PROJECT MANUAL

PRE-BID SITE VISIT SCHEDULED

ON SEPTEMBER 10, 2026
SEE ADVERTISEMENT FOR BIDS INSIDE

PROJECT NO. 47477-C

CONSTRUCTION WORK

RENOVATE ARMORY
STATE ARMORY
2 QUINCY PLACE
YONKERS, NY

JULY 20, 2026

KATHY HOCHUL
Governor

JEANETTE M. MOY
Commissioner

NEW YORK STATE | Office of General Services

PROJECT NO. 47477-C

CONSTRUCTION WORK

RENOVATE ARMORY
STATE ARMORY
2 QUINCY PLACE
YONKERS, NY

JULY 20, 2026

CLIENT:
DIVISION OF MILITARY AND NAVAL AFFAIRS

PROJECT TEAM LEADER:
KEVIN RENAGHAN, RA, LEED AP, PMP

ASBESTOS PROJECT DESIGNER:
Ambient Environmental, Inc.
828 Washington Avenue
Albany, NY 12203

PREPARED BY
Bell & Spina Architects-Engineers, PC
215 Wyoming Street
Syracuse, NY 13204

Ryan Biggs Clark Davis Engineering, DPC
257 Ushers Road
Clifton Park, NY 12065
0023272

Re-Habitat LLC
7648 Hunt Lane
Fayetteville, NY 13066

M&P Engineering & Land Surveying, PLLC.
1326 New Seneca Turnpike
Skaneateles, NY 13152
13152-0000

PREPARED FOR
State of New York
Office of General Services
35th Floor, Corning Tower
The Governor Nelson A. Rockefeller
Empire State Plaza
Albany, NY 12242
Phone (518) 474-0203
FAX (518) 473-7862

Affix Seal 	Affix Seal 	Affix Seal 
08/31/2028 Registration Expiration Date	10/31/2026 Registration Expiration Date	06/30/2026 Registration Expiration Date
	0023272 Certificate of Authorization	0022103 Certificate of Authorization

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09/30/2027 Registration Expiration Date	Registration Expiration Date	Registration Expiration Date

TABLE OF CONTENTS

PROCUREMENT AND CONTRACTING REQUIREMENTS GROUP

DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS

INTRODUCTORY INFORMATION

Document Number and Title

000101.02 Title Page (Cover)
000105.01 Certification Page
000110 Table Of Contents
000115.01 List Of Drawings

BIDDING REQUIREMENTS

Document Number and Title

001114 Advertisement For Bids
002113 Instructions To Bidders
002213 Supplementary Instructions To Bidders – MWBE-EEO
002216 Supplementary Instructions To Bidders – Asbestos Projects
002218 Supplementary Instructions To Bidders – Pre-Bid Site Visit
002219 Supplementary Instructions To Bidders – Qualifications Of Bidders
003113.0 Reference Summary Project Schedule
003126 Existing Hazardous Material Information
003132 Geotechnical Data
004113 Bid Form – Standard
004313 Form Of Bid Bond – Bid Security
004314 New York State Surety Bond
006517 DCA-3 Offerer Disclosure Of Prior Non-Responsibility Determinations

CONTRACTING REQUIREMENTS

Document Number and Title

007213 General Conditions
007305 Supplementary Conditions – Liquidated Damages
007306 Supplementary Conditions – Warranty Extension
007307 Supplementary Conditions – MWBE-EEO
007308 Supplementary Conditions – Buy America Preference
007310 Supplementary Conditions – Contractor's Supervision
007311 Supplementary Conditions – Payments
007322 Supplementary Conditions – Worker's Compensation
007323 Supplementary Conditions – Vendor Responsibility
007324 Supplementary Conditions - Encouraging Use of New York State Businesses in Contract Performance
007326 Supplementary Conditions - Orders on Contract (Change Orders)
007327 Supplementary Conditions – SDVOB

007331 Supplementary Conditions – Labor Law

SPECIFICATIONS GROUP

GENERAL REQUIREMENTS SUBGROUP

DIVISION 01 – GENERAL REQUIREMENTS

Section Number and Title

011000.01 Summary Of The Work Multi Contract
011100 Safety
012100.0 Allowances
012200 Cost Computations
013000.01 Administrative Requirements ECP version
013113 Project Planning and Scheduling
013119 Project Meetings
013300 Submittals
013350 Computer Aided Design Coordination Drawings
014100.01 Regulatory Requirements Upstate
014339 Mockup Requirements
015000.02 Construction Facilities And Temporary Controls Rehab
016500 Materials And Equipment
017329 Removals Cutting And Patching
017716 Contract Closeout
017900.01 Video Training Programs
019113 General Commissioning Requirements
019119.0 Building Enclosure Commissioning

FACILITY CONSTRUCTION SUBGROUP

DIVISION 02 – EXISTING CONDITIONS

Section Number and Title

023313 Underground Utility Locator Service
024115 Site Demolition
028213 Asbestos Abatement
028304 Handling Of Lead Containing Materials

DIVISION 03 – CONCRETE

Section Number and Title

031000 Concrete Forming And Accessories
032000 Concrete Reinforcing
033000 Cast-In-Place Concrete

DIVISION 04 – MASONRY

Section Number and Title

040110	Masonry Cleaning
040120.63	Brick Masonry Repair
040310.0	Historic Masonry Cleaning
040322.0	Historic Masonry Repair
042000	Unit Masonry

DIVISION 05 – METALS

Section Number and Title

051200	Structural Steel Framing
053100	Steel Decking
054000	Cold-Formed Metal Framing
055000	Metal Fabrications
055113	Metal Pan Stairs
055213	Pipe And Tube Railings

DIVISION 06 – WOOD, PLASTICS, AND COMPOSITES

Section Number and Title

061000	Rough Carpentry
061600	Sheathing
064219	Plastic Laminate Faced Wood Paneling
066000	Solid Plastic Fabrications

DIVISION 07 – THERMAL AND MOISTURE PROTECTION

Section Number and Title

070150	Modifications To Existing Warrantied Roof System
072100	Thermal Insulation
072500	Weather Barriers
072600	Vapor Retarders
072700	Air Barriers
074213.19	Insulated Metal Wall Panels
075323	Ethylene-Propylene-Diene Monomer (EPDM) Roofing
076200	Sheet Metal Flashing And Trim
077200	Roof Accessories
078413	Penetration Firestopping
078443	Joint Firestopping
079200	Joint Sealants

DIVISION 08 – OPENINGS

Section Number and Title

081113	Hollow Metal Doors And Frames
083313	Coiling Counter Doors
083323	Overhead Coiling Doors
084113	Aluminum-Framed Entrances And Storefronts

084413	Glazed Aluminum Curtain Walls
085113	Aluminum Windows
087100	Door Hardware
087100.01	Door Hardware Schedule
088000	Glazing
088300	Mirrors
089119	Fixed Louvers
089516	Wall Vents

DIVISION 09 – FINISHES

Section Number and Title

090561.13	Moisture Vapor Emission Control
092116	Gypsum Board Assemblies
093013	Ceramic Tiling
093023	Glass Mosaic Tiling
095123	Acoustic Tile Ceilings
096513	Resilient Base And Accessories
096566	Resilient Athletic Flooring
096723	Resinous Flooring
096813	Tile Carpeting
097200	Wall Coverings
098436	Sound Absorbing Ceiling Units
099114	Exterior Painting
099123	Interior Painting

DIVISION 10 – SPECIALTIES

Section Number and Title

101419	Dimensional Letter Signage
101423.16	Room Identification Panel Signage
102113.19	Plastic Toilet Compartments
102116.19	Plastic Shower Compartments
102233	Accordion Folding Partitions
102600	Wall And Door Protection
102800	Toilet, Bath, And Laundry Accessories
104413	Fire Protection Cabinets
104416	Fire Extinguishers

DIVISION 11 – EQUIPMENT

Section Number and Title

115213	Projection Screens

DIVISION 12 – FURNISHINGS

Section Number and Title

122413	Roller Window Shades
123216	Manufactured Plastic Laminate Clad Casework
123640	Stone Countertops

DIVISION 14 – CONVEYING EQUIPMENT

Section Number and Title

142000	Elevators (New Installations)

SITE AND INFRASTRUCTURE SUBGROUP

DIVISION 31 – EARTHWORK

Section Number and Title

310000	Earthwork
310001	Earthwork Materials
312500	Erosion And Sedimentation Controls

DIVISION 32 – EXTERIOR IMPROVEMENTS

Section Number and Title

321216	Asphalt Paving
321313	Concrete Paving
321373	Concrete Paving Joint Sealants
321613	Concrete Curbs And Gutters
321723	Pavement Markings
323113.0	Chain Link Fences And Gates
329200	Turf And Grasses

DIVISION 34 – TRANSPORTATION

Section Number and Title

344113	Traffic Signs
347115	Site Bollards

APPENDIX

BDC-328 Utilization Plan
BDC-329 Contractor's List Of Subcontractors-Suppliers
BDC-406.1 Statement Of Special Inspections
Geotechnical Engineering Services Report
Hazardous Materials Survey Pre-Renovation For Asbestos, Lead-Based Paint and PCB in Caulk
Prevailing Wage Rate
Renovation Survey For Asbestos-Containing Materials, Lead-Based Paint & PCBs
Sample Firestop Schedule
Schedule Of Submittals (SOS)
SDVOB_100 Utilization Plan

SDVOB_101 Instructions
SDVOB_101 Monthly Compliance Report
SDVOB_200 Waiver Form

END OF TABLE OF CONTENTS

LIST OF DRAWINGS

1.01 DRAWINGS

A. The Contract Drawings, which accompany this Project Manual and form a part of the Contract Documents, are listed on the Title Sheet of the Drawings.

B. The drawings for related contracts are listed on the Title Sheet for reference only. Examine the drawings for related contracts to ascertain the relationship of the Work to the related contracts.

END OF LIST

ADVERTISEMENT FOR BIDS

Sealed bids for Project Nos. 47477-C, 47477-H, 47477-P and 47477-E, comprising separate contracts for Construction Work, HVAC Work, Plumbing Work, and Electrical Work, Renovate Armory, State Armory, 2 Quincy Place, Yonkers (Westchester County), NY, will be received by the Office of General Services (OGS), Design & Construction Group (D&C), Division of Contract Management, 35th Fl., Corning Tower, Empire State Plaza, Albany, NY 12242, on behalf of the Division of Military and Naval Affairs, until 2:00 p.m. on Wednesday, September 23, 2026, when they will be publicly opened and read. Each bid must be prepared and submitted in accordance with the Instructions to Bidders and must be accompanied by a bid security (i.e. certified check, bank check, or bid bond in the amount of $270,900 for C, $80,600 for H, $53,400 for P, and $81,600 for E).

All successful bidders will be required to furnish a Performance Bond and a Labor and Material Bond pursuant to Sections 136 and 137 of the State Finance Law, each for 100% of the amount of the Contract estimated to be between $10,000,000 and $15,000,000 for C, between $2,000,000 and $3,000,000 for H, between $1,000,000 and $2,000,000 for P, and between $2,000,000 and $3,000,000 for E.

Pursuant to State Finance Law §§139-j and 139-k, this solicitation includes and imposes certain restrictions on communications between OGS D&C and a bidder during the procurement process. A bidder is restricted from making contacts from the earliest posting on the OGS website, in a newspaper of general circulation, or in the Contract Reporter, of written notice, advertisement or solicitation of offers, through final award and approval of the contract by OGS D&C and the Office of the State Comptroller ("Restricted Period") to other than designated staff, unless it is a contact that is included among certain statutory exceptions set forth in State Finance Law §139-j(3)(a). Designated staff are Megan Whaley, Catherine Skaczkowski, Jessica Hoffman, and Pierre Alric in the Division of Contract Management, telephone (518) 474-0203, fax (518) 473-7862. For inquires related specifically to Minority and Women-Owned Business Enterprises (MWBE) and to Service-Disabled Veteran Owned Businesses (SDVOB) provisions of this procurement, the designated contact is Tryphina Ramsey, telephone (518) 486-9284 or email **OGS.sm.MWBE@ogs.ny.gov**. OGS D&C employees are also required to obtain certain information when contacted during the restricted period and to make a determination of the responsibility of the bidder pursuant to these two statutes. Certain findings of non-responsibility can result in rejection for contract award and in the event of two findings within a four-year period, the bidder is debarred from obtaining governmental Procurement Contracts. Bidders responding to this Advertisement must familiarize themselves with the State Finance Law requirements and will be expected to affirm that they understand and agree to comply on the bid form. Further information about these requirements can be found within the project manual or at: **https://ogs.ny.gov/ACPL/**

Pursuant to Public Buildings Law § 8(6), effective January 11, 2020, for any projects where the project design commenced on or after January 1, 2020 and for any contracts over $5,000 for the work of construction, reconstruction, alteration, repair, or improvement of any State building, a responsible and reliable NYS-certified Minority or Women-Owned Business Enterprise that submits a bid within ten percent of the lowest bid will be deemed the apparent low bidder provided that the bid is $1,737,918 or less, adjusted annually for inflation as of March 1, 2026. If more than one responsible and reliable MWBE firm meets these requirements, the MWBE firm with the lowest bid will be deemed the apparent low bidder.

___Project commenced design before January 1, 2020. Not subject to provision.
XX Project commenced design on or after January 1, 2020. Subject to provision.

The substantial completion date for this project is 631 days after the Agreement is approved by the Comptroller.

As a condition of award, within five (5) days of receipt of the proposed Contract Agreement from the State, the apparent low bidder shall return the Contract Agreement to the State, properly executed, along with the Bonds if required by said Agreement. Low bidders who cannot meet these provisions may be subject to disqualification and forfeiture of the bid security.

The only time prospective bidders will be allowed to visit the job site to take field measurements and examine existing conditions of the project area will be at 10:00 a.m. on September 10, 2026, at State Armory, 2 Quincy Place, Yonkers, NY. Prospective bidders are urged, but not mandated, to visit the site at this time. Prospective bidders or their representatives attending the pre-bid site visit will not be admitted on facility grounds without proper photo identification. Note that parking restrictions and security provisions will apply, and all vehicles will be subject to search. Refer to Document 002218 for any additional requirements for attendance at the pre-bid site visit.

Phone the office of Allison Krebs-Fogel, (914-941-1122) a minimum of 24 hours in advance of the date to provide the names of those who will attend the pre-bid site visit. Only contractors that schedule a visit at least 24 hours in advance will be allowed to participate in the pre-bid site visit.

Pursuant to New York State Executive Law Article 15-A and the rules and regulations promulgated thereunder, OGS is required to promote opportunities for the maximum feasible participation of New York State-certified Minority and Women-owned Business Enterprises ("MWBEs") and the employment of minority group members and women in the performance of OGS contracts. All bidders are expected to cooperate in implementing this policy. OGS hereby establishes an overall goal of 30% for MWBE participation, 15% for Minority-Owned Business Enterprises ("MBE") participation and 15% for Women-Owned Business Enterprises ("WBE") participation (based on the current availability of qualified MBEs and WBEs). The total contract goal can be obtained by utilizing any combination of MBE and /or WBE participation for subcontracting and supplies acquired under this Contract. Trades with 0% goals are encouraged to make "good faith efforts" to promote and assist in the participation of MWBEs on the Contract for the provision of services and materials.

Article 3 of the Veteran's Services Law provides for more meaningful participation in public procurement by certified Service-Disabled Veteran-Owned Businesses ("SDVOBs"). Bidders are expected to consider SDVOBs in the fulfillment of the requirements of the Contract. Such participation may be as subcontractors or suppliers, as protégés, or in other partnering or supporting roles. OGS hereby establishes overall goals for SDVOBs' participation under this contract as follows: 6% for the C trade contractor, 3% for the E trade contractor, 3% for the H trade contractor, and 3% for the P trade contractor, based on the current availability of qualified SDVOBs. Trades with 0% goals are encouraged to make "good faith efforts" to promote and assist in the participation of SDVOBs on the Contract for the provision of services and materials.

The Office of General Services reserves the right to reject any or all bids.

Downloading Bidding and Contract Documents for this project, along with the submission of Bidder Questions and Electronic Bidding are available through OGS Design & Construction's electronic bidding service, Bid Express at the following link: **http://www.bidexpress.com**

For questions about registration or Bid Express technical issues, e-mail **support@bidexpress.com**, or call Bid Express support (888) 352-2439.

For all other questions, email **DCPlans@ogs.ny.gov**, or call (518) 474-0203.

For additional information on this project, use the link below and then click on the project number:

https://online.ogs.ny.gov/dnc/contractorConsultant/esb/ESBPlansAvailableIndex.asp.

OGS Design & Construction Group
END OF INFORMATION

DOCUMENT 002113

INSTRUCTIONS TO BIDDERS

1. EXAMINATION OF DOCUMENTS

1.1. Carefully examine and be familiar with the Bidding and Contract Documents.

1.2. Examine information concerning subsurface or other latent physical conditions. It is presented in good faith but is not intended as a substitute for personal investigation, interpretations, or judgment of the Contractor.

2. VISIT TO THE SITE

2.1. For projects that include Document 002218, visit the Site of the Work prior to submitting your bid. Refer to the Advertisement for Bids for any special instructions.

2.2. Become familiar with restrictions and regulations established by the facility. Existing restrictions and regulations will not be considered as grounds for any additional cost over the Contract sum.

2.3. Assume the risk of encountering any subsurface or other latent physical condition that can be reasonably anticipated on the basis of documentary information provided by the State and from inspection and examination of the Site.

2.4. Interpretations of contract documents by facility personnel are not binding.

3. DESIGNATED, PERMISSIBLE, IMPERMISSIBLE CONTACTS AND QUESTIONS

3.1. The designated contacts during the restricted period for this procurement will be:

- Megan Whaley, Contract Awards Unit, telephone – (518) 474-0203, fax – (518) 473-7862
- Catherine Skaczkowski, Contract Awards Unit, telephone – (518) 474-0203, fax – (518) 473-7862
- Jessica Hoffman, Assistant Director, Contract Management, telephone – (518) 474-0203
- Pierre Alric, Director, Contract Management, telephone – (518) 474-0201
- For inquires related specifically to Minority and Women-Owned Business Enterprises (MWBE) and to Service-Disabled Veteran Owned Businesses (SDVOB) provisions of this procurement, the designated contact is Tryphina Ramsey, telephone (518) 486-9284 or email **OGS.sm.MWBE@ogs.ny.gov**.

3.2. State Finance Law §139-j recognizes a series of permissible contacts that can go to other than the designated contacts, as follows:

3.2.1. The submission of written proposals in response to a request for proposals, invitation for bids or any other method for soliciting a response from offerers intending to result in a procurement contract.

3.2.2. The submission of written questions to a designated contact set forth in a request for proposals, or invitation for bids, or any other method for soliciting a response from offerers intending to result in a procurement contract, when all written questions and responses are to be disseminated to all offerers who have expressed an interest in the request for proposals, or invitation for bids, or any other method for soliciting a response from offerers intending to result in a procurement contract.

3.2.3. Participation in a conference provided for in a request for proposals, invitation for bids, or any other method for soliciting a response from offerers intending to result in the procurement contract.

3.2.4. Complaints by an offerer regarding the failure of the person or persons designated by the procuring governmental entity pursuant to this section to respond in a timely manner to authorized offerer contacts made in writing to the office of general counsel of the procuring governmental entity, provided that any such written complaints shall become a part of the procurement record.

3.2.5. Offerers who have been tentatively awarded a contract and are engaged in communication with a governmental entity solely for the purpose of negotiating the terms of the procurement contract after being notified of tentative award.

3.2.6. Contacts between designated governmental staff of the procuring governmental entity and an offerer to request the review of a procurement contract award.

3.2.7. Contacts by offerers in protests, appeals or other review proceedings (including the apparent successful bidder or proposer and his or her representatives) before the governmental entity conducting the procurement seeking a final administrative determination, or in a subsequent judicial proceeding.

3.2.8. Complaints of alleged improper conduct in a governmental procurement to the attorney general, inspector general, district attorney, or court of competent jurisdiction.

3.2.9. Written protests, appeals, or complaints to the New York State Office of the State Comptroller (OSC) during the process of contract approval, where OSC's approval is required by law, and where such communications and any response thereto are made in writing and shall be entered in the procurement record pursuant to §163 of the State Finance Law.

3.2.10. Complaints of alleged improper conduct in a governmental procurement conducted by a municipal agency or local legislative body to OSC's office.

3.2.11. Permissible Contacts are only with the procuring agency unless specifically excepted.

3.3. Impermissible contacts include those that a reasonable person would infer are intended to influence a governmental procurement and occur during the restricted period of a governmental procurement between the offerer and any member, officer or employee of any governmental entity; provided, however, that nothing in this section shall be deemed to prohibit an offerer from communicating with a member of the state legislature or legislative staff about a governmental procurement. Contacting a person or entity other than the designated contact person during the restricted period, when such contact does not fall within one of the exemptions, is also an impermissible contact.

Direct all questions regarding the intent or meaning of the drawings or specifications to the Office of General Services (OGS) through OGS Design & Construction's Electronic Document and Bidding service, Bid Express®. Registration along with downloading and electronic bidding can be accessed at the following website: **http://www.bidexpress.com.**

Click on "User Login" and enter your username and password or "Sign Up" if you do not have an account. After logging in, select "Solicitations" then enter the project number or the name of the project. Scroll down to the "Q & A" section and select "Ask a Question".

All responses to appropriate pre-bid inquiries will be communicated via the OGS website and Bid Express. Those inquiries resulting in clarification and or changes to the bid documents will be communicated by Addenda to all persons who have obtained drawings and specifications.

3.4. Pre-bid inquiries answered by means other than Addenda will not be binding.

4. PREPARATION OF BIDS

4.1. **For electronic bids**: Prepare and submit bid using Bid Express®.

4.1.1. Prepare each bid on the official form furnished by the State within the Bid Express® website. Fill in all blank spaces. An incomplete entry may disqualify the bid in its entirety. No post bid meetings will be afforded to any bidder to explain or clarify an incomplete bid or entry omission(s).

4.1.2. Bidders must be registered with Bid Express® in advance. Bidders not previously registered with Bid Express® must complete a one-time registration for a user account. There is no cost to register, to view/download bid documents, or to submit a bid. Vendors can select 'Pay per solicitation (non-member)' when registering.

4.1.3. Bid Security is required in accordance with the BID SECURITY INFORMATION section within this document. Bidders must be registered with a Bid Express® approved bonding service in advance. Bidders

not already registered must register with a Bid Express® approved bonding service, and shall refer to the instructions contained in the BID SECURITY INFORMATION section within this document.

4.1.4. Bidders must establish an Infotech® Digital ID in advance. The Infotech® Digital ID application process may take up to seven business days to complete. Refer to http://www.bidexpress.com for guidance on the application for and installation of Digital IDs. The Digital ID is an electronic tool that allows users to digitally sign bids, contracts, and forms. Digital IDs are used as part of a secure method of maintaining confidentiality and identity verification within the Bid Express® service.

4.2. **For paper bids**: Prepare each bid on the official form furnished by the State.

4.2.1. Make no erasures, cross-outs, whiteouts, write-overs, obliterations, or changes of any kind in the Bid Form phraseology, in the entry of unit prices, or anywhere on the Bid Form.

4.2.2. Fill in all blank spaces legibly. An illegible entry may disqualify the bid in its entirety. If a mistake is made, use a new Bid Form. No post bid meetings will be afforded to any bidder to explain or clarify illegible or changed entries.

4.2.3. Sign the Bid Form in the space provided. An officer or a principal of a corporation or a partnership signing for the bidder shall print or type the legal name of the person, partnership, or corporation on the line provided and place his/her signature after "SIGN BID HERE". The same procedure shall apply to the bid of joint venture by two or more firms, except that the signature and title of an officer or a principal of each member firm of the joint venture shall be required. All signatures must be original. Mechanically reproduced signatures, stamps, or copies are not acceptable. Submitted Bid Forms that do not conform to these requirements will be disqualified.

4.3. For paper or electronic bids, if the Project Manual contains Section 012300 - Alternates, indicate the amounts to be added to or deducted from the base bid in the spaces provided on the Bid Form. If the Work is to be performed at no change in cost, indicate "0". Any bid which fails to indicate an amount for each alternate will be held to be informal and may be rejected.

4.4. For paper or electronic bids, note in the space designated on the Bid Form, each Addenda by numbers, which have been issued.

4.4.1. <u>For paper bids</u>: If no Addenda have been issued, insert the word "NONE" in the space designated on the Bid Form.

4.5. For paper or electronic bids, all contractors submitting bids on public work projects are required to register with the New York State Department of Labor (NYSDOL) under Labor Law Section 220-i. The registration number must be entered in the space provided on the Bid Form. A complete and accurate registration number must be entered in the space provided on the Bid Form. Failure to possess an active and verifiable registration at the time of bid will result in disqualification of the bid.

4.6. All bidders must complete a form <u>DCA-3</u> **– *Offerer Disclosure of Prior Non-Responsibility Determinations*** and submit it with their Bid.

4.6.1. <u>For electronic bids</u>: Complete and submit form DCA-3 within the Bid Express® website. Fill in all blank spaces.

4.6.2. <u>For paper bids</u>: Complete paper form DCA-3 and include it with the Bid Form. Fill in all blank spaces.

4.7. All bids, regardless of dollar value, must include the cost of Labor and Material and Performance Bonds.

5. BID SECURITY INFORMATION

5.1. Bid security is required as a guarantee that the bidder will enter into the Contract and furnish a satisfactory Performance Bond and Labor and Material Bond within the time specified on the Bid Form. Submit bid security in the amount indicated in the Advertisement for Bids in one of the following forms:

5.1.1. Certified check or bank check drawn upon a legally incorporated bank or trust company (payable to the Office of General Services).

5.1.2. Bid Bond on OGS Form 004313 to be issued by a Surety licensed in the State of New York.

5.1.2.1. **For electronic bids**: Electronic bid bond furnished by a Bid Express® approved bonding service is required for an Electronic Bid. Vendors must be registered with a Bid Express® approved bonding service. Refer to http://www.bidexpress.com for guidance and registration information. Vendors not already registered must complete a one-time registration with a Bid Express® approved bonding service. At the time of this publication, the Bid Express® approved bonding services are Tinubu at https://www.tinubu.com, or Surety2000 at https://surety2000.com. Allow sufficient time for account registration and bond processing prior to the bid due date noted in the Advertisement for Bids.

5.1.2.2. **For paper bids:** Sign the bid bond in the space provided. An officer or a principal of a corporation or a partnership signing for the bidder shall print or type the legal name of the person, partnership, or corporation on the line provided and place his/her signature above "Principal". The same procedure shall apply to the bid security of a joint venture by two or more firms, except that the signature and title of an officer or a principal of each member firm of the joint venture shall be required. The same procedure shall apply to the signature for the Attorney-in-Fact. All signatures must be original. Electronic, mechanically-reproduced or stamped signatures, or copies, are not acceptable for either signature. Submitted Bid Security that does not conform to these requirements will be disqualified

5.2. Upon submission of a certified check or bank check, the bid security of the successful bidder will be returned (check issued by OSC) pending acceptance of the required bonds and the execution of Contract. The second low bidder's bid security will be returned after the successful bidder executes the Contract or with the submission of an approved Substitute Bid Bond on the Design and Construction form. The bid security of all other bidders with a bid security in the form of checks will be returned as soon as possible after the apparent low bidder has been determined.

5.3. Bid Bonds submitted as bid security will not be automatically returned to the bidder. Firms requesting to have bonds returned may do so in writing provided they are not the first or second low bidder prior to award. Only those requests made in writing, directed to the Contract Awards Unit, shall be considered for return.

6. SUBMISSION OF BID

6.1. Do not submit both electronic and paper bids. If both an electronic bid from Bid Express® and a paper bid are received from the same contractor, the electronic bid from Bid Express® will prevail, and the paper bid(s) will be disqualified.

6.2. Submit Bid Form, Bid Security and Form DCA-3 – ***Offerer Disclosure of Prior Non-Responsibility Determinations.***

6.2.1. **For electronic bids**: Complete and submit within Bid Express®.

6.2.1.1. Within Bid Express®, select the procurement from the 'Solicitations' tab and click 'Select For Bidding'. Fill in all blank spaces.

6.2.1.2. In accordance with the BID SECURITY INFORMATION section contained within this document, coordinate with a Surety Agent to obtain a Bond ID from one of the Bid Express® approved bonding services. Refer to the instructions in the BID SECURITY INFORMATION section of this document. Complete the Bid Bond information section within Bid Express® and click 'Verify Bid Bond'. Failure to submit a valid Bond ID from an approved electronic bonding service for a bond of the specified value may result in automatic bid disqualification.

6.2.1.3. Click 'Check Bid' and resolve any errors. Click 'Submit Bid'. Sign the electronic bid form using a Bid Express® approved digital ID by clicking 'Submit Bid'.

6.2.2. **For paper bids:** Provide bid in a sealed envelope addressed to:

NYS Office of General Services – Design & Construction Group
Division of Contract Management, Contract Awards Unit
35th Floor, Corning Tower
Albany, NY 12242

Exterior of sealed envelope shall include the words "SEALED BID ENCLOSED", Project Number and Trade Designation of Bid, Bid Due Date, Company Name, Address and Federal ID Number.

6.2.3. Telephone, email, fax, or electronic bids other than electronic bids submitted within Bid Express® will not be accepted.

6.3. All bids must be received before the time specified, and at the place designated for the receipt of bids.

6.4. **Late Bids**:

6.4.1. Electronic bids cannot be accepted after the due date and time.

6.4.2. Paper bids received after the due date and time will be returned unopened with notification of the reason for its refusal.

6.4.3. A late paper bid will be considered if: (1) its arrival at the place designated after the time specified can be shown by documentary or other proofs to be due to mishandling by OGS and (2) that absent such mishandling, the bid would have arrived timely. Delays in the mail or any other means of transmittal, including couriers or agents of the State, other than employees of OGS will not suffice to excuse late arrival of the bid.

7. MODIFICATION OF BID

7.1. Bid Modifications By Amendment:

7.1.1. **For Modification to Electronic Bids:** Electronic bids may be modified on Bid Express® up to the deadline for receipt of bids. To modify your bid, access your bid in Bid Express®, modify applicable component(s), select Submit Bid to update the bid. Refer to the Submission Status to confirm the Last Submitted date and time. Only the submitted bid will be considered.

7.1.2. **For Modification to Paper Bids:** Modifications by amendment will only be considered on condition that the amendment arrives before the time specified and at the place designated for receipt of bids, and

7.1.2.1. The amendment is in writing and executed by a principal of the bidder firm, and

7.1.2.2. The bid, as amended, conforms in all respects with the Contract Documents. Bidders may mail or fax their bid modifications. Fax bid modifications to (518) 473-7862. Bidders may use a bid modification to acknowledge addenda and/or change the bid amount. Bid modifications received by fax must be on company letterhead and signed by a principal of the bidder firm. DO NOT use the OGS Bid Form to submit bid modifications by fax. Indicate any amounts to be added to or deducted from any part of the bid amount with the words "ADD" or "DEDUCT" next to the amount. The only amounts listed on a faxed bid modification should be the amounts to be added or deducted. **DO NOT expose the new bid amount on the faxed bid modification.** If the bid amount is shown on the faxed bid modification, or otherwise exposed at any time before the bid opening, the bid will be disqualified.

8. WITHDRAWAL OF BID

8.1. A bid may be withdrawn at any time prior to the time specified for receipt of bids.

8.1.1. For electronic bids, bidders can withdraw their bids on Bid Express® up to the time specified for receipt of bids.

8.1.2. For paper bids, should a bidder decide to withdraw its bid before the bid opening, the request must be prepared on company letterhead, signed by a principal of the bidder firm, and faxed to (518) 473-7862, or hand-delivered or mailed to the Contract Awards Unit at the place designated for receipt of bids. OGS will

e-mail an acknowledgment of the withdrawal request that includes an indication that the unopened bid will be returned. Should the withdrawal request be in error, the bidder must call the Contract Awards Unit at (518) 474-0203 immediately. The unopened bid will be returned by mail to the bidder.

8.2. Not more than 7 calendar days after the bid opening or a scheduled pre-award meeting, whichever comes later, a low bidder may request the withdrawal of its bid based on a mistake. The request must be submitted via certified or registered mail to the address in Paragraph 6.2.2 of these Instructions to Bidders. The Contracting Officer may conduct or have conducted on his/her behalf a fact-finding proceeding to develop information concerning the request for withdrawal. A request for withdrawal of a bid made after the specified number of days allowed shall result in forfeiture of the bid security.

8.3. Following a timely request for withdrawal of a bid, the bid security will be returned if the bidder establishes by credible evidence, including original documents when requested, the following:

8.3.1. An error, clerical as opposed to judgmental in nature and verifiable by written evidence, occurred in the computation of the bid,

8.3.2. The error constitutes either an unintentional and substantial computational error or an unintentional omission of a substantial quantity of labor and/or material from the final bid computation,

8.3.3. The absence of gross negligence in the preparation of the bid. For the purposes of this subparagraph, gross negligence may include:

i) the apparent failure of a bidder to account for two or more categories (divisions) of work,

ii) the use of multiple erroneous quotations from subcontractors or suppliers,

iii) submission to the Contracting Officer of a bid withdrawal request within the preceding six (6) months.

8.4. If the bidder fails to meet its burden of proof, the request to withdraw without penalty shall be denied and its bid security will be forfeited and become the property of the State. The decision of the Contracting Officer shall be final and conclusive.

8.5. Once a request to withdraw is made, the bidder is ineligible for award. The Contracting Officer shall continue to progress the award process considering only the remaining bids.

9. DISQUALIFICATION

9.1. Any bid which fails to conform to the requirements of the Bidding and Contract Documents may be rejected.

9.2. The Commissioner may waive any informality or afford the bidder an opportunity to remedy any deficiency resulting from a minor informality or irregularity.

9.3. The State reserves the right to disqualify bidders, before or after bid opening, upon evidence of collusion with third parties or other illegal practices upon the part of the bidder.

9.4. Bidders may review the list of common Bid Informalities and Bid Disqualifications at:

https://online.ogs.ny.gov/dnc/contractorConsultant/esb/informalitylist.asp

10. GOVERNING LAWS AND REGULATIONS ADMINISTERED BY OTHER DEPARTMENTS

10.1. **Taxes**: All taxes pertaining to the Work must be paid. Address inquiries regarding taxes to the Tax Collecting Agency. For information regarding sales and use taxes contact the Sales Tax Bureau, Department of Taxation and Finance.

10.2. While all applicable laws, rules and regulations of the State of New York are incorporated by reference in this Contract, take special note of the provisions of the Labor Law and Industrial Code Rule 23 relative to the safety of workers and of persons lawfully occupying or using the premises. Address inquiries regarding labor law provisions to the New York State Department of Labor.

10.3. **Anti-Discrimination Clause**: Discrimination against any employee or applicant for employment because of race, creed, color, national origin, sex, age, disability, or marital status is prohibited.

11. OPENING OF BIDS

Bids will be opened as announced in the Advertisement for Bids.

12. DETERMINATION OF CONTRACTOR'S RESPONSIBILITY

12.1. The State Public Buildings Law requires that contracts for public work in the State of New York be awarded to the lowest responsible and reliable bidders as will best promote the public interest.

12.2. Each apparent low bidder, and each proposed subcontractor (for subcontract work of $100,000 or more) will be required to submit form CCA-2 - ***New York State Vendor Responsibility Questionnaire For Profit Construction*** prior to contract award or subcontractor approval. OGS reserves the right to request CCA-2 forms from proposed subcontractors for work of less than $100,000 if it is determined to be in the best interest of the State. Submission of these forms will assist the State in determining the responsibility and reliability of the vendor.

OGS recommends that vendors file the required CCA-2 form online via the New York State VendRep System. Use of this system requires that the vendor have a New York State Vendor Identification Number (Vendor ID). Please note that the Vendor ID is not the Taxpayer ID number.

If bidders do not already have a Vendor ID, they are encouraged to obtain one ***in advance of*** the bid opening.

To obtain a Vendor ID, contact the OSC Help Desk at 866-370-4672 or 518-408-4672, or by e-mail at ITServiceDesk@osc.state.ny.us.

To enroll in and use the VendRep System, see the **VendRep System** page at:

http://www.osc.state.ny.us./vendrep/info_vrsystem.htm

If you already have a User ID and password, go directly to the VendRep System online at:

https://www.osc.state.ny.us/state-vendors/vendrep/file-your-vendor-responsibility-questionnaire

For direct VendRep System user assistance, contact the OSC Help Desk; the help desk phone numbers and e-mail address are shown above.

Vendors opting to file a paper questionnaire can obtain the appropriate questionnaire from the VendRep website at **http://www.osc.state.ny.us/vendrep/forms_vendor.htm** or may telephone the OSC Help Desk.

12.3. After the bids are opened, the apparent low bidder shall complete and file the CCA-2 within 5 days. Vendors using the online system may certify (or recertify) and file the CCA-2 electronically via the VendRep System: **https://www.osc.state.ny.us/state-vendors/vendrep/file-your-vendor-responsibility-questionnaire**

12.4. It is recommended that all bidders become familiar in advance with all of the requirements of the CCA-2. As mentioned in 12.2, bidders who do not have a Vendor ID are encouraged to obtain one in advance of the bid opening.

12.5. All bidders must submit a completed form DCA-3 - ***Offerer Disclosure of Prior Non-Responsibility Determinations*** along with their Bid Form.

12.6. The determination of responsibility will include a review to ensure the Contractor has not knowingly and willfully violated the provisions of the Procurement Lobby Law or New York State Finance Law §139-j and §139-k.

12.7. New York State Finance Law §139-k (2) obligates a Governmental Entity to obtain specific information regarding prior non-responsibility determinations. This information must be collected in addition to the information that is separately obtained pursuant to State Finance Law §163(9). In accordance with State Finance Law §139-k, a Contractor must be asked to disclose whether there has been a finding of non-responsibility made within the previous four (4) years by any Governmental Entity due to: (a) a violation of State Finance Law §139-j or (b) the intentional provision of false or incomplete information to a Governmental Entity.

12.8. As part of its responsibility determination, State Finance Law §139-k(3) mandates consideration of whether a Contractor fails to timely disclose accurate or complete information regarding the above non-responsibility

determination. In accordance with law, no procurement contract shall be awarded to any Contractor that fails to timely disclose accurate or complete information under this section, unless a finding is made that the award of the Procurement Contract to the Offerer is necessary to protect public property or public health safety, and that the Offerer is the only source capable of supplying the required Article of Procurement within the necessary time frame.

13. AWARD OF CONTRACT

13.1. The Contract may be awarded to the lowest responsible and reliable bidder as will best promote the public interest.

13.2. If alternates are included in the bidding documents, the State reserves the right to accept or reject any or all alternates. The State shall determine the lowest bid by adding to or deducting, from the Base Bid Amount of the bidders, the additive or deductive alternates, if any, that the State elects to accept after the opening of the bids. Alternates will be accepted in the order they are set forth in the contract documents.

13.3. The State reserves the right to reject any or all bids, and advertise for new bids, if in its opinion the best interest of the State will thereby be promoted. In the event that all bids are rejected, each bidder will be so notified.

13.4. A bidder may withdraw its bid if no award is made within forty-five (45) days after the receipt of bids. A written notice must be submitted via certified or registered mail to the address in Paragraph 6.2.2 of these Instructions to Bidders prior to approval of the contract by OSC. The notice must clearly state that the withdrawal is based on the fact that the contract was not awarded within 45 days after the receipt of bids.

13.5. Pursuant to Public Buildings Law § 8(6), effective January 11, 2020, for any projects where the project design commenced on or after January 1, 2020 and for any contracts over $5,000 for the work of construction, reconstruction, alteration, repair, or improvement of any State building, a responsible and reliable NYS-certified Minority or Women-Owned Business Enterprise ("MWBE") that submits a bid within ten percent of the lowest bid will be deemed the apparent low bidder provided that the MWBE bid is $1,737,918 or less, adjusted annually for inflation as of March 1, 2026. If more than one responsible or reliable NYS-certified MWBE firm meets these requirements, the MWBE firm with the lowest bid will be deemed the apparent low bidder. Refer to the Advertisement for Bids for applicability of projects subject to this criteria.

14. MINORITY- AND WOMEN-OWNED BUSINESS ENTERPRISES

14.1. Pursuant to New York State Executive Law Article 15-A and the rules and regulations promulgated thereunder, OGS is required to promote opportunities for the maximum feasible participation of NYS-certified Minority- and Women-owned Business Enterprises and the employment of minority group members and women in the performance of OGS contracts.

14.2. Information on the availability of subcontractors and suppliers for this project may be accessed by first using the following website link:

https://online.ogs.ny.gov/dnc/contractorConsultant/esb/esbplansavailableindex.asp

From this web page, first click on the project number link, then on Interested Subcontractors and Suppliers, and follow the prompts. A list of all interested vendors will be provided with their contact information, MWBE and SDVOB status', and construction specialties.

14.3. Other information on MWBEs, including a directory of MWBE's, is available from:

NYS Empire State Development
Minority and Women's Business Development Division
30 South Pearl Street
Albany, NY 12245
Telephone: (518) 292-5252
Website: https://esd.ny.gov/doing-business-ny/mwbe

15. SURETY BOND

If required, the Contractor shall furnish Performance and Payment Bonds in an amount equal to one hundred percent (100%) of the total Contract price as security for the faithful performance of this Contract, and for the payment of all persons performing labor or furnishing materials in connection with this contract. These bonds are to be executed on the State Comptroller's form and the surety company must be licensed in the State of New York, have a Best Rating of A- or better and appear on the most recent published Department of the Treasury's Listing of Approved Sureties (Department Circular *570*) at the time of filing the bonds.

16. VENDOR PROTEST POLICY

It is the policy of OGS to provide all vendors, prospective bidders, bidders, suppliers and contractors with an opportunity to resolve complaints or inquiries related to bid solicitations, contract awards, or other associated contract award actions. OGS encourages vendors to seek resolution of complaints related to bid solicitations, contract awards, or other associated actions through consultation with the agency designated contact(s). All such complaints will be given impartial and timely consideration. Vendors may also file formal written protests. A copy of the Design and Construction Vendor Protest Policy and Procedures may be obtained by contacting the designated contact or by visiting the OGS website at:

https://ogs.ny.gov/design-construction/vendor-protest-policy-procedures

17. POLICY ON TIED BIDS

A tie-bid is defined as an instance where bids are received from two or more bidders who are the apparent low responsive and reliable bidders with identical offers, or who are MWBEs with identical offers with bids of $1,737,918 or less and whose bids are within ten percent of the lowest bid. A tie-bid does not exist when an apparent low bidder has an identical offer to an MWBE, as the MWBE is deemed the apparent low bidder pursuant to Public Buildings Law § 8(6). It is the policy of OGS to settle the outcome of tie-bids by either drawing a name from a hat or flipping a coin within 24 hours of the bid opening. All affected firms will be notified of the tie and the time and place of the resolution of the tie, and shall be invited to witness the outcome. Attendance is not mandatory. The drawing/flip will be held at OGS, Contract Awards Unit, 35th Floor, Corning Tower, Albany, New York. Two impartial witnesses will be provided and shall be present. All attendees will acknowledge the results of the tie-breaker on the bid tabulation sheet. All firms affected by the tied bids will be notified of the results. The results pursuant to this provision shall be considered final.

18. WORKERS' COMPENSATION INSURANCE AND DISABILITY BENEFITS REQUIREMENTS

Workers' Compensation Law (WCL) §57 & §220 requires the heads of all municipal and state entities to ensure that businesses applying for permits, licenses or contracts provide proof that they have appropriate workers' compensation and disability benefits insurance coverage. These requirements apply to both original contracts and renewals, whether the governmental agency is having the work done or is simply issuing the permit, license or contract. Failure to provide proof of such coverage or a legal exemption will result in a rejection of the vendor's bid or renewal.

18.1. **Proof of Compliance with Workers' Compensation Coverage Requirements**: In order to provide proof of compliance with the requirements of the Workers' Compensation Law pertaining to workers' compensation coverage, a contractor shall: (1) obtain such coverage from an insurance carrier; or (2) be a Workers' Compensation Board-approved self-insured employer or participate in an authorized self-insurance plan; or (3) be legally exempt from obtaining Workers' Compensation insurance coverage.

An ACORD 25 form is **NOT** acceptable as proof of workers' compensation coverage.

A Contractor seeking to enter into a contract with the State of New York **MUST** provide **ONE** of the following forms to OGS upon request, prior to award:

18.1.1. CE-200, ***Certificate of Attestation of Exemption from NYS Workers' Compensation and/or Disability Benefits Coverage,*** which is available on the Workers' Compensation Board's website, www.wcb.ny.gov, under the heading "Forms"; **OR**

18.1.2. C-105.2 – ***Certificate of Workers' Compensation Insurance*** (the contractor's insurance carrier will send this form to OGS upon request); contractors insured through the New York State Insurance Fund should use their version of the form, the U-26.3; **OR**

18.1.3. SI-12 – ***Certificate of Workers Compensation Self-Insurance*** (the contractor should call the Workers' Compensation Board's Self-Insurance Office at 518 402-0247), **OR** GSI-105.2 – ***Certificate of Participation in Workers' Compensation Group Self-Insurance*** (the contractor's Group Self-Insurance Administrator will send this form to OGS upon request).

18.2. Proof of Compliance with Disability Benefits Coverage Requirements: In order to provide proof of compliance with the requirements of the Workers' Compensation Law pertaining to disability benefits, a contractor shall: (1) obtain such coverage from an insurance carrier; or (2) be a Board-approved self-insured employer; or (3) be legally exempt from obtaining disability benefits coverage.

An ACORD 25 form is NOT acceptable as proof of disability benefits coverage.

A Contractor seeking to enter into a contract with the State of New York **MUST** provide **ONE** of the following forms to OGS upon request, prior to award:

18.2.1. CE-200 – ***Certificate of Attestation of Exemption from NYS Workers' Compensation and/or Disability Benefits Coverage,*** which is available on the Workers' Compensation Board's website**,** **www.wcb.ny.gov**, under the heading "Forms"; **OR**

18.2.2. DB-120.1 – ***Certificate of Disability Benefits Insurance*** (the contractor's insurance agent, broker or carrier will send this form to OGS upon request); **OR**

18.2.3. DB-155 – ***Certificate of Disability Benefits Self Insurance*** (the contractor should call the Workers' Compensation Board's Self-Insurance Office at 518 402-0247).

18.3. All of the above-referenced forms, except the CE-200, SI-12 and DB-155, must show the following as the Entity Requesting Proof of Coverage (entity being listed as the Certificate Holder):

NYS Office of General Services – Design & Construction Group
Division of Contract Management
35th Floor, Corning Tower, GNARESP
Albany, NY 12242

19. ELECTRONIC CONTRACTOR PAYMENTS (ECP)

The ECP Program is initiated with an Electronic Contractor Payments (ECP) Certification Form that is forwarded to the contractor with the project agreement and bond forms. This form must be completed, executed and returned with the executed Contract agreement in order for the contractor to participate in the ECP program. The executed ECP Certification Form will remain on file. Note that the certification will apply to this contract and to future ECP-eligible contracts.

19.1. Upon final approval of the contract, an e-mail will be sent to the contractor's designated e-mail address with a hyperlink that will enable the firm to register, using a temporary password, on the OGS Design & Construction Vendor Interface. The temporary password will be sent to the contractor in letter form that is mailed on the same day.

19.2. The OGS Vendor Interface website will provide the ability to view contract information, submit the detailed estimate and payments requests electronically, and communicate with OGS Design & Construction.

20. IRAN DIVESTMENT ACT

20.1 By submitting a bid in response to this solicitation or by assuming the responsibility of a Contract awarded hereunder, bidder/Contractor (or any assignee) certifies that it is not on the "Entities Determined To Be Non-Responsive bidders/Offerers Pursuant to The New York State Iran Divestment Act of 2012" list ("Prohibited Entities List") posted on the OGS website at

http://www.ogs.ny.gov/about/regs/docs/ListofEntities.pdf

and further certifies that it will not utilize on such Contract any subcontractor that is identified on the Prohibited Entities List. Additionally, bidder/Contractor is advised that should it seek to renew or extend a Contract awarded in response to the solicitation, it must provide the same certification at the time the Contract is renewed or extended.

20.2 During the term of the Contract, should OGS receive information that a person (as defined in State Finance Law §165-a) is in violation of the above-referenced certifications, OGS will review such information and offer the person an opportunity to respond. If the person fails to demonstrate that it has ceased its engagement in the investment activity which is in violation of the Act within 90 days after the determination of such violation, then OGS shall take such action as may be appropriate and provided for by law, rule, or contract, including, but not limited to, seeking compliance, recovering damages, or declaring the Contractor in default.

20.3 OGS reserves the right to reject any bid, request for assignment, renewal, or extension for an entity that appears on the Prohibited Entities List prior to the award, assignment, renewal or extension of a contract, and to pursue a responsibility review with respect to any entity that is awarded a contract and appears on the Prohibited Entities list after contract award.

21. NOT USED

END OF DOCUMENT

DOCUMENT 002213

SUPPLEMENTARY INSTRUCTIONS TO BIDDERS - MWBE-EEO

This Supplement modifies the Instructions to Bidders. Where any part of the Instructions to Bidders is modified by this supplement, the unaltered provisions of that part shall remain in effect.

Add the following:

22. GOALS

22.1 To ensure meaningful participation in the Project of certified Minority- and Women-Owned Business Enterprises ("MWBEs") under the Contract, the Commissioner of General Services has established goals set forth in the Supplementary Conditions.

22.2 All bidders should note that important definitions and conditions relating to the foregoing MWBE goals are contained in the Supplementary Conditions.

22.3 In order to assist the State in determining compliance with the goals set forth in the Supplementary Conditions the apparent low bidder will be required to submit an MWBE Utilization Plan via the New York State Contracting System (NYSCS) prior to Contract award or subcontractor approval.

22.4 If unable to submit an MWBE Utilization Plan through the NYSCS, the apparent low bidder must use Form BDC 328 to submit the plan. The BDC 328 form is available for download at https://ogs.ny.gov/mwbe/forms and may be mechanically reproduced. Additional copies may be obtained upon request from the address listed in Paragraph 23.2 below.

22.5 The apparent low bidder must submit the completed MWBE Utilization Plan within seven (7) calendar days after the bids are opened. OGS will review the submitted MWBE Utilization Plan and advise the bidder of OGS acceptance or issue a notice of deficiency within twenty (20) days of receipt.

23. CERTIFICATION

23.1 All Minority- and Women-Owned Business Enterprises ("MBEs" or "WBEs") proposed as contractors, subcontractors or suppliers must be certified by the NYS Empire State Development, Division of Minority and Women's Business Development to be eligible for MBE or WBE credit on this project.

23.2 UPON WRITTEN REQUEST, The New York State Office of General Services' Office of Business Diversity (OBD) will provide a computer printout of certified MBEs and WBEs in specific trades for a given geographical area of New York State.

This printout can be requested in writing as follows:

- By e-mail to: DCMWBEManager@ogs.ny.gov
- By fax to: (518) 486-2679

- By mail to:

  NYS Office of General Services
  Office of Business Diversity
  29th Floor, Corning Tower, GNARESP
  Albany, NY 12242

24. LIQUIDATED DAMAGES – MWBE PARTICIPATION

24.1 Refer to Article 27.8, Document 007307, Supplementary Conditions - MWBE-EEO, for "Liquidated Damages – MWBE Participation".

END OF DOCUMENT

DOCUMENT 002216

SUPPLEMENTARY INSTRUCTIONS TO BIDDERS - ASBESTOS PROJECTS

This supplement modifies the Instructions to Bidders.

Add the following:

25. CONDITION OF AWARD

25.1 As a condition of award, the following shall be transmitted to the Bureau of Contract Awards, Division of Contract Administration, Design and Construction Group, Office of General Service, 35th Floor, Corning Tower, Empire State Plaza, Albany, NY 12242 by certified mail by the apparent low bidder within 5 days after the bids are opened and by other bidders within 5 days after receiving a written request from the Bureau of Contract Awards for such a submission:

A copy of a valid asbestos-handling license issued by the Commissioner of Labor to the contractor who will perform the Work of the asbestos project.

END OF DOCUMENT

DOCUMENT 002218

SUPPLEMENTARY INSTRUCTIONS TO BIDDERS - PRE-BID SITE VISIT

This Supplement modifies the Instructions to Bidders. Where any part of the Instructions to Bidders is modified by this supplement, the unaltered provisions of that part shall remain in effect.

2. VISIT TO THE SITE

Change 2.1 to Read:

2.1 Prospective bidders will be allowed to visit the job site to take field measurements and examine existing conditions of the project area only during the pre-bid site visit. Prospective bidders are urged to visit the site at this time. Prospective bidders or their representatives attending the pre-bid site visit will not be admitted on facility grounds without proper photo identification. Parking restrictions and security provisions will apply and vehicles will be subject to search. The date, time, location of the pre-bid site visit, and the phone number are included in the Advertisement for Bids.

Bidders are strongly encouraged to visit the project site to assess project conditions or quality standards.

Phone a minimum of 24 hours in advance of the pre-bid site visit with the names of those who will attend.

All participants shall comply with facility rules and regulations.

Participants will not be allowed to deviate from the group walk-thru and must stay with the group for the duration of the visit. All participants will adhere to the direction given by the Director's Representative at all times during the visit.

Individuals shall not attend the site visit if they are feeling ill.

END OF DOCUMENT

DOCUMENT 002219

SUPPLEMENTARY INSTRUCTIONS TO BIDDERS - QUALIFICATIONS OF BIDDERS AND MANDATORY PRE-AWARD SUBMITTAL REQUIREMENTS

This Supplement modifies the Instructions to Bidders. Where any part of the Instructions to Bidders is modified by this supplement, the unaltered provisions of that part shall remain in effect.

Add the following Articles:

26. QUALIFICATIONS OF BIDDERS

26.1 The Contracting Officer or their representative will schedule a pre-award meeting to consider the bid responsiveness of the bid submitted by the apparent low bidder within fourteen (14) calendar days of the bid opening. Bidders will be notified of the time and place of the meeting. On a case by case basis, the State will examine and evaluate the bid as responsive by considering the contractors understanding of: the overall project scope, estimated cost, utilization of proposed sub-contractors, expertise, workmanship and past performance in completing similar contracts.

26.2 The Contracting Officer or their respective representative will conduct an investigation to determine the responsibility of any Bidder, including the ability of any Bidder to perform the Work. Bidders shall furnish to the Officer all information and data requested, including complete financial data, within the time and in the form and manner requested. The Contracting Officer reserves the right to reject any bid if the evidence required by the Officer is not submitted as requested, or if the evidence submitted by or the investigation of any Bidder fails to satisfy the Contracting Officer that the Bidder is responsible, or is able and qualified to carry out the obligations of the Contract, or to complete the Work as indicated in the Contract Documents, or able to reasonably perform the Work for the Bid Amount.

26.3 The criteria contained in Executive Order No. 170.1 Uniform Guidelines for Determining the Responsibility of Bidders will be applied in the evaluation of Bidders. Special criteria that will be considered in establishing the responsibility of the Bidders shall include, but not be limited to established experience in performing the Work required by the Contract Documents. Experience will be viewed from comparable projects as well as experience and knowledge of construction by the firm's personnel.

27. MANDATORY PRE-AWARD SUBMITTAL REQUIREMENTS

27.1 The apparent low bidder must submit the required pre-award submittal package outlined below to the Regional Supervisor within seven (7) calendar days after the bids are opened.

Regional Supervisor Name: John Pupons
Address: Eleanor Roosevelt State Office Building
4 Burnett Blvd., Suite 309, Poughkeepsie, NY 12603
Phone: (845) 431-5976
Email: Region3preawardsubmittals@ogs.ny.gov

Submissions must be emailed and must include the Project Number of this contract in the Subject Line of the Pre-Award submission email (i.e. OGS PN 12345-C: Pre-Award Submission).

Pre-award Submittal Package:

1. References and Experience:
   a. List of all past contracts with OGS. Include OGS Project Number and date.
   b. Provide three (3) references (Name, Title, and Phone Number) associated with three (3) different projects (OGS, public, or private sector) of similar scope and size to the one identified in this contract. Additionally, include the names of two major suppliers used for each of these three (3) projects.

      Provide a copy of recent past experience as required under the filing of the NYS Vendor Responsibility Questionnaire (CCA-2 document) with the Office of the State Comptroller. Provide only Attachment A: Completed Construction Contracts and Attachment B: Uncompleted Construction Contracts. For additional information, see:

      http://www.osc.state.ny.us/vendrep/form_cca2.htm

2. Workforce and Work Plan – Provide a detailed written Work Plan which shall demonstrate the contractor's understanding of overall project scope and shall include, but not be limited, to the following:
   a. Sequential listing of specific project activities required to successfully complete the Work of the contract.
      1. Include Critical Milestones.
      2. Include phasing of the Work, if required.
      3. Include listing of long lead items.
      4. Impact of weather and restricted work period(s).
      5. Include a list of site-/project-specific safety hazards, and how such hazards will be considered in performance of the Work.
   b. Résumés for Contractor's proposed supervisory staff, including qualifications for specialized expertise or any certification(s) required to perform the Work.
   c. Schedule Preparer qualifications when required by specification 013200.
   d. Submittal Coordinator qualifications when required by specification 013300.
   e. Names of proposed major sub-contractors (more than 15% of the bid amount or where critical systems of work are identified in the contract) and a listing of the related trade of work and value.
   f. Any special coordination requirements with other trades.
   g. Any special storage and staging requirements for construction materials.

3. Detailed Cost Estimate:
   a. A copy of a Detailed Cost Estimate outlined in CSI format.

4. Provide information for any other special requirements at the request of the Director's Representative.

27.2 When requested by the Contracting Officer or their representative, Bidders shall, within the time specified by the Officer, submit to the Officer the names of the Subcontractors the Bidder proposes to use on the project. The Contracting Officer reserves the right to disapprove the use of any proposed Subcontractor. In such an event the Bidder shall submit the name of another Subcontractor in like manner within the time specified by the Officer. The Bidder shall have and will make no claim for compensation if the Contracting Officer disapproves any proposed Subcontractor. The Contracting Officer reserves the right to reject any bid if the names of proposed Subcontractors, or additional subcontract information, are not submitted as required.

END OF DOCUMENT

DOCUMENT 003113

REFERENCE SUMMARY PROJECT SCHEDULE

A Summary Project Schedule has been prepared for this project. Refer to SECTION – 011000.01 SUMMARY OF THE WORK for the required phasing or sequencing of the work as presented on the following pages. This Summary Project Schedule is meant to be used as reference in preparing a bid response for the Work Plan requirement of DOCUMENT 002219 - SUPPLEMENTARY INSTRUCTIONS TO BIDDERS - QUALIFICATIONS OF BIDDERS AND MANDATORY PRE-AWARD SUBMITTAL REQUIREMENTS. It is not intended that these examples limit the Contractor in any way in preparation of a bid response.

NOTE: All information presented in the Summary Project Schedule included in this Document are for reference only.

DOCUMENT 003126

EXISTING HAZARDOUS MATERIAL INFORMATION

1.01 ASBESTOS SURVEY REPORT

Samples listed in the report were collected at the Project Site and tested for Asbestos Containing Materials (ACM). The report was compiled for New York State Office of General Services, Design and Construction Group by an ELAP certified laboratory. In order to determine the Asbestos content, samples were analyzed by polarized light microscopy (PLM) and/or transmission electron microscopy (TEM). The report is intended for the State design and estimate purposes only and is included to provide bidders with that same information available to the State. The Bulk Samples are representative of Homogeneous Area (HA) and is defined as a suspect material of similar age, appearance, function and texture. All field information was organized in accordance with 40 CFR Part 763, Asbestos Hazard Emergency Response Act (AHERA). See the Hazardous Materials Survey Pre-Renovation For Asbestos, Lead-Based Paint and PCB in Caulk and the Renovation Survey For Asbestos-Containing Materials, Lead-Based Paint & PCBs reports included in the Appendix for type, condition, location and approximate quantity of ACM.

1.02 LEAD SURVEY REPORT

Samples listed in the report were collected at the Project Site and tested for Lead content. The report was compiled for New York State Office of General Services, Design and Construction Group by an ELAP certified laboratory. In order to determine the lead content the Atomic Absorption method or a XRF Analyzer was used. This report is intended for State design and estimate purposes only and is included to provide bidders with the same information available to the State. The samples are representative of like materials in the Work area. All lead containing materials may not have been sampled. See the Hazardous Materials Survey Pre-Renovation For Asbestos, Lead-Based Paint and PCB in Caulk and PCB in Caulk and the Renovation Survey For Asbestos-Containing Materials, Lead-Based Paint & PCBs reports included in the Appendix for details.

1.03 PCB SAMPLING REPORT

Samples listed in the report were collected at the Project Site and tested for PCBs. The report was compiled for New York State Office of General Services, Design and Construction Group by an ELAP certified laboratory. Bulk, wipe or air sampling was used in determining the PCB content. This report is intended for State design and estimate purposes only and is included to provide bidders with the same information available to the State. All PCB containing materials may not have been sampled. See the Hazardous Materials Survey Pre-Renovation For Asbestos, Lead-Based Paint and PCB in Caulk and PCB in Caulk and the Renovation Survey For Asbestos-Containing Materials, Lead-Based Paint & PCBs reports included in the Appendix for details.

END OF DOCUMENT

DOCUMENT 003132

GEOTECHNICAL DATA

The subsurface logs included in this Document were made on the dates indicated on the individual logs.

The observed water levels and/or conditions noted on the subsurface logs are as recorded at the time of exploration. These water levels and/or conditions may vary considerably with time, according to the prevailing climate, rainfall, or other factors and are otherwise dependent on the duration of and method used in the explorations program.

Sound engineering judgment was exercised in preparing the subsurface logs. This information was prepared and is intended for State design and estimate purposes only. Its presentation is for the purpose of providing intended users with access to the same information available to the State. These subsurface logs are presented in good faith and are not intended as a substitute for personal investigation, independent interpretations, or judgment of the bidders.

END OF SECTION

DETACH AND USE THIS FORM

BID FORM FOR: 47477-C

CONSTRUCTION WORK
RENOVATE ARMORY
STATE ARMORY
2 QUINCY PLACE
YONKERS, NY

State of New York
Office of General Services
Design and Construction Group
Division of Contract Management
35th Floor, Corning Tower
The Gov. Nelson A. Rockefeller
Empire State Plaza
Albany, NY 12242

THIS IS A 4 PAGE BID FORM. ALL PAGES MUST BE COMPLETED.

THE STATE RESERVES THE RIGHT TO REJECT ANY OR ALL BIDS. EACH BID FORM SHALL BE ACCOMPANIED BY BID SECURITY (AS DESCRIBED IN THE INSTRUCTIONS TO BIDDERS) IN THE AMOUNT STATED IN THE ADVERTISEMENT FOR BIDS.

The Undersigned agrees to complete the Work within the time stated in Section 011000 of the Specifications.

The Undersigned acknowledges his/her understanding of the social policy concerning minority and women business participation in the State building construction program, and pledges to cooperate with the State in the implementation of this policy, and further pledges to exert good faith efforts to achieve participation of minority and female employees.

The Undersigned certifies, as to each of the occupations listed in the Prevailing Rate Schedule applicable to this Project, the ability and willingness to exert good faith efforts to achieve the goal for minority and women workforce participation as set forth in the Supplementary Conditions.

The Undersigned certifies the ability and willingness to exert good faith efforts to achieve the goals for Minority and Women-Owned Business Enterprise and Service-Disabled Veteran-Owned Businesses participation as set forth in the Supplementary Conditions.

The Undersigned declares that the Bidding and Contract Documents have been carefully examined and that all things necessary for the completion of the Work shall be provided.

The Undersigned agrees that the bid security shall be subject to forfeiture if this bid is accepted by the State and he/she does not submit executed copies of the Agreement WITHIN FIVE (5) DAYS OF RECEIPT OF A WRITTEN REQUEST TO PROVIDE SUCH AGREEMENT. A Performance Bond and a Labor and Material Bond, each in an amount equal to the contract sum, shall be supplied with the executed Agreement and shall be the statutory form of public bonds required by Sections 136 and 137 of the State Finance Law.

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 his/her 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 which 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;

(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.

(4) This contract shall not cause or result in a violation of Section 74(3)(e) of the Public Officers Law which states: "No officer or employee of a state agency, member of the legislature or legislative employee should engage in any transaction as representative or agent of the State with any business entity in which he/she has a direct or indirect financial interest that might reasonably tend to conflict with the proper discharge of his/her official duties."

Federal Employer I.D. No. _____

(5) The Bidder understands and agrees to comply with the requirements of the Procurement Lobbying Law, State Finance Law § 139-j and § 139-k, and with OGS's procedures relating to permissible contacts during a procurement as required by State Finance Law § 139-j(3) and § 139-j(6)(b). Such requirements and procedures are posted at https://ogs.ny.gov/acpl.

(6) The bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of section 165-a of the state finance law (NYS Iran Divestment Act of 2012). The list can be viewed at the following link:

https://ogs.ny.gov/iran-divestment-act-2012

(7) Will New York State Businesses be used in the performance of this contract (refer to Document 007324)?

Yes ☐ No ☐

(8) The New York State Human Rights Law (Human Rights Law), Article 15 of the Executive Law, prohibits discrimination and harassment based on age, race, creed, color, national origin, sex, pregnancy or pregnancy-related conditions, sexual orientation, gender identity, disability, marital status, familial status, domestic violence victim status, prior arrest or conviction record, military status or predisposing genetic characteristics.

The Human Rights Law may also require reasonable accommodation for persons with disabilities and pregnancy-related conditions. A reasonable accommodation is an adjustment to a job or work environment that enables a person with a disability to perform the essential functions of a job in a reasonable manner. The Human Rights Law may also require reasonable accommodation in employment on the basis of Sabbath observance or religious practices.

Generally, the Human Rights Law applies to:

- all employers of four or more people, employment agencies, labor organizations and apprenticeship training programs in all instances of discrimination or harassment;
- employers with fewer than four employees in all cases involving sexual harassment; and,
- any employer of domestic workers in cases involving sexual harassment or harassment based on gender, race, religion or national origin.

In accordance with Executive Order No. 177, the Bidder hereby certifies that it does not have institutional policies or practices that fail to address the harassment and discrimination of individuals on the basis of their age, race, creed, color, national origin, sex, sexual orientation, gender identity, disability, marital status, military status, or other protected status under the Human Rights Law.

Executive Order No. 177 and this certification do not affect institutional policies or practices that are protected by existing law, including but not limited to the First Amendment of the United States Constitution, Article 1, Section 3 of the New York State Constitution, and Section 296(11) of the New York State Human Rights Law.

(9) In accordance with State Finance Law § 139-l, 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 the bidder 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. Such policy shall, at a minimum, meet the requirements of section two hundred one-g of the labor law.

If the bidder cannot make the foregoing certification, such bidder shall so state and shall furnish with the bid a signed statement that sets forth in detail the reasons that the bidder cannot make the certification.

(10) In accordance with State Finance Law § 139-m, 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 the bidder has and has implemented a written policy addressing gender-based violence and the workplace and has provided such policy to all of its employees, directors and board members. Such policy shall, at a minimum, meet the requirements of subdivision 11 of section five hundred seventy-five of the executive law.

If the bidder cannot make the foregoing certification, such bidder shall so state and shall furnish with the bid a signed statement that sets forth in detail the reasons that the bidder cannot make the certification.

Federal Employer I.D. No. _____

(11) In accordance with Section 165(5) of the State Finance Law, the bidder, by submission of this bid, certifies that it or any individual or legal entity in which the bidder holds a 10% or greater ownership interest, or any individual or legal entity that holds a 10% or greater ownership interest in the bidder, either (answer yes or no to one or both of the following, as applicable):

1. have business operations in Northern Ireland Yes ☐ No ☐ and if yes:

2. shall take lawful steps in good faith to conduct any business operations in Northern Ireland in accordance with the MacBride Fair Employment Principles relating to nondiscrimination in employment and freedom of workplace opportunity regarding such operations in Northern Ireland, and shall permit independent monitoring of compliance with such principles.

Yes ☐ No ☐

(12) Certification Under Executive Order No. 16 - Prohibiting State Agencies and Authorities from Contracting with Businesses Conducting Business in Russia

Executive Order No. 16 provides that "all Affected State Entities are directed to refrain from entering into any new contract or renewing any existing contract with an entity conducting business operations in Russia." The complete text of Executive Order No. 16 can be found here: https://www.governor.ny.gov/executive-order/no-16-prohibiting-state-agencies-and-authorities-contracting-businesses-conducting

The Executive Order remains in effect while sanctions imposed by the federal government are in effect. Accordingly, vendors who may be excluded from award because of current business operations in Russia are nevertheless encouraged to respond to solicitations to preserve their contracting opportunities in case the sanctions are lifted during a solicitation or even after award in the case of some solicitations.

As defined in Executive Order No. 16, an "entity conducting business operations in Russia" means an institution or company, wherever located, conducting any commercial activity in Russia or transacting business with the Russian Government or which the commercial entities headquartered in Russia or with their principal place of business in Russia in the form of contracting, sales, purchasing, investment, or any business partnership.

Is Vendor an entity conducting business operations in Russia, as defined above? Please answer by checking one of the following boxes:

☐ 1. No, Vendor does not conduct business operations in Russia within the meaning of Executive Order No. 16.

☐ 2.a. Yes, Vendor conducts business operations in Russia within the meaning of Executive Order No. 16 but has taken steps to wind down business operations in Russia or is in the process of winding down business operations in Russia. (Please provide a detailed description of the wind down process and a schedule for completion.)

☐ 2.b. Yes, Vendor conducts business operations in Russia within the meaning of Executive Order No. 16 but only to the extent necessary to provide vital health and safety services within Russia or to comply with federal law, regulations, executive orders, or directives. (Please provide a detailed description of the services being provided or the relevant laws, regulations, etc.)

☐ 3. Yes, Vendor conducts business operations in Russia within the meaning of Executive Order No. 16.

(13) In accordance with New York State Labor Law Section 220-i, the bidder certifies that it is registered with the New York State Department of Labor (NYSDOL) for public work projects. By submission of this bid and providing the registration number in the space indicated on this bid form, the bidder affirms that its registration is current and valid as of the date of bid submission.

Federal Employer I.D. No. _____

Addenda to the Contract Documents are available at:
https://online.ogs.ny.gov/dnc/contractorConsultant/esb/ESBPlansAvailableIndex.asp
The Undersigned acknowledges receipt and review of all Addenda to the Contract Documents on the above website, listed by number in the space below:

_____

The Undersigned proposes to perform the Work required for this project in accordance with the Contract Documents for the following amount:

BID AMOUNT

1.	All Work except Allowance(s)	$ _____.00
2.	Allowance(s) (As described in Section 012100)	$ 613,246.00
	Total Bid Amount (Sum of 1. & 2.)	$ _____.00

FEDERAL EMPLOYER I.D. NO. _____

NYSDOL CONTRACTOR REGISTRATION NO. (per NYS LABOR LAW 220-i) _____

Is your firm a NYS-Certified Minority and Women-Owned Business Enterprise (MWBE)? Yes ☐ No ☐

MWBE CERTIFICATION FILE NO. _____

SIGN BID HERE _____
Authorized Signature

PRINT NAME OF SIGNER _____

TITLE OF SIGNER _____

OFFICIAL COMPANY NAME _____

MAILING ADDRESS _____
Street

_____
City State Zip

TELEPHONE NO. _____ FAX NO. _____
Area Code Area Code

E-MAIL ADDRESS _____

*****

Federal Employer I.D. No. _____

FORM OF BID BOND - BID SECURITY
STATE OF NEW YORK
OFFICE OF GENERAL SERVICES - DESIGN & CONSTRUCTION

Sub. 3, Sec. 8 - Public Buildings Law

BE IT KNOWN, That _____

_____
(Name of Contractor)

_____
(Address)

(hereinafter called the "Principal") and _____ a corporation created and existing under the Laws of the State of _____ having its principal office in the City of _____ duly licensed as an insurance company in the State of New York, (hereinafter called the "Surety"), are held and firmly bound unto The People of the State of New York (hereinafter called the "State"), in the full and just sum of $270,900 good and lawful money of the United States of America, for the payment of which said sum of money, well and truly to be made, and done, the Principal binds themselves (himself, herself, itself), their (his, hers, its) heirs, executors and administrators, successors and assigns, and the Surety binds itself, its successors and assigns jointly and severally, firmly by these presents:

WHEREAS, the Principal has submitted to the Office of General Services of the State of New York a proposal for Construction Work, Renovate Armory, State Armory, 2 Quincy Place, Yonkers, NY

AND

WHEREAS, the Principal intends to file this bond to guarantee that the Principal will execute a contract and furnish performance and labor and material bonds required by the terms of the Principal's proposal.

NOW, THEREFORE, the condition of the foregoing obligation is such, that if the Principal shall promptly submit an executed agreement and furnish performance and labor and material bonds required by the terms of the Principal's proposal, then this obligation shall be null and void, otherwise to remain in full force and virtue.

NOW, THEREFORE, the condition of the foregoing obligation is such that if the Principal fails to promptly submit an executed agreement and furnish performance and labor and material bonds required by the terms of the Principal's proposal, then the Surety itself, its successors and assigns, jointly and severally, shall pay the whole sum of money previously set forth in this document to the State.

IN TESTIMONY WHEREOF, the Principal has hereunto set their (his, hers, its) hand and seal and the Surety has caused this instrument to be signed by its Attorney-in-fact, _____ and its corporate seal to be hereunto affixed.

Signed, sealed and delivered in the presence of:

(Corporate seal
of Principal if a corporation)

_____ (L.S.)

_____ (L.S.)

Principal

_____ Company

(Corporate seal of Surety Co.) _____

_____

Attorney-in-fact

Witness _____

Name

_____

Name

(Acknowledgment by principal, unless it be a corporation)

STATE OF NEW YORK
SS.:
COUNTY OF _____

On this _____ day of _____20_____, before me personally came _____ to me known and known to me to be the person described in and who executed the foregoing instrument, and acknowledged that he/she executed the same.

_____
Notary Public County

(Acknowledgment by principal, if a corporation)

STATE OF NEW YORK
SS.:
COUNTY OF _____

On this _____ day of _____20_____, before me personally came _____ to me known, who being by me duly sworn, did depose and say that he/she resides in _____; that he/she is the _____ of the _____; the corporation described in and which executed the foregoing instrument; that he/she knew the seal of said corporation; that the seal affixed to said corporation; that the seal affixed to said instrument was such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that he/she signed his/her name thereto by like order.

_____
Notary Public County

(Acknowledgment by Surety Company)

STATE OF NEW YORK
SS.:
COUNTY OF _____

On this _____ day of _____ 20_____, before me personally came _____ to me known, who being by me duly sworn, did depose and say that he/she resides in _____; that he/she is the _____ of the _____; the corporation described in and which executed the within instrument; that he/she knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that is was so affixed by order of the Board of Directors of said corporation; and that he/she signed his/her name thereto by like order.

_____
Notary Public County

Empire State Development

NEW YORK STATE'S SURETY BOND

Assistance Program Helps Small Business Contractors Secure Surety Bonding

What is the NYS Surety Bond Assistance Program?

The NYS Surety Bond Assistance Program (NYSBAP) provides technical and financial assistance to help contractors secure surety bonding. Contractors may be eligible to receive a guarantee of up to 30% to secure a surety bond line, bid bond or a performance and payment bond on state projects.

How does the NYS Surety Bond Assistance Program work?

To apply for financial assistance, small business contractors should review eligibility requirements and fill out a pre-application assessment available at the Empire State Development (ESD) website.

If the assessment indicates you are eligible to submit an application, proceed with the Application and submit the required forms.

Guarantees of up to 30% on a bond line or individual contract bid bonds and payment/performance bonds are available from Empire State Development. Being eligible for this program does not automatically ensure bonding. Approval is based on both underwriting by a surety company and ESD's credit assessment. Participating surety companies will make a credit determination in accordance with their internal underwriting standards.

Small businesses can also enroll to receive training and technical support on how to become bond-ready by using the Contact Information below. The classroom training is held throughout New York State.

Who is eligible?

- Applicant must be a NYS small business or MWBE with at least two years of business operation.
- Maximum bond line or project size is $2 million
- Minimum average gross revenue of $400,000 in the last two fiscal or calendar years and maximum gross revenue not to exceed $5 million in the most recent calendar or fiscal year.
- Minimum credit score of 600.
- Previous experience completing similar work to the contract opportunity being pursued.

Find Out More

If interested in training or financial support, please visit ESD's website:
http://esd.ny.gov/BusinessPrograms/BondingAssistance.html

For additional inquiries, please contact:
Ms. Huey-Min Chuang
Senior Director of Business & Economic Development
212-803-3238
BAP@esd.ny.gov

Offerer Disclosure of Prior Non-Responsibility Determinations

See instructions on next page before completing this form.

Name of Individual or Entity Seeking to Enter into the Procurement Contract:

_____

Address: _____

_____

Name and Title of Person Submitting this Form: _____

_____

Contract Procurement Number: _____ Date: _____

1. Has any Governmental Entity made a finding of non-responsibility regarding the individual or entity seeking to enter into the Procurement Contract in the previous four years? (Please circle):

No Yes

If yes, please answer the next questions:

2. Was the basis for the finding of non-responsibility due to a violation of State Finance Law §139-j (Please circle):

No Yes

3. Was the basis for the finding of non-responsibility due to the intentional provision of false or incomplete information to a Governmental Entity? (Please circle):

No Yes

4. If you answered yes to any of the above questions, please provide details regarding the finding of non-responsibility below and attach additional pages as necessary.

Governmental Entity: _____

Date of Finding of Non-responsibility: _____

Basis of Finding of Non-Responsibility: _____

5. Has any Governmental Entity or other governmental agency terminated or withheld a Procurement Contract with the above-named individual or entity due to the intentional provision of false or incomplete information? (Please circle):

No Yes

6. If yes, please provide details below and attach additional pages as necessary.

Governmental Entity: _____

Date of Termination or Withholding of Contract: _____

Basis of Termination or Withholding: _____

Offerer certifies that all information provided to the Governmental Entity with respect to State Finance Law §139-k is complete, true and accurate.

By: _____ Date: _____

Signature

Instructions for Completing the DCA-3

Offerer Disclosure of Prior Non-Responsibility Determinations

Background:

New York State Finance Law §139-k(2) obligates a Governmental Entity to obtain specific information regarding prior non-responsibility determinations with respect to State Finance Law §139-j. This information must be collected in addition to the information that is separately obtained pursuant to State Finance Law §163(9). In accordance with State Finance Law §139-k, an Offerer must be asked to disclose whether there has been a finding of non-responsibility made within the previous four (4) years by any Governmental Entity due to: (a) a violation of State Finance Law §139-j or (b) the intentional provision of false or incomplete information to a Governmental Entity. The terms "Offerer" and "Governmental Entity" are defined in State Finance Law § 139-k(1). State Finance Law §139-j sets forth detailed requirements about the restrictions on Contacts during the procurement process. A violation of State Finance Law §139-j includes, but is not limited to, an impermissible Contact during the restricted period (for example, contacting a person or entity other than the designated contact person, when such contact does not fall within one of the exemptions).

As part of its responsibility determination, State Finance Law §139-k(3) mandates consideration of whether an Offerer fails to timely disclose accurate or complete information regarding the above non-responsibility determination. In accordance with law, no Procurement Contract shall be awarded to any Offerer that fails to timely disclose accurate or complete information under this section, unless a finding is made that the award of the Procurement Contract to the Offerer is necessary to protect public property or public health safety, and that the Offerer is the only source capable of supplying the required Article of Procurement within the necessary timeframe. See State Finance Law §§139-j (10)(b) and 139-k(3).

Instructions:

OGS Design and Construction includes this disclosure request regarding prior non-responsibility determinations in accordance with State Finance Law §139-k in its solicitation of proposals or bid documents or specifications or contract documents, as applicable, for procurement contracts. The attached form is to be completed and submitted by the individual or entity seeking to enter into a Procurement Contract, Supplement or Change Order. It shall be submitted to the OGS Design and Construction unit conducting the Governmental Procurement.

This document must accompany each Bid Form, Letter of Interest, or Proposal submitted by an offerer and will be required for any contract amendments over $15,000. This document must also accompany each Emergency Contract Bid Form.

STATE OF NEW YORK - EXECUTIVE DEPARTMENT

OFFICE OF GENERAL SERVICES - DESIGN & CONSTRUCTION GROUP

DOCUMENT 007213
GENERAL CONDITIONS
AUGUST 2010 EDITION

TABLE OF ARTICLES

1. The Contract Documents 2
2. Definitions 2
3. Interpretation of Contract Documents 3
4. Submittals 3
5. Materials and Labor 4
6. Contractor's Supervision 4
7. Use of Premises 5
8. Permits and Compliance 6
9. Inspection and Acceptance 6
10. Orders on Contract (Change Orders) 7
11. Site Conditions 8
12. Suspension of Work 8
13. Time of Completion and Termination for Cause 8
14. Termination of Contractor's Employment for the Convenience of the State of New York 9
15. Disputes 10
16. Statutory Requirements for Utilization of Minority and Women Owned Business Enterprises 10
17. Coordination of Separate Contracts 11
17A Delays……. 11
18. Responsibility for Damage 13
19. Insurance - Builder's Risk, Liability and Workers' Compensation 13
20. Occupancy Prior to Completion and Acceptance 15
21. Payment 15
22. Audits and Records 16
23. Labor Law Provisions 16
24. Statutory Requirements for Restrictions on Contracts during the Procurement Process and Disclosure of Contracts and Responsibility of Offerers 17
25. Miscellaneous Provisions 18

STANDARD CLAUSES FOR ALL NEW YORK STATE CONTRACTS - APPENDIX A 20

STANDARD CLAUSE FOR CONTRACTOR DEFAULT AND SURETY TAKEOVER - APPENDIX B 28

(Appendix A revised 06/2023)
(Articles 5, 10 and 21 revised in 01/2011)
(Article 23 corrected in 02/2017)

ARTICLE 1 - THE CONTRACT DOCUMENTS

1.1 The Contract Documents consist of the Agreement, the Performance and Payment Bonds, the General Conditions, the Supplementary Conditions, Appendix A, the Drawings and Specifications, Addenda issued prior to the receipt of bids and all subsequent modifications and changes issued pursuant to the General Conditions.

1.1.1 The Performance and Payment Bonds are not a part of Single Trade Contract less than two hundred thousand dollars.

1.2 The Contract Documents form the Contract. The Contract represents the entire and integrated agreement between the parties and supersedes all prior negotiations, representations and agreements, either written or oral including the bidding documents.

1.3 The Contract may not be modified except in accordance with the General Conditions.

1.4 The project is designed in accordance with the Building Codes of New York State and its reference standards. In no instance shall the Contractor deviate from the contract documents except as provided for in the contract. The Contractor shall notify the State of any deviations or conflicts observed that may violate the Building Codes.

ARTICLE 2 - DEFINITIONS

2.1 The following terms shall have the meanings ascribed to them in this Article, wherever they appear in the Contract Documents.

2.2 The term “Agency” means the officer, board, department, commission, authority, fund or public benefit corporation executing the Agreement.

2.3 The term “Commissioner” means the Commissioner of General Services.

2.4 The term “Comptroller” means the Comptroller of the State of New York.

2.5 The term “Contracting Officer” means the Director of Contract Administration of the Design and Construction Group of the Office of General Services or his representative designated in writing.

2.6 The term “Contractor” means the person, firm or corporation executing the Agreement or the successor or assignee of the Contractor approved in writing by the Contracting Officer. If the text requires, the term includes the person, firm or corporation executing any Agreement in furtherance of the Project or the successors or assigns approved in writing by the Contracting Officer.

2.7 The term “days” means calendar days.

2.8 The term “Director” means the Director of Construction of the Design and Construction Group of the Office of General Services who will have general direction and supervision of the Work.

2.9 The term “Director’s Representative” means the employee or agent of the Design and Construction Group designated in writing by the Director as such. Under the general supervision of the Director, the Director’s Representative shall have complete charge of the Work and shall exercise full supervision and direction of the Work. Where the Contract Documents specifically designate a person to perform a function or duty, that person shall be the Director’s Representative but only for the performance of that function or duty. Where the word “directed” appears in the Contract Documents, the words “by the Director’s Representative” shall be deemed inserted thereafter in each case except where it is obviously inappropriate in context.

2.10 The term “Group Director” means the Deputy Commissioner for Design and Construction, Office of General Services.

2.11 The term “liquidated damages” means the amount of money to be assessed against the Contractor for delay in physical completion of the Work.

2.12 The term “physical completion” means the date upon which the Director’s Representative certifies that all deficiencies noted on the Final Inspection List have been corrected and is evidenced by issuance of the Physical Completion Report.

2.13 The term “premises” means all land, buildings, structures and all other things of any kind located on or adjacent to the Site and owned, occupied or otherwise used by the State.

2.14 The term “product data” means manufacturer’s catalog sheets, brochures, standard diagrams, illustrations, schedules, performance charts, test data, standard schematic drawings, specifications and installation instructions.

2.15 The term “Project” means Work at the same Site carried out pursuant to one or more sets of Contract Documents.

2.16 The term “provide” means furnish and install complete, in place and ready for operation and use.

2.17 The term “sample” means physical examples submitted by the Contractor of materials, equipment or workmanship to establish a standard which the Contractor is required to meet and to show the quality, type, range of color, finish, and texture of the material intended to be furnished for the Work.

2.18 The term “shop drawing” means an original drawing prepared by a Contractor, subcontractor, supplier or distributor which illustrates some portion of the Work showing fabrication, layout, fitting or erection details.

2.19 The term “Site” means the area within the contract limit, as indicated by the Contract Documents, including all land, buildings, structures and other things located within those limits.

2.20 The term “State” means the State of New York.

2.21 The term “substantial completion” means that the Work or major milestones there of as contemplated by the terms of this contract are sufficiently complete so that the Work can be used for the purpose for which it is intended.

2.22 The term “Work” means all that which is required of the Contractor by the Contract Documents including labor, materials, tools and equipment.

2.23 The term “Offerer” shall mean the individual or entity, or any employee, agent, consultant or person acting on behalf of such individual or entity that contacts a governmental entity about a governmental procurement during the restricted period of such governmental procurement.

ARTICLE 3 - INTERPRETATION OF CONTRACT DOCUMENTS

3.1 The Contract Documents are complementary, and what is called for by one shall be as binding as if called for by all. It is not intended to include work not properly inferable from the Contract Documents.

3.2 Upon the Contractor’s written request, the Director’s Representative may issue written interpretation or drawings necessary for the proper execution or progress of the Work which interpretation shall be consistent with and reasonably inferable from the Contract Documents.

3.3 The language of the Contract Documents is directed at the Contractor unless specifically stated otherwise.

3.4 The organization of the Specifications into divisions, sections and articles, and the 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.

3.5 In the event of conflicting provisions in the Contract Documents, the drawings will take precedence over the specifications.

3.6 In the event of conflicting provisions within the drawings, the following order of precedence for resolution of the conflict shall apply: the more specific provision will take precedence over the less specific; if not resolved, the less stringent will take precedence over the more stringent; if not resolved, the less expensive item will take precedence over the more expensive. On all drawings, figures take precedence over scaled dimensions.

3.7 In the event of conflicting provisions within the specifications, the following order of precedence for resolution of the conflict shall apply: the more specific provision will take precedence over the less specific; if not resolved, the less stringent will take precedence over the more stringent; if not resolved, the less expensive item will take precedence over the more expensive.

3.8 If during the performance of the work, the Contractor identifies a conflict in the Contract Documents; the Contractor shall promptly notify the Director’s Representative in writing of the conflict and advise as to the course of action the Contractor proposes to follow. The Director’s Representative shall promptly acknowledge the notification in writing and advise the Contractor, pursuant to Paragraph 3.2 of these General Conditions, as to the interpretation to be followed in the performance of the Work.

ARTICLE 4 - SUBMITTALS

4.1 The Contractor and the Director shall adhere to the submittal and scheduling requirements specified in Division 01 - General Requirements.

4.2 The Contractor shall approve all submittals before submitting them. By such approval, the Contractor represents that it has determined and verified field measurements, field construction criteria, materials, catalog numbers, and similar data and that it has checked and coordinated shop drawings, product data and samples with the requirements of the Contract Documents and that it has verified the completeness, correctness, and accuracy of the submittal.

4.3 The Director’s approval of shop drawings, product data and samples shall not relieve the Contractor of responsibility for any deviation from the requirements of the Contract Documents unless the Contractor has previously informed the Director of any anticipated deviation utilizing the required deviation request form,

(available at the OGS D&C website),at the time of submission. Written approval of the specific deviations as outlined on the request form shall be required. The Director's approval shall not relieve the Contractor from responsibility for errors or omissions in the shop drawings, product data or samples.

4.4 Portions of the Work requiring shop drawings, product data, quality assurance information, or sample submittals shall not be commenced until the appropriate submittals have been approved by the Director.

4.5 The Contractor shall deliver to the Director, in the detail and form and at the time the Director shall require, information concerning the Contractor's operations and proposed operations upon the Project all in accordance with Division 01 - General Requirements.

4.6 During the term of this Project, the Director may require any Contractor to modify any schedules which it has submitted either before or after they are approved so that the Work of any contract in furtherance of the Project may be properly progressed and so that changes in the Work or the work of related contracts is properly reflected in the schedules.

4.7 Where indicated under the specific submittal requirements of the specifications, a re-evaluation fee of $250.00 will be assessed against the Contractor for each re-evaluation required of any submittal package that is deemed incomplete, or lacking appropriate content or required format as required by the individual specification section.

ARTICLE 5 - MATERIALS AND LABOR

5.1 All materials, equipment and articles used permanently in the Work which become the property of the State shall be new unless specifically stated otherwise.

5.2 Asbestos Free Materials: All materials used for construction shall be free of asbestos containing materials unless the materials containing the asbestos have been previously approved for use by the State. If asbestos is found in installed products not previously approved by the State, then it will be the responsibility of the contractor to abate the asbestos containing material and replace the work with new asbestos free materials at no cost to the State of New York in compliance with the requirements of the contract.

5.3 Except where specifically provided otherwise, whenever any product is specified by brand name, i.e., manufacturer's or supplier's name or trade name and catalog or model number or name, the intent is not to limit competition but to establish a standard of quality which the Director has determined is necessary. The words "or equal" shall be deemed inserted in each instance. The Contractor may use any product equal to that named in the Contract Documents which is approved by the Director and which meets the requirements of the Contract Documents providing the Contractor gives timely notice of the Contractor's intent in accordance with the submittal and scheduling requirements of Division 01 - General Requirements.

5.4 The Contractor shall have the burden of proving at the Contractor's own cost and expense, to the satisfaction of the Director, that the proposed product is equal to the named product. The Director may establish criteria for product approval. The Director shall determine with absolute discretion whether a proposed product is to be approved.

5.5 If the Contractor fails to comply with the provisions of this Article, or if the Director determines that the proposed product is not equal to that named, the Contractor shall supply the product named.

5.6 The Contractor shall have and make no claim for the extension of time or for damages because the Director requires a reasonable period of time to consider a product proposed by the Contractor or because the Director disapproves such a product.

5.7 Where optional materials or methods are specified, or where "or equal" submissions are approved, the Contractor shall make all adjustments to contingent Work, whether the contingent Work be the Work of its contract or the Work of other Contractor's, necessary to accommodate the option or "or equal" product it selects without extra or additional cost.

5.8 Royalties and Patents: The Contractor shall pay all royalties and license fees. The Contractor shall defend all suits or claims for infringement of any patent rights and shall save the State harmless from loss on account thereof, except that the State shall be responsible for all such loss when a particular design, process or the product of a particular manufacturer is specified.

ARTICLE 6 - CONTRACTOR'S SUPERVISION

6.1 The Contractor shall designate in writing competent supervision and/or management representatives as required below to represent the Contractor at all times with authority to act for the Contractor. All Direction given to the Contractor's Representatives shall be as binding as if given to the Contractor. A Superintendent or Project Manager shall be classified as management representatives included in the Contractor's overhead and shall perform management, supervisory and/or administrative tasks (non labor) only. Individuals listed under this Article shall have the ability to effectively communicate (verbal and written) with all parties associated with the administration/supervision of this contract.

6.1.1 For contracts valued up to $500,000 the contractor shall provide a supervisor for the Contractor's staff who shall be in attendance at the site throughout the active performance of the Work.

6.1.2 For contracts valued from $500,000 to $2,000,000 the Contractor shall provide a Superintendent for the Contractor's staff who shall be in attendance at the site throughout the active performance of the Work until Substantial Completion. Upon Substantial Completion the contractor shall provide a supervisor who shall be in attendance at the site throughout the active performance of the Work until Physical Completion. The Superintendent shall have the authority to direct and schedule the Work, shall attend all project meetings, shall coordinate the Work of subcontractors, and make purchase and cost decisions on behalf of the Contractor.

6.1.3 For contracts valued from $2,000,001 to $5,000,000 the contractor shall provide a Superintendent for the Contractor's staff who shall be in attendance at the site throughout the active performance of the Work until Substantial Completion. Upon Substantial Completion the contractor shall provide a supervisor who shall be in attendance at the site throughout the active performance of the Work until Physical Completion. The Superintendent shall have the authority to direct the Work, attend all project meetings, and coordinate the Work of subcontractors. The Contractor shall also provide a Project Manager who shall attend project meetings, maintain submittal and approval system, and be responsible for change order/field order responses and negotiations. The Contractor shall provide required information to the Director's Representative for the Project Schedule.

6.1.4 For contracts valued from $5,000,001 to $10,000,000 the contractor shall provide a Project Manager and Superintendent for the Contractor's staff that shall be in attendance at the site throughout the active performance of the Work until Substantial Completion. Upon Substantial Completion the contractor shall provide a supervisor who shall be in attendance at the site throughout the active performance of the Work until Physical Completion. The Superintendent shall have the authority to direct the Work, and coordinate the Work of subcontractors. The Project Manager shall attend project meetings, maintain the project schedule, maintain submittal and approval system, and be responsible for change order/field order responses and negotiations.

6.1.5 For contracts valued for more than $10,000,000 the contractor shall provide a Project Manager and Superintendent for the Contractor's staff who shall be in attendance at the site throughout the active performance of the Work until Substantial Completion. Upon Substantial Completion the contractor shall provide a supervisor who shall be in attendance at the site throughout the active performance of the Work until Physical Completion. The Superintendent shall have the authority to direct the Work, attend all project meetings, and coordinate the Work of subcontractors. The Project Manager shall attend project meetings, maintain the project schedule, maintain submittal and approval system, and be responsible for change order/field order responses and negotiations. If at any time there are more than five subcontractors performing work on the site simultaneously an additional Superintendent is required coordinate their Work.

6.2 Should the Director deem any employees of the Contractor incompetent or negligent or for any cause unfit for their duty, the Contractor shall dismiss them and they shall not again be employed on the Work.

6.3 Before any part of the Contract shall be sublet or material purchased, the Contractor shall submit to the Director in writing the name of each proposed subcontractor and supplier and obtain the Director's written consent to such subcontractor and supplier. The names shall be submitted in ample time to permit acceptance or rejection of each proposed subcontractor and supplier by the Director or Contracting Officer without causing delay in the work of the Project. The Contractor shall promptly furnish such information as the Director or Contracting Officer may require concerning the proposed subcontractor's and supplier's ability and qualifications, and Minority/Women Owned Business Enterprises Status. Each request for approval of a subcontractor whose subcontract will be valued at $10,000.00 or more shall also be accompanied by a NYS Vendor Responsibility Questionnaire - For-Profit Construction properly completed and executed by the proposed subcontractor.

6.4 The Contractor's use of subcontractors shall not diminish the Contractor's obligations to complete the Work in accordance with the Contract. The Contractor shall control and coordinate the Work of its subcontractors.

6.5 The Contractor shall be responsible for informing its subcontractors and suppliers of all the terms, conditions and requirements of the Contract Documents including, but not limited to the General Conditions, Supplementary Conditions, the Drawings and Specifications, Appendix A, and changes made by Addenda.

ARTICLE 7 - USE OF PREMISES

7.1 If the Premises are occupied, the Contractor, its subcontractors, and their employees shall comply with the regulations governing access to, operation of, and conduct while in or on the Premises and shall perform

the Work in such a manner as not to unreasonably interrupt or interfere with the conduct of business.

7.2 Any request received by the Contractor from any source other than the Director or the Director's Representative to change the Work or its sequence shall be referred to the Director's Representative for determination.

7.3 The Contractor, its subcontractors and their employees shall not have access to or be admitted to any area of the Premises outside the Site except with the written permission of the Director's Representative.

ARTICLE 8 - PERMITS AND COMPLIANCE

8.1 The Contractor shall obtain, maintain and pay for all permits and licenses legally required and shall give all notices, pay all fees and comply with all laws, rules and regulations applicable to the Work at no additional cost.

ARTICLE 9 - INSPECTION AND ACCEPTANCE

9.1 The Director's Representative will inspect and test the Work at reasonable times at the Site, unless the Director determines to make an inspection or test at a place of production, manufacture or shipment. Such inspection or test shall be conclusive as to whether the material and workmanship inspected or tested conforms to the requirements of the Contract. Such inspection or test shall not relieve the Contractor of responsibility for damage to or loss of the material prior to acceptance, nor in any way affect the continuing rights of the Director to reject the completed Work.

9.2 The Contractor shall, without charge, promptly correct any Work the Director's Representative finds does not conform to the Contract Documents unless in the public interest the Director consents to accept such Work with an appropriate adjustment on the Contract sum and/or to any terms and conditions of the Contract. The Contractor shall promptly remove rejected material from the Premises.

9.3 If the Contractor does not promptly correct rejected Work including the work of other sub-contractors destroyed or damaged by removal, replacement, or correction, the Director may (1) correct such Work and charge the cost thereof to the Contractor; or (2) terminate the Contract in accordance with Article 13 of the General Conditions.

9.4 The Contractor shall furnish promptly without additional charge all facilities, labor, material and equipment reasonably needed to perform in a safe and convenient manner such inspections and tests as the Director's Representative requires.

9.5 The Contractor shall keep the Director's Representative informed of the progress of the Contractor's Work and particularly when the Contractor intends to cover Work not yet inspected or tested. All inspection and tests by the Director's Representative shall be performed in such manner as not to unreasonably delay the Work.

9.5.1 The Contractor shall be responsible for all required tests and appropriate test schedules, approvals and inspections pursuant to the Contract Documents.

9.5.2 The Contractor shall be back-charged with any cost of inspection when the Work is not ready at the time specified by the Director's Representative for inspection, or for deficient work that shall require re-testing.

9.6 Should the Director's Representative determine at any time before acceptance of the entire Work to examine Work already completed by removing, uncovering or testing the same, the Contractor shall, on request, promptly furnish all necessary facilities, labor, materials and equipment to conduct such inspection, examination or test. If such Work is found to be defective or nonconforming in any material respect, the Contractor shall defray all the expenses of such examination and satisfactory reconstruction. If the Work is found to meet the requirements of the Contract Documents, the Contractor shall be compensated for the additional services involved in such examination and reconstruction by order on contract and, if completion of the Work has been delayed thereby, shall receive a suitable extension of time.

9.7 No previous inspection or certificates of payment shall relieve the Contractor from the obligation to perform the Work in accordance with the Contract Documents. The final payment shall not relieve the Contractor of the responsibility for failing to comply with the Contract Documents.

9.8 The Contractor shall remedy all defects, paying the cost of any damage to other work or property of the State resulting there from, which shall appear within a period of one year from the date of physical completion.

9.9 Contractor warrants that Product(s) furnished pursuant to this Contract shall, when used in accordance with the Product documentation, be able to accurately process date/time data (including, but not limited to, calculating, comparing, and sequencing) transitions, including leap year calculations. Where a Contractor proposes or an acquisition requires that specific Products must perform as a package or system, this warranty shall apply to the Products as a system.

9.9.1 Where Contractor is providing ongoing services, including but not limited to: i) consulting, integration, code or data conversion, ii) maintenance or support services, iii) data entry or processing, or iv) contract administration services (e.g. billing, invoicing, claim processing), Contractor warrants that services shall be provided in an accurate and timely manner without interruption, failure or error due to the inaccuracy of Contractor's business operations in processing date/time data (including, but not limited to, calculating, comparing, and sequencing) various date/time transitions, including leap year calculations. Contractor shall be responsible for damages resulting from any delays, errors or untimely performance resulting there from, including but not limited to the failure or untimely performance of such services.

9.9.2 This Date/Time Warranty shall survive beyond termination or expiration of this contract through: a) ninety (90) days or b) the Contractor's or Product manufacturer/developer's stated date/time warranty term, whichever is longer. Nothing in this warranty statement shall be construed to limit any rights or remedies otherwise available under this Contract for breach of warranty.

ARTICLE 10 - ORDERS ON CONTRACT (CHANGE ORDERS)

10.1 The State may make changes by altering, adding to or deleting from the Work, and adjusting the Contract sum accordingly. All changed Work shall be executed in conformity with the terms and conditions of the Contract Documents unless otherwise provided in the order on contract. Any change in the Contract sum or time for completion of the described work of the order on contract shall be contained in the order on contract. Any change in schedule resulting from an order on contract will be issued in accordance with the provisions of Paragraphs 4.6 and 13.5 of these General Conditions.

10.2 No written or oral instructions shall be construed as directing a change in the Work unless in the form of an order on contract signed by the Contracting Officer. The order on contract shall describe or enumerate the Work to be performed, state the amount (if any) to be added to or deducted from the Contract sum and state the time allowed (if any) for the performance of the changed work. If the extent or cost of the Work is not determinable until after the changed Work is performed, the order on contract shall specify the method for determining the cost and extent of the changed Work when completed. If the Contractor disagrees as to any element of the order on contract, the Contractor shall promptly indicate such disagreement in writing by certified mail directed to the Contracting Officer and shall promptly proceed in accordance with the order on contract. The Contractor's letter of disagreement shall identify by number the order on contract with which the Contractor is disagreeing, the elements with which the Contractor disagrees and a statement as to why there is a disagreement on each element. The letter of disagreement shall be accompanied by documentation of every material element of the Contractor's basis for disagreement. The Contracting Officer shall promptly review the Contractor's letter and supporting documentation and advise the Contractor in writing of any modifications to the order on contract or of the confirmation of the order on contract as issued. The Contracting Officer may, in the exercise of discretion, conduct informal discussions or meetings with the Contractor and/or State Officials, employees or agents prior to rendering a decision.

10.3 If the Contractor is required to perform Work for which the Contractor believes it is entitled to an order on contract, the Contractor shall give the Director prompt written notice and await instructions before proceeding to execute such Work. The Contractor shall thereafter proceed diligently with the performance of the contract in accordance with the Director's instructions. The Contractor shall maintain complete cost records including but not limited to time and payroll records, material invoices and delivery tickets, equipment rental and purchase invoices for itself and all subcontractors, suppliers and material-men when the Contractor performs work which the Contractor believes is extra or additional work. Failure to maintain such records shall waive any right to extra and additional costs beyond those costs supported by actual cost records.

10.4 The Contracting Officer shall determine the value of any order on contract by one or more of the methods provided in Division 01 - General Requirements.

10.5 Irrespective of the method used or to be used by the State in determining the value of a change order, the Contractor shall after receipt of a request, promptly submit to the State a detailed breakdown of the Contractor's estimate of the value of the omitted or extra work. The Contractor shall submit evidence, satisfactory to the Contracting Officer, to substantiate each and every item that constitutes his proposal for the change. The State shall promptly respond to such submission.

10.5.1 The contractor shall submit a responsive cost proposal to the Director's Representative in proper form subject to the provisions of this Article. The contractor shall respond no later than 30 days from the date of a "request for proposal" from the Director's Representative. Should the contractor fail to respond or submit the required cost proposal within the 30 day requirement, the State shall determine a fair market value for the work proposed and will issue an order on contract or field order to the contract. The Contractor, by failing to respond or provide an acceptable proposal; waives any claim or rights to any extra and or additional costs as determined by the Contracting Officer.

10.6 Unless otherwise specifically provided for in a change order, the compensation specified therein for extra work includes full payment for both the extra work covered thereby and for any damage or expense caused the Contractor by any delays to other work to be done under the Contract resulting from or on account of said extra work, and the Contractor waives all rights to any other compensation for said extra work, damage or expense.

10.7 No order on contract which creates a liability on the State shall be binding unless approved by the Office of the State Comptroller.

ARTICLE 11 - SITE CONDITIONS

11.1 If the Contractor encounters subsurface or other latent physical conditions at the Site which differ substantially from those shown, described or indicated in such information provided by the State or from any information which is a public record and which subsurface or other latent physical condition could not have been reasonably anticipated from that information or from the Contractor's own inspection and examination of the Site, the Contractor shall give immediate written notice to the Director before any such condition is disturbed. The Director shall promptly investigate and, if it is determined that the conditions substantially differ from those which should have been reasonably anticipated, shall make such changes in the Drawings and Specifications as may be required. If necessary, the Contract sum and completion date shall be adjusted, to reflect any increase or decrease in the cost of, or time required for, performance of the Contract.

ARTICLE 12 - SUSPENSION OF WORK

12.1 The Director may order the Contractor in writing to suspend, delay, or interrupt performance of all or any part of the Work for a reasonable period of time as the Director may determine.

12.2 Upon receipt of a suspension order, the Contractor shall, as soon as practicable, cease performance of the Work as ordered and take immediate affirmative measures to protect such Work from loss or damage.

12.3 The Contractor specifically agrees that a suspension, interruption or delay of the performance of the Work pursuant to this Article for a period or periods not exceeding thirty days in total shall not increase the cost of performance of the Work of this Contract other than costs directly related to demobilization and remobilization for the Work, temporary services costs, equipment rental which cannot be practically suspended and temporary protection measures which are unusual but necessary.

ARTICLE 13 - TIME OF COMPLETION AND TERMINATION FOR CAUSE

13.1 All time limits stated in the Contract are of the essence of the Contract.

13.2 Termination for Cause.

13.2.1 If in the judgment of the Group Director, the Contractor fails or refuses to prosecute the Work in accordance with the Contract, or is failing to complete the Work within the time provided by the Contract, the Group Director may terminate the Contract by written notice. In such event, the Group Director shall order the surety to complete the Work.

13.2.2 If it is determined after the award of the contract that there exists any cause of so serious or compelling a nature, including but not limited to, submission to a contracting agency of a false or misleading statement on a NYS Vendor Responsibility Questionnaire, or in some other form in connection with a bid for or award of this or any other contract or a request for approval of a subcontractor, that it raises questions about the present responsibility of a contractor or subcontractor, the Group Director may terminate the Contract by written notice. In such event, the Group Director may or may not in his sole discretion, order the surety to complete the Work.

13.2.3 The Director will notify the Contractor and Surety that the State is considering declaring the Contractor in default and will arrange a hearing with the Contractor and the Surety to discuss methods of performing and completing the contract work.

13.2.4 If the State formally declares the contractor in default the State will demand upon the Surety to complete any and all remaining work pursuant to the terms of the Contract and the Surety Takeover Guidelines incorporated as Appendix B. The Surety may undertake to perform and complete the work itself, through its agents or through independent contractors approved by the State. The State will agree to pay the balance of the Contract price to the Surety in accordance with the terms and conditions of the Contract or to the designee authorized in writing by the surety upon acceptance of the Surety's completion plan pursuant to Appendix B. incorporated herein.

13.2.5 The surety agrees to complete any investigation into the default of the Contractor and advise the Group Director as to its intended course of action within ten days of receipt of the written notice of default. That notice will detail the underlying reasons for the default and provide pertinent documentation including the surety takeover guidelines of the Contracting Officer. Any request by a surety for execution of a takeover agreement, shall be delivered to

the Contracting Officer for consideration, within the same ten day period. No changes in the terms and conditions of the Contract will be considered. All rights remedies and defenses of the parties are reserved and no rights, remedies or defenses of the parties are waived, by virtue of the surety's agreement to assume contract performance under the bond

13.2.6 The Surety may elect to forfeit the remaining penal sum of the Performance Bond within twenty days of notification of default by the State; with no additional penalties imposed, upon the execution of a release prepared by the State. The State will determine the value of the remaining Work based upon its investigation of the Work in place against payments previously authorized. As soon as practical the Surety will tender payment therefore to the State.

13.2.7 If the surety fails or refuses to complete the Work within twenty five days of the notification of the contractors default or if the Surety fails or refuses to complete the work within the time frames allotted by the State, the Group Director may take over the Work and prosecute it to completion by contract publicly let or otherwise, and may take possession of and utilize in completing the Work, such of the Contractor's materials, equipment and plant as may be on the Site of the Work. Whether or not the right to terminate is exercised, the Contractor and the Surety shall be liable for any damage to the State resulting from the failure or refusal to complete the Work in accordance with the Contract or the failure to complete the Work within the time provided by the Contract.

13.2.8 Should the Surety fail to commence the work the Group Director will notify the Surety that the State is considering declaring the Surety in default and will arrange a hearing with the Surety to discuss methods of performing and completing the contract work. It is the policy of the Office of General Services, Design and Construction Group to let a Contract for the remaining work after the 21st day of the demand upon the Surety to complete the Work pursuant to the terms and conditions of the Contract, and the Performance Bond filed with the Office of the State Comptroller.

13.3 The amount of Liquidated Damages shall be the product of $1,000.00 times the number of days of delay in physical completion of the work. Upon the assessment of such damages the State may withhold the sum of the damages contemplated from payments to avoid an overpayment to any firm where damages would apply.

13.3.1 If the Group Director terminates the Contract, damages shall consist of liquidated damages, if any, until the Work is physically completed, plus any increased costs occasioned the State in completing the Work.

13.3.2 If the Group Director does not terminate the Contract, the damages shall consist of liquidated damages, if any, until the Work is physically completed.

13.4 The Contract shall not be so terminated nor the Contractor charged with resulting damage if:

13.4.1 The delay in the completion of the Work arises from unforeseeable causes beyond the control and without the fault or negligence of the Contractor, including but not restricted to, acts of God, acts of the public enemy, acts of the State in either its sovereign or contractual capacity, acts of another contractor in the performance of a contract with the State, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, unusually severe weather, or delays of subcontractors or suppliers arising from unforeseeable causes beyond the control and without the fault or negligence of both the Contractor and such subcontractors or suppliers, and

13.4.2 The Contractor notifies the Director in writing of the causes of delay within ten days from when the Contractor knew or ought to have known of any such delay.

13.5 The Director will ascertain the facts and the extent of the delay and extend the time for completing the Work when, in the Director's judgment, the findings of fact justify such an extension, and the Director's findings of fact shall be final and conclusive on the parties.

13.6 If after notice of termination of the Contract, it is determined for any reason the Contractor was not in default or that the delay was excusable, the rights and obligations of the parties shall be the same as if the notice of termination had been issued pursuant to the termination for convenience clause.

13.7 The rights and remedies of the State provided in this Article are in addition to any other rights and remedies provided by law or under this Contract.

13.8 The State, as defined in Article 2 of these General Conditions, reserves the right to terminate this contract in the event it is found that the certification filed by the offerer in accordance with New York State Finance Law §139-k was intentionally false or intentionally incomplete. Upon such finding, the Governmental Entity may exercise its termination right by providing written notification to the offerer in accordance with the written notification terms of the contract.

ARTICLE 14 - TERMINATION OF CONTRACTOR'S EMPLOYMENT FOR THE CONVENIENCE OF THE STATE OF NEW YORK

14.1 The Group Director may terminate this Contract whenever the public interest so requires by delivering to the Contractor a notice of termination specifying the extent to which performance of Work under the Contract is terminated and the date upon which such termination becomes effective. Upon receipt of the notice of termination, the Contractor shall act promptly to minimize the expenses resulting from such termination. The State shall pay the Contractor the sum of:

14.1.1 The costs actually incurred by the Contractor, subcontractors, and sub-subcontractors or their suppliers up to the effective date of such termination, and

14.1.2 The cost of settling and paying claims, provided the concurrence of the Contracting Officer is obtained prior to agreeing to any such settlement, arising out of the termination of Work under subcontracts or orders exclusive of the amounts paid or payable on account of supplies or materials delivered or services furnished by the subcontractor prior to the effective date of the notice of termination of Work under this Contract, which amounts shall be included in the cost on account of which payment is made under 14.1.1 above, and

14.1.3 An amount determined by adding to the amount of the costs under 14.1.1 above a sum equal to 20% (comprised of 10% overhead and 10% profit) thereof, provided, however, that if it appears that the Contractor would have sustained a documentable loss on the entire Contract had it been completed, an appropriate adjustment shall be made reducing the amount to be paid under this Article to reflect the indicated rate of loss.

14.2 In no event shall the Contractor's compensation exceed the total Contract amount.

14.3 The detailed estimate or amount of progress payments made to the Contractor prior to the day termination was effective shall not be conclusive evidence of costs incurred but progress payments shall be offset against any payment which the State makes to the Contractor as a result of such termination.

ARTICLE 15 - DISPUTES

15.1 The Contractor specifically agrees to submit, in the first instance, any dispute or disagreement relating to the performance of this Contract to the Group Director, who shall render a decision in writing and furnish a copy thereof to the Contractor. The Contractor agrees that this clause does not apply to any dispute or disagreement which involves delay, acceleration, interference or any other act or omission constituting a breach of contract; any matter relating to extensions of time, bonuses or liquidated damages; to the value of any order on contract or field order (issued pursuant to Division 01 - General Requirements); any termination for cause or convenience; or to termination costs allowable pursuant to contract.

15.2 The Contractor must request such decision in writing by certified mail no more than fifteen days after the Contractor knew or ought to have known of the facts which are the basis of the dispute or disagreement. Such writing shall identify the nature of the dispute or disagreement; identify the person who rendered the decision or interpretation involved and the date of the decision or interpretation with which the Contractor disputes or disagrees, attaching a copy of such decision or interpretation; contain a statement of the contractual basis for the dispute or disagreement; and identify the relief sought.

15.3 The Group Director may cause an investigation to be made of the circumstances involving the dispute or disagreement and may cause a fact-finding proceeding to be conducted before rendering the decision.

15.4 The Contractor agrees that the decision of the Group Director shall be final and conclusive. Nothing in this Contract shall be construed as making final the decision of any administrative official upon a question of law.

ARTICLE 16 - STATUTORY REQUIREMENTS FOR UTILIZATION OF MINORITY AND WOMEN OWNED BUSINESS ENTERPRISES

16.1 Pursuant to Section 313 of Article 15-A of the Executive Law of the State of New York, the Director of the Division of Minority and Women's Business Development has promulgated rules and regulations (Parts 140 through 145 of Subtitle N of Title 9 New York Code of Rules and Regulations) (the "Regulations") for the purposes of ensuring that certified Minority and Women owned Business Enterprises shall be given the opportunity for meaningful participation in the performance of State contracts and to facilitate the award of a fair share of State contracts and subcontracts to such business enterprises.

16.2 The Contractor shall make a good faith effort to solicit active participation in the Work by enterprises identified in the directory of certified businesses obtainable from the Division of Minority and Women's Business Development, New York State Department of Economic Development.

16.3 The Contractor agrees, as a material condition of this contract, to be bound by the provisions of Section 316 of Article 15-A of the Executive Law of the State of

New York which relates to the resolution of disputes which may arise under this Article.

16.4 The Contractor agrees to include the provisions of Paragraphs 16.2 and 16.3 of these General Conditions in every subcontract it enters into as to Work in connection with this Contract in such a manner that the provisions will be binding upon such subcontractor. However, the provisions of this paragraph shall not be binding upon the Contractor or its subcontractors in the performance of work or the provision of services that are unrelated, separate or distinct from this Contract as expressed by its terms.

16.5 The Regulations referred to in Paragraph 16.1 of these General Conditions require, among other things, that a bidder or proposer for a State contract submit a utilization plan which shall identify certified Minority or Women Owned Business Enterprises which the bidder/proposer intends to use in connection with the performance of the proposed State contract. Such a utilization plan shall be submitted after bids are opened but prior to contract award.

16.5.1 Pursuant to the Regulations: (1) the Commissioner may require the submission by the Contractor of compliance reports relating to the implementation of and adherence to the utilization plan in performing the Contract; (2) the Commissioner shall allow the Contractor to apply for a partial or total waiver of the Minority and Women Owned Business participation requirements; (3) the Contractor may file a complaint with the Executive Director of the Division of Minority and Women's Business Development regarding a denial of a request for waiver of Minority and Women Owned Business participation requirements; (4) the Commissioner may file a complaint with the Executive Director of the Division of Minority and Women's Business Development in the event the Contractor fails to comply with the Minority and Women Owned Business participation requirements set forth in this Contract; and (5) the Commissioner may disqualify the Contractor's bid or proposal as being non-responsive for failure to remedy notified deficiencies contained in the Contractor's utilization plan after an administrative hearing on the record, reviewing all grounds for disqualification stated by the Commissioner and taking into consideration all the criteria set forth in Section 313 of the Executive Law.

16.5.2 The Contractor is referred to the entirety of the provisions of Section 316 of Article 15-A of the Executive Law of the State of New York and of the Regulations for the Contractor's full familiarization with their applicable provisions as terms of this Contract.

ARTICLE 17 - COORDINATION OF SEPARATE CONTRACTS

17.1 The State may award other contracts which affect the Work of this Contract. In that event, the Contractor shall coordinate its Work with the work of other contractors in such manner as the State may direct. Each contractor shall control and coordinate the work of its subcontractors, if any. The State shall approve or require the modification of the work schedules of all contractors to the end that the Project may be progressed as expeditiously as the case permits.

17.2 If any part of the Work depends for proper execution or results upon the work of any other contractor, the Contractor shall inspect and promptly report in writing to the Director's Representative any defects in such work. The Contractor's failure to inspect and report shall constitute an acceptance of the other contractor's work as fit and proper for the reception of the Contractor's Work.

17.3 The Director's Representative shall issue appropriate directions and take such other measures to coordinate and progress the Work as may be reserved to the State in the Contract, and which an ordinarily reasonable project owner in similar circumstances would be expected to take.

17.4 The award of more than one contract for the Project requires sequential or otherwise interrelated contractor operations, and will involve inherent delays in the progress of any individual contractor's work. Accordingly, the State does not guarantee the unimpeded operations of any contractor. The Contractor acknowledges these conditions, and understands that the Contractor shall bear the risk of all delays caused by the presence or operations of other contractors engaged by the State and delays attendant upon any State-approved construction schedule.

17.5 The State shall not be liable for delays which occur by reason of any contractor's failure to comply with directions of the State or because of the neglect, failure or inability of any contractor to perform its work efficiently.

17.6 The Contractor shall defend, indemnify and hold the State harmless from any and all claims or judgments of damages and from costs and expenses to which the State may be subjected or which it may suffer or incur by reason of or based upon an allegation of the Contractor's failure to promptly comply with the directions of the Director's Representatives.

17.7 Should the Contractor sustain any damage through any act or omission of any other contractor having a contract with the State for the performance of work upon the Site of work which may be necessary to

be performed for the proper prosecution of the Work to be performed hereunder, or through any act or omission of a subcontractor of such contractor, the Contractor shall have no claim against the State for such damage, but shall have a right to recover such damage from the other contractor under the provision similar to the following provision which has been or will be inserted in the contract with such other contractors.

17.8 Should any other contractor having or who shall hereafter have a contract with the State for the performance of work upon the Site sustain any damage through any act or omission of the Contractor hereunder or through any act or omission of any subcontractor of the Contractor, the Contractor agrees to reimburse such other contractor for all such damages and to indemnify and hold the State harmless from all such claims.

ARTICLE 17A - DELAYS

17A.1 For the purposes of this Contract, the term delay includes delay, disruption, interference, inefficiencies, impedance, hindrance and acceleration.

17A.2 The Contractor agrees to make claim only for additional costs as defined in Document 012200, section 1.01, paragraph H from causes listed below, attributable to delay in the performance of this contract, occasioned by any act or omission to act by the State or any of its representatives. The Contractor also agrees that delay from any other cause shall be compensated for solely by an extension of time to complete the performance of the work.

17A.2.1 The failure of the State to take reasonable measures to coordinate and progress the work.

17A.2.2 Extended delays attributable to the State in the review or issuance of orders on contract or field orders, in shop drawing reviews and approvals or as a result of the cumulative impact of multiple orders on contract, which constitute a qualitative change to the project work and which have a verifiable impact on project costs.

17A.2.3 The unavailability of the site for such an extended period of time which the Director determines to significantly affect the scheduled completion of the contract.

17A.2.4 The issuance by the Director of a stop work order relative to a substantial portion of work for a period exceeding thirty days.

17A.3 The Contractor shall provide "notice of claim" of an anticipated claim for delay to the Contracting Officer by personal service or certified mail no more than fifteen days after the Contractor knew or ought to have known of the facts which form the basis of the claim. The Contracting Officer shall acknowledge receipt of the Contractor's notice, in writing, within five days. The Contractor agrees that the State shall have no liability for any damages which accrue more than fifteen days prior to the delivery or mailing of the required notice. The notice shall at a minimum provide a description of any operations that were, are being, or will be delayed, the date(s) and reasons for the delay, and, to the extent known, the information required by Paragraph 17A.6 of these General Conditions. In no case, shall oral notice to the Director's Representative or contracting officer constitute notice under this provision or be deemed to constitute a waiver of the written notice requirement. In no case, shall written notice to the Director's Representative or any other individual other that the Contracting Officer constitute notice under this provision or be deemed to constitute a waiver of the written notice requirement. The Contracting Officer is located at the following location:

Division of Contract Administration
Contracting Officer
35th Floor, Corning Tower
Albany, New York 12242

17A.4 Failure by the Contractor to adequately progress the completion of the work will be considered in determining the causes of delay. For any claim asserted under this Article, the Contractor shall keep detailed written records of the costs and shall make them available to the Contracting Officer at any time for the purposes of audit and review. Failure by the Contractor to provide the required written notice or to maintain and furnish records of the costs of such claims to the Contracting Officer shall constitute a waiver of the claim.

17A.5 The provisions of this Article apply only to claims for extra or additional costs attributable to delay and do not preclude determinations by the Director allowing reimbursement for additional costs for extra work pursuant to Article 10 of these General Conditions.

17A.6 REQUIRED CONTENT OF CLAIM SUBMISSION.

17A.6.1 As noted in Paragraph 17.A.3 of these General Conditions, all claims for delay shall be submitted in writing to the Contracting Officer and must be in sufficient detail to enable the Contracting Officer to ascertain the basis and the amount of each claim. The following information shall be provided by the Contractor upon request of the Contracting Officer if not previously supplied:

a. A description of the operations that were delayed, the reasons for the delay and an explanation of how they were delayed.

b. A detailed factual statement of the claim providing all necessary dates, locations and items of work affected by the claim.

c. An as-built chart, "Critical Path Method" scheme or other diagram or chart depicting in graphic form how the operations were or are claimed to be adversely affected including the report and conclusions of all engineering and scheduling experts or other consultants, if any.

d. The date on which actions resulting in the claim occurred or conditions resulting in the claim became evident.

e. A copy of the approved project schedule and a copy of the "notice of claim" required for the specific claim by Paragraph 17A.3 of these General Conditions.

f. To the extent known, the name, function, and activity of each State official, employee or agent, involved in, or knowledgeable about facts that gave rise to such claim.

g. The name, function, and activity of each Contractor or subcontractor officer, or employee, involved in, or knowledgeable about facts that gave rise to such claim.

h. The identification of any pertinent documents, and the substance of any material oral communication relating to such claim.

i. The amount of additional compensation sought and a breakdown of that amount into the categories specified in Division 01 - General Requirements.

j. If an extension of time is also requested, the specific number of days for which it is sought and the basis for such request as determined by an analysis of the construction progress schedule.

17A.7 REQUIRED CERTIFICATION OF CLAIMS.

17A.7.1 When submitting any notice of claim or claim data, the Contractor must certify in writing and under oath:

a. That supporting data is accurate and complete to the Contractor's best knowledge and belief;

b. That the amount of the claim and the claim itself accurately reflects what the Contractor in good faith believes to be the State's liability.

17A.7.2 If the Contractor is an individual, the certification shall be executed by that individual. If the Contractor is not an individual, the certification shall be executed by a company official in charge of the Contractor's operations pertaining to this contract or an officer or general partner of the Contractor having overall responsibility for the conduct of the Contractor's affairs.

17A.7.3 Failure to timely comply with any of the requirements of Article 17A for the submission of any claim for delay may constitute grounds for denial of such claim.

ARTICLE 18 - RESPONSIBILITY FOR DAMAGE

18.1 The Contractor shall faithfully perform and complete all of the Work required by the Contract, and has full responsibility for the following risks:

18.1.1 Loss or damage, direct or indirect, to any property owned by the State or to the Work including the building or structure in which the Work is being performed, or any other construction in progress whether being performed by any other contractor or the State, or to any plant, equipment, tools, materials or property furnished, used, installed or received by the Director under this Contract or any other contract. The Contractor shall bear all such risk of loss or damage, until all of the Work covered by the Contract has been finally accepted. In the event of such loss or damage the Contractor shall forthwith repair, replace, and make good any such loss or damage without additional cost.

18.1.2 Injury to persons (including death resulting there from), or damage to property caused by an occurrence arising out of the performance of this Contract for which the Contractor may be legally liable under the laws of torts.

18.2 The Contractor, however, shall not be responsible for damages resulting from faulty design or from willful acts of State officials or employees or from negligence resulting solely from acts or omissions of the State, its officers or employees. Nothing herein shall vest in third parties any right of action beyond such as may legally exist irrespective of this Article.

18.3 The Contractor shall indemnify and save harmless the State, its employees and agents from suits, actions, damages, and costs of every name and description relating to the performance of this Contract during its prosecution and until the acceptance thereof, and the State may retain such moneys from the amount due the Contractor as may be necessary to satisfy any claim for damages recovered against the State. The Contractor's obligations under this paragraph shall not be deemed waived by the failure of the State to retain the whole or any part of such moneys due the Contractor, nor shall such obligation be deemed limited or discharged by the enumeration or procurement of any insurance for liability for damages imposed by law upon the Contractor, subcontractor or the State.

ARTICLE 19 - INSURANCE - BUILDER'S RISK, LIABILITY AND WORKERS' COMPENSATION

19.1 Before commencing the Work and until the established Physical Completion date, all insurance required by the Contract shall be obtained at the sole cost and expense of the Contractor; and the Contractor shall furnish to the Contracting Officer a Certificate of

Insurance in a form satisfactory to the Contracting Officer showing that the Contractor has complied with this Article. Insurance shall be maintained with insurance carriers licensed to do business in New York State and acceptable to the Contracting Officer; shall be primary and non-contributing to any insurance or self insurance maintained by OGS; and shall be endorsed to provide written notice be given to the Contracting Officer at least thirty days prior to the cancellation, non-renewal, or material alteration of such policies, which notice, evidenced by return receipt of United States Certified Mail, any notice shall be addressed to:

Division of Contract Administration
Director
35th Floor, Corning Tower
Albany, New York 12242

19.1.1 The endorsement shall name The People of the State of New York, its officers, agents, employees and the assigned construction manager as additional insureds there under. This additional insured shall be primary and non-contributory. (General Liability Additional Insured Endorsement shall be on Insurance Service Office's (ISO) form number CG 20 10 11 85 and a copy of which shall be furnished along with the Certificate of Insurance.) The Contracting Officer may modify the provisions of this Article when deemed in the best interest of the State by order on contract or field order.

19.1.2 The Contractor, throughout the term of this Contract, or as otherwise required by this Contract, shall obtain and maintain in full force and effect on an occurrence form, the following insurance with limits not less than those described in this article, and as required by the terms of this Contract, or as required by law, whichever is greater. If such insurance contains an aggregate limit, it shall apply separately on a per job, per location basis.

19.1.3 The Contractor shall be solely responsible for the payment of all deductibles and Self Insured Retentions.

19.1.4 Not less than thirty days prior to the expiration date or renewal date of any insurance policies reflected on such certificates, the Contractor shall supply OGS updated replacement Certificates of Insurance, and amendatory endorsements.

19.2 The kinds and amount of insurance is as follows:

19.2.1 Workers' Compensation Insurance and Disability Benefits Law. A policy covering the obligations of the Contractor in accordance with the Workers' Compensation Law and the Disability Benefits Law covering all operations under the Contract, whether performed by the Contractor or by its subcontractor.

19.2.2 Commercial General Liability, and if necessary, Commercial Umbrella Liability Insurance with a limit of not less than $2,000,000 each occurrence. Such liability shall be written on the ISO occurrence form CG 00 01, or a substitute form providing equivalent coverages and shall cover liability resulting in Bodily Injury, Property Damage, Personal Injury or loss of use arising from premises operations, independent contractors, products-completed operations, broad form property damage, personal & advertising injury, cross liability coverage, liability assumed in a contract (including the tort liability of another assumed in a contract) and explosion, collapse & underground coverage.

If such insurance contains an aggregate limit, it shall apply separately on a per job, per location basis.

19.2.3 Comprehensive Business Automobile Liability, and if necessary, Commercial Umbrella Liability Insurance with a limit of not less than $2,000,000 each accident. Such insurance shall cover liability arising out of any automobile including owned, leased, hired and non-owned automobiles.

19.2.4 Builder's Risk: The Contractor shall be liable for any and all damages and losses to the Project prior to the State of New York's acceptance of the Project as fully completed except that the Contractor shall not be liable for:

19.2.4.1 Losses covered by the Builder's Risk property insurance provided by the State of New York; except that the Contractor shall be liable for the applicable deductible.

19.2.4.2 All policies shall be issued by insurance companies licensed to conduct such business under the laws of the State of New York, shall be written for the benefit of the State of New York and for the Contractor as their interests may appear, and shall run until the contract physical completion date. The State of New York must be listed as loss payee pursuant to this policy. Policies expiring on a fixed date before physical completion must be renewed and re-filed not less than thirty days before such expiration date.

19.2.5 If the work involves abatement, removal, repair, replacement, enclosure, encapsulation and/or disposal of any petroleum, petroleum product, hazardous material or substance including asbestos, lead or mold, and those as defined by applicable State and federal laws and regulations, the Contractor shall procure, or otherwise obtain through an approved subcontractor, and maintain in full force and effect throughout the term of the contract, and for two years after completion hereof, pollution legal liability insurance with limits of not less than $5,000,000, providing coverage for bodily injury and property

damage, including loss of use of damaged property or of property that has not been physically injured. Such policy shall provide coverage for actual, alleged or threatened emission, discharge, dispersal, seepage, release or escape of pollutants, including any loss, cost or expense incurred as a result of any cleanup of pollutants or in the investigation, settlement or defense of any claim, suit, or proceedings against OGS arising from Contractor's work. The State of New York shall be named as additional insured and this shall be primary.

19.2.5.1 If automobiles are to be used for transporting hazardous materials, the Contractor shall provide pollution liability broadened coverage for covered autos (endorsement CA 99 48) as well as proof of MCS 90.

19.3 The Contractor may provide the required proof of insurance on industry forms provided that no other endorsements exclude, delete or restrict those coverage's provided for by this article. It is required that companies affording coverage list the company name in full as filed with the New York State Insurance Department. The contract number and project location must be provided in order to approve the certificate.

19.4 Should the Contractor fail to provide or maintain any insurance required by law the Contract will be considered null and void. Further, no contractor is permitted to access the project site without providing proof of proper insurance to the Contracting Officer or his designated representative. No payments will be authorized by the Contracting Officer to any firm who fails to comply with the provisions of this Article.

ARTICLE 20 - OCCUPANCY PRIOR TO COMPLETION AND ACCEPTANCE

20.1 The State shall have the right to take possession of or use any completed or partially completed portion of the Work. Written notice of such possession shall be given to the Contractor by the Director. The notice shall identify the date when such possession shall commence and the area, equipment or system involved. Written notice shall also be given the Contractor for any cessation of such possession by the State. Such possession or use shall not be deemed an acceptance of any Work. While the State is in such possession, the Contractor, notwithstanding the provisions of Article 18 of the Contract, shall be relieved of the responsibility for loss or damage to the Work except for that resulting from the Contractor's fault or negligence. If such possession or use by the State delays the progress of the Work or causes additional expense to the Contractor, an adjustment in the Contract price and/or the time of completion shall be made and the Contract modified in writing accordingly. The provisions relating to an adjustment in the Contract price or the time of completion contained in this paragraph shall not apply to occupancy or possession after Substantial Completion.

ARTICLE 21 - PAYMENT

21.1 The Contractor shall submit monthly, or at more frequent intervals if permitted in writing by the Contracting Officer, a requisition for a progress payment to the designated payment office for Work performed and materials furnished up to the date of the requisition, less any amount previously paid to the Contractor. Except as otherwise provided by this Contract, the Contracting Officer shall approve and cause to be paid the requisition for the progress payment less an amount necessary to satisfy any claims, liens or judgments against the Contractor which have not been suitably discharged and less any amount authorized by law to be retained. The requisition shall be in such form and supported by such evidence as the Contracting Officer may reasonably require. The designated payment office is listed as follows:

Division of Contract Administration
Bureau of Contract Performance
35th Floor, Corning Tower
Albany, New York 12242

21.1.1 For those contracts designated as Labor and Material reimbursement or similar type contracts, the contractor shall submit to the Contract Payment Audit Group no later than 60 days from the period of when the work occurred, acceptable proof of labor and material costs specific to the approved scope of work as verified by the Directors Representative, to the Contracting Officer for audit, verification and approval prior to the submission of any payment. The Contract Payment Audit Group is located at the following location:

Division of Contract Administration
Contract Payment Audit Group
35th Floor, Corning Tower
Albany, New York 12242

21.1.2 The submittal of cost for reimbursement to the Contractor shall be in such form and supported by such evidence as the Contracting Officer may reasonably require.

21.1.3 For those contracts designated as Electronic Contractor Requisition (ECR) eligible, if the contractor agrees to participate (participation is not mandatory – a contractor may still elect to submit paper requisitions) , the contractor shall provide an Electronic Contractor Requisition (ECR) Program Certification form which shall become part of this agreement. The contractor further certifies that the individual certifying the requisition is duly authorized to undertake requisitioning transactions. The contractor understands that the State will rely on the information disclosed in the contractor's requisition consistent with all of the

provisions of this Article. A contractor need not submit electronic requisitions in order to receive electronic payments.

21.2 The Director or the Contracting Officer may refuse to approve the requisition or a portion of it if the Contractor is failing or refusing to prosecute the Work in accordance with the Contract.

21.3 Payment will be made for approved materials not yet incorporated in the Work which are in short and/or critical supply and for materials determined to be specifically fabricated for the project. Requisitions which require payment for materials shall be accompanied by a notarized statement certifying that the materials for which payment is requisitioned are the Contractor's property and have been suitably stored and insured. The Contractor shall provide such evidence of the value of the material stored as the Contracting Officer may reasonably require. The Contractor shall have full continuing responsibility to insure and protect such materials and maintain them in proper condition to fulfill Contract requirements when installed.

21.4 When the Work or major milestones thereof as contemplated by the terms of this Contract are substantially completed, the Contractor shall submit to the Contracting Officer a requisition for payment of the remaining amount of the Contract balance. Upon receipt of such requisition the Contracting Officer shall, except as otherwise provided by this Contract, approve and cause to be paid the remaining amount of the Contract balance less two times the value of any remaining items to be completed and an amount necessary to satisfy any claims, liens or judgments against the Contractor which have not been suitably discharged. As the remaining items of Work are satisfactorily completed or corrected, the Contracting Officer shall cause to be paid, upon receipt of a requisition, for these remaining items less an amount necessary to satisfy any claims, liens or judgments against the Contractor which have not been suitably discharged.

21.5 No more than 60 days after the issuance of the Physical Completion Report, the Contractor shall submit to the Contracting Officer or his designated representative a requisition for payment of the remaining Contract balance. Upon receipt of this requisition, the Contracting Officer shall, except as otherwise provided by this Contract, approve and cause such requisition to be paid less any amount necessary to satisfy any claims, liens or judgments against the Contractor which have not been suitably discharged. The Contractor waives any claim or right to payment of any contract balance which has not been requisitioned for payment within 60 days of the issuance of the Physical Completion Report.

21.6 The final certificate letter will not be issued until all the labor and material required by the Contract has been furnished and completed, all disputes and claims relating to the performance of the Contract considered and disposed of and all accounts for extra work and materials and allowances for omissions have been rendered and considered. The Contractor waives any claim or right to additional compensation which has not been submitted in writing via certified or registered mail to the Contracting Officer pursuant to Article 17A, within thirty days of the issuance of the Physical Completion Report.

21.7 The final certificate letter will constitute the acceptance of the Work by the State, except as to Work thereafter found to be defective. The date of such certificate shall be regarded as the date of acceptance of the Work.

21.8 No payment will be made to a foreign Contractor until it furnishes satisfactory proof that it has paid all taxes required of foreign Contractors under the provisions of the New York State Tax Law. A foreign Contractor as used in this paragraph shall mean a Contractor denominated "foreign" by the New York State Tax Law.

21.9 The contractor is advised that consistent with Subdivision 3-a, of Section 220 of the Labor Law, the filing of certified payroll records is a condition precedent to payment of any sums due and owing to any person performing work on this project. The failure to file pursuant to this section will result in a payment delay until such time as the filing occurs.

21.10 The Contractor acknowledges that it will not receive payment on any requests for payment unless the contractor complies with the State Comptroller's electronic payment deposit procedures Payments requested by the contractor will only be facilitated via electronic deposit, except where the Commissioner has expressly authorized payment by paper check.

ARTICLE 22 - AUDITS AND RECORDS

22.1 The Group Director, the Comptroller or their representatives shall have the right to examine all books, records, documents, and other data of the Contractor, subcontractors, material-men or suppliers relating to the bidding, pricing or performance of this Contract or any change or modification thereto for the purpose of evaluating the accuracy, completeness, and currency of the cost or pricing data submitted. This right of examination shall extend to all documents necessary to permit adequate evaluation of the cost or pricing data submitted along with the computations and projections used therein.

22.2 The above materials shall be made available at the office of the Contractor, subcontractors, material-men or suppliers at all reasonable times for inspection,

audit or reproduction until the expiration of six years from the date of the final certificate for the Contract.

22.3 If this Contract is completely or partially terminated, the records relating to the Work terminated shall be made available for a period of six years from the date of any resulting final settlement.

22.4 Records which relate to the Disputes Clause of this Contract or litigation or the settlement of claims arising out of the performance of this Contract shall be made available until such appeals, litigation or claims have been disposed of.

22.5 The Contractor shall insert a clause containing all of the provisions of Paragraphs 22.1 to 22.4 of these General Conditions in all subcontracts or purchase orders issued hereunder.

22.6 The Contractor shall make available to the Contracting Officer, upon written request, all records required to be kept by this Contract or by Article 3-A of the Lien Law. The failure to provide said records upon the receipt of the written request shall bar any recovery for claimed extra or additional costs under this Contract.

ARTICLE 23 – LABOR LAW PROVISIONS

23.1 The contractor shall post, in a location designated by the State, a copy of the New York State Department of Labor schedules of prevailing wages and supplements for this Project, a copy of all re-determinations of such schedules for the Project, the Workers' Compensation Law Section 51 notice, all other notices required by law to be posted at the Site, the Department of Labor notice that this Project is a public work project on which each worker is entitled to receive the prevailing wages and supplements for the occupation at which he or she is working, and all other notices which the State directs the contractor to post. The contractor shall provide a surface for such notices which is satisfactory to the State. The contractor shall maintain such notices in a legible manner and shall replace any notice or schedule which is damaged, defaced, illegible or removed for any reason. The contractor shall post such notices before commencing any Work on the Site and shall maintain such notices until all Work on the Site is complete.

23.2 The contractor shall distribute to each worker for this Contract a notice, in a form provided by the State, that this Project is a public work project on which each worker is entitled to receive the prevailing wage and supplements for the occupation at which he or she is working. Worker includes employees of contractor and all Subcontractors and all employees of Suppliers entering the Site. Such notice shall be distributed to each worker before he or she starts performing any Work of this Contract. At the time of distribution, the contractor shall have each worker sign a statement, in a form provided by the State, certifying that the worker has received the notice required by this section, which signed statement shall be maintained with the payroll records required by Paragraph 23.3 of these General Conditions.

23.3 The contractor shall maintain on the Site the original certified payroll or certified transcripts thereof which the contractor and all of its Subcontractors are required to maintain pursuant to New York Labor Law Section 220. The contractor shall maintain with the payrolls or transcripts thereof, the statements signed by each worker pursuant to Paragraph 23.2 of these General Conditions.

23.4 A contractor or subcontractor who is required under New York Labor Law Section 220 to maintain transcripts of payroll records must submit to the contracting agency a transcript of the original payroll record within thirty days of issuance of its first payroll and every thirty days, thereafter. The copy of the payroll record must be subscribed and affirmed as true under penalty of perjury. The copy must include the contract number and should be directed to the Director's Representative at the job site. The Directors Representative is hereby designated as the individual responsible for the receipt, collection and review for authenticity of payroll records filed for this contract, consistent with Article 23.4, General Conditions and subparagraph (iii) and (iv) Section 220 Labor Law.

23.5 In accordance with New York Labor Law §222-H, the contractor agrees where the total cost of all work to be performed under the contract is at least two hundred fifty thousand dollars; all laborers, workers, and mechanics employed in the performance of this contract on the public work site, either by the contractor, sub-contractor or other person doing or contracting to do the whole or a part of the work contemplated by this contract, shall be certified prior to performing any work on the project as having successfully completed a course in construction safety and health approved by the United States department of labor's occupational safety and health administration that is at least ten hours in duration.

23.6 In accordance with New York Labor Law § 220 (3) (a), the Contractor and every sub-contractor agrees to notify all laborers, workers or mechanics in their employ in writing of the prevailing rate of wage for their particular job classification. Such notification shall be given to every laborer, worker or mechanic on their first pay stub and with every pay stub thereafter. At the beginning of performance of every public works contract, and with the first paycheck after July first of each year, the Contractor and every sub-contractor shall notify all laborers, workers, and mechanics in their employ in writing, in accordance with such form as is prescribed by the department, of the telephone number and address for the department. The notice shall also

inform each laborer, worker, or mechanic of his or her right to contact the department or some other representative if, at any time while working for the public works contractor or sub-contractor, he or she does not receive the proper prevailing rate of wages or supplements for his or her particular job classification that he or she is entitled to receive under the contract.

ARTICLE 24 - STATUTORY REQUIREMENTS FOR RESTRICTIONS ON CONTACTS DURING THE PROCUREMENT PROCESS AND DISCLOSURE OF CONTACTS AND RESPONSIBILITY OF OFFERERS MISCELLANEOUS PROVISIONS

24.1 New York State Finance Law §139-k requires that every procurement contract award subject to the provisions of State Finance Law §139-k or §139-j shall contain a certification by the offerer that all information provided to the procuring governmental agency with respect to State Finance Law §139-k is complete, true and accurate. The Contractor shall provide that certification in his contract or agreement.

24.2 New York State Finance Law

24.2.1 New York State Finance Law § 139-k(2) obligates a Governmental Entity to obtain specific information regarding prior non-responsibility determinations. This information must be collected in addition to the information that is separately obtained pursuant to State Finance Law § 163 (9). In accordance with State Finance Law § 139-k, an offerer must be asked to disclose whether there has been a finding of non-responsibility made within the previous four (4) years by any Governmental Entity due to: (a) a violation of State Finance Law § 139-j or (b) the intentional provision of false or incomplete information to a Governmental Entity.

24.2.2 As part of its responsibility determination, State Finance Law § 139-k(3) mandates consideration of whether an offerer fails to timely disclose or complete information regarding the above non-responsibility determination. In accordance with law, no procurement contract shall be awarded to any offerer that fails to timely disclose accurate or complete information under this section, unless a finding is made that the award of the Procurement Contract to the Offerer is necessary to protect public property or public health safety, and that the Offerer is the only source capable of supplying the required Article of Procurement within the necessary timeframe. The required forms to be completed by the offerer must be submitted to the Governmental Entity conducting the government procurement. The Governmental Entity will have included the disclosure request in its solicitation of proposals or bid documents or specifications of contract documents, as applicable, for procurement contracts.

ARTICLE 25 – MISCELLANEOUS PROVISIONS

25.1 Appendix A, standard clauses for all N.Y. State contracts, is attached hereto and is made a part of this agreement as if set forth herein.

25.2 If, in carrying out this Work, a harmful dust hazard is created for which appliances or methods for the elimination of harmful dust have been approved by the Board of Standards and Appeals, then the Contractor shall install, maintain and effectively operate such appliances and methods during the life of this Contract; and in case of Contractor's failure to comply, as provided by Section 222-a of the Labor Law, the Contract shall be void.

25.3 RETAINED PERCENTAGES: The Contractor agrees that, if the Contract Documents for this Contract includes Performance and Payment Bonds, the State shall retain five percent of the amount of each progress payment in accordance with Section 139-f of the State Finance Law. The Contractor further agrees that, if the Contract Documents for this Contract do not include Performance and Payment Bonds, the State shall retain ten percent of the amount of each progress payment in accordance with Section 139-f of the State Finance Law.

25.4 DOMESTIC STEEL: The Contractor agrees, that if the value of this contract exceeds $100,000 all structural steel, reinforcing steel and other major steel items to be incorporated in the Work of this Contract shall be produced and made in whole or substantial part in the United States, its territories or possessions.

25.5 COMMENCEMENT OF ACTIONS: The time, as prescribed by law, within which an action on the contract against the Contractor must be commenced shall be computed from the completion of physical work. The Contractor may notify the State in writing that the physical work of the contract has been completed by specifying a completion date, which date shall be no more than thirty days previous to the date of such notice. The completion date set forth in such notice shall be deemed the date of completion of the physical work unless the State, within thirty days of receipt of such notice, notifies the Contractor in writing of its disagreement. Any notice pursuant to this paragraph shall be sent by the Contractor by Certified Mail and addressed to:

Division of Contract Administration
Contracting Officer
35th Floor, Corning Tower
Albany, New York 12242

25.5.1 In the event that the Contractor fails to send the notice provided for herein or the State disagrees in the manner provided for herein, the date of completion of the physical work shall be determined in any other manner provided by law.

25.6 WORKER'S COMPENSATION LAW: In accordance with Worker's Compensation Law (WCL) §141-b (Suspension and Debarment), any person subject to a final assessment of civil fines or penalties or a stop-work order, or that has been convicted of a misdemeanor for a violation of WCL §§ 26 (Enforcement of Payment in Default), 52 (Effect of Failure to Secure Compensation) or 131 (Payroll Records), and any substantially-owned affiliated entity of such person, shall be ineligible to submit a bid on or be awarded any such public work contract or subcontract with the State, any municipal corporation or public body for a period of one (1) year from the final determination or conviction. Any person convicted of a felony under Article 8 (Administration) of the WCL, or a misdemeanor under WCL §§125 (Job Description Prohibited Based on Prior Receipt of Benefits) and 125-a (Civil Enforcement) shall be ineligible to submit a bid or be awarded any public work contract or subcontract with the State, any municipal corporation or public body for a period of five (5) years from such conviction.

25.7 ENVIRONMENTAL CONSERVATION LAWS: The Contractor certifies and warrants that all heavy duty vehicles, as defined in New York State Environmental Law (ECL) section 19-0323, to be used under this Contract, will comply with the specifications and provisions of ECL section 19-0323 and any regulations promulgated pursuant thereto, which requires the use of BART and ULSD, unless specifically waived by NYSDEC. Qualification for a waiver under this law will be the responsibility of the Contractor.

25.8 REPORTING OF ILLEGAL ACTIVITY: During the term of the contract, the Contractor agrees to report any observed or suspected illegal activity of its employees, agents or other third parties, to the Contracting Officer at 518-474-0201, the Group Director, OGS Legal Services, the State Inspector General or other law enforcement agency. Failure to report criminal conduct associated with a contract awarded by the Office of General Services, will be considered a material breach of the contract and may provide grounds for disqualification of the subject Contractor or Subcontractor for award of future contracts. The Contractor will include the provisions of this section in every subcontract, in such a manner that the provisions will be binding upon each Subcontractor as to work performed in connection with the State contract.

APPENDIX A

STANDARD CLAUSES FOR NEW YORK STATE CONTRACTS

**PLEASE RETAIN THIS DOCUMENT
FOR FUTURE REFERENCE.**

TABLE OF CONTENTS

		Page
1.	Executory Clause	22
2.	Non-Assignment Clause	22
3.	Comptroller's Approval	22
4.	Workers' Compensation Benefits	22
5.	Non-Discrimination Requirements	22
6.	Wage and Hours Provisions	22-23
7.	Non-Collusive Bidding Certification	23
8.	International Boycott Prohibition	23
9.	Set-Off Rights	23
10.	Records	23
11.	Identifying Information and Privacy Notification	23-24
12.	Equal Employment Opportunities For Minorities and Women	24
13.	Conflicting Terms	24
14.	Governing Law	24
15.	Late Payment	25
16.	No Arbitration	25
17.	Service of Process	25
18.	Prohibition on Purchase of Tropical Hardwoods	25
19.	MacBride Fair Employment Principles	25
20.	Omnibus Procurement Act of 1992	25-26
21.	Reciprocity and Sanctions Provisions	26
22.	Compliance with Breach Notification and Data Security Laws	26
23.	Compliance with Consultant Disclosure Law	26
24.	Procurement Lobbying	26
25.	Certification of Registration to Collect Sales and Compensating Use Tax by Certain State Contractors, Affiliates and Subcontractors	26
26.	Iran Divestment Act	26-27
27.	Admissibility of Contract	27

STANDARD CLAUSES FOR NYS CONTRACTS

The parties to the attached contract, license, lease, amendment or other agreement of any kind (hereinafter, "the contract" or "this contract") agree to be bound by the following clauses which are hereby made a part of the contract (the word "Contractor" herein refers to any party other than the State, whether a contractor, licenser, licensee, lessor, lessee or any other party):

1. EXECUTORY CLAUSE. In accordance with Section 41 of the State Finance Law, the State shall have no liability under this contract to the Contractor or to anyone else beyond funds appropriated and available for this contract.

2. NON-ASSIGNMENT CLAUSE. In accordance with Section 138 of the State Finance Law, this contract may not be assigned by the Contractor or its right, title or interest therein assigned, transferred, conveyed, sublet or otherwise disposed of without the State's previous written consent, and attempts to do so are null and void. Notwithstanding the foregoing, such prior written consent of an assignment of a contract let pursuant to Article XI of the State Finance Law may be waived at the discretion of the contracting agency and with the concurrence of the State Comptroller where the original contract was subject to the State Comptroller's approval, where the assignment is due to a reorganization, merger or consolidation of the Contractor's business entity or enterprise. The State retains its right to approve an assignment and to require that any Contractor demonstrate its responsibility to do business with the State. The Contractor may, however, assign its right to receive payments without the State's prior written consent unless this contract concerns Certificates of Participation pursuant to Article 5-A of the State Finance Law.

3. COMPTROLLER'S APPROVAL. In accordance with Section 112 of the State Finance Law, if this contract exceeds $50,000 (or $75,000 for State University of New York or City University of New York contracts for goods, services, construction and printing, and $150,000 for State University Health Care Facilities) or if this is an amendment for any amount to a contract which, as so amended, exceeds said statutory amount, or if, by this contract, the State agrees to give something other than money when the value or reasonably estimated value of such consideration exceeds $25,000, it shall not be valid, effective or binding upon the State until it has been approved by the State Comptroller and filed in his office. Comptroller's approval of contracts let by the Office of General Services, either for itself or its customer agencies by the Office of General Services Business Services Center, is required when such contracts exceed $85,000. Comptroller's approval of contracts established as centralized contracts through the Office of General Services is required when such contracts exceed $125,000, and when a purchase order or other procurement transaction issued under such centralized contract exceeds $200,000.

4. WORKERS' COMPENSATION BENEFITS. In accordance with Section 142 of the State Finance Law, this contract shall be void and of no force and effect unless the Contractor shall provide and maintain coverage during the life of this contract for the benefit of such employees as are required to be covered by the provisions of the Workers' Compensation Law.

5. NON-DISCRIMINATION REQUIREMENTS. To the extent required by Article 15 of the Executive Law (also known as the Human Rights Law) and all other State and Federal statutory and constitutional non-discrimination provisions, the Contractor will not discriminate against any employee or applicant for employment, nor subject any individual to harassment, because of age, race, creed, color, national origin, citizenship or immigration status, sexual orientation, gender identity or expression, military status, sex, disability, predisposing genetic characteristics, familial status, marital status, or domestic violence victim status or because the individual has opposed any practices forbidden under the Human Rights Law or has filed a complaint, testified, or assisted in any proceeding under the Human Rights Law. Furthermore, in accordance with Section 220-e of the Labor Law, if this is a contract for the construction, alteration or repair of any public building or public work or for the manufacture, sale or distribution of materials, equipment or supplies, and to the extent that this contract shall be performed within the State of New York, Contractor agrees that neither it nor its subcontractors shall, by reason of race, creed, color, disability, sex, or national origin: (a) discriminate in hiring against any New York State citizen who is qualified and available to perform the work; or (b) discriminate against or intimidate any employee hired for the performance of work under this contract. If this is a building service contract as defined in Section 230 of the Labor Law, then, in accordance with Section 239 thereof, Contractor agrees that neither it nor its subcontractors shall by reason of race, creed, color, national origin, age, sex or disability: (a) discriminate in hiring against any New York State citizen who is qualified and available to perform the work; or (b) discriminate against or intimidate any employee hired for the performance of work under this contract. Contractor is subject to fines of $50.00 per person per day for any violation of Section 220-e or Section 239 as well as possible termination of this contract and forfeiture of all moneys due hereunder for a second or subsequent violation.

6. WAGE AND HOURS PROVISIONS. If this is a public work contract covered by Article 8 of the Labor Law or a building service contract covered by Article 9 thereof, neither Contractor's employees nor the

employees of its subcontractors may be required or permitted to work more than the number of hours or days stated in said statutes, except as otherwise provided in the Labor Law and as set forth in prevailing wage and supplement schedules issued by the State Labor Department. Furthermore, Contractor and its subcontractors must pay at least the prevailing wage rate and pay or provide the prevailing supplements, including the premium rates for overtime pay, as determined by the State Labor Department in accordance with the Labor Law. Additionally, effective April 28, 2008, if this is a public work contract covered by Article 8 of the Labor Law, the Contractor understands and agrees that the filing of payrolls in a manner consistent with Subdivision 3-a of Section 220 of the Labor Law shall be a condition precedent to payment by the State of any State approved sums due and owing for work done upon the project.

7. NON-COLLUSIVE BIDDING CERTIFICATION. In accordance with Section 139-d of the State Finance Law, if this contract was awarded based upon the submission of bids, Contractor affirms, under penalty of perjury, that its bid was arrived at independently and without collusion aimed at restricting competition. Contractor further affirms that, at the time Contractor submitted its bid, an authorized and responsible person executed and delivered to the State a non-collusive bidding certification on Contractor's behalf.

8. INTERNATIONAL BOYCOTT PROHIBITION. In accordance with Section 220-f of the Labor Law and Section 139-h of the State Finance Law, if this contract exceeds $5,000, the Contractor agrees, as a material condition of the contract, that neither the Contractor nor any substantially owned or affiliated person, firm, partnership or corporation has participated, is participating, or shall participate in an international boycott in violation of the federal Export Administration Act of 1979 (50 USC App. Sections 2401 et seq.) or regulations thereunder. If such Contractor, or any of the aforesaid affiliates of Contractor, is convicted or is otherwise found to have violated said laws or regulations upon the final determination of the United States Commerce Department or any other appropriate agency of the United States subsequent to the contract's execution, such contract, amendment or modification thereto shall be rendered forfeit and void. The Contractor shall so notify the State Comptroller within five (5) business days of such conviction, determination or disposition of appeal (2 NYCRR § 105.4).

9. SET-OFF RIGHTS. The State shall have all of its common law, equitable and statutory rights of set-off. These rights shall include, but not be limited to, the State's option to withhold for the purposes of set-off any moneys due to the Contractor under this contract up to any amounts due and owing to the State with regard to this contract, any other contract with any State department or agency, including any contract for a term commencing prior to the term of this contract, plus any amounts due and owing to the State for any other reason including, without limitation, tax delinquencies, fee delinquencies or monetary penalties relative thereto. The State shall exercise its set-off rights in accordance with normal State practices including, in cases of set-off pursuant to an audit, the finalization of such audit by the State agency, its representatives, or the State Comptroller.

10. RECORDS. The Contractor shall establish and maintain complete and accurate books, records, documents, accounts and other evidence directly pertinent to performance under this contract (hereinafter, collectively, the "Records"). The Records must be kept for the balance of the calendar year in which they were made and for six (6) additional years thereafter. The State Comptroller, the Attorney General and any other person or entity authorized to conduct an examination, as well as the agency or agencies involved in this contract, shall have access to the Records during normal business hours at an office of the Contractor within the State of New York or, if no such office is available, at a mutually agreeable and reasonable venue within the State, for the term specified above for the purposes of inspection, auditing and copying. The State shall take reasonable steps to protect from public disclosure any of the Records which are exempt from disclosure under Section 87 of the Public Officers Law (the "Statute") provided that: (i) the Contractor shall timely inform an appropriate State official, in writing, that said records should not be disclosed; and (ii) said records shall be sufficiently identified; and (iii) designation of said records as exempt under the Statute is reasonable. Nothing contained herein shall diminish, or in any way adversely affect, the State's right to discovery in any pending or future litigation.

11. IDENTIFYING INFORMATION AND PRIVACY NOTIFICATION. (a) Identification Number(s). Every invoice or New York State Claim for Payment submitted to a New York State agency by a payee, for payment for the sale of goods or services or for transactions (e.g., leases, easements, licenses, etc.) related to real or personal property must include the payee's identification number. The number is any or all of the following: (i) the payee's Federal employer identification number, (ii) the payee's Federal social security number, and/or (iii) the payee's Vendor Identification Number assigned by the Statewide Financial System. Failure to include such number or numbers may delay payment. Where the payee does not have such number or numbers, the payee, on its invoice or Claim for Payment, must give the reason or reasons why the payee does not have such number or numbers.

(b) Privacy Notification. (1) The authority to request the above personal information from a seller of goods or services or a lessor of real or personal property, and the authority to maintain such information, is found in Section 5 of the State Tax Law. Disclosure of this information by the seller or lessor to the State is mandatory. The principal purpose for which the information is collected is to enable the State to identify individuals, businesses and others who have been delinquent in filing tax returns or may have understated their tax liabilities and to generally identify persons affected by the taxes administered by the Commissioner of Taxation and Finance. The information will be used for tax administration purposes and for any other purpose authorized by law. (2) The personal information is requested by the purchasing unit of the agency contracting to purchase the goods or services or lease the real or personal property covered by this contract or lease. The information is maintained in the Statewide Financial System by the Vendor Management Unit within the Bureau of State Expenditures, Office of the State Comptroller, 110 State Street, Albany, New York 12236.

12. EQUAL EMPLOYMENT OPPORTUNITIES FOR MINORITIES AND WOMEN. In accordance with Section 312 of the Executive Law and 5 NYCRR Part 143, if this contract is: (i) a written agreement or purchase order instrument, providing for a total expenditure in excess of $25,000.00, whereby a contracting agency is committed to expend or does expend funds in return for labor, services, supplies, equipment, materials or any combination of the foregoing, to be performed for, or rendered or furnished to the contracting agency; or (ii) a written agreement in excess of $100,000.00 whereby a contracting agency is committed to expend or does expend funds for the acquisition, construction, demolition, replacement, major repair or renovation of real property and improvements thereon; or (iii) a written agreement in excess of $100,000.00 whereby the owner of a State assisted housing project is committed to expend or does expend funds for the acquisition, construction, demolition, replacement, major repair or renovation of real property and improvements thereon for such project, then the following shall apply and by signing this agreement the Contractor certifies and affirms that it is Contractor's equal employment opportunity policy that:

(a) The Contractor will not discriminate against employees or applicants for employment because of race, creed, color, national origin, sex, age, disability or marital status, shall make and document its conscientious and active efforts to employ and utilize minority group members and women in its work force on State contracts and will undertake or continue existing programs of affirmative action to ensure that minority group members and women are afforded equal employment opportunities without discrimination. Affirmative action shall mean recruitment, employment, job assignment, promotion, upgradings, demotion, transfer, layoff, or termination and rates of pay or other forms of compensation;

(b) at the request of the contracting agency, the Contractor shall request each employment agency, labor union, or authorized representative of workers with which it has a collective bargaining or other agreement or understanding, to furnish a written statement that such employment agency, labor union or representative will not discriminate on the basis of race, creed, color, national origin, sex, age, disability or marital status and that such union or representative will affirmatively cooperate in the implementation of the Contractor's obligations herein; and

(c) the Contractor shall state, in all solicitations or advertisements for employees, that, in the performance of the State contract, all qualified applicants will be afforded equal employment opportunities without discrimination because of race, creed, color, national origin, sex, age, disability or marital status.

Contractor will include the provisions of "(a), (b) and (c)" above, in every subcontract over $25,000.00 for the construction, demolition, replacement, major repair, renovation, planning or design of real property and improvements thereon (the "Work") except where the Work is for the beneficial use of the Contractor. Section 312 does not apply to: (i) work, goods or services unrelated to this contract; or (ii) employment outside New York State. The State shall consider compliance by a contractor or subcontractor with the requirements of any federal law concerning equal employment opportunity which effectuates the purpose of this clause. The contracting agency shall determine whether the imposition of the requirements of the provisions hereof duplicate or conflict with any such federal law and if such duplication or conflict exists, the contracting agency shall waive the applicability of Section 312 to the extent of such duplication or conflict. Contractor will comply with all duly promulgated and lawful rules and regulations of the Department of Economic Development's Division of Minority and Women's Business Development pertaining hereto.

13. CONFLICTING TERMS. In the event of a conflict between the terms of the contract (including any and all attachments thereto and amendments thereof) and the terms of this Appendix A, the terms of this Appendix A shall control.

14. GOVERNING LAW. This contract shall be governed by the laws of the State of New York except where the Federal supremacy clause requires otherwise.

15. LATE PAYMENT. Timeliness of payment and any interest to be paid to Contractor for late payment shall be governed by Article 11-A of the State Finance Law to the extent required by law.

16. NO ARBITRATION. Disputes involving this contract, including the breach or alleged breach thereof, may not be submitted to binding arbitration (except where statutorily authorized), but must, instead, be heard in a court of competent jurisdiction of the State of New York.

17. SERVICE OF PROCESS. In addition to the methods of service allowed by the State Civil Practice Law & Rules ("CPLR"), Contractor hereby consents to service of process upon it by registered or certified mail, return receipt requested. Service hereunder shall be complete upon Contractor's actual receipt of process or upon the State's receipt of the return thereof by the United States Postal Service as refused or undeliverable. Contractor must promptly notify the State, in writing, of each and every change of address to which service of process can be made. Service by the State to the last known address shall be sufficient. Contractor will have thirty (30) calendar days after service hereunder is complete in which to respond.

18. PROHIBITION ON PURCHASE OF TROPICAL HARDWOODS. The Contractor certifies and warrants that all wood products to be used under this contract award will be in accordance with, but not limited to, the specifications and provisions of Section 165 of the State Finance Law, (Use of Tropical Hardwoods) which prohibits purchase and use of tropical hardwoods, unless specifically exempted, by the State or any governmental agency or political subdivision or public benefit corporation. Qualification for an exemption under this law will be the responsibility of the contractor to establish to meet with the approval of the State.

In addition, when any portion of this contract involving the use of woods, whether supply or installation, is to be performed by any subcontractor, the prime Contractor will indicate and certify in the submitted bid proposal that the subcontractor has been informed and is in compliance with specifications and provisions regarding use of tropical hardwoods as detailed in § 165 State Finance Law. Any such use must meet with the approval of the State; otherwise, the bid may not be considered responsive. Under bidder certifications, proof of qualification for exemption will be the responsibility of the Contractor to meet with the approval of the State.

19. MACBRIDE FAIR EMPLOYMENT PRINCIPLES. In accordance with the MacBride Fair Employment Principles (Chapter 807 of the Laws of 1992), the Contractor hereby stipulates that the Contractor either (a) has no business operations in Northern Ireland, or (b) shall take lawful steps in good faith to conduct any business operations in Northern Ireland in accordance with the MacBride Fair Employment Principles (as described in Section 165 of the New York State Finance Law), and shall permit independent monitoring of compliance with such principles.

20. OMNIBUS PROCUREMENT ACT OF 1992. It is the policy of New York State to maximize opportunities for the participation of New York State business enterprises, including minority- and women-owned business enterprises as bidders, subcontractors and suppliers on its procurement contracts.

Information on the availability of New York State subcontractors and suppliers is available from:

NYS Department of Economic Development
Division for Small Business and Technology Development
625 Broadway
Albany, New York 12245
Telephone: 518-292-5100

A directory of certified minority- and women-owned business enterprises is available from:

NYS Department of Economic Development
Division of Minority and Women's Business Development
633 Third Avenue 33rd Floor
New York, NY 10017
646-846-7364
email: mwbebusinessdev@esd.ny.gov
https://ny.newnycontracts.com/FrontEnd/searchcertifieddirectory.asp

The Omnibus Procurement Act of 1992 (Chapter 844 of the Laws of 1992, codified in State Finance Law § 139-i and Public Authorities Law § 2879(3)(n)–(p)) requires that by signing this bid proposal or contract, as applicable, Contractors certify that whenever the total bid amount is greater than $1 million:

(a) The Contractor has made reasonable efforts to encourage the participation of New York State Business Enterprises as suppliers and subcontractors, including certified minority- and women-owned business enterprises, on this project, and has retained the documentation of these efforts to be provided upon request to the State;

(b) The Contractor has complied with the Federal Equal Opportunity Act of 1972 (P.L. 92-261), as amended;

(c) The Contractor agrees to make reasonable efforts to provide notification to New York State residents of employment opportunities on this project through listing any such positions with the Job Service Division of the New York State Department of Labor, or providing such notification in such manner as is consistent with existing collective bargaining contracts or agreements. The Contractor agrees to document these efforts and to provide said documentation to the State upon request; and

(d) The Contractor acknowledges notice that the State may seek to obtain offset credits from foreign countries as a result of this contract and agrees to cooperate with the State in these efforts.

21. RECIPROCITY AND SANCTIONS PROVISIONS. Bidders are hereby notified that if their principal place of business is located in a country, nation, province, state or political subdivision that penalizes New York State vendors, and if the goods or services they offer will be substantially produced or performed outside New York State, the Omnibus Procurement Act 1994 and 2000 amendments (Chapter 684 and Chapter 383, respectively, codified in State Finance Law § 165(6) and Public Authorities Law § 2879(5)) require that they be denied contracts which they would otherwise obtain. NOTE: As of May 2023, the list of discriminatory jurisdictions subject to this provision includes the states of South Carolina, Alaska, West Virginia, Wyoming, Louisiana and Hawaii.

22. COMPLIANCE WITH BREACH NOTIFICATION AND DATA SECURITY LAWS. Contractor shall comply with the provisions of the New York State Information Security Breach and Notification Act (General Business Law §§ 899-aa and 899-bb and State Technology Law § 208).

23. COMPLIANCE WITH CONSULTANT DISCLOSURE LAW. If this is a contract for consulting services, defined for purposes of this requirement to include analysis, evaluation, research, training, data processing, computer programming, engineering, environmental, health, and mental health services, accounting, auditing, paralegal, legal or similar services, then, in accordance with Section 163 (4)(g) of the State Finance Law (as amended by Chapter 10 of the Laws of 2006), the Contractor shall timely, accurately and properly comply with the requirement to submit an annual employment report for the contract to the agency that awarded the contract, the Department of Civil Service and the State Comptroller.

24. PROCUREMENT LOBBYING. To the extent this agreement is a "procurement contract" as defined by State Finance Law §§ 139-j and 139-k, by signing this agreement the contractor certifies and affirms that all disclosures made in accordance with State Finance Law §§ 139-j and 139-k are complete, true and accurate. In the event such certification is found to be intentionally false or intentionally incomplete, the State may terminate the agreement by providing written notification to the Contractor in accordance with the terms of the agreement.

25. CERTIFICATION OF REGISTRATION TO COLLECT SALES AND COMPENSATING USE TAX BY CERTAIN STATE CONTRACTORS, AFFILIATES AND SUBCONTRACTORS.
To the extent this agreement is a contract as defined by Tax Law § 5-a, if the contractor fails to make the certification required by Tax Law § 5-a or if during the term of the contract, the Department of Taxation and Finance or the covered agency, as defined by Tax Law § 5-a, discovers that the certification, made under penalty of perjury, is false, then such failure to file or false certification shall be a material breach of this contract and this contract may be terminated, by providing written notification to the Contractor in accordance with the terms of the agreement, if the covered agency determines that such action is in the best interest of the State.

26. IRAN DIVESTMENT ACT. By entering into this Agreement, Contractor certifies in accordance with State Finance Law § 165-a that it is not on the "Entities Determined to be Non-Responsive Bidders/Offerers pursuant to the New York State Iran Divestment Act of 2012" ("Prohibited Entities List") posted at: https://ogs.ny.gov/iran-divestment-act-2012

Contractor further certifies that it will not utilize on this Contract any subcontractor that is identified on the Prohibited Entities List. Contractor agrees that should it seek to renew or extend this Contract, it must provide the same certification at the time the Contract is renewed or extended. Contractor also agrees that any proposed Assignee of this Contract will be required to certify that it is not on the Prohibited Entities List before the contract assignment will be approved by the State.

During the term of the Contract, should the state agency receive information that a person (as defined in State Finance Law § 165-a) is in violation of the above-referenced certifications, the state agency will review such information and offer the person an opportunity to respond. If the person fails to demonstrate that it has ceased its engagement in the investment activity which is in violation of the Act within 90 days after the determination of such violation, then the state agency shall take such action as may be appropriate and provided for by law, rule, or contract, including, but not limited to, imposing sanctions, seeking compliance, recovering damages, or declaring the Contractor in default.

The state agency reserves the right to reject any bid, request for assignment, renewal or extension for an entity that appears on the Prohibited Entities List prior to the award, assignment, renewal or extension of a contract, and to pursue a responsibility review with respect to any entity that is awarded a contract and appears on the Prohibited Entities list after contract award.

27. ADMISSIBILITY OF REPRODUCTION OF CONTRACT. Notwithstanding the best evidence rule or any other legal principle or rule of evidence to the contrary, the Contractor acknowledges and agrees that it waives any and all objections to the admissibility into evidence at any court proceeding or to the use at any examination before trial of an electronic reproduction of this contract, in the form approved by the State Comptroller, if such approval was required, regardless of whether the original of said contract is in existence.

1. If the Contractor performs the Contract, the Surety and the Contractor shall have no obligation under the Performance Bond.

2. The Surety's obligation under this Bond shall arise after:

2.1 The State has notified the Contractor and the Surety in writing that the State is considering declaring a Contractor in default, or

2.2 The State has declared a Contractor in default and formally terminated the Contractor's right to complete the Contract, and

2.3 The State has agreed to pay the Balance of the Contract Price to the Surety or to a Contractor selected to complete the Contract in accordance with the terms of the Contract with the State.

3. The Surety shall promptly and at its own expense, take the following actions:

3.1 Undertake to perform and complete the Contract, through its agent or retained contractor; according to the following schedule:

Day 1-10 Immediately begins it investigation Advises OGS of its Representatives.

Day 10-25 Visits Site with OGS representatives to review the contract documents and completed work; and determines extent of acceptable Work.

Day 25-30 Submits proposed completion contractor, completion plan, and CPM as required, for approval by the Office of General Services.

Day 30-44 As completing contractor, the surety or its representative, presents its list of subcontractors to OGS for approval. Additionally an Insurance Certificate naming the Surety and completion Contractor as named insured must be submitted to the Contracting Officer prior to the beginning any completion of the Work. The completion plan and schedule is returned to Surety.

Day 45 Surety begins the Completion of the Work.

4. If the Surety does not proceed with reasonable promptness, the Surety shall be deemed to be in default on the Bond, and the State shall be entitled to enforce any remedy available pursuant to the terms of the contract.

5. After the State has terminated the Contractor's right to complete the Contract, and if the Surety elects to act then the responsibilities of the Surety to the State shall not be greater than those of the Contractor under the Contract, and the responsibilities of the State to the Surety shall not be greater than those provided under the Contract. To the limit of the amount of this Bond, the Surety is obligated to correct defective work and complete the work of the Contract in a timely manner.

6. The penal sum of the Performance Bond furnished by the contractor to the State, approved and filed with the Office of the State Comptroller, in no way shall be impaired or affected by any other bond that may relate to the contract in question.

END OF DOCUMENT

DOCUMENT 007305

SUPPLEMENTARY CONDITIONS - LIQUIDATED DAMAGES

This supplement modifies the General Conditions. Where any part of the General Conditions is modified by this supplement, the unaltered provisions of that part shall remain in effect.

ARTICLE 2 - DEFINITIONS

2.11 Delete this Paragraph in its entirety and replace with the following:

2.11 The term "liquidated damages" means the amount of money to be assessed against the Contractor for delay in completion of the Work.

ARTICLE 13 - TIME OF COMPLETION AND TERMINATION FOR CAUSE

13.3 Delete this Paragraph in its entirety and replace with the following:

13.3 Liquidated Damages: Should Contractor fail to substantially complete the Work within the time frame set forth in the contract, or as described in a subsequent Order(s) on Contract, the Group Director may assess Liquidated Damages for such failure in the amount of $1,000.00 per day until such time as the Group Director determines that the Work is substantially complete as defined in Section 2.21 herein. Should Contractor fail to achieve physical completion of the work within the time frame set forth in the contract, the Group Director may assess Liquidated Damages for such failure in the amount of $500.00 per day until such time as the Group Director determines that the Work is physically complete as defined in Section 2.12 herein. Notwithstanding the provisions of Article 21 herein, Contractor agrees that the Group Director may withhold the sum of the Liquidated Damages from payments to be made to Contractor as compensation to the State for administrative fees and public inconvenience.

END OF DOCUMENT

DOCUMENT 007306

SUPPLEMENTARY CONDITIONS - WARRANTY EXTENSION

This supplement modifies the General Conditions. Where any part of the General Conditions is modified by this supplement, the unaltered provision of that part shall remain in effect.

ARTICLE 9 - INSPECTION AND ACCEPTANCE

9.8 Add the following sub-paragraph:

9.8.1 The one year period required by Paragraph 9.8 of the General Conditions is extended and supplemented for part of the work as described in Section 074213, 075323, 079219 of the Specifications.

END OF DOCUMENT

DOCUMENT 007307

SUPPLEMENTARY CONDITIONS – MWBE-EEO

CONTRACTOR REQUIREMENTS AND PROCEDURES FOR PARTICIPATION BY NEW YORK STATE CERTIFIED MINORITY- AND WOMEN-OWNED BUSINESS ENTERPRISES AND EQUAL EMPLOYMENT OPPORTUNITIES FOR MINORITY GROUP MEMBERS AND WOMEN

This supplement modifies the General Conditions. Where any part of the General Conditions is modified by this supplement, the unaltered provisions of that part shall remain in effect.

ARTICLE 16 - REQUIREMENTS FOR UTILIZATION OF MINORITY- AND WOMEN-OWNED BUSINESS ENTERPRISES (MWBEs)

Add the following:

16.6 Participation by Minority Group Members and Women with Respect to State Contracts: Requirements and Procedures: General Provisions:

16.6.1 OGS is required to implement the provisions of New York State Executive Law Article 15-A and 5 NYCRR Parts 140-145 ("MWBE Regulations") for all State contracts as defined therein, with a value (1) in excess of $25,000 for labor, services, equipment, materials, or any combination of the foregoing or (2) in excess of $100,000 for real property renovations and construction (the "Work").

16.6.2 The Contractor agrees, in addition to any other nondiscrimination provision of the Contract and at no additional cost to OGS, to fully comply and cooperate with OGS in the implementation of New York State Executive Law Article 15-A and the regulations promulgated thereunder. These requirements include equal employment opportunities for minority group members and women ("EEO") and contracting opportunities for MWBEs. Contractor's demonstration of "good faith efforts" pursuant to 5 NYCRR §142.8 shall be a part of these requirements. These provisions shall be deemed supplementary to, and not in lieu of, the nondiscrimination provisions required by New York State Executive Law Article 15 (the "Human Rights Law") or other applicable federal, State or local laws.

16.6.3 Failure to comply with all of the requirements herein may result in a finding of non-responsiveness, a finding of non-responsibility, a breach of contract, leading to the withholding of funds, liquidated damages pursuant to Section 27.9 herein, and/or enforcement proceedings as allowed by the Contract and applicable law.

16.7 Contract Goals:

16.7.1 OGS hereby establishes an overall goal of 30% for MWBE participation, 15% for Minority-Owned Business Enterprises ("MBE") participation and 15% for Women-Owned Business Enterprises ("WBE") participation (based on the current availability of MBEs and WBEs). The total contract goal can be obtained by utilizing any combination of MBE and /or WBE participation for subcontracting and supplies acquired under this Contract.

16.7.2 For purposes of providing meaningful participation by MWBEs on the Contract and achieving the Contract Goals established in Section 16.7.1 hereof, Contractor should reference the directory of NYS Certified MBWEs found at the following internet address:

https://ny.newnycontracts.com/FrontEnd/VendorSearchPublic.asp?TN=ny&XID=2528.

The MWBE Regulations are located at 5 NYCRR §§ 140 – 145. Additionally, Contractor is encouraged to contact the Division of Minority and Women's Business Development (518) 292-5250; (212) 803-2414; or (716) 846-8200) to discuss additional methods of maximizing participation by MWBEs on the Contract.

16.7.3 Pursuant to 5 NYCRR §142.8, Contractor must document "good faith efforts" to provide meaningful participation by MWBEs as subcontractors or suppliers in the performance of the Contract.

16.7.4 In accordance with Executive Law Section 316-a and 5 NYCRR §142.13, the Contractor acknowledges that if it is found to have willfully and intentionally failed to comply with the MWBE participation goals set forth in the Contract, such a finding constitutes a breach of contract and the Contractor shall be liable to OGS for liquidated or other appropriate damages, as set forth herein.

16.7.5 In accordance with 5 NYCRR § 142.8, Contractors must document their good faith efforts toward utilizing MWBEs on the Contract. Evidence of required good faith efforts shall include, but not be limited to, the following:

a. A list of the general circulation, trade, and MWBE-oriented publications and dates of publications in which the Contractor solicited the participation of certified MWBEs as subcontractors/suppliers, copies of such solicitations, and any responses thereto.

b. A list of certified MWBEs appearing in the Empire State Development ("ESD") MWBE directory that were solicited for this Contract. Provide proof of dates or copies of the solicitations and copies of the responses made by the certified MWBEs. Describe specific reasons that responding certified MWBEs were not selected.

c. Descriptions of the Contract documents/plans/specifications made available to certified MWBEs by the Contractor when soliciting their participation and steps taken to structure the scope of work for the purpose of subcontracting with, or obtaining supplies from, certified MWBEs.

d. A description of the negotiations between the Contractor and certified MWBEs for the purposes of complying with the MWBE goals of this Contract.

e. Dates of any pre-bid, pre-award, or other meetings attended by Contractor, if any, scheduled by OGS with certified MWBEs whom OGS determined were capable of fulfilling the MWBE goals set in the Contract.

f. Other information deemed relevant to the request.

16.7.6 The goal for participation in the conduct of the Work is expressed as a percentage equal to the dollar value of the Work performed divided by the Contract Sum. Where the cost to the Contractor of a single item of equipment exceeds twenty-five percent (25%) of the total contract price and where the Contractor has shown good faith efforts to obtain such equipment from MWBE manufacturers and suppliers, and was unsuccessful in obtaining the equipment from an MWBE, the cost of such equipment shall be deducted from the contract sum prior to computing the MWBE participation.

16.7.7 The MWBE utilization credit for Work performed by MWBEs will be determined as follows:

a. Where an MWBE is not the Contractor - MWBE utilization credit will vary depending on how the MWBE performs Work under the Contract, as follows:

i. Where the MWBE performs Work under the Contract as a subcontractor, MBE or WBE utilization credit will be 100% of the dollar value of the Work performed by the MBE or WBE.

ii. Where the MWBE performs Work under the Contract as a manufacturer, MBE or WBE utilization credit will be 100% of the dollar value of the Work performed by the MBE or WBE.

iii. Where the MWBE assists in the performance of the Work under the Contract as a supplier, MBE or WBE utilization credit will be 60% of the dollar value of the Work performed by the MBE or WBE.

iv. Where the MWBE assists in the performance of the Work under the Contract as a broker, MBE or WBE utilization credit will be equal to the percentage of the commission, or the mark-up percentage, of the items brokered, applied to the dollar value of the Work performed by the MBE or WBE.

b. Where the Contractor is a joint venture including one or more MWBEs as joint venturers, MBE or WBE utilization credit will be the Contract Sum multiplied by the percentage of the joint venture's profits (or losses) that are to accrue to the MWBE joint venturer(s) under the joint venture agreement.

c. Where any MWBE is the Contractor or where the Contractor is a joint venture consisting entirely of MWBEs, and the Contractor can document good faith efforts to subcontract to MWBE subcontractors and/or suppliers - the Contract Sum.

Add the following articles:

ARTICLE 26 – EQUAL EMPLOYMENT OPPORTUNITY (EEO)

26.1 The provisions of Article 15-A of the Executive Law and the rules and regulations promulgated thereunder pertaining to equal employment opportunities for minority group members and women shall apply to all Contractors, and any subcontractors, awarded a subcontract over $25,000 for labor, services, including legal, financial and other professional services, travel, supplies, equipment, materials, or any combination of the foregoing, to be performed, or rendered or furnished to, the contracting State agency ("the Work") except where the Work is for the beneficial use of the Contractor.

26.1.1 Contractor and Subcontractors shall undertake or continue existing EEO programs to ensure that minority group members and women are afforded equal employment opportunities without discrimination because of race, creed, color, national origin, sex, age, disability, or marital status. For these purposes, EEO shall apply in the areas of recruitment, employment, job assignment, promotion, upgrading, demotion, transfer, layoff or termination, and rates of pay or other forms of compensation. This requirement does not apply to: (i) the performance of work or the provision of services or any other activity that is unrelated, separate, or distinct from the Contract; or (ii) employment outside New York State.

26.1.2 By entering into this Contract, Contractor certifies that the text set forth in clause 12 of Appendix A, attached hereto and made a part hereof, is Contractor's equal employment opportunity policy. In addition, Contractor agrees to comply with the Non-Discrimination Requirements set forth in clause 5 of Appendix A.

The Contractor will include the provisions of Clause 26.1.2 and Clause 26.3 of this Article, which provides for relevant provisions of the Human Rights Law, in every subcontract in such a manner that the requirements of the subdivisions will be binding upon each subcontractor as to work in connection with the Contract.

26.2 New York State Contract System Workforce Utilization Reporting Module (Construction)

The Contractor shall submit, and shall require each of its subcontractors to submit, a Workforce Audit throughout the term of this Contract, by the 10th day of each month to report the actual workforce utilized during the previous month in the performance of the Contract by the specified categories listed including ethnic background, gender, and Federal

occupational categories. Contractor shall coordinate with its subcontractors to ensure that all workers associated with this Contract are properly counted and reported. To prepare the report, Contractor and its subcontractors shall use the New York State Contract System Workforce Audit Module found at the following website:

https://ny.newnycontracts.com/

The Workforce Audit must be submitted electronically in the New York State Contract System (NYSCS). Separate audits shall be completed by Contractor and all subcontractors. In limited instances, the Contractor or subcontractor may not be able to separate out the workforce utilized in the performance of the Contract from its total workforce. When a separation can be made, the Contractor or subcontractor shall submit the Workforce Audit and indicate that the information provided relates to the actual workforce utilized on the Contract. When the workforce to be utilized on the Contract cannot be separated out from the Contractor's or subcontractor's total workforce, the Contractor or subcontractor shall submit the Workforce Audit and indicate that the information provided is the Contractor's or subcontractor's total workforce during the subject time frame, not limited to work specifically performed under the Contract.

26.3 Contractor shall comply with the provisions of the Human Rights Law and all other State and Federal statutory and constitutional non-discrimination provisions. Contractor and subcontractors shall not discriminate against any employee or applicant for employment because of race, creed (religion), color, sex, national origin, sexual orientation, military status, age, disability, predisposing genetic characteristic, marital status or domestic violence victim status, and shall also follow the requirements of the Human Rights Law with regard to non-discrimination on the basis of prior criminal conviction and prior arrest.

ARTICLE 27- MWBE COMPLIANCE

27.1 By entering into a Contract with OGS, Contractor certifies that it has submitted a completed MWBE Utilization Plan via the New York State Contract System (NYSCS) prior to contract award and will follow such Plan for the performance of MWBEs on the Contract pursuant to the prescribed MWBE goals set forth in Section 16.7.1 of this Supplement. The NYSCS may be accessed at **https://ny.newnycontracts.com**. The Utilization Plan shall list the MWBEs the Bidder intends to use to perform the Contract, a description of the Contract scope of work the Bidder intends the MWBE to perform to meet the goals on the Contract, and the estimated, or if known, actual dollar amounts to be paid to an MWBE. If Contractor is unable to submit such Plan through the NYSCS, Contractor certifies that it used Form BDC 328 (Contractor's Utilization Plan) to submit the Plan. The BDC 328 form is available for download at https://ogs.ny.gov/mwbe/forms.

27.2 By entering into the Contract, Bidder/Contractor understands that only sums paid to MWBEs for the performance of a commercially useful function, as that term is defined in 5 NYCRR § 140.1, may be applied towards the achievement of the applicable MWBE participation goal. When an MWBE is serving as a broker on the Contract, only 25 percent of all sums paid to a broker shall be deemed to represent the commercially useful function performed by the MWBE.

27.3 OGS will review the submitted MWBE Utilization Plan and advise the Bidder of OGS' acceptance or issue a notice of deficiency within 30 calendar days of receipt. Contractor understands that making false representations or including information evidencing a lack of good faith as part of, or in conjunction with, the submission of a Utilization Plan is prohibited by law and may result in penalties including, but not limited to, termination of a contract for cause, loss of eligibility to submit future bids, and/or withholding of payments.

27.4 Contractor further agrees that a failure to submit and/or use such MWBE Utilization Plan shall constitute a material breach of the terms of the Contract. Upon the occurrence of such a material breach, OGS shall be entitled to any remedy provided herein, including but not limited to, a finding of Contractor non-responsiveness.

27.5 Access to the Contractor's Books: The Contractor shall permit access to its books, records and accounts by the State for purposes of investigation to ascertain compliance with the provisions of this Article. The contractor shall include this provision in every subcontract so that such provision will be binding upon each subcontractor.

27.6 If the Contractor, after making good faith efforts, is unable to comply with MWBE goals, the Contractor may submit an Application for MWBE Waiver form (BDC 333) documenting good faith efforts by the Contractor to meet such goals. If the documentation included with the waiver request is complete, OGS shall evaluate the request and issue a written notice of acceptance or denial within twenty (20) business days of receipt.

27.7 If OGS, upon review of the MWBE Utilization Plan and updated Contractors list of Subcontractors and Suppliers determines that Contractor is failing or refusing to comply with the Contract goals and no waiver has been issued in regards to such non-compliance, OGS may issue a notice of deficiency to the Contractor. The Contractor must respond to the notice of deficiency within seven (7) business days of receipt. Such response may include a request for partial or total waiver of MWBE Contract Goals.

27.8 **Monthly MWBE Contractor Compliance Report**

27.8.1 In accordance with 5 NYCRR § 142.10, Contractor is required to report Monthly MWBE Contractor Compliance to OGS during the term of the Contract for the preceding month's activity, documenting progress made towards achievement of the Contract MWBE goals. OGS requests that all Contractors use the NYSCS to report subcontractor and supplier payments made by Contractor to MWBEs performing work under the Contract. The NYSCS may be accessed at **https://ny.newnycontracts.com**. This is a New York State-based system that all State agencies and authorities will be implementing to ensure uniform contract compliance reporting throughout New York State.

27.8.2 When a Contractor receives a payment from OGS under an OGS contract, it is the Contractor's responsibility to pay its subcontractors and suppliers in a timely manner. On or after the first day of each month, the Contractor will receive an e-mail or fax notification ("audit notice") indicating that a representative of its company needs to log-in to the NYSCS to report the company's MWBE subcontractor and supplier payments for the preceding month. The Contractor must also report when no payments have been made to a subcontractor or supplier in a particular month with entry of a zero dollar value in the NYSCS. Once subcontractor and supplier payments have been entered into the NYSCS, the subcontractor(s) and supplier(s) will receive an email or fax notification advising them to log into the NYSCS to confirm that they actually received the reported payments from the Contractor. It is the Contractor's responsibility to educate its MWBE subcontractors and suppliers about the NYSCS and the need to confirm payments made to them in the NYSCS.

27.8.3 To assist in the use of the NYSCS, OGS recommends that all Contractors and MWBE subcontractors and suppliers sign up for the following two webinar trainings offered through the NYSCS: "Introduction to the System – Vendor Training" and "Contract Compliance Reporting - Vendor Training" to become familiar with the NYSCS. To view the training schedule and to register visit:

https://ny.newnycontracts.com/events.asp.

27.8.4 As soon as possible after the Contract is approved, Contractor should visit https://ny.newnycontracts.com and click on "Account Lookup" to identify the Contractor's account by company name. Contact information should be reviewed and updated if necessary by choosing "Change Info." It is important that the staff member who is responsible for reporting payment information for the Contractor be listed as a user in the NYSCS. Users who are not already listed may be added through "Request New User." When identifying the person responsible, please add "- MWBE Contact" after their last name (i.e., John Doe – MWBE Contact) to ensure that the correct person receives audit notices from the NYSCS. NYSCS Technical Support should be contacted for any technical support questions by clicking on the links

for “Contact Us & Support” then “Technical Support” on the NYSCS website.

27.8.5 If Contractor is unable to report MWBE Contractor Compliance via the NYSCS, Contractor must submit Contractor’s Monthly Payment Report on Form BDC 58 to OGS, by the 10th day of each month during the term of the Contract, for the preceding month’s activity to: OGS OBD, 29th Floor Corning Tower, Empire State Plaza, Albany, NY 12242. Phone: 518-486-9284; Fax: 518-486-9285.

27.8.6 It is the Contractor’s responsibility to report subcontractor and supplier payments. Failure to respond to payment audits in a timely fashion through the NYSCS, or by paper to OGS, may jeopardize future payments pursuant to the MWBE liquidated damages clause in Section 27.9 below.

27.9 Liquidated Damages – MWBE Participation

27.9.1 Where OGS determines that Contractor is not in compliance with the requirements of the Contract and Contractor refuses to comply with such requirements, or if Contractor is found to have willfully and intentionally failed to comply with the MWBE participation goals, Contractor shall be obligated to pay liquidated damages to OGS.

27.9.2 Such liquidated damages shall be calculated as an amount equaling the difference between:

a. All sums identified for payment to MWBEs had the Contractor achieved the contractual MWBE goals; and

b. All sums actually paid to MWBEs for work performed or materials supplied under the Contract.

27.9.3 After the Contractor has been afforded the process it is due, if OGS determines that Contractor is liable for liquidated damages and such identified sums have not been withheld by OGS, Contractor shall pay such liquidated damages to OGS within sixty (60) days after they are assessed. Provided, however, that if the Contractor has filed a complaint with the Director of the Division of Minority and Women’s Business Development pursuant to 5 NYCRR § 142.12, liquidated damages shall be payable only in the event of a determination adverse to the Contractor following the complaint process.

27.10 Any suspicion of fraud, waste, or abuse involving the contracting or certification of MWBEs shall be immediately reported to ESD’s Division of Minority and Women’s Business Development at (855) 373-4692.

DOCUMENT 007308

SUPPLEMENTARY CONDITIONS – BUY AMERICA PREFERENCE

This supplement modifies the General Conditions. Where any part of the General Conditions is modified by this supplement, the unaltered provisions of that part shall remain in effect.

ARTICLE 25 – MISCELLANEOUS PROVISIONS

25.4 Delete this Paragraph in its entirety and replace with the following:

25.4 BUY AMERICA PREFERENCE

Recipients of an award of Federal financial assistance from a program for infrastructure are hereby notified that none of the funds provided under this award may be used for an infrastructure project unless:

(1) All iron and steel used in the project are produced in the United States—this means all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States;

(2) All manufactured products used in the project are produced in the United States— this means the manufactured product was manufactured in the United States; and the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of the total cost of all components of the manufactured product, unless another standard that meets or exceeds this standard has been established under applicable law or regulation for determining the minimum amount of domestic content of the manufactured product; and

(3) All construction materials are manufactured in the United States—this means that all manufacturing processes for the construction material occurred in the United States. The construction material standards are listed below.

Incorporation into an infrastructure project. The Buy America Preference only applies to articles, materials, and supplies that are consumed in, incorporated into, or affixed to an infrastructure project. As such, it does not apply to tools, equipment, and supplies, such as temporary scaffolding, brought to the construction site and removed at or before the completion of the infrastructure project. Nor does a Buy America Preference apply to equipment and furnishings, such as movable chairs, desks, and portable computer equipment, that are used at or within the finished infrastructure project, but are not an integral part of the structure or permanently affixed to the infrastructure project.

Categorization of articles, materials, and supplies. An article, material, or supply should only be classified into one of the following categories: (i) Iron or steel products; (ii) Manufactured products; (iii) Construction materials; or (iv) Section 70917(c) materials. An article, material, or supply should not be considered to fall into multiple categories. In some cases, an article, material, or supply may not fall under any of the categories listed in this paragraph. The classification of an article, material, or supply as falling into one of the categories listed in this paragraph must be made based on its status at the time it is brought to the work site for incorporation into an infrastructure project. In general, the work site is the location of the infrastructure project at which the iron, steel, manufactured products, and construction materials will be incorporated.

Application of the Buy America Preference by category. An article, material, or supply incorporated into an infrastructure project must meet the Buy America Preference for only the single category in which it is classified.

Determining the cost of components for manufactured products. In determining whether the cost of components for manufactured products is greater than 55 percent of the total cost of all components, use the following instructions:

(a) For components purchased by the manufacturer, the acquisition cost, including transportation costs to the place of incorporation into the manufactured product (whether or not such costs are paid to a domestic firm), and any applicable duty (whether or not a duty-free entry certificate is issued); or

(b) For components manufactured by the manufacturer, all costs associated with the manufacture of the component, including transportation costs as described in paragraph (a), plus allocable overhead costs, but excluding profit. Cost of components does not include any costs associated with the manufacture of the manufactured product.

Construction material standards. The Buy America Preference applies to the following construction materials incorporated into infrastructure projects. Each construction material is followed by a standard for the material to be considered "produced in the United States." Except as specifically provided, only a single standard should be applied to a single construction material.

(1) Non-ferrous metals. All manufacturing processes, from initial smelting or melting through final shaping, coating, and assembly, occurred in the United States.

(2) Plastic and polymer-based products. All manufacturing processes, from initial combination of constituent plastic or polymer-based inputs, or, where applicable, constituent composite materials, until the item is in its final form, occurred in the United States.

(3) Glass. All manufacturing processes, from initial batching and

melting of raw materials through annealing, cooling, and cutting, occurred in the United States.

(4) Fiber optic cable (including drop cable). All manufacturing processes, from the initial ribboning (if applicable), through buffering, fiber stranding and jacketing, occurred in the United States. All manufacturing processes also include the standards for glass and optical fiber, but not for non-ferrous metals, plastic and polymer-based products, or any others.

(5) Optical fiber. All manufacturing processes, from the initial preform fabrication stage through the completion of the draw, occurred in the United States.

(6) Lumber. All manufacturing processes, from initial debarking through treatment and planing, occurred in the United States.

(7) Drywall. All manufacturing processes, from initial blending of mined or synthetic gypsum plaster and additives through cutting and drying of sandwiched panels, occurred in the United States.

(8) Engineered wood. All manufacturing processes from the initial combination of constituent materials until the wood product is in its final form, occurred in the United States.

Waivers

At any time after award of a construction contract, if a vendor identifies that a material or component cannot be obtained in accordance with Buy America, a waiver request may be submitted to the Director's Representative. Waivers may be requested if:

1. The types of iron, steel, manufactured products, or construction materials are not produced in the United States in sufficient and reasonably available quantities or of a satisfactory quality; or

2. The inclusion of iron, steel, manufactured products or construction materials produced in the United States will increase the cost of the overall project by more than 25%

Waiver requests must be submitted to the Director's Representative in writing prior to purchase of the non-compliant component or material from a manufacturer or distributor. Waivers must be approved by the Made in America Office and are subject to a public comment period of not less than 15 days.

Definitions

"Buy America Preference" means the "domestic content procurement preference" set forth in section 70914 of the Build America, Buy America Act, which requires the

head of each Federal agency to ensure that none of the funds made available for a Federal award for an infrastructure project may be obligated unless all of the iron, steel, manufactured products, and construction materials incorporated into the project are produced in the United States.

"Construction materials" means articles, materials, or supplies that consist of only one of the items listed in paragraph (1) of this definition, except as provided in paragraph (2) of this definition. To the extent one of the items listed in paragraph (1) contains as inputs other items listed in paragraph (1), it is nonetheless a construction material.

(1) The listed items are:

(i) Non-ferrous metals;
(ii) Plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables);
(iii) Glass (including optic glass);
(iv) Fiber optic cable (including drop cable);
(v) Optical fiber;
(vi) Lumber;
(vii) Engineered wood; and
(viii) Drywall.

(2) Minor additions of articles, materials, supplies, or binding agents to a construction material do not change the categorization of the construction material.

"Infrastructure" means public infrastructure projects in the United States, which includes, at a minimum, the structures, facilities, and equipment for roads, highways, and bridges; public transportation; dams, ports, harbors, and other maritime facilities; intercity passenger and freight railroads; freight and intermodal facilities; airports; water systems, including drinking water and wastewater systems; electrical transmission facilities and systems; utilities; broadband infrastructure; and buildings and real property; and structures, facilities, and equipment that generate, transport, and distribute energy including electric vehicle (EV) charging.

"Infrastructure project" means any activity related to the construction, alteration, maintenance, or repair of infrastructure in the United States regardless of whether infrastructure is the primary purpose of the project. See also paragraphs (c) and (d) of 2 CFR 184.4.

"Iron or steel products" means articles, materials, or supplies that consist wholly or predominantly of iron or steel or a combination of both.

“Manufactured products” means:

(1) Articles, materials, or supplies that have been:

(i) Processed into a specific form and shape; or
(ii) Combined with other articles, materials, or supplies to create a product with different properties than the individual articles, materials, or supplies.

(2) If an item is classified as an iron or steel product, a construction material, or a Section 70917(c) material under 2 CFR 184.4(e) and the definitions set forth in 2 CFR 184.3, then it is not a manufactured product. However, an article, material, or supply classified as a manufactured product under 2 CFR 184.4(e) and paragraph (1) of this definition may include components that are construction materials, iron or steel products, or Section 70917(c) materials.

“Predominantly of iron or steel or a combination of both” means that the cost of the iron and steel content exceeds 50 percent of the total cost of all its components. The cost of iron and steel is the cost of the iron or steel mill products (such as bar, billet, slab, wire, plate, or sheet), castings, or forgings utilized in the manufacture of the product and a good faith estimate of the cost of iron or steel components.

“Section 70917(c) materials” means cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives. See Section 70917(c) of the Build America, Buy America Act.

END OF DOCUMENT

DOCUMENT 007310

SUPPLEMENTARY CONDITIONS - CONTRACTOR'S SUPERVISION

This supplement modifies the General Conditions. Where any part of the General Conditions is modified by this supplement, the unaltered provisions of that part shall remain in effect.

ARTICLE 6 - CONTRACTOR'S SUPERVISION

ARTICLE 6 Delete this Article in its entirety and replace with the following:

6.1 The Contractor shall designate in writing, competent supervision and/or management representatives as required below to represent the Contractor at all times with authority to act for the Contractor. All direction given to the Contractor's representatives shall be as binding as if given to the Contractor. A superintendent or project manager shall be classified as management representatives included in the Contractor's overhead and shall perform management, supervisory and/or administrative tasks (non labor) only. Individuals listed under this Article shall have the ability to effectively communicate (verbal and written) with all parties associated with the administration/supervision of this contract.

6.1.1 For contracts awarded up to $1,000,000 the Contractor shall provide a supervisor, for the Contractor's staff, who shall be in attendance at the Site throughout the active performance of the Work, including active performance of the Work by subcontractors.

6.1.2 For contracts awarded from $1,000,001 to $5,000,000, the Contractor shall provide a superintendent, for the Contractor's staff, who shall be in attendance at the Site throughout the active performance of the Work until Substantial Completion. Upon Substantial Completion the Contractor shall provide a supervisor who shall be in attendance at the Site throughout the active performance of the Work until Physical Completion. The superintendent's responsibilities include, but are not limited to, directing and scheduling the Work, attending all Project meetings, coordinating and controlling the Work of subcontractors, and ensuring full compliance with the Contract documents. The Contractor shall also provide a project manager for the Contractor's staff from award through Substantial Completion. The Project Manager's responsibilities shall include, but are not limited to, developing and maintaining the submittal system and project schedules, attending Project meetings, making purchasing and cost decisions on behalf of the Contractor, Orders on Contract responses and negotiations, and closeout and warranty documentation. The Contractor shall provide required information to the Director's Representative for the Project schedule.

6.1.3 For contracts awarded from $5,000,001 to $10,000,000, in addition to the requirements of Article 6.1.2, the contractor shall provide a Project Manager for the Contractor's staff that shall be in attendance at the site throughout the active performance of the Work until Substantial Completion.

6.1.4 For contracts awarded for more than $10,000,000, in addition to the requirements set forth in Article 6.1.3, if at any time the Contractor has more than five subcontractors performing Work on the Site simultaneously, the Contractor shall provide an additional Superintendent to coordinate the Work of the subcontractors.

6.2 Should the Director deem any employees of the Contractor not satisfactory or unfit for their duty, the Contractor shall dismiss them and they shall not again be employed on the Work.

6.2.1 Infractions that are dismissible for project managers, superintendents, or supervisors include, but are not limited to, the failure to develop and maintain Project schedules, failure to comply and enforce safety regulations, failure to schedule inspections or provide adequate notice as required by Contract Documents, failure to attend and adequately prepare for meetings as required by Contract Documents, and failure to follow directions regarding the Work provided by the Director's Representative.

6.3 The experience levels noted below in this Article will be used in evaluating the qualifications and experience of the supervisors, superintendents, and Project Managers, as applicable.

6.3.1 Supervisors, required by paragraph 6.1.1, shall have a minimum of five years of experience in the role of supervisor with a minimum of three projects of similar size and scope, and shall be subject to review and written approval by the Director's Representative before commencing the Work, and subsequently during the course of the Project if the supervisor is replaced after Work has commenced. The Contractor will provide references to validate qualifications of the proposed supervisor upon request.

6.3.2 Superintendents, required for any contracts awarded above $1,000,000 as set forth in Article 6.1.2, shall have a minimum of five years of experience in the role of Superintendent with a minimum of three projects of similar size and scope, and shall be subject to review and written approval by the Director's Representative before commencing the Work, and subsequently during the course of the Project if the Superintendent is replaced after Work has commenced. The Contractor will provide references to validate qualifications of the proposed Superintendent upon request.

6.3.3 The Project Manager, required for any contracts awarded above $1,000,000 as set forth in Article 6.1.2, shall have a minimum of five years of experience in the role of Project Manager with a minimum of three projects of similar size and scope, and shall be subject to review and written approval by the Director's Representative before commencing the Work, and subsequently during the course of the Project if the Project Manager is replaced after Work has commenced. The Contractor will provide references to validate qualifications of the proposed Project Manager upon request.

6.4 No subcontractor shall be allowed at the Work Site before approval by the Director and the Contracting Officer. Before any part of the Contract shall be sublet or material purchased, the Contractor shall submit to the Director in writing the name of each proposed subcontractor and supplier and obtain the Director's written consent to such subcontractor and supplier. The names shall be submitted in ample time to permit acceptance or rejection of each proposed subcontractor and supplier by the Director or Contracting Officer without causing delay in the Work of the Project. The Contractor shall promptly furnish such information as the Director or Contracting Officer may require concerning the proposed subcontractor's and supplier's ability and qualifications, and certification status as a Minority- and Women-Owned Business Enterprises and/or Service-Disabled Veteran-Owned Business. For each proposed subcontractor, the Contractor shall also provide the New York State Department of Labor registration number in accordance with NYS Labor Law Section 220-i. Each request for approval of a subcontractor whose subcontract will be valued at $10,000 or more shall also be accompanied by a NYS Vendor Responsibility Questionnaire - For-Profit Construction properly completed and executed by the proposed subcontractor.

6.5 The Contractor's use of subcontractors shall not diminish the Contractor's obligations to complete the Work in accordance with the Contract. The Contractor shall control and coordinate the Work of its subcontractors.

6.6 The Contractor shall be responsible for informing its subcontractors and suppliers of all the terms, conditions and requirements of the Contract Documents including, but not limited to, the General Conditions, Supplementary Conditions, the Drawings and Specifications, Appendix A, and changes made by Addenda and Orders on Contract.

END OF DOCUMENT

DOCUMENT 007311

SUPPLEMENTARY CONDITIONS – PAYMENT

This supplement modifies the General Conditions. Where any part of the General Conditions is modified by this supplement, the unaltered provisions of that part shall remain in effect.

ARTICLE 21 - PAYMENT

Add the following sub-paragraph:

21.2.1 The Director or the Contracting Officer may withhold payment requisitions or refuse to approve a portion of a payment requisition if the Contractor fails to provide an agreed to Baseline Project Work Plan, Project Schedule Updates, Recovery Project Schedule, or other scheduling requirements in accordance with Division 01 - General Requirements.

END OF DOCUMENT

DOCUMENT 007322

SUPPLEMENTARY CONDITIONS - WORKERS' COMPENSATION

This supplement modifies the General Conditions. Where any part of the General Conditions is modified by this supplement, the unaltered provision of that part shall remain in effect.

ARTICLE 19 - INSURANCE - BUILDER'S RISK, LIABILITY AND WORKERS' COMPENSATION

Add the following paragraphs to 19.2.1:

> The contractor agrees that pursuant to WCL Section 141-b, this contract may be terminated if it is determined that at the time of either the bid submission or contract award, the contractor was, in fact, debarred by WCL Section 141-b, or was a substantially owned affiliate of a debarred contractor.
>
> Additionally, the contractor agrees that it must replace, at no additional charge to the State, any subcontractor who the State or the contractor learns was debarred by WCL Section 141-b prior to or during the contract.

END OF DOCUMENT

DOCUMENT 007323

SUPPLEMENTARY CONDITIONS – VENDOR RESPONSIBILITY

This supplement modifies the General Conditions. Where any part of the General Conditions is modified by this supplement, the unaltered provision of that part shall remain in effect.

ARTICLE 25 - MISCELLANEOUS PROVISIONS

Add the following paragraphs:

25.10 VENDOR RESPONSIBILITY: Contractor shall at all times during the Contract term remain responsible. Contractor agrees, if requested by the Commissioner of OGS or his or her designee, to present evidence of its continuing legal authority to do business in New York State, integrity, experience, ability, prior performance, and organizational and financial capacity.

The Commissioner of OGS or his or her designee, in his or her sole discretion, reserves the right to suspend any or all activities under this Contract, at any time, when he or she discovers any information that calls into question the responsibility of Contractor. In the event of such suspension, Contractor will be given written notice outlining the particulars of such suspension. Upon issuance of such notice, Contractor must comply with the terms of the suspension order. Contract activity may resume at such time as the Commissioner of OGS or his or her designee issues a written notice authorizing a resumption of performance under the contract.

Upon written notice to Contractor, and a reasonable opportunity to be heard with appropriate OGS officials or staff, the Contract may be terminated by the Commissioner of OGS or his or her designee at Contractor's expense where Contractor is determined by the Commissioner of OGS or his or her designee to be non-responsible. In such event, the Commissioner of OGS or his or her designee may complete the contractual requirements in any way he or she may seem advisable and pursue available legal or equitable remedies for breach.

In no case shall termination of the contract by the state be deemed a breach thereof, nor shall the state be liable for any damages or lost profits or otherwise, which may be sustained by Contractor as a result of such termination.

END OF DOCUMENT

DOCUMENT 007324

SUPPLEMENTARY CONDITIONS - ENCOURAGING USE OF NEW YORK STATE BUSINESSES IN CONTRACT PERFORMANCE

This supplement modifies the General Conditions. Where any part of the General Conditions is modified by this supplement, the unaltered provisions of that part shall remain in effect.

ARTICLE 25 – MISCELLANEOUS PROVISIONS

Add the following paragraphs:

25.11 Encouraging New York State Businesses

New York State businesses have a substantial presence in State contracts and strongly contribute to the economies of the state and the nation. In recognition of their economic activity and leadership in doing business in New York State, bidders/proposers for this contract are strongly encouraged and expected to consider New York State businesses in the fulfillment of the requirements of the contract. Such partnering may be as subcontractors, suppliers, protégés or other supporting roles.

Bidders need to be aware that all government entities benefiting from this contract will be strongly encouraged, to the maximum extent practical and consistent with legal requirements, to use responsible and responsive New York State businesses in purchasing commodities that are of equal quality and functionality and in utilizing services and technology. Furthermore, bidders are reminded that they must continue to utilize small, minority and women-owned businesses, consistent with current State law.

Utilizing New York State businesses in State contracts will help create more private sector jobs, rebuild New York's infrastructure, and maximize economic activity to the mutual benefit of the contractor and its New York State business partners. New York State businesses will promote the contractor's optimal performance under the contract, thereby fully benefiting the public sector programs that are supported by associated procurements.

Public procurements can drive and improve the State's economic engine through promotion of the use of New York businesses by its contractors. The State therefore expects bidders to provide maximum assistance to New York businesses in their use of the contract. The potential participation by all kinds of New York businesses will deliver great value to the State and its taxpayers.

Bidders can demonstrate their commitment to the use of New York State businesses by responding to the question shown below ***on the Bid Form for this project***:

Will New York State Businesses be used in the performance of this contract? _____ Yes _____ No

The successful bidder who answers "Yes" to this question on the bid form will be required to list the New York State business(es) that will be used on the **Contractor's List of Subcontractors/Suppliers** (Form BDC 329), which must be submitted within ***fifteen (15) days after award*** of the contract.

END OF DOCUMENT

DOCUMENT 007326

SUPPLEMENTARY CONDITIONS - ORDERS ON CONTRACT (CHANGE ORDERS)

This supplement modifies the General Conditions. Where any part of the General Conditions is modified by this supplement, the unaltered provision of that part shall remain in effect.

ARTICLE 10 - ORDERS ON CONTRACT (CHANGE ORDERS)

Replace paragraph 10.1 with the following:

10.1 The State may make changes by altering, adding to or deleting from the Work, and adjusting the Contract sum accordingly. All changed Work shall be executed in conformity with the terms and conditions of the Contract Documents unless otherwise provided in the order on contract. Any change in the Contract sum or time for completion of the described work of the order on contract shall be contained in the order on contract. The Contractor shall complete a time impact analysis (TIA) pursuant to specification section 013113 concurrently with the pricing of the order on contract. Potential time adjustments shall be determined based on the TIA with presented costs. If the Work of the order on contract impacts the substantial completion date, the Contractor must notify the Director's Representative prior to the negotiation of the order on contract and a time adjustment may be issued. If the Contractor does not develop a time impact analysis during the negotiation of an order on contract, the Contractor shall forfeit their right to a time adjustment.

Replace paragraph 10.5.1 with the following:

10.5.1 The contractor shall submit a responsive cost proposal to the Director's Representative in proper form subject to the provisions of this Article. The contractor shall respond no later than 15 calendar days from the date of a "request for proposal" from the Director's Representative with their cost proposal and time impact analysis (TIA). If the contractor believes additional time is required to prepare and submit a responsive proposal, a justification and proposed response duration must be submitted to the Director's Representative or his/her designated representative within 10 days from the date of a "request for proposal". If approved, the 10-day requirement will be extended as the State may deem appropriate. Should the contractor fail to respond or fail to submit the required cost proposal within the 15-day requirement, the State shall determine a fair market value for the work proposed and will issue an order on contract or field order to the contract. The Contractor, by failing to respond to a request for proposal or provide an acceptable and responsive cost proposal; waives any claim or rights to any extra and or additional costs and/or time as may be determined by the Contracting Officer, and the overrides resulting from this action will be limited to the values as set forth in section 012200.

END OF DOCUMENT

DOCUMENT 007327

SUPPLEMENTARY CONDITIONS – SDVOB

This supplement modifies the General Conditions. Where any part of the General Conditions is modified by this supplement, the unaltered provisions of that part shall remain in effect.

Add the following article:

ARTICLE 28 – PARTICIPATION OPPORTUNITIES FOR NEW YORK STATE CERTIFIED SERVICE-DISABLED VETERAN-OWNED BUSINESSES

Article 3 of the Veterans' Services Law provides for more meaningful participation in public procurement by certified Service-Disabled Veteran-Owned Businesses ("SDVOB"), thereby further integrating such businesses into New York State's economy. OGS recognizes the need to promote the employment of service-disabled veterans and to ensure that certified service-disabled veteran-owned businesses have opportunities for maximum feasible participation in the performance of OGS contracts.

In recognition of the service and sacrifices made by service-disabled veterans and in recognition of their economic activity in doing business in New York State, Bidders are expected to consider SDVOBs in the fulfillment of the requirements of the Contract. Such participation may be as subcontractors or suppliers, as protégés, or in other partnering or supporting roles.

28.1 Contract Goals

28.1.1 OGS hereby establishes overall goals under this contract of 6% for SDVOB participation for the C trade contractor, 3% for SDVOB participation for the E trade contractor, 3% for SDVOB participation for the H trade contractor, and 3% for SDVOB participation for the P trade contractor, based on the current availability of qualified SDVOBs. Trades with 0% goals are encouraged to make "good faith efforts" to promote and assist in the participation of SDVOBs on the Contract for the provision of services and materials. For purposes of providing meaningful participation by SDVOBs, the Bidder/Contractor should refer to the **List of Certified NYS Service-Disabled Veteran-Owned Businesses**, which can be accessed from the OGS website page at the following link:

https://online.ogs.ny.gov/SDVOB/search .

Questions regarding compliance with SDVOB participation goals should be directed to the Designated Contacts specified in Document 002113 Instructions to Bidders. Additionally, following Contract execution, Contractor is encouraged to contact DCSDVOB@ogs.ny.gov to discuss additional methods of maximizing participation by SDVOBs on the Contract.

28.1.2 Contractor must document "good faith efforts" to provide meaningful participation by SDVOBs as subcontractors or suppliers in the performance of the Contract (see clause 28.4 below).

28.2. SDVOB Utilization Plan

28.2.1 The Contractor's SDVOB Utilization Plan, using the form BDC 328S, available for download at https://ogs.ny.gov/veterans/forms, shall list the SDVOBs that the Bidder intends to use to perform the Contract, a description of the work that the Bidder intends the SDVOB to perform to meet the goals on the Contract, and the estimated dollar amounts to be paid to an SDVOB, or, if not known, an estimate of the percentage of Contract work the SDVOB will perform. By signing the Utilization Plan, the Bidder acknowledges that making false representations or providing information that shows a lack of good faith as part of, or in conjunction with, the submission of a Utilization Plan is prohibited by law and may result in

penalties including, but not limited to, termination of a contract for cause, loss of eligibility to submit future bids, and/or withholding of payments. Any modifications or changes to the agreed participation by SDVOBs after the Contract award and during the term of the Contract must be reported on a revised SDVOB Utilization Plan and submitted to OGS.

28.2.2 The apparent low bidder must submit the completed SDVOB Utilization Plan within seven (7) calendar days after the bids are opened. OGS will review the submitted SDVOB Utilization Plan and advise the bidder of OGS acceptance or issue a notice of deficiency within twenty (20) calendar days of receipt.

28.2.3 If a notice of deficiency is issued, Bidder/Contractor agrees that it shall respond to the notice of deficiency, within nine (9) calendar days of receipt, by submitting to OGS a written remedy in response to the notice of deficiency. If the written remedy that is submitted is not timely or is found by OGS to be inadequate, OGS shall notify the Bidder/Contractor and direct the Bidder/Contractor to submit, within seven (7) calendar days of notification by OGS, a request for a partial or total waiver of SDVOB participation goals on form BDC 333S. Failure to file the waiver form in a timely manner may be grounds for disqualification of the bid or proposal.

28.2.4 OGS may disqualify a Bidder's bid or proposal as being non-responsive under the following circumstances:

a. If a Bidder fails to submit an SDVOB Utilization Plan;

b. If a Bidder fails to submit a written remedy to a notice of deficiency;

c. If a Bidder fails to submit a request for waiver; or

d. If OGS determines that the Bidder has failed to document good faith efforts.

28.2.5 If awarded a Contract, Contractor certifies that it will follow the submitted SDVOB Utilization Plan for the performance of SDVOBs on the Contract pursuant to the prescribed SDVOB contract goals set forth in this section.

28.2.6 Contractor further agrees that a failure to use SDVOBs as agreed in the Utilization Plan shall constitute a material breach of the terms of the Contract. Upon the occurrence of such a material breach, OGS shall be entitled to any remedy provided herein, including but not limited to, a finding of Contractor non-responsibility.

28.3 Request for Waiver

28.3.1 In accordance with 9 NYCRR § 252.2(m), a Bidder/Contractor that is able to document good faith efforts to meet the goal requirements, as set forth in 28.4 below, may submit a request for a partial or total waiver on form BDC 333S (https://ogs.ny.gov/veterans/forms), accompanied by supporting documentation. A Bidder may submit the request for waiver at the same time it submits its SDVOB Utilization Plan. If a request for waiver is submitted with the SDVOB Utilization Plan and is not accepted by OGS at that time, the provisions of clauses 28.2.2, 28.2.3 and 28.2.4 will apply. If the documentation included with the waiver request is complete, OGS shall evaluate the request and issue a written notice of acceptance or denial within 20 days of receipt.

28.3.2 Contractor shall attempt to utilize, in good faith, the SDVOBs identified within its SDVOB Utilization Plan, during the performance of the Contract. Requests for a partial or total waiver of established goal requirements made subsequent to Contract award may be made at any time during the term of the Contract to OGS, but must be made prior to the submission of a request for final payment on the Contract. Such waiver requests shall be made on form BDC 333S, accompanied by supporting documentation, and emailed to ogs.sm.sdvobcomp@ogs.ny.gov.

28.3.3 If OGS, upon review of the SDVOB Utilization Plan (BDC 328S) and Contractor's Monthly SDVOB Payment Report (BDC 58S), determines that Contractor is failing or refusing to comply with the contract goals and no waiver has been issued in regards to such non-compliance, OGS may issue a notice of deficiency to the Contractor. The Contractor must respond to the notice of deficiency within nine (9) calendar days of receipt. Such response may include a request for partial or total waiver of SDVOB contract goals.

28.4 Required Good Faith Efforts

In accordance with 9 NYCRR § 252.2(n), Contractors must document their good faith efforts toward utilizing SDVOBs on the Contract. Evidence of required good faith efforts shall include, but not be limited to, the following:

a. A list of the general circulation, trade, and other publications and dates of publications in which the Contractor solicited the participation of certified SDVOBs as subcontractors/suppliers, copies of such solicitations, and any responses thereto.

b. A list of certified SDVOBs that were solicited for this Contract. Provide proof of dates or copies of the solicitations and copies of the responses made by the certified SDVOBs. Describe specific reasons that responding certified SDVOBs were not selected.

c. Descriptions of the Contract documents, plans and specifications made available to certified SDVOBs by the Contractor when soliciting their participation and steps taken to structure the scope of work for the purpose of subcontracting with, or obtaining supplies from, certified SDVOBs.

d. A description of the negotiations between the Contractor and certified SDVOBs for the purposes of complying with the SDVOB goals of this Contract.

e. Dates of any pre-bid, pre-award, or other meetings attended by Contractor, if any, scheduled by OGS with certified SDVOBs whom OGS determined were capable of fulfilling the SDVOB goals set in the Contract.

f. Other information deemed relevant to the request.

28.5 Monthly SDVOB Contractor Compliance Report

In accordance with 9 NYCRR § 252.2(q), Contractor is required to report Monthly SDVOB Contractor Compliance each month to OGS during the term of the Contract for the preceding month's activity, documenting progress made towards achieving the Contract SDVOB goals. This information must be reported by the Contractor using form BDC 58S (form and instructions located at https://ogs.ny.gov/veterans/forms) and emailed by the 10th day of each month for the preceding month's activity to ogs.sm.sdvobcomp@ogs.ny.gov.

28.6 Breach of Contract and Damages

In accordance with 9 NYCRR § 252.2(s), any Contractor found to have willfully and intentionally failed to comply with the SDVOB participation goals set forth in the Contract shall be found to have breached the contract and Contractor shall pay damages as set forth therein.

END OF DOCUMENT

DOCUMENT 007331

SUPPLEMENTARY CONDITIONS – LABOR LAW PROVISIONS

This supplement modifies the General Conditions. Where any part of the General Conditions is modified by this supplement, the unaltered provisions of that part shall remain in effect.

ARTICLE 23 – LABOR LAW PROVISIONS

Add the following paragraph:

23.7 In accordance with New York Labor Law §220-i, the Contractor and all subcontractors shall be registered with the New York State Department of Labor prior to commencing any Work. The Contractor is responsible for ensuring and verifying that all subcontractors are registered before they commence work on the project. Any delays or costs incurred due to a Contractor's or subcontractor's failure to be registered, or the Contractor's failure to verify such registration, shall be borne solely by the Contractor and shall not be grounds for an extension of time or additional compensation.

END OF DOCUMENT

SECTION 011000.01 - SUMMARY OF THE WORK

PART 1 - GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

A. The title and location of the Work is printed on the cover of this Project Manual.

B. Type of Contract: Fixed price.

1.2 RELATED CONTRACTS

A. The Project consists of the following separate contracts:

1. Construction Work Project No. 47477- C
2. HVAC Work Project No. 47477- H
3. Plumbing Work Project No. 47477- P
4. Electrical Work Project No. 47477- E

B. The suffix letter at the end of the project number distinguishes the separate Contracts. The Sections in Division 01 of the Specifications which have more than one suffix letter (such as this Section) are common to each related Contract.

1.3 SUBSTANTIAL AND PHYSICAL COMPLETION DATES

A. Substantially complete the Work within 631 days after the Agreement is approved by the Comptroller.

1. The time allocated for the performance of work under this contract includes 10 days for notification of the Contractor of the Comptroller's approval of the Agreement.
2. The approval of the Agreement by the Comptroller constitutes the filing of the Contract Documents as a public record and notice to the Contractor that a fully executed contract exists between the Contractor and the State.

B. Physically complete the Work within 90 days after the established Substantial Completion date.

1.4 CONTRACT AWARD SUBMITTALS

A. Submittal No. 1: Submit the CONTRACTOR'S LIST OF SUBCONTRACTORS-SUPPLIERS information required in SCHEDULES AND RECORDS Article in Specification Section 013000 not later than 15 days after approval of the Contract by the Comptroller.

B. Submittal No. 2: Submit Preliminary Project Schedule related information noted in 013113 Project Planning and Scheduling or 013200 Construction Progress Documentation, whichever

section is applicable, within 15 days after approval of the Contract by the Comptroller for review by the Director's Representative and OGS Scheduling.

C. Submittal No. 3: Submit the Submittal Coordinator Qualifications not later than 10 days after award. Include resume and references, and other certification, licenses, or other requested information.

1.5 RESTRICTED WORK PERIOD

A. Construction Work Contract: Do not perform the roofing and related Work on or after December 1st and up to, but not including April 1st unless approved otherwise, in writing, by the Director. During this period, clear the roof of materials, equipment, and debris. Maintain the roof in a watertight condition.

B. Construction Work Contract: Do not perform the waterproofing and related Work on or after December 1st and up to, but not including April 1st unless approved otherwise, in writing, by the Director. During this period, clear the work area of materials, equipment, and debris.

C. Construction Work Contract: Do not perform the asphalt paving Work on or after November 15th and up to, but not including April 15th, unless approved otherwise, in writing, by the Director. During this period, leave the disturbed earthwork areas stabilized for winter shutdown and clear the Work area of materials, equipment, and debris.

D. HVAC Work Contract: Do not perform Work requiring shut off of active heating piping and equipment on or after October 15th and up to, but not including May 1st unless approved otherwise, in writing, by the Director.

E. Asbestos-containing materials will be abated by the Construction Work Contractor. Do not perform other Work in the area of such activity during the abatement of asbestos-containing materials.

1.6 ITEMS NOT INCLUDED

A. The following items shown on the Drawings are not included in the Contract:

1. Items indicated "NIC" (Not in Contract).
2. Existing construction, except where such construction is to be removed, replaced, or altered.

1.7 CONFINED SPACE

A. Comply with confined space and permit-required confined space as defined in Title 29, Part 1910, Section 146 of the Code of Federal Regulations (29CFR 1910.146).

B. Comply with Safety Requirements for Confined Spaces (ANSI/ASSE Z117.1-2009).

C. All spaces shall be treated as permit-required confined spaces until the Contractor and/or subcontractors are able to re-classify the space to a non-permit confined space as per 29CFR 1910.146 and ANSI/ASSE Z117.1-2009.

D. Confined spaces are not intended to limit or define Contractor's or subcontractors' regulatory compliance requirements. In addition to confined spaces indicated on the drawings, other confined spaces may be present or created by the work of this contract. Notify the Director's Representative, in writing, of confined spaces created or eliminated during execution of the Work.

E. For the purpose of inspecting ongoing work, furnish at no additional cost to the State, personnel, as directed, to allow the Director's Representative to enter confined space and permit-required confined space in compliance with Title 29, Part 1910, Section 146 of the Code of Federal Regulations (29CFR 1910.146).

1.8 OCCUPANCY

A. This is an occupied Facility, however the building will be vacated during execution of the Work.

1.9 CONTRACTOR USE OF PREMISES

A. Work hours shall be as established by the Facility authorities thru the Director's Representative.

B. Inform the Director's Representative of work area access requirements. The Director's Representative will coordinate and schedule the requirements with Facility staff to obtain and ensure timely availability of work areas.

C. Check in with the Facility Representative, as directed, at the beginning of each workday. Furnish information regarding where employees will be working during the day.

D. Comply with the Facility's Visitor Identification Policy. A copy of the current policy will be distributed at the initial job meeting.

E. The following items are not allowed on the Site or on Facility premises.

1. Firearms, ammunition, weapons, and dangerous instruments (other than tools required for the Work).
2. Alcoholic beverages and persons under the influence of same.
3. Cannabis and persons under the influence of same. Cannabis, as used herein shall refer to any form of cannabis that has psychoactive properties.
4. Illegal controlled substances and persons under the influence of same.
5. Cameras (except with written permission from the Director's Representative).

F. Comply with Facility policies relating to smoking at the Site.

G. Routes of ingress and egress within the building to the location of the Work shall be as directed by the Director's Representative.

H. Store materials and perform the Work so that pedestrian and vehicular traffic is not obstructed.

I. Do not diminish the level of life safety during performance of the Work.

J. Remove furniture and portable equipment which interferes with execution of the Work and store where directed. Reset such items when directed.

K. Utility Outages and Shutdowns: Do not interrupt utility services or branch services within the building except for the time required to make new connections. Arrange with the Director's Representative for the time and duration of interruptions of services. Provide temporary services required to maintain building services at all times other than during scheduled interruptions.

1. Construction Work Contract: During the asbestos abatement portion of the Project, comply with the requirements specified in Section 028213.

L. Be responsible and accountable for employees, suppliers, subcontractors and their employees, with regard to their use of the premises. Direct them to comply with the Facility Regulations and with the security and traffic regulations.

M. Furnish Facility authorities with a telephone number or method to contact the supervisor for the Work in case of an emergency after work hours, including weekends and holidays.

N. Comply with applicable federal and State of New York Right-to-Know Law provisions. Provide Safety Data Sheets (SDS) documents for products that have SDS data prior to use on the project site.

1. Upload and maintain electronic SDS documents on the Submittals Website (SDS tab).
2. SDS tab is organized by prime contracts. To be readily identified, name products with SDS by specification section number and product name.
3. Supply and maintain one hard copy of the appropriate SDS on the project site and one hard copy with the Facility's Right-to-Know Information Officer.

O. Direct employees to be watchful for people in or near the work area where safety hazards may be present. Notify the Facility Safety/Security Department, if necessary, to remove them from the work area or Site.

P. Report fire and other emergency situations to the Facility Safety/Security Department immediately.

1.10 OPENINGS AND CHASES IN NEW CONSTRUCTION

A. Construction Work Contract:

1. Unless specifically indicated otherwise, provide openings, chases, and similar items in new construction provided under this Contract, as required for items to be provided under related contracts.
2. After the installation and completion of the items for which openings and chases have been provided, build in, over, around and finish the openings and chases to complete the Work.
3. Provide all cutting, patching, and refinishing resulting from failure to provide the required openings and chases, if the necessary information was furnished by the related contractor before 24 hours of start of the applicable part of the Work.

4. If related contractors fail to furnish drawings or written information covering the openings and chases they require in new construction at least 24 hours before installation of the Work affected by those items, the related contractors will be required to do all cutting, patching, and refinishing of the construction so affected, at their own expense.

B. HVAC Work, Plumbing Work, and Electrical Work Contracts:

1. Unless specifically indicated otherwise, furnish drawings or written information to the Construction Work Contractor covering the openings and chases required in new construction for the Work. If such information is not furnished at least 24 hours before start of the applicable part of the Construction Work Contractor's work, all necessary cutting, patching, and refinishing will be included in the Contract at no additional cost to the State.

1.11 REFERENCE SPECIFICATIONS AND STANDARDS

A. Comply with the requirements of the various specifications and standards referred to in these Specifications, except where they conflict with the requirements of these Specifications. Such reference specifications and standards shall be the date of latest revision in effect at the time of receiving bids unless the date is given.

B. DOT Specifications: If the abbreviation DOT appears in these Specifications, it shall mean the most current edition of the New York State Department of Transportation, Office of Engineering specifications entitled "STANDARD SPECIFICATIONS - CONSTRUCTION AND MATERIALS", including all applicable Addenda in effect at the time of receipt of bids. The DOT specifications may be purchased from the Department of Transportation, Plan and Publication Sales, 50 Wolf Road, Albany, NY 12232, (518) 457-2124.

1.12 LAYING OUT

A. Examine the Contract Documents thoroughly and promptly report any errors or discrepancies to the Director's Representative before commencing the Work.

B. Lay out the Work in accordance with the Contract Documents.

C. Construction Work Contract:

1. Location of the building on the Site shall be performed by a licensed Land Surveyor or Professional Engineer.
2. Provide and maintain axis lines on each floor.
3. Provide and maintain marks 4 feet above finish floor on each column at each floor.
4. Take elevations and locations from control points located by the Director's Representative.

1.13 SPECIAL INSPECTIONS

A. Special Inspections and tests are required by Chapter 17 of the Building Code of New York State (BCNYS). Inspections & Testing Services will be provided by the state unless otherwise noted.

B. Contractors are responsible for notifying the Directors Representative regarding individual inspections listed in the **STATEMENT OF SPECIAL INSPECTIONS**. Contractors shall cooperate with the inspectors and testing agencies and sufficient notice and lead time (minimum 48 hours) must be allowed for inspection and testing to be performed.

C. Where deficiencies are identified, the contractor must take corrective actions to comply with the contract documents or remedy the deficiencies in accordance with Article 9 of the General Conditions.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 011100 - SAFETY

PART 1 - GENERAL

1.1 SUMMARY

A. This section requires compliance with applicable Safety codes, standards, and regulations, including but not limited to OSHA, Building Code of New York State, Fire Code of New York State, and Facility Regulations.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Summary of the Work: Section 011000.

B. Regulatory Requirements: Section 014100.

1.3 DEFINITIONS, ABBREVIATIONS

A. OSHA: Occupational Safety and Health Administration.

B. BCNYS: Building Code of New York State.

C. EBCNYS: Existing Building Code of New York State.

D. FCNYS: Fire Code of New York State.

E. NFPA: National Fire Protection Association.

F. NEC: NFPA 70E.

1.4 SUBMITTALS

A. Provide a SITE SPECIFIC SAFETY PLAN no later than 15 days after approval of the Contract by the Comptroller. The plan must include at a minimum:

1. Cover page including Project Name/Location/Project Number/Contractor Name/Potential Start/Finish Dates.
2. Complete Scope of work.
3. Roles and Responsibilities page identifying Supervision, list of the names of all competent and/or qualified persons, including their qualifications, for each activity requiring a competent person i.e. excavations, scaffolding, rigging, fall protection, etc.
4. A program for implementing appropriate PPE as specified in the High 5. Hazard Assessment detailed in Subparagraph 1.04 A.11 below.
5. A program for assuring employees have proper work attire, i.e. substantial sole safety-toed footwear, long pants, shirts with minimum 4-inch sleeves, etc.

6. A 100% 6-foot conventional fall protection program which provides full body harnesses, lanyards (connectors), and anchorage points, or guardrails for all trades when working 6 feet above a lower level.

    a. Exception:

        1) When the employer can demonstrate that it is infeasible or creates a greater hazard to utilize these systems, the employer shall develop and implement a Fall Protection Plan, which meets the requirements of paragraph (k) 1926.502. This plan must be approved before implementation by the applicable OGS Regional Safety Manager.
        2) When working from portable ladders.

7. A program for raising employee awareness through the use of weekly Safety Talks (i.e. "Toolbox Talks" or "Tailgate Meetings") on topics related to upcoming/relevant work on the project. Contractor shall be required to verify that all employees on site participated in meeting, with documentation submitted to the Director's Representative.
8. Confined Space entry program and procedures for entry, when applicable.
9. A written Respirable Silica Protection Plan, including tasks for which employees could reasonably be expected to be exposed to harmful silica dust, and control methods that will be used to limit or eliminate exposure, as well as any PPE necessary to ensure protection.
10. Identify specific hazards related to this Project, and how employees will be protected from those hazards.
11. High Hazard Assessment's detailing procedures for all high hazard work activities including, but not limited to:

    a. All lifts involving cranes or material handling equipment.
    b. Scaffolding where scaffold working deck is expected to be 10' or higher from a lower level.
    c. Demolition.
    d. Excavations where anticipated depth is 5' or more.
    e. Hot work activities, which shall follow all applicable requirements stated in NFPA 51B.
    f. Steel erection with specific fall protection requirements detailed.
    g. Work at elevations, including roofing work.
    h. Electrical work involving Lock Out - Tag Out (LOTO) procedures.

        1) High Hazard Assessments shall include a step-by-step breakdown of a given task, the hazards associated with each step, the controls that will be utilized to eliminate or minimize the hazards, and the PPE that will be used to protect from remaining hazards.
        2) All required certifications shall be provided for all applicable types of work with required training/certifications (i.e., Powder Actuated Tools, Aerial Lifts, Forklifts, Crane Operators License, etc.).

12. A project safety inspection program, with a minimum of one documented safety inspection per week, during the course of construction. Submit copies of all resultant inspection reports to the Director's Representative on a weekly basis.

13. A program for providing proper care for injured employees, including the name of the employee with First Aid/CPR certification who will be on site at all times during the course of construction, to include local hospital/medical facility locations and contact information.
14. Provide an Emergency Action and Evacuation Plan, including Fire Protection and Emergency Response, when applicable.

    a. Plan to include:

        1) Procedures for reporting a fire or other emergency.
        2) Procedures for emergency evacuation, including type of evacuation and exit route assignments.
        3) Emergency Contact information.
        4) Procedures on how to alert workers of an emergency.
        5) Procedures to account for all employees after evacuation and muster/evacuation points.
        6) A list of all major fire hazards, to include type of fire protection equipment necessary to control hazard.

B. Provide safety orientation training for each employee prior to their starting work on site. This orientation shall include, but not be limited to: Fitness for Duty (drug, alcohol, and cannabis policies), training on general safety hazards, site-specific safety policies and procedures, personal protective equipment, injury reporting and protocols, emergency evacuation and preferred medical providers, and HAZCOM (GHS Harmonization). Provide documentation of all safety orientation training for each new employee on the site, including all subcontractors, to the Director's Representative.

C. Accident Reporting: The Director's Representative shall be immediately notified of any and all accidents. A copy of a written accident report shall be furnished to the Director's Representative within 24 hours of an incident.

    1. After any incident on site resulting in an employee being injured or damage to property, a Post- Accident Review Investigation shall be held as soon as possible after any incident. As a minimum, this investigation will involve the injured person, his/her supervisor, the responsible project superintendent and/ or supervisor and the onsite safety supervisor. The contractor shall be responsible to provide a written Post-Accident Corrective Action Plan, which will detail immediate steps taken to correct any unsafe condition that led to injury/property damage, long-term actions to prevent repeat incidents from happening on the site, and roles and responsibilities of individuals who will be implementing the corrective measures, which will be reviewed for effectiveness and continually monitored for implementation.

1.5 STOP WORK ACTIVITY AUTHORITY

A. All NYS OGS Representatives have the authority to stop a work activity that exposes any Contractor employees to potentially serious injury and/or illness. The responsible Contractor shall immediately cease work, perform an assessment of the activity that is exposing employees to any Immediately Dangerous to Life or Health (IDLH) conditions, and take action necessary to satisfactorily address the unsafe condition(s), at no cost to the State. The activity may only resume when a NYSOGS Representative and respective Contractor's Safety Representative verify

corrective measures have been satisfactorily completed. Any related impact to time of completion shall be considered within the Contractor's control.

B. No site work, other than mobilization, shall commence until the Site-Specific Safety Plan is approved.

1.6 ADDITIONAL SAFETY POLICIES THAT WILL BE ADHERED TO THROUGHOUT THE CONSTRUCTION PHASE

A. All contractors are required to utilize head (hardhat) and eye protection (safety glasses) at all times well within the project limits.

B. Any employee exposed to equipment/vehicles shall be required to utilize an ANSI Level 2 Safety Work Vest.

C. Contractors are strictly prohibited from utilizing any state-owned equipment or materials during construction.

D. All tools/equipment on multi-trade projects shall bear identifiable markings as to which contractor the tool/equipment belongs to. If any tool/equipment on the project does not have contractor's markings, the tool shall be immediately removed from the site until owner claims the tool/equipment.

E. Seatbelts shall be utilized when operating all heavy equipment designed to be operated in a seated position. When traveling in a vehicle, all employees shall be seated in a secured seat with a seatbelt in place.

F. Inspections of scaffolding prior to use, and excavations prior to entry shall be documented by an on-site competent person. Documented inspection will be available on-site for inspection by the Director's Representative.

G. All electrical cords/water hoses, if feasible, shall be run overhead to avoid additional slip/trip hazards. If not feasible due to physical restrictions, cords/hoses shall be placed to avoid all walkways and work areas.

H. All heavy equipment being utilized on site shall have a fire extinguisher of suitable size/rating within reach of operator.

I. Any fuel-powered equipment shall have a fire extinguisher of suitable size/rating no closer than 10 feet and no further than 25 feet from the equipment.

J. All electrical work shall be done when panels/lines/boxes have been de-energized and locked out, unless otherwise approved in writing by the Director's Representative.

K. An applicable sized Spill Kit shall be available on all jobsites where heavy equipment is being utilized.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011100

SECTION 012100 - ALLOWANCES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Include in the contract sum the allowances stated in this Section.

B. Should the net cost be more than the specified amount of the allowance, the contract sum will be adjusted by Order on Contract in accordance with the General Conditions. No Work in excess of the allowance will be permitted except by Order on Contract. Should the net cost be less than the specified amount of the allowance, the balance will be deducted from the final payment.

1.2 TOTALS FOR ALLOWANCES

A. The sum of allowances required by the Construction Work Contract is $613,246.

B. The sum of allowances required by the HVAC Work Contract is $455,222.

C. The sum of allowances required by the Plumbing Work Contract is $112,919.

D. The sum of allowances required by the Electrical Work Contract is $154,005.

1.3 ALLOWANCES FOR CONTINGENCIES

A. Include in the contract sum the amount indicated below to cover the cost of additional labor and materials for contingent activities within the scope of the Contract as directed in writing by Field Order. The Field Order will include a description of the Work and a method for determining the cost of such Work.

1. Construction Work Contract: $613,246.
2. HVAC Work Contract: $133,818.
3. Plumbing Work Contract: $112,919.
4. Electrical Work Contract: $154,005.

B. The value of the directed Work under this allowance will be determined by one or more of the methods authorized in Section 012200 which will be specified in the Field Order.

1.4 ALLOWANCE FOR DIRECT DIGITAL BUILDING CONTROL SYSTEM

A. HVAC Work Contract: Include in the contract sum the amount of $321,404 to cover the cost of providing modifications TO THE EXISTING Direct Digital Building Control System as specified in Section 230924 and as shown on the H-Contract Drawings.

1. The cost of providing the Work of this allowance will be paid in the amount specified. It is a fixed price allowance. Progress payments will be determined, by the Director, by evaluating the work completed.
2. Include overhead and profit for administering this allowance separately in the contract sum, not in the allowance.
3. Cause the products covered by this allowance to be provided by such persons or firm and for such amount as designated.
4. The amount of the allowance includes furnishing the products in accordance with the requirements of referenced Specification Section. Labor for the installation of the products covered by the referenced Specification Section shall be included in the Contract sum (not in the Allowance).
5. The amount of the Allowance includes delivery to the site and applicable taxes.
6. Include unloading and on-site handling costs, storage, and protection costs, installation costs, and other expenses separately in the Contract sum, not in the Allowance.
7. Purchase and Delivery:

    a. Execute purchase agreement with designated supplier.
    b. Arrange for samples, shop drawings, and product data as required.
    c. Make arrangements for delivery.
    d. Upon delivery, promptly inspect products for damage or defects. Submit claims for transportation damage.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012100

SECTION 012200 - COST COMPUTATIONS

PART 1 - GENERAL

1.1 DESCRIPTION

A. The Contracting Officer shall determine the value of any order on contract or field order by one or more of the following methods:

1. Agreed to Amount:

a. By estimating the fair and reasonable cost of:

1) Labor, including all wages, required wage supplements and insurance/taxes required by law (workers' compensation, social security, disability, unemployment, etc.) paid to or on behalf of working foremen, workers and other employees below the rank of the Contractor's designated representative directly employed at the Site of the Project, and, on contracts with an award price less than $500,000, the Contractor's designated representative, regardless of job title or work status.
2) Materials (to be installed or turned over to the State).
3) Consumables are items that are used during the progression of the extra work that do not become a permanent part of the Work and as such are considered overhead.
4) Equipment, excluding hand tools, which, in the judgment of the State, would have been or will be employed exclusively and directly on the omitted work or extra work.
5) Where the omitted or extra work is performed directly by the Contractor; by adding to the total of such estimated costs a sum equal to 15 percent thereof, but, where the omitted or extra work is performed by a subcontractor, by adding a sum equal to 15 percent of said costs for the benefit of such subcontractor, and by adding, for the benefit of the Contractor (no further allowance will be made where extra work is performed by any sub-subcontractor), an additional sum equal to:

a) 10 percent of the first $10,000 of the above-estimated costs, including the subcontractor's percentage override.
b) Plus 5 percent of the next $90,000 of the total of said items.
c) Plus 3 percent of any sum in excess of $100,000 of the total of said items.
d) For the purposes of the aforesaid percentage overrides, the words "extra work" shall be defined as a complete item of added, modified, or changed work as described in writing to the Contractor and the reductions enumerated shall be applied individually to each Order on contract issued on a Contract. Such "extra work" may include the work of one or more trades and/or subcontractors or sub-subcontractors and shall include all labor, material, plant, equipment, tools and all

incidentals directly and/or indirectly necessary, related, involved in or convenient to the successful completion of the extra work item.

6) By accepting an amount agreed upon by both parties, which amount is to be calculated in a manner similar to that provided in subparagraph 1.01 A. 1. a.

7) Should the Contractor fail to submit the required proposal as required by Article 10.5.1, the Contractor shall be compensated as follows:

a) The costs will be determined by the State as described in 1.01 A. 1. a. above, but the percentages for profit and overhead will be as follows:

(1) Where the omitted or extra work is performed directly by the Contractor; by adding to the total of such estimated costs a sum equal to 10 percent thereof, but, where the omitted or extra work is performed by a subcontractor, by adding a sum equal to 10 percent of said costs for the benefit of such subcontractor, and by adding, for the benefit of the Contractor (no further allowance will be made where extra work is performed by any sub-subcontractor), an additional sum equal to:

(a) 5 percent of the first $10,000 of the above-estimated costs, including the subcontractor's percentage override.
(b) Plus 3 percent of any sum in excess of $10,000 of the total of said items.

2. ACTUAL COSTS - By determining the actual cost of the extra work in the same manner as in the above Subparagraph 1.01 A. 1.a. except that actual costs of the Contractor be utilized in lieu of estimated costs. The State shall have the option to utilize this method provided it notifies the Contractor of its intent to do so prior to the time the Contractor is properly authorized to commence performance of such work.
3. By applying the applicable price or prices set forth in the Contract Documents or by applying a unit price agreed to by both parties.
4. All profit, overhead and expense of whatsoever kind and nature, other than those set forth above in Subparagraphs A.1.a. 1), 2) and 4), and below in Paragraph 1.01 F., of the Contractor, its subcontractors and sub-subcontractors, are covered by the aforesaid percentage overrides and no additional payment therefore will be made by the State.

B. Irrespective of the method used or to be used by the State in determining the value of extra or omitted work, the Contractor shall, after receipt of a request, shall within 15 days submit to the State a detailed breakdown of the Contractor's estimate of the value of the omitted or extra work. The Contractor shall submit evidence, satisfactory to the Contracting Officer, to substantiate each and every item that constitutes their proposal for the change. The State shall promptly respond to such submission.

C. Whenever this Contract requires the determination of labor hours, it shall be determined as follows:

1. Labor Hours shall be based on the labor factors as published in "RSMeans" by Reed Construction Data. The latest versions of the following books shall be used:

a. Building Construction Cost Data
b. Electrical Cost Data
c. Mechanical Cost Data
d. Plumbing Cost Data
e. Site Work and Landscape Cost Data

2. In the event that a labor factor for an item of work is not available from these publications the Director shall establish a labor factor as to the amount of time it takes to perform an item of Work.

a. Conditions that affect the performance of the extra work whether addressed in the Contract Documents or not shall be taken into consideration and negotiated.
b. Unforeseen conditions or conditions that are not identifiable shall not be included in the Contractor's proposal. If while in the process of performing the omitted or extra work a condition or event that affects the work becomes evident, it will be addressed at that time via a field order or change order.

D. Materials:

1. Materials used in performance of the extra work shall conform to Contract Documents and shall be listed by description, quantity, and standard unit of measure.
2. Where the extended value of an item of material is FIVE THOUSAND DOLLARS OR MORE a quote or invoice from a supplier shall be included as part of the Contractor's proposal. The Director's Representative reserves the right to request substantiating pricing documentation to verify actual and reasonableness of any and all submitted costs. This requirement does not impede Subparagraph 1.01 B. above.
3. Travel costs including mileage, tolls, and overnight lodging and meal per diems incurred as a result of the extra work will be reimbursed at costs without any markup for the Contractor or subcontractor as the case may be. Daily travel to the project site must exceed 35 miles, one way, from the Contractor's office address to claim mileage and toll expenses; only mileage beyond 35 miles will be reimbursed. Distance must exceed 50 miles, one way, from Contractor's office address to the project site to claim overnight lodging and meal per diems. Actual cost for overnight lodging and meal per diems will be reimbursed up to the maximum rates listed per locality, as established by U.S. General Services Administration (GSA).
4. Personal Protection equipment required for hazardous materials abatement and materials used to create critical barriers and protection barriers, provided that they are expended during the performance of the extra work or turned over to the State at the request of the Director's Representative, are reimbursable as part of an order on contract.

E. Whenever this Contract requires the determination of the cost of equipment, it shall be determined as follows:

1. Equipment used or to be used in the performance of Work shall be specifically described by the manufacturer, model number and date of manufacture and be of suitable size and capacity required for the work to be performed.
2. Equipment, excluding hand tools which are defined as tools and equipment having a new purchase price of less than ONE THOUSAND DOLLARS, and which will be used exclusively and directly on the Work. For the purposes of computing the Contractor's cost for self-owned equipment, the rate used for periods of under five days shall be the monthly

rate set forth for the item of equipment in the Equipment Watch® "Rental Rate Blue Book" published by Penton Media (800 669-3282) divided by 22 days to establish a daily rate and divided again by eight hours to establish an hourly rate. The rate used for periods of 5 days or more shall be 45% of the published monthly rate. In the event the "Rental Rate Blue Book" does not list the item of equipment used, the applicable rate shall be determined in the same manner as set forth above except that the monthly rate used shall be that set forth in "The AED Green Book" published by Penton Media (800 669-3282). In the event that a rate is not established in the "Rental Rate Blue Book" or "The AED Green Book" for a particular piece of equipment, the Contracting Officer shall establish a rate for ownership costs and operating costs for that piece of equipment that is consistent with its cost and expected life. Self-owned equipment is defined to include equipment rented from controlled or affiliated companies.

3. Rented equipment will be paid for at the actual rental cost. Equipment rented for the Work used in the performance of extra work will be reimbursed for operating costs only.
4. For the purposes of the performance of extra or additional work, when, in the opinion of the Contractor, and as approved in writing by the Director's Representative, suitable equipment is not available on the Site, the moving of said equipment to and from the Site will be paid for at actual cost.
5. Notwithstanding any other provision, if the State should determine that the nature or size of the equipment used by the Contractor in connection with the performance of Work is larger or more elaborate, as the case may be, than the size or nature of the minimum equipment determined by the State to be suitable for the performance of Work, the cost of equipment used in calculating the costs of extra work or delay damages will not be based upon the equipment used by the Contractor but instead will be based on the smallest or least elaborate equipment determined by the State to have been suitable for the performance of the Work. In no event shall the amount paid to the Contractor as the allowance for the use of self-owned construction equipment exceed the lower of the actual cost of such equipment or the depreciated value of such equipment as carried on the Contractor or subcontractors' books.
6. The Contractor shall be reimbursed for its operating costs for self-owned equipment based on actual cost data. Operating costs shall include fuel, lubricants, other operating expendables, and preventive and field maintenance. Operating costs do not include the operator's wages. In the event, after documented and demonstrated due diligence, actual operating costs are not ascertainable, then the Contractor will be compensated utilizing 100 percent of the operating costs set forth in the "Rental Rate Blue Book" and the Contractor shall be reimbursed the product of the number of hours of actual use multiplied by the operating cost per hour.
7. The maximum amount of reimbursement for the ownership costs of self-owned equipment is limited to the original purchase price of the equipment as listed in the "Green Guide for Construction Equipment" published by Penton Media (800) 669-3282. In the specific event when the ownership reimbursement is limited by the original purchase price, the Contractor shall, nevertheless, be reimbursed for the operating cost per hour for each hour of actual use.

F. Insurance and Bonds:

1. The additional cost of all required Bonds and Liability and Builder's Risk Insurance Premium required by this Contract, arising from the additional cost of performing extra work shall be paid by a change order or field order to be issued upon physical completion

of the Work and upon the submission of proof of payment of such additional premiums assessed by the respective insurance companies for such additional cost of the extra work.

2. Should the additional work require an additional insurance policy not initially required or anticipated in the execution of the contract, whether required of the Contractor or a subcontract between the Contractor and a subcontractor actually performing extra work, will be reimbursed based on actual cost.

G. Unless otherwise specifically provided for in an order on contract or field order, the compensation specified therein for extra work includes full payment for both the extra work covered thereby and for any damage or expense caused the Contractor by any delays to other work to be done under the Contract resulting from or on account of said extra work, and the Contractor waives all rights to any other compensation for said extra work, damage or expense.

H. In computing the value of an order on contract or field order which involves additions and deletions of work and the cost of the added work exceeds the cost of the deleted work, overhead and profit shall be computed on the amount by which the actual cost of additional labor and material exceeds the actual cost of the deleted labor and material, except no additional overhead and profit shall be allowed on the value of any order on contract or field order determined by the method provided in Subparagraphs 1.01 A. 1.b. or 1.01 A. 3.

I. In computing the value of an order on contract or field order which involves additions and deletions of work and the cost of the deleted work exceeds the cost of the added work, the Contractor will be allowed to retain the overhead and profit on the amount by which the cost of the deleted work exceeds the cost of the added work, except that no overhead and profit shall be retained on the cost of work determined by the method provided in Subparagraphs 1.01 A. 1.b. or 1.01 A. 3.

J. Subject to the provisions of Article 17A of the General Conditions, the following elements of damage, and only the following elements, as determined by the Contracting Officer, will be recoverable by the Contractor as "delay damages" provided that they are actual, reasonable and necessary:

1. Documented additional or escalated job site labor expenses.
2. Documented additional or escalated costs for materials.
3. Documented additional or escalated equipment costs less appropriate credits, as such are determined in accordance with this Section.
4. Documented costs of extended job-site overhead (including job superintendent, office engineer and clerical staff, but not including working foremen).
5. An additional 15 percent of the total of the above items in Subparagraphs 1.01 J. 1., 2., 3. and 4. for home office overhead and profit thereon.
6. Documented additional or escalated insurance and bond costs.
7. When the work is performed by a subcontractor, the Contractor shall be paid the actual, reasonable and necessary cost of such subcontracted work as outlined Subparagraphs 1.01 J. 1. through 4., including the subcontractor's main office overhead and profit of 15 percent. The Contractor shall also be allowed an additional 5 percent administrative fee for processing.
8. The phrases "additional expenses", "escalated expenses", "additional costs" and "escalated costs" shall include expenses and costs above or below those normally incurred in the performance of the work, less any appropriate credit, and/or attributable, with appropriate

credits, to the performance of work or portions of work in a different time period than that which was indicated on the approved progress schedule.

K. The parties agree that, with regard to delay damages, the State will have no liability for the following items and the Contractor further agrees it shall make no claim for the following items:

1. Profit, in excess of that provided for above.
2. Loss of anticipated or unanticipated profit.
3. Labor inefficiencies and loss of productivity.
4. Home office overhead in excess of that provided for above.
5. Consequential damages, including but not limited to interest on monies in dispute, including interest which is paid on such monies, loss of bonding capacity, bidding opportunities, or interest on retainage or investment, or any resultant insolvency.
6. Indirect costs or expenses of any nature.
7. Direct or indirect costs attributable to performance of work where the Contractor, because of situations or conditions within its control, has not progressed in a manner satisfactory to the Executive Director.
8. Attorneys' fees or claims preparation expenses.

L. Remedies Exclusive: With respect to extra costs and delay damages, the parties agree that the State shall have no liability to the Contractor for expenses, costs, or items of damage other than those which are specifically identified as payable above. In the event any legal action is instituted against the State by the Contractor on account of any extra work or for additional compensation, whether on account of delay, acceleration, breach of contract, or otherwise, the Contractor agrees that the State's liability will be limited to those items which are specifically identified as compensable above. The Contractor further agrees to make no claim for expenses other than those which are specifically identified as compensable above.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012200

SECTION 013000.01 - ADMINISTRATIVE REQUIREMENTS-ECP Version

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

A. Other requirements pertaining to payments are included in the General Conditions and in the various sections of the Specifications.

B. Cost Computations: Section 012200.

C. Submittals: Section 013300.

1.2 WAIVER OF CERTAIN SUBMITTAL REQUIREMENTS

A. The Electronic Contractor Payments (ECP) program facilitates electronic submission of payment applications and related documents and information via a secure web-based portal. This portal is hereinafter referred to as the "Vendor Interface". Hardcopy (paper) submission of the following forms is waived, and the information required by these forms shall be submitted via the Vendor Interface:

1. BDC 169 (Contractor's Application for Payment form).
2. BDC 187 (Detailed Estimate form).
3. BDC 329 (Contractor's List of Subcontractors–Suppliers).

1.3 SCHEDULES AND RECORDS

A. Submit the following information not later than 15 days after approval of the Contract unless the Contractor or the Director determines an earlier submission is required to properly schedule or progress the Work.

1. CONTRACTOR'S LIST OF SUBCONTRACTORS – SUPPLIERS: An affirmative review of the subcontractor's responsibility will be conducted. Any subcontractor disapprovals resulting from negative information derived from the State's review will result in written notice (by letter or e-mail) to the Contractor. A responsibility meeting may result from these actions. The Contractor will defer to the provisions of Article 6, General Conditions, regarding its responsibility to prosecute the work.

a. Submit the CONTRACTOR'S LIST OF SUBCONTRACTORS – SUPPLIERS information using the required electronic entry process via the Vendor Interface.
b. Indicate the items of Work proposed to be accomplished by subcontractors, the name and address of each proposed subcontractor, the dollar value of the subcontract, and Minority and Women-Owned Business Enterprise (MWBE) information.

1) Attach a properly completed and executed NEW YORK STATE VENDOR RESPONSIBILITY QUESTIONNAIRE – FOR PROFIT CONSTRUCTION (CCA-2) and forward to the Vendor Responsibility Unit for each subcontractor whose subcontract is valued at $100,000.00 or more unless requested otherwise by the Contracting Officer and/or the Director's Representative.
2) As an alternative to submitting a paper version of the form, subcontractors may opt to submit the CCA-2 on-line via the New York State VendRep System. Information on this system and the New York State vendor responsibility requirements is available at: http://www.osc.state.ny.us/vendrep/index.htm.

c. Indicate the names and addresses of proposed suppliers, the dollar value of the supplies, and MWBE information.
d. Failure in providing this information may result in payments being withheld and referral to the Contracting Officer for a responsibility determination.

B. If after initial approval, circumstances require a change in a subcontractor or supplier or require additional subcontractors or suppliers to be used, use the Vendor Interface to submit a revised BDC 329 form that reflects the changes or additions.

1.4 DETAILED ESTIMATE

A. Before making the first requisition for a progress payment, prepare a detailed estimate of quantities and prices for materials, labor and other items required for the Work, which shall aggregate the contract sum.

1. Submit the DETAILED ESTIMATE information using the required electronic entry process via the Vendor Interface.

B. The detailed estimate shall be supported by such evidence, including certified copies of subcontracts, as the Director may require.

C. The detailed estimate must be approved by the Director who may revise it as, in their reasonable judgment, is necessary to make the various items conform to their true values.

1. The value of each requisition for payment shall be based on the approved detailed estimate.

D. The Contractor shall bill any item of work listed as "Lump Sum" to 100%, no partial percentages will be allowed.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013000.01

SECTION 013113 - PROJECT PLANNING AND SCHEDULING

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS AND INFORMATION SPECIFIED ELSEWHERE

A. Summary of the Work: Section 011000.

B. Administrative Requirements: Section 013000.

C. Project Meetings: Section 013119.

1.2 SUMMARY

A. Section includes administrative and procedural requirements to plan, schedule, and document the progress of the Project, work in place, and predict and prevent delays to established activities and milestones during performance of the Work.

1.3 DEFINITIONS

A. Activity: A task or grouping of tasks containing an anticipated start-date and corresponding duration in work days, anticipated labor resources, person responsible for the work, restricted work period, contract reference document, sequence of work, and budgeted cost (if required) comprising a generalized portion of the Work, that can be identified and measured for planning, coordinating, monitoring, and controlling the project.

B. Activity Duration: Time needed for the represented work in work days. No duration in any baseline or recovery schedule shall be longer than one (1) reporting period as defined in Section 013119, except for submittal items. All procurement and work activities must be provided in sufficient detail to meet this duration requirement.

C. Baseline Agreement: The agreement document for Section 013113 which will contain the baseline schedule report.

D. Baseline Project Schedule: The schedule derived from the Contractors' Project Work Plan activities and their prescribed durations, predecessor activities, etc., recognizing the completion of the Work of the Project Work Plan in accordance with the Contract duration. The Baseline Project Schedule will remain unaltered as a tool to measure progress outlined and anticipated during the Initial Schedule Meetings and from the agreed-upon Baseline Project Schedule. The Project Team will agree to the resulting schedule by completing the Baseline Agreement within the Project Work Plan software. OGS Scheduling will maintain the agreed-upon Baseline Project Schedule as the assigned project baseline schedule.

E. Calendar: The calendar utilized for each activity, set according to the direction of OGS Scheduling to accurately reflect anticipated State and Federal holidays. Calendars reflecting

additional shifts or non-traditional work hours must be reviewed with the Director's Representative and approved by OGS Scheduling and prior to use in the schedule.

F. Constraints: Constraints are a function which can manipulate or hold specific dates. Constraints are used by OGS Scheduling in specific instances during the baseline process to hold dates dictated by the terms of the Contract or assigned to submittal & procurement items in the Project Work Plan. Constraints are not allowed to be used/entered by Contractors on any activities except for mobilization items.

G. Data Date: The progress point or "status date" for activities/tasks in the project. Project status is up-to-date as of the Data Date. OGS Scheduling will specify the Data Date for each Project Update Reporting Period.

H. Float: The measure of latitude in starting and/or completing an activity without impeding the successful realization of Project Milestones. It is an expiring Project resource that is jointly owned, not for the exclusive use or benefit of either the State or the Contractors. Float is available as needed to meet scheduled milestones and Project completion. Recognizing float within an activity, or chain of activities, does not permit the Contractors to disrupt progress or to delay completion of an activity.

I. Milestone Activity: A significant start or finish to Work on a given set of activities on the Project, defined by both the Director's Representative and the Contractors. The Project Team will identify milestones, activities, or summary activities for incorporation into the Baseline or Project Schedule to assist in planning, scheduling, and coordinating the Project. This may include major milestones or phases required by the Contract Documents to be utilized by the Contractors and Project Team in developing the Baseline Project Schedule.

J. OGS Project Work Plan System (OGS PWPS): The collaborative online system provided by OGS for Contractors to establish their Project Work Plan activities, duration, prerequisites, resources and budgeted cost (if required) for Work of the Project. All work is entered into the OGS PWPS by the Contractor(s).

1. Importing of any information is not allowed.
2. Time lags are not allowed to be scheduled between activities.

K. OGS Scheduling: The department responsible for assisting and training the Project Team, reviewing, reporting, and interpreting the Contractor Project Work Plan and related information.

L. Preliminary Project Schedule: This schedule is a summary outline of the Contractor's anticipated Project Work Plan for the sequence of work of this Contract through Substantial Completion as noted in the Summary of Work (Section 011000). The activities are developed using anticipated dates and are coordinated among the Contractor(s). The resulting Schedule outlines and aligns the sequence of work for the individual Contract and coordinates the Contracts that are part of a multiple trade Project. The Project Work Plan needs to address sequencing of the work, long lead items, and impact of weather and restricted work periods as noted in Section 002219. The Project Team will agree to the resulting schedule by completing the Baseline Agreement within the Project Work Plan software.

M. Project: Work to be performed as part of one or more Contracts.

N. Project Team: The Designated Representatives acting on behalf of the State and/or Contractors to successfully plan, schedule, and coordinate the Work of the Project.

O. Project Update Reporting Period (Project Schedule Updates): A regular reporting period as stipulated for this Project in Section 013119, that is concluded by a Project Update Meeting for review, evaluation, and adjustments to the Project Work Plan and Activity progress.

P. Project Work Plan: A comprehensive list of Contractor tasks, including prerequisite activities, durations, labor resources, budgeted costs (if required), etc. used to develop the Project Schedule as entered by the Contractor's Supervision staff in the OGS PWPS.

Q. Recovery Project Schedule: Revised Project Work Plan developed from recovery options presented by the Contractor to the Director's Representative when Project Update Reporting indicates the Work is 15 or more work days behind the current Substantial Completion dates of the agreed-to Baseline Project Schedule. The Contractor will update their Project Work Plan accordingly for the revision. The Project Team will agree to the resulting recovery project schedule by completing the Baseline Agreement within the Project Work Plan software. OGS Scheduling will maintain the Baseline Agreement Recovery Project Schedule as the assigned Baseline Project Schedule.

1. The Recovery Project Schedule will only be reviewed by OGS when it is entered in the OGS PWPS

R. Resource: Any labor (workers), material, or equipment, shared or exclusive, required for the completion of the Work or an Activity, for which an associated cost is recognized.

S. Schedule: A comprehensive plan of necessary procedural tasks, including task sequencing, projected start and finish dates, and resource allocation required to successfully complete the Work by the Project completion date. The dates in the Schedule are the result of the sequence, duration, and requirements from the Project Work Plan.

PART 2 - PRODUCTS

2.1 SCHEDULE SOFTWARE

A. The Project Work Plan software (Oracle Primavera) is provided by OGS through the OGS PWPS for use on this OGS contract only.

B. Contractors are required to have Internet access to utilize the OGS PWPS for all parts of this section.

C. Meetings will be held in accordance with Section 013119 and will be conducted via WebEx™ or an equivalent online method provided by OGS.

D. OGS will provide training for access and use of the OGS PWPS. Additional support is available by OGS Scheduling as requested.

PART 3 - EXECUTION

3.1 PROJECT AWARD

A. OGS Scheduling will establish one account for each Contractor.

B. The Initial Schedule and Training Meeting is coordinated by the Director's Representative and Project Team. Prior to the meeting all Contractor accounts need to be set up by OGS Scheduling.

3.2 INITIAL SCHEDULE MEETING – (PERIOD DEFINED BY SECTION 013119)

A. The meeting is mandatory for the members of the Project Team and will be conducted by OGS Scheduling for the purpose of defining the intent of the specification and reporting structure of the Project. The mutual agreements reached at this and subsequent meetings form the basis for the Baseline and other Project Schedule(s), and will be used for coordinating, scheduling, and monitoring the Work of all related contracts.

B. This meeting also includes training for the Project Team using the OGS PWPS. Each session will be one hour (total of two hours) via WebEx™ or an equivalent online method provided by OGS.

1. SESSION 1 - Preliminary Project Schedule & Initial Training
2. SESSION 2 - Baseline Project Schedule Training

3.3 PRELIMINARY PROJECT SCHEDULE – (PERIOD DEFINED BY SECTION 011000, if specified)

A. In the OGS PWPS, the Contractor will develop their Project Work Plan activities and provide information relating to activity naming, anticipated work dates, resources, and budgeted cost (if required) on the OGS PWPS. The Project Team will establish a focused work breakdown structure (WBS). The activities are developed using anticipated dates and are coordinated among the Contractor(s).

B. Activities are to be appropriately placed within the OGS PWPS. Activity durations are only limited by the requirements of coordinating the work of the Preliminary Project Schedule by the Project Team. For the purposes of coordinating this schedule, relationships (predecessors and successors) are not required between the activities.

C. The Preliminary Project Schedule must be agreed to by the Project Team. Each Contractor and the Director's Representative shall agree to it by completing the Baseline Agreement within the Project Work Plan Software (sample agreement included at the end of Section 013113) .

3.4 BASELINE PROJECT SCHEDULE – (45 DAYS AFTER AWARD)

A. The Contractor(s) shall develop and enter their Project Work Plan activities which adequately represent their scope of Work of the Contract and the required coordination efforts for the Project. This includes, but is not limited to, sequence requirements, identification of logical connections to other work critical to Substantial Completion, accounting for critical submittals or submissions,

the fabrication and delivery of long-lead materials, products, specialized equipment or services, and the recognition of critical testing, inspection, or commissioning durations for coordination and tracking.

B. Each activity will identify the Contractor's anticipated duration for the activity defined in workdays, resources, and budgeted cost (if required) of the activity. The Contractor is responsible to provide the mandatory requirements outlined by OGS and the online OGS PWPS layout within the project structure provided by OGS. Revisions to the project structure must be agreed upon by the Project Team.

C. Activity durations cannot exceed the time frame in work days of the Project Reporting Period as defined in Section 013119.

D. The Contractors will identify each activity with a unique Activity Name that clearly communicates the scope of the work item to the rest of the Project Team. No Activity Name or Activity ID will be altered without approval of the Director's Representative and OGS Scheduling after the Baseline Project Schedule has been agreed to by the Director's Representative.

E. The Baseline Project Schedule must be agreed to by the Project Team. Each Contractor and the Director's Representative shall agree to it by completing the Baseline Agreement within the Project Work Plan software (sample agreement included at the end of Section 013113).

3.5 PROJECT SCHEDULE UPDATES (PERIOD DEFINED BY SECTION 013119)

A. Project Schedule meetings will be led by the Director's Representative and held to review Contractor updates to the actual starts, actual finishes, and remaining duration of in-progress activities, and consider logic changes, predecessor alterations, duration amendments, time impact events, and scope changes, for the purpose of determining the status of construction progress for the updated Project Schedule. At each meeting the Project Team will:

1. Agree to the completed Activity dates.
2. Coordinate and agree to the next 6-week Project Work Plan.
3. Evaluate and acknowledge any impact to the Contractor's ability to execute the Project Schedule according to the Baseline Project Schedule.

B. During the progress of Work on the Project, the Contractors are required to document actual start, actual finish, and remaining duration on a daily basis. Information will be posted by the Contractor to the OGS PWPS as defined during the Initial Schedule Meeting.

C. Contractors are required to update the status of all their activities two (2) days prior to the Project Schedule Meeting. The Contractors will notify the Director's Representative and OGS Scheduling when their update information for all activities is complete.

1. Any variation of 5 days (+/-) in the start or finish date for each activity must be explained and posted to each activity.
2. All necessary initiated documents such as Request for Information (RFI), Information Bulletins (IB), Field Orders (FO), Change Orders (CO), and Notice of Claim (NOC) must be incorporated by the Contractor into the Contractor's Work Plan.

3. Any Contractor failing to progress their Work as outlined in the updated Project Work Plan will be informed of their deficiencies and, if required, be requested to provide a recovery option.

D. Performing Work out of sequence with the Project Schedule is not permitted unless written approval is obtained from the Director's Representative prior to commencement.

3.6 RECOVERY PROJECT SCHEDULE

A. When the Project Schedule completion date is projected to be greater than the agreed-to Baseline Project Schedule's Substantial Completion date by 15 or more work days, the Contractor(s) will revise the existing Project Work Plan as necessary towards meeting the specified completion date within 10 calendar days after the Project Schedule update meeting.

B. Contractor recovery options may include, but are not limited to, allocating additional resources to reduce activity duration or modify activity sequencing.

C. Alterations to the Project Work Plan activities for a Recovery Work Plan will require the approval of the Contractor(s) and the Director's Representative. Agreed-to alterations to the Project Work Plan activities for a Recovery Work Plan will constitute the updated Project Schedule.

D. The updated Project Schedule must be agreed to by the Project Team. Each Contractor and the Director's Representative shall agree to it by completing the Baseline Agreement within the Project Work Plan Software (sample agreement included at the end of Section 013113).

E. The previous Baseline Project Schedule will be retained. The new agreed-upon Baseline Project Schedule will be used to measure progress moving forward.

3.7 SCHEDULE CLOSEOUT (AS-BUILT SCHEDULE)

A. A schedule meeting must occur to update the project schedule with the actual progress dates and to confirm that all activities are complete for Substantial Completion.

B. The Director's Representative will determine if any of the original Substantial Completion activities need to be tracked for Physical Completion in the project schedule.

3.8 TIME IMPACT AND TIME IMPACT ANALYSIS (TIA)

A. The Contractor(s) will represent the impact relative to the assigned Baseline Project Schedule in the OGS PWPS. The Contractor will incorporate the impact of any change in their Work Plan per the current OGS PWPS requirements for impacts. The requirements include but are not limited to:

1. A day-for-day tracking of the impact to illustrate the sequence of the impact from the initiating event.
2. All information required to create an Activity and the associated codes for the impact in the OGS PWPS as defined previously.

3. Modification of existing activities so that the name of each associated task enhances the reader's understanding of the impact. Modification of the associated (TIA) codes for the change in the OGS PWPS.
4. For the addition of any new activities, an explanation of how the modified scope impacts the agreed-to Baseline Project Schedule.

B. Contractors and the Project Team will use the most current Project Work Plan update to prepare the Time Impact representation.

C. If Project Work Plans have not been updated in accordance with this specification, an update by the Contractor must be generated which includes an accurate realization of the Work performed and progressed up to the Time Impact event. Failure to maintain Project Work Plan updates in accordance with this or related specifications will not absolve the Contractors of the responsibility to identify Time Impact as defined by, but not limited to, Specification Section 013113 or the General Conditions.

D. OGS Scheduling will assist the Contractor with this process as requested.

E. A Request for Time Extension will require Time Impact recognition within the OGS PWPS and Schedule.

F. Time Impact events will be reviewed for accuracy and are to be updated in accordance with relevant new information regarding time for resolution and impact to the remaining work on the Project.

G. All impacts (sequence, duration, and scope) must be agreed to by the Project Team.

3.9 SUBSTANTIAL COMPLETION DATE CHANGES

A. If the Substantial Completion date of the project is modified by an Order on Contract in accordance with the General Conditions, the Project Team will agree to a new Baseline Project Schedule within 10 calendar days after the approval of the Order on Contract.

1. The previous Baseline Project Schedule will be retained. The new agreed-upon Baseline Project Schedule will be used to measure progress moving forward.
2. The new Baseline Agreement must be agreed to by the Project Team. Each Contractor and the Director's Representative shall agree to it by completing the Baseline Agreement within the Project Work Plan Software (sample agreement included at the end of Section 013113).

SAMPLE BASELINE AGREEMENT

Baseline Agreement

NEW YORK STATE OF OPPORTUNITY. Office of General Services Design & Construction

Project:

It is agreed that the referenced Project Schedule defined by the following reports has been reviewed and is accepted for use in coordinating, scheduling, and monitoring the work of all related contracts

By acknowledging within the Project Work Plan software, OGS does not waive the terms and conditions set forth in the Contract Documents. In accordance with the General Conditions (Document 007213) any change in the Contract sum or time of completion requires an Order on Contract.

Refer to the following report for the specific dates.

Contract	Representative	Activity Name	Date

END OF SECTION 013113

SECTION 013119 - PROJECT MEETINGS

PART 1 - GENERAL

1.1 INITIAL JOB MEETING

A. The Director's Representative will notify all parties concerned of the time and place of the initial job meeting. The meeting will be conducted by the Director's Representative. The agenda will be based on the Format for Initial Job Meeting. All items on the format, as they apply, will be discussed.

1. A copy of the Facility's current Visitor Identification Policy will be distributed.

1.2 PROJECT SCHEDULE MEETINGS

A. The Initial Schedule Meeting will be held within 15 days of Project award. The Director's Representative will notify all members of the Project Team of the time and place of the meeting. The meeting will be conducted by the Director's Representative and OGS Scheduling via WebEx™ or an equivalent online method for the following purposes:

1. Define the intent of the specification.
2. Review the reporting structure of the Project.
3. Provide training to the Project Team.

B. The Director's Representative will notify all members of the Project Team of any Schedule development/coordination meetings conducted by the Director's Representative and OGS Scheduling via WebEx™ or an equivalent online method.

C. The Project will have monthly project update reporting periods. The update meetings will be conducted by the Director's Representative and OGS Scheduling via WebEx™ or an equivalent online method for the following purposes:

1. Agree to the completed Activity dates.
2. Coordinate and approve the next 6-week Project Work Plan.
3. Evaluate and acknowledge any impact to the Contractor's ability to execute the Project Schedule according to the approved Baseline Project Schedule.

1.3 BI WEEKLY JOB MEETINGS

A. Unless otherwise directed, job meetings will be held bi weekly, at a time and place agreed upon by the Director's Representative, the Contractor, and the Facility Representative. Other interested parties may attend when needed, e.g., subcontractors and representatives from suppliers, public utilities, and local government. The meetings will be conducted by the Director's Representative for the following purposes:

1. Review job progress, quality of Work, and approval and delivery of materials.

2. Identify and resolve problems which impede planned progress.
3. Coordinate the efforts of all concerned so that the project progresses on schedule to on-time completion.
4. Maintain sound working relationships between the Contractors and the Director's Representative, and a mutual understanding of the project requirements.
5. Maintain sound working procedures.

1.4 PRE-INSTALLATION MEETINGS

A. Pre-installation meetings will be held to review the specifications, Project Schedule, drawings, and approved submittals in preparation for start of a particular activity.

B. The meetings shall be attended by the Director's Representative, a Design Representative, and the Contractor's Representative, including installer and representatives of manufacturers & fabricators involved in or affected by the installation and its coordination with other materials/trades.

C. The Director's Representative shall schedule the meetings prior to the start of the work. The goal of these meetings is to ensure the quality of construction and to maintain the schedule.

1.5 ATTENDANCE

A. A Contractor's Representative shall be required to attend all meetings scheduled by the Director's Representative, as set forth above.

B. If the Contractor's Representative fails to attend two scheduled meetings without prior approval, the Contractor will be directed to replace the current Contractor's Representative. Further incidents of non-attendance by the Contractor's Representative will form the basis for review of the Contractor's responsible vendor status.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013119

SECTION 013300.0 - SUBMITTALS

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

A. Other requirements pertaining to submittals are included in the General Conditions and in the various sections of the Specifications.

B. Summary of the Work: Section 011000.01.

C. Administrative Requirements: Section 013000.

D. Contract Closeout Submittals: Section 017716.

1.2 DEFINITIONS

A. Deviation: Changes in products, materials, equipment and methods of construction from those required by the Contract Documents and proposed by the Contractor.

B. Acceptable Manufacturer, Company or Product: A manufacturer, company or product capable of achieving the requirements established in the Contract Documents and demonstrating compliance.

C. Portable Document Format (PDF): An open standard file format used for representing documents in a device-independent and display resolution-independent fixed layout document format.

D. Environmental Product Declaration (EPD): a third-party verified (also known as “type III”) product declarations that quantify environmental information the full life cycle of a product, from raw material supply, transport, manufacturing, installation, and operational use, through to waste processing and disposal at end-of-life, per ISO 14025.

1.3 DEVIATIONS FROM REQUIREMENTS OF THE CONTRACT DOCUMENTS

A. Deviations from the requirements of the Contract Documents will not be allowed unless a request for deviation is made in writing prior to or at the time of submission and the specific deviation is approved by the Director’s Representative subject to the requirements of Article 4 of the General Conditions. The request for deviation shall be made utilizing the CONTRACT DOCUMENT DEVIATION REQUEST FORM (Form BDC 49) accessible from the OGS Web Site.

1. The submission of a deviation shall be done in a timely manner according to the schedule of submittals to allow the Director sufficient time for review.

1.4 "OR EQUAL" TO BRAND NAME PRODUCTS

A. Whenever a product is specified by brand name, a comparable brand, equal to that named, may be submitted for approval subject to the requirements of Article 5 of the General Conditions.

1. The Contractor shall bear the burden of proving that the proposed product is equal to the specified product. The submission of an "or equal" shall be done in a timely manner to allow the Director sufficient time to review the proposed product.
2. Whenever a color or pattern is indicated by a specific manufacturer's name or number, the intent is to communicate the required color or pattern of the material. Other manufacturers' comparable colors or patterns may be submitted for approval as equal.

1.5 WAIVER OF CERTAIN SUBMITTAL REQUIREMENTS

A. Unless otherwise specified, the requirement to submit product data and samples for approval will be waived for products specified by brand name if the specifically named products are furnished for the Work. In such cases, submit required Product Data to the Director's Representative via Submittal Exchange® for information only.

1.6 ADMINISTRATIVE REQUIREMENTS

A. Participate in the OGS's hosted web-based collaboration service (Submittal Exchange® at www.submittalexchange.com) to transmit and track Contractor provided project related documents.

B. Identify submittals by project title and number. Include Contractor's name, date, and revision date. On shop drawings, product data and samples, also include the name of the supplier and subcontractor (if any), and applicable specification section number. Stamp each submittal and initial or sign the stamp to certify review and approval of submittal.

C. Assemble submittals in accordance with the requirements in the individual sections of the Specifications and as required by this section. It is the Contractor's responsibility to review and verify that all information required for each submittal is included in the submittal package. Errors or omissions found by the Contractor are to be corrected prior to the submission of the submittal package for approval. Incomplete submittal packages that have been submitted for review and approval will be returned.

1. It is the Contractor's responsibility to verify that portions of the submittal package to be provided by a subcontractor (or supplier) are complete, as well as portions of the submittal package being provided directly by the Contractor.
2. Do not combine the submittals of more than one specification section with submittals required by other specification sections unless specifically stated in the contract Specifications.

D. If a submittal is based on, or the result of, a change order or field order to the Contract Documents, include copies of the applicable change order or field order with the submittal.

E. 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 instructions for partial submittals are required in a specific specification section requiring sequential submissions.
3. Submit action submittals and informational submittals required by the same specification section as separate packages under separate transmittals.
4. Coordinate transmittals 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. The Director's Representative reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

F. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on uploading the submittal to Submittal Exchange®. No extension of the project schedule will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow time for the initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. The Designer of Record will advise the Director's Representative when a submittal being processed must be delayed for coordination.
2. Resubmittal Review: Allow time for review of each resubmittal.
3. Sequential Review: Where sequential review of submittals by the project team is necessary for coordination, allow time for review.

G. The Construction Contractor shall employ or otherwise provide a full-time Submittal Coordinator for no less than 90 days after the Initial Job Meeting (IJM). The Submittal Coordinator is responsible to manage, coordinate and facilitate the submittal process on behalf of the Contractor. The Submittal Coordinator shall have regularly been engaged in construction administration for a minimum of 3 years and shall not be employed or otherwise engaged as the Project Manager or Superintendent for either the Work of this Contract or be employed in any role, full or part time, outside of this Contract.

1.7 SUBMITTALS

A. Submittal Coordinator Qualifications: Not later than 10 days after Award. Include resume and references, and other certification, licenses, or other requested information.

B. Schedule of Submittals acknowledgement: Provide written acknowledgement that the Schedule of Submittals has been received and reviewed with Critical Submittals identified and Contractor's Projected Dates (three dates inserted into each column) are entered for each specification item.

1.8 RE-EVALUATION FEE

A. In accordance with Article 4.7 of the General Conditions, a re-evaluation processing fee will be levied against the Contractor for each re-evaluation of a Submittal or Submittal Package

submission that was returned for failure to comply with the submittal requirements relative to completeness, content or format.

1.9 ELECTRONIC SUBMITTALS

A. Submittal Exchange® is used to provide an on-line database and repository which shall be used to transmit and track project related documents. The intent for using this service is to expedite the construction process by reducing paperwork, improving information flow, and decreasing submittal review turnaround time.

1. Project submittals (shop drawing, product data and quality assurance submittals) shall be transmitted by the Contractor in PDF to Submittal Exchange®, where it will be tracked and stored for retrieval for review. After the submittal is reviewed it is uploaded back to Submittal Exchange® for action or use by the Contractor and Director's Representatives.
2. The service also tracks and stores documents related to the project such as RFI's (Request for Information), IB's (Information Bulletins), CAD Coordination, Minutes, Testing, Closeout, and SWPPP documents.

B. For each submittal, the Contractor shall review and apply electronic stamp certifying that the submittal complies with the requirements of the Contract Documents, including verification of manufacturer/product, dimensions and coordination of information with other parts of the work.

C. It is the Contractor's responsibility to provide submittals in PDF. The Contractor may use the following options:

1. Subcontractors and suppliers provide electronic submittals in PDF to the Contractor through Submittal Exchange®.
2. Subcontractors and suppliers provide paper submittals to the Contractor, who electronically scans and converts them to PDF.
3. Contract a Scanning Service, which will allow the Contractor and the Contractor's subcontractors and suppliers to provide paper submittals to the Scanning Service, which electronically scans and converts them to PDF. It will be the Contractor's responsibility to transmit the scanned submittals to Submittal Exchange®.

D. Image Quality:

1. Image resolution: The PDF files shall be created at a minimum resolution of 200 dots per inch utilizing the original document size. The Contractor will be responsible to increase the resolution of the scanned file or images being submitted as required to adequately present the information.
2. Image Color Rendition: When information represented requires color to convey the intent and compliance, provide full color PDF reproduction.

E. Internet Service and Equipment Requirements:

1. The Contractor will be required to have an Email address and Internet access at Contractor's main office.
2. Unless the Contractor will exclusively be using a Scanning Service to create PDF documents, the Contractor will be required to own a PDF reviewing, creating and editing software, such as Adobe Acrobat (www.adobe.com), Bluebeam PDF Revu®

(www.bluebeam.com), or other similar PDF reviewing, creating and editing software for applying electronic stamps and comments.

F. Training and Support:

1. Submittal web-based collaboration training and support shall be available, free of charge from Submittal Exchange®, for project participants using the submittals website.
2. Training schedule will be coordinated through the Director's Representative.

G. Paper prints (hardcopies) of reviewed submittals:

1. Record Copy: Each Contractor shall provide one paper copy of each submittal they are responsible for to the Director's Representative within 14 days of receipt of a released submittal (i.e. marked "Approved", "Approved As Noted", or other implied acceptance of a submittal), or meeting the requirements of Waiver Of Certain Submittal Requirements Article of this specification section.

   a. Exception: Paper copies are not required for a submittal that is disapproved or requiring resubmission.
   b. Paper copies shall be printed in a size format equal to the original document.
   c. Scaled Shop Drawings shall be printed to the scale noted on the drawings.
   d. The resolution of the printed copy shall be equal to that of the PDF file that it is being printed from.
   e. The Record Copy shall be used by the Director's Representative during the construction of the project and shall be retained as a turn-over item to the facility at the end of the project as required under Section 017716 Contract Closeout.

2. Use for Construction: Retain complete copies of submittals on project site. The Contractor shall not commence work for related activities until the appropriate submittals are approved and the corresponding record copies are delivered to the Director's Representative.
3. Distribution: The Contractor will furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Maintain transmittal forms indicating distribution of submittals.

1.10 SHOP DRAWINGS

A. Provide shop drawings in the format required by the Specifications. Show the information, dimensions, connections and other details necessary to insure that the shop drawings accurately interpret the Contract Documents. Show adjoining construction in such detail as required indicating proper connections. Where adjoining connected construction requires shop drawings or product data, submit such information for approval at the same time so that connections can be accurately checked.

B. Electronic copies of CAD Drawings of the Contract Drawings will not be provided by the Director's Representative for Contractor's use in preparing submittals.

C. Have shop drawings prepared by a qualified detailer. Shop drawings shall be neatly drawn and clearly legible. Machine duplicated copies of Contract Drawings will not be accepted as shop drawings.

1. Where shop drawings are indicated to be drawn to scale:

    a. Use scale normally found on an “Architect” or “Engineer” scale.
    b. Written Scale: Clearly label scales being used on each drawing and/or on each detail on the drawing.

        1) Examples: 1/8” = 1’-0” 1” = 40’-0”.

    c. Graphic Scale: Adjacent to each Written Scale, provide a graphic scale delineating the scale being used. Graphic scale shall be divided into measuring units relating to the accuracy required for the drawing or details.
    d. Clearly dimension key elements of the drawing or detail.

2. When the drawing sheet is printed full size, the minimum text size shall be 1/8" (3.2 mm) for hand drafting and 3/32" (2.5 mm) for CADD drawings.

D. Submit the shop drawings through Submittal Exchange®. The shop drawings will be reviewed and the review results will be posted on Submittal Exchange®. Contractor will receive email notice of completed review. If the review results in disposition of “DISAPPROVED” or “RETURNED FOR CORRECTION”, promptly correct the deficiencies and resubmit the shop drawings meeting Contract requirements.

1.11 PRODUCT DATA

A. Provide product data in the format required by the Specifications. Modify product data by deleting information that is not applicable to the project or by marking the product data to identify pertinent products. Supplement standard information, if necessary, to provide additional information applicable to project.

B. Submit the product data through Submittal Exchange®. The product data will be reviewed and the review results will be posted on Submittal Exchange®. Contractor will receive email notice of completed review. If the review results in disposition of “DISAPPROVED” or “RETURNED FOR CORRECTION”, promptly correct the deficiencies and resubmit the product data meeting Contract requirements.

C. Comply with applicable federal and State of New York Right-to-Know Law provisions. Provide Safety Data Sheets (SDS) documents for products that have SDS data prior to use on the project site.

1. Upload and maintain electronic SDS documents on the Submittal Exchange® SDS tab.
2. SDS tab is organized by prime contracts. To be readily identified, name products with SDS by specification section number and product name.
3. Supply and maintain one hard copy of the appropriate SDS on the project site and one hard copy with the Facility’s Right-to-Know Information Officer.

1.12 ENVIRONMENTAL PRODUCT DECLARATION (EPD)

A. Provide EPDs for the specific material required by the Specifications, if available.

B. Manufacturer-provided EPDs must be Product Specific Type III (Third-Party Reviewed), in adherence with ISO 14025 Environmental labels and declarations, ISO 14044 Environmental management – Life cycle assessment, and ISO 21930 Core rules for environmental product declarations of construction products and services.

C. Include completed Environmental Product Declaration (EPD) Cover Form found on the OGS Web Site with the submission of each EPD.

D. Submit the product data through Submittal Exchange®. The EPD will be reviewed, and the review results will be posted on Submittal Exchange®. Contractor will receive email notice of completed review. If the review results in disposition of "DISAPPROVED" or "RETURNED FOR CORRECTION", promptly correct the deficiencies and resubmit the product data meeting Contract requirements.

1.13 QUALITY ASSURANCE

A. Provide quality assurance information in the format required by the Specifications, including supporting documentation as required.

B. Submit the quality assurance information through Submittal Exchange®. The quality assurance information will be reviewed and the review results will be posted on Submittal Exchange®. Contractor will receive email notice of completed review. If the review results in disposition of "DISAPPROVED" or "RETURNED FOR CORRECTION", promptly correct the deficiencies and resubmit the quality assurance information meeting Contract requirements.

1.14 SAMPLES

A. Submit 2 (unless a different number is specified) of each sample required by the Specifications.

B. Samples will become the property of the State when submitted and will not be incorporated in the Work unless specifically stated otherwise.

C. The electronic submittal process is not intended for color samples, color charts, or physical material samples.

D. Record transmittal of each sample required by the Specifications through Submittal Exchange®.

E. Consult with the Director's Representative for direction on where Samples will be sent for review.

F. The sample will be reviewed and the review results will be posted on Submittal Exchange®. Contractor will receive email notice of completed review.

1.15 REVIEW OF SUBMITTALS

A. Items submitted for review will be reviewed for compliance with the Contract Documents, based upon the information submitted. The items will be acted upon with the following dispositions:

1. Approved:

a. Where the submittal is marked “Approved”, the work covered by the submittal may proceed provided it complies with the Contract Documents. Final acceptance will depend on that compliance.

2. Approved as Noted:

a. Where the submittal is marked “Approved as Noted”, the work covered by the submittal may proceed provided it complies with the review comments noted on the submittal and the Contract Documents. Final acceptance will depend on that compliance.

3. Disapproved:

a. Where the submittal is marked “Disapproved”, do not proceed with the work covered by the submittal, including purchasing, fabrication, delivery or other activity for the item submitted. Prepare a new submittal according to the review comments noted on the submittal and meeting the Contract Documents.

4. Returned for Correction:

a. Where the submittal is marked “Returned for Correction”, do not proceed with the work covered by the submittal, including purchasing, fabrication, delivery or other activity for the item submitted. Revise or prepare a new submittal according to the review comments noted on the submittal and meeting the Contract Documents.

5. Acknowledged:

a. Where the submittal is marked “Acknowledged”, receipt of the submittal is acknowledged and has been recorded.

6. No Action:

a. Where the submittal is marked “No Action” or “No Action Taken”, no review was made of this item, see comments noted on submittal and take appropriate action.

7. Multi-Action:

a. Where the submittal is marked “Multi-Action”, separate dispositions were made for the items submitted, see the review comments for the disposition of each item submitted.

1.16 SCHEDULES AND RECORDS

A. Submit the following Schedules and Records information not later than 15 days after approval of the Contract unless the Contractor or the Director determines an earlier submission is required to properly schedule or progress the Work.

1. SCHEDULE OF SUBMITTALS (S.O.S.):

a. Follow the Instructions to the Contractor in the S.O.S (cover page of the Microsoft Excel form supplied by the State).
b. Confirm submittal items listed and indicate in the spaces following each item, the date the item will be submitted (Projected Transmittal Date).
c. Confirm critical submittals and long lead items identified by the Architect / Engineer. Identify and mark with "X" additional submittals deemed as critical or having long lead times. In addition to the date each item will be submitted, include the date approval is required (allow at least 3 weeks), and the date delivery of the material or equipment is necessary for timely completion of the Work in accordance with the Project Schedule.
d. Notify the Director's Representative of modifications and/or additional submittals necessary for the project prior to requesting revisions with Submittal Exchange®.

2. SUBMITTALS WEBSITE LOG:

a. The submittal website log will be populated by Submittal Exchange® by means of the S.O.S.
b. Review the log and verify that all long lead items and critical submittals are properly indicated according to the latest version of the S.O.S. For each item to be submitted indicate the following:

1) In the "Date Expected" column insert the date the item will be submitted for review and approval (this is the same date as the S.O.S "Projected Transmittal Date").
2) In the "Date Requested on Site" column insert the date the item will be delivered to the project site (this is the same date as the S.O.S "Projected Delivery Date").

c. The submission date that is entered shall provide sufficient time for the item to be reviewed, ordered, delivered and installed for timely completion of the Work in accordance with the Project Schedule. The date entered for submittal of each item is the last day a deviation will be considered.

1.17 TRANSMITTALS

A. Submittal Transmittal (Form BDC 42) accessible from the OGS Web Site:

1. Furnish separate Form BDC 42 for each submitted item sent to Submittal Exchange® for review.

a. Contractor may utilize their own Transmittal Form (or Transmittal Letter) in lieu of utilizing the Form BDC 42, contingent on the Contractor's Transmittal Form includes all information and certifications required by Form BDC 42.

2. Clearly identify applicable specification section number of submitted item (product data, shop drawing, etc.) on the Form BDC 42.

B. All Contracts:

1. Transmit items designated in the Schedule of Submittals (and project Specifications) to the Submittal Exchange®.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013300.0

SECTION 013350 - COMPUTER AIDED DESIGN COORDINATION DRAWINGS

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS AND INFORMATION SPECIFIED ELSEWHERE

A. Project Meetings: Section 013119.

B. Submittals: Section 013300.

C. Coordination of Trades: Work of different trades that interfere between mechanical, plumbing electrical, architectural, and structural work shall be avoided by the contractor, within the limits of the practical amount of space required for operation and service of equipment. Keep pipe, duct, conduit, and the like as close to ceiling slabs, walls, columns, etc. to assure maximum benefit of the minimal space allowed. Locate piping, ductwork, and equipment so they do not interfere with the intended use of the operational equipment, and architectural elements. Organize piping, conduit and ductwork in all areas neatly, in an organized arrangement in accordance with approved coordination drawing submittals, in straight, plumb layouts utilizing best quality workmanship for appearance, function and serviceability.

1.2 COORDINATION DRAWINGS

A. The Director's Representative will establish a CAD Administrator (CA) to administer and monitor progress of Coordination Drawings, coordinate and schedule review meetings and protocol for all contractors and distribute information as outlined in this section.

B. The "Base" architectural and structural background drawings will be provided as Computer Aided Design (CAD) files in Autodesk's AutoCAD 2004 or 2007 file format by the CA. The CA will meet with the contractors to determine which version of AutoCAD and which file format they will be using to produce drawings for this project. These "Base" background documents are to be provided to each Contractor in the coordination process to establish a common platform for each Contractor to use for their design drawings. This same information will be used to communicate their respective coordination with the other Contractors.

C. Each Contractor and all of their subcontractors shall prepare as part of its costs, shop drawings in compatible format which will be used for incorporation into the coordination drawings.

D. Work shall start on the coordination drawings within seven (7) days after the initial job meeting. The initial coordination drawing(s) shall be produced by the "C" Contractor starting with the "Base" CAD background drawing supplied by the Director's Representative. These backgrounds shall be updated and modified with integration and revision of CAD drawings for new construction to indicate conditions for approved final layouts for foundations, steel framing, concrete reinforcing, and access flooring approved rough-in layout plans. All building structural elements, walls, doors, windows, louvers, openings, ceiling layouts, access floor layouts and major equipment provided by the C contractor and other significant elements shall be shown on designated layers. Scheduled heights for finished ceilings above finished floor, and height above

finished floor of underside of concrete and metal decks and all beams and joists including provision for fireproofing and finished enclosures shall be indicated at all areas.

1. The "C" Contractor shall provide full size "CAD" files for each level, to be plotted at 3/8" or approved coordination scale as directed by the CA.

    a. All larger coordination drawings, broken up with match lines to correlate with phases and distinct plan areas with drawing designations, shall be supplied by the "C" Contractor and approved by the CA.
    b. All coordination drawings will have the location of plan view information the same. The CA shall establish a point of origin for each drawing and these X and Y positions will not be altered by any Contractor.

2. Each Contractor in the "CAD" Coordination process shall utilize prefixes as established by the CA. Examples of some of those prefixes to be used are as follows:

    a. "B" - Architectural Backgrounds.
    b. "SM" - HVAC Ductwork.
    c. "HV" - HVAC, Piping, Controls, etc.
    d. "PL" – Plumbing.
    e. "EL" – Electrical.
    f. "FP" - Fire Protection.
    g. "ST" – Structural.
    h. "RC" – Reflected Ceilings.
    i. "AF" – Access Flooring.

3. All fonts utilized shall be as found in the agreed upon version of AutoCAD software. If not as specified, the *.shx or *.ttf file shall be provided by the respective Contractor and approved by the Director's Representative. All text height shall be a minimum of 3/32" when plotted in scaled plans.

    a. Compatible hardware and software for completion of designated coordination drawings and communication to the CA is to be included into the bid price.
    b. It shall be the responsibility of each contractor to translate drawings submitted by sub-contractors that were created in alternate CAD programs to the correct format before submission to the CA.

4. Transferring of coordination information drawings from Contractor to Contractor will be by the use of the OGS Project FTP site. Instructions for access to the site will be provided after award of contracts.
5. The final "BASE" Architectural Background drawings will be provided to each Contractor in the coordination process on the FTP site by the "C" contractor. The coordination drawings on disks, including one original vellum and nine prints, shall be forwarded to the CA for approval at each stage in the process by the contractor making the latest modifications.
6. A cross-reference list of drawings shall be provided by each Contractor correlating the drawings list with the "CAD" file name.
7. All altered, changed and/or revised coordination drawings, after resolution of conflicts by the Contractors, shall be submitted via the FTP site.
8. Coordination drawings shall be prepared for the following areas:

a. All areas (above ceiling).
b. Below raised access floors, slab penetrations and inserts.

9. Separate coordination plans shall be prepared for the following areas:

a. Mechanical rooms.
b. Electronics rooms.
c. Electrical rooms.
d. Communications rooms.
e. Radio room.
f. UPS.

E. The sequence of drawings being passed on from one Contractor to another, and the responsibility of each shall be as follows:

1. The initial base Architectural Background drawing, including architectural elements as noted above, shall be placed on the FTP site for each Contractor to access. The CA shall be responsible for periodically updating the base drawings with approved architectural revisions. Each Contractor shall be responsible for submitting drawing files to the FTP site, in the same manner outlined and in the format outlined in this Section. It is the responsibility of each Contractor to check the FTP daily for updates to the drawing files.
2. Within 10 days from date of issue of the Architectural Background by the CA, the "C" Contractor will submit proposed plan layouts and drawing designations. The "C" Contractor will promptly update the backgrounds with detailed layout information based on verification of conditions and dimensions including but not limited to column and beam locations and clear height from finished floors to underside of structure indicating all permanent obstructions. The base drawings provided by the Director's Representative are drawings that were prepared for use in the printing of bid documents. While generally accurate, there is no guarantee of perfect dimensional accuracy of these initial CAD files. It is the responsibility of the "C" Contractor to verify conditions that may vary and to assure the accuracy of drawings showing new construction. The background drawings shall be further updated by the "C" contractor with detailed layout information based on approved shop drawing submittals for steel framing, decking and reinforcing, ceilings and access flooring. Within 60 days from award of contract the "C" Contractor will complete the final Architectural Backgrounds with information outlined above and post on the FTP site, and will notify the CA, the Director's Representative, and all other contractors. Shop drawing submittals must be expedited for all necessary components to complete this work in a timely manner. The "C" contractor will plot the final background drawings and submit 5 sets of prints for approval to the CA.
3. Within 21 days of date of issue of final background drawings by the "C" contractor, the "H" contractor will post updated drawings to the FTP site indicating accurate layouts for all his/her work including equipment size and locations, HVAC piping and ductwork indicating all sizes and height above finished floors, grilles, registers, diffusers, dampers, valves, equipment connections and all major components based on approved submittals, and will notify the CA, the Director's Representative, and all other contractors. Shop drawing submittals must be expedited for all necessary components to complete this work in a timely manner. HVAC ductwork shop drawing submittals and approvals must precede the application of this information to the coordination drawings and the addition of piping and other work. The "H" contractor will plot the updated background drawings and submit 5 sets of prints for approval to the CA.

4. Within 15 days from date of approval of updated backgrounds by the "H" contractor, the "P" contractor will post updated drawings to the FTP site indicating accurate layouts for all plumbing systems indicating sizes and height above finished floor at regular intervals, fixture locations and fire protection systems, and will notify the CA, the Director's Representative, and all other contractors.
5. Within 15 days from date of issue of updated backgrounds by the "P" contractor, the "E" contractor will post updated drawings to the FTP site indicating accurate layouts for all electrical equipment, conduit runs, all lighting fixtures and electrical devices indicating mounting locations and height above finished floor, and will notify the CA, the Director's Representative, and all other contractors.
6. Contractors may submit completed drawings to the FTP Site prior to the total duration established for each contractor. The CA will schedule the sequence for early submissions.

F. Computer Software/Hardware

1. Contractors shall produce their drawings using the agreed upon version of AutoCAD. Contractors may request to use other CAD software, but only with the understanding that they must submit drawings that follow the requirements outlined in this Section.
2. Contractors shall be equipped with a 56 Kbps or greater modem for file transfer with the FTP site, using Microsoft's Internet Explorer version 6.0 (service pack 2) or later for file transfer. Contractors shall be experienced in the use of that modem software before commencement of the drawing process outlined above.

G. Computer Drawings/Files

1. Each Contractor shall be assigned a "Contractor Code" that shall be used throughout the computer drawings in computer file names and drawing layer names. Those prefixes for example are assigned as follows:

CONTRACTOR	SUBCONTRACTOR CODE
C	ST - Structural
E	EL - Electrical
C	EV - Elevator
E	FA - Fire Alarm
P	FP - Fire Protection
H	HV - HVAC
P	PL - Plumbing
C	RC - Reflected Ceiling
H	SM - Sheet Metal
C	AF - Access Flooring

2. Each base drawing file shall be renumbered with each revision with the addition of the Contractor Code. The original drawing file names shall be issued by the "C" Contractor with the release of each approved final background drawing.
3. Each Contractor shall place their work on drawing layers starting with the two letter designations. A layer list will be issued at the initial coordination meeting.
4. Each Contractor shall be assigned a color for their layers to easily distinguish their work from the other Contractors. Contractors shall not deviate from that color without specific instructions.

5. Text size shall be a minimum of 8" in a 1/8" drawing. All text shall be on a separate layer. See attached layer list for each Contractors text layer. All text and callouts shall be located on drawing as not to interfere with other existing data. Contractors shall not deviate from the fonts assigned unless approved by the CA. If non-standard AUTOCAD fonts are used, Contractor shall supply fonts with drawing files.
6. All dimensions shall be placed on their own layer. See attached layer list for each Contractors dimension layer. Each Contractor shall have their own dimension style defined in the DIMS command as SM-DIMS, HV-DIMS, PL-DIMS etc.
7. Any and all blocks used in the drawings shall be created on layer 0 unless otherwise directed. Blocks can then be inserted on Contractor's layer.
8. All questions to be addressed by the Director's Representative shall be placed on the Contractors Questions layer.
9. All beam and slab penetrations shall be shown on the drawings on separate layers with special designations and unique colors to be determined.
10. When a revision is made to a drawing that has been previously issued, or when a specific question or problem area needs attention by others, it shall be clouded and referenced by the Contractor with a revision number. The revision number symbols shall be issued by the CA. The clouds shall be constructed with the cloud command list routine issued by the CA. Clouds and revision numbers shall be placed wherever an addition, deletion, or a change is made, or where an unresolved question remains. The Contractor shall be responsible for checking with the CA for the Revision number to be placed on any particular drawing, and the layer on which that revision number shall be placed.

H. Once the CA receives each final background drawing from the "C" Contractor, the "C", "H", "P", and "E" Contractors shall meet at a minimum weekly meetings to be held to review the status of the coordination process, and drawings which the foremen and/or Superintendent of each Contractor will be required to attend. Each Contractor will be required to bring at least one color plot of all areas to be coordinated of the most current version on the FTP site at that week's meeting. Each affected Contractor shall review, sign and date each updated coordinated drawing which will indicate their agreement that the coordination drawing(s) has (have) been fully coordinated and are void of all conflicts at each stage. Final completed coordination drawings (after submission by the "E" Contractor) shall be signed off by each Contractor, the Director's Representative, and the CA. Any work in place not in conformance with final approved coordination drawings will be required to be removed and relocated unless specific written approval has been obtained by the Director's Representative to proceed with certain specific work in advance of final approval.

I. Any conflicts, etc., discovered in the coordination stages prior to Contractor(s) sign-off which cannot be resolved by the Contractor(s) shall be brought to the attention of the Director's Representative for immediate resolution by the Director at no additional costs to the State. Contractors shall allow for a minimum of one coordination meeting per week.

J. Any conflicts, etc., discovered after coordination sign-off and during the installation of the Work will be the responsibility of the Contractor(s) to resolve with the approval of the Director. Additional costs, if any, for these resolutions shall be solely the responsibility of the Contractor(s).

K. It is the responsibility of the "C" Contractor to verify the accuracy of the final background drawings, and of each subsequent Contractor to verify the completeness and accuracy of the updated information of their own work and to confirm the absence of conflict with other work.

L. A coordination drawing schedule will be developed by the CA for tracking and reporting the status of coordination drawings with the overall project schedule to which all Contractors shall be responsible.

M. Work fabricated/installed prior to the completion of this process is performed at the Contractors own risk, and compensation of time/costs for corrections will not be allowed.

N. During the project these drawings shall be kept up do date by each prime contractor to reflect any and all changes due to field changes, change orders and field orders and shall be used as a basis of the required "As-Built" drawings. At the completion of the contract the construction contractor shall gather the latest information and turn over 5 paper sets and two CDs of the final updated Coordination drawings which is in addition to the specified trade "as-built" drawings for each prime contract

O. Each Contractor shall be responsible for timely updates to the coordination drawings to indicate as-built conditions for their own work. Updates are required to include all changes regardless of the source or reason for the change, including changes initiated by the Director or the Director's Representative. These "as-built" coordination drawing documents (diskettes, mylars, and prints) shall be turned over by each Contractor with certification as to their accuracy, to the Director's Representative upon substantial completion of the project.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013350

SECTION 014100.01 - REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.1 COMPLIANCE

A. Comply with applicable regulatory requirements and various codes referenced in these specifications. Where conflicts exist between local, State, and/or Federal regulatory requirements, codes, or these specifications, advise the Director's Representative. The Director's Representative will assist in resolving the conflicts to the satisfaction of the regulatory agencies prior to commencing the Work.

1.2 UNIFORM CODE, ENERGY CODE, AND CONTRACTOR QUALIFICATIONS

A. All Work shall comply with OSHA (including site-specific safety plans required on all projects), and the New York State Uniform Fire Prevention and Building Code (the "Uniform Code"), which includes the publications incorporated by reference in Title 19 NYCRR Part 1219 through 1228:

1. 2020 Building Code of New York State (the "Building Code")
2. 2020 Fire Code of New York State (the "Fire Code")
3. 2020 Property Maintenance Code of New York State (the "Property Maintenance Code")
4. 2020 Existing Building Code of New York State (the "Existing Building Code")
5. All other standards referenced in 19 NYCRR Parts 1219 through 1228.

B. The contractor shall be aware of, and comply with, contractor requirements identified in the above-referenced codes and standards; for example, but not limited to:

1. OSHA (Occupational Safety and Health Administration).
2. 2020 Building Code Chapter 33 Safeguards During Construction.
3. 2020 Existing Building Code Chapter 15 Construction Safeguards.
4. 2020 Fire Code Chapter 33 Fire Safety During Construction and Demolition.
5. 2020 Fire Code Chapter 35 Welding and Other Hot Work (which governs safety during construction).

C. All Work shall comply with the 2020 Energy Conservation Construction Code of New York State ("Energy Code") promulgated pursuant to Article 11 of the New York State Energy Law. The Energy Code is contained in 19 NYCRR, Part 1240, and in the publications incorporated by reference in 19 NYCRR Part 1240. The publications incorporated by reference in 19 NYCRR Part 1240 include:

1. The publication entitled "2020 Energy Conservation Construction Code" published by International Code Council, Inc.
2. The publication entitled "ANSI / ASHRAE / IES Standard 90.1-2016, Energy Standard for Buildings Except Low-Rise Residential Buildings" published by American Society of Heating, Refrigeration and Air-Conditioning Engineers, Inc.

3. The other referenced standards mentioned and/or referred to in 19 NYCRR Part 1240.

D. Elevator Work; conform to:

1. Safety Code for Elevators and Escalators, ASME A17.1, as referenced in the Uniform Code.

1.3 STATE-REQUIRED PERMITS AND INSPECTIONS

A. No Work shall commence without a Construction Permit issued by the OGS Division of Codes and Construction Permitting. Contractors shall not file for and not pay for Construction Permits for Work located on New York State property.

B. New York Board of Fire Underwriters inspection or certificate is not required.

1.4 LISTINGS

A. Equipment and materials for which Underwriters' Laboratories, Inc. (UL) provides product listing service, shall be listed and bear the listing mark.

1. Alternately, any product listed and bearing the mark from one of the other Nationally Recognized Testing Laboratories (NRTL – as recognized by OSHA) shall be an acceptable alternative to being UL listed and marked if the listed product has been tested to the applicable standard.

1.5 FIRE-RESISTANT CONSTRUCTION MATERIALS AND ASSEMBLIES

A. Conform to the fire rating classifications based upon the test methods and acceptance criteria in the "Standard for Fire Tests of Building Construction and Materials" for which Underwriters' Laboratories, Inc. (UL) provides listings.

1. Materials and assemblies shall comply with the acceptance criteria, detailed description of the assembly, its performance in the fire test, and other pertinent details such as specification of materials, Classification coverage, and alternate assembly details.
2. Alternatively, fire resistance rating classifications by other issuing organizations listed in the New York State Uniform Fire Prevention and Building Code are acceptable.

1.6 UTILITIES

A. Underground Utilities:

1. Locate existing underground utilities prior to commencing excavation work. Conform to all requirements of NYCRR 16 Part 753, including the following:

a. Notify UDig NYat least 48 hours in advance, not counting the date of contact.

1) Statewide Phone Number: 811.

2) Website: https://udigny.org/

b. Refer to Project Manual Section 023313 “Underground Utility Locator Service” to locate all utilities on facility and/or private property.
c. Determine exact utility locations by hand-excavated test pits. Contractor will be responsible for the proper support and protection of all utilities to remain in service.
d. Contractor shall provide a representative to clearly mark areas of excavation in accordance with NYS Code Rule 753.
e. Submit copies of all UDig NY Tickets to the Director’s Representative prior to commencement of any excavations.

B. Coordination with Municipality for Water Connection:

1. Comply with the municipal requirements for the connection of water lines to the municipal utility services. Obtain and pay for all necessary permits from municipal water department. Obtain authority to connect to their existing water mains. The municipal water department is City of Yonkers Housing & Buildings.

a. Make necessary connections to existing municipal water mains under supervision of water department’s representative.
b. Connections to existing municipal water mains will be made by the municipal water department. Pay the water department’s charges for the connections and public works permit fees associated with road and sidewalk replacements.

1.7 MATERIALS WITH TRACE AMOUNTS OF ASBESTOS

A. Perform Work required to remove, disturb, or repair any material that contains less than 1 percent by weight of asbestos (trace) in accordance with all applicable OSHA regulations (29 CFR Part 1926.1101).

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014100.01

SECTION 014339 - MOCKUP REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

A. 032000 “Concrete Reinforcing”.

B. 033000 “Cast-In-Place Concrete”.

C. 040120.63 “Brick Masonry Repair”.

D. 064219 “Plastic-Laminated-Faced Wood Paneling”.

E. 074213.19 “Insulated Metal Wall Panels”.

F. 084413 “Glazed Aluminum Curtain Walls”.

G. 085113 “Aluminum Windows”.

H. 093013 “Ceramic Tiling”.

I. 093023 “Glass Mosaic Tiling”.

J. 096723 “Resinous Flooring”.

K. 096813 “Tile Carpeting”.

L. 097200 “Wall Coverings”.

M. 098436 “Sound Absorbing Ceiling Units”.

1.2 SUBMITTALS

A. Quality Control Submittals

1. Mockup Plan: Copy of proposed plan.

1.3 DEFINITIONS

A. Mockups (General): Full-size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances.

1. Mockups are not Samples.
2. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.

B. Integrated Exterior Mockups: Mockups of the exterior envelope erected separately from the building but on Project site, consisting of multiple products, assemblies, and subassemblies.

C. Room Mockups: Mockups of typical interior spaces complete with wall, floor, and ceiling finishes, doors, windows, millwork, casework, specialties, furnishings and equipment, and lighting.

D. Laboratory Mockups: Full-size physical assemblies constructed at testing facility to verify performance characteristics.

1.4 QUALITY ASSURANCE

A. Mockup Plan: Detailed, dimensioned plans and elevations showing mockup size, and items and materials that will be included in proposed mockup.

B. Pre-Construction Conference: Prior to the construction of the mockup, a conference will be called by the Director's Representative at the Site for the purpose of reviewing the requirements, and intent of mockup. The conference shall be attended by the Director's Representative, Contractor, and person supervising this phase of the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 INSTALLATION

A. Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish as directed.

1. Build mockups in location and of size and profile indicated or as directed by the Director's Representative.
2. Notify the Director's Representative a minimum of 7 days in advance of dates and times when mockups will be constructed and able to be inspected.
3. Employ supervisory personnel to oversee mockup construction. Employ same workers that will be employed during the construction of Project.
4. Demonstrate the proposed range of aesthetic effects and workmanship.
5. Commence the Work after mockup has been inspected and approved in writing by Director's Representative.
6. The mockup will establish the standard of quality of workmanship by which the Work will be judged.
7. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work. Failure to maintain the mockup, until directed, will be cause for rejection of the Work.

B. Mockup Types: Construct mockup in accordance with approved shop drawings, project manual, and Contract Drawings, using exact materials and methods approved for the Project, including required accessories.

1. Integrated Exterior Mockups: Coordinate installation of exterior envelope materials and products for which mockups are required in individual Specification Sections and supporting materials.
2. Room Mockups: Construct mockups incorporating required materials and assemblies, finished according to requirements. Provide required lighting and additional lighting where required to enable the Director's Representative to evaluate quality of the Work.
3. Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Specification Sections.

END OF SECTION 014339

SECTION 015000.02 - CONSTRUCTION FACILITIES & TEMPORARY CONTROLS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Provide the construction facilities and temporary controls necessary for the Work, unless otherwise indicated.

1. The construction facilities and temporary controls specified to be provided by a particular Contract shall be kept operational by that Contractor for the Work of all related Contracts at all times Work is being performed by a Contractor.
2. The construction facilities and temporary controls specified to be provided by a particular Contractor shall be installed as soon after award of the Contract as necessary to enable the Work of each Contract to proceed on schedule and maintained until completion of the Work of all related contracts unless otherwise directed in writing.
3. Any Contractor who requires additions to the construction facilities and temporary controls specified to be provided by another Contractor, shall provide and maintain them.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Disposal of Asbestos-Containing Materials: Section 028213.

1.3 TEMPORARY LIGHT AND POWER

A. Electrical energy for temporary light and power is available and will be made available without charge.

B. Extent of Temporary Wiring: Contractors may ascertain the extent of the temporary wiring provided under the Electrical Work Contract by examining the Electrical Drawings.

C. Electrical Work Contract:

1. During any shutdowns and during upgrades to the building electrical service, provide portable source of electricity for temporary light and power of adequate capacity to supply the needs of all contractors for the performance of their Work until the temporary electrical service can be utilized for temporary light and power.
2. Provide wiring and other equipment within the building for temporary light and power.

a. Wiring for temporary light and single phase power shall, in general, consist of 4 wire, 120/208 volt feeders, with branch circuits of #12 conductors minimum.

1) Install branch circuits with suitable fluorescent fixtures or incandescent lampholders for temporary lighting as required to maintain a minimum of 10 foot candles in the work areas. Equip fixtures and lampholders with guards.

Fixtures and lampholders installed in damp or wet locations shall be of the weatherproof type.

2) Install branch circuits with fused grounding type receptacle outlets for single phase power (for power tools, etc.).

3) Install 2 circuits with fluorescent fixtures or incandescent lampholders in corridors and stairs. Space fixtures or lampholders no more than 30 feet apart in corridors. Install fixture or lampholder at each stair landing. Also install one fixture or lampholder in each boiler room and mechanical equipment room (connect to the corridor and stair lighting circuits).

4) Keep the corridor and stair lighting maintained and energized 24 hours per day, 7 days per week.

a. Install wiring for 3 phase power for machines and other heavy electrical loads consisting of 3 phase, 3 wire, 600 volt feeder with fused disconnect switches as indicated. A maximum motor load will be coordinated with the Electrical Contractor on each feeder.

1) Provide a fused sealed service entrance switch for corridor and stair lighting circuits. Locate switch adjacent to and connect to line side of temporary light and power service entrance switch. Stencil cover "CORRIDOR AND STAIR LIGHTING".

2) Provide lamps and fuses including replacements required.

D. All Contracts:

1. Any Contractor requiring additional lighting shall provide additional fluorescent fixtures or incandescent lampholders (with lamps), but in no case shall the load on any branch circuit or feeder exceed its rated capacity.
2. Install materials for temporary light and power in conformance with the National Electrical Code.
3. Materials for temporary light and power need not be new if they are in satisfactory operating condition.
4. Provide ground-fault protection for personnel (such as portable plug-in type ground-fault circuit-interrupters) on single phase 15 and 20 ampere receptacle outlets which are in use.
5. Receptacle outlets, portable cord connectors and attachment plugs shall have standard NEMA configurations.
6. As the progress of the Work allows, and as approved, completed portions of the permanent wiring and electrical service may be utilized for temporary light and power.

1.4 TEMPORARY WATER

A. Water will be made available for the Work without charge at source or sources directed within the limits of the existing supply and usage.

B. Plumbing Work Contract:

1. Make arrangements and pay for water for temporary service.

2. Provide and maintain a temporary water system, of such size and capacity as to adequately supply the needs of all contractors during performance of their Work.
3. The permanent water lines may be used for temporary water service if potable water is carried in the lines.
4. Protect temporary lines against freezing.
5. Repair damages caused by installation of leaky, defective or broken piping, connections or other fittings.

C. All Contracts: Prevent waste of water.

1.5 TEMPORARY TOILETS

A. Construction Work Contract: Provide toilet facilities for Contractor's and subcontractors employees engaged on the Project, including employees of other contractors. Locate toilets where directed and maintain them in a sanitary condition.

NUMBER OF EMPLOYEES	MINIMUM NUMBER OF FACILITIES
20 or less	1 toilet
20 or more	1 toilet and 1 urinal per 40 employees
200 or more	1 toilet and 1 urinal per 50 employees

*Toilet/Urinal Combinations shall count as only one facility.

1. Where water and sewer connections are available, provide water closets, otherwise provide approved chemical or electric toilets.
2. Inside buildings, locate toilet facilities no more than 4 stories or 60 feet above or below, nor more than 500 feet travel on the same level from the work location of any person.
3. Locate toilet facilities no more than 1000 feet from any work location.

    a. Exception: Mobile crews having readily available transportation to nearby toilet facilities.

1.6 PROTECTION AND MAINTENANCE OF HVAC SYSTEM

A. HVAC Work Contract: Maintain the existing HVAC system as to adequately supply the needs of all contractors during performance of their Work and as approved to accomplish the following:

1. Protect materials and equipment being installed as part of the Contract from freezing.
2. Allow for a comfortable environment to enable workers to accomplish their respective tasks in a satisfactory manner.
3. Maintain construction schedules.

B. When, in the opinion of the Director's Representative, the construction is substantially complete, the Director's Representative will arrange for operation of the heating system in accordance with the provisions of Article 20 of the General Conditions concerning State occupation and operation. At such time, Contractor will be relieved of responsibility for temporary heat.

1. Clean and with the Director's Representative present, test existing HVAC system before arranging for State operation.

1.7 PROTECTION OF WORK AND EXISTING PROPERTY

A. Protect installed Work and existing property during performance of the Work.

B. Maintain the building in a watertight condition during performance of the Work.

C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

D. Provide protective coverings at wall projections, jambs, sills, and soffit of openings.

E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, and movement of heavy objects by covering them with durable sheet materials.

F. Protect smoke detectors from airborne dust and debris.

1. At the beginning of each work day, provide protective coverings over smoke detectors in areas where airborne dust and debris will be generated by the Work.
2. At the end of the work day, clean the areas in which the smoke detectors are located by whatever means necessary to assure that airborne dust and debris will not contaminate the smoke detectors, then remove protective coverings.
3. Provide signs, instructions, and alternate methods for reporting a fire during the periods that the smoke detectors are covered.
4. Notify the Director's Representative and have procedures approved.

G. Prohibit traffic or storage upon waterproofed and roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

H. Protect existing trees and plants during performance of the Work unless otherwise indicated. Box trees and plants within the grading limit lines. Do not deposit excavated materials or store building materials around trees or plants. Do not attach guy wires to trees.

I. Prohibit traffic from landscaped areas.

J. Cleaning tools of cementitious and other insoluble materials:

1. Do not wash tools in sinks or other sanitary drainage systems. Protect all drainage systems from debris that can clog or damage piping and fixtures.
2. Take all precautions necessary to prevent cementitious and other insoluble materials from flowing into floor drains.
3. Dispose of excess cementitious and other insoluble debris with the other rubbish.

1.8 BARRIERS AND ENCLOSURES

A. All Contracts: Provide barriers during performance of the Work to:

1. Prevent unauthorized entry to work areas.
2. Allow for State's occupancy of Site.
3. Protect existing facilities and adjacent properties from damage.

4. Protect vehicular and pedestrian traffic.

B. Construction Work Contract:

1. Temporary Partitions: Provide temporary partitions to form fire resistive barriers between work areas and areas occupied by State personnel. Construct the partitions of 3-5/8 inch width steel framing or 2 x 4 wood framing, with 5/8 inch thick Type X (ASTM C 36) gypsum board on both sides of partition. Secure the partitions in place without damaging existing construction. Seal joints on the State occupied side with joint tape and compound. Provide 1-3/4 inch thick solid core flush wood doors or 18 gage flush steel doors, and steel door frames. Equip doors with full mortise hinges and lockset. Furnish the Director's Representative with 2 keys for each lock.
2. Temporary Dust Barriers: Provide temporary dust barriers to prevent the spread of dust from the work areas. Construct the dust barriers of wood framing sheathed with 6 mil polyethylene film. Secure the dust barriers in place without damaging existing construction.
3. Scaffolding, Hoist, and Equipment Barriers: Provide temporary fence enclosures as required to prevent unauthorized persons from coming in contact with ground supported scaffolding, hoists, and equipment.

1.9 SECURITY

A. Key Deposits: A $25 deposit will be required for each key issued by the Facility. Deposits will be refunded upon return of the keys.

B. Facility Key Regulations:

1. Sign Facility keys out and in on a daily basis unless otherwise directed.
2. Keep keys on person at all times while on the premises. Do not loan or give keys to other persons.
3. Do not remove keys from the premises without written permission from the Director's Representative.
4. Report lost, missing, or stolen keys immediately to the Facility Safety/Security Department. Assume responsibility for cost of necessary key and lock replacement as a result of lost, missing, or stolen keys.

C. Identification Cards: Photo ID badges will be provided by the Contractor for all contractor employees. Badges will be held at the facility security desk and issued to authorized workers by the facility on a daily basis.

1. All Contractors, associated sub-contractor employees, and vendors shall provide all information required for background checks to meet installation access requirements to be accomplished by NYS DMNA/NYNG installation Security Office. Contractor workforce must comply with all personal identity verification requirements as directed by NYS DMNA/NYNG installation Security Office.
2. All contractor employees, including subcontractor employees and vendors who are not in possession of the appropriate security clearance, will be escorted in areas where they may be exposed to classified and/or sensitive materials.

3. In addition to the changes otherwise authorized by the changes clause of this contract, should the Force Protection condition (FPCON) at any individual facility or installation change, the Government may require changes in contactor security matters or process.

D. Promptly relock doors and security screens located in access routes, storage areas, and work areas after use.

E. Restore, by the end of each workday, existing in place safety/security items such as doors, screens, alarm systems components, that required removal, replacement, or adjustment to perform the Work, unless otherwise authorized in writing by the Director's Representative.

F. Remove all tools and materials from occupied work areas when the work areas are not attended by employees and at the end of each work day. Store tools in a locked tool box, cabinet, or shed. Store materials where directed.

G. Access and general protection/security policy and procedures:

1. Contractors, and all associated subcontractors and vendors (contractor workforce) shall provide a verified list of all scheduled and on-site employees to the facility/site force protection/security representative, daily.

1.10 WATER CONTROLS

A. Provide and maintain pumping equipment necessary to keep the work areas free from water. Discharge water into existing storm drainage systems or otherwise disperse as directed.

1.11 FIRE PREVENTION

A. Take precautions necessary to prevent fires.

B. Fuel for cutting and heating torches shall be acetylene or LP-gas only and shall be contained in Underwriters Laboratory or Federal Department of Transportation approved containers.

C. Furnish and maintain a currently inspected 20 pound capacity multi-class A:B:C fire extinguisher in the immediate vicinity where welding tools or torches are in use.

D. Furnish and maintain a currently inspected fire extinguisher of the appropriate class and size whenever the temporary storage of materials changes that areas classification of fire load or life safety.

E. Do not use flammable liquids, other than those specified, within a building without the written approval from the Director's Representative.

F. Tarpaulins shall be flameproof and shall be securely anchored when attached to scaffolding or when used to enclose any portion of a building.

G. If required by the nature of the work and facility regulations, the Contractor shall obtain from the facility and pay all costs associated with "Hot Work Permits" including fire watches to execute

the work of its contract. Perform hot work in accordance with the Fire Code of New York State and the Hot Work Program approved for the work. Prior to, during and after performing hot work, inspect the hot work area for compliance with the requirements of the permitted Hot Work Program.

1. Post signage “Caution: Hot Work In Progress - Stay Clear” in conspicuous locations warning others before they enter a hot work area where the area is accessible to persons other than the operator of the hot work equipment.

1.12 TEMPORARY FIRE PROTECTION

A. If the existing building is to be partially occupied during the course of the project, all existing exits, fire walls, fire barriers and fire protection systems shall be continuously maintained in the occupied phases in compliance with the Fire Code of New York State. Comply with NFPA 241 for items not specifically addressed in the Fire Code of New York State.

B. Those portions occupied by the facility must be available for their use 24 hours a day, seven days a week during the contract period unless otherwise scheduled in these documents.

C. Prior to removal of existing fire walls, fire barriers and fire protection systems, if such removal is part of the work, install equivalent temporary fire walls, fire barriers and fire protection systems as defined in these documents and as approved by the Director’s Representative and/or the facilities representative.

D. The cost of all labor, fire watches, variances, materials, installations, maintenance and removal of such temporary fire protection systems or modifications to the existing systems are the responsibility of the Contractor. Install permanent fire walls, fire barriers and fire protection systems, if provided as part of the work, as soon as practical.

1.13 ACCESS ROADS

A. Routes of ingress and egress on the premises to the location of the Work shall be as directed.

B. Keep designated access roads clear of dirt and debris resulting from the Work.

C. All Contracts:

1. Park vehicles in areas where directed.
2. Keep designated parking areas clear of dirt and debris resulting from the Work.
3. If requested, register vehicles which are to be parked at the Facility with the Facility Safety/Security Department.
4. Remove ignition key from unattended vehicles and lock doors.

D. Construction Work Contract: Remove snow from parking areas allocated to all Contractors.

1.14 RUBBISH REMOVAL

A. Clean up and containerize the rubbish (refuse, debris, waste materials, and removed materials and equipment) resulting from the Work at least once a day and more often if the rubbish interferes with the work of others or presents a hazard. Leave work areas broom clean, except where more stringent cleaning is specified, at the end of each day. Locate containerized rubbish on the Site where directed.

B. Remove rubbish from State property at least once a week and more often if the rubbish presents a hazard. Properly dispose of rubbish.

C. Burning of rubbish will not be permitted.

1.15 RELOCATION AND REMOVALS

A. Should a change in location of any construction facilities and temporary controls be necessary in order to progress the Work properly, remove and relocate such items as directed.

1. Electrical Work Contract: Frequently relocate/revise the temporary lighting as Contractors progress the Work of their contracts causing changes to the condition of the building (installation or relocation of walls, partitions, ceilings, equipment, etc.). Keep pace with the changes and maintain a minimum of 10 foot candles in each recomposed work area.

B. Remove the construction facilities and temporary controls when they are no longer required. Restore permanent facilities used for or connected to temporary facilities to their original condition or better.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 015000

SECTION 016500 – MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

A. Specific requirements pertaining to materials and equipment specified elsewhere are additional to the provisions of this Section.

1.2 PRODUCT LABELS

A. When materials or equipment are specified to conform to ASTM, Federal or other reference specifications, the materials delivered to the site shall bear the manufacturer's printed labels stating that the materials meet the requirements of such referenced specifications.

1.3 TRANSPORTATION AND HANDLING

A. Deliver factory packaged materials and equipment in the manufacturer's original containers.

B. Transport and handle materials and equipment in such a manner as to prevent their damage.

C. Arrange for delivery of materials and equipment during the hours of the day established by the Director's Representative.

D. Have workers available to receive and unload materials and equipment delivered to the site. Do not deliver, or have delivered, any materials and equipment to the site unless such forces are available.

E. Facility personnel are not authorized to sign for receipt of Contractor's material or equipment.

1.4 STORAGE AND PROTECTION

A. Neatly pile, store, protect, and secure materials and equipment in locations where directed.

B. Protect materials and equipment subject to damage by temperature or other weather conditions.

C. Do not store volatile liquids in a State building.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 016500

SECTION 017329 – REMOVALS, CUTTING, AND PATCHING

PART 1 - GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

A. Rubbish Removal: Section 015000.

B. Asbestos Abatement: Section 028213.

C. Drawings and general provisions of the contract, including general and supplementary conditions and other Division 1 specification sections, apply to this section.

1. Refer to Division 1 for applicable local codes and regulations.

1.2 DEFINITIONS

A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to remain the Property of the State.

1.3 PROJECT CONDITIONS

A. Existing Conditions: Do not disturb existing structures, construction, materials or equipment unless required by the Contract.

1. Do not cut, drill, or remove structural members such as joists, beams or columns supporting construction that is to remain unless expressly required by the Contract Documents.

B. Existing Paint: A lead survey was performed on existing surfaces for the presence of lead based paints. A list of the surfaces tested and the results of the survey are in Document 003126. Take precautions as required to prevent the spread of lead containing particles and dust.

1. Assume existing painted surfaces that have not been tested to contain lead based paint. Take precautions as required to prevent spread of lead containing particles and dust.

C. Items to Remain the Property of the State: The following items shall remain the property of the State and shall be stored at the site where directed:

1. HVAC Work Contract: VAV (Variable Air Volume) box.

1.4 DESCRIPTION OF WORK

A. This section includes the following:

1. Demolition and removal of selected portions of building or structure.
2. Demolition and removal of selected site elements.
3. Salvage of existing items to be reused or recycled.
4. Temporary Shoring of the existing structure.

1.5 QUALITY ASSURANCE

A. Demolition Firm Qualifications: An experienced firm specializing in demolition work similar in material and extent of this project.

B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

C. Standards: Comply with ANSI A10.6, OSHA Regulations, and NFPA 241.

D. Predemolition Conference: Hold a conference at project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to selective demolition including the following:

1. Inspect and discuss condition of construction to be selectively demolished.
2. Finalize selective demolition schedule, and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
4. Review areas where existing construction is to remain and requires protection.

E. Structural Load Limitations of Existing Structure: Review load limitations of existing building structural framing system related to selective demolition including the following:

1. Original building Construction Drawings provided by Owner.
2. Condition of existing framing systems scheduled to remain prior to start of selective demolition and periodically during course of selective demolition.
3. Support requirements for proposed demolition equipment, including existing framing systems and temporary shoring and bracing requirements.

1.6 SUBMITTALS

A. Qualification Data: For demolition firm; Professional Engineer.

B. 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 Facility's on-site operations are uninterrupted.
2. Interruption of utility services. Indicate how long utility services will be interrupted.

3. Coordination for shutoff, capping, and continuation of utility services.
4. Use of stairs.
5. Locations of proposed dust- and noise-control temporary partitions and means of egress.
6. Coordination of Facility's continuing occupancy of portions of existing building and of Facility's partial occupancy of completed work.
7. Means of protection for items to remain and items in path of waste removal from building.
8. Verification by a New York State registered Professional Engineer that the existing building framing systems will safely support the demolition equipment proposed for use.

    a. Submit temporary shoring and bracing details if required for demolition equipment used in or adjacent to structure.
    b. Submit procedures used to protect adjacent properties from damage by demolition equipment.

9. Means and methods of temporary shoring stamped by a New York State registered Professional Engineer, including copies of calculations.

C. Predemolition photographs or video: Submit before work begins.

1.7 PROJECT CONDITIONS

A. Hazardous Materials: It is not expected that hazardous materials will be encountered in the work.

1. Hazardous materials will be removed under separate contract.
2. If materials suspected of containing hazardous materials are encountered, do not disturb. Immediately notify Director's Representative.
3. If materials suspected of containing hazardous materials are encountered, do not disturb. Immediately notify Director's Representative.

1.8 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition by methods and with materials so as not to void existing warranties. Notify warrantor before proceeding. Existing warranties include the following:

1. Roofing membrane.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Match the appearance and performance of existing corresponding materials as closely as practicable, unless otherwise indicated.

2.2 MINIMUM REQUIREMENTS FOR SHORING MATERIALS

A. Shoring components and materials that are damaged shall not be used. If damaged during use, replace.

B. Shoring components and materials shall be reviewed by a competent person prior to use

PART 3 - EXECUTION

3.1 EXAMINATION

A. Prior to cutting, drilling or removal, investigate both sides of the surface involved. Determine the exact location of structural members.

B. If unforeseen obstructions are encountered, take precautions necessary to prevent damage and obtain instructions from the Director's Representative before proceeding with the Work.

3.2 PREPARATION

A. Provide temporary shoring and other supports necessary to prevent settlement or other damage to existing construction which is to remain.

B. Prepare existing surfaces properly to receive and, where required, bond with the Work.

C. Site Access and Temporary Controls: Perform selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Comply with requirements for access and protection specified in Division 1 Section 015000 "Temporary Facilities and Controls."

D. Temporary Facilities: Provide temporary barricades and other protection

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. Provide secure barriers between existing construction scheduled to remain and selective demolition area to prevent unauthorized entry into occupied portions of building.
4. Protect walls, ceilings, floors, and other existing finish work to remain or are exposed during selective demolition operations.
5. Cover and protect furniture, furnishings, and equipment not removed.
6. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Division 1 Section 015000 "Temporary Facilities and Controls."

3.3 REMOVALS, CUTTING, AND ALTERING

A. In addition to the items indicated to be removed on the Drawings, remove existing construction superseded by the Work except items such as pipes, conduits, recessed boxes, and ducts which are built into existing construction that is to remain. Cut off and conceal such items at face of remaining construction. Provide cover plates on recessed boxes.

B. Remove and alter existing construction as required to install and connect the Work to adjacent construction in an approved manner.

C. Cut and alter existing materials as required to perform the Work. Limit cutting to the smallest amount necessary. Core drill round holes and saw cut other openings where possible.

D. Perform cutting, drilling, and removals in a manner which will prevent damage to construction which is to remain.

E. Perform removal of items to remain the property of the State with such care as necessary to prevent damage to these items.

3.4 PATCHING

A. Patch existing construction and finishes defaced, damaged, or left incomplete due to alterations and removals. Patching, except as otherwise indicated, shall be limited to the areas which have been cut or altered. Finish patched surfaces to match existing adjacent surfaces as closely as practicable.

B. Perform patching around items penetrating existing construction in a manner that will maintain the water and fire resistive capability of the existing construction.

C. Paint patched areas to match existing adjacent surfaces as closely as practicable using same type of paint. Painting, except as otherwise indicated, shall be limited to the areas which have been patched.

D. Where surfaces exposed by removals are to remain as exposed surfaces, paint such areas to match existing adjacent surfaces as closely as practicable using same type of paint.

3.5 CLEANING

A. After removals of ceiling systems and ceiling-related items, clean all remaining near ceiling items such as conduit, wiring, busways, piping, ductwork and all concrete surfaces.

3.6 REINSTALLATION

A. Where reinstallation of removed items is indicated, reinstall them to a condition equal to or better than their condition before removal.

3.7 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain. Protect against damage during selective demolition operations.

1. Comply with requirements for existing services/systems interruptions specified in Division 1 Section 011000 “Summary of the Work.”

B. Existing Service/System to be removed, relocated, or abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.

1. Director’s Representative will arrange to shut off indicated services/systems when requested by Contractor.
2. Arrange to shut off indicated utilities with utility companies.
3. If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass area of selective demolition and maintain continuity of services/systems to other parts of building.

C. 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. Cut, remove and legally dispose of selected HVAC equipment, components, and materials as indicated, including, but not limited to removal of HVAC piping, heating units and trim and other HVAC items made obsolete by the new work.

3.8 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to extent required by construction and as indicated. Use methods required to complete 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 next lower level.
2. Neatly cut openings and holes plumb, square, and true 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 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 fire watch and 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. Promptly dispose off-site.

7. Remove structural framing members, and lower to ground by methods 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.

    a. Do not bury waste materials from selective demolition activities.
    b. Do not dispose of waste materials resulting from selective demolition activities into watercourses, storm drainage system, or sanitary sewer system.
    c. Do not discharge water containing suspended materials into watercourses, storm drainage system, sanitary sewers, or onto adjacent property.

10. When unanticipated structural, mechanical, or electrical elements are encountered during demolition, contact the Director's Representative and report nature of unanticipated condition. Do not progress demolition until direction is provided by the Director's Representative.
11. Cover or dampen dry materials and waste sufficient to prevent blown dust or debris.

B. Do not demolish building elements beyond what is indicated in drawings without Director's Representative approval.

C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by the Director's Representative, 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.

3.9 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw. Remove concrete between saw cuts.

B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain using power-driven saw. Remove masonry between saw cuts.

C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished. Break up and remove.

D. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings."

E. Roofing: Remove no more existing roofing than what can be covered in one day by new roofing and so that building interior remains watertight and weathertight.

3.10 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be reused, recycled, salvaged, reinstalled, or otherwise indicated to remain the State's property, remove demolished materials from project site and legally dispose of them in an EPA-approved landfill.

1. Do not allow demolished materials to accumulate on-site.

2. Remove and transport debris in manner that will prevent spillage on adjacent surfaces areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off property and legally dispose.

3.11 CLEANING

A. 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.

3.12 REPAIR OF ELEMENTS DAMAGED DURING DEMOLITION

A. Any element damaged during the demolition process is to be repaired to its original condition.

B. Submit a repair procedure for review. Repair procedures are to include analysis stamped and sealed by a professional engineer licensed in the State of New York.

END OF SECTION 017329

SECTION 017716 – CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

A. Other provisions pertaining to this Section are included in Article 9 of the General Conditions.

1.2 CONTRACT CLOSEOUT INSPECTIONS

A. The following 3 inspections will be made in addition to the normal inspections to ensure that all Contract requirements are met and that the Work is complete and acceptable. The purpose of each of these inspections is to furnish the Contractor a written list of Contract exceptions, omissions, and incompletions so that the Work can be progressed to timely completion in accordance with the Contract Documents.

1. Detailed Inspection: The "Detailed Inspection" will be made when the Work is substantially complete. A copy of the detailed inspection list will be furnished to the Contractor. When this inspection progresses over any length of time, copies of the list will be furnished as the inspection progresses so that the Contractor may proceed with the required Work without delay.
2. Final Inspection: The Contractor will be advised by letter of the date and time of final inspection. A copy of the final inspection list containing all incomplete or unsatisfactory items and the time allowed to complete the Work will be furnished to the Contractor.
3. Joint Inspection for Physical Completion: The joint inspection for physical completion may be made to verify completion of the exception items listed on the final inspection list so that the physical completion date (defined in the General Conditions) may be established.

1.3 FINAL CLEANING

A. Perform final cleaning prior to joint inspection for physical completion. Leave the premises in a neat, unobstructed condition, the work areas broom clean (except where more thorough cleaning is specified), and everything in perfect repair and adjustment.

B. Clean site; sweep paved areas, rake clean landscaped surfaces.

C. Remove tools, equipment, waste and surplus materials, rubbish, and construction facilities from the premises as soon as possible upon completion of the Work.

1.4 PROJECT RECORD DOCUMENTS

A. Maintain on site, 2 sets of the following record documents; record actual revisions to the Work.

1. Contract Drawings.

2. Project Manual.
3. Addenda.
4. Change Orders and other modifications to the Contract.
5. Reviewed shop drawings, product data, and samples.

B. Store record documents separate from documents used for construction.

C. Record information concurrent with construction progress.

D. Record Documents and Shop Drawings: Legibly mark each item to record actual construction including.

1. Measured depths of foundations in relation to finish (first) (main) floor datum.
2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
4. Field changes of dimension and detail.
5. Details not on original Contract Drawings.

E. Upon completion of the work, create electronic versions of the project record documents. Black and white documents are to be scanned into TIFF format using CCIT Group 4 compression. Documents with color, which include black line documents with color notations, are to be scanned into TIFF format using a minimum of 8 colors and "packbits" compression test.

1. The scanned images are to be put on a USB flash drive using NTFS/NTFS5 format. Name the electronic files with the same name as the drawing. Create a folder on the USB flash drive for each trade and one for Shop Drawings.
2. Label the USB flash drive with the project number, name, and title as it appears on the project manual cover. If there is more than one USB flash drive include notation to that effect on the label; i.e., 1 of 3, 2 of 3, 3 of 3. The project record documents, and USB flash drive(s) are to be turned over to the Director's Representative.

F. Applications for progress payments will not be approved if the record documents are not kept current. Application for final payment will not be approved until the project record documents are delivered to the Director's Representative.

1.5 OPERATION AND MAINTENANCE DATA

A. Prepare 2 sets comprised of 8-1/2 x 11 inch text pages bound in capacity expansion binders with durable plastic covers identified with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project, and subject matter of binder when multiple binders are required. Prepare a printed Table of Contents for each volume, with each product or system description identified. Internally subdivide the binder contents with permanent page dividers, logically organized as described below, with tab titles clearly printed under reinforced laminated plastic tabs:

Part 1: Directory, listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, subcontractors, and major equipment suppliers.

Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of subcontractors and suppliers. Identify the following:

1. Significant design criteria.
2. List of equipment.
3. Parts list for each component.
4. Operating instructions.
5. Maintenance instructions for equipment and systems.
6. Maintenance instructions for finishes, including recommended cleaning methods and materials and special precautions identifying detrimental agents.

Part 3: Project documents and certificates, including the following:

1. Shop drawings and product data.
2. Air and water balance reports.
3. Certificates.
4. Photocopies of warranties.

B. Submit one copy of completed volumes in final form 15 days prior to final inspection. This copy will be returned after final inspection, with the Director's comments. Revise content of documents as required prior to final submittal.

C. Submit 2 volumes prior to final Application for Payment.

1.6 WARRANTIES

A. Furnish warranty certification and copies of warranties that extend beyond the one year period required by the General Conditions. Warranties submitted without warranty certification will not be accepted.

1. Warranty Certification: Written certification from the warrantor that invoices for installation, service, supplies, and warranty fees have been paid in full to persons or firms due payment, and that the warranty is in effect and non-retractable due to any of the specified conditions.

B. Prepare printed Table of Contents and assemble warranty certifications and warranty copies in a binder with a durable plastic cover.

C. Deliver the binder to the Director's Representative prior to final Application for Payment.

D. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within 10 days after acceptance, indicating date of acceptance as start of warranty period.

E. Applications for final payment will not be approved until the warranty certification and warranty documents are delivered to the Director's Representative.

1.7 SPARE PARTS AND MAINTENANCE MATERIALS

A. Label and deliver spare parts, maintenance items, and extra materials to the Site. Place in locations as directed.

1. Include “NOT FOR WARRANTY REPAIRS” on the labels.
2. Obtain receipt prior to final payment.

B. Do not use the spare parts and maintenance materials required by the Contract Documents to remedy defects during the one-year period described in Paragraph 9.8 of the General Conditions except when approved otherwise by authorized Facility Representative. In such cases, replace items used.

C. Furnish the names, business addresses, and telephone numbers of fully equipped authorized service organizations to the Director’s Representative.

D. Applications for final payment will not be approved until these items are delivered to the Director’s Representative.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 017716

SECTION 017900.01 - VIDEO TRAINING PROGRAMS

PART 1 - GENERAL

1.1 DESCRIPTION

A. This Section includes administrative and procedural requirements for instructing the Owner's and operations and maintenance personnel, including the following:

1. Demonstration of operation of systems, subsystems, and equipment. Contractor shall develop training sessions for systems, subsystems, and equipment.
2. Training in operation and maintenance of systems, subsystems, and equipment.

B. Demonstration and training requirements are described in this section, Section 019100, and in the technical sections of Divisions 22, 23, and 26. The Contractor shall comply with the requirements for demonstration and training data described in all specification sections.

1.2 RELATED WORK

A. Specific commissioning requirements are given in the following sections of these specifications. All the following sections apply to the Work of this section:

1. Section 017716 – Contract Closeout.
2. Section 019113 – Commissioning.
3. Section 210800 - Commissioning of Fire Suppression.
4. Section 220800 - Commissioning of Plumbing.
5. Section 230800 - Commissioning of HVAC.
6. Section 260800 - Commissioning of Electrical.

1.3 SUBMITTALS

A. Instruction Program: No later than two (2) months following acceptance of equipment and system submittals, the responsible contractor shall submit written training plans to the CxA and State for review and approval per Section 019100 and this section.

B. Documentation: After each training session, submit the following:

1. Attendance Roster: Submit list of participants and length of instruction time.
2. Evaluations: For each participant and for each training session, submit results and documentation of performance-based test and student evaluations of training.

1.4 COORDINATION

A. Coordinate instruction schedule with Director’s Representative.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training sessions with content of approved operation and maintenance manuals.

1.5 QUALITY ASSURANCE

A. Facilitator Qualifications: Training shall be facilitated by a firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.

B. Instructor Qualifications: Instructors shall be factory-authorized representatives experienced in operation and maintenance procedures and training.

C. Pre-instruction Conference: Conduct conference at project site. 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, including classroom training and field training.
2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, and audio/visual equipment.
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.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

A. Program Structure: Develop a comprehensive instruction program. Include individual training sessions for each system and equipment not part of a system as required by technical specification sections and the Cx Plan.

B. Training Sessions: Coordinate training with the CxA. Develop a learning objective and teaching outline for each system, subsystem, and product specified in Section 019100 and Divisions 22, 23, and 26. Include a description of specific skills and knowledge that participants are expected to learn.

C. The following list of topics should be applied to each training plan for each equipment or system being presented. Not all will apply, but each major category should be addressed in the training plan with a brief description of how it pertains to the particular training sessions.

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:

a. System, subsystem, and equipment descriptions.
b. Performance requirements.
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. Operations manuals.
    b. Maintenance manuals.
    c. Project Record Documents.
    d. Identification systems.
    e. Warranties and bonds.
    f. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include the following:

    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 normal operating limits.
    e. Sequences for electric or electronic systems.
    f. Special operating instructions and procedures.

4. Operations: Include the following:

    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, including lockout/tagout requirements.
    g. Instructions on stopping.
    h. Normal shutdown and restart instructions.
    i. Operating procedures for system, subsystem, or equipment failure.
    j. Seasonal and weekend operating instructions.
    k. Required sequences for electric or electronic systems.
    l. 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, Care and Cleaning: Include the following:

    a. Inspection procedures.
    b. Types of cleaning agents to be used and methods of cleaning.
    c. List of recommended cleaning agents and methods of cleaning and list of agents and cleaning methods detrimental to product.

d. Procedures for routine cleaning.
e. Procedures for preventive/predictive 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.

D. Training Shifts: Training shall be provided for one shift, unless otherwise noted. Training shall be accomplished during normal business hours.

E. Training Duration: Duration of training and demonstration is addressed in Section 019100. Training and demonstration duration for specific items within a training session may be adjusted with Facility's approval to meet the overall goals of the training session.

PART 3 - EXECUTION

3.1 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training sessions. Assemble training sessions into a combined training manual.

B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

A. Scheduling: Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide instruction on actions necessary to prepare for and execute seasonal changeover.

1. Schedule training through the Facility with at least 30 days notice. This requirement for notice takes precedence over other advance notice requirements in the specification.

B. Quality and Contents of Training Sessions: Each training session shall include the following.

1. Training plan for each class. Training plan shall contain:

a. Class objectives (what the student will learn).
b. Script of lecture and demonstrations.
c. Duration of each instruction period.
d. Participant attendance roster.
e. Participant evaluation survey form.

2. Names of instructors, name of company where employed, their credentials and affiliation with product if applicable and their qualifications as instructor.
3. Name of company who will videotape the classes. Include video script coordination with instructor's syllabus.
4. Training session information shall be submitted to CxA for approval.

C. Evaluation: At conclusion of each training session, assess and document training.

1. Assess and document each participant's comprehension of session by use of an oral performance-based test.
2. Obtain each participant's evaluation of the training.

D. Cleanup: Collect used and leftover educational materials. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

E. Record of Training. Submit the attendance roster as part of the completed training plan upon successful completion of the training session.

END OF SECTION

SECTION 019113 - GENERAL COMMISSIONING REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies the Contractor's responsibilities in the commissioning process. Commissioning requires the participation of the Contractor to ensure that all systems are operating in a manner consistent with the Contract Documents.

B. The commissioning process integrates the traditionally separate functions of system documentation, equipment startup, performance testing and training. Commissioning during the construction phase is intended to achieve the following specific objectives in accordance with the Contract Documents:

1. Verify and document that applicable equipment and systems are installed according to the manufacturer's recommendations, contract requirements, and industry standards and that they receive adequate operational checkout by installing contractors.
2. Verify and document proper performance of equipment and systems.
3. Verify and document that O&M documentation is complete.
4. Verify and document that the Facility operating personnel are properly trained.

C. The systems and equipment to be commissioned are listed in this Section. The Contractor's general commissioning requirements and coordination are detailed in this Section. Specific requirements for commissioning of each system or piece of equipment are detailed in the specification Section for the individual systems or pieces of equipment. A detailed description of the overall commissioning process is included in the appendix.

D. The commissioning process does not reduce the responsibility of the Contractor to provide finished and fully functional systems and equipment.

1.2 SYSTEMS TO BE COMMISSIONED

A. The following systems will be commissioned in this project. Specific requirements for the commissioning of each system are included in the related specification Section.

1. HVAC Work Contract:

a. HVAC Systems.
b. Building Controls.

2. Plumbing Work Contract:

a. Domestic Hot Water System.

3. Electrical Work Contract:

a. Lighting Controls.

B. Example Commissioning Documents: Example Pre-Functional Checklists and Functional Test Procedures are provided following the specification Sections of equipment and systems that are scheduled to be commissioned. These documents are included to provide the Contractor examples of the type of documentation that will be required as part of the commissioning process. Equipment and system specific Pre-Functional Checklists and Functional Test procedures will be developed by the Commissioning Authority based on approved submittals, and then will be provided to the Contractors.

1.3 DEFINITIONS

A. Acceptance Phase: Phase of construction after startup and initial checkout when functional performance tests, O&M documentation review and training occurs.

B. Approval: Acceptance that a piece of equipment or system has been properly installed and is functioning in the tested modes in accordance with the Contract Documents.

C. Commissioning authority (CA): An independent agent responsible for the direction and coordination of the commissioning activities. The CA responsible to the Director's Representative.

D. Commissioning Plan: An overall plan that provides the structure, schedule and coordination planning for the commissioning process.

E. Commissioning Team: The members of the commissioning team consist of the Commissioning Authority, the Director's Representative, the Contractor, the architect and design engineers. The owner and the building or plant operator/engineer also may be members of the commissioning team.

F. Deferred Functional Tests: Functional tests that are performed after substantial completion, due to partial occupancy, seasonal requirements, design or other site conditions that prevent the test from being performed prior to substantial completion.

G. Deficiency: A condition in the installation or function of a component, piece of equipment or system that is not in compliance with the Contract Documents.

H. Factory Testing: Testing of equipment on-site or at the factory by factory personnel.

I. Functional Performance Test (FT): Test of the dynamic function and operation of equipment and systems using manual (direct observation) or monitoring methods. Functional testing is the dynamic testing of systems (rather than just components) under full operation. Systems are tested under various modes, such as during low cooling or heating loads, high loads, component failures, unoccupied, varying outside air temperatures, fire alarm, power failure, etc. The CA develops the functional test procedures in sequential written form. The CA coordinates, oversees and documents the actual testing. The Contractor performs the functional tests. FTs are performed after prefunctional checklists and startup are complete.

J. Phased Commissioning: Commissioning that is completed in phases (by floors, for example) due to the size of the structure or other scheduling issues, in order to minimize the total construction time. Commissioning shall be provided for each phase according to the schedule for that phase. Some repetition and/or remobilization may be required.

K. Prefunctional Checklist (PC): A list of items to inspect and component tests to conduct to verify proper installation of equipment prior to initiating functional testing.

L. Startup: The initial starting or activating of dynamic equipment, including executing prefunctional checklists.

1.4 COORDINATION

A. The CA is hired by, and works for, the Director. The CA directs and coordinates the commissioning activities. All members of the commissioning team shall work together to fulfill their contractual responsibilities and meet the objectives of the Contract Documents.

B. The CA will work with the Contractor according to established protocols to schedule the commissioning activities. The Contractor shall integrate all commissioning activities into the approved progress schedule. All parties will address scheduling problems and make necessary notifications and changes in a timely manner in order to expedite the commissioning process and maintain the approved progress schedule.

1.5 COMMISSIONING PROCESS

A. Commissioning Plan. The commissioning plan provides guidance in the execution of the commissioning process. Following the initial commissioning scoping meeting the CA will update the plan which is then considered the "final" plan, although it may be revised as the project progresses.

B. Commissioning Process. The following narrative provides a brief overview of the typical commissioning tasks during construction and the general order in which they occur. A more detailed description of the commissioning process can be found in the Appendix.

1. Commissioning during construction begins with a scoping meeting conducted by the CA where the commissioning process is reviewed with the Commissioning Team.
2. Additional meetings will be required throughout construction, scheduled by the Director's Representative, to plan, scope, coordinate, and schedule future activities and to resolve problems. When possible, commissioning meetings will be scheduled immediately following construction meetings.
3. Equipment documentation is submitted to the CA during the submittal process, including detailed start-up procedures.
4. The CA works with the Contractor to develop startup activity lists and startup documentation. The CA provides prefunctional checklists to be completed by the Contractor during the startup process.
5. In general, the checkout and performance verification proceeds from simple to complex; from component level to equipment to systems and intersystem levels. In each case

prefunctional checklists are completed, submitted, and approved before functional testing begins.

6. The Contractor executes and documents the prefunctional checklists, and provides notification to the Director's Representative and the CA. The Contractor performs startup and initial checkout. The CA documents that the checklists and startup were completed according to the approved plans.
7. The CA develops specific equipment and system functional performance test procedures. The Contractor reviews the procedures and submits suggestions or comments. Procedures are finalized by the CA.
8. The procedures are executed by the Contractor, under the direction of the CA.
9. Items of non-compliance in material, workmanship, or setup are corrected and retested at the Contractor's expense. The Contractor is responsible for providing all resources, manpower, and materials necessary to rectify deficiencies as per requirements of the approved schedule.
10. The O&M documentation prepared by the Contractor is reviewed for completeness by the CA.
11. Commissioning is completed before Substantial Completion.
12. The CA reviews, pre-approves and coordinates the training provided by the Contractor and verifies that is was completed.
13. Deferred testing is conducted, as specified or required.

1.6 CONTRACTOR'S RESPONSIBILITIES

A. The Contractor's commissioning responsibilities are as follows (all references apply to commissioned systems and equipment only):

1. Construction and Acceptance Phase:

   a. Attend the commissioning scoping meeting and other necessary meetings scheduled by the Director's Representative to facilitate the commissioning process.
   b. Facilitate the coordination of the commissioning work by the CA, and with the CA ensure that commissioning activities are being scheduled into the approved progress schedule.
   c. Provide detailed manufacturer installation and start-up, operating, troubleshooting and maintenance procedures, factory test reports, and full warranty information, including all responsibilities of the Director to keep the warranty in force. The installation, start-up and checkout materials that are actually shipped with the equipment and the actual field checkout sheet forms to be used by the factory or field technicians shall be submitted to the CA. The CA may request further documentation necessary for the commissioning process.
   d. In each purchase order or subcontract written, include requirements for submittal data, O&M data, commissioning tasks and training.
   e. Ensure that all subcontractors execute their commissioning responsibilities according to the Contract Documents and approved progress schedule.
   f. Assist in the process of writing detailed test procedures by clarifying the operation and control of commissioned equipment.
   g. Review test procedures to ensure feasibility, safety and equipment protection and provide necessary written alarm limits to be used during the tests.

h. Develop a full start-up and testing plan using manufacturer's start-up procedures and the prefunctional checklists from the CA for all commissioned equipment. Submit to the CA for review and approval prior to startup.
i. During the startup and initial checkout process, execute all portions of the prefunctional checklists for all commissioned systems and equipment. Verify that system installations include all ports, gages, thermometers, access doors, valves, etc., required for specified functional performance testing.
j. Provide all special tools and instruments (only available from vendor, specific to a piece of equipment) required for testing equipment.
k. Perform and clearly document all completed startup and system operational checkout procedures, providing a copy to the CA.
l. Address incomplete Work before functional performance testing.
m. Provide skilled technicians to execute startup of equipment and to execute the functional performance tests. Ensure that they are available and present during the agreed upon schedules and for sufficient duration to complete the necessary tests, adjustments and problem-solving.
n. Provide skilled technicians to perform functional performance testing under the direction of the CA for specified equipment. Provide Manufacturer's Representative as required and as specified in the Specification. Assist the CA in interpreting the monitoring data, as necessary.
o. Correct deficiencies (differences between specified and observed performance) as directed by the Director's Representative.
p. Prepare O&M manuals according to the Contract Documents, including clarifying and updating the original sequences of operation to as-built conditions. Provide a copy of the O&M manuals and submittals of commissioned equipment to the CA for review and approval.
q. Provide training as specified.
r. Coordinate with equipment manufacturers to determine specific requirements to maintain the validity of the warranty.

2. Warranty Period:

a. Execute seasonal or deferred functional performance testing in accordance with the specifications
b. Correct deficiencies and make necessary adjustments to O&M manuals and as-built drawings for applicable issues identified in any seasonal testing.

PART 2 - PRODUCTS

2.1 TEST EQUIPMENT

A. All standard testing equipment required to perform startup and initial checkout and required functional performance testing shall be provided by the Contractor.

B. Specified special equipment, tools and instruments (only available from vendor, specific to a piece of equipment) required for testing equipment shall be provided by the Contractor and turned over to the facility at the completion of the Work.

C. Datalogging equipment and software required to test equipment will be provided by the Contractor but shall not become the property of the Director's Representative.

D. All testing equipment shall be of sufficient quality and accuracy to test and/or measure system performance with the tolerances specified in the Specifications. All equipment shall be calibrated according to the manufacturer's recommended intervals. Calibration tags shall be affixed or certificates readily available.

PART 3 - EXECUTION

3.1 MEETINGS

A. Scoping Meeting. Prior to the commencement of construction, the CA will schedule, plan and conduct a commissioning scoping meeting with the Commissioning Team.

B. Miscellaneous Meetings. Other meetings will be planned and conducted by the CA as construction progresses. These meetings will cover coordination, deficiency resolution and planning issues with the Contractor, appropriate sub-contractors and suppliers, the Owner's Representative, and the Director's Representative.

3.2 START-UP, PREFUNCTIONAL CHECKLISTS, AND INITIAL CHECKOUT

A. Prefunctional checklists and initial checkout shall ensure that the equipment and systems are hooked up and operational. Each piece of equipment receives full prefunctional checkout. No sampling strategies are used. The prefunctional testing for a given system must be successfully completed prior to formal functional performance testing of systems or equipment.

B. Start-up and Initial Checkout Plan. The CA shall assist the commissioning team members responsible for startup of any equipment in developing detailed start-up plans for all equipment. The primary role of the CA in this process is to ensure that there is written documentation that each of the manufacturer's recommended procedures have been completed.

C. Execution of Prefunctional Checklists and Startup.

1. Four weeks prior to startup, the Contractor shall schedule startup and checkout with the Director's Representative.
2. The Contractor shall execute startup and provide the CA with a signed and dated copy of the completed start-up and prefunctional tests and checklists.

3.3 FUNCTIONAL PERFORMANCE TESTING

A. Development of Test Procedures. Using the requirements in the specifications, the CA shall develop specific test procedures and forms to verify and document proper operation of each piece of equipment and system. The Contractor shall provide assistance to the CA in developing the procedures. Prior to testing, the CA shall provide a copy of the test procedures to the Contractor who shall review the tests for feasibility, safety, equipment and warranty protection.

B. Functional performance testing shall document that each system is operating in accordance with the Contract Documents. During the testing process, areas of deficient performance shall be identified. Deficiencies shall be corrected by the Contractor and functional testing shall be re-scheduled. The Contractor shall be responsible for all costs associated with re-testing for functional performance.

C. Each system shall be operated through all modes of operation. Proper responses to such modes and conditions as power failure, freeze condition, low oil pressure, no flow, equipment failure, etc. shall also be tested.

D. Test Methods. Each function and test shall be performed under conditions that simulate actual conditions as closely as possible. The Contractor shall execute the test and shall provide all necessary materials, system modifications, etc. to produce the necessary flows, pressures, temperatures, etc. necessary to execute the test according to the specified conditions. At the completion of the test, the Contractor shall return all building equipment and systems affected by these temporary modifications to their pre-test condition.

3.4 OPERATION AND MAINTENANCE MANUALS

A. Standard O&M Manuals. The specific content and format requirements for the standard O&M manuals are detailed in Section 017716.

B. The Contractor shall compile and prepare commissioning documentation for all equipment and systems and include this information in the O&M manuals.

3.5 TRAINING

A. The Contractor shall be responsible for coordinating, scheduling, and documenting that all required training has been completed successfully.

B. The Contractor shall have the following training responsibilities:

1. Provide a training plan two weeks before the planned training.
2. Provide comprehensive orientation and training in the understanding of the systems and the operation and maintenance of each piece of equipment.
3. Training shall normally start with classroom sessions followed by hands-on training on each piece of equipment.
4. The training sessions shall follow the outline in the Table of Contents of the operation and maintenance manual and illustrate whenever possible the use of the O&M manuals for reference.
5. Training shall include:

    a. Use of the printed installation, operation and maintenance instruction material included in the O&M manuals.
    b. A review of the written O&M instructions emphasizing safe and proper operating requirements, preventative maintenance, special tools needed and spare parts inventory suggestions. The training shall include start-up, operation in all modes possible, shut-down, and any emergency procedures.

c. Discussion of relevant health and safety issues and concerns.
d. Discussion of warranties and guarantees.
e. Common troubleshooting problems and solutions.
f. Explanatory information included in the O&M manuals and the location of all plans and manuals in the facility.
g. Discussion of any peculiarities of equipment installation or operation.

3.6 DEFERRED TESTING

A. Unforeseen Deferred Tests. If any check or test cannot be completed due to project conditions, required occupancy condition or other deficiency, execution of checklists and functional testing may be delayed upon approval of the Director's Representative. These tests will be conducted in the same manner as the seasonal tests as soon as possible.

B. Seasonal Testing. Seasonal testing (tests delayed until weather conditions are closer to the system's design conditions) shall be completed as part of this contract. Make any final adjustments to the O&M manuals and as-builts resulting from information gained during testing.

END OF SECTION 019113

SECTION 019119 – BUILDING ENCLOSURE COMMISSIONING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

B. **Commissioning Specifications:** See Division 01 Section 019113 - General Commissioning Requirements for general requirements for MEP commissioning including definitions, means and methods for conducting the commissioning process, commissioning team members, Director's Representative responsibilities, Contractor's responsibilities, and Commissioning Authority's responsibilities.

C. **Individual Building Enclosure Specification Sections:** Individual building enclosure technical sections (Divisions 03-09) stipulate requirements for material testing, and warranties for the material, product or assembly specified in the Section. Installation, product testing, and assembly testing are stipulated in each section and/or Part 3 of this section.

1.2 WORK INCLUDED

A. Commissioning requirements common to all Building Enclosure-Related Sections.

B. Independent review of the building enclosure-related design documents

C. Documentation of proper installation and performance of representative areas of Building Enclosure materials, systems, and components through observation and testing.

D. Review and comment on the requirements for field mock-up, trial installation and Functional Performance Testing included in the enclosure-related technical specification sections.

E. Preparation and coordination of Building Enclosure Commissioning Report.

1.3 GENERAL DESCRIPTION

A. Statement of Building Enclosure Design Intent (BEDI): The design intent of this building enclosure is to provide a façade, fenestration and roof assembly which limits air infiltration to the specified levels as required by the individual Building Enclosure (BE) technical sections in Divisions 03 through 09, that eliminates uncontrolled water infiltration (including condensation), provides thermal insulation continuity; and includes products and assemblies that are technically sound, durable and serviceable.

B. Building Enclosure Commissioning (BECx) facilitates a quality-oriented process to document that all building enclosure components are installed and perform collectively according to the BEDI, that the installation is adequately tested and that the specified performance is verified and documented. It serves as a tool to identify deficiencies in the building enclosure during the

preconstruction and construction phases in an effort to advance the building enclosure components from mock-up installations, through installation of the separate components on the structure, to a fully integrated, weather-tight assembly prior to occupancy, thereby reducing impact on the building end user.

C. The Building Enclosure Commissioning Coordinator (BECxC) shall work with the Contractor and Contractor's Quality Assurance and Quality Control personnel to oversee the BECx processes and performance testing. The BECxA will observe tests as deemed appropriate. Unless otherwise specified, the Contractor shall retain and compensate an independent testing agency to perform all required initial Building Enclosure Performance Testing.

1.4 SCOPE

A. This Section includes building enclosure commissioning procedures and protocol, including exterior facade enclosure, fenestration and roofing or other construction that protects climate-controlled interior spaces from unconditioned spaces and the exterior environment, as follows:

1. Building enclosure construction, above grade including exterior opaque walls, windows, and doors including sheathing, framing, insulation and vapor barrier (as required).

2. Roofing, including roofing system, roofing insulation, skylights, hatches, and other roof openings and penetrations.

3. Foundation water proofing systems and sub-drainage.

4. The aforementioned items including continuity between all sections (where applicable).

B. Materials, Product and Assembly Performance Testing as required by individual sections, and/or as outlined in Part 3 of this specification. All performance values shall be as described within each relevant section of the Project Specification.

C. Record Documents related to BECx.

1.5 DEFINITIONS AND ABBREVIATIONS

A. **Action Item (AI):** Any issue that requires a response, completion, corrective or additional work, or any other action related to the construction. Examples include a Contractor’s Request for Information (RFI), an Architect’s Field Directive, a clarification request, or a documented deficiency in the Work. Action Items must be categorized and assigned to the appropriate party for remedial action.

B. **Action List (AL):** This is a list that is maintained and updated by the BECxA that includes all Action Items that relate to BECx activities, including a summary description of each AI (including photograph where appropriate), the date that each AI was first documented, the appropriate party responsible for remedial action, the date corrective action was performed, and a brief summary of the remediation.

C. **A/E:** Architect/Engineer-of-Record.

D. **Commissioning (Cx):** The process of documenting that all building systems perform interactively according to the design intent, the systems are efficient and cost effective and meet Project Requirements.

E. **Commissioning Provider (CxP):** The party in responsible charge for commissioning of the building systems.

F. **Building Enclosure Commissioning Provider (BECxA):** The Party retained by the Director's Representative will oversee the BECx process, develop and stipulate many of the BECx requirements, manage the BECx process, and validate that building enclosure systems are designed, installed and tested to meet the State's requirements and/or contract documents provided by the Architect-of-Record.

G. **Commissioning Portal:** This is an internet hub for the collaboration on Cx and BECx information. This portal will act as a hub for posting electronic information.

H. **Commissioning Report:** The Commissioning Report is the final deliverable from the Cx process, and provides the information needed to understand, and maintain the facility's building enclosure. It should be the repository of all updates and corrections as they occur (even through occupancy). The Facility Manual expands the scope of standard O&M documentation to incorporate additional information developed through the commissioning process. This is also often called a 'Systems Manual' throughout ASHRAE Cx references. Traditionally this manual has documented only the MEP systems. For this project, the facility manual will also include the Building Enclosure Commissioning (BECx) Documents.

I. **Commissioning Team (CxT):** The group of Parties involved in the commissioning process for any given system. The group is typically comprised of representatives from:

1. Director's Representative (PM) and his/her consultants
2. General Contractor and/or Construction Manager (GC or Contractor/CM)
3. Designer and design engineers (particularly the architect and engineers – A/E)
4. Building Enclosure Commissioning Agency (BECxA)
5. Test Technician (TT) (as either trade quality control or BECxA)
6. Building Enclosure subcontractor and their sub-subcontractors (BESC)
7. Specialty subcontractors
8. Any other installing subcontractors or suppliers of materials or systems.

J. **Construction Phase:** Phase of the project during which the facility is constructed. During this phase the Contractor and subcontractors complete the installation and field-testing requirements.

K. **Contract Documents:** The documents governing the responsibilities and relationships between Parties involved in the design and construction of this project including (but not necessarily limited to):

1. Agreements/Contracts;

2. Construction Document Drawings and Specifications;

3. Addenda;

4. Change Orders;

L. **Construction Documents:** Refers generally to the Contract Documents that dictate the details of construction (all but item 1. and 4. above).

M. **Deficiency:** A condition in the installation or function of a material, assembly, or system that is not in compliance with the Contract Documents (that is, does not perform properly or is not complying with the Design Intent).

N. **Contractor:** As used herein, 'Contractor' is a general reference to the installing Party and can therefore refer to the GC, subcontractors, or vendors as inferred by its usage.

O. **Building Enclosure Commissioning (BECx):** The process of facilitating the quality installation of the building enclosure materials, components, and systems in accordance with the contract documents and satisfy the requirements of the BEDI.

P. **Building Enclosure Commissioning Coordinator (BECxC):** This refers to the Individual that is designated the POC for BECx activities.

Q. **Factory/Laboratory Testing:** Off-Site Testing of Building Enclosure materials, components and systems at the manufacturer's facility and/or independent Testing Agency. This testing will be witnessed and documented by the members of the BECx team as appropriate and as specified in the BE technical specifications.

R. **Field Testing Authorized/Accredited Representative:** On-site testing of Building Enclosure materials, components and systems conducted by an authorized Manufacturer's Technical Representative and/or independent Testing Agency.

S. **Manufacturer's Technical Representative:** An individual in direct employ of the manufacturer of the applicable material, component, or system who is technically qualified in the judgment of BECxA to perform the applicable work for which the reference is made.

T. **Party:** Entity responsible for portion of work.

U. **Project Management Consultant (State):** Project management consultant to the State.

V. **Point of Contact (POC): General** reference to the key individual within each Party.

W. **Project Phases:** Phases of the project including the Pre-Construction Phase, The Construction Phase, and The Warranty Phase, including Post-Occupancy Evaluation to be completed at the Director's Representative's discretion by the appropriate members of the Commissioning Team for this project.

X. **RFI:** Request for Information

Y. **Substantial Completion:** As defined in the State-Contractor agreement. This milestone will coincide with the end of the Construction Period and the acceptance of the Property, or portions thereof, by the State. This milestone also coincides with the start of the warranty period.

Z. **Testing Agency:** An independent agency, fully accredited by the appropriate governing body for each of the materials, components or systems to be tested or evaluated for compliance with requirements of the contract documents. The Testing Agency shall submit qualifications as required in Section 019113 and individual BE technical sections for review and acceptance by the A/E and BECxA.

AA. **Warranty Phase:** Beginning on the date of Substantial Completion and continuing through the Warranty Period of each Building Enclosure material, component, and system.

1.6 REFERFENCE STANDARDS

A. ASHRAE NIBS Guideline 3-2012, "Building Enclosure Commissioning Process BECx"

B. ASHRAE Guideline 0-2005, The Commissioning Process

C. ASTM E2813, Standard Practice for Building Enclosure Commissioning

D. ASTM E2947, Standard Guide for Building Enclosure Commissioning

E. Reference standards as identified in the individual Building Enclosure technical sections of the project manual/specification.

1.7 DOCUMENTATION

A. BECxA shall perform a constructability review and provide comments related to the durability, performance and BE conformance with the Project Requirements for consideration by the Director's Representative, A/E and Contractor.

B. The Contractor shall provide to the BECxA the following per the procedures and protocol specified herein and in other BE Technical Sections of the specification (Divisions 03-09) for review and comment by the BECxA:

1. Shop Drawings and Product Data: Provide shop drawings and submittal data for materials, products, systems and equipment that will be part of the BECx process. Refer to Section 01 91 00 for additional requirements.

a. The Contractor shall forward to the BECxA one copy of Shop Drawings and Product Data concurrent with distribution to the A/E. BECxA shall review and provide comments to the Director's Representative and A/E, who will then review and incorporate the BECxA comments at their discretion and return to the Contractor. The Contractor shall then copy BECxA with the reviewed submittal with A/E submittal review stamp.

b. Any action taken by the A/E or Contractor based in whole or in part on the comments and recommendations provided by the BECx as part of its submittal review shall be the sole responsibility of the A/E or Contractor.

2. Factory/Laboratory Test Reports: The Contractor shall provide any factory or laboratory testing documentation or certified test reports required by the specifications. These shall be provided prior to acceptance and installation of the specific item.

3. Schedule Updates: The Contractor shall issue periodic updates to the construction schedule every two weeks or less as appropriate. Contractor shall use schedule to notify BECx team of scheduled tests and milestone installation events. Contractor shall coordinate with BECxA for meetings as appropriate prior to and during construction.

4. Action Item Response: Respond to Action Items to which BECx team members assign the Contractor responsibility within 10 business days of issue.

5. Testing Agency Reports. Provide all documentation of work of independent testing agencies required by the specification. These shall be provided prior to acceptance by A/E and installation.

C. Record Drawings: The Contractor shall maintain at the site an updated set of record or 'As-Built' documents reflecting actual installed conditions and all approved changes and modifications to the contract documents. The Contractor shall provide access to the BECxA to review the As-Built and Record Drawings. The Record Drawings shall be maintained concurrently with construction.

1.8 COORDINATION MANAGEMENT PROTOCOLS

A. Unless otherwise defined and agreed to by the parties to the contract documents for this project, coordination responsibilities and management protocols relative to BECx are defined below, subject to further refinement during the Construction Phase BECx pre-construction meeting.

1. Submittals and Shop Drawings: The BECxA shall review submittals and shop drawings in accordance with paragraph 1.7.C.1 above and Section 019113.

2. Deficiencies Identified by the BECxA: When the BECxA identifies a deficiency, the Contractor shall make a good faith assessment of responsible parties. Those parties shall be notified of the perceived deficiency. This communication is for information only and is not a direction to resolve the deficiency. Contractor may accept responsibility and resolve the deficiency voluntarily. If Contractor contests either the deficiency or responsibility for that deficiency, Contractor shall respond to that affect in writing to the BECxA. If a consensus is not reached as a result of this process, then the Contractor shall issue a work directive or RFI response via the normal contractual channels to resolve the issue.

3. Requests for Meetings (beyond regularly scheduled meetings): In general request by the Contractor for additional meetings with the BECxA shall be routed through the Director's Representative who will then confirm the necessity for the meeting. Note that every attempt should be made to deal with BECx issues at regularly scheduled BECx Meetings.

4. Scheduling Coordination – Contractor shall review the BE technical specifications, identify required BECx items (including field and laboratory test requirements, specified test standards, mock-ups, product submissions, milestone installations and similar) and provide a schedule to the BECxA with anticipated dates for each. It is the responsibility of the Contractor to provide adequate time from submission of each BECx requirement to

response from the BECx, and resolution of any identified deficiencies without unnecessary deleterious impact on the project schedule.

5. Notification of Completion Milestones – Contractor shall notify Director's Representative and BECxA at least two weeks prior to an anticipated BECx activity or BECx milestone (such as installation of a new façade component). Contractor and BECxA shall then coordinate the scheduling of the activity between all required parties as applicable. Notification shall be via e-mail.

6. Action List: BECxA maintains a categorized Action List which tracks the BECx related action items. All content of the Action List will be available to all parties who have credentials on the portal. Any party with credentials may post an Action Item. Any party that is copied on an email resulting from an Action Item posting may respond to it and contribute to the dialogue.

1.9 CONTRACTOR'S RESPONSIBILITIES

A. As defined in this Section and in the individual BE technical sections, including but not limited to the following:

1. Attend the routine BECx meetings.

2. Coordinate and Chair preconstruction and construction-phase coordination meetings.

3. Provide summary and schedule of laboratory and field quality control tests and inspections required by the Contract Documents to BECxA.

4. Participate in Pre-construction Mock-Up and Field-testing coordination meetings.

5. Retain and compensate an independent testing agency to perform all required initial Building Enclosure Performance Testing.

6. Coordinate with the BECxA pre-construction and construction testing and submit laboratory and field quality control testing, field checklists and inspection reports on building enclosure construction to the BECxA. Perform out of sequence work as required to facilitate field tests.

7. Develop and maintain check lists for building enclosure assemblies.

8. Submit maintenance data for products, assemblies, and components to the BECxA.

9. Provide test data, inspection reports, and certificates to BECxA.

10. Review and respond to AI in a timely manner (typically within 10 business days).

11. Contractor is responsible for all costs associated with retesting and corrective work verification as specified in Section 1.13.

12. Contractor is responsible for all costs related to the time and expense for professional services required by Architect and BECxA related to all additional work necessitated by re-testing of specimens following an initial test failure.

13. Provide input for final commissioning documentation.

1.10 A/E RESPONSIBILITIES

A. As defined in this Section and in the individual BE technical sections, including but not limited to the following:

1. Attend the routine BECx meetings.

2. Attend preconstruction and construction-phase coordination meetings.

3. Participate in Pre-construction Mock-Up and Field-testing coordination meetings.

4. Provide resolution to items for which the BECxA and Contractor may be in disagreement.

5. Provide input for final commissioning documentation.

1.11 BECxA RESPONSIBILITIES (BECxA is not to be retained by the Contractor)

A. Develop Construction Phase BECx plan.

B. Provide review comments on the 100% CD's related to the BE for compliance with the design intent and Project requirements. Refer to Part 1.7A for further information. The CxA shall review the design, identify design issues and/or conflicts that would present a problem for the total system commissioning.

C. Provide comments on submittals related to building enclosure. Provide written comments to A/E for their consideration in their review of the submittals. Refer to Part 1.7B for further information.

D. Convene Preconstruction Commissioning Conference: BECxA will schedule a preconstruction BECx conference before construction of the building enclosure starts, at a time convenient to Director's Representative, A/E and Contractor. The BECxA will conduct the meeting to review commissioning responsibilities and personnel assignments.

1. Attendees: Authorized representatives of Director's Representative, BECxA, Contractor, A/E, and Contractor's superintendent; major BE subcontractors; 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 commissioning.

2. Agenda: Discuss items of significance that could affect progress, including the following:

a. Commissioning Plan and related Specifications

b. Tentative construction schedule per Contractor.

c. Phasing and "Building Dry" milestone per Contractor.

d. Critical work sequencing and long-lead items per Contractor.

e. Designation of key personnel and their duties.

f. Field testing schedule, including any special provisions necessary for tests.

g. Procedures and protocol for testing and inspecting.

h. Submittal procedures.

i. Coordination of Record Documents.

j. Occupancy requirements.

3. Minutes: BECxA will record and distribute meeting minutes.

E. Participate in Project-Specific mock-ups and outline the commissioning process and Performance Test procedures or protocol. Attend the construction and testing of the mock-up to observe progress and provide written summary report.

F. Witness building enclosure component testing, milestone installations, and perform periodic site visits to document that work is being performed in compliance with the project specifications and Part 3. Conduct visits no less than weekly during construction of the BE.

G. Conduct routine BECx meetings to review progress on AI list/ Portal and resolve issues affecting the building enclosure. Conduct meetings no less than every two weeks during construction of the BE.

H. Compile test data, inspection reports, and certificates and provide them to the CxA for inclusion in the final Commissioning Report.

1.12 PERFORMANCE TESTING (BUILDING ENCLOSURE)

A. Quality Assurance and Control: Specific BECx quality-assurance and quality-control requirements for individual Building Enclosure and materials, methods, and assemblies are specified in the BE Technical Sections relating to those activities. Specified commissioning tests, inspections, and related actions are specified in Part 3 of this section, do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.

1. Independent Testing Agency

a. The Contractor shall retain and compensate an independent testing agency to perform the Building Enclosure Performance Testing identified in this Section and the individual Building Enclosure technical specification sections. The testing agency shall be independent of the installing subcontractors and manufacturers, and shall be acceptable to the Directors Representative, Architect/Engineer, and BECxA. The testing agency shall meet the qualification requirements of Section 01 45 00 and the applicable technical specification sections.

The Contractor shall coordinate all testing activities and shall provide access, manpower, temporary protection, equipment, lifts, scaffolding, water, power, and other services necessary to facilitate testing. The Contractor shall provide a minimum of two weeks advance notice to the Director’s Representative, Architect/Engineer, BECxA, and testing agency prior to scheduled testing activities.

B. The objective of Performance Testing is to demonstrate that each Building Enclosure system, and system-to-system interfaces meet or exceed the performance requirements of the Contract Documents and the BEDI.

C. The BECxA shall work with the Contractor and Contractor's Quality Assurance and Quality Control personnel to oversee the BECx process and performance testing. The BECxA may witness testing activities as deemed appropriate.

1.13 DEFICIENCIES IDENTIFIED DURING BE FUNCTIONAL PERFORMANCE TESTING

A. **Non-Conformance.** Non-conformance deficiencies identified during Periodic Site Visits or Performance Testing shall be resolved as follows:

1. The BECxA will record the results of the review / functional performance test in the BECx Software project database. All deficiencies or non-conformance issues shall be noted as Action Items and reported to the Contractor.

2. Corrections of identified minor deficiencies may be made during the review / tests at the discretion of the BECxA. In such cases the deficiency and associated resolution will be documented in the database.

3. Every effort will be made by the BECxA to expedite the review / testing process and minimize unnecessary delays, while not compromising the integrity of the procedures.

4. As reviews / tests progress and a deficiency is identified, the BECxA will discuss the issue with the Contractor for follow-up and resolution.

   a. When there is no dispute with respect to the deficiency and the Contractor accepts responsibility to correct it:

      1) The BECxA shall document the deficiency and the Contractor's response. A copy/email/portal issue of the deficiency shall be generated and provided to the Contractor. The Contractor corrects the deficiency, completes the Action Item response certifying that the issue is resolved and /or the product, material or assembly is ready to be retested and notifies the Project Team.

      2) The Contractor reschedules the test and the test is repeated. This process is repeated until the test result(s) meets or exceeds the requirements of the contract documents and, at the discretion of the Director's Representative, the remedial action taken will be implemented on a project-wide basis where applicable. The Contractor is responsible for all retest costs incurred by the BECxA, test agency, Director's Representative and A/E.

   b. If there is a dispute about a deficiency:

      1) The deficiency shall be documented as an Action Item with the Contractor's response, and the Contractor will be notified. The Contractor will track this issue under the construction contract dispute resolution provisions.

      2) Final interpretive authority is with the Director's Representative. Final acceptance authority is with the Director's Representative or A/E.

      3) The BECxA documents the resolution to the Action Item.

      4) Once the interpretation and resolution have been decided, the appropriate party corrects the deficiency and responds to the Action Item indicating completion. The Contractor reschedules the review / test and the review / test is repeated until satisfactory performance is achieved. The Action Item is then considered as closed.

B. Failure: As defined in each BE Technical Sections (Divisions 03-09) and/or Part 3. In event of test failure, the Contractor shall provide the Director's Representative with the following:

1. Installer/Manufacturer's response in writing as to the cause of the failure and proposed resolution.

2. Installer/Manufacturer shall implement their proposed resolution on a representative sample of the product.

3. The Director's Representative will determine whether a replacement of all identical units is required or if a repair is acceptable.

4. Upon acceptance, the responsible Party shall replace or repair all identical items at their expense and shall extend the warranty accordingly.

5. Systemic or frequent failures may result in additional testing beyond originally identified to verify performance. Additional costs to test systems due to deficiencies is to be borne by the responsible Contractor.

1.14 COMMISSIONING REPORT CONTENT

A. Report content and format shall be as specified in Section 019113.

B. Commissioning Report

1. Maintenance Schedule: Contractor will provide a summary table that indexes the building enclosure component requiring maintenance and indicates the frequency each component will require repair or replacement (i.e. replacement of sealants, gaskets, IGUs, repair of paints or coatings). Contractor will provide subcontractors with an Excel spreadsheet that will be completed by each applicable subcontractor and returned to the Contractor for incorporation in the Commissioning Report by the BECxA.

2. Maintenance Information Contractor shall provide Maintenance Information for each entry containing the following:

a. Product Data Sheet: Provide a summary of performance data.

b. Extended Warranty Information: Include all warranties for products, equipment, components, and sub-components whose duration exceeds one year. Include warranties on components with the system they are a part of. Reference all specific operation and maintenance procedures that must be performed to keep the warranty valid.

c. Sources of Material: Include reference to contact information where specific materials can be obtained.

d. Installation and Maintenance Instructions: For each material, component or system.

C. Construction Documentation

1. **Record Drawings:** Contractor shall provide an index of all record drawings with drawing number, title, and electronic file name(s) including electronically referenced drawings.

2. **Record Specifications:** Contractor shall provide a detailed index of the record specification. Include sections and major items in the specification all indexed to the appropriate page number.

3. Approved Product Data and Shop Drawings:

a. Contractor shall provide an index of all product data and shop drawings. This shall list all BE materials, components or systems with the associated submittal number.

b. contractor shall organize and compile only approved product data and shop drawings. Providing these in a filing format is acceptable provided all files are identified and organized for easy access.

c. Inclusion of any of this information in previous sections of the Commissioning Report does not allow exclusion in this section.

4. **Commissioning Record:** BECxA shall provide complete commissioning records including all Performance Test documentation, in both written and electronic format at the discretion of the Director's Representative.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 BE PERFORMANCE TESTING

A. General: Tests are listed in this section and also listed in individual technical specification sections.

B. Site Testing: In coordination with the Contractor, the BECxA will evaluate in-service performance of building enclosure assemblies and construction, and submit reports.

1. Provide site testing as scheduled at the end of this Section.

2. Carry out testing in accordance with Section 019113.

C. Adhesion Tests: Arrange for field tests to take place with joint-sealant and adhered membrane manufacture's technical representative present. Field test sealant joints and self-adhering membranes for adhesion to substrates as follows:

1. Test each type of sealant/membrane in each installation at every substrate indicated.

2. Perform sealant tests in compliance with ASTM C1521 Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints, Method A or ASTM D4541 Standard Test Method for Pull-off Strength of Coatings Using Portable Adhesion Testers.

3. For joints between dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

4. For sealants that fail adhesively, retest until satisfactory adhesion is obtained. Do not use sealants that fail to adhere to joint substrates during testing.

5. Contractor shall provide, at their expense, any tests, additional tests, and inspections required to verify compliance of installed, replaced, remediated, or additional work with specified requirements.

D. Fenestration Field Water Tests:

1. Test installed fenestration systems according to AAMA 501.2 "Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems" [Hose Test], ASTM E1105: Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Curtain Walls, and Doors by Uniform or Cyclic Static Air Pressure Differential

2. Complete testing prior to installation of interior insulation and gypsum board.

3. Contractor to provide powered scaffold, electric supply, hose, water supply, communication system and manpower to perform tests.

4. Contractor will work with the Test Engineer and CxA to determine necessity for additional test methods and for field chamber tests based upon evaluation of initial test results. The BECxA will interpret marginal results and adjust the test procedures or protocol as appropriate.

5. Contractor to perform out-of-sequence work as required facilitating system tests.

6. Contractor shall provide, at their expense, any test, additional tests, and inspections required to verify compliance of installed, replaced, remediated, or additional work with specified requirements.

E. Fenestration Field Air Leakage Tests:

1. AAMA 502-08 "Voluntary Specifications for Field Testing of Newly Installed fenestration Products", and AAMA 503-08 "Voluntary Specification for Field Testing of Newly Installed Storefronts, Curtain Walls and Sloped Glazing Systems".

2. Test installed fenestration systems and interfaces with adjacent substrates according to ASTM E-783: Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors.

3. Complete testing prior to installation of interior insulation, gypsum wall board and interior finishes or systems that may impede the completion of the tests.

4. Test specimen to include the perimeter material substrate and the perimeter seals.

5. Contractor to provide powered scaffold, electric supply, communication and manpower to perform tests.

6. Contractor will work with the Test Engineer and BECxA to determine necessity for additional test methods and for field chamber tests based upon evaluation of initial test results. The CxA will interpret marginal results and re-write the test procedures or protocol as appropriate.

7. Contractor to perform out-of-sequence work as required facilitating system tests. Contractor to install all air seals / dams concealed within the mullions to facilitate air tests at curtain wall assemblies.

8. Contractor shall provide, at their expense, any tests, additional tests, and inspections required to verify compliance of installed, replaced, remediated, or additional work with specified requirements.

F. Air Barrier Field Air Leakage Tests:

1. Test installed air barrier systems and interfaces with adjacent substrates according to ASTM E1186, "Standard Practices for Air Leakage Site Detection in Building Envelopes and Air Barrier Systems and ASTM E-783 Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors.

2. Complete testing prior to installation of interior insulation, gypsum wall board and interior finishes.

3. Test specimen to include the perimeter material substrate and the perimeter seals.

4. Contractor to provide powered scaffold, electric supply, communication and manpower to perform tests.

5. Contractor will work with the Test Engineer and CxA to determine necessity for revised test methods and for field chamber tests based upon evaluation of initial test results. The CxA will interpret marginal results and adjust the test procedures or protocol as appropriate.

6. Contractor to perform out-of-sequence work as required facilitating system tests.

7. Contractor shall provide, at their expense, any tests, additional tests, and inspections required to verify compliance of installed, replaced, remediated, or additional work with specified requirements.

G. Whole Building Air Leakage Testing (Addition):

1. Test installed building enclosure systems, assemblies, components, and interfaces that make-up the building Addition according to ASTM E779, "Standard Test Method for Determining Air Leakage Rate by Fan Pressurization" or ASTM E1827, "Standard Test Methods for Determining Airtightness of Buildings Using an Orifice Blower Door".

2. Complete testing prior to installation of exterior insulating or cladding components configured in a rain-screen assembly.

3. Complete testing prior to installation of interior insulation, gypsum wall board and interior finishes.

4. Test area to include the building Addition generally located on the west facade.

5. Contractor to provide building components and area isolation, electric supply, communication, manpower, and all other required equipment to perform tests.

6. Contractor will work with the Test Engineer and CxA to determine necessity for revised test methods upon evaluation of initial test results.

7. Contractor to perform out-of-sequence work as required facilitating whole building air leakage testing.

8. Contractor shall provide, at their expense, any tests, additional tests, and inspections required to verify compliance of installed, replaced, remediated, or additional work with specified requirements.

H. Roof Field Water and Air Leakage Tests:

1. Test installed roofing systems and interfaces with adjacent substrates using ASTM C1153 Standard Practice for Location of Wet Insulation in Roofing Systems Using Infrared Imaging and Capacitance.

2. Test all installed roof drain sump areas in general accordance with the practices and procedures outlined in ASTM D5957. The water level shall remain unchanged for a minimum of twenty-four (24) hours.

3. Complete testing prior to installation of interior insulation, gypsum wall board and interior ceiling finishes.

4. Contractor will work with the Test Engineer and CxA to determine necessity for revised or supplemental test methods. The CxA will interpret marginal results and adjust the test procedures or protocol as appropriate.

5. Contractor shall provide, at their expense, any tests, additional tests, and inspections required to verify compliance of installed, replaced, remediated, or additional work with specified requirements.

3.2 FIELD PERFORMANCE TEST SCHEDULE

A. Performance testing locations to be determined by A/E and BECxA.

B. Performance testing to be provided by contractor with BECxA present to witness and document all testing:

Supplementary Performance Testing schedule:

Location / Assembly	Testing Standard	Description	Criteria	Schedule and/or Number of Tests
Field Air Leakage Testing:				
Specification Section 084413 – Glazed Aluminum Curtain Walls Specification Section 085113 – Aluminum Windows Specification Section 072500 – Weather Barriers Specification Section 072700 – Air Barrier				
Curtain Wall (chamber size to entire rough opening)	ASTM E783	Field air leakage testing	<0.1 cfm/sq.ft at 6.24 lbf/sq.ft.	1 assembly at west facade (1 total test location)
Punched Window (chamber size to entire rough opening)	ASTM E783	Field air leakage testing	<0.1 cfm/sq.ft at 6.24 lbf/sq.ft.	1 window at each major façade of existing base building, 1 window at addition (5 total test locations)
Air Barrier transitions, laps, field of AB, & penetrations	ASTM E1186	Qualitative Field air leakage tests for air barrier assembly	No visible sign of air leakage	20 bubble gun tests at addition
Field Water Leakage Testing:				
Specification Section 079200 – Joint Sealants Specification Section 084413 – Glazed Aluminum Curtain Walls Specification Section 085113 – Aluminum Windows Expansion Joints – Air and Watertight and Installed within the Exterior Envelope				
Curtain Wall (chamber size to entire rough opening)	ASTM E1105	Field water leakage test	no water at 12 lbf/sq.ft. (no field reduction) (includes perimeter joint seal)	1 assembly at west facade (1 total test location)
Punched Window (chamber size to entire rough opening)	ASTM E1105	Field water leakage test	no water at 12 lbf/sq.ft. (no field reduction) (includes perimeter joint seal)	1 window at each major façade of existing base building, 1 window at addition (5 total test locations)
Expansion Joints	AAMA 501.2	Field water hose nozzle spray testing at 30-35 psi	no leaks includes perimeter joint seal	At 100% completion of all EJ including all vertical and horizontal EJs
Adhesion Testing:				
Specification Section 079200 – Joint Sealants				

Location / Assembly	Testing Standard	Description	Criteria	Schedule and/or Number of Tests
Sealant adhesion to all substrates	ASTM C1521, Method A	Sealant adhesion	Per manufacturer adhesion test data	5 field adhesion tests for the first 1,000 feet of joint sealant per material/substrate type, followed by one test per 1,000 feet there-after
Roofing:				
Specification Section 075323 – Ethylene-Propylene-Diene-Monomer (EPDM) Roofing				
Roof drain sump areas	ASTM D5957	Flood test all roof drain sump areas	no leaks	At 100% completion, water level remains unchanged for 24 hours min.
Roof	ASTM C1153 or ANSI/SPRI RCI NT-1	Thermogra-phy or nu-clear density gauge to identify wet roof insulation	Diagnostic tool – Address anomalies	Survey entire roof at 100% com-pletion prior to turnover
Whole Building Air Testing:				
Specification Section 072500 – Weather Barriers Specification Section 072700 – Air Barrier				
Whole Building Air Barrier - above grade	ASTM E1827 or ASTM E779	Whole build-ing air leak-age testing	0.25 cfm @ 75 Pascal for above grade enclosure	Building Addition at completion of primary building enclosure el-ements, prior to installation of exterior insulating or rainscreen cladding elements.

END OF SECTION 019119

SECTION 023313 - UNDERGROUND UTILITY LOCATOR SERVICE

PART 1 - GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

A. Field Engineering: Section 017123.

1.2 REFERENCES

A. American Society of Civil Engineers, ASCE/UESI/CI 38-22, “Standard Guideline for Investigating and Documenting Existing Utilities.”

B. American Public Works Association, Uniform Color Code.”

1.3 DEFINITIONS

A. Utility Quality Levels:

1. Level B: Information obtained through the application of appropriate surface geophysical methods to determine the existence and approximate horizontal position of subsurface utilities. Quality level B data should be reproducible by surface geophysics at any point of their depiction. This information is surveyed to applicable tolerances defined by the project and reduced onto plan documents.

1.4 DESCRIPTION

A. Retain an independent utility locator service company to field locate and mark existing underground utilities and service connections. The word "independent" as used above means a person not in the regular employment of the Contractor or having any vested interest in the Contractor's business.

1. Level B locator service shall be performed in all project areas where excavations, regrading of the ground surface, and penetrations of the ground surface are to be performed.
2. Support and protect all utilities and service connections to remain in place.
3. The locator service shall field locate and mark underground utilities and service connections prior to excavation.
4. The contractor shall be responsible for coordinating the extent of the areas of subsurface investigation required to locate all underground utilities and service connections in the areas of excavation.

5. All costs associated with the repair of underground utilities and service connections hit/damaged during the investigative work shall be the responsibility of the contractor.
6. Utility location services shall be in accordance with the provisions of ASCE/UESI/CI 38-22, "Standard Guideline for Investigating and Documenting Existing Utilities."

1.5 SUBMITTALS

A. Quality Control Submittals:

1. Submit detailed experience and qualification information about the underground utility locator service company and the persons that will be performing the Work. Detailed experience and qualification information shall include:

    a. Minimum of five (5) years experience in field locating, marking and staking out of existing underground utilities and service connections.

        1) Qualifying Experience: Project information of 5 similar projects, which the locator service company, had worked on during the past 5 years. Information shall include for each project:

            a) Name and Address of project.
            b) Dates worked on project.
            c) Name and telephone Number of contact person at the project site for which the locator service was performed.

    b. Description of types of utility locator equipment (investigation equipment) that company will utilize to perform the underground utility investigation.
    c. Names of persons that the persons that will be performing the Work, including the number of years of experience and training that the persons have in the use of the equipment. Include copy of training certificates for locator equipment proving the person performing the locator service are trained on the equipment being used.

2. Submit Quality Control Submittals within 10 days of contract award.

B. Investigative Report:

1. Submit detailed written report and scaled drawings of the subsurface investigation, documenting all underground utilities and service connections located and identified.

    a. All documentation shall be referenced to existing data (horizontal and vertical) previously established.
    b. Provide three (3) paper copies and one (1) electronic copy of detailed written report and drawings.

2. Submit Investigative Report at least two weeks prior to advancing construction within the scheduled areas of excavation within the project site.

1.6 COORDINATION AND SCHEDULING

A. Coordinate the Work to determine the extent of the areas of subsurface investigation required to locate all underground utilities and service connections in the areas of excavation.

B. Coordinate the Work with the Director's Representative to minimize utility disruptions and facility operations. Provide a schedule for the Work required to the Director's Representative for approval. Upon approval of the schedule, notify the Director's Representative a minimum of three (3) working days prior to performing the Work.

C. Within the areas of excavation, all underground utilities and service connections shall be field located, and their locations marked at least two (2) weeks prior to the performance of the required excavation work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 WORK AREAS AND PERFORMANCE

A. If any underground utilities and service connections are hit or damaged during the Work, immediately inform the Director's Representative for directions on how to proceed.

B. The utility locator service investigative work, field location and marking of underground utilities and service connections and submission of the investigative report must be completed before any excavation work can begin.

1. Contractor shall maintain markings throughout the contract duration or until a time when directed (in writing) by the Director's Representative that maintaining of the markings are no longer required.

C. Provide subsurface investigation information, detailed written report and drawings of the subsurface investigation, documenting all underground utilities and service connections located and identified, prior to the performance of the required excavation work.

D. If during the Level B investigations, unknown underground utilities are discovered, the Director's Representative shall be notified as soon as possible or before the close of that business day.

E. Field Marking of underground utilities shall follow the American Public Works Association (APWA) uniform color code:

1. White: Proposed Excavation.
2. Pink: Temporary Survey Markings.
3. Red: Electric power lines, cables, conduit and lighting cables.
4. Yellow: Gas, oil, steam, petroleum and gaseous material.
5. Orange: Communications, alarm, signal lines, cables or conduit.
6. Blue: Potable water.
7. Purple: Reclaimed water, irrigation and slurry lines.
8. Green: Sewer and drain lines.

END OF SECTION 023313

SECTION 024115 - SITE DEMOLITION

PART 1 - GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

A. Construction Facilities and Temporary Controls: Section 015000.

B. Removals, Cutting and Patching: Section 017329.

C. Earthwork: Section 310000.

1.2 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer's installation instructions shall be provided along with product data.

C. Submittals shall be provided individually in the order in which they are specified and tabbed.

D. Quality Control Submittals:

1. Permits: Submit one copy of each permit.
2. Demolition Plan: For information only, submit one copy of the demolition plan required under Quality Assurance Article.

E. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property for dust control.

1. Adjacent Buildings: Detail special measures proposed to protect adjacent buildings to remain including means of egress from those buildings.

F. Schedule of Site Demolition Activities: Indicate the following:

1. Detailed sequence of demolition work, with starting and ending dates for each activity.

2. Temporary interruption of utility services.

3. Shutoff and capping of utility services.

G. Pre-demolition Photographs or Video: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by demolition operations. Submit before the Work begins.

1.3 QUALITY ASSURANCE

A. Permits: Before the Work of this Section is started, obtain all permits required by Federal, State, and local jurisdictions for all phases and operations of the Work.

B. Demolition Plan: Before the Work of this Section is started, prepare a detailed demolition plan. The demolition plan shall include, but not be limited to, detailed outline of intended demolition and disposal procedures. The demolition plan will not relieve the Contractor of complete responsibility for the successful performance of the Work in accordance with all applicable Federal, State, and local codes and restrictions.

1.4 PROJECT CONDITIONS

A. Recycle demolition debris to the extent possible.

B. Burning is prohibited.

C. The use of explosives is prohibited.

D. Protect utilities during the Work of this Section.

E. Verify the location and status of all utilities within the Contract Limit Line (CLL) as outlined in Section 023313.

F. Do not interrupt utility services to buildings which are to remain.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PREPARATION

A. Provide temporary 8 foot high chain link fence, including all required gates, around the site prior to start of the Work of this Section. Locate temporary fence where directed. Remove temporary fence in its entirety, including all anchorage materials, after completion of backfill operations.

3.2 DEMOLITION

A. Wet down masonry during sawcutting or jackhammering to prevent spread of dust and dirt. Sprinkle debris, and use temporary enclosures as necessary to limit dust to lowest practicable level. Do not use water to extent causing flooding, contaminated runoff, or icing.

B. Remove top of retaining walls, sidewalks, curb, pavements, and railings within CLL, unless shown or directed otherwise.

3.3 DISPOSAL

A. Remove demolition debris and excess fill from State property as soon as practicable.

B. Transport demolition debris and excess fill to designated disposal area as soon as practicable. Grade disposal areas to adjacent contours and slope to drain.

C. Do not store, sell, or burn materials on State property.

END OF SECTION 024117

SECTION 028213 - ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies the procedures for disturbance and removal of existing asbestos-containing materials (ACM) and disposal of removed materials. The results of the testing for ACM are listed in the Building Asbestos Survey Report bound in the Appendix. Also see Document 003126.

1. The Building Asbestos Survey report was compiled by an ELAP certified laboratory.
2. In order to determine asbestos content, samples were analyzed by polarized light microscopy (PLM) and/or transmission electron microscopy (TEM).
3. The report is intended for State Design and estimate purposes only, and is included to provide bidders with the same information available to the State.
4. The Bulk Samples are representative of like materials in the Work area. All ACM may not have been sampled.

B. Type of Asbestos Abatement Project:

1. Large Asbestos Abatement Project: An asbestos project involving the removal, disturbance, repair or handling of more than 160 square feet or 260 linear feet of ACM.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Existing Hazardous Material Information: Section 003126.

B. Summary of the Work: Section 011000.

C. Removals, Cutting, and Patching: Section 017329.

1.3 REFERENCES

A. New York State Department of Environmental Conservation (DEC) 6NYCRR:

1. Part 360 Solid Waste Management Facilities.
2. Part 364 Waste Transporter Permits.
3. Part 370 Hazardous Waste Management System-General.
4. Part 371 Identification and Listing of Hazardous Wastes.
5. Part 372 Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities.
6. Part 373 Hazardous Waste Management Facilities.

B. Occupational Safety and Health Administration (OSHA): Asbestos Regulations (29 CFR Part 1926.1101).

C. U.S. Environmental Protection Agency (USEPA):

1. National Emission Standards for Hazardous Air Pollutants; Asbestos NESHAP Revision; Final Rule.
2. Asbestos Emergency Response Act (AHERA) (40 CFR Part 763, Subpart E).

D. New York State Department of Labor (DOL): Industrial Code Rule 56.

1.4 DEFINITIONS

A. Authorized Personnel: Facility or the Director's Representative, and all other personnel who are authorized officials of any regulating agency, be it State, Local, Federal or Private entity who possess legal authority for enforcement or inspection of the work.

B. Clearance Criteria: Shall be determined and established by a Certified Asbestos Project Monitor with an independent testing lab employed by the Director's Representative, conforming to all standards set forth by all authorities having jurisdiction, mentioned in the references, and issue the certification of cleaning.

C. Site Specific Variance: Relief in accordance with section 30 of the Labor Law from specific sections of Industrial Code Rule 56 for a specific project.

D. Phase I & II: Asbestos Project phases as defined and subcategorized in ICR 56-2.

1.5 ABBREVIATIONS

A. ASTM: American Society for Testing and Materials
1916 Race Street
Philadelphia, PA 19103

B. CFR: Code of Federal Regulations
Government Printing Office
Washington, DC 20402

C. DOL: New York State Department of Labor
Harriman State Office Building Campus
Albany, NY 12240

D. NIOSH: National Institute for Occupational Safety and Health
Building J.N.E. Room 3007
Atlanta, GA 30333

E. OSHA: Occupational Safety and Health Administration
200 Constitution Avenue
Washington, DC 20210

F. USEPA: United States Environmental Protection Agency

401 M Street SW
Washington, DC 20460

1.6 ASBESTOS SITE SPECIFIC VARIANCE

A. If a site specific variance is sought, the application must be submitted by the contractor's NYS DOL Certified Asbestos Project Designer with 14 days after the Contract Agreement is approved by the Comptroller. Forward the required forms to the Department of Labor for their action.

1.7 SUBMITTALS

A. Product Data: Catalog sheets, specifications and installation instructions for each item specified.

B. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

C. Manufacturer's installation instructions shall be provided along with product data.

D. Submittals shall be provided individually in the order in which they are specified and tabbed.

E. Asbestos Site Specific Variance Submittals; if a site specific variance is sought submit the following:

1. One copy of the completed DOSH-751 and DOSH-465 forms.
2. One copy of the New York State Department of Labor site specific variance decision.

F. Quality Control Submittals:

1. Notification Compliance Data: Within 2 days after notification is sent to the regulatory agencies submit one copy of each notice sent to each regulatory agency (USEPA and DOL).
2. Asbestos Removal Company Data: Name and address of proposed asbestos removal company and abatement contractor license issued by DOL.
3. Asbestos Worker Certification Data: Name and address of proposed asbestos abatement workers and licenses issued by DOL.
4. Work Plan: Submit one copy of the work plan required under Quality Assurance Article 1.08 (C).
5. Waste Transporter Permit: One copy of transporter's current waste transporter permit from NYS DEC (NYS Part 364 Permit).
6. NYS Part 360 Landfill Permit: Copy of NYS Part 360 permit of landfill to be used for ACM disposal shall be licensed to receive asbestos waste by NYS DEC (NYS Part 360 Permit) and by USEPA. Out of state landfills shall provide licenses from local agencies having jurisdiction.
7. Negative Air Pressure Equipment: Copy of manufacturer's and performance data of all units and HEPA filters used.

G. Asbestos Work Closeout Submittals:

1. Waste Shipment Records and Disposal Site Receipts: Copy of waste shipment record and disposal site receipt showing that the ACM has been properly disposed.

a. Waste shipment record and disposal site receipt must be received within 35 days of the ACM waste leaving the Site. If receipts are not received within the specified time period, the Director's Representative will notify USEPA in writing within 45 days of the ACM waste leaving the Site.

H. Contract Closeout Submittals:

1. Daily Log: Submit copy of the daily air sample analytical reports and a copy of Asbestos Abatement Contractor's Daily project log.
2. Personal Air Monitoring Data: Submit copy of personal air monitoring analytical reports and chain of custody.

1.8 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with the referenced standards.

B. Pre-Work Conference: Before the Work of this Section is scheduled to commence, a conference will be held by the Director's Representative at the Site for the purpose of reviewing the Contract Documents, discussing requirements for the Work, and reviewing the Work procedures.

1. The conference shall be attended by the Contractor, the asbestos removal subcontractor, and the testing laboratory employed by the Director.

C. Work Plan: At the conclusion of the pre-work conference, before the physical abatement Work begins, prepare a detailed work plan.

D. The work plan shall include, but not be limited to, work procedures, types of equipment, details of equipment used, decontamination unit locations, crew size, and emergency procedures for fire and medical emergencies and for failure of containment barriers.

E. If a site specific variance is sought, do not finalize the work plan until the Department of Labor decision is received.

1.9 PROJECT CONDITIONS

A. In addition to the postings required by law, post at the entrance to the abatement area the following documents:

1. Copy of the printed Work plan.
2. Copy of Industrial Code Rule 56.

B. Shut-down of Air Handling System: Complete the Work of this Section within the time limitation allowed for shut-down of the air handling system serving the work area.

1. The air handling system will not be restarted until approval of the air monitoring tests following the last cleaning.
2. If total shut down of the system is not acceptable, follow all regulations for local isolation and provision for temporary HVAC as per DOL regulations.

C. Maintain electric services to those portions of the building and remaining facility not a part of the asbestos abatement work area at all times. Follow all regulations for electric power shut down exemptions as per DOL regulations.

D. Do not obstruct any aisle or passageway so as to reduce its required width as an exit.

1.10 HEALTH AND SAFETY

A. Where in the performance of the work, workers, supervisory personnel or sub-contractors may encounter, disturb, or otherwise function in the immediate vicinity of contaminated items and materials, all personnel shall take appropriate continuous measures as necessary to protect all ancillary building occupants from the potential ACM exposure.

1. Such measures shall include the procedures and methods described herein and shall be in compliance with all applicable regulations of Federal, State and Local agencies.

1.11 FIRE PROTECTION, EMERGENCY EGRESS AND SECURITY

A. Establish emergency and fire exits from the work area containment. Provide first aid kits and two full sets of protective clothing and respirators for use by qualified emergency personnel outside of the work area.

B. Provide a logbook throughout the entire term of the project. All persons who enter the regulated abatement work area or enclosure shall sign the logbook. Document any intrusion or incident in the log book.

1.12 PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT

A. Workers must wear personal protective equipment for all projects as per OSHA and DOL regulations. Provide respiratory protection in accordance with OSHA regulation 1910.134 and ANSI Z88.2.

B. Workers must be trained as per OSHA and DOL requirements, have medical clearance and must have recently received pulmonary function test (PFT) and respirator fit tested by a trained professional.

1. A personal air sampling program shall be in place as required by OSHA.
2. The use of respirators must also follow a complete respiratory protection program as specified by OSHA.

PART 2 - PRODUCTS

2.1 DISPOSAL BAGS

A. Type: Minimum 6 mil thick, black, and preprinted with a Caution Label.

2.2 EQUIPMENT

A. Temporary lighting, heating, hot water heating units, ground fault interrupters, and all other equipment on site shall be UL listed.

B. All electrical equipment shall be in compliance with the National Electric Code, Article 305 - Temporary Wiring.

2.3 GLOVE BAGS

A. Type: Minimum 6 mil thick, clear, fire retardant polyethylene. Select glove bag sizes appropriate for the size and location of the project.

2.4 NEGATIVE AIR PRESSURE UNITS

A. Type: Local exhaust system, capable of maintaining negative air pressure within the containment, and provides for HEPA filtration of efficiency not less than 99.97 percent with 0.3 micron particles. Equip the unit with filter alarms lights and operation time meter.

2.5 PLASTIC SHEETS

A. Type: Minimum 6 mil thick, clear, fire retardant polyethylene.

2.6 RESPIRATORS

A. Type: As approved by the Mine Safety and Health Administration (MSHA), Department of Labor, or the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services.

2.7 VACUUM CLEANERS

A. Type: Vacuums equipped with HEPA filters.

PART 3 - EXECUTION

3.1 ASBESTOS-CONTAINING MATERIAL HANDLING AND REMOVAL PROCEDURES

A. Comply with the standards referenced in Part 1 of this Section.

3.2 CLEAN UP PROCEDURES

A. Comply with the standards referenced in Part 1 of this Section.

3.3 PROJECT AIR SAMPLING, MONITORING AND ANALYSIS

A. Air Sampling and Analysis: The Director will employ the services of an independent testing laboratory to perform air sample monitoring. The laboratory shall use the methods described in standards referenced in Part 1 of this Section.

1. The equipment, duration, flow rate, calibration of equipment, number and location of samples are as per ICR 56-4.
2. Air sampling technician shall be on site to observe and maintain air sampling equipment for the duration of the air sampling collection.
3. Period of time permitted between completion of air sample collection and receipt of results on the project site shall be equal or less than 48 hours.

B. If air samples collected outside the regulated work area indicate airborne fiber concentrations at or above 0.01 fibers per cubic centimeter, or the established background level, whichever is greater, work shall stop immediately for inspection of barriers and negative air ventilation systems. Clean up surfaces outside the regulated work area using HEPA filter equipped vacuums and wet cleaning methods. Work methods shall be altered to reduce fiber concentrations to acceptable levels.

C. Elevated air sample results, if any, along with background and all other air sample results collected during Phase IIA through Phase IIC shall be submitted to the Commissioner of appropriate Asbestos Control Bureau within the same business day of receipt of results.

3.4 FINAL CLEANING AND CLEARANCE PROCEDURES

A. Negative Pressure Ventilation: Negative air pressure machines if used, shall remain in continuous operation during the entire length of the project.

B. Cleaning and Visual Inspection: After first, second, third cleaning and required waiting/settling and drying periods, perform a final visual inspection.

1. Final clearance air sampling shall commence after the waiting/settling and drying time as per ICR 56 has elapsed.

C. Project Monitor Visual Inspection: The Director will employ the services of a DOL certified asbestos project monitor employed by an independent testing laboratory to perform visual inspection as required by ICR 56.

D. Final Clearance Air Sampling: The Director will employ the services of an independent testing laboratory to perform final air sampling.

1. The laboratory shall use the methods described in standards referenced in Part 1 of this Section.
2. The equipment, duration, flow rate, calibration of equipment, number and location of samples are as per ICR 56-4.
3. If initial Post-Abatement (Clearance Air) Monitoring results do not comply with the standards referenced in Part 1 of this Section the Contractor shall either re-clean or order a full set of TEM analysis.

    a. Results of the TEM analysis will be conclusive, and if the results do not comply with the standards referenced in Part 1 of this Section, the Contractor shall re-clean and additional full set of air samples will be collected and analyzed until the standards are met.
    b. All satisfactory PCM clearance air sample results along with background air sample results, if they are greater than or equal to 0.01 fibers per cubic centimeter, shall be submitted to the Commissioner of appropriate Asbestos Control Bureau within two business days of receipt of satisfactory clearance air results.
    c. All satisfactory TEM results of previously unsatisfactory PCM clearance air sample results, along with the unsatisfactory PCM results shall be submitted to the Commissioner of appropriate Asbestos Control Bureau within two business days of receipt of satisfactory clearance air results.

4. Prior to removal of isolation barriers the Director's Representative at the site will receive an affidavit from the air monitoring laboratory certifying the final air samples comply with the standards referenced in Part 1 of this Section.

E. Dismantling of Regulated Abatement Work Area:

1. Remove all tools and equipment after proper decontamination as per Part 1 of this section.
2. Dismantle and remove each tent enclosure and air lock and any barriers only after final clearance air monitoring has been performed and satisfactory results obtained.
3. All remaining polyethylene, duct tape, expandable foam and other barrier materials shall be bagged, wrapped, containerized and labeled as asbestos waste.
4. Remove all temporary hard walled barriers from site.
5. Dismantle any remote decontamination units and plastic sheeting shall be disposed as asbestos waste.
6. Remove all waste generated to the holding area, lockable trailer or dumpster.
7. Contractor's Supervisor shall certify in writing to the Director that abatement work is complete and no debris/residue remains.

3.5 DISPOSAL OF ASBESTOS-CONTAINING MATERIAL AND RELATED DEBRIS

A. Remove all waste generated as part of the asbestos project from the project site within ten calendar days from the site after completion of Phase IIC of the project or within one day of the waste disposal container/trailer becomes full, whichever occurs first.

B. Transport and dispose of all the asbestos-containing waste, related debris, and waste water to the approved disposal site.

C. All generated waste removed from the site must be documented, accounted for and disposed of in compliance with the requirements of USEPA NESHAP.

D. Comply also with the standards referenced in Part 1 of this Section.

3.6 RESTORATION

A. Remove temporary decontamination facilities and restore area designated for these facilities to its original condition or better.

B. Where existing work is damaged or contaminated, restore work to its original condition or better.

END OF SECTION 028213

SECTION 028304 - HANDLING OF LEAD CONTAINING MATERIALS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies the requirements for the detection and prevention of lead dust, paint chips, or debris contamination of lead dust control work areas and areas adjacent to them, protection of workers, post-work cleaning, predisposal testing and appropriate disposal of removed material. The results of the testing for lead-containing materials are listed in the appendix.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Existing Hazardous Material Information: Section 003126.

B. Summary of the Work: Section 011000.

C. Construction Facilities and Temporary Controls: Section 015000.

D. Removals Cutting and Patching: Section 017329.

1.3 REFERENCES

A. New York State Department of Environmental Conservation (DEC) 6NYCRR:

1. Part 360 Solid Waste Management Facilities.
2. Part 364 Waste Transporter Permits.
3. Part 370 Hazardous Waste Management System-General.
4. Part 371 Identification and Listing of Hazardous Wastes.
5. Part 372 Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities.
6. Part 373 Hazardous Waste Management Facilities.

B. New York State Department of Transportation (DOT): Follow all regulations of 49CFR Part 100 through 199.

C. Occupational Safety and Health Administration (OSHA): Lead Exposure in Construction: Interim Final Rule 29 CFR 1926.62.

D. U.S. Department of Housing and Urban Development (HUD): Guidelines for evaluation and control of Lead based paint hazards: Title Ten of Housing and Community Act of 1992.

E. U.S. Environmental Protection Agency (EPA): Resource Conservation and Recovery Act (RCRA) Section 3004 Hazardous and Solid Waste Amendments.

F. U.S. Environmental Protection Agency (EPA): Toxicity Characteristics Leaching Procedure EPA Method 1311.

1.4 DEFINITIONS

A. Authorized Personnel: Facility or the Director's Representative, and all other personnel who are authorized officials of any regulating agency, be it State, Local, Federal or Private entity who possess legal authority for enforcement or inspection of the work.

B. Containment: The enclosure within the building which establishes a contaminated area and surrounds the location where lead remediation is taking place and establishes a Lead Control Work Area.

C. Floor Surface Clearance Criteria: Shall be determined and established by an independent testing lab hired by the Director's Representative, conforming to all standards set forth by all authorities having jurisdiction, mentioned in the references, and issue the certification of cleaning. At a minimum no single post work lead wipe sample test values shall have reading levels greater than the levels established by pre-work wipe sampling test values, or greater than 10 mg/ft^2. Record levels in mg/ft^2.

D. Fixed Object: Mechanical equipment, electrical equipment, fire detection systems, alarms, and all other fixed equipment, furniture, fixtures or other items which cannot be removed from the work area.

E. HEPA: High Efficiency Particulate Absolute filtration efficiency of 99.97 percent down to 0.3 microns. Filtration provided on specialized vacuums and air filtration devices to trap particles.

F. Lead Based Paint (LBP): Paints or other surface coatings that contain lead equal to or greater than 1.0 milligrams per square centimeter or 0.5 percent of lead by weight.

G. Lead Dust Control Work Area: A cordoned off area with drop clothes or an enclosed area or structure with containment to prevent the spread of lead dust, paint chips, or debris from lead-containing paint disturbance operations.

H. PPE: Personal Protective Equipment.

1.5 ABBREVIATIONS

A. ASTM: American Society for Testing and Materials
1916 Race Street
Philadelphia, PA 19103

B. CFR: Code of Federal Regulations
Government Printing Office
Washington, DC 20402

C. DOT: Department of Transportation
Main Office, 50 Wolf Road
Albany, NY 12232

D. NIOSH: National Institute for Occupational Safety and Health
Building J, N.E. Room 3007
Atlanta, Georgia 30333

E. OSHA: Occupational Safety and Health Administration
200 Constitution Avenue
Washington, DC 20210

F. USEPA: United States Environmental Protection Agency
401 M Street SW
Washington, DC 20460

1.6 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer's installation instructions shall be provided along with product data.

C. Submittals shall be provided individually in the order in which they are specified and tabbed.

D. Quality Control Submittals: Submit the entire Lead Abatement submittal package at the same time.

1. Worker' Qualifications: The persons removing lead containing/coated material and their Supervisors shall be personally experienced in this type of work and shall have been employed by a company with a minimum of one year experience in this type of work. Submit a copy of documentation of completion of the EPA lead renovators training program.

a. Name of lead supervisor on site during the work.

2. Detailed Work Plan: Submit one copy of the work plan required under Quality Assurance Article.
3. Waste Transporter Permit: One copy of transporter's current NYS DEC waste transporter permit.

E. Operation and Maintenance Data: Submit air filtration unit operation and maintenance data and manufacturer's catalog sheets for the HEPA filter.

1. Provide an affidavit stating that the HEPA filters to be used for this project are new and unused.

F. Contract Closeout Submittals:

1. Assessment Report compiled by a testing lab certifying that the work area has lead concentrations below the levels specified under the cleaning criteria.
2. Disposal Site Receipts: Copy of waste shipment record and disposal site receipt showing that the lead-containing materials have been properly disposed.

1.7 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with the referenced standards.

B. Pre-Work Conference: Before the Work of this Section is scheduled to commence, a conference will be held by the Director's Representative at the Site with the contractor and the lead handling subcontractor (if any) for the purpose of reviewing the Contract Documents, discussing requirements for the Work, and reviewing the Work procedures.

C. Detailed Lead-Containing Material Removal Work Plan: Before the physical Work begins, prepare a detailed lead-containing material removal work plan.

1. The work plan shall include, but not be limited to, the location, size, and details of lead dust control work areas, containment, sequencing of lead containing material handling, work procedures, types of equipment, crew size, and emergency procedures for fire and medical emergencies.

1.8 PROJECT CONDITIONS

A. Shut-down of Air Handling System: Complete the Work of this Section within the time limitation allowed for shutdown of the air handling system serving the work area.

1. The air handling system will not be restarted until approval of the post-work dust-wipe testing following the last cleaning.

B. Cover and seal all fin-tube radiator covers, diffusers, duplex outlets, speakers, smoke and heat detectors, etc. Use temporary plasticized partitions as required.

1. Prevent lead containing dust from entering hard to clean areas within the dust containment area.
2. Items judged to be too difficult to protect may be disconnected, removed and replaced at contractor's option.

C. Remove or encase all movable equipment in the work area with two layers of six mil fire retardant polyethylene sheeting.

D. Cut and alter existing materials as required to perform the work. Limit cutting to the smallest amount necessary. Core drill round holes and saw cut other openings where possible for removal work. Flame cutting, high speed grinding or welding is prohibited on lead painted surfaces.

1.9 HEALTH AND SAFETY

A. Where in the performance of the work, workers, supervisory personnel or sub-contractors may encounter, disturb, or otherwise function in the immediate vicinity of contaminated items and materials, all personnel shall take appropriate continuous measures as necessary to protect all ancillary building occupants from the potential lead exposure.

1. Such measures shall include the procedures and methods described herein and shall be in compliance with all applicable regulations of Federal, State and Local agencies.

1.10 FIRE PROTECTION, EMERGENCY EGRESS AND SECURITY

A. Establish emergency and fire exits from the lead dust control work area containment. Provide first aid kits and two full sets of protective clothing and respirators for use by qualified emergency personnel outside of the work area.

B. Provide a logbook throughout the entire term of the project. All persons who enter the regulated lead dust control work area or containment shall sign the logbook. Document any intrusion or incident in the log book.

1.11 PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT

A. Workers must wear protective suits, protective gloves, eye protection and a minimum of half-face respirator with new HEPA filter cartridge for all projects. Respiratory protection shall be in accordance with OSHA regulation 1910.134 and ANSI Z88.2.

B. Workers must be trained per EPA, have medical clearance and must have recently received pulmonary function test (PFT) and respirator fit tested by a trained professional.

1. A personal air sampling program shall be in place as required by OSHA.
2. The use of respirators must also follow a complete respiratory protection program as specified by OSHA.

PART 2 - PRODUCTS

2.1 RESPIRATORS

A. Type: Approved by the Mine Safety and Health Administration (MSHA), Department of Labor, or the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services.

2.2 VACUUM CLEANERS

A. Type: Vacuums equipped with new HEPA filters.

2.3 PLASTIC SHEETS

A. Type: Minimum 6 mil., clear, fire retardant polyethylene sheets.

B. Floor Protective Layer: Minimum 10 mil., reinforced polyethylene sheets.

2.4 DISPOSAL BAGS

A. Type: Minimum 6 mil thick, clear polyethylene bags with preprinted Caution Label. Properly containerize/drum prior to disposal.

2.5 EQUIPMENT

A. Temporary lighting, heating, hot water heating units, ground fault interrupters, and all other equipment on site shall be UL listed and shall be safe, proper, and sufficient for the purpose intended.

B. All electrical equipment shall be in compliance with the National Electric Code, Article 305 - Temporary Wiring.

PART 3 - EXECUTION

3.1 PRE-WORK WIPE TESTING

A. Testing: The Director's Representative will employ the services of an independent testing laboratory to perform the pre-work testing within the lead dust control work area and the areas adjacent to the lead dust control work area.

1. The testing lab will be New York State Department of Health, Environmental Laboratory Accreditation Program (NYS ELAP).

3.2 EMPLOYEE PROTECTION

A. Comply with all applicable Occupational Safety and Health Administration (OSHA) Requirements.

3.3 LEAD-CONTAINING/COATED MATERIAL HANDLING AND DISPOSAL

A. Handle and dispose of lead-containing materials in accordance with OSHA 1926.62 and the approved lead-containing material work plan. Use procedures and equipment required to limit occupational and environmental exposure to lead when material containing or coated with lead containing paint is handled and disposed of in accordance with referenced standards.

3.4 POST-WORK WIPE TESTING

A. Testing: The Director will employ the services of an independent testing laboratory to perform the post-work testing within the lead dust control work area and the areas adjacent to the lead dust control work area.

1. The testing lab will be New York State Department of Health, Environmental Laboratory Accreditation Program (NYS ELAP).

3.5 MULTIPLE WORK LOCATIONS

A. The work locations encountered shall be utilized to develop a method for an acceptable baseline approach for the lead dust control area, pre work wipe samples, employee protection, work method, post work wipe samples, cleaning criteria and disposal.

1. Once an acceptable method is developed and verified by the independent testing lab employed by the Director, subsequent testing shall not be required.
2. Do not change the methodology of the verified work plan during the course of the entire project.

3.6 CLEANING CRITERIA

A. Cleaning criteria is separated into two categories; areas within the lead dust control work area, and areas adjacent to the lead dust control work area:

1. Surfaces within the Lead Dust Control Work Area: In each area where the lead containing/coated materials have been disturbed, compare the post work wipe sample values with the pre work wipe sample values. If any of the sample values exceed the pre work values, clean again and schedule retesting until the lead levels are equal to or less than the pre work values or less than the HUD guidelines listed below. Any other surfaces inside the lead dust control work area that are not listed below shall be cleaned to the pre work values:

    a. Floors: 10 micrograms of lead per square foot.
    b. Window Sills: 100 micrograms of lead per square foot.
    c. Window Troughs: 400 micrograms of lead per square foot.

2. Areas Adjacent to the Lead Dust Control Work Area: In each area where the work has been performed, compare the post work wipe sample values with the pre work wipe sample values. If any of the sample values exceed the pre work values, the area has been contaminated by the work and cleaning is mandatory.

    a. Clean all affected surfaces and schedule retesting. If results still exceed pre work wipe sample values, clean again and schedule retesting until the following criteria is met or until the lead dust values are equal to or lower than the pre-work wipe sample values. Any affected surfaces that are not listed below shall be cleaned to pre-work levels.

        1) Floors: 10 micrograms of lead per square foot.
        2) Window Sills: 100 micrograms of lead per square foot.
        3) Window Troughs: 400 micrograms of lead per square foot.

3.7 CERTIFICATION OF CLEANING

A. Schedule visual inspection and dust wipe testing with the Director’s Representative at the site, when work area is ready for clearance testing.

B. Director's Representative will employ the services of an independent testing lab to perform clearance testing.

1. Prior to removal of any isolation barrier, the Director's Representative will obtain a written affidavit and a final assessment report from the lab stating that the tests conform to all standards set forth by all authorities having jurisdiction, mentioned in the references.
2. Schedule a walk-through inspection with the Director's Representative and obtain his written approval.

C. The Director's Representative shall have final determination of an acceptable clearance level.

3.8 PRE-DISPOSAL TESTING

A. Prior to disposal, the Director's Representative will employ the services of an independent testing lab to perform clearance testing of the removed materials for toxicity in accordance with EPA Method 1311, Toxicity Characteristic Leaching Procedure (TCLP).

1. Test results indicating a value greater than 5 ppm lead or 5mg/L classifies the removed material as Hazardous Waste.

3.9 DISPOSAL OF LEAD-CONTAINING/COATED MATERIAL AND RELATED DEBRIS

A. Transport and dispose of lead-containing material classified as Hazardous Waste in accordance with the standards referenced in Part 1 of this Section.

B. Transport and dispose of lead-containing material classified as Non- Hazardous Waste in accordance with the standards referenced in Part 1 of this Section.

3.10 RESTORATION

A. Remove temporary decontamination facilities and restore area designated for these facilities to its original condition or better.

B. Where existing construction is damaged or contaminated during the course of performing this project, restore area to its condition or better.

END OF SECTION 028304

SECTION 031000 - CONCRETE FORMING AND ACCESSORIES

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:

1. Form-facing material for cast-in-place concrete.
2. Form liners.
3. Insulating concrete forms.
4. Shoring, bracing, and anchoring.

1.3 DEFINITIONS

A. Form-Facing Material: Temporary structure or mold for the support of concrete while the concrete is setting and gaining sufficient strength to be self-supporting.

B. 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.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review the following:

a. Special inspection and testing and inspecting agency procedures for field quality control.
b. Construction, movement, contraction, and isolation joints
c. Forms and form-removal limitations.
d. Shoring and reshoring procedures.
e. Anchor rod and anchorage device installation tolerances.

1.5 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer's installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each of the following:

1. Exposed surface form-facing material.
2. Concealed surface form-facing material.
3. Pan-type forms.
4. Form ties.
5. Waterstops.
6. Form-release agent.

E. Shop Drawings: Prepared by, and signed and sealed by, a qualified professional engineer, registered in New York State, 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 the Director's Representative.

3. Indicate location of waterstops.
4. Indicate form liner layout and form line termination details.
5. Indicate proposed schedule and sequence of stripping of forms, shoring removal, and reshoring installation and removal.
6. Indicate layout of insulating concrete forms, dimensions, course heights, form types, and details.

F. Samples:

1. For waterstops.
2. For Form Liners: 12-inch by 12-inch sample, indicating texture.

G. Qualification Data: For testing and inspection agency.

H. Research Reports: For insulating concrete forms indicating compliance with International Code Council Acceptance Criteria AC353.

I. Field quality-control reports.

J. Minutes of preinstallation conference.

1.6 QUALITY ASSURANCE

A. Testing and Inspection Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.

B. Mockups: Formed surfaces to demonstrate typical joints, surface finish, texture, tolerances, and standard of workmanship.

1. Build panel approximately 100 sq. ft. in the location indicated or, if not indicated, as directed by Director's Representative.
2. Subject to compliance with requirements, approved mockups may become part of the completed Work.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Form Liners: Store form liners under cover to protect from sunlight.

B. Insulating Concrete Forms: Store forms off ground and under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

C. 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.

B. Design, engineer, erect, shore, brace, and maintain insulating concrete forms 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 cross ties to transfer the effects of the following loads to the cast-in-place concrete core:

a. Wind Loads: As indicated on Drawings.

1) Horizontal Deflection Limit: Not more than 1/600 of the wall height.

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).
2) APA MDO (medium-density overlay); mill-release agent treated and edge sealed.
3) APA Structural 1 Plyform, B-B or better; mill oiled and edge sealed.
4) APA Plyform Class I, B-B or better; mill oiled and edge sealed.

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 [with gradual or abrupt irregularities] [without spiral or vertical seams] 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.

E. Void Forms: Biodegradable paper surface, treated for moisture resistance, structurally sufficient to support weight of plastic concrete and other superimposed loads.

F. Form Liners:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Architectural Polymers, Inc.
b. Fitzgerald Formliners.
c. Sika Corporation.
d. Spec Formliners, Inc.
e. Approved Equivalent.

2. Size: As required.
3. Face Pattern: Smooth or Wood.

2.3 INSULATING CONCRETE FORMS

A. Insulating Concrete Forms: Concrete-forming system complying with ASTM E2634, consisting of two panels of insulation connected with cross ties.

1. 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. Amvic Building System.
    b. BuildBlock Building Systems, LLC.
    c. Nudura Corporation.
    d. Approved Equivalent.

2. Insulation: ASTM C578, Type II, expanded polystyrene.

    a. Thickness: Not less than 2-1/2 inches each face.
    b. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

        1) Flame Spread: 25 or less.
        2) Smoke Developed Index: 450 or less.

3. Cross Ties: Polypropylene, with integral reinforcement supports, designed to allow passage of concrete during placement.
4. Core Thickness: 4 inches.

2.4 WATERSTOPS

A. Flexible Rubber Waterstops: U.S. Army Corps of Engineers CRD-C 513,[with factory-installed metal eyelets,] for embedding in concrete to prevent passage of fluids through joints, with factory fabricated corners, intersections, and directional changes.

1. 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. CETCO is a subsidiary of Minerals Technologies Inc.
    b. Sika Corporation.
    c. Williams Products, Inc.
    d. Approved Equivalent.

2. Profile: As indicated.
3. Dimensions: As indicated; nontapered.

B. Chemically Resistant Flexible Waterstops: Thermoplastic elastomer rubber waterstops for embedding in concrete to prevent passage of fluids through joints; resistant to oils, solvents, and chemicals, with factory fabricate corners, intersections, and directional changes.

1. 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. JP Specialties, Inc.
    b. Sika Corporation.
    c. Approved Equivalent.

2. Profile: As indicated.
3. Dimensions: As indicated; nontapered.

C. Flexible PVC Waterstops: U.S. Army Corps of Engineers CRD-C 572, for embedding in concrete to prevent passage of fluids through joints, with factory fabricate corners, intersections, and directional changes.

1. 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. BoMetals, Inc.
    b. Sika Corporation.
    c. Vinylex Waterstop & Accessories.
    d. Approved Equivalent.

2. Profile: As indicated.
3. Dimensions: As indicated; nontapered.

D. 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.

1. 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. Carlisle Coatings & Waterproofing Inc.
    b. Henry Company.
    c. JP Specialties, Inc.
    d. Sika Corporation.
    e. Approved Equivalent.

E. Self-Expanding Rubber Strip Waterstops: Manufactured rectangular or trapezoidal strip, bentonite-free hydrophilic polymer-modified chloroprene rubber, for adhesive bonding to concrete, 3/8 by 3/4 inch.

1. 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. Adeka Corporation.
    b. Kryton International Inc.
    c. Sika Corporation.
    d. Approved Equivalent.

2.5 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 shall 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.
3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.

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 Director’s Representative prior to forming openings not indicated on Drawings.

L. 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 Director's Representative.
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.

M. 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.

N. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

O. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

P. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

Q. Use of nails in forms and use of clay brick to support reinforcement is prohibited.

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 on center.
5. Field fabricate joints in accordance with manufacturer's 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, according to 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 INSTALLATION OF INSULATING CONCRETE FORMS

A. Comply with ACI 301 and manufacturer's instructions.

B. Construct formwork, so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Install forms in running bond pattern.

1. Align joints.
2. Align furring strips.

D. Construct forms tight to prevent loss of concrete mortar.

E. 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 Director’s Representative prior to forming openings not indicated on Drawings.

F. 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.

G. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

H. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

I. Shore insulating concrete forms to ensure stability and to resist stressing imposed by construction loads.

3.5 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 Director’s Representative.

3.6 SHORING AND RESHORING INSTALLATION

A. Comply with ACI 318 and ACI 301 for design, installation, and removal of shoring and reshoring.

1. Do not remove shoring or reshoring until measurement of slab tolerances is complete.

B. In multistory construction, extend shoring or reshoring over a sufficient number of stories to distribute loads in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members without sufficient steel reinforcement.

C. Plan sequence of removal of shores and reshore to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.

3.7 FIELD QUALITY CONTROL

A. Special Inspections: Director's Representative will engage a special inspector and a qualified testing agency to perform tests and inspections in accordance with the requirements of BDC 406 Summary of Special Inspections and BDC 406.1 Statement of Special Inspections and as directed by the Code Compliance Manager.

END OF SECTION 031000

SECTION 032000 - CONCRETE REINFORCING

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:

1. Steel reinforcement bars.
2. Welded-wire reinforcement.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review the following:

a. Special inspection and testing and inspecting agency procedures for field quality control.
b. Construction contraction and isolation joints.
c. Steel-reinforcement installation.

1.4 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For the following:

1. Each type of steel reinforcement.
2. Epoxy repair coating.
3. Zinc repair material.
4. Bar supports.

E. Submit an Environmental Product Declaration (EPD) from the manufacturer for steel reinforcement bar and mesh within this specification section, if available. A statement of the contractor's good faith effort to obtain the EPD shall be provided if not available.

1. Manufacturer-provided EPDs must be Product Specific Type III (Third-Party Reviewed), in adherence with ISO 14025 *Environmental labels and declarations*, ISO 14044 *Environmental management – Life cycle assessment*, and ISO 21930 *Core rules for environmental product declarations of construction products and services*.

F. 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.

G. Construction Joint Layout: Indicate proposed construction joints required to build the structure.

1. Location of construction joints is subject to approval of the Director's Representative.

H. Delegated-Design Submittal: For structural thermal break insulated connection system, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

I. Welding certificates.

1. Reinforcement To Be Welded: Welding procedure specification in accordance with AWS D1.4

J. Material Certificates: For each of the following, signed by manufacturers:

1. Epoxy-Coated Reinforcement: CRSI's "Epoxy Coating Plant Certification."
2. Dual-Coated Reinforcement: CRSI's "Epoxy Coating Plant Certification."
3. Documentation to confirm compliance with General Conditions Article 25.4 Domestic Steel.

K. Material Test Reports: For the following, from a qualified testing agency:

1. Steel Reinforcement:

a. For reinforcement to be welded, mill test analysis for chemical composition and carbon equivalent of the steel in accordance with ASTM A706.

2. Mechanical splice couplers.

L. Field quality-control reports.

M. Minutes of preinstallation conference.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.

B. Welding Qualifications: Qualify procedures and personnel in accordance with AWS D1.4.

C. Mockups: Reinforcing for cast-concrete formed surfaces, to demonstrate tolerances and standard of workmanship.

1. Build panel approximately 100 sq. ft. for formed surface in the location indicated on Drawings or, if not indicated, as directed by Director's Representative.
2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

D. If the value of the contract exceeds $100,000 all structural steel, reinforcing steel and other major steel items to be incorporated in the Work of this Contract shall be produced and made in whole or substantial part in the United States, its territories or possessions.

1.6 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.
3. Do not allow dual-coated reinforcement to be stored outdoors for more than 60 days without being stored under an opaque covering.
4. Do not allow stainless steel reinforcement to come into contact with uncoated reinforcement.

PART 2 - PRODUCTS

2.1 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A615, Grade 60, deformed.

B. Low-Alloy Steel Reinforcing Bars: ASTM A706, deformed.

C. Headed-Steel Reinforcing Bars: ASTM A970.

D. Galvanized Reinforcing Bars:

1. Steel Bars: ASTM A615, Grade 60 OR ASTM A706 Weldable, deformed bars.
2. Zinc Coating: ASTM A767, [Class I] [Class II] zinc coated after fabrication and bending.

E. Epoxy-Coated Reinforcing Bars:

1. Steel Bars: ASTM A615, Grade 60, deformed bars.
2. Epoxy Coating: ASTM A775 with less than 2 percent damaged coating in each 12-inch bar length.

F. Stainless Steel Reinforcing Bars: ASTM A955, Grade 60, deformed.

G. Steel Bar Mats: ASTM A184, fabricated from ASTM A615, Grade 60, deformed bars, assembled with clips.

H. Plain-Steel Welded-Wire Reinforcement: ASTM A1064, plain, fabricated from as-drawn steel wire into flat sheets.

I. Deformed-Steel Welded-Wire Reinforcement: ASTM A1064, flat sheet.

J. Galvanized-Steel Welded-Wire Reinforcement: ASTM A1064, plain, fabricated from galvanized-steel wire into flat sheets.

K. Epoxy-Coated Welded-Wire Reinforcement: ASTM A884, Class A coated, Type 1, deformed steel.

2.2 REINFORCEMENT ACCESSORIES

A. Joint Dowel Bars: ASTM A615, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.

B. Epoxy-Coated Joint Dowel Bars: ASTM A615, Grade 60, plain-steel bars, ASTM A775 epoxy coated.

C. 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.
b. For epoxy-coated reinforcement, use CRSI Class 1A epoxy-coated or other dielectric-polymer-coated wire bar supports.
c. For dual-coated reinforcement, use CRSI Class 1A epoxy-coated or other dielectric-polymer-coated wire bar supports.
d. For zinc-coated reinforcement, use galvanized wire or dielectric-polymer-coated wire bar supports.
e. For stainless steel reinforcement, use CRSI Class 1 plastic-protected steel wire, all-plastic bar supports, or CRSI Class 2 stainless steel bar supports.

D. Steel Tie Wire: ASTM A1064, annealed steel, not less than 0.0508 inch in diameter.

1. Finish: Galvanized ASTM A884, Class A, Type 1, epoxy coated, with less than 2 percent damaged coating in each 12-inch wire length.

E. Stainless Steel Tie Wire: ASTM A1022, not less than 0.0508 inch in diameter.

F. Epoxy Repair Coating: Liquid, two-part, epoxy repair coating; compatible with epoxy coating on reinforcement and complying with ASTM A775.

G. Zinc Repair Material: ASTM A780.

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 shall 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.
4. Weld reinforcing bars in accordance with AWS D1.4, where indicated on Drawings.

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 shall 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.

H. Epoxy-Coated Reinforcement: Repair cut and damaged epoxy coatings with epoxy repair coating in accordance with ASTM D3963.

I. Dual-Coated Reinforcement: Repair cut and damaged epoxy coatings with epoxy repair coating in accordance with ASTM D3963.

J. Zinc-Coated Reinforcement: Repair cut and damaged zinc coatings with zinc repair material in accordance with ASTM A780.

3.3 JOINTS

A. Construction Joints: Install so strength and appearance of concrete are not impaired at locations indicated or as approved by Director’s Representative.

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.

B. Concrete cover measured perpendicular to concrete surface:

1. Member depth (or thickness) 12 inches or less: - 3/8 inch.
2. Member depth (or thickness) over 12 inches: - ½ inch. In all cases the reduction in cover shall not exceed 1/3 the specified concrete cover.

C. Vertical or horizontal variation from specified in plan:

1. Member depth 4 inch or less: +/- ¼ inch.
2. Member depth (or thickness) over 4 inch but not over 12 inch: +/- 3/8 inch.
3. Member depth (or thickness) over 12 inches: +/- ½ inch.

D. Spacing, measured long a line parallel to the specified spacing:

1. In slabs or walls: +/- 3 inch.
2. Stirrups: lesser of +/- 3 inches or +/- 1 inch per foot of beam depth.
3. Ties: lesser of +/- 3 inches or +/-1 inch per foot of least column width. In all cases the total number of bars shall not be less than that specified.

E. Longitudinal location of bends in bars and ends of bars:

1. At discontinuous ends of elements: +/- 1 inch.
2. At other locations: +/- 2 inch.

F. Length of bar lap for #3 to #11: -1 inch.

3.5 FIELD QUALITY CONTROL

A. Special Inspections: Director's Representative will engage a special inspector and a qualified testing agency to perform tests and inspections in accordance with the requirements of BDC 406 Summary of Special Inspections and BDC 406.1 Statement of Special Inspections and as directed by the Code Compliance Manager.

END OF SECTION 032000

SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Cast-in-place concrete, including concrete materials, mixture design, placement procedures, and finishes.

B. Related Requirements:

1. Section 031000 "Concrete Forming and Accessories" for form-facing materials, form liners, insulating concrete forms, and waterstops.
2. Section 032000 "Concrete Reinforcing" for steel reinforcing bars and welded-wire reinforcement.

1.2 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.

B. Water/Cement Ratio (w/cm): The ratio by weight of water to cementitious materials.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:

a. Contractor's superintendent.
b. Independent testing agency responsible for concrete design mixtures.
c. Ready-mix concrete manufacturer.
d. Concrete Subcontractor.
e. Special concrete finish Subcontractor.

2. Review the following:

a. Special inspection and testing and inspecting agency procedures for field quality control.
b. Construction joints, control joints, isolation joints, and joint-filler strips.
c. Semirigid joint fillers.
d. Vapor-retarder installation.

e. Anchor rod and anchorage device installation tolerances.
f. Cold and hot weather concreting procedures.
g. Concrete finishes and finishing.
h. Curing procedures.
i. Forms and form-removal limitations.
j. Shoring and reshoring procedures.
k. Methods for achieving specified floor and slab flatness and levelness.
l. Floor and slab flatness and levelness measurements.
m. Concrete repair procedures.
n. Concrete protection.
o. Initial curing and field curing of field test cylinders (ASTM C31)
p. Protection of field cured field test cylinders.

1.4 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer's installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. General: Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

E. Product Data: For each of the following.

1. Mix Design.
2. Portland cement.
3. Fly ash.
4. Slag cement.
5. Silica fume.
6. Performance-based hydraulic cement.
7. Aggregates.
8. Admixtures.

    a. Include limitations of use, including restrictions on cementitious materials, supplementary cementitious materials, air entrainment, aggregates, temperature at time of concrete placement, relative humidity at time of concrete placement, curing conditions, and use of other admixtures.

9. Vapor retarders.
10. Curing materials.

    a. Include documentation from color pigment manufacturer, indicating that proposed methods of curing are recommended by color pigment manufacturer.

11. Joint fillers.
12. Repair materials.

F. Submit an Environmental Product Declaration (EPD) from the manufacturer for each concrete mix within this specification section, if available. A statement of the contractor's good faith effort to obtain the EPD shall be provided if not available.

1. Manufacturer-provided EPDs must be Product Specific Type III (Third-Party Reviewed), in adherence with ISO 14025 *Environmental labels and declarations*, ISO 14044 *Environmental management – Life cycle assessment*, and ISO 21930 *Core rules for environmental product declarations of construction products and services*.

G. Design Mixtures: For each concrete mixture, include the following:

1. Mixture identification.
2. Minimum 28-day compressive strength.
3. Durability exposure class.
4. Maximum w/cm.
5. Calculated equilibrium unit weight, for lightweight concrete.
6. Slump limit.
7. Air content.
8. Nominal maximum aggregate size.
9. Indicate amounts of mixing water to be withheld for later addition at Project site if permitted.
10. Include manufacturer's certification that permeability-reducing admixture is compatible with mix design.
11. Include certification that dosage rate for permeability-reducing admixture matches dosage rate used in performance compliance test.
12. Intended placement method.
13. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

H. Shop Drawings:

1. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.

    a. Location of construction joints is subject to approval of the Director's Representative.

I. Concrete Schedule: For each location of each Class of concrete indicated in "Concrete Mixtures" Article, including the following:

1. Concrete Class designation.
2. Location within Project.
3. Exposure Class designation.
4. Formed Surface Finish designation and final finish.
5. Final finish for floors.
6. Curing process.
7. Floor treatment if any.

J. Qualification Data: For the following:

1. Installer: Include copies of applicable ACI certificates.

2. Ready-mixed concrete manufacturer.
3. Testing agency: Include copies of applicable ACI certificates.

K. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.
2. Admixtures.
3. Curing compounds.
4. Bonding agents.
5. Adhesives.
6. Vapor retarders.
7. Semirigid joint filler.
8. Joint-filler strips.
9. Repair materials.

L. Material Test Reports: For the following, from a qualified testing agency:

1. Portland cement.
2. Fly ash.
3. Slag cement.
4. Blended hydraulic cement.
5. Silica fume.
6. Performance-based hydraulic cement.
7. Aggregates.
8. Admixtures.

a. Permeability-Reducing Admixture: Include independent test reports, indicating compliance with specified requirements, including dosage rate used in test.

M. Research Reports:

1. For concrete admixtures in accordance with UNIFORM CODE's Acceptance Criteria AC198.
2. For sheet vapor retarder/termite barrier, showing compliance with UNIFORM CODE AC380.

N. Preconstruction Test Reports: For each mix design.

O. Field quality-control reports.

P. Minutes of preinstallation conference.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs Project personnel qualified as an ACI-certified Flatwork Technician and Finisher and a supervisor who is a certified ACI Flatwork Concrete Finisher/Technician or an ACI Concrete Flatwork Technician with experience installing and finishing concrete, incorporating permeability-reducing admixtures.

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 requirements for production facilities and equipment.

1. Manufacturer certified in accordance with NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

C. Laboratory Testing Agency Qualifications: A testing agency qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated and employing an ACI-certified Concrete Quality Control Technical Manager.

1. Personnel performing laboratory tests shall be an ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician, Grade I. Testing agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician, Grade II.

D. Field Quality Control Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.

1. Personnel conducting field tests shall be qualified as an ACI Concrete Field Testing Technician, Grade 1, in accordance with ACI CPP 610.1 or an equivalent certification program.

E. Mockups: Cast concrete slab-on-ground panels to demonstrate typical joints, surface finish, texture, tolerances, floor treatments, and standard of workmanship.

1. Slab-On-Ground: Build panel approximately 15 feet by 15 feet in the location indicated or, if not indicated, as directed by Director’s Representative.

a. Divide panel into four equal panels to demonstrate saw joint cutting.

1.6 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on each concrete mixture.

1. Include the following information in each test report:

a. Admixture dosage rates.
b. Slump.
c. Air content.
d. Seven-day compressive strength.
e. 28-day compressive strength.
f. Permeability.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Comply with ASTM C94 and ACI 301.

1.8 FIELD CONDITIONS

A. Cold-Weather Placement: Comply with ACI 301 and ACI 306.1 and 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 average high and low temperature is expected to fall below 40 deg F for three successive days, 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.
5. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

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, GENERAL

A. ACI Publications: Comply with ACI 301unless 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 or class of cementitious material of the same brand from the same manufacturer's plant.
3. Obtain aggregate from single source.
4. Obtain each type of admixture from single source from single manufacturer.

B. Cementitious Materials:

1. Portland Cement: ASTM C150, Type I or Type II
2. Fly Ash: ASTM C618, Class F.
3. Slag Cement: ASTM C989, Grade 100 or 120.
4. Blended Hydraulic Cement: ASTM C595, Type IL, portland-limestone cement.
5. Silica Fume: ASTM C1240 amorphous silica.

C. Normal-Weight Aggregates: ASTM C33. Provide aggregates from a single source.

1. Coarse-Aggregate: Clean, uncoated, processed aggregate free from clay, mud, loam, or foreign matter.

    a. For footings, foundation walls, piers, basement walls, retaining walls and interior walls, gradation conforming to ASTM C33, 3S coarse aggregate, or better, graded.
    b. For slabs-on-grade and slabs on deck, gradations conforming to ATM C33, 1N, coarse aggregate, or better graded.
    c. For other applications, ASTM C33, 2N coarse aggregate, or better graded.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

D. Air-Entraining Admixture: ASTM C260.

E. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride in steel-reinforced concrete.

1. Water-Reducing Admixture: ASTM C494, Type A.
2. Retarding Admixture: ASTM C494, Type B.
3. Water-Reducing and -Retarding Admixture: ASTM C494, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C494, Type F.
5. High-Range, Water-Reducing and -Retarding Admixture: ASTM C494, Type G.
6. Plasticizing and Retarding Admixture: ASTM C1017, Type II.
7. Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete and complying with ASTM C494, Type C.

    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) BASF Corporation.
        2) Euclid Chemical Company (The); an RPM company.
        3) GCP Applied Technologies Inc.
        4) Sika Corporation.
        5) Approved equivalent.

8. Non-Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, non-set-accelerating, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete.

    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) Aggregate Industries (US); Lafarge.
        2) Barrier-Bac; Inteplast Group.
        3) BASF Corporation.
        4) Sika Corporation.

5) Approved equivalent.

F. Water and Water Used to Make Ice: ASTM C94, potable**.**

2.3 VAPOR RETARDERS

A. Sheet Vapor Retarder, Class A: ASTM E1745, Class A; not less than 10 mils thick and with a perm rating less than 0.02 pems. Include manufacturer's recommended adhesive or pressure-sensitive tape.

1. 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. Barrier-Bac; Inteplast Group.
b. ISI Building Products.
c. Raven Industries, Inc.
d. Reef Industries, Inc.
e. Stego Industries, LLC.
f. Approved equivalent.

2.4 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: Black.
b. Ambient Temperature between 50 deg F and 85 deg F: Any color.
c. Ambient Temperature Above 85 deg F: White.

D. Curing Paper: Eight-feet- wide paper, consisting of two layers of fibered kraft paper laminated with double coating of asphalt.

E. Water: Potable or complying with ASTM C1602.

F. Clear, Waterborne, Membrane-Forming, Dissipating Curing Compound: ASTM C309, Type 1, Class B.

G. Clear, Waterborne, Membrane-Forming, Nondissipating Curing Compound: ASTM C309, Type 1, Class B Verify with manufacturer that retained products have been tested against interference with bonding of floor covering.

H. Clear, Waterborne, Membrane-Forming, Curing Compound: ASTM C309, Type 1, Class B, 18 to 25 percent solids, nondissipating Retain "Clear, Solvent-Borne, Membrane-Forming, Curing and Sealing Compound" Paragraph below if a clear, nonyellowing, solvent-borne, membrane-forming curing and sealing compound is required. Although the EPA mandates maximum VOC emissions of 700 g/L for curing and sealing compounds, verify VOC emission limits of authorities having jurisdiction.

I. Clear, Solvent-Borne, Membrane-Forming, Curing and Sealing Compound: ASTM C1315, Type 1, Class A.

J. Clear, Waterborne, Membrane-Forming, Curing and Sealing Compound: ASTM C1315, Type 1, Class A.

2.5 RELATED MATERIALS

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 or aromatic polyurea with a Type A shore durometer hardness range of 90 to 95 in accordance with ASTM D2240.

C. Bonding Agent: ASTM C1059, Type II, nonredispersible, acrylic emulsion or styrene butadiene.

D. Epoxy Bonding Adhesive: ASTM C881, 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. Type V, for bonding hardened or freshly mixed concrete to hardened concrete.

E. Floor Slab Protective Covering: Eight-feet- wide cellulose fabric.

1. 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. McTech Group, Inc.
b. approved equivalent.

2.6 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 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.

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 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.

2.7 CONCRETE MIXTURES, GENERAL

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 cement in concrete as follows:

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.

1. Use water-reducing admixture in concrete, as required, for placement and workability.
2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
3. Use water-reducing admixture in pumped concrete, concrete for parking structure slabs, [and] [concrete with a w/cm below 0.50.
4. Use corrosion-inhibiting admixture in concrete mixtures where indicated.
5. Use permeability-reducing admixture in concrete mixtures where indicated.

D. Color Pigment: Add color pigment to concrete mixture in accordance with manufacturer's written instructions and to result in hardened concrete color consistent with approved mockup.

2.8 CONCRETE MIXTURES

A. Exterior Non-Building Class A**:** Normal-weight concrete used for footings, stair pans and miscellaneous.

1. Exposure Class: ACI 318 F0 S0 W0 C1.
2. Minimum Compressive Strength: 3000 psi at 28 days.
3. Maximum w/cm: 0.55.
4. Slump Limit: 4 inches, plus or minus 1 inch.
5. Slump Flow Limit: 24 inches to 30 inches.
6. Air Content:

    a. Exposure Class F1: 4.5 percent, plus or minus 1.5 percent at point of delivery for concrete containing 1-1/2-inch nominal maximum aggregate size.

7. Limit water-soluble, chloride-ion content in hardened concrete to 0.30 percent by weight of cement.

B. Interior Class A**:** Normal-weight concrete used for footings, stair pans and miscellaneous.

1. Exposure Class: ACI 318 F0 S0 W0 C1.
2. Minimum Compressive Strength: 3000 psi at 28 days.
3. Maximum w/cm: 0.55.
4. Slump Limit: 4 inches, plus or minus 1 inch.
5. Slump Flow Limit: 24 inches to 30 inches.
6. Air Content:

    a. Exposure Class F1: 4.5 percent, plus or minus 1.5 percent at point of delivery for concrete containing 1-1/2-inch nominal maximum aggregate size.

7. Limit water-soluble, chloride-ion content in hardened concrete to 0.30 percent by weight of cement.

C. Class B: Normal-weight concrete used for piers and foundation walls.

1. Exposure Class: As indicated.
2. Minimum Compressive Strength: 4500 psi at 28 days.
3. Maximum w/cm: 0.45.
4. Slump Limit: 4 inches, plus or minus 1 inch.
5. Slump Flow Limit: 24 inches to 30 inches.
6. Air Content:

    a. Exposure Classes F2 and F3: 5.5 percent, plus or minus 1.5 percent at point of delivery for concrete containing 1-1/2-inch nominal maximum aggregate size.

7. Limit water-soluble, chloride-ion content in hardened concrete to 0.30 percent by weight of cement.

D. Class C: Normal-weight concrete used for interior slabs-on-ground.

1. Exposure Class: As indicated.
2. Minimum Compressive Strength: 4000 psi at 28 days.
3. Maximum w/cm: 0.50.
4. Minimum Cementitious Materials Content: 488 pounds plus 20 percent pozzolans by weight.
5. Slump Limit: 4 inches, plus or minus 1 inch.
6. Slump Flow Limit: 24 inches to 30 inches.
7. Air Content:

    a. Do not use an air-entraining admixture or allow total air content to exceed 3 percent for concrete used in trowel-finished floors.

8. Limit water-soluble, chloride-ion content in hardened concrete to 1.0 percent by weight of cement.

E. Class D: Normal-weight concrete used for slabs on metal deck.

1. Exposure Class: As indicated.
2. Minimum Compressive Strength: 4000 psi at 28 days.
3. Maximum w/cm: 0.50.
4. Minimum Cementitious Materials Content: 530 lb/cu. yd.
5. Slump Limit: 4 inches, plus or minus 1 inch.
6. Slump Flow Limit: 22 inches, plus or minus 1.5 inches.
7. Air Content:

    a. Do not use an air-entraining admixture or allow total air content to exceed 3 percent for concrete used in trowel-finished floors.

8. Limit water-soluble, chloride-ion content in hardened concrete to 1.00 percent by weight of cement.
9. Steel-Fiber Reinforcement: Add to concrete mixture, in accordance with manufacturer's written instructions, at a rate of 50 lb/cu. yd..
10. Synthetic Micro-Fiber: Uniformly disperse in concrete mixture at manufacturer's recommended rate, but not less than a rate of 1.0 lb/cu. yd.
11. Synthetic Macro-Fiber: Uniformly disperse in concrete mixture at manufacturer's recommended rate, but not less than a rate of 4.0 lb/cu. yd.

F. Class J: Normal-weight concrete used for exterior retaining walls.

1. Exposure Class: As indicated.
2. Minimum Compressive Strength: As indicated at 28 days.
3. Maximum w/cm: 0.45.
4. Slump Limit: 4 inches maximum.
5. Slump Flow Limit 24 inches to 30 inches.
6. Air Content:

    a. Exposure Classes F2 and F3: 5.5 percent, plus or minus 1.5 percent at point of delivery for concrete containing 1-1/2-inch nominal maximum aggregate size.

7. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

2.9 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete in accordance with ASTM C94 and furnish batch ticket information.

B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete in accordance with ASTM C94. Mix concrete materials in appropriate drum-type batch machine mixer.

1. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than five minutes after ingredients are in mixer, before any part of batch is released.
2. For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd..
3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.

2.10 GLOBAL WARMING POTENTIAL LIMITS

A. The Global Warming Potential (GWP) of standard ready-mix concrete mixes shall meet the maximum limits outlined in in the table below. GWP of each mix will be verified through the submission of an EPD.

Maximum Global Warming Potential (GWP) Limits

for Low Embodied Carbon Concrete

Specified compressive strength (f'c in PSI)	Maximum Global Warming Potential Limits for Low Embodied Carbon Concrete (kilograms of carbon dioxide equivalent per cubic yard - CO_2e kg/y^3)
0 - 2500	275
2501 - 3000	302
3001 - 4000	360
4001 - 5000	434
5001 - 6000	458
6001 - 8000	541
8000+	N/A

B. The maximum GWP limits are not applicable to quick cure concrete, concrete designed to cure to its design strength quicker than the standard 28 days.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions:

1. Before placing concrete, verify that installation of concrete forms, accessories, and 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 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 ANSI/AISC 303.

3.4 INSTALLATION OF VAPOR RETARDER

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.

B. Bituminous Vapor Retarders: Place, protect, and repair bituminous vapor retarder in accordance with manufacturer's written instructions.

3.5 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 Director’s Representative.
2. Place joints perpendicular to main reinforcement.

    a. Continue reinforcement across construction joints unless otherwise indicated.
    b. Do not continue reinforcement through sides of strip placements of floors and slabs.

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. If not indicated, space joints a maximum of 15 feet. Unless otherwise indicated on Drawings, locate vertical joints beside piers integral with walls, near corners, and in concealed locations where possible.
7. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
8. 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, specified in Section 079200 "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.

F. Dowel Plates: Install dowel plates at joints where indicated on Drawings.

3.6 CONCRETE PLACEMENT

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 Director’s Representative and testing and inspection agencies 24 hours prior to commencement of concrete placement.

C. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Director’s Representative in writing, but not to exceed the amount indicated on the concrete delivery ticket.

1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

D. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301, but not to exceed the amount indicated on the concrete delivery ticket.

1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

E. Conform to the discharge limitations and requirements of ASTM C94 in the operation of truck mixers and agitators.

F. 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. Do not allow discharged concrete to freefall more than 4 feet.
5. 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.

G. 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.

H. Pumping Concrete:

1. When pumping concrete, the lubrication materials within the delivery line shall not be discharged into the forms.
2. The inside diameter of the delivery lines shall be the greater of 5 inches or 3 times the maximum size of the coarse aggregate.

3.7 FINISHING FORMED SURFACES

A. As-Cast Surface Finishes:

1. ACI 301 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 not exposed to public view.

2. ACI 301 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**.**

2. Grout-Cleaned Rubbed Finish:

a. Clean concrete surfaces after contiguous surfaces are completed and accessible.
b. Do not clean concrete surfaces as Work progresses.
c. Mix 1 part portland cement to 1-1/2 parts fine sand, complying with ASTM C144 or ASTM C404, by volume, with sufficient water to produce a mixture with the consistency of thick paint. Add white portland cement in amounts determined by trial patches, so color of dry grout matches adjacent surfaces.
d. Wet concrete surfaces.
e. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap, and keep surface damp by fog spray for at least 36 hours.
f. Maintain required patterns or variances as shown on Drawings or to match mockups.

C. Related Unformed Surfaces:

1. At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a color and texture matching adjacent formed surfaces.
2. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.8 FINISHING FLOORS AND SLABS

A. Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. 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 mortar setting beds for bonded cementitious floor finishes.

C. 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.
3. Apply float finish to surfaces to receive trowel finish and to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or sand-bed terrazzo.

D. 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.
5. Do not apply hard-troweled finish to concrete, which has a total air content greater than 3 percent.
6. Apply a trowel finish to surfaces exposed to view orto be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.
7. Finish surfaces to the following tolerances, in accordance with ASTM E1155, for a randomly trafficked floor surface:

    a. Slabs on Ground:

        1) Finish and measure surface so gap at any point between concrete surface and an unleveled, freestanding, 10-ft.- long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/4 inch.
        2) Specified overall values of flatness, FF 25; and of levelness, FL 20; with minimum local values of flatness, FF 17; and of levelness, FL 15.
        3) Specified overall values of flatness, FF 35; and of levelness, FL 25; with minimum local values of flatness, FF 24; and of levelness, FL 17.
        4) Specified overall values of flatness, FF 45; and of levelness, FL 35; with minimum local values of flatness, FF 30; and of levelness, FL 24.
        5) Specified Overall Value (SOV): FF 50 and FL 25 with minimum local value (MLV): FF 40 and FL 17.
        6) Specified Overall Value (SOV): FF 25 and FL 20 with minimum local value (MLV): FF 17 and FL 15.

E. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces indicated on Drawings. While concrete is still plastic, slightly scarify surface with a fine broom perpendicular to main traffic route.

1. Coordinate required final finish with Director’s Representative before application.
2. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.

F. 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 fiber-bristle broom perpendicular to main traffic route.
2. Coordinate required final finish with Director’s Representative before application.

G. Slip-Resistive Finish: Before final floating, apply slip-resistive aggregate finish to concrete stair treads, platforms, ramps as indicated on Drawings.

1. Apply in accordance with manufacturer's written instructions and as follows:

a. Uniformly spread 25 lb/100 sq. ft. of dampened slip-resistive aggregate over surface in one or two applications.
b. Tamp aggregate flush with surface, but do not force below surface.
c. After broadcasting and tamping, apply float finish.
d. After curing, lightly work surface with a steel wire brush or an abrasive stone and water to expose slip-resistive aggregate.

3.9 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 blend with in-place construction.
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 steel-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 6 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: 5000 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.

3.10 CONCRETE CURING

A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

1. Comply with ACI 301 and ACI 306.1 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 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 Vertical-Formed Surfaces:

1. Keep forms in place for minimum of 7 days, 14 days in cold weather or until concrete has achieved 70 percent of its design strength.

2. If forms are removed before minimum time period, alternate methods of curing, wet-curing, moisture-retaining-cover curing, or liquid-membrane curing, are required.

    a. Contractor shall submit procedures to Architect for review.
    b. Forms shall remain in place for a minimum of 24 hours when alternating methods of curing are used. For placement during cold weather, the minimum time to form removal shall be extended based on expected weather conditions and Contractor's submitted procedures.

D. Cure concrete placed under cold-weather conditions completely covering exposed surface of concrete with moisture-retaining cover completely sealed around edges. Cure concrete 14 days minimum with concrete temperature at or above 40 degrees F or 7 days minimum with concrete temperature at or above 70 degrees F.

E. During hot weather after concrete has hardened, loosen form ties, keeping forms in place, and apply water to inside face of form to keep concrete continuously moist

F. Curing Unformed Surfaces: Comply with ACI 308.1 as follows:

1. Begin curing immediately 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:

            a) Water.
            b) Continuous water-fog spray.

    b. Floors to Receive Penetrating Liquid Floor Treatments: 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:

   a) Water.
   b) Continuous water-fog spray.

c. 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.

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 unless manufacturer certifies curing compound does not interfere with bonding of floor covering used on Project.

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.

3.11 TOLERANCES

A. Conform to ACI 117.

3.12 APPLICATION OF LIQUID FLOOR TREATMENTS

A. Penetrating Liquid Floor Treatment: Prepare, apply, and finish penetrating liquid floor treatment in accordance with manufacturer's written instructions.

1. Remove curing compounds, sealers, oil, dirt, laitance, and other contaminants and complete surface repairs.
2. Do not apply to concrete that is less than 28 days' old.
3. Apply liquid until surface is saturated, scrubbing into surface until a gel forms; rewet; and repeat brooming or scrubbing.
4. Rinse with water; remove excess material until surface is dry.
5. Apply a second coat in a similar manner if surface is rough or porous.

B. Sealing Coat: Uniformly apply a continuous sealing coat of curing and sealing compound to hardened concrete by power spray or roller in accordance with manufacturer's written instructions.

3.13 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 six month(s).
2. Do not fill joints until construction traffic has permanently ceased.

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.

3.14 CONCRETE SURFACE REPAIRS

A. Defective Concrete:

1. Repair and patch defective areas when approved by Director's Representative.
2. Remove and replace concrete that cannot be repaired and patched to Director's Representative's approval.

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, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, 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 strike off slightly higher than surrounding surface.

3. Repair defects on concealed formed surfaces that will affect concrete's durability and structural performance as determined by Director's Representative.

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, and other objectionable conditions.
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 cutting out low areas and replacing with 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 Director’s Representative's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Director’s Representative's approval.

3.15 FIELD QUALITY CONTROL

A. Special Inspections: Director's Representative will engage a special inspector and a qualified testing agency to perform tests and inspections in accordance with the requirements of BDC 406 Summary of Special Inspections and BDC 406.1 Statement of Special Inspections and as directed by the Code Compliance Manager.

B. Concrete Tests: Testing of composite samples of fresh concrete obtained in accordance with ASTM C 172 shall 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 shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Slump: ASTM C143:

    a. One test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture.
    b. Perform additional tests when concrete consistency appears to change.

3. Slump Flow: ASTM C1611:

    a. One test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture.
    b. Perform additional tests when concrete consistency appears to change.

4. Air Content: ASTM C231 pressure method, for normal-weight concrete; ASTM C173 volumetric method, for 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.

5. Concrete Temperature: ASTM C1064:

    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.

6. Unit Weight: ASTM C567 fresh unit weight of 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.

7. Compression Test Specimens: ASTM C31:

    a. Cast and laboratory cure two sets of six 6-inch by 12-inch or 4-inch by 8-inch cylinder specimens for each composite sample.

b. Cast, initial cure, and field cure two sets of two standard cylinder specimens for each composite sample.

8. Sampling of Pumped Concrete: Sample and cast separate specimens with concrete obtained both at the truck discharge and at the end of the pump delivery line. The test results obtained from the truck discharge shall govern.
9. Compressive-Strength Tests: ASTM C39.

    a. Test one set of two 6-inch by 12-inch or three 4-inch by 8-inch laboratory-cured specimens at seven days and one set of two 6-inch by 12-inch or three 4-inch by 8-inch specimens at 28 days.
    b. A compressive-strength test shall be the average compressive strength from a set of two 6-inch by 12-inch or three 4-inch by 8-inch specimens obtained from same composite sample and tested at age indicated.

10. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
11. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests 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.
12. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Director's Representative but will not be used as sole basis for approval or rejection of concrete.
13. Additional Tests:

    a. Testing and inspecting agency shall 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 Director's Representative.
    b. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42 or by other methods as directed by Director's Representative.

        1) Acceptance criteria for concrete strength shall be in accordance with ACI 301 section 1.6.6.3.

14. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
15. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

C. Measure floor and slab flatness and levelness in accordance with ASTM E1155 within **72** hours of completion of floor finishing and promptly report test results to Director's Representative.

D. The Registered Design Professionals (RDPs) for Structural Engineering and Architecture and the Special Inspector will visit construction site at appropriate intervals to determine if work is in general conformance with Contract Documents and specifications. Notify RDPs 48 hours before

anticipated time of completion of reinforcement for a given section of work so they may determine if site observations are required. If site observations are required, do not place concrete until RDPs have had opportunity to observe reinforcement.

3.16 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 040110 - MASONRY CLEANING

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 cleaning the following:

1. Unit masonry surfaces.
2. Stone surfaces.

1.3 DEFINITIONS

A. Very Low-Pressure Spray: Under 100 psi.

B. Low-Pressure Spray: 100 to 400 psi; 4 to 6 gpm.

C. Medium-Pressure Spray: 400 to 800 psi; 4 to 6 gpm.

D. High-Pressure Spray: 800 to 1200 psi; 4 to 6 gpm.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to cleaning masonry including, but not limited to, the following:

a. Verify masonry-cleaning equipment and facilities needed to make progress and avoid delays.
b. Materials, material application, and sequencing.
c. Cleaning program.
d. Coordination with building occupants.

1.5 SEQUENCING AND SCHEDULING

A. Work Sequence: Perform masonry-cleaning work in the following sequence:

1. Remove plant growth.

2. Inspect for open mortar joints. Where repairs are required, delay further cleaning work until after repairs are completed, cured, and dried to prevent the intrusion of water and other cleaning materials into the wall.
3. Clean masonry surfaces.

1.6 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer's installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

1. Include material descriptions and application instructions.
2. Include test data substantiating that products comply with requirements.

E. Qualification Data: For chemical-cleaner manufacturer.

F. Cleaning program.

1.7 QUALITY ASSURANCE

A. Chemical-Cleaner Manufacturer Qualifications: A firm regularly engaged in producing masonry cleaners that have been used for similar applications with successful results, and with Company Service Advisor who are available for consultation and Project-site inspection and on-site assistance.

B. Cleaning Program: Prepare a written cleaning program that describes cleaning process in detail, including materials, methods, and equipment to be used; protection of surrounding materials; and control of runoff during operations. Include provisions for supervising worker performance and preventing damage.

1. If materials and methods other than those indicated are proposed for any phase of cleaning work, add a written description of such materials and methods, including evidence of successful use on comparable projects and demonstrations to show their effectiveness for this Project.

1.8 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit masonry-cleaning work to be performed according to product manufacturers' written instructions and specified requirements.

B. Clean masonry surfaces only when air temperature is 40 deg F and above and is predicted to remain so for at least seven days after completion of cleaning.

PART 2 - PRODUCTS

2.1 CLEANING MATERIALS

A. Water: Potable.

B. Detergent Solution, Job Mixed: Solution prepared by mixing 2 cups of tetrasodium pyrophosphate (TSPP), 1/2 cup of laundry detergent, and 20 quarts of hot water for every 5 gal. of solution required.

C. Mold, Mildew, and Algae Remover, Job Mixed: Solution prepared by mixing 2 cups of tetrasodium pyrophosphate (TSPP), 5 quarts of 5 percent sodium hypochlorite (bleach), and 15 quarts of hot water for every 5 gal. of solution required.

D. Nonacidic Liquid Cleaner: Manufacturer's standard mildly alkaline liquid cleaner formulated for removing mold, mildew, and other organic soiling from ordinary building materials, including polished stone, brick, aluminum, plastics, and wood.

1. 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. American Building Restoration Products, Inc.
b. Cathedral Stone Products, Inc.
c. Diedrich Technologies, Inc.; a Hohmann & Barnard company.
d. Dumond Chemicals, Inc.
e. PROSOCO, Inc.
f. Approved equivalent.

2.2 ACCESSORY MATERIALS

A. Liquid Strippable Masking Agent: Manufacturer's standard liquid, film-forming, strippable masking material for protecting glass, metal, glazed masonry, and polished stone surfaces from damaging effects of acidic and alkaline masonry cleaners.

1. 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. American Building Restoration Products, Inc.
b. Price Research, Ltd.
c. PROSOCO, Inc.
d. Approved equivalent.

2.3 CHEMICAL CLEANING SOLUTIONS

A. Dilute chemical cleaners with water to produce solutions not exceeding concentration recommended in writing by chemical-cleaner manufacturer.

PART 3 - EXECUTION

3.1 PROTECTION

A. Comply with each manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent chemical cleaning solutions from coming into contact with people, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.

1. Cover adjacent surfaces with materials that are proven to resist paint removers and chemical cleaners used unless products being used will not damage adjacent surfaces. Use protective materials that are waterproof and UV resistant. Apply masking agents according to manufacturer's written instructions. Do not apply liquid strippable masking agent to painted or porous surfaces. When no longer needed, promptly remove masking to prevent adhesive staining.
2. Do not apply chemical solutions during winds of enough force to spread them to unprotected surfaces.
3. Neutralize alkaline and acid wastes before disposal.
4. Dispose of runoff from operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.

3.2 CLEANING MASONRY, GENERAL

A. Cleaning Appearance Standard: Cleaned surfaces are to have a uniform appearance as viewed from 50 feet away by Director’s Representative.

B. Proceed with cleaning in an orderly manner; work from top to bottom of each scaffold width and from one end of each elevation to the other. Ensure that dirty residues and rinse water do not wash over dry, cleaned surfaces.

C. Use only those cleaning methods indicated for each masonry material and location.

1. Brushes: Do not use wire brushes or brushes that are not resistant to chemical cleaner being used.
2. Spray Equipment: Use spray equipment that provides controlled application at volume and pressure indicated, measured at nozzle. Adjust pressure and volume to ensure that cleaning methods do not damage surfaces, including joints.

    a. Equip units with pressure gages.
    b. For chemical-cleaner spray application, use low-pressure tank or chemical pump suitable for chemical cleaner indicated, equipped with nozzle having a cone-shaped spray.

c. For water-spray application, use fan-shaped spray that disperses water at an angle of 25 to 50 degrees.

D. Perform each cleaning method indicated in a manner that results in uniform coverage of all surfaces, including corners, moldings, and interstices, and that produces an even effect without streaking or damaging masonry surfaces. Keep wall wet below area being cleaned to prevent streaking from runoff.

E. Perform additional general cleaning, paint and stain removal, and spot cleaning of small areas that are noticeably different when viewed according to the "Cleaning Appearance Standard" Paragraph, so that cleaned surfaces blend smoothly into surrounding areas.

F. Water Application Methods:

1. Water-Soak Application: Soak masonry surfaces by applying water continuously and uniformly to limited area for time indicated. Apply water at low pressures and low volumes in multiple fine sprays using perforated hoses or multiple spray nozzles. Erect a protective enclosure constructed of polyethylene sheeting to cover area being sprayed.
2. Water-Spray Applications: Unless otherwise indicated, hold spray nozzle at least 6 inches from masonry surface and apply water in horizontal back-and-forth sweeping motion, overlapping previous strokes to produce uniform coverage.

G. Chemical-Cleaner Application Methods: Apply chemical cleaners to masonry surfaces according to chemical-cleaner manufacturer's written instructions; use brush or spray application**.** Do not spray apply at pressures exceeding 50 psi. Do not allow chemicals to remain on surface for periods longer than those indicated or recommended in writing by manufacturer.

H. Rinse off chemical residue and soil by working upward from bottom to top of each treated area at each stage or scaffold setting. Periodically during each rinse, test pH of rinse water running off of cleaned area to determine that chemical cleaner is completely removed.

1. Apply neutralizing agent and repeat rinse if necessary to produce tested pH of between 6.7 and 7.5.

I. After cleaning is complete, remove protection no longer required. Remove tape and adhesive marks.

3.3 PRELIMINARY CLEANING

A. Removing Plant Growth: Completely remove visible plant, moss, and shrub growth from masonry surfaces. Carefully remove plants, creepers, and vegetation by cutting at roots and allowing remaining growth to dry as long as possible before removal. Remove loose soil and plant debris from open joints to whatever depth they occur.

B. Preliminary Cleaning: Before beginning general cleaning, remove extraneous substances that are resistant to planned cleaning methods. Extraneous substances include paint, calking, asphalt, and tar.

1. Carefully remove heavy accumulations of rigid materials from masonry surface with sharp chisel. Do not scratch or chip masonry surface.

2. Remove paint and calking with alkaline paint remover.

    a. Repeat application up to two times if needed.

3. Remove asphalt and tar with solvent-type paste paint remover.

    a. Comply with requirements in "Paint Removal" Article.
    b. Apply paint remover only to asphalt and tar by brush without prewetting.
    c. Allow paint remover to remain on surface for 10 to 30 minutes.
    d. Repeat application if needed.

3.4 CLEANING MASONRY

A. Cold-Water Soak:

1. Apply cold water by intermittent spraying to keep surface moist.
2. Use perforated hoses or other means that apply a fine water mist to entire surface being cleaned.
3. Apply water in cycles of five minutes on and 20 minutes off.
4. Continue spraying until surface encrustation has softened enough to permit its removal by water wash, as indicated by cleaning tests.
5. Remove soil and softened surface encrustation from surface with cold water applied by low-pressure spray.

B. Cold-Water Wash: Use cold water applied by the lowest pressure spray required to clean the substrate.

C. Detergent Cleaning:

1. Wet surface with cold water applied by low-pressure spray.
2. Scrub surface with detergent solution using medium-soft brushes until soil is thoroughly dislodged and can be removed by rinsing. Use small brushes to remove soil from mortar joints and crevices. Dip brush in solution often to ensure that adequate fresh detergent is used and that surface remains wet.
3. Rinse with cold water applied by lowest-pressure spray required to remove detergent solution and soil.
4. Repeat cleaning procedure above where required to produce cleaning effect established by mockup.

D. Mold, Mildew, and Algae Removal:

1. Wet surface with cold water applied by low-pressure spray.
2. Apply mold, mildew, and algae remover by brush or low-pressure spray.
3. Scrub surface with medium-soft brushes until mold, mildew, and algae are thoroughly dislodged and can be removed by rinsing. Use small brushes for mortar joints and crevices. Dip brush in mold, mildew, and algae remover often to ensure that adequate fresh cleaner is used and that surface remains wet.
4. Rinse with cold water applied by lowest-pressure spray to remove mold, mildew, and algae remover and soil.

5. Repeat cleaning procedure above where required to produce cleaning effect established by mockup.

E. Mild-Acid Chemical Cleaning:

1. Wet surface with cold water applied by low-pressure spray.
2. Apply cleaner to surface in two applications by brush or low-pressure spray.
3. Let cleaner remain on surface for period established by mockup.
4. Rinse with cold water applied by lowest-pressure spray to remove chemicals and soil.
5. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

3.5 FINAL CLEANING

A. Clean adjacent nonmasonry surfaces of spillage and debris. Use detergent and soft brushes or cloths.

B. Remove masking materials, leaving no residues that could trap dirt.

END OF SECTION 040110

SECTION 040120.63 - BRICK MASONRY REPAIR

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:

1. Repairing brick masonry.

1.3 DEFINITIONS

A. Rebuilding (Setting) Mortar: Mortar used to set and anchor masonry in a structure, distinct from pointing mortar installed after masonry is set in place.

B. Saturation Coefficient: Ratio of the weight of water absorbed during immersion in cold water to weight absorbed during immersion in boiling water; used as an indication of resistance of bricks to freezing and thawing.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to brick masonry repair including, but not limited to, the following:

a. Verify brick masonry repair specialist's personnel, equipment, and facilities needed to make progress and avoid delays.
b. Materials, material application, sequencing, tolerances, and required clearances.
c. Quality-control program.
d. Coordination with building occupants.

1.5 SEQUENCING AND SCHEDULING

A. Work Sequence: Perform brick masonry repair work in the following sequence, which includes work specified in this and other Sections:

1. Inspect masonry for open mortar joints and point them before cleaning to prevent the intrusion of water and other cleaning materials into the wall.
2. Rake out mortar from joints surrounding masonry to be replaced and from joints adjacent to masonry repairs along joints.
3. Repair masonry, including replacing existing masonry with new masonry materials.
4. Rake out mortar from joints to be repointed.
5. Point mortar and sealant joints.
6. After repairs and repointing have been completed and cured, perform a final cleaning to remove residues from this work.

B. As scaffolding is removed, patch anchor holes used to attach scaffolding. Patch holes in bricks according to "Brick Masonry Patching" Article.

1.6 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
2. Include recommendations for product application and use.
3. Include test data substantiating that products comply with requirements.

E. Samples for Initial Selection: For the following:

1. Sand Types Used for Mortar: Minimum 8 oz. of each in plastic screw-top jars.
2. Patching Compound: Submit sets of patching compound Samples in the form of plugs (patches in drilled holes) in sample units of masonry representative of the range of masonry colors on the building.

    a. Have each set contain a close color range of at least three Samples of different mixes of patching compound that matches the variations in existing masonry when cured and dry.

3. Include similar Samples of accessories involving color selection.

F. Samples for Verification: For the following:

1. Each type of brick unit to be used for replacing existing units. Include sets of Samples to show the full range of shape, color, and texture to be expected. For each brick type, provide straps or panels containing at least four bricks. Include multiple straps for brick with a wide range.

2. Each type of patching compound in the form of briquettes, at least 3 inches long by 1-1/2 inches wide. Document each Sample with manufacturer and stock number or other information necessary to order additional material.
3. Accessories: Each type of accessory and miscellaneous support.

1.7 QUALITY ASSURANCE

A. Brick Masonry Repair Specialist Qualifications: Engage an experienced brick masonry repair firm to perform work of this Section. 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. Experience in only installing masonry is insufficient experience for masonry repair work.

1. Field Supervision: Brick masonry repair specialist firm shall maintain experienced full-time supervisors on Project site during times that brick masonry repair work is in progress.
2. Brick Masonry Repair Worker Qualifications: When bricks are being patched, assign at least one worker per crew who is trained and certified by manufacturer of patching compound to apply its products.

B. Mockups: Prepare mockups of brick masonry repair to demonstrate aesthetic effects and to set quality standards for materials and execution and for fabrication and installation.

1. Masonry Repair: Prepare sample areas for each type of masonry repair work performed. If not otherwise indicated, size each mockup not smaller than two adjacent whole units or approximately 48 inches in least dimension. Construct sample areas in locations in existing walls where directed by Director’s Representative unless otherwise indicated. Demonstrate quality of materials, workmanship, and blending with existing work. Include the following as a minimum:

    a. Replacement: Four brick units replaced.
    b. Patching: Three small holes as directed for each type of brick indicated to be patched.

2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Director’s Representative 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.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver bricks to Project site strapped together in suitable packs or pallets or in heavy-duty cartons and protected against impact and chipping.

B. Deliver packaged materials to Project site in manufacturer's original and unopened containers, labeled with manufacturer's name and type of products.

C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

D. 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.

E. Store sand where grading and other required characteristics can be maintained and contamination avoided.

F. Handle bricks to prevent overstressing, chipping, defacement, and other damage.

1.9 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit brick masonry repair work to be performed according to product manufacturers' written instructions and specified requirements.

B. Temperature Limits: Repair brick masonry only when air temperature is between 40 and 90 deg F and is predicted to remain so for at least seven days after completion of the Work unless otherwise indicated.

C. Cold-Weather Requirements: Comply with the following procedures for masonry repair unless otherwise indicated:

1. When air temperature is below 40 deg F, heat mortar ingredients, masonry repair materials, and existing masonry walls to produce temperatures between 40 and 120 deg F.
2. When mean daily air temperature is below 40 deg F, provide enclosure and heat to maintain temperatures above 32 deg F within the enclosure for seven days after repair.

D. Hot-Weather Requirements: Protect masonry repairs when temperature and humidity conditions produce excessive evaporation of water from mortar and repair materials. Provide artificial shade and wind breaks, and use cooled materials as required to minimize evaporation. Do not apply mortar to substrates with temperatures of 90 deg F and above unless otherwise indicated.

E. For manufactured repair materials, perform work within the environmental limits set by each manufacturer.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Source Limitations: Obtain each type of material for repairing brick masonry (brick, cement, sand, etc.) from single source with resources to provide materials of consistent quality in appearance and physical properties.

2.2 MASONRY MATERIALS

A. Face Brick: As required to complete brick masonry repair work.

1. Brick Matching Existing: Units with colors, color variation within units, surface texture, size, and shape that match existing brickwork and with physical properties within 10 percent of those determined from preconstruction testing of selected existing units.

    a. For existing brickwork that exhibits a range of colors or color variation within units, provide brick that proportionally matches that range and variation rather than brick that matches an individual color within that range.

2.3 MORTAR MATERIALS

A. Portland Cement: ASTM C150, Type I or Type II, except Type III may be used for cold-weather construction; white or gray, where required for color matching of mortar.

1. 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. Masonry Cement: ASTM C91.

1. 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. Hanson Brick and Tile;Lehigh Hanson.
    b. Holcim US.
    c. QUIKRETE.
    d. Approved Equivalent.

D. Mortar Cement: ASTM C1329.

1. 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. Cemex, Inc.
    b. Holcim US.
    c. Approved Equivalent.

E. Mortar Sand: ASTM C144.

1. Exposed Mortar: Match size, texture, and gradation of existing mortar sand as closely as possible. Blend several sands if necessary to achieve suitable match.

F. Water: Potable.

2.4 MANUFACTURED REPAIR MATERIALS

A. Brick Patching Compound: Factory-mixed cementitious product that is custom manufactured for patching brick masonry.

1. 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. Cathedral Stone Products, Inc.
    b. Conproco Corporation.
    c. Edison Coatings, Inc.
    d. Approved Equivalent.

2. Use formulation that is vapor and water permeable (equal to or more than the brick), exhibits low shrinkage, has lower modulus of elasticity than bricks being repaired, and develops high bond strength to all types of masonry.
3. Use formulation having working qualities and retardation control to permit forming and sculpturing where necessary.
4. Formulate patching compound in colors and textures to match each brick being patched. Provide sufficient number of colors to enable matching of the color, texture, and variation of each unit.

2.5 ACCESSORY MATERIALS

A. Setting Buttons and Shims: Resilient plastic, nonstaining to masonry, sized to suit joint thicknesses and bed depths of bricks, less the required depth of pointing materials unless removed before pointing.

B. Masking Tape: Nonstaining, nonabsorbent material; compatible with mortar, joint primers, sealants, and surfaces adjacent to joints; and that easily comes off entirely, including adhesive.

C. Other Products: Select materials and methods of use based on the following, subject to approval of a mockup:

1. Previous effectiveness in performing the work involved.
2. Minimal possibility of damaging exposed surfaces.
3. Consistency of each application.
4. Uniformity of the resulting overall appearance.
5. Do not use products or tools that could leave residue on surfaces.

2.6 MORTAR MIXES

A. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer.

B. Colored Mortar: Produce mortar of color required by using specified ingredients. Do not alter specified proportions without Director’s Representative's approval.

C. Do not use admixtures in mortar unless otherwise indicated.

D. Mixes: Mix mortar materials in the following proportions:
   1. Rebuilding (Setting) Mortar by Type: ASTM C270, Proportion Specification, Type N unless otherwise indicated; with cementitious material limited to portland cement and lime.

PART 3 - EXECUTION

3.1 PROTECTION

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 repair work to discourage mortar from adhering.
   3. Immediately remove mortar splatters in contact with exposed masonry and other surfaces.

3.2 MASONRY REPAIR, GENERAL

A. Appearance Standard: Repaired surfaces are to have a uniform appearance as viewed from 30 feet away by Director's Representative.

3.3 BRICK REMOVAL AND REPLACEMENT

A. At locations indicated, remove bricks that are damaged, spalled, or deteriorated or are to be reused. Carefully remove entire units from joint to joint, without damaging surrounding masonry, in a manner that permits replacement with full-size units.

   1. When removing single bricks, remove material from center of brick and work toward outside edges.

B. Support and protect remaining masonry that surrounds removal area.

C. Maintain flashing, reinforcement, lintels, and adjoining construction in an undamaged condition.

D. Notify Director's Representative of unforeseen detrimental conditions including voids, cracks, bulges, and loose units in existing masonry backup, rotted wood, rusted metal, and other deteriorated items.

E. Remove in an undamaged condition as many whole bricks as possible.

   1. Remove mortar, loose particles, and soil from brick by cleaning with hand chisels, brushes, and water.
   2. Remove sealants by cutting close to brick with utility knife and cleaning with solvents.
   3. Store brick for reuse. Store off ground, on skids, and protected from weather.
   4. Deliver cleaned brick not required for reuse to Director's Representative unless otherwise indicated.

F. Clean masonry surrounding removal areas by removing mortar, dust, and loose particles in preparation for brick replacement.

G. Replace removed damaged brick with other removed brick in good condition, where possible, or with new brick matching existing brick. Do not use broken units unless they can be cut to usable size.

H. 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.

1. Maintain joint width for replacement units to match existing joints.
2. Use setting buttons or shims to set units accurately spaced with uniform joints.

I. Lay replacement brick with rebuilding (setting) mortar and with completely filled bed, head, and collar joints. Butter ends with enough 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.

1. Tool exposed mortar joints in repaired areas to match joints of surrounding existing brickwork.
2. Rake out mortar used for laying brick before mortar sets according to Section 040120.64 "Brick Masonry Repointing." Point at same time as repointing of surrounding area.
3. When mortar is hard enough to support units, remove shims and other devices interfering with pointing of joints.

J. Curing: Cure mortar by maintaining in thoroughly damp condition for at least 72 consecutive hours, including weekends and holidays.

1. Hairline cracking within the mortar or mortar separation at edge of a joint is unacceptable. Completely remove such mortar and repoint.

3.4 BRICK MASONRY PATCHING

A. Patch the following bricks unless another type of repair or replacement is indicated:

1. Bricks with holes.

B. Patching Bricks:

1. Remove loose material from masonry surface. 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 recommended in writing by patching compound manufacturer.
2. Mask adjacent mortar joint or rake out for repointing if patch extends to edge of brick.
3. Mix patching compound in individual batches to match each unit being patched. Combine one or more colors of patching compound, as needed, to produce exact match.
4. Rinse surface to be patched and leave damp, but without standing water.

5. Place patching compound in layers as recommended in writing by patching compound manufacturer, but not less than 1/4 inch or more than 2 inches thick. Roughen surface of each layer to provide a key for next layer.
6. Trowel, scrape, or carve surface of patch to match texture and surrounding surface plane or contour of brick. Shape and finish surface before or after curing, as determined by testing, to best match existing brick.
7. Keep each layer damp for 72 hours or until patching compound has set.
8. Remove and replace patches with hairline cracks or that show separation from brick at edges, and those that do not match adjoining brick in color or texture.

3.5 FINAL CLEANING

A. After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter; use wood scrapers, stiff-nylon or -fiber brushes, and clean water applied by low-pressure spray.

1. Do not use metal scrapers or brushes.
2. Do not use acidic or alkaline cleaners.

B. Clean adjacent nonmasonry surfaces. Use detergent and soft brushes or cloths.

C. Remove masking materials, leaving no residues that could trap dirt.

3.6 FIELD QUALITY CONTROL

A. Director’s Representative Testing Agency: Director’s Representative will engage a qualified testing agency to perform tests and inspections. Allow inspectors use of lift devices and scaffolding, as needed, to perform inspections.

B. Notify Director’s Representative in advance of times when lift devices and scaffolding will be relocated. Do not relocate lift devices and scaffolding until Director’s Representative have had reasonable opportunity to make inspections and observations of work areas at lift device or scaffold location.

3.7 MASONRY WASTE DISPOSAL

A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property.

B. Masonry Waste: Remove masonry waste and legally dispose of off Director’s Representative's property.

END OF SECTION 040120.63

SECTION 040310 - HISTORIC MASONRY CLEANING

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 historic treatment work consisting of cleaning historic clay brick and stone masonry surfaces.

1.3 ALLOWANCES

A. Allowances for cleaning historic masonry are specified in Section 012100 "Allowances."

1. Perform historic masonry cleaning work under quantity allowances and only as authorized. Authorized work includes work required by Drawings and the Specifications and work as directed in writing by Director's Representative.
2. Notify Director's Representative weekly of extent of work performed that is attributable to quantity allowances.
3. Perform work that exceeds quantity allowances only as authorized by Change Orders.

B. Preconstruction testing is part of testing and inspecting allowance.

C. Cleaning brickwork and stone, including preliminary and final cleaning, is part of masonry cleaning allowance.

1.4 DEFINITIONS

A. High-Pressure Spray:

1. Pressure: 800 to 1200 psi.
2. Flow Rate: 4 to 6 gpm.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review minutes of Preliminary Historic Treatment Conference that pertain to masonry historic treatment and cleaning.

2. Review methods and procedures related to cleaning historic masonry, including, but not limited to, the following:

    a. Historic treatment specialist's personnel, equipment, and facilities needed to make progress and avoid delays.
    b. Materials, material application, and sequencing.
    c. Quality-control program.
    d. Fire-protection plan.
    e. Cleaning program.
    f. Coordination with building occupants.

1.6 SEQUENCING AND SCHEDULING

A. Work Sequence: Perform historic masonry cleaning work in the following sequence:

1. Remove plant growth.
2. Inspect masonry for open mortar joints. Where repairs are required, delay further cleaning work until after repairs are completed, cured, and dried to prevent intrusion of water and other cleaning materials into the wall.
3. Remove paint.
4. Clean masonry.
5. Where water repellents or graffiti-resistant coatings are to be used on or near masonry work, delay application of these chemicals until after cleaning.

B. As scaffolding is removed, patch anchor holes used to attach scaffolding. Patch holes in masonry units according to historic masonry repair Sections. Patch holes in mortar joints according to historic masonry repointing Sections.

1.7 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

1. Include material descriptions and application instructions.
2. Include test data substantiating that products comply with requirements.

E. Qualification Data: For historic treatment specialists including field supervisors and workers.

F. Preconstruction Test Reports: For cleaning materials and methods.

G. Quality-control program.

H. Cleaning program.

1.8 QUALITY ASSURANCE

A. Historic Treatment Specialist Qualifications: A qualified historic masonry cleaning specialist. Experience cleaning new masonry work is insufficient experience for historic treatment work.

B. Paint-Remover Manufacturer Qualifications: A firm regularly engaged in producing masonry paint removers that have been used for similar applications with successful results, and with Company Service Advisors who are available for consultation and Project-site inspection, preconstruction product testing, and on-site assistance.

C. Chemical-Cleaner Manufacturer Qualifications: A firm regularly engaged in producing masonry cleaners that have been used for similar applications with successful results, and with Company Service Advisors who are available for consultation and Project-site inspection, preconstruction product testing, and on-site assistance.

D. Quality-Control Program: Prepare a written quality-control program for this Project to systematically demonstrate the ability of personnel to properly follow methods and use materials and tools without damaging masonry. Include provisions for supervising performance and preventing damage.

E. Cleaning Program: Prepare a written cleaning program that describes cleaning process in detail, including materials, methods, sequence, and equipment to be used; protection of surrounding materials; and control of runoff during operations.

1. If materials and methods other than those indicated are proposed for any phase of cleaning work, add to the quality-control program a written description of such materials and methods, including evidence of successful use on comparable projects, and demonstrations to show their effectiveness for this Project.

F. Mockups: Prepare mockups of cleaning on existing surfaces to demonstrate aesthetic effects and to set quality standards for materials and execution.

1. Cleaning: Clean an area approximately 25 sq. ft. for each type of masonry and surface condition.

a. Test cleaners and methods on samples of adjacent materials for possible adverse reactions. Do not test cleaners and methods known to have deleterious effect.
b. Allow a waiting period of not less than seven days after completion of sample cleaning to permit a study of sample panels for negative reactions.

2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Director’s Representative specifically approves such deviations in writing.

1.9 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified historic treatment specialist or one or more chemical-cleaner manufacturers to perform preconstruction testing on masonry surfaces.

1. Use test areas as indicated and representative of proposed materials and existing construction.
2. Propose changes to materials and methods to suit Project.

1.10 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit masonry cleaning work to be performed according to product manufacturers' written instructions and specified requirements.

B. Clean masonry surfaces only when air temperature is 40 deg F and above and is predicted to remain so for at least seven days after completion of cleaning.

PART 2 - PRODUCTS

2.1 CLEANING MATERIALS

A. Water: Potable.

B. Hot Water: Water heated to a temperature of 140 to 160 deg F.

C. Detergent Solution, Job Mixed: Solution prepared by mixing 2 cups of tetrasodium pyrophosphate (TSPP), 1/2 cup of laundry detergent, and 20 quarts of hot water for every 5 gal. of solution required.

D. Mold, Mildew, and Algae Remover, Job Mixed: Solution prepared by mixing 2 cups of tetrasodium pyrophosphate (TSPP), 5 quarts of 5 percent sodium hypochlorite (bleach), and 15 quarts of hot water for every 5 gal. of solution required.

E. Nonacidic Gel Cleaner: Manufacturer's standard gel formulation, with pH between 6 and 9, that contains detergents with chelating agents and is specifically formulated for cleaning masonry surfaces.

F. Nonacidic Liquid Cleaner: Manufacturer's standard mildly alkaline liquid cleaner formulated for removing mold, mildew, and other organic soiling from ordinary building materials, including polished stone, brick, aluminum, plastics, and wood.

G. Mild-Acid Cleaner: Manufacturer's standard mild-acid cleaner based on phosphoric, oxalic, or citric acid; but not containing muriatic (hydrochloric), hydrofluoric, or sulfuric acid; or ammonium bifluoride or chlorine bleaches.

H. Acidic Cleaner: Manufacturer's standard acidic masonry cleaner composed of hydrofluoric acid or ammonium bifluoride blended with other acids, detergents, wetting agents, and inhibitors.

I. One-Part Limestone Acidic Cleaner: Manufacturer's standard one-part acidic formulation for cleaning limestone.

J. Two-Part Chemical Cleaner: Manufacturer's standard system consisting of potassium- or sodium-hydroxide-based, alkaline prewash cleaner and acidic afterwash cleaner that does not contain hydrofluoric acid.

2.2 ACCESSORY MATERIALS

A. Liquid Strippable Masking Agent: Manufacturer's standard liquid, film-forming, strippable masking material for protecting glass, metal, glazed masonry, and polished stone surfaces from damaging effects of acidic and alkaline masonry cleaners.

B. Other Products: Select materials and methods of use based on the following, subject to approval of a mockup:

1. Previous effectiveness in performing the work involved.
2. Minimal possibility of damaging exposed surfaces.
3. Consistency of each application.
4. Uniformity of the resulting overall appearance.
5. Do not use products or tools that could do the following:

    a. Remove, alter, or harm the present condition or future preservation of existing surfaces, including surrounding surfaces not in contract.
    b. Leave residue on surfaces.

2.3 CHEMICAL-CLEANING SOLUTIONS

A. Dilute chemical cleaners with water to produce solutions not exceeding concentration recommended in writing by chemical-cleaner manufacturer.

B. Acidic Cleaner Solution for Brick and Unpolished Stone: Dilute acidic cleaner with water to produce hydrofluoric acid content of 3 percent or less, but not greater than that recommended in writing by chemical-cleaner manufacturer.

1. Stones: Use only on unpolished granite, unpolished dolomite marble, and siliceous sandstone.

PART 3 - EXECUTION

3.1 HISTORIC TREATMENT SPECIALIST

A. Historic Treatment Specialist Firms: Minimum of 10 year of relevant experience.

3.2 CLEANING MASONRY, GENERAL

A. Have cleaning work performed only by qualified historic treatment specialist.

B. Cleaning Appearance Standard: Cleaned surfaces are to have a uniform appearance as viewed from 20 feet away by Director's Representative.

C. Proceed with cleaning in an orderly manner; work from top to bottom and from one end of each elevation to the other. Ensure that dirty residues and rinse water do not wash over dry, cleaned surfaces.

D. Use only those cleaning methods indicated for each masonry material and location.

1. Brushes: Do not use wire brushes or brushes that are not resistant to chemical cleaner being used.
2. Spray Equipment: Use spray equipment that provides controlled application at volume and pressure indicated, measured at nozzle. Adjust pressure and volume to ensure that cleaning methods do not damage masonry.

    a. Equip units with pressure gauges.
    b. For chemical-cleaner spray application, use low-pressure tank or chemical pump suitable for chemical cleaner indicated, equipped with nozzle having a cone-shaped spray.
    c. For water-spray application, use fan-shaped spray that disperses water at an angle of 25 to 50 degrees.
    d. For high-pressure water-spray application, use fan-shaped spray that disperses water at an angle of at least 40 degrees.
    e. For heated water-spray application, use equipment capable of maintaining temperature between 140 and 160 deg F at flow rates indicated.
    f. For steam application, use steam generator capable of delivering live steam at nozzle.

E. Perform each cleaning method in a manner that results in uniform coverage of all surfaces, including corners, moldings, and interstices, and that produces an even effect without streaking or damaging masonry surfaces.

1. Keep wall wet below area being cleaned to prevent streaking from runoff.

F. Perform additional general cleaning, paint and stain removal, and spot cleaning of small areas that are noticeably different when viewed according to "Cleaning Appearance Standard" Paragraph, so that cleaned surfaces blend smoothly into surrounding areas.

G. Water-Spray Application Methods:

1. Water-Soak Application: Soak masonry surfaces by applying water continuously and uniformly to limited area for time indicated. Apply water at low pressures and low volumes in multiple fine sprays using perforated hoses or multiple spray nozzles. Erect a protective enclosure constructed of polyethylene sheeting to cover area being sprayed.
2. Water-Spray Applications: Unless otherwise indicated, hold spray nozzle at least 6 inches from masonry surface, and apply water in horizontal back-and-forth sweeping motion, overlapping previous strokes to produce uniform coverage.

H. Steam Cleaning: Apply steam to masonry surfaces at very low pressures indicated for each type of masonry. Hold nozzle at least 6 inches from masonry surface, and apply steam in horizontal back-and-forth sweeping motion, overlapping previous strokes to produce uniform coverage.

I. Chemical-Cleaner Application Methods: Apply chemical cleaners to masonry surfaces according to chemical-cleaner manufacturer's written instructions; use brush or spray application. Do not allow chemicals to remain on surface for periods longer than those indicated or recommended in writing by manufacturer.

J. Rinse off chemical residue and soil by working upward from bottom to top of each treated area at each stage or scaffold setting. Periodically during each rinse, test pH of rinse water running off of cleaned area to determine that chemical cleaner is completely removed.

1. Apply neutralizing agent and repeat rinse if necessary to produce tested pH of between 6.7 and 7.5.

K. After cleaning is complete, remove protection no longer required. Remove tape and adhesive marks.

3.3 PRELIMINARY CLEANING

A. Removing Plant Growth: Completely remove visible plant, moss, and shrub growth from masonry surfaces. Carefully remove plants, creepers, and vegetation by cutting at roots and allowing remaining growth to dry as long as possible before removal. Remove loose soil and plant debris from open masonry joints to whatever depth they occur.

B. Preliminary Cleaning: Before beginning general cleaning, remove extraneous substances that are resistant to planned cleaning methods. Extraneous substances include paint, caulking, asphalt, and tar.

1. Carefully remove heavy accumulations of rigid materials from masonry surface with sharp chisel. Do not scratch or chip masonry surface.
2. Remove paint and caulking.
3. Remove asphalt and tar

3.4 CLEANING BRICKWORK

A. Cold-Water Wash: Use cold water applied by high-pressure spray.

B. Detergent Cleaning:

1. Wet surface with cold water applied by low-pressure spray.
2. Scrub surface with detergent solution using medium-soft brushes until soil is thoroughly dislodged and can be removed by rinsing. Use small brushes to remove soil from mortar joints and crevices. Dip brush in solution often to ensure that adequate fresh detergent is used and that surface remains wet.
3. Rinse with cold water applied by high-pressure spray to remove detergent solution and soil.
4. Repeat cleaning procedure, where needed to produce cleaning effect established by mockup.

C. Mold, Mildew, and Algae Removal:

1. Wet surface with cold water applied by low-pressure spray.
2. Apply mold, mildew, and algae remover by brush or low-pressure spray.
3. Scrub surface with medium-soft brushes until mold, mildew, and algae are thoroughly dislodged and can be removed by rinsing. Use small brushes for mortar joints and crevices. Dip brush in mold, mildew, and algae remover often to ensure that adequate fresh cleaner is used and that surface remains wet.
4. Rinse with cold water applied by high-pressure spray to remove mold, mildew, and algae remover and soil.
5. Repeat cleaning procedure, where needed to produce cleaning effect established by mockup.

D. Nonacidic Gel Chemical Cleaning:

1. Wet surface with cold water applied by low-pressure spray.
2. Apply gel cleaner in 1/8-inch thickness by brush, working into joints and crevices. Apply quickly and do not brush out excessively, so area is uniformly covered with fresh cleaner and dwell time is uniform throughout area being cleaned.
3. Let cleaner remain on surface for period recommended in writing by chemical-cleaner manufacturer and established by mockup.
4. Remove bulk of gel cleaner.
5. Rinse with cold water applied by high-pressure spray to remove chemicals and soil.
6. Repeat cleaning procedure, where needed to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

E. Nonacidic Liquid Chemical Cleaning:

1. Wet surface with cold water applied by low-pressure spray.
2. Apply cleaner to surface in two applications by brush or low-pressure spray.
3. Let cleaner remain on surface for period recommended in writing by chemical-cleaner manufacturer and established by mockup.
4. Rinse with cold water applied by high-pressure spray to remove chemicals and soil.
5. Repeat cleaning procedure, where needed to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

F. Mild-Acid Chemical Cleaning:

1. Wet surface with cold water applied by low-pressure spray.
2. Apply cleaner to surface in two applications by brush or low-pressure spray.
3. Let cleaner remain on surface for period recommended in writing by chemical-cleaner manufacturer and established by mockup.
4. Rinse with cold water applied by [low] [medium] [high]-pressure spray to remove chemicals and soil.
5. Repeat cleaning procedure, where needed to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

3.5 CLEANING UNPOLISHED STONEWORK

A. Cold-Water Wash: Use cold water applied by high-pressure spray.

B. Detergent Cleaning:

1. Wet surface with cold water applied by low-pressure spray.
2. Scrub surface with detergent solution using medium-soft brushes until soil is thoroughly dislodged and can be removed by rinsing. Use small brushes to remove soil from mortar joints and crevices. Dip brush in solution often to ensure that adequate fresh detergent is used and that surface remains wet.
3. Rinse with cold water applied by high-pressure spray to remove detergent solution and soil.
4. Repeat cleaning procedure, where needed to produce cleaning effect established by mockup.

C. Mold, Mildew, and Algae Removal:

1. Wet surface with cold water applied by low-pressure spray.
2. Apply mold, mildew, and algae remover by brush or low-pressure spray.
3. Scrub surface with medium-soft brushes until mold, mildew, and algae are thoroughly dislodged and can be removed by rinsing. Use small brushes for mortar joints and crevices. Dip brush in mold, mildew, and algae remover often to ensure that adequate fresh cleaner is used and that surface remains wet.
4. Rinse with cold water applied by high-pressure spray to remove mold, mildew, and algae remover and soil.
5. Repeat cleaning procedure, where needed to produce cleaning effect established by mockup.

D. Nonacidic Gel Chemical Cleaning:

1. Wet surface with cold water applied by low-pressure spray.
2. Apply gel cleaner in 1/8-inch thickness by brush, working into joints and crevices. Apply quickly and do not brush out excessively, so area is uniformly covered with fresh cleaner and dwell time is uniform throughout area being cleaned.
3. Let cleaner remain on surface for period recommended in writing by chemical-cleaner manufacturer and established by mockup.
4. Remove bulk of gel cleaner.
5. Rinse with cold water applied by high-pressure spray to remove chemicals and soil.
6. Repeat cleaning procedure, where needed to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

E. Nonacidic Liquid Chemical Cleaning:

1. Wet surface with cold water applied by low-pressure spray.
2. Apply cleaner to surface in two applications by brush or low-pressure spray.
3. Let cleaner remain on surface for period recommended in writing by chemical-cleaner manufacturer and established by mockup.
4. Rinse with cold water applied by high-pressure spray to remove chemicals and soil.

5. Repeat cleaning procedure, where needed to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

F. Mild-Acid Chemical Cleaning:

1. Wet surface with cold water applied by low-pressure spray.
2. Apply cleaner to surface in two applications by brush or low-pressure spray.
3. Let cleaner remain on surface for period recommended in writing by chemical-cleaner manufacturer and established by mockup.
4. Rinse with cold water applied by high-pressure spray to remove chemicals and soil.
5. Repeat cleaning procedure, where needed to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

G. One-Part Limestone Chemical Cleaning:

1. Wet surface with cold water applied by low-pressure spray.
2. Apply cleaner to surface by brush or low-pressure spray.
3. Let cleaner remain on surface for period recommended in writing by chemical-cleaner manufacturer and established by mockup.
4. Immediately repeat application of one-part limestone cleaner as indicated above over the same area.
5. Rinse with cold water applied by medium-pressure spray to remove chemicals and soil.

3.6 FINAL CLEANING

A. Clean adjacent nonmasonry surfaces of spillage and debris. Use detergent and soft brushes or cloths.

B. Remove debris from gutters and downspouts. Rinse off roof and flush gutters and downspouts.

C. Remove masking materials, leaving no residues that could trap dirt.

3.7 FIELD QUALITY CONTROL

A. Testing Agency: Director’s Representative will engage a qualified testing agency to perform tests and inspections. Allow inspectors use of lift devices and scaffolding, as needed, to perform inspections.

B. Architect's Project Representatives: Architect will assign Project representatives to help carry out Architect's responsibilities at the site, including observing progress and quality of portion of the Work completed. Allow Architect's Project representatives use of lift devices and scaffolding, as needed, to observe progress and quality of portion of the Work completed.

C. Notify Project representatives in advance of times when lift devices and scaffolding will be relocated. Do not relocate lift devices and scaffolding until Project representatives have had reasonable opportunity to make inspections and observations of work areas at lift device or scaffold location.

D. Manufacturer's Field Service: Engage chemical-cleaner manufacturer's Company Service Advisor for consultation and Project-site inspection, to perform preconstruction product testing, and provide on-site assistance when requested by Director’s Representative. Have chemical-cleaner manufacturer's Company Service Advisors visit Project site not less than once to observe progress and quality of the Work.

END OF SECTION 040310

SECTION 040322 - HISTORIC BRICK UNIT MASONRY REPAIR

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 historic treatment work consisting of repairing historic clay brick masonry as follows:

1. Repairing unit masonry.
2. Removing abandoned anchors.
3. Painting steel uncovered during the work.
4. Reanchoring veneers.

B. Related Requirements:

1. Section 013591 "Historic Treatment Procedures" for general historic treatment requirements.
2. Section 076200 "Sheet Metal Flashing and Trim" for metal flashing installed in or on repaired masonry.

1.3 ALLOWANCES

A. Allowances for historic masonry repair are specified in Section 012100 "Allowances."

1. Perform historic masonry repair work under quantity allowances and only as authorized. Authorized work includes work required by Drawings and the Specifications and work as directed in writing by Director’s Representative.
2. Notify Director’s Representative weekly of extent of work performed that is attributable to quantity allowances.
3. Perform work that exceeds quantity allowances only as authorized by Change Orders.

B. Brick removal and replacement is part of brick removal and replacement allowance.

C. Reanchoring veneers is part of veneer reanchoring allowance.

D. Patching brick masonry is part of masonry patching allowance.

1.4 DEFINITIONS

A. Low-Pressure Spray:

1. Pressure: 100 to 400 psi.
2. Flow Rate: 4 to 6 gpm.

B. Rebuilding (Setting) Mortar: Mortar used to set and anchor masonry in a structure, distinct from pointing mortar installed after masonry is set in place.

C. Saturation Coefficient: Ratio of the weight of water absorbed during immersion in cold water to weight absorbed during immersion in boiling water; used as an indication of resistance of bricks to freezing and thawing.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review minutes of Preliminary Historic Treatment Conference that pertain to masonry historic treatment and repair.
2. Review methods and procedures related to repairing historic brick masonry, including, but not limited to, the following:

a. Historic treatment specialist's personnel, equipment, and facilities needed to make progress and avoid delays.
b. Materials, material application, sequencing, tolerances, and required clearances.
c. Quality-control program.
d. Fire-protection plan.
e. Unit masonry historic treatment program.
f. Coordination with building occupants.

1.6 SEQUENCING AND SCHEDULING

A. Order sand and gray portland cement for colored mortar immediately after approval of mockups. Take delivery of and store at Project site a sufficient quantity to complete Project.

B. Work Sequence: Perform masonry historic treatment work in the following sequence, which includes work specified in this and other Sections:

1. Remove plant growth.
2. Inspect masonry for open mortar joints and permanently or temporarily point them before cleaning to prevent intrusion of water and other cleaning materials into the wall.
3. Remove paint.
4. Clean masonry.
5. Rake out mortar from joints surrounding masonry to be replaced and from joints adjacent to masonry repairs along joints.
6. Repair masonry, including replacing existing masonry with new masonry materials.
7. Rake out mortar from joints to be repointed.
8. Point mortar and sealant joints.

9. After repairs and repointing have been completed and cured, perform a final cleaning to remove residues from this work.
10. Where water repellents are to be used on or near masonry work, delay application of these chemicals until after pointing and cleaning.

C. As scaffolding is removed, patch anchor holes used to attach scaffolding. Patch holes in bricks according to "Brick Masonry Patching" Article. Patch holes in mortar joints according to Section 040323 "Historic Brick Unit Masonry Repointing."

1.7 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer's installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
2. Include recommendations for product application and use.
3. Include test data substantiating that products comply with requirements.

E. Samples for Initial Selection: For the following:

1. 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 at least **three** samples 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.

2. Sand Types Used for Mortar: Minimum 8 oz. of each in plastic screw-top jars.

    a. For blended sands, provide Samples of each component and blend. Identify blend ratio.
    b. Identify sources, both supplier and quarry, of each type of sand.

3. Each type of brick to be used for replacing existing units. Include sets of Samples to show the full range of shape, color, and texture to be expected.

    a. For each brick type, provide straps or panels containing at least four bricks. Include multiple straps for brick with a wide range.

4. Each type of patching compound in the form of briquettes, at least 3 inches long by 1-1/2 inches wide. Document each Sample with manufacturer and stock number or other information necessary to order additional material.
5. Accessories: Each type of anchor, accessory, and miscellaneous support.

F. Qualification Data: For historic treatment specialist including field supervisors and workers.

G. Quality-control program.

H. Unit masonry historic treatment program.

1.8 QUALITY ASSURANCE

A. Historic Treatment Specialist Qualifications: A qualified historic brick masonry repair specialist. Experience installing standard unit masonry is insufficient experience for masonry historic treatment work.

B. Quality-Control Program: Prepare a written quality-control program for this Project to systematically demonstrate the ability of personnel to properly follow methods and use materials and tools without damaging masonry. Include provisions for supervising worker performance and preventing damage.

C. Unit Masonry Historic Treatment Program: Prepare a written, detailed description of materials, methods, equipment, and sequence of operations to be used for each phase of historic treatment work, including protection of surrounding materials and Project site.

1. Include methods for keeping exposed mortar damp during curing period.
2. If materials and methods other than those indicated are proposed for any phase of historic treatment work, add to the quality-control program a written description of such materials and methods, including evidence of successful use on comparable projects, and demonstrations to show their effectiveness for this Project.

D. Mockups: Prepare mockups of historic treatment to demonstrate aesthetic effects and to set quality standards for materials and execution and for fabrication and installation.

1. Masonry Repair: Prepare sample areas for each type of masonry material indicated to have repair work performed. If not otherwise indicated, size each mockup not smaller than two adjacent whole units or approximately 48 inches in least dimension. Construct sample areas in locations in existing walls where directed by Director's Representative unless otherwise indicated. Demonstrate quality of materials, workmanship, and blending with existing work. Include the following as a minimum:

    a. Replacement: Six brick units replaced.
    b. Reanchoring Veneers: Install three masonry repair anchors in mockup wall assembly of each anchor type required.

2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Director's Representative 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.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver bricks to Project site strapped together in suitable packs or pallets or in heavy-duty cartons and protected against impact and chipping.

B. Deliver packaged materials to Project site in manufacturer's original and unopened containers, labeled with manufacturer's name and type of products.

C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

D. 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.

E. Store lime putty covered with water in sealed containers.

F. Store sand where grading and other required characteristics can be maintained and contamination avoided.

G. Handle bricks to prevent overstressing, chipping, defacement, and other damage.

1.10 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit repair work to be performed according to product manufacturers' written instructions and specified requirements.

B. Temperature Limits: Repair brick masonry only when air temperature is between 40 and 90 deg F and is predicted to remain so for at least seven days after completion of the Work unless otherwise indicated.

C. Cold-Weather Requirements: Comply with the following procedures for masonry repair unless otherwise indicated:

1. When air temperature is below 40 deg F, heat mortar ingredients, masonry repair materials, and existing masonry walls to produce temperatures between 40 and 120 deg F.
2. When mean daily air temperature is below 40 deg F, provide enclosure and heat to maintain temperatures above 32 deg F within the enclosure for seven days after repair.

D. Hot-Weather Requirements: Protect masonry repairs when temperature and humidity conditions produce excessive evaporation of water from mortar and repair materials. Provide artificial shade and wind breaks, and use cooled materials as required to minimize evaporation. Do not apply mortar to substrates with temperatures of 90 deg F and above unless otherwise indicated.

E. For manufactured repair materials, perform work within the environmental limits set by each manufacturer.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Source Limitations: Obtain each type of material for repairing historic masonry (face brick, cement, sand, etc.) from single source with resources to provide materials of consistent quality in appearance and physical properties.

2.2 DIRECTOR'S REPRESENTATIVE-FURNISHED MATERIAL

A. Salvaged brick.

2.3 MASONRY MATERIALS

A. Face Brick: Units, including molded, ground, cut, or sawed shapes as required to complete masonry repair work.

1. Brick Matching Existing: Units with colors, color variation within units, surface texture, size, and shape that match existing brickwork.

a. Size : 3 5/8"x2 ¼"x8 ¼"
b. Color: Belden Brick Company 280-284 Smooth or equivalent.

B. Salvaged Brick: Obtain salvaged brick from location indicated on Drawings. Clean off residual mortar.

2.4 MORTAR MATERIALS

A. Portland Cement: ASTM C150, Type I or Type II; white, gray or both where required for color matching of mortar.

1. 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. Factory-Prepared Lime Putty: ASTM C1489.

D. Quicklime: ASTM C5, pulverized lime.

E. Mortar Sand: ASTM C144 unless otherwise indicated.

1. Match size, texture, and gradation of existing mortar sand as closely as possible. Blend several sands if necessary to achieve suitable match.
2. Colored Mortar: Natural sand or ground marble, granite, or other sound stone of color necessary to produce required mortar color.

3. For exposed mortar, provide sand with rounded edges.

F. Mortar Pigments: ASTM C979, compounded for use in mortar mixes, and having a record of satisfactory performance in masonry mortars.

G. Water: ASTM C270, potable.

2.5 ACCESSORY MATERIALS

A. Masonry Repair Anchors, Spiral Type: Driven-in, **Type 304** stainless-steel spiral rods designed to be installed in drilled holes and relying on screw effect rather than adhesive to secure them to backup and veneer. Anchors are flexible in plane of veneer but rigid perpendicular to it.

B. Joint Reinforcing:

1. Type 304 stainless steel helical tie, 6 mm or 1/4-inch, “Crack Stitching,” by Helifix; “Crack Stitching” by Thor Helical; “Heli-Tie” by Simpson Strong-Tie; or accepted equivalent. (For use in 1/2-inch or thicker mortar joints.)

C. Setting Buttons and Shims: Resilient plastic, nonstaining to masonry, sized to suit joint thicknesses and bed depths of bricks, less the required depth of pointing materials unless removed before pointing.

D. Masking Tape: Nonstaining, nonabsorbent material; compatible with mortar, joint primers, sealants, and surfaces adjacent to joints; and that easily comes off entirely, including adhesive.

E. Other Products: Select materials and methods of use based on the following, subject to approval of a mockup:

1. Previous effectiveness in performing the work involved.
2. Minimal possibility of damaging exposed surfaces.
3. Consistency of each application.
4. Uniformity of the resulting overall appearance.
5. Do not use products or tools that could do the following:

a. Remove, alter, or harm the present condition or future preservation of existing surfaces, including surrounding surfaces not in Contract.
b. Leave residue on surfaces.

2.6 MORTAR MIXES

A. Preparing Lime Putty: Slake quicklime and prepare lime putty according to appendix to ASTM C5 and manufacturer's written instructions.

B. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer.

C. Colored Mortar: Produce mortar of color required by using specified ingredients. Do not alter specified proportions without Director's Representative's approval.

1. Mortar Pigments: Where mortar pigments are indicated, do not add pigment exceeding 10 percent by weight of the cementitious or binder materials, except for carbon black which is limited to 2 percent, unless otherwise demonstrated by a satisfactory history of performance.

D. Do not use admixtures in mortar unless otherwise indicated.

E. Mixes: Mix mortar materials in the following proportions:
1. Rebuilding (Setting) Mortar by ASTM C1713 Composition: ASTM C1713, with binder material limited to portland cement and lime, and with a volume ratio of 1 part portland cement, 1 part lime, and 6 parts sand .
2. Colored Mortar: Add mortar pigments to produce exposed, setting (rebuilding) mortar of colors required.

PART 3 - EXECUTION

3.1 PROTECTION

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 repair work to discourage mortar from adhering.
3. Immediately remove mortar splatters in contact with exposed masonry and other surfaces.

3.2 MASONRY REPAIR, GENERAL

A. Have repair work performed only by qualified historic treatment specialist.

B. Repair Appearance Standard: Repaired surfaces are to have a uniform appearance as viewed from 20 feet away by Director's Representative.

3.3 BRICK REMOVAL AND REPLACEMENT

A. At locations indicated, remove bricks that are damaged, spalled, or deteriorated. Carefully remove entire units from joint to joint, without damaging surrounding masonry, in a manner that permits replacement with full-size units.

1. When removing single bricks, remove material from center of brick and work toward outside edges.

B. Support and protect remaining masonry that surrounds removal area.

C. Maintain flashing, reinforcement, lintels, and adjoining construction in an undamaged condition.

D. Notify Director's Representative of unforeseen detrimental conditions, including voids, cracks, bulges, loose masonry units in existing backup, rotted wood, rusted metal, and other deteriorated items.

E. Remove in an undamaged condition as many whole bricks as possible.

1. Remove mortar, loose particles, and soil from brick by cleaning with hand chisels, brushes, and water.
2. Remove sealants by cutting close to brick with utility knife and cleaning with solvents.
3. Store brick for reuse. Store off ground, on skids, and protected from weather.
4. Deliver cleaned brick not required for reuse to Director's Representative unless otherwise indicated.

F. Clean masonry surrounding removal areas by removing mortar, dust, and loose particles in preparation for brick replacement.

G. Replace removed damaged brick with other removed brick and salvaged brick in good condition, where possible, or with new brick matching existing brick. Do not use broken units unless they can be cut to usable size.

H. 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.

1. Maintain joint width for replacement units to match existing joints.
2. Use setting buttons or shims to set units accurately spaced with uniform joints.

I. 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.

1. Tool exposed mortar joints in repaired areas to match joints of surrounding existing brickwork.
2. Rake out mortar used for laying brick before mortar sets according to Section 040323 "Historic Brick Unit Masonry Repointing." Point at same time as repointing of surrounding area.
3. When mortar is hard enough to support units, remove shims and other devices interfering with pointing of joints.

J. Curing: Cure mortar by maintaining in thoroughly damp condition for at least 72 consecutive hours, including weekends and holidays.

1. Hairline cracking within the mortar or mortar separation at edge of a joint is unacceptable. Completely remove such mortar and repoint.

3.4 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 or whole salvaged

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 Director's Representative of unforeseen detrimental conditions, including voids, cracks, bulges, loose masonry units beyond the removal area, rotted wood, rusted metal, and other deteriorated items.

E. Remove in an undamaged condition as many whole bricks as possible.

1. Remove mortar, loose particles, and soil from brick by cleaning with hand chisels, brushes, and water.
2. Remove sealants by cutting close to brick with utility knife and cleaning with solvents.
3. Store brick for reuse. Store off ground, on skids, and protected from weather.
4. Deliver cleaned brick not required for reuse to Director's Representative unless otherwise indicated.

F. Clean masonry surrounding removal areas by removing mortar, dust, and loose particles in preparation for brick replacement.

G. Replace removed damaged brick with salvaged backup brick in good condition, where possible, or with new building brick matching existing backup brick. Do not use broken units unless they can be cut to usable size.

H. 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.

I. 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.

J. Curing: Cure mortar by maintaining in thoroughly damp condition for at least 72 consecutive hours, including weekends and holidays.

1. Hairline cracking within the mortar or mortar separation at edge of a joint is unacceptable. Completely remove such mortar and repoint.

3.5 REANCHORING VENEERS (At Crack Repair and Brick Rebuilding)

A. Install masonry repair anchors in horizontal mortar joints and according to manufacturer's written instructions. Space anchors not more than 16 inches o.c. vertically and 24 inches o.c. horizontally apart unless otherwise indicated. Install at locations to avoid penetrating flashing.

B. Recess anchors 5/8 inch or more from surface of mortar joint, and fill recess with pointing mortar according to Section 040323 "Historic Brick Unit Masonry Repointing."

3.6 FINAL CLEANING

A. After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter; use wood scrapers, stiff-nylon or -fiber brushes, and clean water, applied by low-pressure spray.

1. Do not use metal scrapers or brushes.
2. Do not use acidic or alkaline cleaners.

B. Clean adjacent nonmasonry surfaces. Use detergent and soft brushes or cloths.

C. Clean mortar and debris from roof; remove debris from gutters and downspouts. Rinse off roof and flush gutters and downspouts.

D. Remove masking materials, leaving no residues that could trap dirt.

3.7 FIELD QUALITY CONTROL

A. Testing Agency: Director’s Representative will engage qualified testing agencies to perform tests and inspections. Allow inspectors use of lift devices and scaffolding, as needed, to perform inspections.

B. Architect's Project Representatives: Architect will assign Project representatives to help carry out Architect's responsibilities at the site, including observing progress and quality of portion of the Work completed. Allow Architect's Project representatives use of lift devices and scaffolding, as needed, to observe progress and quality of portion of the Work completed.

C. Notify [**testing agency] [and] [Architect's Project representatives**] in advance of times when lift devices and scaffolding will be relocated. Do not relocate lift devices and scaffolding until [**inspectors] [and] [Architect's Project representatives**] have had reasonable opportunity to make inspections and observations of work areas at lift device or scaffold location.

3.8 MASONRY-WASTE DISPOSAL

A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property.

B. Masonry Waste: Remove masonry waste and legally dispose of off State property.

END OF SECTION 040322

SECTION 042000 - UNIT MASONRY

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:

1. Concrete masonry units.
2. Mortar and grout.
3. Steel reinforcing bars.
4. Masonry-joint reinforcement.
5. Ties and anchors.
6. Embedded flashing.
7. Miscellaneous masonry accessories.
8. Masonry-cell fill.

B. Products Installed but not Furnished under This Section:

1. Steel lintels in unit masonry.
2. Steel shelf angles for supporting unit masonry.
3. Cavity wall insulation.

C. Related Requirements:

1. Section 031000 "Concrete Forms and Accessories" for installing dovetail slots for masonry anchors.
2. Section 051200 "Structural Steel Framing" for installing anchor sections of adjustable masonry anchors for connecting to structural steel frame.
3. Section 072100 "Thermal Insulation" for cavity wall insulation.
4. Section 076200 "Sheet Metal Flashing and Trim" for exposed sheet metal flashing and for furnishing manufactured reglets installed in masonry joints.

1.3 DEFINITIONS

A. CMU(s): Concrete masonry unit(s).

B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer's installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

E. Shop Drawings: For the following:

1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
2. Reinforcing Steel: Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315. Show elevations of reinforced walls.
3. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.
4. Reference Contract Drawing number and addendum number in each shop drawing.

F. Samples for Initial Selection:

1. Weep holes/cavity vents.

G. Samples for Verification: For each type and color of the following:

1. Weep holes and cavity vents.
2. Accessories embedded in masonry.

H. Qualification Data: For testing agency.

I. Material Certificates: For each type and size of the following:

1. Masonry units.

a. Include data on material properties.
b. For brick, include size-variation data verifying that actual range of sizes falls within specified tolerances.
c. For exposed brick, include test report for efflorescence according to ASTM C67.
d. For masonry units used in structural masonry, include data and calculations establishing average net-area compressive strength of units.

2. Integral water repellent used in CMUs.
3. Cementitious materials. Include name of manufacturer, brand name, and type.
4. Mortar admixtures.

5. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
6. Grout mixes. Include description of type and proportions of ingredients.
7. Reinforcing bars.
8. Joint reinforcement.
9. Anchors, ties, and metal accessories.

J. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.

1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C109 for compressive strength, ASTM C1506 for water retention, and ASTM C91 for air content.
2. Include test reports, according to ASTM C1019, for grout mixes required to comply with compressive strength requirement.

K. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined according to TMS 602/ACI 530.1/ASCE 6.

L. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM C1093 for testing indicated.

1. Build sample panels for each type of exposed unit masonry construction in sizes approximately 60 inches long by 48 inches high by full thickness.
2. Build sample panels facing south.
3. Where masonry is to match existing, build panels adjacent and parallel to existing surface.
4. Clean one-half of exposed faces of panels with masonry cleaner indicated.
5. Protect approved sample panels from the elements with weather-resistant membrane.
6. Approval of sample panels is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; aesthetic qualities of workmanship; and other material and construction qualities specifically approved by Director's Representative in writing.

    a. Approval of sample panels does not constitute approval of deviations from the Contract Documents contained in sample panels unless Director's Representative specifically approves such deviations in writing.

B. Preconstruction Testing: Contractor shall employ and pay qualified independent Testing Agency to perform preconstruction testing indicated and other inspecting and testing services required for source and field quality control.

C. Test mortar composition and properties in accordance with ASTM C 270 if Property Specification is used.

D. Evaluate mortar proportions in accordance with ASTM C 270 if Proportion Specification is used.

E. Test mortar properties for approved mix in accordance with ASTM C780 (Compressive Strength Method) to determine a base line for field mortar tests.

F. Test grout compressive strength in accordance with ASTM C 1019 to demonstrate compliance with ASTM C476, Property Specification.

1. Contractor shall deliver to Testing Agency accepted CMU for fabrication of test samples.

G. Test self-consolidating grout compressive strength in accordance with ASTM C1019. Test slump flow and visual stability index in accordance with ASTM C1611/C1611M.

H. Testing Agency Qualifications: Independent Testing Agency shall demonstrate to Architect's satisfaction that it has experience and capability to satisfactorily perform testing indicated without delaying progress of work.

I. Contractor shall employ and pay a licensed Land Surveyor to survey foundations for compliance with dimensional tolerances specified in referenced unit masonry standard.

J. When directed, demolish and remove mock-ups from project site.

K. Accepted mock-ups in undisturbed condition at time of substantial completion may become part of completed unit of work.

1. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

L. Grout Demonstration Panel: If proposed grouting procedures, construction techniques, or grout space limitations do not conform to the requirements of this Specification, a grout demonstration panel is required to be constructed prior to installation of Contract work. Grout demonstration panel must represent actual project and field conditions. After grouting, the panel must be deconstructed to confirm whether filling and adequate consolidation has been achieved. The RDP will determine whether the proposed grouting procedures are acceptable for use for Contract work.

M. The Registered Design Professionals (RDPs) for Structural Engineering and Architecture will visit construction site at appropriate intervals to determine if work is in general conformance with Contract Documents and specifications. Notify RDPs 48 hours before anticipated time of completion for given section of work so they may determine if site observations are required. If site observations are required, do not place grout or continue construction of masonry until RDPs have had opportunity to make observations.

N. Material Test Reports: Submit to Special Inspector and Architect/Engineer reports from qualified independent Testing Agency employed and paid by Contractor indicating and interpreting test results relative to compliance for the following proposed masonry materials with requirements indicated.

1. Mortar: Property (Proportion) requirements of ASTM C 270.

2. Grout complying with ASTM C 476. Include description of type and proportions of grout ingredients.
3. Self-consolidating grout complying with ASTM C476 and ASTM C1611/C1611M.
4. Masonry units: ASTM C67 and ASTM C140.
5. Field Mortar Base Line Compressive Test: ASTM C780.
6. Efflorescence tests for Brick: ASTM C67.
7. Durability tests for surface-coated brick: ASTM C67.

O. Construction Procedures: Submit cold-weather construction and hot-weather construction procedures evidencing compliance with requirements specified in referenced unit masonry standard.

P. Qualification Data: Submit data for firms and persons specified to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, telephone numbers, names of Architects and Owners, and other information specified.

Q. Grouting Program: Submit proposed grouting program for grouting CMU walls. Grouting shall be in accordance with recommendations of NCMA-TEK 3-2A. Provide grout demonstration panel when proposed grouting techniques do not meet NCMA recommendations.

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 cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

D. Deliver preblended, dry mortar mix in moisture-resistant containers. Store preblended, dry mortar mix in delivery containers on elevated platforms in a dry location or in covered weatherproof dispensing silos.

E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.8 FIELD 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.

1. Extend cover a minimum of 24 inches down both sides of walls, and hold cover securely in place.

2. Where one wythe of multiwythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches down face next to unconstructed wythe, and hold cover in place.

B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three 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 spreading coverings 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 TMS 602/ACI 530.1/ASCE 6.

1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.

E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

1.9 WORKMANSHIP

A. Contractor shall be responsible for correction of work not conforming to specified requirements. Correct deficient work as directed by Architect.

B. Remove work found to be defective. Replace with new acceptable work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.

B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

2.2 PERFORMANCE REQUIREMENTS

A. Provide unit masonry that develops indicated net-area compressive strengths at 28 days.

1. Determine net-area compressive strength of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) according to TMS 602/ACI 530.1/ASCE 6.
2. Determine net-area compressive strength of masonry by testing masonry prisms according to ASTM C1314.

    a. Contractor shall fabricate prisms under supervision and direction of Testing Agency Representative.

2.3 UNIT MASONRY, GENERAL

A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6, except as modified by requirements in the Contract Documents.

B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work

C. Fire-Resistance Ratings: Comply with requirements for fire-resistance-rated assembly designs indicated.

1. Where fire-resistance-rated construction is indicated, units shall be listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction.

2.4 CONCRETE MASONRY UNITS

A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.

1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
2. Provide square-edged units for outside corners unless otherwise indicated.

B. Integral Water Repellent: Provide units made with integral water repellent for exposed units.

1. Integral Water Repellent: Liquid polymeric, integral water-repellent admixture that does not reduce flexural bond strength. Units made with integral water repellent, when tested according to ASTM E514 as a wall assembly made with mortar containing integral water-repellent manufacturer's mortar additive, with test period extended to 24 hours, shall show no visible water or leaks on the back of test specimen.

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) "RainBloc" by ACM Chemistries.
2) "Dry-Block" by W.R. Grace Construction Products.
3) "Eucon Blocktite" by Euclid Chemical.

C. CMUs: ASTM C90.

1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2000 psi.
2. Density Classification: Normal weight unless otherwise indicated.
3. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.
4. Exposed Faces: Provide color and texture matching the range represented by Director's Representative's sample.
5. Recycled Content: 30 percent minimum pre-consumer recycled content.

2.5 MASONRY LINTELS

A. General: Provide one of the following:

B. Masonry Lintels: Prefabricated or built-in-place masonry lintels made from bond beam CMUs matching adjacent CMUs in color, texture, and density classification, 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.

2.6 BRICK

A. General: Provide shapes indicated and as follows, with exposed surfaces matching finish and color of exposed faces of adjacent units:

1. For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished.
2. Provide special shapes for applications where stretcher units cannot accommodate special conditions, including those at corners, movement joints, bond beams, sashes, and lintels.
3. Provide special shapes for applications requiring brick of size, form, color, and texture on exposed surfaces that cannot be produced by sawing.
4. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.

B. Clay Face Brick: Facing brick complying with ASTM C216.

1. Grade: SW.
2. Type: FBX.
3. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 4150 psi.

4. Initial Rate of Absorption: Less than 30 g/30 sq. in. per minute when tested according to ASTM C67.
5. Efflorescence: Provide brick that has been tested according to ASTM C67 and is rated "not effloresced."
6. Size (Actual Dimensions): 3-5/8 inches wide by 2-1/4 inches high by 7-5/8 inches long.
7. Color and Texture: As selected by Director's Representative.

2.7 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.

1. Alkali content shall not be more than 0.1 percent when tested according to ASTM C114.

B. Hydrated Lime: ASTM C207, Type S.

C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.

D. Masonry Cement: ASTM C91.

1. 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. Cemex, Inc.
b. Holcim US.
c. Lehigh Hanson; Heidelberg Cement Group.
d. Approved equivalent.

E. Mortar Cement: ASTM C1329.

1. 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. Cemex, Inc.
b. Lafarge North America Inc.
c. Approved equivalent.

F. Ready-Mixed Mortar: Cementitious materials, water, and aggregate complying with requirements specified in this article, combined with set-controlling admixtures to produce a ready-mixed mortar complying with ASTM C 1142.

G. Aggregate for Mortar: ASTM C144.

1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.

2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
3. White-Mortar Aggregates: Natural white sand or crushed white stone.
4. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.

H. Aggregate for Grout: ASTM C404.

I. Epoxy Pointing Mortar: ASTM C395, epoxy-resin-based material formulated for use as pointing mortar for glazed or pre-faced masonry units (and approved for such use by manufacturer of units); in color indicated or, if not otherwise indicated, as selected by Director's Representative from manufacturer's colors.

J. Refractory Mortar Mix: Ground fireclay or nonwater-soluble, calcium aluminate, medium-duty refractory mortar that passes ASTM C199 test; or an equivalent product acceptable to authorities having jurisdiction.

K. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C494, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.

1. 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. Euclid Chemical Company (The); an RPM company.
b. GCP Applied Technologies Inc.
c. Approved equivalent.

L. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with CMUs containing integral water repellent from same manufacturer.

1. 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. BASF Corporation.
b. Euclid Chemical Company (The); an RPM company.
c. GCP Applied Technologies Inc.
d. Approved equivalent.

M. Water: Potable.

N. Additives: Not permitted.

O. Integral Water Repellent Admixture: Provide admixture for all mortar to be used with integral water repellent masonry units. Admixture must be same manufacturer as masonry units.

1. Products:

    a. “RainBloc” by ACM Chemistries.
    b. “Dry-Block” by W.R. Grace Construction Products.
    c. “Eucon Blocktite” by Euclid Chemical.

2.8 REINFORCEMENT

A. Uncoated-Steel Reinforcing Bars: ASTM A615 or ASTM A775, Grade 60.

B. General: Provide reinforcing steel complying with requirements of referenced unit masonry standard and this article.

C. Recycled Content: Provide minimum 90 percent postconsumer recycled content. For stainless steel products, provide minimum 60 percent postconsumer recycled content.

D. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and to hold reinforcing bars in center of cells. Units are formed from 0.148-inch steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.

1. 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. Heckmann Building Products, Inc.
    b. Hohmann & Barnard, Inc.
    c. Wire-Bond.
    d. Approved equivalent.

E. Deformed Reinforcing Wire: ASTM A 496.

F. Plain-Welded Wire Fabric: ASTM A 185.

G. Masonry-Joint Reinforcement, General: ASTM A951.

1. Interior Walls: Mill galvanized carbon steel.
2. Exterior Walls: Hot-dip galvanized carbon steel.
3. Wire Size for Side Rods: 0.148-inchdiameter.
4. Wire Size for Cross Rods 0.148-inch diameter.
5. Wire Size for Veneer Ties: 0.187-inchdiameter.
6. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o.c.
7. Provide in lengths of not less than 10 feet.

H. Masonry-Joint Reinforcement for Single-Wythe Masonry: Ladder type with single pair of side rods.

1. 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. Hohmann & Barnard, Inc.
b. Wire-Bond.
c. Approved Equivalent.

I. Masonry-Joint Reinforcement for Multiwythe Masonry:

1. 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. Heckmann Building Products, Inc.
b. Hohmann & Barnard, Inc.
c. Wire-Bond.
d. Approved Equivalent.

2. Ladder type with one side rod at each face shell of hollow masonry units more than 4 inches wide, plus one side rod at each wythe of masonry 4 inches wide or less.
3. Tab type, either ladder or truss design, with one side rod at each face shell of backing wythe and with rectangular tabs sized to extend at least halfway through facing wythe, but with at least 5/8-inch cover on outside face.
4. Adjustable (two-piece) type, either ladder or truss design, with one side rod at each face shell of backing wythe and with separate adjustable ties with pintle-and-eye connections having a maximum horizontal play of 1/16 inch and maximum vertical adjustment of 1-1/4 inches. Size ties to extend at least halfway through facing wythe but with at least 5/8-inch cover on outside face. Ties have hooks or clips to engage a continuous horizontal wire in the facing wythe.

J. Masonry-Joint Reinforcement for Veneers Anchored with Seismic Masonry-Veneer Anchors: Single 0.187-inch- diameter, hot-dip galvanized carbon steel continuous wire.

2.9 TIES AND ANCHORS

A. General: Ties and anchors shall extend at least 1-1/2 inches into veneer but with at least a 5/8-inch cover on outside face.

B. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:

1. Mill-Galvanized, Carbon-Steel Wire: ASTM A82, with ASTM A641, Class 1 coating.
2. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A82, with ASTM A153, Class B-2 coating.
3. Stainless Steel Wire: ASTM A580, Type 304.
4. Galvanized-Steel Sheet: ASTM A653, Commercial Steel, G60 zinc coating.
5. Steel Sheet, Galvanized after Fabrication: ASTM A1008, Commercial Steel, with ASTM A153, Class B coating.
6. Stainless Steel Sheet: ASTM A240 or ASTM A666, Type 304.
7. Steel Plates, Shapes, and Bars: ASTM A36.
8. Stainless Steel Bars: ASTM A276 or ASTM A666, Type 304.

C. Corrugated-Metal Ties: Metal strips not less than 7/8 inch wide with corrugations having a wavelength of 0.3 to 0.5 inch and an amplitude of 0.06 to 0.10 inch made from 0.062-inch-thick, stainless steel sheet.

D. Individual Wire Ties: Rectangular units with closed ends and not less than 4 inches wide.

1. Z-shaped ties with ends bent 90 degrees to provide hooks not less than 2 inches long may be used for masonry constructed from solid units.
2. Where wythes do not align, use adjustable ties with pintle-and-eye connections having a maximum adjustment of 1-1/4 inches.
3. Wire: Fabricate from 1/4-inch diameter, hot-dip galvanized steel wire. Mill-galvanized wire ties may be used in interior walls unless otherwise indicated.

E. Adjustable Anchors for Connecting to Concrete: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.

1. Connector Section: Dovetail tabs for inserting into dovetail slots in concrete and attached to tie section; formed from 0.109-inch- thick, stainless steel sheet.

    a. 0.064-inch thick, galvanized-steel sheet may be used at interior walls unless otherwise indicated.

2. Tie Section: Triangular-shaped wire tie made from 0.187-inch- diameter, hot-dip galvanized steel wire. Mill-galvanized wire may be used at interior walls unless otherwise indicated.
3. Corrugated-Metal Ties: Metal strips not less than 7/8 inch wide with corrugations having a wavelength of 0.3 to 0.5 inch and an amplitude of 0.06 to 0.10 inch made from 0.109-inch thick, stainless steel sheet with dovetail tabs for inserting into dovetail slots in concrete.

    a. 0.108-inch thick galvanized sheet may be used at interior walls unless otherwise indicated.

F. Partition Top Anchors: 0.105-inch- thick metal plate with a 3/8-inch- diameter metal rod 6 inches long welded to plate and with closed-end plastic tube fitted over rod that allows rod to move in and out of tube. Fabricate from steel, hot-dip galvanized after fabrication.

G. Rigid Anchors: Fabricate from steel bars 1-1/2 inches wide by 1/4 inch thick by 24 inches long, with ends turned up 2 inches or with cross pins unless otherwise indicated.

1. Corrosion Protection: Hot-dip galvanized to comply with ASTM A153.

H. Adjustable Masonry-Veneer Anchors:

1. General: Provide anchors that allow vertical adjustment but resist a 100-lbf load in both tension and compression perpendicular to plane of wall without deforming or developing play in excess of 1/16 inch.
2. Fabricate sheet metal anchor sections and other sheet metal parts from 0.109-inch thick, stainless steel sheet.

3. Fabricate wire ties from 0.187-inch diameter, hot-dip galvanized-steel wire unless otherwise indicated.
4. Contractor's Option: Unless otherwise indicated, provide any of the adjustable masonry-veneer anchors specified.
5. Screw-Attached, Masonry-Veneer Anchors: Wire tie and a rib-stiffened, sheet metal anchor section with screw holes top and bottom, with a projecting vertical tab having a slotted hole for inserting wire tie.

    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) FERO Corporation.
        2) Hohmann & Barnard, Inc.
        3) PROSOCO, Inc.
        4) Wire-Bond.
        5) Approved Equivalent.

6. Seismic Masonry-Veneer Anchors: Connector section and rib-stiffened, sheet metal anchor section with screw holes top and bottom, with projecting tabs having slotted holes for inserting vertical leg of connector section. Connector section consists of a rib-stiffened, sheet metal bent plate with down-turned leg designed to fit in anchor section slot and with integral tabs designed to engage continuous wire.

    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) Hohmann & Barnard, Inc.
        2) Wire-Bond.
        3) Approved Equivalent.

2.10 EMBEDDED FLASHING MATERIALS

A. Metal Flashing: Provide metal flashing complying with SMACNA's "Architectural Sheet Metal Manual" and as follows:

1. Stainless Steel: ASTM A240 or ASTM A666, Type 304, 0.016 inch thick.
2. Fabricate continuous flashings in sections 96 inches long minimum, but not exceeding 12 feet. Provide splice plates at joints of formed, smooth metal flashing.
3. Fabricate through-wall metal flashing embedded in masonry from stainless steel, with ribs at 3-inch intervals along length of flashing to provide an integral mortar bond.

    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) Cheney Flashing Company.
        2) Hohmann & Barnard, Inc.

3) Keystone Flashing Company, Inc.
4) Approved Equivalent.

4. Fabricate through-wall flashing with snaplock receiver on exterior face where indicated to receive counterflashing.
5. Fabricate through-wall flashing with drip edge where indicated. Fabricate by extending flashing 1/2 inch out from wall, with outer edge bent down 30 degrees.
6. Fabricate through-wall flashing with sealant stop where indicated. Fabricate by bending metal back on itself 3/4 inch at exterior face of wall and down into joint 1/4 inch to form a stop for retaining sealant backer rod.
7. Fabricate metal drip edges for ribbed metal flashing from plain metal flashing of same metal as ribbed flashing and extending at least 3 inches into wall with hemmed inner edge to receive ribbed flashing and form a hooked seam. Form hem on upper surface of metal so that completed seam sheds water.
8. Fabricate metal drip edges from stainless steel. Extend at least 3 inches into wall and 1/2 inch out from wall, with outer edge bent down 30 degrees.
9. Fabricate metal sealant stops from stainless steel. Extend at least 3 inches into wall and out to exterior face of wall. At exterior face of wall, bend metal back on itself for 3/4 inch and down into joint 1/4 inch to form a stop for retaining sealant backer rod.
10. Fabricate metal expansion-joint strips from stainless steel to shapes indicated.
11. Solder metal items at corners.

B. Flexible Flashing: Use the following unless otherwise indicated:

1. Elastomeric Thermoplastic Flashing: Composite flashing product consisting of a polyester-reinforced ethylene interpolymer alloy.

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) Hohmann & Barnard, Inc.
2) Mortar Net Solutions.
3) Wire-Bond.
4) Approved Equivalent.

b. Monolithic Sheet: Elastomeric thermoplastic flashing, 0.040 inch thick.
c. Self-Adhesive Sheet: Elastomeric thermoplastic flashing, 0.025 inch thick, with a 0.015-inch- thick coating of adhesive.
d. Self-Adhesive Sheet with Drip Edge: Elastomeric thermoplastic flashing, 0.025 inch thick, with a 0.015-inch- thick coating of rubberized-asphalt adhesive. Where flashing extends to face of masonry, rubberized-asphalt coating is held back approximately 1-1/2 inches from edge.

1) Color: Black.

e. Accessories: Provide preformed corners, end dams, other special shapes, and seaming materials produced by flashing manufacturer.

2. EPDM Flashing: Sheet flashing product made from ethylene-propylene-diene terpolymer, complying with ASTM D4637, 0.040 inch thick.

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) Carlisle Coatings & Waterproofing Inc.
2) Firestone Specialty Products.
3) Heckmann Building Products, Inc.
4) Hohmann & Barnard, Inc.
5) Wire-Bond.
6) Approved Equivalent.

C. Application: Unless otherwise indicated, use the following:

1. Where flashing is indicated to receive counterflashing, use metal flashing.
2. Where flashing is indicated to be turned down at or beyond the wall face, use metal flashing.
3. Where flashing is partly exposed and is indicated to terminate at the wall face, use metal flashing with a sealant stop or flexible flashing with a metal drip edge.
4. Where flashing is fully concealed, use flexible flashing.

D. Single-Wythe CMU Flashing System: System of CMU cell flashing pans and interlocking CMU web covers made from UV-resistant, high-density polyethylene. Cell flashing pans have integral weep spouts designed to be built into mortar bed joints and that extend into the cell to prevent clogging with mortar.

E. Solder and Sealants for Sheet Metal Flashings: As specified in Section 076200 "Sheet Metal Flashing and Trim."

1. Solder for Stainless Steel: ASTM B32, Grade Sn60, with acid flux of type recommended by stainless steel sheet manufacturer.

F. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

G. Termination Bars for Flexible Flashing: Stainless steel bars 1/8 inch by 1 inch.

H. Termination Bars for Flexible Flashing: Stainless steel sheet 0.019 inch by 1-1/2 inches with a 3/8 inch sealant flange at top.

2.11 POST-INSTALLED ANCHORS

A. Chemical Adhesive Anchors:

1. Anchors to solid concrete, grouted CMU, solid brick, or stone:

a. Anchors for use when base material temperature is 0°F or greater: “HIT-Ice” by Hilti; “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 200 Safe Set” by Hilti; “Epcon C6” by ITW Ramset/Red Head; “T308 Plus” by Powers Fasteners; “ET Epoxy-Tie” by Simpson/Strong-Tie; or accepted equivalent.

2. Anchors to hollow masonry (brick or hollow CMU

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: “Epcon C6” by ITW Ramset/Red Head; “T308 Plus” by Powers Fasteners; “ET Epoxy-Tie” by Simpson/Strong-Tie; “HIT-HY 270” by Hilti; or accepted equivalent.
c. Provide manufacturer’s standard screen tubes for use with anchors.

2.12 MISCELLANEOUS MASONRY ACCESSORIES

A. Compressible Filler: Premolded filler strips complying with ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene.

B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D2000, Designation M2AA-805 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.

C. Bond-Breaker Strips: Asphalt-saturated felt complying with ASTM D226, Type I (No. 15 asphalt felt).

D. Weep/Cavity Vent Products: Use one of the following unless otherwise indicated:

1. Wicking Material: Absorbent rope, made from UV-resistant synthetic fiber, 1/4 to 3/8 inch in diameter, in length required to produce 2-inch exposure on exterior and 18 inches in cavity. Use only for weeps.
2. Round Plastic Weep/Vent Tubing: Medium-density polyethylene, 3/8-inch OD by 4 inches long.
3. Rectangular Plastic Weep/Vent Tubing: Clear butyrate, 3/8 by 1-1/2 by 3-1/2 inches long.
4. Cellular Plastic Weep/Vent: One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, full height and width of head joint and depth 1/8 inch less than depth of outer wythe, in color selected from manufacturer's standard.
5. Mesh Weep/Vent: Free-draining mesh; made from polyethylene strands, full height and width of head joint and depth 1/8 inch less than depth of outer wythe; in color selected from manufacturer's standard.
6. Aluminum Weep Hole/Vent: Units made from sheet aluminum, designed to fit into a head joint and consisting of a vertical channel, with louvers stamped in web and with a top flap to keep mortar out of the head joint; factory primed and painted before installation to comply with Section 099114 "Exterior Painting" in color selected by Director’s Representative.

7. Vinyl Weep Hole/Vent: Units made from flexible PVC, designed to fit into a head joint and consisting of a louvered vertical leg, flexible wings to seal against ends of masonry units, and a top flap to keep mortar out of the head joint; in color selected by Director's Representative.

E. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.

1. 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. Advanced Building Products Inc.
b. Hohmann & Barnard, Inc.
c. Keene Building Products.
d. Mortar Net Solutions.
e. Wire-Bond.
f. York Manufacturing, Inc.
g. Approved Equivalent.

2. Configuration: Provide one of the following:

a. Strips, full depth of cavity and 10 inches high, with dovetail-shaped notches 7 inches deep that prevent clogging with mortar droppings.
b. Strips, not less than 1-1/2 inches thick and 10 inches high, with dimpled surface designed to catch mortar droppings and prevent weep holes from clogging with mortar.
c. Sheets or strips, full depth of cavity and installed to full height of cavity.
d. Sheets or strips not less than 1 inch thick and installed to full height of cavity, with additional strips 4 inches high at weep holes and thick enough to fill entire depth of cavity and prevent weep holes from clogging with mortar.

2.13 MASONRY-CELL FILL

A. Loose-Fill Insulation: Perlite complying with ASTM C549, Type II (surface treated for water repellency and limited moisture absorption) or Type IV (surface treated for water repellency and to limit dust generation).

B. Lightweight-Aggregate Fill: ASTM C331.

2.14 MASONRY CLEANERS

A. 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.

2.15 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.
2. Use portland cement-lime mortar unless otherwise indicated.
3. For exterior masonry, use portland cement-lime or mortar cement mortar.
4. For reinforced masonry, use portland cement-lime or mortar cement mortar.
5. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.

B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.

C. Mortar for Unit Masonry: Comply with ASTM C270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated.

1. For masonry below grade or in contact with earth, use Type M.
2. For reinforced masonry, use Type S.
3. For mortar parge coats, use Type S or Type N.
4. For exterior, above-grade, load-bearing and nonload-bearing walls and parapet walls; for interior load-bearing walls; for interior nonload-bearing partitions; and for other applications where another type is not indicated, use Type N.
5. For interior nonload-bearing partitions, Type O may be used instead of Type N.

D. Grout for Unit Masonry: Comply with ASTM C476.

1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 602/ACI 530.1/ASCE 6 for dimensions of grout spaces and pour height.
2. Proportion grout in accordance with ASTM C476, paragraph 4.2.2 for specified 28-day compressive strength indicated, but not less than 2000 psi.
3. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C143.

E. Self-Consolidating Grout for Unit Masonry: Comply with material requirements of ASTM C476, and slump flow and VSI per ASTM C1611/C1611M.

1. Slump Flow: 24 inches to 30 inches.
2. Visual Stability Index (VSI) Rating: 1 or less. (Appendix X.1).
3. Minimum strength: 2,000 psi.

F. Epoxy Pointing Mortar: Mix epoxy pointing mortar to comply with mortar manufacturer's written instructions.

1. Application: Use epoxy pointing mortar for exposed mortar joints with the following units:

    a. Pre-faced CMUs.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
2. Verify that foundations are within tolerances specified.
3. Verify that reinforcing dowels are properly placed.
4. Verify that substrates are free of substances that impair mortar bond.

B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

D. Examine mechanical vibrators to be used for grout consolidation prior to grout delivery to verify vibrators are in proper working order.

3.2 INSTALLATION, GENERAL

A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.

B. Build chases and recesses to accommodate items specified in this and other Sections.

C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match construction immediately adjacent to opening.

D. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.

F. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.

G. Wetting of Brick: Wet brick before laying if initial rate of absorption exceeds 30 g/30 sq. in. per minute when tested according to ASTM C67. Allow units to absorb water so they are damp but not wet at time of laying.

3.3 INSTALLATION OF REINFORCING STEEL

A. Place reinforcement as detailed in drawings. Secure against displacement prior to grouting. Horizontal bars may rest on cross web of hollow units.

B. Tolerances for placement of reinforcing steel in walls and flexural members shall be as follows:

1. Plus/minus 1/2 inch for d equal to 8 inches or less.
2. Plus/minus 1 inch for d equal to 24 inches or less but greater than 8 inches.
3. Plus/minus 1 ½ inches for d equal to 24 inches or less.
4. Plus/minus 2 inches for longitudinal location of reinforcement.

C. Clearance between reinforcing steel and surface of masonry shall not be less than ¼ inch for fine grout and ½ inch for coarse grout.

D. Lap reinforcing bars as shown in drawings.

E. Positioners: Provide positioners to maintain position of vertical reinforcing bars at each lap splice or at maximum spacing of 10 feet, whichever is less. Where these positioners are within ½ inch of surface of masonry, galvanize according to ASTM Standard A 153.

F. Provide continuous bond beams reinforced with two No. 5 bars at floors, roof, and tops of parapets unless otherwise noted. Provide corner bars same size as continuous reinforcing in wall corners and intersections, lapped 2 feet with continuous reinforcing.

G. Provide minimum vertical reinforcing of one No. 4 bar in window and door jambs, at ends of walls, corners, and each side of vertical control joints. Locate bar maximum 16 inches from end of CMU. If typical vertical wall reinforcing noted is larger than No. 4, use larger size.

3.4 TOLERANCES

A. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch or minus 1/4 inch.
2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch.
3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.

B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 feet, or 1/2-inch maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.
3. For vertical lines and surfaces, do not vary from plumb by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.

4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.
5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.
6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet or 1/2-inch maximum.
7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch except due to warpage of masonry units within tolerances specified for warpage of units.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.
2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.
4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch.
5. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch from one masonry unit to the next.

3.5 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: Unless otherwise indicated, lay exposed masonry in running bond do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.

C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 4 inches. Bond and interlock each course of each wythe at corners. Do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.

D. Stopping and Resuming Work: Stop work by stepping back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.

E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.

F. Fill space between steel 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, wire mesh, or plastic mesh in the joint below, and rod mortar or grout into core.

H. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

I. Build nonload-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. Brace top of wall as shown in drawings.
2. Fasten partition top anchors to structure above and build into top of partition. Grout cells of CMUs solidly around plastic tubes of anchors and push tubes down into grout to provide 1/2-inch clearance between end of anchor rod and end of tube. Space anchors 48 inches o.c. unless otherwise indicated.
3. Wedge nonload-bearing partitions against structure above with small pieces of tile, slate, or metal. Fill joint with mortar after dead-load deflection of structure above approaches final position.
4. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Section 078443 "Joint Firestopping."

3.6 MORTAR BEDDING AND JOINTING

A. Lay CMUs as follows:

1. Bed face shells in mortar and make head joints of depth equal to bed joints.
2. Bed webs in mortar in all courses of piers, columns, and pilasters.
3. Bed webs in mortar in grouted masonry, including starting course on footings.
4. Fully bed entire units, including areas under cells, at starting course on footings where cells are not grouted.
5. Fully bed units and fill cells with mortar at anchors and ties as needed to fully embed anchors and ties in mortar.

B. Lay solid 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.

C. If another joint profile is used, revise first paragraph below or show on Drawings.

D. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

1. For glazed masonry units, use a nonmetallic jointer 3/4 inch or more in width.

E. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.

F. Cut joints flush where indicated to receive waterproofing, cavity wall insulation, air barriers unless otherwise indicated

G. Unless otherwise spplecified or noted in drawings, tool mortar joints with a concave surface except for the following:

1. Walls to be plastered shall have flush cut or sacked mortar joints.
2. Walls to be concealed by other materials shall have flush cut joints.
3. For joints facing cavities/air spaces, strike joints flush. No voids allowed.

3.7 CAVITY WALLS

A. Bond wythes of cavity walls together using one of the following methods:

1. Individual Metal Ties: Provide ties as shown installed in horizontal joints, but not less than one metal tie for 1.77 sq. ft. of wall area spaced not to exceed 16 inches o.c. horizontally and 16 inches o.c. vertically. Stagger ties in alternate courses. Provide additional ties within 12 inches of openings and space not more than 36 inches apart around perimeter of openings. At intersecting and abutting walls, provide ties at no more than 24 inches o.c. vertically.

    a. Where bed joints of wythes do not align, use adjustable-type (two-piece-type) ties.
    b. Where one wythe is of clay masonry and the other of concrete masonry, use adjustable-type (two-piece-type) ties to allow for differential movement regardless of whether bed joints align.

2. Masonry-Joint Reinforcement: Installed in horizontal mortar joints.

    a. Where bed joints of both wythes align, use ladder-type reinforcement extending across both wythes.
    b. Where bed joints of wythes do not align, use adjustable-type (two-piece-type) reinforcement with continuous horizontal wire in facing wythe attached to ties.
    c. Where one wythe is of clay masonry and the other of concrete masonry, use adjustable-type (two-piece-type) reinforcement with continuous horizontal wire in facing wythe attached to ties to allow for differential movement regardless of whether bed joints align.

3. Header Bonding: Provide masonry unit headers extending not less than 3 inches into each wythe. Space headers not more than 8 inches clear horizontally and 16 inches clear vertically.
4. Masonry-Veneer Anchors: Comply with requirements for anchoring masonry veneers.

B. Bond wythes of cavity walls together using bonding system indicated on Drawings.

C. Keep cavities clean of mortar droppings and other materials during construction. Bevel beds away from cavity, to minimize mortar protrusions into cavity. Do not attempt to trowel or remove mortar fins protruding into cavity.

D. Parge cavity face of backup wythe in a single coat approximately 3/8 inch thick. Trowel face of parge coat smooth.

E. Installing Cavity Wall Insulation: Place small dabs of adhesive, spaced approximately 12 inches 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 ANCHORED MASONRY VENEERS

A. Anchor masonry veneers to concrete and masonry backup with masonry-veneer anchors to comply with the following requirements:

1. Fasten screw-attached anchors through sheathing to wall framing and to concrete and masonry backup with metal fasteners of type indicated. Use two fasteners unless anchor design only uses one fastener.
2. Embed tie sections in masonry joints.
3. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
4. Space anchors as indicated, but not more than 18 inches o.c. vertically and 24 inches o.c. horizontally, with not less than one anchor for each 2 sq. ft. of wall area. Install additional anchors within 12 inches of openings and at intervals, not exceeding 8 inches, around perimeter.
5. Space anchors as indicated, but not more than 16 inches o.c. vertically and 25 inches o.c. horizontally, with not less than one anchor for each 2.67 sq. ft. of wall area. Install additional anchors within 12 inches of openings and at intervals, not exceeding 36 inches, around perimeter.
6. Space anchors as indicated, but not more than 18 inches o.c. vertically and horizontally. Install additional anchors within 12 inches of openings and at intervals, not exceeding 24 inches, around perimeter.

B. Provide not less than 2 inches of airspace between back of masonry veneer and face of sheathing or insulation.

1. Keep airspace clean of mortar droppings and other materials during construction. Bevel beds away from airspace, to minimize mortar protrusions into airspace. Do not attempt to trowel or remove mortar fins protruding into airspace.

3.9 MASONRY-CELL FILL

A. Pour loose-fill insulation into cavities to fill void spaces. Maintain inspection ports to show presence of fill at extremities of each pour area. Close the ports after filling has been confirmed. Limit the fall of fill to one story high, but not more than 20 feet.

B. Install molded-polystyrene insulation units into masonry unit cells before laying units.

3.10 MASONRY-JOINT REINFORCEMENT

A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.

1. Space reinforcement not more than 16 inches o.c.
2. Space reinforcement not more than 8 inches o.c. in foundation walls and parapet walls.
3. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings in addition to continuous reinforcement.

B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.

C. Provide continuity at wall intersections by using prefabricated T-shaped units.

D. Provide continuity at corners by using prefabricated L-shaped units.

E. Cut and bend reinforcing units as directed by manufacturer for continuity at[corners,] returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.11 ANCHORING MASONRY TO STRUCTURAL STEEL AND CONCRETE

A. Anchor masonry to structural steel and concrete, where masonry abuts or faces structural steel or concrete, to comply with the following:

1. Provide an open space not less than 1 inch wide between masonry and structural steel or concrete unless otherwise indicated. Keep open space free of mortar and other rigid materials.
2. Anchor masonry with anchors embedded in masonry joints and attached to structure.
3. Space anchors as indicated, but not more than 16 inches o.c. vertically and 16 inches o.c. horizontally.

3.12 CONTROL AND EXPANSION JOINTS

A. General: Install control- and expansion-joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.

B. Form control joints in concrete masonry using one of the following methods:

1. Fit bond-breaker strips into hollow contour in ends of CMUs on one side of control joint. Fill resultant core with grout, and rake out joints in exposed faces for application of sealant.
2. Install preformed control-joint gaskets designed to fit standard sash block.
3. Install interlocking units designed for control joints. Install bond-breaker strips at joint. Keep head joints free and clear of mortar, or rake out joint for application of sealant.
4. Install temporary foam-plastic filler in head joints, and remove filler when unit masonry is complete for application of sealant.

C. Provide horizontal, pressure-relieving joints by either leaving an airspace or inserting a compressible filler of width required for installing sealant and backer rod specified in Section 079200 "Joint Sealants," but not less than 3/8 inch.

1. Locate horizontal, pressure-relieving joints beneath shelf angles supporting masonry.

3.13 LINTELS

A. Install steel lintels where indicated.

B. Provide masonry lintels where shown and where openings of more than 12 inches for brick-size units and 24 inches for block-size units are shown without structural steel or other supporting lintels.

C. Provide minimum bearing of 8 inches at each jamb unless otherwise indicated.

3.14 FLASHING, WEEP HOLES, AND CAVITY 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. Install cavity vents at shelf angles, ledges, and other obstructions to upward flow of air in cavities, and where indicated.

B. Install flashing as follows unless otherwise indicated:

1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, 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.
2. At multiwythe masonry walls, including cavity walls, extend flashing through outer wythe, turned up a minimum of 8 inches, and through inner wythe to within 1/2 inch of the interior face of wall in exposed masonry. Where interior face of wall is to receive furring or framing, carry flashing completely through inner wythe and turn flashing up approximately 2 inches on interior face.
3. At masonry-veneer walls, extend flashing through veneer, across airspace behind veneer, and up face of sheathing at least 8 inches; with upper edge tucked under water-resistive barrier, lapping at least 4 inches. Fasten upper edge of flexible flashing to sheathing through termination bar.
4. At lintels and shelf angles, extend flashing a minimum of 6 inches into masonry at each end. At heads and sills, extend flashing 6 inches at ends and turn up not less than 2 inches to form end dams.
5. Interlock end joints of ribbed sheet metal flashing by overlapping ribs not less than 1-1/2 inches or as recommended by flashing manufacturer, and seal lap with elastomeric sealant complying with requirements in Section 079200 "Joint Sealants" for application indicated.
6. Install metal drip edges with ribbed sheet metal flashing by interlocking hemmed edges to form hooked seam. Seal seam with elastomeric sealant complying with requirements in Section 079200 "Joint Sealants" for application indicated.

7. Install metal drip edges beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch back from outside face of wall, and adhere flexible flashing to top of metal drip edge.
8. Install metal flashing termination beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch back from outside face of wall, and adhere flexible flashing to top of metal flashing termination.
9. Cut flexible flashing off flush with face of wall after masonry wall construction is completed.

C. Install single-wythe CMU flashing system in bed joints of CMU walls where indicated to comply with manufacturer's written instructions. Install CMU cell pans with upturned edges located below face shells and webs of CMUs above and with weep spouts aligned with face of wall. Install CMU web covers so that they cover upturned edges of CMU cell pans at CMU webs and extend from face shell to face shell.

D. Install reglets and nailers for flashing and other related construction where they are shown to be built into masonry.

E. Install weep holes in exterior wythes and veneers in head joints of first course of masonry immediately above embedded flashing.

1. Use specified weep/cavity vent products or open-head joints to form weep holes.
2. Use wicking material to form weep holes above flashing under brick sills. Turn wicking down at lip of sill to be as inconspicuous as possible.
3. Space weep holes 24 inches o.c. unless otherwise indicated.
4. Space weep holes formed from plastic tubing or wicking material 16 inches o.c.
5. Cover cavity side of weep holes with plastic insect screening at cavities insulated with loose-fill insulation.
6. Trim wicking material flush with outside face of wall after mortar has set.

F. Place pea gravel in cavities as soon as practical to a height equal to height of first course above top of flashing, but not less than 2 inches, to maintain drainage.

1. Fill cavities full height by placing pea gravel in cavities as masonry is laid, so that at any point, masonry does not extend more than 24 inches above top of pea gravel.

G. Place cavity drainage material in [cavities] [airspace behind veneers] to comply with configuration requirements for cavity drainage material in "Miscellaneous Masonry Accessories" Article.

H. Install cavity vents in head joints in exterior wythes at spacing indicated. Use specified weep/cavity vent products to form cavity vents.

1. Close cavities off vertically and horizontally with blocking in manner indicated. Install through-wall flashing and weep holes above horizontal blocking.

3.15 REINFORCED UNIT MASONRY

A. 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 that of other loads that may be placed on them during construction.

B. Placing Reinforcement: Comply with requirements in TMS 602/ACI 530.1/ASCE 6.

C. 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 TMS 602/ACI 530.1/ASCE 6 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
2. Limit height of vertical grout pours to not more than 60 inches.
3. Use grout to fill masonry. Do not use mortar.
4. Reinforcement must be in place prior to grouting.
5. Install vertical grout dams at maximum horizontal spacing of 30 feet to control horizontal flow of grout. For walls partially grouted, use expanded metal lath mesh or other material that will not interfere with bond to restrict grout into only those cells that are to be grouted.
6. After mortar joints have set, remove protruding mortar fins that excessively constrict grout space.
7. Do not place grout until entire height of masonry to be grouted has attained sufficient strength to resist grout pressure.
8. Grout to 1½ inches below top of masonry units for each lift to form and interlock with subsequent masonry and grouting. Where bond beams occur, stop grout pour minimum 1½ inch below top of masonry. At top of masonry, fill grout space flush with tops of units and consolidate.
9. Solidly grout cells and spaces containing reinforcing steel for partially grouted walls. For solid grouted walls, grout all cells.
10. Consolidate grout using mechanical vibrator, and reconsolidate using mechanical vibrator after excess water is absorbed into masonry units.

    a. Do not consolidate or reconsolidate self-consolidating grout.

D. Low Lift Grouting:

1. Construct masonry wall up to 5 feet 4 inches (vertically) at a time. Minimum height of grout lift creating a cold joint shall equal splice length of reinforcing indicated in drawings.
2. Install vertical and horizontal reinforcing steel, anchors, and embedded items as masonry work progresses.
3. Grout walls in 5 foot 4 inch maximum lifts, consolidating and reconsolidating each lift. Stop grout 1½ inch below top of top course.

a. Do not consolidate or reconsolidate self-consolidating grout.

E. High Lift Grouting:

1. Construct masonry wall up to 24 feet maximum without grouting.
2. Provide cleanout openings at base of wall.

a. At vertical reinforcing bars.
b. At spacing of no more than 32 inches on center for solid grouted walls.
c. At spacing of no more than 48 inches on center for partially grouted walls.

3. Install horizontal reinforcing steel, anchors, and embedded items as masonry work progresses. Vertical reinforcing steel may be placed during or after wall is constructed, but must be secured in place prior to grouting.
4. Provide positioners to secure vertical reinforcement in correct location.
5. Remove mortar droppings and other debris through cleanouts at base of wall. After cleanouts have been inspected, seal and brace cleanouts.
6. Grout walls in 5 foot 4 inch maximum lifts, consolidating and reconsolidating each lift.

a. Do not consolidate or reconsolidate self-consolidating grout.
b. Alternate Lift Height: Where the following conditions are met, maximum lift height may be increased to 12 foot 8 inches:
I. Masonry wall must be cured for a minimum of 4 hours.
II. No intermediate horizontal reinforcing steel (bond beam) is present.

7. If grouting is to be stopped for more than one hour during a pour, stop grout 1½ inch below top of uppermost grouted unit (top of pour). Where additional masonry is to be laid above a given pour, stop grout 1½ inch below top of top course.

3.16 FIELD QUALITY CONTROL

A. Testing and Inspecting: Director's Representative will engage a special inspector and a qualified testing agency to perform tests and inspections in accordance with the requirements of BDC 406 Summary of Special Inspections and BDC 406.1 Statement of Special Inspections and as directed by the Code Compliance Manager.

3.17 PARGING

A. Parge exterior faces of below-grade masonry walls, where indicated, in two uniform coats to a total thickness of 3/4 inch. Dampen wall before applying first coat, and scarify first coat to ensure full bond to subsequent coat.

B. Use a steel-trowel finish to produce a smooth, flat, dense surface with a maximum surface variation of 1/8 inch per foot. Form a wash at top of parging and a cove at bottom.

C. Damp-cure parging for at least 24 hours and protect parging until cured.

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, where indicated.

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 Director’s Representative'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 or polyethylene film and waterproof masking tape.
4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
5. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
6. Clean concrete masonry by applicable cleaning methods indicated in NCMA TEK 8-4A.
7. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.
8. Clean stone trim to comply with stone supplier's written instructions.
9. Clean limestone units to comply with recommendations in ILI's "Indiana Limestone Handbook."

3.19 MASONRY WASTE DISPOSAL

A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

B. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.

1. Crush masonry waste to less than 4 inches in each dimension.
2. Mix masonry waste with at least two parts of specified fill material for each part of masonry waste.
3. Do not dispose of masonry waste as fill within 18 inches of finished grade.

C. Masonry Waste Recycling: Return broken CMUs not used as fill to manufacturer for recycling.

D. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above or recycled, and other masonry waste, and legally dispose of off Director's Representative's property.

END OF SECTION 042000

SECTION 051200 - STRUCTURAL STEEL FRAMING

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:

1. Structural steel.
2. Shear stud connectors.
3. Shrinkage-resistant grout.

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.
3. Section 099123 "Interior Painting" for painting requirements.

1.3 DEFINITIONS

A. Structural Steel: Elements of the structural frame indicated on Drawings and as described in ANSI/AISC 303.

B. Seismic-Load-Resisting System: Elements of structural-steel frame designated as "SLRS" or along grid lines designated as "SLRS" on Drawings, including columns, beams, and braces and their connections.

C. Heavy Sections: Rolled and built-up sections as follows:

1. Shapes included in ASTM A6 with flanges thicker than 1-1/2 inches.
2. Welded built-up members with plates thicker than 2 inches.
3. Column base plates thicker than 2 inches.

D. Protected Zone: Structural members or portions of structural members indicated as "protected zone" on Drawings. Connections of structural and nonstructural elements to protected zones are limited.

E. Demand-Critical Welds: Those welds, the failure of which would result in significant degradation of the strength and stiffness of the seismic-load-resisting system and which are indicated as "demand critical" or "seismic critical" on Drawings.

1.4 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.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: A minimum of 14 days prior to the initial submission of shop drawings, a meeting will be held at the Site for the purpose of reviewing the Contract Documents and discussing the requirements and procedures for submittals and for the Work. The meeting will be conducted by the Director’s Representative. The Contractor and the fabricator’s project coordinator and certified welding inspector must attend the meeting. The Director’s Representative and a Representative of OGS D&C Structural Engineering will also attend.

1.6 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. General: Review of submittals will be for general conformance only. Compliance with requirements for materials, fabrication, erection, and dimensioning of structural steel shall be Contractor's responsibility. Resubmitted shop drawings shall have revisions identified and dated.

C. Manufacturer’s installation instructions shall be provided along with product data.

D. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

E. Product Data:

1. Structural-steel materials.
2. High-strength, bolt-nut-washer assemblies.
3. Shear stud connectors.
4. Anchor rods.
5. Threaded rods.
6. Forged-steel hardware.
7. Slide bearings.
8. Prefabricated building columns.
9. Shop primer.

10. Galvanized-steel primer.
11. Etching cleaner.
12. Galvanized repair paint.
13. Shrinkage-resistant grout.

F. Submit an Environmental Product Declaration (EPD) from the manufacturer for structural steel within this specification section, if available. A statement of the contractor's good faith effort to obtain the EPD shall be provided if not available.

1. Manufacturer-provided EPDs must be Product Specific Type III (Third-Party Reviewed), in adherence with ISO 14025 *Environmental labels and declarations*, ISO 14044 *Environmental management – Life cycle assessment*, and ISO 21930 *Core rules for environmental product declarations of construction products and services.*

G. Shop Drawings: Show fabrication of structural-steel components.

1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
2. Include erection drawings indicating sizes, weights, and locations of all structural members. Including field installation details in Erection Drawings.
3. Include embedment and base plate Drawings.
4. 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.
5. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical, high-strength bolted connections.
6. Identify members and connections of the seismic-load-resisting system.
7. Indicate locations and dimensions of protected zones.
8. Identify demand-critical welds.
9. Identify members not to be shop primed.
10. Reference Contract Drawing number and addendum number in each shop and Erection drawings.
11. Shop and Erection drawings shall show:
    a. Details including cuts, copes, camber, connections, holes, bolts, and other pertinent information.
    b. Connection design loads.
    c. Material, including ASTM designations and grades or manufacturer's data as appropriate.
    d. Location of shop-welded masonry anchors and weldable reinforcement. Coordinate with Division 4 and Masonry Contractor.

H. Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs): Provide in accordance with AWS D1.1 for each welded joint whether prequalified or qualified by testing including the following:

1. Power source (constant current or constant voltage).
2. Electrode manufacturer and trade name, for demand-critical welds.

I. Material Data: Submit to Special Inspector and Engineer laboratory test reports and other data as required to show compliance with specifications. Submit producer's or manufacturer's specifications and installation instructions for the following products:

1. Structural steel, including certified copies of mill reports covering chemical and physical properties.
2. High-strength bolts, including nuts and washers.
3. Unfinished bolts and nuts.
4. Structural steel primer paint if used.
5. Welding electrodes.
6. Post-installed anchors (expansion, sleeve, or chemical adhesive) if used.

J. 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 in New York State responsible for their preparation.

1. Submit proposed connection types and calculations for review before preparing detailed shop drawings.
2. Submit connection calculations in accordance with Option 3 of AISC *Code of Standard Practice for Steel Buildings and Bridges*. Calculations shall be stamped by a licensed Professional Engineer in New York State (Connection Design Engineer) retained by Fabricator.
3. Connections shown on shop drawings shall be coordinated with the submitted connection calculations. Submit written confirmation from Fabricator's Connection Design Engineer that the shop and erection drawings accurately incorporate the connection designs.

K. Qualification Data: For Installer, fabricator and testing agency.

L. Welding certificates.

M. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

N. Mill test reports for structural-steel materials, including chemical and physical properties.

O. 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.

P. Survey of existing conditions.

Q. Source quality-control reports.

1. Documentation to confirm compliance with General Conditions Article 25.4 Domestic Steel.

R. Field quality-control reports.

1.7 QUALITY ASSURANCE

A. Fabricator Qualifications: The fabricator of the structural steel shall be regularly engaged in the fabrication of structural steel for a minimum of 5 years and shall be subject to the approval of the Director.

1. AISC Quality Certified Fabricators (latest list issued) are approved.

B. Installer Qualifications: The structural steel erector shall be regularly engaged in the erection of structural steel for a minimum of 5 years and shall be subject to the approval of the Director.

C. Shop-Painting Applicators: Qualified in accordance with AISC's Sophisticated Paint Endorsement P1, Endorsement P2, Endorsement P3 or to SSPC-QP 3.

D. Welding Qualifications: Qualify procedures and personnel in accordance with AWS D1.1.

1. Welders and welding operators performing work on bottom-flange, demand-critical welds shall pass the supplemental welder qualification testing, as required by AWS D1.8. FCAW-S and FCAW-G shall be considered separate processes for welding personnel qualification.
2. AWS C5.4 “Recommended Practices for Stud Welding.”

E. Research Council on Structural Connections (RCSC), Educational Bulletin No. 4, "Recommended Erection and Field Inspection Procedures for High-Strength Bolts in Structural Steel Assemblies.”

F. American Hot-Dip Galvanizers Association, Inc.; Zinc Institute Inc.

1. "Inspection Manual for Hot-Dip Galvanized Products.”

G. If the value of the contract exceeds $100,000 all structural steel, reinforcing steel and other major steel items to be incorporated in the Work of this Contract shall be produced and made in whole or substantial part in the United States, its territories or possessions.

1.8 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 Director’s Representative'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, Grade F1852 bolt assemblies and for retesting bolt assemblies after lubrication.

C. Store Material in horizontal position on supports above ground.

D. Protect from weather, and keep free of dirt and debris.

E. Handle material carefully so it is not bent or marred.

F. Repair or replace damaged materials. Do not incorporate in work fastener components that accumulate rust and dirt.

1.9 WORKMANSHIP

A. Contractor shall be responsible for correction of work not conforming to specified requirements. Correct deficient work as directed by Directors Representative.

B. Remove work found to be defective. Provide acceptable work.

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 341.
3. ANSI/AISC 360.
4. RCSC's "Specification for Structural Joints Using High-Strength Bolts."

B. Connection Design Information:

1. Option 2: Fabricator's experienced steel detailer shall select or complete connections in accordance with ANSI/AISC 303.

a. Select and complete connections using schematic details indicated and ANSI/AISC 36.
b. Use Allowable Stress Design; data are given at service-load level.

2. Option 3 and 3A: Design connections in accordance with ANSI/AISC 303 by fabricator's qualified professional engineer. Member reinforcement at connections is indicated on Drawings.

a. Use Allowable Stress Design; data are given at service-load level.

3. Option 3 and 3B: 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 fully restrained.

D. Minimum Capacity of Beam Connections: For connections not detailed, provide connection capacity for shear, axial, and moment reactions shown in drawings. If reactions are not shown in drawings, base on either Allowable Stress Design or Load and Resistance Factor Design as follows:

1. Shear connections:

    a. At least 50 percent of uniform load from Maximum-Uniform Load Tables in AISC *Steel Construction Manual*, Part 3, for given steel member (ASD or LRFD, as appropriate).
    b. At least 70 percent of uniform load from Maximum Uniform Load Tables in AISC Steel Construction Manual, Part 3, for beams and girders with shear connectors (ASD or LRFD, as appropriate).
    c. Concentrated loads near supports must be added.

2. Moment Connections:

    a. Design moment connections for full bending capacity for given steel member.

E. Beam connections to columns shall be in accordance with AISC and comply with the following:

1. Use AISC Double-Angle Shear Connection for beam connections welded to faces of HSS columns having a workable flat of 6.75 inches or greater and to faces of W column flanges that have a width of 6.75 inches or greater
2. Use AISC Double-Angle Shear Connection for beam connections bolted to faces of W column flanges that have a width greater than 6 inches.
3. Use AISC Single-Plate Shear Connection for beam connections to faces of columns smaller than required for double-angle shear connection.
4. AISC Seated Connections are permitted as an alternative to double-angle and single-plate shear connections.

F. Use AISC Single-Plate, Single-Angle, Double-Angle, or End-Plate Shear Connection for beam-to-beam connections.

G. Construction: Combined system of braced frame and shear walls.

2.2 STRUCTURAL-STEEL MATERIALS

A. W-Shapes: ASTM A992.

B. Channels, Angles: ASTM A36 or ASTM A572, Grade 50.

C. Plate and Bar: ASTM A36 or ASTM A572, Grade 50.

D. Corrosion-Resisting (Weathering) Structural-Steel Shapes, Plates, and Bars: ASTM A588, 50 ksi.

E. Cold-Formed Hollow Structural Sections: ASTM A500, Grade C structural tubing.

F. Corrosion-Resisting (Weathering), Cold-Formed Hollow Structural Sections: ASTM A847 structural tubing.

G. Steel Pipe: ASTM A53, Type E or Type S, Grade B.

1. Weight Class: Extra strong.
2. Finish: Black except where indicated to be galvanized.

H. Steel Castings: ASTM A216, Grade WCB, with supplementary requirement S11.

I. Steel Forgings: ASTM A668.

J. Welding Electrodes: Comply with AWS requirements

K. Stainless Steel Plates: ASTM A 276, Type 304 or 316; smooth finish.

L. Stainless Steel Pipe: ASTM A 276, Type 304 or 316; or ASTM A 312, Grade TP304 or TP316; smooth finish.

M. Hot-Dip Galvanizing: Hot-dip galvanize after fabricating in accordance with ASTM A 123. Restraighten members after galvanizing if necessary to be square and true. Items to be hot-dip galvanized are identified in drawings.

N. Galvanizing Touch-up Compound: Zinc-rich, anti-corrosion paint complying with ASTM A780. “ZRC Galvilite” by ZRC Worldwide; “Roval ZC Galvanizing Repair” by Roval Corporation; or accepted equivalent. Use for field touch-up of hot-dip galvanized surfaces.

2.3 BOLTS AND CONNECTORS

A. High-Strength A325 Bolts, Nuts, and Washers: ASTM F3125, Grade A325, Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436, Type 1, hardened carbon-steel washers; all with plain finish.

1. Direct-Tension Indicators: ASTM F959, Type 325-1, compressible-washer type with plain finish.

B. High-Strength A490 Bolts, Nuts, and Washers: ASTM F3125, Grade A490, Type 1, heavy-hex steel structural bolts or Grade F2280 tension-control, bolt-nut-washer assemblies with splined ends; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436, Type 1, hardened carbon-steel washers; all with plain finish.

1. Direct-Tension Indicators: ASTM F959, Type 490-1, compressible-washer type with plain finish.

C. Zinc-Coated High-Strength A325 Bolts, Nuts, and Washers: ASTM F3125, Grade A325, Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436, Type 1, hardened carbon-steel washers.

1. Finish: Hot-dip or mechanically deposited zinc coating.
2. Direct-Tension Indicators: ASTM F959, Type 325-1, compressible-washer type with mechanically deposited zinc coating, baked epoxy-coated finish.

D. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F3125, Grade F1852, Type 1, heavy-hex or round head assemblies, consisting of steel structural bolts with splined ends; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436, Type 1, hardened carbon-steel washers.

1. Finish: Plain finish. At exterior conditions and galvanized steel, hot dip or mechanically deposited zink coating.

E. Shear Stud Connectors: ASTM A108, AISI C-1015 through C-1020, headed-stud type, cold-finished carbon steel; AWS D1.1, Type B.

1. Connector to project a minimum of 1 ½ inches above top of deck.

F. Twist-Off-Type, Tension-Control Bolt Assemblies: ASTM F1852 or ASTM F2280

G. High-Strength Bolts, Galvanized: ASTM A 325, Type 1.

H. Threaded Rods: ASTM A 36 unless otherwise indicated in Drawings.

I. Nuts: ASTM A 563. Grade and finish to match bolt or rod type.

J. Washers: ASTM F 436 (ASTM F 844 for ASTM A 307 bolts, A 36 rods and F 1554 Grade 36 anchor rods). Finish to match bolt or rod type.

K. Direct Tension Indicator Washers: ASTM F959 for use in pretensioned and slip-critical joints where direct-tension-indicator method is used. DTI "Squirter" as manufactured by Applied Bolting Technology or accepted equivalent.

L. Electrodes: E70 and in accordance with AWS.

1. E308 for Type 304 stainless steel.
2. 2. E316 for Type 316 stainless steel.

M. Expansion Anchors: “Kwik-Bolt 3” or “Kwik-Bolt-TZ” by Hilti; “Trubolt Wedge Anchors” by ITW Ramset/Red Head; “Power-Stud” by Powers Fasteners; “Wedge-All” by Simpson/Strong-Tie; or accepted equivalent.

N. Sleeve Anchors: “HLC Sleeve Anchor” by Hilti; “Dynabolt Sleeve Anchor” by ITW Ramset/Red Head; “Power-Bolt” by Powers Fasteners; “Sleeve-All” by Simpson/Strong-Tie; or accepted equivalent.

O. Screw Anchors: “Kwik HUS-EZ Screw Anchor” by Hilti; “Large Diameter Tapcon (LDT) Anchor” by ITW Ramset/Red Head; “Wedge-Bolt +” by Powers Fasteners; “Titen HD” by Simpson/Strong-Tie; or accepted equivalent.

P. Thermal Isolation Material (TIM): High-performance, fire-retardant, fiberglass-reinforced laminate composite for use between flanged connections of internal and external steelwork to limit thermal bridging, as manufactured by Fabreeka, Inc.; “Series 625 Extren” by Strongwell; or Type TBG300 by Farrat, Inc.; or accepted equivalent.

Q. High-Strength Bolts, Stainless Steel: ASTM F 593, Alloy Group 1 Condition CW.

R. Stainless Steel Nuts: ASTM F 594, Alloy Group 1 Condition CW.

S. Chemical Adhesive Anchors:

1. Anchors to solid concrete:

   a. Anchors for use when base material temperature is 0°F or greater: “HIT-Ice” by Hilti; “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 200 Safe Set System with HIT-Z Rod or Hollow Drill Bit System” or “HIT-RE 500-SD” by Hilti; “Epcon C6” by ITW Ramset/Red Head; “T308 Plus” by Powers Fasteners; “ET Epoxy-Tie” by Simpson/Strong-Tie; or accepted equivalent.

2. Anchors 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; “T308 Plus” by Powers Fasteners; “ET Epoxy-Tie” by Simpson/Strong-Tie; or accepted equivalent.
   c. Provide manufacturer’s standard screen tubes for use with anchors.

2.4 RODS

A. Unheaded Anchor Rods: ASTM F1554, Grade 36 or ASTM F1554, Grade 55, weldable.

1. Configuration: Straight].
2. Nuts: ASTM A563 heavy hex carbon steel.
3. Plate Washers: ASTM A36 carbon steel.
4. Washers: ASTM F436, Type 1, hardened carbon steel.
5. Finish: Plain.

B. Headed Anchor Rods: ASTM F1554, Grade 36 or ASTM F1554, Grade 55, weldable straight.

1. Nuts: ASTM A563 heavy hex carbon steel.
2. Plate Washers: ASTM A36 carbon steel.
3. Washers: ASTM F436, Type 1, hardened carbon steel.
4. Finish: Plain.

C. Threaded Rods: ASTM A36 unless otherwise indicated.

1. Nuts: ASTM A63 heavy-hex carbon steel.
2. Washers: ASTM F436, Type 1, hardened or [ASTM A36 carbon steel.
3. Finish: Plain.

D. Headed Stud Anchors: ASTM A 108, AWS Type B, minimum tensile strength 65 ksi, solid-fluxed and in accordance with AWS. Use arc shield (ferrule) with each anchor. Size as indicated in drawings.

E. Submit written description of ability.

F. At completion of fabrication, Fabricator shall submit Certificate of Compliance to Special Inspector and Code Enforcement Official stating work was performed in accordance with approved Construction Documents in accordance with Chapter 17 of the *International Building Code* (IBC) as referenced by the *New York State Uniform Code.*

2.5 FORGED-STEEL STRUCTURAL HARDWARE

A. Clevises and Turnbuckles: Made from cold-finished carbon-steel bars, ASTM A108, AISI C-1035.

B. Eye Bolts and Nuts: Made from cold-finished carbon-steel bars, ASTM A108, AISI C-1030.

C. Sleeve Nuts: Made from cold-finished carbon-steel bars, ASTM A108, AISI C-1018.

2.6 PRIMER

A. Steel Primer:

1. Comply with Section 099123 "Interior Painting."
2. SSPC-Paint 23, latex primer.
3. Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer complying with MPI#79 and compatible with topcoat.

B. Galvanized-Steel Primer: MPI#26.

1. Etching Cleaner: MPI#25, for galvanized steel.
2. Galvanizing Repair Paint: MPI#18 or SSPC-Paint 20 ASTM A780.

2.7 SHRINKAGE-RESISTANT GROUT

A. Metallic, Shrinkage-Resistant Grout: ASTM C1107, factory-packaged, metallic aggregate grout, mixed with water to consistency suitable for application and a 30-minute working time.

B. Nonmetallic, Shrinkage-Resistant Grout: ASTM C1107, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.8 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 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.

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 and manufacturer's written instructions.

G. Steel Wall-Opening Framing: Select true and straight members for fabricating steel wall-opening framing to be attached to structural-steel frame. Straighten as required to provide uniform, square, and true members in completed wall framing. Build up welded framing, weld exposed joints continuously, and grind smooth. Limit sweep to 1/8 inch for each 10 feet of length.

H. Welded-Steel Door Frames: Build up welded-steel door frames attached to structural-steel frame. Weld exposed joints continuously and grind smooth. Plug-weld fixed steel bar stops to frames. Secure removable stops to frames with countersunk machine screws, uniformly spaced not more than 10 inches o.c. unless otherwise indicated on Drawings.

I. 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. Do not thermally cut bolt holes or enlarge holes by burning.
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

J. Fabricate and assemble structural material in shop to greatest extent possible.

K. Fit stiffeners neatly between girder flanges. Where tight fits are required to transmit bearing, mill or grind ends of stiffeners for even bearing against flange.

L. Provide camber as indicated in drawings. Where no camber is indicated, fabricate steel with mill camber up. Camber by mechanical means or by use of V-heat up to 1,200 degrees F maximum.

M. Provide holes for securing other work to structural steel framing. Comply with AISC Specification 360, Section M2 for surface roughness for holes.

N. Anchor Rods: Furnish anchor rods, leveling plate, or other devices necessary for setting anchoring rods required for securing structural steel to foundation, concrete, or masonry.

2.9 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 Pretensioned or Slip critical is indicated.

B. Weld Connections: Comply with AWS D1.1 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.

2.10 GALVANIZING

A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel in accordance with ASTM A123.

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.

2.11 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 2.
2. SSPC-SP 3.
3. SSPC-SP 7 (WAB)/NACE WAB-4.
4. SSPC-SP 11.
5. SSPC-SP 6 (WAB)/NACE WAB-3.
6. SSPC-SP 10 (WAB)/NACE WAB-2.
7. SSPC-SP 5 (WAB)/NACE WAB-1.
8. SSPC-SP 8.

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.

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.

2.12 SOURCE QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform shop tests and inspections.

1. Allow testing agency access to places where structural-steel work is being fabricated or produced to perform tests and inspections.
2. Bolted Connections: Inspect and test shop-bolted connections in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts."
3. Welded Connections: Visually inspect shop-welded connections in accordance with AWS D1.1 and the following inspection procedures, at testing agency's option:

    a. Liquid Penetrant Inspection: ASTM E165.
    b. Magnetic Particle Inspection: ASTM E709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
    c. Ultrasonic Inspection: ASTM E164.
    d. Radiographic Inspection: ASTM E94.

4. In addition to visual inspection, test and inspect shop-welded shear stud connectors in accordance with requirements in AWS D1.1 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 stud connector.
    b. Conduct tests in accordance with requirements in AWS D1.1 on additional shear stud connectors if weld fracture occurs on shear stud connectors already tested.

5. Prepare test and inspection reports.

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.

1. Prepare a certified survey of existing conditions. Include bearing surfaces, anchor rods, bearing plates, and other embedments showing dimensions, locations, angles, and elevations.

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.

1. Do not remove temporary shoring supporting composite deck construction and structural-steel framing until cast-in-place concrete has attained its design compressive strength.

3.3 PROTECTION

A. Do not use members for storage or work platforms until permanently secured.

B. Do not exceed load capacity of members with construction loads

3.4 WELDING TO EXISTING STEEL

A. Clean area to be welded using mechanical grinders and solvents to remove paint, rust, and other materials.

B. Use E7018, low-hydrogen electrodes stored in ovens as prescribed by AWS. Preheat steel to be welded and maintain temperatures as prescribed by AWS.

3.5 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.
2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.

E. Splice members only where indicated.

F. Do not use thermal cutting during erection unless approved by the Director’s Representative. Finish thermally cut sections within smoothness limits in AWS D1.1.

G. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

H. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact after assembly.

I. Contractor may field modify anchor rods and embedded structural supports incorrectly located or damaged after installation as indicated in Section **033000** and tested by Testing Agency. Submit documentation showing proposed field modification for review and acceptance by Engineer before beginning.

J. Install snug-tightened, pretensioned, and slip-critical bolted joints to comply with RCSC “Specification for Structural Joints Using High-Strength Bolts” and to comply with RCSC Educational Bulletin No. 4, “Recommended Erection and Field Inspection Procedures for High-Strength Bolts in Structural Steel Assemblies.” Compliance with RCSC Specifications and Bulletins is mandatory for installation of all high-strength bolted connections including pretensioned or slip-critical joints.

K. Install field connections and framing as detailed in Contract Documents and accepted shop drawings. If Contractor finds field modifications are necessary, submit documentation of proposed field modifications to Architect and Engineer for review and acceptance before beginning

3.6 SHEAR CONNECTORS

A. General: Installation shall be in accordance with AWS Code, using automatically timed connector welding equipment.

B. Clean welding surface before installing connectors.

C. Lay out shear connectors prior to welding.

D. For beams perpendicular to deck span, distribute shear connectors as follows unless noted otherwise.

1. Equally space (approximately) connectors in one row along beam at a maximum spacing of 2 feet on center. Notify Engineer if there are insufficient connectors to space at 2 feet on center throughout the length of the beam.
2. If there are connectors remaining, assign one connector to every other rib without a connector starting at each end of beam.
3. If there are still connectors remaining, assign one connector to each rib without a connector, again starting at each end of beam.
4. If number of connectors exceeds number of ribs, assign one connector to each rib. Assign a second connector to each rib starting at each end of beam until all connectors are used. Weld connectors only after assigning is completed.

E. For beams parallel to deck span, distribute shear connectors as follows unless noted otherwise:

1. Equally space total number of connectors in one row along beam.
2. Connector spacing along beam shall not be closer than 4 1/2 inches on center.
3. For one row of connectors, locate connectors over beam web. For two rows of connectors, locate each row 1½ inches from center of beam web (3 inch gauge).

F. At start of each day's production welding period and after welding equipment has been moved or changed, weld and test two test connectors. These connectors shall be bent to an angle of 30 degrees from vertical by striking with a hammer. If failure occurs in weld zone of either connector, correct or adjust welding operation. Two consecutive connectors shall be welded and found satisfactory before production welding can begin.

1. Where connectors are welded through metal deck, ten connectors shall be tested as described above. Connectors shall be on the same beam and through the same deck type and thickness. Ten consecutive connectors shall be welded and found satisfactory before production welding can begin.
2. Connector tests shall be performed each time conditions change (i.e., no deck to through deck, through one thickness or layer of deck to another thickness or multiple layers of deck, change of deck types).

G. Replace connectors that fail inspection by Testing/Inspecting Agency at no expense to the State.

H. Break ferrules away from connectors.

I. Do not weld when air temperature is below 0 degrees F or when welding surface is wet.

J. Beam top flange shall not be painted or galvanized in area of connector welding. Remove paint, galvanized coating, rust, and debris prior to welding connectors.

K. Number of shear connectors shown in drawings is based on deck type and size specified. Should deck be installed with characteristics different than specified deck, number of shear connectors shall be increased to provide equivalent capacity at no additional expense to the State.

3.7 TOLERANCES

A. Tolerances shall be within limits in AISC "Code of Standard Practice."

B. Fabrication and mill tolerance shall be within limits in AISC "Standard Mill Practice."

3.8 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 joints using bearing bolts with thread N for bolted connections unless indicated otherwise.

B. Weld Connections: Comply with AWS D1.1 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, 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.

3.9 REPAIR

A. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing, and repair galvanizing to comply with ASTM A780.

B. Touchup Painting:

1. Immediately after erection, clean exposed areas where primer is damaged or missing, and paint with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

a. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.

2. Cleaning and touchup painting are specified in Section 099123 "Interior Painting."

3.10 FIELD QUALITY CONTROL

A. Special Inspections: Director's Representative will engage a special inspector and a qualified testing agency to perform tests and inspections in accordance with the requirements of BDC 406 Summary of Special Inspections and BDC 406.1 Statement of Special Inspections and as directed by the Code Compliance Manager.

B. The Registered Design Professionals (RDPs) for Structural Engineering and Architecture will visit construction site at appropriate intervals to determine if work is in general conformance with Contract Documents and specifications. Notify RDPs 48 hours before anticipated time of completion for a given section of work so they may determine if site observations are required. If site observations are required, do not conceal framing until RDPs have had opportunity to make observations.

END OF SECTION 051200

SECTION 053100 - STEEL DECKING

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:

1. Roof deck.
2. Composite floor 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.
4. Section 099123 "Interior Painting" for repair painting of primed deck and finish painting of deck.

1.3 SUBMITTALS

A. General: Review of submittals is for general conformance only. Compliance with requirements for materials, fabricating, erection, and dimensions is Contractor's responsibility.

B. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

C. Manufacturer’s installation instructions shall be provided along with product data.

D. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

E. Product Data: For the following:

1. Roof deck.
2. Composite floor deck.
3. Noncomposite form deck.

F. Submit an Environmental Product Declaration (EPD) from the manufacturer for steel sheets within this specification section, if available. A statement of the contractor's good faith effort to obtain the EPD shall be provided if not available.

1. Manufacturer-provided EPDs must be Product Specific Type III (Third-Party Reviewed), in adherence with ISO 14025 *Environmental labels and declarations*, ISO 14044 *Environmental management – Life cycle assessment*, and ISO 21930 *Core rules for environmental product declarations of construction products and services.*

G. 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.
2. Reference Contract Drawing number including addendum number in each shop drawing
3. Panel layout.
4. Anchorage details showing locations and size of welds or mechanical fasteners if used.
5. Each condition requiring closure panels.
6. Location and attachment of accessories.
7. Supplementary framing furnished and required.
8. Special conditions; opening locations.
9. Side-lap fastening.
10. Material thickness.
11. Deck finish.
12. Cross-section of panel with dimensions.
13. Layout, size, material, and quantity of shear connectors.
14. Panels requiring shoring from panel layout.
15. Powder-actuated corrosion resistant fasteners.

H. Welding certificates.

I. Product Certificates: For each type of steel deck.

J. Product Test Reports: For tests performed by a qualified testing agency, indicating that each of the following complies with requirements:

1. Power-actuated mechanical fasteners.
2. Screw fasteners

K. Research Reports: For steel deck, from ICC-ES.

L. Source quality-control reports.

1. Documentation to confirm compliance with General Conditions Article 25.4 Domestic Steel.

M. Field quality-control reports.

1.4 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code - Sheet Steel."

B. Electrical Raceway Units: Provide UL-labeled cellular floor-deck units complying with UL 209 and listed in UL's "Electrical Construction Equipment Directory" for use with standard header ducts and outlets for electrical distribution systems.

C. If the value of the contract exceeds $100,000 all structural steel, reinforcing steel and other major steel items to be incorporated in the Work of this Contract shall be produced and made in whole or substantial part in the United States, its territories or possessions.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

C. Protect from weather and keep free of dirt and debris.

D. Ventilate to avoid condensation.

E. Replace damaged materials at no cost to the State.

1.6 WORKMANSHIP

A. Contractor shall be responsible for correction of work not conforming to specified requirements. Correct deficient work as directed by the Director’s Representative.

B. Remove work found to be defective. Provide acceptable work.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."

B. Steek Deck Institute (SDI)

a. "Design Manual for Composite Decks, Form Decks, and Roof Decks.”
b. “Diaphragm Design Manual.”

C. 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 the listings of another qualified testing agency.

D. For composite deck, limit construction deflections from deck weight, wet concrete, and 20-psf construction live load to 1/180 of span or 3/4 inch, whichever is smaller.

1. Limit deflection from total uniform live and superimposed dead load to 1/360 of span when deck acts compositely with concrete slab.

E. Limit construction deflection from concentrated live load of 300 pounds distributed over 1 foot to 1/240 of the span or 3/4 inch, whichever is smaller.

F. Limit deflection of roof deck to 1/240 of span under total dead and live load.

2.2 ROOF DECK

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Canam Steel Corporation; Canam Group, Inc.
2. Epic Metals Corporation.
3. New Millennium Building Systems, LLC.
4. Nucor Corporation.
5. Approved equivalent.

B. Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 31, and with the following:

1. Prime-Painted Steel Sheet: ASTM A1008, Structural Steel (SS), Grade 50 minimum, shop primed with manufacturer's standard baked-on, rust-inhibitive primer.

a. Color: Manufacturer's standard.

2. Galvanized-Steel Sheet: ASTM A653, Structural Steel (SS), Grade 50, G60 zinc coating.
3. Galvanized and Shop-Primed Steel Sheet: ASTM A653, Structural Steel (SS), Grade 50, G60 zinc coating; cleaned, pretreated, and primed with manufacturer's standard baked-on, rust-inhibitive primer.

a. Color: Manufacturer's standard.

4. Aluminum-Zinc-Alloy-Coated Steel Sheet: ASTM A792, Structural Steel (SS), Grade 50 minimum, AZ50 aluminum-zinc-alloy coating.
5. Deck Profile: As indicated.
6. Cellular Deck Profile: As indicated, with bottom plate.
7. Profile Depth: As indicated
8. Design Uncoated-Steel Thickness: As indicated.

9. Design Uncoated-Steel Thicknesses; Deck Unit/Bottom Plate: As indicated.
10. Span Condition: Double span or more.
11. Side Laps: Overlapped or interlocking seam at Contractor's option.

2.3 COMPOSITE FLOOR DECK

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. “UFS” by Canam Steel Corporation; Canam Group, Inc.
2. “C” by Vulcraft.
3. Epic Metals Corporation.
4. New Millennium Building Systems, LLC.
5. Nucor Corporation.
6. Approved equivalent.

B. Composite Floor Deck: Fabricate panels, with integrally embossed or raised pattern ribs and interlocking side laps, to comply with "SDI Specifications and Commentary for Composite Steel Floor Deck," in SDI Publication No. 31, with the minimum section properties indicated, and with the following:

1. Prime-Painted Steel Sheet: ASTM A1008, Structural Steel (SS), Grade 50 minimum, with top surface phosphatized and unpainted and underside surface shop primed with manufacturers' standard gray baked-on, rust-inhibitive primer.
2. Galvanized-Steel Sheet: ASTM A653, Structural Steel (SS), Grade 33, G60 zinc coating.
3. Galvanized and Shop-Primed Steel Sheet: ASTM A653, Structural Steel (SS), Grade 33, G60 zinc coating; with unpainted top surface and cleaned and pretreated bottom surface primed with manufacturer's standard gray baked-on, rust-inhibitive primer.
4. Profile Depth: As indicated.
5. Design Uncoated-Steel Thickness: As indicated.
6. Span Condition: Double span or more.

2.4 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, minimum 16 ga., of same material and finish as deck, and of thickness and profile indicated.

G. Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material, finish, and thickness as deck unless otherwise indicated.

H. Piercing Hanger Tabs: Piercing steel sheet hanger attachment devices for use with floor deck.

I. Weld Washers: Uncoated steel sheet, shaped to fit deck rib, 0.0747 inch thick, with factory-punched hole of 3/8-inch minimum diameter.

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. Recessed Sump Pans: Single-piece steel sheet, 0.0747 inch thick, of same material and finish as deck, with 3-inch- wide flanges and [level] [sloped] recessed pans of 1-1/2-inch minimum depth. For drains, cut holes in the field.

L. Galvanizing Repair Paint: ASTM A780 SSPC-Paint 20 or MIL-P-21035B, with dry film containing a minimum of 94 percent zinc dust by weight.

M. 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 according to applicable specifications and commentary in SDI Publication No. 31, manufacturer's written instructions, and requirements in this Section.

B. Install temporary shoring before placing deck panels if required to meet deflection limitations. Provide shoring in accordance with manufacturers requirements or deck gauge and span. Maintain shoring until concrete has achieved design strength.

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 (SMAW), 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 according to deck 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 as indicated, and as follows:

1. Mechanically fasten with self-drilling, No. 10 diameter or larger, carbon-steel screws.
2. Mechanically clinch or button punch.
3. Fasten with a minimum of 1-1/2-inch- long welds.

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 or butted at Contractor's option.

D. Roof Sump Pans and Sump Plates: Install over openings provided in roof deck and weld flanges to top of deck. Space welds not more than 12 inches apart with at least one weld at each corner.

1. Install reinforcing channels or zees in ribs to span between supports and weld.

E. Miscellaneous Roof-Deck Accessories: Install ridge and valley plates, finish strips, end closures, and reinforcing channels according to deck manufacturer's written instructions. Weld to substrate to provide a complete deck installation.

1. Weld cover plates at changes in direction of roof-deck panels unless otherwise indicated.
2. Lap end joints not less than 3 inches with laps in direction of water flow.

F. Flexible Closure Strips: Install flexible closure strips over partitions, walls, and where indicated. Install with adhesive according to 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: Weld edge ribs of panels at each support. Space additional welds an average of 12 inches apart, but not more than 18 inches apart.
3. Weld Spacing: Space and locate welds as indicated.
4. 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.
2. Mechanically clinch or button punch.
3. Fasten with a minimum of 1-1/2-inch- long welds.

C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 2 inches, with end joints as follows:

1. End Joints: as indicated.

D. Pour Stops and Girder Fillers: Weld steel sheet pour stops and girder fillers to supporting structure according to SDI recommendations unless otherwise indicated.

E. Floor-Deck Closures: Weld steel sheet column closures, cell closures, and Z-closures to deck, according to SDI recommendations, to provide tight-fitting closures at open ends of ribs and sides of deck.

F. Install piercing hanger tabs at 14 inches apart in both directions, within 9 inches of walls at ends, and not more than 12 inches from walls at sides unless otherwise indicated.

G. At beams to receive shear connectors and pour stops, lap pour stop 2 inches onto beam flange and butt deck to pour stop. Do not lap deck onto pour stop. Locate shear connectors on the opposite side of the beam flange from pour stop.

H. Do not place deck units on concrete supporting structure until concrete has cured and dried.

I. Coordinate and cooperate with structural steel erector in locating deck bundles to prevent overloading of structural members.

J. Joint Covers: Provide metal joint covers at abutting ends and changes in direction of floor deck units except where taped joints are required.

3.5 REPAIR

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A780 and manufacturer's written instructions.

B. Repair Painting:

1. Wire brush and clean rust spots, welds, and abraded areas on both surfaces of prime-painted deck immediately after installation, and apply repair paint.
2. Apply repair paint, of same color as adjacent shop-primed deck, to bottom surfaces of deck exposed to view.
3. Wire brushing, cleaning, and repair painting of bottom deck surfaces are included in Section 099123 "Interior Painting."
4. Wire brushing, cleaning, and repair painting of rust spots, welds, and abraded areas of both deck surfaces are included in Section 099123 "Interior Painting."

3.6 FIELD QUALITY CONTROL

A. Special Inspections: Director’s Representative will engage a special inspector and a qualified testing agency to perform tests and inspections in accordance with the requirements of BDC 406 Summary of Special Inspections and BDC 406.1 Statement of Special Inspections and as directed by the Code Compliance Manager.

3.7 PROTECTION AND LOADING

A. Do not use units for storage or for work platforms until deck is permanently secured to the supporting structure.

B. Do not exceed load capacity of deck with construction loads. Limit temporary construction loads to 20 psf.

C. Before concrete placement, check welds. Reweld broken or damaged welds.

D. Do not suspend mechanical, electrical, or plumbing items from roof or floor form deck. Suspend loads directly from main framing or from supplemental framing installed between main framing.

1. Refer to mechanical, electrical, and plumbing specifications for hangers and supplemental framing required to attach these items to main framing.

3.8 TOLERANCES

A. Maximum variation in deck unit alignment shall be 1/4 inch in 40 feet.

END OF SECTION 053100

SECTION 054000 - COLD-FORMED METAL FRAMING

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:

1. Load-bearing wall framing.
2. Exterior non-load-bearing wall framing.
3. Interior non-load-bearing wall framing.

1.3 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For the following:

1. Cold-formed steel framing materials.
2. Load-bearing wall framing.
3. Exterior non-load-bearing wall framing.
4. Interior non-load-bearing wall framing.
5. Vertical deflection clips.
6. Connection components
7. Single deflection track.
8. Ceiling joist framing.
9. Soffit framing.
10. Self-drilling screw fasteners.
11. Sill sealer.

E. Submit an Environmental Product Declaration (EPD) from the manufacturer for steel framing within this specification section, if available. A statement of the contractor’s good faith effort to obtain the EPD shall be provided if not available.

1. Manufacturer-provided EPDs must be Product Specific Type III (Third-Party Reviewed), in adherence with ISO 14025 *Environmental labels and declarations*, ISO 14044 *Environmental management – Life cycle assessment*, and ISO 21930 *Core rules for environmental product declarations of construction products and services.*

F. Shop Drawings: Designate member sizes per Steel Stud Manufacturers Association (SSMA) standard conventions.

1. Include layout, spacings, sizes, thicknesses, and types of cold-formed steel framing; 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.

G. Qualification Data: For testing agency.

H. Welding certificates.

I. Product Certificates: For each type of code-compliance certification for studs and tracks.

J. Product Test Reports: For each listed product, for tests performed by manufacturer and witnessed by a qualified testing agency.

1. Steel sheet.
2. Expansion anchors.
3. Power-actuated anchors.
4. Mechanical fasteners.
5. Miscellaneous structural clips and accessories.

K. Research Reports:

1. For nonstandard cold-formed steel framing power-actuated fasteners, from ICC-ES or other qualified testing agency acceptable to authorities having jurisdiction.

L. Source quality-control reports.

1. Documentation to confirm compliance with General Conditions Article 25.4 Domestic Steel.

1.4 QUALITY ASSURANCE

A. 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.

B. Code-Compliance Certification of Studs and Tracks: Provide documentation that framing members are certified according to the product-certification program of the Certified Steel Stud Association.

C. If the value of the contract exceeds $100,000 all structural steel, reinforcing steel and other major steel items to be incorporated in the Work of this Contract shall be produced and made in whole or substantial part in the United States, its territories or possessions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. ClarkDietrich.
2. MarinoWARE.
3. Super Stud Building Products Inc.
4. The Steel Network, Inc.
5. Approved equivalent.

2.2 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide cold-formed steel framing capable of withstanding design loads within limits and under conditions indicated.

1. Design Parameters and Loads: As indicated on Drawings**.**
2. Deflection Limits: Design framing systems to withstand design loads without deflections greater than the following:

    a. Exterior Load-Bearing Wall Framing: Horizontal deflection of 1/360 of the wall height.
    b. Interior Load-Bearing Wall Framing: Horizontal deflection of 1/360 of the wall height under a horizontal load of 5 lbf/sq. ft..
    c. Exterior Non-Load-Bearing Framing: Horizontal deflection of 1/240 of the wall height.
    d. Interior Non-Load-Bearing Framing: Horizontal deflection of 1/240 of the wall height under a horizontal load of 5 lbf/sq. ft..

3. Design framing systems to provide for movement of framing 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.
4. Design exterior non-load-bearing wall framing to accommodate horizontal deflection without regard for contribution of sheathing materials.

B. Cold-Formed Steel Framing Standards: Unless more stringent requirements are indicated, framing shall comply with AISI S100, AISI S200, and the following:

1. Wall Studs: AISI S211.
2. Headers: AISI S212.
3. Lateral Design: AISI S213.

C. 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 the listings of another qualified testing agency acceptable to authorities having jurisdiction.

2.3 COLD-FORMED STEEL FRAMING MATERIALS

A. Steel Sheet: ASTM A1003, Structural Grade, Type H, metallic coated, of grade and coating designation as follows:

1. Grade: As required by structural performance.
2. Coating: G60.

2.4 LOAD-BEARING WALL FRAMING

A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: **0.**0329 inch (20) ga.
2. Flange Width: 1-3/8 inches (137).
3. Section Properties: Insert minimum allowable calculated section modulus, moment of inertia, and allowable moment.

B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with straight flanges, and as follows:

1. Minimum Base-Metal Thickness: Matching steel studs.
2. Flange Width: 1-1/4 inches (125).

C. Steel Box or Back-to-Back Headers: Manufacturer's standard C-shapes used to form header beams, of web depths indicated, unpunched, with stiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: 0.0329 inch (20 ga).
2. Flange Width: 1-5/8 inches (162).
3. Section Properties: Refer to drawings.

D. Steel Single- or Double-L Headers: Manufacturer's standard L-shapes used to form header beams, of web depths indicated, and as follows:

1. Minimum Base-Metal Thickness: 0.0329 inch (20 ga).
2. Top Flange Width: 1-5/8 inches (162).
3. Section Properties: Refer to drawings.

2.5 EXTERIOR NON-LOAD-BEARING WALL FRAMING

A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: 0.0329 inch (20 ga)
2. Flange Width: 1-5/8 inches (162).
3. Section Properties: Refer to drawings.

B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with unstiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: 0.0329 inch (20 ga).
2. Flange Width: 1-1/4 inches (125).

C. Single Deflection Track: Manufacturer's single, deep-leg, U-shaped steel track; unpunched, with unstiffened flanges, of web depth to contain studs while allowing free vertical movement, with flanges designed to support horizontal loads and transfer them to the primary structure, and as follows:

1. Minimum Base-Metal Thickness: 0.0428 inch (18 ga).
2. Flange Width: 1 inch (100) plus the design gap for one-story structures and 1 inch plus twice the design gap for other applications.

2.6 INTERIOR NON-LOAD-BEARING WALL FRAMING

A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: 0.0329 inch (20 ga).
2. Flange Width: 1-5/8 inches (162)..
3. Section Properties: Refer to drawings.

B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with unstiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: Matching steel studs.
2. Flange Width: 1-1/4 inches (125).

C. Single Deflection Track: Manufacturer's single, deep-leg, U-shaped steel track; unpunched, with unstiffened flanges, of web depth to contain studs while allowing free vertical movement, with flanges designed to support horizontal loads and transfer them to the primary structure, and as follows:

1. Minimum Base-Metal Thickness: 0.0428 inch (18 ga).
2. Flange Width: 1 inch (100) plus the design gap for one-story structures and 1 inch (100) plus twice the design gap for other applications.

2.7 FRAMING ACCESSORIES

A. Fabricate steel-framing accessories from ASTM A1003, Structural Grade, Type H, metallic coated steel sheet, of same grade and coating designation 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. Stud kickers and knee braces.
7. Hole-reinforcing plates.
8. Backer plates.

2.8 ANCHORS, CLIPS, AND FASTENERS

A. Steel Shapes and Clips: ASTM A36, zinc coated by hot-dip process according to ASTM A123.

B. Anchor Bolts: ASTM F1554, Grade 36, threaded carbon-steel hex-headed bolts, carbon-steel nuts, and fla, hardened-steel washers; zinc coated by hot-dip process according to ASTM A153, 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, according to an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01 as appropriate for the substrate.

1. Uses: Securing cold-formed steel framing to structure.
2. Type: Torque-controlled expansion anchor or torque-controlled adhesive anchor.
3. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941, Class Fe/Zn 5, unless otherwise indicated.
4. Material for Exterior or Interior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 stainless-steel bolts, ASTM F593, and nuts, ASTM F594.

D. Power-Actuated Anchors: Fastener systems with working capacity greater than or equal to the design load, according to 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.

2.9 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint: ASTM A780.

B. Cement Grout: Portland cement, ASTM C150, Type I; and clean, natural sand, ASTM C404. 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: Factory-packaged, nonmetallic, noncorrosive, nonstaining grout, complying with ASTM C1107, and with a fluid consistency and 30-minute working time.

D. Shims: Load-bearing, high-density, multimonomer, nonleaching plastic; or cold-formed steel of same grade and metallic coating as framing members supported by shims.

E. Sill Sealer Gasket: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to match width of bottom track or rim track members as required.

F. Sill Sealer Gasket/Termite Barrier: Minimum 68-mil nominal thickness, self-adhering sheet consisting of 64 mils of rubberized asphalt laminated on one side to a 4-mil- thick, polyethylene-film reinforcement, and with release liner on adhesive side**;** formulated for application with primer or surface conditioner that complies with VOC limits of authorities having jurisdiction.

1. 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. Polyguard Products, Inc.
    b. Approved equivalent.

2. Physical Properties:

    a. Peel Adhesion: 17.0 lb/in of width when tested in accordance with ASTM D412.
    b. Low-Temperature Flexibility: Pass at minus 25 deg FASTM D146.
    c. Water Vapor Permeance: 0.05 perm maximum when tested in accordance with ASTM E96, Method B.
    d. Resistance to Termite Penetration: Comply with ICC-ES AC380.

2.10 FABRICATION

A. Fabricate cold-formed steel 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 in the field.
3. Fasten cold-formed steel framing members by welding, screw fastening, clinch fastening, pneumatic pin 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 screws penetrating joined members by no fewer than three exposed screw threads.

4. Fasten other materials to cold-formed steel framing by welding, bolting, pneumatic pin fastening, or screw fastening, according to Shop Drawings.

B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies 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 feet and as follows:

1. Spacing: Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
2. Squareness: Fabricate each cold-formed steel framing assembly to a maximum out-of-square tolerance of 1/8 inch.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, conditions, and abutting structural 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. Install load-bearing shims or grout between the underside of load-bearing wall bottom track and the top of foundation wall or slab at locations with a gap larger than 1/4 inch to ensure a uniform bearing surface on supporting concrete or masonry construction.

B. Install sill sealer gasket/termite barrier in accordance with manufacturer's written instructions at the underside of wall bottom track or rim track and at the top of foundation wall or slab at stud or joist locations.

3.3 INSTALLATION, GENERAL

A. Cold-formed steel framing may be shop or field fabricated for installation, or it may be field assembled.

B. Install cold-formed steel framing according to AISI S200, AISI S202, and 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.

D. Install cold-formed steel 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 in the field.
2. Fasten cold-formed steel 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, install according to Shop Drawings, and comply 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 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 framing are secured.

G. Do not bridge building expansion joints with cold-formed steel framing. Independently frame both sides of joints.

H. Install insulation, specified in Section 072100 "Thermal Insulation," in framing-assembly members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.

I. Fasten hole-reinforcing plate over web penetrations that exceed size of manufacturer's approved or standard punched openings.

3.4 INSTALLATION OF LOAD-BEARING WALL FRAMING

A. Install continuous top and bottom tracks sized to match studs. Align tracks accurately and securely anchor at corners and ends, and at spacings as follows:

1. Anchor Spacing: As shown on Shop Drawings.

B. Squarely seat studs against top and bottom tracks, with gap not exceeding 1/8 inch between the end of wall-framing member and the web of track.

1. Fasten both flanges of studs to top and bottom tracks.
2. Space studs as follows:

a. Stud Spacing: As indicated on Drawings.

C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar configurations.

D. Align studs vertically where floor framing interrupts wall-framing continuity. Where studs cannot be aligned, continuously reinforce track to transfer loads.

E. Align floor and roof framing over studs according to AISI S200, Section C1. Where framing cannot be aligned, continuously reinforce track to transfer loads.

F. Anchor studs abutting structural columns or walls, including masonry walls, to supporting structure.

G. Install headers over wall openings wider than stud spacing. Locate headers above openings. Fabricate headers of compound shapes indicated or required to transfer load to supporting studs, complete with clip-angle connectors, web stiffeners, or gusset plates.

1. Frame wall openings with not less than a double stud at each jamb of frame. Fasten jamb members together to uniformly distribute loads.
2. Install tracks and jack studs above and below wall openings. Anchor tracks to jamb studs with clip angles or by welding, and space jack studs same as full-height wall studs.

H. Install supplementary framing, blocking, and bracing in stud framing indicated to support fixtures, equipment, services, casework, heavy trim, furnishings, and similar work requiring attachment to framing.

1. If type of supplementary support is not indicated, comply with stud manufacturer's written recommendations and industry standards in each case, considering weight or load resulting from item supported.

I. Install horizontal bridging in stud system, spaced vertically as indicated on Drawings. Fasten at each stud intersection.

1. Strap Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges, and secure solid blocking to stud webs or flanges.

J. Install miscellaneous framing and connections, including supplementary framing, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system.

3.5 INSTALLATION OF EXTERIOR NONLOADBEARING WALL FRAMING

A. Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure.

B. Fasten both flanges of studs to[top and] bottom track unless otherwise indicated. Space studs as follows:

1. Stud Spacing: 16 inches.

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 to prevent transfer of vertical loads while providing lateral support.

1. Install single deep-leg deflection tracks and anchor to building structure.
2. Install double deep-leg deflection tracks and anchor outer track to building structure.

E. Install horizontal bridging in wall studs, spaced vertically in rows indicated on Shop Drawings but not more than 48 inches apart. Fasten at each stud intersection.

1. Strap Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges

F. Top Bridging for Single Deflection Track: Install row of horizontal bridging within 12 inches of single deflection track. Install a combination of bridging and stud or stud-track solid blocking of width and thickness matching studs, secured to stud webs or flanges.

1. Install solid blocking at 96-inch centers.

G. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system.

3.6 INSTALLATION OF INTERIOR NONLOADBEARING WALL FRAMING

A. Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure.

B. Fasten both flanges of studs to top and bottom track unless otherwise indicated. Space studs as follows:

1. Stud Spacing: 16 inches.

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 to prevent transfer of vertical loads while providing lateral support.

1. Install single deep-leg deflection tracks and anchor to building structure.

E. Install horizontal bridging in wall studs, spaced vertically in rows indicated but not more than 48 inches apart. Fasten at each stud intersection.

1. Strap Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.

F. Top Bridging for Single Deflection Track: Install row of horizontal bridging within 18 inches of single deflection track. Install a combination of bridging and stud or stud-track solid blocking of width and thickness matching studs, secured to stud webs or flanges.

1. Install solid blocking at 96-inch centers.

G. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system.

3.7 INSTALLATION OF JOIST FRAMING

A. Install perimeter joist track sized to match joists. Align and securely anchor or fasten track to supporting structure at corners, ends, and spacings indicated[on Shop Drawings].

B. Install joists bearing on supporting frame, level, straight, and plumb; adjust to final position, brace, and reinforce. Fasten joists to both flanges of joist track.

1. Install joists over supporting frame with a minimum end bearing of 1-1/2 inches.
2. Reinforce ends and bearing points of joists with web stiffeners, end clips, joist hangers, steel clip angles, or steel-stud sections.

C. Space joists not more than 2 inches from abutting walls, and as follows:

1. Joist Spacing: 12 inches.

D. Frame openings with built-up joist headers, consisting of joist and joist track or another combination of connected joists if indicated.

E. Install joist reinforcement at interior supports with single, short length of joist section located directly over interior support, with lapped joists of equal length to joist reinforcement.

1. Install web stiffeners to transfer axial loads of walls above.

F. Install bridging at intervals indicated. Fasten bridging at each joist intersection as follows:

1. Combination Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and joist-track solid blocking of width and thickness indicated. Fasten flat straps to bottom flange of joists and secure solid blocking to joist webs.

G. Secure joists to load-bearing interior walls to prevent lateral movement of bottom flange.

H. Install miscellaneous joist framing and connections, including web stiffeners, closure pieces, clip angles, continuous angles, hold-down angles, anchors, and fasteners, to provide a complete and stable joist-framing assembly.

3.8 INSTALLATION TOLERANCES

A. Install cold-formed steel framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:

1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.9 REPAIR

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed steel framing with galvanized repair paint according to ASTM A780 and manufacturer's written instructions.

3.10 FIELD QUALITY CONTROL

A. Special Inspections: Director’s Representative will engage a special inspector and a qualified testing agency to perform tests and inspections in accordance with the requirements of BDC 406 Summary of Special Inspections and BDC 406.1 Statement of Special Inspections and as directed by the Code Compliance Manager.

B. Cold-formed steel framing will be considered defective if it does not pass tests and inspections.

C. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.11 PROTECTION

A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed steel framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION 054000

SECTION 055000 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Steel framing and supports for ceiling-hung toilet compartments.
2. Steel framing and supports for operable partitions.
3. Steel framing and supports for overhead doors.
4. Steel framing and supports for countertops.
5. Steel framing and supports for mechanical and electrical equipment.
6. Steel framing and supports for applications where framing and supports are not specified in other Sections.
7. Elevator machine beams hoist beams.
8. Steel shapes for supporting elevator door sills.
9. Slotted channel framing.
10. Shelf angles.
11. Metal ladders.
12. Floor Grating.
13. Elevator pit sump covers.
14. Metal downspout boots.

B. Products furnished, but not installed, under this Section include the following:

1. Loose steel lintels.
2. Anchor bolts, steel pipe sleeves, slotted-channel inserts, and wedge-type inserts indicated to be cast into concrete or built into unit masonry.
3. Steel weld plates and angles for casting into concrete for applications where they are not specified in other Sections.

C. Related Requirements:

1. Section 042000 "Unit Masonry" for installing loose lintels, anchor bolts, and other items built into unit masonry.
2. Section 051200 "Structural Steel Framing" for steel framing, supports, elevator machine beams, hoist beams, door frames, and other steel items attached to the structural-steel framing.
3. Section 077200 "Roof Accessories" for manufactured metal roof walkways and metal roof stairs.

1.2 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written instructions to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of metal fabrications that are anchored to or that receive other work. 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.

1.3 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer's installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For the following:

1. Fasteners.
2. Shop primers.
3. Shrinkage-resisting grout.
4. Manufactured metal ladders.
5. Metal bollards.
6. Floor Grating.
7. Metal downspout boots.

E. Submit an Environmental Product Declaration (EPD) from the manufacturer for structural steel and slotted channel framing within this specification section, if available. A statement of the contractor's good faith effort to obtain the EPD shall be provided if not available.

1. Manufacturer-provided EPDs must be Product Specific Type III (Third-Party Reviewed), in adherence with ISO 14025 *Environmental labels and declarations*, ISO 14044 *Environmental management – Life cycle assessment*, and ISO 21930 *Core rules for environmental product declarations of construction products and services.*

F. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide Shop Drawings for the following:

1. Steel framing and supports for ceiling-hung toilet compartments.
2. Steel framing and supports for operable partitions.
3. Steel framing and supports for overhead doors.
4. Steel framing and supports for countertops.
5. Steel framing and supports for mechanical and electrical equipment.
6. Steel framing and supports for applications where framing and supports are not specified in other Sections.
7. Elevator machine beams hoist beams.
8. Steel shapes for supporting elevator door sills.
9. Shelf angles.
10. Metal ladders.
11. Floor Grating.

12. Elevator pit sump covers.
13. Miscellaneous steel trim including [steel angle corner guards] [steel edgings].
14. Metal bollards.
15. Loose steel lintels.

G. Qualification Data: For professional engineer's experience with providing delegated-design engineering services of the kind indicated, including documentation that engineer is licensed and registered in New York State.

H. Mill Certificates: Signed by stainless steel manufacturers, certifying that products furnished comply with requirements.

I. Welding certificates.

J. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

K. Research Reports: For post-installed anchors.

L. Source quality-control reports.

1. Documentation to confirm compliance with General Conditions Article 25.4 Domestic Steel.

1.4 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel in accordance with the following:

1. AWS D1.1, "Structural Welding Code - Steel."
2. AWS D1.2, "Structural Welding Code - Aluminum."
3. AWS D1.6, "Structural Welding Code - Stainless Steel."
4. For metals other than the ones listed above provide relevant welding qualifications and 5 years minimum relevant experience.

B. If the value of the contract exceeds $100,000 all structural steel, reinforcing steel and other major steel items to be incorporated in the Work of this Contract shall be produced and made in whole or substantial part in the United States, its territories or possessions.

1.5 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of walls, floor slabs, decks, and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Performance of Aluminum Ladders: Ladders, including landings, shall withstand the effects of loads and stresses within limits and under conditions specified in ANSI A14.3 and applicable OSHA standards.

B. 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.

2.2 METALS

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Wide Flange Structural Steel Shapes: ASTM A992 , Grade 50, UNO.

C. Rolled-Steel Floor Plate: ASTM A786, rolled from plate complying with ASTM A36 or ASTM A283, Grade C or D.

D. Structural Steel Tubing: ASTM A500, cold-formed steel tubing.

E. Structural Steel Pipe: ASTM A53, Standard Weight (Schedule 40) unless otherwise indicated.

F. Aluminum Plate and Sheet: ASTM B209, Alloy 6061-T6.

G. Aluminium Extrusions: ASTM B221, Alloy 6063-T6.

2.3 FASTENERS

A. General: Unless otherwise indicated, provide Type 304 stainless steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.

1. Provide stainless steel fasteners for fastening aluminum.

B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A307, Grade A; with hex nuts, ASTM A563; and, where indicated, flat washers.

C. High-Strength Bolts, Nuts, and Washers: ASTM F3125, Grade A325 or A440 as noted, Type 3, heavy-hex steel structural bolts; ASTM A563, Grade DH3, heavy-hex carbon-steel nuts; and where indicated, flat washers.

D. Stainless Steel Bolts and Nuts: Regular hexagon-head annealed stainless steel bolts, ASTM F593; with hex nuts, ASTM F594; and, where indicated, flat washers; Alloy Group 1.

E. Anchor Bolts: ASTM F1554, Grade 36 or as noted, of dimensions indicated; with nuts, ASTM A563; and, where indicated, flat washers.

1. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.

F. Anchors, General: 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 in accordance with ASTM E488, conducted by a qualified independent testing agency.

G. Cast-in-Place Anchors in Concrete: Either threaded, deformed, or headed type unless otherwise indicated; galvanized ferrous castings, either ASTM A47 malleable iron or ASTM A27 cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F2329.

H. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors.

1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941, Class Fe/Zn 5, unless otherwise indicated.
2. Material for Interior Locations Where Stainless Steel Is Indicated: Alloy Group 1 stainless steel bolts, ASTM F593, and nuts, ASTM F594.
3. Material for Exterior Locations: Alloy Group 2 stainless-steel bolts, ASTM F593, and nuts, ASTM F594.

2.4 MISCELLANEOUS MATERIALS

A. Shop Primers: Provide primers that comply with Section 099123 "Interior Painting."

B. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.

1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

C. Water-Based Primer: Emulsion type, anticorrosive primer for mildly corrosive environments that is resistant to flash rusting when applied to cleaned steel, complying with MPI#107 and compatible with topcoat.

D. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.

E. Shop Primer for Galvanized Steel: Primer formulated for exterior use over zinc-coated metal and compatible with finish paint systems indicated.

F. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

G. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187.

H. Shrinkage-Resistant Grout: Factory-packaged, nonmetallic, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

I. Concrete: Comply with requirements in Section 033000 "Cast-in-Place Concrete" for normal-weight, air-entrained concrete with a minimum 28-day compressive strength of 3000 psi.

2.5 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. 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. 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.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work with accurate angles and surfaces and straight edges.

E. 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.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

J. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1-1/2 inches, with a minimum 6-inch embedment and 2-inch hook, not less than 8 inches from ends and corners of units and 24 inches o.c., unless otherwise indicated.

2.6 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.

1. Fabricate units from slotted channel framing where indicated.
2. Furnish inserts for units installed after concrete is placed.

C. Fabricate supports for operable partitions from continuous steel beams of sizes indicated with attached bearing plates, anchors, and braces as recommended by partition manufacturer. Drill or punch bottom flanges of beams to receive partition track hanger rods; locate holes where indicated on operable partition Shop Drawings.

D. Galvanize miscellaneous framing and supports where indicated.

E. Prime miscellaneous framing and supports with zinc-rich primer where indicated.

2.7 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 bolts, spaced not more than 6 inches from ends and 24 inches o.c., unless otherwise indicated.

1. Provide mitered and welded units at corners.
2. Provide open joints in shelf angles at expansion and control joints. Make open joint approximately 2 inches larger than expansion or control joint.

B. For cavity walls, provide vertical channel brackets to support angles from backup masonry and concrete.

C. Galvanize and prime shelf angles located in exterior walls.

D. Prime shelf angles located in exterior walls with zinc-rich primer.

E. Furnish wedge-type concrete inserts, complete with fasteners, to attach shelf angles to cast-in-place concrete.

2.8 METAL LADDERS

A. General:

1. Comply with ANSI A14.3, except for elevator pit ladders.
2. For elevator pit ladders, comply with ASME A17.1/CSA B44.

B. Steel Ladders:

1. Space siderails 18 inches apart unless otherwise indicated.
2. Siderails: Continuous, 3/8-by-2-1/2-inch steel flat bars, with eased edges unless otherwise indicated.
3. Rungs: 1-inch- square, steel bars.
4. Fit rungs in centerline of siderails; plug-weld and grind smooth on outer rail faces.
5. 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.
6. Source Limitations: Obtain nonslip surfaces from single source from single manufacturer.
7. Provide platforms as indicated fabricated from welded or pressure-locked steel bar grating, supported by steel angles. Limit openings in gratings to no more than 3/4 inch in least dimension.
8. Support each ladder at top and bottom and not more than 60 inches o.c. with welded or bolted steel brackets.
9. Galvanize and prime exterior ladders, including brackets.
10. Prime [exterior]ladders, including brackets and fasteners, with zinc-rich primer.

2.9 STRUCTURAL-STEEL DOOR FRAMES

A. Fabricate structural-steel door frames from steel shapes, plates, and bars of size and to dimensions indicated, fully welded together, with 5/8-by-1-1/2-inch steel channel stops, unless otherwise indicated. Plug-weld built-up members and continuously weld exposed joints. Secure removable stops to frame with countersunk machine screws, uniformly spaced at not more than 10 inches o.c. Reinforce frames and drill and tap as necessary to accept finish hardware.

1. Provide with integrally welded steel strap anchors for securing door frames into adjoining concrete or masonry.

B. Extend bottom of frames to floor elevation indicated with steel angle clips welded to frames for anchoring frame to floor with expansion shields and bolts.

C. Galvanize and prime exterior steel frames.

D. Prime [exterior]steel frames with zinc-rich primer.

2.10 FLOOR GRATING

A. Grating: Rectangular, welded steel bar grating designed to support 200 lb/sq ft with deflection not exceeding 1/180. Fabricate with bearing bars on edge, and with all intersecting and abutting members joined by the electro-pressure welding method for the full depth of cross bar. Steel Bars: ASTM A 569.

1. Top Surface of Bearing Bars: Plain.
2. Finish: Galvanized.
3. Fasteners for Removable Panels: Saddle clip anchor assembly, with self-drilling screw or weldable stud bolt. Clips shall have same finish as grating.

4. Banding: Continuous steel bar of same material and size as bearing bars, welded to grating panel.
5. Toeplate: Flat steel bar curb secured to outer edge of grating where shown.

2.11 MISCELLANEOUS STEEL TRIM

A. Unless otherwise indicated, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.

B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work.

1. Provide with integrally welded steel strap anchors for embedding in concrete or masonry construction.

C. Galvanize and prime exterior miscellaneous steel trim.

D. Prime exterior miscellaneous steel trim with zinc-rich primer.

2.12 DOWNSPOUT GUARDS

A. Fabricate downspout guards from 3/8-inch- thick by 12-inch- wide, steel plate, bent to fit flat against the wall or column at both ends and to fit around pipe with 2-inch clearance between pipe and pipe guard. Drill each end for two 3/4-inch anchor bolts.

B. Galvanize steel downspout guards.

C. Prime steel downspout guards with zinc-rich primer.

2.13 METAL DOWNSPOUT BOOTS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. J.R. Hoe & Sons Inc.
2. Neenah Foundry Company.
3. Approved equivalent.

B. Source Limitations: Obtain downspout boots from single source from single manufacturer.

C. Provide downspout boots made from cast iron in heights indicated with inlets of size and shape to suit downspouts. Provide units with flanges and holes for countersunk anchor bolts.

1. Outlet: Vertical, to discharge into pipe.

D. Prime cast-iron downspout boots with zinc-rich primer.

2.14 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 exterior bearing and leveling plates.

C. Prime interior plates with zinc-rich primer.

2.15 LOOSE STEEL LINTELS

A. Fabricate loose steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated. Fabricate in single lengths for each opening unless otherwise indicated. Weld adjoining members together to form a single unit where indicated.

B. Size loose lintels to provide bearing length at each side of openings equal to 1/12 of clear span, but not less than 8 inches unless otherwise indicated.

C. Galvanize and prime loose steel lintels located in exterior walls.

D. Prime loose steel lintels located in interior walls with zinc-rich primer.

2.16 STEEL WELD PLATES AND ANGLES

A. Provide steel weld plates and angles not specified in other Sections, for items supported from concrete construction as needed to complete the Work. Provide each unit with no fewer than two integrally welded steel anchors for embedding in concrete.

2.17 GENERAL FINISH REQUIREMENTS

A. Finish metal fabrications after assembly.

B. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

2.18 STEEL AND IRON FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A153 for steel and iron hardware and with ASTM A123 for other steel and iron products.

1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.

B. Preparation for Shop Priming Galvanized Items: After galvanizing, thoroughly clean galvanized surfaces of grease, dirt, oil, flux, and other foreign matter, and treat with metallic phosphate process.

C. Shop prime iron and steel items not indicated to be galvanized unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.

1. Shop prime with universal shop primer unless zinc-rich primer is indicated.

D. Preparation for Shop Priming: Prepare surfaces to comply with SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning" & SSPC-SP 3, "Power Tool Cleaning" requirements indicated below:

1. Exterior Items: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
2. Items Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
3. Other Steel Items: SSPC-SP 3, "Power Tool Cleaning."
4. Galvanized-Steel Items: SSPC-SP 16, "Brush-off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals."

E. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

2.19 ALUMINUM FINISHES

A. As-Fabricated Finish: AA-M12.

B. Clear Anodic Finish: AAMA 611, Class I, AA-M12C22A41.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. 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.

B. 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.

C. 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.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

F. Corrosion Protection: Coat concealed surfaces of aluminum that come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:

1. Extruded Aluminum: Two coats of clear lacquer.

G. Grating: Weld grating to supporting members, unless otherwise shown or specified.

3.2 INSTALLATION OF 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.

B. Anchor supports for ceiling hung toilet partitions and overhead doors securely to, and rigidly brace from, building structure.

C. Anchor shelf angles securely to existing construction with post-installed anchors.

D. 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 for girders supported on concrete or masonry, install as specified in "Installing Bearing and Leveling Plates" Article.

E. Install pipe columns on concrete footings with grouted baseplates. Position and grout column baseplates as specified in "Installation of Bearing and Leveling Plates" Article.

1. Grout baseplates of columns supporting steel girders after girders are installed and leveled.

3.3 INSTALLATION OF 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 shrinkage-resistant grout. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.4 REPAIRS

A. Touchup Painting:

1. Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

    a. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

2. Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Section 099123 "Interior Painting."

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780.

END OF SECTION 055000

SECTION 055113 - METAL PAN STAIRS

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:

1. Preassembled steel stairs with concrete-filled treads.
2. Steel tube railings and guards attached to metal stairs.
3. Steel tube handrails attached to walls adjacent to metal stairs.

1.3 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written instructions to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorages for metal stairs**,** railings, and guards.

1. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, blocking for attachment of wall-mounted handrails**,** and items with integral anchors, that are to be embedded in concrete or masonry.
2. Deliver such items to Project site in time for installation.

C. Coordinate locations of hanger rods and struts with other work so they do not encroach on required stair width and are within fire-resistance-rated stair enclosure.

D. Schedule installation of railings and guards so wall attachments are made only to completed walls.

1. Do not support railings and guards temporarily by any means that do not satisfy structural performance requirements.

1.4 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For metal pan stairs and the following:

1. Perforated metal.
2. Abrasive nosings.
3. Shop primer products.
4. Abrasive-coating finish to formed-metal stairs.
5. Handrail wall brackets.
6. Grout.

E. Shop Drawings:

1. Include plans, elevations, sections, details, attachments to other work, and welding procedure specifications (WPS).
2. Indicate sizes of metal sections, thickness of metals, profiles, holes, and field joints.
3. Include plan at each level.
4. Indicate locations of anchors, weld plates, and blocking for attachment of wall-mounted handrails.

F. Welding certificates.

G. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

H. Source quality-control reports.

1. Documentation to confirm compliance.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Fabricator of products.

B. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1, “Structural Welding Code – Steel.”

C. If the value of the contract exceeds $100,000 all structural steel, reinforcing steel and other major steel items to be incorporated in the Work of this Contract shall be produced and made in whole or substantial part in the United States, its territories or possessions.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification.

1. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers.
2. Protect steel members and packaged materials from corrosion and deterioration.

3. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures.

    a. Repair or replace damaged materials or structures as directed.

B. Store and handle galvanized steel members per the recommendations of the American Galvanized Association.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Performance of Stairs: Metal stairs shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Uniform Load: 100 lbf/sq. ft..
2. Concentrated Load: 300 lbf applied on an area of 4 sq. in..
3. Uniform and concentrated loads need not be assumed to act concurrently.
4. Stair Framing: Capable of withstanding stresses resulting from railing and guard loads in addition to loads specified above.

B. Structural Performance of Railings and Guards: Railings and guards, including attachment to building construction, shall withstand the effects of gravity loads and the following 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 1 sq. ft..
    b. Infill load and other loads need not be assumed to act concurrently.

2.2 METALS

A. Metal Surfaces: Provide materials with smooth, flat surfaces unless otherwise indicated. For components exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Steel Plates, Shapes, and Bars: ASTM A36.

C. Steel Tubing for Railings and Guards: ASTM A500 (cold formed) or ASTM A513.

D. Steel Pipe for Railings and Guards: ASTM A53, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.

E. Uncoated, Hot-Rolled Steel Sheet: ASTM A1011, either commercial steel, Type B, or structural steel, Grade 36 (250) Types 1 and 2, unless another grade is required by design loads.

2.3 ABRASIVE NOSINGS

A. Cast-Metal Units: Cast iron, with an integral abrasive, as-cast finish consisting of aluminum oxide, silicon carbide, or a combination of both. Fabricate units in lengths necessary to accurately fit openings or conditions.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. American Safety Tread Co., Inc.
b. Balco; a CSW Industrials Company.
c. Safe-T-Metal Company, Inc.
d. Approved equivalent.

2. Configuration: Cross-hatched units, 4 inches wide without lip.

B. Provide anchors for embedding units in concrete, either integral or applied to units, as standard with manufacturer.

C. Apply bituminous paint to concealed surfaces of cast-metal units set into concrete.

2.4 FASTENERS

A. General: Provide zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941, Class Fe/Zn 12 for exterior use, and Class Fe/Zn 5 Type 316 stainless steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941, Class Fe/Zn 5, where built into exterior walls.

B. Fasteners for Anchoring Railings and Guards to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings and guards to other types of construction indicated.

C. Bolts and Nuts: Regular hexagon-head bolts, ASTM A307, Grade A; with hex nuts, ASTM A563; and, where indicated, flat washers.

1. Structural Steel Connections: ASTM F3125, Grade A325 Type 1.

D. Anchor Bolts: ASTM F1554, Grade 36, of dimensions indicated; with nuts, ASTM A563; and, where indicated, flat washers.

1. Provide mechanically deposited or hot-dip, zinc-coated anchor bolts for stairs indicated to be shop primed with zinc-rich primer.

E. Post-Installed Anchors: Torque-controlled expansion anchors 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 E488, conducted by a qualified independent testing agency.

1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941, Class Fe/Zn 5, unless otherwise indicated.
2. Material for Interior Locations Where Stainless Steel Is Indicated: Alloy stainless-steel bolts, ASTM F593, and nuts, ASTM F594.

2.5 MISCELLANEOUS MATERIALS

A. Handrail Wall Brackets: Cast iron, center of rail 3-1/8 inches from face of wall.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Blum, Julius & Co., Inc.
b. The Wagner Companies.
c. Approved equivalent.

B. Welding Electrodes: Comply with AWS requirements and welding procedure specification.

C. Shop Primers: Provide primers that comply with Section 099123 "Interior Painting."

D. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.

1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

E. Zinc-Rich Primer: Comply with SSPC-Paint 20, Type II, Level 2, and compatible with topcoat.

F. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187.

G. Nonmetallic, Shrinkage-Resistant Grout: ASTM C1107, factory-packaged, nonmetallic aggregate grout; recommended by manufacturer for [interior] [exterior] use; noncorrosive and nonstaining; mixed with water to consistency suitable for application and a 30-minute working time.

2.6 FABRICATION, GENERAL

A. Provide complete stair assemblies, including metal framing, hangers, struts, railings and guards, clips, brackets, bearing plates, and other components necessary to support and anchor stairs and platforms on supporting structure.

1. Join components by welding or bolting unless otherwise indicated.
2. Use connections that maintain structural value of joined pieces.

B. Assemble stairs**,** railings, and guards in shop to greatest extent possible.

1. Disassemble units only as necessary for shipping and handling limitations.
2. Clearly mark units for reassembly and coordinated installation.

C. Cut, drill, and punch metals cleanly and accurately.

1. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated.
2. Remove sharp or rough areas on exposed surfaces.

D. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

E. Form exposed work with accurate angles and surfaces and straight edges.

F. Weld connections to comply with the following:

1. Comply with AWS requirements and approved welding procedure specifications.
2. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
3. Obtain fusion without undercut or overlap.
4. Remove welding flux immediately.
5. Weld exposed corners and seams continuously unless otherwise indicated.
6. At exposed connections, finish exposed welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Finish #2 - Completely sanded joint with some undercutting and pinholes okay.

G. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible.

1. Where exposed fasteners are required, use Phillips flat-head (countersunk) fastener head screws or bolts unless otherwise indicated.
2. Locate joints where least conspicuous.
3. Fabricate joints that will be exposed to weather in a manner to exclude water.
4. Provide weep holes where water may accumulate internally.

2.7 FABRICATION OF STEEL-FRAMED STAIRS

A. NAAMM Stair Standard: Comply with NAAMM AMP 510, "Metal Stairs Manual," for Architectural Class, unless more stringent requirements are indicated.

B. Stair Framing:

1. Fabricate stringers as indicated on Drawings.

a. Stringer Size: As indicated on Drawings.
b. Provide closures for exposed ends of channel and rectangular tube stringers.
c. Finish: Painted.

2. Construct platforms of steel indicated on Drawings.

a. Provide closures for exposed ends of channel and rectangular tube framing.
b. Finish: Painted.

3. Weld or bolt stringers to headers; weld or bolt framing members to stringers and headers. If using bolts, fabricate and join so bolts are not exposed on finished surfaces.
4. Where masonry walls support metal stairs, provide temporary supporting struts designed for erecting steel stair components before installing masonry.

C. Metal Pan Stairs: Form risers, subtread pans, and subplatforms to configurations shown from steel sheet of thickness needed to comply with performance requirements, but not less than 0.067 inch.

1. Fabricate treads and landing subplatforms of exterior stairs so finished walking surfaces slope to drain.
2. Steel Sheet: Uncoated, hot-rolled steel sheet unless otherwise indicated.
3. Directly weld metal pans to stringers; locate welds on top of subtreads where they will be concealed by concrete fill. Do not weld risers to stringers.
4. 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.
5. Shape metal pans to include nosing integral with riser.
6. Attach abrasive nosings to risers.
7. At Contractor's option, provide stair assemblies with metal pan subtreads filled with reinforced concrete during fabrication.
8. Provide epoxy-resin-filled treads, reinforced with glass fibers, with non-slip-concrete aggregate finish to tread surface.
9. Provide subplatforms of configuration indicated or, if not indicated, the same as subtreads. Weld subplatforms to platform framing.

a. Smooth Soffit Construction: Construct subplatforms with flat metal under surfaces to produce smooth soffits.

D. Abrasive-Coating-Finished, Formed-Metal Stairs: Form risers, treads, and platforms to configurations shown from steel sheet of thickness needed to comply with performance requirements, but not less than 0.097 inch (12 ga).

1. Steel Sheet: Uncoated, hot-rolled steel sheet unless otherwise indicated.
2. Directly weld risers and treads to stringers; locate welds on underside of stairs.
3. Provide platforms of configuration indicated or, if not indicated, the same as treads. Weld platforms to platform framing.
4. Finish tread and platform surfaces with manufacturer's standard epoxy-bonded abrasive finish.

2.8 FABRICATION OF STAIR RAILINGS AND GUARDS

A. Fabricate railings and guards to comply with requirements indicated for design, dimensions, details, finish, and member sizes, including wall thickness of member, post spacings, wall bracket spacing, and anchorage, but not less than that needed to withstand indicated loads.

1. Rails and Posts: Minimum 1/4-inch wall thickness 1-1/2-inch- square top and bottom rails and 1-1/2-inch- square posts.

B. Welded Connections: Fabricate railings and guards with welded connections.

1. Fabricate connections that are exposed to weather in a manner that excludes water.

a. Provide weep holes where water may accumulate internally.

2. Cope components at connections to provide close fit, or use fittings designed for this purpose.
3. Weld all around at connections, including at fittings.
4. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
5. Obtain fusion without undercut or overlap.
6. Remove flux immediately.
7. Finish welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Finish #2 - Completely sanded joint, some undercutting and pinholes are okay as shown in NAAMM AMP 521.

C. Form changes in direction of railings and guards as follows:

1. As detailed.

D. For changes in direction made by bending, use 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 railing and guard members with prefabricated end fittings.

F. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated.

1. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.

G. Connect posts to stair framing by direct welding unless otherwise indicated.

H. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, end closures, flanges, miscellaneous fittings, and anchors for interconnecting components and for attaching to other work.

1. Furnish inserts and other anchorage devices for connecting to concrete or masonry work.
2. For galvanized railings and guards, provide galvanized fittings, brackets, fasteners, sleeves, and other ferrous-metal components.
3. For nongalvanized railings and guards, provide nongalvanized ferrous-metal fittings, brackets, fasteners, and sleeves, except galvanize anchors embedded in exterior masonry and concrete construction.
4. Provide type of bracket with flange that provides 1-1/2-inch clearance from inside face of handrail to finished wall surface.

2.9 FINISHES

A. Finish metal stairs after assembly.

B. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A153 for steel and iron hardware and with ASTM A123 for other steel and iron products.

1. Do not quench or apply post-galvanizing treatments that might interfere with paint adhesion.
2. Fill vent and drain holes that are exposed in the finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.

C. Preparation for Shop Priming: Prepare uncoated, ferrous-metal surfaces to comply with SSPC-SP 3, "Power Tool Cleaning."

D. Apply shop primer to uncoated surfaces of metal stair components, except those with galvanized finishes and those to be embedded in concrete or masonry unless otherwise indicated. Comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify elevations of floors, bearing surfaces and locations of bearing plates, and other embedments for compliance with requirements.

1. For wall-mounted railings, verify locations of concealed reinforcement within gypsum board and plaster assemblies.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF METAL PAN STAIRS

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing metal stairs to in-place construction.

1. Include threaded fasteners for concrete and masonry inserts, through-bolts, lag bolts, and other connectors.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal stairs. Set units accurately in location, alignment, and elevation, measured from established lines and levels and free of rack.

C. Install metal stairs by welding stair framing to steel structure or to weld plates cast into concrete unless otherwise indicated.

D. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

E. Fit exposed connections accurately together to form hairline joints.

1. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations.
2. 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.
3. Comply with requirements for welding in "Fabrication, General" Article.

F. Place and finish concrete fill for treads and platforms to comply with Section 033000 "Cast-in-Place Concrete."

1. Install abrasive nosings with anchors fully embedded in concrete.
2. Center nosings on tread width.

3.3 INSTALLATION OF RAILINGS AND GUARDS

A. Adjust railing and guard systems before anchoring to ensure matching alignment at abutting joints with tight, hairline joints.

1. Space posts at spacing indicated or, if not indicated, as required by design loads.
2. Plumb posts in each direction, within a tolerance of 1/16 inch in 3 feet.
3. Align rails and guards so variations from level for horizontal members and variations from parallel with rake of stairs for sloping members do not exceed 1/4 inch in 12 feet.
4. Secure posts, rail ends, and guard ends to building construction as follows:

    a. Anchor posts to steel by bolting to steel supporting members.
    b. Anchor handrail and guard ends to concrete and masonry with steel round flanges welded to rail and guard ends and anchored with post-installed anchors and bolts.

B. Attach handrails to wall with wall brackets.

1. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.
2. Secure wall brackets to building construction as follows:

    a. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.
    b. For hollow masonry anchorage, use toggle bolts.
    c. For steel-framed partitions, use self-tapping screws fastened to steel framing or to concealed steel reinforcements.

3.4 REPAIR

A. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Section 099123 "Interior Painting."

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780.

END OF SECTION 055113

SECTION 055213 - PIPE AND TUBE RAILINGS

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:

1. Aluminum railings.

1.3 COORDINATION

A. 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.

1.4 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data:

1. Manufacturer's product lines of mechanically connected railings.
2. Expanded metal infill panels.
3. Perforated metal infill panels.
4. Woven-wire mesh infill panels.
5. Fasteners.
6. Post-installed anchors.
7. Handrail brackets.
8. Shop primer.
9. Intermediate coats and topcoats.
10. Bituminous paint.
11. Nonshrink, nonmetallic grout.

12. Anchoring cement.
13. Metal finishes.
14. Paint products.

E. Shop Drawings: Include plans, elevations, sections, details, attachments to other work, and welding procedure specifications (WPS).

F. Samples for Initial Selection: For products involving selection of color, texture, or design, including mechanical finishes.

G. 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, including finish.
2. Fittings and brackets.
3. Assembled Sample of railing system, made from full-size components, including top rail, post, handrail, and infill. Sample need not be full height.

    a. Show method of connecting and finishing members at intersections.

H. Delegated-Design Submittal: For railings, including analysis and design data signed and sealed by the qualified professional engineer, licensed in the State of New York, responsible for their preparation.

I. Qualification Data: For professional engineer's experience with providing delegated-design engineering services of the kind indicated, including documentation that engineer is licensed and registered in the State of New York

J. Welding certificates.

K. Mill Certificates: Signed by manufacturers of stainless steel products, certifying that products furnished comply with requirements.

L. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

M. Product Test Reports: For tests on railings performed by a qualified testing agency, in accordance with ASTM E894 and ASTM E935.

N. Research Reports: For post-installed anchors, from ICC-ES or other qualified testing agency acceptable to authorities having jurisdiction.

O. Source quality-control reports.

1. Documentation to confirm compliance.

1.5 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel in accordance with the following:

1. AWS D1.2, "Structural Welding Code - Aluminum."

B. If the value of the contract exceeds $100,000 all structural steel, reinforcing steel and other major steel items to be incorporated in the Work of this Contract shall be produced and made in whole or substantial part in the United States, its territories or possessions.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect mechanical finishes on exposed surfaces of railings from damage by applying a strippable, temporary protective covering before shipping.

1.7 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with railings by field measurements before fabrication.

1. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers.
2. Protect steel members and packaged materials from corrosion and deterioration.
3. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures.

a. Repair or replace damaged materials or structures as directed.

B. Store and handle galvanized steel members per the recommendations of the American Galvanized Association.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, licensed and registered to practice in the State of New York, to design railings, including attachment to building construction.

B. Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following 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 1 sq. ft..
b. Infill load and other loads need not be assumed to act concurrently.

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.

B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.

1. Provide type of bracket with predrilled hole for exposed bolt anchorage and that provides 1-1/2-inch clearance from inside face of handrail to finished wall surface.

2.3 ALUMINUM RAILINGS

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. Fixfast USA.
2. Hollaender Mfg. Co.
3. Superior Aluminum Products, Inc.
4. Approved equivalent.

B. Source Limitations: Obtain each type of railing from single source from single manufacturer.

C. Aluminum, General: Provide alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with not less than the strength and durability properties of alloy and temper designated below for each aluminum form required.

D. Extruded Bars and Tubing: ASTM B221, Alloy 6063-T5/T52.

E. Extruded Structural Pipe and Round Tubing: ASTM B429, Alloy 6063-T6.

1. Provide Standard Weight (Schedule 40) pipe unless otherwise indicated.

F. Drawn Seamless Tubing: ASTM B210, Alloy 6063-T832.

G. Plate and Sheet: ASTM B209, Alloy 6061-T6.

H. Die and Hand Forgings: ASTM B247, Alloy 6061-T6.

I. Castings: ASTM B26, Alloy A356.0-T6.

2.4 FASTENERS

A. Fastener Materials:

1. Aluminum Railing Components: Type 304 stainless steel fasteners.

2. Finish exposed fasteners to match appearance, including color and texture, of railings.

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 and capable of withstanding design loads.

C. Fasteners for Interconnecting Railing Components:

1. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless otherwise indicated.
2. 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.
3. Provide square or hex socket flat-head machine screws for exposed fasteners unless otherwise indicated.

D. Post-Installed Anchors: Fastener systems with working capacity greater than or equal to the design load, according to an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC193.

1. Material for Exterior Locations: Alloy Group 2 stainless-steel bolts, ASTM F593, and nuts, ASTM F594.

2.5 MISCELLANEOUS MATERIALS

A. Handrail Brackets: Cast aluminum**,** center of handrail 2-1/2 inches from wall.

B. Welding Rods and Bare Electrodes: Select in accordance with AWS specifications for metal alloy welded and welding procedure specification.

1. For aluminum 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.

C. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout, complying with ASTM C1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

D. 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: 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 design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.

B. Shop assemble railings to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations.

1. Clearly mark units for reassembly and coordinated installation.
2. Use connections that maintain structural value of joined pieces.

C. Cut, drill, and punch metals cleanly and accurately.

1. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated.
2. 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 are exposed to weather in a manner that excludes water.

1. Provide weep holes where water may accumulate.
2. Locate weep holes in inconspicuous locations.

F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.

G. Connections: Fabricate railings with welded or bolted 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. Comply with AWS requirements and approved welding procedure specifications.
2. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
3. Obtain fusion without undercut or overlap.
4. Remove flux immediately.
5. At exposed connections, finish exposed welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Finish #2 welds; good appearance, completely sanded joint, some undercutting and pinholes okay.

I. Welded Connections for Aluminum Pipe: Fabricate railings to interconnect members with concealed internal welds that eliminate surface grinding, using manufacturer's standard system of sleeve and socket fittings.

J. Nonwelded Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.

1. Fabricate splice joints for field connection, using an epoxy structural adhesive, if this is manufacturer's standard splicing method.

K. Form changes in direction as follows:

1. As detailed.
2. By bending to smallest radius that will not result in distortion of railing member.

L. 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.

M. Close exposed ends of hollow railing members with prefabricated cap and end fittings of same metal and finish as railings.

N. 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 or less.

O. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.

1. At brackets and fittings fastened to plaster or gypsum board partitions, provide crush-resistant fillers or other means to transfer loads through wall finishes to structural supports and prevent bracket or fitting rotation and crushing of substrate.

P. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work.

1. Fabricate anchorage devices capable of withstanding loads imposed by railings.
2. Coordinate anchorage devices with supporting structure.

Q. For railing posts set in concrete, provide stainless steel sleeves not less than 6 inches long with inside dimensions not less than 1/2 inch greater than outside dimensions of post, with metal plate forming bottom closure.

R. 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 post height.

1. Provide socket covers designed and fabricated to resist being dislodged.
2. Provide chain with eye, snap hook, and staple across gaps formed by removable railing sections at locations indicated. Fabricate from same metal as railings.

S. 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

2.7 ALUMINUM FINISHES

A. 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 unacceptable. 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.

B. Mill Finish: AA-M12, nonspecular as fabricated.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Perform cutting, drilling, and fitting required for installing railings.

1. Fit exposed connections together to form tight, hairline joints.
2. Install railings level, plumb, square, true to line; without distortion, warp, or rack.
3. Set railings accurately in location, alignment, and elevation; measured from established lines and levels.
4. Do not weld, cut, or abrade surfaces of railing components that are coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
5. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
6. 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 1/4 inch in 12 feet.

B. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1. 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.

C. Adjust railings before anchoring to ensure matching alignment at abutting joints.

D. Fastening 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. Nonwelded Connections: Use mechanical or adhesive joints for permanently connecting railing components. Use wood blocks and padding to prevent damage to railing members and fittings. 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 joint on either side; fasten internal sleeve securely to one side; and locate joint within 6 inches of post.

3.3 ANCHORING POSTS

A. Anchor posts with flanges, angle type, or floor type, as required by conditions, connected to posts and to supporting members as follows:

1. For aluminum railings, attach posts as indicated, using fittings designed and engineered for this purpose.

3.4 ATTACHING RAILINGS

A. Anchor railing ends to concrete and masonry with flanges connected to railing ends and anchored to wall construction with anchors and bolts.

B. Attach handrails to walls 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.

1. Use type of bracket with predrilled hole for exposed bolt anchorage.
2. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.

C. 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. For steel-framed partitions, fasten brackets directly to steel framing or concealed steel reinforcements, using self-tapping screws of size and type required to support structural loads.

3.5 CLEANING

A. Clean aluminum by washing thoroughly with clean water and soap and rinsing with clean water.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas, and repair galvanizing to comply with ASTM A780.

3.6 PROTECTION

A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

B. Restore finishes damaged during installation and construction period, so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units.

END OF SECTION 055213

SECTION 061000 - ROUGH CARPENTRY

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:

1. Wood blocking.
2. Plywood backing panels.
3. Unless otherwise noted, all interior wood nailers and blocking shall be fire retardant.

1.3 DEFINITIONS

A. Boards or Strips: Lumber of less than 2 inches nominal size in least dimension.

B. Dimension Lumber: Lumber of 2 inches nominal size or greater but less than 5 inches nominal size in least dimension.

1.4 SUBMITTALS

A. General: Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. 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 fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
2. For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D5664.

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.

E. Evaluation Reports: For the following, from ICC-ES:

1. Fire-retardant-treated wood.
2. Power-driven fasteners.
3. Metal framing anchors.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

B. Mill and Producers Mark: Each piece of lumber and plywood shall be gradestamped indicating type, grade, mill, and grading agency certified by the Board of Review of the American Lumber Standards Committee. Mark shall appear on unfinished surface, or ends of pieces with finished surfaces.

1. Fire-Retardant Treated Material: Accredited testing agency mark on each piece of wood indicating compliance with the fire hazard classification.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Stack wood products flat with spacers beneath and between each bundle to provide air circulation. Protect wood products from weather by covering with waterproof sheeting, securely anchored. 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 grading agencies indicated. If no grading agency is indicated, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.

B. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.

2.2 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. Treatment shall 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. Kiln-dry lumber after treatment to maximum moisture content of 19 percent.

D. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.

E. Application: Treat all rough carpentry unless otherwise indicated**.**

2.3 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.
3. Unless otherwise noted, lumber shall NOT be pressure preservative treated.

B. Pressure Preservative Treated Lumber: Provide pressure preservative treaded nailers, blocking and grounds only where material is in direct contact with masonry or concrete. Where feasible, provide a slipsheet or roof membrane separator between materials.

C. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.

D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

E. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.4 PLYWOOD BACKING PANELS

A. Equipment Backing Panels: Plywood, DOC PS 1, fire-retardant treated, in thickness indicated or, if not indicated, not less than 1/2-inch nominal thickness.

2.5 FASTENERS

A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture. Unless noted otherwise, fasteners used in exterior components shall be hot dipped galvanized or stainless steel typical.

1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners of Type 304 stainless steel.

B. Nails, Brads, and Staples: ASTM F1667.

C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

D. Adhesive Anchor Systems: Single or multi-part adhesive anchor systems with an evaluation report acceptable to the authorities having jurisdiction for structural anchorage of blocking and accessories into concrete, masonry and brick substrates.

1. Anchor bolts: Stainless steel sizes and shapes as noted on the drawings.
2. Screen Anchors: Manufacturer standard screen anchors for hollow or cracked masonry.

2.6 METAL FRAMING ANCHORS

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. Cleveland Steel Specialty Co.
2. Phoenix Metal Products, Inc.
3. Simpson Strong-Tie Co., Inc.
4. Approved equivalent.

B. Stainless Steel Sheet: ASTM A240 or ASTM A666, Type 304.

1. Use for exterior locations and where indicated.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

B. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.

C. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate blocking, and similar supports to comply with requirements for attaching other construction.

D. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels. Install fire-retardant-treated plywood backing panels with classification marking of testing agency exposed to view.

E. Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.

F. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.

1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches o.c.

G. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

H. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

1. Use inorganic boron for items that are continuously protected from liquid water.
2. Use copper naphthenate for items not continuously protected from liquid water.

3.2 INSTALLATION OF WOOD BLOCKING

A. Install where indicated and where required for 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.

3.3 PROTECTION

A. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061000

SECTION 061600 - SHEATHING

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:

1. Wall sheathing.
2. Sheathing joint and penetration treatment.

B. Related Requirements:

1. Section 072500 "Weather Barriers" for water-resistive barrier applied over wall sheathing.

1.3 ACTION SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. 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 plywood complies with requirements. Indicate type of preservative used and net amount of preservative retained.
2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements. Include physical properties of treated materials.
3. For fire-retardant treatments, include physical properties of treated plywood both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D5516.
4. For products receiving waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
5. For air-barrier and water-resistant glass-mat gypsum sheathing, include manufacturer's technical data and tested physical and performance properties of products.

1.4 INFORMATIONAL SUBMITTALS

A. Product Certificates: From air-barrier and water-resistant glass-mat gypsum sheathing manufacturer, certifying compatibility of sheathing accessory materials with Project materials that connect to or that come in contact with the sheathing.

B. Product Test Reports: For each air-barrier and water-resistant glass-mat gypsum sheathing assembly, indicating compliance with specified requirements, for tests performed by a qualified testing agency.

1.5 QUALITY ASSURANCE

A. Mill and Producers Mark: Each piece of lumber and plywood shall be grade stamped indicating type, grade, mill, and grading agency certified by the Board of Review of the American Lumber Standards Committee. Mark shall appear on unfinished surface or ends of pieces with finished surfaces.

1. Fire-Retardant Treated Material: Accredited testing agency mark on each piece of wood indicating compliance with the fire hazard classification.

1.6 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.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance Ratings: As tested according to ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

B. Air-Barrier and Water-Resistant Glass-Mat Gypsum Sheathing Performance: Air-barrier and water-resistant glass-mat gypsum sheathing assembly, and seals with adjacent construction, shall be capable of performing as a continuous 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.

2.2 WOOD PANEL PRODUCTS

A. Thickness: As needed to comply with requirements specified, but not less than thickness indicated.

B. Factory mark panels to indicate compliance with applicable standard.

2.3 PRESERVATIVE-TREATED PLYWOOD

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with ground and Use Category UC4a for items in contact with ground.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

B. Mark plywood with appropriate classification marking of an inspection agency acceptable to authorities having jurisdiction.

C. Application: Treat all plywood unless otherwise indicated.

2.4 FIRE-RETARDANT-TREATED PLYWOOD

A. General: Where fire-retardant-treated materials are indicated, use materials complying 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 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 (3.2 m) 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 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/D3201M at 92 percent relative humidity. Use where exterior type is not indicated.
4. Design Value Adjustment Factors: Treated lumber plywood shall be tested according to ASTM D5516 and design value adjustment factors shall be calculated according to ASTM D6305. Span ratings after treatment shall be not less than span ratings specified. For roof sheathing and where high-temperature fire-retardant treatment is indicated, span ratings for temperatures up to 170 deg F (76 deg C) shall be not less than span ratings specified.

C. Kiln-dry material after treatment to a maximum moisture content of 15 percent. Do not use material that is warped or does not comply with requirements for untreated material.

D. Identify fire-retardant-treated plywood with appropriate classification marking of qualified testing agency.

E. Application: Treat all plywood unless otherwise indicated.

2.5 WALL SHEATHING

A. Plywood Sheathing: Exterior, Structural I sheathing.

1. Span Rating: Not less than 16/0.
2. Nominal Thickness: Not less than 1/2 inch1/2 inch (13 mm).

B. Glass-Mat Gypsum Sheathing: ASTM C1177/C1177M.

1. 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. Georgia-Pacific Gypsum LLC.
    b. National Gypsum Company.
    c. USG Corporation.
    d. An approved equivalent is permitted.
    e. Approved equivalent.

2. Type and Thickness: Type X, 5/8 inch thick.
3. Size: 48 by 96 inches for vertical installation.

C. Air-Barrier and Water-Resistant Glass-Mat Gypsum Sheathing: ASTM C1177/C1177M, Type X, coated fiberglass mat gypsum sheathing with integral weather-resistant barrier and air barrier complying with ASTM E2178.

1. 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. Georgia-Pacific Gypsum LLC.
    b. USG Corporation.
    c. An approved equivalent is permitted.
    d. Approved equivalent.

2. Thickness: 5/8 inch thick.
3. Size: 48 by 96 inches for vertical installation.
4. Edges: Square.
5. Flashing and Transitions Strips: As acceptable to sheathing manufacturer.
6. Air Permeance: Maximum 0.004 cfm/sq. ft. of surface area at 1.57-lbf/sq. ft.0.004 cfm/sq. ft. of surface area at 1.57-lbf/sq. ft. (0.02 L/s x sq. m of surface area at 75-Pa) pressure difference when tested according to ASTM E2178.
7. Vapor Permeance: Minimum 20 perms (580 ng/Pa x s x sq. m) when tested according to ASTM E96/E96M, Desiccant Method, Procedure A.

8. Sheathing Assembly Air Leakage: Maximum 0.04 cfm/sq. ft. of surface area at 1.57 lbf/sq. ft.0.04 cfm/sq. ft. of surface area at 1.57 lbf/sq. ft. (0.2 L/s x sq. m of surface area at 75 Pa) when tested according to ASTM E2357.
9. Fire Propagation Characteristics: Complies with NFPA 285 testing as part of an approved assembly.
10. UV Resistance: Can be exposed to sunlight for 30 days according to manufacturer's written instructions.
11. Provide primers, transition strips, termination strips, joint reinforcing fabric and 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 sheathing 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.

2.6 PARAPET SHEATHING

A. Plywood Sheathing: DOC PS 1, Exposure 1, Structural I sheathing.

1. Span Rating: Not less than 16/0.
2. Nominal Thickness: Not less than 1/2 inch1/2 inch (13 mm).

B. Glass-Mat Gypsum Sheathing: ASTM C1177/C1177M.

1. 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. Georgia-Pacific Gypsum LLC.
    b. National Gypsum Company.
    c. USG Corporation.
    d. An approved equivalent is permitted.
    e. Approved equivalent.

2. Type and Thickness: Type X, 5/8 inch5/8 inch (15.9 mm) thick.
3. Size: 48 by 96 inches48 by 96 inches (1219 by 2438 mm) for vertical installation.

2.7 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. For roof parapet and wall sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M.
2. For roof parapet and wall sheathing, provide fasteners with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B117.

B. Nails, Brads, and Staples: ASTM F1667.

C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

D. Screws for Fastening Sheathing to Wood Framing: ASTM C1002.

E. 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.

1. For steel framing less than 0.0329 inch0.0329 inch (0.835 mm) thick, use screws that comply with ASTM C1002.
2. For steel framing from 0.033 to 0.112 inch0.033 to 0.112 inch (0.84 to 2.84 mm) thick, use screws that comply with ASTM C954.

2.8 SHEATHING JOINT-AND-PENETRATION TREATMENT MATERIALS

A. Sealant for Glass-Mat Gypsum Sheathing: Elastomeric, medium-modulus, neutral-curing silicone joint sealant compatible with joint substrates formed by gypsum sheathing and other materials, recommended by sheathing manufacturer for application indicated and complying with requirements for elastomeric sealants specified in Section 079200 "Joint Sealants."

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 the following:

1. Table 2304.9.1, "Fastening Schedule," in the ICC's International Building Code.

D. Use common wire nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections. Install fasteners without splitting wood.

E. Coordinate wall parapet and roof sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.

F. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

G. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.

3.2 GYPSUM SHEATHING INSTALLATION

A. Comply with GA-253 and with manufacturer's written instructions.

1. Fasten gypsum sheathing to wood framing with screws.
2. Fasten gypsum sheathing to cold-formed metal framing with screws.
3. Install panels with a 3/8-inch3/8-inch (9.5-mm) gap where non-load-bearing construction abuts structural elements.
4. Install panels with a 1/4-inch1/4-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. Horizontal Installation: Install sheathing with V-grooved edge down and tongue edge up. Interlock tongue with groove to bring long edges in contact with edges of adjacent panels without forcing. Abut ends over centers of studs, and stagger end joints of adjacent panels not less than one stud spacing. Attach at perimeter and within field of panel to each stud.

1. Space fasteners approximately 8 inches8 inches (200 mm) o.c. and set back a minimum of 3/8 inch3/8 inch (9.5 mm) from edges and ends of panels.

D. Vertical Installation: Install vertical edges centered over studs. Abut ends and edges with those of adjacent panels. Attach at perimeter and within field of panel to each stud.

1. Space fasteners approximately 8 inches8 inches (200 mm) o.c. and set back a minimum of 3/8 inch3/8 inch (9.5 mm) from edges and ends of panels.

E. 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 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.

F. Air-Barrier and Water-Resistant Glass-Mat Gypsum Sheathing:

1. Install accessory materials according to sheathing manufacturer's written instructions and details to form a seal with adjacent construction, to seal fasteners, and ensure continuity of air and water barrier.

    a. Coordinate the installation of sheathing with installation of roofing membrane and base flashing to ensure continuity of air barrier with roofing membrane.
    b. Install transition strip on roofing membrane or base flashing, so that a minimum of 3 inches3 inches (75 mm) of coverage is achieved over each substrate.

2. Connect and seal sheathing material continuously to air barriers specified under other Sections as well as 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.
3. 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.
4. Wall Openings: Prime concealed, perimeter frame surfaces of windows, curtain walls, storefronts, and doors. Apply preformed silicone extrusion, so that a minimum of 3 inches (75 mm) of coverage is achieved over each substrate. Maintain 3 inches (75 mm) of full contact over firm bearing to perimeter frames, with not less than 1 inch (25 mm) of full contact.

    a. Preformed Silicone Extrusion: Set in full bed of silicone sealant applied to walls, frame, and air-barrier material.

5. Fill gaps in perimeter frame surfaces of windows, curtain walls, storefronts, doors, and miscellaneous penetrations of sheathing material with foam sealant.
6. Seal top of through-wall flashings to sheathing with an additional 6-inch- (150-mm-) wide, transition strip.
7. Seal exposed edges of strips at seams, cuts, penetrations, and terminations not concealed by metal counterflashing or ending in reglets with termination mastic.
8. Repair punctures, voids, and deficient lapped seams in strips and transition strips extending 6 inches (150 mm) beyond repaired areas in strip direction.

3.3 FIELD QUALITY CONTROL

A. ABAA Quality Assurance Program: Perform examinations, preparation, installation, testing, and inspections under ABAA's Quality Assurance Program.

B. Inspections: Air-barrier and water-resistant glass-mat gypsum sheathing, 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. 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.
3. Termination mastic has been applied on cut edges.
4. Strips and transition strips have been firmly adhered to substrate.
5. Compatible materials have been used.
6. Transitions at changes in direction and structural support at gaps have been provided.
7. Connections between assemblies (sheathing and sealants) have complied with requirements for cleanliness, surface preparation and priming, structural support, integrity, and continuity of seal.
8. All penetrations have been sealed.

C. Air barriers will be considered defective if they do not pass tests and inspections.

D. Repair damage to air barriers caused by testing; follow manufacturer's written instructions.

E. Prepare test and inspection reports.

END OF SECTION 061600

SECTION 064219 - PLASTIC-LAMINATE-FACED WOOD PANELING

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:

1. Plastic-laminate-faced wood paneling.

B. Related Requirements:

1. Section 061000 "Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing paneling that is concealed within other construction before paneling installation.

1.3 REFERENCES

A. Architectural Woodwork Standards (including errata to date) by the Architectural Woodwork Institute (AWI).

1.4 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that paneling can be installed as indicated.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.6 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

1. Include data for fire-retardant treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.

E. Shop Drawings: For plastic-laminate-faced wood paneling.

1. Include plans, elevations, sections, and attachment details.
2. Show details full size.
3. Show locations and sizes of furring and blocking, including concealed blocking specified in other Sections.
4. Apply AWI Quality Certification Program label to Shop Drawings.

F. Samples: For each exposed product and for each color and texture specified, in manufacturer's or fabricator's standard size.

G. Samples for Initial Selection: For each type of plastic laminate.

H. Samples for Verification: For each type of exposed laminate, 12 by 12 inches.

1. Provide one Sample applied to core material and with specified edge material applied to one edge.

I. Product Certificates: For each type of product.

J. Evaluation Reports: For fire-retardant-treated materials, from ICC-ES.

1.7 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

1. Shop Certification: AWI's Quality Certification Program accredited participant.

B. Installer Qualifications: Fabricator of products.

C. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Build mockups of typical paneling as shown on Drawings.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver paneling until painting and similar operations that might damage paneling have been completed in installation areas. Store paneling in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

1.9 FIELD CONDITIONS

A. Environmental Limitations without Humidity control: Do not deliver or install paneling until building is enclosed, wet-work is complete, and HVAC system is operating and will maintain temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.

B. Environmental Limitations with Humidity control: Do not deliver or install paneling until building is enclosed, wet-work is complete, and HVAC system is operating and will maintain temperature between 60 and 90 deg F and relative humidity between 25 and 55 percent during the remainder of the construction period.

C. Field Measurements: Where paneling 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 paneling by field measurements before being enclosed/concealed by construction and indicate measurements on Shop Drawings.

D. Established Dimensions: Where paneling is indicated to fit to other construction, establish dimensions for areas where woodwork is to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

PART 2 - PRODUCTS

2.1 PANELING, GENERAL

A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of plastic-laminate-faced wood paneling (decorative laminate surfacing) indicated for construction, finishes, installation, and other requirements.

2.2 PLASTIC-LAMINATE-FACED WOOD PANELING

A. Grade: Custom.

B. Plastic Laminate: High-pressure decorative laminate complying with NEMA LD 3 and the following requirements:

1. 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. Formica Corporation.
    b. Pionite; a Panolam Industries International, Inc. brand.
    c. Wilsonart LLC.
    d. Approved Equal.

2. Faces: Grade VGS Grade VGF.
3. Backs: Grade VGF.
4. Exposed Edges: Same as faces or Grade VGS.

C. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed surfaces complying with the following requirements:
    1. As selected by Director's Representative from laminate manufacturer's full range in the following categories:
        a. Wood grains, velvet finish.

    2. Grain Direction: Vertical.

D. Panel Core: Fire-retardant particleboard or fire-retardant MDF.

    1. Thickness: 3/4 inch.

E. Exposed Panel Edges: Plastic-laminate matching faces.

F. Panel Reveals: Matte black plastic laminate Black Finish Stainless steel channels, 1 by 1 by 1/16 inch thick.

G. Fire-Retardant-Treated Paneling: Panels shall consist of fire-retardant plastic laminate and fire-retardant particleboard or fire-retardant, medium-density fiberboard (MDF). Panels shall have a flame-spread index of 25 or less and a smoke-developed index of 450 or less per ASTM E84, and be listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction.

H. Assemble panels by gluing and concealed fastening.

2.3 MATERIALS

A. Materials, General: Provide materials that comply with requirements of referenced quality standard for each quality grade specified unless otherwise indicated.

B. Wood Moisture Content: 5 to 10 percent.

C. Composite Wood Products: Provide materials that comply with requirements of referenced quality standard for each quality grade specified unless otherwise indicated.

    1. MDF: ANSI A208.2, Grade 130.
    2. Particleboard (Medium Density): ANSI A208.1, Grade M-2.

2.4 FIRE-RETARDANT-TREATED MATERIALS

A. Fire-Retardant-Treated Materials, General: Where fire-retardant-treated materials are indicated, use materials 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.

1. Use treated materials that comply with requirements of referenced quality standard. Do not use materials that are warped, discolored, or otherwise defective.
2. Use fire-retardant-treatment formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants to distinguish treated materials from untreated materials.
3. Identify fire-retardant-treated materials with appropriate classification marking of qualified testing agency in the form of removable paper label or imprint on surfaces that will be concealed from view after installation.

B. Fire-Retardant-Treated Lumber and Plywood: Products with a flame-spread index of 25 or less when tested according to ASTM E84, 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. Kiln-dry lumber and plywood after treatment to a maximum moisture content of 19 and 15 percent, respectively.

C. Fire-Retardant Particleboard: Made from softwood particles and fire-retardant chemicals mixed together at time of panel manufacture to achieve flame-spread index of 25 or less and smoke-developed index of 25 or less per ASTM E84.

1. For panels 3/4 inch thick and less, comply with ANSI A208.1 for Grade M-2 except for the following minimum properties: modulus of rupture, 1600 psi; modulus of elasticity, 300,000 psi; internal bond, 80 psi; and screw-holding capacity on face and edge, 250 and 225 lbf, respectively.
2. For panels 13/16 to 1-1/4 inches thick, comply with ANSI A208.1 for Grade M-1 except for the following minimum properties: modulus of rupture, 1300 psi; modulus of elasticity, 250,000 psi; linear expansion, 0.50 percent; and screw-holding capacity on face and edge, 250 and 175 lbf, respectively.

D. Fire-Retardant Fiberboard: MDF panels complying with ANSI A208.2, made from softwood fibers, synthetic resins, and fire-retardant chemicals mixed together at time of panel manufacture to achieve flame-spread index of 25 or less and smoke-developed index of 200 or less per ASTM E84.

2.5 INSTALLATION MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: Fire-retardant-treated softwood lumber, kiln-dried to less than 15 percent moisture content.

B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls.

C. Installation Adhesive: Product recommended by panel fabricator for each substrate for secure anchorage.

2.6 FABRICATION

A. Complete fabrication, including assembly, 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. Notify Director's Representative seven days in advance of the dates and times paneling fabrication will be complete.

B. 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.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installation, condition paneling to humidity conditions in installation areas.

B. Before installing paneling, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

3.2 INSTALLATION

A. Grade: Install paneling to comply with quality standard grade of paneling to be installed.

B. Install paneling level, plumb, true in line, and without distortion. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches. Install with no more than 1/16 inch in 96-inch vertical cup or bow and 1/8 inch in 96-inch horizontal variation from a true plane.

1. For flush paneling with revealed joints, install with variations in reveal width, alignment of top and bottom edges, and flushness between adjacent panels not exceeding 1/16 inch.

C. Anchor paneling to supporting substrate with concealed panel-hanger clips. Do not use face fastening unless covered by trim.

3.3 ADJUSTING AND CLEANING

A. Repair damaged and defective paneling, where possible, to eliminate defects. Where not possible to repair, replace paneling. Adjust for uniform appearance.

B. Clean paneling on exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION 064219

SECTION 066000

SOLID PLASTIC FABRICATIONS

PART 1 - GENERAL

1.1 SUBMITTALS

A. Waiver of Submittals: The "Waiver of Certain Submittal Requirements" in Section 013300 does not apply to this Section.

B. Shop Drawings: Show fabrication details and connection to adjacent Work.

C. Product Data: Catalog sheets, specifications and installation instructions.

D. Samples:

1. Solid Plastic Panels: 12 inch square piece; each color, pattern, and finish.

a. Color Samples: Manufacturer's standard colors, patterns, and finishes.

E. Quality Control Submittals:

1. Qualifications Certificates: Certified statement by technical representative of the panel manufacturer that the fabricator and installer are certified or approved.

F. Contract Closeout Submittals:

1. Maintenance Data: Deliver 2 copies, covering the installed products, to the Director's Representative.

1.2 QUALITY ASSURANCE

A. Qualifications: The fabrication and installation of the Work of this Section shall be performed by a fabricator and installer certified or approved by the solid plastic manufacturer.

1.3 PROJECT CONDITIONS

A. Do not install the Work of this Section until the walls and ceilings of the spaces to receive the Work have been finished.

PART 2 - PRODUCTS

2.1 COMPANIES

A. DuPont Surfaces, Chestnut Run Plaza, P.O. Box 80721, Wilmington, DE 19880-0721, (800) 436-6072, www.corian.com.

B. Formica Corp., 10155 Reading Rd., Cincinnati, OH 45241, (800) 367-6422, www.formica.com.

C. The Swan Corp., One City Centre, Suite 2300, St. Louis, MO 63101, (800) 325-7008, www.theswancorp.com.

D. Wilsonart International, Inc., 2400 Wilson Pl. P.O. Box 6110, Temple, TX 76503-6110, (800) 433-3222, www.wilsonart.com.

2.2 MATERIALS

A. Solid Plastic Panels: Corian by DuPont Surfaces; Formica Solid Surfacing by Formica Corp.; Swanstone Solid Surface by The Swan Corp.; or Gibraltar Solid Surfacing by Wilsonart International.

1. Color and Pattern: As selected by Director's Representative from manufacturer's full range.
2. Adhesives, Fillers, and Sealants: Panel manufacturer's standard or recommended materials.

2.3 FABRICATION

A. Shop fabricate components to greatest extent possible to sizes and shapes indicated, in accordance with approved shop drawings.

B. Form joints between components using joint adhesive, without conspicuous joints.

C. Provide shop cutouts for fittings and accessories as indicated on the Drawings.

D. Cut and finish component edges with clean, sharp returns. Rout radii and contours to template. Repair or replace defective and inaccurate materials.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install the Work of this Section in accordance with the manufacturer's printed instructions, approved shop drawings, and as follows:

1. Install components plumb and level, scribed to adjacent surfaces.
2. Form field joints using adhesive, with joints inconspicuous in finished work.
3. Provide back splashes and end splashes in locations indicated.
4. Installation Tolerances: Plus or minus 1/8 inch overall.
5. Keep components clean during installation.

3.2 CLEANING

A. After installation, clean exposed surfaces to remove dirt, adhesive, sealant, and other blemishes. Comply with panel manufacturer's printed cleaning instructions.

3.3 PROTECTION

A. Apply heavy kraft paper or other heavy protective coating approved by the Director's Representative, masked in place to prevent surface damage.

END OF SECTION

SECTION 070150 - MODIFICATIONS TO EXISTING WARRANTIED ROOF SYSTEM

PART 1 - GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

A. Rough Carpentry: Section 061000.

B. EPDM Membrane: Section 075323

C. Roof Accessories: Section 077200.

1.2 SYSTEM DESCRIPTION

A. The Work of this Section consists of modifications to the existing warrantied roof system on the existing Armory Building.

1. Existing Type of Roof System: 0.090” EPDM Single Ply Membrane, Fully Adhered over polyiso insulation and vapor retarder, installed 2013.
2. Existing Roof System Manufacturer: Firestone, 20yr Warranty #RO057402.

1.3 PRE-INSTALLATION CONFERENCE

A. At the discretion of the Director's Representative, a conference may be called before the Work is scheduled to commence for the purpose of reviewing the Drawings and the Specifications and discussing requirements for the Work. The conference shall be attended by the Contractor, the authorized roofing applicator and if necessary, a representative of the existing roof system manufacturer.

1.4 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Waiver of Submittals: The "Waiver of Certain Submittal Requirements" in Section 013300 does not apply to this Section.

E. Submittals Package: Submit the product data and quality control submittals specified below at the same time in one complete package. Partial submittal will not be considered.

F. Product Data:

1. Membrane manufacturer's installation instructions and details for the Work of this Section.
2. Manufacturer's data sheets for materials required for the Work of this Section.

G. Quality Control Submittals:

1. Applicator's Certification: Letter from the existing roof system manufacturer certifying that the applicator is licensed or approved to perform the Work of this Section prior to bid.
2. Material Certification: Letter from the existing roof system manufacturer certifying that the materials used for the Work of this Section are approved for use with the existing system.
3. Warranty Certification: Letter from the existing roof system manufacturer certifying that the Work of this Section will not modify or void the existing warranty.

1.5 QUALITY ASSURANCE

A. Applicator's Qualifications: The Work of this Section shall be performed by an applicator licensed or approved by the existing roof system manufacturer prior to bid.

B. Material Certification: The materials used for the Work of this Section shall be approved by the existing roof system manufacturer.

C. Warranty Certification: The Work of this Section shall not modify or void the existing roof system warranty.

1. Submit a copy of the Contract Documents to the existing roof system manufacturer for review and approval.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials to the site in the manufacturer's labeled, unbroken containers.

B. Storage and Handling: Store materials in a dry, well ventilated place protected from the weather.

1. Volatile liquids shall be stored in a separate storage building or trailer, or removed from the Site at the end of each workday.
2. Store volatile liquids at temperatures recommended by the manufacturer.
3. Store adhesives at temperatures between 60 degrees F and 80 degrees F.

1.7 PROJECT CONDITIONS

A. Do not execute the Work of this Section unless the Director's Representative is present, unless otherwise directed in writing.

B. Do not execute the Work of this Section unless the substrate is dry and free of dirt and debris.

C. Moisture Protection:

1. Cover, seal or otherwise protect the roof and flashings so that water cannot accumulate or flow under completed portions. When and where necessary to accomplish this, provide temporary water cut-offs in accordance with the membrane manufacturer's written specifications.
2. Limit the removal of existing materials to areas that can be completely re-roofed or temporarily protected within the same day.

D. Do not smoke or use open flames near volatile materials.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Provide materials required to complete the Work of this Section. Materials shall be approved by the existing roof system manufacturer. Materials shall be equal to but not less that those specified for new construction. Refer to Section 075323 EPDM Roof Membrane Assemblies.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install the Work of this Section as shown on the Contract Drawings and in accordance with the existing roof system manufacturer's written instructions.

1. Install the Work of this Section so that the watertight integrity of the existing system is not compromised.

END OF SECTION 070150

SECTION 072100 - THERMAL INSULATION

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:

1. Extruded polystyrene foam-plastic board insulation.
2. Mineral-wool blanket insulation.
3. Mineral-fiber blanket insulation.
4. Mineral-wool board insulation.
5. Spray-foam insulation.

1.3 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For the following:

1. Extruded polystyrene foam-plastic board insulation.
2. Mineral-wool blanket insulation.
3. Mineral-fiber blanket insulation.
4. Mineral-wool board insulation.
5. Spray-foam insulation.

E. Samples:

1. Blanket, Batt or Roll: 12-inch-square.
2. Rigid Type: 12-inch-square.

F. Quality Control Submittal:

1. Certificate: Affidavit required under Quality Assurance Article.

G. Product Test Reports: For each product, for tests performed by a qualified testing agency.

H. Research Reports: For foam-plastic insulation, from UNIFORM CODE-ES.

1.4 QUALITY ASSURANCE

A. Allowable Thickness Variations: Manufacturer's standard units which vary slightly from the thickness indicated may be acceptable, subject to the approval of the Director's Representative.

B. Thermal Resistance: The thicknesses shown are for the thermal resistance (R-Value in accordance with ASTM C 177 or ASTM C 518) specified for each material. The R-Values specified are minimum acceptable. Provide adjusted thicknesses as directed for the use of material having a different thermal resistance.

C. Certification: Affidavit by the polystyrene thermal insulation manufacturer, certifying that the insulation was manufactured with CFC and HCFC-free blowing agents.

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. 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. Do not deliver foam-plastic board materials to Project site until just before installation time.
3. Quickly complete installation and concealment of foam-plastic board insulation in each area of construction.

1.6 PROJECT CONDITIONS

A. Do not proceed with the installation of insulation on walls or under slabs until the Work which follows (and which conceals the insulation) is ready to be performed.

B. Examination of Substrate: Examine the substrate and the conditions under which the insulation Work is to be performed. Do not proceed with the insulation Work until unsatisfactory conditions have been corrected.

PART 2 - PRODUCTS

2.1 EXTRUDED POLYSTYRENE FOAM-PLASTIC BOARD INSULATION

A. Extruded Polystyrene Board Insulation, Type IV: ASTM C578, Type IV, 25-psi minimum compressive strength; unfaced.

1. Drainage channels.
2. Edges and Ends: Square or tongue-and-groove at manufacturer's option.
3. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
4. Smoke-Developed Index: Not more than 450 when tested in accordance with ASTM E84.
5. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.

2.2 MINERAL-WOOL RIGID BLANKET INSULATION

A. Rigid or Semi-Rigid Mineral-Wool Blanket Insulation, Unfaced: ASTM C665, Type I (blankets without membrane facing); consisting of fibers; passing ASTM E136 for combustion characteristics.

1. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
2. Smoke-Developed Index: Not more than 50 when tested in accordance with ASTM E84.
3. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.

2.3 MINERAL FIBER INSULATION

A. Mineral Fiber Insulation: Glass or other inorganic fibers and resinous binders formed into flexible blankets, batts or rolls; ASTM C 665.

1. R-Value:

a. 3-1/2 or 3-5/8 Inches Nominal Thickness: R = 11.0.
b. 6-1/4 or 6-1/2 Inches Nominal Thickness: R = 19.0.

2. Type II, Class C - Blankets with a nonreflective barrier membrane covering one principal face.

2.4 MINERAL-WOOL BOARD INSULATION

A. Mineral-Wool Board Insulation, Types IVA, Unfaced: ASTM C612; passing ASTM 285 for combustion characteristics.

1. Nominal Density: 4 lb/cu. ft.
2. Flame-Spread Index: Not more than 15 when tested in accordance with ASTM E84.
3. Smoke-Developed Index: Not more than zero when tested in accordance with ASTM E84.

4. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.
5. Basis of Design: Rockwool Comfortboard 110.

2.5 INSULATION FASTENERS

A. Mechanical Anchor Pins: Type and size shown or, if not shown, as recommended by the insulation manufacturer for the type of application shown and condition of substrate.

1. Hilti X-IE-G 6 Insulation Fastener by length required, or approved equal.

B. Anchor Adhesive: Product with demonstrated capability to bond insulation anchors securely to substrates without damaging insulation, fasteners, or substrates.

2.6 ACCESSORIES

A. Insulation for Miscellaneous Voids:

1. Glass-Fiber Insulation: ASTM C764, Type II, loose fill; with maximum flame-spread and smoke-developed indexes of 5, per ASTM E84.

B. Spray Foam Insulation: “GREAT STUFF PRO™ Window & Door” by The Dow Chemical Company.

1. Polyurethane.
2. Single Component.
3. Closed Cell.
4. Low Expansion / Low Pressure (recommended by the manufacturer for use around windows and doors).
5. Manufacturers standard 15-minute thermal barrier paint or integrated thermal barrier formula; ASTM E84.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean substrates of substances that are harmful to insulation, including removing projections capable of puncturing insulation or vapor retarders, or that interfere with insulation attachment.

3.2 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and applications. If printed instructions are not available or do not apply to the project conditions, consult the manufacturer’s technical representative for specific recommendations before proceeding with the work.

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. Install insulation with manufacturer's R-value label exposed after insulation is installed.

D. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

E. Provide sizes to fit applications and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units unless multiple layers are otherwise shown or required to make up total thickness or to achieve R-value.

3.3 INSTALLATION OF SLAB INSULATION

A. On vertical slab edge and foundation surfaces, set insulation units using manufacturer's recommended adhesive according to manufacturer's written instructions.

1. If not otherwise indicated, extend insulation a minimum of 48 inches below exterior grade line.

B. On horizontal surfaces, loosely lay insulation units according to manufacturer's written instructions. Stagger end joints and tightly abut insulation units.

1. If not otherwise indicated, extend insulation a minimum of 24 inches in from exterior walls.

3.4 INSTALLATION OF FOUNDATION WALL INSULATION

A. Butt panels together for tight fit.

B. Anchor Installation: 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.
2. Space anchors according to insulation manufacturer's written instructions for insulation type, thickness, and application.
3. Apply insulation standoffs to each spindle to create cavity width indicated on Drawings between concrete substrate and insulation.
4. Where insulation will not be covered by other building materials, apply capped washers to tips of spindles.

3.5 INSTALLATION OF CAVITY-WALL INSULATION

A. Foam-Plastic Board Insulation: Install pads of adhesive spaced approximately 24 inches o.c. both ways on inside face.

1. Fit courses of insulation between wall ties and other obstructions, with edges butted tightly in both directions, and with faces flush.

2. Press units firmly against inside substrates.
3. Supplement adhesive attachment of insulation by securing boards with two-piece wall ties designed for this purpose and specified in Section 042000 "Unit Masonry."

B. Mineral-Wool Board Insulation: Install insulation fasteners 4 inches from each corner of board insulation, at center of board.

1. Fit courses of insulation between masonry wall ties and other obstructions, with edges butted tightly in both directions, and with faces flush.
2. Press units firmly against inside substrates.

3.6 INSTALLATION OF INSULATION IN FRAMED CONSTRUCTION

A. 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 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, support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.
5. Vapor-Retarder-Faced Blankets: Tape joints and ruptures in vapor-retarder facing and seal each continuous area of insulation to ensure airtight installation.

    a. Exterior Walls: Set units with facing placed toward interior of construction.

B. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:

1. Glass-Fiber Insulation: Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft.
2. Spray Polyurethane Insulation: Apply according to manufacturer's written instructions.

3.7 INSTALLATION OF CURTAIN-WALL INSULATION

A. Install board insulation in curtain-wall construction according to curtain-wall manufacturer's written instructions.

1. Hold insulation in place by securing metal clips and straps or integral pockets within window frames, spaced at intervals recommended in writing by insulation manufacturer to hold insulation securely in place without touching spandrel glass.
2. Maintain cavity width of dimension indicated on Drawings between insulation and glass.
3. Install insulation to fit snugly without bowing.

3.8 PROTECTION

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes.

B. 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 072500 - WEATHER BARRIERS

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:

1. Building wrap.
2. Flexible flashing.

B. Related Sections:

1. Section 019119 for Related Building Enclosure Commissioning.

1.3 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

1. For building wrap, include data on air and water-vapor permeance based on testing according to referenced standards.
2. Include manufacturer’s installation instructions.

E. Shop Drawings: Show details of building wrap at terminations, openings, and penetrations. Show details of flexible flashing applications.

PART 2 - PRODUCTS

2.1 WATER-RESISTIVE BARRIER

A. Building Wrap: ASTM E1677, Type I air barrier; with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, when tested according to ASTM E84; UV stabilized; and acceptable to authorities having jurisdiction.

1. Water-Vapor Permeance: Not less than 75 perms per ASTM E96, Desiccant Method (Procedure A).
2. Air Permeance: Not more than 0.004 cfm/sq. ft. at 0.3-inch wg when tested according to ASTM E2178.
3. Allowable UV Exposure Time: Not less than three months.
4. Basis of Design: WR Meadows Air-Shield.

B. Building-Wrap Tape: Pressure-sensitive plastic tape recommended by building-wrap manufacturer for sealing joints and penetrations in building wrap.

2.2 FLEXIBLE FLASHING

A. Butyl Rubber Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.040 inch.

B. Primer for Flexible Flashing: Product recommended in writing by flexible flashing manufacturer for substrate.

C. Nails and Staples: Product recommended in writing by flexible flashing manufacturer and complying with ASTM F1667.

D. Basis of Design: WR Meadows Air-Shield.

PART 3 - EXECUTION

3.1 WATER-RESISTIVE BARRIER INSTALLATION

A. Cover exposed exterior surface of sheathing with water-resistive barrier securely fastened to framing immediately after sheathing is installed.

B. Cover sheathing with water-resistive barrier as follows:

1. Cut back barrier 1/2 inch on each side of the break in supporting members at expansion- or control-joint locations.
2. Apply barrier to cover vertical flashing with a minimum 4-inch overlap unless otherwise indicated.

C. Building Wrap: Comply with manufacturer's written instructions and warranty requirements.

1. Seal seams, edges, fasteners, and penetrations with tape.
2. Extend into jambs of openings and seal corners with tape.

3.2 FLEXIBLE FLASHING INSTALLATION

A. Apply flexible flashing where indicated to comply with manufacturer's written instructions.

1. Prime substrates as recommended by flashing manufacturer.
2. Lap seams and junctures with other materials at least 4 inches except that at flashing flanges of other construction, laps need not exceed flange width.
3. Lap flashing over water-resistive barrier at bottom and sides of openings.
4. Lap water-resistive barrier over flashing at heads of openings.
5. After flashing has been applied, roll surfaces with a hard rubber or metal roller to ensure that flashing is completely adhered to substrates.

3.3 DRAINAGE MATERIAL INSTALLATION

A. Install drainage material over building wrap and flashing to comply with manufacturer's written instructions.

3.4 FIELD QUALITY CONTROL

A. Refer to Section 019119 “Building Enclosure Commissioning” for additional information on specific responsibilities and testing goals.

B. Testing Agency: Contractor to Engage a qualified testing agency to perform tests and inspections.

1. Building Enclosure Commissioning Provider will interpret tests and state in each report whether tested work complies with or deviates from requirements.

C. Test Area: Perform tests on representative areas of weather resistive barriers.

D. Field Quality-Control Testing: Perform the following tests on representative areas.

1. Air Leakage: ASTM E1186 Bubble Gun test at localized areas that evidence no signs of air leakage.

a. Perform a minimum of tests in areas as directed by Director’s Representative.

E. Weather Resistive Barriers will be considered defective if they do not pass tests and inspections.

F. Prepare test and inspection reports.

END OF SECTION 072500

SECTION 072600 - VAPOR RETARDERS

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:

1. Smart Vapor retarder and accessory materials for application over interior mineral wool insulation board as indicated on the drawings.

B. Related Sections

1. Section 072100 “Thermal Insulation.”

1.3 REFERENCE STANDARDS

A. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

B. ASTM D 1709 Standard Test Methods of Impact Resistance of Plastic Film by the Free-Falling Dart Method.

C. ASTM E 96 Standard Test Methods for Water Vapor Transmission of Materials.

D. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

E. ASTM E 154 Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs.

F. ASTM E 1643 Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.

G. ASTM E 1745 Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil Or Granular Fill Under Concrete Slabs.

1.4 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer's installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

E. Samples:

1. Vapor Retarder Material: 12 inches square.
2. Pressure-Sensitive Tape: 36 inches long piece minimum.

F. Product Test Reports: For each product, for tests performed by a qualified testing agency.

1.5 ADMINISTRATIVE REQUIREMENTS

A. Pre-Installation Meeting: Convene before the start of installation of air and water-resistive barrier system.

1. Require attendance of parties directly affecting work of this Section, including the Owner's Representative, Contractor, Architect, installing subcontractor, membrane system manufacturer's representative, and all subcontractors who have materials penetrating membrane system or finishes covering membrane system.
2. Contractor shall notify Architect at least seven days prior to time for conference.
3. Contractor shall record minutes of meeting and distribute to attending parties.
4. Review the following:

a. Interior surface preparation.
b. Interior substrate condition and pretreatment.
c. Minimum curing period.
d. Special details and sheet flashing.
e. Sequence of construction, responsibilities, and schedule for subsequent operations.
f. Installation procedures.
g. Inspection procedures.
h. Protection and repair procedures.
i. Review and approval of application.

1.6 QUALITY ASSURANCE

A. Applicable standards, as referenced herein: ASTM International (ASTM).

C. Manufacturer Qualifications: Manufacturer with a minimum of ten years experience manufacturing products in this section shall provide all products listed

D. Installer's qualifications: Products listed in this section shall be installed by a single organization with at least five years' experience successfully installing vapor retarders.

E. Regulations: Provide products which comply with all state and local regulations controlling use of volatile organic compounds (VOC).

F. Mock-up:

1. Prior to installation of the vapor barrier a mock-up shall be applied to verify details to demonstrate the required installation.

    a. Allow 72 hours for inspection and testing of mock-up before proceeding with vapor barrier work.
    b. Coordinate construction of mockups to permit inspection by Owner's Representative of vapor barrier before beginning installation.
    c. Approved, undamaged mock-up must remain as part of the work.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials and products in labeled packages. Store and handle in strict compliance with manufacturer's instructions and recommendations. Protect from damage, weather, excessive temperatures and construction operations. Remove damaged material from site and dispose of in accordance with applicable regulations.

B. Protect vapor barrier components from freezing and extreme heat.

C. Sequence deliveries to avoid delays, and to minimize on-site storage.

1.8 FIELD CONDITIONS

A. Environmental limitations:

1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

B. Proceed with installation only when the substrate construction and preparation work are complete and in condition to receive the membrane system.

PART 2 - PRODUCTS

2.1 VAPOR RETARDER

A. Acceptable Manufacturer: Certainteed, 20 Moores Rd, Malvern, PA 19355. Tel 800-233-8990.

B. Sheet Retarder: Certainteed MemBrain (Basis of Design) , Polyimide film vapor retarder for use with unfaced, vapor permeable glass fiber and mineral wool insulation in wall cavities. Material has a permeance of 1 perm or less when tested to ASTM E 86, dry cup method and increases to greater than 10 perms using the wet cup method.

1. Water Vapor Permeance:

    a. ASTM E 86, dry cup method: 1.0 perms (57ng/Pa*s*m2).
    b. ASTM E 86, wet cup method: 10.0 perms (1144ng/Pa*s*m2).

2. Fire Hazard Classification: ASTM E 84:

    a. Maximum Flame Spread Index; 25
    b. Maximum Smoke Developed Index; 450

C. Vapor Barrier Fasteners: Hilti X-IE-G 6 Insulation Fasteners for use in fastening vapor barrier and rigid insulation. Length to be as recommended by fastener manufacturer for insulation thickness specified or shown on drawings.

D. Vapor Retarder Tape: 3” wide white Vapor Retarder Seam Tape; Bluetex or equal.

E. Sealant: Product approved by Vapor Retarder manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION OF VAPOR RETARDERS

A. Install vapor retarder in accordance with manufacturer’s printed instructions and ASTM E 1643.

B. Install without gaps or voids.

C. Install vapor barrier over mineral wool insulation board facing the warm side, using adhesive recommended by manufacturer. Seal around penetrations such as utilities and columns in order to create a monolithic, airtight membrane at grade surface, perimeter, and all vertical penetrations.

D. Each membrane sheet should be lapped 6” and loosely taped with a manufacturer recommended seam tape, doublestick tape and/or a bead of urethane sealant adhesive. Tape and seal at all perimeter terminations and wrap into the window openings. Stick-pin anchors used to fix the insulation board may be used as an adhesive surface for the vapor retarder membrane. Turn horizontally onto the ceiling and the floor, 3” and set in double-stick adhesive tape or adhesive

sealant. At the ceilings, install concrete plastic cap nails every 48” to affix the membrane until the metal furring walls are positioned and clamp the membrane in place.

E. Note that all fire-rated assemblies are to be sealed directly to the plaster or masonry surface of the exterior wall. As indicated on plans, the air vapor membrane applied to the inside face of exterior walls, as well as the insulation, studs, and new gypsum board around the perimeter is to be discontinuous where it meets all rated walls to accommodate this requirement.

3.4 PROTECTION

A. Protect vapor retarders from damage until concealed by permanent construction.

B. Repair tears and punctures with a piece of vapor retarder material, overlapping the tear or puncture a minimum of six inches on all sides, and completely seal edges with pressure-sensitive tape or adhesive.

END OF SECTION 072600

SECTION 072700 - AIR BARRIERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes air leakage criteria for primary air seal building enclosure materials and assemblies; materials and installation methods supplementing other air seal materials and assemblies; and air seal materials to connect and seal openings, joints, and junctions between other air seal materials and assemblies.

B. Related Sections:

1. Section 019119 for Related Building Enclosure Commissioning.
2. Section 072600: Vapor Retarders.

1.2 REFERENCES

A. American Society of Civil Engineers:

1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

B. ASTM International:

1. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
2. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
3. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
4. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors By Uniform Static Air Pressure Difference.

C. Sealant, Waterproofing and Restoration Institute:

1. SWRI - Sealant Specification.

1.3 DEFINITIONS

A. Air Barrier: Continuous network of materials and joints providing air tightness, with adequate strength and stiffness to not deflect excessively under air pressure differences, to which it will be subjected in service. It can be comprised of single material or combination of materials to achieve performance requirements.

1.4 DESIGN REQUIREMENTS

A. Perform design work in accordance with ASCE 7.

1.5 PERFORMANCE REQUIREMENTS

A. Static Test: Resist air leakage caused by static air pressure across exterior wall assemblies and other interruptions to integrity of building enclosure systems; to maximum air leakage rate of 0.40 cfm/sq ft when subjected to pressure differential of 1.57lb/sq ft when tested in accordance with ASTM E283.

B. Dynamic Test: Resist air leakage caused by dynamic air pressure across exterior wall assemblies and other interruptions to integrity of wall and roof systems; to maximum air leakage rate of 0.40 cfm/sq ft when subjected to pressure differential of 1.57 lb/sq ft when tested in accordance with ASTM E283.

C. Provide continuity of air seal materials and assemblies in conjunction with materials described in Section 085113.

1.6 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Design Data: Submit design calculations.

E. Manufacturer's Installation Instructions: Submit preparation, installation requirements and techniques, product storage and handling criteria.

1.7 QUALITY ASSURANCE

A. Perform Work in accordance with SWRI - Sealant and Caulking Guide Specification requirements for materials and installation.

B. Maintain one copy of each document on site.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Section 016000 - Product Requirements.

B. Maintain temperature and humidity recommended by materials manufacturers before, during and after installation.

1.9 SEQUENCING

A. Section 011000 - Summary: Work sequence.

B. Sequence Work to permit installation of materials in conjunction with related materials and seals.

1.10 COORDINATION

A. Section 013000 - Administrative Requirements: Coordination and project conditions.

B. Coordinate the Work of this section with sections referencing this section.

PART 2 - PRODUCTS

2.1 AIR BARRIERS

A. Furnish materials in accordance with State standards.

2.2 SUSTAINABILITY CHARACTERISTICS

A. Materials and Resources Characteristics:

1. Recycled Content Materials: Furnish materials with maximum available recycled content.

2.3 COMPONENTS

A. Sheet Seal: EPDM, 90 mil thick; manufactured by Firestone.

B. Liquid Seal Type 3: Synthetic rubber, roller applied, nominal total thickness as recommended by the manufacturer, Tremco.

C. Butyl Sealant Type A: ASTM C920, Grade NS, Class S, Use butyl rubber base, single component, solvent release, non-skinning,; black:

1. Elongation Capability: 5 percent.
2. Service Temperature Range: -40 to 180 degrees F.
3. Shore A Hardness Range: 10 to 30.

D. Primer: Recommended by sealant manufacturer.

E. Substrate Cleaner: Non-corrosive, compatible with adjacent materials.

F. Mastic Adhesive Type 1: Compatible with sheet seal and substrate, thick mastic of uniform knife grade manufactured by MAPEI.

2.4 ACCESSORIES

A. Thinner and Cleaner for Butyl Sheet: As recommended by sheet material manufacturer.

B. Tape: Polyethylene self adhering type, mesh reinforced, 50 mm wide, compatible with sheet material.

C. Attachments: Galvanized steel bars and anchors, 2 inch.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean and prime substrate surfaces to receive adhesive and sealants.

3.2 INSTALLATION

A. Sheet Seal Over Solid Substrate: Secure flexible sheet sea Type 1 to masonry materials with adhesive sealant to ensure complete seal. Position lap seal over firm bearing.

B. Liquid Seal Over Solid Substrate: Place liquid seal Type 1 to materials by roller with Type 1 sealant to ensure complete seal.

C. Install sheet seal Type 1 between window and door frames and adjacent wall seal materials with sealant Type 1. Caulk to ensure complete seal. Position lap seal over firm bearing.

D. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

E. Install air barrier to maintain continuity across different substrates and interface with existing construction.

3.3 PROTECTION OF INSTALLED CONSTRUCTION

A. Do not permit adjacent work to damage work of this section.

END OF SECTION 072700

SECTION 074213.19 - INSULATED METAL WALL PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Foamed-insulation-core metal wall panels.
2. Structural metal framing, girts, trim and accessory flashings and trim.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Meet with Director’s Representative, Director’s Representative’s insurer if applicable, metal panel Installer, metal panel manufacturer's representative, structural-support Installer, and installers whose work interfaces with or affects metal panels, including installers of doors, windows, and louvers.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review methods and procedures related to metal panel installation, including manufacturer's written instructions.
4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
5. Review flashings, special siding details, wall penetrations, openings, and condition of other construction that affect metal panels.
6. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
7. Review temporary protection requirements for metal panel assembly during and after installation.
8. Review procedures for repair of metal panels damaged after installation.
9. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.3 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.
2. Include manufacturer's installation instructions.

E. Shop Drawings:

1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches.

F. Samples for Initial Selection: For each type of metal panel indicated with factory-applied color finishes.

1. Include similar Samples of trim and accessories involving color selection.

G. Samples for Verification: For each type of exposed finish, prepared on Samples of size indicated below.

1. Metal Panels: 12 inches long by actual panel width. Include fasteners, closures, and other metal panel accessories.

H. Quality Control Submittals:

1. Qualification Data: For Installer.
2. Product Test Reports: For each product, tests performed by a qualified testing agency.
3. Field quality-control reports.
4. Sample Warranties: For special warranties.

I. Contract Closeout Submittals:

1. Maintenance Data: For metal panels to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

B. Mockups: Build Mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

1. Build Mockup of typical metal panel assembly as shown on Drawings, including corner, soffits, supports, attachments, and accessories.
2. Water-Spray Test: Conduct water-spray test of metal panel assembly mockup, testing for water penetration according to AAMA 501.2.
3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in Benchmarks unless Director's Representative specifically approves such deviations in writing.

4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, 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 horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Retain strippable protective covering on metal panels during installation.

1.6 FIELD 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.

1.7 COORDINATION

A. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems 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 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 panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Hunter units when tested according to ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

C. Special Warranty: The one year period required by Paragraph 9.8 of the General Conditions is extended to 2 years for the Work in this Section. Refer to Supplementary Conditions.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E72:

1. Wind Loads: Zone 4 & 5 as indicated on Drawings.
2. Deflection Limits: For wind loads, no greater than 1/180 of the span.

B. Air Infiltration: Air leakage of not more than 0.06 cfm/sq. ft when tested according to ASTM E283 at the following test-pressure difference:

1. Test-Pressure Difference: 6.24 lbf/sq. ft.

C. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E331 at the following test-pressure difference:

1. Test-Pressure Difference: 6.24 lbf/sq. ft.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 180 deg F, material surfaces.

E. Fire-Test-Response Characteristics: Provide metal wall panels and system components with the following fire-test-response characteristics, as determined by testing identical panels and system components 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 agency.

1. Fire-Resistance Characteristics: Provide materials and construction tested for fire resistance per ASTM E119.
2. Intermediate-Scale Multistory Fire Test: Tested mockup, representative of completed multistory wall assembly of which wall panel is a part, complies with NFPA 285 for test method and required fire-test-response characteristics of exterior non-load-bearing wall panel assemblies.
3. Radiant Heat Exposure: No ignition when tested according to NFPA 268.

4. Potential Heat: Acceptable level when tested according to NFPA 259.
5. Surface-Burning Characteristics: Provide wall panels with a flame-spread index of 25 or less and a smoke-developed index of 450 or less, per ASTM E84.

2.2 FOAMED-INSULATION-CORE METAL WALL PANELS

A. General: Provide factory-formed and -assembled metal wall panels fabricated from two metal facing sheets and insulation core foamed in place during fabrication, and with joints between panels designed to form weathertight seals. Include accessories required for weathertight installation.

1. Insulation Core: Modified isocyanurate or polyurethane foam using a non-CFC blowing agent, with maximum flame-spread and smoke-developed indexes of 25 and 450, respectively.

a. Closed-Cell Content: 90 percent when tested according to ASTM D6226.
b. Density: 2.0 to 2.6 lb/cu. ft. when tested according to ASTM D1622.
c. Compressive Strength: Minimum 20 psi when tested according to ASTM D1621.
d. Shear Strength: 26 psi when tested according to ASTM C273.

B. Concealed-Fastener, Foamed-Insulation-Core Metal Wall Panels: Formed with tongue-and-groove panel edges; designed for sequential installation by interlocking panel edges and mechanically attaching panels to supports using concealed clips or fasteners.

1. Basis of Design: Versawall V+ by Centria.
2. Metallic-Coated Steel Sheet: Facings of zinc-coated (galvanized) steel sheet complying with ASTM A653, G90 coating designation, or aluminum-zinc alloy-coated steel sheet complying with ASTM A792, Class AZ50 coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A755.

a. Gauge: 24 ga.
b. Exterior Finish: Two-coat fluoropolymer.

1) Color: As selected by Director’s Representative from manufacturer's custom colors. Basis of Design Color: Centria 977 Moss with Dark Bronze trim.

3. Backer Board: On back side of exterior facing.
4. Panel Coverage: 36 inches nominal.
5. Panel Thickness: 2.75 inches.
6. Thermal-Resistance Value (R-Value): R-23 according to ASTM C1363.
7. Accessory Pieces: Provide one-piece inside/ outside corner covers.

2.3 MISCELLANEOUS MATERIALS

A. Miscellaneous Metal Subframing and Furring: ASTM C645, cold-formed, metallic-coated steel sheet, ASTM A653, G90 coating designation or ASTM A792, Class AZ50 aluminum-zinc-alloy coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.

B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.

1. Closures: Provide closures at eaves and rakes, fabricated of same metal as metal panels.
2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

C. Backer Board: Hardboard complying with ANSI A135.4, Class 1 tempered, 1/4 inch thick unless otherwise indicated.

D. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, bases, drips, sills, jambs, corners, endwalls, framed openings, rakes, fasciae, parapet caps, soffits, reveals, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.

E. Panel Fasteners: Self-tapping screws designed to withstand design loads. Provide exposed fasteners with heads matching color of metal panels by means of plastic caps or factory-applied coating. Provide EPDM or PVC sealing washers for exposed fasteners.

F. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.

1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
2. Joint Sealant: ASTM C920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C1311.

2.4 FABRICATION

A. General: Fabricate and finish metal panels and accessories at the factory, 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. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.

C. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.

D. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to 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. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
3. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
5. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.

    a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal wall panel manufacturer for application but not less than thickness of metal being secured.

2.5 FINISHES

A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. 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 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.

C. Aluminum Panels and Accessories:

1. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

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 the Work.

1. Examine wall framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by metal wall panel manufacturer.
2. Examine wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal wall panel manufacturer.

    a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C754 and metal panel manufacturer's written recommendations.

3.3 METAL PANEL INSTALLATION

A. General: Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal 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 panels.
2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
3. Install screw fasteners in predrilled holes.
4. Locate and space fastenings in uniform vertical and horizontal alignment.
5. Install flashing and trim as metal panel work proceeds.
6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
7. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
8. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.

B. Fasteners:

1. Steel Panels: Use stainless-steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.
2. Aluminum Panels: Use aluminum or stainless-steel fasteners for surfaces exposed to the exterior; use aluminum or galvanized-steel fasteners for surfaces exposed to the interior.

C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

D. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weathertight performance of metal wall panel assemblies. Provide types of gaskets, fillers, and sealants indicated by metal panel manufacturer; or, if not indicated, provide types recommended by metal wall panel manufacturer.

1. Seal metal wall panel end laps with double beads of tape or sealant, full width of panel. Seal side joints where recommended by metal wall panel manufacturer.
2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

3.4 INSULATED METAL WALL PANEL INSTALLATION

A. General: Apply continuous ribbon of sealant to panel joint on concealed side of insulated metal wall panels as vapor seal; apply sealant to panel joint on exposed side of panels for weather seal.

1. Fasten foamed-insulation-core metal wall panels to supports with fasteners at each lapped joint at location and spacing and with fasteners recommended by manufacturer.
2. Apply panels and associated items true to line for neat and weathertight enclosure. Avoid "panel creep" or application not true to line.
3. Provide metal-backed washers under heads of exposed fasteners on weather side of insulated metal wall panels.
4. Locate and space exposed fasteners in uniform vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of washer.
5. Provide sealant tape at lapped joints of insulated metal wall panels and between panels and protruding equipment, vents, and accessories.
6. Apply a continuous ribbon of sealant tape to panel side laps and elsewhere as needed to make panels weathertight.

B. Foamed-Insulation-Core Metal Wall Panels: Fasten metal wall panels to supports with concealed clips at each joint at location and spacing and with fasteners recommended by manufacturer. Fully engage tongue and groove of adjacent panels.

1. Install clips to supports with self-tapping fasteners.

C. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal panel manufacturer; or, if not indicated, provide types recommended by metal panel manufacturer.

D. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level. Install work with laps, joints, and seams that are permanently watertight.

1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to achieve waterproof performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Water-Spray Test: After installation, test area of assembly as directed by Director’s Representative for water penetration according to AAMA 501.2.

C. Manufacturer's Field Service: Engage a Company Service Advisor to test and inspect completed metal wall panel installation, including accessories.

D. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.

E. Prepare test and inspection reports.

3.6 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. After metal panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.

C. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 074213.19

SECTION 075323 - ETHYLENE-PROPYLENE-DIENE-MONOMER (EPDM) ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Adhered ethylene-propylene-diene-terpolymer (EPDM) roofing system.
2. Substrate board.
3. Vapor retarder.
4. Roof insulation.
5. Cover Board.
6. Walkways.

B. Related Sections:

1. Section 019119 for Related Building Enclosure Commissioning.

1.2 DEFINITIONS

A. Roofing Terminology: Definitions in ASTM D1079 and glossary of NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" apply to work of this Section.

B. Company Field Advisor; An individual meeting the requirements of either subparagraph below:

1. An employee of the company producing or manufacturing the system (or the company which lists and markets the primary components of the system under their name) who is certified in writing by the company to be technically qualified in design, installation, and servicing of the required products, and has experience in the installation of the required products. Personnel involved solely in sales do not qualify.
2. An individual employed by an organization (other than the company producing or manufacturing the system), certified in writing by the company producing or manufacturing the system, that the individual is technically qualified in design, installation and servicing of the required products and is capable to act as company field advisor in their behalf, and has experience in the installation of the required products. Personnel involved solely in sales do not qualify.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Roofing Conference: Conduct conference at Project site.

1. Meet with Director’s Representative, testing and inspecting agency representative, roofing Installer, roofing manufacturer’s Company Field Advisor, deck Installer, air barrier Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.

2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Examine deck substrate conditions and finishes, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that affects roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

1.4 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Waiver Of Submittals:

1. “Named Brand” Roofing Systems: The “Waiver Of Certain Submittal Requirements” in Section 013300 applies to this Section only if a “Named Brand” roofing system is furnished.
2. “Or Equal” Roofing Systems: The “Waiver Of Certain Submittal Requirements” in Section 013300 does not apply to this Section if an “or equal” is submitted.

E. Submittals Package: Submit the shop drawings, product data, samples, and quality control submittals specified below at the same time as a package.

F. “Named Brand” Submittals: Submit for approval, one of the “named brand” roofing systems and any proposed deviations from the Contract Documents. Submit Product Data, Samples, Applicator’s Certification, and Material’s Certification, to the Director’s Representative at the site for information purposes only.

G. “Or Equal” Submittals: Submit for approval, product data, samples, quality control submittals, and any proposed deviations from the Contract Documents.

H. Approvals: Approval of a “named brand” or “or equal” roofing system is with the understanding that the requirements of the Contract Documents will be met. Approval of a roofing system does not constitute blanket approval of the manufacturer’s installation specifications or details.

1. If the requirements of the Contract Documents differ from or are more stringent than the requirements of the approved roof system manufacturer, the Contract Documents have precedence over the requirements of the approved manufacturer.

I. Proposed Deviations from the Contract Documents: Submit for approval proposed deviations when the roofing system is submitted. Proposed deviations submitted after the roofing system has been approved will not be considered for approval and may be cause for rejection of the previously approved roofing system.

1. Manufacturer's Details: Do not use or submit manufacturer's standard details unless there is an omission or a proposed deviation from the Contract Documents. In such instances, submit the revised detail for approval. Label each revised detail with the words "PROPOSED DEVIATION".
2. Manufacturer's Specifications and Installation Instructions: When there is a proposed deviation from the Contract Documents, submit the proposed deviation for approval. Label each specification and instruction revision with the words "PROPOSED DEVIATION".

J. Letter of Assembly: Letter prepared by the Roofing Manufacturer confirming that the proposed roof assembly meets the project details and performance requirements; identifies each component material in the assembly; confirms that the installer is certified to install the roof system and certifies that the installed assembly will be warrantied for the specified term and conditions. Specifically include the following information:

1. Certification from the manufacturer that the installer is certified to installed the roof assembly.
2. List of each roof component in the roof assembly, itemized by roof area and/ or roof type. All products listed must match product data submitted elsewhere.
3. List any deviations from the specified roof assembly. Submit for approval the deviations under a separate submittal shop drawing.
4. Include information on methods of attachment, coverage rates and spacing.
5. Confirm compliance with FM Global, UL & ASTM performance requirements in the letter.
6. Confirm compliance with warranty terms.
7. Declare manufacturer company field advisor.

K. Product Data: For each type of product.

1. For insulation and roof system component fasteners, include copy of FM Approvals' RoofNav listing.

L. Shop Drawings: Include roof plans, sections, details, and attachments to other work, including the following:

1. Layout and thickness if insulation.
2. Base flashings and membrane terminations.

    a. Before the Work commences, turn over to the Director's Representative at the site one set of sheet membrane layout drawings prepared or approved by the membrane manufacturer.

3. Flashing details at penetrations.
4. Tapered insulation, thickness, and slopes.

    a. Submit an accurate layout of the tapered insulation showing the slopes to the drains. Show cross section drawings illustrating the location and thickness of tapered

insulation pieces and filler pieces. Show the thickness of the insulation system at high and low points.

5. Roof plan showing orientation of steel roof deck and orientation of roof membrane and fastening spacings and patterns for mechanically fastened roofing system.
6. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.
7. Tie-in with air barrier.

M. Samples:

1. Roof membrane and flashings of color required.
2. EPDM Cover Tape.
3. Inseam Tape.
4. Insulation.
5. Substrate Board.
6. Walkway pads or rolls, of color required.
7. Torch-Applied Vapor Retarder: One 6 inch square piece.

N. Quality Control Submittals:

1. Wind Uplift Resistance Submittal: For roofing system, indicating compliance with wind uplift performance requirements certification that the roof system, including the specific insulation and fasteners, has been tested in conjunction with the type of structural roof deck applicable to this project, and has achieved a Factory Mutual Class 1-90 Wind Uplift rating.
2. Fire Hazard Certification: Written certification that the roof system, including the specific insulation, has been tested in conjunction with the type of structural roof deck and roof slope applicable to the project and has achieved an Underwriters Laboratories Class A or B external fire resistance rating.

    a. Acceptable Certification: Letter from Underwriters Laboratories, or a copy of the Underwriters Laboratories classification listing for the roofing system.

3. Qualification Data: For Installer and manufacturer.

    a. Installer Certification:

        1) Letter from the membrane manufacturer certifying that the installer is licensed or approved to install the roof system.
        2) Names, address, and telephone numbers of 3 buildings where the applicator has installed EPDM sheet membrane roof systems that have had the manufacturer's warranty issued. Include the types of EPDM systems installed, the manufacturer's name, and the warranty numbers.
        3) Letter certifying that the job foreman or crew chief and at least one other member of the roofing crew have installed at least 3 EPDM sheet membrane roof systems and are thoroughly familiar with all aspects of the installation.

    b. Membrane Manufacturer Certificates:

        1) Submit a letter certifying that the manufacturer has been actively marketing the submitted system for a minimum of 5 years.

2) Submit the names and addresses of 10 previous roofing projects. Include the type and size of each project, and name and telephone number of a contact person at the project location.

4. Material Certificates:

a. Performance Requirement Certificate: Signed by roof membrane manufacturer, certifying that roofing system complies with requirements specified in "Performance Requirements" Article.

1) Submit evidence of complying with performance requirements.

b. Special Warranty Certificate: Signed by roof membrane manufacturer, certifying that all materials supplied under this Section are acceptable for special warranty.

5. Product Test Reports: For components of roof membrane and insulation, for tests performed by a qualified testing agency, indicating compliance with specified requirements.
6. Evaluation Reports: For components of roofing system, from UNIFORM CODE-ES.
7. Field Test Reports:

a. Fastener-pullout test results and manufacturer's revised requirements for fastener patterns.

8. Field quality-control reports.

O. Contract Closeout Submittals:

1. Sample Warranties: For manufacturer's special warranties.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Materials Submittals:

1. Furnish to the Facility 25 sq ft of EPDM sheet membrane, one gallon of splicing cement, and 4 tubes of lap sealant. These materials will be used by the Facility for emergency repairs of the membrane. Include one set of the manufacturer’s printed instructions for installing the above items.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is UL listed and listed in FM Approvals' RoofNav for roofing system identical to that used for this Project.

1. The manufacturer shall have been actively marketing an EPDM roof system in the United States for a minimum of 5 years.
2. The manufacturer shall have the technical expertise and qualified technical representatives to resolve questions or problems that may arise both during and after the Work is completed.

3. The manufacturer shall furnish the names, addresses, and telephone numbers of at least 10 previous projects of comparable size, scope, and complexity as the work of this Section.
4. The manufacturer shall require that the roof system be installed by a licensed or approved installer.

B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

1. The installer shall have previously installed at least 3 EPDM sheet membrane systems for which the manufacturer's warranty was issued.
2. Workers: The crew chief or foreman and at least one other member of the roofing crew shall have installed at least 3 EPDM sheet membrane roof systems and shall be thoroughly familiar with all aspects of the installation.

C. Fire Hazard Classification: The EPDM sheet membrane roof system shall have an Underwriters Laboratories Class A or B External Fire Resistance rating, as determined by tests conducted in conformity with UL-790 (ASTM E 108).

1. The roof system, which includes a specific generic type of insulation and in some instances, a specific name brand insulation, shall have been tested in conjunction with the type of structural roof deck and roof slope applicable to the project.

1.7 ROOFING MANUFACTURER'S COMPANY FIELD ADVISOR

A. The manufacturer of the roofing system, issuing the final system guarantee on this roofing project, must supply a Company Field Advisor, as a technical representative, with the following minimum qualifications:

1. Five years of field experience on the same type of roofing system.
2. Ten projects where role was a Company Field Advisor; include contact names and phone numbers for each project.
3. Attendance at a roof specific instructional seminar within the last two years.

B. Secure the services of the Company Field Advisor for a minimum of 6 days at a minimum of 2 hours per day to inspect the workmanship of the roofing system installer.

C. Company Field Advisor Duties and Responsibilities:

1. Become familiar with the Contract Documents and approved submittals prior to the pre-roofing conference.
2. Attend the pre-roofing conference and the beginning of the actual membrane installation for the purpose of:

    a. Rendering technical assistance to the Contractor regarding installation procedures of the system.
    b. Familiarizing the Director's Representative with aspects of the system including inspection techniques.
    c. Answering questions that might arise.

3. Attend bi-weekly meeting, when requested.
4. Be objective, unbiased and impartial in each inspection, recommendation, conversation, action and written report.

    a. Inspect and approve the existing substrate, flashing, blocking, and related materials as being acceptable for the installation of the roofing system.
    b. Ensure proper fastening patterns and fastener sizes of wood blocking, insulation, edge flashing, and related components.

5. Immediately report non-compliant conditions, if any, to the Director's Representative.
6. Provide to the Director's Representative a written report, submitted prior to leaving the Project Site each day the Company Field Advisor is present. Each daily written report shall contain at a minimum:

    a. Date of report and inspection.
    b. Weather conditions at the start, middle, and end of the workday.
    c. Work performed including Contractor activity, contractor crew size, supervisor's name, area of activity, and progress and quality of the work as observed.
    d. Discussions with Contractor regarding work anomalies and resolution.
    e. Conditions that are not in compliance with the Contract documents.

        1) Continue documenting non-compliance issues in subsequent reports until the issue has been resolved. Document resolution of non-compliance issues when resolved.

7. Report to the Director's Representative in writing failure or refusal of the Contractor to correct unacceptable practices called to the Contractor's attention.
8. Confirm, after completion of the roofing work and based on the Company Field Advisor's inspections and tests, that the Company Field Advisor has observed no applications procedures in conflict with the specifications other than those that may have been previously reported and corrected.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

    1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

D. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of deck.

1.9 FIELD CONDITIONS

A. Do not execute the Work of this Section unless the Director's Representative is present, unless otherwise directed in writing.

B. Do not execute the Work of this Section unless the substrate is dry and free of dirt and debris.

C. Moisture Protection:

1. Cover, seal or otherwise protect the roof and flashings so that water cannot accumulate or flow under completed portions. When and where necessary to accomplish this, provide temporary water cut-offs in accordance with the membrane manufacturer's written specifications.
2. Limit the removal of existing materials to areas that can be completely re-roofed or temporarily protected within the same day. At the discretion of the Director's Representative, a watertight built-up vapor barrier may be acceptable temporary protection for a maximum of 48 hours.

D. Do not smoke or use open flames near volatile materials.

E. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.10 WARRANTY

A. Warranty Extension: The one year period required by Paragraph 9.8 of the General Conditions is extended to 2 years for the Work of this Section. Refer to Supplementary Conditions.

B. Manufacturer's Warranty: In addition to the 2 year period specified above, furnish the membrane manufacturer's printed 30 Year Full System Warranty 90 mil membrane, covering workmanship, materials, and wind related damage, for the Work of this Section.

1. The warranty shall include, but not be limited to, repair of leakage and the repair and/or replacement of the roofing system as necessary to correct defects or damage caused by; materials, workmanship, or 90 MPH (ASD) windspeed, 3 second gust.

a. Materials shall include the membrane, insulation, fasteners, adhesives and tapes, flashing originally provided by the manufacturer, and all accessory products.
b. Repair and/or replacement of the roofing system shall include the replacement of wet insulation. For the purpose of this specification, insulation will be considered wet if either of the following exists:

1) Free water is visible when the insulation is compressed.
2) No free water is visible when the insulation is compressed, but the insulation is damp to the touch over a large enough area, as determined by the Director's

Representative, to jeopardize the integrity of the roof system and any of its components, or to significantly lower the specified R value of the insulation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General Performance: Installed roofing system and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roofing and flashings shall remain watertight.

1. Accelerated Weathering: Roof membrane shall withstand 2000 hours of exposure when tested according to ASTM G152, ASTM G154, or ASTM G155.
2. Impact Resistance: Roof membrane shall resist impact damage when tested according to ASTM D3746, ASTM D4272, or the Resistance to Foot Traffic Test in FM Approvals 4470.

B. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roof membrane manufacturer based on testing and field experience.

C. Wind Uplift Resistance: Design roofing system to resist the following wind uplift pressures when tested according to FM Approvals 4474, UL 580, or UL 1897 as noted on the Drawings.

D. FM Approvals' RoofNav Listing: Roof membrane, base flashings, and component materials shall comply with requirements in FM Approvals 4450 or FM Approvals 4470 as part of a roofing system, and shall be listed in FM Approvals' RoofNav for Class 1 or noncombustible construction, as applicable. Identify materials with FM Approvals Certification markings.

1. Fire/Windstorm Classification: Class 1A-90.
2. Hail-Resistance Rating: FM Global Property Loss Prevention Data Sheet 1-34 MH.

E. ENERGY STAR Listing: Roofing system shall be listed on the DOE's ENERGY STAR "Roof Products Qualified Product List" for low-slope roof products.

F. Energy Performance: Roofing system shall have an initial solar reflectance of not less than 0.70 and an emissivity of not less than 0.75 when tested according to CRRC-1.

G. Fire-Resistance Ratings: Comply with fire-resistance-rated assembly designs indicated. Identify products with appropriate markings of applicable testing agency.

2.2 SYSTEM DESCRIPTION

A. Type B (Concrete Deck):

1. Adhered EPDM System: EPDM membrane system fully adhered with bonding adhesive, to coverboard and multiple layers of insulation set in low-rise foam adhesive on a torch grade vapor retarder layer on a concrete substrate.

B. Type C (Steel Deck):

1. Adhered EPDM System: EPDM membrane system fully adhered with bonding adhesive, to coverboard and multiple layers of insulation set in low-rise foam adhesive on a torch grade vapor retarder layer on substrate board mechanically attached to the structural deck.

2.3 ETHYLENE-PROPYLENE-DIENE-TERPOLYMER (EPDM) ROOFING

A. EPDM Sheet: ASTM D4637, Type I, nonreinforced, EPDM sheet with factory-applied seam tape.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Carlisle SynTec Incorporated; Sure-Seal EPDM**.**
b. Elevate Firestone Building Products; RubberGard EPDM.
c. GenFlex Roofing Systems.
D. Johns Manville; a Berkshire Hathaway Company; JM EPDM NR. Versico Roofing Systems; VersiGard Fully Adhered Roofing System.
f. Approved equivalent.

2. Thickness: 90 mils nominal.
3. Exposed Face Color: Black.
4. Source Limitations: Obtain components for roofing system from roof membrane manufacturer or manufacturers approved by roof membrane manufacturer.

2.4 AUXILIARY ROOFING MATERIALS

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with other roofing components.

1. Adhesive and Sealants: Comply with VOC limits of authorities having jurisdiction.

B. Sheet Flashing: 60-mil-thick EPDM, partially cured or cured, according to application.

C. Prefabricated Pipe Flashings: As recommended by roof membrane manufacturer.

D. Expansion Joint Tube: Compressible neoprene or polyethylene tube, twice the diameter of the width of the expansion joint

E. Bonding Adhesive: Coverboard, Insulation And Underlayment Board Adhesive:

1. Two-part, low rise polyurethane foam adhesive, supplied by the membrane manufacturer to satisfy warranty requirements.

2. One-part, solvent-free, moisture curing, cold fluid-applied, bituminous-urethane adhesive, supplied by the membrane manufacturer to satisfy warranty requirements.

F. Seaming Material: Manufacturer's standard, synthetic-rubber polymer primer and 6-inch- wide minimum, butyl splice tape with release film.

G. Lap Sealant: Manufacturer's standard, single-component sealant, colored to match membrane roofing.

H. Sealant: One-part, low modulus, silicone sealant:

1. Products: Subject to compliance with requirements, provide one of the following:

a. Dowsil; 790 Silicone Building Sealant.
b. GE Silicones; SCS2000 Silpruf Sealant.
c. Pecora Corp.; 864NST Silicone Sealant.
d. Tremco;
e. Approved equivalent.

I. Water Cutoff Mastic: Manufacturer's standard butyl mastic sealant.

J. Metal Termination Bars: Manufacturer's standard, predrilled stainless steel or aluminum bars, approximately 1 by 1/8 inch thick; with anchors.

K. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening components to substrate, and acceptable to roofing system manufacturer.

1. Steel Decks: hardened, self-tapping, anti-backout, Phillips pan head screws with round, square or hexagonal steel stress plates. Plate size as recommended by the membrane manufacturer.

a. Minimum penetration 1-inch, minimum pull out resistance from deck 400 pounds unless specified otherwise by the membrane manufacturer.

2. Concrete Decks: hardened, anti-backout, Phillips pan head screws with round, square or hexagonal steel stress plates; or hammer driven spikes with deformed shanks and round, square, or hexagonal steel stress plates. Plate size as recommended by the membrane manufacturer.

a. Minimum penetration 1-inch, minimum pull out resistance from deck 400 pounds unless specified otherwise by the membrane manufacturer.

L. Roof Drain Membrane Clamping Collar: Universal cast iron membrane clamping collar and mounting hardware.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Jay R. Smith Mfg. Co.; Universal Membrane Clamping Collar Model No. 1002.
b. Marathon Roofing Prod

M. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, molded pipe boot flashings, preformed inside and outside corner sheet flashings, reinforced EPDM securement strips, T-joint covers, in-seam sealants, termination reglets, cover strips, and other accessories.

2.5 SUBSTRATE BOARDS

A. Substrate Board: ASTM C1177, glass-mat, water-resistant gypsum board or ASTM C1278, fiber-reinforced gypsum board.

1. Products: Subject to compliance with requirements, provide one of the following:

    a. Georgia-Pacific Gypsum LLC; Dens Deck.
    b. USG Corporation; Securock Glass-Fiber Roof Board.
    c. Approved equivalent.

2. Thickness: 1/2 inch.
3. Surface Finish: Unprimed.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening substrate panel to roof deck.

2.6 VAPOR RETARDER

A. Vapor retarder to have a minimum perm rating of 0.05 per ASTM E96. Vapor retarder must be acceptable as a temporary roof and have a minimum 90 day exposure rating.

B. Torch-applied Vapor Retarder:

1. Torch-applied Membrane: 80 mil minimum, torch-applied, modified (rubberized) ply membrane reinforced with polyester or fiberglass scrim as approved by roof system manufacturer.
2. Properties (Tested per ASTM D-5147 at 73.4 degrees F.)
    a. Tensile Strength: MD 100 lbf/in,: CMD 100 lbf/in.
    b. Tear Strength: MD 95 lbf,; CMD 95 lbf.
    c. Elongation: MD 3.8% min.; CMD 3.8% min.
    d. Low Temperature Flexibility: Passes 0 degrees F.

2.7 ROOF INSULATION

A. General: Preformed roof insulation boards manufactured or approved by EPDM roof membrane manufacturer, approved for use in FM Approvals' RoofNav-listed roof assemblies.

B. Polyisocyanurate Board Insulation: ASTM C1289, Type II, Class 1, Grade 2, felt or glass-fiber mat facer on both major surfaces.

1. Compressive Strength: 20 psi.
2. Size: 48 by 48 inches.
3. Thickness: as shown on Drawings.

C. Tapered Insulation: Provide factory-tapered insulation boards.

1. Material: Match roof insulation.
2. Minimum Thickness: 1/2 inch.
3. Slope:

a. Roof Field: 1/4 inch per foot unless otherwise indicated on Drawings.
b. Saddles and Crickets: 1/2 inch per foot unless otherwise indicated on Drawings.

2.8 INSULATION ACCESSORIES

A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with other roofing system components.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation**[** and cover boards to substrate, and acceptable to roofing system manufacturer.

C. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation layer as follows:

1. Modified asphaltic, asbestos-free, cold-applied adhesive.
2. Bead-applied, low-rise, one-component or multicomponent urethane adhesive.
3. Full-spread, spray-applied, low-rise, two-component urethane adhesive.

D. Cover Board: ASTM C1177, glass-mat, water-resistant gypsum substrate, or ASTM C1278, fiber-reinforced gypsum board.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Georgia-Pacific Gypsum LLC; Dens Deck.
b. USG Corporation; Securock Glass Mat Roof Board.
c. Approved equivalent.

2. Thickness: 1/2 inch.
3. Surface Finish: Unprimed.

E. Tapered Cricket System: Membrane manufacturer’s approved 1/2 inch per foot factory tapered isocyanurate insulation conforming to ASTM C 1289.

2.9 HOT STACK FLASHING

A. Hot Stack Flashing Components:

1. Stainless steel drawband and high temperature sealant on stainless steel rain collar.

2. Stainless steel flange set in a full bed of manufacturer's recommended mastic.
3. Fully reinforced liquid resin flashing system.
4. Stone wool insulation.

2.10 WALKWAYS

A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads, approximately 2 inch thick and acceptable to roofing system manufacturer. Color to be chosen by the Director's Representative from the manufacturer's standard colors.

1. Size: Approximately 24 by 24 inch.
2. Color: Contrasting with roof membrane.
3. Basis of Design: Dura Strong Rubber Paving Tiles.

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 roof openings and penetrations are in place, curbs are set and braced, and roof-drain bodies are securely clamped in place.
2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
3. Verify that surface plane flatness and fastening of steel roof deck complies with requirements in Section 053100 "Steel Decking."
4. Verify that minimum concrete drying period recommended by roofing system manufacturer has passed.
5. Verify that concrete substrate is visibly dry and free of moisture, and that minimum concrete internal relative humidity is not more than [75] <Insert number> percent, or as recommended by roofing system manufacturer when tested according to ASTM F2170.

    a. Test Frequency: One test probe per each [1000 sq. ft.] <Insert area>, or portion thereof, of roof deck, with not less than three test probes.
    b. Submit test reports within 24 hours of performing tests.

6. Verify that concrete-curing compounds that will impair adhesion of roofing components to roof deck have been removed.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing system installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

C. Perform fastener-pullout tests according to roof system manufacturer's written instructions and as identified in Part 2.

1. Submit test result within 24 hours of performing tests.

D. Testing Pull Out Resistance of Fasteners: Before commencing with the roofing work, in the presence of the Director's Representative, conduct fastener pull out tests to determine if the pull out values meet the requirements of the Contract Documents and the membrane manufacturer.

1. Conduct the tests at representative locations and/or where selected by the Director's Representative as follows:

a. Up to 5,000 square feet: 3 tests.
b. 5,000 to 10,000 square feet: 6 tests.
c. 10,000 to 50,000 square feet: 10 tests.
d. 50,000 to 100,000 square feet: 20 tests.

2. Patch holes at the test locations.
3. Do not proceed with the roofing work if the pull out resistance of the fasteners is less than specified in this Section.

3.3 INSTALLATION OF ROOFING, GENERAL

A. Install roofing system according to roofing system manufacturer's written instructions, FM Approvals' RoofNav assembly requirements, and FM Global Property Loss Prevention Data Sheet 1-29.

B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at end of workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.4 INSTALLATION OF SUBSTRATE BOARD

A. Install substrate board with long joints in continuous straight lines, with end joints staggered not less than 24 inches in adjacent rows.

1. At steel roof decks, install substrate board at right angle to flutes of deck.

a. Locate end joints over crests of steel roof deck.

2. Tightly butt substrate boards together.
3. Cut substrate board to fit tight around penetrations and projections, and to fit tight to intersecting sloping roof decks.
4. Fasten substrate board to top flanges of steel deck according to recommendations in FM Approvals' RoofNav listed roof assembly requirements for specified Windstorm

Resistance Classification and FM Global Property Loss Prevention Data Sheet 1-29 and as follows:

a. Installing Substrate Board With Adhesive:

1) Clean dust and debris off of existing metal deck to ensure proper adhesive attachment. Install the substrate board over the deck with the long joints running in a continuous straight line with end joints staggered. Butt edges and ends snugly so there are no gaps between the boards.
Set each board in serpentine ribbons of the adhesive applied at the manufacturer's recommended rate, but no less than 6 inches on center. Apply boards in accordance with manufacturer's recommendations.

b. Installing Mechanically Fastened Substrate Board:

1) Install the substrate board over the deck with the long joints running in a continuous straight line with end joints staggered. Butt edges and ends snugly so there are no gaps between the boards.
2) Check each fastener to insure that it is securely anchored to the deck, penetrating the top flute only. Do not allow the fastener to damage the substrate board. Remove loose or defective fasteners.

3.5 INSTALLATION OF VAPOR RETARDER

A. Installing Torch Down Vapor Retarder:
1. Clean and prime the concrete sealed roof drain areas. Prime at rate recommended by vapor retarder membrane manufacturer, covering no more than 100 sq. ft. per gallon.
2. Install a single ply of vapor retarder membrane starting at the low point of roofing layouts and shingled in proper direction to shed water on each area of roof, according. Lap sheet side and ends and as recommended by manufacturer's written instructions.
3. Completely seal vapor barrier at terminations, obstructions, and penetrations.
4. Installing Vapor Retarder on Underlayment Board:

a. Apply primer to the substrate before application of vapor retarder and as recommended by manufacturer's written instructions.
b. Install one base ply over the underlayment board with 3" minimum laps set in adhesive.

B. Completely seal vapor retarder at terminations, obstructions, and penetrations to prevent air movement into roofing system.

3.6 INSTALLATION OF INSULATION

A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at end of workday.

B. Comply with roofing system and insulation manufacturer's written instructions for installing roof insulation.

C. Installation Over Metal Decking:

1. Install base layer of insulation with joints staggered not less than 24 inches in adjacent rows and with long joints continuous at right angle to flutes of decking.

    a. Locate end joints over crests of decking.
    b. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
    c. Make joints between adjacent insulation boards not more than 1/4 inch in width.
    d. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches.

        1) Trim insulation so that water flow is unrestricted.

    e. Fill gaps exceeding 1/4 inch with insulation.
    f. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
    g. Loosely lay base layer of insulation units over substrate.
    h. Mechanically attach base layer of insulation and substrate board using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to metal decks.

        1) Fasten insulation according to requirements in FM Approvals' RoofNav for specified Windstorm Resistance Classification.

2. Install upper layers of insulation and tapered insulation with joints of each layer offset not less than 12 inches from previous layer of insulation.

    a. Staggered end joints within each layer not less than 24 inches in adjacent rows.
    b. Install with long joints continuous and with end joints staggered not less than 12 inches in adjacent rows.
    c. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
    d. Make joints between adjacent insulation boards not more than 1/4 inch in width.
    e. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches.
    f. Trim insulation so that water flow is unrestricted.
    g. Fill gaps exceeding 1/4 inch with insulation.
    h. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
    i. Loosely lay each layer of insulation units over substrate.
    j. Adhere each layer of insulation to substrate using adhesive according to FM Approvals' RoofNav listed roof assembly requirements for specified Windstorm Resistance Classification and FM Global Property Loss Prevention Data Sheet 1-29, as follows:

        1) Set each layer of insulation in a solid mopping of hot roofing asphalt, applied within plus or minus 25 deg F of equiviscous temperature.
        2) Set each layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
        3) Set each layer of insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

D. Installation Over Concrete Decks:

1. Install base layer of insulation with joints staggered not less than 24 inches in adjacent rows.

    a. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
    b. Make joints between adjacent insulation boards not more than 1/4 inch in width.
    c. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches.

        1) Trim insulation so that water flow is unrestricted.

    d. Fill gaps exceeding 1/4 inch with insulation.
    e. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
    f. Loosely lay base layer of insulation units over substrate.
    g. Adhere base layer of insulation vapor retarder according to FM Approvals' RoofNav listed roof assembly requirements for specified Windstorm Resistance Classification and FM Global Property Loss Prevention Data Sheet 1-29, as follows:

        1) Prime surface of concrete deck with asphalt primer at rate of 3/4 gal./100 sq. ft., and allow primer to dry.
        2) Set insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
        3) Set insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

2. Install upper layers of insulation and tapered insulation with joints of each layer offset not less than 12 inches from previous layer of insulation.

    a. Staggered end joints within each layer not less than 24 inches in adjacent rows.
    b. Install with long joints continuous and with end joints staggered not less than 12 inches in adjacent rows.
    c. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
    d. Make joints between adjacent insulation boards not more than 1/4 inch in width.
    e. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches.

        1) Trim insulation so that water is unrestricted.

    f. Fill gaps exceeding 1/4 inch with insulation.
    g. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
    h. Adhere each layer of insulation to substrate using adhesive according to FM Approvals' RoofNav listed roof assembly requirements for specified Windstorm Resistance Classification and FM Global Property Loss Prevention Data Sheet 1-29, as follows:
        1) Set each layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.

2) Set each layer of insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

3.7 INSTALLATION OF COVER BOARDS

A. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches in each direction.

1. Trim cover board neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
2. At internal roof drains, conform to slope of drain sump.

    a. Trim cover board so that water flow is unrestricted.

3. Cut and fit cover board tight to nailers, projections, and penetrations.
4. Adhere cover board to substrate using adhesive according to FM Approvals' RoofNav listed roof assembly requirements for specified Windstorm Resistance Classification and FM Global Property Loss Prevention Data Sheet 1-29, as follows:
    a. On a prepared vapor retarder approved by the manufacturer, install insulation boards adhered to the vapor retarder in low rise insulation adhesive applied to the vapor retarder in accordance with the manufacturer’s printed instructions.
    b. Mixing, dispensing, application of approved low rise insulation adhesive shall be according to manufacturer's specifications. When applying adhesive, place the insulation boards onto the adhesive within 3 minutes and walk on the boards immediately to spread the adhesive for maximum contact. Continue to walk on the insulation boards every 5-7 minutes until the insulation is firmly attached (usually 20-45 minutes).
    c. Remove debris and cartons from roof deck. Leave insulation clean and dry ready to receive roofing membrane.

3.8 INSTALLATION OF ADHERED ROOF MEMBRANE

A. Adhere roof membrane over area to receive roofing according to roofing system manufacturer's written instructions.

B. Unroll membrane roof membrane and allow to relax before installing.

C. Start installation of roofing in presence of roofing system manufacturer's technical personnel.

D. Accurately align roof membrane, and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

E. Bonding Adhesive: Apply to substrate and underside of roof membrane at rate required by manufacturer, and allow to partially dry before installing roof membrane. Do not apply to splice area of roof membrane.

F. In addition to adhering, mechanically fasten roof membrane securely at terminations, penetrations, and perimeters.

G. Apply roof membrane with side laps shingled with slope of roof deck where possible.

H. Adhesive Seam Installation: Clean both faces of splice areas, apply splicing cement.

1. Firmly roll side and end laps of overlapping roof membrane to ensure a watertight seam installation.
2. Apply lap sealant and seal exposed edges of roofing terminations.
3. Apply a continuous bead of in-seam sealant before closing splice if required by roofing system manufacturer.

I. Tape Seam Installation: Clean and prime both faces of splice areas, apply splice tape.

1. Firmly roll side and end laps of overlapping roof membrane to ensure a watertight seam installation.
2. Apply lap sealant and seal exposed edges of roofing terminations.

J. Repair tears, voids, and lapped seams in roof membrane that do not comply with requirements.

K. Spread sealant or mastic bed over deck-drain flange at roof drains, and securely seal roof membrane in place with clamping ring.

L. Adhere protection sheet over roof membrane at locations indicated.

3.9 INSTALLATION OF BASE FLASHING

A. Install sheet flashings and preformed flashing accessories, and adhere to substrates according to roofing system manufacturer's written instructions.

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate, and allow to partially dry. Do not apply to seam area of flashing.

C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

D. Clean splice areas, apply splicing cement, and firmly roll side and end laps of overlapping sheets to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of sheet flashing terminations.

E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

F. At Hot Stacks: Install stone wool insulation and stainless steel flange set in a full bed of manufacturer’s recommended mastic. Terminate membrane as shown in on Drawings and apply fully reinforced liquid resin flashing.

3.10 INSTALLATION OF WALKWAYS

A. Flexible Walkways (Type 1): Install walkway products according to manufacturer's written instructions.

1. Install flexible walkways at the following locations:

    a. Perimeter of each rooftop unit.
    b. Between each rooftop unit location, creating a continuous path connecting rooftop unit locations.
    c. Between each roof hatch and each rooftop unit location or path connecting rooftop unit locations.
    d. Top and bottom of each roof access ladder.
    e. Between each roof access ladder and each rooftop unit location or path connecting rooftop unit locations.
    f. Locations indicated on Drawings.
    g. As required by roof membrane manufacturer's warranty requirements.

2. Provide 6-inch clearance between adjoining pads.
3. Adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.11 FIELD QUALITY CONTROL

A. As the joints are completed or at the end of each workday, in the presence of the Director's Representative closely examine joints in the membrane and flashing. Cut out and repair areas of the joints that are not fully bonded or that contain "fishmouths" or "wrinkles". Repair the membrane so it is restored to its full waterproof integrity. Lap patches a minimum of 6 inches beyond cuts.

B. Final Flow Testing Existing Roof Drains and Conductor Pipes: Upon completion of the work of this specification section, in the presence of the Director's Representative, provide water testing into each roof drain at 18 gallons per minute for 20 minutes. Remove debris, flush and clean any drains exhibiting obstruction. Submit a written report to the Director's Representative indicating that the system is functioning properly.

C. Final Flow Test Report: Provide a report to the Directors Representative.

D. A roof inspection is required by manufacturer before warranty issue. Revise scope of inspection and source of report to a qualified roofing consultant or an independent testing and inspecting agency if preferred.

E. Repair or remove and replace components of roofing system where inspections indicate that they do not comply with specified requirements.

F. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.12 PROTECTING AND CLEANING

A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing system, inspect roofing system for

deterioration and damage, describing its nature and extent in a written report, with copies to Director's Representative and Director's Representative.

B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 075323

SECTION 076200 - SHEET METAL FLASHING AND TRIM

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:

1. Manufactured reglets with counterflashing.
2. Formed roof-drainage sheet metal fabrications.
3. Formed low-slope roof sheet metal fabrications.
4. Formed wall sheet metal fabrications.

B. Related Sections:

1. Section 075323.0 - Ethylene-propylene-diene-terpolymer (EPDM) roofing.

1.3 COORDINATION

A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.

B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leakproof, secure, and noncorrosive installation.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review construction schedule. Verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review special roof details, roof drainage, roof-penetration flashing, equipment curbs, and condition of other construction that affect sheet metal flashing and trim.
3. Review sheet metal flashing observation and repair procedures after flashing installation.

1.5 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer's installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: Catalog sheets, specifications, installation instructions for each item specified except for shop or job formed items, solder, flux, and bituminous paint.

E. Shop Drawings: For sheet metal flashing and trim.

1. Include plans, elevations, sections, and attachment details.
2. Detail fabrication and installation layouts, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled Work.
3. Include identification of material, thickness, weight, and finish for each item and location in Project.
4. Include details for forming, including profiles, shapes, seams, and dimensions.
5. Include details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
6. Include details of termination points and assemblies.
7. Include details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction from fixed points.
8. Include details of roof-penetration flashing.
9. Include details of edge conditions, including crickets, flashings, and counterflashings.
10. Include details of special conditions.
11. Include details of connections to adjoining work.

F. Samples: For each exposed product and for each color and texture specified, 12 inches long by actual width.

1. Sheet Metal Flashing: 12 inches long by actual width of unit, including finished seam and in required profile. Include fasteners, cleats, clips, closures, and other attachments.
2. Trim, Metal Closures, Expansion Joints, Joint Intersections, and Miscellaneous Fabrications: 12 inches long and in required profile. Include fasteners and other exposed accessories.
3. Unit-Type Accessories and Miscellaneous Materials: Full-size Sample.
4. Kynar Coated Aluminum Samples: Samples to show full range to be expected for each color required.

G. Qualification Data: For fabricator.

H. Except as otherwise shown or specified, comply with applicable recommendations, details, and standards of CDA, and SMACNA.

I. Manufacturer's Installation Instructions.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For sheet metal flashing and trim, and its accessories, to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

1.8 SITE CONDITIONS

A. Do not execute the Work of this Section unless the Director's Representative is present, or unless they direct that the Work be performed during their absence.

B. Make the roof and uncompleted flashings watertight at the end of each work day.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

1. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
2. Protect stored sheet metal flashing and trim from contact with water.

B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

1.10 WARRANTY

A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
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. Sheet metal flashing and trim assemblies, including cleats, anchors, and fasteners, shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without

failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

B. Sheet Metal Standard for Flashing and Trim: Comply with SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 SHEET METALS

A. Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

B. Prefinished Aluminum Sheet: ASTM B209, alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required; with smooth, flat surface.

1. Exposed Coil-Coated Finish:

a. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

b. Three-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

2. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with minimum total dry film thickness of 0.5 mil.

D. Stainless Steel Sheet: ASTM A240, Type 304, dead soft, fully annealed; with smooth, flat surface.

1. Finish: ASTM A480, No. 2D (dull, cold rolled).

a. Surface Preparation: Remove tool and die marks.

2.3 MISCELLANEOUS MATERIALS

A. Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as

recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.

1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.

a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
b. Blind Fasteners: High-strength aluminum or stainless steel rivets suitable for metal being fastened.

2. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
3. Fasteners for Stainless Steel Sheet: Series 300 stainless steel.

C. Anchors: Provide one of the following types:

1. Hammer driven anchors, consisting of a stainless steel drive pin and a plastic or corrosion resistant metal expansion shield inserted thru a stainless steel disc with an EPDM sealing washer.
2. Self-tapping, corrosion resistant, concrete and masonry screw inserted thru a stainless steel disc with an EPDM sealing washer.

D. Solder:

1. For Stainless Steel: ASTM B32, Grade Sn60, with acid flux of type recommended by stainless steel sheet manufacturer.

E. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.

F. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.

G. Extruded Aluminum Gravel Stop and Fascia Sump: Complete system including fascia, water dam, splice plates, corners, and intersections, and other accessory components.

1. Manufacturers: Subject to compliance with project requirements:

a. Viridian Systems
b. Metal ERA.
c. IMETCO.
d. Approved Equivalent.

2. Face Height: Closest manufacturer’s standard dimension to face height shown on Drawings.

3. Style: Specifically Designed For:

    a. One Ply Roofing Membrane.

4. Finish: Fluorocarbon Coating Polyvinylidene Fluoride .
5. Color: As selected by the Director's Representative from manufacturer's standard colors.

H. Factory Fabricated Formed Coping: Complete system including 0.063 inch aluminum coping, anchor plates, joint drainage system, concealed joint covers, corners, and intersections, and other accessory components.

1. Manufacturers: Subject to compliance with project requirements:

    a. Viridian Systems
    b. Metal ERA.
    c. IMETCO.
    d. Approved Equivalent.

2. Finish: Fluorocarbon Coating Polyvinylidene Fluoride .
3. Color: As selected by the Director's Representative from manufacturer's standard colors.

I. Metal Expansion Joint Cover: Factory fabricated unit backed with closed cell foam, anchored to metal flange. Include prefabricated corners, and intersections (if any), joint splice plater, and all other accessory components.

1. Metal Flange: Aluminum.

J. Cap Flashing With In-Wall Receiver: Three way mortar bond type receiver with snap fit cap flashing;

1. Product: Keystone Flashing Co.; Keystone Two-Piece Cap Flashing, approved equivalent.

K. Reglets: Reglets: Units of type, material, and profile required, formed to provide secure interlocking of separate reglet and counterflashing pieces, and compatible with flashing indicated [with factory-mitered and -welded corners and junctions] [and] [with interlocking counterflashing on exterior face, of same metal as reglet].

1. Source Limitations: Obtain reglets from single source from single manufacturer.
2. Material: Aluminum, 0.024 inch thick.
3. Surface-Mounted Type: Provide with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.
4. Masonry Type: Provide with offset top flange for embedment in masonry mortar joint.
5. Accessories:

    a. Flexible-Flashing Retainer: Provide resilient plastic or rubber accessory to secure flexible flashing in reglet where clearance does not permit use of standard metal counterflashing or where Drawings show reglet without metal counterflashing.
    b. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing's lower edge.

6. Finish: With manufacturer's standard color coating.

2.4 FABRICATION, GENERAL

A. Custom fabricate sheet metal flashing and trim to comply with details indicated and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required.

1. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
2. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
3. Verify shapes and dimensions of surfaces to be covered and obtain field measurements for accurate fit before shop fabrication.
4. Form sheet metal flashing and trim to fit substrates without excessive oil-canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
5. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.

B. Fabrication Tolerances:

1. Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

C. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
2. Use lapped expansion joints only where indicated on Drawings.

D. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal in accordance with cited sheet metal standard to provide for proper installation of elastomeric sealant.

E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

F. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard for application, but not less than thickness of metal being secured.

G. Seams:

1. Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.
2. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer.

H. Do not use graphite pencils to mark metal surfaces.

2.5 ROOF-DRAINAGE SHEET METAL FABRICATIONS

A. Scuppers: Fabricate scuppers to dimensions required, with closure flange trim to exterior, 4-inch-wide wall flanges to interior, and base extending 4 inches beyond cant or tapered strip into field of roof. Fabricate from the following materials:

1. Stainless Steel: 0.025 inch (24 ga.) thick.

2.6 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

A. Roof Edge Flashing (Gravel Stop) and Fascia Cap: Fabricate in minimum 96-inch-long, but not exceeding 12-foot-long sections. Furnish with 6-inch-wide, joint cover plates. Shop fabricate interior and exterior corners.

1. Fabricate from the following materials:

a. Aluminum: 0.050 inch thick.

B. Counterflashing: Shop fabricate interior and exterior corners. Fabricate from the following materials:

1. Stainless Steel: 0.0188 inch (26 ga.) thick.

C. Flashing Receivers: Fabricate from the following materials:

D. Copings: Fabricate in minimum 96-inch-long, but not exceeding 12-foot-long, sections. Fabricate joint plates of same thickness as copings. Furnish with continuous cleats to support edge of external leg and interior leg. Miter corners, fasten and seal watertight. Shop fabricate interior and exterior corners.

1. Coping Profile: in accordance with SMACNA's "Architectural Sheet Metal Manual."
2. Joint Style: Butted with expansion space and 6-inch-wide, concealed backup plate.
3. Fabricate from the following materials:
   a. Aluminum: 0.050 inch thick.

E. Counterflashing: Shop fabricate interior and exterior corners. Fabricate from the following materials:

1. Stainless Steel: 0.0188 inch (26 ga.) thick.

F. Flashing Receivers: Fabricate from the following materials:

1. Stainless Steel: 0.0188 inch (26 ga.) thick.

2.7 WALL SHEET METAL FABRICATIONS

A. Through-Wall Flashing: Fabricate continuous flashings in minimum 96-inch-long, but not exceeding 12-foot-long, sections, under copings, and at shelf angles. Fabricate discontinuous

lintel, sill, and similar flashings to extend 6 inches beyond each side of wall openings; and form with 2-inch-high, end dams. Fabricate from the following materials:

1. Stainless Steel: 0.0156 inch thick.

    a. Joint Sealant: Trowel grade asphalt roofing cement.

B. Wall Expansion-Joint Cover: Fabricate from the following materials:

1. Aluminum: 0.040 inch thick.

2.8 MISCELLANEOUS SHEET METAL FABRICATIONS

A. Cleats:

1. Aluminum: 0.040 inch thick.

B. Continuous Edge Strip:

1. Aluminum: 0.040 inch thick.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.

1. Verify compliance with requirements for installation tolerances of substrates.
2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
3. Verify that air- or water-resistant barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Install sheet metal flashing and trim to comply with details indicated and recommendations of cited sheet metal standard that apply to installation characteristics required unless otherwise indicated on Drawings.

1. Install fasteners, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
2. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder or sealant.

3. Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement.
4. Install sheet metal flashing and trim to fit substrates and to result in watertight performance.
5. Install continuous cleats with fasteners spaced not more than 12 inches o.c.
6. Space individual cleats not more than 12 inches apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
7. Install exposed sheet metal flashing and trim with limited oil-canning, and free of buckling and tool marks.
8. Do not field cut sheet metal flashing and trim by torch.
9. Do not use graphite pencils to mark metal surfaces.

B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.

C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim.

1. Space movement joints at maximum of 10 feet with no joints within 24 inches of corner or intersection.
2. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with sealant concealed within joints.
3. Use lapped expansion joints only where indicated on Drawings.

D. Fasteners: Use fastener sizes that penetrate [wood blocking or sheathing not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws] [substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance] <Insert size requirement>.

E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.

F. Seal joints as required for watertight construction.

1. Use sealant-filled joints unless otherwise indicated.

a. Embed hooked flanges of joint members not less than 1 inch into sealant.
b. Form joints to completely conceal sealant.
c. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way.
d. Adjust setting proportionately for installation at higher ambient temperatures.

1) Do not install sealant-type joints at temperatures below 40 deg F.

2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter.

1. Stainless Steel Soldering:

a. Tin edges of uncoated sheets, using solder for stainless steel and acid flux.
b. Promptly remove acid-flux residue from metal after tinning and soldering.
c. Comply with solder manufacturer's recommended methods for cleaning and neutralization.

3.3 INSTALLATION OF ROOF-DRAINAGE SYSTEM

A. Install sheet metal roof-drainage items to produce complete roof-drainage system in accordance with cited sheet metal standard unless otherwise indicated. Coordinate installation of roof perimeter flashing with installation of roof-drainage system.

B. Scuppers:

1. Continuously support scupper, set to correct elevation, and seal flanges to interior wall face, over cants or tapered edge strips, and under roofing membrane.
2. Anchor scupper closure trim flange to exterior wall and seal with elastomeric sealant to scupper.
3. Loosely lock front edge of scupper with conductor head.
4. Seal with elastomeric sealant exterior wall scupper flanges into back of conductor head.

C. Expansion-Joint Covers:

1. Install expansion-joint covers at locations and of configuration indicated on Drawings. Lap joints minimum of 4 inches in direction of water flow.

   a. Install combination edge strip and cap flashing over the base flashing.
   b. Form the expansion joint cover with standing seam joints not to exceed 10’-0” o.c.
   c. Turn the edges of the cover over the edge strip. Allow clearance of one half the width of the expansion joint between edges of cover and edge strip.

2. Where expansion joints intersect gravel stops, provide the manufacturer’s prefabricated expansion joint section. Install the expansion joint before installing the gravel stop.

3.4 INSTALLATION OF ROOF FLASHINGS

A. Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and cited sheet metal standard.

1. Provide concealed fasteners where possible, and set units true to line, levels, and slopes.
2. Install work with laps, joints, and seams that are permanently watertight and weather resistant.

B. Installing Counter Flashing:

1. Form and install the counter flashing to provide a spring tight fit against the base flashing. Lap all end joints and base flashing a minimum of 3 inches. Extend the counter flashing continuously around corners or provide lock seams.
2. Counter Flashing for Installation In Reglets:

a. Extend the built in portion of the cap a min of 3/4-inch into the reglet. Form the edge of the built in portion with a 1/4-inch hook dam.
b. Secure the counter flashing with lead wedges 8 inches o.c. Fill joint completely with Type 2 sealant and tool to a slightly concave surface.

3. Surface Mounted Counter Flashing:

a. Form the top portion of the counter flashing which comes in contact with the wall surface with a one-inch wide bearing surface. Form a 45 degree x 1/4 inch wide stiffener and caulking flange along the top edge.
b. Apply Type 2 sealant on the back side of the bearing surface.
c. Secure the counter flashing to the wall with fasteners spaced one foot o.c. thru the bearing surface.
d. Apply Type 2 sealant along the caulking flange.

4. Counter Flashing For Installation in Receivers:

a. Insert the cap flashing into the receiver locking slot. Apply upward pressure along the entire length of the cap flashing so that it is securely locked into position.

C. Installing Extruded Aluminum Gravel Stop:

1. Install 12 inches wide 0.025 inch concealed aluminum flashing beneath the gravel stop at all joints.
2. Apply the membrane manufacturer's recommended sealant between the contact surfaces of the horizontal portion of the splice plate and the gravel stop.
3. Secure the gravel stop at the midpoint, and at ends of each 10 ft. section. Allow a 1/2 inch space between each section for expansion.
4. Install a 4 inch wide exposed aluminum cover plate at all joints.

D. Installing Thru Wall Scupper:

1. Form the scupper with 4 inch wide flashing flanges.
2. Secure the scupper to the roof deck and the inside face of the wall with fasteners installed thru the flashing flanges.

a. On the outside face of the wall lock the scupper on four sides to a surface mounted receiver formed from the same metal as the scupper.
b. Form the receiver with a 1/4 inch wide caulking flange.
c. Apply Type 2 sealant on the lock side of the flange.
d. Secure the flange to the wall with fastener 6 inches o.c.
e. Apply Type 2 sealant along the caulking flange.

E. Roof Edge Flashing:

1. Anchor to resist uplift and outward forces in accordance with recommendations in cited sheet metal standard unless otherwise indicated. Interlock bottom edge of roof edge flashing with continuous cleat anchored to substrate at staggered 3-inch centers.

F. Copings:

1. Anchor to resist uplift and outward forces in accordance with recommendations in cited sheet metal standard unless otherwise indicated.

   a. Form the coping into lengths not exceeding 8'-0".
   b. Join coping sections with 1-1/2 inch loose locked seams filled with Type 3 sealant.
   c. Hook the front and back edges of the coping over continuous metal edge strips. Nail the edge strip 6 inches oc.

2. Install in accordance with the manufacturer's written instructions unless shown or specified otherwise.

G. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with elastomeric sealant and clamp flashing to pipes that penetrate roof.

3.5 INSTALLATION OF WALL FLASHINGS

A. Install sheet metal wall flashing to intercept and exclude penetrating moisture in accordance with cited sheet metal standard unless otherwise indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

B. Installing In-Wall and Thru-Wall Cap Flashing Receivers:

1. Set the receiver so there is mortar above and below the built-in portion.
2. Do not mallet, bend or deform the exposed portion.
3. Lap all end joints so they interlock at the first raised rib. Apply Type 3 sealant between the mating surfaces of the built-in portion of the receiver before interlocking end joints.

3.6 INSTALLATION OF MISCELLANEOUS FLASHING

A. Re-flashing Existing Drains:

1. Remove the existing dome strainer, clamping ring and lead flashing from existing roof drains. Install 30 inches square lead flashing turned into drain body and reinstall clamping ring and strainer. If necessary, tap existing clamping ring bolt holes and install new clamping ring bolts.

3.7 INSTALLATION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.8 CLEANING

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder.

C. Clean off excess sealants.

3.9 PROTECTION

A. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.

B. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended in writing by sheet metal flashing and trim manufacturer.

C. Maintain sheet metal flashing and trim in clean condition during construction.

D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures, as determined by Director’s Representative.

END OF SECTION 076200

SECTION 077200 - ROOF ACCESSORIES

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:

1. Ballasted Fall Protection Rail System.
2. Pre-Manufactured Plumbing Vent Flashings.
3. Plumbing Vent Pipe Extensions.
4. Pipe Chase Housing.
5. Pipe/Conduit Supports.
6. Sleeper Equipment Supports.
7. Roof Drains.
8. Ventilator Grease Guards.

1.3 COORDINATION

A. Coordinate layout and installation of roof accessories with roofing membrane and base flashing and interfacing and adjoining construction to provide a leakproof, weathertight, secure, and noncorrosive installation.

B. Coordinate dimensions with rough-in information or Shop Drawings of equipment to be supported.

1.4 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of roof accessory.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

E. Shop Drawings: For roof accessories.

1. Include plans, elevations, keyed details, and attachments to other work. Indicate dimensions, loadings, and special conditions. Distinguish between plant- and field-assembled work.

F. Contract Closeout Submittals:

1. Operation and Maintenance Data: For roof accessories to include in operation and maintenance manuals.

a. Grease Guard Maintenance: Turn over to the Facility grease guard manufacturer's printed maintenance requirements.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General Performance: Roof accessories shall withstand exposure to weather and resist thermally induced movement without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.

2.2 BALLASTED FALL PROTECTION RAIL SYSTEM

A. System includes non-penetrating ballasted guardrail system installed to prevent roof falls in accordance with NYS Building Code and OSHA requirements.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Kee Safety, Inc, 800-851-5151, www.keesafety.com, self ballasted freestanding metal roof guard rail system or BlueWater SafetyProducts Group, www.safetypg.com, 952-448-2935.
2. Provide freestanding system including pipe railings, uprights, bases, counterweights and fittings.

a. Freestanding counterweighted guardrail system with 42 inch minimum height to provide a pedestrian egress barrier on the roof to withstand a minimum load of 200 lb in any direction to the top rail per OSHA Regulation 29 CFR 1910.23.
b. Pipe: Steel, 1-1/2 inches schedule 40, galvanized.
c. Tube: Galvanized tube, 12 gauge, 1-1/2 inches, 1.90 inches OD.
d. Rails and Posts: Galvanized Tube, 12 gauge, 1-1/2 inches 1.90 inches diameter.
e. Toe Guard: Provide continuous galvanized toe guard edges.
f. Counterweight Levers: Galvanized Tube, 12 gauge, 1-1/4 inches 1.660 inches diameter.
g. Mounting Bases: Steel bases are galvanized and are supplied with a rubber roof-top protection pad on underside of the component.
h. Counterweights: Molded recycled PVC with one fixing collar per counterbal-ance.
i. Fasteners: stainless steel or galvanized.
j. All finished elements to be color coated with the manufacturer's standard color offering as selected by the Director's Representative.

2.3 PRE-MANUFACTURERED PLUMBING VENT FLASHINGS

A. Basis of Design: Thaler Model # SJ-27 as manufactured by Thaler Metal Industries, 1-800-387-7217 (Mississauga, Ontario, Canada) (New Braunfels, TX), 1-800-576-1200. Removable cap insulated stack flashing height as shown on drawings, .064 mill finished 1100-OT alloy aluminum and bituminous painted deck flange. Provide stainless steel fasteners as shown on drawings.

2.4 PLUMBING VENT PIPE EXTENSIONS

A. Basis of Design: "Tubos" by OMG Inc. 153 Bowles Road, Agawam, Mass. 01001, (800) 633-3800. Solid-wall PVC fitting consisting of pipe and splice sleeve inserts, configured for insertion and sealing to existing plumbing vent piping, sized to fit inside diameter of plumbing vent piping, enabling extension of piping to field-determined height:

1. Material:

    a. Solid-wall PVC, white.
    b. Splice Sleeve Insert:

2. Size & Dimensions:

    a. Six (6) inches length at both ends of precut extension.
    b. Outside Diameter – Field Verify.
    c. Overall Length: 28 inches; Net Usable Length: 16 inches. Excluding Splice Sleeve Inserts.

2.5 PIPE CHASE HOUSING

A. Aluminum Pipe Chase Housing: Basis of Design - Roof Products Inc., 7616 Lee Highway, Chattanooga, TN 37421, (800) 262-6669, roofproductsinc.com; Model # RPPC-90 pipe chase housing, with the following features:
    1. Aluminum Body and Lid: Removable and gasketed, minimum 18 gauge ASTM A 653 G90 hot-dipped galvanized steel, with integral to frame and welded deck flange compatible with deck and roof membrane.
    2. Removable sloped 18 gauge galvanized metal cap with ¾ inch plywood.
    3. Corners: Mitered and welded. Bolted connections are not accepted.
    4. Exit seals sized as required for pipe, wire, etc.
    5. Curb heigh: 16"
    6. Flashing height as shown on drawings.

2.6 PIPE/CONDUIT SUPPORTS

A. Pipe supports for various piping and conduits at existing rooftop mechanical equipment.
    1. Basis of Design: Miro Industries Inc., Model 20-Base Strut-18, with factory-set maximum height of 19 1nches with adjustability down to 5 ½ inches.
    2. Maximum spacing per manufacturer's written instructions.
    3. Material: Polcarbonate base, hot-dipped galvanized or stainless steel struts.

2.7 SLEEPER EQUIPMENT SUPPORTS

A. Sleeper Equipment Supports: As manufactured by The Pate Company. Type ES-2, 3 ½" wide by height as required by details.

2.8 METAL ROOF DRAINS

A. Cast-Iron, Deep-Sump, General-Purpose Roof Drains:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Basis of Design: Zurn Froet 100C Bi-Functional Deep Sump Dual Outlet Roof Drain With Dome, by Zurn Industries, LLC.
   b. Approved equivalent.

2. Standard: ASME A112.6.4.
3. Body Material: Cast iron.
4. Dimension of Body: 14-inch diameter.
5. Combination Flashing Ring and Gravel Stop: Not required.
6. Outlet: Bottom.
7. Outlet Type: No hub.
8. Underdeck Clamp: Required.
9. Dome Material: Cast iron.

2.9 FIXED ACCESS LADDER / STAIR

A. Permanent fixed aluminum ladder/stair:

1. Structural Performance of Aluminum Ladders/Stair: Aluminum, including landings to meet or exceed the effects of loads and stresses within limits and under conditions specified in ANSI A14.3 & OSHA 1910.27.
2. Ladder Siderails: Continuous extruded-aluminum channels or tubes, not less than 2-1/2 inches deep, ¾ inches wide and 1/8 inch thick.
3. Ladder Rungs: Extruded-aluminum tubes, not less than ¾ inch deep and not less than 1/8 inch thick with ribbed tread surface.
4. Stair Siderails & Platform: Continuous extruded-aluminum channels or tubes, not less than 8 inches deep,1.5 inches wide and 1/4 inch thick.
5. Stair Treads: Extruded-aluminum tubes, not less than 2" inches deep, 8" wide and not less than 1/4 inch thick with non-slip surface.
6. Fit ladder rungs in centerline of siderails, fasten by welding or with stainless steel fasteners or brackets.
7. Provide platforms as indicated fabricated from pressure-locked aluminum bar grating or extruded-aluminum plank grating, supported by extruded-aluminum framing. Limit openings in gratings to no more than 3/4 inch in least dimension.
8. Support each ladder at top and bottom and not more than 60 inches on center with welded or bolted aluminum brackets.
9. Finish: Power coated aluminum finish, color to be selected from full range of color options.
10. Wall Anchors: Threaded stainless steel anchor rods and epoxy anchor adhesive.

11. Basis of Design Manufacturer: O'Keefee's Inc, 325 Newhall Street, San Francisco, CA 94123.

B. Basis of Design: Thaler ARS-520-1 NS: Urethane insulated, galvanized, hollow steel support and deck mounting plate, threaded steel cap and 2 inch diameter stainless steel adapter stub.

1. Fastening: 3/8 inch x 3 inch stainless steel nut and bolt.
2. Deck Fastening: 5/8 inch x 8 inch x 12 inch steel plate bolted into concrete deck.
3. Size & Dimensions:

a. Overall Height: Coordinate with stair.

2.10 GREASE GUARDS

A. Grease containment system consisting of an extruded anodized aluminum frame and 3-inch thick, 3 layer absorbent filter, deflection cap flanges, and miscellaneous accessories, sized 48 inches larger than the exhaust curb;

1. 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. Facilitec Corporation.
b. Approved equivalent.

2.11 METAL MATERIALS

A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A653, G90 coating designation and mill phosphatized for field painting where indicated.

1. Mill-Phosphatized Finish: Manufacturer's standard for field painting.

B. Aluminum Sheet: ASTM B209, manufacturer's standard alloy for finish required, with temper to suit forming operations and performance required.

1. Mill Finish: As manufactured.

C. Aluminum Extrusions and Tubes: ASTM B221, manufacturer's standard alloy and temper for type of use, finished to match assembly where used; otherwise mill finished.

D. Steel Shapes: ASTM A36, hot-dip galvanized according to ASTM A123 unless otherwise indicated.

E. Galvanized-Steel Tube: ASTM A500, round tube, hot-dip galvanized according to ASTM A123.

F. Steel Pipe: ASTM A53, galvanized.

2.13 MISCELLANEOUS MATERIALS

A. Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items required by manufacturer for a complete installation.

B. Fasteners: Roof accessory manufacturer's recommended fasteners suitable for application and metals being fastened. Match finish of exposed fasteners with finish of material being fastened. Provide nonremovable fastener heads to exterior exposed fasteners. Furnish the following unless otherwise indicated:

1. Fasteners for Zinc-Coated or Aluminum-Zinc Alloy-Coated Steel: Series 300 stainless steel or hot-dip zinc-coated steel according to ASTM A153 or ASTM F2329.
2. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.

C. Gaskets: Manufacturer's standard tubular or fingered design of neoprene, EPDM, PVC, or silicone or a flat design of foam rubber, sponge neoprene, or cork.

D. Elastomeric Sealant: ASTM C920, elastomeric silicone polymer sealant as recommended by roof accessory manufacturer for installation indicated; low modulus; of type, grade, class, and use classifications required to seal joints and remain watertight.

E. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for expansion joints with limited movement.

2.14 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. 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.

EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.

B. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.

C. Verify dimensions of roof openings for roof accessories.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install roof accessories according to manufacturer's written instructions.

1. Install roof accessories level; plumb; true to line and elevation; and without warping, jogs in alignment, buckling, or tool marks.
2. Anchor roof accessories securely in place so they are capable of resisting indicated loads.
3. Use fasteners, separators, sealants, and other miscellaneous items as required to complete installation of roof accessories and fit them to substrates.
4. Install roof accessories to resist exposure to weather without failing, rattling, leaking, or loosening of fasteners and seals.

a. On sloping surfaces, integrate mounting flanges with roofing elements to properly shed water.

B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.

1. Coat concealed side of uncoated aluminum roof accessories with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.

C. Ballasted Fall Protection Rail System:

1. Install system in accordance with manufacturers' recommendations.
2. Install sacrificial membrane below all weights and counterweight components to protect the roof membrane.

D. Pre-Manufactured Plumbing Vent Flashings:

1. Install manufacturers standard field fabricated pipe penetration flashings to the pipe and the membrane to create a watertight warrantable installation; refer to Section 075323. The roofing manufacturer flashing details shall be installed first and inspected by the company representative before installation of the pre-manufactured plumbing vent flashings.
2. Install the pre-manufactured plumbing vent flashing over the membrane flashing detail and strip in the flanges as recommended by the manufacturer.

E. Install roof drains at low points of roof areas in accordance with roof membrane manufacturer's written installation instructions.

1. Install flashing collar or flange of roof drain to prevent leakage between drain and adjoining roofing. Maintain integrity of waterproof membranes where penetrated.
2. Install expansion joints, if indicated, in roof drain outlets.
3. Position roof drains for easy access and maintenance.

F. Grease Guard Installation:

1. Cover EPDM curb flashing with 0.030 inch aluminum sheet flashing before installing grease guard.

2. Install grease guards in accordance with the manufacturer’s printed instructions, and the membrane manufacturer’s recommendations.

    a. Seal joints with elastomeric or butyl sealant as required by roof accessory manufacturer.

3.3 REPAIR AND CLEANING

A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing according to ASTM A780.

B. Clean exposed surfaces according to manufacturer's written instructions.

C. Clean off excess sealants.

D. Replace roof accessories that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION 077200

SECTION 078413 - PENETRATION FIRESTOPPING

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:

1. Penetration firestopping systems for the following applications:

a. Penetrations in fire-resistance-rated walls.
b. Penetrations in horizontal assemblies.
c. Penetrations in smoke barriers.

1.3 COORDINATION

A. Coordinate construction of openings and penetrating items to ensure that penetration firestopping systems can be installed according to specified firestopping system design.

B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate penetration firestopping systems.

1.4 DEFINITIONS

A. UL Fire Resistance Directory: Product directory published yearly, with supplements, by Underwriters Laboratories Inc., containing listings and classifications in effect as of the published date for product categories covered by UL.

B. Factory Mutual Approval Guide: Product directory published yearly, with supplements, by Factory Mutual Research Corp., containing listed building products, materials, and assemblies which have been tested by Factory Mutual Research Corp., to recognized governing standards.

C. Intertek Group Directory of Listed Building Products: Product directory published yearly, with supplements, by Intertek Group, containing listed building products, materials, and assemblies.

D. F Rating: Prohibits flame passage through the system and requires acceptable hose stream test performance.

E. T Rating: Prohibits flame passage through the system and requires the maximum temperature rise on the unexposed surface of the wall or floor assembly, on the penetrating item and on the

fill material not to exceed 325 degrees F above ambient and requires acceptable hose stream test performance.

F. Company Field Advisor: An employee of the Company which lists and markets the primary components of the system under their name who is certified in writing by the Company to be technically qualified in design, installation, and servicing of the required products or an employee of an organization certified by the foregoing Company to be technically qualified in design, installation and servicing of the required products. Personnel involved solely in sales do not qualify.

1.5 PREINSTALLATION MEETINGS

A. Conduct conference at Project site.

B. Before the firestop work is scheduled to commence, a conference will be called by the Director's Representative for the purpose of reviewing the Contract Documents and discussing requirements for the Work. The conference shall be attended by related trade Contractors (if any), their qualified firestopping installers, and associated firestopping manufacturer's Company Field Advisors.

1.6 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer's installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Submittals Package: Submit the following items specified below the same time as a package:

1. Product Data.
2. Samples.
3. Quality Control Submittals.
4. Firestop Schedule.

E. Product Data: For each type of product.

1. Indicate design number for each firestop proposed to be used which is detailed in the UL Fire Resistance Directory, Factory Mutual Approval Guide, or the Intertek Group Directory of Listed Building Products.
2. State the specific locations where each firestop system is proposed to be installed.

F. Product Schedule: For each penetration firestopping system. Include location, illustration of firestopping system, and design designation of qualified testing and inspecting agency.

G. Quality Control Submittals:

1. Design Data: Show details and include engineering information and manufacturer's written recommendations required under Design Requirements Article for each proposed firestop if other than a design detailed in the UL Fire Resistance Directory, Factory Mutual Approval Guide, or the Intertek Group Directory of Listed Building Products.

    a. State the specific locations where each firestop is proposed to be installed.

2. 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. Names and addresses of 3 similar projects that each person has worked on during the past 5 years.

3. Company Field Advisor Data:

    a. Name, business address and telephone number of Company Field Advisor secured for the required services.
    b. Certified statement from the Company listing the qualifications of the Company Field Advisor and listing of services and each product specifically listed for this Project for which Company Field Advisor is given authorization by the Company to render advice.

H. Firestop Schedule: Submit schedule itemizing the following:

1. Manufacturer's product reference numbers and/or drawing numbers.
2. UL, Factory Mutual Research Corp., or Intertek Group design number.
3. Location of firestop material.
4. Penetrating Item Description/Limits: Material, size, insulated or uninsulated, and combustibility.
5. Maximum allowable annular space or maximum size opening.
6. Wall type construction.
7. Floor type construction.
8. Hourly Fire resistance rating of wall or floor.
9. F rating.
10. T rating, if available.

NOTE: Firestop Schedule is for information only and will not be acted on for approval. Refer to Sample Firestop Schedule bound in Appendix.

I. Product Test Reports: For each penetration firestopping system, for tests performed by a qualified testing agency.

J. Qualification Data: For Installer.

1.7 CLOSEOUT SUBMITTALS

A. Installer Certificates: From Installer indicating that penetration firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: A firm that has been approved by FM Approval according to FM Approval 4991, "Approval Standard for Firestop Contractors," or been evaluated by UL and found to comply with its "Qualified Firestop Contractor Program Requirements."

B. Container/Package Labels: Include manufacturer’s name and identifying product number, date of manufacturer, lot number, shelf life (if applicable), qualified testing and inspecting agency classification marking, curing time, and mixing instructions for multi-component materials.

C. Company Field Advisor: Secure the services of a Company Field Advisor for the following:

1. Render advice regarding suitability of firestopping materials and methods.
2. Assist in completing firestop schedule.
3. Attend pre-installation conference.

1.9 PROJECT CONDITIONS

A. Environmental Limitations: Do not install penetration firestopping system when ambient or substrate temperatures are outside limits permitted by penetration firestopping system manufacturers or when substrates are wet because of rain, frost, condensation, or other causes.

B. Install and cure penetration firestopping materials per manufacturer's written instructions using natural means of ventilations or, where this is inadequate, forced-air circulation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics:

1. Perform penetration firestopping system tests by a qualified testing agency acceptable to authorities having jurisdiction.
2. Test per testing standards referenced in "Penetration Firestopping Systems" Article. Provide rated systems complying with the following requirements:

a. Penetration firestopping systems shall bear classification marking of a qualified testing agency.

1) UL in its "Fire Resistance Directory."
2) Intertek Group in its "Directory of Listed Building Products."
3) FM Approval in its "Approval Guide."

3. Exception: Where no listed designs exist that meet the requirements of a specific project condition, submit details and manufacturer's written recommendations for a design meeting the requirements. Include evidence of engineering judgment and extrapolation from listed designs.

2.2 PENETRATION FIRESTOPPING SYSTEMS

A. Penetration Firestopping Systems: Systems that resist spread of fire, 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: Penetration firestopping systems with ratings determined per ASTM E814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.

1. F-Rating: Not less than the fire-resistance rating of constructions penetrated.

C. Penetrations in Horizontal Assemblies: Penetration firestopping systems with ratings determined per ASTM E814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.

1. F-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated.
2. T-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.
3. W-Rating: Provide penetration firestopping systems showing no evidence of water leakage when tested according to UL 1479.

D. Penetrations in Smoke Barriers: Penetration firestopping systems with ratings determined per UL 1479, based on testing at a positive pressure differential of 0.30-inch wg.

1. L-Rating: Not exceeding 5.0 cfm/sq. ft. of penetration opening at and no more than 50-cfm cumulative total for any 100 sq. ft. at both ambient and elevated temperatures.

E. Exposed Penetration Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, per ASTM E84.

F. Manufactured Piping Penetration Firestopping System: Penetration firestopping systems with ratings determined per ASTM E814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.

1. F-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated.
2. T-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.
3. W-Rating: Provide penetration firestopping systems showing no evidence of water leakage when tested according to UL 1479.
4. Sleeve: Molded-PVC plastic, of length to match slab thickness and with integral nailing flange on one end for installation in cast-in-place concrete slabs.

G. 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 system manufacturer and approved by qualified testing and inspecting agency for conditions indicated.

1. Permanent forming/damming/backing materials.
2. Substrate primers.
3. Collars.
4. Steel sleeves.

2.3 FILL MATERIALS

A. Latex Sealants: Single-component latex formulations that do not re-emulsify after cure during exposure to moisture.

B. Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.

C. Intumescent Putties: Nonhardening, water-resistant, intumescent putties containing no solvents or inorganic fibers.

D. Intumescent Wrap Strips: Single-component intumescent elastomeric sheets with aluminum foil on one side.

E. 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.

F. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.

G. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants.

2.4 MIXING

A. Penetration Firestopping Materials: For those products requiring mixing before application, comply with penetration firestopping system 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. Examine existing junctures, control joints, and expansion joints in the Work areas.

C. Where firestopping is missing or not intact, submit a written report to the Director's Representative describing the existing conditions.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning: Before installing penetration firestopping systems, clean out openings immediately 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 materials.
2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with penetration firestopping materials. Remove loose particles remaining from cleaning operation.
3. Remove laitance and form-release agents from concrete.

B. 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.

3.3 INSTALLATION

A. General: Install penetration firestopping systems to comply with manufacturer's written installation instructions and published drawings for products and applications.

1. Where applicable design is not detailed in the Directories, use forming materials and fill, void or cavity material to form through-penetration firestop in accordance with approved printed details and installation instructions from the company producing the forming materials and fill, void or cavity material.
2. If the construction type(s) of the building cannot be determined, provide firestopping with fire resistance ratings as specified in the Building Code of New York State, Tables 720.1(1), 720.1(2), 720.1(3), and 302.3.2.

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.

1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not forming permanent components of firestopping.

C. Install fill materials by proven techniques to produce the following results:

1. Fill voids and cavities formed by openings, forming materials, accessories and penetrating items to achieve required fire-resistance ratings.
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. Wall Identification: Permanently label walls containing penetration firestopping systems with the words "FIRE AND/OR SMOKE BARRIER - PROTECT ALL OPENINGS," using lettering not less than 3 inches high and with minimum 0.375-inch strokes.

1. Locate in accessible concealed floor, floor-ceiling, or attic space at 15 feet from end of wall and at intervals not exceeding 30 feet.

B. Penetration Identification: Identify each penetration firestopping system with legible metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of penetration firestopping system edge so labels are visible to anyone seeking to remove penetrating items or firestopping systems. 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. Leave exposed those firestopping installations that are to be concealed behind other construction until the Director’s Representative has examined each installation.

B. Where deficiencies are found or penetration firestopping system is damaged or removed because of testing, repair or replace penetration firestopping system to comply with requirements.

C. Proceed with enclosing penetration firestopping systems 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 system 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 systems are 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 material and install new materials to produce systems complying with specified requirements.

END OF SECTION 078413

SECTION 078443 - JOINT FIRESTOPPING

Confirm 3.5 below - “Inspecting Agency: Director’s Representative will engage a qualified testing agency to perform tests and inspections according to ASTM E2393” Does OGS for this project? Sent to Ryan for OGS comment.

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:

1. Joints in or between fire-resistance-rated constructions.

B. Related Requirements:

C. Section 078413 "Penetration Firestopping" for penetrations in fire-resistance-rated walls and horizontal assemblies.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

E. Product Schedule: For each joint firestopping system. Include location, illustration of firestopping system, and design designation of qualified testing agency.

F. Qualification Data: For Installer.

G. Product Test Reports: For each joint firestopping system, for tests performed by a qualified testing agency.

1.5 CLOSEOUT SUBMITTALS

A. Installer Certificates: From Installer indicating that joint firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.

B. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions

1.6 QUALITY ASSURANCE

A. Installer Qualifications: A firm that has been approved by FM Approvals according to FM Approvals 4991, "Approval of Firestop Contractors," or been evaluated by UL and found to comply with UL's "Qualified Firestop Contractor Program Requirements."

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not install joint firestopping systems when ambient or substrate temperatures are outside limits permitted by joint firestopping system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.

B. Install and cure joint firestopping systems per manufacturer's written instructions using natural means of ventilation or, where this is inadequate, forced-air circulation.

1.8 COORDINATION

A. Coordinate construction of joints to ensure that joint firestopping systems can be installed according to specified firestopping system design.

B. Coordinate sizing of joints to accommodate joint firestopping systems.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics:

1. Perform joint firestopping system tests by a qualified testing agency acceptable to the Director’s Representative.
2. Test per testing standards referenced in "Joint Firestopping Systems" Article. Provide rated systems complying with the following requirements:

    a. Joint firestopping systems shall bear classification marking of a qualified testing agency.

1) UL in its "Fire Resistance Directory."

2.2 JOINT FIRESTOPPING SYSTEMS

A. Joint Firestopping Systems: Systems that resist spread of fire, passage of smoke and other gases, and maintain original fire-resistance rating of assemblies in or between which joint firestopping systems are installed. Joint firestopping 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 joint firestopping systems with ratings determined per ASTM E1966 or UL 2079.

1. Fire-Resistance Rating: Equal to or exceeding the fire-resistance rating of the wall, floor, or roof in or between which it is installed.

C. Joints at Exterior Curtain-Wall/Floor Intersections: Provide joint firestopping systems with rating determined per ASTM E2307.

1. F-Rating: Equal to or exceeding the fire-resistance rating of the floor assembly.

D. Exposed Joint Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E84.

E. Accessories: Provide components of joint firestopping systems, including primers and forming materials, that are needed to install elastomeric fill materials and to maintain ratings required. Use only components specified by joint firestopping system manufacturer and approved by the qualified testing agency for conditions 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: Before installing joint firestopping systems, clean joints immediately 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 elastomeric fill materials or compromise fire-resistive rating.
2. Clean joint substrates to produce clean, sound surfaces capable of developing optimum bond with elastomeric fill materials. Remove loose particles remaining from cleaning operation.

3. Remove laitance and form-release agents from concrete.

B. Prime substrates where recommended in writing by joint firestopping 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.

3.3 INSTALLATION

A. General: Install joint firestopping 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 elastomeric 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 elastomeric 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 elastomeric fill materials for joint firestopping systems by proven techniques to produce the following results:

1. Elastomeric fill voids and cavities formed by joints and forming materials as required to achieve fire-resistance ratings indicated.
2. Apply elastomeric fill materials so they contact and adhere to substrates formed by joints.
3. For elastomeric 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. Joint Identification: Identify joint firestopping systems with legible metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of joint edge so labels are visible to anyone seeking to remove or joint firestopping 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 - Joint Firestopping - 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: Director’s Representative will engage a qualified testing agency to perform tests and inspections according to ASTM E2393.

B. Where deficiencies are found or joint firestopping systems are damaged or removed due to testing, repair or replace joint firestopping systems so they comply with requirements.

C. Proceed with enclosing joint firestopping systems with other construction only after inspection reports are issued and installations comply with requirements.

3.6 CLEANING AND PROTECTION

A. Clean off excess elastomeric fill materials adjacent to joints as the Work progresses by methods and with cleaning materials that are approved in writing by joint firestopping 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 joint firestopping 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 joint firestopping systems immediately and install new materials to produce joint firestopping systems complying with specified requirements.

3.7 JOINT FIRESTOPPING SYSTEM SCHEDULE

A. Where UL-classified systems are indicated, they refer to system numbers in UL's "Fire Resistance Directory" under product Category XHBN or Category XHDG.

B. Floor-to-Floor, Joint Firestopping Systems:

1. UL-Classified Systems: FF-D-0400.
2. Assembly Rating: 1 hour.
3. Nominal Joint Width: As indicated.
4. Movement Capabilities: Class I - 25 percent compression, extension, or horizontal shear.
5. L-Rating at Ambient: Less than 1 cfm/ft..
6. L-Rating at 400 Deg F : Less than 1 cfm/ft.
7. W-Rating: No leakage of water at completion of water leakage testing.

C. Wall-to-Wall, Joint Firestopping Systems:

1. UL-Classified Systems: WW-D-1200.
2. Assembly Rating: 1 hour.
3. Nominal Joint Width: 1/8”.
4. Movement Capabilities: Class I – 25 percent compression or extension.
5. L-Rating at Ambient: Less than 1 cfm/ft.
6. L-Rating at 400 Deg F: Less than 1 cfm/ft..

D. Floor-to-Wall, Joint Firestopping Systems:

1. UL-Classified Systems: FW-S-2400.
2. Assembly Rating: 1 hour.
3. Nominal Joint Width: 1/16”.

END OF SECTION 078443

SECTION 079200 - JOINT SEALANTS

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:

1. Silicone joint sealants.
2. Nonstaining silicone joint sealants.
3. Mildew-resistant joint sealants.
4. Butyl joint sealants.
5. Latex joint sealants.

B. Related Sections:

1. Section 019119 for Related Building Enclosure Commissioning.

1.3 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each joint-sealant product.

1. Including manufacturer’s installation instructions.

E. Quality Control Submittals:

1. Installer’s Qualifications Data: Affadavit required under Quality Assurance Article
2. Company Field Advisor Data: Name, Business Address and Telephone Number of Company Field Advisor

F. Samples:

1. Sealants: 1 pint or standard tube

2. Joint Fillers: 24 inches long full section.
3. Joint Primer/Sealer/Conditioners: 1 pint.
4. Backer Rods: 24 inches long full section.
5. Bond Breaker Tape: 24 inches long full section.

G. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

H. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch-wide joints formed between two 6-inch- long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

I. Qualification Data: For qualified testing agency.

J. Sample Warranties: For special warranties.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

B. Product Testing: Test joint sealants using a qualified testing agency.

1. Testing Agency Qualifications: Qualified according to ASTM C1021 to conduct the testing indicated.
2. Test and validate sealants used for exterior weathersealing per the Sealant Waterproofing Restoration Institute (SWRI).

C. Container Labels: Include manufacturer's name, trade name of product, kind of material, federal specification number (if applicable), expiration date (if applicable), and packaging date or batch number.

1.5 FIELD CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. Humidity and Moisture: Do not install the Work of this Section under conditions that are detrimental to the application, curing and performance of the material.
2. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
3. When joint substrates are wet.
4. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
5. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.
6. Ventilation: Provide sufficient ventilation wherever sealants, primers, and other similar materials are installed in enclosed spaces. Follow manufacturer's recommendations.

1.6 WARRANTY

A. Special Installer's Warranty: Installer agrees to repair or replace 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. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:

1. Movement of the structure caused by stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
2. Disintegration of joint substrates from causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.
4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

D. Product Warranties

1. Silicone Sealant: 20 years weatherseal warranty.
2. Polyurethane: 5 year weatherseal warranty.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. Colors of Exposed Joint Sealants: As selected by Director’s Representative from manufacturer's full range.

C. Colors of Concealed Joint Sealants: provide the natural color which has the best overall performance characteristics.

2.2 SILICONE JOINT SEALANTS

A. Silicone, S, NS, 100/50, NT: Single-component, nonsag, plus 100 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 100/50, Use NT.

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. Dowsil; 790 Silicone Building Sealant
    b. Or equal.

B. Silicone, S, NS, 50, NT: Single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 50, Use NT.

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. Dowsil; 756 SMS Building Sealant (cold weather application)
    b. Dowsil; 791
    c. Dowsil; 795
    d. Dowsil; Contractors Concrete Sealant (CCS)
    e. GE Construction Sealants; SCS2000 SilPruf Sealant
    f. Or equal.

C. Silicone: Single-component sealant for high temperatures.

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. Dowsil; 736 Heat Resistant Sealant
    b. Dowsil; Hi-Temp Sealant Red
    c. Henkel Adhesives; Loctite SI 596
    d. Tremco Incorporated; TremPro 644 HT
    e. Or equal.
    f. Or equal.

2.3 MILDEW-RESISTANT JOINT SEALANTS

A. Mildew-Resistant Joint Sealants: Formulated for prolonged exposure to humidity with fungicide to prevent mold and mildew growth.

B. Silicone, Mildew Resistant, Neutral Curing, S, NS, 50, NT: Mildew-resistant, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 50, Use NT.

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. Pecora Corporation; 898NST Sanitary Silicone
    b. Or equal.

2.4 BUTYL JOINT SEALANTS

A. Butyl-Rubber-Based Joint Sealants: ASTM C1311.

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. Pecora Corporation; BC-158.
b. PTI; 707.
c. Tremco; Butyl Sealant.
d. Or equal.

2.5 LATEX JOINT SEALANTS

A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C834, Type OP, Grade NF.

1. Products: Subject to compliance with requirements, provide the following:

a. Bostik; Duo-Sil.
b. GE Construction Sealants; All Weather Pro Sealant.
c. Pecora Corporation; AVW-920; AC-20.
d. Or equal.

2.6 PREFORMED, FOAM JOINT SEALS

A. Preformed, Foam Joint Seals: Manufacturer's standard joint seal manufactured from urethane or EVA (ethylene vinyl acetate) foam with minimum density of 10 lb/cu. ft. and impregnated with a nondrying, water-repellent agent. Factory produce them in precompressed sizes in roll or stick form to fit joint widths based on design criteria indicated, with factory- or field-applied adhesive for bonding to substrates.

1. Design Criteria:

a. Nominal Joint Width: As indicated on Drawings.
b. Minimum Joint Width: As indicated on Drawings.
c. Maximum Joint Width: As indicated on Drawings.
d. Movement Capability: -25 percent/+25 percent.

2. Joint Seal Color: As selected by Director’s Representative from full range of industry colors.

2.7 MISCELLANEOUS SEALANTS

A. Flame and smoke resistant intumescent sealant:

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. Metacaulk MC 150+ Firestop Sealant,
    b. 3M Fire Barrier Caulk CP 25WB+,
    c. Dowsil; Smoke Seal 800SL
    d. Or equal.

2.8 JOINT FILLERS

A. Expanded Polyethylene Joint Filler: Flexible, compressible, closed-cell polyethylene of not less than 10 psi compression deflection (25 percent).

B. Closed Cell Polyurethane Joint Filler: Resilient, compressible, semi-rigid; W.R. Meadows Ceramar or A.C. Horn Closed Cell Plastic Foam Filler, Code 5401.

2.9 JOINT-SEALANT BACKING

A. Cylindrical Sealant Backings: ASTM C1330, Type C (closed-cell material with a surface skin) or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

B. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.10 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 joint substrates and adjacent nonporous surfaces in any way and formulated to promote optimum adhesion of sealants to 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 performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions 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 porous joint substrate surfaces by brushing, grinding, 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 after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:

    a. Concrete.
    b. Masonry.

3. Remove laitance and form-release agents from concrete.
4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:

    a. Metal.
    b. Glass.
    c. Glazed surfaces of ceramic tile.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. 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 or primer 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

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Installation of Preformed, Foam Joint Seals:

1. Install each length of seal immediately after removing protective wrapping.
2. Firmly secure compressed joint seals to joint gap side to obtain full bond using exposed pressure-sensitive adhesive or field-applied adhesive as recommended by manufacturer.
3. Do not pull or stretch material. Produce seal continuity at splices, ends, turns, and intersections of joints.
4. For applications at low ambient temperatures, heat foam joint seal material in compliance with manufacturer's written instructions.

G. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C1193 unless otherwise indicated.

3.4 FIELD QUALITY CONTROL

A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:

1. Extent of Testing: Test completed and cured sealant joints as follows:

    a. Perform one test for each 1000 feet of joint length thereafter or one test per each floor per elevation.

2. Inspect tested joints and report on the following:

    a. Whether sealants filled joint cavities and are free of voids.
    b. Whether sealant dimensions and configurations comply with specified requirements.
    c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion complies with sealant manufacturer's field-adhesion hand-pull test criteria.

3. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant material, sealant configuration, and sealant dimensions.
4. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.

B. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.5 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.6 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

B. Protect preformed joint seals from damage resulting from construction operations or other causes so seals are without deterioration or damage at time of Substantial Completion.

END OF SECTION 079200

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Interior standard steel doors and frames.
2. Exterior standard steel doors and frames.

B. Related Requirements:

1. Section 087100 "Door Hardware" for door hardware for hollow-metal doors.

1.2 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or ANSI/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 requirements for installation of door hardware, electrified door hardware, and access control and security systems.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittal’s shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

1. Include construction details, material descriptions, core descriptions, fire-resistance ratings, and finishes.

E. 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 electrical raceway and preparation for electrified hardware, access control systems, and security systems.
7. Details of anchorages, joints, field splices, and connections.
8. Details of accessories.
9. Details of moldings, removable stops, and glazing.

F. Samples for Initial Selection: For hollow-metal doors and frames with factory-applied color finishes.

G. Samples for Verification:

1. Finishes: For each type of exposed finish required, prepared on Samples of not less than 3 by 5 inches.
2. Fabrication: Prepare Samples approximately 12 by 12 inches to demonstrate compliance with requirements for quality of materials and construction:

a. Doors: Show vertical-edge, top, and bottom construction; core construction; and hinge and other applied hardware reinforcement. Include separate section showing glazing if applicable.
b. Frames: Show profile, corner joint, floor and wall anchors, and silencers. Include separate section showing fixed hollow-metal panels and glazing if applicable.

H. Product Schedule: For hollow-metal doors and frames, 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.

I. Product Test Reports: For each type of fire-rated hollow-metal door and frame assembly [fire-rated borrowed-lite assembly and thermally rated door assemblies for tests performed by a qualified testing agency indicating compliance with performance requirements.

J. Field quality control reports.

1.6 CLOSEOUT SUBMITTALS

A. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow-metal doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.

1. Provide additional protection to prevent damage to factory-finished units.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow-metal doors and frames vertically under cover at Project site with head up. Place on minimum 4-inch high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings indicated on Drawings, based on testing at positive pressure according to NFPA 252 or UL 10C.

1. Smoke- and Draft-Control Door Assemblies: 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.

2.2 INTERIOR STANDARD STEEL DOORS AND FRAMES

A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Standard-Duty Doors and Frames: ANSI/SDI A250.8, Level 1; ANSI/SDI A250.4, Level C. At locations indicated in the Door and Frame Schedule.

1. Doors:

a. Type: As indicated in the Door and Frame Schedule.
b. Thickness: 1-3/4 inches.
c. Face: Metallic-coated steel sheet, minimum thickness of 0.032 inch.
d. Edge Construction: Model 1, Full Flush.
e. Edge Bevel: Provide manufacturer's standard beveled or square edges.
f. Core: Polystyrene.
g. Fire-Rated Core: Manufacturer's standard vertical steel stiffener core for fire-rated doors.

2. Frames:

   a. Materials: Metallic-coated steel sheet, minimum thickness of 0.042 inch.
   b. Sidelite Frames: Fabricated from same thickness material as adjacent door frame.
   c. Construction: Full profile welded.

3. Exposed Finish: Prime.

2.3 EXTERIOR STANDARD STEEL DOORS AND FRAMES

A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Heavy-Duty Doors and Frames: ANSI/SDI A250.8, Level 2; ANSI/SDI A250.4, Level B. At locations indicated in the Door and Frame Schedule.

1. Doors:
   a. Type: As indicated in the Door and Frame Schedule.
   b. Thickness: 1-3/4 inches.
   c. Face: Metallic-coated steel sheet, minimum thickness of 0.042 inch, with minimum A40 coating.
   d. Edge Construction: Model 1, Full Flush.
   e. Edge Bevel: Provide manufacturer's standard beveled or square edges.
   f. Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets. Seal joints against water penetration.
   g. Bottom Edges: Close bottom edges of doors where required for attachment of weather stripping with end closures or channels of same material as face sheets. Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape.
   h. Core: Polystyrene.
2. Frames:
   a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch, with minimum A40 coating.
   b. Construction: Full profile welded.
3. Exposed Finish: Prime.

2.4 BORROWED LITES

A. Fabricate of uncoated steel sheet, minimum thickness of 0.053 inch.

B. Construction: Full profile welded.

C. Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as metal as frames.

D. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.

2.5 HOLLOW-METAL PANELS

A. Provide hollow-metal panels of same materials, construction, and finish as adjacent door assemblies.

2.6 FRAME ANCHORS

A. Jamb Anchors:

1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.
2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches of frame height above 7 feet.
3. Postinstalled Expansion Anchor: Minimum 3/8-inch diameter bolts with expansion shields or inserts, with manufacturer's standard pipe spacer.

B. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.

C. Material: ASTM A879, Commercial Steel (CS), 04Z coating designation; mill phosphatized.

1. For anchors built into exterior walls, steel sheet complying with ASTM A1008 or ASTM A1011; hot-dip galvanized according to ASTM A153, Class B.

2.7 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A1008, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Hot-Rolled Steel Sheet: ASTM A1011, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

C. Metallic-Coated Steel Sheet: ASTM A653, Commercial Steel (CS), Type B.

D. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A153.

E. 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.

F. Mineral-Fiber Insulation: ASTM C665, 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 E136 for combustion characteristics.

G. Glazing: Comply with requirements in Section 088000 "Glazing."

2.8 FABRICATION

A. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.

1. Sidelite 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 welding.
2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
3. 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. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping according to ANSI/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 BHMA A156.115 for preparing hollow-metal doors and frames for hardware.

C. Glazed Lites: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with mitered hairline joints.

1. Provide stops and moldings flush with face of door, and with beveled stops unless otherwise indicated.
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. Provide loose stops and moldings on inside of hollow-metal doors and frames.
4. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.
5. Provide stops for installation with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.

2.9 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 ANSI/SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

2.10 LOUVERS

A. Provide louvers for interior doors, where indicated, which comply with SDI 111, with blades or baffles formed of 0.020-inch thick, cold-rolled steel sheet set into 0.032-inch thick steel frame.

1. Sightproof Louver: Stationary louvers constructed with inverted-V or inverted-Y blades.

B. Form corners of moldings with hairline joints. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.

PART 3 - EXECUTION

3.1 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. Touch up factory-applied finishes where spreaders are removed.

B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.2 INSTALLATION

A. Install hollow-metal doors and frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.

B. Hollow-Metal Frames: Comply with ANSI/SDI A250.11.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.

a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.
b. Install frames with removable stops located on secure side of opening.

2. Fire-Rated Openings: Install frames according to NFPA 80.
3. Floor Anchors: 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.

4. Solidly pack mineral-fiber insulation inside frames.
5. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout or mortar.

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 frames to the following tolerances:

    a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
    b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
    c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
    d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

C. Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below.

1. Non-Fire-Rated Steel Doors: Comply with ANSI/SDI A250.8.
2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.

D. Glazing: Comply with installation requirements in Section 088000 "Glazing" and with hollow-metal manufacturer's written instructions.

3.3 FIELD QUALITY CONTROL

A. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.

B. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.

C. Prepare and submit separate inspection report for each fire-rated door assembly indicating compliance with each item listed in NFPA 80.

3.4 REPAIR

A. 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.

B. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

C. Factory-Finish Touchup: Clean abraded areas and repair with same material used for factory finish according to manufacturer's written instructions.

D. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

END OF SECTION 081113

SECTION 083313 - COILING COUNTER DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Counter door assemblies.

1.2 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type and size of coiling counter door and accessory.

1. Include construction details, material descriptions, dimensions of individual components, profiles for slats, and finishes.
2. Manufacturer’s current installation instructions.

E. Shop Drawings: For each installation and for special components not dimensioned or detailed in manufacturer's product data.

1. Include plans, elevations, sections, and mounting details.
2. Include details of equipment assemblies, and indicate dimensions, required clearances, method of field assembly, components, and location and size of each field connection.
3. Include points of attachment and their corresponding static and dynamic loads imposed on structure.

F. Samples: Manufacturer's finish charts showing full range of colors and textures available for units with factory-applied finishes.

1. Include similar Samples of accessories involving color selection.

G. Contract Closeout Submittals

1. Maintenance Data: For coiling counter doors to include in maintenance manuals.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer for both installation and maintenance of units required for this Project.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain coiling counter doors from single source from single manufacturer.

1. Obtain operators and controls from coiling counter door manufacturer.
2. Manufacturers:

a. Alumatec PFC-20.
b. Alpine Counter-Shutter.
c. Cookson ESC10.

2.2 COUNTER DOOR ASSEMBLY

A. Counter Door: Coiling counter door formed with curtain of interlocking metal slats.

B. Operation Cycles: Door components and operators capable of operating for not less than 10,000. One operation cycle is complete when a door is opened from the closed position to the fully open position and returned to the closed position.

C. Door Curtain Material: Galvanized steel.

D. Door Curtain Slats: Flat profile slats of 1-1/2-inch center-to-center height.

E. Bottom Bar: Manufacturer's standard continuous channel or tubular shape, fabricated aluminum extrusion and finished to match door.

F. Curtain Jamb Guides: Galvanized steel with exposed finish matching curtain slats. Provide continuous integral wear strips to prevent metal-to-metal contact and to minimize operational noise.

G. Hood: Match curtain material and finish.

1. Shape: Round.
2. Mounting: Between jambs.

H. Integral Frame, Hood, and Fascia: Galvanized.

1. Mounting: Between jambs.

I. Sill Configuration: No sill.

J. Locking Devices: Equip door with locking device assembly.

1. Locking Device Assembly: Inside with cylinders.

K. Manual Door Operator: Push-up operation.

L. Curtain Accessories: Equip door with push/pull handles and pull-down strap.

M. Door Finish:
1. Baked-Enamel or Powder-Coated Finish: Color as selected by Director's Representative from manufacturer's full range.
2. Factory Prime Finish: Manufacturer's standard color.

2.3 DOOR CURTAIN MATERIALS AND FABRICATION

A. Door Curtains: Fabricate coiling counter door curtain of interlocking metal slats in a continuous length for width of door without splices. Unless otherwise indicated, provide slats of thickness and mechanical properties recommended by door manufacturer for performance, size, and type of door indicated, and as follows:

1. Steel Door Curtain Slats: Zinc-coated (galvanized), cold-rolled structural-steel sheet; complying with ASTM A653, with G90 zinc coating; nominal sheet thickness (coated) of 0.028 inch; and as required.

B. Curtain Jamb Guides: Manufacturer's standard angles or channels and angles of same material and finish as curtain slats unless otherwise indicated, with sufficient depth and strength to retain curtain, to allow curtain to operate smoothly, and to withstand loading. Slot bolt holes for guide adjustment. Provide removable stops on guides to prevent overtravel of curtain.

2.4 HOODS

A. General: Form sheet metal hood to entirely enclose coiled curtain and operating mechanism at opening head. Contour to fit end brackets to which hood is attached. Roll and reinforce top and bottom edges for stiffness. Form closed ends for surface-mounted hoods and fascia for any portion of between-jamb mounting that projects beyond wall face. Equip hood with intermediate support brackets as required to prevent sagging.

1. Galvanized Steel: Nominal 0.028-inch- thick, hot-dip galvanized-steel sheet with G90 zinc coating, complying with ASTM A653.

B. Integral Frame, Hood, and Fascia: Welded sheet metal assembly of the following sheet metal(s):

1. Galvanized Steel: Hot-dip galvanized-steel sheet with G90 zinc coating, complying with ASTM A653.

2.5 LOCKING DEVICES

A. Locking Device Assembly: Fabricate with cylinder lock, spring-loaded dead bolt, operating handle, cam plate, and adjustable locking bars to engage through slots in tracks.

1. Lock Cylinders: Standard with manufacturer.
2. Keys: Three for each cylinder.

2.6 CURTAIN ACCESSORIES

A. Push/Pull Handles: Equip each push-up-operated or emergency-operated door with lifting handles on each side of door, finished to match door.

B. Pull-Down Strap: Provide pull-down straps for doors more than 84 inches high.

2.7 COUNTERBALANCE MECHANISM

A. General: Counterbalance doors by means of manufacturer's standard mechanism with an adjustable-tension, steel helical torsion spring mounted around a steel shaft and contained in a spring barrel connected to top of curtain with barrel rings. Use grease-sealed bearings or self-lubricating graphite bearings for rotating members.

B. Counterbalance Barrel: Fabricate spring barrel of manufacturer's standard hot-formed, structural-quality, seamless carbon-steel pipe, of sufficient diameter and wall thickness to support rolled-up curtain without distortion of slats and to limit barrel deflection to not more than 0.03 in./ft. of span under full load.

C. Counterbalance Spring: One or more oil-tempered, heat-treated steel helical torsion springs. Size springs to counterbalance weight of curtain, with uniform adjustment accessible from outside barrel. Secure ends of springs to barrel and shaft with cast-steel barrel plugs.

1. Fire-Rated Doors: Equip with auxiliary counterbalance spring and prevent tension release from main counterbalance spring when automatic closing device operates.

D. Torsion Rod for Counterbalance Shaft: Fabricate of manufacturer's standard cold-rolled steel, sized to hold fixed spring ends and carry torsional load.

E. Brackets: Manufacturer's standard mounting brackets of either cast iron or cold-rolled steel plate.

2.8 MANUAL DOOR OPERATORS

A. General: Equip door with manual door operator by door manufacturer.

B. Push-up Door Operation: Design counterbalance mechanism so that required lift or pull for door operation does not exceed 25 lbf.

2.9 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM/NOMMA 500 for recommendations for applying and designating finishes.

B. 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.

2.10 STEEL AND GALVANIZED-STEEL FINISHES

A. Factory Prime Finish: Manufacturer's standard primer, compatible with field-applied finish. Comply with coating manufacturer's written instructions for cleaning, pretreatment, application, and minimum dry film thickness.

B. Baked-Enamel or Powder-Coat Finish: Manufacturer's standard baked-on finish consisting of prime coat and thermosetting topcoat. Comply with coating manufacturer's written instructions for cleaning, pretreatment, application, and minimum dry film thickness.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates areas and conditions, with Installer present, for compliance with requirements for substrate construction and other conditions affecting performance of the Work.

B. Examine locations of electrical connections.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Install coiling counter doors and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports; according to manufacturer's written instructions and as specified.

B. Install coiling counter doors, hoods, controls, and operators at the mounting locations indicated for each door.

3.3 FIELD QUALITY CONTROL

A. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.

B. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.

3.4 ADJUSTING

A. Adjust hardware and moving parts to function smoothly so that doors operate easily, free of warp, twist, or distortion.

B. Lubricate bearings and sliding parts as recommended by manufacturer.

3.5 DEMONSTRATION

A. Engage a Company Service Advisor to train Director’s Representative's maintenance personnel to adjust, operate, and maintain coiling counter doors.

END OF SECTION 083313

SECTION 083323 - OVERHEAD COILING DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Insulated rolling doors.

1.2 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type and size of overhead coiling door and accessory.

1. Include manufacturer’s installation instructions, construction details, material descriptions, dimensions of individual components, profiles for slats, and finishes.
2. Include operating characteristics, electrical characteristics, and furnished accessories.

E. Shop Drawings: For each installation and for special components not dimensioned or detailed in manufacturer's product data.

1. Include plans, elevations, sections, and mounting details.
2. Include details of equipment assemblies, and indicate dimensions, required clearances, method of field assembly, components, and location and size of each field connection.
3. Include points of attachment and their corresponding static and dynamic loads imposed on structure.
4. For exterior components, include details of provisions for assembly expansion and contraction and for excluding and draining moisture to the exterior.
5. Include diagrams for power, signal, and control wiring.

F. Samples for Initial Selection: Manufacturer's finish charts showing full range of colors and textures available for units with factory-applied finishes.

1. Include similar Samples of accessories involving color selection.

G. Quality Control Submittals:

1. Qualification Data: For Installer.
2. Sample Warranty: For special warranty.

H. Contract Closeout Submittals:

1. Replacement parts list.
2. Special warranty.
3. Maintenance Data: For overhead coiling doors to include in maintenance manuals.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer for both installation and maintenance of units required for this Project.

1.4 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of doors that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain overhead coiling doors from single source from single manufacturer.

1. Basis of Design: Thermiser Max, Model ESD30, by Cookson Inc.
2. Obtain operators and controls from overhead coiling-door manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Accessibility Standard: Comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design" and ICC A117.1.

B. Structural Performance, Exterior Doors: Capable of withstanding the following design wind loads:

1. Design Wind Load: As indicated on Drawings.
2. Deflection Limits: Design overhead coiling doors to withstand design wind load without evidencing permanent deformation or disengagement of door components.

2.3 DOOR ASSEMBLY

A. Insulated Service Door: Overhead coiling door formed with curtain of interlocking metal slats.

1. 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. C.H.I. Overhead Doors, Inc.
    b. Clopay Building Products.
    c. Cookson; a CornellCookson company.
    d. McKeon Rolling Steel Door Company, Inc.
    e. Overhead Door Corporation.
    f. Raynor Garage Doors.
    g. Wayne-Dalton Corp.
    h. Or equal.

B. Operation Cycles: Door components and operators capable of operating for not less than 50,000. One operation cycle is complete when a door is opened from the closed position to the fully open position and returned to the closed position.

C. Air Infiltration: Maximum rate of 0.4 cfm/sq. ft. (2.03 L/s per sq. m at 15 and 25 mph (24.1 and 40.2 km/h) when tested according to ASHRAE Handbook of Fundamentals.

D. STC Rating: 26.

E. Insulated Door Curtain R-Value: 8.0

F. Insulated Door Assembly U-Factor: .125.

G. Door Curtain Material: Galvanized steel.

H. Door Curtain Slats: Flat profile slats of 3-inch (76.2-mm) center-to-center height.

1. Vision Panels: Approximately 10- by 1-5/8-inch (254- by 41-mm) openings spaced approximately 2 inches (51 mm) apart and beginning 12 inches (305 mm) from end guides; in three rows of slats at height indicated on Drawings; installed with insulated vision-panel glazing.
2. Insulated-Slat Interior Facing: Metal.

I. Bottom Bar: Two angles, each not less than 1-1/2 by 1-1/2 by 1/8 inch (38 by 38 by 3 mm) thick; fabricated from hot-dip galvanized steel or aluminum extrusions and finished to match door.

J. Curtain Jamb Guides: Galvanized steel with exposed finish matching curtain slats.

K. Hood: Galvanized steel.

1. Shape: Round.
2. Mounting: Face of wall.

L. Use slide bolts on push-up doors, chain locking keeper on chain operated doors, and locking device assembly on crank operated doors. Cylinder lock on bottom bar is available, but on motor operated door also include protective electrical interlock. Locking Devices: Equip door with locking device assembly.

1. Locking Device Assembly: Inside**,** both jamb sides with two cylinders, one on each jamb side.

M. Electric Door Operator:

1. Usage Classification: Standard duty, up to 25 cycles per hour and up to 90 cycles per day.
2. Operator Location: Wall mounted.
3. Safety: Listed according to UL 325 by a qualified testing agency for commercial or industrial use; moving parts of operator enclosed or guarded if exposed and mounted at 8 ft. (2.44 m) or lower.
4. Motor Exposure: Interior.
5. Motor Electrical Characteristics:

    a. Horsepower: 1/2 hp., or as recommended by door manufacture for size and type of door.
    b. Voltage: 115 V ac, single phase, 60 Hz 208 V ac, three phase, 60 Hz.

6. Emergency Manual Operation: Chain type.
7. Obstruction-Detection Device: Automatic electric sensor edge on bottom bar or pneumatic sensor edge on bottom bar; self-monitoring type.

    a. Sensor Edge Bulb Color: Black.

8. Control Station(s): Interior mounted.

N. Curtain Accessories: Equip door with weatherseals and backup pull chain.

O. Door Finish:
1. Factory Prime Finish: Manufacturer's standard color.
2. Interior Curtain-Slat Facing: Match finish of exterior curtain-slat face.

2.4 MATERIALS, GENERAL

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.5 DOOR CURTAIN MATERIALS AND CONSTRUCTION

A. Door Curtains: Fabricate overhead coiling-door curtain of interlocking metal slats, designed to withstand wind loading indicated, in a continuous length for width of door without splices. Unless otherwise indicated, provide slats of thickness and mechanical properties recommended by door manufacturer for performance, size, and type of door indicated, and as follows:

1. Steel Door Curtain Slats: Zinc-coated (galvanized), cold-rolled structural-steel sheet; complying with ASTM A653/A653M, with G90 (Z275) zinc coating; nominal sheet thickness (coated) of 0.028 inch (0.71 mm); and as required.

2. Vision-Panel Glazing: Manufacturer's standard clear glazing, fabricated from transparent acrylic sheet or fire-protection-rated glass as required for type of door; set in glazing channel secured to curtain slats.
3. Insulation: Fill slats for insulated doors with manufacturer's standard thermal insulation complying with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, according to ASTM E84 or UL 723. Enclose insulation completely within slat faces.
4. Metal Interior Curtain-Slat Facing: Match metal of exterior curtain-slat face, with minimum steel thickness of 0.010 inch (0.25 mm).

B. Curtain Jamb Guides: Manufacturer's standard angles or channels and angles of same material and finish as curtain slats unless otherwise indicated, with sufficient depth and strength to retain curtain, to allow curtain to operate smoothly, and to withstand loading. Slot bolt holes for guide adjustment. Provide removable stops on guides to prevent overtravel of curtain.

2.6 HOODS

A. General: Form sheet metal hood to entirely enclose coiled curtain and operating mechanism at opening head. Contour to fit end brackets to which hood is attached. Roll and reinforce top and bottom edges for stiffness. Form closed ends for surface-mounted hoods and fascia for any portion of between-jamb mounting that projects beyond wall face. Equip hood with intermediate support brackets as required to prevent sagging.

1. Galvanized Steel: Nominal 0.028-inch- (0.71-mm-) thick, hot-dip galvanized-steel sheet with G90 (Z275) zinc coating, complying with ASTM A653/A653M.

2.7 LOCKING DEVICES

A. Locking Device Assembly: Fabricate with cylinder lock, spring-loaded dead bolt, operating handle, cam plate, and adjustable locking bars to engage through slots in tracks.

1. Lock Cylinders: Standard with manufacturer.
2. Keys: Three for each cylinder.

B. Chain Lock Keeper: Suitable for padlock.

C. Safety Interlock Switch: Equip power-operated doors with safety interlock switch to disengage power supply when door is locked.

2.8 CURTAIN ACCESSORIES

A. Weatherseals for Exterior Doors: Equip each exterior door with weather-stripping gaskets fitted to entire exterior perimeter of door for a weather-resistant installation unless otherwise indicated.

1. At door head, use 1/8-inch- (3-mm-) thick, replaceable, continuous-sheet baffle secured to inside of hood or field-installed on the header.
2. At door jambs, use replaceable, adjustable, continuous, flexible, 1/8-inch- - (3-mm-) thick seals of flexible vinyl, rubber, or neoprene.

2.9 COUNTERBALANCE MECHANISM

A. General: Counterbalance doors by means of manufacturer's standard mechanism with an adjustable-tension, steel helical torsion spring mounted around a steel shaft and contained in a spring barrel connected to top of curtain with barrel rings. Use grease-sealed bearings or self-lubricating graphite bearings for rotating members.

B. Counterbalance Barrel: Fabricate spring barrel of manufacturer's standard hot-formed, structural-quality, seamless carbon-steel pipe, of sufficient diameter and wall thickness to support rolled-up curtain without distortion of slats and to limit barrel deflection to not more than 0.03 in./ft. (2.5 mm/m) of span under full load.

C. Counterbalance Spring: One or more oil-tempered, heat-treated steel helical torsion springs. Size springs to counterbalance weight of curtain, with uniform adjustment accessible from outside barrel. Secure ends of springs to barrel and shaft with cast-steel barrel plugs.

D. Torsion Rod for Counterbalance Shaft: Fabricate of manufacturer's standard cold-rolled steel, sized to hold fixed spring ends and carry torsional load.

E. Brackets: Manufacturer's standard mounting brackets of either cast iron or cold-rolled steel plate.

2.10 ELECTRIC DOOR OPERATORS

A. General: Electric door operator assembly of size and capacity recommended and provided by door manufacturer for door and operation-cycles requirement specified, with electric motor and factory-prewired motor controls, starter, gear-reduction unit, solenoid-operated brake, clutch, control stations, control devices, integral gearing for locking door, and accessories required for proper operation.

1. Comply with NFPA 70.
2. Control equipment complying with NEMA ICS 1, NEMA ICS 2, and NEMA ICS 6, with NFPA 70 Class 2 control circuit, maximum 24-V ac or dc.

B. Usage Classification: Electric operator and components capable of operating for not less than number of cycles per hour indicated for each door.

C. Door Operator Location(s): Operator location indicated for each door.

1. Wall Mounted: Operator is mounted to the inside front wall on the left or right side of door and connected to door drive shaft with drive chain and sprockets. Side room is required for this type of mounting. Wall-mounted operator can also be mounted above or below shaft; if above shaft, headroom is required.
2. Through-Wall Mounted: Operator is mounted on other side of wall from coil side of door.

D. Motors: Reversible-type motor with controller (disconnect switch) for motor exposure indicated for each door assembly.

1. Electrical Characteristics: Minimum as indicated for each door assembly. If not indicated, large enough to start, accelerate, and operate door in either direction from any position, at

a speed not less than 8 in./sec. (203 mm/s) and not more than 12 in./sec. (305 mm/s), without exceeding nameplate ratings or service factor.

2. Operating Controls, Controllers, Disconnect Switches, Wiring Devices, and Wiring: Manufacturer's standard unless otherwise indicated.
3. Coordinate wiring requirements and electrical characteristics of motors and other electrical devices with building electrical system and each location where installed.

E. Limit Switches: Equip each motorized door with adjustable switches interlocked with motor controls and set to automatically stop door at fully opened and fully closed positions.

F. Obstruction-Detection Devices: External entrapment protection consisting of indicated automatic safety sensor capable of protecting full width of door opening. For non-fire-rated doors, activation of device immediately stops and reverses downward door travel.

1. Electric Sensor Edge: Automatic safety sensor edge, located within astragal or weather stripping mounted to bottom bar. Contact with sensor activates device. Connect to control circuit using manufacturer's standard take-up reel or self-coiling cable.

a. Self-Monitoring Type: Four-wire-configured device designed to interface with door operator control circuit to detect damage to or disconnection of sensor edge.

2. Pneumatic Sensor Edge: Automatic safety sensor edge, located within astragal or weather stripping mounted to bottom bar. Contact with sensor activates device.

G. Control Station: Three-button control station in fixed location with momentary-contact push-button controls labeled "Open" and "Stop" and sustained- or constant-pressure push-button control labeled "Close."

1. Interior-Mounted Units: Full-guarded, surface-mounted, heavy-duty type, with general-purpose NEMA ICS 6, Type 1 enclosure.

H. Emergency Manual Operation: Equip each electrically powered door with capability for emergency manual operation. Design manual mechanism so required force for door operation does not exceed 25 lbf (111 N).

I. Emergency Operation Disconnect Device: Equip operator with hand-operated disconnect mechanism for automatically engaging manual operator and releasing brake for emergency manual operation while disconnecting motor without affecting timing of limit switch. Mount mechanism so it is accessible from floor level. Include interlock device to automatically prevent motor from operating when emergency operator is engaged.

J. Motor Removal: Design operator so motor may be removed without disturbing limit-switch adjustment and without affecting emergency manual operation.

2.11 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM/NOMMA 500 for recommendations for applying and designating finishes.

B. 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.

2.12 STEEL AND GALVANIZED-STEEL FINISHES

A. Factory Prime Finish: Manufacturer's standard primer, compatible with field-applied finish. Comply with coating manufacturer's written instructions for cleaning, pretreatment, application, and minimum dry film thickness.

B. Baked-Enamel or Powder-Coat Finish: Manufacturer's standard baked-on finish consisting of prime coat and thermosetting topcoat. Comply with coating manufacturer's written instructions for cleaning, pretreatment, application, and minimum dry film thickness.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates areas and conditions, with Installer present, for compliance with requirements for substrate construction and other conditions affecting performance of the Work.

B. Examine locations of electrical connections.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Install overhead coiling doors and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports; according to manufacturer's written instructions and as specified.

B. Install overhead coiling doors, hoods, controls, and operators at the mounting locations indicated for each door.

C. Accessibility: Install overhead coiling doors, switches, and controls along accessible routes in compliance with the accessibility standard.

D. Power-Operated Doors: Install automatic garage doors openers according to UL 325.

3.3 FIELD QUALITY CONTROL

A. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.

B. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.

3.4 STARTUP SERVICE

A. Engage a Company Service Advisor: Factory-authorized service representative to perform startup service.

1. Complete installation and startup checks according to manufacturer's written instructions.
2. After electrical circuitry has been energized, operate doors to confirm proper motor rotation and door performance.
3. Test and adjust controls and safety devices. Replace damaged and malfunctioning controls and equipment.

3.5 ADJUSTING

A. Adjust hardware and moving parts to function smoothly so that doors operate easily, free of warp, twist, or distortion.

1. Adjust exterior doors and components to be weather resistant.

B. Lubricate bearings and sliding parts as recommended by manufacturer.

C. Adjust seals to provide tight fit around entire perimeter.

3.6 DEMONSTRATION

A. Engage a Company Service Advisor to train Director’s Representative's maintenance personnel to adjust, operate, and maintain overhead coiling doors.

END OF SECTION 083323

SECTION 084113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Aluminum-framed storefront systems.
2. Aluminum-framed entrance door systems.

B. Related Sections:

1. Section 088000 for Glazing and Spandrel Panel Types.
2. Section 087100 for Door Hardware.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

E. Shop Drawings: For aluminum-framed entrances and storefronts. Include plans, elevations, sections, full-size details, and attachments to other work.

1. Include details of provisions for assembly expansion and contraction and for draining moisture occurring within the assembly to the exterior.
2. Include full-size isometric details of each type of vertical-to-horizontal intersection of aluminum-framed entrances and storefronts, showing the following:

a. Joinery, including concealed welds.
b. Anchorage.
c. Expansion provisions.

d. Glazing.
e. Flashing and drainage.

3. Show connection to and continuity with adjacent thermal, weather, air, and vapor barriers.
4. Include point-to-point wiring diagrams showing the following:

a. Power requirements for each electrically operated door hardware.
b. Location and types of switches, signal device, conduit sizes, and number and size of wires.

F. Samples for Initial Selection: For units with factory-applied color finishes.

G. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.

H. Fabrication Sample: Of each vertical-to-horizontal intersection of assemblies, made from 12-inch lengths of full-size components and showing details of the following:

1. Joinery, including concealed welds.
2. Anchorage.
3. Expansion provisions.
4. Glazing.
5. Flashing and drainage.

I. Entrance Door Hardware Schedule: Prepared by or under supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.

J. Quality Control Submittals:

1. Energy Performance Certificates: For aluminum-framed entrances and storefronts, accessories, and components, from manufacturer.

a. Basis for Certification: NFRC-certified energy performance values for each aluminum-framed entrance and storefront.

2. Source quality-control reports.
3. Sample Warranties: For special warranties.

K. Contract Closeout Submittals

1. Maintenance Data: For aluminum-framed entrances and storefronts to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

B. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.

1. Do not change intended aesthetic effects, as judged solely by Director's Representative, except with Director's Representative's approval. If changes are proposed, submit comprehensive explanatory data to Director's Representative for review.

1.5 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of aluminum-framed entrances and storefronts that do not comply with requirements or that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures, including, but not limited to, excessive deflection.
b. Noise or vibration created by wind and thermal and structural movements.
c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
d. Water penetration through fixed glazing and framing areas.
e. Failure of operating components.

2. Warranty Period: 10 years from date of Substantial Completion.

B. Special Finish Warranty, Factory-Applied Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Warranty Period: 20 years from date of Substantial Completion.

C. Special Finish Warranty, Anodized Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of PVDF finishes within specified warranty period.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain all components of aluminum-framed entrance and storefront system, including framing spandrel panels and accessories, from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrances and storefronts representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.

1. Aluminum-framed entrances and storefronts shall withstand movements of supporting structure, including, but not limited to, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
2. Failure also includes the following:

a. Thermal stresses transferring to building structure.
b. Glass breakage.
c. Noise or vibration created by wind and thermal and structural movements.
d. Loosening or weakening of fasteners, attachments, and other components.
e. Failure of operating units.

B. Structural Loads:

1. Wind Loads: As indicated on Drawings.
2. Other Design Loads: As indicated on Drawings.

C. Deflection of Framing Members: At design wind pressure, as follows:

1. Deflection Normal to Wall Plane: Limited to edge of glass in a direction perpendicular to glass plane not exceeding 1/175 of the glass edge length for each individual glazing lite or an amount that restricts edge deflection of individual glazing lites to 3/4 inch, whichever is less.
2. Deflection Parallel to Glazing Plane: Limited to 1/360 of clear span or 1/8 inch, whichever is smaller.

D. Structural: Test according to ASTM E330 as follows:

1. When tested at positive and negative wind-load design pressures, storefront assemblies, including entrance doors, do not evidence deflection exceeding specified limits.
2. When tested at 150 percent of positive and negative wind-load design pressures, storefront assemblies, including entrance doors and anchorage, do not evidence material failures, structural distress, or permanent deformation of main framing members exceeding 0.2 percent of span.
3. Test Durations: As required by design wind velocity, but not less than 10 seconds.

E. Water Penetration under Static Pressure: Test according to ASTM E331 as follows:

1. No evidence of water penetration through fixed glazing and framing areas, including entrance doors, when tested according to a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft..

F. Seismic Performance: Aluminum-framed entrances and storefronts shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1. Seismic Drift Causing Glass Fallout: Complying with criteria for passing based on building occupancy type when tested according to AAMA 501.6 at design displacement.

G. Energy Performance: Certified and labeled by manufacturer for energy performance as follows:

1. Thermal Transmittance (U-factor):

a. Fixed Glazing and Framing Areas: U-factor for the system of not more than 0.45 Btu/sq. ft. x h x deg F as determined according to NFRC 100.
b. Entrance Doors: U-factor of not more than 0.77 Btu/sq. ft. x h x deg F as determined according to NFRC 100.

2. Solar Heat-Gain Coefficient (SHGC):

a. Fixed Glazing and Framing Areas: SHGC for the system of not more than 0.40 as determined according to NFRC 200.
b. Entrance Doors: SHGC of not more than 0.35 as determined according to NFRC 200.

3. Air Leakage:

a. Fixed Glazing and Framing Areas: Air leakage for the system of not more than 0.06 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft. when tested according to ASTM E283.
b. Entrance Doors: Air leakage of not more than 1.0 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft.

4. Condensation Resistance Factor (CRF):

a. Fixed Glazing and Framing Areas: CRF for the system of not less than 55 as determined according to AAMA 1503.
b. Entrance Doors: CRF of not less than 63 as determined according to AAMA 1503.

H. Noise Reduction: Test according to ASTM E90, with ratings determined by ASTM E1332, as follows.

1. Outdoor-Indoor Transmission Class: Minimum 30.

I. Blast Resistance:

1. Hazard Rating: Very Low Hazard according to ASTM F2912.
2. Performance Condition: 3a according to GSA-TS01.

J. Ballistics Resistance, UL 752: Level 4 when tested according to UL 752.

K. Ballistics Resistance, ASTM F1233: Class/Level HG3 when tested according to ASTM F1233.

L. Ballistics Resistance, HPW-TP-0500.03: C when tested according to HPW-TP-0500.03.

M. Ballistics Resistance, SD-STD-01.01: R when tested according to SD-STD-01.01.

N. Ballistics Resistance, NIJ STD-0108.01: Level II when tested according to NIJ STD-0108.01.

O. Windborne-Debris Impact Resistance: Passes ASTM E1886 missile-impact and cyclic-pressure tests in accordance with ASTM E1996 for Wind Zone 3 for basic protection.

1. Large-Missile Test: For glazing located within 30 feet of grade.
2. Small-Missile Test: For glazing located between 30 feet and 60 feet above grade.

P. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.
2. Thermal Cycling: No buckling; stress on glass; sealant failure; excess stress on framing, anchors, and fasteners; or reduction of performance when tested according to AAMA 501.5.

a. High Exterior Ambient-Air Temperature: That which produces an exterior metal-surface temperature of 180 deg F.
b. Low Exterior Ambient-Air Temperature: 0 deg F.
c. Interior Ambient-Air Temperature: 75 deg F.

2.3 STOREFRONT SYSTEMS

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. EFCO Corporation.
2. Kawneer North America, an Arconic company.
3. Mapes Industries.
4. Oldcastle Building Envelope (OBE); CRH Americas.
5. Trulite Glass & Aluminum Solutions, LLC.
6. Tubelite Inc.
7. U.S. Aluminum; a brand of C.R. Laurence.
8. YKK AP America Inc.
9. Or equal.

B. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.

1. Exterior Framing Construction: Thermally broken.
2. Interior Vestibule Framing Construction: Nonthermal.
3. Glazing System: Retained mechanically with gaskets on four sides.
4. Glazing Plane: Front.
5. Finish: 70% PVDF finish.
6. Fabrication Method: Field-fabricated stick system.
7. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
8. Steel Reinforcement: As required by manufacturer.

C. Backer Plates: Manufacturer's standard, continuous backer plates for framing members, if not integral, where framing abuts adjacent construction.

D. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

2.4 ENTRANCE DOOR SYSTEMS

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. EFCO Corporation.
2. Kawneer North America, an Arconic company.
3. Oldcastle Building Envelope (OBE); CRH Americas.
4. Trulite Glass & Aluminum Solutions, LLC.
5. Tubelite Inc.
6. U.S. Aluminum; a brand of C.R. Laurence.
7. YKK AP America Inc.
8. Or equal.

B. Entrance Doors: Manufacturer's standard glazed entrance doors for manual-swing or automatic operation.

1. Door Construction: 1-3/4-inch overall thickness, with minimum 0.125-inch- thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.
2. Thermal Construction: High-performance plastic connectors separate aluminum members exposed to the exterior from members exposed to the interior.
3. Door Design: Medium stile; 3-1/2-inch nominal width.
4. Glazing Stops and Gaskets: Square, snap-on, extruded-aluminum stops and preformed gaskets.

    a. Provide nonremovable glazing stops on outside of door.

5. Finish: Match adjacent storefront framing finish.

2.5 ENTRANCE DOOR HARDWARE

A. Entrance Door Hardware: Hardware not specified in this Section is specified in Section 087100 "Door Hardware."

2.6 GLAZING

A. Glazing Gaskets: Manufacturer's standard sealed-corner pressure-glazing system of black, resilient elastomeric glazing gaskets, setting blocks, and shims or spacers.

B. Glazing Sealants: As recommended by manufacturer.

C. Weatherseal Sealants: ASTM C920 for Type S; Grade NS; Class 25; Uses NT, G, A, and O; chemically curing silicone formulation that is compatible with structural sealant and other system components with which it comes in contact; recommended by structural-sealant, weatherseal-sealant, and structural-sealant-glazed storefront manufacturers for this use.

1. Color: Match structural sealant.

2.7 MATERIALS

A. Sheet and Plate: ASTM B209.

B. Extruded Bars, Rods, Profiles, and Tubes: ASTM B221.

C. Extruded Structural Pipe and Tubes: ASTM B429.

D. Structural Profiles: ASTM B308.

E. Steel Reinforcement:

1. Structural Shapes, Plates, and Bars: ASTM A36.
2. Cold-Rolled Sheet and Strip: ASTM A1008.
3. Hot-Rolled Sheet and Strip: ASTM A1011.

F. Steel Reinforcement Primer: Manufacturer's standard zinc-rich, corrosion-resistant primer complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM and prepare surfaces according to applicable SSPC standard.

2.8 ACCESSORIES

A. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
2. Reinforce members as required to receive fastener threads.
3. Use exposed fasteners with countersunk Phillips screw heads, finished to match framing system.

B. Anchors: Three-way adjustable anchors with minimum adjustment of 1 inch that accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer.

1. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A123 or ASTM A153 requirements.

C. Concealed Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials.

D. Bituminous Paint: Cold-applied asphalt-mastic paint containing no asbestos, formulated for 30-mil thickness per coat.

2.9 FABRICATION

A. Form or extrude aluminum shapes before finishing.

B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

C. Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fitted joints with ends coped or mitered.
3. Physical and thermal isolation of glazing from framing members.
4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
5. Provisions for field replacement of glazing from interior for vision glass and exterior for spandrel glazing or metal panels.
6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.

E. Storefront Framing: Fabricate components for assembly using shear-block system.

F. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.

1. At interior and exterior doors, provide compression weather stripping at fixed stops.

G. Entrance Doors: Reinforce doors as required for installing entrance door hardware.

1. At pairs of exterior doors, provide sliding-type weather stripping retained in adjustable strip and mortised into door edge.
2. At exterior doors, provide weather sweeps applied to door bottoms.

H. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.

I. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.10 ALUMINUM FINISHES

A. Two-Coat PVDF Color Finish: AAMA 2605 70% Fluoropolymer Resin Finish.

1. Color: Refer to drawings for scheduled finish, to be selected from the manufacturer’s standard color options. Color must match color finishes of windows and curtainwall systems specified elsewhere.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, 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. Comply with manufacturer's written instructions.

B. Do not install damaged components.

C. Fit joints to produce hairline joints free of burrs and distortion.

D. Rigidly secure nonmovement joints.

E. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.

F. Seal perimeter and other joints watertight unless otherwise indicated.

G. Metal Protection:

1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.
2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

H. Set continuous sill members and flashing in full sealant bed, as specified in Section 079200 "Joint Sealants," to produce weathertight installation.

I. Install joint filler behind sealant as recommended by sealant manufacturer.

J. Install components plumb and true in alignment with established lines and grades.

3.3 INSTALLATION OF WEATHERSEAL SEALANT

A. Install weatherseal sealant to completely fill cavity, according to sealant manufacturer's written instructions, to produce weatherproof joints.

3.4 INSTALLATION OF ALUMINUM-FRAMED ENTRANCE DOORS

A. Install entrance doors to produce smooth operation and tight fit at contact points.

1. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.
2. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware according to entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

3.5 ERECTION TOLERANCES

A. Install aluminum-framed entrances and storefronts to comply with the following maximum tolerances:

1. Plumb: 1/8 inch in 10 feet; 1/4 inch in 40 feet.
2. Level: 1/8 inch in 20 feet; 1/4 inch in 40 feet.
3. Alignment:

    a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch wide, limit offset from true alignment to 1/16 inch.
    b. Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch wide, limit offset from true alignment to 1/8 inch.
    c. Where surfaces are separated by reveal or protruding element of 1 inch wide or more, limit offset from true alignment to 1/4 inch.

4. Location: Limit variation from plane to 1/8 inch in 12 feet; 1/2 inch over total length.

3.6 FIELD QUALITY CONTROL

A. Testing Agency: Director’s Representative will engage a qualified testing agency to perform tests and inspections.

B. Field Quality-Control Testing: Perform the following test on representative areas of aluminum-framed entrances and storefronts.

1. Water-Spray Test: Before installation of interior finishes has begun, areas designated by Director’s Representative shall be tested according to AAMA 501.2 and shall not evidence water penetration.

    a. Perform a minimum of two tests in areas as directed by Director’s Representative.
    b. Perform tests in each test area as directed by Director’s Representative. Perform at least three tests, prior to 10, 35, and 70 percent completion.

2. Air Leakage: ASTM E783 at 1.5 times the rate specified for laboratory testing in "Performance Requirements" Article but not more than 0.09 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft.

    a. Perform a minimum of two tests in areas as directed by Director’s Representative.

b. Perform tests in each test area as directed by Director's Representative. Perform at least three tests, prior to 10, 35, and 70 percent completion.

3. Water Penetration: ASTM E1105 at a minimum uniform static-air-pressure differential of 0.67 times the static-air-pressure differential specified for laboratory testing in "Performance Requirements" Article, but not less than 6.24 lbf/sq. ft., and shall not evidence water penetration.

C. Aluminum-framed entrances and storefronts will be considered defective if they do not pass tests and inspections.

D. Prepare test and inspection reports.

END OF SECTION 084113

SECTION 084413 - GLAZED ALUMINUM CURTAIN WALLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Glazed aluminum curtain wall systems:

a. Four sided captured glazing.

B. Related Sections:

1. Section 019119 for Related Building Enclosure Commissioning.
2. Section 079200 for Joint Sealants
3. Section 088000 for Glazing and Spandrel Panel Types.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Provide Qualification Data from Quality Control Submittals prior to submitting the remaining submittals in order specified below.

1. Submit Product Data, Shop Drawings, Samples for Initial Selection submittals as one package.
2. Submit remaining Quality Controls Submittals.
3. Submit remaining submittals Sample for Verification and Fabrication Samples.
4. Contract Closeout Submittals.

E. Quality Control Submittals:

1. Qualification Data: For Installer.

2. Energy Performance Certificates: For glazed aluminum curtain walls, accessories, and components from manufacturer.

a. Basis for Certification: NFRC-certified energy performance values for each glazed aluminum curtain wall.

3. Product Test Reports: For glazed aluminum curtain walls, for tests performed by manufacturer and witnessed by a qualified testing agency.
4. Source quality-control reports.
5. Field quality-control reports.
6. Sample Warranties: For special warranties.

F. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

2. Include manufacturer’s installation instructions.

G. Shop Drawings: For glazed aluminum curtain walls. Include plans, elevations, sections, full-size details, and attachments to other work.

1. Include details of provisions for assembly expansion and contraction and for draining moisture occurring within the assembly to the exterior.
2. Include full-size isometric details of each type of vertical-to-horizontal intersection of glazed aluminum curtain walls, showing the following:

a. Joinery, including concealed welds.
b. Anchorage.
c. Expansion provisions.
d. Glazing.
e. Flashing and drainage.

3. Show connection to and continuity with adjacent thermal, weather, air, and vapor barriers.

H. Samples for Initial Selection: For units with factory-applied color finishes.

I. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.

J. Fabrication Sample: Of each vertical-to-horizontal intersection of assemblies, made from 12-inch lengths of full-size components and showing details of the following:

1. Joinery, including concealed welds.
2. Anchorage.
3. Expansion provisions.
4. Glazing.
5. Flashing and drainage.

K. Contract Closeout Submittals:

1. Maintenance Data: For glazed aluminum curtain walls to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer and that employs a qualified glazing contractor for this Project who is certified under the North American Contractor Certification Program (NACC) for Architectural Glass & Metal (AGM) contractors and that employs glazing technicians certified under the Architectural Glass and Metal Technician (AGMT) certification program.

B. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.

1. Do not change intended aesthetic effects, as judged solely by Director's Representative, except with Director's Representative's approval. If changes are proposed, submit comprehensive explanatory data to Director's Representative for review.

1.5 WARRANTY

A. Special Assembly Warranty: Manufacturer agrees to repair or replace components of glazed aluminum curtain wall that do not comply with requirements or that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including, but not limited to, excessive deflection.
b. Noise or vibration created by wind and thermal and structural movements.
c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
d. Water penetration through fixed glazing and framing areas.
e. Failure of operating components.

2. Warranty Period: 10 years from date of Substantial Completion.

B. Special Finish Warranty, Factory-Applied Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of baked enamel, powder coat, or organic finishes within specified warranty period.

1. Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Warranty Period: 20 years from date of Substantial Completion.

C. Special Finish Warranty, Anodized Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of anodized finishes within specified warranty period.

1. Deterioration includes, but is not limited to, the following:

    a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.
    b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
    c. Cracking, peeling, or chipping.

2. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General Performance: Comply with performance requirements specified, as determined by testing of glazed aluminum curtain walls representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.

1. Glazed aluminum curtain walls shall withstand movements of supporting structure, including, but not limited to, story drift, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
2. Failure also includes the following:

    a. Thermal stresses transferring to building structure.
    b. Glass breakage.
    c. Noise or vibration created by wind and thermal and structural movements.
    d. Loosening or weakening of fasteners, attachments, and other components.
    e. Failure of operating units.

B. Structural Loads:

1. Wind Loads: As indicated on Drawings.
2. Other Design Loads: As indicated on Drawings.

C. Deflection of Framing Members Supporting Glass: At design wind load, as follows:

1. Deflection Normal to Wall Plane: Limited to 1/175 of clear span for spans of up to 13 feet 6 inches and to 1/240 of clear span plus 1/4 inch for spans of greater than 13 feet 6 inches.
2. Deflection Parallel to Glazing Plane: Limited to amount not exceeding that which reduces glazing bite to less than 75 percent of design dimension and that which reduces edge clearance between framing members and glazing or other fixed components to less than 1/8 inch.

3. Cantilever Deflection: Limited to 2l/175 at unsupported cantilevers.

D. Structural: Test in accordance with ASTM E330 as follows:

1. When tested at positive and negative wind-load design pressures, assemblies do not evidence deflection exceeding specified limits.

2. When tested at 150 percent of positive and negative wind-load design pressures, assemblies, including anchorage, do not evidence material failures, structural distress, or permanent deformation of main framing members exceeding 0.2 percent of span.
3. Test Durations: As required by design wind velocity, but not less than 10 seconds.

E. Water Penetration under Static Pressure: Test in accordance with ASTM E331 as follows:

1. No evidence of water penetration through fixed glazing and framing areas when tested in accordance with a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure, but not less than 10 lbf/sq. ft..

F. Water Penetration under Dynamic Pressure: Test in accordance with AAMA 501.1 as follows:

1. No evidence of water penetration through fixed glazing and framing areas when tested at dynamic pressure equal to 20 percent of positive wind-load design pressure, but not less than 15 lbf/sq. ft..
2. Maximum Water Leakage: No uncontrolled water penetrating assemblies or water appearing on assemblies' normally exposed interior surfaces from sources other than condensation. Water leakage does not include water controlled by flashing and gutters or water that is drained to exterior.

G. Interstory Drift: Accommodate design displacement of adjacent stories indicated.

1. Design Displacement: As indicated on Drawings.
2. Test Performance: Complying with criteria for passing based on building occupancy type when tested in accordance with AAMA 501.4 at design displacement and 1.5 times the design displacement.

H. Seismic Performance: Glazed aluminum curtain walls shall withstand the effects of earthquake motions determined in accordance with ASCE/SEI 7.

1. Seismic Drift Causing Glass Fallout: Complying with criteria for passing based on building occupancy type when tested in accordance with AAMA 501.6 at design displacement.
2. Vertical Interstory Movement: Complying with criteria for passing based on building occupancy type when tested in accordance with AAMA 501.7 at design displacement.

I. Energy Performance: Certified and labelled by manufacturer for energy performance as follows:

1. Thermal Transmittance (U-factor):

a. Fixed Glazing and Framing Areas: U-factor for the system of not more than 0.36 Btu/sq. ft. x h x deg F as determined in accordance with NFRC 100.

2. Solar Heat Gain Coefficient (SHGC):

a. Fixed Glazing and Framing Areas: SHGC for the system of not more than 0.36 as determined in accordance with NFRC 200.

3. Air Leakage:

a. Fixed Glazing and Framing Areas: Air leakage for the system of not more than 0.06 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft. when tested in accordance with ASTM E283.

4. Condensation Resistance Factor (CRF):

a. Fixed Glazing and Framing Areas: CRF for the system of not less than 65 as determined in accordance with AAMA 1503.

J. Noise Reduction: Test in accordance with ASTM E90, with ratings determined by ASTM E1332, as follows:

1. Outdoor-Indoor Transmission Class: Minimum 30.
2. Sound Transmission Class: Minimum 34

K. Windborne-Debris Impact Resistance: Pass ASTM E1886 missile-impact and cyclic-pressure tests in accordance with ASTM E1996 for Wind Zone 3 for enhanced protection.

1. Large-Missile Test: For glazing located within 30 feet of grade.
2. Small-Missile Test: For glazing located between 30 feet and 60 feet above grade.

L. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes:

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.
2. Thermal Cycling: No buckling; stress on glass; sealant failure; excess stress on framing, anchors, and fasteners; or reduction of performance when tested in accordance with AAMA 501.5.

a. High Exterior Ambient-Air Temperature: That which produces an exterior metal-surface temperature of 180 deg F.
b. Low Exterior Ambient-Air Temperature: 0 deg F.

2.2 SOURCE LIMITATIONS

A. Obtain all components of curtain-wall system and storefront system, including framing entrances and accessories, from single manufacturer.

2.3 GLAZED ALUMINUM CURTAIN WALL SYSTEMS

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. Boyd Aluminum.
2. EFCO Corporation.
3. Oldcastle BuildingEnvelope (OBE); CRH Americas.
4. Tubelite Inc.
5. Wausau Window and Wall Systems; Apogee Wausau Group, Inc.
6. YKK AP America Inc.

7. Or equal.

B. Framing Members: Manufacturer's extruded- or formed-aluminum framing members and of thickness required and reinforced as required to support imposed loads but not less than 0.070” wall thickness.

1. Depth: 6” depth (nominal)
2. Sightlines: 2-1/2” (nominal)
3. Construction: Thermally broken.
4. Glazing System: Retained mechanically with gaskets on four sides suitable for 1” nominal glazing units.
5. Glazing Plane: Front.
6. Finish: AAMA 2605 70% Fluoropolymer Resin Finish.
7. System: Either stick or unitized system.
8. Aluminum: ASTM B221:6063-T6 alloy minimum unless other alloy and temper recommended by manufacturer for type of use and finish indicated.
9. Reinforcement: As required by manufacturer.

C. Pressure Caps: Manufacturer's standard aluminum components that mechanically retain glazing.

1. Include snap-on aluminum trim that conceals fasteners.

D. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

E. Insulated Spandrel Panels: Refer to Section 088000 “Glazing”.

F. Entrance Door Systems: Comply with Section 084113 "Aluminum-Framed Entrances and Storefronts".

2.4 GLAZING ACCESSORIES

A. Glazing Gaskets: ASTM C509 or ASTM C864. Manufacturer's standard.

1. Color: Black.

B. Glazing Sealants: As recommended by manufacturer.

C. Structural Glazing Sealants: ASTM C1184, chemically curing silicone formulation that is compatible with system components with which it comes into contact, specifically formulated and tested for use as structural sealant and approved by structural-sealant manufacturer for use in curtain-wall assembly indicated.

1. Color: As selected by Director’s Representative from manufacturer's full range of colors.

D. Weatherseal Sealants: ASTM C920 for Type S; Grade NS; Class 25; Uses NT, G, A, and O; chemically curing silicone formulation that is compatible with structural sealant and other system components with which it comes into contact; recommended by structural-sealant, weatherseal-sealant, and structural-sealant-glazed curtain-wall manufacturers for this use.

1. Color: Match structural sealant.

2.5 MATERIALS

A. Sheet and Plate: ASTM B209.

B. Extruded Bars, Rods, Profiles, and Tubes: ASTM B221.

C. Structural Profiles: ASTM B308.

D. Steel Reinforcement:

1. Structural Shapes, Plates, and Bars: ASTM A36.
2. Cold-Rolled Sheet and Strip: ASTM A1008.
3. Hot-Rolled Sheet and Strip: ASTM A1011.

E. Steel Reinforcement Primer: Manufacturer's standard zinc-rich, corrosion-resistant primer complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods in accordance with recommendations in SSPC-SP COM and prepare surfaces in accordance with applicable SSPC standard.

2.6 ACCESSORIES

A. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
2. Reinforce members as required to receive fastener threads.
3. Use exposed fasteners with countersunk Phillips screw heads, finished to match framing system.

B. Anchors: Three-way adjustable anchors with minimum adjustment of 1 inch that accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer.

1. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A123 or ASTM A153 requirements.

C. Concealed Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials.

D. Bituminous Paint: Cold-applied asphalt-mastic paint containing no asbestos, formulated for 30-mil thickness per coat.

2.7 FABRICATION

A. Form or extrude aluminum shapes before finishing.

B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

C. Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fitted joints with ends coped or mitered.
3. Physical and thermal isolation of glazing from framing members.
4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
5. Provisions for field replacement of glazing from interior for vision glass and exterior for spandrel glazing or metal panels.
6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

D. Fabricate components to resist water penetration as follows:

1. Internal guttering system or other means to drain water passing joints, condensation occurring within framing members, and moisture migrating within glazed aluminum curtain wall to exterior.
2. Pressure-equalized system or double barrier design with primary air and vapor barrier at interior side of glazed aluminum curtain wall and secondary seal weeped and vented to exterior.

E. Curtain-Wall Framing: Fabricate components for assembly using manufacturer's standard assembly method.

F. After fabrication, clearly mark components to identify their locations in Project in accordance with Shop Drawings.

2.8 ALUMINUM FINISHES

A. Two-Coat PVDF Color Finish: AAMA 2605 70% Fluoropolymer Resin Finish.

1. Color: Refer to drawings for scheduled finish, to be selected from the manufacturer’s standard color options. Color must match color finishes of windows and storefront systems specified elsewhere.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, 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. Comply with manufacturer's written instructions.

B. Do not install damaged components.

C. Fit joints to produce hairline joints free of burrs and distortion.

D. Rigidly secure nonmovement joints.

E. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.

F. Where welding is required, weld components in concealed locations to minimize distortion or discoloration of finish. Protect glazing surfaces from welding.

G. Seal joints watertight unless otherwise indicated.

H. Metal Protection:

1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with primer, applying sealant or tape, or installing nonconductive spacers as recommended by manufacturer for this purpose.
2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

I. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within glazed aluminum curtain wall to exterior.

J. Install components plumb and true in alignment with established lines and grades.

3.3 INSTALLATION OF CAPTURED GLAZING

A. Install curtain wall systems plumb, level, and true to line, without warp or rack of frames, within manufacturer’s prescribed tolerances, and complying with installation instructions.

B. Provide support and anchor in place.

C. Dissimilar Materials:

1. Provide separation of aluminum materials from sources of corrosion or electrolytic actioncontact points.

D. Glazing:

1. Glass shall be outside-glazed.
2. Set glazing into framing in accordance with sealant manufacturer's and framing manufacturer's written instructions and standard practice. Use a spacer or backer as recommended by manufacturer.
3. Set glazing with proper orientation, so that coatings face exterior or interior as specified.

4. Glass shall be held in place with extruded aluminum pressure plates anchored to the mullion using stainless steel fasteners that are spaced no more than 9" oncenter.

E. Water Drainage

1. Each light of glass shall be compartmentalized using joint plugs and silicone sealant to divert water to the horizontal weep locations.
2. Weep holes shall be located in the horizontal pressure plates and covers to divert waterto the exterior of the building.

F. Clean and protect glass as indicated in Section 088000 "Glazing."

3.4 INSTALLATION OF WEATHERSEAL SEALANT

A. After structural sealant has completely cured, remove temporary retainers, and insert backer rod between lites of glass, as recommended by sealant manufacturer.

B. Install weatherseal sealant to completely fill cavity, in accordance with sealant manufacturer's written instructions, to produce weatherproof joints.

3.5 ERECTION TOLERANCES

A. Install glazed aluminum curtain walls to comply with the following maximum tolerances:

1. Plumb: 1/8 inch in 10 feet; 1/4 inch in 40 feet.
2. Level: 1/8 inch in 20 feet; 1/4 inch in 40 feet.
3. Alignment:

a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch wide, limit offset from true alignment to 1/16 inch.
b. Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch wide, limit offset from true alignment to 1/8 inch.
c. Where surfaces are separated by reveal or protruding element of 1 inch wide or more, limit offset from true alignment to 1/4 inch.

4. Location: Limit variation from plane to 1/8 inch in 12 feet; 1/2 inch over total length.

3.6 FIELD QUALITY CONTROL

A. Refer to Section 019119 “Building Enclosure Commissioning” for additional information on specific responsibilities and testing goals.

B. Testing Agency: Contractor to Engage a qualified testing agency to perform tests and inspections.

1. Building Enclosure Commissioning Provider will interpret tests and state in each report whether tested work complies with or deviates from requirements.

C. Test Area: Perform tests on representative areas of glazed aluminum curtain walls.

D. Field Quality-Control Testing: Perform the following test on representative areas of glazed aluminum curtain walls.

1. Air Leakage: ASTM E783 at 1.5 times the rate specified for laboratory testing in "Performance Requirements" Article but not more than 0.1 cfm/sq. ft. at a static-air-pressure differential of 6.24 lbf/sq. ft.

a. Perform a minimum of tests in areas as directed by Director's Representative.

2. Water Penetration: ASTM E1105 at a minimum uniform static-air-pressure differential of 0.67 times the static-air-pressure differential specified for laboratory testing in "Performance Requirements" Article, but not less than 12 lbf/sq. ft., and shall not evidence water penetration.

E. Glazed aluminum curtain walls will be considered defective if they do not pass tests and inspections.

F. Prepare test and inspection reports.

END OF SECTION 084413

SECTION 085113 - ALUMINUM WINDOWS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes aluminum windows for exterior locations.

B. Related Sections:

1. Section 019119 for Related Building Enclosure Commissioning.
2. Section 079200 for Joint Sealants
3. Section 088000 for Glazing and Spandrel Panel Types.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

1. Include construction details, material descriptions, glazing and fabrication methods, dimensions of individual components and profiles, hardware, and finishes for aluminum windows.
2. Include manufacturer’s installation instructions.

E. Shop Drawings: For aluminum windows.

1. Include plans, elevations, sections, hardware, accessories, insect screens, operational clearances, and details of installation, including anchor, flashing, and sealant installation.

F. Samples: Corner section for each type of window unit and for each color specified, 8 by 8 inches in size.

1. Include as part of corner section: frame, sash, and insect screen.
2. Provide manufacturer’s standard color finishes for selection.

G. Product Schedule: For aluminum windows. Use same designations indicated on Drawings.

H. Quality Control Submittals:

1. Qualification Data: For manufacturer and Installer.

a. Names and address of 3 similar projects that Installer has worked on during the past 5 years.

2. Product Test Reports: For each type of aluminum window, for tests performed by a qualified testing agency.
3. Sample Warranties: For manufacturer's warranties.

1.4 QUALITY ASSURANCE

A. 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.

B. Mockups: Build Mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

1. Build Mockup of typical aluminum window assembly as shown on Drawings, including corner, soffits, supports, attachments, and accessories.
2. Water-Spray Test: Conduct water-spray test of metal panel assembly mockup, testing for water penetration according to AAMA 501.2.
3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in Benchmarks unless Director’s Representative specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

C. Installer Qualifications: An installer acceptable to aluminum window manufacturer for installation of units required for this Project and have a minimum 10 years’ experience.

D. Label: each window unit shall have a AAMA or WDMA Certification label affixed to it.

1.5 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace aluminum windows that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Failure to meet performance requirements.
b. Structural failures including excessive deflection, water leakage, condensation, and air infiltration.
c. Faulty operation of movable sash and hardware.
d. Deterioration of materials and finishes beyond normal weathering.
e. Failure of insulating glass.

2. Warranty Period:

a. Window: 10 years from date of Substantial Completion.
b. Glazing Units: 20 years from date of Substantial Completion.
c. Aluminum Finish: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain aluminum windows from single source from single manufacturer.

2.2 WINDOW PERFORMANCE REQUIREMENTS

A. 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. Window Certification: AAMA certified with label attached to each window.

B. Performance Class and Grade: AAMA/WDMA/CSA 101/I.S.2/A440 as follows:

1. Minimum Performance Class: AW.
2. Minimum Performance Grade: 100.

C. Thermal Transmittance: NFRC 100 maximum whole-window U-factor of 0.30 Btu/sq. ft. x h x deg F.

D. Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum whole-window SHGC of 0.36.

E. Condensation-Resistance Factor (CRF): Provide aluminum windows tested for thermal performance according to AAMA 1503, showing a CRF of 52.

F. Thermal Movements: Provide aluminum windows, including anchorage, 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: 120 deg F ambient; 180 deg F material surfaces.

G. Sound Transmission Class (STC): Rated for not less than 35 STC when tested for laboratory sound transmission loss according to ASTM E90 and determined by ASTM E413.

H. Outside-Inside Transmission Class (OITC): Rated for not less than 30 OITC when tested for laboratory sound transmission loss according to ASTM E90 and determined by ASTM E1332.

I. Windborne-Debris Impact Resistance: Passes ASTM E1886 missile-impact and cyclic-pressure tests in accordance with ASTM E1996 for Wind Zone 2 for basic protection.

2.3 ALUMINUM WINDOWS

A. Manufacturer: Acceptable window manufacturers that may be incorporated into the work include:

1. Kawneer; 8400 Series (Basis of Design)
2. Architectural Windows
3. Oldcastle Building Envelope (OBE)
4. YKK AP America
5. EFCO Corporation

B. Types: Provide the following types in locations indicated on Drawings:

1. Fixed.

C. Frames and Sashes: Aluminum extrusions complying with AAMA/WDMA/ CSA 101/I.S.2/A440.
1. Aluminum: ASTM B221:6063-T6 alloy minimum unless other alloy and temper recommended by manufacturer for type of use and finish indicated.
2. Thermally Improved Construction: 3/8” nominal high-density polyurethane thermal barrier.
3. Frame Thickness: 0.070” aluminum thickness, minimum.
4. Frame Depth: 4” nominal.
5. Glazing Plane: Rear.
6. Finish: AAMA 2605 70% Fluoropolymer Resin Finish.

D. Insulating Glass Units: Refer to 088000 “Glazing”

E. Insulating Metal Spandrel Panel Units: Refer to 088000 “Glazing”

2.4 ACCESSORIES

A. Subsills: Thermally broken, 0.093” thick extruded-aluminum subsills in configurations indicated on Drawings.

B. Factory Mulled Window Units: Extruded-aluminum profiles in sizes and configurations indicated on Drawings.

C. Receptor System: Two-piece, snap-together, thermally broken, extruded-aluminum receptor system that anchors windows in place.

D. Flexible Membrane Flashing: Henry Blueskin “Zero Flash” flashing tape or approved equal; 6” wide tape minimum.

2.5 FABRICATION

A. Fabricate aluminum windows in sizes indicated. Include a complete system for assembling components and anchoring windows.

B. Glaze aluminum windows in the factory.

C. Weather strip each operable sash to provide weathertight installation.

D. Weep Holes: Provide weep holes and internal passages to conduct infiltrating water to exterior.

E. Provide water-shed members above side-hinged sashes and similar lines of natural water penetration.

F. Mullions: Provide mullions and cover plates, 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. Provide mullions and cover plates capable of withstanding design wind loads of window units.

G. Complete fabrication, assembly, finishing, hardware application, and other work in the factory to greatest extent possible. Disassemble components only as necessary for shipment and installation.

2.6 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual" 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.

2.7 ALUMINUM FINISHES

A. Two-Coat PVDF Color Finish: AAMA 2605 70% Fluoropolymer Resin Finish.

1. Color: Refer to drawings for scheduled finish, to be selected from the manufacturer’s standard color options. Color must match color finishes of storefront and curtainwall systems specified elsewhere.

2. Color: To be selected from the full line of manufacturer standard colors.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Verify rough opening dimensions, levelness of sill plate, and operational clearances.

C. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure weathertight window installation.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with manufacturer's written instructions for installing windows, hardware, accessories, and other components. For installation procedures and requirements not addressed in manufacturer's written instructions, comply with installation requirements in ASTM E2112.

B. Install windows level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction to produce weathertight construction.

C. Install windows and components to drain condensation, water penetrating joints, and moisture migrating within windows to the exterior.

D. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

3.3 FIELD QUALITY CONTROL

A. Refer to Section 019119 “Building Enclosure Commissioning” for additional information on specific responsibilities and testing goals.

B. Testing Agency: Contractor to Engage a qualified testing agency to perform tests and inspections.

1. Building Enclosure Commissioning Provider will interpret tests and state in each report whether tested work complies with or deviates from requirements.

C. Test Area: Perform tests on representative areas of glazed aluminum windows.

D. Field Quality-Control Testing: Perform the following tests on representative areas of windows.

1. Air Leakage: ASTM E783 at 1.5 times the rate specified for laboratory testing in "Performance Requirements" Article but not more than 0.1 cfm/sq. ft. at a static-air-pressure differential of 6.24 lbf/sq. ft.

a. Perform a minimum of tests in areas as directed by Director’s Representative.

2. Water Penetration: ASTM E1105 at a minimum uniform static-air-pressure differential of 0.67 times the static-air-pressure differential specified for laboratory testing in "Performance Requirements" Article, but not less than 12 lbf/sq. ft., and shall not evidence water penetration.

E. Windows will be considered defective if they do not pass tests and inspections.

F. Prepare test and inspection reports.

3.4 ADJUSTING, CLEANING, AND PROTECTION

A. Adjust operating sashes and hardware for a tight fit at contact points and weather stripping for smooth operation and weathertight closure.

B. Clean exposed surfaces immediately after installing windows. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.

1. Keep protective films and coverings in place until final cleaning.

C. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

D. Protect window surfaces from contact with contaminating substances resulting from construction operations. If contaminating substances do contact window surfaces, remove contaminants immediately according to manufacturer's written instructions.

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 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Mechanical door hardware for the following:

a. Swinging doors.
b. Sliding doors.

2. Cylinders for door hardware specified in other Sections.
3. Electrified door hardware.

B. References

1. NFPA 80 Fire Doors and Windows
2. NFPA 101 Life Safety Code.
3. Building Code of New York State.
4. ICC/ANSI A117.1-2003 Accessible and Usable Buildings and Facilities.
5. ANSI/BHMA Standard A156.1 Butts and Hinges.
6. ANSI/BHMA Standard A156.4 Door Controls – Closers.
7. ANSI/BHMA Standard A156.6 Architectural Door Trim.
8. ANSI/BHMA Standard A156.7 Template Hinge Dimensions.
9. ANSI/BHMA Standard A156.8 Door Controls – Overhead Stops and Holders.
10. ANSI/BHMA Standard A156.13 Mortise Locks and Latches Series 1000.
11. ANSI/BHMA Standard A156.16 Auxiliary Hardware.
12. ANSI/BHMA Standard A156.18 Materials and Finishes.
13. ANSI/BHMA Standard A156.22 Door Gasketing Systems.
14. ANSI/BHMA Standard A156.26 Continuous Hinges.
15. DHI - Door and Hardware Institute.
16. NAAM Standard HMMA 800-96- Hollow Metal Manufacturers Association.
17. NAAM Standard HMMA 831-97 Recommended Hardware Locations for Custom Hollow Metal Doors and Frames.
18. 2010 Standards for State and Local Government Facilities: Title II.

1.3 DEFINITIONS

A. Architectural Hardware Consultant (AHC): A Door and Hardware Institute certified expert in complex architectural openings requiring advanced knowledge of model building codes and safety standards, ADA requirements, access control knowledge and installation expertise.

B. Architectural Hardware Distributor: A company that regularly purchases architectural hardware from manufacturers and specializes in the sale, service and support of that hardware to contractors and/or end users.

C. Company Field Advisor(s): Hardware manufacturers' representatives who are certified in writing by manufacturer to be technically qualified in design, installation, and servicing of products.

D. Installation Supervisor: Designated supervisor/installer, who has a minimum three years experience in finish hardware installation, and is qualified and responsible to ensure approved finish hardware is installed, adjusted, and operates properly.

1.4 COORDINATION

A. Floor-Recessed Door Hardware: Coordinate layout and installation with floor construction.

1. Cast anchoring inserts into concrete.

B. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

C. Security: Coordinate installation of door hardware, keying, and access control with Director's Representative's security consultant.

D. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.

E. Existing Openings: Where hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide proper door operation.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

B. Keying Conference: Conduct conference at Project site.

1. Conference participants shall include Installer's Architectural Hardware Consultant and Director's Representative.
2. Incorporate conference decisions into keying schedule after reviewing door hardware keying system including, but not limited to, the following:

a. Flow of traffic and degree of security required.
b. Preliminary key system schematic diagram.
c. Requirements for key control system.

d. Requirements for access control.
e. Address for delivery of keys.

1.6 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

E. Shop Drawings: For electrified door hardware.

1. Include diagrams for power, signal, and control wiring.
2. Include details of interface of electrified door hardware and building safety and security systems.

F. Samples: For each exposed product in each finish specified, in manufacturer's standard size.

1. Tag Samples with full product description to coordinate Samples with door hardware schedule.

G. Samples for Initial Selection: For each type of exposed finish.

H. Samples for Verification: For each type of exposed product, in each finish specified.

1. Sample Size: Full-size units or minimum 2-by-4-inch Samples for sheet and 4-inch long Samples for other products.

a. Full-size Samples will be returned to Contractor. Units that are acceptable and remain undamaged through submittal, review, and field comparison process may, after final check of operation, be incorporated into the Work, within limitations of keying requirements.

2. Tag Samples with full product description to coordinate Samples with door hardware schedule.

I. Door Hardware Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant. Coordinate door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Submittal Sequence: Submit door hardware schedule concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate the fabrication of other work that is critical in Project construction schedule.
2. Format: Use same scheduling sequence and format and use same door numbers as in door hardware schedule in the Contract Documents.
3. Content: Include the following information:

a. Identification number, location, hand, fire rating, size, and material of each door and frame.

b. Locations of each door hardware set, cross-referenced to Drawings on floor plans and to door and frame schedule.
c. Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.
d. Description of electrified door hardware sequences of operation and interfaces with other building control systems.
e. Fastenings and other installation information.
f. Explanation of abbreviations, symbols, and designations contained in door hardware schedule.
g. Mounting locations for door hardware.
h. List of related door devices specified in other Sections for each door and frame.

J. Keying Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant, detailing Director's Representative's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations that are coordinated with the Contract Documents.

K. Qualification Data: For Installer and Architectural Hardware Consultant.

L. Product Certificates: For each type of electrified door hardware.

1. Certify that door hardware for use on each type and size of labeled fire-rated doors complies with listed fire-rated door assemblies.

M. Product Test Reports: For compliance with accessibility requirements, for tests performed by manufacturer and witnessed by a qualified testing agency, for door hardware on doors located in accessible routes.

N. Field quality-control reports.

O. Sample Warranty: For special warranty.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of door hardware to include in maintenance manuals.

B. Schedules: Final door hardware and keying schedule.

1.8 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Door Hardware: Provide 2 of each type of hardware for future use.
2. Electrical Parts: Provide 1 of each type of electrical item for future use.

1.9 QUALITY ASSURANCE

A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and of an Architectural Hardware Consultant who is available during the course of the Work to consult Contractor and Director's Representative about door hardware and keying.

1. Warehousing Facilities: In Project's vicinity.
2. Scheduling Responsibility: Preparation of door hardware and keying schedule.
3. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

B. Architectural Hardware Consultant Qualifications: A person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and who is currently certified by DHI as Architectural Hardware Consultant (AHC).

1.10 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.

B. Tag each item or package separately with identification coordinated with the final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.

C. Deliver keys to manufacturer of key control system for subsequent delivery to Director’s Representative.

D. Deliver keys and permanent cores to Director’s Representative by registered mail or overnight package service.

1.11 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including excessive deflection, cracking, or breakage.
b. Faulty operation of doors and door hardware.
c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.

2. Warranty Period: Three years from date of Substantial Completion unless otherwise indicated below:

a. Electromagnetic Locks: Five years from date of Substantial Completion.
b. Exit Devices: Two years from date of Substantial Completion.
c. Manual Closers: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain each type of door hardware from single manufacturer.

1. Provide electrified door hardware from same manufacturer as mechanical door hardware unless otherwise indicated. Manufacturers that perform electrical modifications and that are listed by a testing and inspecting agency acceptable to authorities having jurisdiction are acceptable.

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Rated Door Assemblies: Where fire-rated doors are indicated, provide door hardware complying with NFPA 80 that is 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.

B. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that complies with requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.

1. Air Leakage Rate: Maximum air leakage of 0.3 cfm/sq. ft. at the tested pressure differential of 0.3-inch wg of water.

C. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

D. Means of Egress Doors: Latches do not require more than 15 lbf to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.

E. Accessibility Requirements: For door hardware on doors in an accessible route, comply with the ABA standards of the Federal agency having jurisdiction & ICC A117.1.

1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf.
2. Comply with the following maximum opening-force requirements:

    a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf applied perpendicular to door.
    b. Sliding or Folding Doors: 5 lbf applied parallel to door at latch.
    c. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.

3. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch high.
4. Adjust door closer sweep periods so that, from an open position of 90 degrees, the door will take at least 5 seconds to move to a position of 12 degrees from the latch.
5. Adjust spring hinges so that, from an open position of 70 degrees, the door will take at least 1.5 seconds to move to the closed position.

2.3 HINGES

A. Hinges: BHMA A156.1. Provide template-produced hinges for hinges installed on hollow-metal doors and hollow-metal frames.

2.4 SELF-CLOSING HINGES AND PIVOTS

A. Self-Closing Hinges and Pivots: BHMA A156.17.

2.5 CENTER-HUNG AND OFFSET PIVOTS

A. Center-Hung and Offset Pivots: BHMA A156.4.

2.6 CONTINUOUS HINGES

A. Continuous Hinges: BHMA A156.26; minimum 0.120-inch thick, hinge leaves with minimum overall width of 4 inches; fabricated to full height of door and frame and to template screw locations; with components finished after milling and drilling are complete.

B. Continuous, Gear-Type Hinges: Extruded-aluminum, pinless, geared hinge leaves joined by a continuous extruded-aluminum channel cap; with concealed, self-lubricating thrust bearings.

2.7 CONCEALED HINGES

A. Concealed Hinges: Fully concealed within mortises in the door edge and frame and allowing door to swing open 180 degrees.

2.8 MECHANICAL LOCKS AND LATCHES

A. Lock Functions: As indicated in door hardware schedule.

B. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:

1. Bored Locks: Minimum 1/2-inch latchbolt throw.
2. Mortise Locks: Minimum 3/4-inch latchbolt throw.
3. Deadbolts: Minimum 1-inch bolt throw.

C. Lock Backset: 2-3/4 inches unless otherwise indicated.

D. Lock Trim:

1. Description: As indicated on Drawings.
2. Levers: Cast.
    a. Sargent 8200 LWil.
3. Escutcheons (Roses): Wrought.
4. Dummy Trim: Match lever lock trim and escutcheons.

E. Strikes: Provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.

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: Manufacturer's special strike box fabricated for aluminum framing.
4. Rabbet Front and Strike: Provide on locksets for rabbeted meeting stiles.

F. Bored Locks: BHMA A156.2; Grade 1; Series 4000.

G. Mortise Locks: BHMA A156.13; Operational Grade, 2 Security Grade 2; stamped steel case with steel or brass parts; Series 1000.

2.9 AUXILIARY LOCKS

A. Mortise Auxiliary Locks: BHMA A156.36; Grade 2; with strike that suits frame.

B. Push-Button Combination Locks: BHMA A156.36; cylindrical; Grade 1; lock opens by entering a one- to five-digit code by pushing correct buttons in correct sequence; automatically relocks when door is closed; with strike that suits frame.

2.10 ELECTRIC STRIKES

A. Electric Strikes: BHMA A156.31; Grade 1; with faceplate to suit lock and frame.

2.11 ELECTROMAGNETIC LOCKS

A. Electromagnetic Locks: BHMA A156.23; electrically powered; with electromagnet attached to frame and armature plate attached to door; full-exterior or full-interior type, as required by application indicated.

B. Delayed-Egress Electromagnetic Locks: BHMA A156.24, electrically powered, with electromagnet attached to frame and armature plate attached to door; depressing push bar for more than three seconds initiates irreversible alarm and adjustable time delay for egress. When integrated with fire alarm, fire alarm voids time delay.

2.12 ELECTROMECHANICAL LOCKS

A. Electromechanical Locks: BHMA A156.25; Grade 2; motor or solenoid driven; with strike that suits frame.

1. Type: [Bored] [Mortise latchbolt] [Mortise deadbolt] [Mortise deadlocking latchbolt].

2.13 EXIT LOCKS AND EXIT ALARMS

A. Exit Locks and Alarms: BHMA A156.29, Grade 1.

2.14 SURFACE BOLTS

A. Surface Bolts: BHMA A156.16.

2.15 MANUAL FLUSH BOLTS

A. Manual Flush Bolts: BHMA A156.16; minimum 3/4-inch throw; designed for mortising into door edge.

2.16 AUTOMATIC AND SELF-LATCHING FLUSH BOLTS

A. Automatic Flush Bolts: BHMA A156.3, Type 25; minimum 3/4-inch throw; with dust-proof strikes; designed for mortising into door edge. Include wear plates.

B. Self-Latching Flush Bolts: BHMA A156.3, Type 27; minimum 3/4-inch throw; with dust-proof strikes; designed for mortising into door edge. Include wear plates.

2.17 EXIT DEVICES AND AUXILIARY ITEMS

A. Exit Devices and Auxiliary Items: BHMA A156.3.

2.18 LOCK CYLINDERS

A. Lock Cylinders: Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver. Provide cylinder from same manufacturer of locking devices.

B. Standard Lock Cylinders: BHMA A156.5; Grade 1 permanent cores; face finished to match lockset.

1. Core Type: Interchangeable.

C. High-Security Lock Cylinders: BHMA A156.30; Grade 2 permanent cores that are removable; face finished to match lockset.

1. Type: M, mechanical.

D. Construction Master Keys: Provide cylinders with feature that permits voiding of construction keys without cylinder removal. Provide 10 construction master keys.

E. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 10 construction master keys.

2.19 KEYING

A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, appendix. Provide one extra key blank for each lock. Incorporate decisions made in keying conference.

1. No Master Key System: Only change keys operate cylinders.

a. Provide three cylinder change keys.

2. Master Key System: Change keys and a master key operate cylinders.

a. Provide three cylinder change keys and five master keys.

3. Grand Master Key System: Change keys, a master key, and a grand master key operate cylinders.

a. Provide three cylinder change keys and five each of master and grand master keys.

4. Great-Grand Master Key System: Change keys, a master key, a grand master key, and a great-grand master key operate cylinders.

a. Provide three cylinder change keys and five each of master, grand master, and great-grand master keys.

5. Existing System:

    a. Master key or grand master key locks to existing system.
    b. Re-key existing master key system into new keying system.

6. Keyed Alike: Key all cylinders to same change key.

B. Keys: Nickel silver.

1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:

    a. Notation: "DO NOT DUPLICATE.".

2.20 KEY CONTROL SYSTEM

A. Key Control Cabinet: BHMA A156.28; metal cabinet with baked-enamel finish; containing key-holding hooks, labels, two sets of key tags with self-locking key holders, key-gathering envelopes, and temporary and permanent markers; with key capacity of 150 percent of the number of locks.

1. Multiple-Drawer Cabinet: Grade 1 cabinet with drawers equipped with key-holding panels and key envelope storage, and progressive-type ball-bearing suspension slides. Include single cylinder lock to lock all drawers.

B. Key Lock Boxes: Designed for storage of two keys.

C. Key Control System Software: Multiple-index system for recording and reporting key-holder listings, tracking keys and lock and key history, and printing receipts for transactions. Include instruction manual.

2.21 OPERATING TRIM

A. Operating Trim: BHMA A156.6; stainless steel unless otherwise indicated.

2.22 ACCESSORIES FOR PAIRS OF DOORS

A. Coordinators: BHMA A156.3; consisting of active-leaf, hold-open lever and inactive-leaf release trigger; fabricated from steel with nylon-coated strike plates; with built-in, adjustable safety release and with internal override.

B. Carry-Open Bars: BHMA A156.3; prevent the inactive leaf from opening before the active leaf; provide polished brass or bronze carry-open bars with strike plate for inactive leaves of pairs of doors unless automatic or self-latching bolts are used.

C. Astragals: BHMA A156.22.

2.23 SURFACE CLOSERS

A. Surface Closers: BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written instructions for size of door

closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.

2.24 CONCEALED CLOSERS

A. Concealed Closers: BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves. Comply with manufacturer's written instructions for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.

2.25 CLOSER HOLDER RELEASE DEVICES

A. Closer Holder Release Devices: BHMA A156.15; Grade 1; closer connected with separate or integral releasing and fire- or smoke-detecting devices. Door shall become self-closing on interruption of signal to release device. Automatic release is activated by loss of power.

2.26 MECHANICAL STOPS AND HOLDERS

A. Wall- and Floor-Mounted Stops: BHMA A156.16.

2.27 ELECTROMAGNETIC STOPS AND HOLDERS

A. Electromagnetic Door Holders: BHMA A156.15, Grade 1; wall-mounted electromagnetic single unit with strike plate attached to swinging door; coordinated with fire detectors and interface with fire-alarm system for labeled fire-rated door assemblies.

2.28 OVERHEAD STOPS AND HOLDERS

A. Overhead Stops and Holders: BHMA A156.8.

2.29 DOOR GASKETING

A. Door Gasketing: BHMA A156.22; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.

B. Maximum Air Leakage: When tested according to ASTM E283 with tested pressure differential of 0.3-inch wg, as follows:

1. Smoke-Rated Gasketing: 0.3 cfm/sq. ft. of door opening.
2. Gasketing on Single Doors: 0.3 cfm/sq. ft. of door opening.
3. Gasketing on Double Doors: 0.50 cfm per ft. of door opening.

2.30 THRESHOLDS

A. Thresholds: BHMA A156.21; fabricated to full width of opening indicated.

2.31 SLIDING DOOR HARDWARE

A. Sliding Door Hardware: BHMA A156.14; consisting of complete sets including rails, hangers, supports, bumpers, floor guides, and accessories indicated.

2.32 FOLDING DOOR HARDWARE

A. General: BHMA A156.14; complete sets including overhead rails, hangers, supports, bumpers, floor guides, and accessories indicated.

2.33 METAL PROTECTIVE TRIM UNITS

A. Metal Protective Trim Units: BHMA A156.6; fabricated from 0.050-inch thick stainless steel; with manufacturer's standard machine or self-tapping screw fasteners.

2.34 AUXILIARY DOOR HARDWARE

A. Auxiliary Hardware: BHMA A156.16.

2.35 AUXILIARY ELECTRIFIED DOOR HARDWARE

A. Auxiliary Electrified Door Hardware:

2.36 FABRICATION

A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rating labels and as otherwise approved by Director’s Representative.

1. Manufacturer's identification is permitted on rim of lock cylinders only.

B. Base Metals: Produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18.

C. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware unless otherwise indicated.

1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.
2. Fire-Rated Applications:

Wood or Machine Screws: For the following:

1) Strike plates to frames.
2) Closers to doors and frames.

b. Steel Through Bolts: For the following unless door blocking is provided:

1) Surface hinges to doors.
2) Closers to doors and frames.
3) Surface-mounted exit devices.

3. Spacers or Sex Bolts: For through bolting of hollow-metal doors.
4. Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

2.37 FINISHES

A. Provide finishes complying with BHMA A156.18 as indicated in door hardware schedule.

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.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance of the Work.

B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Steel Doors and Frames: For surface-applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.

B. Wood Doors: Comply with door and hardware manufacturers' written instructions.

3.3 INSTALLATION

A. Mounting Heights: Mount door hardware units at heights to comply with the following unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
2. Custom Steel Doors and Frames: HMMA 831.
3. Wood Doors: DHI's "Recommended Locations for Architectural Hardware for Wood Flush Doors."

B. Install each door hardware item to comply with manufacturer's 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. Do not install surface-mounted items until finishes have been completed on substrates involved.

1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

C. Hinges: Install types and in quantities indicated in door hardware schedule, but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.

D. Intermediate Offset Pivots: Where offset pivots are indicated, provide intermediate offset pivots in quantities indicated in door hardware schedule, but not fewer than one intermediate offset pivot per door and one additional intermediate offset pivot for every 30 inches of door height greater than 90 inches.

E. Lock Cylinders: Install construction cores to secure building and areas during construction period.

1. Replace construction cores with permanent cores as directed by Director’s Representative.
2. Furnish permanent cores to Director’s Representative for installation.

F. Key Control System:

1. Key Control Cabinet: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.
2. Key Lock Boxes: Install where indicated or approved by Director’s Representative to provide controlled access for fire and medical emergency personnel.
3. Key Control System Software: Set up multiple-index system based on final keying schedule.

G. Boxed Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings. Verify location with Director’s Representative.

1. Configuration: Provide one power supply for each door opening with electrified door hardware.

H. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant complying with requirements specified in Section 079200 "Joint Sealants."

I. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they will impede traffic.

J. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

1. Do not notch perimeter gasketing to install other surface-applied hardware.

K. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

L. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

3.4 FIELD QUALITY CONTROL

A. Independent Architectural Hardware Consultant: Director's Representative will engage a qualified independent Architectural Hardware Consultant to perform inspections and to prepare inspection reports.

1. Independent Architectural Hardware Consultant will inspect door hardware and state in each report whether installed work complies with or deviates from requirements, including whether door hardware is properly installed and adjusted.

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.

1. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.
2. Spring Hinges: Adjust to achieve positive latching when door is allowed to close freely from an open position of 70 degrees and so that closing time complies with accessibility requirements of authorities having jurisdiction.
3. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.

B. Occupancy Adjustment: Approximately six months after date of Substantial Completion, Installer's Architectural Hardware Consultant shall examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors, door hardware, and electrified door hardware.

3.6 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items as necessary to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.7 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions to the Director’s Representative for continued adjustment, maintenance, and removal and replacement of door hardware.

B. Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by skilled employees of door hardware Installer. Include quarterly preventive maintenance, repair, or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door and door hardware operation. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.

3.8 DEMONSTRATION

A. Engage Installer to train Maintenance personnel to adjust, operate, and maintain door hardware.

3.9 DOOR HARDWARE SCHEDULE

A. See Section 087100.01 Door Hardware Schedule.

END OF SECTION 087100.

Architect Set

Heading # 01.00

Number	Degree	Location	Frame	Door	Size	Label	Hand	Qty	Type
101A	0		HM	HM	5'-0" x 7'-0" x 1-3/4"	---		1	PAIR

Qty Act	Qty Inact	Description		Finish	Mfgr	
3	3	4-1/2 Hvy Wt(.180) Hinge	T4A3386 4-1/2" x 4-1/2" NRP	32D	McKinney	100A
0	2	Flush Bolt, Extension, Manual	555	US26D	Rockwood	200A
1	0	Mortise Lockset	63-DG1-8205 x LW1L x MK	US26D	Sargent	311A
1	0	Closer - Parallel Arm with 5th screw	281-CPS	EN	Sargent	500A
1	0	Door Seal	700ES{60"w x 84"h}	MILL	National Guard	800B
1	0	Meeting Stile	600A(SET){60"w x 84"h}	A	National Guard	804A
1	0	Sweep	200NA{30"w}	A	National Guard	801A
1	0	Threshold	612SS x SIA{60"w}	SS	National Guard	802B

Note

Architect Set

Heading # 02.00

Number	Degree	Location	Frame	Door	Size	Label	Hand	Qty	Type
102A	0		HM	HM	6'-0" x 7'-0" x 1-3/4"	---		1	PAIR
103	0		HM	HM	6'-0" x 7'-0" x 1-3/4"	---		1	PAIR

Qty Act	Qty Inact	Description		Finish	Mfgr	
3	3	4-1/2 Hvy Wt(.180) Hinge	T4A3786 4-1/2" x 4-1/2" NRP	26D	McKinney	101A
0	5	Flush Bolt, Extension, Manual	555	US26D	Rockwood	200A
1	0	Mortise Lockset	63-DG1-8205 x LW1L x MK	US26D	Sargent	311A
1	1	Kickplate	K1050 x 4BE x CSK x 10"h{34"w}	US32D	Rockwood	600A
1	1	Wall Stop	400	US26D	Rockwood	700A
1	1	Silencer	608-RKW	GRAY	Rockwood	900A

Note

Architect Set

Heading # 02A.00

Number	Degree	Location	Frame	Door	Size	Label	Hand	Qty	Type
102B	0		HM	HM	6'-0" x 7'-0" x 1-3/4"	C45		1	PAIR

Qty Act	Qty Inact	Description		Finish	Mfgr	
3	3	4-1/2 Hvy Wt(.180) Hinge	T4A3786 4-1/2" x 4-1/2" NRP	26D	McKinney	101A
0	5	Flush Bolt, Extension, Manual	555	US26D	Rockwood	200A
1	0	Mortise Lockset	63-DG1-8205 x LW1L x MK	US26D	Sargent	311A
1	0	Closer - Parallel Arm with 5th screw	281-P10	EN	Sargent	501A
1	1	Kickplate	K1050 x 4BE x CSK x 10"h{34"w}	US32D	Rockwood	600A
1	1	Wall Stop	400	US26D	Rockwood	700A
1	0	Astragal	S771BL7{84"h}	BL	Pemko	806A
1	0	Gasketing	S88D21{72"w x 84"h}	D	Pemko	803B

Note

Architect Set

Heading # 03.00

Number	Degree	Location	Frame	Door	Size	Label	Hand	Qty	Type
102D	0		HM	HM	6'-0" x 7'-0" x 1-3/4"	---		1	PAIR

Qty Act	Qty Inact	Description		Finish	Mfgr	
3	3	4-1/2 Hvy Wt(.180) Hinge	T4A3386 4-1/2" x 4-1/2" NRP	32D	McKinney	100A
1	0	Push Pad, SVR	63-DG1-8713F 36"w x 84"h x ETL x 624 x 646 x 41"AFF x MK{36"w x 84"h}	US32D	Sargent	301A
0	1	Push Pad, SVR	8710F 36"w x 84"h x No Trim x 624 x 646 x 41"AFF{36"w x 84"h}	US32D	Sargent	302A
1	1	Closer - Parallel Arm with 5th screw	281-CPS	EN	Sargent	500A
1	0	Door Seal	700ES{72"w x 84"h}	MILL	National Guard	800C
1	0	Meeting Stile	600A(SET){72"w x 84"h}	A	National Guard	804B
1	1	Sweep	200NA{36"w}	A	National Guard	801B
1	0	Threshold	612SS x SIA{72"w}	SS	National Guard	802C

Note

Architect Set

Heading # 04.00

Number	Degree	Location	Frame	Door	Size	Label	Hand	Qty	Type
102C	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
120A	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL

Qty Act	Qty Inact	Description		Finish	Mfgr	
3	0	4-1/2 Hvy Wt(.180) Hinge	T4A3386 4-1/2" x 4-1/2" NRP	32D	McKinney	100A
1	0	Mortise Lockset	63-DG1-8205 x LW1L x MK	US26D	Sargent	311A
1	0	Closer - Parallel Arm with 5th screw	281-CPS	EN	Sargent	500A
1	0	Door Seal	700ES{36"w x 84"h}	MILL	National Guard	800A
1	0	Sweep	200NA{36"w}	A	National Guard	801B
1	0	Threshold	612SS x SIA{36"w}	SS	National Guard	802A

Note

Architect Set

Heading # 05.00

Number	Degree	Location	Frame	Door	Size	Label	Hand	Qty	Type
104	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
208	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
209	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
210	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL

Qty Act	Qty Inact	Description		Finish	Mfgr	
3	0	4-1/2 Hvy Wt(.180) Hinge	T4A3786 4-1/2" x 4-1/2" NRP	26D	McKinney	101A
1	0	Mortise Lockset	63-DG1-8205 x LW1L x MK	US26D	Sargent	311A
1	0	Electric Strikes/Mag Locks	1006CLB-12/24D-630 x 2005M3	630	Hes	303A
1	0	Closer - Parallel Arm with 5th screw	281-CPS	EN	Sargent	500A
1	0	Kickplate	K1050 x 4BE x CSK x 10"h{34"w}	US32D	Rockwood	600A
1	0	Silencer	608-RKW	GRAY	Rockwood	900A

Note

Access control / card reader By Others

Architect Set

Heading # 06.00

Number	Degree	Location	Frame	Door	Size	Label	Hand	Qty	Type
105	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
106	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
108	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
109	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
229	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
230A	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
230D	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
231A	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
231B	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
232A	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
232B	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
233	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
234A	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
234B	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
C1	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL

Qty Act	Qty Inact	Description		Finish	Mfgr	
3	0	4-1/2 Hvy Wt(.180) Hinge	T4A3786 4-1/2" x 4-1/2" NRP	26D	McKinney	101A
1	0	Push Plate	70C-RKW	US32D	Rockwood	401A
1	0	Pull Plate	102 X 70C	US32D	Rockwood	400A
1	0	Closer	281-UO	EN	Sargent	502A
1	0	Kickplate	K1050 x 4BE x CSK x 10"h{34"w}	US32D	Rockwood	600A
3	0	Silencer	608-RKW	GRAY	Rockwood	900A

Note

Architect Set

Heading # 07.00

Number	Degree	Location	Frame	Door	Size	Label	Hand	Qty	Type
107	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
110	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
120B	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
222	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
223	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
225	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
C2A	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
S4	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL

Qty Act	Qty Inact	Description		Finish	Mfgr	
3	0	4-1/2 Hvy Wt(.180) Hinge	T4A3786 4-1/2" x 4-1/2" NRP	26D	McKinney	101A
1	0	Mortise Lockset	63-DG1-8205 x LW1L x MK	US26D	Sargent	311A
1	0	Kickplate	K1050 x 4BE x CSK x 10"h{34"w}	US32D	Rockwood	600A
1	0	Wall Stop	400	US26D	Rockwood	700A
3	0	Silencer	608-RKW	GRAY	Rockwood	900A

Note

Architect Set

Heading # 08.00

Number	Degree	Location	Frame	Door	Size	Label	Hand	Qty	Type
112	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
116	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
111	0		HM	HM	6'-0" x 7'-0" x 1-3/4"	---		1	PAIR

Qty Act	Qty Inact	Description		Finish	Mfgr	
3	3	4-1/2 Hvy Wt(.180) Hinge	T4A3786 4-1/2" x 4-1/2" NRP	26D	McKinney	101A
0	2	Flush Bolt, Extension, Manual	555	US26D	Rockwood	200A
1	0	Mortise Lockset	63-DG1-8205 x LW1L x MK	US26D	Sargent	311A
0	1	Electric Strikes/Mag Locks	1006CLB-12/24D-630 x 2005M3	630	Hes	303A
1	0	Closer	281-UO	EN	Sargent	502A
1	1	Kickplate	K1050 x 4BE x CSK x 10"h{34"w}	US32D	Rockwood	600A
1	1	Wall Stop	400	US26D	Rockwood	700A
0	1	Electric Power Transfer	EL-CEPT	US32D	Securitron	901A
1	1	Silencer	608-RKW	GRAY	Rockwood	900A

Note

Access control / card reader By Others

Architect Set

Heading # 09.00

Number	Degree	Location	Frame	Door	Size	Label	Hand	Qty	Type
115	0		HM	HM	6'-0" x 7'-0" x 1-3/4"	---		1	PAIR
117B	0		HM	HM	6'-0" x 7'-0" x 1-3/4"	---		1	PAIR

Qty Act	Qty Inact	Description		Finish	Mfgr	
3	3	4-1/2 Hvy Wt(.180) Hinge	T4A3786 4-1/2" x 4-1/2" NRP	26D	McKinney	101A
1	1	Push Pad, SVR	63-DG1-NB8713F 36"w x 84"h x ETL x 646 x 41"AFF x MK{36"w x 84"h}	US32D	Sargent	304A
1	1	Closer - Parallel Arm with 5th screw	281-CPS	EN	Sargent	500A
1	1	Kickplate	K1050 x 4BE x CSK x 10"h{34"w}	US32D	Rockwood	600A
1	1	Silencer	608-RKW	GRAY	Rockwood	900A

Note

Architect Set

Heading # 10.00

Number	Degree	Location	Frame	Door	Size	Label	Hand	Qty	Type
117A	0		HM	HM	6'-0" x 7'-0" x 1-3/4"	---		1	PAIR

Qty Act	Qty Inact	Description		Finish	Mfgr	
3	3	4-1/2 Hvy Wt(.180) Hinge	T4A3786 4-1/2" x 4-1/2" NRP	26D	McKinney	101A
1	1	Push Pad, SVR	63-DG1-NB8713F 36"w x 84"h x ETL x 646 x 41"AFF x MK{36"w x 84"h}	US32D	Sargent	304A
1	1	Closer - Parallel Arm with 5th screw	281-P10	EN	Sargent	501A
1	1	Kickplate	K1050 x 4BE x CSK x 10"h{34"w}	US32D	Rockwood	600A
1	1	Silencer	608-RKW	GRAY	Rockwood	900A

Note

Architect Set

Heading # 11.00

Number	Degree	Location	Frame	Door	Size	Label	Hand	Qty	Type
117C	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL

Qty Act	Qty Inact	Description		Finish	Mfgr	
3	0	4-1/2 Hvy Wt(.180) Hinge	T4A3386 4-1/2" x 4-1/2" NRP	32D	McKinney	100A
1	0	Push Pad, Rim	8810F 36"w x No Trim x 649{36"w}	US32D	Sargent	305A
1	0	Closer - Parallel Arm with 5th screw	281-CPS	EN	Sargent	500A
1	0	Kickplate	K1050 x 4BE x CSK x 10"h{34"w}	US32D	Rockwood	600A
1	0	Door Seal	700ES{36"w x 84"h}	MILL	National Guard	800A
1	0	Sweep	200NA{36"w}	A	National Guard	801B
1	0	Threshold	612SS x SIA{36"w}	SS	National Guard	802A

Note

Architect Set

Heading # 12.00

Number	Degree	Location	Frame	Door	Size	Label	Hand	Qty	Type
117D	0		HM	HM	6'-0" x 7'-0" x 1-3/4"	---		1	PAIR

Qty Act	Qty Inact	Description		Finish	Mfgr	
3	3	4-1/2 Std Wt(.134) Hinge	TA2714 4-1/2" x 4-1/2"	26D	McKinney	102A
0	2	Flush Bolt, Extension, Manual	555	US26D	Rockwood	200A
1	0	Mortise Passage	8215 x LW1L	US26D	Sargent	306A
1	1	Surface Overhead Holder/Stop, Std Duty	1548S{36"w}	US26D	Sargent	701A
1	1	Silencer	608-RKW	GRAY	Rockwood	900A

Note

Kelley Bros

Architect Set

Heading # 13.00

Number	Degree	Location	Frame	Door	Size	Label	Hand	Qty	Type
117E	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
224	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL

Qty Act	Qty Inact	Description		Finish	Mfgr	
3	0	4-1/2 Std Wt(.134) Hinge	TA2714 4-1/2" x 4-1/2"	26D	McKinney	102A
1	0	Mortise Passage	8215 x LW1L	US26D	Sargent	306A
1	0	Wall Stop	400	US26D	Rockwood	700A
3	0	Silencer	608-RKW	GRAY	Rockwood	900A

Note

Architect Set

Heading # 14.00

Note

Architect Set

Heading # 15.00

Number	Degree	Location	Frame	Door	Size	Label	Hand	Qty	Type
C3	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	B90		1	SNGL
S3-2	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	B90		1	SNGL

Qty Act	Qty Inact	Description		Finish	Mfgr	
3	0	4-1/2 Hvy Wt(.180) Hinge	T4A3786 4-1/2" x 4-1/2" NRP	26D	McKinney	101A
1	0	Push Pad, Rim	63-DG1-12-8813F 36"w x ETL x 649 x MK{36"w}	US32D	Sargent	308A
1	0	Closer	281-UO	EN	Sargent	502A
1	0	Kickplate	K1050 x 4BE x CSK x 10"h{34"w}	US32D	Rockwood	600A
1	0	Wall Stop	400	US26D	Rockwood	700A
1	0	Gasketing	S88D21{36"w x 84"h}	D	Pemko	803A

Note

Architect Set

Heading # 16.00

Number	Degree	Location	Frame	Door	Size	Label	Hand	Qty	Type
S3-1A	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL

Qty Act	Qty Inact	Description		Finish	Mfgr	
3	0	4-1/2 Hvy Wt(.180) Hinge	T4A3386 4-1/2" x 4-1/2" NRP	32D	McKinney	100A
1	0	Push Pad, Rim	56-63-DG1-8804F 36"w x PSB x 649 x MK{36"w}	US32D	Sargent	309A
1	0	Closer - Automatic Operator	6331	689	Norton	503A
1	0	Kickplate	K1050 x 4BE x CSK x 10"h{34"w}	US32D	Rockwood	600A
1	0	Door Seal	700ES{36"w x 84"h}	MILL	National Guard	800A
1	0	Sweep	200NA{36"w}	A	National Guard	801B
1	0	Threshold	612SS x SIA{36"w}	SS	National Guard	802A
2	0	Actuator	505		Norton	805A
1	0	Electric Power Transfer	EL-CEPT	US32D	Securitron	901A
1	0	Power Supply	AQD2-1R		Securitron	902A

Note

Access control / card reader By Others

Architect Set

Heading # 17.00

Number	Degree	Location	Frame	Door	Size	Label	Hand	Qty	Type
S3-1B	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	B90		1	SNGL

Qty Act	Qty Inact	Description		Finish	Mfgr	
3	0	4-1/2 Hvy Wt(.180) Hinge	T4A3786 4-1/2" x 4-1/2" NRP	26D	McKinney	101A
1	0	Push Pad, Rim	12-8815F 36"w x ETL x 649{36"w}	US32D	Sargent	310A
1	0	Electric Strikes/Mag Locks	9500-12/24D-630	630	Hes	318A
1	0	Closer - Automatic Operator	6331	689	Norton	503A
1	0	Kickplate	K1050 x 4BE x CSK x 10"h{34"w}	US32D	Rockwood	600A
1	0	Wall Stop	400	US26D	Rockwood	700A
2	0	Actuator	505		Norton	805A
1	0	Gasketing	S88D21{36"w x 84"h}	D	Pemko	803A

Note

Access control / card reader By Others

Architect Set

Heading # 18.00

Number	Degree	Location	Frame	Door	Size	Label	Hand	Qty	Type
201	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
202	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
203	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
204	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
205	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
206	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
207	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
211	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
213	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
214	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
217	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
218	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
226	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
227	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
228	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
235A	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
235B	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
236	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
237	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
238	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL

Qty Act	Qty Inact	Description		Finish	Mfgr	
3	0	4-1/2 Hvy Wt(.180) Hinge	T4A3786 4-1/2" x 4-1/2" NRP	26D	McKinney	101A
1	0	Mortise Lockset	63-DG1-8205 x LW1L x MK	US26D	Sargent	311A
1	0	Kickplate	K1050 x 4BE x CSK x 10"h{34"w}	US32D	Rockwood	600A
1	0	Wall Stop	400	US26D	Rockwood	700A
3	0	Silencer	608-RKW	GRAY	Rockwood	900A

Note

Architect Set

Heading # 19.00

Number	Degree	Location	Frame	Door	Size	Label	Hand	Qty	Type
212	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
215	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
216	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL

Qty Act	Qty Inact	Description		Finish	Mfgr	
3	0	4-1/2 Hvy Wt(.180) Hinge	T4A3786 4-1/2" x 4-1/2" NRP	26D	McKinney	101A
1	0	Push Pad, Rim	63-DG1-8813F 36"w x ETL x 649 x MK{36"w}	US32D	Sargent	312A
1	0	Closer - Parallel Arm with 5th screw	281-P10	EN	Sargent	501A
1	0	Kickplate	K1050 x 4BE x CSK x 10"h{34"w}	US32D	Rockwood	600A
1	0	Wall Stop	400	US26D	Rockwood	700A
3	0	Silencer	608-RKW	GRAY	Rockwood	900A

Note

Architect Set

Heading # 20.00

Number	Degree	Location	Frame	Door	Size	Label	Hand	Qty	Type
219B			AL	AL	6'-0" x 7'-0"	---		1	PAIR
219A	0		AL	AL	6'-0" x 7'-0" x 1-3/4"	---		1	PAIR

Qty Act	Qty Inact	Description		Finish	Mfgr	
1	1	Continuous Hinge	A110HDC083{83"h}	C	Abh	103A
1	1	Push/Pull Set	BF15647 x Type T3HD x 33"w-CTC	US32D	Rockwood	402A
1	1	Closer - Parallel Arm with 5th screw	281-CPS	EN	Sargent	500A
1	1	Drop Plate	281D	EN	Sargent	504A
1	1	Blade Stop Spacer	581-2	EN	Sargent	903A

Note

Architect Set

Heading # 21.00

Number	Degree	Location	Frame	Door	Size	Label	Hand	Qty	Type
220A			AL	AL	6'-0" x 7'-0"	---		1	PAIR

Qty Act	Qty Inact	Description		Finish	Mfgr	
0	1	Continuous Hinge	A110HDC083{83"h}	C	Abh	103A
1	0	Continuous Hinge	A110HDC083 x PT{83"h}	C	Abh	104A
1	0	Push Pad, CVR MD	56-63-DG1-AD8410F 36"w x 84"h x 106 x 862 x 41"AFF x MK{36"w x 84"h}	US32D	Sargent	313A
0	1	Push Pad, CVR MD	AD8410F 36"w x 84"h x 862 x 41"AFF{36"w x 84"h}	US32D	Sargent	314A
1	1	Closer - Parallel Arm with 5th screw	281-CPS	EN	Sargent	500A
1	1	Drop Plate	281D	EN	Sargent	504A
1	1	Sweep	200NA{36"w}	A	National Guard	801B
1	0	Threshold	612SS x SIA{72"w}	SS	National Guard	802C
1	1	Blade Stop Spacer	581-2	EN	Sargent	903A
1	0	Electric Power Transfer	EL-CEPT	US32D	Securitron	901A
1	0	Power Supply	AQD2-1R		Securitron	902A

Note

Access control / card reader By Others

Architect Set

Heading # 22.00

Number	Degree	Location	Frame	Door	Size	Label	Hand	Qty	Type
220B			AL	AL	6'-0" x 7'-0"	---		1	PAIR

Qty Act	Qty Inact	Description		Finish	Mfgr	
1	1	Continuous Hinge	A110HDC083{83"h}	C	Abh	103A
1	1	Push Pad, CVR MD	AD8410F 36"w x 84"h x 862 x 41"AFF{36"w x 84"h}	US32D	Sargent	314A
1	1	Closer - Parallel Arm with 5th screw	281-CPS	EN	Sargent	500A
1	1	Drop Plate	281D	EN	Sargent	504A
1	1	Sweep	200NA{36"w}	A	National Guard	801B
1	0	Threshold	612SS x SIA{72"w}	SS	National Guard	802C
1	1	Blade Stop Spacer	581-2	EN	Sargent	903A

Note

Architect Set

Heading # 23.00

Number	Degree	Location	Frame	Door	Size	Label	Hand	Qty	Type
221	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL
119	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	B90		1	SNGL

Qty Act	Qty Inact	Description		Finish	Mfgr	
3	0	4-1/2 Hvy Wt(.180) Hinge	T4A3786 4-1/2" x 4-1/2" NRP	26D	McKinney	101A
1	0	Mortise Lockset	63-DG1-8237 x LW1L x MK	US26D	Sargent	315A
1	0	Closer	281-UO	EN	Sargent	502A
1	0	Kickplate	K1050 x 4BE x CSK x 10"h{34"w}	US32D	Rockwood	600A
1	0	Wall Stop	400	US26D	Rockwood	700A
3	0	Silencer	608-RKW	GRAY	Rockwood	900A

Note

Architect Set

Heading # 24.00

Number	Degree	Location	Frame	Door	Size	Label	Hand	Qty	Type
239	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL

Qty Act	Qty Inact	Description		Finish	Mfgr	
3	0	4-1/2 Hvy Wt(.180) Hinge	T4A3786 4-1/2" x 4-1/2" NRP	26D	McKinney	101A
1	0	Push Pad, Rim	63-DG1-8813F 36"w x ETL x 649 x MK{36"w}	US32D	Sargent	312A
1	0	Closer - Parallel Arm with 5th screw	281-CPS	EN	Sargent	500A
1	0	Kickplate	K1050 x 4BE x CSK x 10"h{34"w}	US32D	Rockwood	600A
3	0	Silencer	608-RKW	GRAY	Rockwood	900A

Note

Architect Set

Heading # 25.00

Number	Degree	Location	Frame	Door	Size	Label	Hand	Qty	Type
C2	0		HM	HM	3'-0" x 7'-0" x 1-3/4"	---		1	SNGL

Qty Act	Qty Inact	Description		Finish	Mfgr	
3	0	4-1/2 Hvy Wt(.180) Hinge	T4A3386 4-1/2" x 4-1/2" NRP	32D	McKinney	100A
1	0	Push Pad, Rim	63-DG1-8804F 36"w x PSB x 649 x MK{36"w}	US32D	Sargent	316A
1	0	Electric Strikes/Mag Locks	9600-12/24D-630 x 2005M3	630	Hes	317A
1	0	Closer - Parallel Arm with 5th screw	281-CPS	EN	Sargent	500A
1	0	Kickplate	K1050 x 4BE x CSK x 10"h{34"w}	US32D	Rockwood	600A
1	0	Door Seal	700ES{36"w x 84"h}	MILL	National Guard	800A
1	0	Sweep	200NA{36"w}	A	National Guard	801B
1	0	Threshold	612SS x SIA{36"w}	SS	National Guard	802A

Note

Access control / card reader By Others

SECTION 088000 - GLAZING

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:

1. Glass products.
2. Insulating glass.
3. Glazing sealants.
4. Glazing tapes.
5. Miscellaneous glazing materials.
6. Insulated Metal Spandrel Panels withing Window/ Storefront and/or Curtainwall Systems

B. Related Requirements:

1. Section 084113"Aluminum Framed Entrances and Storefronts."
2. Section 084413 " Glazed Aluminum Curtain Walls" for glazing sealants used in structural-sealant-glazed curtain walls.
3. Section 085113 "Aluminum Windows".
4. Section 088013 “Fire Rated Frames and Glazing”
5. Section 088300 "Mirrors."

1.3 DEFINITIONS

A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.

B. Glass Thicknesses: Indicated by thickness designations in millimeters in accordance with ASTM C1036.

C. IBC: International Building Code the Uniform Code.

A. Interspace: Space between lites of an insulating-glass unit.

1.4 COORDINATION

A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

1.5 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

1. Include manufacturer's specifications and installation instructions for each type of glass and glazing material specified, and spacers and compressible filler rod.

E. Submit an Environmental Product Declaration (EPD) from the manufacturer for glass within this specification section, if available. A statement of the contractor’s good faith effort to obtain the EPD shall be provided if not available.

1. Manufacturer-provided EPDs must be Product Specific Type III (Third-Party Reviewed), in adherence with ISO 14025 *Environmental labels and declarations*, ISO 14044 *Environmental management – Life cycle assessment*, and ISO 21930 *Core rules for environmental product declarations of construction products and services.*

F. Glass Samples: For each type of the following products; 12 inches (300 mm) square.

1. Insulating glass.
2. Clear Ceramic Glass.
3. Spandrel glass.

G. Glazing Accessory Samples: For sealants and colored spacers, in 12-inch (300-mm) lengths. Install sealant Samples between two strips of material representative in color of adjoining framing system.

H. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

I. Quality Control Submittals:

1. Product Certificates: For glass.
2. Preconstruction adhesion and compatibility test report.
3. Sample Warranties: For special warranties.

1.6 QUALITY ASSURANCE

A. Fabricated-Glass Manufacturer Qualifications: A qualified manufacturer of fabricated glass units who is approved and certified by primary glass manufacturer.

B. Installer Qualifications: A qualified glazing contractor for this Project who is certified under the North American Contractor Certification Program (NACC) for Architectural Glass & Metal

(AG&M) contractors and who employs glazing technicians certified under the Architectural Glass and Metal Technician (AGMT) certification program.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials in accordance with manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

B. Comply with insulating-glass manufacturer's written instructions for venting and sealing units to avoid hermetic seal ruptures due to altitude change.

1.8 FIELD 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 glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or are below 40 deg F (4.4 deg C).

1.9 WARRANTY

A. Manufacturer's Special Warranty for Insulating Glass: Manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is obstruction of vision by dust, moisture, or film on interior surfaces of glass.

1. Warranty Period: 10 years from date of Substantial Completion.

B. Manufacturer's Special Warranty for Heat-Soaked Tempered Glass: Manufacturer agrees to replace heat-soaked tempered glass units that spontaneously break due to nickel sulfide (NiS) inclusions at a rate exceeding 0.3 percent (3/1000) within specified warranty period. Coverage for any other cause is excluded.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations for Glass: Obtain coated glass from single source from single manufacturer.

B. Source Limitations for Glazing Accessories: For each product and installation method, obtain from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined in accordance with the IBC and ASTM E1300:

1. Design Wind Pressures: As indicated on Drawings.

a. Wind Design Data: As indicated on Drawings.
b. Basic Wind Speed: 115 mph (52 m/s).
c. Importance Factor: 1.0.
d. Exposure Category: C.

2. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or 1 inch (25 mm), whichever is less.

C. Windborne-Debris-Impact Resistance: Exterior glazing shall pass ASTM E1886 missile-impact and cyclic-pressure tests in accordance with ASTM E1996 for Wind Zone for basic protection.

1. Small-Missile Test: For glazing located between 30 feet 9.1 m above grade.

D. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.

E. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:

1. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
2. U-Factors: Center-of-glazing values, in accordance with NFRC 100 and based on LBL's WINDOW 7 computer program, expressed as Btu/sq. ft. x h x deg F (W/sq. m x K).
3. SHGC and Visible Transmittance: Center-of-glazing values, in accordance with NFRC 200 and based on LBL's WINDOW 7 computer program.
4. Visible Reflectance: Center-of-glazing values, in accordance with NFRC 300.

F. Acoustic Performance:

1. Exterior Glazing: 28 OITC.
2. Interior Glazing: 37 STC.

2.3 GLASS PRODUCTS, GENERAL

A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.

1. AAMA Publications: AAMA GDSG-1, "Glass Design for Sloped Glazing," and AAMA TIR A7, "Sloped Glazing Guidelines."
2. IGMA Publication for Sloped Glazing: IGMA TB-3001, "Guidelines for Sloped Glazing."
3. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."

B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or manufacturer. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of the IGCC.

D. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than thickness indicated.

1. Minimum Glass Thickness for Exterior Lites: 6 mm.

E. Strength: Where annealed float glass is indicated, provide annealed float glass, heat-strengthened float glass, or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where heat-strengthened float glass is indicated, provide heat-strengthened float glass or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where fully tempered float glass is indicated, provide fully tempered float glass.

2.4 GLASS PRODUCTS

A. Fully Tempered Float Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.

B. Heat-Strengthened Float Glass: ASTM C1048, Kind HS (heat strengthened), Type I, Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.

C. Reflective- and Low-E-Coated Vision Glass: ASTM C1376.

D. Ceramic-Coated Spandrel Glass: ASTM C1048, Type I, Condition B, Quality-Q3.

2.5 INSULATING GLASS

A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified in accordance with ASTM E2190.

1. Sealing System: Dual seal, with manufacturer's standard primary and secondary sealants.
2. Warm Edge Perimeter Spacer: Manufacturer's standard spacer material and construction.
3. Desiccant: Molecular sieve or silica gel, or a blend of both.

2.6 INSULATING METAL SPANDREL PANELS

A. Laminated, metal-faced flat panels with no deviations in plane exceeding 0.8 percent of panel dimension in width or length.

1. Overall Panel Thickness: 1” thick unless noted otherwise on the drawings.

2. Exterior Skin: Pre-finished aluminum.

a. Thickness: Manufacturer's standard for finish and texture indicated.
b. Finish: Match framing system.
c. Texture: Embossed.
d. Backing Sheet: 0.125-inch- thick, corrugated, high-density polyethylene.

3. Interior Skin: Pre-finished aluminum.

a. Thickness: Manufacturer's standard for finish and texture indicated.
b. Finish: Matching storefront framing.
c. Texture: Embossed.
d. Backing Sheet: 0.125-inch- thick, corrugated, high-density polyethylene.

4. Thermal Insulation Core: Manufacturer's standard extruded-polystyrene board.

a. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1) Flame-Spread Index: 25 or less.
2) Smoke-Developed Index: 450 or less.

B. Finishes: Two-Coat PVDF Color Finish: AAMA 2605 70% Fluoropolymer Resin Finish.

1. Color: Refer to drawings for scheduled finish, to be selected from the manufacturer’s standard color options. Color must match color finishes of windows and curtainwall systems specified elsewhere.

2.7 GLAZING SEALANTS

A. General:

1. Compatibility: Compatible with one another and with other materials they 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 of industry colors.

B. Acid-Curing Silicone Glazing Sealant, Class 25: Complying with ASTM C920, Type S, Grade NS, Use NT.

2.8 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, recommended in writing by 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:

1. Neoprene with Shore A durometer hardness of 85, plus or minus 5.
2. Type recommended in writing by sealant or glass manufacturer.

D. Spacers:

1. Neoprene blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
2. Type recommended in writing by sealant or glass manufacturer.

E. Edge Blocks:

1. Neoprene with Shore A durometer hardness per manufacturer's written instructions.
2. Type recommended in writing by sealant or glass manufacturer.

2.9 OBSCURE GLASS FILMS

A. Interior field or shop applied permanent translucent vinyl window privacy film; 3M Crystal Glass Finish or approved equal.

1. Thickness: 120 microns
2. Visible Light Transmittance: 70-80%
3. Solar Heat Transmittance: 60-70%
4. Fire Performance: Flame 25max/ Smoke 450max

2.10 FABRICATION OF GLAZING UNITS

A. Fabricate glazing units in sizes required to fit 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 publications, to comply with system performance requirements.

1. Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.

a. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine framing, glazing channels, and stops, 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 systems.
3. Minimum required face and 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.

B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.

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. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.

C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.

D. 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.

E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

F. Provide spacers for glass lites where length plus width is larger than 50 inches (1270 mm).

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.

G. 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 in accordance with requirements in referenced glazing publications.

H. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

I. Set glass lites with proper orientation so that coatings face exterior or interior as specified.

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. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, 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 right 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. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch 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. Installation with Drive-in Wedge Gaskets: 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 in writing by gasket manufacturer.

D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended in writing by gasket manufacturer.

E. 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 CLEANING AND PROTECTION

A. Immediately after installation, remove nonpermanent labels and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations. 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 buildup of dirt, scum, alkaline deposits, or stains.

1. If, despite such protection, contaminating substances do contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.

C. Remove and replace glass that is damaged during construction period.

D. Wash glass on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

3.8 GLAZING SCHEDULE

A. GLAZ-1: 1" thick (nominal) double pane insulated safety glass sealed unit with argon gas airspace and warm edge spacer, as follows (outside to inside surfaces):

1. Exterior Lite - Fully Tempered Clear ¼" Glass,
2. Air Space - Aron Gas
3. Interior Lite(s): Low-E Coating on the #3 surface with two lites of fully laminated 1/8" thick (nominal) of clear heat strengthened glass bonded together w/ min. 0.030" PVB interlayer.
4. Refer to section 3-11 standard 10, Glazing in DOD United Facilities Standards 4-010-01, revised version June 2026.
5. PVB laminated glass to be bedded to the frame with structural silicone sealant adhesive within the glazing pocket, minimum 3/8" glazing bite.

B. GLAZ-2: 1" thick (nominal) double pane insulated sealed unit with Argon gas and warm edge spacer as follows, outside to inside surfaces:

1. Exterior Lite - Fully Tempered Clear ¼" Glass,
2. Air Space - Aron Gas
3. Interior Lite(s): Low-E Coating on the #3 surface on Fully Tempered Clear ¼" Glass,

C. GLAZ-3: See Section 088813 FireRated Windows and Glazing

D. GLAZ-4: 3/8" Clear monolithic tempered safety glass with custom surface applied DMNA decals to the glass panels.

E. SPANDREL PANELS: 1" thick insulated prefinished aluminum sandwich panels.

F. GLAZING FILM: Where noted on the drawings, provide Obscure Privacy Films on all glass surfaces.

END OF SECTION 088000

SECTION 088300 - MIRRORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Silvered flat glass mirrors.

1.2 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

1. Include manufacturer’s installation instructions.

E. Shop Drawings: Include mirror elevations, edge details, mirror hardware, and attachment details.

F. Samples: For each type of the following:

1. Mirrors: 12 inches square, including edge treatment on two adjoining edges.
2. Mirror Clips: Full size.
3. Mirror Trim: 12 inches long.

G. Quality Control Submittals:

1. Qualification Data: For Installer.
2. Product Certificates: For each type of mirror.
3. Sample Warranty: For special warranty.

H. Contract Closeout Submittals:

1. Maintenance Data: For mirrors to include in maintenance manuals.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Protect mirrors in accordance with mirror manufacturer's written instructions and as needed to prevent damage to mirrors from moisture, condensation, temperature changes, direct exposure to sun, or other causes.

B. Comply with mirror manufacturer's written instructions for shipping, storing, and handling mirrors as needed to prevent deterioration of silvering, damage to edges, and abrasion of glass surfaces and applied coatings. Store indoors.

1.4 FIELD CONDITIONS

A. Environmental Limitations: Do not install mirrors until ambient temperature and humidity conditions are maintained at levels indicated for final occupancy.

1.5 WARRANTY

A. Special Warranty: Manufacturer agrees to replace mirrors that deteriorate within specified warranty period. Deterioration of mirrors is defined as defects developed from normal use that are not attributed to mirror breakage or to maintaining and cleaning mirrors contrary to manufacturer's written instructions. Defects include discoloration, black spots, and clouding of the silver film.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations for Mirrors: Obtain mirrors from single source from single manufacturer.

B. Source Limitations for Mirror Accessories: Obtain mirror-glazing accessories from single source.

2.2 SILVERED FLAT GLASS MIRRORS

A. Mirrors, General: ASTM C1503; manufactured using copper-free, low-lead mirror coating process.

B. Tempered Glass Mirrors: Mirror Glazing Quality for blemish requirements and complying with ASTM C1048 for Kind FT, Condition A, tempered float glass before silver coating is applied; clear.

1. Nominal Thickness: 6.0 mm.

2.3 MISCELLANEOUS MATERIALS

A. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.

B. Edge Sealer: Coating compatible with glass coating and approved by mirror manufacturer for use in protecting against silver deterioration at mirrored glass edges.

C. Film Backing for Safety Mirrors: Film backing and pressure-sensitive adhesive; both compatible with mirror backing paint as certified by mirror manufacturer.

2.4 MIRROR HARDWARE

A. Aluminum J-Channels and Cleat: Aluminum extrusions with a return deep enough to produce a glazing channel to accommodate mirrors of thickness indicated and in lengths required to cover edges of mirrors in a single piece.

1. Aluminum J Channel and Cleat, Bottom and Side Trim: J-channels formed with front leg and back leg not less than 5/16 and 3/4 inch in height, respectively.
2. Aluminum J Channel and Cleat, Top Trim: Formed with front leg with a height matching bottom trim and back leg designed to fit into the pocket created by wall-mounted aluminum cleat.
3. Finish: Clear bright anodized.

B. Mirror Top and Bottom Clips: Manufacturer's standard bottom clip.

C. Plated Steel Hardware: Formed-steel shapes with plated finish indicated.

1. Profile: As indicated.
2. Finish: Clear bright anodized.

D. Fasteners: Fabricated of same basic metal and alloy as fastened metal and matching it in finished color and texture where fasteners are exposed.

E. Anchors and Inserts: Provide devices as required for mirror hardware installation. Provide toothed or lead-shield, expansion-bolt devices for drilled-in-place anchors. Provide galvanized anchors and inserts for applications on inside face of exterior walls and where indicated.

2.5 FABRICATION

A. Shop fabricate mirrors to greatest extent possible.

B. Fabricate cutouts for notches and holes in mirrors without marring visible surfaces. Locate and size cutouts, so they fit closely around penetrations in mirrors.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, over which mirrors are to be mounted, with Installer present, for compliance with installation tolerances, substrate preparation, and other conditions affecting performance of the Work.

B. Verify compatibility with and suitability of substrates, including compatibility of existing finishes or primers with mirror mastic.

C. Proceed with installation only after unsatisfactory conditions have been corrected and surfaces are dry.

3.2 INSTALLATION

A. General: Install mirrors to comply with mirror manufacturer's written instructions and with referenced National Glass Association (NGA) publications. Mount mirrors accurately in place in a manner that avoids distorting reflected images.

1. NGA Publications: "Laminated Glazing Reference Manual," "Glazing Manual" and "Installation Techniques Designed to Prolong the Life of Flat Glass Mirrors."

B. Provide a minimum airspace of 1/8 inch between back of mirrors and mounting surface for air circulation between back of mirrors and face of mounting surface.

C. Install mirrors with mirror hardware. Attach mirror hardware securely to mounting surfaces with mechanical fasteners installed with anchors or inserts as applicable. Install fasteners so heads do not impose point loads on backs of mirrors.

1. Aluminum J-Channels: Provide setting blocks 1/8 inch thick by 4 inches long at quarter points. To prevent trapping water, provide, between setting blocks, two slotted weeps not less than 1/4 inch wide by 3/8 inch long at bottom channel.
2. Aluminum J-Channels and Cleat: Fasten J-channel directly to wall and attach top trim to continuous cleat fastened directly to wall.
3. Mirror Clips: Place a felt or plastic pad between mirror and each clip to prevent spalling of mirror edges. Locate clips so they are symmetrically placed and evenly spaced.

3.3 CLEANING AND PROTECTION

A. Protect mirrors from breakage and contaminating substances resulting from construction operations.

B. Do not permit edges of mirrors to be exposed to standing water.

C. Maintain environmental conditions that prevent mirrors from being exposed to moisture from condensation or other sources for continuous periods of time.

END OF SECTION 088300

SECTION 089119 - FIXED LOUVERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fixed extruded-aluminum louvers.

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. Horizontal Louver: Louver with horizontal blades (i.e., the axis of the blades are horizontal).

C. 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 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

1. For louvers specified to bear AMCA seal, include printed catalog pages showing specified models with appropriate AMCA Certified Ratings Seals.
2. Include manufacturer’s installation instructions.

E. Shop Drawings: For louvers and accessories. Include plans, elevations, sections, details, and attachments to other work. Show frame profiles and blade profiles, angles, and spacing.

1. Show weep paths, gaskets, flashings, sealants, and other means of preventing water intrusion.
2. Show mullion profiles and locations.

F. Samples: For each type of metal finish required.

G. Quality Control Submittals:

1. Sample Warranties: For manufacturer's special warranties.

1.4 FIELD CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.5 WARRANTY

A. Special Finish Warranty, Factory-Applied Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of baked enamel, powder coat, or organic finishes within specified warranty period.

1. Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Warranty Period: Five years from date of Substantial Completion.

B. Special Finish Warranty, Anodized Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of anodized finishes within specified warranty period.

1. Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
c. Cracking, peeling, or chipping.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain fixed louvers from single source from a single manufacturer where indicated to be of same type, design, or factory-applied color finish.

1. Basis of Design: Greenheck Model EAC-601.

2.2 PERFORMANCE REQUIREMENTS

A. SMACNA Standard: Comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" for fabrication, construction details, and installation procedures.

2.3 FIXED EXTRUDED-ALUMINUM LOUVERS

A. Horizontal Drainable-Blade Louver, Extruded Aluminum:

1. Louver Depth: 4 inches.
2. Frame and Blade Nominal Thickness: Not less than 0.060 inch for blades and 0.080 inch for frames.
3. Mullion Type: Exposed.
    a. Point of Beginning Water Penetration: Not less than 900 fpm.
    b. Air Performance:

        1) Not more than 0.10-inch wg static pressure drop at 700-fpm - 800-fpm free-area exhaust velocity.

4. AMCA Seal: Mark units with AMCA Certified Ratings Seal.

2.4 LOUVER SCREENS

A. General: Provide screen at louvers indicated.

1. Screen Location for Fixed Louvers: Interior face.
2. Screening Type: Insect screening.

B. Secure screen frames to louver frames with machine screws with heads finished to match louver, spaced a maximum of 6 inches from each corner and at 12 inches o.c.

C. Louver Screen Frames: Fabricate with mitered corners to louver sizes indicated.

1. Metal: Same type 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.
3. Type: Rewirable frames with a driven spline or insert.

D. Louver Screening for Aluminum Louvers:
1. Insect Screening, Aluminum: 18-by-16 mesh, 0.012-inch wire.

2.5 MATERIALS

A. Aluminum Extrusions: ASTM B221, Alloy 6063-T5, T-52, or T6.

B. Fasteners: Use types and sizes to suit unit installation conditions.

1. Use Phillips flat-head screws for exposed fasteners unless otherwise indicated.

2. For fastening aluminum, use aluminum or 300 series stainless steel fasteners.
3. For color-finished louvers, use fasteners with heads that match color of louvers.

C. Postinstalled Fasteners for Concrete and Masonry: Torque-controlled expansion anchors, fabricated from stainless steel components, with allowable load or strength design capacities calculated in accordance with Uniform Code-ES AC193 and ACI 318 greater than or equal to the design load, as determined by testing in accordance with ASTM E488 conducted by a qualified testing agency.

2.6 FABRICATION

A. Factory assemble louvers to minimize field splicing and assembly. Disassemble units as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

B. 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.

C. Include supports, anchorages, and accessories required for complete assembly.

D. Provide subsills made of same material as louvers for recessed louvers.

E. Join frame members to each other and to fixed louver blades with fillet welds concealed from view, threaded fasteners, or both, as standard with louver manufacturer unless otherwise indicated or size of louver assembly makes bolted connections between frame members necessary.

2.7 ALUMINUM FINISHES

A. Finish louvers after assembly.

B. Baked-Enamel or Powder-Coat Finish: AAMA 2603. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

1. Color and Gloss: As selected by Director’s Representative from manufacturer's full range.

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 of the Work.

B. 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. Protect unpainted galvanized- and nonferrous-metal surfaces that are in contact with concrete, masonry, or dissimilar metals from corrosion and galvanic action by applying a heavy coating of bituminous paint or by separating surfaces with waterproof gaskets or nonmetallic flashing.

F. Install concealed gaskets, flashings, joint fillers, and insulation as louver installation progresses, where weathertight louver joints are required. Comply with Section 079200 "Joint Sealants" for sealants applied during louver installation.

3.4 ADJUSTING AND CLEANING

A. Clean exposed louver surfaces that are not protected by temporary covering, to remove fingerprints and soil during construction period. Do not let soil accumulate during construction period.

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 Director’s Representative, 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 089119

SECTION 089516 - WALL VENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Brick vents.

1.2 ACTION SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

1. Include manufacturer’s installation instructions.

E. Samples: For each type of metal finish required.

1.3 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For flood vents, from ICC Code-ES.

B. Sample Warranties: For manufacturer’s special warranties.

1.4 WARRANTY

A. Special Finish Warranty, Factory-Applied Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of baked enamel, powder coat, or organic finishes within specified warranty period.

1. Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Warranty Period: Five years from date of Substantial Completion.

B. Special Finish Warranty, Anodized Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of anodized finishes within specified warranty period.

1. Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
c. Cracking, peeling, or chipping.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain vents from single source from single manufacturer.

2.2 WALL VENTS (BRICK VENTS)

A. Extruded-Aluminum Wall Vents:

1. Extruded-aluminum louvers and frames, not less than 0.125-inch (3.18-mm) nominal thickness, assembled by welding; with 18-by-14-- (1.4-by-1.8-mm-) mesh, aluminum insect screening on inside face; incorporating weep holes, continuous drip at sill, and integral waterstop on inside edge of sill; of load-bearing design and construction.
2. Dampers: Aluminum blades and frames mounted on inside of wall vents; operated from exterior with Allen wrench in socket-head cap screw. Fabricate operating mechanism from Type 304 stainless steel components.
3. Finish: As selected by Director’s Representative from manufacturer's full range.
4. Basis of Design: Greenheck BVE.

2.3 MATERIALS

A. Aluminum Extrusions: ASTM B221 (ASTM B221M), Alloy 6063-T5, T-52, or T6.

B. Aluminum Sheet: ASTM B209 (ASTM B209M), Alloy 3003 or 5005 with temper as required for forming, or as otherwise recommended by metal producer for required finish.

2.4 ALUMINUM FINISHES

A. Color Anodic Finish: AAMA 611, AA-M12C22A42/A44, Class I, 0.018 mm or thicker.

1. Color: As selected by Director’s Representative from full range of industry colors and color densities.

B. Factory-Primed Finish: AA-C12C42R1x with air-dried primer of not less than 2-mil (0.05-mm) dry film thickness.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install according to manufacturer's written instructions.

B. Locate and place vents level, plumb, and at indicated alignment with adjacent work.

C. Attach vents securely in place using fasteners supplied or approved by manufacturer.

D. Protect unpainted surfaces that are in contact with concrete, masonry, or dissimilar metals from corrosion and galvanic action by applying a heavy coating of bituminous paint or by separating surfaces with waterproof gaskets or nonmetallic flashing.

E. Build vents into masonry work as construction progresses; comply with requirements in Section 042000 "Unit Masonry."

3.2 ADJUSTING AND CLEANING

A. Adjust flood vents for proper operation.

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 vents damaged during installation and construction, so no evidence remains of corrective work. If results of restoration are unsuccessful, as determined by Architect Director’s Representative, remove damaged units and replace with new units.

END OF SECTION 089516

SECTION 090561.13 - MOISTURE VAPOR EMISSION CONTROL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fluid-applied, resin-based, membrane-forming systems that control the moisture-vapor-emission rate of high-moisture, interior concrete to prepare it for floor covering installation.

1.2 DEFINITIONS

A. MVE: Moisture vapor emission.

B. MVER: Moisture vapor emission rate.

1.3 SUBMITTALS

A. General: Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

E. Qualification Data: For Installer and manufacturer.

F. Product Test Reports: For each MVE-control system, for tests performed by a qualified testing agency.

G. Preinstallation testing reports.

H. Field quality-control reports.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Employs factory-trained personnel who are available for consultation and Project-site inspection.

B. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating directions for storage and mixing with other components.

1.6 FIELD CONDITIONS

A. Environmental Limitations: Comply with MVE-control system manufacturer's written instructions for substrate and ambient temperatures, humidity, ventilation, and other conditions affecting system installation.

1. Store system components in a temperature-controlled environment and protected from weather and at ambient temperature of not less than 65 deg F and not more than 85 deg F at least 48 hours before use.
2. Maintain ambient temperature and relative humidity in installation areas within range recommended in writing by MVE-control system manufacturer, but not less than 65 deg F or more than 85 deg F and not less than 40 or more than 60 percent relative humidity, for 48 hours before installation, during installation, and for 48 hours after installation unless longer period is recommended in writing by manufacturer.
3. Install MVE-control systems where concrete surface temperatures will remain a minimum of 5 deg F higher than the dew point for ambient temperature and relative humidity conditions in installation areas for 48 hours before installation, during installation, and for 48 hours after installation unless longer period is recommended in writing by manufacturer.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. MVE-Control System Capabilities: Capable of suppressing MVE without failure where installed on concrete that exhibits the following conditions:

1. MVER: Maximum 25 lb of water/1000 sq. ft. when tested according to ASTM F1869.
2. Relative Humidity: Maximum 100 percent when tested according to ASTM F2170 using in situ probes.

B. Water-Vapor Transmission: Through MVE-control system, maximum 0.10 perm when tested according to ASTM E96.

C. Tensile Bond Strength: For MVE-control system, greater than 400 psi with failure in the concrete according to ASTM D7234.

2.2 MVE-CONTROL SYSTEM

A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

1. Custom Building Products; CustomTech™ TechMVC™ 100% Solids Epoxy Moisture Vapor Control.
2. H.B. Fuller Construction Products Inc. / TEC; H.B. Fuller Construction Products / TEC LiquiDam.
3. Laticrete International, Inc.; Laticrete Vapor Ban™ Primer ER.
4. Approved equivalent.

B. MVE-Control System: ASTM F3010-qualified, fluid-applied, two-component, epoxy-resin, membrane-forming system; formulated for application on concrete substrates to reduce MVER to level required for installation of floor coverings indicated and acceptable to manufacturers of floor covering products indicated, including adhesives.

1. Substrate Primer: Provide MVE-control system manufacturer's concrete-substrate primer if required for system indicated by substrate conditions.
2. Cementitious Underlayment Primer: If required for subsequent installation of cementitious underlayment products, provide MVE-control system manufacturer's primer to ensure adhesion of products to MVE-control system.

2.3 ACCESSORIES

A. Patching and Leveling Material: Moisture-, mildew-, and alkali-resistant product recommended in writing by MVE-control system manufacturer and with minimum of 3000-psi compressive strength after 28 days when tested according to ASTM C109.

B. Crack-Filling Material: Resin-based material recommended in writing by MVE-control system manufacturer for sealing concrete substrate crack repair.

C. Cementitious Underlayment: If required to maintain manufacturer's warranty, provide MVE-control system manufacturer's hydraulic cement-based underlayment.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for maximum moisture content, installation tolerances, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

1. Installation of system indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Preinstallation Testing:

1. Testing Agency: Engage a qualified testing agency to perform tests.

2. Alkalinity Testing: Perform pH testing according to ASTM F710. Install MVE-control system in areas where pH readings are less than 7.0 and in areas where pH readings are greater than 8.5.
3. Moisture Testing: Perform tests so that each test area does not exceed 1000 sq. ft., and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

    a. Anhydrous Calcium Chloride Test: ASTM F1869. Install MVE-control system in locations where concrete substrate MVER exceeds 3 lb of water/1000 sq. ft. in 24 hours.
    b. Internal Relative Humidity Test: Using in situ probes, ASTM F2170. Install MVE-control system in locations where concrete substrates exhibit relative humidity level greater than 75 percent.

4. Tensile-Bond-Strength Testing: For typical locations indicated to receive installation of MVE-control system, install minimum 100-sq. ft. area of MVE-control system to prepared concrete substrate and test according to ASTM D7234.

    a. Proceed with installation only where tensile bond strength is greater than 400 psi with failure in the concrete.

B. Concrete Substrates: Prepare and clean substrates according to MVE-control system manufacturer's written instructions to ensure adhesion of system to concrete.

1. Remove coatings and other substances that are incompatible with MVE-control system and that contain soap, wax, oil, or silicone, using mechanical methods recommended in writing by MVE-control system manufacturer. Do not use solvents.
2. Provide concrete surface profile complying with ICRI 310.2R CSP 3 by shot blasting using apparatus that abrades the concrete surface with shot, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup.
3. After shot blasting, repair damaged and deteriorated concrete according to MVE-control system manufacturer's written instructions.
4. Protect substrate voids and joints to prevent resins from flowing into or leaking through them.
5. Fill surface depressions and irregularities with patching and leveling material.
6. Fill surface cracks, grooves, control joints, and other nonmoving joints with crack-filling material.
7. Allow concrete to dry, undisturbed, for period recommended in writing by MVE-control system manufacturer after surface preparation, but not less than 24 hours.
8. Before installing MVE-control systems, broom sweep and vacuum prepared concrete.

C. Protect walls, floor openings, electrical openings, door frames, and other obstructions during installation.

3.3 INSTALLATION

A. Install MVE-control system according to ASTM F3010 and manufacturer's written instructions to produce a uniform, monolithic surface free of surface deficiencies such as pin holes, fish eyes, and voids.

1. Install primers as required to comply with manufacturer's written instructions.

B. Do not apply MVE-control system across substrate expansion, isolation, and other moving joints.

C. Apply system, including component coats if any, in thickness recommended in writing by MVE-control system manufacturer for MVER indicated by preinstallation testing.

D. Cure MVE-control system components according to manufacturer's written instructions. Prevent contamination or other damage during installation and curing processes.

E. After curing, examine MVE-control system for surface deficiencies. Repair surface deficiencies according to manufacturer's written instructions.

F. Install cementitious underlayment over cured membrane if required to maintain manufacturer's warranty and in thickness required to maintain the warranty.

3.4 PROTECTION

A. Protect MVE-control system from damage, wear, dirt, dust, and other contaminants before floor covering installation. Use protective methods and materials, including temporary coverings, recommended in writing by MVE-control system manufacturer.

B. Do not allow subsequent preinstallation examination and testing for floor covering installation to damage, puncture, or otherwise compromise the MVE-control system membrane.

END OF SECTION 090561.13

SECTION 092116 - GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

A. Cold Formed (Load Bearing) Metal Framing: Section 054000.

B. Firestopping: Section 078413

C. Joint Firestopping: Section 078443

1.2 DEFINITIONS

A. Gypsum Board Terminology: ASTM C 11 - Standard Terminology Relating to Gypsum and Related Building Materials and Systems.

1.3 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer's installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: Catalog sheets, specifications, and installation instructions for each item specified.

E. Samples:

1. Gypsum Board: 12 inches square, each type specified.
2. Fasteners: 10 each type specified.
3. Adhesive: 1 pint.

1.4 QUALITY ASSURANCE

A. Fire Resistance Rated Applications: Provide UL listed or ASTM E 119 tested materials, accessories, and application procedures to comply with the rating, UL Design Number, or Gypsum Association File Number indicated.

B. Sound Transmission Class (STC) Rated Applications: Provide materials and installation procedures identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413.

C. Single Source Responsibility: Obtain components for gypsum board shaft-wall assemblies from a single manufacturer for each type of assembly required.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer.

B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes. Stack gypsum panels flat to prevent sagging.

1.6 PROJECT CONDITIONS

A. Environmental Requirements: Comply with gypsum board manufacturer's printed temperature and ventilation requirements during application and finishing. Ventilate installation areas to relieve excess moisture.

PART 2 - PRODUCTS

2.1 GYPSUM BOARD

A. Standard Gypsum Board: ASTM C 1396; long edges as follows:

1. Long Edges: Tapered.
2. Long Edges: Tapered with beveled or rounded edges.
3. Thickness: 5/8" inch typical unless noted otherwise.

B. Fire Resistant Gypsum Board: ASTM C 1396; Type X, UL listed and bearing listing marking; long edges as follows:

1. Long Edges: Tapered.
2. Long Edges: Tapered with beveled or rounded edges.
3. Thickness: 5/8" inch typical unless noted otherwise.

C. Moisture Resistant Gypsum Board: ASTM C 1396; long edges tapered.

1. Thickness: 5/8" inch typical unless noted otherwise.

D. Moisture and Fire Resistant Gypsum Board: ASTM C 1396; Type X, UL listed and bearing listing mark; long edges tapered.

1. Thickness: 5/8" inch typical unless noted otherwise.

2.2 FASTENERS

A. Steel Drill Screws: ASTM C 1002; gypsum board manufacturer's recommended types and sizes for substrates involved.

B. Laminating Adhesive: Gypsum board manufacturer's recommended type for substrates involved.

C. Expansion Anchors: Anchor bodies AISI 1018 or 12L14, of dimensions indicated; with nuts, ASTM A 563; and flat washers. Expansion sleeves AISI 1010, of dimensions indicated; with bolts, SAE Grade 5; and flat washers.

D. Toggle Bolts: Tumble wing type.

1. Wing Body: AISI 1008-1010 or equivalent cold rolled steel.
2. Trunnion Nut: 1/4 inch thru 3/8 inch AISI 1010 steel; 1/2 inch Zamac alloy.
3. Screw: Carbon steel.

E. Self Threading Masonry Screws: Zinc plated; Tapcon Fasteners by ITW Buildex 1349 West Bryn Mawr Ave. Itasca, IL 60143, (800) 284-5339.

2.3 TRIM

A. Interior Trim: ASTM C 1047.

1. Material: Galvanized steel or extruded vinyl.
2. Shapes:

a. Cornerbead: Use at outside corners.
b. Bullnose Bead: Use where indicated.
c. LC-Bead: J-Shaped, exposed long flange receives joint compound. Use at exposed panel edges.
d. L-Bead: L-shaped, exposed long leg receives joint compound with tear away bead. Use where gypsum board abuts or intersects dissimilar material.
e. U-Bead: J-shaped, exposed short flange does not receive joint compound. Use where indicated.
f. Expansion (Control) Joint: Use where indicated.
g. Furring Channels: USG DWC 20, face 1-1/4", depth 7/8", or 1-1/2".
h. Resilient "Z" channels: 25 gauge, G40, ASTM C645, refer to drawings for sizing.

2.4 ACCESSORIES

A. Sound Attenuation Blankets: ASTM C 665, Type 1; semi-rigid, mineral fiber blankets without membrane covering. Furnish blankets of thickness, density, and type tested by the gypsum board manufacturer for the required rating.

B. Acoustical Sealant for Exposed and Concealed Joints: Nonsag, paintable, nonstaining, latex sealant complying with ASTM C 834 that effectively reduces airborne sound transmission

through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

C. Acoustical Sealant for Concealed Joints: Non drying, nonhardening, nonskinning, nonstaining, gunnable, synthetic-rubber sealant recommended for sealing interior concealed joints to reduce airborne sound transmission.

2.5 JOINT TREATMENT MATERIALS

A. Joint Tapes: ASTM C 475; plain or perforated.

B. Joint Compound: ASTM C 475; gypsum board manufacturer's recommended dry powder or ready-mixed, either of the following:

1. One Compound Treatment: One compound for both bedding and finishing joints.
2. Two Compound Treatment: Compatible joint compounds; one compound for bedding and the other compound for finishing joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates to which gypsum board system attaches or abuts, preset steel door frames, cast in anchors, and structural framing, with installer present for compliance with requirements for installation tolerances and other conditions affecting performance of gypsum board system construction. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 CONSTRUCTION TOLERANCES

A. Do not exceed 1/8 inch in 8 feet variation from plumb or level in any exposed line or surface, except at joints between boards do not exceed 1/16 inch variation between planes or abutting edges or ends. Shim as required to comply with specified tolerances.

3.3 ACOUSTICAL ACCESSORIES INSTALLATION

A. STC-Rated Assemblies: Comply with STC rating indicated.

1. Multi-layer application.

a. Balanced Partitions: Two or more layers applied to each sides of supports.
b. Unbalanced Partitions: One layer applied to one face and 2 layers applied to other face.

B. Sound Attenuation Blankets: Install in partitions tight within spaces, around cut openings, behind and around electrical and mechanical items within or behind partitions, and tight to items passing through partitions.

C. Acoustical Sealant: ASTM C 919; install continuous bead of acoustical sealant at gypsum board perimeter. Seal wherever gypsum board abuts dissimilar materials. Seal spaces between gypsum board and all penetrating items. Seal sides and backs of electrical and mechanical items.

3.4 GYPSUM BOARD INSTALLATION

A. Install gypsum board in the most economical direction, of maximum lengths to minimize end butt joints. Where unavoidable, locate end butt joints as far from center of walls or ceilings as possible.

B. Install gypsum board with face side out. Butt boards together at edges and ends over firm bearing with not more than 1/16 inch of open space between boards. Do not force into place.

C. Fasteners: Fasten gypsum board to supports and furring with steel drill screws of required size and spacing as recommended by the gypsum board manufacturer.

1. Multiple-layer Work:

a. Mechanically fasten both layers.
b. Multiple-layer Work: Laminate second layer to base layer with adhesive. Provide temporary nails for removal after drying or permanent screws for temporary support of second layer.
c. Stagger vertical joints in multiple layer Work. Offset joints not less than 10 inches.

D. Provide additional framing and blocking required to support gypsum board at openings and cutouts.

E. Form control joints in gypsum board where indicated. Allow 1/2 inch continuous opening between boards to allow for insertion of control joint trim.

F. Wood Supports: Provide “floating” interior angle construction between gypsum board at interior corners.

G. Reinforce joints formed by tapered edges, butt edges, and interior corners or angles with joint tape.

3.5 TRIM INSTALLATION

A. Coordinate installation of trim progressively with gypsum board installation where trim is of type required to be installed prior to, or progressively with installation of gypsum board.

B. Securely fasten trim pieces in accordance with manufacturer’s printed instructions.

C. Install cornerbeads at external corners. Install LC-Bead (J-Bead) beads at unprotected (exposed) edges and where gypsum board abuts dissimilar materials. Use single unjointed lengths unless otherwise approved by the Director.

D. Miter corners of semi-finishing type casing and trim beads.

E. Install control joint trim in accordance with ASTM C 840, where indicated.

F. Comply with joint compound manufacturer's recommended drying time for the relative humidity and temperature at time of application. Allow minimum of 24 hours drying time between applications of joint compound.

G. Except Type X Gypsum Board: Joint compound treatment is not required on gypsum board surfaces installed above suspended ceiling lines.

H. Type X Gypsum Board: Install joint and corner reinforcing and trim, and one coat of joint compound over joints, fastener heads, and metal flanges above suspended ceiling lines.

3.6 LEVELS OF GYPSUM BOARD FINISH

A. General: Finish panels to levels indicated below, in accordance with ASTM C 840, for locations indicated.

1. Level 2 Finish: Joints and angles, provide tape embedded in joint compound and provide one separate coat of joint compound over the tape and fastener heads. Cover accessories with one coat of joint compound. Surface shall be free of excess joint compound. Tool marks and ridges will be acceptable. Joint compound applied over the body of the tape at the time of tape embedment will be considered a separate coat of joint compound and will satisfy the conditions of this level.
2. Level 4 Finish: Joints and angles, provide tape embedded in joint compound and provide three separate coats of joint compound over all joints, angles, and fastener heads. Accessories to be covered with three separate coats of joint compound. Joint compounds to be smooth and free of tool marks and ridges. Cover the prepared surface with a drywall primer prior to the application of the final decoration.

END OF SECTION 092116

SECTION 093013 - CERAMIC TILING

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:
   1. Porcelain tile.
   2. Glazed wall tile.
   3. Stone thresholds.
   4. Tile backing panels.
   5. Waterproof membrane for thinset applications.
   6. Crack isolation membrane.
   7. Metal edge strips.

B. Related Requirements:
   1. Section 079200 "Joint Sealants" for sealing of expansion, contraction, control, and isolation joints in tile surfaces.
   2. Section 092900 "Gypsum Board" for glass-mat, water-resistant backer board.
   3. Section 093023 "Glass Mosaic Tiling."

1.3 DEFINITIONS

A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.

B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in its "Specifications for Installation of Ceramic Tile."

C. Face Size: Actual tile size, excluding spacer lugs.

D. Module Size: Actual tile size plus joint width indicated.

1.4 PREINSTALLATION MEETINGS

   1. Review requirements in ANSI A108.01 for substrates and for preparation by other trades.
   2. Required Attendees:

a. Construction Contractor.
b. Tiling Subcontractor.
c. Representative for the Designer of Record.
d. Director's Representative.

1.5 SUBMITTALS

A. General: Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer's installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

E. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.

F. Samples for Initial Selection: For tile, grout, and accessories involving color selection.

G. Samples for Verification:

1. Full-size units of each type and composition of tile and for each color and finish required.
2. Full-size units of each type of trim and accessory for each color and finish required.
3. Stone thresholds in 6-inch lengths.
4. Metal edge strips in 6-inch lengths.

H. Qualification Data: For Installer.

1. Name of each person who will be performing the work, trade certificates, and their employer's name, business address, and telephone number.
2. Names and addresses of 3 similar projects that each person has worked on during the past 5 years.

I. Master Grade Certificates: For each shipment, type, and composition of tile, signed by tile manufacturer and Installer.

J. Product Certificates: For each type of product.

K. Product Test Reports: For tile-setting and -grouting products and certified porcelain tile.

L. Field Quality Control Reports: Results of moisture testing for slabs on grade.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.
2. Grout: Furnish quantity of grout equal to 3 percent of amount installed for each type, composition, and color indicated.

1.7 QUALITY ASSURANCE

A. Installer Qualifications:

1. Installer employs only Ceramic Tile Education Foundation Certified Installers or installers recognized by the U.S. Department of Labor as Journeyman Tile Layers for Project.
2. Installer employs at least one installer for Project that has completed the Advanced Certification for Tile Installers (ACT) certification for installation of membranes and shower receptors.

B. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockup of each type of floor tile installation.
2. Build mockup of each type of wall tile installation.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 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 requirements in ANSI A137.1 for labeling tile packages.

B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.

C. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.

D. Store liquid materials in unopened containers and protected from freezing.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations for Tile: Obtain tile of each type and color or finish from single source or producer.

1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.

B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from single manufacturer and each aggregate from single source or producer.

1. Obtain setting and grouting materials, except for unmodified Portland cement and aggregate, from single manufacturer.
2. Obtain waterproof membrane and crack isolation membrane, except for sheet products, from manufacturer of setting and grouting materials.

C. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer:

1. Stone thresholds.
2. Waterproof membrane.
3. Crack isolation membrane.
4. Cementitious backer units.
5. Metal edge strips.

2.2 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.

B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCNA installation methods specified in tile installation schedules, and other requirements specified.

C. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.

2.3 TILE PRODUCTS

A. Ceramic Tile Type CT-1: Glazed porcelain tile.

1. 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. Caesar Ceramics USA, Inc.
b. American Marazzi Tile, Inc.
c. American Olean; a division of Dal-Tile Corporation.
d. Daltile.
e. Approved equivalent.

2. Certification: Tile certified by the Porcelain Tile Certification Agency.
3. Face Size: 6 x 24 inch.
4. Face Size Variation: Rectified.
5. Thickness: 9 mm.
6. Face: Plain with square edges.
7. Dynamic Coefficient of Friction: Not less than 0.42.
8. Tile Color, Glaze, and Pattern: Basis of Design: Caesar Ceramics USA, Inc., Wavescape, Malibu.
9. Grout Color: As selected by Director’s Representative from manufacturer's full range.
10. Trim Units: Basis of Design, Schluter Dilex BWA 100 G (Gray).

B. Ceramic Tile Type CT-2: Glazed porcelain tile.

1. 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. Caesar Ceramics USA, Inc.
b. American Marazzi Tile, Inc.
c. American Olean; a division of Dal-Tile Corporation.
d. Daltile.
e. Approved equivalent.

2. Certification: Tile certified by the Porcelain Tile Certification Agency.
3. Face Size: 12 x 24 inch.
4. Face Size Variation: Rectified.
5. Thickness: 9 mm.
6. Face: Plain with square edges.
7. Dynamic Coefficient of Friction: Not less than 0.42.
8. Tile Color, Glaze, and Pattern: Basis of Design: Caesar Ceramics USA, Inc., Wavescape, Malibu.
9. Grout Color: As selected by Director’s Representative from manufacturer's full range.
10. Trim Units: Basis of Design, Schluter Dilex BWA 100 G (Gray).

C. Ceramic Tile Type CT-3: Glazed porcelain tile.

1. 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. Caesar Ceramics USA, Inc.
b. American Marazzi Tile, Inc.
c. American Olean; a division of Dal-Tile Corporation.
d. Daltile.

e. Approved equivalent.

2. Certification: Tile certified by the Porcelain Tile Certification Agency.
3. Face Size: 12 x 24 inch.
4. Face Size Variation: Rectified.
5. Thickness: ¾ inch.
6. Face: Plain with square edges.
7. Dynamic Coefficient of Friction: Not less than 0.42.
8. Tile Color, Glaze, and Pattern: Basis of Design: Caesar Ceramics USA, Inc., Stoneways, Night.
9. Grout Color: As selected by Director's Representative from manufacturer's full range.
10. Trim Units: Per schedule, TB-2/Schulter Schiene AE100.

D. Ceramic Tile Type CT-7: Glazed porcelain tile.

1. 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. Stonepeak Ceramics, Inc.
b. Caesar Ceramics USA, Inc.
c. American Marazzi Tile, Inc.
d. American Olean; a division of Dal-Tile Corporation.
e. Daltile.
f. Approved equivalent.

2. Certification: Tile certified by the Porcelain Tile Certification Agency.
3. Face Size: 12 x 24 inch.
4. Face Size Variation: Rectified.
5. Thickness: ¾ inch.
6. Face: Plain with square edges.
7. Dynamic Coefficient of Friction: Not less than 0.42.
8. Tile Color, Glaze, and Pattern: Basis of Design: Sonepeak Ceramics, Inc., Urban 2.0, Lava Gray.
9. Grout Color: As selected by Director's Representative from manufacturer's full range.
10. Trim Units: TB-3.

E. Ceramic Tile Type CT-4: Glazed wall tile.

1. 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. American Marazzi Tile, Inc.
b. American Olean; a division of Dal-Tile Corporation.
c. Daltile.
d. Approved equivalent.

2. Module Size: 4 x 4 inch.
3. Face Size Variation: Rectified.

4. Thickness: 5/16 inch.
5. Face: Plain with modified square edges or cushion edges.
6. Descriptions in "Finish" subparagraph below are defined in ASTM C242. All glazes may not be available in or suitable for this tile type. If inserting another description, also include list of products meeting that description.
7. Finish: Opaque gloss glaze.
8. Tile Color and Pattern: Basis of Design: American Olean, Color Story Wall, 0061 Matte Designer White.
9. Grout Color: As selected by Director’s Representative from manufacturer's full range.

F. Ceramic Tile Type CT-5: Glazed wall tile.

1. 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. American Marazzi Tile, Inc.
    b. American Olean; a division of Dal-Tile Corporation.
    c. Daltile.
    d. Approved equivalent.

2. Module Size: 4 x 12 inch.
3. Face Size Variation: Rectified.
4. Thickness: 5/16 inch.
5. Face: Plain with modified square edges or cushion edges.
6. Descriptions in "Finish" subparagraph below are defined in ASTM C242. All glazes may not be available in or suitable for this tile type. If inserting another description, also include list of products meeting that description.
7. Finish: Opaque gloss glaze.
8. Tile Color and Pattern: Basis of Design: American Olean, Color Story Wall, 0117 Navy.
9. Grout Color: As selected by Director’s Representative from manufacturer's full range.
10. Trim Units: Basis of Design, Schluter Dilex BWA 100 G (Gray).

G. Ceramic Tile Type CT-6: Glazed wall tile.

1. 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. American Marazzi Tile, Inc.
    b. American Olean; a division of Dal-Tile Corporation.
    c. Daltile.
    d. Approved equivalent.

2. Module Size: 4 x 12 inch.
3. Face Size Variation: Rectified.
4. Thickness: 5/16 inch.
5. Face: Plain with modified square edges or cushion edges.

6. Descriptions in "Finish" subparagraph below are defined in ASTM C242. All glazes may not be available in or suitable for this tile type. If inserting another description, also include list of products meeting that description.
7. Finish: Opaque gloss glaze.
8. Tile Color and Pattern: Basis of Design: American Olean, Color Story Wall, 0077 Mandarin.
9. Grout Color: As selected by Director’s Representative from manufacturer's full range.
10. Trim Units: Basis of Design: Schluter Schiene, AE80.

H. Accessories: Provide vitreous china accessories of type and size indicated, suitable for installing by same method as used for adjoining wall tile.

2.4 THRESHOLDS

A. Marble Thresholds: Sound Group A; ASTM C503, with a minimum abrasion resistance of 10 according to ASTM C1353 or ASTM C241 and with honed finish.
1. Description: Provide one of the following marble types:

a. Gray Marble Threshold, basis of design Nordic Grey Marble.
b. Double Bevel.
c. 4” x Door Width Dimension.

2.5 TILE BACKING PANELS

A. Cementitious Backer Units: ANSI A118.9 or ASTM C1325, Type A, in maximum lengths available to minimize end-to-end butt joints.

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. Custom Building Products; WonderBoard® Lite Backerboard.
b. Georgia-Pacific Gypsum LLC; DensShield® Tile Backer.
c. USG Corporation; DUROCK Cement Board.
d. Approved equivalent.

2. Thickness: As indicated.

2.6 WATERPROOF MEMBRANE

A. General: Manufacturer's standard product, selected from the following, that complies with ANSI A118.10 and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.

B. Fluid-Applied Membrane: Liquid-latex rubber or elastomeric polymer.

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. Boiardi Products Corporation; a QEP company; Elastiment 644 Membrane Waterproofing System.
b. Custom Building Products; RedGard® Waterproofing and Crack Prevention Membrane.
c. Laticrete International, Inc.; Laticrete Hydro Ban®.
d. MAPEI Corporation; Mapelastic WaterStop.
e. Approved equivalent.

2. Membrane to be applied at floor and 6” up all walls.

2.7 CRACK ISOLATION MEMBRANE

A. General: Manufacturer's standard product, selected from the following, that complies with ANSI A118.12 for high performance and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.

B. Fluid-Applied Membrane: Liquid-latex rubber or elastomeric polymer.

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. Custom Building Products; RedGard® Waterproofing and Crack Prevention Membrane.
b. Laticrete International, Inc.; Laticrete HydroBan.
c. MAPEI Corporation; Mapeleastic CI.
d. Approved equivalent.

2.8 SETTING MATERIALS

A. Modified Dry-Set Mortar (Thinset): ANSI A118.4.

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. Custom Building Products; Large Format Thin-set Mortar.
b. Laticrete International, Inc.; Laticrete 4-XLT.
c. MAPEI Corporation; Large Format Thin-set Mortar.
d. Summitville Tiles, Inc.; Large Format Thin-set Mortar.
e. Approved equivalent.

2. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.4.

2.9 GROUT MATERIALS

A. Water-Cleanable Epoxy Grout: ANSI A118.3.

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. Custom Building Products; CEG-IG 100% Solids Industrial Grade Epoxy Grout.
b. Laticrete International, Inc.; Laticrete Spectralock® Pro-Premium Epoxy Grout.
c. MAPEI Corporation; Kerapoxy® IEG CQ.
d. Summitville Tiles, Inc.; S-600 Setting & Grouting Epoxy.
e. Approved equivalent.

2.10 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

B. Expansion Joints: Follow instructions for TCNA EJ171:

1. Basis of Design: Laticrete, Latasil.

C. Metal Edge Strips: Angle or L-shaped, height to match tile and setting-bed thickness, metallic or combination of metal and PVC or neoprene base, designed specifically for flooring, wall base, and exposed wall tile edge applications; stainless steel exposed-edge material.

1. 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. Blanke Corporation; www.blankecorp.com.
b. Dural; us.dural.com.
c. Schluter Systems L.P.; www.schluter.com.
d. Approved equivalent.

D. Movement Joints:

1. All interior vertical corners to receive movement joints that match grout color.

E. 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.

F. Floor Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.

1. 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. ColorSealPro; www.colorsealpro.com.
b. Laticrete International, Inc.
c. Modern Stone Technologies; www.modernstonecare.com.
d. Approved equivalent.

2.11 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.

B. Add materials, water, and additives in accurate proportions.

C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

1. Verify that substrates for setting tile are firm; dry; clean; free of coatings that are incompatible with tile-setting materials, including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
2. Verify that concrete substrates for tile floors installed with thinset mortar comply with surface finish requirements in ANSI A108.01 for installations indicated.

    a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
    b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.

3. 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.
4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Director’s Representative.

B. Moisture Testing of Concrete Slabs on Grade: Perform tests so that each test area does not exceed 1000 sq. ft., and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

1. Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement or a level acceptable to the setting bed manufacturer.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with adhesives or thinset mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.

B. Where indicated, prepare substrates to receive waterproof membrane by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot toward drains.

C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of 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.

3.3 INSTALLATION OF CERAMIC TILE

A. Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.

1. For the following installations, follow procedures in the ANSI A108 series of tile installation standards for providing 95 percent mortar coverage:
    a. Tile floors consisting of tiles 8 by 8 inches or larger.

B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

C. 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 plates, collars, or covers overlap tile.

D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.

E. Where accent tile differs in thickness from field tile, vary setting-bed thickness so that tiles are flush.

F. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.

1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.
2. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.

3. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.

G. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
1. Glazed Wall Tile: 1/16 inch.
2. Porcelain Tile: 1/8 inch.

H. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.

1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.

I. Stone Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.

J. Metal Edge Strips: Install where exposed edge of tile flooring meets carpet or other flooring that finishes flush with or below top of tile and no threshold is indicated.

K. Floor Sealer: Apply floor sealer to cementitious grout joints in tile floors according to floor-sealer manufacturer's written instructions. As soon as floor sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

3.4 INSTALLATION OF WATERPROOF MEMBRANE

A. Install waterproof membrane to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness that is bonded securely to substrate.

B. Allow waterproof membrane to cure and verify by testing that it is watertight before installing tile or setting materials over it.

3.5 INSTALLATION OF CRACK ISOLATION MEMBRANE

A. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness that is bonded securely to substrate.

B. Allow crack isolation membrane to cure before installing tile or setting materials over it.

3.6 ADJUSTING AND CLEANING

A. Remove and replace tile that is damaged or that does not match adjoining tile. Provide new matching units, installed as specified and in a manner to eliminate evidence of replacement.

B. Cleaning: On 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. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.

3.7 PROTECTION

A. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.

B. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.

C. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

3.8 INTERIOR CERAMIC TILE INSTALLATION SCHEDULE

1. Ceramic Tile Installation <CT-3>: TCNA F115; thinset mortar; epoxy grout.

    a. Ceramic Tile Type: <CT-3>.
    b. Thinset Mortar: Large Format Thinset mortar.
    c. Grout: Water-cleanable epoxy grout.

2. Ceramic Tile Installation <CT-7>: TCNA F115; thinset mortar; epoxy grout.

    a. Ceramic Tile Type: <CT-7>.
    b. Thinset Mortar: Large Format Thinset mortar.
    c. Grout: Water-cleanable epoxy grout.

B. Interior Wall Installations, Masonry or Concrete:

1. Ceramic Tile Installation <CT-1>: TCNA W202; thinset mortar.

    a. Ceramic Tile Type: <CT-1>.
    b. Thinset Mortar: Large Format Thinset Mortar.
    c. Grout: Water-cleanable epoxy grout

2. Ceramic Tile Installation <CT-2>: TCNA W202; thinset mortar.

    a. Ceramic Tile Type: <CT-2>.
    b. Thinset Mortar: Large Format Thinset Mortar.
    c. Grout: Water-cleanable epoxy grout

C. Interior Wall Installations, Wood or Metal Studs or Furring:

1. Ceramic Tile Installation <CT-1>: TCNA W202; thinset mortar.

a. Ceramic Tile Type: <CT-1>.
b. Thinset Mortar: Large Format Thinset Mortar.
c. Grout: Water-cleanable epoxy grout

2. Ceramic Tile Installation <CT-2>: TCNA W202; thinset mortar.

a. Ceramic Tile Type: <CT-2>.
b. Thinset Mortar: Large Format Thinset Mortar.
c. Grout: Water-cleanable epoxy grout.

3. Ceramic Tile Installation <CT-4, CT-5, and CT-6>: TCNA W202; thinset mortar.

a. Ceramic Tile Type: <CT-4, CT-5, CT-6>.
b. Thinset Mortar: Large Format Thinset Mortar.
c. Grout: Water-cleanable epoxy grout.

END OF SECTION 093013

SECTION 093023 - GLASS MOSAIC TILING

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:

1. Glass tile.

B. Related Requirements:

1. Section 079200 "Joint Sealants" for sealing of expansion, contraction, control, and isolation joints in tile surfaces.

1.3 DEFINITIONS

A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.2 apply to Work of this Section unless otherwise specified.

B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in its "Specifications for Installation of Ceramic Tile."

C. Face Size: Actual tile size, excluding spacer lugs.

D. Module Size: Actual tile size plus joint width indicated.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review requirements in ANSI A108.01 for substrates and for preparation by other trades.

1.5 SUBMITTALS

A. General: Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer's installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

E. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.

F. Samples for Initial Selection: For tile, grout, and accessories involving color selection.

G. Samples for Verification:

1. Full-size units of each type and composition of tile and for each color and finish required. For glass mosaic tile in color blend patterns, provide full sheets of each color blend.

H. Qualification Data: For Installer.

1. Name of each person who will be performing the work, trade certificates, and their employer's name, business address, and telephone number.
2. Names and addresses of 3 similar projects that each person has worked on during the past 5 years.

I. Master Grade Certificates: For each shipment, type, and composition of tile, signed by tile manufacturer and Installer.

J. Product Certificates: For each type of product.

K. Product Test Reports: For tile-setting and -grouting products.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Tile Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.
2. Grout: Furnish quantity of grout equal to 3 percent of amount installed for each type, composition, and color indicated.

1.7 QUALITY ASSURANCE

A. Installer Qualifications:

1. Installer employs only Ceramic Tile Education Foundation Certified Installers or installers recognized by the U.S. Department of Labor as Journeyman Tile Layers for Project.

B. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockup of each type of glass tile installation.
2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 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 requirements in ANSI A137.2 for labeling tile packages.

B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.

C. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.

D. Store liquid materials in unopened containers and protected from freezing.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations for Tile: Obtain tile of each type and color or finish from single source or producer.

1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.

B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from single manufacturer and each aggregate from single source or producer.

1. Obtain setting and grouting materials, except for unmodified Portland cement and aggregate, from single manufacturer.
2. Obtain waterproof membrane, except for sheet products, from manufacturer of setting and grouting materials.

C. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer:

1. Waterproof membrane.
2. Joint sealants.
3. Cementitious backer units.

2.2 PRODUCTS, GENERAL

A. ANSI Glass Tile Standard: Provide glass tile that complies with ANSI A137.2 for types and other characteristics indicated.

B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCNA installation methods specified in tile installation schedules, and other requirements specified.

C. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.

D. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.

2.3 TILE PRODUCTS

A. Glass Tile Type GT-1: Factory-mounted mosaic glass tile.

1. 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. American Marazzi Tile, Inc.
    b. American Olean; a division of Dal-Tile Corporation.
    c. Crossville, Inc.
    d. Approved equivalent.

2. Module Size: varies
3. Sizing Category: Standard.
4. Aesthetic Class: V4.
5. Tile Color and Pattern: As selected by Director’s Representative from manufacturer's full range. Basis of Design: American Olean, Zen, Block Random.
6. Grout Color: As selected by Director’s Representative from manufacturer's full range.

2.4 TILE BACKING PANELS

A. Cementitious Backer Units: ANSI A118.9 or ASTM C1325, Type A, in maximum lengths available to minimize end-to-end butt joints.

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. Custom Building Products; WonderBoard® Lite Backerboard.
b. Georgia-Pacific Gypsum LLC; DensShield® Tile Backer.
c. USG Corporation; DUROCK Cement Board.
d. Approved equivalent.

2. Thickness: As indicated.

2.5 SETTING MATERIALS

A. Improved Modified Dry-Set Mortar (Thinset): ANSI A118.15; white, unless otherwise indicated.

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. Custom Building Products; Glass Tile Premium Thin-Set Mortar.
b. Laticrete International, Inc.; Laticrete Glass Tile Adhesive (basis of design).
c. MAPEI Corporation; Ultraflex 3.
d. Approved equivalent.

2. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.15.

2.6 GROUT MATERIALS

A. Water-Cleanable Epoxy Grout: ANSI A118.3.

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. Custom Building Products; CEG-IG 100% Solids Industrial Grade Epoxy Grout.
b. Laticrete International, Inc.; Laticrete Spectralock® Pro Premium Epoxy Grout.
c. MAPEI Corporation; Kerapoxy® IEG CQ.
d. Summitville Tiles, Inc.; S-600 Setting & Grouting Epoxy.
e. Approved equivalent.

2.7 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

B. Metal Edge Strips: Angle or L-shaped, height to match tile and setting-bed thickness; stainless steel, ASTM A276 or ASTM A666, 300 Series exposed-edge material.

1. 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. Blanke Corporation; www.blankecorp.com.
b. Dural; us.dural.com.
c. Schluter Systems L.P.; www.schluter.com.
d. Approved equivalent.

C. 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.

D. Grout Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.

1. 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. ColorSealPro; www.colorsealpro.com.
b. Laticrete International, Inc.
c. Modern Stone Technologies; www.modernstonecare.com.
d. Approved equivalent.

2.8 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.

B. Add materials, water, and additives in accurate proportions.

C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

1. Verify that substrates for setting tile are firm; dry; clean; free of coatings that are incompatible with tile-setting materials, including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
2. Verify that concrete substrates for tile floors installed with thinset mortar comply with surface finish requirements in ANSI A108.01 for installations indicated.

a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.

3. 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.
4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Director's Representative.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Where indicated, prepare substrates to receive waterproof membrane by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot toward drains.

B. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of 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.

3.3 INSTALLATION OF GLASS TILE

A. Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.

B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

C. 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 plates, collars, or covers overlap tile.

D. Where accent tile differs in thickness from field tile, vary setting-bed thickness so that tiles are flush.

E. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.

1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.

F. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:

1. Mosaic Glass Tile: 1/16 inch.

G. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.

1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.

H. Metal Edge Strips: Install at locations indicated.

I. Grout Sealer: Apply grout sealer to grout joints according to grout-sealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

3.4 CLEANING AND PROTECTING

A. Cleaning: On completion of placement and grouting, clean all tile surfaces so they are free of foreign matter.

1. Remove grout residue from tile as soon as possible.
2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.
3. Remove temporary protective coating by method recommended by coating manufacturer and that is acceptable to tile and grout manufacturer. Trap and remove coating to prevent drain clogging.

B. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls.

C. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

3.5 INTERIOR GLASS TILE INSTALLATION SCHEDULE

A. Interior Wall Installations, Masonry or Concrete:

1. Glass Tile Installation <GT-1>: TCNA W202; thinset mortar.

a. Glass Tile Type: <GT-1>.
b. Wall Preparation: remove existing paint on CMU if not soundly adhered, or use CMU block primer, Basis of Design Laticrete Prime and Bond.
c. Thinset Mortar: Improved modified dry-set glass tile adhesive mortar.

d. Grout: Water-cleanable epoxy grout.

B. Interior Wall Installations, Wood or Metal Studs or Furring:

1. Glass Tile Installation <GT-1>: TCNA W243; thinset mortar on gypsum board.

a. Glass Tile Type: <GT-1>.
b. Thinset Mortar: Improved modified dry-set glass tile adhesive mortar.
c. Grout: Water cleanable epoxy grout.

END OF SECTION 093023

SECTION 095123 - ACOUSTICAL TILE CEILINGS

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:

1. Acoustical tiles for interior ceilings.
2. Exposed, direct-hung, suspension systems.

1.3 REFERENCES

A. ASTM E 1264 - Standard Classification for Acoustical Ceiling Products.

B. Ceilings and Interior Systems Contractors Association (CISCA) Acoustical Ceilings: Use and Practice.

C. Ceilings and Interior Systems Contractors Association (CISCA) Acoustical Ceilings: Ceiling Systems Handbook.

D. UL - Fire Resistance Directory and Building Material Directory.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 SUBMITTALS

A. General: Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Submittals Package: Submit the Coordination Drawings, Product Data, Quality Control Submittals and Evaluation Reports specified below at the same time as a package.

E. Product Data: For each type of product including product testing data.

F. Samples: For each exposed product and for each color and texture specified, 6 inches in size.

G. Samples for Initial Selection: For components with factory-applied finishes.

H. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of sizes indicated below:

1. Acoustical Tiles: Set of full-size Samples of each type, color, pattern, and texture.
2. Suspension-System Members: 6-inch- long Sample of each type.
3. Exposed Moldings and Trim: Set of 6-inch- long Samples of each type and color.
4. Fasteners: Each type required.
5. Wire: 12 inches long piece.

I. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Ceiling suspension-system members.
2. Structural members to which suspension systems will be attached.
3. Method of attaching hangers to building structure.
4. Carrying channels or other supplemental support for hanger-wire attachment where conditions do not permit installation of hanger wires at required spacing.
5. Size and location of initial access modules for acoustical tile.
6. Items penetrating finished ceiling and ceiling-mounted items including the following:

    a. Lighting fixtures.
    b. Diffusers.
    c. Grilles.
    d. Sprinklers.
    e. Perimeter moldings.

7. Minimum Drawing Scale: 1/8 inch = 1 foot.

J. Quality Control Submittals:

1. 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. Names and addresses of 3 similar projects that each person has worked on during the past 5 years.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For finishes to include in maintenance manuals.

1.7 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. Acoustical Ceiling Units: Full-size tiles equal to 2 percent of quantity installed.
2. Suspension-System Components: Quantity of each grid and exposed component equal to 2 percent of quantity installed.

1.8 QUALITY ASSURANCE

A. Qualifications: The person(s) installing the ceiling system and their Supervisor shall be personally experienced in ceiling system work and shall have been regularly employed by a Company installing ceiling systems for a minimum of 5 years.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical tiles, suspension-system components, and accessories to Project site and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical tiles, permit them to reach room temperature and a stabilized moisture content.

1.10 FIELD CONDITIONS

A. Environmental Limitations: Do not install acoustical tile ceilings until spaces are enclosed and weathertight, 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. Environmental Requirements: Comply with acoustical units manufacturer’s printed temperature and ventilation requirements before, during, and after installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations:

1. Suspended Acoustical Tile Ceilings: Obtain each type of acoustical ceiling tile and its suspension system from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: Class A according to ASTM E1264.
2. Smoke-Developed Index: 50 or less.

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 or from the listings of another qualified testing agency.

C. Structural Performance and Suspension System Types:

1. Type HD/EG: Heavy duty, direct hung, exposed grid. (Minimum load carrying capability of main runners: 16 lb/lin ft).

2.3 ACOUSTICAL TILES: ACT-1

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. Armstrong World Industries, Inc.
2. CertainTeed Corporation; Saint-Gobain North America.
3. USG Corporation.
4. Approved equivalent.

B. Acoustical Tile Standard: Provide manufacturer's standard tiles of configuration indicated that comply with ASTM E1264 classifications as designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.

C. Classification: Provide tiles as follows:

1. Basis of Design: USG 808 Sandrift Acoustical Panels.

D. Color: White.

E. Light Reflectance (LR): Not less than 0.75 or greater.

F. Ceiling Attenuation Class (CAC): Not less than 30 or greater.

G. Noise Reduction Coefficient (NRC): Not less than 0.50-0.75.

H. Edge/Joint Detail: Shadowline, revealed edge.

I. Thickness: 3/4 inch.

J. Modular Size: 24 by 24 inches.

K. Antimicrobial Treatment: Manufacturer's standard broad spectrum, antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D3273, ASTM D3274, or ASTM G21 and evaluated according to ASTM D3274 or ASTM G21.

2.4 METAL SUSPENSION SYSTEM ACT-1

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. Armstrong World Industries, Inc.
2. CertainTeed Corporation; Saint-Gobain North America.
3. USG Corporation.
4. Approved equivalent.

B. Metal Suspension-System Standard: Provide manufacturer's standard, direct-hung, fully concealed, metal suspension system and accessories of type, structural classification, and finish indicated that complies with applicable requirements in ASTM C635.

1. High-Humidity Finish: Where indicated, provide coating tested and classified for "severe environment performance" according to ASTM C635.

C. Suspension System: Main and cross runners roll formed from and capped with cold-rolled steel sheet, prepainted, electrolytically zinc coated, or hot-dip galvanized, G30 coating designation.

1. Structural Classification: As indicated in PERFORMANCE article above-duty system.

2.5 ACOUSTICAL TILES: ACT-2

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. Armstrong World Industries, Inc.
2. CertainTeed Corporation; Saint-Gobain North America.
3. USG Corporation.
4. Approved equivalent.

B. Acoustical Tile Standard: Provide manufacturer's standard tiles of configuration indicated that comply with ASTM E1264 classifications as designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.

C. Classification: Provide tiles as follows:

1. Basis of Design: USG Kitchen Lay-In Panel.

D. Color: White.

E. Light Reflectance (LR): Not less than 0.90 or greater.

F. Ceiling Attenuation Class (CAC): Not less than 30 or greater.

G. Noise Reduction Coefficient (NRC): Not less than 0.50-0.75.

H. Edge/Joint Detail: Square.

I. Thickness: 5/8 inch.

J. Modular Size: 24 by 24 inches.

K. Antimicrobial Treatment: Manufacturer's standard broad spectrum, antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D3273, ASTM D3274, or ASTM G21 and evaluated according to ASTM D3274 or ASTM G21.

2.6 METAL SUSPENSION SYSTEM ACT-2

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. Armstrong World Industries, Inc.
2. CertainTeed Corporation; Saint-Gobain North America.
3. USG Corporation.
4. Approved equivalent.

B. Metal Suspension-System Standard:

1. Basis of Design: USG Donn Brand ZXLA 15/16” Acoustical Suspension System
2. Provide manufacturer's standard, direct-hung, fully concealed, metal suspension system and accessories of type, structural classification, and finish indicated that complies with applicable requirements in ASTM C635.

3. High-Humidity Finish: Where indicated, provide coating tested and classified for "severe environment performance" according to ASTM C635.

C. Suspension System: Main and cross runners roll formed from and capped with cold-rolled steel sheet, prepainted, electrolytically zinc coated, or hot-dip galvanized, G30 coating designation.

1. Structural Classification: As indicated in PERFORMANCE article above-duty system.

2.7 ACCESSORIES

A. Attachment Devices: Size for five times the design load indicated in ASTM C635/C635M, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.

1. Anchors in Concrete: Anchors of type and material indicated below, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to five times that imposed by ceiling construction, as determined by testing

according to ASTM E488 or ASTM E1512 as applicable, conducted by a qualified testing and inspecting agency.

a. Type: Cast-in-place anchors.
b. Corrosion Protection: Carbon-steel components zinc plated according to ASTM B633, Class SC 1 (mild) service condition.

2. 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 according to ASTM E1190, conducted by a qualified testing and inspecting agency.

B. Hanger Clips: Galvanized steel clips or clamps specifically designed for attachment to structural steel. Drive-on clips or clamps which depend on friction to hold the device are not acceptable.

C. Welded Studs: Low carbon steel copper flashed studs, 1/4 - 20 UNC, automatic short-cycle welded to a transformer-rectifier power source. When surface on which studs are to receive fireproofing, furnish studs of length to extend one inch below fireproofing.

D. Wire Hangers, Braces, and Ties: Provide wires as follows:

1. Zinc-Coated, Carbon-Steel Wire: ASTM A641, Class 1 zinc coating, soft temper.
2. Size: Wire diameter sufficient for its stress at three times hanger design load (ASTM C635, Table 1, "Direct Hung") will be less than yield stress of wire, but not less than 0.106-inch-diameter wire.

E. Miscellaneous Fasteners: Bolts, screws, and other fasteners recommended by suspension system manufacturer and necessary to install the Work.

2.8 METAL EDGE MOLDINGS AND TRIM

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. Armstrong World Industries, Inc.
2. CertainTeed Corporation; Saint-Gobain North America.
3. USG Corporation.
4. Approved equivalent.

B. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations complying with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for of suspension-system runners.

1. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.
2. Finish: Painted white.

C. Extruded-Aluminum Edge Moldings and Trim: Where indicated, provide manufacturer's extruded-aluminum edge moldings and trim of profile indicated or referenced by manufacturer's designations, including splice plates, corner pieces, and attachment and other clips, complying with seismic design requirements.

1. Baked-Enamel or Powder-Coat Finish: Minimum dry film thickness of 1.5 mils. Comply with ASTM C635 and coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing and substrates to which acoustical tile ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine acoustical tiles before installation. Reject acoustical tiles that are wet, moisture damaged, or mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Preparation for Existing Substrates: Remove dirt, dust, oil, grease, and other foreign matter that may impair proper bonding of the tile adhesive. Clean and prepare substrates in accordance with the adhesive manufacturer’s instructions and as specified.

1. Existing Painted Surfaces: Remove loose, peeling, and blistered coatings. Sand glossy surfaces to a dull finish.
2. Concrete Surfaces: Remove laitance, fins, and other defects that may impair bonding of the tile adhesive or may prevent alignment of tiles in a uniform plane.

B. Measure each ceiling area and establish layout of acoustical tiles to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width tiles at borders unless otherwise indicated, and comply with layout shown on reflected ceiling plans.

C. Layout openings for penetrations centered on the penetrating items.

3.3 INSTALLATION OF SUSPENDED ACOUSTICAL TILE CEILING SYSTEMS

A. Install suspended acoustical tile ceilings according to ASTM C636 and in accordance with manufacturer's written instructions, and CISCA “Ceiling System Handbook”.

B. Lay-out grid system as indicated, or if not indicated, lay out to a balanced design with edge units no less than 50 percent of acoustical unit size.

C. Suspend ceiling hangers from building's structural members and as follows:

1. Unless otherwise shown, secure the hangers to the construction as follows:

    a. Attachment to Existing Cast-in-Place Concrete: Attach hangers to clip angles, fastened to the concrete with expansion bolts or drive pins.
    b. Attachment to Structural Steel Framing: Clinch hanger around top of flange of steel member approximately 135 degrees. If framing member supports roof planks or precast slabs, bolt hanger to center of web or weld to bottom flange. Where applicable, hanger wires may be directly double wound around steel members with wires twisted together.
    c. Attachment to Steel Joists: Secure hanger with special clip or clamp designed for such use. Where applicable, hanger wires may be directly double wound around steel members with wires twisted together.
    d. Attachment to Steel Decks: Secure hangers with welded studs. Locate studs as close to the deck supports as possible. Install studs in accordance with manufacturer's printed instructions. After installation, clean stud welds and repair the affected areas of deck and studs with cold galvanizing compound. Attach hangers to studs with double nuts.

2. 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.
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.
4. Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly to structure or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
5. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
6. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
7. Do not attach hangers to steel deck tabs.
8. Do not hang grid system from walls, columns, ducts, pipes, and conduit.
9. Do not attach hangers to steel roof deck. Attach hangers to structural members.
10. Space hangers not more than 48 inches o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
11. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.

D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical tiles.

1. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends. Miter corners accurately and connect securely.
2. Do not use exposed fasteners, including pop rivets, on moldings and trim.

E. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

F. Install Hold Down Clips per the following:

1. Install hold-down clips at all locations where required to prevent ceiling panel movement due to air pressure changes, including areas near mechanical diffusers, supply air plenums, and building entrances.
2. Provide hold-down clips at each tile along exterior walls, at seismic separation joints, and at accessible panels as recommended by the manufacturer.
3. Hold-down clips shall be by the same manufacturer as the grid system.

3.4 INSTALLATION OF ACOUSTICAL TILES IN CONCEALED GRID SYSTEM

A. Install acoustical units in accordance with the manufacturer's printed instructions, unless otherwise shown or specified.

1. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
2. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
3. Scribe and cut acoustical units to fit accurately at borders and at penetrations.

B. Arrange directionally patterned acoustical tiles as follows:

1. As indicated on reflected ceiling plans.

C. Install acoustical tiles in coordination with suspension system and exposed moldings and trim. Place splines or suspension-system flanges into kerfed edges of tiles so tile-to-tile joints are interlocked.

1. Fit adjoining tiles to form flush, tight joints. Scribe and cut tiles for accurate fit at borders and around penetrations through ceiling.
2. Hold tile field in compression by inserting leaf-type, spring-steel spacers between tiles and moldings, spaced 12 inches o.c.
3. Protect lighting fixtures and air ducts according to requirements indicated for fire-resistance-rated assembly.

3.5 ERECTION TOLERANCES

A. Suspended Ceilings: Install main and cross runners level to a tolerance of 1/8 inch in 12 feet, non-cumulative.

B. Moldings and Trim: Install moldings and trim to substrate and level with ceiling suspension system to a tolerance of 1/8 inch in 12 feet, non-cumulative.

3.6 FIELD QUALITY CONTROL

A. Perform the following tests and inspections of completed installations of acoustical tile ceiling hangers and anchors and fasteners in successive stages and when installation of ceiling suspension systems on each floor has reached 20 percent completion, but no tiles have been installed. Do not proceed with installations of acoustical tile ceiling hangers for the next area until test results for previously completed installations of acoustical tile ceiling hangers show compliance with requirements.

1. Within each test area, testing agency will select one of every 10 power-actuated fasteners and postinstalled anchors used to attach hangers to concrete and will test them for 200 lbf of tension; it will also select one of every two postinstalled anchors used to attach bracing wires to concrete and will test them for 440 lbf of tension.
2. When testing discovers fasteners and anchors that do not comply with requirements, testing agency will test those anchors not previously tested until 20 pass consecutively and then will resume initial testing frequency.

B. Acoustical tile ceiling hangers, anchors, and fasteners will be considered defective if they do not pass tests and inspections.

C. Prepare test and inspection reports.

3.7 ADJUSTING

A. Clean exposed surfaces of acoustical tile ceilings, including trim and edge moldings. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage.

B. Remove and replace tiles and other ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 095123

SECTION 096513 - RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Thermoplastic-rubber base.

1.2 SUBMITTALS

A. General: Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer's installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

E. Samples: For each exposed product and for each color and texture specified, not less than 12 inches long.

F. Product Schedule: For resilient base and accessory products. Use same designations indicated on Drawings.

1.3 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. Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F.

1.5 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive resilient products during the following periods:

1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.

C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 THERMOSET-RUBBER BASE RB-1

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. Johnsonite; a Tarkett company.
2. Roppe Corporation; Roppe Holding Company.
3. Approved equivalent.

B. Product Standard: ASTM F1861, Type TS (rubber, vulcanized thermoset), Group I (solid, homogeneous).

1. Style and Location: as indicated in drawings and schedules

C. Thickness: 0.125 inch.

D. Height: 4 inches.

E. Lengths: Cut coils in manufacturer's standard length.

F. Outside Corners: Preformed.

G. Inside Corners: Preformed.

H. Colors: As indicated by manufacturer's designations, basis of design 123 Charcoal (Roppe).

2.2 THERMOSET-RUBBER BASE RB-2

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. Johnsonite; a Tarkett company.

2. Roppe Corporation; Roppe Holding Company.
3. Approved equivalent.

B. Product Standard: ASTM F1861, Type TS (rubber, vulcanized thermoset), Group I (solid, homogeneous).

1. Style and Location: as indicated in drawings and schedules

C. Thickness: 0.125 inch.

D. Height: 4 inches.

E. Lengths: Cut coils in manufacturer's standard length.

F. Outside Corners: Preformed.

G. Inside Corners: Preformed.

H. Colors: As selected by Director’s Representative from manufacturer's full range.

2.3 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.

C. Floor Polish: Provide protective, liquid floor-polish products recommended by resilient stair-tread manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

1. Installation of resilient products indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

1. Moisture Testing: Perform tests so that each test area does not exceed 1000 sq. ft., and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
b. Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.

B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

C. Do not install resilient products until materials are the same temperature as space where they are to be installed.

1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.

D. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

3.3 RESILIENT BASE INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.

G. Preformed Corners: Install preformed corners before installing straight pieces.

3.4 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.

B. Perform the following operations immediately after completing resilient-product installation:

1. Remove adhesive and other blemishes from surfaces.
2. Sweep and vacuum horizontal surfaces thoroughly.
3. Damp-mop horizontal surfaces to remove marks and soil.

C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION 096513

SECTION 096566 - RESILIENT ATHLETIC FLOORING

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:

1. Interlocking, rubber floor tile.

B. Related Requirements:

1. Section 096513 "Resilient Base and Accessories" for wall base and accessories installed with resilient athletic flooring.

1.3 COORDINATION

A. Coordinate layout and installation of flooring with floor inserts for gymnasium equipment.

1.4 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

E. Shop Drawings: Show installation details and locations of the following:

1. Floor patterns.
2. Layout, colors, widths, and dimensions of game lines and markers.
3. Locations of floor inserts for athletic equipment installed through flooring.

F. Samples: For each exposed product and for each type, color, and pattern specified, 6-inch- square in size and of the same thickness indicated for the Work.

G. Samples for Initial Selection: For each type of resilient athletic flooring.

H. Samples for Verification: For each type, color, and pattern of flooring specified, 6-inch- square in size and of same thickness and material indicated for the Work.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For resilient athletic flooring to include in maintenance manuals.

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. Floor Tile: Furnish no fewer than 1 box for each 50 boxes or fraction thereof, of each type, color, pattern, and size of floor tile installed.
2. Sheet Flooring: Furnish full-width rolls of not less than 10 linear feet for each 500 linear feet or fraction thereof, of each type, color, and pattern of flooring installed.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storing.

B. Store materials to prevent deterioration.

1. Store tiles on flat surfaces.
2. Store rolls upright.

1.8 FIELD CONDITIONS

A. Install flooring after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 INTERLOCKING, RUBBER FLOOR TILE <AF-1>

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. Amarco Products.
2. Conner Sports Surface Solutions.
3. Pawling Corporation.
4. Approved equivalent.

B. Description: Athletic flooring consisting of modular rubber tiles with precision cut, interlocking edges, for free-lay installation.

C. Material: Rubber.

D. Tile Interlock: Visible.

E. Traffic-Surface Texture: Nondirectional, stipple texture.

1. Provide reversible tiles (with traffic-surface texture on both sides).

F. Size: 24 inches square.

G. Thickness: 3/8 inch.

H. Weight: Not less than 12 lbs per tile.

I. Color and Pattern: As selected by Director's Representative from manufacturer's full range. Basis of Design: Mannington Commercial, Reset, Beige Tones.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances, moisture content, and other conditions affecting performance of the Work.

1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of flooring.

B. Concrete Substrates: Prepare according to ASTM F710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Alkalinity Testing: Perform pH testing according to ASTM F710. Proceed with installation only if pH readings are not less than 7.0 and not greater than 8.5.
3. Moisture Testing: Perform tests so that each test area does not exceed 1000 sq. ft., and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
b. Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.

C. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended in writing by manufacturer. Do not use solvents.

D. Use trowelable leveling and patching compound to fill cracks, holes, and depressions in substrates.

E. Move flooring and installation materials into spaces where they will be installed at least 48 hours in advance of installation unless manufacturer recommends a longer period in writing.

1. Do not install flooring until it is the same temperature as space where it is to be installed.

F. Sweep and vacuum clean substrates to be covered by flooring immediately before installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, and dust. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 FLOORING INSTALLATION, GENERAL

A. Comply with manufacturer's written installation instructions.

B. Scribe, cut, and fit flooring to butt neatly and tightly to vertical surfaces, equipment anchors, floor outlets, and other interruptions of floor surface.

C. Extend flooring into toe spaces, door reveals, closets, and similar openings unless otherwise indicated.

D. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating subfloor markings on flooring. Use nonpermanent, nonstaining marking device.

3.4 FLOOR TILE INSTALLATION

A. Lay out tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.

1. Lay tiles in pattern indicated.

B. Discard broken, cracked, chipped, or deformed tiles.

C. Tile Matching: Match tiles for color and pattern by selecting tiles from cartons in same sequence as manufactured and packaged if so numbered.

1. Lay tiles in pattern of colors and sizes indicated.

D. Free-Lay Tile: Place flooring at locations indicated with units securely interconnected and fully seated on substrate to form a smooth, level surface.

3.5 CLEANING AND PROTECTION

A. Perform the following operations immediately after completing flooring installation:

1. Remove adhesive and other blemishes from flooring surfaces.
2. Sweep and vacuum flooring thoroughly.
3. Damp-mop flooring to remove marks and soil after time period recommended in writing by manufacturer.

B. Protect flooring from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.

1. Do not move heavy and sharp objects directly over flooring. Protect flooring with plywood or hardboard panels to prevent damage from storing or moving objects over flooring.

END OF SECTION 096566

SECTION 096723 - RESINOUS FLOORING

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:

1. Resinous flooring.
2. Integral cove base accessories.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review manufacturer's written instructions for substrate preparation and environmental conditions affecting resinous flooring installation.
2. Review details of integral cove bases.
3. Review manufacturer's written instructions for installing resinous flooring systems.
4. Review protection measures for adjacent construction and installed flooring, floor drainage requirements, curbs, base details, and associated items.

1.4 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

1. Include manufacturer's technical data, installation instructions, and recommendations for each resinous flooring component required.

E. Samples for Verification: For each resinous flooring system required and for each color and texture specified, 6 inches square, applied to a rigid backing by Installer for this Project.

F. Product Schedule: Use resinous flooring designations indicated in Part 2 and room designations indicated on drawings in product schedule.

G. Qualification Data:

1. For Installer. Affidavit required under Quality Assurance Article.
2. For Installer. Installer certificates signed by manufacturer certifying that installers comply with specified requirements.

H. Material Certificates: For each resinous flooring component. Affidavit required under Article 3.1.

I. List of Completed Installations: At the request of the Director's Representative, furnish a list of at least 5 comparable installations of the submitted flooring materials with a satisfactory service life of not less than three years. Additionally, provide representative contact information for each project listed.

J. Material Test Reports: At the request of the Director's Representative, furnish test reports from an independent testing laboratory showing that the submitted flooring materials meet or exceed the specified physical properties and performance requirements.

K. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For resinous flooring to include in maintenance manuals. Deliver 2 copies of the flooring manufacturer's printed recommendations for the cleaning and maintenance of the installed flooring to the Director's Representative.

1.6 QUALITY ASSURANCE

A. No request substitution shall be considered that would change the generic type of floor system specified (ie. Epoxy based flake broadcast with urethane mortar base). Equivalent materials of other manufacturers may be substituted only on approval of Architect, Engineer, or Director's Representative. Request for substitution will only be considered if submitted 10 days prior to bid date. Request will be subject to specification requirements described in this section.

B. Installer Qualifications: Engage an experienced installer (applicator) who is experienced in applying resinous flooring systems similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance, and who is acceptable to resinous flooring manufacturer.

1. Engage an installer who is certified in writing by resinous flooring manufacturer as qualified to apply resinous floor systems as indicated.

2. Contractor shall have completed at least 10 projects of similar size and complexity. Furnish to the Director the names and addresses of these 10 similar projects which the foregoing people have worked on.

C. Source Limitations: Obtain primary resinous flooring materials, including primers, resins, hardening agents, grouting coats, and topcoats, through one source from a single manufacturer, with not less than ten years of successful experience in manufacturing and installing principal materials described in this section. Provide secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from source recommended by manufacturer of primary materials.

D. Manufacturer Field Technical Service Representatives: Resinous flooring manufacture shall retain the services of Field Technical Service Representatives who are trained specifically on installing the system to be used on the project.

1. Field Technical Services Representatives shall be employed by the system manufacture to assist in the quality assurance and quality control process of the installation and shall be available to perform field problem solving issues with the installer.

E. Mockups: Apply mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Apply full-thickness mockups on 48-inch- square floor area as selected by Architect.

    a. Include 48-inch length of integral cove base with inside and outside corner.

2. Simulate finished lighting conditions for Director’s Representative's review of mockups. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Director’s Representative specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

F. Pre-installation Conference:

1. General contractor shall arrange a meeting not less than thirty days prior to starting work.
2. Attendance:

    a. General Contractor.
    b. Architect/Director's Representative.
    c. Manufacturer/Installer's Representative.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage and mixing with other components.

B. Store materials to prevent deterioration from moisture, heat, cold, direct sunlight, or other detrimental effects.

C. All materials used shall be factory pre-weighed and pre-packaged in single, easy to manage batches to eliminate on site mixing errors. No on site weighing or volumetric measurements allowed.

1.8 FIELD CONDITIONS

A. Environmental Limitations: Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring application.

1. Maintain material and substrate temperature between 65 and 85 deg F (18 and 30 deg C) during resinous flooring application and for not less than 24 hours after application.

B. Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring application.

C. Close spaces to traffic during resinous flooring application and for not less than 24 hours after application, unless manufacturer recommends a longer period.

D. Concrete substrate shall be properly cured for a minimum of 30 days. A vapor barrier must be present for concrete subfloors on or below grade. Otherwise, an osmotic pressure resistant grout must be installed prior to the resinous flooring.

1.9 WARRANTY

A. Manufacturer shall furnish a single, written warranty covering both material and workmanship for a period of (1) one full years from date of installation, or provide a joint and several warranty signed on a single document by material manufacturer and applicator jointly and severally warranting the materials and workmanship for a period of (1) one full year from date of installation. A sample warranty letter must be included with bid package or bid may be disqualified.

PART 2 - PRODUCTS

2.1 RESINOUS FLOORING AND BASE (ERF-1)

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include,

1. Build of Broadcast or liquid rich type systems will not be accepted and will result in a disqualification from bid.
2. All Accessory Materials must be from the same Flooring Manufacturer.

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Stonhard; Stontec-TRF (Basis of Design).
b. Dex-O-Tex; Tek-Crete TT/Bio-Tex CF.

c. Key Resin; Key Urecon Chip/Flake #100.

C. System Characteristics:

1. Color and Pattern: As selected by Director's Representative from manufacturer's full range.
2. Wearing Surface: Standard.
3. Integral Cove Base: At all ERF-1 floor locations.
4. Overall System Thickness: Nominal 3/16", 5mm.

D. System Components: Manufacturer's standard components that are compatible with each other and as follows:

1. Primer:

a. Material Basis: Stonhard Urethane Primer.
b. Resin: Urethane.
c. Formulation Description: (2) two component, low viscosity, urethane.
d. Application Method: Squeegee and nap roller.
e. Number of Coats: (1) one.

2. Body Coat(s):

a. Material Basis: Stonclad UR.
b. Resin: Urethane 100% solids.
c. Formulation Description: 4 components.
d. Application Method: Screed and Metal trowel.

1) Thickness of Coats: 1/8"/ 3mm, with primer coat.
2) Number of Coats: One.

3. Under coat: Bonding coat for vinyl flake broadcast.

a. Material Basis: Stontec epoxy undercoat.
b. Resin: Epoxy.
c. Formulation Description: 100% solids.
d. Type: Pigmented.
e. Number of Coats: One.

4. Broadcast: Vinyl Flake.

a. Material Basis: Stontec Flake.
b. Formulation Description: Decorative flake for broadcasting.
c. Type: Tweed (chips to be mixed in Mfg. facility).
d. Finish: Standard.
e. Number of Coats: one.

5. Topcoat:

a. Material Basis: Stonseal CA7.
b. Resin: Aliphatic polyaspartic.
c. Formulation Description: Two-component, UV resistant.

d. Type: Clear.
e. Finish: Gloss.
f. Number of Coats: Two.

Note: Components listed above are the basis of design intent; all bids will be compared to this standard including resin chemistry, color, wearing surface, thickness, and installation procedures, including number of coats. Contractor shall be required to comply with all the requirements of the Specifications and all of the components required by the Specifications, whether or not such products are specifically listed above.

2.2 RESINOUS FLOORING AND BASE (ERF-2)

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include:

1. Build of Broadcast or liquid rich type systems will not be accepted and will result in a disqualification from bid.
2. All Accessory Materials must be from the same Flooring Manufacturer.

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Stonhard; Stonclad GS/StonKote GS4 (Basis of Design).
b. Dex-O-Tex; Tek-Crete SL-B.
c. Key Resin; Key Mortar STD.

C. System Characteristics:

1. Color and Pattern: As selected by Director’s Representative from manufacturer's full range.
2. Wearing Surface: Standard smooth.
3. Integral Cove Base: At all ERF-2 floor locations.
4. Overall System Thickness: Nominal ¼”.

D. System Components: Manufacturer's standard components that are compatible with each other and as follows:

1. Primer:

a. Material Basis: Stonhard Standard Primer.
b. Resin: Epoxy.
c. Formulation Description: (2) two component, 100 percent solids.
d. Application Method: Squeegee and roller.
e. Number of Coats: (1) one.

2. Mortar Base:

a. Material Basis: Stonclad GS.
b. Resin: Urethane Epoxy.
c. Formulation Description: (3) three component, 100 percent solids.
d. Application Method: Metal trowel.

1) Thickness of Coats: nominal 1/4 inch.
2) Number of Coats: One.

e. Aggregates: Pigmented Blended aggregate.

3. Topcoat:

a. Material Basis: Stonkote GS4.
b. Resin: Epoxy.
c. Formulation Description: (2) two component 100 percent solids.
d. Type: Pigmented.
e. Finish: Standard.
f. Number of Coats: One.

Note: Components listed above are the basis of design intent; all bids will be compared to this standard including resin chemistry, color, wearing surface, thickness, and installation procedures, including number of coats. Contractor shall be required to comply with all the requirements of the Specifications and all of the components required by the Specifications, whether or not such products are specifically listed above.

E. System Physical Properties: Provide resinous flooring system with the following minimum physical property requirements when tested according to test methods indicated:

1. Compressive Strength: 10,000 psi after 7 days per ASTM C 579.
2. Tensile Strength: 1,750 psi per ASTM C 307.
3. Flexural Strength: 4,000 psi per ASTM C 580.
4. Water Absorption: < 1% per ASTM C 413.
5. Impact Resistance: > 160 in. lbs. per ASTM D 2794.
6. Flammability: Class 1 per ASTM E-648.
7. Hardness: .85 to .90, Shore D per ASTM D 2240.
8. Flexural Modulus of Elasticity: $2.0x10^{6}$ psi per ASTM C-580.
9. Thermal Coefficient of Linear Expansion: $1.4x10^{-5}$ in./in.˚F per ASTM C-531.

2.3 ACCESSORY MATERIALS

A. Patching, Leveling, and Fill Material: Resinous product of or approved by resinous flooring manufacturer and recommended by manufacturer for application indicated.

B. Joint Sealant: Type recommended or produced by resinous flooring manufacturer for type of service and joint condition indicated. Allowances should be included for Stonflex MP7 joint fill material.

C. Crack Treatment: Type recommended or produced by resinous flooring manufacturer. Allowances should be included for Stonproof CT5 Crack Treatment. Allowances should be included for Stonflex MP7 joint fill material.

D. Waterproof membrane: If required, Stonproof ME7 to be used for waterproofing.

a. Two component 25 mil urethane membrane…1 coat.

E. Pitching materials: If required, Stonset TG5 or TG6 will be required for fill or pitching.

a. TG6: Four component urethane grout system….1 coat.

F. Moisture Mitigation System: If required, polymer modified, cementitious grout, to be installed prior to overlayment. Allowances should be included or line itemed for Stonfil OP2 by Stonhard. Moisture Mitigation System: If required, polymer modified, cementitious grout, to be installed prior to overlayment. Allowances should be included or line itemed for Stonfil OP2 by Stonhard. Not required with Stontec TRF® when installed over a new substrate with a properly installed vapor barrier, elevated substrates, or over a wood substrate.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Certification: Furnish affidavit by the flooring installer that the surfaces to receive the Work of this Section have been examined and are acceptable for application of the approved flooring. Do not install the flooring until such certification has been acknowledged by the Director in writing.

3.2 PREPARATION

A. General: Prepare and clean substrates according to resinous flooring manufacturer's written instructions for substrate indicated. Provide clean, dry, and neutral Ph substrate for resinous flooring application.

B. Concrete Substrates: Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with resinous flooring.

1. Mechanically prepare substrates as follows:

a. Shot-blast surfaces with an apparatus that abrades the concrete surface, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup.
b. Comply with ASTM C 811 requirements, unless manufacturer's written instructions are more stringent.

2. Repair damaged and deteriorated concrete according to resinous flooring manufacturer's written recommendations.

a. Perform in situ probe test, ASTM F 2170. Proceed with application only after substrates do not exceed a maximum potential equilibrium relative humidity of 75 percent.
b. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with application only after substrates have maximum moisture-vapor-emission rate of 7 lb of water/1000 sq. ft. of slab in 24 hours.
c. Perform additional moisture tests recommended by manufacturer. Proceed with application only after substrates pass testing.

3. Verify that concrete substrates have neutral Ph and that resinous flooring will adhere to them. Perform tests recommended by manufacturer. Proceed with application only after substrates pass testing.

C. Resinous Materials: Mix components and prepare materials according to resinous flooring manufacturer's written instructions.

D. Use patching and fill material to fill holes and depressions in substrates according to manufacturer's written instructions. Resinous materials only.

E. Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written recommendations.

3.3 INSTALLATION

A. General: Apply components of resinous flooring system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness indicated.

1. Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate, and optimum intercoat adhesion.
2. Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during application and curing processes.
3. At substrate expansion and isolation joints, provide joint in resinous flooring to comply with resinous flooring manufacturer's written recommendations.

    a. Apply joint sealant to comply with manufacturer's written recommendations.

B. Apply primers where required by resinous system, over prepared substrate at manufacturer's recommended spreading rate.

C. Integral Cove Base: Apply cove base mix to wall surfaces before applying flooring. Apply according to manufacturer's written instructions and details including those for taping, mixing, priming, troweling, sanding, and top coating of cove base. Round internal and external corners. Refer to detail drawings.

D. Mix and apply mortar base as indicated for flooring system and at coverage rates recommended in writing by manufacturer. Screed mortar materials, compact and smooth mortar base with steel finishing trowels.

E. Apply undercoat bonding for broadcast flakes. squeegee in thickness indicated for flooring system. Back roll liquids with finish rollers.

F. Broadcasts: Vinyl chip, in number of coats indicated for flooring system and at spreading rates recommended in writing by manufacturer.

G. Apply topcoat(s) in number of coats indicated for flooring system and at spreading rates recommended in writing by manufacturer.

3.4 TERMINATIONS

A. Chase edges to “lock” the coating system into the concrete substrate along lines of termination.

B. Penetration Treatment: Lap and seal coating onto the perimeter of the penetrating item by bridging over compatible elastomer at the interface to compensate for possible movement.

C. Trenches: Continue coating system into trenches to maintain monolithic protection. Treat cold joints to assure bridging of potential cracks.

D. Treat floor drains by chasing the coating to lock in place at point of termination.

3.5 JOINTS AND CRACKS

A. Treat control joints to bridge potential cracks and to maintain monolithic protection.

B. Treat cold joints and construction joints to bridge potential cracks and to maintain monolithic protection on horizontal and vertical surfaces as well as horizontal and vertical interfaces.

C. Discontinue floor coating system at vertical and horizontal contraction and expansion joints by installing backer rod and compatible sealant after coating installation is completed. Provide sealant type recommended by manufacturer for traffic conditions and chemical exposures to be encountered.

3.6 FIELD QUALITY CONTROL

A. Material Sampling: Director’s Representative may at any time and any numbers of times during resinous flooring application require material samples for testing for compliance with requirements.

1. Director’s Representative will engage an independent testing agency to take samples of materials being used. Material samples will be taken, identified, sealed, and certified in presence of Contractor.
2. Testing agencies will test samples for compliance with requirements, using applicable referenced testing procedures or, if not referenced, using testing procedures listed in manufacturer's product data.
3. If test results show applied materials do not comply with specified requirements, pay for testing, remove noncomplying materials, prepare surfaces coated with unacceptable materials, and reapply flooring materials to comply with requirements.

3.7 CLEANING, PROTECTING, AND CURING

A. Cure resinous flooring materials in compliance with manufacturer's directions, taking care to prevent contamination during stages of application and prior to completion of curing process. Close area of application for a minimum of 18 hours.

B. Protect resinous flooring materials from damage and wear during construction operation. Where temporary covering is required for this purpose, comply with manufacturer's recommendations

for protective materials and method of application. General Contractor is responsible for protection and cleaning of surfaces after final coats.

C. Cleaning: Remove temporary covering and clean resinous flooring just prior to final inspection. Use cleaning materials and procedures recommended by resinous flooring manufacturer.

END OF SECTION 096723

SECTION 096813 - TILE CARPETING

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:

1. Modular carpet tile.

B. Related Requirements:

1. Section 096513 "Resilient Base and Accessories" for resilient wall base and accessories installed with carpet tile.

1.3 REFERENCES

A. AATCC - The American Association of Textile Chemists and Colorists, Research Triangle Park, NC 27709, www.aatcc.org.

B. CRI – Carpet and Rug Institute, Dalton, GA 30722-2048, www.carpet-rug.com.

1.4 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.

1.5 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

1. Include manufacturer's written data on physical characteristics, durability, and fade resistance, including the following:

    a. Trade name and number.
    b. Manufacturer.
    c. Address of mill constructing carpet.
    d. Construction type.
    e. Gage.
    f. Stitches per inch.
    g. Pile height.
    h. Face yarn.
    i. Face yarn weight.
    j. Weight density factor.
    k. Primary backing.
    l. Secondary backing.
    m. Total weight.
    n. Dye method.
    o. Tuft bind.
    p. Static resistance.
    q. Flammability.

2. Adhesive.
3. Include manufacturer's written installation recommendations for each type of substrate.
4. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tiles.
5. Carpet tile type, color, and dye lot.
6. Type of subfloor.
7. Type of installation.
8. Pattern of installation.
9. Pattern type, location, and direction.
10. Pile direction.
11. Type, color, and location of insets and borders.
12. Type, color, and location of edge, transition, and other accessory strips.
13. Transition details to other flooring materials.

E. 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- long Samples.

F. Product Schedule: For carpet tile. Use same designations indicated on Drawings.

G. Qualification Data: For Installer.

H. Product Test Reports: For carpet tile, for tests performed by a qualified testing agency.

I. Sample Warranty: For special warranty.

1.6 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.

1.7 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..

1.8 QUALITY ASSURANCE

A. Installer Qualifications: The persons installing the tile carpeting and their Supervisor shall be experienced in carpeting installation, including the requirements of the tile carpeting manufacturer, and shall have been regularly employed by a company engaged in installation of carpeting for a minimum of 5 years.

1. Furnish to the Director’s Representative the names and addresses of 5 similar projects which the foregoing people have worked on during the past 3 years.

B. Certifications: Furnish certification from tile carpeting installer that the substrate surfaces have been examined and are acceptable for installation of the Work of this Section.

C. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.

1. Build mockups at locations and in sizes shown on Drawings.
2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Comply with the Carpet and Rug Institute's CRI 104.

B. Deliver tile carpeting in original carpet mill packaging with each package having labels legible and intact.

1.10 FIELD CONDITIONS

A. Comply with the Carpet and Rug Institute's CRI 104 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 levels planned for building occupants 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. Do not install the Work of this Section until painting, finishing Work, and Work of other trades has been completed.

1.11 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, the following:

a. More than 10 percent edge raveling, snags, and runs.
b. Dimensional instability.
c. Excess static discharge.
d. Loss of tuft-bind strength.
e. Loss of face fiber.
f. Delamination.

3. Warranty Period: Minimum 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CARPET TILE <CPT-1 >

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. Interface, LLC.
2. Mannington Mills, Inc.
3. Milliken & Company.
4. Shaw Contract Group; a Berkshire Hathaway company.
5. Mohawk Industries, Inc.
6. Approved equivalent.

B. Color: As selected by Director's Representative from manufacturer's full range.

C. Pattern: As selected by Director's Representative from manufacturer's full range. Basis of Design: Mannington Commercial, Renewed Refinement, Chic Revivals.

D. Fiber Content: 100 percent nylon 6, 6.

E. Pile Characteristic: Tufted, textured loop pile (Random Pattern).

F. Density: Minimum 5,000 oz./cu. yd..

G. Pile Thickness: Minimum 0.130 inches for finished carpet tile according to ASTM D6859.

H. Stitches: Minimum 8.3 per inch.

I. Gage: Minimum 1/8 ends per inch.

J. Surface Pile Weight: 20 oz./sq. yd.

K. Primary Backing: Manufacturer's standard vinyl or thermoplastic hard-backing or integral-cushion thermoplastic backing system, recyclable content, maintaining a 100 percent moisture barrier between secondary backing and the floor substrate. Pre-adhered backing system may be used as an alternate without an applied releasable adhesive to surface substrate.

L. Size: 12 x 36, 24x24, or 24 x36 inches.

M. Applied Treatments:

1. Soil-Resistance Treatment: Manufacturer's standard treatment.
2. Antimicrobial Treatment: Manufacturer's standard treatment that protects carpet tiles as follows:

    a. Antimicrobial Activity: Not less than 2-mm halo of inhibition for gram-positive bacteria, not less than 1-mm halo of inhibition for gram-negative bacteria, and no fungal growth, according to AATCC 174.

N. Performance Characteristics:

1. Flammability Certification:

    a. Radiant Panel Flooring Flammability Test: NFPA 253. Class I, Minimum 0.45 watts per sq centimeter.
    b. Methenamine Tablet Test: DOC-FF-1-70 and ASTM D 2859. Meet the "Standards for the Surface Flammability of Carpets".
    c. Smoke Density Test: NFPA 258 and ASTM E 662. Specific optical density (DM) of 450 or less (flaming).

2. Appearance Retention Rating: Severe traffic, 3.5 minimum according to ASTM D7330.
3. Critical Radiant Flux Classification: Not less than 0.45W/sq. cm according to NFPA 253.
4. Dry Breaking Strength: Not less than 100 lbf according to ASTM D2646.
5. Tuft Bind: Not less than 12 lbf according to ASTM D1335.

6. Dimensional Tolerance: Within 1/32 inch of specified size dimensions, as determined by physical measurement.
7. Dimensional Stability: 0.2 percent or less according to ISO 2551 (Aachen Test).
8. Electrostatic Propensity: Less than 3.5 kV according to AATCC 134.
9. Stain Resistance: AATCC 175. Rating of 8 or better.
10. Dimensional Stability: Aachen Method DIN 54318, 0.2 percent or less.

2.2 CARPET TILE <CPT-2 >

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. Interface, LLC.
2. Mannington Mills, Inc.
3. Milliken & Company.
4. Shaw Contract Group; a Berkshire Hathaway company.
5. Mohawk Industries, Inc.
6. Approved equivalent.

B. Color: As selected by Director’s Representative from manufacturer's full range.

C. Pattern: Basis of Design: Shaw Contract Group, Welcome II 5T031.

D. Fiber Content: 100 percent nylon 6, 6.

E. Pile Characteristic: Tufted, textured loop pile (Random Pattern).

F. Density: Minimum 5,000 oz./cu. yd..

G. Pile Thickness: Minimum 0.130 inches for finished carpet tile according to ASTM D6859.

H. Stitches: Minimum 8.3 per inch.

I. Gage: Minimum 1/8 ends per inch.

J. Surface Pile Weight: 20 oz./sq. yd..

K. Primary Backing: Manufacturer’s standard vinyl or thermoplastic hard-backing or integral-cushion thermoplastic backing system, recyclable content, maintaining a 100 percent moisture barrier between secondary backing and the floor substrate. Pre-adhered backing system may be used as an alternate without an applied releasable adhesive to surface substrate.

L. Size: 24 x 24 inches.

M. Applied Treatments:

1. Soil-Resistance Treatment: Manufacturer's standard treatment.
2. Antimicrobial Treatment: Manufacturer's standard treatment that protects carpet tiles as follows:

a. Antimicrobial Activity: Not less than 2-mm halo of inhibition for gram-positive bacteria, not less than 1-mm halo of inhibition for gram-negative bacteria, and no fungal growth, according to AATCC 174.

N. Performance Characteristics:

1. Flammability Certification:

a. Radiant Panel Flooring Flammability Test: NFPA 253. Class I, Minimum 0.45 watts per sq centimeter.
b. Methenamine Tablet Test: DOC-FF-1-70 and ASTM D 2859. Meet the "Standards for the Surface Flammability of Carpets".
c. Smoke Density Test: NFPA 258 and ASTM E 662. Specific optical density (DM) of 450 or less (flaming).

2. Appearance Retention Rating: Severe traffic, 3.5 minimum according to ASTM D7330.
3. Critical Radiant Flux Classification: Not less than 0.45W/sq. cm according to NFPA 253.
4. Dry Breaking Strength: Not less than 100 lbf according to ASTM D2646.
5. Tuft Bind: Not less than 12 lbf according to ASTM D1335.
6. Dimensional Tolerance: Within 1/32 inch of specified size dimensions, as determined by physical measurement.
7. Dimensional Stability: 0.2 percent or less according to ISO 2551 (Aachen Test).
8. Electrostatic Propensity: Less than 3.5 kV according to AATCC 134.
9. Stain Resistance: AATCC 175. Rating of 8 or better.
10. Dimensional Stability: Aachen Method DIN 54318, 0.2 percent or less.

2.3 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 comply with flammability requirements for installed carpet tile, and are recommended by carpet tile manufacturer for releasable installation.

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.

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.

B. Examine carpet tile for type, color, pattern, and potential defects.

C. Concrete Slabs: Verify that finishes comply with requirements specified in Section 033000 "Cast-in-Place Concrete" and that surfaces are free of cracks, ridges, depressions, scale, and foreign deposits.

1. Moisture Testing: Perform tests so that each test area does not exceed 1000 sq. ft., and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
b. Relative Humidity Test: Using in situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.
c. Perform additional moisture tests recommended in writing by adhesive and carpet tile manufacturers. Proceed with installation only after substrates pass testing.

D. Painted Subfloors: Perform bond test recommended in writing by adhesive manufacturer.

1. Access Flooring Systems: Verify the following:

a. Access floor substrate is compatible with carpet tile and adhesive if any.
b. Underlayment surface is flat, smooth, evenly planed, tightly jointed, and free of irregularities, gaps greater than 1/8 inch, protrusions more than 1/32 inch, and substances that may interfere with adhesive bond or show through surface.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. General: Comply with the Carpet and Rug Institute's CRI 104 and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile.

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 wide or wider, and protrusions more than 1/32 inch unless more stringent requirements are required by manufacturer's written instructions.

C. Concrete Substrates: 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 adhesive and carpet tile manufacturers.

D. Concrete Substrates: Prepare according to ASTM F710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Alkalinity Testing: Perform pH testing according to ASTM F710. Proceed with installation only if pH readings are not less than 7.0 and not greater than 8.5.

3. Moisture Testing: Perform tests so that each test area does not exceed 1000 sq. ft., and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

    a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
    b. Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.

E. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

F. Existing Resilient Sheet Flooring: Remove existing resilient sheet flooring.

G. Existing Resilient Tile Flooring:

1. Remove wax using liquid stripper or mechanical removal.
2. Remove loose tiles and replace or patch as necessary.

3.3 INSTALLATION

A. General: Comply with the Carpet and Rug Institute's CRI 104, Section 10, "Carpet Tile," and with carpet tile manufacturer's written installation instructions.

B. Installation Method: As recommended in writing by carpet tile manufacturer.

C. Maintain dye-lot integrity. Do not mix dye lots in same area.

D. Maintain pile-direction patterns indicated on Drawings.

E. 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.

F. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

G. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on carpet tile as marked on subfloor. Use nonpermanent, nonstaining marking device.

H. Install pattern parallel to walls and borders.

3.4 CLEANING AND PROTECTION

A. Perform the following operations immediately after installing carpet tile:

1. Remove excess adhesive 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 the Carpet and Rug Institute's CRI 104, Section 13.7.

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 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:

1. Vinyl wall covering.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

1. Include data on physical characteristics, durability, fade resistance, and fire-test-response characteristics.

E. Shop Drawings: Show location and extent of each wall-covering type. Indicate pattern placement, veneer matching seams and termination points.

F. Samples: For each type of wall covering and for each color, pattern, texture, and finish specified, full width by 36 inches long in size.

1. Wall-Covering Sample: From same production run to be used for the Work, with specified treatment and/or paint applied.

a. Show complete pattern repeat.
b. Mark top and face of fabric.

2. Wood-Veneer Wall-Covering Sample: From same flitch to be used for the Work, with specified finish applied.

G. Product Schedule: For wall coverings. Use same designations indicated on Drawings.

H. Product Test Reports: For each wall covering, for tests performed by a qualified testing agency.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For wall coverings to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same production run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Wall-Covering Materials: For each type, color, texture, and finish, full width by length to equal to 5 percent of amount installed.

1.7 QUALITY ASSURANCE

A. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and to set quality standards for installation.

1. Build mockups for each type of wall covering on each substrate required. Comply with requirements in ASTM F1141 for appearance shading characteristics.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Director's Representative 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.

1.8 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install wall coverings until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work above ceilings is complete, and HVAC system is operating and maintaining ambient temperature and humidity conditions at levels intended for occupants after Project completion during the remainder of the construction period.

1. Wood-Veneer Wall Coverings: Condition spaces for not less than 48 hours before installation.

B. Lighting: Do not install wall covering until lighting that matches conditions intended for occupants after Project completion 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.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: As determined by testing identical wall coverings applied with identical adhesives to substrates in accordance with test method indicated below by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Surface-Burning Characteristics: Comply with ASTM E84; 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.

2. Fire-Growth Contribution: No flashover and heat and smoke release when tested in accordance with NFPA 265.

2.2 VINYL WALL COVERING <WC-1>

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. Arc-Com.
2. DesignTex Inc.
3. Innovations.
4. Knoll, Inc.
5. Maharam.
6. Wolf-Gordon.
7. Koroseal Interior Products, LLC.
8. Nekoosa Coated Products, LLC.
9. Approved equivalent.

B. Description: Provide vinyl products in rolls from same production run and complying with the following:

1. FS CCC-W-408D and Wallcovering Association's W-101 for Type II, Medium Duty.
2. ASTM F793 for strippable wall coverings.

    a. Category: II, Decorative with Medium Serviceability.

C. Total Weight: 20 oz/yd^2 minimum, excluding coatings.

D. Width: 52 inches.

E. Backing: Nonwoven.

F. Repeat: 33 inch.

G. Colors, Textures, and Patterns: Basis of Design: Koroseal, Pattern: Canopy, Color: Luna CL02-02.

2.3 VINYL WALL COVERING <WC-2,WC-5 through WC-9>

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. Arc-Com.
2. DesignTex Inc.
3. Innovations.
4. Knoll, Inc.
5. Maharam.
6. Wolf-Gordon.
7. Koroseal Interior Products, LLC.
8. Nekoosa Coated Products, LLC.
9. Approved equivalent.

B. Description: Provide vinyl products in rolls from same production run and complying with the following:

1. FS CCC-W-408D and Wallcovering Association's W-101 for Type II, Medium Duty.
2. ASTM F793 for strippable wall coverings.

a. Category: II, Decorative with Medium Serviceability.

C. Total Weight: 20 oz/yd^2 minimum, excluding coatings.

D. Width: Custom/Project Specific.

E. Backing: Nonwoven vinyl.

F. Repeat: Custom/Project Specific.

G. Colors, Textures, and Patterns: Basis of Design: Koroseal, Digital Lab, PVC Free Vinyl Substrate with custom graphic as selected by Owner’s Representative.

2.4 VINYL WALL COVERING <WC-3>

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. Arc-Com.
2. DesignTex Inc.
3. Innovations.

4. Knoll, Inc.
5. Maharam.
6. Wolf-Gordon.
7. Koroseal Interior Products, LLC.
8. Nekoosa Coated Products, LLC.
9. Approved equivalent.

B. Description: Provide vinyl products in rolls from same production run and complying with the following:

1. FS CCC-W-408D and Wallcovering Association's W-101 for Type II, Medium Duty.
2. ASTM F793 for strippable wall coverings.

a. Category: II, Decorative with Medium Serviceability.

C. Total Weight: 410-420 gsm.

D. Width: 54 inches.

E. Backing: Nonwoven vinyl.

F. Repeat: Custom/Project Specific.

G. Mildew Resistance: Rating of zero or 1 when tested in accordance with ASTM G21.

H. Colors, Textures, and Patterns: Basis of Design: Nekoosa, Trifecta Vinyl, with GR-2 custom decal graphic as provided by Owner’s Representative.

2.5 VINYL WALL COVERING <WC-4>

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. Arc-Com.
2. DesignTex Inc.
3. Innovations.
4. Knoll, Inc.
5. Maharam.
6. Wolf-Gordon.
7. Koroseal Interior Products, LLC.
8. Nekoosa Coated Products, LLC.
9. Approved equivalent.

B. Description: Provide vinyl products in rolls from same production run and complying with the following:

1. FS CCC-W-408D and Wallcovering Association's W-101 for Type II, Medium Duty.
2. ASTM F793 for strippable wall coverings.

a. Category: II, Decorative with Medium Serviceability.

C. Total Weight: 410-420 gsm.

D. Width: 54 inches.

E. Backing: Nonwoven vinyl.

F. Repeat: Custom/Project Specific.

G. Mildew Resistance: Rating of zero or 1 when tested in accordance with ASTM G21.

H. Colors, Textures, and Patterns: Basis of Design: Nekoosa, Trifecta Vinyl, with GR-2 custom decal graphic as provided by Owner's Representative.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation surfaces being true in plane and vertical and horizontal alignment, maximum moisture content, and other conditions affecting performance of the Work.

B. 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 bond of wall covering, including dirt, oil, grease, mold, and mildew.

C. Prepare substrates to achieve a smooth, dry, clean, structurally sound surface free of flaking, unsound coatings, cracks, and defects.

1. Moisture Content: Maximum of 5 percent on new drywall, plaster, concrete, and concrete masonry units when tested with an electronic moisture meter.
2. Plaster: Allow plaster to cure for at least 90 days. Neutralize areas of high alkalinity. Apply primer/sealer as recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.
3. Existing Cementitious Plaster: Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Repair defects including dents and chips more than 1/4 inch in size and all holes and cracks by filling with cementitious patching compound and sanding smooth. Remove protruding fasteners.
4. Existing Gypsum Plaster: Repair defects including dents and chips more than 1/8 inch in size and all holes and cracks by filling with gypsum-plaster patching compound and sanding smooth. Remove protruding fasteners.
5. Metals: If not factory primed, clean and apply metal primer as recommended in writing by metal-primer manufacturer and wall-covering manufacturer.

6. Existing Metals: Treat repair locations by wire-brushing and solvent cleaning. Use mechanical rust removal method to clean off rust. Repair non-load-bearing defects in existing metal surfaces, including dents and gouges more than 1/8 inch deep by filling with metal-patching compound and sanding smooth. Remove burrs and protruding fasteners.
7. Gypsum Board: Apply primer/sealer as recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.
8. Existing Gypsum Board: Repair defects including dents and chips more than 1/8 inch in size and all holes and cracks by filling with spackle and sanding smooth. Remove protruding fasteners.
9. Painted Surfaces:

    a. Check for pigment bleeding. Apply primer/sealer to areas susceptible to pigment bleeding as recommended in writing by primer/sealer manufacturer.
    b. Sand gloss, semigloss, and eggshell finishes with fine sandpaper.

D. Remove hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.

E. Acclimatize wall-covering materials by removing them from packaging in the installation areas not less than 24 hours before installation.

3.3 INSTALLATION OF WALL LINER

A. Install wall liner, without gaps or overlaps. Form smooth wrinkle-free surface for finished installation. Do not begin wall-covering installation until wall liner has dried.

3.4 INSTALLATION OF WALL COVERING

A. Comply with wall-covering manufacturers' written installation instructions applicable to products and applications indicated.

B. Cut wall-covering strips in roll number sequence. Change the roll numbers at partition breaks and corners.

C. Install strips in same order as cut from roll.

1. For solid-color, even-texture, or random-match wall coverings, reverse every other strip.

D. Install wall covering without lifted or curling edges and without visible shrinkage.

E. Install seams vertical and plumb at least 6 inches from outside corners and 3 inches from inside corners unless a change of pattern or color exists at corner. Horizontal seams are not permitted.

F. Trim edges and seams for color uniformity, pattern match, and tight closure. Butt seams without overlaps or gaps between strips.

G. Fully bond wall covering to substrate. Remove air bubbles, wrinkles, blisters, and other defects.

3.5 CLEANING

A. Remove excess adhesive at 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 098436 - SOUND-ABSORBING CEILING UNITS

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 shop-fabricated, acoustical panel units tested for acoustical performance, including the following:

1. Sound-absorbing ceiling panels.
2. Sound-diffusing ceiling panels.

1.3 DEFINITIONS

A. NRC: Noise Reduction Coefficient.

B. SAA: Sound Absorption Average.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

1. Include panel edge, core material, and mounting indicated.

E. Shop Drawings: For unit assembly and installation.

1. Include reflected ceiling plans, elevations, sections, and mounting devices and details.

2. Include details at joints and corners; and details at ceiling intersections and intersections with walls. Indicate panel edge profile and core materials.

F. Samples for Initial Selection: For each color option.

1. Include Samples of hardware and accessories involving color or finish selection.

G. Samples for Verification: For the following products:

1. Panel Edge: 12-inch- long Sample(s) showing each edge profile, corner, and finish.
2. Core Material: 12-inch- square Sample at corner.
3. Mounting Devices: Full-size Samples.
4. Assembled Panels: Approximately 36 by 36 inches, including joints and mounting methods and applied color.

H. Coordination Drawings: Reflected ceiling plans and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Electrical outlets.
2. Suspended ceiling components above ceiling units.
3. Structural members to which suspension devices will be attached.
4. Items penetrating or covered by units including the following:

a. Lighting fixtures.
b. Air outlets and inlets.
c. Speakers.
d. Alarms.
e. Sprinklers.
f. Access panels.

I. Product Certificates: For each type of unit.

J. Sample Warranty: For manufacturer's special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of unit to include in maintenance manuals. Include fabric manufacturer's written cleaning and stain-removal instructions.

1.7 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. Mounting Devices: Full-size units equal to 5 percent of amount installed, but no fewer than five devices.

1.8 QUALITY ASSURANCE

A. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials, fabrication, and installation.

1. Build mockup of typical ceiling area as shown in drawings.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Director's Representative 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.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Comply with fabric and unit manufacturers' written instructions for minimum and maximum temperature and humidity requirements for shipment, storage, and handling.

B. Deliver materials and units in unopened bundles and store in a temperature-controlled dry place with adequate air circulation.

1.10 FIELD CONDITIONS

A. Environmental Limitations: Do not install units until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work at and 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 units until a lighting level of not less than 50 fc is provided on surfaces to receive the units.

C. Air-Quality Limitations: Protect units from exposure to airborne odors, such as tobacco smoke, and install units under conditions free from odor contamination of ambient air.

D. Field Measurements: Verify unit locations and actual dimensions of openings and penetrations by field measurements before fabrication, and indicate them on Shop Drawings.

1.11 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace units and components that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Acoustical performance.
b. Fabric sagging, distorting, or releasing from panel edge.
c. Warping of core.

2. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain similar content ceiling units from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: Units shall comply with "Surface-Burning Characteristics" or "Fire Growth Contribution" Subparagraph below, or both, as determined by testing identical products by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:

1. Surface-Burning Characteristics: Comply with ASTM E84 or UL 723; 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.

2. Fire Growth Contribution: Comply with acceptance criteria of local code and authorities having jurisdiction when tested according to NFPA 286.

2.3 SOUND-ABSORBING CEILING UNITS

A. Sound-Absorbing Ceiling Panel <APC-1>: Manufacturer's standard panel construction consisting of facing material laminated to front face, edges, and back edge border of core.

1. 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. Armstrong World Industries, Inc.
b. Conwed Designscape; an Owens Corning company.
c. Kinetics Noise Control, Inc.
d. Certainteed, a Saint-Gobain Company
e. Approved equivalent.

2. Panel: Basis of Design, Certainteed Saint-Gobain, Decoustics Claro Wall Smooth

3. Panel Shape: Flat, see drawings.
4. Mounting: Back mounted with manufacturer's standard direct mount system, secured to substrate.
5. Core: fiberglass.
6. Edge Construction: Manufacturer's standard extruded-aluminum or zinc-coated, rolled-steel frame.
7. Edge Profile: Square.

8. Corner Detail in Elevation: Square with continuous edge profile indicated.
9. Reveals between Panels**:** as indicated on Drawings.
10. Facing Material: Manufacturer’s standard.
11. Acoustical Performance: Sound absorption NRC 0.50 to 0.90 according to ASTM C423 for F5 mounting according to ASTM E795.
12. Nominal Overall Panel Thickness: 1 1/16 inch.
13. Panel Width: As indicated on Drawings.
14. Panel Height: As indicated on Drawings.
15. Panel Color: As indicated on Drawings.

B. Sound-Absorbing Ceiling Panel <APC-2>: Manufacturer's standard panel construction consisting of facing material laminated to front face, edges, and back edge border of core.

1. 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. Armstrong World Industries, Inc.
    b. Conwed Designscape; an Owens Corning company.
    c. Kinetics Noise Control, Inc.
    d. Certainteed, a Saint-Gobain Company
    e. Approved equivalent.

2. Panel: Basis of Design, Certainteed Saint-Gobain, Decoustics Claro Wall Smooth

3. Panel Shape: Flat, see drawings.
4. Mounting: Back mounted with manufacturer's standard suspension system.
5. Core: fiberglass.
6. Edge Construction: Manufacturer's standard extruded-aluminum or zinc-coated, rolled-steel frame.
7. Edge Profile: Square.
8. Corner Detail in Elevation: Square with continuous edge profile indicated.
9. Reveals between Panels**:** as indicated on Drawings.
10. Facing Material: Manufacturer’s standard.
11. Acoustical Performance: Sound absorption NRC 0.50 to 0.90 according to ASTM C423 for E400 mounting according to ASTM E795.
12. Nominal Overall Panel Thickness: 1 1/16 inch.
13. Panel Width: As indicated on Drawings.
14. Panel Height: As indicated on Drawings.
15. Panel Color: To match PT-1.

C. Sound-Absorbing Ceiling Panel <APC-3>: Manufacturer's standard panel construction consisting of facing material laminated to front face, edges, and back edge border of core.

1. 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. Armstrong World Industries, Inc.
    b. Conwed Designscape; an Owens Corning company.

c. Kinetics Noise Control, Inc.
d. Certainteed, a Saint-Gobain Company
e. Approved equivalent.

2. Panel: Basis of Design, Armstrong, Acoustibuilt Seamless Acoustical Ceiling System

3. Panel Shape: Flat, see drawings.
4. Mounting: Back mounted with manufacturer's standard suspension system.
5. Core: Mineral Fiber.
6. Edge Construction: Basis of Design: Armstrong AXIOM Trim.
7. Edge Profile: Basis of Design: Armstrong AXIOM Trim, Square.
8. Corner Detail in Elevation: Basis of Design: Armstrong AXIOM Trim, Square with continuous edge profile indicated.
9. Reveals between Panels**:** Basis of Design: Armstrong AXIOM Trim, as indicated on Drawings.
10. Facing Material: Manufacturer’s standard.
11. Acoustical Performance: Sound absorption NRC 0.50 to 0.90 according to ASTM C423 for E400 mounting according to ASTM E795.
12. Nominal Overall Panel Thickness: 7/8 inch.
13. Panel Width: As indicated on Drawings.
14. Panel Height: As indicated on Drawings.
15. Panel Color: To match PT-5.

2.4 MATERIALS

A. Core Materials: Manufacturer's standard.

1. Glass-Fiber Board: ASTM C612; of type standard with manufacturer; nominal density of 6 to 7 lb/cu. ft., unfaced, and dimensionally stable, molded rigid board; and with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.
2. Cementitious-Fiber Board: Density of not less than 20 lb/cu. ft.

B. Facing Material: Integral system as indicated in section 2.3 Sound Absorbing Ceiling Units above.

C. Mounting Devices: Concealed on back or top edge of unit, recommended by manufacturer to support weight of unit.

2.5 FABRICATION

A. Standard Construction: Use manufacturer's standard construction unless otherwise indicated, with facing material applied to face, edges, and back border of dimensionally stable core and with rigid edges to reinforce panel perimeter against warpage and damage.

B. Measure each area and establish layout of panels and joints of sizes indicated on Drawings within a given area.

C. Edge Hardening: For glass-fiber board and mineral-fiber board cores, chemically harden core edges and areas of core where mounting devices are attached.

D. Dimensional Tolerances of Finished Units: Plus or minus 1/16 inch for the following:

1. Thickness.
2. Edge straightness.
3. Overall length and width.
4. Squareness from corner to corner.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine fabric, fabricated units, substrates, areas, and conditions for compliance with requirements, installation tolerances, and other conditions affecting unit performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install units in locations indicated. Unless otherwise indicated, install units with edges in alignment with walls and other units, faces flush, and scribed to fit adjoining work accurately at borders and at penetrations.

B. Comply with manufacturer's written instructions for installation of units using type of mounting devices indicated. Mount units securely to supporting substrate.

3.3 INSTALLATION TOLERANCES

A. Variation from Alignment with Surfaces: Plus or minus 1/16 inch in 48 inches, noncumulative.

B. Variation from Level or Slope: Plus or minus 1/8 inch.

C. Variation of Joint Width: Not more than 1/16 inch wide from reveal line in 48 inches, noncumulative.

3.4 CLEANING

A. Clip loose threads; remove pills and extraneous materials.

B. Clean panels on completion of installation to remove dust and other foreign materials according to manufacturer's written instructions.

C. Provide two copies of Cleaning Instructions for each APC type to Director’s Representative.

END OF SECTION 098436

SECTION 099114 - EXTERIOR PAINTING (MPI STANDARDS)

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Surface preparation and application of paint systems on the following exterior substrates:

a. Concrete.
b. Steel and iron.
c. Galvanized metal.

B. Work under this Contract shall also include, but not necessarily be limited to:

1. Labor, materials, tools and other equipment, services and supervision required to complete all exterior painting and decorating work as indicated on Finish Schedules and to the full extent of the drawings and specifications.
2. Moisture testing of substrates.
3. Surface preparation of substrates as required for acceptance of paint, including cleaning, small crack repair, patching, caulking, and making good surfaces and areas to the limits defined under MPI Architectural Painting Manual Preparation requirements.
4. Specific pre-treatments noted herein or specified in the MPI Architectural Painting Manual.
5. Sealing / priming surfaces for painting in accordance with MPI Architectural Painting Manual requirements.
6. Provision of safe and adequate ventilation as required over and above temporary ventilation supplied by others, where toxic and/or volatile / flammable materials are being used.

C. Related Requirements:

1. Section 051200 "Structural Steel Framing" for shop priming of metal substrates.
2. Section 055000 "Metal Fabrications" for shop priming metal fabrications.

D. Refer to drawings and schedules (e.g., Finish Schedule) for type, location and extent of exterior painting required.

1.2 REFERENCES

A. Master Painters Institute Inc., MPI Architectural Painting Manual. www.specifypaint.us..

1.3 DEFINITIONS

A. MPI Gloss Level 1 (Matte or Flat): Not more than five units at 60 degrees and 10 units at 85 degrees, according to ASTM D523.

B. MPI Gloss Level 3 (Eggshell): 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D523.

C. MPI Gloss Level 4 (Satin): 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D523.

D. MPI Gloss Level 5 (Semi-Gloss): 35 to 70 units at 60 degrees, according to ASTM D523.

E. MPI Gloss Level 6 (Gloss): 70 to 85 units at 60 degrees, according to ASTM D523.

F. MPI Gloss Level 7 (High Gloss): More than 85 units at 60 degrees, according to ASTM D523.

1.4 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Painting Schedule: Cross-referenced Painting Schedule listing all exterior and interior substrates to be painted and specified finish paint type designation; product name and manufacturer, recommended primers and product numbers, and finish paint color designation for each substrate to be painted.

1. Designate exterior substrates by building name and number, substrate to be painted and surface location.

E. Product Data: For each type of product.

1. Include preparation requirements and application instructions.
2. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
3. Indicate VOC content.
4. Manufacturer’s standard colors in the form of actual fan decks.

F. Samples: For each type of topcoat product.

G. Samples for Initial Selection: For each type of topcoat product.

H. Samples for Verification: For each type of paint system and each color and gloss of topcoat.

1. Submit Samples on rigid backing, 8 inches square.
2. Apply coats on Samples in steps to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

I. Contractor's Qualifications: Submit documentation demonstrating compliance with requirements in Quality Assurance Article.

J. Certification of Volatile Organic Compounds: Submit certified list demonstrating compliance requirements in Quality Assurance Article.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Paint: 5 percent, but not less than 1 gal. of each material and color applied.

1.6 QUALITY ASSURANCE

A. Volatile Organic Compounds (VOCs) Regulatory Requirements: Chapter III of Title 6 of the official compilation of Codes, Rules and Regulations of the State of New York (Title 6 NYCRR), Part 205 Architectural Surface Coatings.

1. Certificate of Compliance: List of each paint product to be delivered and installed. List shall include written certification stating that each paint product listed complies with the VOC regulatory requirements in effect at the time of job site delivery and installation.

B. Contractor shall have a minimum of five (5) years proven satisfactory experience and shall show proof before commencement of work that he will maintain a qualified crew of painters throughout the duration of the work. When requested by the Director's Representative, Contractor shall provide a list of the last three comparable repainting jobs including, name, location, specifying authority / project manager, start / completion dates and value of the work.

C. All materials, preparation and workmanship shall conform to the standards contained in the latest edition of the Master Painters Institute (MPI) Architectural Painting Manual (herein referred to as the MPI Manual).

D. The painting contractor shall receive written confirmation of the specific surface preparation procedures and primers used for all fabricated steel items from the fabricator / supplier to ascertain appropriate and manufacturer compatible finish coat materials to be used before painting such work.

E. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Director's Representative will select one surface to represent surfaces and conditions for application of each paint system.

a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft..
b. Other Items: Director's Representative will designate items or areas required.

2. Final approval of color selections will be based on mockups.

a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Director's Representative at no added cost to the State.

3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Director's Representative specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

F. Compatibility of Paint Materials: Primers and intermediate paints shall be products manufactured or recommended by the finish paint manufacturer.

1.7 REGULATORY REQUIREMENTS

A. Conform to work place safety regulations for storage, mixing, application and disposal of all paint related materials to requirements of those authorities having jurisdiction.

B. To reduce the amount of contaminants entering waterways, sanitary / storm drain systems or into the ground the following procedures shall be strictly adhered to:

1. Retain cleaning water for water based materials to allow sediments to be filtered out. In no case shall equipment be cleaned using free draining water.
2. Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.
3. Return solvent and oil-soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.
4. Dispose of contaminants in an approved legal manner in accordance with hazardous waste regulations.
5. Empty paint cans are to be dry prior to disposal or recycling (where available).
6. Close and seal tightly partly used cans of materials including sealant and adhesive containers and store protected in well ventilated fire safe area at moderate temperature.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver painting materials in sealed, original labeled containers bearing manufacturer's name, brand name, type of paint or coating and color designation, standard compliance, materials content as well as mixing and/or reducing and application requirements.

B. 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.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

C. Where toxic and/or volatile / explosive / flammable materials are being used, provide adequate fireproof storage lockers and take necessary precautions and post adequate warnings (e.g. no smoking) as required.

D. Take necessary precautionary and safety measures to prevent fire hazards and spontaneous combustion and to protect the environment from hazard spills. Materials that constitute a fire hazard (paints, solvents, drop clothes, etc.) to be stored in suitable closed and rated containers or removed from the site on a daily basis.

E. Comply with requirements of authorities having jurisdiction, in regard to the use, handling, storage and disposal of hazardous materials.

1.9 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

C. Perform no painting work unless a minimum lighting level of 323 Lux (30-foot candles) is provided on surfaces to be repainted.

D. Apply paint only to dry, clean, and adequately prepared surfaces in areas where dust is no longer generated by construction activities such that airborne particles will not affect the quality of finished surfaces.

E. The following items are not to be painted unless otherwise specified, noted or directed:

1. Exposed stainless steel, chrome, copper, bronze, brass, and aluminum.
2. Steel to be encased in cast-in-place concrete.
3. Top flanges of structural beams and girders in composite concrete-steel construction.
4. Factory prefinished items.
5. Exposed structural wood floor joists, subflooring, rafters, roof sheathing and other framing lumber.
6. Galvanized items not exposed in finished spaces.

1.10 MAINTENANCE MATERIALS

A. Except as noted below, provide a minimum of 1 gallon of each type and color of paint from same production run (batch mix) used in unopened cans, properly labeled and identified. Store where directed by Director's Representative.

1. Paint Type EAL-1: Four gallons, each type.
2. Paint Types EAL-2: Two gallons, each type.
3. Other Paint Types: One gallon, each type.

PART 2 - PRODUCTS

2.1 PAINT MATERIALS, GENERAL

A. MPI Standards: Provide products complying with MPI standards indicated and listed in its "MPI Approved Products List."

B. 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 topcoat manufacturers for use in paint system and on substrate indicated.

C. Colors: As selected by Director’s Representative from manufacturer's full range.

D. Mechanical, Electrical, and Plumbing Components Colors: Provide paint colors shown on contract drawings or to be selected by the Director from finish paint manufacturers available color selections.

1. Approved finish paint manufacturers to match designated colors of other manufacturers where colors are shown on contract documents.
2. Safety Colors: Industry Standard ANSI Safety Colors.
3. Fire Protection Systems: Paint exposed piping, and handles of valves serving the system as specified below:

a. Sprinkler Systems: Red piping, and green valve handles.
b. Standpipe Systems: Red piping, and red valve handles.
c. Combination Sprinkler/Standpipe Systems: Red piping, and yellow valve handles.

4. Do not paint equipment with factory finish paint.
5. Color Coding: Apply exposed insulated and uninsulated piping finish paints in the following colors when piping is located in the following applicable rooms or spaces:

a. Applicable Rooms and Spaces: Mechanical Equipment Rooms, Steam Service Rooms, Refrigeration Machine Rooms, Boiler Rooms, Penthouse Mechanical Equipment Rooms and Power Houses.
b. Color code as follows:

1) Air, Control: Safety Green.
2) Flue Gases: Safety Yellow.
3) Gas, Natural and Manufactured: Safety Yellow.
4) Glycol and Glycol/Water Mixtures: Safety Yellow.
5) Refrigerants: Safety Yellow
6) Sewers, Storm and Sanitary: Safety Yellow.
7) Steam; Supply, Condensate Return and Exhaust: Safety Yellow.
8) Water, Up to 140 Degrees Fahrenheit: Safety Green.
9) Water, 141 Degrees and Above: Safety Yellow.

c. Other Colors:

1) Exposed Ductwork: Gray.
2) Insulated and Uninsulated Equipment: Gray.

2.2 PAINT MATERIAL MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by the following:

1. Benjamin Moore & Co.
2. Carboline.
3. Cloverdale Paint.
4. PPG Architectural.
5. Sherwin-Williams.
6. Or equal.

B. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to products listed in the Exterior Painting Schedule for the paint category indicated.

C. Source Limitations: Obtain paint from single source from single manufacturer.

2.3 PAINT MATERIALS

A. Concrete and Masonry Primers and Sealers:

1. Type ARP: Primer, alkali resistant, water based, MPI #3. Provide one of the following:

a. Benjamin Moore: Ultra Spec Masonry Int/Ext 100 Acylic Sealer.
b. PPG Architectural: Perma-Crete Interior/Exterior Alkali Resistant Primer.
c. Sherwin-Williams: PrepRite ProBlock Interior/Exterior Latex Primer/Sealer.
d. Or equal.

2. Type LBF: Block filler, latex, interior/exterior, MPI #4. Provide one of the following:

a. Benjamin Moore: Ultra Spec Hi-Build Masonry Block Filler.
b. PPG Architectural: Speedhide Int./Ext. Masonry Hi Fill Latex Block Filler.
c. Sherwin-Williams: Pro Industrial Heavy Duty Block Filler.
d. Or equal.

B. Metal Primers:

1. Type ESP-1: Primer, Metal, Surface Tolerant MPI #23. Provide one of the following:

a. Benjamin Moore & Co.: Coronado Rust Scat Polyurethane Int/Ext Alkyd Metal Primer.
b. PPG Architectural: Protective and Marine Coatings Multiprime/Devguard 4160.
c. Sherwin-Williams: Protective & Marine Kem Bond HS.
d. Or equal.

2. Type ESP-2: Primer, Alkyd, Anti-Corrosive for Metal MPI #79. Provide one of the following:

    a. Benjamin Moore & Co.: Super Spec HP Alkyd Metal Primer.
    b. PPG Architectural: Protective and Marine Coatings Multiprime/Devguard 4160.
    c. Sherwin-Williams: Protective & Marine Kem Bond HS.
    d. Or equal.

3. Type ESP-3: Primer, Zinc Rich, Organic MPI #18. Provide one of the following:

    a. Benjamin Moore & Co.: Corotech Organic Zinc Rich Primer.
    b. Diamond Vogel: Endura Zinc 705, Organic Zinc Rich Epoxy Ester Primer.
    c. Sherwin-Williams: Protective & Marine Corothane I Galvapac 1K Zinc Primer
    d. Or equal.

C. Solvent-Based Paints:

1. Type EAP: Alkyd, Exterior Gloss (Gloss Level 6) MPI #9. Provide one of the following:

    a. Benjamin Moore & Co.: Super Spec HP Urethane Alkyd Gloss Enamel.
    b. PPG Architectural: Protective & Marine Coatings HPC Industrial Alkyd LVOC Gloss.
    c. Sherwin-Williams: Protective & Marine Seaguard 1000 Marine.
    d. Or equal.

2.4 SOURCE QUALITY CONTROL

A. Testing of Paint Materials: The Director's Representative reserves the right to invoke the following procedure:

1. The Director's Representative will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
2. Testing agency will perform tests for compliance with product requirements.
3. The Director's Representative 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.

PART 3 - EXECUTION

3.1 PROTECTION

A. Comply with each manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent chemical solutions from coming into contact with people, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.

1. Cover adjacent surfaces with materials that are proven to resist coatings being used. Use protective materials that are UV resistant and waterproof. Apply masking agents to comply with manufacturer's written instructions. Do not apply liquid masking agent to painted or porous surfaces. When no longer needed, promptly remove masking to prevent adhesive staining.

3.2 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Concrete: 12 percent.
2. Fiber-Cement Board: 12 percent.

C. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.

D. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.3 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and 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.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

D. Concrete Substrates: Remove release agents, curing compounds, 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.

E. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceeds that permitted in manufacturer's written instructions.

F. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer**.**

G. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

H. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

I. Plastic Trim Fabrication Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

3.4 INSTALLATION

A. Apply paints in accordance with manufacturer's written instructions and recommendations in "MPI Manual."

1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
3. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.
4. Paint entire exposed surface of window frames and sashes.
5. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
6. Primers specified in the Exterior Painting Schedule may be omitted on items that are factory primed or factory finished if compatible with intermediate and topcoat coatings and acceptable to intermediate and topcoat paint manufacturers.

B. Tint undercoats same color as topcoat, but tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. 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.

E. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:

1. Paint the following work where exposed to view:

a. Equipment, including panelboards and switch gear.
b. Uninsulated metal piping.
c. Uninsulated plastic piping.
d. Pipe hangers and supports.
e. Metal conduit.
f. Plastic conduit.

3.5 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: The Director's Representative may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.

1. Contractor shall touch up and restore painted surfaces damaged by testing.
2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written instructions, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written instructions.

3.6 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

1. Do not clean equipment with free-draining water and prevent solvents, thinners, cleaners, and other contaminants from entering into waterways, sanitary and storm drain systems, and ground.
2. Dispose of contaminants in accordance with requirements of authorities having jurisdiction.
3. Allow empty paint cans to dry before disposal.
4. Collect waste paint by type and deliver to recycling or collection facility.

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 Director's Representative, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.7 SURFACES, GENERAL

A. Surfaces: Unless otherwise specified or shown on the drawings, paint surfaces as follows:

1. Exterior Surfaces:

a. Factory Finished Metal Substrates: Field painting not required.
b. Factory Primed and Unprimed Ferrous Substrates:

1) Metal Siding: Paint Type EAL-2.
2) Doors, Windows, Frames and Trim: Paint Type EAL-3.
3) Handrails: Paint Type AU.
4) Existing Unprimed Structural Steel: Paint Type AU over primer Paint Type ESP.
5) New Primed Structural Steel: Paint Type AU.
6) Steel Stairs, Decks and Handrails: Paint Type AU.

2. Unless otherwise noted, paint exterior unremovable and exposed wall and ceiling air supply and return grilles; plumbing pipes; electrical panel and fuse boxes, raceways and conduits; heating convector cabinets, radiators, radiator cabinets, unit heaters, and similar existing and installed devices and equipment by other trades.

a. Paint to match adjacent wall or ceiling surfaces.
b. Paint exposed surfaces when any part of the surface is on or within 8 inches of ceiling or wall surface to be painted.

3. Doors and Frames: Unless otherwise noted, paint doors and frames the same color in the next highest gloss as adjacent wall surfaces.

a. Where walls are not the same color on both sides of a door frame, change color at the inside corner of the frame stop.
b. Prime and finish paint door faces and edges before installation.

1) Paint door edges the same paint type color as the exterior side of the door.

c. Do not paint door components which are clearly not intended to be painted such as non-ferrous hardware, frame mutes, and weather stripping.
d. Do not allow doors and frames to touch until paint is thoroughly dry on both surfaces.

4. Window Frames and Sash: Unless otherwise noted, paint window frames and sash the same color as adjacent wall surfaces.

a. Do not paint window components which are clearly not intended to be painted such as prefinished frames, sliding metal or plastic contacts, weatherstripping, and non-ferrous hardware.
b. Do not allow operable doors, windows and frames to touch until paint is thoroughly dry on both surfaces.

5. Ferrous Metal Door and Window Hardware: Unless otherwise noted, prime and paint to match adjacent doors, windows and frames.

6. Do not paint plastic laminate surfaces, glazing, factory finished surfaces, finish hardware and similar items clearly not intended to be painted.

3.8 EXTERIOR PAINTING SCHEDULE

A. Concrete Substrates, Nontraffic Surfaces:

1. Latex System MPI EXT 3.1A:

a. Prime Coat: Primer, alkali resistant, water based, MPI #3. Type ARP.
b. Prime Coat, Latex: Exterior, matching topcoat.
c. Intermediate Coat: Latex, exterior, matching topcoat.
d. Flat Topcoat: Latex, exterior, flat (MPI Gloss Level 1), MPI #10. Type EAL-1.
e. Low-Sheen Topcoat: Latex, exterior, low sheen (MPI Gloss Level 3-4), MPI #15. Type EAL-2.
f. Semigloss Topcoat: Latex, exterior, semigloss (MPI Gloss Level 5), MPI #11. Type EAL-3.

B. Steel and Iron Substrates:

1. Polyurethane, Pigmented over Epoxy System MPI EXT 5.1.H:

a. Primer, Epoxy, Anti-Corrosive, for Metal MPI #101. Type ESP-EP2.
b. Intermediate Coat: Type EP: Epoxy, Gloss: MPI #77.
c. Topcoat: Polyurethane, Two-Component, Pigmented, Gloss (Gloss Level 6) MPI #72. Type AU.

C. Galvanized-Metal Substrates:

1. Polyurethane, Pigmented over Epoxy System MPI EXT 5.1.H:

a. Primer, Epoxy, Anti-Corrosive, for Metal MPI #101. Type ESP-EP2.
b. Intermediate Coat: Polyurethane, Two-Component, matching topcoat.
c. Topcoat: Polyurethane, Two-Component, Pigmented, Gloss (Gloss Level 6) MPI #72. Type AU.

END OF SECTION 099114

SECTION 099123 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes surface preparation and the application of paint systems on the following interior substrates:

1. Concrete.
2. Concrete masonry units (CMUs).
3. Steel and iron.
4. Galvanized metal.
5. Aluminum (not anodized or otherwise coated).
6. Stainless steel.
7. Wood.
8. Gypsum board.
9. Bituminous-coated surfaces.

B. Work under this Contract shall also include, but not necessarily be limited to:

1. Labor, materials, tools and other equipment, services and supervision required to complete all interior painting and decorating work as indicated on Finish Schedules and to the full extent of the drawings and specifications.
2. Moisture testing of substrates.
3. Surface preparation of substrates as required for acceptance of paint, including cleaning, small crack repair, patching, caulking, and making good surfaces and areas to the limits defined under MPI Architectural Painting Manual preparation requirements.
4. Specific pre-treatments noted herein or specified in the MPI Architectural Painting Manual.
5. Sealing / priming surfaces for painting in accordance with MPI Architectural Painting Manual requirements.
6. Provision of safe and adequate ventilation as required over and above temporary ventilation supplied by others, where toxic and/or volatile / flammable materials are being used.

C. Related Requirements:

1. Section 051200 "Structural Steel Framing for shop priming structural steel.
2. Section 055000 "Metal Fabrications" for shop priming metal fabrications.
3. Section 055113 "Metal Pan Stairs" for shop priming metal pan stairs.

D. Refer to drawings and schedules (e.g., Finish Schedule) for type, location and extent of interior painting required.

1.2 REFERENCES

A. Master Painters Institute Inc., MPI Architectural Painting Manual. www.specifypaint.us.

1.3 DEFINITIONS

A. MPI Gloss Level 1 (Matte or Flat): Not more than five units at 60 degrees and 10 units at 85 degrees, according to ASTM D523.

B. MPI Gloss Level 2 (Velvet): Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D523.

C. MPI Gloss Level 3 (Eggshell): 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D523.

D. MPI Gloss Level 4 (Satin): 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D523.

E. MPI Gloss Level 5 (Semi-Gloss): 35 to 70 units at 60 degrees, according to ASTM D523.

F. MPI Gloss Level 6 (Gloss): 70 to 85 units at 60 degrees, according to ASTM D523.

G. MPI Gloss Level 7 (High Gloss): More than 85 units at 60 degrees, according to ASTM D523.

1.4 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer's installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Painting Schedule: Cross-referenced Painting Schedule listing all interior substrates to be painted and specified finish paint type designation; product name and manufacturer, recommended primers and product numbers, and finish paint color designation for each substrate to be painted.

1. Designate interior substrates by building name and number, floor, room name and number, and surface to be painted.

E. Product Data: For each type of product. Include preparation requirements and application instructions.

1. Indicate VOC content.
2. Manufacturer's standard colors in the form of actual fan decks.

F. Samples for Verification: For each type of paint system and in each color and gloss of topcoat.

1. Submit Samples on rigid backing, 8 inches square.
2. Apply coats on Samples in steps to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

G. Contractor's Qualifications: Submit documentation demonstrating compliance with requirements in Quality Assurance Article.

H. Certification of Volatile Organic Compounds: Submit certified list demonstrating compliance requirements in Quality Assurance Article.

1.5 QUALITY ASSURANCE

A. Volatile Organic Compounds (VOCs) Regulatory Requirements: Chapter III of Title 6 of the official compilation of Codes, Rules and Regulations of the State of New York (Title 6 NYCRR), Part 205 Architectural Surface Coatings.

1. Certificate of Compliance: List of each paint product to be delivered and installed. List shall include written certification stating that each paint product listed complies with the VOC regulatory requirements in effect at the time of job site delivery and installation.

B. Contractor shall have a minimum of five (5) years proven satisfactory experience and shall show proof before commencement of work that he will maintain a qualified crew of painters throughout the duration of the work. When requested by the Director's Representative, Contractor shall provide a list of the last three comparable repainting jobs including, name, location, specifying authority / project manager, start / completion dates and value of the work.

C. All materials, preparation and workmanship shall conform to the standards contained in the latest edition of the Master Painters Institute (MPI) Architectural Painting Manual (herein referred to as the MPI Manual).

D. The painting contractor shall receive written confirmation of the specific surface preparation procedures and primers used for all fabricated steel items from the fabricator / supplier to ascertain appropriate and manufacturer compatible finish coat materials to be used before painting such work.

E. Compatibility of Paint Materials: Primers and intermediate paints shall be products manufactured or recommended by the finish paint manufacturer.

F. Mockups: Prepare mockups of CMU block filler to demonstrate aesthetic effects and to set quality standards for materials and execution and for fabrication and installation.

1. Prepare sample areas for each type of masonry repair work performed. If not otherwise indicated, size each mockup to be 10 s.f.. Construct sample areas in locations in existing walls where directed by Director's Representative unless otherwise indicated. Demonstrate quality of materials, workmanship, and blending with existing work. Include the following as a minimum:
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Director's Representative 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.

1.6 REGULATORY REQUIREMENTS

A. Conform to work place safety regulations for storage, mixing, application and disposal of all paint related materials to requirements of those authorities having jurisdiction.

B. To reduce the amount of contaminants entering waterways, sanitary / storm drain systems or into the ground the following procedures shall be strictly adhered to:

1. Retain cleaning water for water based materials to allow sediments to be filtered out. In no case shall equipment be cleaned using free draining water.
2. Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.
3. Return solvent and oil-soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.
4. Dispose of contaminants in an approved legal manner in accordance with hazardous waste regulations.
5. Empty paint cans are to be dry prior to disposal or recycling (where available).
6. Close and seal tightly partly used cans of materials including sealant and adhesive containers and store protected in well ventilated fire safe area at moderate temperature.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver painting materials in sealed, original labeled containers bearing manufacturer's name, brand name, type of paint or coating and color designation, standard compliance, materials content as well as mixing and/or reducing and application requirements.

B. 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.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

C. Where toxic and/or volatile / explosive / flammable materials are being used, provide adequate fireproof storage lockers and take necessary precautions and post adequate warnings (e.g. no smoking) as required.

D. Take necessary precautionary and safety measures to prevent fire hazards and spontaneous combustion and to protect the environment from hazard spills. Materials that constitute a fire hazard (paints, solvents, drop clothes, etc.) to be stored in suitable closed and rated containers or removed from the site on a daily basis.

E. Comply with requirements of authorities having jurisdiction, in regard to the use, handling, storage and disposal of hazardous materials.

1.8 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

C. Perform no painting work unless a minimum lighting level of 323 Lux (30-foot candles) is provided on surfaces to be repainted.

D. Apply paint only to dry, clean, and adequately prepared surfaces in areas where dust is no longer generated by construction activities such that airborne particles will not affect the quality of finished surfaces.

E. The following items are not to be painted unless otherwise specified, noted or directed:

1. Exposed stainless steel, chrome, copper, bronze, brass, and aluminum.
2. Steel to be encased in cast-in-place concrete.
3. Top flanges of structural beams and girders in composite concrete-steel construction.
4. Factory prefinished items.
5. Exposed structural wood floor joists, subflooring, rafters, roof sheathing and other framing lumber.
6. Galvanized items not exposed in finished spaces.

1.9 MAINTENANCE MATERIALS

A. Except as noted below, provide a minimum of 1 gallon of each type and color of paint from same production run (batch mix) used in unopened cans, properly labeled and identified. Store where directed.

1. Paint Type IAL-1: Four gallons, each type.
2. Paint Types IAL-2: Two gallons, each type.
3. Other Paint Types: One gallon, each type.

PART 2 - PRODUCTS

2.1 PAINT MATERIALS, GENERAL

A. MPI Standards: Provide products complying with MPI standards indicated and listed in its "MPI Approved Products List."

B. 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 topcoat manufacturers for use in paint system and on substrate indicated.

C. Colors: As indicated in a color schedule.

D. Mechanical, Electrical, and Plumbing Components Colors: Provide paint colors selected by the Director from finish paint manufacturers available color selections.

1. Approved finish paint manufacturers to match designated colors of other manufacturers where colors are shown on contract documents.
2. Safety Colors: Industry Standard ANSI Safety Colors.
3. Fire Protection Systems: Paint exposed piping, and handles of valves serving the system as specified below:

    a. Sprinkler Systems: Red piping, and green valve handles.
    b. Standpipe Systems: Red piping, and red valve handles.
    c. Combination Sprinkler/Standpipe Systems: Red piping, and yellow valve handles.

4. Do not paint sprinkler heads. Cover and protect during painting of exposed sprinkler piping or any other surface painting. Remove protection after painting is completed.

5. Do not paint equipment with factory finish paint.
6. Color Coding: Apply exposed insulated and uninsulated piping finish paints in the following colors when piping is located in the following applicable rooms or spaces:

    a. Applicable Rooms and Spaces: Mechanical Equipment Rooms, Steam Service Rooms, Refrigeration Machine Rooms, Boiler Rooms, Penthouse Mechanical Equipment Rooms and Power Houses.
    b. Color code as follows:

        1) Air, Compressed: Safety Green.
        2) Air, Control: Safety Green.
        3) Air, Medical: Safety yellow.
        4) Ammonia, Gas and Liquid: Safety Yellow.
        5) Brine: Safety Green.
        6) Carbon Dioxide: Safety Red.
        7) Dangerous Materials: Safety Yellow.
        8) Engine Exhausts: Safety Yellow.
        9) Flue Gases: Safety Yellow.
        10) Gas, Natural and Manufactured: Safety Yellow.
        11) Gasoline: Safety Yellow.
        12) Glycol and Glycol/Water Mixtures: Safety Yellow.
        13) Nitrous Oxide: Safety Blue.
        14) Oils, Fuel and Lubrications: Safety Yellow.
        15) Oxygen: Safety Green.
        16) Pneumatic Tube System s: Safety Green.
        17) Refrigerants: Safety Yellow.
        18) Sewers, Storm and Sanitary: Safety Yellow.
        19) Steam; Supply, Condensate Return and Exhaust: Safety Yellow.
        20) Vacuum: Safety Green.
        21) Vent, Atmospheric: Safety Green.
        22) Water, Up to 140 Degrees Fahrenheit: Safety Green.
        23) Water, 141 Degrees and Above: Safety Yellow.

c. Other Colors:

1) Exposed Ductwork: Gray.
2) Insulated and Uninsulated Equipment: Gray.

2.2 PAINT MATERIAL MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by the following:

1. Behr Paint.
2. Benjamin Moore & Co.
3. Cloverdale Paint.
4. Dunn-Edwards.
5. Pratt & Lambert.
6. PPG Architectural.
7. Sherwin-Williams.
8. Or equal.

B. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to products listed in the Interior Painting Schedule for the paint category indicated.

2.3 PAINT MATERIALS

A. Primers and Sealers:

1. Type ARP: Primer, alkali resistant, water based, MPI #3. Provide one of the following:

a. Benjamin Moore: Ultra Spec Masonry Int/Ext 100 Acylic Sealer.
b. PPG Architectural: Perma-Crete Interior/Exterior Alkali Resistant Primer.
c. Sherwin-Williams: PrepRite ProBlock Interior/Exterior Latex Primer/Sealer.
d. Or equal.

2. Type LBF: Block filler, latex, interior/exterior, MPI #4. Provide one of the following:

a. Benjamin Moore: Ultra Spec Hi-Build Masonry Block Filler.
b. PPG Architectural: Speedhide Int./Ext. Masonry Hi Fill Latex Block Filler.
c. Sherwin-Williams: Pro Industrial Heavy Duty Block Filler.
d. Or equal.

3. Type TCL: Textured coating, latex, flat, MPI #42. Provide one of the following:

a. Benjamin Moore: Coronado Texcrete Waterborne Medium Texture Waterproofer.
b. PPG Architectural: Perma-Crete Textured Coating.
c. Sherwin-Williams: ConFlex Flexible Waterproofer-Textured.
d. Or equal.

4. Type CFS: Sealer, water based, for concrete floors, MPI #99. Provide one of the following:

a. Behr Paint: Behr Premium Floor Coatings Wet-Look Sealer High Gloss.
b. PPG Architectural: Perma-Crete Plex-Seal WB Interior/Exterior Clear Sealer.
c. Sherwin-Williams: H & C Clarishield Water-Based Wet-Look Sealer.
d. Or equal.

5. Type IAL-P: Primer Sealer, Latex, Interior MPI #50. Provide one of the following:

a. Benjamin Moore & Co.: Super Hide Zero VOC Latex Primer.
b. PPG Architectural: Speedhide Zero Interior VOC Latex Sealer.
c. Sherwin-Williams: ProMar 200 Zero Interior Latex Primer.
d. Or equal.

6. Type IAL-P-LO: Primer Sealer, Interior, Institutional Low Odor/VOC. MPI #149. Provide one of the following:

a. Benjamin Moore & Co.: Ultra Spec 500; Waterborne Interior Primer.
b. PPG Architectural: Speedhide Zero Interior Zero VOC Latex Sealer.
c. Sherwin-Williams: ProMar 200 Zero; Interior Latex Primer.
d. Or equal.

B. Water-Based Paints:

1. Type IAL-1: Latex, Interior, Flat, (Gloss Level 1) MPI #53. Provide one of the following:

a. Benjamin Moore & Co.: Super Hide Zero VOC Interior Flat.
b. PPG Architectural: Speedhide Pro EV Zero VOC Latex Flat.
c. Sherwin-Williams: SuperPaint Interior Latex Flat.
d. Or equal.

2. Type IAL-2: Latex, Interior, (Gloss Level 3) MPI #52. Provide one of the following:

a. Benjamin Moore & Co.: Super Hide Zero VOC Interior Low Eggshell.
b. PPG Architectural: Speedhide Zero Interior Satin.
c. Sherwin-Williams: ProMar 200 Zero VOC Interior Latex Eg-Shel.
d. Or equal.

3. Type IAL-3: Latex, Interior, Semigloss, (Gloss Level 5). MPI #54. Provide one of the following:

a. Benjamin Moore & Co.: Ultra Spec 500 Interior Semi-Gloss.
b. PPG Architectural: Speedhide Zero Interior Semi-Gloss.
c. Sherwin-Williams: ProMar 200 Zero VOC Interior Latex Semi-Gloss.
d. Or equal.

4. Type IAL-4: Latex, Interior, Gloss, (Gloss Level 6, except Minimum Gloss of 65 Units at 60 Degrees) MPI #114. Provide one of the following:

a. Benjamin Moore & Co.: Ultra Spec HP D.T.M. Acrylic Gloss Enamel.
b. PPG Architectural: Advantage 900 Int/Ext Trim & Door Gloss.
c. Sherwin-Williams: Pro Industrial DTM Acrylic Gloss.
d. Or equal.

5. Type DFL-1: Dry Fall, Latex, Flat. MPI #118. Provide one of the following:

    a. Benjamin Moore & Co.: Latex Dry Fall Flat.
    b. PPG Architectural: Speedhide Super Tech WB Interior Dry Fog Flat Latex.
    c. Sherwin-Williams: Pro Industrial Waterborne Acrylic Dryfall.
    d. Or equal.

6. Type DFL-2: Dry Fall, Latex, (MPI Gloss Level 3). MPI #155. Provide one of the following:

    a. Benjamin Moore & Co.: Latex Dry Fall Eggshell.
    b. PPG Architectural: Speedhide Super Tech WB Interior Eggshell 100% Acrylic Dry-Fog.
    c. Sherwin-Williams: Pro Industrial Waterborne Dryfall Eg-Shel.
    d. Or equal.

7. Type DFL-3: Dry Fall, Latex, Semi-Gloss (MPI Gloss Level 5). MPI #226. Provide one of the following:

    a. Benjamin Moore & Co.: Latex Dry Fall Semi-Gloss.
    b. PPG Architectural: Speedhide Super Tech WB Interior Semi-Gloss 100% Acrylic Dry Fog Latex.
    c. Sherwin-Williams: Pro Industrial Waterborne Acrylic Dryfall Semi-Gloss.
    d. Or equal.

C. Solvent-Based Paints:

1. Type EAP: Alkyd, Interior, Gloss (Gloss Level 6) MPI #48. Provide one of the following:

    a. Benjamin Moore & Co.: Super Spec HP Urethane Alkyd Gloss Enamel.
    b. PPG Architectural: Protective & Marine Coatings Industrial Alkyd Gloss.
    c. Sherwin-Williams: Industrial Enamel HS.
    d. Or equal.

2.4 SOURCE QUALITY CONTROL

A. Testing of Paint Materials: The Director's Representative reserves the right to invoke the following procedure:

1. The Director's Representative will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
2. Testing agency will perform tests for compliance with product requirements.
3. The Director's Representative 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.

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 the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Concrete: 12 percent.
2. Fiber-Cement Board: 12 percent.
3. Masonry (Clay and CMUs): 12 percent.
4. Wood: 15 percent.
5. Gypsum Board: 12 percent.
6. Plaster: 12 percent.

C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.

D. Plaster Substrates: Verify that plaster is fully cured.

E. Spray-Textured Ceiling Substrates: Verify that surfaces are dry.

F. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.

G. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and 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.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

D. Concrete Substrates: Remove release agents, curing compounds, 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.

E. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceeds that permitted in manufacturer's written instructions.

F. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer.

1. SSPC-SP3.

G. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

H. Wood Substrates:

1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
2. Sand surfaces that will be exposed to view, and dust off.
3. Prime edges, ends, faces, undersides, and backsides of wood.
4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions and to recommendations in "MPI Manual."

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.
4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.

B. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

C. 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.

D. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:

1. Paint the following work where exposed in occupied spaces:

a. Equipment, including panelboards.
b. Uninsulated metal piping.
c. Uninsulated plastic piping.
d. Pipe hangers and supports.
e. Metal conduit.
f. Plastic conduit.
g. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
h. Other items as directed by Director's Representative.

3.4 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: The Director's Representative may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.

1. Contractor shall touch up and restore painted surfaces damaged by testing.
2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

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 Director's Representative, 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 SURFACES, GENERAL

A. Surfaces: Unless otherwise specified or shown on the drawings, paint surfaces as follows:

1. Interior Surfaces:

a. Ceilings: Paint Type IAL-1 except as noted below:

1) Toilets, Kitchens, Shower Rooms, Janitor Closets and Other Wet Areas: Paint Type IAL-3.

b. Walls: Paint Type IAL-2 except as noted below:

1) Toilets and Kitchens: Paint Type IAL-3.
2) Shower Rooms, Janitor Closets and Other Wet Areas Paint Type IAL-4.

c. Doors, Windows, Frames and Trim: Paint Type IAL-3 except as noted below:

1) Use Paint Type IAL-4 where walls are Paint Type IAL-3.

2. Unless otherwise noted, paint interior unremovable and exposed wall and ceiling air supply and return grilles; plumbing pipes; electrical panel and fuse boxes, raceways and conduits; heating convector cabinets, radiators, radiator cabinets, unit heaters, and similar existing and installed devices and equipment by other trades.

a. Paint to match adjacent wall or ceiling surfaces.
b. Paint exposed surfaces when any part of the surface is on or within 8 inches of ceiling or wall surface to be painted.

3. Doors and Frames: Unless otherwise noted, paint doors and frames the same color in the next highest gloss as adjacent wall surfaces.

a. Where walls are not the same color on both sides of a door frame, change color at the inside corner of the frame stop.
b. Prime and finish paint door faces and edges before installation.

1) Paint door edges the same paint type color as the exterior side of the door.

c. Do not paint door components which are clearly not intended to be painted such as non-ferrous hardware, frame mutes, and weather stripping.
d. Do not allow doors and frames to touch until paint is thoroughly dry on both surfaces.

4. Ferrous Metal Door: Unless otherwise noted, prime and paint to match adjacent doors, and frames.
5. Do not paint plastic laminate surfaces, special countertop materials, glazing, factory finished surfaces, finish hardware and similar items clearly not intended to be painted.

3.7 INTERIOR PAINTING SCHEDULE

A. Concrete Substrates, Traffic Surfaces:

1. Water-Based Concrete Floor Sealer System MPI INT 3.2G:

a. First Coat: Sealer, water based, for concrete floors, matching topcoat.
b. Topcoat: Sealer, water based, for concrete floors, MPI #99. Type CFS.

B. CMU Substrates:

1. Latex System MPI INT 4.2A:

a. Block Filler: Block filler, latex, interior/exterior, MPI #4. Type LBF.
b. Intermediate Coat: Latex, interior, matching topcoat.
c. Topcoat: Latex, interior (MPI Gloss Level 3), MPI #52. Type IAL-2.

2. Latex Aggregate System MPI INT 4.2B:

a. Prime Coat: Primer for textured coating, latex, flat, as recommended in writing by topcoat manufacturer.
b. Intermediate Coat: Intermediate coat for textured coating, latex, flat, as recommended in writing by topcoat manufacturer.
c. Topcoat: Textured coating, latex, flat, MPI #42. Type TCL.

C. Steel Substrates:

1. Latex System, Alkyd Primer MPI INT 5.1Q:

a. Prime Coat: Shop primer specified in Section where substrate is specified.
b. Intermediate Coat: Latex, interior, matching topcoat.
c. Topcoat: Latex, interior, flat (MPI Gloss Level 1), MPI #53. Type IAL-1.

2. Water-Based Dry-Fall System:

a. Prime Coat: Shop primer specified in Section where substrate is specified.
b. Topcoat: Dry fall, latex, flat, MPI #118. Type DFL-1.

D. Wood Substrates: Wood trim, Architectural woodwork, Doors, Windows.

1. Latex over Latex Primer System MPI INT 6.3T:

a. Prime Coat: Primer, latex, for interior wood, MPI #39. Type IAL-PW.
b. Intermediate Coat: Latex, interior, matching topcoat.
c. Topcoat: Latex, interior (MPI Gloss Level 3), MPI #52. Type IAL-2.

E. Gypsum Board Substrates:

1. Latex over Latex Sealer System MPI INT 9.2A:

a. Prime Coat: Primer sealer, latex, interior, MPI #50. Type IAL-P.
b. Intermediate Coat: Latex, interior, matching topcoat.
c. Topcoat: Latex, interior, flat (MPI Gloss Level 1), MPI #53. Type IAL-1.
d. Topcoat: Latex, interior (MPI Gloss Level 3), MPI #52. Type IAL-2.

END OF SECTION 099123

SECTION 101419 - DIMENSIONAL LETTER SIGNAGE

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:

1. Fabricated channel dimensional characters.

1.3 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

E. Shop Drawings: For signs.

1. Include fabrication and installation details and attachments to other work.
2. Show sign mounting heights, locations of supplementary supports to be provided by other installers, and accessories.
3. Show message list, typestyles, graphic elements, and layout for each sign at least half size.

F. Samples for Initial Selection: For each type of sign assembly, exposed component, and exposed finish.

1. Include representative Samples of available typestyles and graphic symbols.

G. Samples for Verification: For each type of sign assembly showing all components and with the required finish(es), in manufacturer's standard size unless otherwise indicated and as follows:

1. Dimensional Characters: Full-size Sample of dimensional character.
2. Exposed Accessories: Full-size Sample of each accessory type.

H. Product Schedule: For pin mounted dimensional letter signs. Use same designations indicated on Drawings or specified.

I. Qualification Data: For Installer and manufacturer.

J. Warranty: All signage type warranties.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For signs to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer of products and an entity that employs installers and supervisors who are trained and approved by manufacturer.

1.6 FIELD CONDITIONS

A. Field Measurements: Verify locations of electrical service embedded in permanent construction by other installers by field measurements before fabrication, and indicate measurements on Shop Drawings.

1.7 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Deterioration of finishes beyond normal weathering.
b. Separation or delamination of sheet materials and components.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 DIMENSIONAL CHARACTERS

A. Fabricated Channel Characters: Metal face and side returns, formed free from warp and distortion; with uniform faces, sharp corners, and precisely formed lines and profiles; internally braced for stability, to meet structural performance loading without oil-canning or other surface deformation, and for securing fasteners; and as follows.

1. 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. A.R.K. Ramos.
    b. ACE Sign Systems, Inc.
    c. Signs & Decal Corp.
    d. Approved equivalent.

2. Character Material: Sheet or plate aluminum.
3. Material Thickness: As indicated on Drawings.
4. Character Height: As indicated on Drawings.
5. Character Depth: As indicated on Drawings.
6. Finishes:

    a. Integral Metal Finish: Brushed.
    b. Integral Aluminum Finish: Clear anodized.

7. Mounting: As indicated on Drawings.

    a. Hold characters at 2-inch distance from wall surface.

8. Typeface: Helvetica.

2.2 DIMENSIONAL CHARACTER MATERIALS

A. Aluminum Castings: ASTM B26, alloy and temper recommended by sign manufacturer for casting process used and for type of use and finish indicated.

B. Aluminum Sheet and Plate: ASTM B209, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

C. Aluminum Extrusions: ASTM B221, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

2.3 ACCESSORIES

A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signs, noncorrosive and compatible with each material joined, and complying with the following:

1. Use concealed fasteners and anchors unless indicated to be exposed.
2. Exposed Metal-Fastener Components, General:

    a. Fabricated from same basic metal and finish of fastened metal unless otherwise indicated.

3. Sign Mounting Fasteners:

    a. Concealed Studs: Concealed (blind), threaded studs welded or brazed to back of sign material, screwed into back of sign assembly, or screwed into tapped lugs cast integrally into back of cast sign material, unless otherwise indicated.
    b. Projecting Studs: Threaded studs with sleeve spacer, welded or brazed to back of sign material, screwed into back of sign assembly, or screwed into tapped lugs cast integrally into back of cast sign material, unless otherwise indicated.
    c. Through Fasteners: Exposed metal fasteners matching sign finish, with type of head indicated, installed in predrilled holes.

B. Adhesive: As recommended by sign manufacturer.

1. Adhesives to have a VOC content of 250 g/L or less.

C. Two-Face Tape: Manufacturer's standard high-bond, foam-core tape, 0.045 inch thick, with adhesive on both sides.

D. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187.

2.4 FABRICATION

A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.

1. Preassemble signs and assemblies in the shop to greatest extent possible. Disassemble signs and assemblies only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.
2. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
3. Comply with AWS for recommended practices in welding and brazing. Provide welds and brazes behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded and brazed connections of flux, and dress exposed and contact surfaces.
4. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
5. Internally brace dimensional characters for stability, to meet structural performance loading without oil-canning or other surface deformation, and for securing fasteners.
6. Provide rabbets, lugs, and tabs necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.
7. Castings: Fabricate castings free of warp, cracks, blowholes, pits, scale, sand holes, and other defects that impair appearance or strength. Grind, wire brush, sandblast, and buff castings to remove seams, gate marks, casting flash, and other casting marks before finishing.

2.5 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. 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.

C. Directional Finishes: Run grain with long dimension of each piece and perpendicular to long dimension of finished trim or border surface unless otherwise indicated.

2.6 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, Class I, 0.018 mm or thicker.

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.

B. Verify that sign-support surfaces are within tolerances to accommodate signs without gaps or irregularities between backs of signs and support surfaces unless otherwise indicated.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.

1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
2. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
3. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

B. Mounting Methods:

1. Through Fasteners: Drill holes in substrate using predrilled holes in sign as template. Countersink holes in sign if required. Place sign in position and flush to surface. Install through fasteners and tighten.

3.3 ADJUSTING AND CLEANING

A. Remove and replace damaged or deformed characters and signs that do not comply with specified requirements. Replace characters with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.

B. Remove temporary protective coverings and strippable films as signs are installed.

C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by the Director’s Representative.

END OF SECTION 101419

SECTION 101423.16 - ROOM-IDENTIFICATION PANEL SIGNAGE

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 room-identification signs that are directly attached to the building.

1.3 REFERENCES

A. Americans with Disabilities Act - 1990.

B. ICC/ANSI A-117.1 - Specifications for Sign Requirements for the Physically Handicapped.

1.4 DEFINITIONS

A. Accessible: In accordance with the accessibility standard.

1.5 COORDINATION

A. Furnish anchorage materials and templates for placement of sign-anchorage devices embedded in permanent construction by other installers.

1.6 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

E. Shop Drawings: For room-identification signs.

1. Include fabrication and installation details and attachments to other work.

2. Show sign mounting heights, locations of supplementary supports to be provided by other installers, and accessories.
3. Show message list, typestyles, graphic elements, including raised characters and Braille, and layout for each sign at least half size. Identify sign types, installation method, and sign location.

F. Samples for Initial Selection: For each type of sign assembly, exposed component, and exposed finish.

1. Include representative Samples of available typestyles and graphic symbols.

G. Samples for Verification: For each type of sign assembly showing all components and with the required finish(es), in manufacturer's standard size unless otherwise indicated and as follows:

1. Room-Identification Signs: Full-size Sample.
2. Variable Component Materials: Full-size Sample of each base material, character (letter, number, and graphic element) in each exposed color and finish not included in Samples above.
3. Exposed Accessories: Full-size Sample of each accessory type.

H. Product Schedule: For room-identification signs. Use same designations indicated on Drawings or specified.

I. Qualification Data: For fabricator.

J. Sample Warranty: For special warranty.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For signs to include in maintenance manuals.

1.8 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. Variable Component Materials: 12 replaceable text inserts and interchangeable characters (letters, numbers, and graphic elements) of each type.
2. Tools: One set(s) of specialty tools for assembling signs and replacing variable sign components.

1.9 QUALITY ASSURANCE

A. Fabricator’s Qualifications: The firm manufacturing the signs shall have been regularly producing signs similar to those specified for the Work, for a minimum of 5 years. The firm shall also have sufficient production capacity to produce the quantity of sign units required without causing delay in the Work.

1.10 FIELD CONDITIONS

A. Field Measurements: Verify locations of anchorage devices embedded in permanent construction by other installers by field measurements before fabrication and indicate measurements on Shop Drawings.

1.11 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Deterioration of finishes beyond normal weathering.
b. Deterioration of embedded graphic image.
c. Separation or delamination of sheet materials and components.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Accessibility Standard: Comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design" and ICC A117.1.

2.2 ROOM-IDENTIFICATION SIGNS

A. Room-Identification Sign: Sign system with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:

1. 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. Fossil industries, Inc.
b. Mohawk Sign Systems.
c. Seton Identification Products; a Brady Corporation company.
d. Signs & Decal Corp.
e. Takeform
f. Approved equivalent.

2. Basis of Design:

a. All sign panels as selected by Director’s Representative from manufacturer's full range. Takeform, Vivid Interior Signage, Border Background: Twighlight, Copy Color: Dove, removeable title and nameplates.

3. Laminated-Sheet Sign: Sandblasted polymer face sheet with raised graphics laminated to acrylic backing sheet to produce composite sheet with finish specified in "Surface Finish and Applied Graphics" Subparagraph and per the MESSAGE SCHEDULE.

   a. Composite-Sheet Thickness: 0.125 inch.
   b. Color(s): As selected by Director’s Representative from manufacturer's full range.

4. Sign-Panel Perimeter: Finish edges smooth.

   a. Edge Condition As indicated on Drawings, Square cut.
   b. Corner Condition in Elevation: As indicated on Drawings, Square.

5. Mounting: Manufacturer's standard method for substrates indicated.

   a. Mounting Methods:

      1) Mechanical Mounting (MM): Sign manufacturer’s standard or recommended full threaded screws with tamper resistant heads.
      2) Tape Mounting (TM): Sign manufacturer’s standard or recommended double sided foam tape intended for substrates involved.
      3) Sealant Mounting (SM): Sign manufacturer’s standard or recommended acrylic or silicone sealant type adhesive intended for substrates involved.

6. Text and Typeface: Accessible raised characters and Braille and variable content as scheduled.

   a. Copy Style:

      1) Style 1: Basis of Design: Takeform, ADA Futura Regular, upper case, 3/4 inch height, with Grade 2 Braille below copy.

   b. Copy Position: Copy shall be as stated in MESSAGE SCHEDULE in the drawings. Confirm “To Be Determined” information before fabrication.

2.3 SIGN MATERIALS

A. Acrylic Sheet: ASTM D4802, category as standard with manufacturer for each sign, Type UVF (UV filtering).

2.4 ACCESSORIES

A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signs, noncorrosive and compatible with each material joined, and complying with the following:

   1. Use concealed fasteners and anchors unless indicated to be exposed.

a. Fastener Heads: Use flathead or oval countersunk screws and bolts with tamper-resistant one-way-head slots unless otherwise indicated.

2. Sign Mounting Fasteners:

a. Through Fasteners: Exposed metal fasteners matching sign finish, with type of head indicated, and installed in predrilled holes.

B. Adhesive: As recommended by sign manufacturer.

C. Two-Face Tape: Manufacturer's standard high-bond, foam-core tape, 0.045 inch thick, with adhesive on both sides.

2.5 FABRICATION

A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.

1. Preassemble signs and assemblies in the shop to greatest extent possible. Disassemble signs and assemblies only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.
2. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
3. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
4. Provide rabbets, lugs, and tabs necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.

B. Sand Carved (Sand Blasted) Process (SC): Sand carved (sand blasted) letters, numbers, symbols, Grade 2 Braille, and other graphic devices to produce precisely formed copy raised to a uniform height of 1/32 inch with sharply formed edges.

C. Dimensional Process (D): Machine cut letters, numbers, symbols, and other graphic devices to produce precisely formed copy raised to a uniform height of 1/8 inch with sharply formed edges. Chemically weld copy to sign panel face.

D. Signs with Changeable Message Capability: Fabricate signs to allow insertion of changeable messages as follows:
1. For slide-in changeable inserts, fabricate slot without burrs or constrictions that inhibit function. Furnish initial changeable insert. Subsequent changeable inserts are by the Facilty. Furnish two blank inserts for each sign for Facility.

2.6 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. 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.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.

1. Coordinate sign units with MESSAGE SCHEDULE prior to installation.
2. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
3. Install signs so they do not protrude or obstruct according to the accessibility standard.
4. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.

B. Mounting Locations: Accessible Signage: Install in locations on walls as indicated on Drawings and according to the accessibility standard.

1. Location A: Latch side of door, sign unit center 60 inches above finished floor and near edge of sign unit 2 inches from outside edge of door frame.
2. Location B: Hinge side of door, sign unit center 60 inches above finished floor and near edge of sign unit 2 inches from outside edge of door frame.
3. Location C: (Truss Identification Sign): Locate sign units in accordance with 19 NYCRR Part 1264, Table I-1264.
4. Location D: Center of door, sign unit center 60 inches above finished floor and centered on width of door.
5. Location E: Specific location indicated, sign unit center 60 inches above finished floor.
6. Location F: Specific location indicated, sign unit center at specific location above finished floor.

C. Mounting Methods:

1. Through Fasteners: Drill holes in substrate using predrilled holes in sign as template. Countersink holes in sign if required. Place sign in position and flush to surface. Install through fasteners and tighten.
2. Adhesive: Clean bond-breaking materials from substrate surface and remove loose debris. Apply linear beads or spots of adhesive symmetrically to back of sign and of suitable quantity to support weight of sign after cure without slippage. Keep adhesive away from edges to prevent adhesive extrusion as sign is applied and to prevent visibility of cured adhesive at sign edges. Place sign in position, and push to engage adhesive. Temporarily support sign in position until adhesive fully sets.
3. Two-Face Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply tape strips symmetrically to back of sign and of suitable quantity to support weight of sign without slippage. Keep strips away from edges to prevent visibility at sign edges. Place sign in position, and push to engage tape adhesive.

3.2 ADJUSTING AND CLEANING

A. Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.

B. Remove temporary protective coverings and strippable films as signs are installed.

C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Director’s Representative.

3.3 MESSAGE SCHEDULE

A. Refer to schedule within drawings.

END OF SECTION 101423.16

SECTION 102113.19 - PLASTIC TOILET COMPARTMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Solid-plastic toilet compartments configured as toilet enclosures and urinal screens.

B. Related Requirements:

1. Section 055000 "Metal Fabrications" for supports that attach floor-and-ceiling-anchored compartments and to overhead structural system.
2. Section 102800 "Toilet, Bath, and Laundry Accessories" for accessories mounted on toilet compartments.

1.2 COORDINATION

A. Coordinate requirements for overhead supports, blocking, reinforcing, and other supports concealed within wall and ceiling.

1.3 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data:

1. Solid-plastic toilet compartments:

a. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for toilet compartments.

E. Shop Drawings: For solid-plastic toilet compartments.

1. Include plans, elevations, sections, details, and attachment details.
2. Show locations of cutouts for compartment-mounted toilet accessories.
3. Show locations of centerlines of toilet fixtures.
4. Show locations of floor drains.
5. Show ceiling grid, ceiling-mounted items, and overhead support or bracing locations.

F. Samples for Initial Selection: Manufacturer's standard color sheets, showing full range of available colors for each type of toilet compartment material indicated.

1. Include Samples of hardware and accessories involving material and color selection.

G. Samples for Verification: Actual sample of finished products for each type of toilet compartment indicated.

1. Size: 6-inch- square, of same thickness indicated for Work.
2. Include each type of hardware and accessory.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For toilet compartments.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Extra Stock Material: Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Door Hinges: Two hinge(s) with associated fasteners.
2. Latch and Keeper: Two latch(es) and keeper(s) with associated fasteners.
3. Door Bumper: Two bumper(s) with associated fasteners.
4. Door Pull: Two door pull(s) with associated fasteners.
5. Fasteners: 10 fasteners of each size and type.

1.6 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of toilet fixtures, walls, columns, ceilings, and other construction contiguous with toilet compartments by field measurements, and coordinate before fabrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire Performance: Tested in accordance with, and pass the acceptance criteria of, NFPA 286.

B. Regulatory Requirements: Comply with applicable provisions in the U.S. Department of Justice "2010 ADA Standards for Accessible Design" and ICC A117.1 for toilet compartments designated as accessible.

2.2 SOLID-PLASTIC TOILET COMPARTMENTS

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. All American Metal Corp.
2. Flush Metal Partition, LLC.
3. Knickerbocker Partition Corporation.
4. Metpar Corp.
5. Approved equivalent.

B. Toilet-Enclosure Style: Floor and ceiling anchored.

C. Urinal-Screen Style: Wall hung.

D. Door, Panel, Screen, and Pilaster Construction: Solid, high-density polyethylene (HDPE) panel material, not less than 1 inch thick, seamless, with eased edges, and with homogenous color and pattern throughout thickness of material.

1. Integral Hinges: Configure doors and pilasters to receive integral hinges.
2. Color and Pattern: As selected by Director’s Representative from manufacturer's full range.

E. Pilaster Shoes: Manufacturer's standard design; Stainless steel.

F. Brackets (Fittings):

1. Stirrup Type: Ear or U-brackets, stainless steel.
2. Full-Height (Continuous) Type: Manufacturer's standard design stainless steel.

2.3 HARDWARE AND ACCESSORIES

A. Hardware and Accessories, Heavy Duty: Manufacturer's heavy-duty operating hardware and accessories.

1. Hinges: Manufacturer's minimum 0.062-inch (16 ga)- thick stainless steel continuous, cam type that swings to a closed or partially open position, allowing emergency access by lifting door. Mount with through bolts.
2. Latch and Keeper: Manufacturer's heavy-duty, surface-mounted, cast-stainless steel latch unit, designed to resist damage due to slamming, with combination rubber-faced door strike and keeper, and with provision for emergency access. Provide units that comply with regulatory requirements for accessibility at compartments designated as accessible. Mount with through bolts.
3. Coat Hook: Manufacturer's heavy-duty combination cast-stainless steel hook and rubber-tipped bumper, sized to prevent inswinging door from hitting compartment-mounted accessories. Mount with through bolts.
4. Door Bumper: Manufacturer's heavy-duty, rubber-tipped, cast-stainless steel bumper at outswinging doors. Mount with through bolts.
5. Door Pull: Manufacturer's heavy-duty, cast-stainless steel pull at outswinging doors that complies with regulatory requirements for accessibility. Provide units on both sides of doors at compartments designated as accessible. Mount with through bolts.

B. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel, finished to match the items they are securing, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use stainless steel, hot-dip galvanized steel, or other rust-resistant, protective-coated steel compatible with related materials.

2.4 MATERIALS

A. Stainless Steel Sheet: ASTM A240 or ASTM A666, Type 304, stretcher-leveled standard of flatness.

B. Stainless Steel Castings: ASTM A743.

2.5 FABRICATION

A. Fabrication, General: Fabricate toilet compartment components to sizes indicated. Coordinate requirements and provide cutouts for through-partition toilet accessories where required for attachment of toilet accessories.

B. Floor-and-Ceiling-Anchored Units: Provide manufacturer's standard corrosion-resistant anchoring assemblies with leveling adjustment nuts at tops and bottoms of pilasters. Provide shoes and sleeves (caps) at pilasters to conceal anchorage.

C. Door Size and Swings: Unless otherwise indicated, provide 24-inch- wide, inswinging doors for standard toilet compartments and 36-inch- wide, outswinging doors with a minimum 32-inch-wide, clear opening for compartments designated as 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 OF PLASTIC TOILET COMPARTMENTS

A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices.

1. Maximum Clearances:

a. Pilasters and Panels: 1/2 inch.

b. Panels and Walls: 1 inch.

2. Stirrup Brackets: Secure panels to walls and to pilasters with no fewer than three brackets attached at midpoint and near top and bottom of panel.

   a. Locate wall brackets, so holes for wall anchors occur in masonry or tile joints.
   b. Align brackets at pilasters with brackets at walls.

3. Full-Height (Continuous) Brackets: Secure panels to walls and to pilasters with full-height brackets.

   a. Locate bracket fasteners, so holes for wall anchors occur in masonry or tile joints.
   b. Align brackets at pilasters with brackets at walls.

B. Floor-and-Ceiling-Anchored Units: Secure pilasters to supporting construction and level, plumb, and tighten. Hang doors and adjust, so doors are level and aligned with panels, when doors are in closed position.

C. Urinal Screens: Attach with anchoring devices to suit supporting structure. Set units level and plumb, rigid, and secured to resist lateral impact.

3.3 ADJUSTING

A. Hardware Adjustment: Adjust and lubricate hardware according to hardware manufacturer's written instructions for proper operation. Set hinges on inswinging doors to hold doors open approximately 30 degrees from closed position when unlatched. Set hinges on outswinging doors to return doors to fully closed position.

END OF SECTION 102113.19

SECTION 102116.19 - PLASTIC SHOWER COMPARTMENTS

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:

1. Shower receptors.

B. Related Requirements:

1. Section 102800 "Toilet, Bath, and Laundry Accessories" for grab bars, purse shelves, and similar accessories.

1.3 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

E. Shop Drawings: For shower receptors.

1. Include plans, elevations, sections, and attachment details.
2. Show locations of centerlines of drains.

F. Samples for Initial Selection: For each type of receptor material indicated.

G. Samples for Verification: For the following products, in manufacturer's standard sizes unless otherwise indicated:

1. Each type of material, color, and finish required for receptors.

H. Product Certificates: For each type of shower receptors.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For shower receptors to include in maintenance manuals.

1.5 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of fixtures, drains, walls, columns, ceilings, and other construction contiguous with shower compartments by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire Performance: Tested according to, and pass the acceptance criteria of, NFPA 286.

B. Regulatory Requirements: Comply with applicable provisions in USDOJ's "2010 ADA Standards for Accessible Design" and ICC A117.1 for shower and dressing compartments designated as accessible.

2.2 SHOWER RECEPTORS

A. General: Manufacturer's standard, prefabricated, terrazzo receptor complete with integral drain.

1. Curb: Not less than 2 inches and not more than 9 inches deep when measured from the top of the curb to the top of the drain; with curb threshold not less than 1 inch below the sides and back of the receptor; and with a ramped entrance surface for accessible compartments.
2. Floor: Finished, sloping uniformly toward the drain and not less than 1/4 unit vertical in 12 units horizontal and not more than 1/2 inch.
3. Drain Strainer: Manufacturer's standard, removable stainless steel strainer.
4. Drain Gasket: Manufacturer's standard gasket sized to fit waste pipe.

B. Finish: Manufacturer's standard finish on exposed surfaces, as selected by Director’s Representative from manufacturer's full range and with slip-resistant floor surface texture.

2.3 MATERIALS

A. Stainless Steel Sheet: ASTM A240 or ASTM A666, Type 304, stretcher-leveled standard of flatness.

B. Stainless Steel Castings: ASTM A743.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Comply with manufacturer's written installation instructions. Install compartments rigid, straight, level, and plumb. Secure compartments in position with manufacturer's recommended anchoring devices.

1. Clearances for Dressing Compartments: Maximum 1/2 inch between pilasters and panels; 1 inch between panels and walls.

B. Shower Receptors: Install prefabricated shower receptors with drain gasket compression fit to OD of waste pipe.

END OF SECTION 102116.19

SECTION 102233 - ACCORDION FOLDING PARTITIONS

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.

B. Structural support beam for the automatic vertically retractable acoustical wall and end-mounted motor assembly.

C. Ceiling storage pockets along axis of automatic vertically retractable acoustical wall – Section

D. Bulkheads and sound insulation above, below and in the fixed walls at both ends of the automatic vertically retractable acoustical wall, per ASTM E557.

E. All the site wiring and connections for main power, including disconnect switches at each motor location. All site wiring and connections for control, including installation of key switches.

1.2 SUMMARY

A. Section Includes:

1. Electrically operated, automatic vertically retractable acoustical wall.

1.3 ITEMS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION

A. Remote Control Stations: Deliver the remote control stations to the Electrical Work Contractor for installation.

1.4 DEFINITIONS

A. NIC: Noise Isolation Class.

B. NRC: Noise Reduction Coefficient.

C. STC: Sound Transmission Class.

D. Automatic Vertically Retractable Acoustical Wall (from here on called Operable Wall):

1. Refers specifically to acoustical operable walls that, when in the down position (closed) are hard, rigid, flat, plumb walls, made of a grid of rectangular acoustical panels, and when are lifted (opened), fold upward (vertically) without the use of any manual labor, in a manner similar to an accordion, into a pocket in the ceiling, between roof joists, or up

between built in bulkheads. In the down (closed) position, the wall shall be comprised of two vertical planes of acoustical panels, separated by an acoustical air space.

2. The operable wall shall open and close in a manner similar to an accordion, in that all wall panels fold and unfold at the exact same time, at the exact same rate.

E. Standard Drive System:

1. The motor drive assembly is mounted directly above the centerline of the operable wall and located to one end of the wall. Cables from the motor must pass through a port cut into a perpendicular support beam. Support steel is only required at one location. Minimum wall length without modifying the system is 11'-3" (3430mm). A minimum 24" x 48" access panel must be provided in soffit below motor for maintenance access.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.6 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer's installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

E. Shop Drawings: For accordion folding partitions.

1. Include plans, elevations, sections, and attachment details depicting layout of operable wall system based on field verified dimensions.
2. Indicate storage and operating clearances.
3. Indicate location and installation requirements for hardware and track, blocking, and direction of travel.
4. Indicate facing-material seam locations if any.
5. Include diagrams for power, signal, and control wiring.

a. Forward copy of approved wiring diagrams to the Electrical Work Contractor for installations of wiring and connections required under the Electrical Work Contract.

F. Samples for Initial Selection: For each type of exposed material, facing material, and finish indicated.

1. Include similar Samples of accessories involving color selection.

G. Samples for Verification: For each type of exposed material, facing material, and finish indicated, prepared on Samples of size indicated below:

1. Textile Facing Material: Full width by not less than 36-inch- long section of fabric from dye lot to be used for the Work, with specified treatments applied. Show complete pattern repeat.
2. Facing Material Other Than Textile: Manufacturer's standard-size unit, not less than 3 inches square.
3. Edge Material: Not less than full width by 3 inches long.
4. Hardware: Manufacturer's standard exposed door-operating device.

H. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:

1. Partition track, track supports, switches, turning space, and storage layout.
2. Suspended ceiling components.
3. Structural members to which suspension systems and operating motor will be attached, and structural members with openings that components of operating system must pass-through.
4. Size and location of initial access modules for acoustical tile.
5. Items penetrating finished ceiling, including the following:

    a. Lighting fixtures.
    b. HVAC ductwork, outlets, and inlets.
    c. Speakers.
    d. Sprinklers.
    e. Smoke detectors.
    f. Access panels.

I. Setting Drawings: For embedded items and cutouts required in other work, including support-beam, mounting-hole template.

J. Qualification Data: For manufacturer and Installer.

K. Product Certificates: For each type of accordion folding partition, from manufacturer.

L. Sample Warranty: For manufacturer's special warranty.

1.7 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For accordion folding partitions to include in maintenance manuals.

1. Operation and maintenance documentation directory manuals.
2. Emergency manuals.
3. Systems and equipment operation manuals.
4. Systems and equipment maintenance manuals.
5. Product maintenance manuals.
6. In addition to items specified above, include the following:

    a. Facing materials and finishes for exposed trim and accessories. Include precautions for cleaning materials and methods that could be detrimental to finishes and performance.
    b. Seals, hardware, track, carriers, and other operating components.

c. Electric operator and controls.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.9 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of accordion folding partitions that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Faulty operation of accordion folding partitions.
b. Deterioration of metals, metal finishes, and other materials beyond normal use.

2. Warranty Period: Two years from date of Substantial Completion.
3. Warranty Period for Pantographic Frames, Trolleys, and Tracks: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Acoustical Performance: Provide accordion folding partitions tested by a qualified testing agency for the following acoustical properties, according to test methods indicated:

1. Sound-Transmission Requirements: Accordion folding partition assembly tested in a laboratory for sound-transmission loss performance according to ASTM E90, calculated according to ASTM E413, and rated for not less than the STC value indicated.

B. Fire-Test-Response Characteristics: Provide partitions with finishes complying with one of the following, as determined by testing identical products by a testing and inspecting agency acceptable to authorities having jurisdiction:

1. Surface-Burning Characteristics: Comply with ASTM E84; 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.

2. Fire Growth Contribution: Complying with acceptance criteria of local code and authorities having jurisdiction when tested according to NFPA 265 Method B Protocol or NFPA 286.

C. Fire Resistance: Provide fire-rated accordion folding partitions complying with NFPA 80, based on testing according to UL 10B for fire-rated door assemblies.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.2 ACCORDION FOLDING PARTITION

A. Accordion Folding Partition: Accordion folding frame with pantograph or hinged sections designed for horizontal extension and retraction, covered with decorative facing material, reinforced for hardware attachment, supported by overhead suspension system, and equipped with manufacturer's standard air-release method to prevent billowing.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include:

a. Basis-Of-Design: Skyfold Classic 51.

B. Partition Type: Automatic Vertically Retractable Acoustical Wall with the following hardware:

1. Acoustical panels:

a. Acoustical panels shall be faced with steel that is compatible with a wide variety of architectural finishes such as paint, vinyl, fabric, specialty metals, wood veneer, etc.
b. Acoustical panels, together with all of the sound insulation, shall be made of non-combustible or fire-treated materials.
c. Acoustical panels shall be fabricated to satisfy the rigid criteria when the operable wall is down (closed) and to ensure that there is no interference between panels when the wall is in motion.
d. Acoustical panels shall be architecturally flat with no bowing, oil canning, warping, waviness or any other surface deformation and discontinuity.
e. Acoustical panels shall have the finish of the architect’s choice, provided that the finish has been approved by the operable wall manufacturer to ensure compatibility with the wall panels. The following criteria must be met:

1) Maximum weight of material: 0.111 lbs/ft² (0.542 kg/m²).
2) Maximum thickness of material: 1/8” (3mm).

2. Folding Mechanism:

a. The hanging, folding and extension mechanism shall be made from structural grade aluminum extrusions and structural shapes to achieve the minimum assembled weight.
b. All wear surfaces, such as bushings, spacers, pins, discs, bearings, and sleeves shall be designed to function quietly and with minimum wear. Minimum service life expectancy is 10,000 cycles.
c. The hangers, which fasten the lifting mechanism to the support steel, shall be fabricated from steel and shall be welded or bolted to the support steel supplied by others.

3. Motor Drive:

    a. The motor drive should be sized to open and close the wall effectively over a 10,000-cycle design life of the wall.
    b. Ball bearings shall be used in the folding mechanism. In no circumstance shall chain or belt drive systems be acceptable.
    c. There shall be a wire rope cable for every set of folding mechanisms. This cable shall be of 6 x 31 construction aircraft cable and shall be made of galvanized steel. The diameter of the cables shall be sized so that they shall be able to hold the entire weight of the wall, with the appropriate safety factor.
    d. The cable wraps on yoyo drums with 2 safety wraps and multiple layers of cable.
    e. The line shaft, sized to deliver the required torque with minimum deflection, shall support and rotate the cable drums.
    f. Flange bearings shall be used for the drive system, located immediately on both sides of the drum assembly.
    g. The motor drive shall be sized to deliver sufficient amount of torque to safely and effectively raise and lower the operable wall over its design life.
    h. The motor drive shall use the latest in industry standards in thermal protection, overload protection, quick acting fuses, etc., in order to ensure the safety and reliability of the system.

4. Safety Equipment:

    a. The operable wall shall employ an electromagnetic type of brake which shall activate firmly, without hesitation, when power is lost to the system. This brake shall have a minimum retarding torque rating equal to 200% of the motor drive's full load torque. The drive system shall be equipped with a manual override and a brake release lever.
    b. The operable wall shall employ a dynamic brake, distinct and separate from the brake in 2.2.4.1, in order to lower the wall at a controlled speed of no more than approximately 150% of the normal down speed, in the case of a catastrophic failure in the motor drive's power train. Alternately, the operable wall shall employ a brake, distinct and separate from the brake in 2.2.4.1, in order to completely halt the downward motion of the wall in the case of a catastrophic failure in the power train.
    c. The operable wall shall employ electrical or other limit switches in order to stop the wall at its up and down travel limits.
    d. The operable wall shall employ an over torque detector in order to sense a jam in the system and to act as an over travel limit in the up direction should the primary limit switch fail to act in 1.3.2.4. This over torque sensor shall be mechanical, using the motor's torque arm in its over torque detection.
    e. The entire length of the bottom edge of the operable wall shall be equipped with a continuous pressure sensing strip which shall cut power to the motor drive and shall activate the brake outlined in 2.2.4.1, if the sensing edge comes in firm contact with an object, before the operable wall is in the full down (closed) position. The operable wall will automatically reverse direction and ascend for approximately 3 seconds to clear the obstruction. The power shall remain cut to the motor drive until the switches have been released. The operation of the operable wall can resume once the obstruction is removed.

5. Electrical:

    a. The operable wall shall be equipped for a three-phase power supply to the electrical control box.
    b. Standard electrical control box will be NEMA 1. NEMA 4 shall be available on request from the manufacturer.
    c. Low voltage wiring (by others). 18-gauge wiring from the switches to the control box.
    d. Switches (standard): Two (2) push button switches wired in series with power controlled by a single, three position key switch. One push button switch shall be equipped with an LED that flashes fault codes in case of an electrical system failure. (Installation and wiring by others).
    Touch Screen Operator Stations (optional): Two (2), 4.3" resistive LCD touch screens, wired in series with multilingual capabilities and 4-digit adjustable user pin. The screens will display faults in case of a failure with the electrical system. (wiring by others).

6. Fabrication:

    a. Factory assemble all components, assemblies and systems into the largest possible assemblies in order to minimize the amount of assembly on site.

C. STC: 51.

D. Dimensions: Fabricate partitions to form an assembled system of dimensions indicated on Drawings and verified by field measurements.

E. Facing Material: Plastic laminate.

1. Color/Pattern: Match Basis of Design Color: Wilsonart Laminate, 7937 River Cherry.

2.3 COMPONENTS

A. Posts and Seals: Provide types of posts and seals that produce accordion folding partitions complying with performance requirements.

1. Posts: Steel or aluminum; formed with deep-nesting and interlocking interfaces and fabricated to ensure rigidity of accordion folding partition.
2. Perimeter Seals: Manufacturer's standard vinyl, neoprene, or woven silica vertical seals, horizontal top and bottom seals, and closures for lead posts and jambs.

B. Hardware: Manufacturer's standard manually operated pulls, latches, locks, and bolts as required to operate accordion folding partitions; with decorative, protective finish.

C. Trim: Manufacturer's standard with decorative, protective finish.

D. Tiebacks: As required to maintain accordion folding partitions in stacked position; with manufacturer's standard finish.

2.4 SUSPENSION SYSTEMS

A. The hangers, which fasten the lifting mechanism to the support steel, shall be fabricated from steel and shall be welded or bolted to the support steel supplied by others.

B. Carriers: Trolley system as required for size and weight of partition and for easy, quiet operation; with manufacturer's standard ball-bearing carriers at lead post and manufacturer's standard ball-bearing carriers at intermediate partition supports.

1. Wheels: Manufacturer's standard.

C. Track Switches and Accessories: Manufacturer's standard switches as required for type of operation, storage, track configuration, and layout indicated.

D. Aluminum Finish: Mill finish or manufacturer's standard, factory-applied, decorative finish unless otherwise indicated.

E. Steel Finish: Factory-applied, corrosion-resistant, protective coating unless otherwise indicated.

2.5 ELECTRIC OPERATORS

A. Factory-assembled electric operation system of size and capacity recommended and provided by accordion folding partition manufacturer for partition specified; with electric motor and factory-prewired motor controls, speed reducer, chain drive, remote-control stations, control devices, and accessories required for operation. Include wiring from control stations to motor. Coordinate operator wiring requirements and electrical characteristics with building electrical system.

B. Comply with NFPA 70.

C. Motor Electrical Characteristics:

1. Horsepower: Manufacturer's standard.
2. Volts: 115.
3. Phase: Polyphase.
4. Hertz: 60.

D. Control Equipment: Comply with NEMA ICS 1, NEMA ICS 2, and NEMA ICS 6.

E. Remote-Control Station: For partitions indicated, provide manufacturer's standard key-operated, constant-pressure, three-position control station labeled "Open," "Close," and " Stop." Provide two keys per station.

F. Obstruction-Detection Device: For partitions indicated, provide automatic safety sensor indicated that causes operator to immediately stop and reverse direction.

1. Sensor Edge: Contact-pressure-sensitive safety edge along partition's leading edge.

G. Limit Switches: Provide each partition with adjustable switches, interlocked with motor controls and set to automatically stop accordion folding partition at fully extended and fully stacked positions.

H. Electric Interlock: Provide each partition with safety interlocks to prevent operation of accordion folding partition under the following conditions:

1. On partition, to prevent operation when partition is extended and locked.
2. On storage pocket door, to prevent partition operation if door is not in fully open position.
3. On partitions, at location of convergence by another partition, to prevent operation if merging partitions are in place.

I. Emergency Release Mechanism: For partitions indicated, provide quick disconnect-release of electric-motor drive system, permitting manual operation in event of operating failure.

2.6 FACING MATERIALS

A. Provide facing materials with appropriate backing that comply with indicated fire-test-response characteristics, and that are factory attached to accordion folding partitions with concealed fasteners.

1. Factory-apply facing material free of air bubbles, wrinkles, blisters, and other defects; with vertical invisible seams complying with Shop Drawings for location; and with no gaps or overlaps. Tightly secure and conceal raw and selvage edges of facing material for finished appearance. Horizontal butted edges or seams are not permitted.
2. Where facing material with directional, repeating, or matching grain are indicated, mark facing-material top and attach facing material in same direction.
3. Slip match laminate patterns.

B. Plastic Laminate: High-pressure decorative laminate; NEMA LD 3, Grade HGS.

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PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine flooring, floor levelness, structural support, and opening, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of accordion folding partitions.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with accordion folding partition manufacturer's written installation instructions. Install accordion folding partitions level and plumb, with tight joints and uniform appearance, and free of deformation and surface and finish irregularities.

B. Install accordion folding partitions and accessories after other finishing operations, including painting, have been completed in area of partition installation.

C. Broken, cracked, chipped, deformed, or unmatched sections are unacceptable.

D. Broken, cracked, deformed, or unmatched seals or seals with gaps at butted ends are unacceptable.

E. Light-Leakage Test: Illuminate one side of partition installation and observe vertical joints and top and bottom seals for voids. Adjust partitions for alignment and full closure of vertical joints and full closure along top and bottom seals.

3.3 ADJUSTING

A. Adjust accordion folding partitions to operate smoothly, without warping or binding. Lubricate hardware and other moving parts as recommended by manufacturer.

B. Adjust storage pocket doors to operate smoothly and easily, without binding or warping. Check and readjust operating hardware. Confirm that latches and locks engage accurately and securely without forcing or binding.

C. Electrically Operated Partitions: Adjust electric interlocks to properly control partition operation.

D. Verify that safety devices are properly functioning.

3.4 DEMONSTRATION

A. Engage a Company Field Advisor to train Facility's maintenance personnel to adjust, operate, and maintain accordion folding partitions.

END OF SECTION 102233

SECTION 102600 - WALL AND DOOR PROTECTION

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:

1. Wall Protection Panels.
2. Corner guards.

1.3 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer's installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

1. Include construction details, material descriptions, impact strength, dimensions of individual components and profiles, and finishes.

E. Shop Drawings: For each type of wall and door protection showing locations and extent.

1. Include plans, elevations, sections, and attachment details.

F. Samples for Verification: For each type of exposed finish on the following products, prepared on Samples of size indicated below:

1. Corner and End-Wall Guards: 12 inches long. Include example top caps.
2. Abuse-Resistant Wall Covering: 6 by 6 inches square.

G. Sample Warranty: For special warranty.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of wall and door protection product to include in maintenance manuals.

1. Include recommended methods and frequency of maintenance for maintaining best condition of wall and corner guards. Include precautions against using cleaning materials and methods that may be detrimental to finishes and performance.

1.5 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. Mounting and Accessory Components: Amounts proportional to the quantities of extra materials. Package mounting and accessory components with each extra material.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store wall protection in original undamaged packages and containers inside well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.

1. Store wall protection:

a. Store corner-guard covers in a vertical position.
b. Store wall-guards in a horizontal position.

1.7 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of wall-protection units that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including detachment of components from each other or from the substrates, delamination, and permanent deformation beyond normal use.
b. Deterioration of metals, metal finishes, and other materials beyond normal use.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain wall-protection products of each type from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Surface Burning Characteristics: Comply with ASTM E84 or UL 723; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: 25 or less.
2. Smoke-Developed Index: 450 or less.

B. Regulatory Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities and ICC A117.1.

2.3 CORNER GUARDS

A. Surface-Mounted, Metal Corner Guards: Fabricated as one piece from formed or extruded metal with formed edges; with 90- or 135-degree turn to match wall condition.

1. 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. American Floor Products Company, Inc.
    b. Korogard Wall Protection Systems; a division of RJF International Corporation.
    c. Pawling Corporation.
    d. Approved equivalent.

2. Material: Stainless-steel sheet, Type 304.

    a. Thickness: Minimum 0.0781 inch(14 ga).
    b. Finish: Directional satin, No. 4.

3. Material: Extruded aluminum, minimum 0.0625 inch (14 ga) thick, with clear anodic finish.
4. Wing Size: Nominal 1-1/2 by 1-1/2 inches.
5. Corner Radius: 1/8 inch.
6. Mounting: Flat-head, countersunk screws through factory-drilled mounting holes.

2.4 ABUSE-RESISTANT WALL COVERINGS

A. Abuse-Resistant Sheet Wall Covering <WP-1>: Fabricated stainless steel diamond plate wall protection.

1. 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. Protek Systems, Inc.; WPSD-12 Stainless Steel Diamond Plate Wall Covering.
    b. InPro, Corp.; Stainless Steel Diamond Plate
    c. Pawling Corporation, SAD-125 Diamond Tread Plate.
    d. Approved equivalent.

2. Size: As indicated, see drawings.
3. Sheet Thickness: 0.125 inch.
4. Height: As indicated.
5. Trim and Joint Moldings: Smooth butt joint at corners.
6. Mounting: Mechanical fastener.

2.5 MATERIALS

A. Fasteners: Aluminum, nonmagnetic stainless-steel, or other noncorrosive metal screws, bolts, and other fasteners compatible with items being fastened. Use security-type fasteners where exposed to view.

2.6 FABRICATION

A. Fabricate wall and door protection according to requirements indicated for design, performance, dimensions, and member sizes, including thicknesses of components.

B. Factory Assembly: Assemble components in factory to greatest extent possible to minimize field assembly. Disassemble only as necessary for shipping and handling.

C. Quality: Fabricate components with uniformly tight seams and joints and 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.

2.7 FINISHES

A. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. 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.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and wall areas, with Installer present, for compliance with requirements for installation tolerances, and other conditions affecting performance of the Work.

B. Examine walls to which wall and door protection will be attached for blocking, grounds, and other solid backing that have been installed in the locations required for secure attachment of support fasteners.

1. For wall and door protection attached with adhesive, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

C. 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.

B. Before installation, clean substrate to remove dust, debris, and loose particles.

3.3 INSTALLATION

A. Installation Quality: Install wall and door protection according to manufacturer's written instructions, 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.

B. Mounting Heights: Install wall and door protection in locations and at mounting heights indicated on Drawings.

C. Accessories: Provide splices, mounting hardware, anchors, trim, joint moldings, and other accessories required for a complete installation.

1. Provide anchoring devices and suitable locations to withstand imposed loads.

D. Abuse-Resistant Wall Covering: Install top and edge moldings, corners, and divider bars as required for a complete installation.

E. Fire Doors: Install protection according to the listing of each item.

3.4 CLEANING

A. Immediately after completion of installation, clean plastic covers and accessories using a standard ammonia-based household cleaning agent.

END OF SECTION 102600

SECTION 102800 - TOILET, BATH, AND LAUNDRY ACCESSORIES

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:

1. Public-use washroom accessories.
2. Public-use shower room accessories.

B. Related Requirements:

1. Section 093013 "Ceramic Tiling" for ceramic toilet and bath accessories.

1.3 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.

1.4 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
2. Include anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.

E. Samples: For each exposed product and for each finish specified, full size.

1. Approved full-size Samples will be returned and may be used in the Work.

F. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.

1. Identify locations using room designations indicated.

G. Sample Warranty: For manufacturer's special warranties.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For accessories to include in maintenance manuals.

1.6 WARRANTY

A. Manufacturer's Special Warranty for Mirrors: Manufacturer agrees to repair or replace mirrors that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, visible silver spoilage defects.
2. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Performance: Design accessories and fasteners to comply with the following requirements:

1. Grab Bars: Installed units are able to resist 250 lbf concentrated load applied in any direction and at any point.

2.2 PUBLIC-USE WASHROOM ACCESSORIES

A. Source Limitations: Obtain each type of public-use washroom accessory from single source from single manufacturer.

B. Toilet Tissue (Roll) Dispenser:

1. Description: Single-roll dispenser.
2. Mounting: Surface mounted.
3. Operation: Noncontrol delivery with standard spindle.
4. Capacity: Designed for 4-1/2- or 5-inch diameter tissue rolls.
5. Material and Finish: Stainless steel, ASTM A480 No. 4 finish (satin).

C. Paper Towel (Folded) Dispenser:

1. Mounting: Surface mounted.
2. Minimum Capacity: 400 C-fold or 525 multifold towels.
3. Material and Finish: Stainless steel, ASTM A480 No. 4 finish (satin).
4. Lockset: Tumbler type.

D. Soap Dispenser:

1. Description: Designed for manual operation and dispensing soap in liquid or lotion form.
2. Mounting: Surface mounted.
3. Capacity: 40 Ounce.
4. Exposed Material and Finish: Stainless steel.

E. Grab Bar:

1. Mounting: Flanges with concealed fasteners.
2. Material: Stainless steel, 0.05 inch thick.

    a. Finish: Smooth, ASTM A480 No. 4 finish (satin) on ends and slip-resistant texture in grip area.

3. Outside Diameter: 1-1/2 inches.
4. Configuration and Length: As indicated on Drawings.

F. Sanitary-Napkin Disposal Unit:

1. Mounting: Surface mounted.
2. Door or Cover: Self-closing, disposal-opening cover.
3. Receptacle: Removable.
4. Material and Finish: Stainless steel.

G. Mirror Unit:

1. Frame: Stainless steel angle, 0.05 inch thick.

    a. Corners: Manufacturer's standard.

2. Size: As indicated on Drawings.

H. Hook:

1. Description: Single-prong unit.
2. Mounting: Concealed.
3. Material and Finish: Stainless steel.

2.3 PUBLIC-USE SHOWER ROOM ACCESSORIES

A. Shower Curtain Rod:

1. Description: 1-1/4-inch outside diameter, straight rod.
2. Configuration: As indicated on Drawings.
3. Mounting Flanges: Exposed fasteners; in material and finish matching rod.
4. Rod Material and Finish: Stainless steel, ASTM A480 No. 4 finish (satin).

B. Shower Curtain:

1. Size: Minimum 12 inches wider than opening by 72 inches high.
2. Material: Nylon-reinforced vinyl, minimum 9 oz. or 0.008-inch thick vinyl, with integral antibacterial and flame-retardant agents.
3. Color: As selected from manufacturer's full range.
4. Grommets: Corrosion resistant at minimum 6 inches o.c. through top hem.
5. Shower Curtain Hooks: Chrome-plated or stainless steel, spring wire curtain hooks with snap fasteners, sized to accommodate specified curtain rod. Provide one hook per curtain grommet.

C. Soap Dish:

1. Description: Surface mounted, with the following features:

   a. Washcloth bar.

2. Material and Finish: Stainless steel, ASTM A480 No. 4 finish (satin).

D. Robe Hook:

1. Description**:** Single-prong unit.
2. Material and Finish: Stainless steel, ASTM A480 No. 4 finish (satin).

2.4 HEALTHCARE ACCESSORIES

A. Sharps Disposal Container:

1. Mounting: Surface mounted.
2. Door or Cover: Self-closing, disposal-opening cover.
3. Receptacle: Removable.
4. Material and Finish: Stainless steel.
5. Lockset: Tumbler type.

2.5 CHILDCARE ACCESSORIES

A. Source Limitations: Obtain childcare accessories from single source from single manufacturer.

B. Diaper-Changing Station:

1. Description: Horizontal unit that opens by folding down from stored position and with child-protection strap.

    a. Engineered to support minimum of 250-lb static load when opened.

2. Mounting: Surface mounted, with unit projecting not more than 4 inches from wall when closed.
3. Operation: By pneumatic shock-absorbing mechanism.
4. Material and Finish: HDPE with plastic-laminate insert in color selected by Director's Representative.

2.6 UNDERLAVATORY GUARDS

A. Underlavatory Guard:

1. Description: Insulating pipe covering for supply and drain piping assemblies that prevents direct contact with and burns from piping; allow service access without removing coverings.
2. Material and Finish: Antimicrobial, molded plastic, white.

2.7 CUSTODIAL ACCESSORIES

A. Custodial Mop and Broom Holder:

1. Description: Unit with shelf, hooks, holders, and rod suspended beneath shelf.
2. Length: 36 inches.
3. Hooks: Four.
4. Mop/Broom Holders: Three, spring-loaded, rubber hat, cam type.
5. Material and Finish: Stainless steel, ASTM A480 No. 4 finish (satin).

    a. Shelf: Not less than nominal 0.05-inch thick stainless steel.
    b. Rod: Approximately 1/4-inch diameter stainless steel.

2.8 MATERIALS

A. Stainless Steel: ASTM A240 or ASTM A666, Type 304, 0.031-inch minimum nominal thickness unless otherwise indicated.

B. Galvanized-Steel Mounting Devices: ASTM A153, hot-dip galvanized after fabrication.

C. Fasteners: Screws, bolts, and other devices of same material as accessory unit, unless otherwise recommended by manufacturer or specified in this Section, and tamper and theft resistant where exposed, and of stainless or galvanized steel where concealed.

D. Mirrors: ASTM C1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.

2.9 FABRICATION

A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.

B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Director’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.

1. Remove temporary labels and protective coatings.

B. Grab Bars: Install to comply with specified structural-performance requirements.

3.2 ADJUSTING AND CLEANING

A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.

B. Clean and polish exposed surfaces according to manufacturer's written instructions.

END OF SECTION 102800

SECTION 104413 - FIRE PROTECTION CABINETS

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:

1. Fire-protection cabinets for the following:

a. Portable fire extinguisher.

B. Related Requirements:

1. Section 104416 "Fire Extinguishers" for portable, hand-carried fire extinguishers accommodated by fire-protection cabinets.

1.3 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

1. Show door hardware, cabinet type, trim style, and panel style. Include roughing-in dimensions and details showing recessed-mounting method and relationships of box and trim to surrounding construction.

E. Shop Drawings: For fire-protection cabinets.

1. Include plans, elevations, sections, details, and attachments to other work.

F. Samples: For each type of exposed finish required.

G. Samples for Initial Selection: For each type of exposed finish required.

H. Samples for Verification: For each type of exposed finish required, prepared on samples 6 by 6 inches square.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For fire-protection cabinets to include in maintenance manuals.

1.5 COORDINATION

A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.

B. Coordinate sizes and locations of fire-protection cabinets with wall depths.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain fire-protection cabinets, accessories, and fire extinguishers from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Rated Fire-Protection Cabinets: Listed and labeled to comply with requirements in ASTM E814 for fire-resistance rating of walls where they are installed.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.3 FIRE-PROTECTION CABINET

A. Cabinet Type: Suitable for fire extinguisher.

1. 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. Fire-End & Croker Corporation.
    b. MOON American.
    c. Strike First Corporation of America (The).
    d. Approved equivalent.

B. Cabinet Construction: Fire rated as required to meet the rating of the wall as shown on drawings.

1. Fire-Rated Cabinets: Construct fire-rated cabinets with double walls fabricated from 0.043-inch (18 ga)- thick cold-rolled steel sheet lined with minimum 5/8-inch- thick fire-barrier material. Provide factory-drilled mounting holes.

C. Cabinet Material: Cold-rolled steel sheet.

1. Shelf: Same metal and finish as cabinet.

D. Recessed Cabinet:

1. Exposed Flat Trim: One-piece combination trim and perimeter door frame overlapping surrounding wall surface, with exposed trim face and wall return at outer edge (backbend).

E. Cabinet Trim Material: Same material and finish as door.

F. Door Material: Steel sheet.

G. Door Style: Fully glazed panel with frame.

H. Door Glazing: Acrylic sheet.

1. Acrylic Sheet Color: Clear transparent acrylic sheet.

I. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.

1. Provide manufacturer's standard.
2. Provide manufacturer's standard hinge, permitting door to open 180 degrees.

J. Accessories:

1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire-protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
2. Lettered Door Handle: One-piece, cast-iron door handle with the word "FIRE" embossed into face.
3. Door Lock: Cam lock that allows door to be opened during emergency by pulling sharply on door handle.
4. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated.

a. Identify fire extinguisher in fire-protection cabinet with the words "FIRE EXTINGUISHER."

1) Location: Applied to cabinet glazing.
2) Application Process: Decals.
3) Lettering Color: Red.
4) Orientation: Vertical.

K. Materials:

1. Cold-Rolled Steel: ASTM A1008, Commercial Steel (CS), Type B.

    a. Finish: TGIC polyester powder coat, complying with AAMA 2603.
    b. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
    c. Color: As selected by Director’s Representative from manufacturer's full range.
2. Transparent Acrylic Sheet: ASTM D4802, Category A-1 (cell-cast sheet), 3 mm thick, with Finish 1 (smooth or polished).

2.4 FABRICATION

A. Fire-Protection Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.

1. Weld joints and grind smooth.
2. Miter corners and grind smooth.
3. Provide factory-drilled mounting holes.
4. Prepare doors and frames to receive locks.
5. Install door locks at factory.

B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles.

1. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch thick.
2. Fabricate door frames of one-piece construction with edges flanged.
3. Miter and weld perimeter door frames and grind smooth.

C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.5 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's AMP 500, "Metal Finishes Manual for Architectural and Metal Products," for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces of fire-protection cabinets from damage by applying a strippable, temporary protective covering before shipping.

C. Finish fire-protection cabinets after assembly.

D. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. 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.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine walls and partitions for suitable framing depth and blocking where recessed cabinets will be installed.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare recesses for recessed fire-protection cabinets as required by type and size of cabinet and trim style.

3.3 INSTALLATION

A. General: Install fire-protection cabinets in locations and at mounting heights indicated or, if not indicated, at height indicated below:

1. Fire-Protection Cabinets: 42 inches above finished floor to top of fire extinguisher.

B. Fire-Protection Cabinets: Fasten cabinets to structure, square and plumb.

1. Unless otherwise indicated, provide recessed fire-protection cabinets. If wall thickness is inadequate for recessed cabinets, provide semirecessed fire-protection cabinets.
2. Fasten mounting brackets to inside surface of fire-protection cabinets, square and plumb.

C. Identification:

1. Apply decals at locations indicated.

3.4 ADJUSTING AND CLEANING

A. Remove temporary protective coverings and strippable films, if any, as fire-protection cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.

B. Adjust fire-protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.

C. On completion of fire-protection cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.

D. Touch up marred finishes, or replace fire-protection cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by fire-protection cabinet and mounting bracket manufacturers.

E. Replace fire-protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 104413

SECTION 104416 - FIRE EXTINGUISHERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes portable, hand-carried fire extinguishers for fire extinguishers.

B. Related Requirements:

1. Section 104413 "Fire Protection Cabinets."

1.2 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product. Include rating and classification, material descriptions, dimensions of individual components and profiles, and finishes for fire extinguisher and mounting brackets.

E. Warranty: Sample of special warranty.

1.3 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For fire extinguishers to include in maintenance manuals.

1.4 COORDINATION

A. Coordinate type and capacity of fire extinguishers with fire-protection cabinets to ensure fit and function.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."

B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.

2.2 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

A. Fire Extinguishers: Type, size, capacity for mounting bracket indicated.

1. 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. Fire End & Croker Corporation.
    b. MOON American.
    c. Strike First Corporation of America (The).
    d. Approved equivalent.

2. Valves: Manufacturer's standard.
3. Handles and Levers: Manufacturer's standard.
4. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B, and bar coding for documenting fire-extinguisher location, inspections, maintenance, and recharging.

B. Multipurpose Dry-Chemical Type in Steel Container : UL-rated 3-A:40-B:C, 5-lb nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine fire extinguishers for proper charging and tagging.

1. Remove and replace damaged, defective, or undercharged fire extinguishers.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install fire extinguishers and mounting brackets in locations indicated and in compliance with requirements of authorities having jurisdiction.

END OF SECTION 104416

SECTION 115213 - PROJECTION SCREENS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Electrically operated, front-projection screens.
2. Ceiling mounted projectors

B. Related Requirements:

1. Section 055000 "Metal Fabrications" for metal support framing for front-projection screens.

1.2 DEFINITIONS

A. ALR: Ambient-light rejection; for specular reflective viewing surfaces, measured as the percentage of ambient light striking the viewing surface that has equal angles of incidence and reflection.

B. Gain: Ratio of light reflected from viewing-surface material to that reflected perpendicularly from a magnesium carbonate surface as determined in accordance with SMPTE RP 94.

C. Half-Gain Angle: The angle, measured from the axis of the viewing surface to the most central position on a perpendicular plane through the horizontal centerline of the viewing surface, where the gain is half of the peak gain.

1.3 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Submittals Package: Provide all submittals, except samples and closeout submittals, as a single submittal package.

E. Product Data: For each type of product.

F. Shop Drawings: Show layouts and types of front-projection screens. Include the following:

1. Drop heights.
2. Location of seams in viewing surfaces.
3. For end-mounted motors, location of screen centerline relative to ends of screen case.
4. Anchorage details, including connection to supporting structure for suspended units.
5. Details of juncture of screen case or trim with adjacent finishes.
6. For electrically operated units, wiring diagrams and location of wiring connections.
7. Accessories.
8. Associated Projector Units.

G. Samples for Initial Selection: For each type of exposed finish.

H. Samples for Verification: For each type of exposed finish, in manufacturer's standard sizes.

I. Product Schedule: For front-projection screens. Use same designations indicated on Drawings.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For front-projection screens to include in maintenance manuals.

B. Maintenance Data: For projector units to include in maintenance manuals.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Environmental Limitations: Do not deliver front-projection screens until spaces are enclosed and weathertight, wet-work in installation spaces is complete and dry, and temporary or permanent HVAC system is operating and maintaining ambient temperature and humidity conditions planned for building occupants during the remainder of the construction period.

B. Store front-projection screens in manufacturer's protective packaging and according to manufacturer's written instructions.

1.6 COORDINATION

A. Coordinate layout and installation of front-projection screens with adjacent construction, including ceiling suspension systems, light fixtures, HVAC system components, fire-suppression system, and partitions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations for Projection Screens: Obtain front-projection screens from single manufacturer. Obtain viewing surfaces and accessories, including mounting hardware, from screen manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Viewing-Surface and Masking Materials:

1. Mildew-Resistance Rating: Zero or 1 when tested in accordance with ASTM G21.
2. Flame Resistance: Passes NFPA 701.
3. Flame-Spread Index: Not greater than 75 when tested in accordance with ASTM E84.

2.3 ELECTRICALLY OPERATED, FRONT-PROJECTION SCREENS

A. General Requirements: Manufacturer's standard units, consisting of case, screen, motor, controls, mounting accessories, and other components necessary for a complete installation. Provide units that are listed and labeled as an assembly by Underwriters Laboratories Inc. (UL) or another testing and inspecting agency acceptable to authorities having jurisdiction.

1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
2. Screen Mounting: Top edge securely anchored to rigid metal roller and bottom edge formed into a pocket holding a metal rod, with ends of rod protected by plastic caps.

B. Suspended, Electrically Operated Screen: Unit designed and fabricated for suspended mounting.

1. 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. Draper Inc.
    b. Legrand AV; Legrand North America, LLC.
    c. Stewart Filmscreen Corporation.
    d. Approved equivalent.

2. Motor in Roller: Instant-reversing motor of size and capacity recommended in writing by screen manufacturer; with permanently lubricated ball bearings, automatic thermal-overload protection, preset limit switches to automatically stop screen in up and down positions, and positive-stop action to prevent coasting. Mount motor inside roller with vibration isolators to reduce noise transmission.
3. Wiring Compartment: Metal or metal lined.
4. Controls: Remote, three-position control switch installed in recessed device box with flush cover plate matching other electrical device cover plates in room where switch is installed.

    a. Provide with number of control switches indicated on Drawings.
    b. Provide power supply for low-voltage systems if required.
    c. Provide locking cover plates for switches.
    d. Provide key-operated, power-supply switch.
    e. Provide infrared remote control, consisting of battery-powered transmitter and receiver.
    f. Provide video interface control for connecting to projector. Projector provides signal to raise or lower screen.

5. Screen Case: Metal.

a. Ceiling Aperture: With closure, hinged to automatically open when screen is lowered and automatically close when screen is fully raised.

1) Provide screen case with trim flange to receive ceiling finish.

b. Finish on Exposed Surfaces: Prime painted.

6. Tab-Tensioned, ALR Viewing Surface: Minimum peak gain of 0.8, 57 percent ALR, and 50-degree minimum half-gain angle. Provide viewing surface without seams.

a. Tab Tensioning: Durable low-stretch cord, such as braided polyester, on each side of screen that is connected to edge of entire height of screen by tabs, to pull viewing surface flat horizontally.

7. Size of Viewing Surface: 65 by 116 inches.

C. Projector AV Units

1. 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. ViewSonic, CDW, LLC.
b. Epson America, Inc.
c. InFocus.
d. Approved equivalent.

2. Basis of Design:

a. Model:ViewSonic, V57-4K HDR RGB Laser Home Cinema Projector
b. Projection System: .65” 4K-UHD
c. Native Resolution: 3840x2160
d. Brightness: 5200 RGB Laser Lumens
e. Contrast Ratio: 30000000:1
f. Display Color: 1.07 Billion Colors
g. Light Source Type: RGB Laser
h. Light Source Life in Normal Mode: 20000
i. Projection Offset: 137% +/- 10%
j. Throw Ratio: 1.4-2.24
k. Optical Zoom: 1.6
l. Digital Zoom: 0.8x-2.0
m. Image Size: 30”-300”
n. Throw Distance: 0.93-14.88m
o. Keystone: H +/- 30deg., V +/- 15%deg
p. Audible Noise: Normal, 30dB
q. Resolution Support: VGA 640 x 480 to 4K 3840 x 2160
r. HDTV Compatibility: 480i, 480p, 576i, 576p, 720p, 1080i, 1080p, 2160p
s. Horizontal Frequency: 15K-255KHz
t. Vertical Scan Rate: 23-240Hz

3. Input:

    a. Input: HDMI 2

4. Output:

    a. Audio Out (3.5 mm): 1
    b. Audio Out (HDMI ARC): 1 (eARC)
    c. Speaker: 15W
    d. USB Type A (Power): 2

        1) USB2.0 - 5V/0.5A x1
        2) USB2.0 - 5V/1.5A x1
        3) Shared with USB A Service

    e. 12C Trugger (e.5 mm): 1

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install front-projection screens with screen cases in position and in relation to adjoining construction indicated. Securely anchor them to supporting substrate in a manner that produces a smoothly operating screen that, when lowered, has flat viewing surface and plumb vertical edges.

1. Install low-voltage controls in accordance with NFPA 70 and complying with manufacturer's written instructions.
2. Power supply and connections to be provided by the Electrical Work Contract.

    a. Wiring Method: Install wiring in raceway, except in accessible ceiling spaces and in gypsum board partitions, where unenclosed wiring method may be used. Use UL-listed plenum cable in environmental air spaces, including plenum ceilings. Conceal raceway and cables, except in unfinished spaces.

3. Test electrically operated units to verify that screen controls, limit switches, closures, and other operating components are in optimum functioning condition.
4. Test manually operated units to verify that screen-operating components are in optimum functioning condition.

END OF SECTION 115213

SECTION 122413 - ROLLER WINDOW SHADES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Manually operated roller shades with single rollers.
2. Motor-operated roller shades with single rollers.

1.2 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer's installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, features, finishes, and operating instructions for roller shades.
2. Include manufacturer's installation instructions.

E. Shop Drawings: Show fabrication and installation details for roller shades, including shadeband materials, their orientation to rollers, and their seam and batten locations.

1. Motor-Operated Shades: Include details of installation and diagrams for power, signal, and control wiring.

F. Samples for Initial Selection: For each type and color of shadeband material.

1. Include Samples of accessories involving color selection.

G. Samples for Verification: For each type of roller shade.

1. Shadeband Material: Not less than 10 inches square. Mark interior face of material if applicable.
2. Roller Shade: Full-size operating unit, not less than 16 inches wide by 36 inches long for each type of roller shade indicated.
3. Installation Accessories: Full-size unit, not less than 10 inches long.

H. Product Schedule: For roller shades. Use same designations indicated on Drawings.

I. Quality Control Submittals

1. Qualification Data: For Installer.
2. Product Certificates: For each type of shadeband material.
3. Product Test Reports: For each type of shadeband material, for tests performed by manufacturer and witnessed by a qualified testing agency.

J. Contract Closeout Submittals:

1. Operation and Maintenance Data: For roller shades to include in maintenance manuals.

K. Maintenance Material Submittals:

1. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

a. Roller Shades: Full-size units equal to 5 percent of quantity installed for each size, color, and shadeband material indicated, but no fewer than two units.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: Fabricator of products.

B. Product Certificates and Test Reports:

1. Fire-Test-Response Characteristics: Provide shades that are identical to products that pass NFPA 701 Small Scale Test for flame-propagation resistance performed by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify shades with appropriate markings of applicable testing and inspecting agency.
2. Shade Cloth Anti-Microbial Characteristics:

a. ASTM G 21 results for ATCC9642, ATCC9644, ATCC9348, and ATCC9645 indicating “No Growth Contact Area.”

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver roller shades in factory packages, marked with manufacturer, product name, and location of installation using same designations indicated on Drawings.

1.5 FIELD CONDITIONS

A. Environmental Limitations: Do not install roller shades until construction and finish work in spaces, including painting, is complete and dry 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 operating hardware of operable glazed

units through entire operating range. Notify Director's Representative of installation conditions that vary from Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain roller shades from single source from single manufacturer.

2.2 MANUALLY OPERATED SHADES WITH SINGLE ROLLERS

A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

1. MechoShade Systems, LLC; Mecho/5.
2. Rollease Acmeda Inc.; Zipscreen Manual Shades.
3. Draper, Inc.; Clutch Operated FlexShade.
4. Approved equivalent.

B. Chain-and-Clutch Operating Mechanisms: With continuous-loop bead chain and clutch that stops shade movement when bead chain is released; permanently adjusted and lubricated.

1. Bead Chains: Stainless steel.

a. Loop Length: Full length of roller shade.
b. Limit Stops: Provide upper and lower ball stops.
c. Chain-Retainer Type: Clip, jamb mount.

C. Rollers: Corrosion-resistant steel or extruded-aluminum tubes of diameters and wall thicknesses required to accommodate operating mechanisms and weights and widths of shadebands indicated without deflection. Provide with permanently lubricated drive-end assemblies and idle-end assemblies designed to facilitate removal of shadebands for service.

1. Roller Drive-End Location: Right side of interior face of side.
2. Direction of Shadeband Roll: Regular, from back (exterior face) of roller.
3. Shadeband-to-Roller Attachment: Manufacturer's standard method.

D. Mounting Hardware: Brackets or endcaps, corrosion resistant and compatible with roller assembly, operating mechanism, installation accessories, and mounting location and conditions indicated.

E. Roller-Coupling Assemblies: Coordinated with operating mechanism and designed to join up to three inline rollers into a multiband shade that is operated by one roller drive-end assembly.

F. Shadebands:

1. Shadeband Material: Light-filtering fabric.

2. Shadeband Bottom (Hem) Bar: Steel or extruded aluminum.

    a. Type: Enclosed in sealed pocket of shadeband material.
    b. Color and Finish: As selected by Director’s Representative from manufacturer's full range.

G. Installation Accessories:

1. Front Fascia: Aluminum extrusion that conceals front and underside of roller and operating mechanism and attaches to roller endcaps without exposed fasteners.

    a. Shape: L-shaped.
    b. Height: Manufacturer's standard height required to conceal roller and shadeband assembly when shade is fully open, but not less than 4 inches.

2. Installation Accessories Color and Finish: As selected from manufacturer's full range.

2.3 MOTOR-OPERATED, SINGLE-ROLLER SHADES

A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

1. Draper, Inc.; Motorized Flexshade AC.
2. MechoShade Systems, LLC; ElectroShade Motorized Shade System.
3. Approved equivalent.

B. Motorized Operating System: Provide factory-assembled, shade-operator system of size and capacity and with features, characteristics, and accessories suitable for conditions indicated, complete with electric motor and factory-prewired motor controls, power disconnect switch, enclosures protecting controls and operating parts, and accessories required for reliable operation without malfunction. Include wiring from motor controls to motors. Coordinate operator wiring requirements and electrical characteristics with building electrical system.

1. Electrical Components: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
2. Electric Motor: Manufacturer's standard tubular, enclosed in roller.

    a. Electrical Characteristics: 110-V ac.
    b. Maximum Total Shade Width: As required to operate roller shades indicated.
    c. Maximum Shade Drop: As required to operate roller shades indicated.
    d. Maximum Weight Capacity: As required to operate roller shades indicated.

3. Remote Control: Electric controls with NEMA ICS 6, Type 1 enclosure for recessed or flush mounting. Provide the following for remote-control activation of shades:

    a. Individual Switch Control Station: Momentary-contact, wall-switch-operated control station with open, close, and center off functions.

        1) Switch Positions: Three.
        2) Switch Style: Toggle.

b. Color: As selected by Director’s Representative from manufacturer's full range.

4. Limit Switches: Adjustable switches interlocked with motor controls and set to stop shades automatically at fully raised and fully lowered positions.
5. Operating Features:

a. Group switching with integrated switch control; single faceplate for multiple switch cutouts.

C. Rollers: Corrosion-resistant steel or extruded-aluminum tubes of diameters and wall thicknesses required to accommodate operating mechanisms and weights and widths of shadebands indicated without deflection. Provide with permanently lubricated drive-end assemblies and idle-end assemblies designed to facilitate removal of shadebands for service.

1. Roller Drive-End Location: Right side of interior face of shade.
2. Direction of Shadeband Roll: Regular, from back (exterior face) of roller.
3. Shadeband-to-Roller Attachment: Manufacturer's standard method.

D. Mounting Hardware: Brackets or endcaps, corrosion resistant and compatible with roller assembly, operating mechanism, installation accessories, and mounting location and conditions indicated.

E. Roller-Coupling Assemblies: Coordinated with operating mechanism and designed to join up to three inline rollers that are operated by one roller drive-end assembly.

F. Shadebands:

1. Shadeband Material: Light-filtering fabric.
2. Shadeband Bottom (Hem) Bar: Steel or extruded aluminum.

G. Installation Accessories:

1. Front Fascia: Aluminum extrusion that conceals front and underside of roller and operating mechanism and attaches to roller endcaps without exposed fasteners.

a. Shape: L-shaped.
b. Height: Manufacturer's standard height required to conceal roller and shadeband assembly when shade is fully open, but not less than 4 inches.

2.4 SHADEBAND MATERIALS

A. Shadeband Material Flame-Resistance Rating: Comply with NFPA 701. Testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

B. Light-Filtering Fabric: Woven fabric, stain and fade resistant.

1. Source: Roller shade manufacturer.
2. Type: Vinyl-coated fiberglass.
3. Weave: Basketweave.

4. Weight: 10.7 oz./sq. yd.
5. Roll Width: 122 inch.
6. Orientation on Shadeband: Up the bolt.
7. Openness Factor: 5 percent.
8. Color: As selected by Interior Design Representative from manufacturer's full range.

2.5 ROLLER SHADE FABRICATION

A. Product Safety Standard: Fabricate roller shades to comply with WCMA A 100.1, including requirements for flexible, chain-loop devices; lead content of components; and warning labels.

B. Unit Sizes: Fabricate units in sizes to fill window and other openings as follows, measured at 74 deg F:

1. Between (Inside) Jamb Installation: Width equal to jamb-to-jamb dimension of opening in which shade is installed less 1/4 inch per side or 1/2-inch total, plus or minus 1/8 inch. Length equal to head-to-sill or -floor dimension of opening in which shade is installed less 1/4 inch, plus or minus 1/8 inch.

C. Shadeband Fabrication: Fabricate shadebands without battens or seams to extent possible, except as follows:

1. Vertical Shades: Where width-to-length ratio of shadeband is equal to or greater than 1:4, provide battens and seams at uniform spacings along shadeband length to ensure shadeband tracking and alignment through its full range of movement without distortion of the material.
2. Railroaded Materials: Railroad material where material roll width is less than the required width of shadeband and where indicated. Provide battens and seams as required by railroaded material to produce shadebands with full roll-width panel(s) plus, if required, one partial roll-width panel located at top of shadeband.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, locations of connections to building electrical system, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ROLLER SHADE INSTALLATION

A. Install roller shades level, plumb, and aligned with adjacent units according to manufacturer's written instructions.

B. Electrical Connections: Connect motor-operated roller shades to building electrical system.

C. Roller Shade Locations: As indicated in window-covering schedule.

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 Director’s Representative, before time of Substantial Completion.

3.5 DEMONSTRATION

A. Engage a Company Service Advisor to train Facility maintenance personnel to adjust, operate, and maintain motor-operated roller shades.

END OF SECTION 122413

SECTION 123216 - MANUFACTURED PLASTIC-LAMINATE-CLAD CASEWORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Plastic-laminate-clad casework.
2. Casework hardware and accessories.

1.2 DEFINITIONS

A. Definitions in the AWI/AWMAC/WI's "Architectural Woodwork Standards" apply to the Work of this Section.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that casework can be supported and installed as indicated.

1.5 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

1. Include manufacturer’s installation instructions.

E. Shop Drawings: For plastic-laminate-clad casework.

1. Include plans, elevations, sections, and attachments to other work including blocking and reinforcements required for installation.
2. Indicate types and sizes of casework.
3. Indicate manufacturer's catalog numbers for casework.
4. Show fabrication details, including types and locations of hardware.
5. Indicate locations of and clearances from adjacent walls, doors, windows, other building components, and equipment.

6. Apply AWI's Quality Certification Program label to Shop Drawings.

F. Samples for Initial Selection: For casework and hardware finishes.

G. Samples for Verification: For the following:

1. Plastic Laminates: 8 by 10 inches, for each type, color, pattern, and surface finish required.

a. Provide one Sample applied to core material with specified edge material applied to one edge.

2. Thermally Fused Laminate Panels: 8 by 10 inches, for each color, pattern, and surface finish.

a. Provide edge banding on one edge.

3. Base Cabinet: One full-size, 16-inch wide, finished base cabinet complete with hardware, doors, and drawers but without countertop.
4. Wall Cabinet: One full-size, 12-inch wide, finished wall cabinet complete with hardware, doors, and adjustable shelves.
5. Full-Size Samples: Maintain at Project site during construction in an undisturbed condition as a standard for judging the completed Work. Unless otherwise indicated, approved sample units may become part of the completed Work if in undisturbed condition at time of Substantial Completion. Notify Director’s Representative of their locations.

H. Quality Control Submittals:

1. Qualification Data: For casework manufacturer and Installer.
2. Sample Warranty: For special warranty.
3. Field quality-control reports.

I. Contract Closeout Submittals

1. Quality Standard Compliance Certificates: AWI's Quality Certification Program certificates.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacture and Licensed participant in AWI's Quality Certification Program.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect finished surfaces during handling and installation with protective covering of polyethylene film or other suitable material.

1.8 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install casework until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative

humidity at levels planned for building occupants during remainder of construction period. Maintain temperature and relative humidity during remainder of construction period in range recommended for Project location by the AWI/AWMAC/WI's "Architectural Woodwork Standards."

B. Established Dimensions: Where casework is indicated to fit to other construction, establish dimensions for areas where casework is to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

C. Field Measurements: Where casework is indicated to fit to existing construction, verify dimensions of existing construction by field measurements before fabrication and indicate measurements on Shop Drawings. Provide fillers and scribes to allow for trimming and fitting.

D. Locate concealed framing, blocking, and reinforcements that support casework by field measurements before enclosing them, and indicate measurements on Shop Drawings.

1.9 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of casework that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Delamination of components or other failures of glue bond.
b. Warping of components.
c. Failure of operating hardware.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain from single source from single manufacturer.

2.2 GENERAL REQUIREMENTS FOR CASEWORK

A. Quality Standard: Unless otherwise indicated, comply with the AWI/AWMAC/WI's "Architectural Woodwork Standards" for grades of casework indicated for construction, finishes, installation, and other requirements.

1. Grade: Custom.
2. Provide labels and certificates from AWI certification program indicating that casework complies with requirements of grades specified.

a. Contractor shall register the Work under this Section with AWI's Quality Certification Program at www.awiqcp.org or by calling 855-345-0991.

B. Product Designations:

1. Drawings indicate configurations of manufactured plastic-laminate-clad casework by referencing designations of Casework Design Series numbering system in the Appendix of the AWI/AWMAC/WI's "Architectural Woodwork Standards."

2.3 PLASTIC-LAMINATE-CLAD CASEWORK

A. Design: Frameless cabinet construction with the following door and drawer-front style:

1. Reveal overlay.

B. Grain Direction for Wood-Grain Plastic Laminate:

1. Doors: Vertical with continuous vertical matching.
2. Drawer Fronts: Vertical with continuous vertical matching.
3. Face Frame Members: Lengthwise.
4. End Panels: Vertical.
5. Bottoms and Tops of Units: Side to side.
6. Knee Space Panels: Vertical.
7. Aprons: Horizontal.

C. Exposed Materials:

1. Plastic-Laminate Grade: VGP.

a. Colors and Patterns: As indicated by manufacturer's designation.

2. Edgebanding: Plastic laminate matching adjacent surfaces.

3. Solid Wood: Clear hardwood lumber of species indicated, selected for compatible grain and color.

a. Wood Species: Cherry.
b. Wood Finish: As indicated by manufacturer's designations.

D. Semiexposed Materials:

1. Plastic Laminate: Grade VGP unless otherwise indicated. Provide plastic laminate for semiexposed surfaces unless otherwise indicated.

a. Colors and Patterns: As indicated by manufacturer's designations.
b. Provide plastic laminate of same grade as exposed surfaces for interior faces of doors and drawer fronts and other locations where opposite side of component is exposed.

2. Thermally Fused Laminate (TFL) Panels: Provide thermally fused laminate panels for semiexposed surfaces unless otherwise indicated.

a. Colors and Patterns: As indicated by manufacturer's designations.
b. Provide plastic laminate of same grade as exposed surfaces for interior faces of doors and drawer fronts and other locations where opposite side of component is exposed.

3. Hardboard: Use only for cabinet backs where exterior side of back is not exposed.

E. Concealed Materials:

1. Solid Wood: With no defects affecting strength or utility.
2. Plywood: Hardwood plywood.
3. Plastic Laminate: Grade BKL.
4. Particleboard.
5. MDF.
6. Hardboard.

2.4 CASEWORK HARDWARE AND ACCESSORIES

A. Hardware, General: Unless otherwise indicated, provide manufacturer's standard satin-finish, commercial-quality, heavy-duty hardware.

1. Use threaded metal or plastic inserts with machine screws for fastening to particleboard except where hardware is through-bolted from back side.

B. Butt Hinges: Stainless steel, semiconcealed, five-knuckle hinges complying with ANSI/BHMA A156.9, Grade 1, with antifriction bearings and rounded tips. Provide two hinges for doors less than 48 inches high and provide three hinges for doors more than 48 inches high.

C. Frameless Concealed Hinges (European Type): ANSI/BHMA A156.9, Type B01602, self-closing. Provide two hinges for doors less than 48 inches high and provide three hinges for doors more than 48 inches high.

1. Degrees of Opening: 100 degrees.

D. Wire Pulls: Solid stainless steel wire pulls, fastened from back with two screws.

1. Provide two pulls for drawers more than 24 inches wide.

E. Door Catches: dual, self-aligning, permanent magnet catch. Provide two catches on doors more than 48 inches high.

F. Door and Drawer Bumpers: Self-adhering, clear silicone rubber.

1. Doors: Provide one bumper at top and bottom of closing edge of each swinging door.
2. Drawers: Provide one bumper on back side of drawer front at each corner.

G. Drawer Slides: ANSI/BHMA A156.9.

1. Manufacturer's standard.
2. Heavy Duty (Grade 1HD-100): Side mount.

a. Type: Full extension.
b. Material: Zinc-plated steel slides.
c. Motion Feature: Soft close dampener.

3. General-purpose drawers; provide 100 lb load capacity.

H. Adjustable Shelf Supports:

1. Pin-type, Single-pin metal shelf rests complying with ANSI/BHMA A156.9, Type B04013.

2.5 MATERIALS

A. Maximum Moisture Content for Lumber: 7 percent for hardwood and 12 percent for softwood.

B. Hardwood Plywood: HPVA HP-1, particleboard core except where veneer core is indicated.

C. Softwood Plywood: DOC PS 1.

D. Particleboard: ANSI A208.1, Grade M-2.

E. MDF: Medium-density fiberboard, ANSI A208.2, Grade 130.

F. Hardboard: ANSI A135.4, Class 1 tempered.

G. Plastic Laminate: High-pressure decorative laminate complying with NEMA LD 3.

1. Source Limitations: Obtain from single source from single manufacturer.

H. PVC Edgebanding for Plastic Laminate: Rigid PVC extrusions, through color with satin finish, 3.0 mm thick at doors and drawer fronts, 1.0 mm thick elsewhere.

I. Thermally Fused Laminate Panels: Particleboard or MDF finished with thermally fused, melamine-impregnated decorative paper and complying with requirements of NEMA LD 3, Grade VGL, for Test Methods 3.3, 3.4, 3.6, 3.8, and 3.10.

1. Edgebanding for Thermally Fused Laminate (TFL) Panels: PVC or polyester edgebanding matching thermally fused laminate panels.

2.6 FABRICATION

A. Plastic-Laminate-Clad Cabinet Construction: As required by referenced quality standard, but not less than the following:

1. Bottoms and Ends of Cabinets, and Tops of Wall Cabinets and Tall Cabinets: 3/4-inch particleboard.
2. Shelves: 3/4-inch thick plywood.
3. Backs of Casework: 1/2-inch thick particleboard or MDF where exposed, 1/4-inch thick, veneer-core hardwood plywood dadoed into sides, bottoms, and tops where not exposed.
4. Drawer Fronts: 3/4-inch particleboard.
5. Drawer Sides and Backs: 1/2-inch thick solid-wood or veneer-core hardwood plywood, with glued dovetail or multiple-dowel joints.
6. Drawer Bottoms: 1/4-inch thick hardwood plywood glued and dadoed into front, back, and sides of drawers. Use 1/2-inch material for drawers more than 24 inches wide**.**
7. Doors 48 Inches High or Less: 3/4 inch thick, with particleboard or MDF cores and solid-wood stiles and rails.

B. Filler Strips: Provide as needed to close spaces between casework and walls, ceilings, and equipment. Fabricate from same material and with same finish as casework.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances, location of framing and reinforcements, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Grade: Install casework to comply with same quality standard grade as item to be installed.

B. Install casework level, plumb, and true in line; shim as required using concealed shims. Where casework abuts other finished work, apply filler strips and scribe for accurate fit, with fasteners concealed where practical.

C. Base Cabinets: Set cabinets straight, level, and plumb. Adjust subtops within 1/16 inch of a single plane. Align similar adjoining doors and drawers to a tolerance of 1/16 inch. Bolt adjacent cabinets together with joints flush, tight, and uniform.

D. Wall Cabinets: Hang cabinets straight, level, and plumb. Adjust fronts and bottoms within 1/16 inch of a single plane. Fasten cabinets to hanging strips, masonry, framing, wood blocking, or reinforcements in walls and partitions. Align similar adjoining doors to a tolerance of 1/16 inch.

E. Fasten casework to adjacent units and to masonry, framing, wood blocking, or reinforcements in walls and partitions to comply with the AWI/AWMAC/WI's "Architectural Woodwork Standards."

F. Install hardware uniformly and precisely. Set hinges snug and flat in mortises unless otherwise indicated. Adjust and align hardware so moving parts operate freely and contact points meet accurately. Allow for final adjustment after installation.

G. Adjust operating hardware so doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

3.3 FIELD QUALITY CONTROL

A. Inspections: Provide inspection of installed Work through AWI's Quality Certification Program certifying that woodwork, including installation, complies with requirements of the Architectural Woodwork Standards for the specified grade.

1. Inspection entity shall prepare and submit report of inspection.

3.4 CLEANING

A. Repair or remove and replace defective work as directed on completion of installation.

B. Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish, as approved by Director's Representative.

END OF SECTION 123216

SECTION 123640 - STONE COUNTERTOPS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes stone countertops.

1.2 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer's installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Quality Control Submittals

1. Qualification Data: For fabricator.
2. Material Test Reports:

a. Stone Test Reports: For each stone variety proposed for use on Project, by a qualified testing agency, indicating compliance with required physical properties, according to referenced ASTM standards. Base reports on testing done within previous three years.
b. Sealant Compatibility and Adhesion Test Report: From sealant manufacturer indicating that sealants will not stain or damage stone.

E. Product Data: For each variety of stone, stone accessory and manufactured product.

1. Include manufacturer's installation instructions.

F. Shop Drawings:

1. Include plans, sections, details, and attachments to other work.
2. Show locations and details of joints.
3. Show direction of veining, grain, or other directional pattern.

G. Samples for Verification: For each stone type indicated, in sets of Samples not less than 12 inches square.

1. Include two or more Samples in each set and show the full range of variations in appearance characteristics expected in the completed Work.

H. Contract Closeout Submittals:

1. Maintenance Data: For stone countertops to include in maintenance manuals. Include product data for stone-care products used or recommended by Installer, and names, addresses, and telephone numbers of local sources for products.

1.3 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate stone countertops similar to that required for this Project, and whose products have a record of successful in-service performance.

B. Installer Qualifications: Fabricator of stone countertops.

C. Mockups: Build mockups to demonstrate aesthetic effects and to set quality standards for fabrication and execution.

1. Build mockup of typical countertop as shown on Drawings. Approved mockup can be included as a counter in project.

1.4 PRECONSTRUCTION TESTING

A. Preconstruction Laboratory Testing: Submit to joint-sealant manufacturer, for compatibility and adhesion testing according to sealant manufacturer's standard testing methods and according to Section 079200 "Joint Sealants," Samples of materials that will contact or affect joint sealants.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store and handle stone and related materials to prevent deterioration or damage due to moisture, temperature changes, contaminants, corrosion, breaking, chipping, and other causes.

1. Lift stone with wide-belt slings; do not use wire rope or ropes that might cause staining. Move stone, if required, using dollies with cushioned wood supports.
2. Store stone on wood A-frames or pallets with nonstaining, waterproof covers. Arrange to distribute weight evenly and to prevent damage to stone. Ventilate under covers to prevent condensation.

1.6 FIELD CONDITIONS

A. Field Measurements: Verify dimensions of construction to receive stone countertops by field measurements before fabrication and indicate measurements on Shop Drawings.

PART 2 - PRODUCTS

A. Source Limitations for Stone: Obtain each variety of stone, regardless of finish, from a single manufacturer with resources to provide materials of consistent quality in appearance and physical properties.

1. For stone types that include same list of varieties and sources, provide same variety from same source for each.

2.2 QUARTZ SURFACING <SS-2>

A. Material Standards:

1. Minimum Hardness per ASTM D2583: 60-65.
2. Minimum Water Absorption per ASTM C97: 0.04.
3. Minimum Flexural Strength per ASTM C880: 5,620.
4. Minimum Stone Abrasion Resistance per ASTM C241 or ASTM C1353: .62.

B. Approved Manufacturers:

1. Cosentino, Silestone.
2. Cambria Quartz.
3. Wilsonart Quartz.
4. LG Hausys, Viaterra Quartz.
5. Or approved equal.

C. Finish: Polished.

D. Color: Basis of design: Silestone, Desert Silver.

E. Accessories: Integral undermounted quartz sink as indicated in drawings.

2.3 ADHESIVES, GROUT, SEALANTS, AND STONE ACCESSORIES

A. General: Use only adhesives formulated for stone and ceramic tile and that are recommended by their manufacturer for the application indicated.

B. Water-Cleanable Adhesive: ANSI A118.3/Manufacturer’s recommended product.

C. Water-Cleanable Grout: ANSI A118.3 Manufacturer’s recommended product.

D. Sealant for Countertops: Manufacturer's standard sealant that complies with applicable requirements in Section 079200 "Joint Sealants" and that will not stain the stone it is applied to.

1. Mildew-Resistant Joint Sealant: Manufacturer’s recommended mildew resistant, single component, nonsag, neutral curing, silicone.
2. Joint Sealant: Manufacturer’s recommended joint sealant.
3. Color: As selected by Designer Representative from manufacturer's full range.

E. Plywood Subtops: Exterior softwood plywood complying with DOC PS 1, Grade C-C Plugged, touch sanded.

F. Counter Brackets: Metal standard front/wall mount countertop L-Brackets to be stud or blocking mounted. Furnish in appropriate sizes for both counter/vanity depth and weight loading. Black or paintable finish.

G. Grommets: Supply 2 ½" metal grommets for wire management as indicated.

H. Stone Cleaner: Specifically formulated for stone types, finishes, and applications indicated, as recommended by stone producer and, if a sealer is specified, by sealer manufacturer. Do not use cleaning compounds containing acids, caustics, harsh fillers, or abrasives.

2.4 STONE FABRICATION, GENERAL

A. Select stone for intended use to prevent fabricated units from containing cracks, seams, and starts that may impair structural integrity, function, or appearance.

1. Repairs that are characteristic of the varieties specified are acceptable provided they do not impair structural integrity or function and are not aesthetically unpleasing, as judged by Director's Representative.

B. Grade and mark stone for final locations to produce assembled countertop units with an overall uniform appearance.

C. Fabricate stone countertops in sizes and shapes required to comply with requirements indicated.

1. Clean sawed backs of stones to remove rust stains and iron particles.
2. Dress joints straight and at right angle to face unless otherwise indicated.
3. Cut and drill sinkages and holes in stone for anchors, supports, and attachments.
4. Provide openings, reveals, and similar features as needed to accommodate adjacent work.
5. Fabricate molded edges with machines having abrasive shaping wheels made to reverse contour of edge profile to produce uniform shape throughout entire length of edge and with precisely formed arris slightly eased to prevent snipping, and matched at joints between units. Form corners of molded edges as indicated with outside corners slightly eased unless otherwise indicated.
6. Finish exposed faces of stone to comply with requirements indicated for finish of each stone type required and to match approved Samples and mockups. Provide matching finish on exposed edges of countertops, splashes, and cutouts.

D. Carefully inspect finished stone units at fabrication plant for compliance with requirements for appearance, material, and fabrication. Replace defective units.

2.5 STONE COUNTERTOPS

A. General: Comply with recommendations in MIA's "Dimension Stone - Design Manual VII."

B. Nominal Thickness: Provide thickness indicated in drawings.

C. Edge Detail: Straight, slightly eased at top.

D. Splashes: Provide 3/4-inch thick backsplashes and end splashes unless otherwise indicated.

1. Height: As indicated.
2. Top-Edge Detail: Straight, slightly eased at corner.

E. Joints: Fabricate countertops in sections for joining in field.

1. Joint Locations: Not within 18 inches of a sink or cooktop and not where a countertop section less than 36 inches long may result, unless unavoidable.
2. Joint Type: Per manufacturer's recommendation.

F. Cutouts and Holes:

1. Undercounter Fixtures: Make cutouts for undercounter fixtures in shop using template or pattern furnished by fixture manufacturer. Form cutouts to smooth, even curves.

a. Provide vertical edges, rounded to 3/8-inch radius at juncture of cutout edges with top surface of countertop, slightly eased at bottom, and projecting 3/16 inch into fixture opening.

2. Fittings: Drill countertops in shop for plumbing fittings, undercounter soap dispensers, and similar items.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates to receive stone countertops and conditions under which stone countertops will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of stone countertops.

B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of stone countertops.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Advise installers of other work about specific requirements for placement of inserts and similar items to be used by stone countertop Installer for anchoring stone countertops. Furnish installers of other work with Drawings or templates showing locations of these items.

B. Before installing stone countertops, clean dirty or stained stone surfaces by removing soil, stains, and foreign materials. Use only mild cleaning compounds that contain no caustic or harsh materials or abrasives and rinse with clear water. Allow stone to dry before installing.

3.3 CONSTRUCTION TOLERANCES

A. Variation from Level: Do not exceed 1/8 inch in 96 inches, 1/4 inch maximum.

B. Variation in Joint Width: Do not vary joint thickness more than one-fourth of nominal joint width.

C. Variation in Plane at Joints (Lipping): Do not exceed 1/64-inch difference between planes of adjacent units.

3.4 INSTALLATION OF COUNTERTOPS

A. Fasten subtops to cabinets by screwing through subtops into cornerblocks of base cabinets. Shim as needed to align subtops in a level plane.

B. Install countertops over subtops with full spread of water-cleanable epoxy adhesive.

C. Do not cut stone in field unless otherwise indicated. If stone countertops or splashes require additional fabrication not specified to be performed at Project site, return to fabrication shop for adjustment.

D. Set stone to comply with requirements indicated. Shim and adjust stone to locations indicated, with uniform joints of widths indicated and with edges and faces aligned according to established relationships and indicated tolerances. Install anchors and other attachments as necessary to secure stone countertops in place.

E. Bond joints with stone adhesive and draw tight as countertops are set. Mask areas of countertops adjacent to joints to prevent adhesive smears.

   1. Clamp units to temporary bracing, supports, or each other to ensure that countertops are properly aligned and joints are of specified width.

F. Space joints with 1/16-inch gap for filling with sealant. Use temporary shims to ensure uniform spacing.

   1. Clamp units to temporary bracing, supports, or each other to ensure that countertops are properly aligned and joints are of specified width.

G. Complete cutouts not finished in shop. Mask areas of countertops adjacent to cutouts to prevent damage while cutting. Use power saws with diamond blades to cut stone. Make cutouts to accurately fit items to be installed, and at right angles to finished surfaces unless beveling is required for clearance. Ease edges slightly to prevent snipping.

H. Install backsplashes and end splashes by adhering to wall with water-cleanable epoxy adhesive. Leave 1/16-inch gap between countertop and splashes for filling with sealant. Use temporary shims to ensure uniform spacing.

I. Apply sealant to joints and gaps specified for filling with sealant; comply with Section 079200 "Joint Sealants." Remove temporary shims before applying sealant.

3.5 ADJUSTING AND CLEANING

A. In-Progress Cleaning: Clean countertops as work progresses. Remove adhesive, grout, mortar, and sealant smears immediately.

B. Remove and replace stone countertops of the following description:

1. Broken, chipped, stained, or otherwise damaged stone. Stone may be repaired if methods and results are approved by Director's Representative.
2. Defective countertops.
3. Defective joints, including misaligned joints.
4. Interior stone countertops and joints not matching approved Samples and mockups.
5. Interior stone countertops not complying with other requirements indicated.

C. Replace in a manner that results in stone countertops matching approved Samples and mockups, complying with other requirements, and showing no evidence of replacement.

D. Clean stone countertops no fewer than six days after completion of sealant installation, using clean water and soft rags. Do not use wire brushes, acid-type cleaning agents, cleaning compounds with caustic or harsh fillers, or other materials or methods that may damage stone.

END OF SECTION 123640

SECTION 142000 – ELEVATORS (NEW INSTALLATIONS)

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes the following:

1. Provide where shown, all materials, labor, services, permits and related work, to furnish a complete, operating, tested, functioning, documented traction elevator installation including all work shown, specified or required, including but not limited to the following:

a. Provide one (1) simplex machine-room-less traction elevator system of capacity and features scheduled and specified.

1.2 PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION

A. Deliver the following item to the Construction Work Contractor for installation:

1. Masonry inserts for support of guide rails.
2. Pit ladder.

1.3 RELATED WORK PROVIDED BY OTHERS: (DO NOT INCLUDE IN ELEVATOR BID)

A. On-site storage area for elevator equipment. The area shall be dry and enclosed within the building. Space will provide rollable access to the elevator hoistway at ground level, adjacent to the hoistway.

B. Scaffolding from the base to the top of the hoistway, if necessary, for use by the Construction Work Contractor for the construction of the hoistway closure wall and to be removed prior to equipment installation by the Elevator Contractor.

C. On-site refuse containers for disposal of elevator packing material.

D. Cut-outs to accommodate elevator equipment and patching/painting of walls, floors or partitions in the hoistway and machine room.

E. Other Contractor shall provide painting of hoistway entrance, frames and areas surrounding frames, where required.

F. Plumb vertical surface for entrances and supports and finish floor and grout between door frames to sill line.

G. Flooring material in elevator car.

H. Guarding and protection of the public from the hoistway during construction. Elevator Contractor shall provide barricades for the protection of workers as specified in this Section.

I. Elevator pit with sump pump as shown on the plumbing drawings.

J. Rough openings at entrances which are 10″ greater than the entrances.

K. In-fill at the entrance frames after installation of the frames by Elevator Contractor.

L. Permanent light fixture in each elevator pit together with GFCI outlet and outlet for the sump pump and light switch.

M. Fire extinguisher adjacent top elevator landing.

N. Illumination adjacent top elevator landing providing 19 footcandles minimum at the floor level.

O. Ventilation to maintain the temperature at the top of the hoistway below 113°F.

P. GFCI outlet along with illumination at the top of the hoistway in the vicinity of the hoistway machine. The light switch and outlet to be located in coordination with the Elevator Contractor.

Q. Fire alarm system interface with suitable relays for Phase 1 Recall and contact for firefighter's hat activation. (Connection to Elevator Controller by Elevator Contractor).

R. Shunt trip main circuit breaker at location as shown on the drawings.

S. 208Y/120V, 3-phase circuits for machine power and a separate 120V, 1-phase circuit for car lights.

1.4 PRODUCTS FURNISHED BY OTHERS AND INSTALLED UNDER THIS CONTRACT

A. The following items will be furnished under the Electrical Work Contractor for installation under this Contract:

1. Card access control equipment
2. CCTV equipment

1.5 SPECIFICATION INTENT

A. It is the intent of the Specification to provide traction elevators which conform to the State's Standards in terms of keying, car accessories and maintainable parts. The standard offering of an elevator vendor shall be considered acceptable so long as the furnished materials meet the State's standards for keying and replaceable parts, and the unit can be fully maintained and adjusted by third parties. The above shall be interpreted to include all annual and 5-year inspection tests as required by the AHJ. The vendor shall also agree to provide the sale of replacement and/or spare parts directly to the State's designated maintenance contractor.

B. By submission of this bid, Contractor agrees that any and all equipment, devices, software, etc., shipped from the factory with the elevator, or installed in the field during construction, shall remain on the unit regardless of the execution of a continuing maintenance agreement with the Facility. The Contractor shall not remove any component part, software module, license, etc. from the equipment at the expiration of the warrantee period. Intellectual property of the manufacturer shall remain the ownership of the manufacturer at all times and the State agrees to prohibit release of any such property to third parties without the consent of the manufacturer.

1.6 APPLICABLE CODES

A. Facilities to comply with all current applicable building codes. These codes include but are not limited to:

1. Americans with Disabilities Act (ADA).
2. 2020 Building Code of NYS.
3. NFPA 72 National Fire Alarm Code, 2016 Edition.
4. ASME A17.1 Safety Code for Elevators and Escalators, 2016 Edition.
5. NFPA 70 National Electric Code, 2017 Edition.

1.7 RELATED WORK SPECIFIED ELSEWHERE

A. Firestopping: Section 078413.

1.8 DEFINITIONS

A. Company Field Advisor: An employee of the Company which lists and markets the primary components of the elevator equipment under their name, who is certified by the Company to be technically qualified in design, installation, and servicing of the required products, or an employee of an organization certified by the foregoing company to be technically qualified in design, installation and servicing of the required products.

B. Traction Elevators: Elevators in which cars are hoisted by the action of a series of ropes, sheaves, and motors, together with other components of the work, including governors, safeties, car enclosures, hoistway entrances, operation systems, signal equipment, guide rails, electrical wiring, buffers, and devices to provide operation, safety, security, and required performance at rated speed and capacity.

C. 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.

D. Authority Having Jurisdiction (AHJ): For this project, the AHJ is the New York State Office of General Services.

1.9 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturers installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Waiver of Submittals: The "Waiver of Certain Submittal Requirements" in Section 013300 does not apply to the Work of Division 14.

E. Submittals Package: Submit the shop drawings, product data, samples, and quality control submittals specified below at the same time as a package except for the following:

1. Control System Wiring Diagrams (Shop Drawings).
2. Test Report (Quality Control Submittal).

F. Shop Drawings:

1. Hoistway, sections and layouts showing reaction points with reactions.
2. Entrance and car details.
3. Details of doors, frames, and sills.
4. Control System Wiring Diagrams.
5. Car and lobby fixture details.
6. Manufacturers machine and emergency brake drawings.
7. Location of masonry inserts for support of guide rails

G. Product Data:

1. Manufacturer's catalog sheets, specifications and installation instructions for each component specified.
2. Motor data shall be certified by the manufacturer. Provide calculations utilized to determine horsepower rating provided.

H. Samples:

1. Color Selections.

I. Quality Control Submittals:

1. Installers Qualifications Data:

   a. Name of each person who will be performing the Work.
   b. Employer's name, business address and telephone number.
   c. Names and addresses of the required number of similar projects that each person has worked on which meet the experience criteria.

2. Test Report: Acceptance test report.
3. Certificate: Affidavit signed by the Company Field Advisor and notarized, certifying that the equipment meets contract requirements and is operating properly.

J. Contract Closeout Submittals:

1. Operation and Maintenance Data: Deliver 2 copies, covering the installed products to the Director's Representative. Include lubrication charts, wiring diagrams and instructions. Mount and hang one copy of wiring diagrams in elevator machine room. Each sheet of wiring diagrams shall be laminated in plexiglass.
2. Deliver all portable diagnostic keyboards and or programming tools required for testing, service or maintenance to the Director's Representative. Include manuals containing all passwords, set up parameters, fault coding and all other operational and maintenance requirements. Contractor shall be able to demonstrate the required functionality of the diagnostic devices.

1.10 QUALITY ASSURANCE

A. Company Qualification: The Company, installers and supervisors employed to perform the Work of Division 14, shall be experienced in Elevator Work, and shall have been engaged in the rehabilitation of elevators and have installed the products specified in Division 14 for use on this project for a minimum of 3 years.

1. Furnish to the Director the names and addresses of 5 similar projects, which the products specified in Division 14 for use on this project, have been installed during the past 3 years.

B. Product Manufacturer Qualification: If products by Companies other than those specified in Division 14 are proposed for use, furnish the name, address and telephone number of at least 5 comparable installations located within a 100-mile radius of the project site, which can prove the proposed products have operated satisfactorily for 3 years.

1. Elevator control systems shall be supported by a manufacturer's technical support office staffed with technical field advisors located within a 300-mile radius of the project site.

C. Company Field Advisor: Secure the services of a Company Field Advisor for the following:

1. Render advice regarding installation, adjustment and operation of equipment.
2. Witness tests and certify with an affidavit that the equipment installed is in accordance with contract documents and is operating properly.
3. Explain available service programs to facility supervisory personnel for consideration.

D. Seismic Design Criteria: Project seismic design Category B, Elevator Seismic Zone 0. No special design constraints on the elevator system.

1.11 DELIVERY, STORAGE, AND HANDLING

A. Packing and Shipping: Protect equipment and exposed finishes during transportation and erection against damage.

1.12 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 in time for installation.

B. Coordinate locations and dimensions of other work relating to the elevator including sumps and sump pumps in pits and hoistbeams.

1.13 WARRANTY

A. Special Manufacturer's Warranty: Manufacturer's standard form in which manufacturer agrees to repair, restore, or replace defective elevator work within specified warranty period.

1. Warranty Period: 12 months from date of Project acceptance.

1.14 MAINTENANCE SERVICE

A. Initial Maintenance Service: Beginning upon Project acceptance and when the elevator car is turned over to the facility, provide one year full maintenance service by skilled employees of 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 same as those used in the manufacture and installation of original equipment.

1. Perform maintenance, including emergency callback service, during normal working hours.

a. Response Time: Two hours or less.

PART 2 - PRODUCTS

2.1 ELEVATOR EQUIPMENT

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering machine-room-less elevators that may be incorporated in the Work include, but are not limited to, the following

1. Approved installation companies:

a. KONE Inc.
b. Otis Elevator Company.
c. TK Elevator.
d. Schindler Elevator.

B. The basis of design is the Gen3 Edge product or the equivalent Kone Monospace 300 DX, TKE EOX, or Schindler 3300. Substitutions of a lesser quality or lighter duty use shall not be considered acceptable.

C. Contractors proposing to furnish the products of other vendors shall submit at the time of bid, a letter stating one of the following:

1. By submission of this bid the contractor certifies to the State that the contractor has reviewed the proposed elevator product and verified that it will meet the dimensional and performance requirements shown and specified for this project.

OR

2. By submission of this bid the contractor certifies to the State that the contractor has reviewed the proposed elevator product and verified that the contractor will be able to adjust the dimensional and building interface features shown and specified to allow installation of the proposed elevator product at no additional cost to the State or any other subcontractor or contractor. The contractor further certifies that the proposed unit will meet the performance requirements shown and specified for this project.

D. Type of Elevator: Passenger.

1. Rated Load: 3,000 lbs.
2. Rated Speed: 150 fpm.
3. Controller: Microprocessor, VVVF.
4. Operation: Selective-Collective.
5. Leveling: Two-way automatic.
6. Travel: ± 11′-4″.
7. Stops: 2.
8. Openings: 2
9. Type of Machine: Gearless Traction.
    a. Roping: 2:1.
10. Machine Location: Overhead.
11. Machine Room Floor: N/A, Machine-Room-Less.
12. Car Platform Size: TBD.
13. Net Car Size (Inside): ± 6′-8″W x 5′-0″D.
14. Hoistway Entrances: 3′-6″W x7′-0″H.
    a. Single speed horizontal slide type.
15. Car Doors: 3′-6″W x7′-0″H.
    a. Single speed horizontal slide type.
16. Door Operation: Power.

2.2 GENERAL MATERIALS AND COMPONENTS

A. Provide NYS OGS standard equipment. Where components are not otherwise indicated, provide only non-proprietary, ASME A17.1 and ADA compliant components as required for a complete system.

2.3 ELEVATOR CAR

A. Provide manufacturer's standard running platforms for custom elevator cars. Platform shall be ASME 17.1 compliant fabricated of welded steel. Subfloor shall be a minimum ¾″ marine grade plywood.

B. Custom elevator cars shall be produced by Elevator Interiors, Syracuse, NY. Car walls shall be 14 ga reinforced stainless steel, Rigidized 5-WL pattern. The car ceiling shall be 14 ga reinforced steel painted Bright White.

C. Provide two (2) vandal-resistant LED troffer light fixtures with polycarbonate lenses in each elevator. Any single fixture shall be capable of supplying a minimum of 5 footcandles at the car floor entrance threshold. Provide detailed submittal.

D. Provide and install manufacturer's standard "Luxury" or "Premium" ADA compliant, vandal resistant applied-style Car Operating Panel (C.O.P.) with:

1. Satin stainless steel finish.
2. Hands free emergency telephone installed in the C.O.P.
3. Emergency light.
4. Two-way communication.
5. Keyed off/on switches for inspection, phase two fire service, run/stop, light, fan, hoistway access, and independent service.

    a. Fire Service: # FEO-K1.
    b. Independent, Lights and Fan: Vendor standard keying.
    c. Inspection, Hoistway Access, and Run: Vendor standard keying.

6. Red illuminated Fire emblem, and hands free phone call received.
7. Local Alarm button, call cancel, alarm, door open, and door close.
8. Provide illuminated buttons with Braille tags and audible signal registered display for each floor.
9. C.O.P. shall be provided with permanently engraved fire service instructions.
10. C.O.P. shall contain a digital position indicator with voice annunciation and passing chime.

E. Floor shall be ⅛″ thick rubber sheet goods provided by Construction Work Contractor. Elevator Contractor to arrange sill heights to allow this finished material.

F. Provide electric fan operated ventilation, sufficient to provide one (1) air change per minute, approximately 300 cfm. Exhaust ductwork shall be completely concealed and vandal resistant.

G. Provide ASME A17.1 compliant ceiling emergency exit operable only from the outside. Provide and install a local alarm to be activated upon the opening of the exit door.

H. Provide Car Top Inspection station with guarded A19 Type LED light and switch and GFCI outlet.

I. Provide complete top of car handrail system.

J. Provide pad studs and pads. Arrangements that clip to wall panels or hook into vent slots are not acceptable. Pads shall be heavy duty brown canvas, as manufactured by Palmer Pads.

K. Provide closed loop door operator, hangers, clutch and interlocks.

L. Provide 4″ satin stainless base with vents and vent guards.

M. Provide flat stock satin stainless steel handrails and bumper rails on all three sides of car.

N. The elevator number shall be permanently engraved within the C.O.P.

2.4 ENTRANCE FIXTURES

A. Provide and install manufacturer's standard "Luxury" or "Premium" ASME A17.1, AHJ approved, ADA compliant, vandal resistant hall call fixtures at 42″ center line above the finished floor. Primary recall landing shall have permanently engraved fire service instructions within the call station fixture.

B. All fixtures shall be flush-mount, satin stainless steel finish. Jamb-mount fixtures are not acceptable.

C. Fire Service key switch (FEO-1 Barrel Key) on Primary recall landing only. Verify primary and secondary recall locations with the AHJ. Fixtures shall have illuminated buttons, Braille tags, and audible signal capability.

D. Provide fire pictographs on each landing, engraved on hall call fixtures.

E. Metal plate floor tags with Braille and raised lettering permanently attached to both sides of the doorframe jambs. Tags shall be riveted to the doorframe at 60″ above the finished floor. Tags shall be satin stainless steel.

F. Provide hoistway access key switches within hall call fixtures on terminal landing fixtures only.

G. Provide emergency phone line monitoring buzzer, light and alarm silence keyswitch at primary recall landing only. These functions may be integrated into the hall station or provided as a separate fixture.

H. Provide emergency two-way visual communication system complying with ASME A17.1-2019.

1. Mad Mosiac compatible control panel required.

2.5 ENTRANCES

A. 1½ hour UL fire rated doors and frames on each landing.

B. Doors shall be satin stainless steel, flush construction.

C. Nickel silver sills shall be provided at each landing.

D. Doorframes shall be stainless steel with satin finish.

E. Provide infrared door edge detector.

F. Provide Tri-lock door key plug #6950 at each entrance.

G. Provide sight guards and door restrictors.

2.6 MECHANICAL

A. Provide and install elevator controller within hoistway at top landing.

1. Drive type shall be AC variable voltage variable frequency, fully regenerative. The controller shall be factory equipped for emergency power operation as well as card access security.
2. VFD shall generate no more than 20% total current harmonic distortion back into the electrical system or shall be equipped with a filter to reduce distortion to the 20% total current harmonic distortion level. Provide detailed submittal data.
3. Capacity shall be as specified in ASME A17.1.
4. Provide door nudging and pre-opening.
5. Terminate all required fire alarm connections as directed to provide Phase 1 Recall and Phase 2 Emergency Operation.
6. Provide manufacturer's standard factory installed remote monitoring communication interface for Facility-supplied ethernet connection.
7. Provide connection for phone lines (provided by others) for emergency phones.
8. Make provisions to connect light/fan circuits to separate power disconnect left in the vicinity of the controller by a separate Contractor.

B. Rails, sheaves and beams shall be sized in accordance with ASME A17.1 requirements based on speed and capacity. Systems shall be engineered to match the hoistway and pit conditions.

C. Provide required concrete and masonry insets 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.

D. Provide approved capacity plates.

E. Safeties shall be Type "B" flexible safeties.

F. Guides shall be the manufacturer's standard roller guides.

G. Provide and install machine room-less AC gearless traction machine.

1. Locally available voltage is 208Y/120 volt, 3 phase, 60 Hz.
2. Motor shall be horsepower and voltage scheduled to meet the loading and speed requirements and to match the building voltage available.

3. Confirm available motor circuit ampacity as shown on the electrical plans and schedules.

H. Provide ropes and wedge sockets. Ropes shall be equalized with rope tensioner. Alternative suspension means are acceptable as long as metallic strength members are provided.

I. Provide interlocks and terminal landing devices for car entrances and counterweights. Pin all switches to rails where rail connections are made.

J. Provide fascias, dust covers, and toe guards.

K. Provide traveling cable, number, and type of conductors to suit elevator controller requirements. Provide additional communications- only traveling cable, with CAT5e twisted shielded pairs for use with security camera (provided by Facility). Cable shall also contain standard twisted shielded pairs for emergency phone and in-car card reader. Draka Model 18-020-99 with RJ-45 terminal blocks.

L. Provide pit stop switches. The stop switch shall be pushed to stop, pulled to run, mushroom head style. A toggle switch is not acceptable.

M. All hoistway wiring shall be wholly enclosed in cableways.

2.7 MICROPROCESSOR LOGIC CONTROLLER

A. Function:

1. The controller shall start and stop the car smoothly and shall cause the cab to make accurate landings under all load conditions.
2. Components and operating devices shall govern starting, stopping, direction of travel, acceleration, retardation and speed.

B. Type: Microprocessor based self-diagnostic programmable controller with an Erasable Programmable Read Only Memory with provisions for enabling random access memory for such items as timer adjustments and motion control tuning.

1. The printed circuit boards (modules) shall be of the type that plug into prewired mounting racks. No field wiring or alteration shall be necessary in order to replace defective modules.
2. Any field wiring changes required during construction shall be required to be made only to the mounting rack connection points and not to the individual module circuitry or components. If it becomes necessary to alter individual modules, they shall be returned to the factory where such design changes may be made so that correct replacements units are available.
3. Wiring connections for operating circuits and for external control circuits shall be brought to terminal blocks mounted in an accessible location within the controller cabinet. Terminal blocks using pierce-through serrated washers shall not be accepted.
4. Safety and Motion Circuits: Electro-Mechanical pilot type relays. Safety circuits shall be monitored by the microprocessor for redundant protection. All outputs shall be individually fused.
5. Identify each device and fuse (ampere rating) on panels by name, letter, or standard symbol, in an approved indelible and legible manner. Coordinate identification markings with

wiring diagrams. All logic symbols and circuitry designations shall be in accordance with ANSI Standards.

C. Hand-Held Diagnostic Tester: Shall plug into the control processing unit or shall be capable of being cable connected. Testers shall enable operators to monitor logic, timer, and counter values for more productive operation. Tester shall be furnished to the State at completion of the Project. Integral (LED) diagnostic devices shall be acceptable in lieu of hand-held tester.

D. Fault Protection System:

1. Protect against the following:

a. Complete power circuit protects from failure under short circuit.
b. Surge protection.
c. Overload.
d. Low voltage, phase loss, unbalanced voltage.

E. Components and Operating Devices:

1. Reverse phase relay.
2. Additional components and devices as required to suit type of operation specified.

2.8 PAINTING

A. Finish ferrous surfaces of the elevator Work with Company's standard multiple coat paint finish, (unless a more stringent finish is specified) including primer and latex enamel finish totaling not less than two coats. Exceptions: Do not paint sliding and rubbing surfaces. Use Company's standard colors, except as otherwise indicated.

1. Cab Color: Tampa Tangerine.

2.9 HANDICAP ACCESS SIGNS

A. Size: Minimum 6 x 6 inches.

B. Material: Plastic laminate.

C. Message: International Symbol of Access, with:

D. Colors:

1. Background: Blue.
2. Figures or Graphic Symbols: White.

2.10 CODE DATA PLATE

A. Provide a code data plate in accordance with Section 8.9 of the A17.1 Elevator Safety Code. Attach code data plate to the front of the controller

PART 3 - EXECUTION

3.1 DELIVERY OF TOOLS, MATERIALS AND EQUIPMENT

A. The Contractor shall assume responsibility and all costs associated with the delivery and removal of all materials and equipment. The Contractor shall furnish all trucking, rigging, and transportation for all items required to complete the project. In addition, the Contractor shall accept responsibility to protect the grounds, building, and building contents during associated deliveries and removals.

3.2 BARRICADES

A. Solid barricades shall completely enclose entrances to the shaft from the public and shall have a keyed locked entrance on each floor. Each barricade shall completely contain all portions of the project for each individual landing to a height of not less than 8′-0″ or to the ceiling. At no time shall the barricades be removed prior to the installation of fully functional safety interlocks, and installation of walls. At no time shall any entrance be left open to any elevator shaft. The Contractor shall comply with any and all Occupational Safety and Health Standards for general industry (26 CFR 1911) and for the Construction Industry (29 CFR 1926.) Special attention shall be addressed to Sections 1926.502 Personal Fall Arrest Systems and especially 1926.502(d)(ii) regarding work in Elevator Shafts by all persons working inside the guarded areas. The Contractor shall be required to show documentation that each person who has access to the elevator entrances has been trained in the proper use of personal fall protection. The State reserves the right to require additional safety precautions at any time. A copy of the "Elevator Industry Field Employee's Safety Handbook" shall be required on the site at all times and an additional copy shall be provided to State's Risk Management-Safety Department along with a job specific safety program prior to the beginning of any work. Perform work at all times in accordance with the minimum requirements of the "Elevator Industry Field Employee's Safety Handbook," published by Elevator World.

3.3 DUST PROTECTION

A. Barricades shall be so constructed as to protect adjacent portions of the building from dust and debris. Barricades shall be arranged to avoid damage to existing building finishes.

3.4 ELEVATOR EQUIPMENT

A. Install equipment in strict accordance with manufacturers printed installation instructions.

B. All discarded materials are the sole responsibility of the Contractors to completely remove from the site at their expense. The Contractor shall be responsible for documenting compliance with Project Construction Waste Diversion Plans.

C. Adjust and balance car float as required to allow smooth ride conditions.

D. Clean and adjust rails at project completion.

E. Provide AHJ inspection and full load test.

F. All components will be inspected by the Director's Representative prior to placing them in service. Additional components not included in this specification deemed by the Contractor necessary for inspection shall be standard.

3.5 EXAMINATION

A. Examine elevator areas, with Installer present, for compliance with requirements, installation tolerances, and other conditions affecting performance of elevator work. 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. Do not proceed with installation until unsatisfactory conditions have been corrected.

B. For the record, prepare a written report, endorsed by the installer, listing dimensional discrepancies and conditions detrimental to the performance of elevator work.

3.6 ADDITIONAL REQUIREMENTS

A. Comply with manufacturer's instructions and recommendations.

B. Welded Construction: Where welded construction is used, comply with AWS standards for workmanship and for qualifications of welding operators.

1. Submit welding certificates of any personnel performing field welding as a shop drawing.

C. Coordination: Coordinate elevator work with work of other trades for proper time and sequence to avoid construction delays. Use established benchmarks, lines, and levels to ensure dimensional coordination of the Work.

D. Sound Isolation: Mount rotating and vibrating equipment on vibration-isolating mounts designed to effectively prevent transmission of vibrations to structure and thereby eliminate sources of structure-borne noise from elevator system.

E. Lubricate operating parts of systems, including ropes, if any, as recommended by manufacturers.

F. Alignment: Coordinate installation of hoistway entrances with installation of elevator guide rails for accurate alignment of entrances with cars. Where possible, delay installation of sills and frames until the car is operable in shaft. Reduce clearances to minimum, safe, workable dimensions at each landing.

G. Leveling Tolerance: ¼ inch (6 mm), up or down, regardless of load and direction of travel.

H. Set sills flush with finished floor surface at landings. Fill space under sills solidly with non-shrink, nonmetallic grout.

I. Provide minimum run-by and areas of refuge as specified in the latest issue of ASME A17.1.

3.7 TESTING

A. The Contractor shall provide for all testing and inspection services. The Contractor shall provide for a reasonable amount of time to integrate the elevator operations with the work of other trades. The Contractor shall provide a complete functioning elevator, approved by the AHJ, and is required to make any corrections directed by the AHJ to obtain final approval.

3.8 FIELD QUALITY CONTROL

A. Acceptance Testing: Upon nominal 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 by the AHJ.

B. Advise Director's Representative, Architect/Engineer, and Authorities Having Jurisdiction in advance of dates and times that tests are to be performed on elevators.

3.9 DEMONSTRATION

A. Instruct Facility's personnel in proper use, operations, and daily maintenance of elevators. Review emergency provisions, including emergency access and procedures to be followed at times of failure in operation and other building emergencies. Train Facility's personnel in procedures to follow in identifying sources of operational failures or malfunctions. Confer with Facility on requirements for a complete elevator maintenance program.

B. Make a final check of each elevator operation with Facility personnel present and just prior to date of Substantial Completion. Determine that operating systems and devices are functioning properly.

3.10 PROTECTION

A. Temporary Use: Do not use an elevator 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.

B. Provide final protection and maintain conditions, in a manner acceptable to the Director's Representative that ensure elevators are without damage or deterioration at the time of Substantial Completion.

3.11 MAINTENANCE SERVICE

A. Initial Maintenance Service: Beginning at Substantial Completion, provide 12 months' full maintenance service by skilled, competent 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 a rated speed and capacity. Use parts and supplies as used in the manufacture and installation of original equipment.

B. Perform maintenance, including emergency callback service, during normal working hours.

1. Include 24-hour-per-day, 7-day-per-week emergency callback service.

    a. Response Time: 2 hours or less.

C. Continuing Maintenance Service: Provide a continuing maintenance proposal from Installer to Facility, 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.

D. Provide full maintenance service by skilled, competent employees of the 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 a rated speed and capacity. Use parts and supplies as used in the manufacture and installation of original equipment.

3.12 "AS-BUILT" DRAWINGS

A. The Contractor shall be required to prepare and submit a set of Division 14 "As-Built" Drawings as the portions of work are completed and prior to application for final payment.

B. The "As-Built" Drawings shall include a full set of the 'as bid' or 'conformed' Contract Drawings for Division 14.

C. The submitted Drawings shall be in the form of full size as-bid first plus additional drawings and attachments following. The Drawings shall be clean, original paper copies of the Contract Drawings, marked up in red pencil or pen with the Contractor's markups. For Floor Plans drawn at less than ¼″ scale, the field drawings shall be expanded to ¼″ scale to provide room for mark ups.

D. The Contractor shall maintain a dedicated set of Construction Drawings at a protected location at the job site for the continuous documentation for these as-builts. The Contractor shall record the actual installed locations of equipment, wiring, conduit/pathway, etc. Record any and all variations from the original Construction Drawings in neat, legible, hand drawn lines and text. Attach copies of Contractor's field sketches and note where they pertain.

E. Confirm that all information provided to the Contractor in the Form of Request for Information (RFI) responses, accepted Requests for Proposal (RFPs), Change Orders and Supplemental Instructions (SIs) are properly conveyed on the Drawings. Show the actual changes made, do not just paste a copy of the RFI, RFP, ASI, or CO unless that document includes a full scale drawing which accurately represents the work actually installed.

F. Confirm that the room names and numbers shown on the As-Built's are the actual room numbers and names posted on the rooms at the time of turnover.

G. Confirm that equipment schedules accurately depict any changes made during construction.

H. For work which becomes concealed as part of the project, keep an accurate record and show on "As-Built" Drawings the actual installed location of any concealed work such as conduit, piping, etc. Provide location on Record Drawings for outside services by indicating actual dimensions from fixed reference points which will be available after completion of construction. "Tie" two (2) dimensions from different reference points to confirm locations of concealed work.

I. For projects extending more than three months, provide the original "As-Built" to the Engineer as the work is completed on sections of the project and obtain a receipt from the Engineer. The Contractor shall be responsible for the safe keeping and maintenance of the "As-Built" Drawings throughout construction, and for maintenance of one (1) photocopy at the Contractor's office for a period of not less than three (3) years following final acceptance.

J. Provide the original copies of the "As-Built" Drawings to the Architect or Engineer in accordance with the provisions of the General Conditions and Division 1. Unless reproducible "As-Built" Drawings are required under the General Condition and Division 1, provide the original paper copy of "As-Built" Drawings to the Engineer.

3.13 OPERATION AND MAINTENANCE INFORMATION

A. Submit Operation and Maintenance Manuals per Section 013300 "Submittal Procedures". Submit reviewed manual content formatted and organized as required by this Section.

1. The Architect/Engineer will comment on whether content of Operation and Maintenance submittals is acceptable.
2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.

B. Initial Manual Submittal: Submit a draft copy of each manual at least 30 days before commencing demonstration and training. Architect/Engineer will comment on whether the general scope and content of manual are acceptable.

C. Final Manual Submittal: Submit each manual in the final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. The Architect will return a 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.

D. Comply with Section 017700 "Closeout Procedures" for schedule for submitting Operation and Maintenance documentation.

E. Format of Operation and Maintenance Manuals: Submit manuals in the form of a single composite electronic PDF file.

1. Electronic Files: Use electronic files prepared by the manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size. "Recognize Text" shall be run on all scanned documents to provide a text searchable PDF.

F. Organization and Requirements for Operation and Maintenance Manuals: Unless otherwise indicated, organize each manual into the format as described below.

1. Title Page: Indicate Building Name, Project Title and OGS Project Number.
2. Table of Contents: Hyperlinked bookmarked information with links to each CSI Master Format specification section contained in manual.

3. Contact List: Indicating name and contact information for the following:

    a. Construction Manager or General Contractor.
    b. Subcontractor.
    c. Architect.
    d. Architect's Subconsultants.

4. Project Warranties: Include the overall project warranty and hyperlinks to any special warranties included in equipment's specification sections.
5. Operations and Maintenance Information: Operations and Maintenance information for every CSI specification section included in project. Each section shall contain the final submittal that has been updated to include any architectural remarks, any special Contractor or manufacturer warranty associated with the equipment or system, the installation, Operations and Maintenance manuals for each piece of equipment, including any accessory components, all test reports for systems and equipment and parts list for each piece of equipment.
6. Include a typed guarantee from the Contractor with a 1 year guarantee stated as commencing on the date of final acceptance.
7. The Contractor shall include a complete copy of the O&M Manual checklist which follows this section as the last page of the O&M Manual.
8. Provide a written Maintenance and Control Program as per 8.6.1.2.1.

3.14 CLEANING

A. Clean elevator equipment of dust, dirt, grease and foreign materials.

B. Remove articles of tools and material from shafts and machine rooms not necessary for maintenance and operation of elevator.

O&M Manual Checklist Date_____

(Include a completed copy of this Checklist in O&M Manual when submitted)
Project_____ Trade_____

Project Name_____

Submitted as an electronic file per Section 01 78 23 YES / NO

Composite electronic PDF file YES / NO

Minimum readable text size YES / NO

Title page "Recognize Text" turned on for all scanned documents YES / NO

……

O&M Manual:

Cover Sheet listing:

Building Name

O&M Manual Table of Contents: Hyperlinked book-marked information with links to each CSI Master Format Specification Section in manual YES / NO

O&M Manual Contact List:

Contractor
Contractor Name _____
Contractor's Address _____
Contact person _____
Tel. & Fax #'s _____

Each Major Subcontractor
Contractor Name _____
Contractor's Address _____
Contact person _____
Tel. & Fax #'s _____

Project Manager
Name

Engineer
Name
Company Name _____
Contact person _____

Architect
Name
Company Name_____
Contact person _____

……

O&M Manual Project Guarantee & Warranties:

Typed guarantee from Contractor with 1 year guarantee stated as commencing on the date of final acceptance by the Director's Representative.

Date must be identified _____

Hyperlinks to any special warranties included in Equipment Specifications YES / NO

1. Organized by CSI Specification Section number. YES / NO
2. Each CSI Specification Section included. YES / NO
3. Includes final submittal, updated to contain A/E remarks. YES / NO
4. Includes any special Contractor or manufacturer warranty. YES / NO
5. Includes the Installation, Operation and Maintenance (IOM) manuals for each piece of equipment, up to date for the version of equipment supplied. YES / NO
6. Includes IOM data for accessory data. YES / NO
7. Includes test reports for each piece of equipment. YES / NO

Scan of spare parts list. _____
Scan of all test reports (i.e., fire alarm). _____
Scan of all inspections (i.e., plumbing, electrical). _____
Scan of all certification data. _____
Scan of facility lubrication chart. _____
Scan of facility valve chart. _____
Scan copy of complete temperature control and operating instructions. _____
Completed copy of checklist last page of O&M Manual. _____

END OF SECTION 142000

SECTION 310000 - EARTHWORK

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:

1. Disconnecting, capping, sealing, and/or removing existing utilities.
2. Site Clearing:

    a. Protecting existing vegetation to remain.
    b. Removing existing vegetation.
    c. Clearing and grubbing.
    d. Stripping and stockpiling topsoil.
    e. Removing above- and below-grade improvements.
    f. Disconnecting, capping or sealing, and removing or abandoning site utilities in place.

3. Excavation:

    a. Excavating for buildings and structures.
    b. Excavating trenches for utilities and pits for buried utility structures.

4. Fill and Backfill:

    a. Backfilling for building and site structures to subgrade elevations.
    b. Backfilling for trenches.
    c. Fill under slabs-on-grade.
    d. Fill under pavements.
    e. Fill for over-excavation.
    f. Subsurface drainage backfill for walls and trenches.

5. Preparation of subgrades.
6. Compaction.
7. Rough and final grading.

B. Related Requirements:

1. Section 310001 – Earthwork Materials.
2. Section 312500 – Erosion and Sedimentation Controls.
3. Section 329200 – Turf and Grasses.

1.3 REFERENCE STANDARDS

A. ASTM International:

1. ASTM C88 - Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
2. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
3. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3).
4. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3).
5. ASTM D2419 – Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.
6. ASTM D2434 - Standard Test Method for Permeability of Granular Soils (Constant Head).
7. ASTM D2487 – Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
8. ASTM D2974 – Standard Test Methods for Determining the Water (moisture) Content, Ash Content, and Organic Material of Peat and Other Organic Soils.
9. ASTM D4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
10. ASTM D4373 - Standard Test Method for Rapid Determination of Carbonate Content of Soils
11. ASTM D4873 – Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples.
12. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

B. Related Requirements:

1. Local utility standards when working in close proximity to utility lines.
2. Occupational Safety and Health Administration: Comply with the applicable requirements of the Code of Federal Regulations Title 29 – Labor, Part 1926 Safety and Health Regulations for Construction (OSHA).

C. New York State Department of Transportation (NYS DOT)

1. NYS DOT 703 - Aggregates
2. NYS DOT 733 - Earthwork Materials

1.4 DEFINITIONS

A. Surface Soil: Soil that is present at the top layer of the existing soil profile.

B. Subsurface: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile.

C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil; the zone where plant roots grow. Its appearance is generally friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsurface; reasonably free of subsurface soils, clay lumps, gravel, weeds, roots, toxic materials, or other non-soil materials.

D. Borrow Soil: Approved soil imported from off-site for use as fill or backfill.

E. Backfill: Soil material or controlled low-strength material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

F. Fill: Soil materials used to raise existing grades.

G. Suitable Material (Fill and Backfill for Landscaped Areas): Material generally consisting of mineral soil (inorganic), blasted or broken rock and similar materials of natural or man-made origin, including mixtures thereof. Maximum particle size will not exceed 2/3 of the specified layer thickness prior to compaction. Topsoil and organic silt may be used as suitable material in landscaped areas provided it is placed as the surface soil.

H. Unsuitable Material: Material containing cinders, industrial waste, sludge, building/construction rubble, land fill, muck, and peat.

I. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage material, or topsoil materials.

J. Subbase Course: Aggregate layer placed between the subgrade and asphaltic or concrete pavement section or concrete structure.

K. Bedding Course (Cushion Material): Aggregate layer placed over the excavated subgrade in a trench before laying pipe.

L. Drainage Material: Aggregate layer with minimal material passing the #200 sieve to promote downward water flow and minimizes upward capillary flow of pore water.

M. Classified Earth Excavation: Removal of all surface and subsurface material not classified as rock, to the lines and dimensions indicated.

N. Rock: Limestone, sandstone, shale, granite and similar material in solid beds or masses in its original or stratified position which can be removed only by blasting operations, drilling, wedging, or use of pneumatic tools, and boulders with a volume greater than 1.0 cu yd. Concrete building foundations and concrete slabs, not indicated, with a volume greater than 1.0 cu yd shall be classified as rock.

1. Limestone, sandstone, shale, granite, and similar material in a broken or weathered condition which can be removed with an excavator or backhoe equipped with a bucket with ripping teeth or any other style bucket shall be classified as earth excavation.
2. Masonry building foundations, whether indicated or not, shall be classified as earth excavation.

O. Unclassified Earth Excavation: Removal of all surface and subsurface material, of any description, necessary to perform the work of this contract. This will include:

1. All soil deposits of any description both above and below groundwater levels. These may be naturally deposited or placed by previous construction operations.

2. Ledge rock of all quality. (Limestone, Sandstone, Shale, Granite and similar materials in solid beds or masses in its original or stratified position which can only be removed by drilling, wedging, use of pneumatic tools or heavy ripping equipment). Blasting operations will not be permitted to loosen any ledge rock necessary to be removed in this contract.
3. Boulders of any size.
4. Any materials of man-made origin.

P. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Director's Representative. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.

Q. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Director's Representative. Unauthorized excavation, as well as remedial work directed by Director's Representative, shall be without additional compensation.

R. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

S. Utilities: On-site underground pipes, conduits, ducts, and cables as well as underground services within buildings.

T. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction.

U. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

V. Landscaped Areas: Areas not covered by structures, walks, roads, paving, or parking.

W. Grading Limit Line (Shown on Drawings): Limits of grading, excavations and filling required for the Work. Unless specifically noted otherwise, the Grading Limit Line and Contract Limit Line shall be considered the same.

1.5 MATERIAL OWNERSHIP

A. Except for materials indicated to be stockpiled or otherwise remain State's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.6 SUBMITTALS

A. Submittals for this Section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer's installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Existing Conditions: Submit documentation before earthwork activities begin of existing trees and plantings, adjoining construction, and site improvements that establishes preconstruction conditions that might be misconstrued as damage caused by the Work of this Section.

1. Use sufficiently detailed photographs or video recordings.
2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plant designated to remain.

E. Qualification Data: For qualified testing agency.

1.7 QUALITY ASSURANCE

A. Geotechnical Testing Agency Qualifications: Qualified according to ASTM E329 and ASTM D3740 for testing indicated.

1.8 FIELD CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth-moving operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Director's Representative and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed traffic ways if required by Director's Representative or authorities having jurisdiction.

B. Improvements on Adjoining Property: Authority for performing earth moving indicated on property adjoining State's property will be obtained by Director's Representative before award of Contract.

1. Do not proceed with work on adjoining property until directed by Director's Representative.

C. Utility Locator Service: Locate underground utilities, in accordance with Section 023313 – Underground Utility Locator Service, before beginning site clearing or earth-moving operations.

D. Do not commence operations until temporary site fencing and erosion and sedimentation control measures are in place.

E. Do not commence earthwork operations until plant-protection measures specified herein are in place.

F. The following practices are prohibited within protection zones:

1. Storage of construction materials, debris, or excavated material.
2. Parking vehicles or equipment.
3. Foot traffic.
4. Erection of sheds or structures.
5. Impoundment of water.
6. Excavation or other digging unless otherwise indicated.

7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

G. Do not direct vehicle or equipment exhaust towards protection zones.

H. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.

I. Soil Stripping, Handling, and Stockpiling: Perform only when the soil is dry or slightly moist.

PART 2 - PRODUCTS

2.1 MATERIALS

A. See Section 310001 - Earthwork Materials.

B. Protection-Zone Fencing:

1. Plastic Protection-Zone Fencing: Plastic construction fencing constructed of high-density extruded and stretched polyethylene fabric with 2-inch maximum opening in pattern and weighing a minimum of 0.4 lb/ft.; remaining flexible from minus 60 to plus 200 deg F; inert to most chemicals and acids; minimum tensile yield strength of 2000 psi and ultimate tensile strength of 2680 psi; secured with plastic bands or galvanized-steel or stainless-steel wire ties; and supported by tubular or T-shape galvanized-steel posts spaced not more than 96 inches apart.

    a. Height: 36 inches.
    b. Color: High-visibility orange, nonfading.

C. Protection-Zone Gates: Double swing access gates matching material and appearance of fencing, to allow for maintenance activities within protection zones

D. Protection-Zone Signage: Shop-fabricated, rigid plastic or metal sheet with attachment holes prepunched and reinforced; legibly printed with nonfading lettering and as follows:

1. Size and Text: 2’x2’.
2. Lettering: 3” high minimum, Black characters on white background.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Verify that trees, shrubs, and other vegetation to remain or to be relocated have been flagged and that protection zones have been identified and enclosed as required.

C. Protect existing site features, to remain, from damage during construction. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

1. Restore damaged improvements to their original condition, as acceptable to the Director's Representative.

D. Protect and maintain erosion and sedimentation controls during earth-moving operations.

E. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Provide and maintain temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, in accordance with Section 312500 Erosion & Sedimentation Controls, the Contract Drawings, and requirements of authorities having jurisdiction. If the erosion and sedimentation controls specified by the authorities having jurisdiction are more stringent than those specified in the Contract Documents, contact the Director's Representative.

1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.
2. Inspect, maintain, and repair erosion and sedimentation control measures during construction until permanent vegetation has been established.
3. Remove erosion and sedimentation controls, and restore and stabilize areas disturbed during removal.

3.3 PLANT PROTECTION

A. Locate and clearly identify trees, shrubs, and other vegetation to remain and be protected. Flag each tree trunk at 54 inches above the ground.

B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

C. Trunk Protection: Protect the trunk of each tree to remain as follows:

1. Install 2-by-4-inch wood planks around trunk at maximum 3 inches apart. Minimum three planks per tree. Band together with no less than three steel bands stapled to the planks to hold them securely in place.

a. Height: 48 inches.

D. Protection-Zone Fencing: Install protection-zone fencing along edges of protection zones in a manner that will prevent people from easily entering protected areas except by entrance gates. Construct fencing so as not to obstruct safe passage or visibility at vehicle intersections where fencing is located adjacent to pedestrian walkways or in close proximity to street intersections, drives, or other vehicular circulation. Install access gates where indicated.

E. Install protection-zone signage in visibly prominent locations in a manner approved by Director's Representative. Install one sign spaced approximately every 20' on protection-zone fencing, but no fewer than four signs with each facing a different direction.

F. Maintain protection zones free of weeds and trash.

G. Maintain protection-zone fencing and signage in good condition as acceptable to Director's Representative and remove when construction operations are complete and equipment has been removed from the site.

1. Do not remove protection-zone fencing, even temporarily, to allow deliveries or equipment access through the protection zone.
2. Temporary access is permitted subject to preapproval in writing by arborist if a root buffer effective against soil compaction is constructed as directed by arborist. Maintain root buffer so long as access is permitted.

H. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations.

1. Small Trees: Provide new trees of same size and species as those being replaced for each tree that measures 6 inches or smaller in caliper size.
2. Large Trees: Provide one new tree(s) of 6-inch caliper size for each tree being replaced that measures more than 6-inches in caliper size.

    a. Species: to match existing, unless otherwise directed by Director's Representative.

3. Plant and maintain new trees as specified in Section 329300 - Plants.

3.4 EXISTING UTILITIES

A. Locate, identify, disconnect, and seal or cap utilities indicated to be removed or abandoned in place.

1. Arrange with utility companies to shut off indicated utilities as necessary

B. Interrupting Existing Utilities: Do not interrupt utilities serving occupied facilities unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Director's Representative not less than seven days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without the Director's Representative's written permission.

C. Excavate for and remove underground utilities indicated to be removed.

3.5 CLEARING AND GRUBBING

A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.

1. Do not remove trees, shrubs, and other vegetation indicated to remain.
2. Grind down stumps and remove roots, obstructions, and debris to a depth of 18 inches below exposed subgrade.
3. Use only hand methods or air spade for grubbing within protection zones.
4. Chip removed tree branches and dispose of off-site.

B. Fill depressions caused by clearing and grubbing operations with suitable material unless further excavation or earthwork is indicated.

1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches, and compact each layer to specified density.

3.6 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to depth of 4 inches in a manner to prevent intermingling with underlying soil or other waste materials.

1. Remove subsurface soil and non-soil materials from topsoil, including clay lumps, gravel, and other objects larger than 2 inches in diameter; trash, debris, weeds, roots, and other waste materials.

C. Stockpile topsoil away from edge of excavations without intermixing with subsurface soil or other materials. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.

1. Limit height of topsoil stockpiles to 120 inches.
2. Do not stockpile topsoil within protection zones.
3. Stockpile surplus topsoil to allow for respreading deeper topsoil.
4. Dispose of surplus topsoil. Surplus topsoil is that which exceeds quantity indicated to be stockpiled or reused.

3.7 STORAGE OF SOIL MATERIALS

A. Stockpile borrow soil materials and excavated suitable materials away from the edge of excavations and without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.

1. Limit height of soil stockpiles to 180 inches.
2. Do not stockpile soil material within protection zones.
3. Dispose of surplus soils. Surplus soil is that which exceeds quantity indicated to be stockpiled or reused.

3.8 DEWATERING

A. Provide dewatering system of sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of ground water and permit excavation and construction to proceed on dry, stable subgrades. Refer to Section 312319 – Dewatering.

B. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

C. Protect subgrades from rain or water accumulation that can cause softening, undermining/undercutting, washout, damage, and other soil changes that would be detrimental to the stability of subgrades.

1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

D. Dispose of water removed by dewatering in a manner that avoids endangering public health, property, and portions of work under construction or completed. Dispose of water and sediment in a manner that avoids inconvenience to others.

3.9 SHEETING, SHORING, AND BRACING

A. Temporary Sheeting: Install temporary sheeting, shoring and bracing as required to create a safe working environment and prevent settlement or other damage to adjacent grounds and structures resulting from excavation operations. Shore and brace sheeting in a manner which will not interfere with progress of other Work or related contracts (if any) on this project. Check shoring and bracing for settlement and adjust for settlement. Promptly remove temporary sheeting, shoring, and bracing when no longer required.

3.10 EXCAVATION, GENERAL

A. Unclassified Earth Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.

1. If excavated materials intended for fill and backfill include unsuitable materials and rock, replace with suitable materials.

B. Classified Earth Excavation: Excavate to subgrade elevations. Material to be excavated will be classified as earth and rock. Do not excavate rock until it has been classified and cross sectioned. The Contract Sum will be adjusted for rock excavation according to Contract provisions for changes in the Work. Changes in the Contract Time may be authorized for rock excavation.

1. Earth excavation includes excavating pavements and obstructions visible on surface; underground structures, utilities, and other items indicated to be removed; and soil, boulders, and other materials not classified as rock or unauthorized excavation.

a. Intermittent drilling; blasting, if permitted; ram hammering; or ripping of material not classified as rock excavation is earth excavation.

3.11 EXCAVATION

A. Excavation for Structures: Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for

placing and removing concrete formwork, for installing services and other construction, and for inspections.

B. Excavations for Footings and Foundations:

1. Do not disturb bottom of excavation when concrete is to bear on undisturbed soil. Excavate by hand to final foundation bearing grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
2. Where concrete is to bear entirely on existing rock, remove loose soil and loose rock and place concrete to required lines and grades.
3. Where concrete is to bear partially on rock and partially on soil, immediately notify the Director's Representative before any backfilling or concrete placement occurs; the Director's Representative will determine the correct foundation treatment for the Work.
4. Pile Foundations: Stop excavations 12 inches above bottom of pile cap before piles are placed. After piles have been installed, remove loose and displaced material. Excavate to final grade, leaving solid base to receive concrete pile caps.

C. Excavation for Underground Tanks, Basins, and Mechanical or Electrical utility structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch. Do not disturb bottom of excavations intended as bearing surfaces.

D. Excavation for Slabs and Floors: Excavate to the following depths below bottom of concrete for addition of Select Granular Material:

1. Interior Floors: 6 inches, unless otherwise indicated.
2. Exterior Slabs and Steps: 12 inches, unless otherwise indicated.

E. Excavations at Edges of Plant-Protection Zones:

1. Excavate by hand or with an air spade to indicated lines, cross sections, elevations, and subgrades. If excavating by hand, use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
2. Redirect roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and redirect them without breaking. If encountered immediately adjacent to location of new construction and redirection is not practical, cut roots approximately 3 inches back from new construction and as required for root pruning.
3. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

F. Excavation for Walks and Pavements: Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

G. Excavation for Open Ditches: Cut ditches to cross sections and grades indicated.

H. Excavation for Utility Trenches: Excavate trenches to indicated gradients, lines, depths, and elevations.

1. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line, unless noted otherwise in contract plans.
2. Trench Width: Excavate trenches to uniform widths to provide 12 inches of clearance on each side of pipe or conduit.
3. Trench Bottoms: Excavate trenches 6 inches deeper than bottom of pipe and conduit elevations to allow for bedding course. Hand-excavate deeper for bells and coupling joints of pipe.

I. Trenching within Protection Zones: Where utility trenches are required within protection zones, excavate under or around tree roots by hand or with air spade, or tunnel under the roots by drilling, auger boring, or pipe jacking. Do not cut main lateral tree roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots as required for root pruning. If excavating by hand, use narrow-tine spading forks to comb soil and expose roots.

3.12 UNAUTHORIZED EXCAVATION

A. Fill unauthorized excavation under foundations, wall footings, and retaining walls with Select Granular Material, without altering top elevation of footing, foundation, or wall.

1. Unauthorized excavations under structural work shall be reported to the Director's Representative immediately before any backfilling or concrete work commences.

B. Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavation of the same classification, unless otherwise directed by the Director's Representative.

3.13 SUBGRADE INSPECTION

A. Notify Director's Representative when excavations have reached required subgrade and are ready for inspection.

B. If Director's Representative determines that unsuitable material is present or that there are soft spots or areas of excessive pumping or rutting, excavate and replace with compacted backfill or fill material as directed.

1. Have cross section taken, under the supervision of an independent land surveyor, to determine volume of additional excavations.

C. Authorized additional excavation and replacement material will be paid for according to Contract provisions for unit prices.

D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by the Director's Representative, without additional compensation.

3.14 BACKFILL & SOIL FILL

A. Place and compact backfill in excavations promptly, but not before completing the following:

1. Construction below finish grade including, where applicable, subdrainage, damp-proofing, waterproofing, and perimeter insulation.
2. Surveying locations of underground utilities for Record Documents.
3. Testing and inspecting underground utilities.
4. Removing concrete formwork.
5. Removing trash and debris.
6. Removing temporary shoring, bracing, and sheeting.
7. Cutting off top of permanent sheeting or sheetpiling.
8. Installing permanent or temporary horizontal bracing on horizontally supported walls.
9. Acceptance by the Director's Representative of construction below finish grade.

B. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

C. Place fill and backfill on subgrades free of mud, frost, snow, or ice.

D. Place fill and backfill materials in layers not more than eight inches thick in loose depth, unless otherwise specified. Before compaction, moisten or aerate each layer as necessary to facilitate compaction to the specified density.

1. Place fill and backfill against foundation walls and in confined areas such as trenches not easily accessible by larger compaction equipment in maximum 6-inch-thick loose depth layers.
2. For large fill and backfill areas, the layer thickness may be modified by the Director's Representative, at the Contractor's written request, if in the Director's Representative's judgment, the equipment used is capable of compacting the fill material in a greater layer thickness. This request will include the type and specifications of compaction equipment intended for use.
3. For Open Graded Stone/Clean Stone (Item B-12, No. 1 crushed stone, No. 2 crushed stone, etc.) in excess of six inches: Material must be wrapped in separation fabric.

E. Concrete Walls

1. Do not place fill or backfill against concrete walls until the walls have attained 70 percent of their design strength. Place backfill against walls of structures containing basements or crawl spaces only after the first floor structural members are in place and any concrete components of the first floor structural system have attained 70 percent of their concrete design strength.
2. Prevent wedging action of backfill against structures backfilled on both sides, by placing backfill uniformly around structure so that the elevation on each side never differs by more than 24 inches.

F. Foundation Drains

1. Line pipe trench loosely with drainage geotextile. Lap successive sheets 18 inches.
2. Place drainage/cushion material a minimum of 2 inches deep under pipe and 6 inches on both sides and over top of pipe.
3. Completely wrap drainage/cushion material with drainage geotextile.

G. Perimeter Insulation: Before the insulation is installed, place and tamp specified backfill to a smooth plane even with the required elevation of the lower surface of the insulation.

H. Under Exterior Concrete Slabs and Steps:

1. Up to Subgrade Surface Elevation: Place Selected Fill when fill or backfill is required.
2. Subbase Material: Place 12 inches of Subbase course Type 2 over subgrade surface.

I. Under Interior Concrete Slabs:

1. Up to Subgrade Surface Elevation: Place Selected Fill when fill or backfill is required.
2. Subbase Material: Place 6 inches of Select Granular Material over subgrade surface.

J. Under Pavements and Walks:

1. Up to Subgrade Surface Elevation: Place Selected Fill when fill or backfill is required.
2. Subbase Material: Place as indicated.

K. Landscaped Areas: Place Suitable Material when required to complete fill or backfill areas up to subgrade surface elevation. Do not use material containing particles over four inches in diameter within the top 12 inches of suitable material.

L. Utility Trench Backfill

1. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
2. Backfill voids with suitable material while removing shoring and bracing.
3. Initial Backfill:

    a. Soil Backfill: Place and compact initial backfill of Cushion Material to a minimum depth of 4 inches below the bottom, 12 inches to the sides, and to a height of 12 inches over the pipe or conduit.

        1) Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of piping or conduit to avoid damage or displacement of piping or conduit.

    b. Flowable Fill: Place initial backfill of flowable fill (controlled low strength material) to a height of [12 inches] over the pipe or conduit.

4. Coordinate backfilling with utilities testing.
5. Final Backfill:

    a. Soil Backfill: Place and compact final backfill of Selected Fill soil to final subgrade elevation.

M. Backfilling Excavation Resulting From Removal of Unsuitable Material:

1. Up to Subgrade Surface Elevation: Place Select Granular Material when backfill is needed unless otherwise specified by the Directors Representative.

3.15 SOIL MOISTURE CONTROL

A. Where fill or backfill must be moisture conditioned before compaction, uniformly apply water to the surface and to each layer of fill or backfill to within 2 percent of optimum moisture content.

B. Prevent ponding or other free water on surface during and after compaction operations.

C. Remove and replace, or scarify and air dry, soil that is too wet to permit compaction to specified density. Soil that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing or pulverizing, until moisture content is reduced to a value which will permit compaction to the percentage of maximum density specified.

D. When the existing ground surface to be compacted has a density less than that specified for the particular area classification, break up and pulverize, and moisture condition to facilitate compaction to the required percentage of maximum density.

3.16 COMPACTION OF SOIL BACKFILLS AND FILLS

A. Compact soil materials to not less than the following percentages of maximum density according to ASTM D698 for the following:

1. Under structures, including area within 10-ft outside perimeter: 95 percent.
2. Under concrete slabs, steps, and pavements: 95 percent.
3. Under walkways: 95 percent.
4. Under landscaped areas, turf, or unpaved areas: 90 percent.
5. Pipe bedding: 95 percent.
6. Behind retaining walls: 92 percent.

3.17 GRADING

A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between adjacent existing grades and new grades.
2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Rough Grading:

1. Interior Grading: Trim unexcavated spaces within the building to levels indicated.

   a. Subgrade for Interior Slabs: Compact as specified to receive fill material. Finish subgrade surface within 1 inch above or below level specified for fill required.

2. Exterior Grading: Trim and grade area within the Grading Limit Line and excavations outside the limit line, required by this Contract, to a level of 4 inches below the finish grades indicated unless otherwise specified herein or where greater depths are indicated. Provide smooth uniform transition to adjacent areas.

a. Slope cut and fill in transition areas, outside of the grading limit line, to meet corresponding levels of existing grades at a slope of 1 vertical to 2 horizontal unless otherwise indicated.
b. Landscaped Areas: Provide uniform subgrade surface within 1 inch of required level to receive topsoil thickness specified. Compact fill as specified to within 3 inches of subgrade surface. Remove objectionable material detrimental to proper compaction or to placing full depth of topsoil. If the top 3 inches of subgrade has become compacted before placement of topsoil, harrow or otherwise loosen rough graded surface to receive topsoil to a depth of three inches immediately prior to placing topsoil.

C. Subgrade Surface for Walks and Pavement:

1. Shape and grade subgrade surface as follows:

a. Walks: Shape the surface of areas under walks to required line, grade and cross section, with the finish surface not more than 1/4 inch above or below the required subgrade surface elevation.
b. Pavements: Shape the surface of areas under pavement to required line, grade and cross section, with the finish surface not more than 1/4 inch above or below the required subgrade surface elevation.

2. Grade Control: During construction, maintain lines and grades including crown and cross-slope of subbase course.
3. Thoroughly compact subgrade surface for walks and pavement by mechanical rolling, tamping, or with vibratory equipment as approved to the density specified.

D. Finish Grading:

1. Uniformly grade rough graded areas within limits of the Grading Limit Line to finish grade elevations indicated.
2. Grade and compact to smooth finished surface within tolerances specified, and to uniform levels or slopes between points where finish elevations are indicated or between such points and existing finished grade.
3. Grade areas adjacent to building lines so as to drain away from structures and to prevent ponding.
4. Finish surfaces free from irregular surface changes, and as follows:

a. Walks: Place and compact subbase material as specified. Shape surface of areas under walks to required line, grade and cross section, with the finish surface not more than 1/4 inch above or below the required subbase elevation.
b. Pavements: Place and compact subbase material as specified. Shape surface of areas under pavement to required line, grade and cross section, with the finish surface not more than 1/4 inch above or below the required subbase elevation.
c. Building Slabs: Grade subbase material smooth and even, free of voids, compacted as specified, and to required subbase elevation. Finish final grades within a tolerance of 1/4 inch when tested with a ten-foot straightedge.
d. Surfaces To Receive Vapor Barrier: Provide smooth surfaces graded, tamped and/or rolled, entirely free of obstructions or protruding objects.

5. Spread topsoil directly upon prepared subgrade surface to a depth measuring 4 inches after natural settlement of the topsoil has occurred in areas to be seeded or to receive sod. Perform topsoil spreading operations only during dry weather. Place to greater depth when necessary to adjust grades to required elevations.

    a. Approved existing topsoil within the Grading Limit Line may be used. Provide additional topsoil from outside sources as required.

6. Finish topsoil surface free of depressions that would trap water, free of stones over 1 inch in any dimension, and free of debris or other objectionable material. Finished surfaces shall conform to the contour lines and elevations indicated on the drawings or as directed by the Director's Representative.

3.18 FIELD QUALITY CONTROL

A. Special Inspections: Director's Representative will engage a qualified Special Inspector to perform the following special inspections:

1. Determine prior to placement of fill that site has been prepared in compliance with requirements.
2. Determine that fill material classification and maximum lift thickness comply with requirements.
3. Determine, during placement and compaction, that in-place density of compacted fill complies with requirements.

B. Testing Agency: Director's Representative will engage a qualified geotechnical engineering testing agency to perform tests and inspections.

C. Coordinate with and allow testing agency to inspect and test subgrades and each fill or backfill layer; provide testing agency minimum three working days advanced notice prior to all phases of filling and backfilling operations. Proceed with subsequent earthwork activities only after test results for previously completed work comply with requirements.

D. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Director's Representative.

E. Testing agency will test compaction of soils in place according to ASTM D698 or ASTM D1557, as applicable. Tests will be performed at the following locations and frequencies:

1. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 sq. ft. or less of paved area or building slab but in no case fewer than three tests.
2. Foundation Wall Backfill: At each compacted backfill layer, at least one test for every 100 feet or less of wall length but no fewer than two tests.
3. Trench Backfill: At each compacted initial and final backfill layer, at least one test for every 150 feet or less of trench length but no fewer than two tests.

F. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

3.19 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

1. Scarify or remove and replace soil material to depth as directed by Director's Representative; reshape and recompact.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.20 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove from State property and dispose of excess and unsuitable materials, including materials resulting from clearing, grubbing and removal of existing improvements; soil; trash; and debris.

B. Transport excess and unsuitable materials, including materials resulting from clearing and grubbing and removal of existing improvements, to spoil areas on State property designated by the Director's Representative, and dispose of such materials as directed.

C. Transport excess topsoil to areas on State property designated by the Director's Representative. Smooth grade deposited topsoil.

D. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities. Do not interfere with other Project work.

END OF SECTION 310000

SECTION 310001 - EARTHWORK MATERIALS

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:

1. Soil/Aggregate Materials.
2. Wastewater Materials.

B. Related Requirements:

1. Section 310000 - Earthwork.

1.3 REFERENCE STANDARDS

A. New York State Department of Transportation (NYS DOT)

1. NYSDOT 703 - Aggregates
2. NYSDOT 733 - Earthwork Materials

1.4 SUBMITTALS

A. Submittals for this Section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: Submit name of imported materials source.

E. Qualification Data: For ASTM certified soils testing agency.

F. Material Test Reports: For each on-site and borrow soil material proposed for fill and backfill as follows:

1. Classification according to ASTM D2487.

2. Laboratory compaction curve according to ASTM D698.

G. Samples: Submit, in airtight containers, samples of the following types to ASTM certified soil testing laboratory. Provide Director's Representative with the laboratory test results for gradation, Proctors and soundness tests.

1. Select Granular Material: 50 - 60 lb. (Two Samples).
2. Subbase Course Type 2: 50 - 60 lb. (Two Samples).
3. Selected Fill: 40 - 50 lb.
4. Cushion Material: 30 lb.
5. River Stone: 30 lb.
6. Topsoil: 30 lb.

H. Source Quality-Control Submittals:

1. Subbase Materials: Provide name and location of source and the NYSDOT Source Number. If the material is not being taken from an approved NYSDOT source, the soil laboratory test results for gradation and soundness tests performed by an ASTM certified soils laboratory will be required.
2. Other Aggregates: Provide name and location of source and soil laboratory test results for gradation and soundness tests performed by an ASTM certified soils laboratory.
3. Topsoil: Topsoil used on this project shall be tested by a certified soils laboratory for organic matter, Ph value, and gradation, and must be approved before placement.

I. Supplier's Certificate: Certify that products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

A. Furnish each aggregate and/or topsoil material from a single source throughout the Work.

PART 2 - PRODUCTS

2.1 SOIL/STONE MATERIALS

A. Select Granular Material.

1. Description: Stockpiled, sound, durable, sand, gravel, stone, or blends of these materials.
2. Quality: Free of organic and other deleterious materials.
3. Magnesium Sulfate Soundness Test: 20% maximum loss by weight after four test cycles.
4. Plasticity Index: The plasticity index of the material passing the No. 40 mesh sieve shall not exceed 5.0.
5. Elongated Particles: Not more than 30%, by weight, of the particles retained on a ½ inch sieve will consist of flat or elongated particles. A flat or elongated particle is defined as one which has its greatest dimension more than three times its least dimension.
6. Comply with the gradation requirements specified below:

Sieve Size	Percent Passing
2 inch	100

Sieve Size	Percent Passing
1/4 inch	30-65
No. 40	5-40
No. 200	0-10

B. Subbase Course Type 2.

1. Description: Stockpiled, crushed ledge rock or approved blast furnace slag.
2. Quality: Free of organic and other deleterious materials.
3. Magnesium Sulfate Soundness Test: 20% maximum loss by weight after four test cycles.
4. Plasticity Index: The plasticity index of the material passing the No. 40 mesh sieve shall not exceed 5.0.
5. Elongated Particles: Not more than 30%, by weight, of the particles retained on a ½ inch sieve will consist of flat or elongated particles. A flat or elongated particle is defined as one which has its greatest dimension more than three times its least dimension.
6. Comply with the gradation requirements specified below:

Sieve Size	Percent Passing
2 inch	100
1/4 inch	25-60
No. 40	5-40
No. 200	0-10

C. Selected Fill.

1. Source: Imported Borrow
2. Description: Sound, durable, sand, gravel, stone, or blends of these materials.
3. Quality: Free of organic and other deleterious materials.
4. Comply with the gradation requirements specified below:

Sieve Size	Percent Passing
4 inch	100
No. 40	0-70
No. 200	0-15

D. Cushion Material.

1. Description: Clean, hard, durable, uncoated particles,
2. Quality: Free from lumps of clay and all deleterious substances.
3. Comply with the gradation requirements specified below:

Sieve Size	Percent Passing
1/4 inch	100
No. 60	0-35
No. 100	0-10
1/4 inch	90-100
1/8 inch	0-15
No. 200	0-1

E. Topsoil:

1. Description: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for vegetation growth. Material shall be original loam topsoil, well drained homogeneous texture and of uniform grade, without the admixture of subsoil material and entirely free of dense material, hardpan, sod, or any other objectionable foreign material.
2. Organic Content: Containing not less than 4 percent nor more than 20 percent organic content in that portion of a sample passing a 1/4 inch sieve, when determined by the wet combustion method on a sample dried at 105 degrees C.
3. pH: Containing a Ph value within the range of 4.5 to 7 on that portion of the sample passing a 1/4 inch sieve.
4. Comply with the gradation requirement specified below:

Sieve Size	Percent Passing
1 inch	100
1/4 inch	97 - 100
No. 200	20 - 65 (of the 1/4 inch sieve)

2.2 Geosynthetics

A. Geotextile:

1. Separation for foundation drains, underdrains, undercuts:

a. GeoTex 601 and 801
b. Mirafi 160N & 180N
c. WINFAB 600N & 800N
d. Approved equivalent.

2.3 ACCESSORIES

A. Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility; colored as follows:

1. Red: Electric.
2. Yellow: Gas, oil, steam, and dangerous materials.
3. Orange: Telephone and other communications.
4. Blue: Water systems.
5. Green: Sewer systems.

B. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:

1. Red: Electric.
2. Yellow: Gas, oil, steam, and dangerous materials.

3. Orange: Telephone and other communications.
4. Blue: Water systems.
5. Green: Sewer systems.

PART 3 – EXECUTION (Not Used)

END OF SECTION 310001

SECTION 312500 - EROSION AND SEDIMENTATION CONTROLS

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:

1. Temporary Structural Measures
2. Permanent Structural Measures
3. Vegetative Measures

1.3 REFERENCES

A. New York State Standards and Specifications for Erosion and Sediment Control, current version as published by the New York State Department of Environmental Conservation.

B. New York State Department of Environmental Conservation SPDES General Permit for Stormwater Discharges from Construction Activity, current version, as published by the New York State Department of Environmental Conservation.

C. ASTM International:

1. ASTM C127 - Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate.
2. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3).
3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3).
4. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.4 SUBMITTALS

A. Submittals for this Section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: Submit data on temporary and permanent erosion and sediment control measures.

1.5 QUALITY ASSURANCE

A. Perform Work according to NEW YORK STATE STANDARDS AND SEPCIFICATIONS FOR EROSION AND SEDIMENT CONTROL by NYS Department of Environmental Conservation (i.e., Bluebook) standards.

1.6 PRE-INSTALLATION MEETING

A. Section 013000 - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one week prior to commencing Work of this Section.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Do not place grout when air temperature is below freezing.

B. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

1.8 RESPONSIBILITY

A. Adhere to all erosion and sediment control requirements presented in the contract Drawings. Comply with all applicable NYSDEC regulatory requirements.

B. During construction conduct operations to prevent damage to any water body from pollution by debris, sediment, chemical or other foreign material, or from the manipulation of equipment and/or materials in or near a stream or ditch flowing directly to a stream. Any water which has been used for wash purposes or other similar operations that becomes polluted with sewage, silt, cement, concentrated chlorine, oil, fuels, lubricants, bitumens, or other impurities shall not be discharged into any water body.

C. In the event of conflict between these specifications and the regulation of other Federal, State, or local jurisdictions, the more restrictive regulations shall apply.

1.9 DESCRIPTION

A. The Work shall consist of furnishing, installing, inspecting, maintaining, and removing erosion and sediment control measures as shown on the contract documents or as ordered by the Director’s Representative during the life of the contract to provide erosion and sediment control.

B. Temporary structural measures provide erosion control protection to a critical area for an interim period. A critical area is any disturbed, bare slope subject to erosion. These are used during construction to prevent off-site sedimentation. Temporary structural measures may include any or all or the following:

1. Check dams
2. Construction road stabilization
3. Stabilized construction access
4. Dust control
5. Earth dike
6. Sediment basin
7. Sediment trap
8. Silt fence
9. Erosion control matting
10. Storm drain inlet protection
11. Temporary storm drain diversion
12. Temporary swale
13. Other temporary structural measures as required by the SWPPP.

C. Permanent structural measures also control protection to a critical area. They are used to convey runoff to a safe outlet. They remain in place and continue to function after completion of construction. Permanent structural measures shall include:

1. Land grading
2. Retaining wall

D. Vegetative measures shall include:

1. Grassed waterway
2. Mulching
3. Protecting vegetation
4. Seeding
5. Temporary swale
6. Topsoil
7. Other vegetative measures as required by the SWPPP.

PART 2 - PRODUCTS

2.1 PIPE MATERIALS

A. Pipe: Plastic, as specified in Section 334200 Stormwater Conveyance.

PART 3 - EXECUTION

3.1 DIVERSION CHANNELS

A. Excavate and place excavated material on low side of channel.

B. Compact to 90 percent maximum density.

C. On entire channel area, apply soil supplements and sow seed as specified in Section 329200 Turf and Grasses.

D. Mulch seeded areas with hay as specified in Section 329200 Turf and Grasses.

3.2 SITE STABILIZATION

A. Incorporate erosion control devices indicated on the Drawings ,and in the SWPPP, into the Project at the earliest practicable time.

B. Stockpile and waste pile heights shall not exceed 35 feet. Slope stockpile sides at 2: 1 or flatter.

C. Stabilize any disturbed area of affected erosion control devices on which activity has ceased and which will remain exposed for more than 20 days.

1. During non-germinating periods, apply mulch at recommended rates.
2. Stabilize disturbed areas which are not at finished grade and which will be disturbed within one year in accordance with Section 329200 Turf and Grasses at 80 percent of permanent application rate with no topsoil.
3. Stabilize disturbed areas which are either at finished grade or will not be disturbed within one year in accordance with Section 329200 Turf and Grasses permanent seeding specifications.

D. Stabilize diversion channels, and stockpiles immediately.

3.3 FIELD QUALITY CONTROL

A. Field inspecting, testing, adjusting, and balancing.

B. Inspect erosion control devices on a weekly basis and after each runoff event. Make necessary repairs to ensure erosion and sediment controls are in good working order.

C. Compaction Testing: As specified in Section 310000.

D. Compaction Testing: In accordance with ASTM D1557.

E. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

F. Frequency of Compaction Testing: One for each lift.

3.4 PROTECTION

A. Immediately after placement, protect paving from premature drying, excessive hot or cold temperatures, and mechanical injury.

B. Do not permit construction traffic over paving for 7 days minimum after finishing.

C. Protect paving from elements, flowing water, or other disturbance until curing is completed.

3.5 WORK AREAS

A. The Director's Representative has the authority to limit the surface area of erodible earth exposed by earthwork operations and to direct the Contractor to provide immediate temporary or permanent erosion measures to minimize damage to property and contamination of watercourses and water impoundments. Under no circumstances will the area of erodible earth material exposed at one time exceed 50,000 sq. ft. The Director's Representative may increase or decrease this area of erodible earth material exposed at one time as determined by their analysis of project, weather and other conditions. The Director's Representative may limit the area of clearing and grubbing and earthwork operations in progress commensurate with the Contractor's demonstrated capability in protecting erodible earth surfaces with temporary, permanent, vegetative or biotechnical erosion control measures.

B. Schedule the work so as to minimize the time that earth areas will be exposed to erosive conditions. Provide temporary structural measures immediately to prevent any soil erosion.

C. Provide temporary seeding on disturbed earth or soil stockpiles exposed for more than 7 days or for any temporary shutdown of construction. In spring, summer or early fall apply rye grass at a rate of 1 lb/ 1000 sq.ft. In late fall or early spring, apply certified Aroostook Rye at a rate of 2.5 lbs./ 1000 sq. ft. Apply hay or straw at a rate of 2 bales/ 1000 sq. ft. or wood fiber hydromulch at the manufacturer's recommended rate. Hay or straw shall be anchored.

D. Coordinate the use of permanent controls or finish materials shown with the temporary erosion measures.

E. All erosion and sediment control devices must be maintained in working order until the site is stabilized. All preventative and remedial maintenance work, including clean out, repair, replacement, re-grading, re-seeding, or re-mulching, must be performed immediately.

F. After final stabilization has been achieved temporary sediment and erosion controls must be removed. Areas disturbed during removal must be stabilized immediately.

END OF SECTION 312500

SECTION 321216 - ASPHALT PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Asphalt paving.

B. Related Requirements:

1. Section 024116 "Site Demolition" for demolition and removal of existing asphalt pavement, concrete landing/stairs, concrete curb and sidewalk, and sections of concrete retaining wall where indicated.
2. Section 310000 "Earthwork" for subgrade preparation, fill material, separation geotextiles, unbound-aggregate subbase and base courses, and aggregate pavement shoulders.

1.2 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials

1. AASHTO M 29 - Standard Specification for Fine Aggregate for Asphalt Mixtures
2. AASHTO M 140 - Standard Specification for Emulsified Asphalt
3. AASHTO M 208 - Standard Specification for Cationic Emulsified Asphalt
4. AASHTO M 288 - Standard Specification for Geosynthetic Specification for Highway Applications
5. AASHTO M 320 - Standard Specification for Performance-Graded Asphalt Binder
6. AASHTO R 97 - Standard Practice for Sampling Asphalt Mixtures
7. AASHTO T 245 - Standard Method of Test for Resistance to Plastic Flow of Asphalt Mixtures Using Marshall Apparatus.

B. Asphalt Institute

1. AI MS-2 - Asphalt Mix Design Methods
2. AI MS-22 - Construction of Hot Mix Asphalt Pavements

C. ASTM International

1. ASTM D242 - Standard Specification for Mineral Filler for Asphalt Mixtures
2. ASTM D977 - Standard Specification for Emulsified Asphalt
3. ASTM D979 - Standard Practice for Sampling Bituminous Paving Mixtures
4. ASTM D1188 - Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Coated Samples
5. ASTM D2027 - Standard Specification for Cutback Asphalt (Medium-Curing Type)

6. ASTM D2041 - Standard Test Method for Theoretical Maximum Specific Gravity and Density of Asphalt Mixtures
7. ASTM D2397 - Standard Specification for Cationic Emulsified Asphalt
8. ASTM D2726 - Standard Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Asphalt Mixtures
9. ASTM D2950 - Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods
10. ASTM D3141 - Standard Specification for Asphalt for Undersealing Portland-Cement Concrete Pavements
11. ASTM D3381 - Standard Specification for Viscosity-Graded Asphalt Binder for Use in Pavement Construction
12. ASTM D3549 - Standard Test Method for Thickness or Height of Compacted Asphalt Mixture Specimens
13. ASTM D3666 - Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials
14. ASTM D3910 - Standard Practices for Design, Testing, and Construction of Slurry Seal
15. ASTM D6373 - Standard Specification for Performance Graded Asphalt Binder
16. ASTM D6690 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements
17. ASTM D6927 - Standard Test Method for Marshall Stability and Flow of Asphalt Mixtures

D. New York State Department of Transportation (NYS DOT)

1. DOT 300 – Bases and Subbases
2. DOT 400 – Asphalt Mixture and Pavement
3. DOT 600 – Incidental Construction
4. DOT MM 5.16 - Asphalt Mixture Design And Mixture Verification Procedures

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. The attendance at this meeting will include Contractor’s Paving Superintendent, Chief Inspector or Paving Inspector(s), asphalt plant representative, density gauge operator, depending on the compaction method used, and work zone traffic control (WZTC) competent person (if applicable).

2. Review methods and procedures related to asphalt paving including, but not limited to, the following:

   a. Review proposed sources of paving materials, including capabilities and location of plant that will manufacture asphalt.
   b. Review requirements for protecting paving work, including restriction of traffic during installation period and for remainder of construction period.

1.4 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer's installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: Include manufacturer / provider / plant name, product name, technical data and tested physical and performance properties.

E. Submit an Environmental Product Declaration (EPD) from the manufacturer for each asphalt mix within this specification section, if available. A statement of the contractor's good faith effort to obtain the EPD shall be provided if not available.

1. Manufacturer-provided EPDs must be Product Specific Type III (Third-Party Reviewed), in adherence with ISO 14025 *Environmental labels and declarations*, ISO 14044 *Environmental management – Life cycle assessment*, and ISO 21930 *Core rules for environmental product declarations of construction products and services.*

F. Asphalt Designs:

1. Certification, by authorities having jurisdiction, of approval of each asphalt design proposed for the Work.
2. Batch plant name, NYSDOT Plant Number, and location of asphalt plant for each asphalt design proposed for the Work.
3. Asphalt Mix Design Test results that are less than 6 months old for each mix proposed for the Work.

G. Qualification Data: For paving-mix manufacturer and testing agency.

H. Material Delivery Tickets for pavement materials including the following information

1. Ticket Number.
2. Plant Identification.
3. Project Name.
4. Mix Type.
5. Quantity of material in vehicle.
6. Date and Time.
7. Statement that mixes containing recycled materials will perform equal to mixes produced from all new materials.

I. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: A paving-mix manufacturer registered with and approved by the NYS Department of Transportation.

B. Testing Agency Qualifications: Qualified in accordance with ASTM D3666 for testing indicated.

C. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of NYS Department of Transportation Standard Specifications for asphalt paving work.

1. Measurement and payment provisions and safety program submittals included in standard specifications do not apply to this Section.

1.6 FIELD CONDITIONS

A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp, or if rain is imminent or expected before time required for adequate cure.

B. Discontinue paving when surface temperatures fall below requirements listed in DOT Table 404-1 unless otherwise specified in the General Conditions of this Contract or as directed by the Director's Representative.

C. Pavement is restricted by dates listed in the General Conditions.

PART 2 - PRODUCTS

2.1 AGGREGATES

A. All aggregate used in design mixes shall be as specified in NYS DOT Specification Section 401-2.02 B; Coarse Aggregate Type F2 Conditions.

2.2 ASPHALT MATERIALS

A. Asphalt: Use aggregate and PG binder from suppliers listed in the NYS DOT's Approved List for Fine and Coarse Aggregates and Performance Graded (PG) Binders and Warm Mix Technology for Asphalt Paving respectively. Mineral filler shall meet the requirements of NYS DOT Section 703-08.

B. Supply approved asphalt mixtures that meet the requirements of NYS DOT MM 5.16 *Asphalt Mixture Design and Mixture Verification Procedures*. Each mixture must be obtained from a single plant for the duration of the project. The following NYS DOT items only shall be utilized for this project:

1. 19.0 Binder Course Asphalt.

C. Reclaimed Asphalt Pavement (RAP) shall meet the requirements of NYS DOT MM 5.16.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that subgrade is dry and in suitable condition to begin paving.

B. Proceed with paving only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protection: Provide protective materials, procedures, and worker training to prevent asphalt materials from spilling, coating, or building up on curbs, driveway aprons, manholes, and other surfaces adjacent to the Work.

B. Subgrade compaction shall adhere to Section 310000.

3.3 SURFACE PREPARATION

A. Prepare existing surfaces in accordance with DOT Section 402-3.05, Conditioning of Existing Surface.

B. Ensure that prepared subgrade has been proof-rolled and is ready to receive paving. Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces.

3.4 ASPHALT PLACEMENT

A. Spread and Finish asphalt in accordance with DOT Section 404-3.06, Spreading and Finishing.

B. Remove and restore paved areas that are defective or contaminated as delineated by the Director's Representative at no additional cost to the State.

3.5 JOINTS

A. Asphalt joints shall be in accordance with DOT Section 404-3.09, Joints.

3.6 COMPACTION

A. Provide compaction of asphalt mixtures in general accordance with DOT Section 404-3.07, Compaction, Paragraph D, 80 Series Compaction Methods, specifically meeting the minimum requirements as shown in Table 404-3 Number of Passes.

1. The Director's Representative may increase or decrease the number of passes to obtain adequate density of the compacted asphalt.
2. The Director's Representative may also approve alternate compaction procedures where the specified procedures are not applicable.
3. Testing to be performed at the direction of and in locations chosen by the Director's Representative. Target compaction is 95% (92% - 97% range is acceptable; as mixture maximum theoretical density).

3.7 INSTALLATION TOLERANCES

A. Pavement Thickness: Compact each course to produce thickness indicated within the following tolerances:

1. Binder Course and Surface Course: Plus or minus ¼ inch when the total nominal thickness indicated on the plans is 4 inches or less. Plus or minus ½ inch when the total nominal thickness is over 4 inches but not more than 8 inches. When the asphalt mixture is placed on newly constructed subbase material, an additional tolerance of ½ inch will be allowed both in the nominal thickness of the course placed directly on the subbase and the total pavement thickness.

B. Pavement Surface Smoothness: Compact each course to produce surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:

1. Base Course and Binder Course: 1/2 inch.
2. Surface Course: 1/2 inch.

3.8 FIELD QUALITY CONTROL

A. Testing Agency: Director's Representative will engage a qualified testing agency to perform tests and inspections.

B. Thickness: In-place compacted thickness of asphalt courses will be determined in accordance with ASTM D3549.

C. Surface Smoothness: Finished surface of each asphalt course will be tested for compliance with smoothness tolerances.

D. Density Testing: Testing agency will take samples of uncompacted paving mixtures and compacted pavement in accordance with ASTM D979.

1. Reference maximum theoretical density will be determined by averaging results from four samples of asphalt-paving mixture delivered daily to site, prepared in accordance with ASTM D2041, and compacted in accordance with job-mix specifications.
2. Density of compacted pavement will be determined by testing core samples in accordance with ASTM D1188 or ASTM D2726.

    a. One core sample will be taken for every 1000 sq. ft. or less of installed pavement.
    b. Field density of in-place compacted pavement may also be determined by nuclear method in accordance with ASTM D2950 and coordinated with ASTM D1188 or ASTM D2726.

E. Replace and compact asphalt where core tests were taken.

F. Remove and replace or install additional asphalt where test results or measurements indicate that it does not comply with specified requirements.

END OF SECTION 321216

SECTION 321313 - CONCRETE PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes Concrete Paving:

1. Walks.

1.2 REFERENCES

A. American Concrete Institute

1. CP-1 Technician Workbook for ACI Certification of Concrete Field Testing Technician.
2. ACI 301 - Specifications for Structural Concrete
3. ACI 306.1 – Standard Specification for Cold Weather Concreting
4. ACI 318-19 – Building Code Requirements

B. ASTM International

1. ASTM A184 - Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement
2. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength
3. ASTM A615 - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
4. ASTM A767 - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement
5. ASTM A775 - Standard Specification for Epoxy-Coated Steel Reinforcing Bars
6. ASTM A780 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
7. ASTM A884 - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement
8. ASTM A934 - Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars
9. ASTM A1017 - Standard Specification for Pressure Vessel Plates, Alloy Steel, Chromium-Molybdenum-Tungsten
10. ASTM A1064 - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
11. ASTM C31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field
12. ASTM C39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
13. ASTM C94 - Standard Specification for Ready-Mixed Concrete
14. ASTM C143 - Standard Test Method for Slump of Hydraulic-Cement Concrete
15. ASTM C150 - Standard Specification for Portland Cement

16. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete
17. ASTM C172 - Standard Practice for Sampling Freshly Mixed Concrete
18. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
19. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete
20. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
21. ASTM C494 - Standard Specification for Chemical Admixtures for Concrete
22. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
23. ASTM C881 - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete
24. ASTM C979 - Standard Specification for Pigments for Integrally Colored Concrete
25. ASTM C989 - Standard Specification for Slag Cement for Use in Concrete and Mortars
26. ASTM C1059 - Standard Specification for Latex Agents for Bonding Fresh To Hardened Concrete
27. ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
28. ASTM C1116 - Standard Specification for Fiber-Reinforced Concrete
29. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
30. ASTM D3963 - Standard Specification for Fabrication and Jobsite Handling of Epoxy-Coated Steel Reinforcing Bars
31. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection

C. New York State Department of Transportation

1. DOT 501-3 – Construction Details
2. DOT 502 – Portland Cement Concrete Pavement
3. DOT 705-15 – Transverse Joint Supports
4. DOT 711-02 – Quilted Covers (For Curing)
5. DOT 711-05 – Membrane Curing Compound

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash, slag cement, and other pozzolans.

B. W/C Ratio: The ratio by weight of water to cementitious materials.

1.4 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

E. Submit an Environmental Product Declaration (EPD) from the manufacturer for each concrete mix and steel reinforcement bar within this specification section, if available. A statement of the contractor's good faith effort to obtain the EPD shall be provided if not available.

1. Manufacturer-provided EPDs must be Product Specific Type III (Third-Party Reviewed), in adherence with ISO 14025 *Environmental labels and declarations*, ISO 14044 *Environmental management – Life cycle assessment*, and ISO 21930 *Core rules for environmental product declarations of construction products and services.*

F. Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

G. Material Certificates: For the following, from manufacturer:

1. Cementitious materials.
2. Steel reinforcement and reinforcement accessories.
3. Admixtures.
4. Curing compounds.
5. Applied finish materials.
6. Bonding agent or epoxy adhesive.
7. Joint fillers.

H. Quality Control Submittals:

1. Data: Name and location of batch plant for concrete paving.

I. Ready-Mix-Concrete Manufacturer Qualifications: Concrete batching plants shall be currently approved as concrete suppliers by the New York State Department of Transportation.

1.5 FIELD CONDITIONS

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as shown in the Contract Drawings.

B. Cold-Weather Concrete Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with NYS DOT 502 and the following:

1. Place concrete when the air temperature of the area to be paved is 40 deg F and rising, or warmer, and when the surface temperature of the area to be paved is 40 deg F, or warmer.
2. Do not use frozen materials or materials containing ice or snow.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.

C. Hot-Weather Concrete Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Cover steel reinforcement with water-soaked burlap, so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. ACI Publications: Comply with ACI 301 unless otherwise indicated.

2.2 FORMS

A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.

1. Use flexible or uniformly curved forms for curves with a radius of 100 feet or less. Do not use notched and bent forms.

B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

2.3 STEEL REINFORCEMENT

A. Plain-Steel Welded-Wire Reinforcement: ASTM A1064, fabricated from galvanized-steel wire into flat sheets.

B. Deformed-Steel Welded-Wire Reinforcement: ASTM A1064, flat sheet.

C. Epoxy-Coated Welded-Wire Reinforcement: ASTM A884, Class A, plain steel. Reinforcing Bars: ASTM A615, Grade 60; deformed.

D. Steel Bar Mats: ASTM A184; with ASTM A615, Grade 60 deformed bars; assembled with clips.

E. Plain-Steel Wire: ASTM A1064, galvanized.

F. Deformed-Steel Wire: ASTM A1064.

G. Tie Bars: ASTM A615, Grade 60; deformed.

H. Bar Supports: Galvanized steel or AISI Type 430 stainless steel, and without plastic tips.

I. Zinc Repair Material: ASTM A780.

2.4 CONCRETE MATERIALS

A. Cementitious Materials: Use the following cementitious materials, of same type, brand, and source throughout Project:

1. Portland Cement: ASTM C150, gray Portland cement Type I, Type II, or Type I/II.
2. Fly Ash: ASTM C618, Class F.
3. Slag Cement: ASTM C989, Grade 100 or 120.

B. Normal-Weight Aggregates: ASTM C33, Class 4S, uniformly graded. Provide aggregates from a single source on the NYS DOT Approved List of Sources of Fine and Coarse Aggregates.

1. Use only crushed stone, crushed gravel, or crushed slag meeting the requirements of NYS DOT Section 703-02, Coarse Aggregates in either one or a combination of size designations specified in NYS DOT Table 703-4, Sizes of Stone, Gravel, and Slag and graded according to NYS DOT Table 501-2, Coarse Aggregate Gradations.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Air-Entraining Admixture: meeting ASTM C260 and appearing on the NYS DOT Approved List of Materials.

D. Chemical Admixtures: Admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material and appearing on the NYS DOT Approved List of Materials.

1. Water-Reducing Admixture: ASTM C494, Type A and appearing on the NYS DOT Approved List of Materials.
2. Retarding Admixture: ASTM C494, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C494, Type D and appearing on the NYS DOT Approved List of Materials.
4. High-Range, Water-Reducing Admixture: ASTM C494, Type F and appearing on the NYS DOT Approved List of Materials.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C494, Type G.
6. Plasticizing and Retarding Admixture: ASTM C1017, Type II.

E. Water: Potable and complying with ASTM C94.

F. Global Warming Potential Limits

1. The Global Warming Potential (GWP) of standard ready-mix concrete mixes shall meet the maximum limits outlined in in the table below. GWP of each mix will be verified through the submission of an EPD.

Maximum Global Warming Potential (GWP) Limits

for Low Embodied Carbon Concrete

Specified compressive strength	Maximum Global Warming Potential Limits for Low Embodied

(f'c in PSI)	Carbon Concrete (kilograms of carbon dioxide equivalent per cubic yard - CO_2e kg/y^3)
0 - 2500	275
2501 - 3000	302
3001 - 4000	360
4001 - 5000	434
5001 - 6000	458
6001 - 8000	541
8000+	N/A

2. The maximum GWP limits are not applicable to quick cure concrete, concrete designed to cure to its design strength quicker than the standard 28 days.

2.5 CURING MATERIALS

A. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.

B. Moisture-Retaining Cover: ASTM C171, polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

2.6 RELATED MATERIALS

A. Joint Fillers: ASTM D1751, asphalt-saturated cellulosic fiber in preformed strips.

B. Bonding Agent: ASTM C1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

2.7 CONCRETE MIXTURES

A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete, at a NYS DOT-approved concrete batching plant.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than Portland Cement in concrete as follows:

1. Fly Ash or Pozzolan: 20 percent.

C. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:

1. Air Content: 6.5 percent plus or minus 1-1/2 percent.

D. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

E. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing admixture in concrete as required for placement and workability.
2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

F. Synthetic Fiber: Uniformly disperse in concrete mixture at manufacturer's recommended rate, but not less than 1.0 lb/cu. yd.

G. Concrete Mixtures: Normal-weight concrete.

1. Compressive Strength (28 Days): 4500 psi.
2. Maximum W/C Ratio at Point of Placement: 0.45.
3. Slump Limit: 4 inches; before the addition of any water-reducing admixtures or high-range water-reducing admixtures at the site. When a water-reducing admixture is used, maximum slump shall be 6 inches and when a high range water reducing admixture is used maximum slump shall be 8 inches.

2.8 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C94 and ASTM C1116. Furnish batch certificates for each batch discharged and used in the Work.

1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove loose material from compacted subbase surface immediately before placing concrete.

3.3 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.4 STEEL REINFORCEMENT INSTALLATION

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.

C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

D. Install welded-wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

E. Zinc-Coated Reinforcement: Use galvanized-steel wire ties to fasten zinc-coated reinforcement. Repair cut and damaged zinc coatings with zinc repair material.

3.5 Install fabricated bar mats in lengths as long as practicable. Handle units to keep them flat and free of distortions. Straighten bends, kinks, and other irregularities, or replace units as required before placement. Set mats for a minimum 2-inch overlap of adjacent mats. JOINTS

A. General: Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.

1. When joining existing paving, place transverse joints to align with previously placed joints unless otherwise indicated.

B. Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than one-half hour unless paving terminates at isolation joints.

1. Continue steel reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of paving strips unless otherwise indicated.
2. Provide tie bars at sides of paving strips where indicated.
3. Butt Joints: Use bonding agent at joint locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, other fixed objects, and where indicated.

1. Locate expansion joints at intervals of 50 feet unless otherwise indicated.
2. Extend joint fillers full width and depth of joint.
3. Terminate joint filler not less than 1/2 inch or more than 1 inch below finished surface if joint sealant is indicated.
4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.

5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
6. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.

D. Edging: After initial floating, tool edges of paving, gutters, curbs, and joints in concrete with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate edging-tool marks on concrete surfaces.

3.6 CONCRETE PLACEMENT

A. Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast-in.

B. Remove snow, ice, or frost from subbase surface and steel reinforcement before placing concrete. Do not place concrete on frozen surfaces.

C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

D. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

E. Do not add water to concrete during delivery or at Project site unless specifically noted in approved mix design and on batch ticket. Do not add water to fresh concrete after testing.

F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

G. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.

1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement and joint devices.

H. Screed paving surface with a straightedge and strike off.

I. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleedwater appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

J. Curbs and Gutters: Use design mixture for automatic machine placement. Produce curbs and gutters to required cross section, lines, grades, finish, and jointing.

K. Slip-Form Paving: Use design mixture for automatic machine placement. Produce paving to required thickness, lines, grades, finish, and jointing.

1. Compact subbase and prepare subgrade of sufficient width to prevent displacement of slip-form paving machine during operations.

3.7 Float finishing:

A. General: Do not add water to concrete surfaces during finishing operations.

B. Float Finish: Begin the second floating operation when bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

1. Medium-to-Fine-Textured Broom Finish: Draw a soft-bristle broom across float-finished concrete surface, perpendicular to line of traffic, to provide a uniform, fine-line texture.

3.8 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Comply with NYS DOT 502 for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete but before float finishing.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

E. Curing Methods: Cure concrete by moisture-retaining-cover curing compound as follows:

1. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Immediately repair any holes or tears occurring during installation or curing period, using cover material and waterproof tape.
2. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating, and repair damage during curing period.

3.9 PAVING TOLERANCES

A. Comply with tolerances in ACI 117 and as follows:

1. Elevation: 3/4 inch.
2. Thickness: Plus 3/8 inch, minus 1/4 inch.

3. Surface: Gap below 10-feet-long; unleveled straightedge not to exceed 1/2 inch.
4. Alignment of Tie-Bar End Relative to Line Perpendicular to Paving Edge: 1/2 inch per 12 inches of tie bar.
5. Lateral Alignment and Spacing of Dowels: 1 inch.
6. Vertical Alignment of Dowels: 1/4 inch.
7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Paving Edge: 1/4 inch per 12 inches of dowel.
8. Joint Spacing: 3 inches.
9. Contraction Joint Depth: Plus 1/4 inch, no minus.
10. Joint Width: Plus 1/8 inch, no minus.

3.10 FIELD QUALITY CONTROL

A. Testing Agency: Director's Representative will engage a qualified testing agency to perform tests and inspections.

B. Strength of each concrete mixture will be satisfactory if average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.

C. Test results shall be reported in writing to Director's Representative, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

D. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Director's Representative but will not be used as sole basis for approval or rejection of concrete.

E. Additional Tests: Testing and inspecting agency shall 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 Director's Representative.

F. Concrete paving will be considered defective if it does not pass tests and inspections.

G. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

H. Prepare test and inspection reports.

3.11 REPAIR AND PROTECTION

A. Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Director's Representative.

B. Drill test cores, where directed by Director's Representative, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory paving areas with Portland cement concrete bonded to paving with epoxy adhesive.

C. Protect concrete paving from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.

D. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 321313

SECTION 321373 - CONCRETE PAVING JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Cold-applied joint sealants.
2. Joint-sealant backer materials.
3. Primers.

1.2 REFERENCES

A. ASTM International

1. ASTM C920 - Standard Specification for Elastomeric Joint Sealants
2. ASTM C1193 - Standard Guide for Use of Joint Sealants
3. ASTM D1752 - Standard Specification for Preformed Sponge Rubber, Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction
4. ASTM D5249 - Standard Specification for Backer Material for Use with Cold- and Hot-Applied Joint Sealants in Portland-Cement Concrete and Asphalt Joints
5. ASTM D5893 - Standard Specification for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements

1.3 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer’s installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product, including federal specification number, expiration date, and packaging date or batch number (if applicable).

E. Product Certificates: For each type of joint sealant and accessory.

1.4 FIELD CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature, humidity, or moisture conditions are outside limits permitted by joint-sealant manufacturer or temperatures are below 40 deg F.
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backing materials, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

2.2 COLD-APPLIED JOINT SEALANTS

A. Single-Component, Nonsag, Silicone Joint Sealant: ASTM D5893, Type NS.

1. Products:

a. Tremco Vulkem 116
b. Pecora Dynatrol I XL
c. Sika Sikaflex Textured Sealant
d. DOWSIL CCS or CWS
e. Pecora 301-NS
f. Pecora 311-NS
g. Approved equivalent.

B. Single-Component, Self-Leveling, Silicone Joint Sealant: ASTM D5893, Type SL.

1. Products:

a. Bostik Chem-Calk 955-SL
b. Pecora Urexpan NR-201
c. Pecora 300-SL
d. Pecora 310-SL
e. Sika Sikaflex-1c SL
f. DOWSIL 890-SL
g. Approved equivalent.

2.3 JOINT-SEALANT BACKER MATERIALS

A. Joint-Sealant Backer Materials: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by joint-sealant manufacturer, based on field experience and laboratory testing.

2.4 PRIMERS

A. Primers: Product recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated.

2.5 COLOR OF MATERIALS

A. For exposed materials furnish color as indicated, or if not indicated, as selected by the Director from the manufacturer's standard colors. For concealed materials, provide the natural color which has the best overall performance characteristics.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Before installing joint sealants, clean out joints immediately to comply with joint-sealant manufacturer's written instructions.

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.

B. Joint Priming: Prime joint substrates where indicated or where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

3.3 INSTALLATION OF JOINT SEALANTS

A. Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated unless more stringent requirements apply.

B. Joint-Sealant Installation Standard: Comply with recommendations in ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions.

C. Install joint-sealant backings to support joint sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of joint-sealant backings.
2. Do not stretch, twist, puncture, or tear joint-sealant backings.
3. Remove absorbent joint-sealant backings that have become wet before sealant application and replace them with dry materials.

D. Install joint sealants immediately following backing installation, using proven techniques that comply with the following:

1. Place joint sealants so they fully contact joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

E. Tooling of Nonsag Joint Sealants: Immediately after joint-sealant application and before skinning or curing begins, tool sealants according to the following requirements to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint:

1. Remove excess joint sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by joint-sealant manufacturer and that do not discolor sealants or adjacent surfaces.

F. Provide joint configuration to comply with joint-sealant manufacturer's written instructions unless otherwise indicated.

3.4 CLEANING AND PROTECTION

A. Clean off excess joint sealant as the Work progresses, by methods and with cleaning materials approved in writing by joint-sealant manufacturers.

B. Protect joint sealants, during and after curing period, from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants 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 and replace with joint sealant so installations in repaired areas are indistinguishable from the original work.

END OF SECTION 321373

SECTION 321613 - CONCRETE CURBS AND GUTTERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes Concrete Curbs and Gutters.

B. Related Requirements:

1. Section 033000 "Cast-in-Place Concrete" for general building applications of concrete.
2. Section 321373 "Concrete Paving Joint Sealants" for joint sealants in expansion and contraction joints within concrete paving and in joints between concrete paving and asphalt paving or adjacent construction.

1.2 REFERENCES

A. American Concrete Institute

1. CP-1 Technician Workbook for ACI Certification of Concrete Field Testing Technician.
2. ACI 301 - Specifications for Structural Concrete
3. ACI 306.1 – Standard Specification for Cold Weather Concreting
4. ACI 318-19 – Building Code Requirements

B. ASTM International

1. ASTM C31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field
2. ASTM C39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
3. ASTM C94 - Standard Specification for Ready-Mixed Concrete
4. ASTM C143 - Standard Test Method for Slump of Hydraulic-Cement Concrete
5. ASTM C150 - Standard Specification for Portland Cement
6. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete
7. ASTM C172 - Standard Practice for Sampling Freshly Mixed Concrete
8. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
9. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete
10. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
11. ASTM C494 - Standard Specification for Chemical Admixtures for Concrete
12. ASTM C595 - Standard Specification for Blended Hydraulic Cements
13. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
14. ASTM C881 - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete

15. ASTM C989 - Standard Specification for Slag Cement for Use in Concrete and Mortars
16. ASTM C1059 - Standard Specification for Latex Agents for Bonding Fresh To Hardened Concrete
17. ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
18. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
19. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection

C. New York State Department of Transportation

1. DOT 501-3 – Construction Details
2. DOT 705-15 – Transverse Joint Supports
3. DOT 711-02 – Quilted Covers (For Curing)
4. DOT 711-05 – Membrane Curing Compound
5. DOT 713-03 – Fertilizer

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash, slag cement, and other pozzolans.

B. W/C Ratio: The ratio by weight of water to cementitious materials.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to concrete paving, including but not limited to, the following:

    a. Concrete mixture design.
    b. Quality control of concrete materials and concrete paving construction practices.

2. Require representatives of each entity directly concerned with concrete paving to attend, including the following:

    a. Contractor's superintendent.
    b. Independent testing agency responsible for concrete design mixtures.
    c. Ready-mix concrete manufacturer.
    d. Concrete paving Subcontractor.

1.5 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer's installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

E. Submit an Environmental Product Declaration (EPD) from the manufacturer for each concrete mix and steel reinforcement bar within this specification section, if available. A statement of the contractor's good faith effort to obtain the EPD shall be provided if not available.

1. Manufacturer-provided EPDs must be Product Specific Type III (Third-Party Reviewed), in adherence with ISO 14025 *Environmental labels and declarations*, ISO 14044 *Environmental management – Life cycle assessment*, and ISO 21930 *Core rules for environmental product declarations of construction products and services.*

F. Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

G. Qualification Data: For qualified ready-mix concrete manufacturer.

H. Material Certificates: For the following, from manufacturer:

1. Cementitious materials.
2. Fiber reinforcement.
3. Admixtures.
4. Curing compounds.
5. Bonding agent or epoxy adhesive.
6. Joint fillers.

I. Quality Control Submittals:

1. Data: Name and location of batch plant for concrete paving.

J. Ready-Mix-Concrete Manufacturer Qualifications: Concrete batching plants shall be currently approved as concrete suppliers by the New York State Department of Transportation.

1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.

1.6 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: The Director's Representative will engage a qualified independent testing agency to perform preconstruction testing on concrete paving mixtures.

1.7 FIELD CONDITIONS

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as shown in the Contract Drawings.

B. Cold-Weather Concrete Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with NYS DOT 502 and the following:

1. Place concrete when the air temperature of the subject area is 40 deg F and rising, or warmer, and when the surface temperature of the subject area is 40 deg F, or warmer.
2. Do not use frozen materials or materials containing ice or snow.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.

C. Hot-Weather Concrete Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Cover steel reinforcement with water-soaked burlap, so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. ACI Publications: Comply with ACI 301 unless otherwise indicated.

2.2 FORMS

A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.

1. Use flexible or uniformly curved forms for curves with a radius of 100 feet or less. Do not use notched and bent forms.

B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

2.3 CONCRETE MATERIALS

A. Cementitious Materials: Use the following cementitious materials, of same type, brand, and source throughout Project:

1. Portland Cement: ASTM C150, gray Portland cement Type I/II.
2. Fly Ash: ASTM C618, Class F.
3. Slag Cement: ASTM C989, Grade 100 or 120.

B. Normal-Weight Aggregates: ASTM C33, Class 4S, uniformly graded. Provide aggregates from a single source on the NYS DOT Approved List of Sources of Fine and Coarse Aggregates.

1. Use only crushed stone, crushed gravel, or crushed slag meeting the requirements of NYS DOT Section 703-02, Coarse Aggregates in either one or a combination of size designations specified in NYS DOT Table 703-4, Sizes of Stone, Gravel, and Slag and graded according to NYS DOT Table 501-2, Coarse Aggregate Gradations.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Air-Entraining Admixture: meeting ASTM C260 and appearing on the NYS DOT Approved List of Materials.

D. Chemical Admixtures: Admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material and appearing on the NYS DOT Approved List of Materials.

1. Water-Reducing Admixture: ASTM C494, Type A and appearing on the NYS DOT Approved List of Materials.
2. Retarding Admixture: ASTM C494, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C494, Type D and appearing on the NYS DOT Approved List of Materials.
4. High-Range, Water-Reducing Admixture: ASTM C494, Type F and appearing on the NYS DOT Approved List of Materials.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C494, Type G.
6. Plasticizing and Retarding Admixture: ASTM C1017, Type II.

E. Water: Potable and complying with ASTM C94.

2.4 FIBER REINFORCEMENT

A. Fibrous Concrete Reinforcement: Collated Fibrillated type; ASTM C 1116 and ASTM C 1018, 100 percent virgin, homopolymer polypropylene fibers specifically manufactured for use as concrete reinforcement. Fiber Length: 3/4 to 1 1/2 inch. Specific Gravity: 0.9.

1. Grace Fibers by W.R. Grace & Company – Conn., Construction Products, 62 Whittemore Ave., Cambridge, MA 02140-1692, (877) 423-6491 www.na.graceconstruction.com.
2. Fibermesh by Propex Concrete Systems Corp., 6025 Lee Highway, Suite 425, PO Box 22788, Chattanooga, TN 37422, (800) 621-1273, www.fibermesh.com.
3. FORTA Econo-Mono by Forta Corporation, 100 Forta Dr., Grove City, PA 16127-6399, (800) 245-0306, www.fortacorp.com.

4. ProMesh Fibrillated Fibers by Pro Mesh Fiber Systems, Division of Canada Cordage Inc., 50 Ottawa St. S., Kitchener, Ontario, Canada N2G 3S7, (877) 224-2673, www.promesh.com.
5. Approved equivalent.

2.5 CURING MATERIALS

A. Moisture-Retaining Cover: ASTM C171, polyethylene film or white burlap-polyethylene sheet.

B. Water: Potable.

C. Evaporation Retarder: Waterborne, monomolecular, film forming, manufactured for application to fresh concrete.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Kaufman Products, Inc, (410) 354-8600, 3811 Curtis Ave, Curtis Bay, MD 21226
b. Laticrete International, Inc, (800) 243-4788, One LATICRETE Park, North Bethany, CT 06524-3423, USA
c. Sika Corporation, (800) 933-7452, 201 Polito Avenue, Lyndhurst, NJ 07071
d. Approved equivalent.

D. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 1, Class B, dissipating. The VOC content shall meet the requirements of the EPA national AIM VOC regulations and NYS DEC regulation 6 NYCRR Part 205 – "Architectural and Industrial (AIM) Coatings".

a. Products: Subject to compliance with requirements, provide one of the following:

1) Dayton Superior; [Clear Cure VOC J7WB][Clear Resin Cure J11W][Cure & Seal 309 EF][Cure & Seal 309 J18].
2) Kaufman Products, Inc; DR Cure.
3) Unitex by Dayton Superior; Hydroseal 18.
4) Approved equivalent.

2.6 RELATED MATERIALS

A. Joint Fillers: ASTM D1751, asphalt-saturated cellulosic fiber in preformed strips.

B. Pigmented Mineral Dry-Shake Hardener: Factory-packaged, dry combination of portland cement, graded quartz aggregate, color pigments, and plasticizing admixture. Use color pigments that are finely ground, nonfading mineral oxides interground with cement.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Dayton Superior; Quartz Tuff.
b. Kaufman Products, Inc; Tycron.
c. Approved equivalent.

2.7 CONCRETE MIXTURES

A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete, at a NYS DOT-approved concrete batching plant.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than Portland Cement in concrete as follows:

1. Fly Ash or Pozzolan: 20 percent.

C. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:

1. Air Content: 6.5 percent plus or minus 1-1/2 percent.

D. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

E. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

F. Concrete Mixtures: Normal-weight concrete.

1. Compressive Strength (28 Days): 5000 psi.
2. Maximum W/C Ratio at Point of Placement: 0.45.

G. Slump Limit: 4 inches; before the addition of any water-reducing admixtures or high-range water-reducing admixtures at the site. When a water-reducing admixture is used, maximum slump shall be 6 inches and when a high range water reducing admixture is used maximum slump shall be 8 inches.

H. Global Warming Potential Limits

1. The Global Warming Potential (GWP) of standard ready-mix concrete mixes shall meet the maximum limits outlined in in the table below. GWP of each mix will be verified through the submission of an EPD.

Maximum Global Warming Potential (GWP) Limits

for Low Embodied Carbon Concrete

Specified compressive strength (f'c in PSI)	NYS Buy Clean Concrete GWP Limits (in kilograms of carbon dioxide equivalent per cubic yard - $kgCO_2e/y^3$)	NYS Buy Clean Concrete GWP Limits (in kilograms of carbon dioxide equivalent per cubic meter - $kgCO_2e/m^3$)
0 - 2500	275	360
2501 - 3000	302	395
3001 - 4000	360	471

4001 - 5000	434	568
5001 - 6000	458	599
6001 - 8000	541	707
8000+	N/A	N/A

2. The maximum GWP limits are not applicable to quick cure concrete, concrete designed to cure to its design strength quicker than the standard 28 days.

2.8 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C94. Furnish batch certificates for each batch discharged and used in the Work.

1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C94. Mix concrete materials in appropriate drum-type batch machine mixer.

1. For concrete batches of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
2. For concrete batches larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd.
3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixing time, quantity, and amount of water added.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove loose material from compacted subbase surface immediately before placing concrete.

3.3 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.4 JOINTS

A. General: Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.

B. Construction Joints: Set construction joints at side and end terminations of placement and at locations where placement operations are stopped for more than one-half hour unless paving terminates at isolation joints.

1. Butt Joints: Use bonding agent at joint locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
2. Keyed Joints: Provide preformed keyway-section forms or bulkhead forms with keys unless otherwise indicated. Embed keys at least 1-1/2 inches into concrete.
3. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.

C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, other fixed objects, and where indicated.

1. Locate expansion joints at intervals of 50 feet unless otherwise indicated.
2. Extend joint fillers full width and depth of joint.
3. Terminate joint filler not less than 1/2 inch or more than 1 inch below finished surface if joint sealant is indicated.
4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
6. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.

D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated on the drawings or every ten linear feet for curbs. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows**,** to match jointing of existing adjacent concrete paving.

1. Sawed Joints: Form contraction joints with power saws equipped with early entry, shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.

E. Edging: After initial floating, tool edges of paving, gutters, curbs, and joints in concrete with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate edging-tool marks on concrete surfaces.

3.5 CONCRETE PLACEMENT

A. Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast-in.

B. Remove snow, ice, or frost from subbase surface and steel reinforcement before placing concrete. Do not place concrete on frozen surfaces.

C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

D. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

E. Do not add water to concrete during delivery or at Project site unless specifically noted in approved mix design and on batch ticket. Do not add water to fresh concrete after testing.

F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

G. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.

H. Screed concrete surface with a straightedge and strike off.

I. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleedwater appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

J. Curbs and Gutters: Use design mixture for automatic machine placement. Produce curbs and gutters to required cross section, lines, grades, finish, and jointing.

3.6 FLOAT FINISHING

A. General: Do not add water to concrete surfaces during finishing operations.

B. Float Finish: Begin the second floating operation when bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

1. Smooth Rubbed Finish: Rub exposed face of curb to a smooth rubbed finish.

3.7 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Comply with NYS DOT 502 for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete but before float finishing.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

E. Curing Methods: Cure concrete by curing compound as follows:

1. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating, and repair damage during curing period.

3.8 FIELD QUALITY CONTROL

A. Testing Agency: Director’s Representative will engage a qualified testing agency to perform tests and inspections.

B. Testing Services: Testing and inspecting of composite samples of fresh concrete obtained according to ASTM C172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain at least one composite sample for each 50 cu. yd. or fraction thereof of each concrete mixture placed each day.

    a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Slump: ASTM C143; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C231, pressure method at point of placement; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
4. Concrete Temperature: ASTM C1064; one test hourly when air temperature is 40 deg F and below and when it is 80 deg F and above, and one test for each composite sample.
5. Compression Test Specimens: ASTM C31; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
6. Compressive-Strength Tests: ASTM C39; test one specimen at seven days and two specimens at 28 days.

a. A compressive-strength test shall be the average compressive strength from two specimens obtained from same composite sample and tested at 28 days.

C. Strength of each concrete mixture will be satisfactory if average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.

D. Test results shall be reported in writing to Director's Representative, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Director's Representative but will not be used as sole basis for approval or rejection of concrete.

F. Additional Tests: Testing and inspecting agency shall 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 Director's Representative.

G. Concrete paving will be considered defective if it does not pass tests and inspections.

H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

I. Prepare test and inspection reports.

3.9 REPAIR AND PROTECTION

A. Remove and replace concrete curbing that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Director's Representative.

B. Drill test cores, where directed by Director's Representative, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory paving areas with Portland cement concrete bonded to paving with epoxy adhesive.

C. Protect concrete curbing from damage.

D. Maintain concrete curbing free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 321613

SECTION 321723 - PAVEMENT MARKINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Painted markings applied to asphalt paving.
2. Painted markings applied to concrete surfaces.

1.2 REFERENCES

A. United States Department of Justice (US DOJ).

1. Americans with Disabilities Act (ADA), Standards for Accessible Design.

B. Building Code of New York State Chapter 11 – Accessibility.

C. New York State Department of Transportation (NYS DOT):

1. DOT 640 – Reflectorized Pavement Marking Paints.

1.3 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer's installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: Include technical data and tested physical and performance properties.

E. Samples:

1. For each exposed product and for each color and texture specified; on rigid backing, 8 inches square.

F. Quality Assurance:

1. Certification: Affidavit by the paint applicator, certifying that the materials comply with the current regulatory requirements in effect at the time products were delivered and applied.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of NYS Department of Transportation Standards and Specifications for pavement-marking work.

1. Measurement and payment provisions and safety program submittals included in standard specifications do not apply to this Section.

1.5 FIELD CONDITIONS

A. Environmental Limitations: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 40 deg F.

B. Provide temporary barriers to prevent vehicles from driving over newly painted areas.

PART 2 - PRODUCTS

2.1 PAVEMENT MARKINGS

A. Paint: DOT Section 640-2, yellow or white as indicated, or if not indicated as directed. Delete reference to Glass Beads.

B. Source Limitations: Obtain pavement-marking paints from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Accessibility Standard: Comply with applicable provisions in the latest edition of the Building Code of New York State, Chapter 11.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that pavement-marking substrate is dry and in suitable condition to begin pavement marking in accordance with manufacturer's written instructions.

B. Remove dust, dirt, and other foreign material detrimental to paint adhesion.

C. Mark layout of stripes and lines with chalk or paint.

D. Proceed with pavement marking only after unsatisfactory conditions have been corrected.

3.2 PAVEMENT MARKING

A. Do not apply pavement-marking paint until layout, colors, and placement have been verified by the Director's Representative.

B. Allow asphalt paving or concrete surfaces to age for the minimum duration recommended by the pavement marking manufacturer before starting pavement marking.

A. Apply paint in accordance with DOT Section 640-3.02, except as follows:

1. Delete references to Glass Beads.
2. Apply graphic symbols and lettering with paint-resistant, die-cut stencils, firmly secured to asphalt paving or concrete surface. Mask an extended area beyond edges of each stencil to prevent paint application beyond stencil. Apply paint so that it cannot run beneath stencil.

3.3 PROTECTING AND CLEANING

A. Protect pavement markings from damage and wear during remainder of construction period.

B. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 321723

SECTION 323113 - CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Chain-link fences.
2. Manually operated swing gates.
3. Privacy slats.

1.2 REFERENCES

A. Comply with ASTM A53 for requirements of Schedule 40 piping.

1.3 DEFINITIONS

A. Height of Fence: Distance measured from the top of concrete footing to the top of fabric. Fences with buried fabric measured from finished grade to the top of fabric.

1.4 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer's installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Waiver of Submittals: The "Waiver of Certain Submittal Requirements" in Section 013300 does not apply to this Section.

E. Shop Drawings: Complete detailed drawings for each height and style of fence and gate required. Include separate schedule for each listing all materials required and technical data such as size, weight, and finish, to ensure conformance to specifications.

F. Product Data: Manufacturer's catalog cuts, specifications, and installation instructions for each item specified.

G. Submit an Environmental Product Declaration (EPD) from the manufacturer for steel framework and steel fabric within this specification section, if available. A statement of the contractor's good faith effort to obtain the EPD shall be provided if not available.

1. Manufacturer-provided EPDs must be Product Specific Type III (Third-Party Reviewed), in adherence with ISO 14025 *Environmental labels and declarations*, ISO 14044 *Environmental management – Life cycle assessment*, and ISO 21930 *Core rules for environmental product declarations of construction products and services.*

H. Samples:

1. Fence Fabric: Minimum one square foot.
2. Fence and Gate Posts: Two each, one foot long, if requested.
3. Miscellaneous Materials and Accessories: One each, if requested.

I. Quality Control Submittals:

1. Test Reports: Security coils test procedure report.
2. Certificates: Affidavit required under Quality Assurance Article.

1.5 QUALITY ASSURANCE

A. Comply with standards of the Chain Link Fence Manufacturer's Institute.

B. Provide steel fence and related gates as a complete compatible system including necessary erection accessories, fittings, and fastenings.

C. Posts and rails shall be continuous without splices.

D. Concrete batching plants shall be currently approved as concrete suppliers by the New York State Department of Transportation.

E. Testing Agency Qualifications: For testing fence grounding; member company of NETA or an NRTL.

1. Testing Agency's Field Supervisor: Certified by NETA to supervise on-site testing.

1.6 DELIVERY

A. Coordinate delivery of anchors and other accessories to be built into other Work, to avoid delay. Furnish instructions and templates as required for accurate location.

1.7 FIELD CONDITIONS

A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Class B Steel Tubing (Option):

1. SS-40 Fence Pipe by Allied Tube & Conduit Corp., 16100 S. Lathrop Ave., Harvey, IL, 60426, (800) 882-5543.
2. AP-40 Fence Framework by American Tube and Pipe Co., Inc., 2525 N. 27th Ave., Phoenix, AZ 85009, (800) 669-8823.

2.2 STEEL FRAMEWORK (FOR FENCES UP TO 6'-0" HIGH)

A. End Posts, Corner Posts and Pull Posts:

1. Pipe: 2.375 inches OD, 3.65 pounds per linear foot (Schedule 40).

B. Line Posts:

1. Pipe: 1.90 inches OD, 2.72 pounds per linear foot (Schedule 40).

2.3 STEEL FABRIC

A. One-piece widths for fence heights up to 12'-0".

B. Chain link, 2-inch mesh, No. 9 gauge; 3/8-inch mesh, No. 11 gauge.

C. Selvages: Top edge and bottom edge knuckled.

2.4 SWING GATE POSTS

A. Single width of gate 6'-0" to 12'-0" wide or over 10'-0" high:

1. Pipe: 4 inches OD, 9.11 pounds per linear foot (Schedule 40).

2.5 SWING GATE FRAMES

A. Height: 6'-0" - 12'-0", or leaf width exceeding 8'-0":

1. Pipe: 1.90 inches OD, 2.72 pounds per linear foot (Schedule 40).

B. Assemble gate frames by welding or with special steel fittings and rivets for rigid connections. Provide truss rods as cross bracing to prevent sag or twist.

2.6 SWING GATE HARDWARE

A. Hinges: Non-lift-off type, offset to permit 180-degree swing, and of suitable size and weight to support gate. Provide 1-1/2 pair of hinges for each leaf over 6 feet high.]

B. Latch: Drop bar type with keeper for double gates complete with flush plate set in concrete. Drop bar length shall be 2/3 the height of the gate. Padlock eye shall be an integral part of latch construction.

C. Keeper for Double Gates: Keeper which automatically engages the gate leaf and holds it in open position until manually released.

D. Locks:
   1. Type “C” Gate: Drop bar type complete with flush plate set in concrete. Provide full height drop bar and keeper. Padlock eye shall be an integral part of latch construction.

E. Holdbacks for Vehicle Gates: Type which automatically engages the gate leaf and holds it in open position until manually released.

2.7 MISCELLANEOUS MATERIALS AND ACCESSORIES

A. Rails and Post Braces:

   1. Pipe: 1.660 inches OD, 2.27 pounds per linear foot (Schedule 40).

B. Fittings and Post Tops: Steel, wrought iron, or malleable iron.

   1. Fasteners: Tamper-resistant cadmium plated steel screws.

C. Stretcher Bars: One piece equal to full height of fabric, minimum cross-section 3/16 inch by 3/4 inch.

D. Metal Bands (for securing stretcher bars): Steel, wrought iron, or malleable iron.

E. Wire Ties: Conform to American Steel Wire gauges.

   1. For tying fabric to line posts, rails and braces: 9 gauge (.1483 inch) steel wire.
   2. For tying tension wire to fabric: 11 gauge (.1205 inch) steel hog rings.

F. Truss Rods: 3/8-inch diameter.

G. Concrete: Portland Cement concrete having a minimum compressive strength of 4,000 psi at 28 days.

H. Cold Galvanizing Compound: Single component compound giving 93 percent pure zinc in the dried film, and meeting the requirements of DOD-P-21035A (NAVY).

I. Tension Wire: 7 gauge coiled spring steel wire.

J. Angle Beams, I Beams, and Steel Shapes: ASTM A 36.

K. Bolts and Nuts: ASTM A 307, Grade A.

L. Expansion Anchors: ¾ inch diameter with a minimum 4-3/4" embedment depth, Stainless Steel KWIK Bolt 3 (KB3) by Hilti, Inc. www.us.hilti.com ; 1-800-879-8000.

M. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107. Provide grout, recommended in writing by manufacturer, for exterior applications.

N. Aluminum Slats:

1. Size: 1-7/8 inches wide and 1-3/4 inches wide by .009 inch to .0105 inch thick.
2. Aluminum Alloy: 5052 H19 or 6011 T81.
3. Finish: Baked enamel, color as indicated or directed.

2.8 FINISHES

A. Steel Framework:

1. Pipe: Galvanized in accordance with ASTM A 53, 1.8 ounces zinc per square foot.
2. Polyvinyl Chloride (PVC): Black plastic finish, fusion bonded to galvanized metal, minimum thickness 10 mils.

B. Fabric; one of the following:

1. Polyvinyl Chloride (PVC) Finish: Black plastic, fusion bonded to galvanized wire, breaking strength, 1290 pounds, minimum thickness 7 mils.

C. Fence and Gate Hardware, Miscellaneous Materials, Accessories:

1. PVC coated, per manufacturer's standards.

D. Tension Wire; one of the following:

1. PVC Coated, per manufacturer's standards.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clear and grub along fence line as required to eliminate growth interfering with alignment. Remove debris from State property.

3.2 INSTALLATION

A. Space posts equidistant in the fence line with a maximum of 10 feet on center.

B. Locate corner posts at corners and at changes in direction. Use pull posts at all abrupt changes in grade

C. Install top rail continuously through post tops or extension arms, bending to radius for curved runs. Install expansion couplings as recommended by fencing manufacturers.

D. Install bottom and intermediate rails in one piece between posts and flush with post on fabric side using special offset fittings where necessary.

E. Brace corner posts, pull posts, end posts, and gate posts to adjacent line posts with horizontal rails.

F. Diagonally brace corner posts, pull posts, end posts, and gate posts to adjacent line posts with truss rods and turnbuckles.

G. Attach fabric to security side of fence. Maintain a 2-inch clearance above finished grade except when indicated otherwise. Thread stretcher bars through fabric using one bar for each gate and end post and 2 for each corner and pull post. Pull fabric tight so that the maximum deflection of fabric is 2 inches when a 30-pound pull is exerted perpendicular to the center of a panel. Maintain tension by securing stretcher bars to posts with metal bands spaced 15 inches oc. Fasten fabric to steel framework with wire ties spaced 12 inches of for line posts and 24 inches oc for rails and braces. Bend back wire ends to prevent injury. Tighten stretcher bar bands, wire ties, and other fasteners securely.

H. Position bolts for securing metal bands and hardware so nuts are located opposite the fabric side of fence. Tighten nuts and cut off excess threads so no more than 1/8 inch is exposed. Peen ends to prevent loosening or removal of nuts.

1. Secure post tops with tamper-resistant screws.

I. Install gates plumb and level and adjust for full opening without interference. Install ground-set items in concrete for anchorage, as recommended by fence manufacturer. Adjust hardware for smooth operation and lubricate where necessary.

1. Eliminate all fabric vibrations and rattles caused by wind against posts and rails. Install additional wire ties above quantity specified if deemed necessary to prevent vibrations and rattles.
2. Eliminate all rattles from stretcher bar bands, truss rods, rail and post clamps, and other hardware.

J. Tension Wire: Support bottom edge of fabric with tension wire. Weave tension wire through fabric or fasten with hog rings spaced 24 inches oc. Tie tension wire to posts with 9-gauge wire ties.

K. Aluminum Slats: Install where indicated aluminum slats in every diagonal run of links in both directions for the full height of the fence. Crimp and staple with monel staples at the top and bottom of fabric. Overlap and staple spliced slats.

3.3 DEMONSTRATION

A. Fence contractor to train Facility's maintenance personnel to adjust, operate and maintain chain-link fences and gates.

END OF SECTION 323113

SECTION 329200 - TURF AND GRASSES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Seeding.

1.2 DEFINITIONS

A. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.

1.3 SUBMITTALS

A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer's installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture, stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.

1.4 QUALITY ASSURANCE

A. Provide prepackaged seed readily available to the public with quality and purity equal to product of O.M. Scotts and Son, Marysville, OH. On-the-job or made-to-order mixes will not be accepted.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.

1. Seed: Store all seed at the site in a cool dry place as approved by the Director's Representative. Replace any seed damaged during storage.

B. Bulk Materials:

1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
3. Accompany each delivery of bulk materials with appropriate certificates.

1.6 FIELD CONDITIONS

A. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 SEED

A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Rules for Testing Seeds" for purity and germination tolerances.

1. Acceptable material in a seed mixture other than pure live seed consists of nonviable seed, chaff, hulls, live seed of crop plants and inert matter. The percentage of weed seed shall not exceed 0.1 percent by weight.
2. All seed will be rejected if the label or test analysis indicates any of the following contaminates: Timothy, Orchard Grass, Sheep Fescue, Meadow Fescue, Canada Blue Grass, Alta Fescue, Kentucky 31 Fescue, and Bent Grass.

B. Seed Species: Provide the following seed mixture:
A = Min. Percentage of Germination
B= Min. Purity Percentage
C = Weight Pure Live Seed in Mixture
1. Seed Mix “A” – Urban Lawn Mix

Name	Variety	A	B	C
Chewings Fescue (Festuca rubra commutata)	Banner, Highlight, Jamestown, or an approved equal.	85	97	25
Kentucky Bluegrass * (Poa pratensis)	Barron, Flyking, Glade, or an approved equal.	80	95	55
Perennial Ryegrass ** (Lolium perenne)	Manhatten II, Pennfine, York-town II, or an approved equal.	90	98	20

*Approximately equal proportions of 2 or more improved Bluegrass varieties as listed in the Cornell Recommendations for Turfgrass.
**One or more of the improved Ryegrass varieties as listed in the Cornell Recommendations for Turfgrass.

2.2 MULCHES

A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley that are free of noxious weeds. Weight shall be based on a 15 percent moisture content.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to be planted for compliance with requirements and other conditions affecting installation and performance of the Work.

1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
2. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
3. Uniformly moisten excessively dry soil that is not workable or which is dusty.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Director's Representative and replace with new planting soil.

3.2 PREPARATION

A. Protect structures; utilities; sidewalks; pavements; and other facilities, trees, shrubs, and plantings from damage caused by planting operations.

B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 SEEDING

A. Seed Bed: Scarify soil to a depth of 3 inches in compacted areas. Smooth out unsightly variations, bumps, ridges, and depressions which will hold water. Remove stones, litter, or other objectionable material.

1. Obtain written approval of seed bed from the Director's Representative before commencing seeding operations.

B. Assume all risks when seed is sowed before approval of seed analysis.

C. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph.

1. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
2. Do not use wet seed or seed that is moldy or otherwise damaged.
3. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.

D. Sow seed at a total rate of 5 lb/1000 sq. ft. for Seed Mix “A”.

E. Rake seed lightly into top 1/8 inch of soil, roll lightly, and water with fine spray.

1. Protect all seeded areas by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre to form a continuous blanket 1-1/2 inches in loose thickness over seeded areas. Spread by hand, blower, or other suitable equipment.

a. Anchor straw mulch by crimping into soil with suitable mechanical equipment.

3.4 TURF RENOVATION

A. Renovate existing turf where indicated.

B. Renovate turf damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.

1. Reestablish turf where settlement or washouts occur or where minor regrading is required.
2. Install new planting soil as required.

C. Remove sod and vegetation from diseased or unsatisfactory turf areas; do not bury in soil.

D. Remove topsoil containing foreign materials, such as oil drippings, fuel spills, stones, gravel, and other construction materials resulting from Contractor's operations, and replace with new planting soil.

E. Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides.

F. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off Director’s Representative property.

G. Till stripped, bare, and compacted areas thoroughly to a soil depth of 6 inches.

H. Apply seed and protect with straw mulch as required for new turf.

I. Water newly planted areas and keep moist until new turf is established.

3.5 TURF MAINTENANCE

A. General: Maintain and establish turf by watering, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.

1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.
2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.

B. Watering: Install and maintain temporary piping, hoses, and turf-watering equipment to convey water from sources and to keep turf uniformly moist to a depth of 4 inches.

1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
2. Water turf with fine spray at a minimum rate of 1 inch per week unless rainfall precipitation is adequate.

3.6 SATISFACTORY TURF

A. Turf installations shall meet the following criteria as determined by Director’s Representative:

1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 95 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.

B. Use specified materials to reestablish turf that does not comply with requirements, and continue maintenance until turf is satisfactory.

C. Portions of the turf may be accepted at various times at the discretion of the Director’s Representative.

D. At the physical completion of the Work, the State will assume maintenance responsibilities of the turf areas.

3.7 CLEANUP AND PROTECTION

A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

B. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Director’s Representative's property.

C. Erect temporary means as required to protect newly planted areas from traffic. Maintain throughout initial maintenance period and remove after Final Acceptance of the Work.

D. Remove nondegradable erosion-control measures after grass establishment period.

END OF SECTION 329200

SECTION 344113 – TRAFFIC SIGNS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Traffic Signs.

1.2 REFERENCES

A. DOT

1. DOT Section 645 – SIGNS.

1.3 SUBMITTALS

A. Submittals in this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer's installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Shop Drawings: Show shop drawings, not necessarily to scale, but sufficient enough in detail to show color, wording, lettering size and style, overall sign size, construction details and installation details for each type of sign.

PART 2 - PRODUCTS

2.1 TRAFFIC SIGNS

A. Construction Materials: Comply with the applicable requirements of DOT Section 645.

B. Posts: Galvanized steel.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Erect signs in their designated locations, as indicated and in accordance with the approved shop drawings and the applicable requirements of DOT Section 645.

B. Protect surfaces and finishes from abrasion and other damage during handling and installation.

C. Replace damaged or faulty signs.

END OF SECTION 344113

SECTION 347115 – SITE BOLLARDS

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:

1. Bollards.

1.3 REFERENCES

A. ASTM International

1. ASTM A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
2. ASTM A135 - Standard Specification for Electric-Resistance-Welded Steel Pipe

1.4 SUBMITTALS

A. Submittals in this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

B. Manufacturer's installation instructions shall be provided along with product data.

C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

D. Product Data: For each type of product.

E. Submit an Environmental Product Declaration (EPD) from the manufacturer for steel pipe bollards within this specification section, if available. A statement of the contractor's good faith effort to obtain the EPD shall be provided if not available.

1. Manufacturer-provided EPDs must be Product Specific Type III (Third-Party Reviewed), in adherence with ISO 14025 *Environmental labels and declarations*, ISO 14044 *Environmental management – Life cycle assessment*, and ISO 21930 *Core rules for environmental product declarations of construction products and services.*

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For site furnishings to include in maintenance manuals.

PART 2 - PRODUCTS

2.1 BOLLARDS

A. Manufacturers:

1. Canterbury Designs.
2. Columbia Cascade Company.
3. Eagle Manufacturing Company.
4. Approved equivalent.

B. Bollard Construction:

1. Pipe OD: Not less than 6 inches.

a. Steel: Schedule 40 pipe.

2. Style: As indicated.
3. Overall Height: As indicated.
4. Overall Width: As indicated.
5. Overall Depth: As indicated.
6. Accessories: Yellow pipe sleeve.
7. Installation Method: Cast in concrete.

C. Steel Finish: Color coated.

1. Color: Yellow.

2.2 MATERIALS

A. Plastic: Color impregnated, color and UV-light stabilized, and mold resistant.

1. Polyethylene: Fabricated from virgin plastic HDPE resin.

B. Anchors, Fasteners, Fittings, and Hardware: Manufacturer's standard, corrosion-resistant-coated or noncorrodible materials; commercial quality, tamperproof, vandal and theft resistant.

C. Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107; recommended in writing by manufacturer, for exterior applications.

D. Erosion-Resistant Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with potable water at Project site to create pourable anchoring, patching, and grouting compound; resistant to erosion from water exposure

without needing protection by a sealer or waterproof coating; recommended in writing by manufacturer, for exterior applications.

2.3 FABRICATION

A. Metal Components: Form to required shapes and sizes with true, consistent curves, lines, and angles. Separate metals from dissimilar materials to prevent electrolytic action.

B. Exposed Surfaces: Polished, sanded, or otherwise finished; all surfaces smooth, free of burrs, barbs, splinters, and sharpness; all edges and ends rolled, rounded, or capped.

C. Factory Assembly: Factory assemble components to greatest extent possible to minimize field assembly. Clearly mark units for assembly in the field.

2.4 GENERAL FINISH REQUIREMENTS

A. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. 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.

2.5 STEEL AND GALVANIZED-STEEL FINISHES

A. Powder-Coat Finish: Manufacturer's standard polyester, powder-coat finish complying with finish manufacturer's written instructions for surface preparation, including pretreatment, application, baking, and minimum dry film thickness.

B. PVC Finish: Manufacturer's standard, UV-light stabilized, mold-resistant, slip-resistant, matte-textured, dipped or sprayed-on, PVC-plastisol finish, with flame retardant added; complying with coating manufacturer's written instructions for pretreatment, application, and minimum dry film thickness.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for correct and level finished grade, mounting surfaces, 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 installation instructions unless more stringent requirements are indicated. Complete field assembly of site furnishings where required.

B. Unless otherwise indicated, install site furnishings after landscaping and paving have been completed.

C. Install site furnishings level, plumb, true, and positioned at locations indicated on Drawings.

D. Post Setting: Set cast-in support posts in concrete footing with smooth top, shaped to shed water. Protect portion of posts above footing from concrete splatter. Verify that posts are set plumb or at correct angle and are aligned and at correct height and spacing. Hold posts in position during placement and finishing operations until concrete is sufficiently cured.

END OF SECTION 347115

NEW YORK STATE | Office of General Services

Design and Construction

Division of Codes & Construction Permitting, 33rd Floor, Corning Tower
The Governor Nelson A. Rockefeller Empire State Plaza
Albany, New York 12242
Phone: (518) 474-1314

STATEMENT OF SPECIAL INSPECTIONS

Project No.: 47477

Instructions: BCNYS Section 1704.2.3 requires the project Design Professional to complete the Statement of Special Inspections *as a condition for issuance of the Construction Permit.* Complete each section of this form as applicable, and submit it to the Code Compliance Manager with the Summary of Special Inspections (BDC 406).

PROJECT INFORMATION:	**DESIGNER INFORMATION:**		**CONSTRUCTION INFORMATION**:	
Project Description: *(Project Title, Facility Name and Address)* RENOVATE ARMORY STATE ARMORY 2 QUINCY PLACE YONKERS, NY	Architect/Engineer/Consultant: Bell & Spina Architects-Engineers, PC		Engineer- In-Charge:	Region:
	Name of Person Completing Form: *(if different from above)* Jack Healy - RBCD; Mike Olszewski - M&P		Name of Person Completing Form: *(if different from above)*	
	Phone: 315-488-0377	Date: 11-24-2025	Phone:	Date:
Business Unit: BU 4	Comments: Completed by Ryan Biggs Clark Davis Engineering, DPC; M&P Engineering and Land Surveying, PLLC		Comments:	
Team Leader: Kevin Renaghan				

Check if Required	INSPECTION AND TESTING Continuous and Periodic as defined by the BCNYS	Continuous	Periodic	REFERENCE STANDARD	BCNYS REFERENCE	SPEC SECTION	COMMENTS	REGIONAL INSPECTION ASSIGNMENTS
	A. Steel Construction				1705.2			
☒	1. Structural steel.	☐	☒	AISC 360 Chapter N.5	1705.2, 1705.2.1	051200.0		
☒	2. Cold-formed steel deck.		☒	SDI QA/QC 2011	1705.2, 1705.2.2	053100.0		
☐	3. Installation of open-web steel joist and joist girders.		☐	SJI specification (Section 2207.1)	1705.2, 1705.2.3, 1705.2.4			
	B. Concrete Construction				1705.3			
☒	1. Inspection of reinforcing steel, including prestressing tendons, and placement.		☒	ACI 318: Ch. 20, 25.2, 25.3, 26.6.1-26.6.3	1705.3, 1908.4	032000.0		

Check if Required	INSPECTION AND TESTING Continuous and Periodic as defined by the BCNYS	Continuous	Periodic	REFERENCE STANDARD	BCNYS REFERENCE	SPEC SECTION	COMMENTS	REGIONAL INSPECTION ASSIGNMENTS
	B. Concrete Construction				1705.3			
☒	2a. Reinforcing bar welding - Weldability of reinforcing bars other than ASTM A706.		☒	AWS D1.4; ACI 318: 26.6.4	1705.3, 1705.3.1	032000.0		
☒	2b. Reinforcing bar welding - Single-pass fillet welds, maximum 5/16 inches.		☒	AWS D1.4; ACI 318: 26.6.4	1705.3, 1705.3.1	032000.0		
☒	2c. Reinforcing bar welding - All other welds.	☒		AWS D1.4; ACI 318: 26.6.4	1705.3, 1705.3.1	032000.0		
☒	3. Cast in concrete anchorage.		☒	ACI 318: 17.8.2	1705.3	032000.0		
☒	4a. Post installed concrete members - Adhesive anchors installed horizontally or upwardly inclined to resist sustained tension loads.	☒		ACI 318: 17.8.2.4	1705.3	033000.0		
☒	4b. Post installed concrete members - Mechanical anchors and adhesive anchors not defined in 4.a.		☒	ACI 318: 17.8.2		033000.0		
☒	5. Verify use of required design mix.		☒	ACI 318: Ch. 19, 26.4.3, 26.4.4	1705.3, 1904.1, 1904.2, 1908.2, 1908.3	033000.0		
☒	6. Sampling fresh concrete: slump, air content, temperature, strength test specimens.	☒		ASTM C 172, ASTM C31; ACI 318: 26.4, 26.12	1705.3, 1908.10	033000.0		
☒	7. Inspect concrete and shotcrete placement for proper application techniques.	☒		ACI 318: 26.5	1705.3, 1908.6, 1908.7, 1908.8	033000.0		
☒	8. Inspection for maintenance of specified curing temperature and techniques.		☒	ACI 318: 26.5.3-26.5.5	1705.3, 1908.9	033000.0		
☐	9. Inspection of prestressed concrete.	☐		ACI 318: 26.10	1705.3			

Check if Required	INSPECTION AND TESTING Continuous and Periodic as defined by the BCNYS	Continuous	Periodic	REFERENCE STANDARD	BCNYS REFERENCE	SPEC SECTION	COMMENTS	REGIONAL INSPECTION ASSIGNMENTS
☐	10. Erection of precast concrete members.		☐	ACI 318: Ch. 26.8	1705.3			
☐	11. Verification of in-situ concrete strength prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and slabs.		☐	ACI 318: 26.11.2	1705.3			
☒	12. Inspect formwork for shape, location and dimensions of the concrete member being formed.		☒	ACI 318: 26.11.1.2(b)		031000.0		
☒	13. Material Tests – In absence of sufficient data or documentation for materials.		☒	ACI 318 Ch. 19 and 20		033000.0		
	C. Masonry Construction				1705.4			
☒	1. Masonry construction.	☐	☒	ACI 530/ ASCE 5/TMS 402 and ACI 530.1/ ASCE 6/TMS 602 Ch. 3	1705.4	042000.0		
☐	2. Empirically designed masonry, glass unit masonry and masonry veneer in Risk Category IV.		☐	TMS 402/ ACI530/ ASCE 5 Level B Ch. 3	1705.4.1, 2109, 2110, or Ch. 14			
☐	3. Vertical masonry foundation elements.	☐	☐		1705.4, 1705.4.2			
	D. Wood Construction				1705.5			
☐	1. Wood construction- Fabrication of wood structural elements and assemblies.		☐		1705.5, 1704.2.5			
☐	2. High-load Diaphragms.		☐		1705.5, 1705.5.1, 2306.2,1704.2			

Check if Required	INSPECTION AND TESTING Continuous and Periodic as defined by the BCNYS	Continuous	Periodic	REFERENCE STANDARD	BCNYS REFERENCE	SPEC SECTION	COMMENTS	REGIONAL INSPECTION ASSIGNMENTS
	D. Wood Construction				1705.5			
☐	3. Metal-plate-connected wood trusses spanning 60 feet or greater (temp. and perm. installation).		☐		1705.5.2			
	E. Soils				1705.6			
☒	1. Subgrade inspection.		☒		1705.6	310000.0		
☒	2. Classification and testing of compacted fill materials.		☒		1705.6	310000.0		
☒	3. Evaluation of in-place density and lift thickness.	☒			1705.6	310000.0		
☐	**F. Driven Deep Foundations** Installation and load tests (if applicable).	☐			1705.7			
☐	**G. Cast-In-Place Deep Foundations** Installation, end bearing strata, and load tests (if applicable).	☐			1705.8			
☐	**H. Helical Pile Foundation** Installation and load tests (is applicable).	☐			1705.9			
☒	**I. Fabricated Items**		☒		1705.10, 1704.2.5	055213	Pipe and tube railings	
☐	**J. Wind Resistance** Applicable in Exposure Category B with a basic wind speed of 120 mph and Exposure Categories C or D with basic wind speed of 110 mph or greater.				1705.11			
☐	1a. Structural wood - Field gluing operation of elements of main wind force-resisting system (MWRS).	☐			1705.11.1			

Check if Required	INSPECTION AND TESTING Continuous and Periodic as defined by the BCNYS	Continuous	Periodic	REFERENCE STANDARD	BCNYS REFERENCE	SPEC SECTION	COMMENTS	REGIONAL INSPECTION ASSIGNMENTS
☐	**J. Wind Resistance** Applicable in Exposure Category B with a basic wind speed of 120 mph and Exposure Categories C or D with basic wind speed of 110 mph or greater.				1705.11			
☐	1a. Field Gluing	☐			1705.11.1			
☐	1b. Structural wood - Nailing, bolting, anchoring, and fastening elements of the MWRS.		☐		1705.11.1			
☐	2a. Cold formed steel - Welding operations of elements of MWRS.		☐		1705.11.2			
☐	2b. Cold formed steel - Screw attachments, bolting, anchoring, and fastening of elements of MWRS.		☐		1705.11.2			
☐	3. Wind-resisting components – Roof covering, roof deck, and roof framing connections. Exterior wall covering and wall connections to roof and floor diaphragms and framing.		☐		1705.11, 1705.11.3			
☐	**K. Special Inspections for Seismic Resistance** Applicable to specific structures, systems, and components.				1705.12			
☐	1. Structural steel - Seismic force-resisting systems & elements.	☐		AISC 341 Ch. J	1705.12.1.1 or 1705.12.1.2			
☐	2a. Structural wood - Field gluing operation of elements of seismic force-resisting system (SFRS).	☐			1705.12.2			
☐	2b. Structural wood - Nailing, bolting, anchoring, and fastening of elements of SFRS.		☐		1705.12.2			

Check if Required	INSPECTION AND TESTING Continuous and Periodic as defined by the BCNYS	Continuous	Periodic	REFERENCE STANDARD	BCNYS REFERENCE	SPEC SECTION	COMMENTS	REGIONAL INSPECTION ASSIGNMENTS
	K. Special Inspections for Seismic Resistance Applicable to specific structures, systems, and components.				1705.12			
☐	3. Cold-formed steel framing – welding and fasteners.		☐		1705.12.3			
☐	4. Designated seismic systems – verify that label, anchorage, and mounting conforms to the certificate of compliance.		☐	ASCE 7 Section 13.2.2	1705.12.4			
☐	5. Architectural components.		☐		1705.12.5			
☐	6. Plumbing, Mechanical and electrical components.		☐		1705.12.6			
☐	7. Storage racks and access floors.		☐		1705.12.7,			
☐	8. Seismic isolation systems.		☐		1705.12.8			
☐	9. Cold-formed steel special bolted moment frames.		☐		1705.12.9			
☐	**L. Structural Testing for Seismic Resistance** Applicable to specific structures, systems, and components.				1705.13			
☐	1. Structural steel.	☐	☐	AISC 341 Ch. J	1705.13.1			
☐	2. Nonstructural components.		☐	ASCE 7 Section 13.2.1	1705.13.2			
☐	3. Designated seismic systems.		☐	ASCE 7 Section 13.2.2	1705.13.3			

Check if Required	INSPECTION AND TESTING Continuous and Periodic as defined by the BCNYS	Continuous	Periodic	REFERENCE STANDARD	BCNYS REFERENCE	SPEC SECTION	COMMENTS	REGIONAL INSPECTION ASSIGNMENTS
	L. Structural Testing for Seismic Resistance Applicable to specific structures, systems, and components.				1705.13			
☐	4. Seismic isolation systems.		☐	ASCE 7 Section 17.8	1705.13.4			
	M. Sprayed Fire-Resistant Materials [BF]				1705.14			
☐	1. Physical and visual tests.		☐		1705.14.1			
☐	2. Structural member surface conditions.		☐		1705.14.2			
☐	3. Application.		☐		1705.14.3			
☐	4. Thickness.		☐	ASTM E 605	1705.14.4			
☐	5. Density.		☐	ASTM E 605	1705.14.5			
☐	6. Bond strength.		☐	ASTM E 736	1705.14.6			
☐	**N. Mastic and Intumescent Fire-Resistant Coatings [BF]**		☐	AWCI 12-B	1705.15			
☐	**O. Exterior Insulation and Finish Systems (EIFS)**		☐	ASTM E2570	1705.16			
☐	**P. Fire-Resistant Penetrations and Joints [BF]** High rise building or buildings assigned to risk category III or IV		☐	ASTM E2174 ASTM E2393	1705.17			
☐	**Q. Testing for Smoking Control [F]**		☐		1705.18			

NEW YORK STATE
Office of General Services
Office of Business Diversity

Design and Construction
Office of Business Diversity
29th Floor, Corning Tower
The Governor Nelson A. Rockefeller Empire State Plaza
Albany, New York 12242
Phone: (518) 486-9284 FAX: (518) 486-9285

CONTRACTOR'S MWBE UTILIZATION PLAN

☐ Revised Plan

Contract No.: _____

REMINDER: Utilize the New York State Contract System located at https://ny.newnycontracts.com/Default.asp?TN=ny&XID=8353 to report MWBE payments on a monthly basis. Making false representations or including information evidencing a lack of good faith as part of, or in conjunction with, the submission of a Utilization Plan is prohibited by law and may result in penalties including, but not limited to, termination of a contract for cause, loss of eligibility to submit future bids, and/or withholding of payments. Firms that do not perform commercially useful functions may not be counted toward MWBE utilization.

Contractor's Name, Address and Federal ID No.:	Contract Description/Location:	Date Proposal Approved:	Date Printed:	Bid Date:	MWBE GOALS	
					MBE%	WBE%
Federal ID No.:	Work/Job Order:	OGS Project Number:	Work Order Value:	Contract Amount:		

Certified MBE/WBE Name, Address and Phone No.	MBE	WBE	Tiered Sub	Description of Subcontracting/Supplies	Anticipated performance/purchase date(s)	Dollar Value of Subcontract/Supplies	FOR OGS USE ONLY	SEE BDC 328.1
Federal ID No.:	☐	☐	☐					☐
Federal ID No.:	☐	☐	☐					☐
Federal ID No.:	☐	☐	☐					☐
Federal ID No.:	☐	☐	☐					☐

Pursuant to Executive Law Article 15-A, my firm will engage in a good faith effort to achieve the MWBE goals on this contract.

Contractor's Signature:

Enter Name:

Title:

E-Mail Address: Date:

Contractor's Comments:

FOR OGS USE ONLY

☐ Accepted ☐ Accepted as Noted ☐ Notice of Deficiency Issued

MBE % _____ MBE $ _____ WBE % _____ WBE $ _____

OGS Authorized Signature:	Enter Name:	Date:

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Albany, New York 12242
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CONTRACTOR'S LIST OF SUBCONTRACTORS/SUPPLIERS

Contract No.

Contractor's Name, Address and Federal ID No.:	Project Description/Location:		Date Submitted:	Bid Date:	MWBE Goals		SDVOB Goal
					MBE	WBE	
Federal ID No.	☐ Construction Contracts Exceeding $100,000 ☐ Commodity or Service Contracts Exceeding $25,000		Submittal No.:	Contract Amount:			
Date Proposal Approved:	Date Printed:	OGS Project Number:	Work/Job Order:		Work Order Value:		

Subcontractor/Supplier Name, Address, Phone No., Federal ID No. (FEIN) and DOL No. *(Do not list information previously submitted.)*	Sub/Supplier *(Check One)*			MBE	WBE	SDVOB	General Description of Work	Subcontractor/ Supplier Dollar Value	**OGS Use Only**
	Sub	Tiered Sub	Supplier						
FEIN.: DOL No: - -CR	☐	☐	☐	☐	☐	☐			
FEIN.: DOL No: - -CR	☐	☐	☐	☐	☐	☐			
FEIN.: DOL No: - -CR	☐	☐	☐	☐	☐	☐			
FEIN.: DOL No: - -CR	☐	☐	☐	☐	☐	☐			

Pursuant to Executive Law Article 15-A and Article 3 of the Veterans' Services Law, my firm proposes to use the certified firms listed above.

Contractor's Signature

Title

Date

OGS Use Only

Proposed Goal Attainments:

MBE % _____ WBE % _____ SDVOB % _____

☐ Accepted ☐ Accepted as Noted ☐ Not Accepted

Reason: _____

OGS Authorized Signature _____ Date _____

OGS 47477 RENOVATE STATE ARMORY NATIONAL GUARD

GEOTECHNICAL ENGINERING SERVICES – NEW ADDITION

RGE PROJECT NUMBER: 25.0015

GEOTECHNICAL ENGINEERING SERVICES REPORT

RENAISSANCE GEOTECHNICAL ENGINEERING™



PREPARED FOR:

BELL & SPINA
215 WYOMING STREET
SYRACUSE, NY 13204

PREPARED BY:

RENAISSANCE GEOTECHNICAL ENGINEERING, PLLC
P.O. BOX 2503
GLENVILLE, NY 12302
al@renaissancegeo.com

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RENAISSANCE GEOTECHNICAL ENGINEERING™

June 23, 2025

BELL AND SPINA
215 Wyoming Street
Syracuse, New York 13204

Attn.: Mr. James L. Paolini, AIA Email: jpaolini@bellandspina.com

RE: Geotechnical Engineering Services Report
Renovate State Armory National Guard – New Addition
2 Quincy Place, Yonkers, Rockland County, New York
OGS Project No.: 47477
RGE PROJECT Number: 25.0015

Dear Mr. Paolini:

On May 23, 2025, RENAISSANCE GEOTECHNICAL ENGINEERING, PLLC (RGE) retained the services of Core Down Drilling Company for the completion of a single subsurface exploration boring within the existing facility of the State Armory National Guard in Yonkers, New York. The purpose of this investigation was to oversee the drilling process, visually classify the recovered subgrade soils, and provide shallow footing foundation recommendations to support a lightly loaded addition.

The test boring was advanced to a depth of approximately 22 feet below current grade. A map depicting the approximate location of the boring is included with this letter as Attachment 1.

A test boring log data including the completed laboratory tests have been provided as part of Attachment 2. Expanded laboratory test results and curves are included in Attachment 3.

Site Geology

The Surficial Geologic Map of New York, Lower-Hudson, 1989 Sheet identifies the project area as part of "t – Till" described as Silty SAND with Gravel.

According to the United States Geological Survey (USGS) and the Geologic Map of New York, Lower Hudson, the project site is situated in a geologic area best described as being part of the Fordham Gneiss.

Seismic Considerations

We recommend that foundations at this site be designed assuming a Seismic Site Class "D" as recommended in Section 1613.3.2 of the New York State Building Code and Chapter 20 of ASCE 7. Seismic output parameters summarized in the table below from the ASCE/SEI 7-16 Seismic Standard Tool are also found in Attachment 4.

Seismic Site Class and Spectral Accelerations

Seismic Site Class		D
Estimated Site Coordinates	Latitude	40.938352
	Longitude	-73.89689
Adjusted Peak Ground Acceleration - PGA_M		0.264g
S_{MS} – Short Period, Site Class Modified Spectral Acceleration		0.464g
S_{M1} – 1 Second Period, Site Class Modified Spectral Acceleration		0.147g
S_{DS} – Short Period, Five Percent Damping, Spectral Acceleration		0.31g
S_{D1} – 1 Second Period, Five Percent Damping, Spectral Acceleration		0.098g

S_s – Short Period Spectral Acceleration	0.297g
S_1 – 1 Second Period Spectral Acceleration	0.061g
Assumed Risk Category (Final determination shall be by the structural engineer)	III

Groundwater Conditions

The presence of water was not observed at the time of drilling. Groundwater level fluctuations and/or perched water conditions may occur due to seasonal variations in the amount of rainfall and other factors such as drainage characteristics. To obtain more accurate groundwater level information, long-term observations in a monitoring well or piezometer that is sealed from the influence of surface water would be needed.

Shallow Foundations

To limit total and differential elastic settlements due to static loading to less than an inch, a reinforced continuous footing, with isolated column footings should be designed using a maximum allowable net bearing pressure of 2,000 pounds per square foot. This bearing pressure is the pressure that can be applied to the soils at the base of the footings in excess of the minimum surrounding overburden pressures. To provide frost heave protection and ensure adequate confinement of the bearing materials, footings should be located at least 3.5 feet below final outside grade. Interior column footings may bear at least 3 feet below the finished floor elevation and be at least 30 inches in width.

Formed continuous footings should have a minimum width of 24 inches. Prior to placing concrete, all foundation bearing grades should be dry, stable, and free of standing water, mud, or frost. Bearing grades should be compacted prior to constructing the foundations in order to densify the subgrade materials that have been loosened during the excavations. The foundation excavations should be backfilled with onsite soils, or of select granular fill meeting the gradation requirements shown below:

Sieve Size Designation	Percent Passing by Weight
4-inch	100
No. 40	0 – 70
No. 200	0 – 15

Caution should be taken to prevent wetting, drying, or disturbance of the bearing materials. This can be accomplished by placing concrete as soon as the excavation is approved by the Geotechnical Engineer's representative. Surface run-off water should drain away from the excavated areas. If the subgrade materials should become wet or dry and/or loose or disturbed, they should be removed before placing concrete. Any soft or loose areas observed should also be removed before placing concrete.

The passive resistance of the soils against the sides of the footings should be neglected within the top 2 feet. For portions of the footings that extend below the 2-foot depth and bear against undisturbed soils, an ultimate passive earth pressure of 400 psf per foot of depth can be used for stability. Lateral resistance can be calculated using an allowable coefficient of sliding friction 0.4 times the sustained dead load on the footing up to a maximum 2,000 pounds per square feet.

Slab-On-Grade Floor Slab

The floor slab should be provided with a subbase course of Select Granular Material at least 6 inches thick. This subbase course should consist of crusher-run stone that conforms to the gradation requirements shown below:

Sieve Size Designation	Percent Passing by Weight
2-inch	100
¼"	25 – 60
No. 40	5 – 40
No. 200	0 – 10

This subbase material should be compacted to 95 percent of the material maximum dry density per ASTM D-1557. We recommend placing a waterproof membrane (15-mil Polyethylene) on top of the compacted subbase below the floor slab for a vapor barrier. A slab-on-grade supported on at least 6 inches of the above specified subbase material should be designed using a modulus of subgrade reaction, k_1, of 150 pci based on a 1-foot by 1-foot plate load test.

Water curing the slab will help the curing process and should help reduce shrinkage cracks and slab curling. Alternative curing provisions of ACI 302 and ACI 308R can also be adopted as directed by the Structural Engineer. Before the floor covering is placed, we recommend slab moisture emission tests be conducted to confirm that moisture discharge levels are within the floor covering manufacture's recommendation. These tests should be run at typical temperature and humidity conditions representative of what the floor covering will be susceptible to under normal conditions.

Drainage Considerations

The ground surface should be sloped at least 2% away from the building on all sides to allow for positive drainage away from the building. Water should not be allowed to pond near the structure during or after construction. Foundation and floor drain systems are not required; however, if installed, they should be at least 4 inches thick and constructed of crushed stone or gravel with no more than 10 percent of the material passing the #4 sieve. Additional recommendations for the design of foundation and floor drains can be found in Section 1805 of the 2020 New York State Building Code.

Construction Dewatering

The presence of groundwater was not observed. However, if encountered during the excavation process for the foundations, the need for dewatering shall be the responsibility of the contractor including restoring the excavations to a dry condition and preparing the foundation subgrades that are free of mud, water, and disturbed soils.

Construction Monitoring

This report provides geotechnical recommendations based on the subsurface conditions encountered at a single test boring. It is not practical or economical to perform enough subsurface investigation borings and test pits to identify all conditions at the site. Subsurface conditions may vary with distance away from the boring completed for this report. Conditions that may affect the recommendations contained in this letter may exist and may not become known until construction. If variations appear during construction, it may be necessary to revise the recommendations contained in this letter. In general accordance with the 2020 State of New York Building Code, monitoring of subsurface conditions during construction should be performed by a geotechnical engineer registered in the State of New York or his/her representative to verify that conditions are consistent with the findings included in this letter. Foundation construction recommended in this letter must be monitored in a full-time basis by a registered geotechnical engineer.

General

The findings and recommendations contained in this letter have been made with generally accepted professional geotechnical practices in the local area. No other warranties are implied or expressed. The scope of services and recommendations contained in this letter do not include any environmental assessment or identification of contaminated or hazardous materials. Any statements in this report or in the boring log concerning suspicious odors, colors, irregular textures or abnormal conditions are for informational purposes only and have not been verified by the geotechnical engineer, drilling or testing companies.

Mr. Paolini, we appreciate the opportunity to work with you on this project, and at your request, we are prepared to assist you with the proper construction monitoring and testing services. If you have any questions regarding the information contained in this letter report or if we can be of further assistance, please call us at (518) 902-9222 or email at al@renaissancegeo.com

Respectfully,
RENAISSANCE GEOTECHNICAL ENGINEERING, PLLC



Alseny Diop, P.E.
Principal Geotechnical Engineer

Attachment 1 – Vicinity Map & Boring Location Diagram

Attachment 2 – Test Boring Log, General Notes, Key to Boring Log Symbols

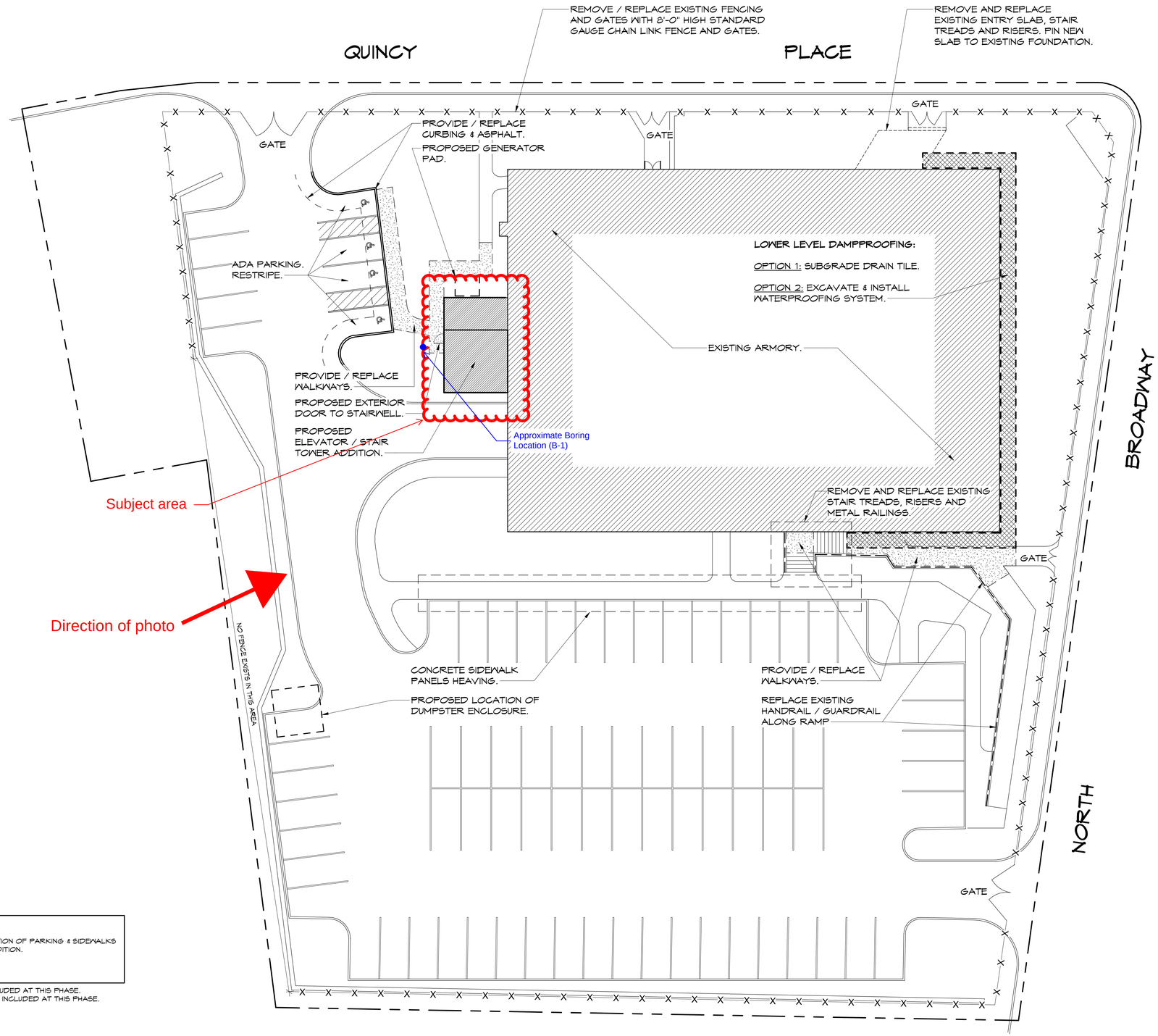
Attachment 3 – Graph of Laboratory Test Results

Attachment 4 – Seismic Output Data

Attachment 1

Vicinity Map & Boring Location Diagram


Approximate Boring
Location (B-1)



SCOPE OF SITE WORK:

1. RESTORATION AND RECONFIGURATION OF PARKING & SIDEWALKS FOR STAIR/ELEVATOR TOWER ADDITION.
2. FENCING & DUMPSTER.
3. SIDEWALKS AND RAILINGS.
4. WATERPROOFING.
5. LANDSCAPING, STORAGE NOT INCLUDED AT THIS PHASE.
6. PARKING LOT IMPROVEMENTS NOT INCLUDED AT THIS PHASE.

1 SITE PLAN
SCALE : 1/16" = 1'-0"

NEW YORK STATE OF OPPORTUNITY. Office of General Services

DESIGN & CONSTRUCTION

CONSULTANT

bell & spina ARCHITECTS

WARNING:
THE ALTERATION OF THIS MATERIAL ANY WAY, UNLESS DONE UNDER THE DIRECTION OF A COMPARABLE PROFESSIONAL, I.E. ARCHITECT FOR AN ARCHITECT, ENGINEER FOR AN ENGINEER OR LANDSCAPE ARCHITECT FOR A LANDSCAPE ARCHITECT, IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW AND/OR REGULATIONS AND IS A CLASS 'A' MISDEMEANOR

CONTRACT:
CONSTRUCTION

TITLE:
RENOVATE ARMORY

LOCATION:
STATE ARMORY
2 QUINCY PLACE
YONKERS, NY

CLIENT:
DIVISION OF MILITARY AND NAVAL AFFAIRS

MARK	DATE	DESCRIPTION
	12/04/2024	30% SUBMISSION

MARK	DATE	DESCRIPTION
PROJECT NUMBER:	47477-C	
DESIGNED BY:	JP	
DRAWN BY:	BT	
FIELD CHECK:		
APPROVED:		

SHEET TITLE:
SITE PLAN

DRAWING NUMBER:
G-102

SHEET 3 OF 109

Attachment 2

Boring Log
General Notes
Key to Boring Log Symbols

Renaissance Geotechnical Engineering, PLLC
3049 Hamburg Street
Schenectady, NY 12303
Telephone: 518-902-9222
Fax: 518-630-6757

BORING NUMBER B-1

CLIENT BELL & SPINA
PROJECT NAME NYSOGS 47477 Yonkers Armory Renovation
PROJECT NUMBER 25.0015
PROJECT LOCATION 2 Quincy Place, Yonkers, New York
DATE STARTED 5/23/25 **COMPLETED** 5/23/25
GROUND ELEVATION **HOLE SIZE** 6 inches
DRILLING CONTRACTOR RENAISSANCE GEOTECHNICAL
GROUND WATER LEVELS:
DRILLING METHOD CME-55 4-Inch ID HW40
AT TIME OF DRILLING --- None
LOGGED BY A.Diop **CHECKED BY** A.Diop
AT END OF DRILLING --- None
NOTES
AFTER DRILLING --- None

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	Test Results and Remarks	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0							0.3 **Approximately 4 inches of TOPSOIL**
	SS 1	63	1-1-3-3 (4)		SM		(SM) **(FILL) Silty SAND, trace gravel** loose, brownish-gray, moist
	SS 2	75	5-10-11-8 (21)	MC = 9% LL = NP PL = NP Fines = 36% SAND = 56%, gravel = 7%			- grades to medium dense from 2.5 feet
5	SS 3	96	5-6-5-4 (11)				
	SS 4	65	5-8-5-6 (13)				6.5 (CL-ML) **Sandy, Silty CLAY, trace gravel**
10	SS 5	58	3-6-5-15 (11)	MC = 18% LL = 22 PL = 16 Fines = 70% Sand = 29%, gravel = 1%	CL-ML		10.0
	SS 6	67	12-21-23-25 (44)	MC = 8% LL = NP PL = NP Fines = 25% SAND = 52%, Gravel = 23%	SM		(SM) **Silty SAND with Gravel** dense, light brown, dry
15	HS						
	SS 7	90	22-23-21-31 (44)	MC = 7% LL = NP PL = NP Fines = 37% SAND = 47%, Gravel = 16%			- frequent small cobbles of gneiss from 15 feet
20	HS						
	SS 8	100	22-39-50-50/6"				22.0

Bottom of borehole at 22.0 feet.

GENERAL BH / TP / WELL - GINT STD US LAB COLOR.GDT - 6/23/25 17:09 - C:\USERS\ALDIO\ONEDRIVE - RENAISSANCE GEOTECHNICAL ENGINEERING, PLLC\- PROJECTS\- 2025\- OGS PROJECTS\25.0015 - OGS 47477 RENOVATE STATE ARMORY NATIONAL GUARD

RENAISSANCE GEOTECHNICAL ENGINEERING TM

Phone: 518-902-9222
405-215-9367
info@renaissancegeo.com

BORING LOG ACRONYM LIBRARY

- SPT-N: Blow or strike count for the Standard Penetration Test or the Texas Cone Penetrometer Test. In general, the Standard Penetration Test "N" is the numbers of strikes required to advance a standard 2-inch outside diameter split-spoon a distance of 1-foot, or portion thereof, with a 140-pound hammer falling 30 inches.

  In general, the Texas Cone Penetrometer Test (TCP) "N" is the numbers of strikes with penetration depths required to advance a solid steel three-inch diameter cone of standard dimensions with a170-pound weight falling 24-inches. Two 50 strike intervals or two 6-inch penetration intervals is recorded.

- WOH: Weight of Hammer
- WOR: Weight of Drilling Rod
- USCS Symbol: The Unified Soil Classification System Identification Symbol
- ATV: All-Terrain Vehicle Mounted Drill Rig
- EL: Elevation
- Lt: Left
- Rt: Right
- LL, PL, PI: Atterberg Limits (Liquid Limit, Plastic Limit, Plasticity Index)
- -#200: Percent Passing Standard No. 200 Sieve
- NP – Non-Plastic
- MC: Moisture Content
- AS: Auger Sample
- BS: Bucket Sample
- DB: Diamond Drilling Bit (Truck Rotary Drilling using air or water to remove cuttings)
- DCD: Diamond Core Barrel Drilling
- HA: Hand Auger
- HS: Hollow Stem Auger (Truck Rotary Drilling)
- PA: Power Auger (Truck Rotary Drilling)
- NR: No Recovery
- PMT: Pressure Meter
- DMT: Dilatometer
- CPT: Cone Penetration Test
- BHS: Borehole Shear
- FV: Field Vane Shear
- TV: Torvane
- PP: Pocket Penetrometer
- RB: Rock/Roller Bit (Truck Rotary Drilling using air or water to remove cuttings)
- RC: Rock Core using
- RQD: Rock Quality Designation
- SS/SPT: Standard Penetration Test (Split-Spoon)
- ST: Thin-Wall Tube Sample (Shelby Tube): a 3" O.D. tube, unless noted otherwise
- TCP: Texas Cone Penetrometer Test
- DCP: Dynamic Cone Penetrometer
- WS: Wash Sample
- WB: Wash Bore
- AB: After Boring Complete
- DCI: Dry Cave In
- WCI: Wet Cave In
- WD: While Drilling
- WS: While Sampling
- WL: Water Level Depth from Boring Surface Elevation
- CME: Central Mine Equipment
- GP: Geoprobe
- AHS: After Hollow Stem
- BHS: Before Hollow Stem

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GENERAL INFORMATION & KEY TO THE SUBSURFACE EXPLORATION LOGS

The Subsurface Logs attached to this report present the general observations and mechanical data collected by the drillers at the site, supplemented by classification of the material removed from the borings as determined through visual identification by engineers in the field, and by technicians in the laboratory. The materials removed from the borings represent only a small fraction of the soils at the site and may not be representative of subsurface conditions between and/or away from the boring locations or the sampled intervals. The data presented on the Subsurface Logs along with the recovered samples provide a basis for estimating the engineering characteristics of the soils at the site. The evaluation must consider all the recorded details and their relative significance to the project. It is common that evaluation of standard subsurface data indicates the need for additional testing and/or sampling to evaluate the subsurface conditions more accurately. Any evaluation of the data presented on the Subsurface Logs must be performed by qualified professionals. The following information defines some of the procedures and terms used on the Subsurface Logs to describe the conditions encountered. Water levels measured in low permeability soils (clays & unfractured rock) may require long term observations and therefore, the depths shown may not be accurate.

Soil Classification and Descriptions

- Soil Classification: The soil description and classification is based on the Unified Soil Classification System (USCS) unless noted otherwise

- *Consistency/Relative Density*

Cohesionless Materials		Cohesive Materials		
N-blows/ft	Relative Density	N-blows/ft	Consistency	Est. UCS-q_u (psf)
0 – 4	very loose	0 – 2	Very Soft	< 500
5 – 10	loose	2 – 5	Soft	500 – 1,000
11 – 24	medium dense	5 – 10	Medium	1,001 – 2,000
25 – 50	dense	10 – 20	Stiff	2,001 – 4,000
51 – 80	very dense	20 – 30	Very Stiff	4,001 – 8,000
81+	extremely dense	30 – 60	Hard	8,001 – 16,000
		>60	Very Hard	> 16,000

Particle Size

Particle Size	Material Type
Boulders	>12 inches
Cobbles	3 inches to 12 inches
Gravel	coarse: ¾" to 3"
	fine: #4 to ¾"
Sand	coarse: #10 to #4
	medium: #40 to #10
	fine: #200 to #40
Silt/Clay	<#200

- Description Modifier: The following terms may be used as qualifiers for mixed soils

Term Used	Estimated Percent Total	Component	Particle Shape – Applicable to Coarse
Primary	More than 50	Noun – GRAVEL, SAND, SILT or CLAY	*Angular:* sharp edges and relatively plain sides with unpolished surfaces
and or &	35 – 50	Gravelly, sandy, silty, clayey, with	*Subangular:* similar to angular but with rounded edges
Some	20 – 35	**MOISTURE CONTENT DESCRIPTION**	*Subrounded:* nearly plane sides but with well rounded corners and edges
		Dry: absent of moisture, dusty, dry to touch	
little	10 – 20	Moist: damp but no visible water	Rounded: smoothly curved sides and no edges
trace	less than 10	Wet: visible free water	

Varved: Horizontal uniform layers or seams of soil(s)
Seam: Soil deposit less than 6" thick
Laminated - Irregular, horizontal and angled seams and partings of soil

Layer: Soil deposit more than 6"thick.
Parting: Soil deposit Jess than 1/8" thick

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

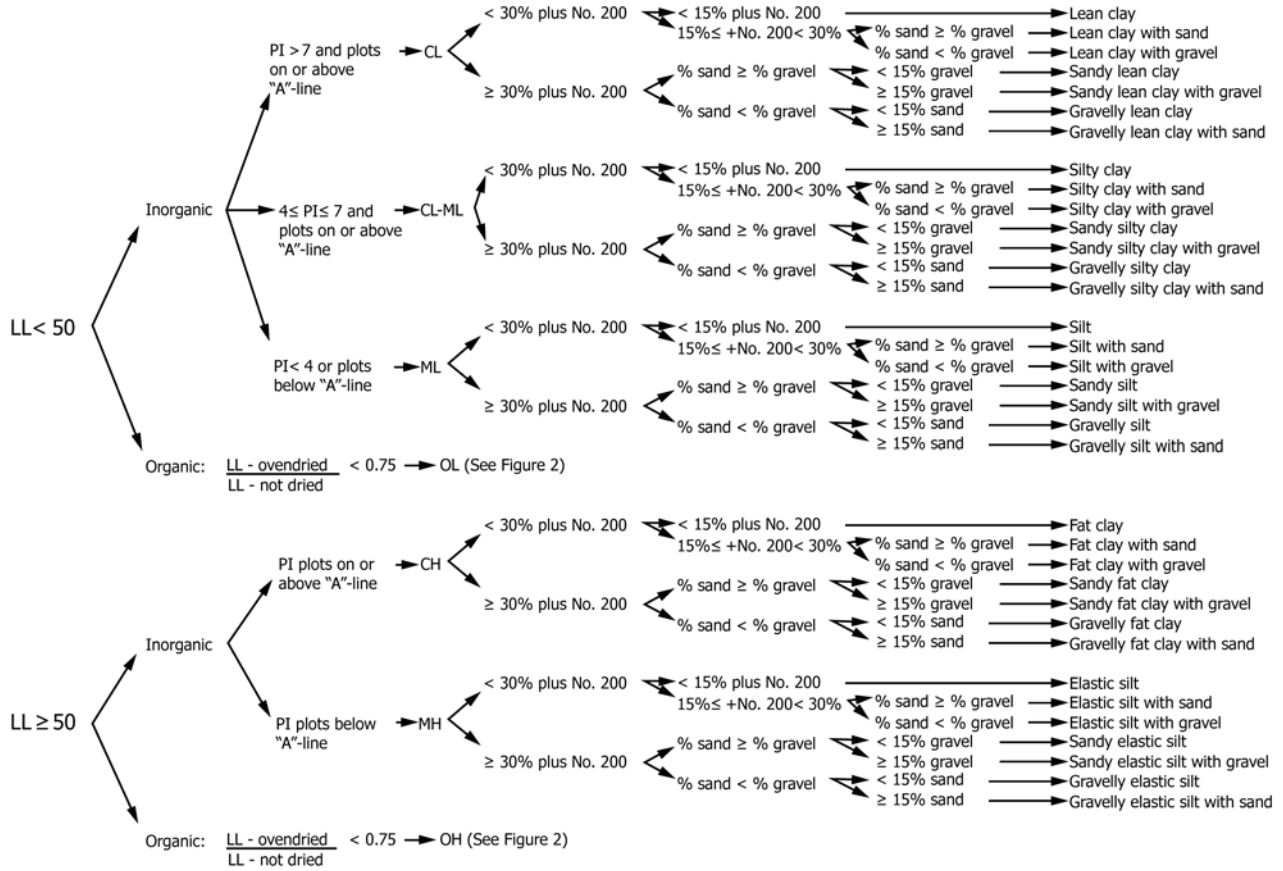


FIG. 1 Flow Chart for Classifying Fine-Grained Soil (50 % or More Passes No. 200 Sieve)

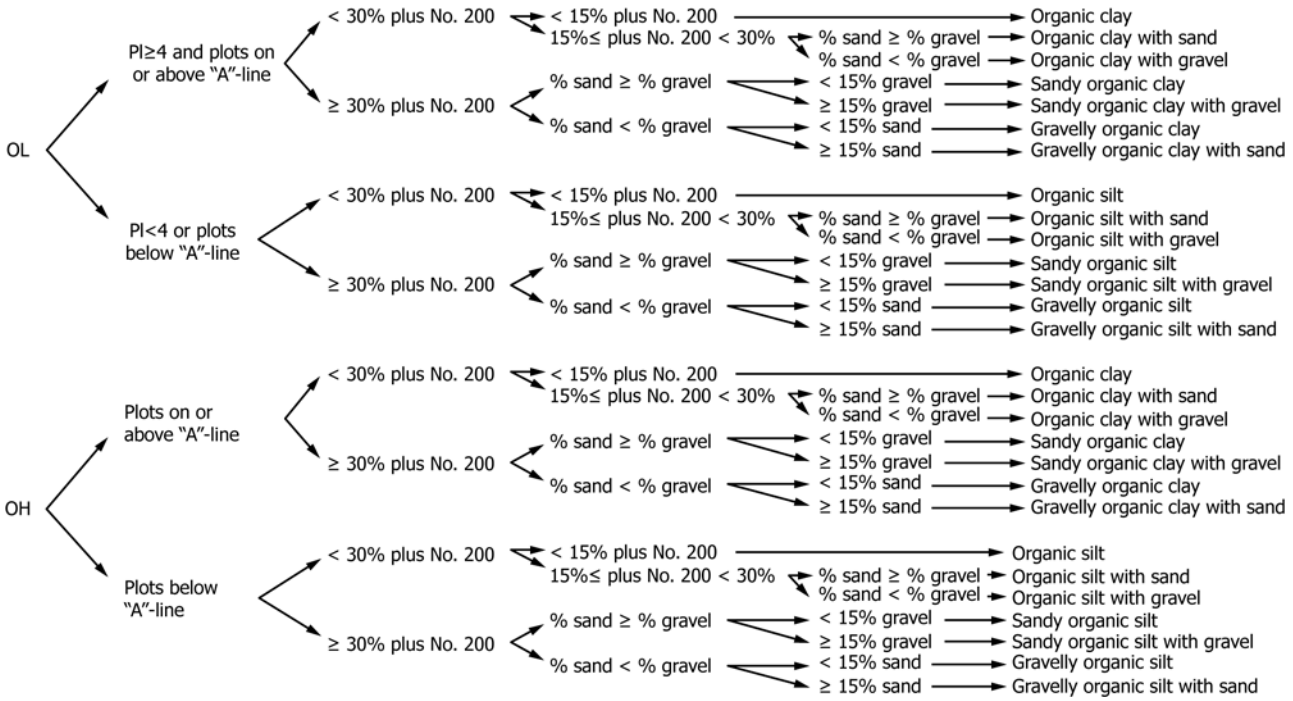


FIG. 2 Flow Chart for Classifying Organic Fine-Grained Soil (50 % or More Passes No. 200 Sieve)

Source ASTM D2487

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

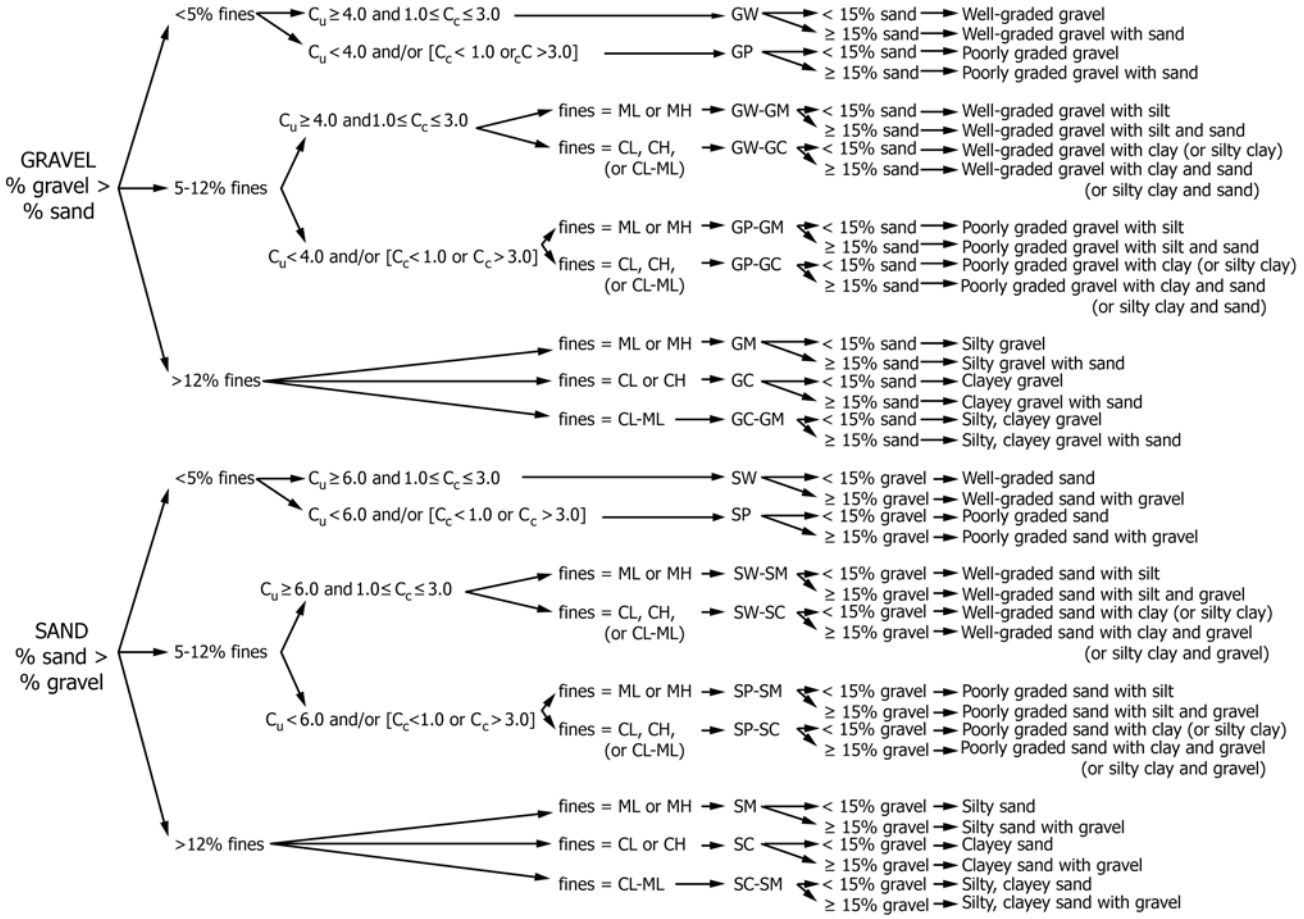


FIG. 3 Flow Chart for Classifying Coarse-Grained Soils (More Than 50 % Retained on No. 200 Sieve)

Source ASTM D2487

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

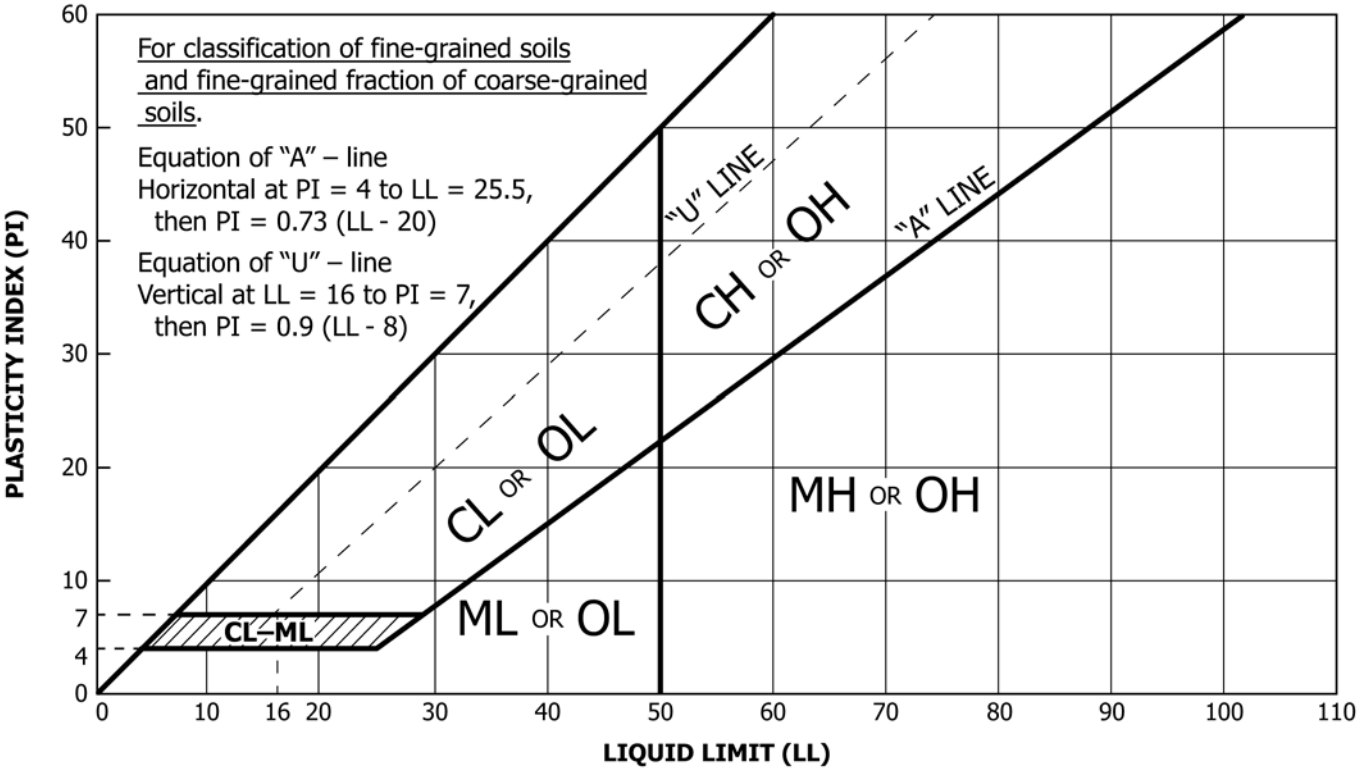


FIG. 4 Plasticity Chart

Source ASTM D2487

Renaissance Geotechnical Engineering, PLLC
3049 Hamburg Street
Schenectady, NY 12303
Telephone: 518-902-9222

KEY TO SYMBOLS

CLIENT BELL & SPINA

PROJECT NAME NYSOGS 47477 Yonkers Armory Renovation

PROJECT NUMBER 25.0015

PROJECT LOCATION 2 Quincy Place, Yonkers, New York

LITHOLOGIC SYMBOLS
(Unified Soil Classification System)


FILL: Fill (made ground)


SA CL-ML: Sandy Silty Clay


SMG: Silty SAND with Gravel


TOPSOIL: Topsoil

SAMPLER SYMBOLS


HS: Hollow Stem Auger


Split Spoon

WELL CONSTRUCTION SYMBOLS

ABBREVIATIONS

LL - LIQUID LIMIT (%)
PI - PLASTIC INDEX (%)
W - MOISTURE CONTENT (%)
DD - DRY DENSITY (PCF)
NP - NON PLASTIC
-200 - PERCENT PASSING NO. 200 SIEVE
PP - POCKET PENETROMETER (TSF)

TV - TORVANE
PID - PHOTOIONIZATION DETECTOR
UC - UNCONFINED COMPRESSION
ppm - PARTS PER MILLION


Water Level at Time Drilling, or as Shown


Water Level at End of Drilling, or as Shown


Water Level After 24 Hours, or as Shown

KEY TO SYMBOLS - GINT STD US LAB COLOR.GDT - 6/24/25 10:16 - C:\USERS\RENAISSANCE\ONEDRIVE - RENAISSANCE GEOTECHNICAL ENGINEERING, PLLC\- PROJECTS\- 2025\- OGS PROJECTS\25.0015 - OGS 47477 RENOVATE STATE ARMORY NATIONAL GUAR

Attachment 3

Expanded Laboratory Test Result Graphs

Renaissance Geotechnical Engineering, PLLC
3049 Hamburg Street
Schenectady, NY 12303
Telephone: 518-902-9222

SUMMARY OF LABORATORY RESULTS

CLIENT BELL & SPINA

PROJECT NAME NYSOGS 47477 Yonkers Armory Renovation

PROJECT NUMBER 25.0015

PROJECT LOCATION 2 Quincy Place, Yonkers, New York

Borehole	Depth	Liquid Limit	Plastic Limit	Plasticity Index	Maximum Size (mm)	%<#200 Sieve	Class-ification	Water Content (%)	Dry Density (pcf)	Satur-ation (%)	Void Ratio
B-1	2.0	NP	NP	NP	25	36	SM	8.6			
B-1	8.0	22	16	6	19	70	CL-ML	17.5			
B-1	10.0	NP	NP	NP	25	25	SM	7.8			
B-1	15.0	NP	NP	NP	50	37	SM	6.9			

LAB SUMMARY - GINT STD US LAB COLOR.GDT - 6/24/25 10:15 - C:\USERS\RENAISSANCE\ONEDRIVE - RENAISSANCE GEOTECHNICAL ENGINEERING, PLLC\- PROJECTS\- 2025\- OGS PROJECTS\25.0015 - OGS 47477 RENOVATE STATE ARMORY NATIONAL GUARD

Renaissance Geotechnical Engineering, PLLC
3049 Hamburg Street
Schenectady, NY 12303
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Fax: 518-630-6757

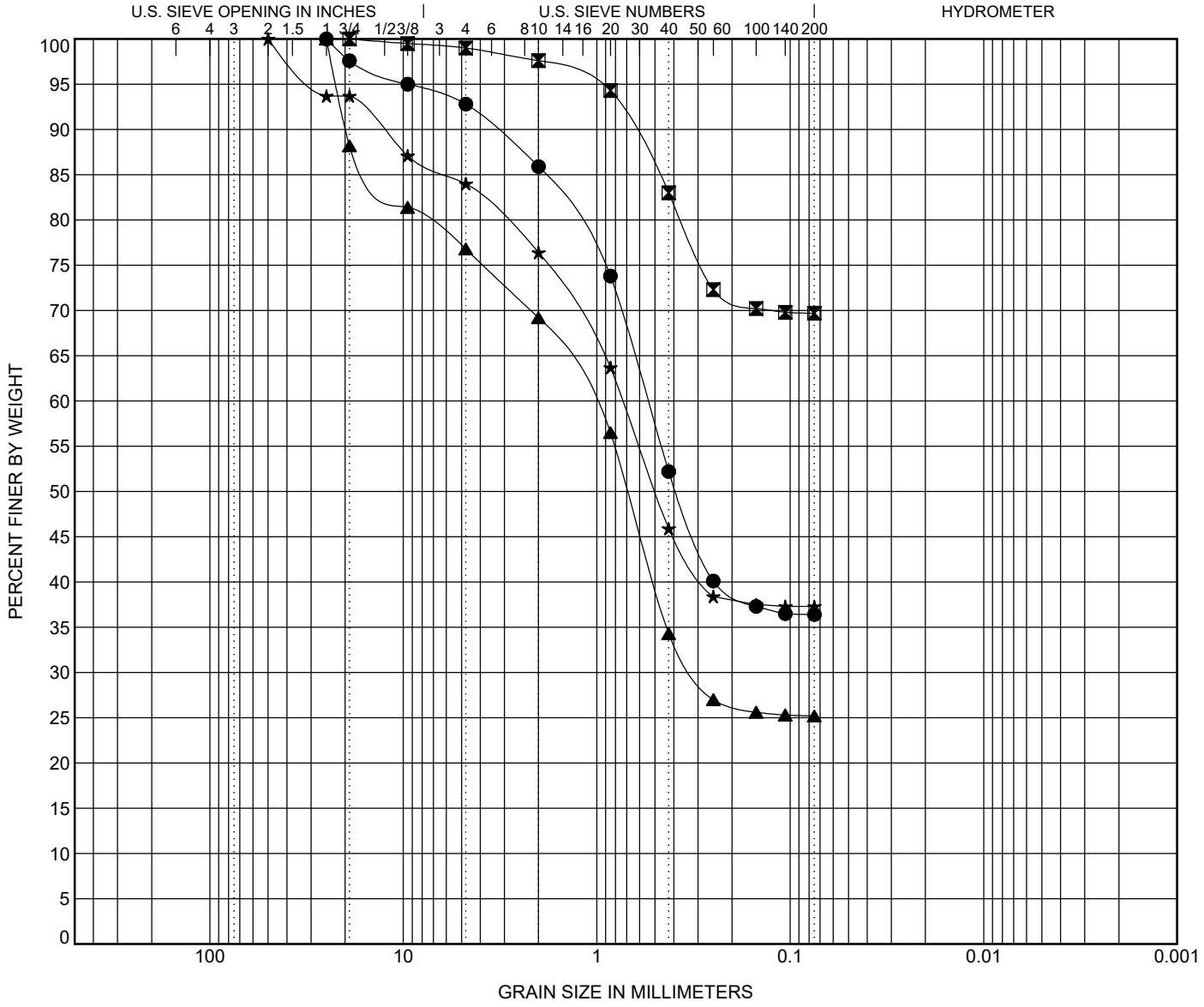
GRAIN SIZE DISTRIBUTION

CLIENT BELL & SPINA

PROJECT NAME NYSOGS 47477 Yonkers Armory Renovation

PROJECT NUMBER 25.0015

PROJECT LOCATION 2 Quincy Place, Yonkers, New York



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
●	B-1	2.0	SILTY SAND(SM)	NP	NP	NP		
⊠	B-1	8.0	SANDY SILTY CLAY(CL-ML)	22	16	6		
▲	B-1	10.0	SILTY SAND with GRAVEL(SM)	NP	NP	NP		
★	B-1	15.0	SILTY SAND with GRAVEL(SM)	NP	NP	NP		

	BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	B-1	2.0	25	0.546			7.2	56.4	36.4	
⊠	B-1	8.0	19				1.0	29.3	69.7	
▲	B-1	10.0	25	1.076	0.311		23.2	51.6	25.2	
★	B-1	15.0	50	0.736			16.0	46.7	37.3	

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Attachment 3

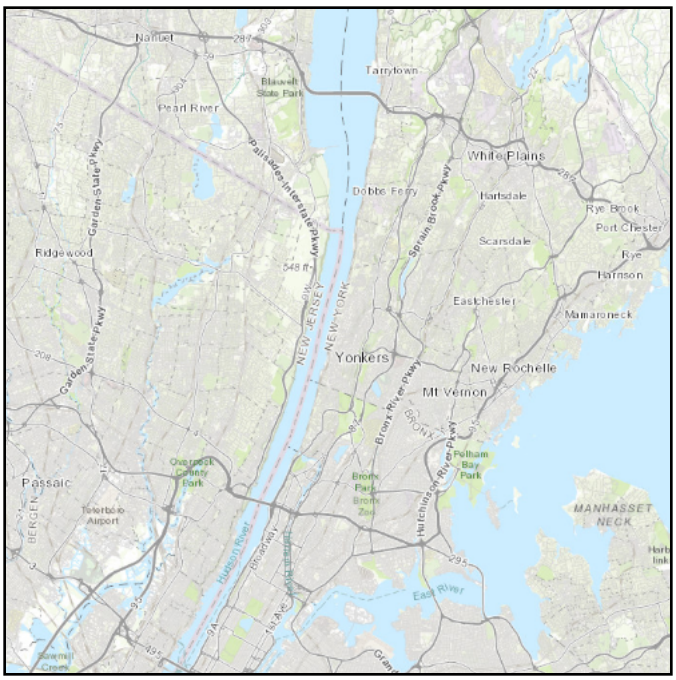
Seismic Output Data

ASCE Hazards Report

Address:
2 Quincy Pl
Yonkers, New York
10701

Standard:	ASCE/SEI 7-16	**Latitude:**	40.938352
Risk Category:	II	**Longitude:**	-73.89689
Soil Class:	D - Default (see Section 11.4.3)	**Elevation:**	99.30562790218944 ft (NAVD 88)





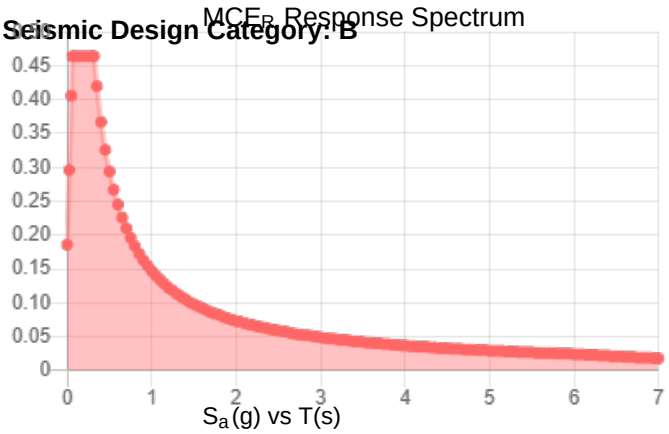
Seismic

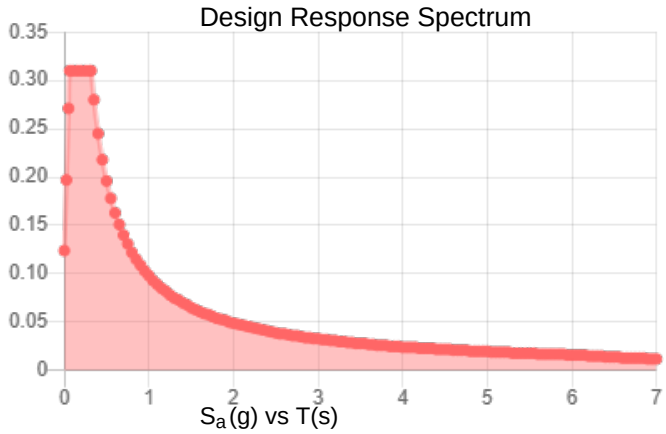
Site Soil Class: D - Default (see Section 11.4.3)

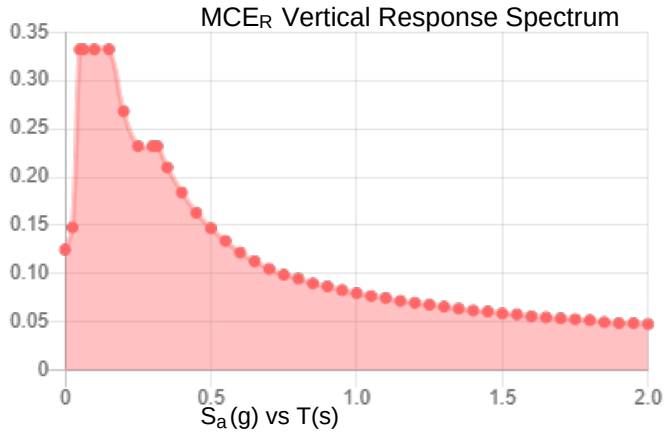
Results:

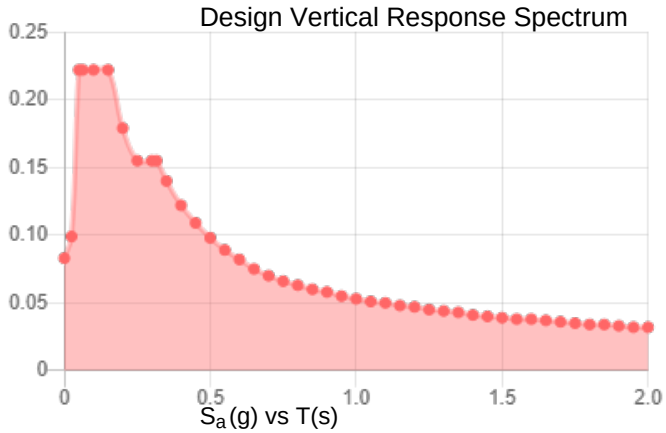
S_S :	0.297	S_{D1} :	0.098
S_1 :	0.061	T_L :	6
F_a :	1.562	PGA :	0.185
F_v :	2.4	PGA_M :	0.264
S_{MS} :	0.464	F_{PGA} :	1.431
S_{M1} :	0.147	I_e :	1
S_{DS} :	0.31	C_v :	0.894

Seismic Design Category: B









Data Accessed: **Tue Jun 24 2025**

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

The ASCE Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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Ambient Environmental, Inc.
Building Science and EHS Solutions
NYS Certified WBE,
SBA EDWOSB & DBE

April 28, 2025

Mr. James Paolini
Bell & Spina Architects
215 Wyoming Street
Syracuse, NY 13204
Ph. 315-488-0377
M. 315-436-7736
jpaolini@bellandspina.com

RE: Hazardous Materials Survey Report
Pre-Renovation
Asbestos, Lead-Based Paint, and PCB in Caulk
Yonkers Armory
127 N Broadway
Yonkers, NY 10701
Ambient Project Number: 250204AA

Dear Mr. Paolini:

Ambient Environmental, Inc. is pleased to submit the attached Hazardous Materials Survey Report for asbestos, lead-based paint, and polychlorinated biphenyls (PCB) in caulk at the above-referenced site. This report includes the procedures and methodologies followed, analytical laboratory results, and applicable conclusions and recommendations.

Ambient appreciates the opportunity to serve Bell & Spina Architects and we look forward to working with you in the future. In the meantime, if you have questions or comments regarding the information in this report or if we can be of further assistance, please do not hesitate to contact us.

Sincerely,
Ambient Environmental, Inc.

C.D. Wolford
Operations Lead

Kevin Jones
Inspector
Asbestos License # 24-6LTTH-SHAB

Enclosure

Ambient Environmental, Inc.
Building Science and EHS Solutions
NYS Certified WBE,
SBA EDWOSB & DBE

HAZARDOUS MATERIALS SURVEY
Pre-Renovation
Asbestos, Lead-Based Paint, and PCB in Caulk

Yonkers Armory
127 N Broadway
Yonkers, NY 10701

Survey Date(s): April 7-8, 2025

Prepared for:

Mr. James Paolini
Bell & Spina Architects
215 Wyoming Street
Syracuse, NY 13204

Prepared by:

Ambient Environmental, Inc.
828 Washington Ave.
Albany, New York 12203

Ambient Project No. 250204AA

TABLE OF CONTENTS

1.0 PURPOSE AND SCOPE OF SERVICES 1

2.0 EXECUTIVE SUMMARY 1

3.0 ASBESTOS-CONTAINING MATERIALS SURVEY 1
3.1 Sampling Protocol 2
3.1.1 Homogeneous Areas 2
3.1.2 Hazard Assessment Factors 2
3.1.3 Sampling Strategy 3
3.1.4 Laboratory Analytical Results 3
3.2 Asbestos Containing Material Results 4

4.0 LEAD-BASED PAINT SURVEY 5
4.1 Sampling Protocol 5
4.1.1 Methodology 5
4.1.2 Strategy 6
4.2 Lead-Based Paint Results 6
4.3 Recommendations 7

5.0 POLYCHLORINATED BIPHENYL (PCB) SURVEY 7
5.1 Polychlorinated Biphenyls (PCB) Results 7

6.0 ASSUMPTIONS, LIMITATIONS, AND OTHER CONCERNS 7

ATTACHMENTS

Attachment A Asbestos Results and Asbestos Laboratory Analysis Report with Chain of Custody Documentation

Attachment B Lead-Based Paint Testing Results

Attachment C PCB Results and Laboratory Analysis Report with Chain of Custody Documentation

Attachment D Hazardous Material Location Drawings

Attachment E Photographic Documentation

Attachment F Company, Inspector and Laboratory Accreditations and Licenses

Attachment G Historical Documentation

1.0 PURPOSE AND SCOPE OF SERVICES

The purpose of this project was to conduct a pre-renovation hazardous materials survey for asbestos, lead-based paint (LBP), and polychlorinated biphenyls (PCB) in caulk at Yonkers Armory, 127 N Broadway, Yonkers, NY 10701 (The Site). The areas inspected were the interior and exterior of the building with the exception of the roof. Ambient was provided with historical survey reports that were utilized for this inspection and only sampled materials that had not previously been sampled. Please review the Historical Reports located in attachment G for additional information. Ambient Environmental, Inc. (Ambient) provided the following services for Bell & Spina Architects (Client) in accordance with Ambient proposal number 2025-02-0068.

Conduct a representative Hazardous Materials Survey in the identified building, which includes:

- Survey the site building.
- Identify accessible suspect asbestos-containing materials (ACMs) that were not previously tested using limited destructive means.
- Quantify ACMs, including material condition and location.
- Collect and analyze bulk samples of suspect friable and non-friable materials to eliminate suspect materials as asbestos containing.
- Conduct a limited lead-based paint inspection of the building with a Viken Detection Pb200e Lead Paint Analyzer.
- Collect and analyze bulk samples of potential PCB containing window/door caulk.

2.0 EXECUTIVE SUMMARY

The inspection was conducted by NYS licensed and AHERA trained asbestos inspectors and trained lead inspectors. The inspection involved visual examinations and sampling of suspect materials that may be impacted by planned renovation projects.

Inspection results revealed the following findings:

- **The renovation area does contain asbestos containing materials**
- **The renovation area does contain lead-based paint**
- **The renovation does not contain PCBs in caulk**

Please see attachments and specific report sections for sample locations, type of materials and analytical results.

3.0 ASBESTOS-CONTAINING MATERIALS SURVEY

Ambient performed an asbestos-containing material survey for planned renovations at the subject property. Ambient examined previous reports, if available, to determine if adequate sampling was performed in the work areas and collected additional samples that appeared to be deficient. New York State certified and AHERA trained asbestos inspectors conducted the asbestos survey of the area.

The building was visually inspected for the presence of any additional building materials in the path of renovation that are suspected to contain asbestos. Bulk samples of the newly identified suspect ACMs were collected and placed into individual containers for transport to a National Voluntary Laboratory Accreditation Program (NVLAP) and a New York State Department of Health Environmental Laboratory Approval Program (ELAP)-accredited laboratory for analysis. Materials visibly identified as non-asbestos (fibrous glass, foam rubber, wood, etc.) were not sampled. The asbestos survey consisted of three basic procedures: **1)** conducting a visual inspection of the structures; **2)** identifying homogeneous areas (HAs) of suspect surfacing, thermal system insulation, and miscellaneous materials; and **3)** sampling accessible, friable and non-friable suspect materials.

3.1 Sampling Protocol

3.1.1 Homogeneous Areas

Prior to collecting any samples, HAs were identified and listed to develop a sampling strategy. A homogeneous sampling area can be described as one or more areas of material that are similar in appearance and texture and that have the same installation date and function. The actual number of samples collected from each homogeneous sampling area may vary, based on the type of material and the professional judgment of the inspector.

3.1.2 Hazard Assessment Factors

From the list of suspect homogeneous materials, a physical assessment was performed for each material on the list. A physical assessment includes evaluating the condition, assessing the potential for disturbance, and determining the friability of each material. Friability is a term used to describe the ease in which a building material inherently lends itself to disturbance. By definition, "friable" materials are those that can be crumbled or reduced to powder by hand pressure when dry. Each material on the list was further classified into one of three categories, which have specific sampling requirements for each category.

Surfacing Materials:	Refers to spray-applied or troweled surfaces such as plaster ceilings and walls, fireproofing, textured paints, textured plasters, and spray-applied acoustical surfaces.
Thermal System Insulation:	Refers to insulation used to inhibit heat gain or loss on pipes, boilers, tanks, ducts, and various other building components.
Miscellaneous Materials:	Refers to friable and non-friable products and materials that do not fit in any of the above two categories such as resilient floor covering, baseboards, mastics, adhesives, roofing material, caulking, glazing, and siding. This category also contains wallboard and ceiling tile.

All confirmed ACMs were then assessed by their condition as good (intact), fair (damaged) or poor (significantly damaged) per Title 40 Code of Federal Regulations Part 763. Material with localized significant damage was also assessed as poor when observed.

3.1.3 Sampling Strategy

The asbestos inspection was conducted according to New York State Department of Labor Industrial Code Rule 56 guidelines using a minimum number of samples collected from each HA, which also meets the sampling requirement found in 29 CFR 1926.1101.

Sample collection depends on the category that the HA falls into and the amount of material present, as follows:

GUIDELINES FOR DETERMINING THE NUMBER OF SAMPLES TO TAKE		
HA CATEGORY	**HA SIZE**	**SAMPLES REQUIRED**
Surfacing Materials	<1,000 SF	3
	1,000-5,000 SF	5
	>5,000 SF	7 or more
Thermal System Insulation	No Stipulation	3+ (Must also sample all repair patches)
Miscellaneous Materials	No Stipulation	Per AHERA, these materials must be sampled "in a manner sufficient to determine whether or not they contain asbestos" typically 2-3 samples based upon inspector judgment.

If the analytical results indicated that all the samples collected per HA did not contain asbestos, then the HA (material) would be considered a non-ACM. However, if the analytical results of one or more of the samples collected per HA indicate that asbestos is present in quantities of greater than 1 percent asbestos by weight (as defined by EPA), all of the HA (material) would be treated as an ACM regardless of any other analytical results. Material, which can visually be determined to be non-asbestos (i.e., fibrous glass, foam rubber, etc.) by the accredited inspector are not required to be sampled.

Miscellaneous materials require adequately representative sampling, which is typically done by collecting from two to three samples per material. Inspectors typically rely on other survey observations such as the condition, friability, and quantity of material to determine what would be a sufficient number of samples to accurately evaluate the presence or absence of asbestos content.

Actual collection of a bulk asbestos sample involves physically removing a small piece of material and placing it in a marked, airtight container. Sample containers are marked with a unique identification number, which is also noted in the field notes.

3.1.4 Laboratory Analytical Results

Samples were sent to AmeriSci New York in New York, New York for analysis. AmeriSci is fully accredited for bulk sample analysis under the Environmental Laboratory Approval Program (ELAP) administered by the New York State Department of Health, (ELAP# 11480). AmeriSci is also accredited by the National Voluntary Laboratory Accreditation Program (NVLAP No. 200546-0) for both air and bulk sampling.

- *Friable Samples* – Friable suspect asbestos containing material samples were analyzed utilizing Method EPA/600/R-93/116 with New York State ELAP 198.1 revision to facilitate compliance with both AHERA and the New York State Department of Health polarized light

microscopy (PLM) analytical techniques. All fibers observed were identified to determine whether or not they contained asbestos.

- *Non-Friable Samples* – Non-friable organically bound (NOB) suspect asbestos containing material samples were analyzed utilizing Method EPA/600/R-93/116 with New York State ELAP 198.6 and 198.4 revisions to facilitate compliance with both AHERA and the New York State Department of Health polarized light microscopy (PLM) and transmission electron microscopy (TEM) analytical techniques. These non-friable organically bound samples must be weighed to record initial sample weights, then subjected to muffle furnace and acid bath sample preparation to eliminate the organic constituents. If the remaining inorganic sample residue is 1% or less of the original sample weight, the sample is considered a non-asbestos containing material. If the remaining inorganic sample residue is greater than 1% of the original sample weight then the sample must be analyzed using either PLM or TEM analytical techniques to determine that the sample is an asbestos containing material (positive) or TEM to prove that the sample is a non-asbestos containing material (negative). A non-friable organically bound sample must be proven a non-asbestos containing material utilizing the NYS ELAP 198.4 TEM test method to be in compliance with the New York state Department of Health.

3.2 Asbestos Containing Material Results

The results of the asbestos survey conducted at the subject property can be found in Attachment A.

The building survey included limited destructive sampling for "hidden" materials. Therefore, the results of this survey may not be inclusive of <u>all</u> asbestos containing material that may be present in the pathway of demolition. If, during the course of renovation, any suspect material is discovered that is not listed on the table in Attachment A it must be treated as asbestos containing material and handled appropriately or sampled by an inspector and analyzed according to NYS and EPA regulations.

One (1) copy of the results of the building/structure asbestos survey shall be immediately transmitted by the building/structure owner as follows:

- One (1) copy of the completed asbestos survey shall be sent by the owner or their agent to the local government entity charged with issuing a permit for such demolition, renovation, remodeling or repair work under applicable State or local laws.
- The completed asbestos survey for controlled demolition (as per Subpart 56-11.5) or pre-demolition asbestos projects shall also be submitted to the appropriate Asbestos Control Bureau district office.
- The completed asbestos survey shall be kept on the construction site with the asbestos notification and variance, if required, throughout the duration of the asbestos project and any associated demolition, renovation, remodeling or repair project.

4.0 LEAD-BASED PAINT SURVEY

Ambient conducted a limited lead-based paint (LBP) investigation of building components which will be affected by proposed renovation work. The purpose of this investigation was to assess if building components contain actionable quantities of lead-based paint.

The U.S Environmental Protection Agency (EPA) and U.S. Department of Housing and Urban Development (HUD) has established a definition of lead-based paint as a paint or other surface coating that contains lead equal to or greater than 1.0 mg/cm^2 or 0.5% by weight (equivalent units are: 5,000 µg/g, 5,000 mg/kg, or 5,000 ppm by weight). Surface coatings include paint, shellac, varnish, or any other coating, including wallpaper, which covers painted surfaces. A limited inspection for lead-based paint using XRF instrumentation was conducted to determine if lead coated surfaces were affected. This inspection was not in full compliance with HUD guidelines.

4.1 Sampling Protocol

4.1.1 Methodology

Testing was performed using X-Ray Fluorescence in situ analysis (XRF) of painted construction materials. Ambient utilized the Pb200e analyzer manufactured by Viken Detection for this survey.
The Pb200e Lead Paint Analyzer is a complete lead paint analysis system that quickly, accurately, and non-destructively measures the concentration of LBP on surfaces. The Pb200e relies on the measurement of the K-shell X-rays to determine the amount of lead present in the painted surface. K-shell X-rays can penetrate many layers of paint and allow a measurement of the lead content of paint to be made without being significantly affected by the thickness or number of layers of paint on the surface of the sample.

The Pb200e can analyze and compute corrections for the differences in the energy spectrums relating to different substrates. This analysis of the energy spectrum means that the lead paint reading displayed on the instrument already accounts for any substrate effects and correction is not required by the operator. The Pb200e's field of view is limited to a depth of 3/8", deep enough to handle virtually all painted surfaces, but not prone to detect lead objects located behind the surface.

There are two measurement modes of operation in the Pb200e analyzer namely the "Action Level Mode" and the "Extended Reading Mode. In the "Action Level" mode, the analyzer automatically adjusts the measurement time to be the least time that is needed to make a definitive measurement with a 95% confidence level (2-sigma). The Pb200e analyzer will finish a measurement once the 2-sigma confidence level is achieved, and the data is statistically meaningful. This time period for conclusive measurements is typically between 1 to 5 seconds but can extend to a measurement of 60 seconds depending on the action level for abatement. Ambient utilized the Pb200e in the "Action Level" mode for the testing performed.

Upon arrival at the job site and once every four hours or after the day’s paint testing work was completed, a "validation test" was performed to assure that the instrument was operating properly. The “validation test” includes taking a series of three test measurements on the NIST

Paint Film Standard (SRM No. 2579) as required by the instrument's PCS. The individual readings and an average of the three readings were recorded and compared to the standards. In all cases the instrument was functioning within the standard deviation as defined by the manufacturer and the PCS. All validation readings are recorded in the XRF in the order in which they were taken at the site. If for any reason the XRF does not pass the quality control procedures, it is Ambient's policy to replace that instrument with an XRF that passes the above criteria for calibration.

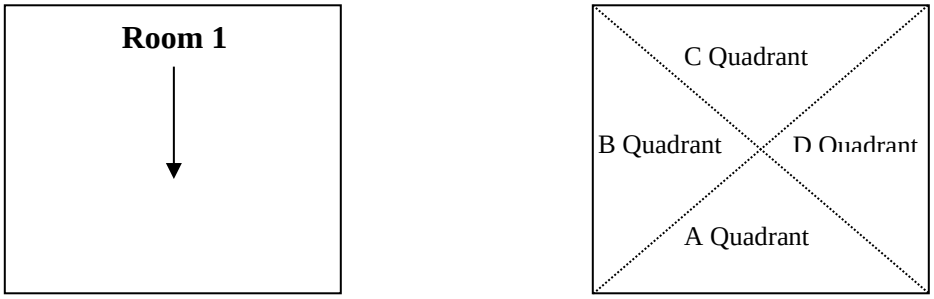
The parameters used to interpret XRF results are outlined in the HUD Guidelines and the Performance Characteristics Sheet (PCS) in Attachment B. According to the PCS, each XRF result is classified as positive for LBP if the result is greater than or equal to 1.0 mg/cm2 or negative for LBP if the result is below 1.0 mg/cm2.

When measurable amounts of lead are reported in the XRF result, the paint is classified by OSHA as a lead containing material.

4.1.2 Strategy

Location identifiers (reading numbers) were assigned to each room component. Each location sampled has a unique number. The associated sample results will be listed by room number, room location, room name, location in the space and description of material sampled. By convention a sample location is assigned a letter designator for each of the four walls. This divides the space into four equal quadrants, each quadrant consisting of a wall, portion of the floor and a portion of the ceiling. Please see Diagram 1. These letter designators are A, B, C and D. On the diagrams provided, the letter designators are marked for each of the quadrants. In this fashion the sampled space, location in the space and the description of the material sampled can be identified on the attached drawings and associated results table.

Diagram 1



4.2 Lead-Based Paint Results

The results of the lead-based paint survey conducted at the subject property can be found in Attachment B.

4.3 Recommendations

Any contractor disturbing a lead-based or lead containing paint is directed to comply with all applicable laws and regulations governing the disturbance of lead-based or lead containing materials including but not limited to *Occupational Safety and Health Administration (OSHA)* standards including *Construction Lead Standard 29 CFR 1926.62*. Air monitoring for employee exposures should be performed in accordance with the National Institute for Occupational Safety and Health (NIOSH) 7300 Method or equivalent. As an alternative to air monitoring, the contractor may provide objective data per 29 CFR 1926.62 Section (d)(3)(iv). The contractor shall employ work practices and controls to prevent the occurrence of lead contamination at the Site.

5.0 POLYCHLORINATED BIPHENYL (PCB) SURVEY

Ambient sampled suspect PCB containing caulk that could be impacted by the upcoming renovation and analyzed it for Polychlorinated Biphenyl (PCB) content.

The PCB survey involved a visual examination and sampling of caulk materials that may be impacted by the planned renovation projects. PCB, or Polychlorinated Biphenyl, was used in various products including caulking material from 1930 to approximately 1979 when PCB were banned by Congress. PCB are listed to be Probable Human Carcinogens by the ATSDR (Agency for Toxic Substances and Disease Registry), the National Cancer Institute and the World Health Organization.

PCB-containing materials are regulated under the Toxic Substances Control Act (TSCA) and 40 CFR 761 and are considered a regulated hazardous material at concentrations equal to or greater than 50 ppm (50,000 ppb). PCB must be segregated from construction debris and then be taken to a hazardous waste landfill in accordance with U.S. EPA regulations under the Toxic Substances Control Act (40 CFR761.62) and NYSDEC hazardous waste regulations (6NYCRR370-373). PCB can also be incinerated at an approved facility. There are also alternative methods for PCB destruction.

Bulk samples were collected and submitted to Schneider Labs, 2512 W. Cary Street, Richmond, Virginia. The samples were analyzed using EPA SW-846 Method 8082 PCB by Gas Chromatography.

5.1 Polychlorinated Biphenyls (PCB) Results

The results of the PCB survey conducted can be found in Attachment C.

6.0 ASSUMPTIONS, LIMITATIONS, AND OTHER CONCERNS

The results, findings, conclusions, and recommendations expressed in this report are based only on conditions that were noted during the inspection of the subject property.

- Ambient's selection of sample locations and frequency of sampling was based on observations and the assumption that like materials in the same area are homogeneous in content.

- Refer to Section 1.0 Purpose and Scope of Services of this report to see clarification of survey locations that were in our scope of work.
- Limited wiring and electrical components were inspected as the building power was live at the time of the survey. No cloth covered wiring or transite type electrical components were observed. Other components that were not observed may contain asbestos.
- Ambient inspected mirrors located throughout the building and determined that the ones with metal frames typically located above the sinks appear to have a hanger bracket. There are some pieces of mirror glass that do appear to be glued to the wall. These mirrors may have glue dabs that contain asbestos.
- Ambient observed to the best of their ability the inside of ductwork and other building mechanical systems but destruction or disassembly is required to gain complete access. These items may contain asbestos.
- Ambient performed limited inspection of exterior areas below grade in the location of the proposed elevator. Buried piping, and other items may exist below grade which may contain asbestos.
- Floor levelers, seam sealers, adhesives, concrete sealers, and other materials below flooring layers may exist. The limited destructive nature of sampling may not have discovered these materials as only small areas of large expanses of flooring are accessed. The removal of flooring and mastics is to include the removal of these items as well and all other materials down to the concrete substrate.
- The components of the windows/doors that were accessible without demolition were inspected. Limited intrusive demolition was performed during this inspection. There may be additional materials concealed beneath or behind window/door frames. Only full removal of the window/door unit would reveal these materials.
- The lead-based paint inspection was limited to representative accessible painted surfaces that are expected to be impacted by the planned renovation or demolition as of the date of the inspection. Representative locations were selected based on available information including construction and renovation history, conditions observed during the paint inspection and inspector safety when accessing the surfaces. OSHA requires the use of lead safe work practices to protect employees who are disturbing any lead containing material including, but not limited to, components coated with lead-based paint or varnish.
- Ambient relied on historical sampling data provided by the client if the analysis methods met current regulatory requirements.
- Ambient drilled several holes in walls but raw vermiculite insulation was not found during this inspection; however, vermiculite insulation may exist in concealed spaces in the building. Currently, there is no approved analytical methodology to confirm vermiculite as non-asbestos; therefore, it automatically must be contaminated with asbestos in New York State. If encountered during renovation it must be handled as an asbestos containing material. Please refer to this link for more information http://www2.epa.gov/asbestos/protect-your-family-asbestos-contaminated-vermiculite-insulation

- Although there was no asbestos containing Thermal System Insulation (TSI) or pipe insulation found there may be TSI or pipe insulation found in unseen cavities or wet walls. A reasonable attempt was made to identify all TSI without performing full demolition.
- Ambient performed limited coring/destructive sampling of floors, walls, and ceilings during the inspection. However, only full demolition would reveal "hidden" asbestos containing materials. Care should be taken during demolition/renovation of the building.
- This report reflects the conditions found at the date and time of the inspections. Conditions of the area may change due to external events or forces. Re-inspection of the area may be required prior to the start of any work if an extended period has passed or if disturbances have occurred.
- All locations on drawings are approximate and all quantities are estimated. Any contractor or other user of this report is required to physically visit the site to verify all measurements and confirm the quantities of materials to be removed, to be bid for removal, or for any other purpose.

All construction personnel, as well as individuals who have access to locations where ACM exists, should be informed of its presence and the proper work practices in these areas. Conspicuous labeling of all ACM is suggested to ensure personnel is adequately informed. Personnel should be informed not to rest, lean or store material or equipment on or near these surfaces and not to cut, saw, drill, sand or disturb ACM. All removal, disturbance and repair of ACM should be performed in compliance with Title 12 NYCRR Part 56 by persons properly trained to handle ACM. Facility custodial and maintenance personnel should receive training commensurate with their work activities; as defined in 29 CFR 1910.1001.

The report is designed to aid the building owner, architect, construction manager, general contractors, and potential asbestos or lead abatement contractors in locating ACM. Under no circumstances is the report to be utilized as a bidding document or as a project specification document since it does not have all the components required to serve as an Asbestos Project Design document or an Abatement Workplan.

Our professional services have been performed, our findings obtained, and our conclusions and recommendations prepared in accordance with customary principles and practices in the fields of environmental science and engineering. This statement is in lieu of other statements either expressed or implied. This report does not warrant against future operations or conditions, nor does it warrant against operations or conditions present of a type or at a location not investigated.

Ambient inspected and sampled materials, which were observable and accessible to the survey team. It is possible, however, that additional suspect materials may exist within interstitial spaces (i.e. underground chases, plenums, wall cavities, beneath pavement/asphalts pathways, etc.), which were not accessible or not made accessible and as a result, not noted in this report.

If questions arise regarding asbestos in materials/locations that were not tested by Ambient, then additional survey services should be procured to test these locations. Ambient makes no representation or warranty concerning the standards and specifications provided in applicable regulations. Any materials that have not been tested and/or found during future investigation must be assumed positive for asbestos, lead-based paint and/or PCB (if applicable).

ATTACHMENT A

ASBESTOS RESULTS AND ASBESTOS LABORATORY ANALYSIS REPORT WITH CHAIN OF CUSTODY DOCUMENTATION

BELL & SPINA ARCHITECTS
YONKERS ARMORY
127 N BROADWAY, YONKERS, NY 10701
SUMMARY OF ASBESTOS SAMPLES AND ANALYSIS RESULTS

Homogeneous Area Number	Bulk Sample ID Number	Sampled Material (T, S, M)	Sample Location	Friability (N/F)	Condition (G, D, SD)	Quantity	Homogeneous Area	Asbestos Content (Type & %)
001	01	Foil Faced Duct Insulation (T)	Upper Level – Conference Room 111	N	G	N/A	N/A	NAD
001	02	Foil Faced Duct Insulation (T)	Upper Level – Conference Room 111	N	G	N/A	N/A	NAD
001	03	Foil Faced Duct Insulation (T)	Upper Level – Conference Room 111	N	G	N/A	N/A	NAD
002	01	Gray Duct Sealer (M)	Upper Level – Room 118	N	G	N/A	N/A	NAD
002	02	Gray Duct Sealer (M)	Upper Level – Room 118	N	G	N/A	N/A	NAD
003	01	Foil Backed Heating Pipe Insulation (T)	Upper Level – Room 116	N	G	N/A	N/A	NAD
003	02	Foil Backed Heating Pipe Insulation (T)	Upper Level – Room 116	N	G	N/A	N/A	NAD
003	03	Foil Backed Heating Pipe Insulation (T)	Upper Level – Room 116	N	G	N/A	N/A	NAD
004	01	White Pipe Insulation Mastic (M)	Upper Level – Conference Room 111	N	G	N/A	N/A	NAD
004	02	White Pipe Insulation Mastic (M)	Upper Level – Conference Room 111	N	G	N/A	N/A	NAD
005	01	CMU Wall (M)	Upper Level – Corridor	F	G	N/A	N/A	NAD
005	02	CMU Wall (M)	Upper Level – Corridor	F	G	N/A	N/A	NAD
006	01	Red Epoxy Floor (S)	Upper Level – Women's Latrine Room 134	F	G	N/A	N/A	NAD
006	02	Red Epoxy Floor (S)	Upper Level – Women's Latrine Room 134	F	G	N/A	N/A	NAD
006	03	Red Epoxy Floor (S)	Upper Level – Women's Latrine Room 134	F	G	N/A	N/A	NAD
007	01	White Expansion Joint Caulk (M)	Upper Level – Room 127	N	G	N/A	N/A	NAD
007	02	White Expansion Joint Caulk (M)	Upper Level – Room 127	N	G	N/A	N/A	NAD
008	01	White Caulk on Window Frame to CMU Wall (M)	Upper Level – Room 127	N	G	N/A	N/A	NAD
008	02	White Caulk on Window Frame to CMU Wall (M)	Upper Level – Room 127	N	G	N/A	N/A	NAD

BELL & SPINA ARCHITECTS
YONKERS ARMORY
127 N BROADWAY, YONKERS, NY 10701
SUMMARY OF ASBESTOS SAMPLES AND ANALYSIS RESULTS

Homogeneous Area Number	Bulk Sample ID Number	Sampled Material (T, S, M)	Sample Location	Friability (N/F)	Condition (G, D, SD)	Quantity	Homogeneous Area	Asbestos Content (Type & %)
009	01	Black Window Glazing (M)	Upper Level – Room 127	N	G	850 LF or 36 SF (25 Windows)	Upper Level	9.7% Chrysotile
009	02	Black Window Glazing (M)	Upper Level – Room 127	N	G			NA/PS
010	01	Beige Wall Paint (S)	Upper Level – Room 127	N	G	N/A	N/A	NAD
010	02	Beige Wall Paint (S)	Upper Level – Room 116	N	G	N/A	N/A	NAD
010	03	Beige Wall Paint (S)	Upper Level – Room 116	N	G	N/A	N/A	NAD
010	04	Beige Wall Paint (S)	Upper Level – Room 111	N	G	N/A	N/A	NAD
010	05	Beige Wall Paint (S)	Upper Level – Room 111	N	G	N/A	N/A	NAD
011	01	Gray Floor Paint (S)	Upper Level – Room 133	N	G	N/A	N/A	NAD
011	02	Gray Floor Paint (S)	Upper Level – Room 133	N	G	N/A	N/A	NAD
011	03	Gray Floor Paint (S)	Upper Level – Room 133	N	G	N/A	N/A	NAD
012	01	Off-White Wall Paint (S)	Lower Level – Assembly Hall 5	N	G	N/A	N/A	NAD
012	02	Off-White Wall Paint (S)	Lower Level – Assembly Hall 5	N	G	N/A	N/A	NAD
012	03	Off-White Wall Paint (S)	Lower Level – Assembly Hall 5	N	G	N/A	N/A	NAD
012	04	Off-White Wall Paint (S)	Lower Level – Assembly Hall 5	N	G	N/A	N/A	NAD
012	05	Off-White Wall Paint (S)	Lower Level – Assembly Hall 5	N	G	N/A	N/A	NAD
012	06	Off-White Wall Paint (S)	Lower Level – Assembly Hall 5	N	G	N/A	N/A	NAD
012	07	Off-White Wall Paint (S)	Lower Level – Assembly Hall 5	N	G	N/A	N/A	NAD
013	01	Yellow Wall Paint (S)	Lower Level – Assembly Hall 5	N	G	N/A	N/A	NAD
013	02	Yellow Wall Paint (S)	Lower Level – Assembly Hall 5	N	G	N/A	N/A	NAD
013	03	Yellow Wall Paint (S)	Lower Level – Assembly Hall 5	N	G	N/A	N/A	NAD

BELL & SPINA ARCHITECTS
YONKERS ARMORY
127 N BROADWAY, YONKERS, NY 10701
SUMMARY OF ASBESTOS SAMPLES AND ANALYSIS RESULTS

Homogeneous Area Number	Bulk Sample ID Number	Sampled Material (T, S, M)	Sample Location	Friability (N/F)	Condition (G, D, SD)	Quantity	Homogeneous Area	Asbestos Content (Type & %)
013	04	Yellow Wall Paint (S)	Lower Level – Assembly Hall 5	N	G	N/A	N/A	NAD
013	05	Yellow Wall Paint (S)	Lower Level – Assembly Hall 5	N	G	N/A	N/A	NAD
014	01	Black Electrical Wire Insulation (M)	Lower Level – Mechanical Room 1	N	G	N/A	N/A	NAD
014	02	Black Electrical Wire Insulation (M)	Lower Level – Mechanical Room 1	N	G	N/A	N/A	NAD
015	01	White Electrical Wire Insulation (M)	Lower Level – Mechanical Room 1	N	G	N/A	N/A	NAD
015	02	White Electrical Wire Insulation (M)	Lower Level – Mechanical Room 1	N	G	N/A	N/A	NAD
016	01	Brick Wall (M)	Exterior	F	G	N/A	N/A	NAD
016	02	Brick Wall (M)	Exterior	F	G	N/A	N/A	NAD
017	01	Tan Adhesive on Stair Tread (M)	Exterior	N	G	N/A	N/A	NAD
017	02	Tan Adhesive on Stair Tread (M)	Exterior	N	G	N/A	N/A	NAD
018	01	Tan Concrete Step (M)	Exterior	F	G	N/A	N/A	NAD
018	02	Tan Concrete Step (M)	Exterior	F	G	N/A	N/A	NAD
019	01	Concrete Sidewalk (M)	Exterior	F	G	N/A	N/A	NAD
019	02	Concrete Sidewalk (M)	Exterior	F	G	N/A	N/A	NAD
020	01	Sidewalk Caulk (M)	Exterior	N	G	N/A	N/A	NAD
020	02	Sidewalk Caulk (M)	Exterior	N	G	N/A	N/A	NAD
021	01	Foundation Sealer (M)	Exterior	N	G	N/A	N/A	NAD
021	02	Foundation Sealer (M)	Exterior	N	G	N/A	N/A	NAD

(T=TSI; S=Surfacing; M=Misc)

NAD = No asbestos detected

BELL & SPINA ARCHITECTS
YONKERS ARMORY
127 N BROADWAY, YONKERS, NY 10701
SUMMARY OF ASBESTOS SAMPLES AND ANALYSIS RESULTS

NA/PS = Not analyzed/positive stop

SF = Square Foot
LF = Linear Foot

* Quantities are estimates only and should be field verified.
* Quantities and homogenous locations only reflect renovation areas and do not represent other areas throughout the building.

Note: Refer to Assumptions & Limitations Section of the Report.

AmeriSci New York
117 EAST 30TH ST.
NEW YORK, NY 10016
TEL: (212) 679-8600 • FAX: (212) 679-3114

April 17, 2025

Ambient Environmental, Inc.
Attn: Joella Viscusi
828 Washington Avenue
Albany, NY 12203

RE: Ambient Environmental, Inc.
Job Number 225041730
P.O. #250204AA
250204AA; Bell & Spina Architects; Inspection Yonkers Armory, 127 N. Broadway, Yonkers, NY 10701, Yonkers Armory - Interior & Exterior

Dear Joella Viscusi:

Enclosed are the results of Asbestos Analysis - Bulk Protocol of the following Ambient Environmental, Inc. samples, received at AmeriSci on Wednesday, April 9, 2025, for a 5 day turnaround:

001-01, 001-02, 001-03, 002-01, 002-02, 003-01, 003-02, 003-03, 004-01, 004-02, 005-01, 005-02, 006-01, 006-02, 006-03, 007-01, 007-02, 008-01, 008-02, 009-01, 009-02, 010-01, 010-02, 010-03, 010-04, 010-05, 011-01, 011-02, 011-03, 012-01, 012-02, 012-03, 012-04, 012-05, 012-06, 012-07, 013-01, 013-02, 013-03, 013-04, 013-05, 014-01, 014-02, 015-01, 015-02, 016-01, 016-02, 017-01, 017-02, 018-01, 018-02, 019-01, 019-02, 020-01, 020-02, 021-01, 021-02

The 57 samples, placed in zip lock bag, were shipped to AmeriSci via Fed Ex. Ambient Environmental, Inc. requested ELAP PLM/TEM analysis of these samples.

The results of the analyses which were performed following ELAP Protocols 198.1 PLM Friable and/or 198.6 for PLM NOB. ELAP Protocol 198.4 TEM NOB guidelines are presented within the Summary Table of this report. The presence of matrix reduction data in the Summary Table normally indicates an NOB sample. For NOB samples the individual matrix reduction, combined PLM and TEM analysis results are listed in the Summary Bulk Asbestos Analysis Results in Table I. Complete PLM results for individual samples are presented in the PLM Bulk Asbestos Report. Samples near 1% asbestos may be analyzed by EPA 400 pt ct method (EPA 600-M4-82-020). This combined report relates ONLY to sample analysis expressed as percent composition by weight and percent asbestos. This report must not be used to claim product endorsement or approval by these laboratories, NVLAP, ELAP or any other associated agency. This report must not be reproduced, except in full without the written approval of the laboratory. This report may contain specific data not covered by NVLAP or ELAP accreditations respectively, if so identified in relevant footnotes.

AmeriSci appreciates this opportunity to serve your organization. Please contact us for any further assistance or with any questions.

Sincerely,

Marvin E. Brothers

President | Authorized Signatory

AmeriSci New York
117 EAST 30TH ST.
NEW YORK, NY 10016
TEL: (212) 679-8600 • FAX: (212) 679-3114

PLM Bulk Asbestos Report

Ambient Environmental, Inc.
Attn: Joella Viscusi
828 Washington Avenue

Albany, NY 12203

Date Received 4/9/2025 **AmeriSci Job #** 225041730
Date Examined 04/15/25 **P.O. #**
ELAP # 11480 **Page** 1 **of** 9

RE: 250204AA; Bell & Spina Architects; Inspection Yonkers Armory, 127 N. Broadway, Yonkers, NY 10701, Yonkers Armory - Interior & Exterior

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos	Notes
001-01 001	225041730-01	***No***	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 04/15/25	
Location: Upper Level - Conference Room 111 - Foil Faced Duct Insulation (T) **Analyst Description:** Silver/Brown, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 50%, Fibrous glass 10%, Non-fibrous 40%				
001-02 001	225041730-02	***No***	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 04/15/25	
Location: Upper Level - Conference Room 111 - Foil Faced Duct Insulation (T) **Analyst Description:** Silver/Brown, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 50%, Fibrous glass 10%, Non-fibrous 40%				
001-03 001	225041730-03	***No***	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 04/15/25	
Location: Upper Level - Conference Room 111 - Foil Faced Duct Insulation (T) **Analyst Description:** Silver/Brown, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 50%, Fibrous glass 10%, Non-fibrous 40%				
002-01 002	225041730-04	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
Location: Upper Level - Room 118 - Gray Duct Sealer (M) **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 3.2%				
002-02 002	225041730-05	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
Location: Upper Level - Room 118 - Gray Duct Sealer (M) **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 3.3%				
003-01 003	225041730-06	***No***	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 04/15/25	
Location: Upper Level - Room 116 - Foil Backed Heating Pipe Insulation (T) **Analyst Description:** White/Silver, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 50%, Fibrous glass 10%, Non-fibrous 40%				

See Reporting notes on last page

PLM Bulk Asbestos Report

250204AA; Bell & Spina Architects; Inspection Yonkers Armory, 127 N. Broadway, Yonkers, NY 10701, Yonkers Armory - Interior & Exterior

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos	Notes
003-02 003	225041730-07	***No***	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 04/15/25	
Location: Upper Level - Room 116 - Foil Backed Heating Pipe Insulation (T) **Analyst Description:** White/Silver, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 50%, Fibrous glass 10%, Non-fibrous 40%				
003-03 003	225041730-08	***No***	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 04/15/25	
Location: Upper Level - Room 116 - Foil Backed Heating Pipe Insulation (T) **Analyst Description:** White/Silver, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 50%, Fibrous glass 10%, Non-fibrous 40%				
004-01 004	225041730-09	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
Location: Upper Level - Conference Room 111 - White Pipe Insulation Mastic (M) **Analyst Description:** White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 22%				
004-02 004	225041730-10	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
Location: Upper Level - Conference Room 111 - White Pipe Insulation Mastic (M) **Analyst Description:** White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 20%				
005-01 005	225041730-11	***No***	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 04/15/25	
Location: Upper Level - Corridor - CMU Wall (M) **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%				
005-02 005	225041730-12	***No***	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 04/15/25	
Location: Upper Level - Corridor - CMU Wall (M) **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%				
006-01 006	225041730-13	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
Location: Upper Level - Women's Latrine Room 134 - Red Epoxy Floor (S) **Analyst Description:** Red, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 60%				

See Reporting notes on last page

PLM Bulk Asbestos Report

250204AA; Bell & Spina Architects; Inspection Yonkers Armory, 127 N. Broadway, Yonkers, NY 10701, Yonkers Armory - Interior & Exterior

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos	Notes
006-02 006	225041730-14	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
Location: Upper Level - Women's Latrine Room 134 - Red Epoxy Floor (S) **Analyst Description:** Red, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 60%				
006-03 006	225041730-15	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
Location: Upper Level - Women's Latrine Room 134 - Red Epoxy Floor (S) **Analyst Description:** Red, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 65%				
007-01 007	225041730-16	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
Location: Upper Level - Room 127 - White Expansion Joint Caulk (M) **Analyst Description:** White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 3.5%				
007-02 007	225041730-17	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
Location: Upper Level - Room 127 - White Expansion Joint Caulk (M) **Analyst Description:** White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 2.2%				
008-01 008	225041730-18	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
Location: Upper Level - Room 127 - White Caulk On Window Frame To CMU Wall (M) **Analyst Description:** White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 0.1%				
008-02 008	225041730-19	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
Location: Upper Level - Room 127 - White Caulk On Window Frame To CMU Wall (M) **Analyst Description:** White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 5.7%				
009-01 009	225041730-20	***Yes***	9.7% (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	
Location: Upper Level - Room 127 - Black Window Glazing (M) **Analyst Description:** Black, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** Chrysotile 9.7% **Other Material:** Non-fibrous 14%				

See Reporting notes on last page

PLM Bulk Asbestos Report

250204AA; Bell & Spina Architects; Inspection Yonkers Armory, 127 N. Broadway, Yonkers, NY 10701, Yonkers Armory - Interior & Exterior

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos	Notes
009-02 009 **Location:** Upper Level - Room 127 - Black Window Glazing (M) **Analyst Description:** Bulk Material **Asbestos Types:** **Other Material:**	225041730-21		NA/PS	
010-01 010 **Location:** Upper Level - Room 127 - Beige Wall Paint (S) **Analyst Description:** Tan, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 19%	225041730-22	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
010-02 010 **Location:** Upper Level - Room 116 - Beige Wall Paint (S) **Analyst Description:** Tan, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 18%	225041730-23	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
010-03 010 **Location:** Upper Level - Room 116 - Beige Wall Paint (S) **Analyst Description:** Tan, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 20%	225041730-24	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
010-04 010 **Location:** Upper Level - Room 111 - Beige Wall Paint (S) **Analyst Description:** Tan, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 19%	225041730-25	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
010-05 010 **Location:** Upper Level - Room 111 - Beige Wall Paint (S) **Analyst Description:** Tan, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 22%	225041730-26	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
011-01 011 **Location:** Upper Level - Room 133 - Gray Floor Paint (S) **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 11%	225041730-27	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*

See Reporting notes on last page

PLM Bulk Asbestos Report

250204AA; Bell & Spina Architects; Inspection Yonkers Armory, 127 N. Broadway, Yonkers, NY 10701, Yonkers Armory - Interior & Exterior

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos	Notes
011-02 011 **Location:** Upper Level - Room 133 - Gray Floor Paint (S) **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 6.3%	225041730-28	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
011-03 011 **Location:** Upper Level - Room 133 - Gray Floor Paint (S) **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 16%	225041730-29	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
012-01 012 **Location:** Lower Level - Assembly Hall 5 - Off-White Wall Paint (S) **Analyst Description:** Off-White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 23%	225041730-30	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
012-02 012 **Location:** Lower Level - Assembly Hall 5 - Off-White Wall Paint (S) **Analyst Description:** Off-White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 25%	225041730-31	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
012-03 012 **Location:** Lower Level - Assembly Hall 5 - Off-White Wall Paint (S) **Analyst Description:** Off-White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 24%	225041730-32	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
012-04 012 **Location:** Lower Level - Assembly Hall 5 - Off-White Wall Paint (S) **Analyst Description:** Off-White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 27%	225041730-33	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
012-05 012 **Location:** Lower Level - Assembly Hall 5 - Off-White Wall Paint (S) **Analyst Description:** Off-White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 27%	225041730-34	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*

See Reporting notes on last page

PLM Bulk Asbestos Report

250204AA; Bell & Spina Architects; Inspection Yonkers Armory, 127 N. Broadway, Yonkers, NY 10701, Yonkers Armory - Interior & Exterior

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos	Notes
012-06 012 **Location:** Lower Level - Assembly Hall 5 - Off-White Wall Paint (S) **Analyst Description:** Off-White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 25%	225041730-35	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
012-07 012 **Location:** Lower Level - Assembly Hall 5 - Off-White Wall Paint (S) **Analyst Description:** Off-White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 26%	225041730-36	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
013-01 013 **Location:** Lower Level - Assembly Hall 5 - Yellow Wall Paint (S) **Analyst Description:** Yellow, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 28%	225041730-37	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
013-02 013 **Location:** Lower Level - Assembly Hall 5 - Yellow Wall Paint (S) **Analyst Description:** Yellow, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 30%	225041730-38	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
013-03 013 **Location:** Lower Level - Assembly Hall 5 - Yellow Wall Paint (S) **Analyst Description:** Yellow, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 30%	225041730-39	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
013-04 013 **Location:** Lower Level - Assembly Hall 5 - Yellow Wall Paint (S) **Analyst Description:** Yellow, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 28%	225041730-40	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
013-05 013 **Location:** Lower Level - Assembly Hall 5 - Yellow Wall Paint (S) **Analyst Description:** Yellow, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 29%	225041730-41	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*

See Reporting notes on last page

PLM Bulk Asbestos Report

250204AA; Bell & Spina Architects; Inspection Yonkers Armory, 127 N. Broadway, Yonkers, NY 10701, Yonkers Armory - Interior & Exterior

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos	Notes
014-01 014	225041730-42	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
Location: Lower Level - Mechanical Room 1 - Black Electrical Wire Insulation (M) **Analyst Description:** Black, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 5.1%				
014-02 014	225041730-43	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
Location: Lower Level - Mechanical Room 1 - Black Electrical Wire Insulation (M) **Analyst Description:** Black, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 7.4%				
015-01 015	225041730-44	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
Location: Lower Level - Mechanical Room 1 - White Electrical Wire Insulation (M) **Analyst Description:** White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 17%				
015-02 015	225041730-45	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
Location: Lower Level - Mechanical Room 1 - White Electrical Wire Insulation (M) **Analyst Description:** White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 15%				
016-01 016	225041730-46	***No***	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 04/15/25	
Location: Exterior - Brick Wall (M) **Analyst Description:** Brown, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%				
016-02 016	225041730-47	***No***	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 04/15/25	
Location: Exterior - Brick Wall (M) **Analyst Description:** Brown, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%				
017-01 017	225041730-48	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
Location: Exterior - Tan Adhesive On Stair Tread (M) **Analyst Description:** Tan, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 21%				

See Reporting notes on last page

PLM Bulk Asbestos Report

250204AA; Bell & Spina Architects; Inspection Yonkers Armory, 127 N. Broadway, Yonkers, NY 10701, Yonkers Armory - Interior & Exterior

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos	Notes
017-02 017 **Location:** Exterior - Tan Adhesive On Stair Tread (M) **Analyst Description:** Tan, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 23%	225041730-49	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
018-01 018 **Location:** Exterior - Tan Concrete Step (M) **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%	225041730-50	***No***	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 04/15/25	
018-02 018 **Location:** Exterior - Tan Concrete Step (M) **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%	225041730-51	***No***	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 04/15/25	
019-01 019 **Location:** Exterior - Concrete Sidewalk (M) **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%	225041730-52	***No***	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 04/15/25	
019-02 019 **Location:** Exterior - Concrete Sidewalk (M) **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%	225041730-53	***No***	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 04/15/25	
020-01 020 **Location:** Exterior - Sidewalk Caulk (M) **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 0.6%	225041730-54	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
020-02 020 **Location:** Exterior - Sidewalk Caulk (M) **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 0.6%	225041730-55	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*

See Reporting notes on last page

PLM Bulk Asbestos Report

250204AA; Bell & Spina Architects; Inspection Yonkers Armory, 127 N. Broadway, Yonkers, NY 10701, Yonkers Armory - Interior & Exterior

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos	Notes
021-01 021 **Location:** Exterior - Foundation Sealer (M) **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 54%	225041730-56	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*
021-02 021 **Location:** Exterior - Foundation Sealer (M) **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 58%	225041730-57	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by John P. Koubiadis on 04/15/25	*1*

Reporting Notes:

(1) NAD results by NYS 198.6 are inconclusive and are not considered non-ACM

Analyzed by: John P. Koubiadis
Date: 4/15/2025

Reviewed by: Marwan A. Alahiri

*NAD/NSD =no asbestos detected; NA =not analyzed; NA/PS=not analyzed/positive stop, (SOF-V) = Sprayed On Fireproofing containing Vermiculite; (SM-V) = Surfacing Material containing Vermiculite; PLM Bulk Asbestos Analysis using Olympus, Model BH-2 Pol Scope, Microscope, Serial #: 223705, by Appd E to Subpt E, 40 CFR 763 quantified by either CVES or 400 pt ct as noted for each analysis (NVLAP 200546-0), ELAP PLM Method 198.1 for NY friable samples, which includes the identification and quantitation of vermiculite, or ELAP 198.6 for NOB samples, or EPA 400 pt ct by EPA 600-M4-82-020 (NY ELAP Lab 11480); Note: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 (also see EPA Advisory for floor tile, FR 59,146,38970,8/1/94) National Institute of Standards and Technology Accreditation requirements mandate that this report must not be reproduced except in full without the approval of the lab.This PLM report relates ONLY to the items tested. RI Cert AAL-094, CT Cert PH-0186, Mass Cert AA000054, NJ Lab ID #NY031.

END OF REPORT

Client Name: Ambient Environmental, Inc.

Table I

Summary of Bulk Asbestos Analysis Results by NYS ELAP 198.4

250204AA; Bell & Spina Architects; Inspection Yonkers Armory, 127 N. Broadway, Yonkers, NY 10701, Yonkers Armory - Interior & Exterior

AmeriSci Sample #	Client Sample#	HG Area	NOB Sample Weight (gram)	NOB Heat Sensitive Organic %	NOB Acid Soluble Inorganic %	NOB Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
01	001-01	001	----	----	----	----	NAD	NA
Location: Upper Level - Conference Room 111 - Foil Faced Duct Insulation (T)								
02	001-02	001	----	----	----	----	NAD	NA
Location: Upper Level - Conference Room 111 - Foil Faced Duct Insulation (T)								
03	001-03	001	----	----	----	----	NAD	NA
Location: Upper Level - Conference Room 111 - Foil Faced Duct Insulation (T)								
04	002-01	002	0.194	25.8	71.0	3.2	NAD	NAD
Location: Upper Level - Room 118 - Gray Duct Sealer (M)								
05	002-02	002	0.261	26.1	70.7	3.3	NAD	NAD
Location: Upper Level - Room 118 - Gray Duct Sealer (M)								
06	003-01	003	----	----	----	----	NAD	NA
Location: Upper Level - Room 116 - Foil Backed Heating Pipe Insulation (T)								
07	003-02	003	----	----	----	----	NAD	NA
Location: Upper Level - Room 116 - Foil Backed Heating Pipe Insulation (T)								
08	003-03	003	----	----	----	----	NAD	NA
Location: Upper Level - Room 116 - Foil Backed Heating Pipe Insulation (T)								
09	004-01	004	0.133	37.4	40.5	22.2	NAD	NAD
Location: Upper Level - Conference Room 111 - White Pipe Insulation Mastic (M)								
10	004-02	004	0.189	38.4	41.6	20.0	NAD	NAD
Location: Upper Level - Conference Room 111 - White Pipe Insulation Mastic (M)								
11	005-01	005	----	----	----	----	NAD	NA
Location: Upper Level - Corridor - CMU Wall (M)								
12	005-02	005	----	----	----	----	NAD	NA
Location: Upper Level - Corridor - CMU Wall (M)								
13	006-01	006	0.248	22.9	16.7	60.4	NAD	NAD
Location: Upper Level - Women's Latrine Room 134 - Red Epoxy Floor (S)								
14	006-02	006	0.252	22.1	17.3	60.6	NAD	NAD
Location: Upper Level - Women's Latrine Room 134 - Red Epoxy Floor (S)								
15	006-03	006	0.303	20.5	13.9	65.7	NAD	NAD
Location: Upper Level - Women's Latrine Room 134 - Red Epoxy Floor (S)								
16	007-01	007	0.268	29.8	66.7	3.5	NAD	NAD
Location: Upper Level - Room 127 - White Expansion Joint Caulk (M)								

See Reporting notes on last page

Table I
Summary of Bulk Asbestos Analysis Results by NYS ELAP 198.4

250204AA; Bell & Spina Architects; Inspection Yonkers Armory, 127 N. Broadway, Yonkers, NY 10701, Yonkers Armory - Interior & Exterior

AmeriSci Sample #	Client Sample#	HG Area	NOB Sample Weight (gram)	NOB Heat Sensitive Organic %	NOB Acid Soluble Inorganic %	NOB Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
17	007-02	007	0.236	29.3	68.5	2.2	NAD	NAD
Location: Upper Level - Room 127 - White Expansion Joint Caulk (M)								
18	008-01	008	0.208	28.7	71.1	0.1	NAD	NAD
Location: Upper Level - Room 127 - White Caulk On Window Frame To CMU Wall (M)								
19	008-02	008	0.180	28.5	65.8	5.7	NAD	NAD
Location: Upper Level - Room 127 - White Caulk On Window Frame To CMU Wall (M)								
20	009-01	009	0.182	41.2	34.6	14.5	Chrysotile 9.7	NA
Location: Upper Level - Room 127 - Black Window Glazing (M)								
21	009-02	009	0.189	41.7	35.3	22.9	NA/PS	NA
Location: Upper Level - Room 127 - Black Window Glazing (M)								
22	010-01	010	0.054	27.4	53.6	19.0	NAD	NAD
Location: Upper Level - Room 127 - Beige Wall Paint (S)								
23	010-02	010	0.090	28.7	52.5	18.7	NAD	NAD
Location: Upper Level - Room 116 - Beige Wall Paint (S)								
24	010-03	010	0.082	26.9	52.8	20.3	NAD	NAD
Location: Upper Level - Room 116 - Beige Wall Paint (S)								
25	010-04	010	0.071	31.0	49.7	19.3	NAD	NAD
Location: Upper Level - Room 111 - Beige Wall Paint (S)								
26	010-05	010	0.065	23.9	53.2	22.8	NAD	NAD
Location: Upper Level - Room 111 - Beige Wall Paint (S)								
27	011-01	011	0.051	66.7	22.2	11.2	NAD	NAD
Location: Upper Level - Room 133 - Gray Floor Paint (S)								
28	011-02	011	0.087	82.4	11.3	6.3	NAD	NAD
Location: Upper Level - Room 133 - Gray Floor Paint (S)								
29	011-03	011	0.062	57.7	25.3	16.9	NAD	NAD
Location: Upper Level - Room 133 - Gray Floor Paint (S)								
30	012-01	012	0.141	30.0	46.8	23.3	NAD	NAD
Location: Lower Level - Assembly Hall 5 - Off-White Wall Paint (S)								
31	012-02	012	0.206	28.5	46.1	25.4	NAD	NAD
Location: Lower Level - Assembly Hall 5 - Off-White Wall Paint (S)								
32	012-03	012	0.132	27.8	47.2	24.9	NAD	NAD
Location: Lower Level - Assembly Hall 5 - Off-White Wall Paint (S)								

See Reporting notes on last page

Table I
Summary of Bulk Asbestos Analysis Results by NYS ELAP 198.4

250204AA; Bell & Spina Architects; Inspection Yonkers Armory, 127 N. Broadway, Yonkers, NY 10701, Yonkers Armory - Interior & Exterior

AmeriSci Sample #	Client Sample#	HG Area	NOB Sample Weight (gram)	NOB Heat Sensitive Organic %	NOB Acid Soluble Inorganic %	NOB Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
33	012-04	012	0.123	26.3	46.0	27.7	NAD	NAD
Location: Lower Level - Assembly Hall 5 - Off-White Wall Paint (S)								
34	012-05	012	0.218	29.2	43.2	27.6	NAD	NAD
Location: Lower Level - Assembly Hall 5 - Off-White Wall Paint (S)								
35	012-06	012	0.238	29.0	45.3	25.8	NAD	NAD
Location: Lower Level - Assembly Hall 5 - Off-White Wall Paint (S)								
36	012-07	012	0.220	29.7	44.0	26.3	NAD	NAD
Location: Lower Level - Assembly Hall 5 - Off-White Wall Paint (S)								
37	013-01	013	0.282	35.2	36.2	28.6	NAD	NAD
Location: Lower Level - Assembly Hall 5 - Yellow Wall Paint (S)								
38	013-02	013	0.338	33.9	35.2	30.9	NAD	NAD
Location: Lower Level - Assembly Hall 5 - Yellow Wall Paint (S)								
39	013-03	013	0.302	34.5	35.0	30.5	NAD	NAD
Location: Lower Level - Assembly Hall 5 - Yellow Wall Paint (S)								
40	013-04	013	0.241	31.8	40.2	28.0	NAD	NAD
Location: Lower Level - Assembly Hall 5 - Yellow Wall Paint (S)								
41	013-05	013	0.208	8.5	61.7	29.8	NAD	NAD
Location: Lower Level - Assembly Hall 5 - Yellow Wall Paint (S)								
42	014-01	014	0.168	86.9	8.0	5.1	NAD	NAD
Location: Lower Level - Mechanical Room 1 - Black Electrical Wire Insulation (M)								
43	014-02	014	0.184	86.7	5.9	7.4	NAD	NAD
Location: Lower Level - Mechanical Room 1 - Black Electrical Wire Insulation (M)								
44	015-01	015	0.183	75.9	7.0	17.0	NAD	NAD
Location: Lower Level - Mechanical Room 1 - White Electrical Wire Insulation (M)								
45	015-02	015	0.173	76.1	8.9	15.1	NAD	NAD
Location: Lower Level - Mechanical Room 1 - White Electrical Wire Insulation (M)								
46	016-01	016	----	----	----	----	NAD	NA
Location: Exterior - Brick Wall (M)								
47	016-02	016	----	----	----	----	NAD	NA
Location: Exterior - Brick Wall (M)								
48	017-01	017	0.251	63.3	15.3	21.4	NAD	NAD
Location: Exterior - Tan Adhesive On Stair Tread (M)								

See Reporting notes on last page

Table I
Summary of Bulk Asbestos Analysis Results by NYS ELAP 198.4

250204AA; Bell & Spina Architects; Inspection Yonkers Armory, 127 N. Broadway, Yonkers, NY 10701, Yonkers Armory - Interior & Exterior

AmeriSci Sample #	Client Sample#	HG Area	NOB Sample Weight (gram)	NOB Heat Sensitive Organic %	NOB Acid Soluble Inorganic %	NOB Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
49	017-02	017	0.229	63.5	13.2	23.2	NAD	NAD
Location: Exterior - Tan Adhesive On Stair Tread (M)								
50	018-01	018	----	----	----	----	NAD	NA
Location: Exterior - Tan Concrete Step (M)								
51	018-02	018	----	----	----	----	NAD	NA
Location: Exterior - Tan Concrete Step (M)								
52	019-01	019	----	----	----	----	NAD	NA
Location: Exterior - Concrete Sidewalk (M)								
53	019-02	019	----	----	----	----	NAD	NA
Location: Exterior - Concrete Sidewalk (M)								
54	020-01	020	0.282	35.6	63.8	0.6	NAD	NAD
Location: Exterior - Sidewalk Caulk (M)								
55	020-02	020	0.198	35.1	64.4	0.6	NAD	NAD
Location: Exterior - Sidewalk Caulk (M)								
56	021-01	021	0.189	16.5	29.3	54.2	NAD	NAD
Location: Exterior - Foundation Sealer (M)								
57	021-02	021	0.169	10.8	30.7	58.5	NAD	NAD
Location: Exterior - Foundation Sealer (M)								

Analyzed by: Marwan A. Alahiri
Date: 4/15/2025



Reviewed by: Marwan A. Alahiri



**Quantitative Analysis (Semi/Full); Bulk Asbestos Analysis - PLM by Appd E to Subpt E, 40 CFR 763 or NYSDOH ELAP 198.1 for New York friable samples or NYSDOH ELAP 198.6 for New York NOB samples; TEM (Semi/Full) by EPA 600/R-93/116 (or NYSDOH ELAP 198.4; for New York samples). Analysis using Hitachi, Model H600-Noran 7 System, Microscope, Serial #: 600-27-6. NAD = no asbestos detected during a quantitative analysis; NA = not analyzed; Trace = <1%; (SOF-V) = Sprayed On Fireproofing containing Vermiculite; (SM-V) = Surfacing Material containing Vermiculite; Quantitation for beginning weights of <0.1 grams should be considered as qualitative only; Qualitative Analysis: Asbestos analysis results of "Present" or "NVA = No Visible Asbestos" represents results for Qualitative PLM or TEM Analysis only (no accreditation coverage available from any regulatory agency for qualitative analyses): NVLAP (PLM) 200546-0, NYSDOH ELAP Lab 11480, NJ Lab ID #NY031.

Warning Note: PLM limitation, only TEM will resolve fibers <0.25 micrometers in diameter. TEM bulk analysis is representative of the fine grained matrix material and may not be representative of non-uniformly dispersed debris for which PLM evaluation is recommended (i.e. soils and other heterogenous materials).

Ambient Environmental, Inc.
Comprehensive Building Science Solutions
NYS Certified WBE,
SBA EDWOSB & DBE

#225041750

BULK SAMPLE DATA AND CHAIN OF CUSTODY FORM

PROJECT INFORMATION

Client:	Project Name:	Project Street Address:	Client Contact:
Bell & Spina Architects	Inspection Yonkers Armory	127 N. Broadway	James Paolini
Project Number:	**Inspector:**	**Project Address City/State:**	**Collection Date:**
250204AA	Peter Minotti & Kevin Jones	Yonkers, NY 10701	4/7/2025 – 4/8/2025
Sample TAT:	**Building Name:**	**Sampling Areas:**	**Comments: (Field)**
5 Day	Yonkers Armory	Interior & Exterior	X Analyze to First Positive By Homogeneous Material X For Negative NOB PLM's, continue to TEM

BULK SAMPLE LOCATION — TYPE OF MATERIALS

Homogeneous Area Number	Bulk Sample ID Number	Sampled Material (T, S, M)	Sample Location	Friability (N/F)	Condition (G, D, SD)	Quantity (LF, SF, EA)	Homogeneous Areas	Asbestos Content (Type & %)
001	01	Foil Faced Duct Insulation (T)	Upper Level – Conference Room 111	N	G			
001	02	Foil Faced Duct Insulation (T)	Upper Level – Conference Room 111	N	G			
001	03	Foil Faced Duct Insulation (T)	Upper Level – Conference Room 111	N	G			
002	01	Gray Duct Sealer (M)	Upper Level – Room 118	N	G			
002	02	Gray Duct Sealer (M)	Upper Level – Room 118	N	G			
003	01	Foil Backed Heating Pipe Insulation (T)	Upper Level – Room 116	N	G			
003	02	Foil Backed Heating Pipe Insulation (T)	Upper Level – Room 116	N	G			
003	03	Foil Backed Heating Pipe Insulation (T)	Upper Level – Room 116	N	G			
004	01	White Pipe Insulation Mastic (M)	Upper Level – Conference Room 111	N	G			
004	02	White Pipe Insulation Mastic (M)	Upper Level – Conference Room 111	N	G			
005	01	CMU Wall (M)	Upper Level – Corridor	F	G			
005	02	CMU Wall (M)	Upper Level – Corridor	F	G			
006	01	Red Epoxy Floor (S)	Upper Level – Women's Latrine Room 134	F	G			
006	02	Red Epoxy Floor (S)	Upper Level – Women's Latrine Room 134	F	G			

CHAIN OF CUSTODY

Relinquished By:	Date	Time	Received By:	Date	Time
I	4/8/25	15:00		4/9/25	11:11
II					

LAB INFORMATION

Lab Name	Date	Time
a. Analyzed By	4/15/25	6:17
b. QC by:		

Project Manager: C.D.	Results To: Results@ambient-env.com	Drawings: ___ Sample Locations ___ Material Locations	Comments:

(T=TSI; S=Surfacing; M=Misc)

Ambient Environmental, Inc.
Comprehensive Building Science Solutions
NYS Certified WBE,
SBA EDWOSB & DBE

#250417 50

BULK SAMPLE DATA AND CHAIN OF CUSTODY FORM

PROJECT INFORMATION

Client: Bell & Spina Architects	**Project Name:** Inspection Yonkers Armory	**Project Street Address:** 127 N. Broadway	**Client Contact:** James Paolini
Project Number: 250204AA	**Inspector:** Peter Minotti & Kevin Jones	**Project Address City/State:** Yonkers, NY 10701	**Collection Date:** 4/7/2025 – 4/8/2025
Sample TAT: 5 Day	**Building Name:** Yonkers Armory	**Sampling Areas:** Interior & Exterior	**Comments: (Field)** X Analyze to First Positive By Homogeneous Material; X For Negative NOB PLM's, continue to TEM

BULK SAMPLE LOCATION — TYPE OF MATERIALS

Homogeneous Area Number	Bulk Sample ID Number	Sampled Material (T, S, M)	Sample Location	Friability (N/F)	Condition (G, D, SD)	Quantity (LF, SF, EA)	Homogeneous Areas	Asbestos Content (Type & %)
006	03	Red Epoxy Floor (S)	Upper Level – Women's Latrine Room 134	F	G			
007	01	White Expansion Joint Caulk (M)	Upper Level – Room 127	N	G			
007	02	White Expansion Joint Caulk (M)	Upper Level – Room 127	N	G			
008	01	White Caulk on Window Frame to CMU Wall (M)	Upper Level – Room 127	N	G			
008	02	White Caulk on Window Frame to CMU Wall (M)	Upper Level – Room 127	N	G			
009	01	Black Window Glazing (M)	Upper Level – Room 127	N	G			
009	02	Black Window Glazing (M)	Upper Level – Room 127	N	G			
010	01	Beige Wall Paint (S)	Upper Level – Room 127	N	G			
010	02	Beige Wall Paint (S)	Upper Level – Room 116	N	G			
010	03	Beige Wall Paint (S)	Upper Level – Room 116	N	G			
010	04	Beige Wall Paint (S)	Upper Level – Room 111	N	G			
010	05	Beige Wall Paint (S)	Upper Level – Room 111	N	G			
011	01	Gray Floor Paint (S)	Upper Level – Room 133	N	G			
011	02	Gray Floor Paint (S)	Upper Level – Room 133	N	G			

CHAIN OF CUSTODY

Relinquished By:	Date	Time	Received By:	Date	Time
I	4/8/25	15:00		4/9/25	11:11
II					

LAB INFORMATION

Lab Name	Date	Time
a. Analyzed By:	4/15/25	6:18
b. QC by:		

Project Manager: C.D.	**Results To:** Results@ambient-env.com	**Drawings:** ___ Sample Locations ___ Material Locations

Comments:

(T=TSI; S=Surfacing; M=Misc)

Ambient Environmental, Inc.
Comprehensive Building Science Solutions
NYS Certified WBE,
SBA EDWOSB & DBE

#250417 50

BULK SAMPLE DATA AND CHAIN OF CUSTODY FORM

PROJECT INFORMATION

Client:	Project Name:	Project Street Address:	Client Contact:
Bell & Spina Architects	Inspection Yonkers Armory	127 N. Broadway	James Paolini
Project Number:	**Inspector:**	**Project Address City/State:**	**Collection Date:**
250204AA	Peter Minotti & Kevin Jones	Yonkers, NY 10701	4/7/2025 – 4/8/2025
Sample TAT:	**Building Name:**	**Sampling Areas:**	**Comments: (Field)**
5 Day	Yonkers Armory	Interior & Exterior	X Analyze to First Positive By Homogeneous Material X For Negative NOB PLM's, continue to TEM

BULK SAMPLE LOCATION — TYPE OF MATERIALS

Homogeneous Area Number	Bulk Sample ID Number	Sampled Material (T, S, M)	Sample Location	Friability (N/F)	Condition (G, D, SD)	Quantity (LF, SF, EA)	Homogeneous Areas	Asbestos Content (Type & %)
011	03	Gray Floor Paint (S)	Upper Level – Room 133	N	G			
012	01	Off-White Wall Paint (S)	Lower Level – Assembly Hall 5	N	G			
012	02	Off-White Wall Paint (S)	Lower Level – Assembly Hall 5	N	G			
012	03	Off-White Wall Paint (S)	Lower Level – Assembly Hall 5	N	G			
012	04	Off-White Wall Paint (S)	Lower Level – Assembly Hall 5	N	G			
012	05	Off-White Wall Paint (S)	Lower Level – Assembly Hall 5	N	G			
012	06	Off-White Wall Paint (S)	Lower Level – Assembly Hall 5	N	G			
012	07	Off-White Wall Paint (S)	Lower Level – Assembly Hall 5	N	G			
013	01	Yellow Wall Paint (S)	Lower Level – Assembly Hall 5	N	G			
013	02	Yellow Wall Paint (S)	Lower Level – Assembly Hall 5	N	G			
013	03	Yellow Wall Paint (S)	Lower Level – Assembly Hall 5	N	G			
013	04	Yellow Wall Paint (S)	Lower Level – Assembly Hall 5	N	G			
013	05	Yellow Wall Paint (S)	Lower Level – Assembly Hall 5	N	G			
014	01	Black Electrical Wire Insulation (M)	Lower Level – Mechanical Room 1	N	G			

CHAIN OF CUSTODY

Relinquished By:	Date	Time	Received By:	Date	Time
I Rob Minotti	4/8/25	15:00	[illegible]	4/9/25	11:11
II					

LAB INFORMATION

Lab Name	Date	Time
a. Analyzed By: Meenu Mahi	4/15/25	6:18
b. QC by:		

Project Manager: C.D.	Results To: Results@ambient-env.com	Drawings: ___ Sample Locations ___ Material Locations

Comments:

(T=TSI; S=Surfacing; M=Misc)

Ambient Environmental, Inc.
Comprehensive Building Science Solutions
NYS Certified WBE,
SBA EDWOSB & DBE

 #250417-00

BULK SAMPLE DATA AND CHAIN OF CUSTODY FORM

PROJECT INFORMATION

Client: **Bell & Spina Architects**	Project Name: **Inspection Yonkers Armory**	Project Street Address: **127 N. Broadway**	Client Contact: **James Paolini**
Project Number: **250204AA**	Inspector: **Peter Minotti & Kevin Jones**	Project Address City/State: **Yonkers, NY 10701**	Collection Date: **4/7/2025 – 4/8/2025**
Sample TAT: **5 Day**	Building Name: **Yonkers Armory**	Sampling Areas: **Interior & Exterior**	Comments: (Field) X Analyze to First Positive By Homogeneous Material X For Negative NOB PLM's, continue to TEM

BULK SAMPLE LOCATION / TYPE OF MATERIALS

Homogeneous Area Number	Bulk Sample ID Number	Sampled Material (T, S, M)	Sample Location	Friability (N/F)	Condition (G, D, SD)	Quantity (LF, SF, EA)	Homogeneous Areas	Asbestos Content (Type & %)
014	02	Black Electrical Wire Insulation (M)	Lower Level – Mechanical Room 1	N	G			
015	01	White Electrical Wire Insulation (M)	Lower Level – Mechanical Room 1	N	G			
015	02	White Electrical Wire Insulation (M)	Lower Level – Mechanical Room 1	N	G			
016	01	Brick Wall (M)	Exterior	F	G			
016	02	Brick Wall (M)	Exterior	F	G			
017	01	Tan Adhesive on Stair Tread (M)	Exterior	N	G			
017	02	Tan Adhesive on Stair Tread (M)	Exterior	N	G			
018	01	Tan Concrete Step (M)	Exterior	F	G			
018	02	Tan Concrete Step (M)	Exterior	F	G			
019	01	Concrete Sidewalk (M)	Exterior	F	G			
019	02	Concrete Sidewalk (M)	Exterior	F	G			
020	01	Sidewalk Caulk (M)	Exterior	N	G			
020	02	Sidewalk Caulk (M)	Exterior	N	G			
021	01	Foundation Sealer (M)	Exterior	N	G			

CHAIN OF CUSTODY

Relinquished By:	Date	Time	Received By:	Date	Time
I	4/8/25	15:00		4/9/25	11:11
II					

LAB INFORMATION

Lab Name	Date	Time
a. Analyzed By:	4/15/25	6:18
b. QC by:		

Project Manager: **C.D.**	Results To: **Results@ambient-env.com**	Drawings: ___ Sample Locations ___ Material Locations	Comments:

(T=TSI; S=Surfacing; M=Misc)

Ambient Environmental, Inc.
Comprehensive Building Science Solutions
NYS Certified WBE,
SBA EDWOSB & DBE

#250417CD

BULK SAMPLE DATA AND CHAIN OF CUSTODY FORM

PROJECT INFORMATION

Client: **Bell & Spina Architects**	Project Name: **Inspection Yonkers Armory**	Project Street Address: **127 N. Broadway**	Client Contact: **James Paolini**
Project Number: **250204AA**	Inspector: **Peter Minotti & Kevin Jones**	Project Address City/State: **Yonkers, NY 10701**	Collection Date: **4/7/2025 – 4/8/2025**
Sample TAT: **5 Day**	Building Name: **Yonkers Armory**	Sampling Areas: **Interior & Exterior**	Comments: (Field) X Analyze to First Positive By Homogeneous Material X For Negative NOB PLM's, continue to TEM

BULK SAMPLE LOCATION — TYPE OF MATERIALS

Homogeneous Area Number	Bulk Sample ID Number	Sampled Material (T, S, M)	Sample Location	Friability (N/F)	Condition (G, D, SD)	Quantity (LF, SF, EA)	Homogeneous Areas	Asbestos Content (Type & %)
021	02	Foundation Sealer (M)	Exterior	N	G			

CHAIN OF CUSTODY

Relinquished By:	Date	Time	Received By:	Date	Time
I	4/8/25	15:00		4/9/25	11:41
II					

Project Manager: **C.D.**	Results To: **Results@ambient-env.com**	Drawings: ___ Sample Locations ___ Material Locations

(T=TSI; S=Surfacing; M=Misc)

LAB INFORMATION

Lab Name	Date	Time
a. Analyzed By:	4/15/25	6:18
b. QC by:		

Comments:

ATTACHMENT B
LEAD-BASED PAINT TESTING RESULTS

Ambient Environmental, Inc.
Building Science and EHS Solutions
NYS Certified WBE,
SBA EDWOSB & DBE

Lead Based Paint Inspection Detailed Report

828 Washington Avenue
Albany, New York

INSPECTION SITE:	Yonkers Armory 2 Quincy Place Yonkers, New York
INSPECTION DATE:	4/7/2025 - 4/7/2025
REPORT NUMBER:	250204AA
INSTRUMENT TYPE:	Viken Detection Pb200i XRF Lead Paint Analyzer 2327
ACTION LEVEL:	1.0 (mg/cm²)
Job ID:	250204AA

STATEMENT: Paint conditions included in this report represent conditions observed by the inspector at the time of the inspection

Lead Based Paint Inspection Detailed Report

Inspection Date:	4/7/2025 - 4/7/2025	Inspection Site:	Yonkers Armory 2 Quincy Place Yonkers, New York
Action Level:	1.0 (mg/cm²)		
Report Number:	250204AA		
Total Readings:	62		
Unit Started:	04/07/2025 17:02:47		
Unit Ended:	04/07/2025 18:50:47		

Read #	Result	-->RoomChoice	Structure	-->Member	Substrate	Wall	Location	Color	Lead (mg/cm²)	Mode
7	Negative	1	Room	Wall	Concrete	A	1	Beige	0.3 mg/cm²	Action Level
8	Negative	1	Room	Wall	Concrete	A	2	Yellow	0.4 mg/cm²	Action Level
9	Negative	1	Door		Metal	A	1	Green	0.2 mg/cm²	Action Level
10	Negative	1	Door	Frame	Metal	A	1	Black	0.7 mg/cm²	Action Level
11	Negative	1	Door	Frame	Metal	B	1	Black	0.7 mg/cm²	Action Level
12	Negative	1	Door		Metal	B	1	Green	0.2 mg/cm²	Action Level
13	Negative	1	Room	Wall	Concrete	B	1	Beige	0.1 mg/cm²	Action Level
14	Negative	1	Room	Wall	Concrete	B	2	Yellow	0.2 mg/cm²	Action Level
15	Negative	1	Room	Wall	Concrete	C	1	Beige	0.0 mg/cm²	Action Level
16	Negative	1	Room	Wall	Concrete	C	2	Yellow	0.2 mg/cm²	Action Level
17	Negative	1	Door		Metal	C	1	Gray	0.2 mg/cm²	Action Level
18	Negative	1	Door	Frame	Metal	C	1	Black	0.4 mg/cm²	Action Level
19	Negative	1	Room	Wall	Concrete	C	1	Beige	0.2 mg/cm²	Action Level
20	Negative	1	Room	Wall	Concrete	C	2	Yellow	0.1 mg/cm²	Action Level
21	Negative	1	Room	Wall	Concrete	D	1	Beige	0.1 mg/cm²	Action Level
22	Negative	1	Room	Wall	Concrete	D	2	Yellow	0.3 mg/cm²	Action Level
23	Negative	1	Door		Metal	D	1	Green	0.1 mg/cm²	Action Level
24	Negative	1	Door	Frame	Metal	D	1	Black	0.6 mg/cm²	Action Level

Lead Based Paint Inspection Detailed Report

Inspection Date: 4/7/2025 - 4/7/2025
Action Level: 1.0 (mg/cm²)
Report Number: 250204AA
Total Readings: 62
Unit Started: 04/07/2025 17:02:47
Unit Ended: 04/07/2025 18:50:47

Inspection Site: Yonkers Armory
2 Quincy Place
Yonkers, New York

Read #	Result	-->RoomChoice	Structure	-->Member	Substrate	Wall	Location	Color	Lead (mg/cm²)	Mode
25	Negative	2	Room	Wall	Concrete	A	1	Beige	0.4 mg/cm²	Action Level
26	Negative	2	Room	Wall	Concrete	A	2	Yellow	0.1 mg/cm²	Action Level
27	Negative	2	Room	Wall	Concrete	C	1	Beige	0.3 mg/cm²	Action Level
28	Negative	2	Room	Wall	Concrete	C	2	Yellow	0.2 mg/cm²	Action Level
29	Negative	2	Door		Metal	D	1	Red	0.2 mg/cm²	Action Level
30	Negative	2	Door	Frame	Metal	D	1	Black	0.6 mg/cm²	Action Level
31	Negative	3	Room	Wall	Concrete	A	1	Beige	0.5 mg/cm²	Action Level
32	Negative	3	Room	Wall	Concrete	B	1	Beige	0.1 mg/cm²	Action Level
33	Negative	3	Room	Wall	Concrete	C	1	Beige	0.1 mg/cm²	Action Level
34	Negative	3	Room	Wall	Concrete	D	1	Beige	0.0 mg/cm²	Action Level
35	Negative	4	Room	Wall	Concrete	A	1	Beige	0.2 mg/cm²	Action Level
36	Negative	4	Room	Wall	Concrete	B	1	Beige	0.1 mg/cm²	Action Level
37	Negative	4	Room	Wall	Concrete	C	1	Beige	0.2 mg/cm²	Action Level
38	Negative	4	Room	Wall	Concrete	D	1	Beige	0.2 mg/cm²	Action Level
39	Negative	4	Door		Metal	D	1	Red	0.1 mg/cm²	Action Level
40	Negative	4	Door	Frame	Metal	D	1	Black	0.6 mg/cm²	Action Level
41	Negative	4	Room	Ceiling	Drywall	D	1	White	0.1 mg/cm²	Action Level
42	Negative	4	Room	Floor	Concrete	D	1	Gray	0.4 mg/cm²	Action Level

Lead Based Paint Inspection Detailed Report

Inspection Date:	4/7/2025 - 4/7/2025	Inspection Site:	Yonkers Armory 2 Quincy Place Yonkers, New York
Action Level:	1.0 (mg/cm²)		
Report Number:	250204AA		
Total Readings:	62		
Unit Started:	04/07/2025 17:02:47		
Unit Ended:	04/07/2025 18:50:47		

Read #	Result	-->RoomChoice	Structure	-->Member	Substrate	Wall	Location	Color	Lead (mg/cm²)	Mode
43	Negative	5	Room	Floor	Concrete	A	1	Tan	0.4 mg/cm²	Action Level
44	Positive	5	Room	Wall	Ceramic	A	1	White	1.8 mg/cm²	Action Level
45	Positive	5	Room	Wall	Ceramic	B	1	White	2.0 mg/cm²	Action Level
46	Positive	5	Room	Wall	Ceramic	C	1	White	1.9 mg/cm²	Action Level
47	Positive	5	Room	Wall	Ceramic	D	1	White	1.9 mg/cm²	Action Level
48	Negative	5	Room	Ceiling	Drywall	D	1	Tan	0.1 mg/cm²	Action Level
49	Negative	6	Room	Wall	Concrete	A	1	Beige	0.3 mg/cm²	Action Level
50	Negative	6	Room	Wall	Concrete	B	1	Beige	0.3 mg/cm²	Action Level
51	Negative	6	Room	Wall	Concrete	C	1	Beige	0.3 mg/cm²	Action Level
52	Negative	6	Room	Wall	Concrete	D	1	Beige	0.2 mg/cm²	Action Level
53	Negative	6	Room	Floor	Concrete	D	1	Tan	0.5 mg/cm²	Action Level
54	Negative	6	Room	Ceiling	Drywall	D	1	Beige	0.1 mg/cm²	Action Level
55	Negative	6	Bar Joist		Metal	A	1	Red	0.1 mg/cm²	Action Level
56	Negative	7	Room	Wall	Concrete	A	1	Beige	0.3 mg/cm²	Action Level
57	Negative	7	Room	Wall	Concrete	B	1	Beige	0.4 mg/cm²	Action Level
58	Negative	7	Room	Wall	Concrete	C	1	Beige	0.2 mg/cm²	Action Level
59	Negative	7	Room	Wall	Concrete	D	1	Beige	0.2 mg/cm²	Action Level
60	Negative	8 Exterior	Door		Metal	A	1	Green	0.1 mg/cm²	Action Level

Lead Based Paint Inspection Detailed Report

Inspection Date: 4/7/2025 - 4/7/2025
Action Level: 1.0 (mg/cm²)
Report Number: 250204AA
Total Readings: 62
Unit Started: 04/07/2025 17:02:47
Unit Ended: 04/07/2025 18:50:47

Inspection Site: Yonkers Armory
2 Quincy Place
Yonkers, New York

Read #	Result	-->RoomChoice	Structure	-->Member	Substrate	Wall	Location	Color	Lead (mg/cm²)	Mode
61	Negative	8 Exterior	Door	Frame	Metal	A	1	Green	0.1 mg/cm²	Action Level
62	Negative	8 Exterior	Window	Sash	Metal	A	1	Green	0.2 mg/cm²	Action Level
63	Negative	8 Exterior	Door		Metal	B	1	Green	0.1 mg/cm²	Action Level
64	Negative	8 Exterior	Door	Frame	Metal	B	1	Green	0.2 mg/cm²	Action Level
65	Negative	8 Exterior	Door	Frame	Metal	C	1	Green	0.6 mg/cm²	Action Level
66	Negative	8 Exterior	Door	---	Metal	C	1	Gray	0.1 mg/cm²	Action Level
67	Negative	8 Exterior	Door	---	Metal	C	2	Green	0.2 mg/cm²	Action Level
68	Negative	8 Exterior	Door	Frame	Metal	C	2	Green	0.5 mg/cm²	Action Level

------ END OF READINGS ------

ATTACHMENT C

PCB RESULTS AND LABORATORY ANALYSIS REPORT WITH CHAIN OF CUSTODY DOCUMENTATION

BELL & SPINA ARCHITECTS
YONKERS ARMORY
127 N BROADWAY, YONKERS, NY 10701
SUMMARY OF PCB SAMPLES AND ANALYSIS RESULTS

Material Description	Sample Number	Total PCB (PPM)	Sample Location
White Expansion Joint Caulk -	PCB-01	<.729	Room 127
White Caulk	PCB-02	<1.390	Window Frame to CMU Wall - Room 127
Black Window Glazing	PCB-03	<10.900	Room 127
Gray Sidewalk Caulk	PCB-04	<.477	Exterior

Analysis Report

Schneider Laboratories Global, Inc

2512 W. Cary Street • Richmond, Virginia • 23220-5117
804-353-6778 • 800-785-LABS (5227) • Fax 804-359-1475

Customer: Ambient Environmentals LLC. (3639)
Address: 828 Washington Ave
Albany, NY 12203-1622

Attn:

Project: Inspection Yonkers Armory
Location: 127 N. Broadway Yonkers, NY
Number: 250204AA

Order #: 615306

Matrix Bulk
Received 04/09/25
Reported 04/14/25

PO Number:

Sample ID / Parameter	Cust. Sample ID / Method	Result	RL*	Units	Analysis Date	Analyst
615306-001	PCB-01 — White Exp Joint Caulk					
Semi-volatile Organic Compounds						
Aroclor - 1016	SW846 8082A / 3550C	**<663**	663	µg/kg	04/11/25	KM
Aroclor - 1221	SW846 8082A / 3550C	**<663**	663	µg/kg	04/11/25	KM
Aroclor - 1232	SW846 8082A / 3550C	**<663**	663	µg/kg	04/11/25	KM
Aroclor - 1242	SW846 8082A / 3550C	**<663**	663	µg/kg	04/11/25	KM
Aroclor - 1248	SW846 8082A / 3550C	**<663**	663	µg/kg	04/11/25	KM
Aroclor - 1254	SW846 8082A / 3550C	**<729**	729	µg/kg	04/11/25	KM
Aroclor - 1260	SW846 8082A / 3550C	**<663**	663	µg/kg	04/11/25	KM
Aroclor - 1262	SW846 8082A / 3550C	**<663**	663	µg/kg	04/11/25	KM
Aroclor - 1268	SW846 8082A / 3550C	**<663**	663	µg/kg	04/11/25	KM
615306-002	PCB-02 — White Caulk Window Frame					
Semi-volatile Organic Compounds						
Aroclor - 1016	SW846 8082A / 3550C	**<1260**	1260	µg/kg	04/11/25	KM
Aroclor - 1221	SW846 8082A / 3550C	**<1260**	1260	µg/kg	04/11/25	KM
Aroclor - 1232	SW846 8082A / 3550C	**<1260**	1260	µg/kg	04/11/25	KM
Aroclor - 1242	SW846 8082A / 3550C	**<1260**	1260	µg/kg	04/11/25	KM
Aroclor - 1248	SW846 8082A / 3550C	**<1260**	1260	µg/kg	04/11/25	KM
Aroclor - 1254	SW846 8082A / 3550C	**<1390**	1380	µg/kg	04/11/25	KM
Aroclor - 1260	SW846 8082A / 3550C	**<1260**	1260	µg/kg	04/11/25	KM
Aroclor - 1262	SW846 8082A / 3550C	**<1260**	1260	µg/kg	04/11/25	KM
Aroclor - 1268	SW846 8082A / 3550C	**<1260**	1260	µg/kg	04/11/25	KM
615306-003	PCB-03 — Black Window Glazing					
Semi-volatile Organic Compounds						
Aroclor - 1016	SW846 8082A / 3550C	**<9850**	9850	µg/kg	04/11/25	KM
Aroclor - 1221	SW846 8082A / 3550C	**<9850**	9850	µg/kg	04/11/25	KM
Aroclor - 1232	SW846 8082A / 3550C	**<9850**	9850	µg/kg	04/11/25	KM
Aroclor - 1242	SW846 8082A / 3550C	**<9850**	9850	µg/kg	04/11/25	KM

All internal QC parameters were met. Unusual sample conditions, if any, are described. Surrogate Spike results designated with "D" indicate that the analyte was diluted out. "MI" indicates matrix interference. Concentration and *Reporting Limit (RL) based on areas provided by client. Values are reported to three significant figures. Solid PPM = mg/kg | PPB = µg/kg and Water PPM = mg/L | PPB = µg/L. The test results apply to the sample as received.

Analysis Report

Schneider Laboratories Global, Inc

2512 W. Cary Street • Richmond, Virginia • 23220-5117
804-353-6778 • 800-785-LABS (5227) • Fax 804-359-1475

Customer: Ambient Environmentals LLC. (3639)
Address: 828 Washington Ave
Albany, NY 12203-1622

Attn:

Project: Inspection Yonkers Armory
Location: 127 N. Broadway Yonkers, NY
Number: 250204AA

Order #: 615306

Matrix Bulk
Received 04/09/25
Reported 04/14/25

PO Number:

Sample ID / Parameter	Cust. Sample ID / Method	Location / Result	RL*	Units	Analysis Date	Analyst
615306-003	PCB-03	Black Window Glazing				
Aroclor - 1248	SW846 8082A / 3550C	**<9850**	9850	µg/kg	04/11/25	KM
Aroclor - 1254	SW846 8082A / 3550C	**<10900**	10800	µg/kg	04/11/25	KM
Aroclor - 1260	SW846 8082A / 3550C	**<9850**	9850	µg/kg	04/11/25	KM
Aroclor - 1262	SW846 8082A / 3550C	**<9850**	9850	µg/kg	04/11/25	KM
Aroclor - 1268	SW846 8082A / 3550C	**<9850**	9850	µg/kg	04/11/25	KM
615306-004	PCB-04	Gray Sidewalk Caulk				
Semi-volatile Organic Compounds						
Aroclor - 1016	SW846 8082A / 3550C	**<434**	434	µg/kg	04/11/25	KM
Aroclor - 1221	SW846 8082A / 3550C	**<434**	434	µg/kg	04/11/25	KM
Aroclor - 1232	SW846 8082A / 3550C	**<434**	434	µg/kg	04/11/25	KM
Aroclor - 1242	SW846 8082A / 3550C	**<434**	434	µg/kg	04/11/25	KM
Aroclor - 1248	SW846 8082A / 3550C	**<434**	434	µg/kg	04/11/25	KM
Aroclor - 1254	SW846 8082A / 3550C	**<477**	477	µg/kg	04/11/25	KM
Aroclor - 1260	SW846 8082A / 3550C	**<434**	434	µg/kg	04/11/25	KM
Aroclor - 1262	SW846 8082A / 3550C	**<434**	434	µg/kg	04/11/25	KM
Aroclor - 1268	SW846 8082A / 3550C	**<434**	434	µg/kg	04/11/25	KM

All internal QC parameters were met. Unusual sample conditions, if any, are described. Surrogate Spike results designated with "D" indicate that the analyte was diluted out. "MI" indicates matrix interference. Concentration and *Reporting Limit (RL) based on areas provided by client. Values are reported to three significant figures. Solid PPM = mg/kg | PPB = µg/kg and Water PPM = mg/L | PPB = µg/L. The test results apply to the sample as received.

Analysis Report

Schneider Laboratories Global, Inc

2512 W. Cary Street • Richmond, Virginia • 23220-5117
804-353-6778 • 800-785-LABS (5227) • Fax 804-359-1475

Customer: Ambient Environmentals LLC. (3639)
Address: 828 Washington Ave
Albany, NY 12203-1622

Attn:

Project: Inspection Yonkers Armory
Location: 127 N. Broadway Yonkers, NY
Number: 250204AA

Order #: 615306

Matrix Bulk
Received 04/09/25
Reported 04/14/25

PO Number:

Sample ID / Parameter	Cust. Sample ID / Method	Result	RL*	Units	Analysis Date	Analyst

615306-04/14/25 03:23 PM

Kelly Muncy

Reviewed By: **Kelly Muncy**
Manager

Surrogate Recoveries

615306-001 - PCB	
DCB	84%
TCMX	153%
615306-002 - PCB	
DCB	136%
TCMX	MI
615306-003 - PCB	
DCB	MI
TCMX	MI
615306-004 - PCB	
DCB	98%
TCMX	125%

All internal QC parameters were met. Unusual sample conditions, if any, are described. Surrogate Spike results designated with "D" indicate that the analyte was diluted out. "MI" indicates matrix interference. Concentration and *Reporting Limit (RL) based on areas provided by client. Values are reported to three significant figures. Solid PPM = mg/kg | PPB = µg/kg and Water PPM = mg/L | PPB = µg/L. The test results apply to the sample as received.

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Schneider Laboratories Global, Inc

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Project: Inspection Yonkers Armory
Location: 127 N. Broadway Yonkers, NY
Number: 250204AA

Order #: 615306

Matrix Bulk
Received 04/09/25
Reported 04/14/25

PO Number:

Sample ID	Cust. Sample ID	Location					
Parameter		Method	Result	RL*	Units	Analysis Date	Analyst

State Certifications

Method	Parameter	New York	Virginia
SW846 8082A	Aroclor - 1016	ELAP Certified	VELAP Certified
SW846 8082A	Aroclor - 1221	ELAP Certified	VELAP Certified
SW846 8082A	Aroclor - 1232	ELAP Certified	VELAP Certified
SW846 8082A	Aroclor - 1242	ELAP Certified	VELAP Certified
SW846 8082A	Aroclor - 1248	ELAP Certified	VELAP Certified
SW846 8082A	Aroclor - 1254	ELAP Certified	VELAP Certified
SW846 8082A	Aroclor - 1260	ELAP Certified	VELAP Certified
SW846 8082A	Aroclor - 1262	ELAP Certified	VELAP Certified
SW846 8082A	Aroclor - 1268	ELAP Certified	VELAP Certified

State	Certificate Number
New York	ELAP 69247
Virginia	VELAP 12761

All internal QC parameters were met. Unusual sample conditions, if any, are described. Surrogate Spike results designated with "D" indicate that the analyte was diluted out. "MI" indicates matrix interference. Concentration and *Reporting Limit (RL) based on areas provided by client. Values are reported to three significant figures. Solid PPM = mg/kg | PPB = µg/kg and Water PPM = mg/L | PPB = µg/L. The test results apply to the sample as received.

SCHNEIDER LABORATORIES GLOBAL, INC.
2512 West Cary Street, Richmond, Virginia 23220-5117
804-353-6778 • 800-785-LABS (5227) • Fax 804-359-1475
www.slabinc.com • info@slabinc.com

615306

V:\615\615306

aelnasseh 4/9/2025 10:14:04 AM
Federal Express 818593510503

Submitting Co.	Ambient Environmental, Inc.	**State of Collection**	NY	**Cert. Required**	☐ YES ☐ NO
828 Washington Avenue		**Acct #**	3639	**Phone**	518-482-0704
Albany, New York 12203		**Email**	Results@ambient-env.com		
Project Name	Inspection Yonkers Armory	**PO #**			
Project Location	127 N. Broadway, Yonkers, NY 10701	**Special Instructions**			
Project Number	250204AA				
Collected By	Peter Minotti & Kevin Jones				

Turn Around Time **

- ☐ Same day *
- ☐ 1 business day
- ☐ 2 business days
- ☐ 3 business days
- ☒ 5 business days

* not available for all tests

** A job received past 3 PM will begin its TAT the next business day

Please schedule rush tests in advance

Matrix

- ☐ Paint
- ☒ Bulk
- ☐ Soil
- ☐ Wipe
- ☐ Ground Water
- ☐ Waste Water

Test selection for all Samples listed below (Circle desired method)

- ☐ VOC (8260/624) ☐ SVOC (8270/625)
- ☐ Pesticides (8081/608) ☐ Herbicides (8151)
- ☐ Chlordane (8081/608) ☐ Toxaphene (8081/608)
- ☒ PCB (8082) ☐ TPH-DRO (8015) ☐ TPH-GRO (8015)
- ☐ BTEX (8260/8021) ☐ MTBE (8260/8021) ☐ Naphthalene (8260/8270)

TCLP

- ☐ Volatiles
- ☐ Semi-Volatiles
- ☐ Herbicides
- ☐ Pesticides
- ☐ Full TCLP (10 Day)

Miscellaneous

- ☐ Chlorides (300/9056) ☐ Silica (7602)
- ☐ Sulfates (300/9056) ☐ PAH (8270/625)
- ☐ Oil and Grease (1664) ☐ TPH (EPA 418.1)

Individual Sample Requests

Sample #	Date Sampled	Time Sampled	# of Containers	Sample Identification	Wipe Area
PCB-01	4/7/2025			White Expansion Joint Caulk - Room 127	
PCB-02	4/7/2025			White Caulk Window Frame to CMU Wall - Room 127	
PCB-03	4/7/2025			Black Window Glazing - Room 127	
PCB-04	4/7/2025			Gray Sidewalk Caulk - Exterior	

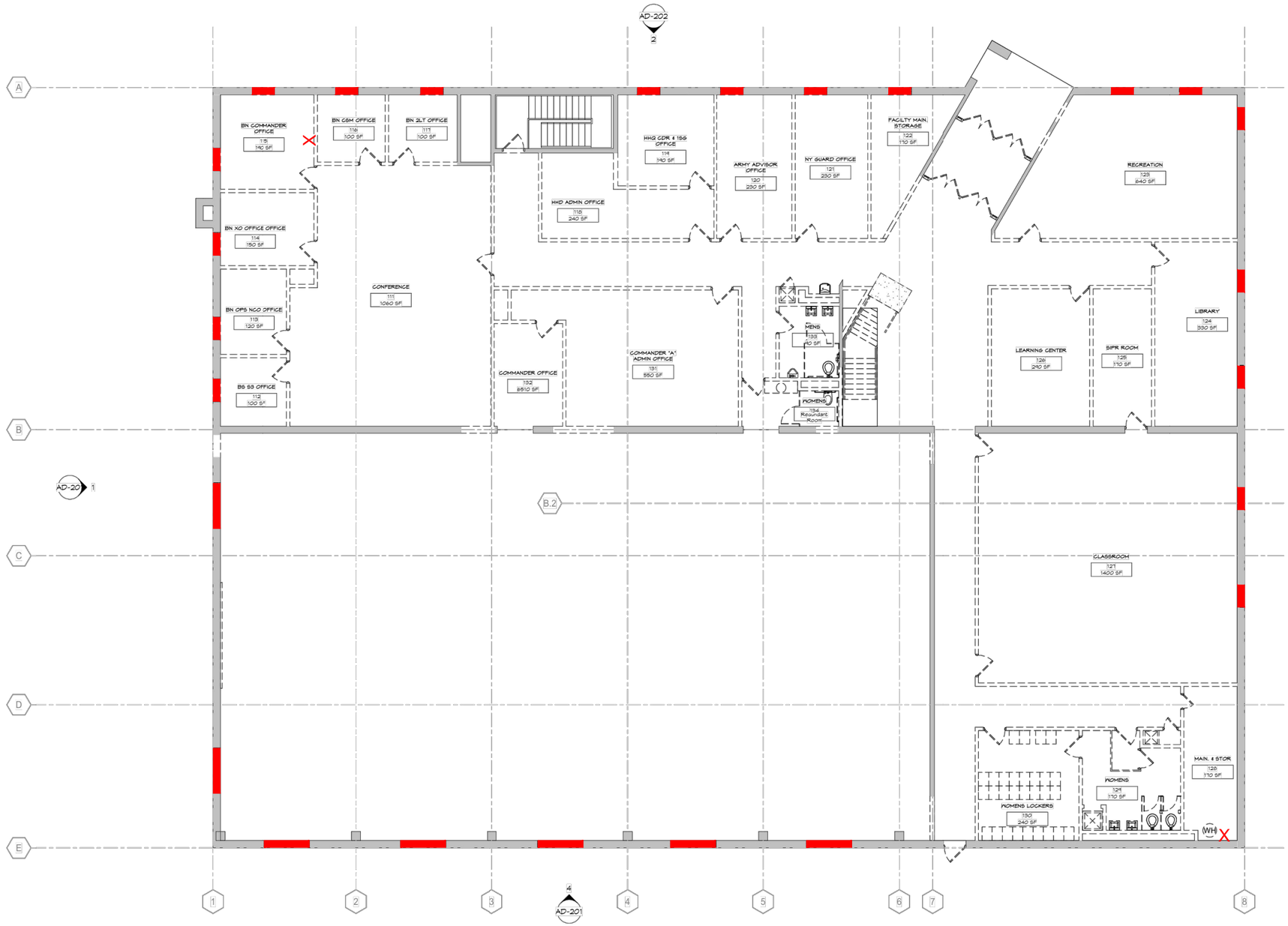
For Aqueous and Solid samples ensure enough sample is sent for duplicate and spike analyses

Relinquished By: Peter Minotti Signature: Peter Minotti Date/Time 4/8/25 15:00

! ALL SHADED FIELDS MUST BE FILLED TO AVOID DELAYS !

Chain-of-Custody documentation continued internally

ATTACHMENT D
HAZARDOUS MATERIAL LOCATION DRAWINGS



1 UPPER LEVEL REMOVALS PLAN

SCALE : 1/8" = 1'-0"

*PLEASE REFER TO THE ASSUMPTIONS AND LIMITATIONS SECTION OF REPORT

Ambient Environmental, Inc.
Building Science and EHS Solutions
828 Washington Avenue, Albany, NY 12203
PH: 518.482.0704 FAX:518.482.0750
www.ambient-env.com

LEGEND

- (009-01) BLACK WINDOW GLAZING
- X VERMICULITE PROBE LOCATION

REVISIONS

PROJECT LOCATION

NY NATIONAL GUARD ARMORY
2 QUINCY PLACE
YONKERS, NEW YORK

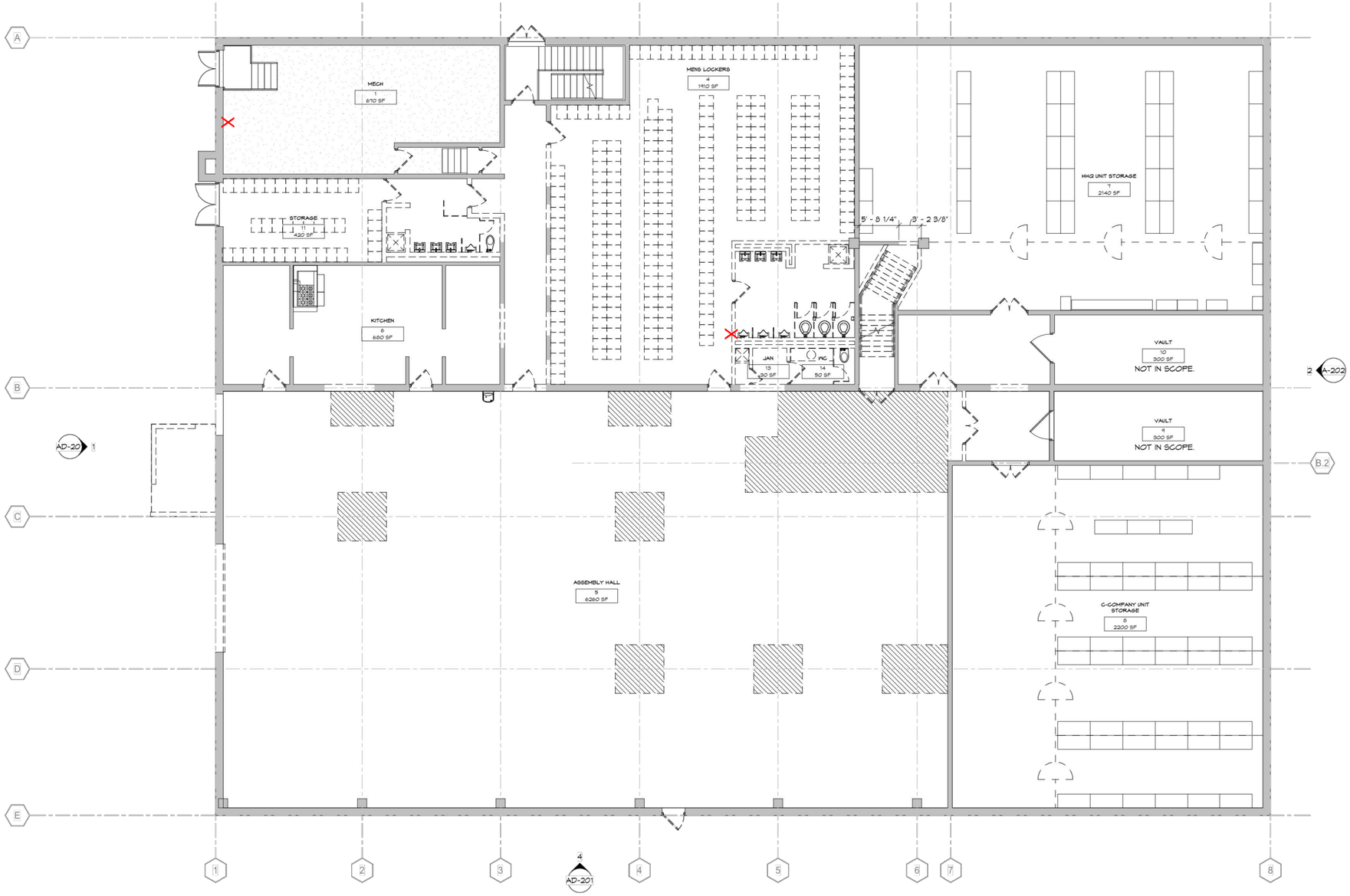
DRAWING TITLE

UPPER LEVEL MATERIALS LOCATION PLAN

DATE: 4/16/2025	SCALE: NTS
PROJECT NO.	250204AA
DRAWN BY	KAJ
CHECKED BY	CDW

DWG. NO.

ASB-200



1 LOWER LEVEL REMOVALS PLAN
SCALE : 1/8" = 1'-0"

*PLEASE REFER TO THE ASSUMPTIONS AND LIMITATIONS SECTION OF REPORT

Ambient Environmental, Inc.
Building Science and EHS Solutions
828 Washington Avenue, Albany, NY 12203
PH: 518.482.0704 FAX:518.482.0750
www.ambient-env.com

LEGEND

X VERMICULITE PROBE LOCATION

REVISIONS		

PROJECT LOCATION

NY NATIONAL GUARD
ARMORY
2 QUINCY PLACE
YONKERS, NEW YORK

DRAWING TITLE

LOWER LEVEL MATERIALS LOCATION PLAN

DATE: 4/16/2025	SCALE: NTS
PROJECT NO.	250204AA
DRAWN BY	KAJ
CHECKED BY	CDW

DWG. NO.
ASB-100

A

B

C

D



1 UPPER LEVEL REMOVALS PLAN

SCALE : 1/8" = 1'-0"

*PLEASE REFER TO THE ASSUMPTIONS AND LIMITATIONS SECTION OF REPORT

Ambient Environmental, Inc.
Building Science and EHS Solutions
828 Washington Avenue, Albany, NY 12203
PH: 518.482.0704 FAX:518.482.0750
www.ambient-env.com

LEGEND

X XRF ROOM NUMBER

X BUILDING SIDE

REVISIONS		

PROJECT LOCATION

NY NATIONAL GUARD ARMORY
2 QUINCY PLACE
YONKERS, NEW YORK

DRAWING TITLE

UPPER LEVEL LEAD BASED PAINT ROOM LOCATION PLAN

DATE: 4/16/2025	SCALE: NTS
PROJECT NO.	250204AA
DRAWN BY	KAJ
CHECKED BY	CDW

DWG. NO.

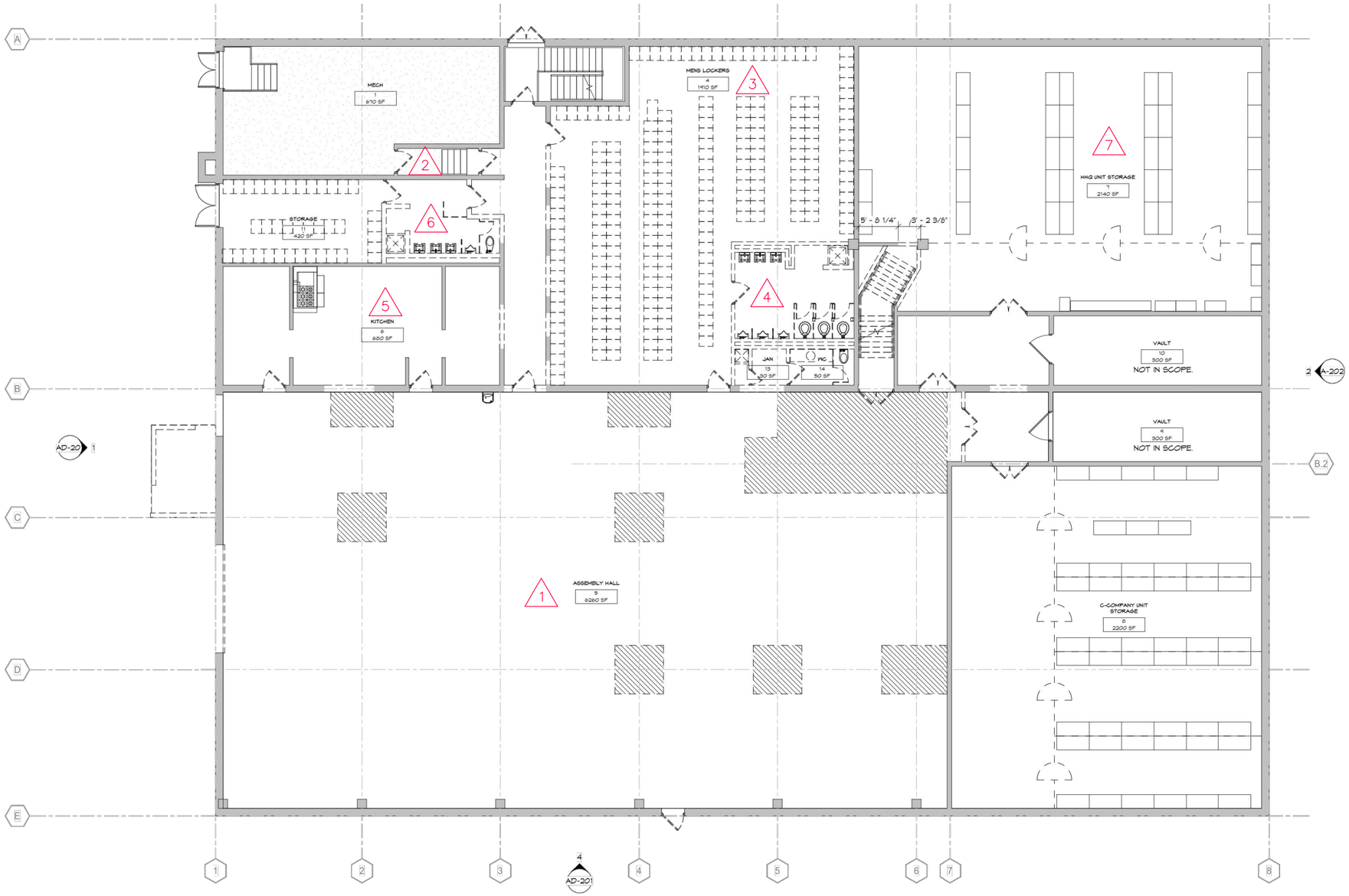
PB-200

A

B

C

D



1 LOWER LEVEL REMOVALS PLAN
SCALE : 1/8" = 1'-0"

*PLEASE REFER TO THE ASSUMPTIONS AND LIMITATIONS SECTION OF REPORT

Ambient Environmental, Inc.
Building Science and EHS Solutions
828 Washington Avenue, Albany, NY 12203
PH: 518.482.0704 FAX:518.482.0750
www.ambient-env.com

LEGEND

X XRF ROOM NUMBER

X BUILDING SIDE

REVISIONS		

PROJECT LOCATION

NY NATIONAL GUARD
ARMORY
2 QUINCY PLACE
YONKERS, NEW YORK

DRAWING TITLE

LOWER LEVEL LEAD BASED PAINT ROOM LOCATION PLAN

DATE: 4/16/2025	SCALE: NTS
PROJECT NO.	250204AA
DRAWN BY	KAJ
CHECKED BY	CDW

DWG. NO.

PB-100

ATTACHMENT E
PHOTOGRAPHIC DOCUMENTATION

Ambient Environmental, Inc.
Building Science and EHS Solutions
NYS Certified WBE,
SBA EDWOSB & DBE

PHOTO LOG

Ambient Project #250204AA
Hazmat Inspection
NY National Guard Armory
2 Quincy Place, Yonkers, NY
December 27, 2019



Photograph 1 – 009-01 Black Window Glazing

ATTACHMENT F

COMPANY, INSPECTOR AND LABORATORY ACCREDITATION AND LICENSES

WE ARE YOUR DOL

NEW YORK STATE | Department of Labor

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

ASBESTOS HANDLING LICENSE

Ambient Environmental, Inc.
828 Washington Avenue, Albany, NY, 12203

License Number: 29608
License Class: RESTRICTED
Date of Issue: 06/17/2024
Expiration Date: 07/31/2025
Duly Authorized Representative: Joella Viscusi

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.



Amy Phillips, Director
For the Commissioner of Labor

United States Environmental Protection Agency

This is to certify that

Ambient Environmental, Inc.

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

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 May 12, 2026

LBP-16658-3

Certification #

December 12, 2022

Issued On

Michelle Price, Chief

Lead, Heavy Metals, and Inorganics Branch

NEW YORK STATE

MINORITY- AND WOMEN-OWNED BUSINESS ENTERPRISE ("MWBE")

CERTIFICATION

Empire State Development's Division of Minority and Women's Business Development grants a

Women Business Enterprise (WBE)

pursuant to New York State Executive Law, Article 15-A to:

Ambient Environmental, Inc.

Certification Awarded on: January 30, 2020
Expiration Date: January 30, 2025
File ID#: 50943

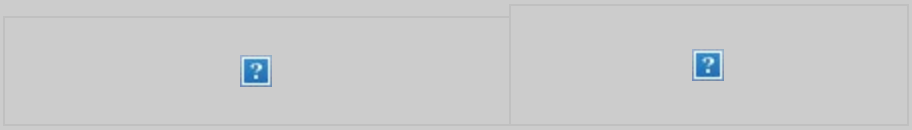
NEW YORK STATE OF OPPORTUNITY. Division of Minority and Women's Business Development

A Division of Empire State Development

From: Joella Viscusi
To: Michelle Bissonette
Cc: Christina Agans
Subject: RE: NYS: Application Review In Process
Date: Friday, January 10, 2025 9:32:33 AM
Attachments: image002.jpg
image003.jpg
image004.jpg

Thank you Michelle, please print this out and keep it in case we need to send to clients to prove we are still certified while we wait. Thank you.

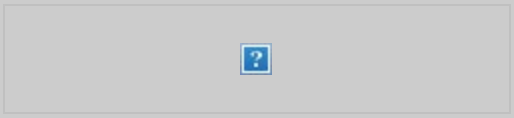
Joella Viscusi
President
828 Washington Ave.
Albany, NY 12203
Ph. 518-482-0704 | Cell 518-859-5924
joellav@ambient-env.com



From: Michelle Bissonette <michelleb@ambient-env.com>
Sent: Friday, January 10, 2025 9:10 AM
To: New York State Contract System <ny@newnycontracts.com>
Subject: RE: NYS: Application Review In Process

Good morning;
Thank you so very much for the clarification. Have a great rest of your day.

Michelle



Michelle Bissonette
Finance Director
Ambient Environmental, Inc
828 Washington Avenue
Albany, NY 12203
518.482.0704
michelleb@ambient-env.com

www.ambient-env.com

From: New York State Contract System <ny@newnycontracts.com>
Sent: Friday, January 10, 2025 9:09 AM
To: Michelle Bissonette <michelleb@ambient-env.com>
Subject: RE: NYS: Application Review In Process



RE: NYS: Application Review In Process

Good morning,

Your recertification application is under review with an analyst. Your certification will remain in effect.

Thank you for contacting us,
Olga Candelaria

> Good afternoon;
> I do have one question relating to the review
> process timing and the expiration of our WBE
> Certification.
> Is our certification still in effect during the
> review process time period, if that time is beyond
> 1/30/2025 (our certification expiration date)?
>
> Thank you
>
> Michelle
>
> [AmbientLogo2018]
>
>
> Michelle Bissonette
> Finance Director
> Ambient Environmental, Inc
> 828 Washington Avenue
> Albany, NY 12203
> 518.482.0704
> michelleb@ambient-env.com
> www.ambient-env.com
>
>
> From: New York State Contract System
>
> Sent: Monday, January 6, 2025 10:47 AM

> To: Michelle Bissonette
>
> Subject: NYS: Application Review In Process
>
> [Image removed by
> sender.]
> Certification Application Review In Process
>
> Applicant: Ambient Environmental, Inc.
> Certifying Agency: New York State
> Application Type: Recertification Application
> (NEW)
> Application Number: 4247524
> Contact: Michelle Bissonette
> Date Submitted: 1/3/2025
> Date Received: 1/6/2025
>
> Dear Michelle Bissonette,
>
> Your application received on 1/6/2025 has been
> assigned to a certification analyst and our review of your
> application will be completed in the next 90 to 120 days.
> During this time, we may contact you with questions about
> your application and/or requests for additional
> information and supporting documentation. The certification
> analyst assigned to review your application may also be in
> contact with you to schedule an on-site visit at your
> principal place of business, if required. Your prompt and
> complete responses to any questions we may ask will result
> in the most expeditious completion of your
> application. Failure to adequately respond to our questions in
> a timely manner may result in a determination that
> you have abandoned your application, which would
> require you to reapply after 90 days.
>
> To view your application, visit:
> https://ny.newnycontracts.com/?GO=677
> If you have any questions, please email us at
> ny@newnycontracts.com.
>
> New York State Contract System
> Web: https://ny.newnycontracts.com/
> Email:
> ny@newnycontracts.com
>
> NYS M/WBE Program: http://www.esd.ny.gov/MWBE.html
> This message was sent to: "Michelle Bissonette"
> Sent on: 1/6/2025 9:47:00 AM
> System ReferenceID: 255700689
>

Customer Support
https://ny.newnycontracts.com/
New York State New York State Contract System

Ticket Number: 2860366
#%#2860366%$%

This message was sent to: michelleb@ambient-env.com
Sent on: 1/10/2025 8:09:01 AM
System ReferenceID: 256246335

Certification: View

Help & Tools

Certification List | Add Date Alert

This record is from **New York State Department of Transportation**. It is not managed by New York State.

Vendor Information

BUSINESS NAME	**Ambient Environmental, Inc.**
SYSTEM VENDOR NUMBER	**20167029**
PRIMARY OWNER'S NAME	**Ms. Joella Viscusi**
ETHNIC GROUP	**Other Minority**
GENDER	**Female**

Certification Information

CERTIFYING AGENCY	**New York State Department of Transportation**
CERTIFICATION TYPE	**DBE - Disadvantaged Business Enterprise**
EFFECTIVE DATE	**3/27/2013**
RENEWAL DATE	**3/27/2026**

Contact Information

MAIN COMPANY EMAIL	**joellav@ambient-env.com**
MAIN PHONE	**518-482-0704**
MAIN FAX	**518-482-0750**
MAIN COMPANY WEBSITE	**http://www.ambient-env.com**

Addresses

PHYSICAL ADDRESS	**828 Washington Ave.** **Albany, NY 12203-1622 [map]**
MAILING ADDRESS	**828 Washington Ave.** **Albany, NY 12203-1622 [map]**

Business Capabilities

BUSINESS CERTIFIED FOR	**Environmental Services.**	
FULL DESCRIPTION OF CAPABILITIES/PRODUCTS	**Environmental Services.**	
COMMODITY CODES	**NAICS 541620**	**Environmental consulting services** (More)

Owner Ethnicity and Gender

ETHNIC GROUP	**Other Minority**
GENDER	**Female**

Location

COUNTY	**Albany (NY)**

Certification List

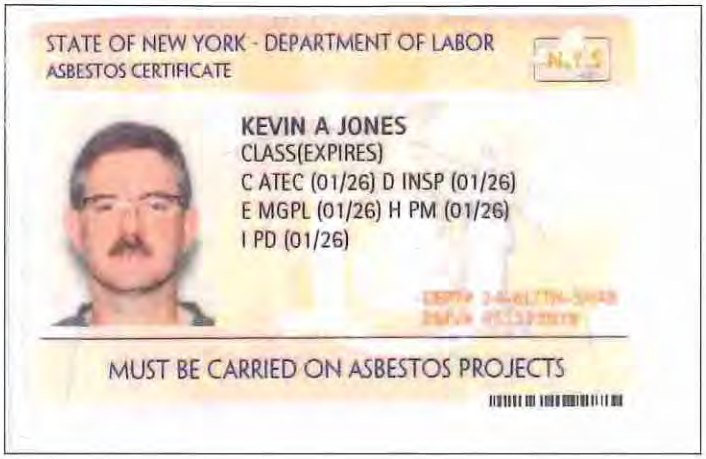
This profile was generated on 2/27/2025

Copyright © 2025 B2Gnow. All rights reserved.

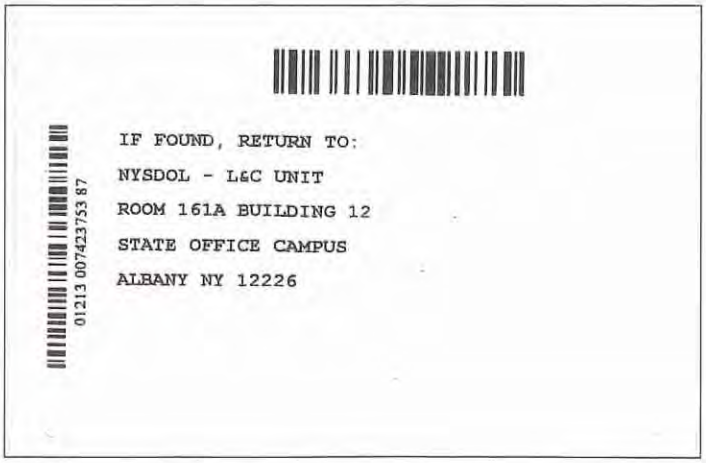
Ambient Environmental, Inc.
Building Science and EHS Solutions
NYS Certified WBE,
SBA EDWOSB & DBE

AMBIENT ENVIRONMENTAL, INC.
NEW YORK STATE DEPARTMENT OF LABOR
ASBESTOS LICENSE

Kevin Jones
Cert No. 24-6LTTH-SHAB
Front of License



Back of License



Codes:

A- Asbestos Handler
B- Restricted Handler
C- Project Air Sampling Technician
D- Inspector – R III
E- Management Planner
F- Operations and Maintenance
G- Supervisor
H- Project Monitor
I- Project Designer
J- Allied Trades

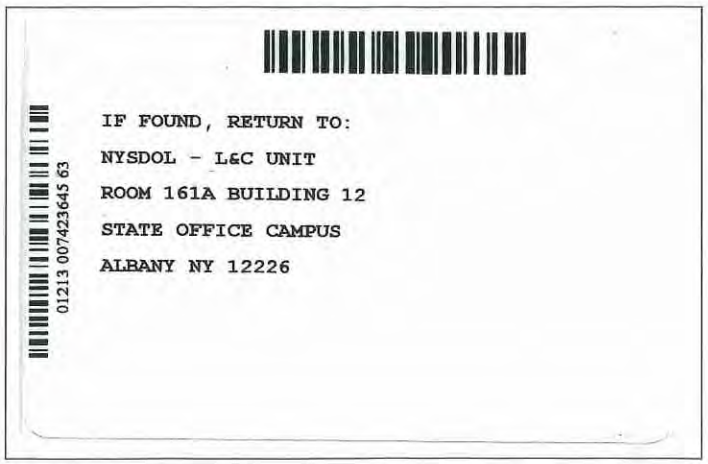
Ambient Environmental, Inc.
Building Science and EHS Solutions
NYS Certified WBE,
SBA EDWOSB & DBE

AMBIENT ENVIRONMENTAL, INC.
NEW YORK STATE DEPARTMENT OF LABOR
ASBESTOS LICENSE

Peter Minotti
Cert No. 2463H4K-SHAB
Front of License



Back of License



Codes:

A- Asbestos Handler
B- Restricted Handler
C- Project Air Sampling Technician
D- Inspector – R III
E- Management Planner
F- Operations and Maintenance
G- Supervisor
H- Project Monitor
I- Project Designer
J- Allied Trades

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2026
Issued April 01, 2025

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MS. KAROL H. LU
AMERICA SCIENCE TEAM NEW YORK, INC
117 EAST 30TH ST
NEW YORK, NY 10016

NY Lab Id No: 11480

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

Serial No.: 70488

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, 2026
Issued April 01, 2025

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MR. FAYEZ ABOUZAKI
SCHNEIDER LABORATORIES GLOBAL, INC
2512 WEST CARY STREET
RICHMOND, VA 23220-5117

NY Lab Id No: 11413

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:

Metals III

Cobalt, Total	EPA 6010D
Molybdenum, Total	EPA 6010D
Thallium, Total	EPA 6010D
Tin, Total	EPA 6010D
Titanium, Total	EPA 6010D

Nitroaromatics and Isophorone

2,4-Dinitrotoluene	EPA 8270D
Nitrobenzene	EPA 8270D

Polychlorinated Biphenyls

Aroclor 1016 (PCB-1016)	EPA 8082A
Aroclor 1221 (PCB-1221)	EPA 8082A
Aroclor 1232 (PCB-1232)	EPA 8082A
Aroclor 1242 (PCB-1242)	EPA 8082A
Aroclor 1248 (PCB-1248)	EPA 8082A
Aroclor 1254 (PCB-1254)	EPA 8082A
Aroclor 1260 (PCB-1260)	EPA 8082A
Aroclor 1262 (PCB-1262)	EPA 8082A
Aroclor 1268 (PCB-1268)	EPA 8082A

Polynuclear Aromatics

Acenaphthene	EPA 8270D
Anthracene	EPA 8270D
Benzo(a)anthracene	EPA 8270D
Benzo(a)pyrene	EPA 8270D
Benzo(b)fluoranthene	EPA 8270D
Benzo(g,h,i)perylene	EPA 8270D
Benzo(k)fluoranthene	EPA 8270D

Serial No.: 70458

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.

ATTACHMENT G

HISTORICAL DOCUMENTATION

Adelaide
ENVIRONMENTAL HEALTH

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LIMITED SURVEY
FOR
ASBESTOS-CONTAINING MATERIALS, LEAD-BASED PAINT & PCBs

PERFORMED AT:

Yonkers Armory
2 Quincy Place
Yonkers, New York 10701
Adelaide Project# MACF:20060.00-IN
OGS Project# 46166

PREPARED FOR:

Mr. John Miranowski
McFarland-Johnson, Inc.
49 Court Street, P.O. Box 1980
Binghamton, New York 13901

PREPARED BY:
Philip J. Page
August 18, 2020

REVIEWED BY:



Stephanie A. Soter
President

TABLE OF CONTENTS

1.0	**Introduction**	1
1.1	Scope of Work / Project Personnel	1
1.2	Executive Summary	1
1.2.1	**Conclusions and Recommendations**	1
1.2.2	Asbestos-containing Materials (ACM)	1
1.2.3	Lead-based Paint (LBP)	1
1.2.4	PolyChlorinated Biphenyls (PCB)	1
2.0	**Summary of Hazardous Materials**	2
2.1	Summary of Identified ACM/PACM	2
2.2	Summary of Identified Non-ACM	2
2.3	Summary of Identified LBP	2
2.4	Summary of Identified PCB-containing Materials	2
2.5	Observations	3
3.0	**Asbestos-containing Materials (ACM)**	3
3.1	Field Procedures and Analysis Methodology	3
3.2	Regulatory Guidelines and Requirements of ACM	4
4.0	**Lead-based Paint (LBP)**	6
4.1	Applicable Standards/Guidelines for LBP	6
4.2	XRF Information	6
5.0	**PolyChlorinated Biphenyls (PCB)**	7
5.1	Background and Protocol for PCBs	7
6.0	**General Discussion**	8
7.0	**Disclaimers**	9

APPENDICES

Sample Location Map(s)	A
Asbestos Analytical Results	B
XRF Readings	C
Personnel and Laboratory Certifications	D

1.0 Introduction

1.1 Scope of Work / Project Personnel

Adelaide Environmental Health Associates, Inc. **(Adelaide)** performed an Asbestos, Lead and PCB Survey for Building/Structure Demolition, Renovation, Remodeling and/or Repair, in conformance with ALL Federal, State and Local regulations, on August 12, 2020 for McFarland-Johnson, Inc. The survey is related to New York State Office of General Services (OGS) project# 46166 to replace the boiler and HVAC equipment. The survey included a visual inspection/assessment for hazardous materials throughout accessible interior and/or exterior spaces of the building/structure or portion thereof identified to be demolished, renovated, remodeled or repaired. Certified **Adelaide** personnel (Appendix D), Philip J. Page (NYS Asbestos Inspector/Cert. #12-10888 and EPA Lead-based Paint Inspector/Cert. #LBP-I-I172697-1), performed the visual assessment throughout inspection area(s) identified.

1.2 Executive Summary

On August 12, 2020, **Adelaide** inspected the boiler room, gym, roof and various control valve locations throughout that will be affected by the proposed scope of work for suspect ACM, LBP and PCBs. **Adelaide** collected fourteen (14) suspect asbestos samples/layers, twenty three (23) XRF readings [calibrations included] and zero (0) suspect PCB samples from the above-mentioned area(s). Zero (0) samples/homogenous areas tested positive for asbestos and two (2) XRF readings tested positive for lead-based paint. No suspect PCB-containing materials were observed to be impacted by the above-mentioned scope of work.

1.2.1 Conclusions and Recommendations

The following conclusions and recommendations are prepared by **Adelaide** as per the provided scope of work for Building/Structure Demolition, Renovation, Remodeling and/or Repair. Should the scope of work change, it is recommended that the findings be revisited to determine if additional sampling will be required to satisfy ALL Federal, State and Local regulations.

1.2.2 Asbestos-containing Materials (ACM)

- This survey concluded that the materials listed in Section 2.2 tested ***negative for asbestos***.

1.2.3 Lead-based Paint (LBP)

- This survey concluded that the materials listed in Section 2.3 tested ***positive for lead-based paint.***
- These areas must be either abated or Lead safe work practices must be implemented during the demolition, renovation, remodeling, or repair activities if these areas are to be disturbed.

1.2.4 PolyChlorinated Biphenyls (PCB)

- This survey concluded that no suspect PCB-containing materials were observed to be impacted by the above-mentioned scope of work.

2.0 Summary of Hazardous Materials

2.1 Summary of Identified ACM/PACM

KEY: **ACM** = Materials containing greater than 1% of asbestos; **HA** = Homogeneous Area; **LF** = Linear Feet; **SF** = Square Feet; **PACM** = Presumed Asbestos-containing Materials; **Friable** = ACM capable of being released into air, and which can be crumbled, pulverized, powdered, crushed or exposed by hand-pressure.

Samples collected by **Adelaide** August 12, 2020

HA	Identified ACM	ACM Location(s)	Approx. Qty.	Condition	Friable? (Yes or No)
NO Asbestos-containing Materials (ACM) identified upon PLM, PLM-NOB, QTEM and/or PLM-SM-V analysis, by a laboratory approved under the NYSDOH ELAP, of samples collected/analyzed in reference to the above-mentioned scope of work.					

2.2 Summary of Identified Non-ACM

Samples collected by **Adelaide** August 12, 2020

Identified Non-ACM	Sample Location(s) & HA's
Sheetrock & Joint Compound	Boiler Room Ceiling
Mudded Fittings	Boiler Room, Breeching
Tar (top layer)	Boiler Room, Boiler Sections
Rope Gasket (bottom layer)	
Canvas Wrap (ductwork)	Throughout

2.3 Summary of Identified LBP

Based on review of the data generated by the Thermo Scientific Niton XLp 300A and/or Heuresis Corp. Pb200i Analyzer, the following surfaces tested were identified as lead-based, as defined by HUD/EPA (equal to or in excess of 1.0 milligram per square centimeter):

Readings collected by **Adelaide** August 12, 2020

Location of LBP	LBP Component	Substrate	Color	Condition	Readings (mg/cm2)
Boiler Room	Orange Piping	Metal	Orange	Fair	*1.5 – 1.6*

2.4 Summary of Identified PCB-containing Materials

Inspection performed by **Adelaide** August 12, 2020

Sample #	Location / Description	Material Matrix	Color	Substrate	Analytical Result
NO suspect PCB-containing materials were observed to be impacted by the above-mentioned scope of work.					

2.5 Observations

ASBESTOS-CONTAINING MATERIALS (ACM)
A visual inspection was performed and homogeneous material types were established based on appearance, color and texture. The findings presented in this report are based upon reasonably available information and observed site conditions at the time the assessment was performed. The findings and conclusions of this report are not meant to be indicative of future conditions at the site and does not warrant against conditions that were not evident from visual observations or historical information obtained from others.

Representative bulk sampling was performed on suspect building materials for laboratory analysis and the following is a summary of installed building materials sampled as per the scope of work provided:

- Ceiling Materials – Sheetrock, Joint Compound.
- Thermal System Insulation (TSI) – Mudded Fittings, Canvas Wrap over Fiberglass, Rope Gasket & Tar on Boiler.
- Non-suspect Materials (not sampled) – Fiberglass Insulation, Silicone, Wood, Glass, Metal.

3.0 Asbestos-containing Materials (ACM)

3.1 Field Procedures and Analysis Methodology

Guidelines used for the inspection were established by the U.S. 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) and Title 12 NYCRR Part 56-5.1. Field information was organized as per the AHERA concept of a homogeneous area (HA); that is, suspect Asbestos-containing Materials (ACM) with similar age, appearance, and texture were grouped together, sampled and assessed for condition.

For the purposes of this inspection, suspect ACM has been placed in three material categories: thermal, surfacing, and miscellaneous. 1) Surfacing materials are those that are sprayed on, troweled on or otherwise applied to surfaces for fireproofing, acoustical, or decorative purposes (e.g., wall and ceiling plaster). 2) Thermal materials are those applied to heat pipes or other structural components to prevent heat loss or gain or prevent water condensation (e.g., pipe and fitting insulation, duct insulation, boiler flue). 3) Miscellaneous materials are interior building materials on structural components, structural members or fixtures, such as floor and ceiling tiles, etc. and do not include surfacing material or thermal system insulation.

SURFACING MATERIALS
Surfacing materials were grouped into homogeneous sampling areas. A homogeneous area contains material that is uniform in color and texture and appears identical in every other respect. Materials installed at different times belong to different sampling areas. Homogeneous areas were determined on per floor basis.

The following protocol was used for determining the number of samples to be collected:

- At least three bulk samples were collected from each homogeneous area that is 1,000 square feet or less.
- At least five bulk samples were collected from each homogeneous area that is greater than 1,000 square feet but less than or equal to 5,000 square feet.
- At least seven bulk samples were collected from each homogeneous area that is greater than 5,000 square feet.

THERMAL SYSTEM INSULATION (TSI)

The concept of homogeneous sampling areas applies equally well to thermal insulation as to surfacing material. A "typical" building may contain multiple insulated pipe runs from any combination of the following categories:

- Hot water supply and/or return
- Cold water supply
- Chilled water supply
- Steam supply and/or return
- Roof or system drain

The following protocol was used for determining the number of samples to be collected.

- Collect at least three bulk samples from each homogeneous area of thermal system insulation.
- Collect at least one bulk sample from each homogeneous area of patched thermal system insulation if the patched section is less than 6 linear or square feet.
- In a manner sufficient to determine whether the material is ACM or not ACM, collect a minimum of three bulk samples from each homogeneous insulated mechanical system tee, elbow, and valve.

Bulk samples are not collected from any homogeneous area where the certified inspector has determined that the thermal system insulation is fiberglass, foam glass, or rubber.

MISCELLANEOUS MATERIALS

Miscellaneous materials are grouped into different homogeneous areas and at least two bulk samples are collected from each homogeneous area as per the clarification letter from the EPA and the Professional Abatement Contractors of New York, Inc in November of 2007.

Samples collected were analyzed by a laboratory approved under the New York State Department of Health Environmental Laboratory Approval Program (NYSDOH ELAP). Samples were analyzed in the laboratory by Polarized Light Microscopy (PLM), Polarized Light Microscopy-NOB (PLM-NOB) and/or Quantitative Transmission Electron Microscopy (QTEM), as required. Sample collection and laboratory analysis were conducted in compliance with the requirements of Title 12 NYCRR Part 56-5.1, 29 CFR 1926.1101 and standard EPA & OSHA accepted methods. Samples consisting of multiple layers were separated and analyzed independently in the laboratory.

3.2 Regulatory Guidelines and Requirements for ACM

FEDERAL

In accordance with the Clean Air Act (CAA), the U.S. Environmental Protection Agency (EPA) established National Emission Standards for hazardous Air Pollutants (NESHAP) to protect the public from exposure to airborne pollutants. Asbestos was one of the air pollutants, which was addressed under the NESHAP 40 CFR Part 61. The purpose of asbestos NESHAP regulations is to protect the public health by minimizing the release of asbestos when facilities, which contain ACM, are being renovated or demolished. EPA is responsible for enforcing regulations related to asbestos during renovations and demolition, however, the CAA allows the EPA to delegate this authority to State and Local Agencies. Even after EPA delegate's responsibility to a state or Local agency, EPA retains the authority to oversee agency performance and to enforce NESHAP regulations as appropriate.

NEW YORK STATE

Asbestos in New York State is regulated under the Labor Law Section 906, Part 56 of Title 12 of the Official Compilation of Codes, Rules, and Regulations. Within the department and for the purpose of the Department of Labor, this part (rule) is known as Industrial Code Rule No. 56 (ICR 56) relating to hazards to the public safety and health, during the removal, encapsulation, or disturbance of friable asbestos, or any handling of ACM that may result in the release of asbestos fiber.

As specified in Title 12 NYCRR Part 56-5.1 (h) and (i), "If the building/structure asbestos survey finds that the portion of the building/structure to be demolished, renovated, remodeled, or have repair work contains ACM, PACM, suspect miscellaneous ACM assumed to be ACM, or asbestos material, which is impacted by the work, the owner or the owner's agent shall conduct, or cause to have conducted, asbestos removal performed by a licensed asbestos abatement contractor in conformance with all standards set forth in this Part. All ACM, PACM, suspect miscellaneous ACM assumed to be ACM, or asbestos material impacted by the demolition, renovation, remodeling or repair project shall be removed as per this Part, prior to access or disturbance by other uncertified trades or personnel. No demolition, renovation, remodeling or repair work shall be commenced by any owner or the owner's agent prior to the completion of the asbestos abatement in accordance with the notification requirements of this Part…All building/structure owners and asbestos abatement contractors on a demolition, renovation, remodeling, or repair project, which includes work covered by this part, shall inform all trades on the work site about PACM, ACM, asbestos material and suspect miscellaneous ACM…Bids may be advertised and contracts awarded for demolition, remodeling, renovation, or repair work, but no work on the current intermediate portion of the project shall commence on the demolition, renovation, remodeling or repair work by any owner or agent prior to completion of all necessary asbestos abatement work for the current intermediate portion of the entire project, in conformance with all standards set forth in this Part." All work conducted should be in accordance with all legal requirements, including but not limited to U.S. Environmental Protection Agency (EPA) National Emissions Standards for Hazardous Air Pollutants (NESHAP) [40 CFR Part 61], New York State Industrial Code Rule 56 Asbestos Regulations (ICR 56) and Chapter 1 of Title 15 of the Rules of the City of New York Regulations, as applicable. Advance notification of the asbestos project to the USEPA, NYSDOL, and NYCDEP may be required.

NEW YORK CITY

Asbestos Control Program (ACP), Title 15, Chapter 1 of the New York City Department of Environmental Protection (NYCDEP) regulates all asbestos abatement activities occurring within the City of New York. The ACR regulations also require asbestos surveys and abatement work to be performed by a NYCDEP certified asbestos investigator and asbestos workers, respectively.

The New York City Department of Buildings (NYCDOB) requires an ACP notification to be included with the renovation/demolition permit applications. The notification is performed using an ACP 5 or ACP 20/21 forms.

All confirmed ACM will need to be removed prior to any building renovation or demolition. The removal and disposal of ACM must be performed by a NYS-DOL licensed asbestos handling contractor in accordance with Federal, state, and local regulations. Proper notifications must be filed with the US-EPA, NYS-DOL, NYC-DEP and other regulatory agencies prior to performing such activities.

As required by the NYS-DOL and NYC-DEP regulations, the abatement project must be monitored by a NYS-DOL certified project monitor. The project monitor oversees contractor's work practices and also performs pre, during, and final clearance post abatement air sampling in accordance with the state and city regulations.

CONCEALED ACM

In addition to the ACMs identified at the site, there is a possibility that concealed suspect ACM may exist at the building/structure. As such, if any concealed suspect ACM is encountered during future construction related activities, the work should immediately stop. Prior to resuming the work, the suspect ACM should either be 1) Sampled by an appropriately-certified asbestos professional and submitted to an Approved NYSDOH ELAP laboratory for asbestos analysis or 2) Presumed to be ACM (PACM) and removed by a licensed asbestos abatement contractor for disposal in accordance with all applicable regulations.

4.0 Lead-based Paint (LBP)

4.1 Applicable Standards/Guidelines for LBP

The U.S Department of Housing and Urban Development (HUD) defines the action level for lead-based paint as a lead content equal to or greater than 1.0 milligrams of lead per square centimeter of painted surface (≥1.0 mg Pb/cm^2) when measured with an XRF analyzer or 0.5 percent by weight when chemically tested. This definition is described in the HUD "Lead-Based Paint: Interim Guidelines for Hazard Identification and Abatement in Public and Indian Housing, September 1990". The state of New York's definition of the action level for lead-based paint is consistent with the level established by HUD.

Please note that although the HUD defines lead-based paint as paint having lead concentrations equal or greater than 1.0 mg/cm2, the Occupational Safety and Health Administration (OSHA) considers any concentration of lead in paint to be lead-containing paint. Regardless of the lead concentrations in paint, the contractor shall comply with 29 CFR 1926.62, OSHA regulations, and take precautionary measures for dust control and limit employee exposure to lead dust during the renovations.

Painted surfaces that would be impacted by planned activities such as drilling, cutting, scrapping, etc. and create dust should be properly addressed by following safe work practices, good housekeeping procedures and/or following proper abatement procedures. Grinding and sanding of paint without HEPA filter exhaust, open flame gas fired torch, unconfined abrasive blasting, and chemical strippers containing methylene chloride or other human carcinogenic chemicals are not recommended.

The Federal Resource Conservation and Recovery Act (RCRA) regulation governs the handling, transportation, and disposal of hazardous materials. Every demolition/renovation debris generator has the responsibility to determine whether the debris exhibits one or more of the characteristic wastes listed in subpart C of 40 CFR Part 261. In the case of demolition debris, lead in LBP is a characteristic waste, and therefore, it is the responsibility of the renovation/demolition debris generator to characterize the waste prior to its disposal and, if found to be hazardous waste as defined by Federal Statutes, to be properly handled and disposed.

Metal objects painted with LBP are exempt from disposal regulations applicable to lead, provided they are properly recycled. All metal objects that are painted with LBP should be sent to a certified recycling facility.

This report is not Lead-based Paint abatement specification and should not be used for specifying removal methods or techniques.

4.2 XRF Information

Thermo Scientific Niton XLp 300A X-Ray Fluorescence (XRF), Heuresis Corp. Pb200i X-Ray Fluorescence (XRF) Analyzer(s) were used to survey the building/structure or portion thereof identified to be demolished, renovated, remodeled or repaired for the presence of LBP. The XRF analyzers are using a sealed source of XLp 300A X-Ray Fluorescence (XRF) Cd109 with 40mCi and the Pb200i X-Ray Fluorescence (XRF) Co 57 with 5mCi sources, meeting HUD requirements for the analysis of paint films. During the analysis, the intensity of the x-rays is converted by the instrument's internal software into an estimate of the concentration of lead in the substance being analyzed. The results are interpreted as concentrations of lead in milligrams per square centimeter. This device is a field-screening tool, used to collect multiple readings in a short period of time. The method of measurement is based on spectrometric analysis of lead x-ray fluorescence within a controlled depth of interrogation. The reading is an estimate of lead content in all layers of paint. The results are displayed in milligrams per square centimeter (mg/cm2). The device(s) used for this inspection were the Thermo Scientific Niton XLp 300A Analyzer(s), Serial number 102951, Source date 9/15/17, and/or Heuresis Corp. Pb200i X-Ray Fluorescence (XRF) Analyzer(s) Serial

Number 2104, Source date 1/25/19, Serial number 2231, Source date 4/5/19, Serial number 2595, Source date 1/31/20.

5.0 PolyChlorinated Biphenyls (PCB)

5.1 Background and Protocol for PCBs

PolyChlorinated Biphenyls (PCB) are a group of manmade chemicals. PCBs were widely used in building materials and electrical products in the past. The U.S. Environmental Protection Agency banned the manufacturing and certain uses of PCBs in 1978, but buildings constructed or renovated between 1950 and 1978 may still have building materials and electrical products that contain PCBs. Examples of products that may contain PCBs include caulk, paint, glues, plastics, fluorescent lighting ballasts, transformers and capacitors.

PCBs are currently prohibited from being used in caulk and other commodities (U.S. EPA, 40 CFR 761). However, prior to 1977, PCBs were present in some caulking materials used in the construction of schools and other buildings. Studies have shown that concentrations of PCB can exceed 1% (10,000 ppm) by weight in some caulk materials. An investigation of 24 buildings in the Greater Boston Area revealed that one-third of the buildings tested (8 of 24) contained caulking materials with polychlorinated biphenyl (PCB) content exceeding 50 ppm by weight with an average concentration of 15,600 ppm or 1.5% (Herrick et al., 2004). These buildings included schools and other public buildings.

The U.S. EPA regulates the disposal of caulk, as well as soil and other materials contaminated with PCBs from caulk, if the concentration of PCBs exceeds 50 ppm. Such materials must be disposed at an appropriate approved or permitted facility.

U.S. EPA regulation 40 CFR 761 defines "PCB remediation waste" to include contaminated soil, and specifies a clean-up level of <1ppm without further conditions for unrestricted use in "high occupancy areas" (i.e., areas where individuals may be present for 335 hours or more per year). PCB caulk is defined as a PCB bulk product waste, and its disposal is subject to U.S. EPA regulations under the Toxic Substances Control Act (40 CFR761.62).

This protocol has been developed in consultation with the New York State Department of Health, Division of Environmental Health Assessment, Bureau of Toxic Substance Assessment to address concerns about properly managing caulk containing PCBs that will be disturbed during building renovation and maintenance.

CAULK SAMPLE COLLECTION

Buildings constructed or renovated between 1950 and 1977 have a potential to contain PCBs in existing caulk. Representative samples of caulking materials from these buildings prior to renovation or demolition work should be tested to determine whether the caulk is contaminated with PCBs. Professional judgement should be used to design the sampling plan for characterizing caulk throughout the building. The consultant should pay particular attention to construction and maintenance records and to the appearance of caulking materials (likenesses and differences). Samples should be taken from window frames or expansion joints that have not been repaired or replaced since 1977. Depending on specific information provided in the workplan developed by the project manager, such as window placement, compositing of some caulk samples might be appropriate. Caulk from different time periods or that have a different appearance should not be composited together.

It is important to note that caulk used during the time period of interest may also contain asbestos or lead. Therefore, the work plan should include testing, handling and disposal requirements appropriate for such regulated materials.

SOIL SAMPLE COLLECTION

Buildings constructed or renovated between 1950 and 1977, which have undergone further renovation after 1977, may have residual PCB contamination in adjacent soils. An adequate representation of surface soils should be tested to assess the potential for residual PCB contamination.

When designing a representative soil sampling plan, the likelihood of soil contamination from deteriorated or deteriorating caulk should be considered. Caulk that has in the past dried out and fallen to the ground is the most important source of soil contamination. Thus, sampling should include soil beneath windows where caulk has obviously deteriorated or been replaced because of previous deterioration. Areas subject to the stress of sun and prevailing weather (typically the southern and western side of each structure) should be included for sampling. These samples would provide a conservative evaluation of soil conditions due to an increased potential for material failure, possibly resulting in contamination of soil. Also, if earlier renovation or demolition work may have stockpiled potentially contaminated caulk in other school areas, the school should consider having soils in those areas tested as well.

Soil sampling should focus on areas of the building where "banks" or "gangs" of windows exist/were replaced and areas of the structure where large expansion joints are located. This would provide a conservative evaluation of potential soil contamination and permit efficient sampling.

Any obvious pieces of caulk encountered during the collection of soil samples should be removed from the soil, categorized (with respect to location and depth) and treated as a separate potential sample.

Depth – At each soil sample location, soil should be collected in depth intervals of 0-2 inches, 2-6 inches and 6-12 inches. The surface soil sample (0-2 inches) should be collected from below the vegetative surface layer, if present.

Distance from Structure – Samples should be collected within 1 foot of the building and 5 feet from the building.

Samples should be collected in a manner that prevents cross-contamination. Augers or driven core samplers should be avoided, as any caulk caught on the edge of this type of tool could be driven to lower intervals. Using a designated trowel for each sample location and each interval of depth is encouraged. If the sampling tool is field cleaned between samples, do so in a manner that does not add solvent contamination to the environment.

NOTE

Sampling was performed by **Adelaide** in compliance with protocols outlined by New York State Education Department (NYSED) and USEPA 40 CFR 761, as described above. Only one sample per homogeneous area was required for analysis of suspect PCB-containing materials. Bulk sample(s) were properly packaged and forwarded, with associated Chain of Custody (COC), to York Analytical Laboratories, Inc., for analysis using method SW846-3550B/8082. The analysis will determine if the suspect material will be classified as PCB-containing at or above 50 ppm or mg/kg as per the EPA regulations. Copies of the analytical results are contained within attached appendices for review.

6.0 General Discussion

All construction personnel as well as individuals who have access to locations where asbestos-containing materials (ACM), lead-based paints (LBP) and/or polychlorinated biphenyls (PCB) exists should be informed of its presence and the proper work practices in these areas. Conspicuous labeling of all ACM is suggested to ensure personnel is adequately informed. Personnel should be informed not to rest, lean or store material or equipment on or near these surfaces and not to cut, saw, drill, sand or disturb ACM. All removal, disturbance, and repair of ACM should be performed in compliance with Title 12 NYCRR Part 56 by persons properly trained to handle ACM. Facility custodial and maintenance personnel should receive training commensurate with their work activities; as defined in 29 CFR 1910.1001.

7.0 Disclaimers

Adelaide certifies that the information contained within this report is based solely upon site observations and the results of laboratory analysis for samples collected during this survey/assessment. These observations and results are time dependent, subject to changing site conditions and revisions to Federal, State and Local regulations. **Adelaide** warrants that these findings have been promulgated after being prepared in general accordance with generally accepted practices in the abatement industries. **Adelaide** also recognizes that inspection laboratory data is not usually sufficient to make all abatement and management decisions. No other warranties are expressed or implied.

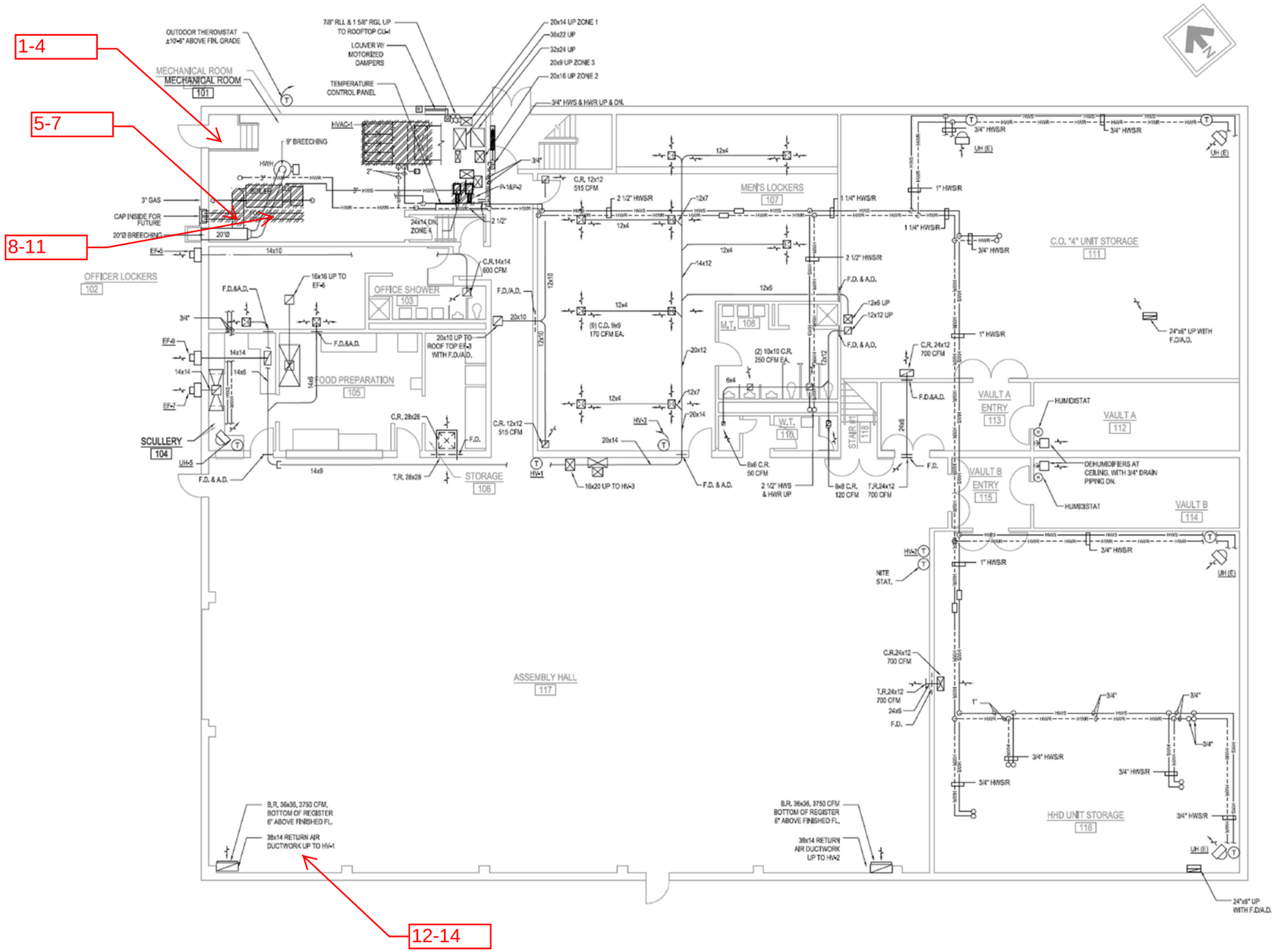
Due to the potential for concealed Asbestos-containing Materials (ACM) and/or other regulated materials, this report should not be construed to represent all ACM and/or regulated materials within the site(s). All quantities of ACM and/or other regulated materials identified, and all dimensions listed within this report are approximate and should be verified On-site.

This inspection report is not intended to be used as the sole basis for soliciting pricing for asbestos abatement. An abatement plan, specification, drawing and/or Variances should be developed to identify scope, timing, phasing and remediation means & methods for any asbestos project. The Linear and/or Square Footages (LF / SF) listed within this Report are only approximates. Abatement Contractor(s) are required to visit the building(s) in order to take actual field measurements within each listed location.

NYSDOH issued an Interim Guidance Letter, on July 9, 2013, which outlined the approved testing alternative for materials containing vermiculite. Specifically, "...Where TSI, surfacing materials, or other PACM or miscellaneous suspect ACM contain greater than 10% vermiculite, Item 198.6 may be used to evaluate the asbestos content of the material; provided, however, that any test results using this method must be reported with the following conspicuous disclaimer: *"This method does not remove vermiculite and may underestimate the level of asbestos present in a sample containing greater than 10% vermiculite."* On July 22, 2014, NYSDOH issued a Regulatory Guidance Letter outlining the new approved analytical methods for testing sprayed-on fireproofing (SOFP) that contains vermiculite. NYSDOH authorized the use of ***two*** analytical methods to evaluate the asbestos content of SOFP that contains vermiculite. As per NYSDOH Guidelines, *"After October 31, 2014, one of the new methods **must** be used to test SOF-V, regardless of the percent of vermiculite."* On May 6, 2016, NYSDOH issued a Regulatory Guidance Letter outlining the new protocol for analytical procedure for surfacing materials (ie. plaster, stucco, etc.) that contain vermiculite. As per NYSDOH Guidelines, "*The original July 2013 and July 2014 letters addressed SOF-V only. Both NYS DOH's Item 198.8 and RJ Lee Group Method 055 shall now be applied to test for vermiculite in other Surfacing Material (SM) as defined in 12 NYCRR Part 56 (NYS Industrial Code Rule 56).*"

APPENDIX A

SAMPLE LOCATION MAP(S)



Level 1 Key Plan - Sample Locations

Drawing Not to Scale

Adelaide ENVIRONMENTAL HEALTH
1511 Route 22
Brewster, NY 10509
Phone: (845) 278-7710
Fax: (845) 278-7750

CLIENT:
McFarland-Johnson
49 Court Street
Binghamton, New York 13901

OGS Project #
46166

SURVEY LOCATION:
Yonkers Armory
2 Quincy Place
Yonkers, New York 10701

DATE: 08/18/2020

DRAWING VERSION: No. 1

ISSUED FOR:
Limited HazMat Survey

ADELAIDE PROJECT NO.:
MACF:20060.00-IN

DRAWING PREPARED BY:
PJP

SL-01

APPENDIX B

ASBESTOS ANALYTICAL RESULTS

Table I
Summary of Bulk Asbestos Analysis Results
OGSx:20060.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, NY 10701

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
01	1	1A	----	----	----	----	NAD	NA
Location: 1st Fl. / MER / Ceiling - Sheetrock								
02	2	1A	----	----	----	----	NAD	NA
Location: 1st Fl. / MER / Ceiling - Sheetrock								
03	3	1B	----	----	----	----	NAD	NA
Location: 1st Fl. / MER / Ceiling - Joint Compound								
04	4	1B	----	----	----	----	NAD	NA
Location: 1st Fl. / MER / Ceiling - Joint Compound								
05	5	2	----	----	----	----	NAD	NA
Location: 1st Fl. / MER / Breeching - Mudded Fitting								
06	6	2	----	----	----	----	NAD	NA
Location: 1st Fl. / MER / Breeching - Mudded Fitting								
07	7	2	----	----	----	----	NAD	NA
Location: 1st Fl. / MER / Breeching - Mudded Fitting								
08	8	3A	0.202	45.4	45.4	9.2	NAD	NAD
Location: 1st Fl. / MER / Boiler Sections / Top Layer - Tar								
09	9	3A	0.257	48.4	44.8	6.8	NAD	NAD
Location: 1st Fl. / MER / Boiler Sections / Top Layer - Tar								
10	10	3B	----	----	----	----	NAD	NA
Location: 1st Fl. / MER / Boiler Sections / Bottom Layer - Rope Gasket								
11	11	3B	----	----	----	----	NAD	NA
Location: 1st Fl. / MER / Boiler Sections / Bottom Layer - Rope Gasket								
12	12	4	----	----	----	----	NAD	NA
Location: 2nd Fl. / Assembly Hall / HV-1 Ductwork / Over FG - Canvas Wrap								
13	13	4	----	----	----	----	NAD	NA
Location: 2nd Fl. / Assembly Hall / HV-1 Ductwork / Over FG - Canvas Wrap								
14	14	4	----	----	----	----	NAD	NA
Location: 2nd Fl. / Assembly Hall / HV-1 Ductwork / Over FG - Canvas Wrap								

See Reporting notes on last page

Client Name: Adelaide Environmental Health

Table I
Summary of Bulk Asbestos Analysis Results

OGSx:20060.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, NY 10701

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM

Analyzed by: Khaalid W. Perine; Date Analyzed 8/13/2020 Hitachi #747/Nova

**Quantitative Analysis (Semi/Full); Bulk Asbestos Analysis - PLM by Appd E to Subpt E, 40 CFR 763 or NYSDOH ELAP 198.1 for New York friable samples or NYSDOH ELAP 198.6 for New York NOB samples; TEM (Semi/Full) by EPA 600/R-93/116 (or NYSDOH ELAP 198.4; for New York samples); NAD = no asbestos detected during a quantitative analysis; NA = not analyzed; Trace = <1%; (SOF-V) = Sprayed On Fireproofing containing Vermiculite; (SM-V) = Surfacing Material containing Vermiculite; Quantitation for beginning weights of <0.1 grams should be considered as qualitative only; Qualitative Analysis: Asbestos analysis results of "Present" or "NVA = No Visible Asbestos" represents results for Qualitative PLM or TEM Analysis only (no accreditation coverage available from any regulatory agency for qualitative analyses): NVLAP (PLM) 200546-0, NYSDOH ELAP Lab 11480, AIHA-LAP, LLC (PLM) Lab ID 102843.

Warning Note: PLM limitation, only TEM will resolve fibers <0.25 micrometers in diameter. TEM bulk analysis is representative of the fine grained matrix material and may not be representative of non-uniformly dispersed deposits for which PLM evaluation is recommended (i.e. soils and other heterogenous materials).

Reviewed By: for PM

AmeriSci New York
117 EAST 30TH ST.
NEW YORK, NY 10016
TEL: (212) 679-8600 • FAX: (212) 679-3114

PLM Bulk Asbestos Report

Adelaide Environmental Health
Attn: John Soter
1511 Rte. 22, Suite C24

Brewster, NY 10509

Date Received 08/13/20 **AmeriSci Job #** 220082255
Date Examined 08/13/20 **P.O. #**
ELAP # 11480 **Page** 1 **of** 3
RE: OGSx:20060.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, NY 10701

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
1 1A	220082255-01 **Location:** 1st Fl. / MER / Ceiling - Sheetrock	*No*	NAD [1] (by NYS ELAP 198.1) by Valeriu Voicu on 08/13/20
Analyst Description: Brown/White, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 7 %, Fibrous glass Trace, Non-fibrous 93 %			
2 1A	220082255-02 **Location:** 1st Fl. / MER / Ceiling - Sheetrock	*No*	NAD (by NYS ELAP 198.1) by Valeriu Voicu on 08/13/20
Analyst Description: Grey, Homogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 2 %, Fibrous glass 1 %, Non-fibrous 97 %			
3 1B	220082255-03 **Location:** 1st Fl. / MER / Ceiling - Joint Compound	*No*	NAD (by NYS ELAP 198.1) by Valeriu Voicu on 08/13/20
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose Trace, Non-fibrous 100 %			
4 1B	220082255-04 **Location:** 1st Fl. / MER / Ceiling - Joint Compound	*No*	NAD (by NYS ELAP 198.1) by Valeriu Voicu on 08/13/20
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose Trace, Non-fibrous 100 %			
5 2	220082255-05 **Location:** 1st Fl. / MER / Breeching - Mudded Fitting	*No*	NAD (by NYS ELAP 198.1) by Valeriu Voicu on 08/13/20
Analyst Description: Grey, Homogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose Trace, Fibrous glass 15 %, Non-fibrous 85 %			

See Reporting notes on last page

PLM Bulk Asbestos Report

OGSx:20060.00-IN; Yonkers Armory; 2 Quincy Place,
Yonkers, NY 10701

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
6 2	220082255-06 **Location:** 1st Fl. / MER / Breeching - Mudded Fitting	***No***	NAD (by NYS ELAP 198.1) by Valeriu Voicu on 08/13/20
Analyst Description: Grey/Brown, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose Trace, Fibrous glass 7 %, Non-fibrous 93 %			
7 2	220082255-07 **Location:** 1st Fl. / MER / Breeching - Mudded Fitting	***No***	NAD (by NYS ELAP 198.1) by Valeriu Voicu on 08/13/20
Analyst Description: Grey, Homogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose Trace, Fibrous glass 10 %, Non-fibrous 90 %			
8 3A	220082255-08 **Location:** 1st Fl. / MER / Boiler Sections / Top Layer - Tar	***No***	NAD (by NYS ELAP 198.6) by Valeriu Voicu on 08/13/20
Analyst Description: Black, Homogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Fibrous glass 3 %, Non-fibrous 6.2 %			
9 3A	220082255-09 **Location:** 1st Fl. / MER / Boiler Sections / Top Layer - Tar	***No***	NAD (by NYS ELAP 198.6) by Valeriu Voicu on 08/13/20
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Fibrous glass Trace, Non-fibrous 6.8 %			
10 3B	220082255-10 **Location:** 1st Fl. / MER / Boiler Sections / Bottom Layer - Rope Gasket	***No***	NAD (by NYS ELAP 198.1) by Valeriu Voicu on 08/13/20
Analyst Description: Grey, Homogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose Trace, Fibrous glass 97 %, Non-fibrous 3 %			
11 3B	220082255-11 **Location:** 1st Fl. / MER / Boiler Sections / Bottom Layer - Rope Gasket	***No***	NAD (by NYS ELAP 198.1) by Valeriu Voicu on 08/13/20
Analyst Description: Grey, Homogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose Trace, Fibrous glass 98 %, Non-fibrous 2 %			

See Reporting notes on last page

PLM Bulk Asbestos Report

OGSx:20060.00-IN; Yonkers Armory; 2 Quincy Place,
Yonkers, NY 10701

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
12 4	220082255-12 **Location:** 2nd Fl. / Assembly Hall / HV-1 Ductwork / Over FG - Canvas Wrap	***No***	NAD (by NYS ELAP 198.1) by Valeriu Voicu on 08/13/20
Analyst Description: White, Homogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 75 %, Fibrous glass Trace, Non-fibrous 25 %			
13 4	220082255-13 **Location:** 2nd Fl. / Assembly Hall / HV-1 Ductwork / Over FG - Canvas Wrap	***No***	NAD (by NYS ELAP 198.1) by Valeriu Voicu on 08/13/20
Analyst Description: OffWhite/Yellow, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 40 %, Fibrous glass 5 %, Non-fibrous 55 %			
14 4	220082255-14 **Location:** 2nd Fl. / Assembly Hall / HV-1 Ductwork / Over FG - Canvas Wrap	***No***	NAD (by NYS ELAP 198.1) by Valeriu Voicu on 08/13/20
Analyst Description: OffWhite, Homogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 80 %, Fibrous glass 1 %, Non-fibrous 19 %			

Reporting Notes:

(1) This PLM job was analyzed using Olympus BH-2 Pol Scope S/N 229915

Analyzed by: Valeriu Voicu _____

*NAD/NSD =no asbestos detected; NA =not analyzed; NA/PS=not analyzed/positive stop, (SOF-V) = Sprayed On Fireproofing containing Vermiculite; (SM-V) = Surfacing Material containing Vermiculite; PLM Bulk Asbestos Analysis by Appd E to Subpt E, 40 CFR 763 (NVLAP 200546-0), ELAP PLM Method 198.1 for NY friable samples, which includes the identification and quantitation of vermiculite or ELAP 198.6 for NOB samples or EPA 400 pt ct by EPA 600-M4-82-020 (NY ELAP Lab 11480); Note: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 (also see EPA Advisory for floor tile, FR 59,146,38970,8/1/94) National Institute of Standards and Technology Accreditation requirements mandate that this report must not be reproduced except in full without the approval of the lab.This PLM report relates ONLY to the items tested. AIHA-LAP, LLC Lab ID 102843, RI Cert AAL-094, CT Cert PH-0186, Mass Cert AA000054.

Reviewed By:_____ _____END OF REPORT_____

Adelaide Environmental Health Associates, Inc
1511 Route 22, Suite C24
Brewster, NY 10509
845-278-7710
845-278-7750 - fax

Site Address: **Yonkers Armory**	Date: **08/12/20**	Inspector(s) **Philip J. Page**
2 Quincy Place		
Yonkers, NY 10701	Project #: **OGSx:20060.00-IN**	

Sample ID #	Homogeneous Area	Floor Level	Sample Location/Description	Quantity (In Feet)	Friable NonFriable	Condition g, d, sd
1	1_A	1	MER, CEILING - SHEETROCK			
2	↓	↓	↓			
3	1_B	↓	- JOINT COMPOUND #220082255			
4	↓	↓	↓			
5	2	↓	, BREECHING - MUDDED FITTINGS			
6	↓	↓	↓			
7	↓	↓	↓			
8	3_A	↓	, BOILER SECTIONS, TOP LAYER - TAR			
9	↓	↓	↓			
10	3_B	↓	, BOTTOM - ROPE GASKET			
11	↓	↓	↓			
12	4	2	ASSEMBLY HALL, HV-1 DUCTWORK, OVER FG - CANVAS WRAP			
13	↓	↓	↓			

Special Instructions/ Turnaround Time:

Stop at 1st Positive per Homogenous Area **24HR TAT**

E-Mail Results to AdelaideLabResults@adelaideilc.com & ppage@adelaideilc.com

Relinquished by:
Received by: 8/13/20 1115
Relinquished by:
Received by:

Adelaide Environmental Health Associates, Inc
1511 Route 22, Suite C24
Brewster, NY 10509
845-278-7710
845-278-7750 - fax

Site Address:	Date:	Inspector(s)
Yonkers Armory	**08/12/20**	**Philip J. Page**
2 Quincy Place		
Yonkers, NY 10701	Project #: **OGSx:20060.00-IN**	

Sample ID #	Homogeneous Area	Floor Level	Sample Location/Description	Quantity (In Feet)	Friable NonFriable	Condition g, d, sd
14	4	2	Assembly Hall, HV-1 Ductwork, over FG - Canvas Wrap			
			#22008225 5			

Special Instructions/ Turnaround Time:

Stop at 1st Positive per Homogenous Area ***24HR TAT***

E-Mail Results to AdelaideLabResults@adelaidellc.com & ppage@adelaidellc.com

Relinquished by:
Received by: 8/13/20 1115
Relinquished by:
Received by:

APPENDIX C

XRF READINGS

Adelaide Environmental Heath Associates Inc.
1511 Route 22, Suite C-24
Brewster, New York 10509
Adelaide Project# MACF:20060.00-IN
OGS Project# 46166
Project Name: Yonkers Armory- Boiler Replacement Project
Inspector: Philip J. Page

Reading #	Date	Time	Space Type	Floor	Room	Component	Substrate	Color	Condition	Lead Concentration (mg/cm2)	Result
1	**8/12/2020**	**7:43:48**	**Yonkers Armory**		**Calibration**					**1.1**	**Positive**
2	**8/12/2020**	**7:44:01**	**Yonkers Armory**		**Calibration**					**1**	**Positive**
3	**8/12/2020**	**7:44:14**	**Yonkers Armory**		**Calibration**					**1.1**	**Positive**
4	8/12/2020	7:47:40	Yonkers Armory	2nd Floor	Gym	HV-1	Metal	Grey	Fair	0.1	Negative
5	8/12/2020	7:47:48	Yonkers Armory	2nd Floor	Gym	HV-1	Metal	Grey	Fair	0	Negative
6	8/12/2020	7:48:16	Yonkers Armory	2nd Floor	Gym	Ductwork	Metal	Light Grey	Fair	0.1	Negative
7	8/12/2020	7:48:23	Yonkers Armory	2nd Floor	Gym	Ductwork	Metal	Light Grey	Fair	0	Negative
8	8/12/2020	7:50:48	Yonkers Armory	2nd Floor	Gym	Bar Joist	Metal	Red	Fair	0.2	Negative
9	8/12/2020	8:49:36	Yonkers Armory	1st Floor	MER	Ceiling	Drywall	White	Fair	0	Negative
10	**8/12/2020**	**8:50:14**	**Yonkers Armory**	**1st Floor**	**MER**	**Pipe**	**Metal**	**Orange**	**Fair**	**1.6**	**Positive**
11	**8/12/2020**	**8:50:39**	**Yonkers Armory**	**1st Floor**	**MER**	**Pipe**	**Metal**	**Orange**	**Fair**	**1.5**	**Positive**
12	8/12/2020	8:50:56	Yonkers Armory	1st Floor	MER	Pipe	Metal	Yellow	Fair	0.1	Negative
13	8/12/2020	8:51:15	Yonkers Armory	1st Floor	MER	Pipe	Metal	Yellow	Fair	0.2	Negative
14	8/12/2020	8:52:23	Yonkers Armory	1st Floor	MER	Boiler	Metal	Grey	Fair	0	Negative
15	8/12/2020	8:52:55	Yonkers Armory	1st Floor	MER	Burner	Metal	Blue	Fair	0.3	Negative
16	8/12/2020	8:53:45	Yonkers Armory	1st Floor	MER	HV-1	Metal	Grey	Fair	0.1	Negative
17	8/12/2020	8:54:16	Yonkers Armory	1st Floor	MER	Pump	Metal	Red	Fair	0.4	Negative
18	8/12/2020	8:54:26	Yonkers Armory	1st Floor	MER	Pump	Metal	Red	Fair	0.2	Negative
19	8/12/2020	9:06:10	Yonkers Armory	Exterior	Roof	Trane Unit	Metal	Light Green	Poor	0.1	Negative
20	8/12/2020	9:06:45	Yonkers Armory	Exterior	Roof	Curb	Metal	Black	Fair	0.3	Negative
21	**8/12/2020**	**9:11:57**	**Yonkers Armory**		**Calibration**					**1**	**Positive**
22	**8/12/2020**	**9:12:10**	**Yonkers Armory**		**Calibration**					**1**	**Positive**
23	**8/12/2020**	**9:12:23**	**Yonkers Armory**		**Calibration**					**1.1**	**Positive**

APPENDIX D

PERSONNEL AND LABORATORY CERTIFICATIONS

New York State – Department of Labor
Division of Safety and Health
License and Certificate Unit
State Campus, Building 12
Albany, NY 12240

ASBESTOS HANDLING LICENSE

Adelaide Environmental Health Associates, Inc.
Suite C24
1511 Route 22

Brewster, NY 10509

FILE NUMBER: 99-0656
LICENSE NUMBER: 29305
LICENSE CLASS: RESTRICTED
DATE OF ISSUE: 06/29/2020
EXPIRATION DATE: 07/31/2021

Duly Authorized Representative – John Soter:

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.

Eileen M. Franko, Director
For the Commissioner of Labor

SH 432 (8/12)

United States Environmental Protection Agency

This is to certify that

Adelaide Environmental Health Associates, Inc

has fulfilled the requirements of the Toxic Substances Control Act (TSCA) Section 402, and has received certification to conduct lead-based paint renovation, repair, and painting activities pursuant to 40 CFR Part 745.89

In the Jurisdiction of:

All EPA Administered States, Tribes, and Territories

This certification is valid from the date of issuance and expires December 05, 2022

NAT-15081-2

Certification #

June 21, 2017

Issued On

Michelle Price, Chief

Lead, Heavy Metals, and Inorganics Branch

STATE OF NEW YORK - DEPARTMENT OF LABOR
ASBESTOS CERTIFICATE

N.Y.S



PHILIP J PAGE
CLASS(EXPIRES)
C ATEC(05/21) D INSP(05/21)
H PM (05/21) I PD (05/21)

CERT# 12-10888
DMV# 216687928

MUST BE CARRIED ON ASBESTOS PROJECTS

01213 00536798828

EYES BRO
HAIR BLN
HGT 6' 00"

IF FOUND RETURN TO:
NYSDOL - L&C UNIT
ROOM 161A BUILDING 12
STATE OFFICE CAMPUS
ALBANY NY 12240

United States Environmental Protection Agency

This is to certify that



Philip J Page

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 March 23, 2023

LBP-I-I172697-2

Certification #

December 23, 2019

Issued On

Susan Schulz, Acting Chief

Chemicals and Multimedia Programs Branch

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2021
Issued April 01, 2020

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

DR. THOMAS R. MCKEE
AMERISCI RICHMOND
13635 GENITO RD
MIDLOTHIAN, VA 23112

NY Lab Id No: 10984

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 Material	Item 198.8 of Manual

NEW YORK STATE | Department of Health

Serial No.: 61267

Property of the New York State Department of Health. Certificates are valid only at the address shown, must be conspicuously posted, and are printed on secure paper. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify the laboratory's accreditation status.

Adelaide
ENVIRONMENTAL HEALTH

1511 Route 22, Suite C24
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Albany, NY 12207 518.874.0617
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E-mail: adelaidemail@adelaidellc.com
Fax: 845.278.7750

RENOVATION SURVEY
FOR
ASBESTOS-CONTAINING MATERIALS, LEAD-BASED PAINT & PCBs

PERFORMED AT:

Yonkers Armory
2 Quincy Place
Yonkers, New York 10701
Adelaide Project# BA:23168.00-IN
OGS Project# 47477

PREPARED FOR:

Greg Springer
Bergmann: Architects, Engineers, Planners
18 Corporate Woods Blvd., Suite 400
Albany, New York 12211

PREPARED BY:
Jason Fullum
June 15, 2023

REVIEWED BY:



Stephanie A. Soter
President

TABLE OF CONTENTS

1.0		**Introduction**	1
	1.1	Scope of Work / Project Personnel	1
	1.2	Executive Summary	1
	1.3	**Conclusions and Recommendations**	1
	1.4	Asbestos-containing Materials (ACM)	2
	1.5	Lead-based Paint (LBP)	2
	1.6	PolyChlorinated Biphenyls (PCB)	2
2.0		**Summary of Hazardous Materials**	2
	2.1	Summary of Identified ACM/PACM	2
	2.2	Summary of Identified Non-ACM	3
	2.3	Summary of Identified LBP	3
	2.4	Summary of Identified PCB-containing Materials	4
	2.5	Observations	4
3.0		**Asbestos-containing Materials (ACM)**	4
	3.1	Field Procedures and Analysis Methodology	4
	3.2	Regulatory Guidelines and Requirements of ACM	6
4.0		**Lead-based Paint (LBP)**	7
	4.1	Applicable Standards/Guidelines for LBP	7
	4.2	XRF Information	8
5.0		**PolyChlorinated Biphenyls (PCB)**	8
	5.1	Background and Protocol for PCBs	8
6.0		**General Discussion**	10
7.0		**Disclaimers**	10

APPENDICES

ACM Location Map(s)	A
Sample Location Map(s)	B
ACM Photo(s)	C
Asbestos Analytical Results	D
XRF Readings	E
PCB Analytical Results	F
Personnel and Laboratory Certifications	G

1.0 Introduction

1.1 Scope of Work / Project Personnel

Adelaide Environmental Health Associates, Inc. **(Adelaide)** performed an Asbestos, Lead and PCB Survey for Building/Structure Demolition, Renovation, Remodeling and/or Repair, in conformance with ALL Federal, State and Local regulations for Bergmann:

SURVEY LOCATION(S):	Yonkers Armory, 2 Quincy Place, Yonkers, New York 10701
SURVEY DATE(S):	June 6, 2023
SCOPE OF WORK:	Entire building renovation excluding the roof.
SCOPE OF WORK BUILDING/ STRUCTURE PLANS UTILIZED:	As built drawings from 1985 were utilized for the inspection.
CERTIFIED ADELAIDE PERSONNEL:	Jason Fullum (NYS Asbestos Inspector/Cert. #97-20574 and EPA Lead-based Paint Risk Assessor/Cert. #LBP-R-12098-2)
SITE CONTACT(S):	Trentin Reese - Bergmann

1.2 Executive Summary

On June 6, 2023, **Adelaide** inspected the first floor, second floor and exterior areas that will be affected by the proposed scope of work for suspect ACM, LBP and PCBs.

SUSPECT HAZARDOUS MATERIAL	SAMPLE(S)/LAYER(S)/ READING(S) COLLECTED	SAMPLE(S) / HOMOGENEOUS AREA(S) IDENTIFIED POSITIVE
Asbestos-containing Materials (ACM):	56	0
Lead-based Paint (LBP):	31 (plus calibrations)	0
PolyChlorinated Biphenyls (PCB):	6	0

The following indicates assumed materials due to live electric at the time of the inspection.

- PACM electrical wiring insulation and panels, mirror mastic

There are **asbestos materials that will be impacted** by this scope of work as described in section 1.1. These materials are listed in section 2.1.

1.3 Conclusions and Recommendations

The following conclusions and recommendations are prepared by **Adelaide** as per the provided scope of work for Building/Structure Demolition, Renovation, Remodeling and/or Repair. Should the scope of work change, it is recommended that the findings be revisited to determine if additional sampling will be required to satisfy ALL Federal, State and Local regulations.

The materials sampled, as part of this survey, were limited to building materials potential affected by the provided scope of work only. All building materials outside the scope of work that have the potential to be disturbed, impacted, or if the scope of work is to change, are to be presumed asbestos-containing materials (PACM). Identified PACM **must** either be sampled by a licensed NYS Asbestos Inspector and/or abated/removed and disposed of by a licensed NYS Asbestos Abatement Contractor.

1.4 Asbestos-containing Materials (ACM)

- This survey concluded that the materials listed in Section 2.1 are assumed ***positive for asbestos***.

- There are asbestos materials that will be impacted by this scope of work. These materials are listed in section 2.1. Refer to Appendix A for the approximate location of the above materials in the affected scope of work.

- Subpart 56-5(h) of 12 NYCRR Part 56 requires that no demolition, renovation, remodeling, or repair work be commenced by any owner or the owner's agent prior to the completion of asbestos abatement. Asbestos abatement must be performed by an asbestos abatement contractor that maintains a current asbestos handling license and employs NYSDOL/NYCDEP certified asbestos handlers and supervisors. It is recommended that a 12 NYCRR 56 certified Project Monitor oversee abatement activities.

- Subpart 56-5(g) of 12 NYCRR Part 56 specifies requirements for transmittal of asbestos survey information by the owner or owner's agent. (1) One copy of the asbestos survey report shall be sent to the local government entity charged with issuing a permit for such demolition, renovation, remodeling, or repair work under applicable State or local laws. (2) If controlled demolition or pre-demolition activities will be performed, one copy of the asbestos survey report shall be submitted to the appropriate Asbestos Control Bureau district office. (3) One copy of the asbestos survey report must be kept on the construction site throughout the duration of the asbestos project and any associated demolition, renovation, remodeling, or repair project.

1.5 Lead-based Paint (LBP)

- This survey concluded that the readings summarized in Section 2.3 and Appendix E tested ***negative for lead-based paint.***

1.6 PolyChlorinated Biphenyls (PCB)

- This survey concluded that the materials listed in Section 2.4 and Appendix F tested ***negative for PCBs.***

2.0 Summary of Hazardous Materials

2.1 Summary of Identified ACM/PACM

KEY: **ACM** = Materials containing greater than 1% of asbestos; **HA** = Homogeneous Area; **LF** = Linear Feet; **SF** = Square Feet; **PACM** = Presumed Asbestos-containing Materials; **Friable** = ACM capable of being released into air, and which can be crumbled, pulverized, powdered, crushed or exposed by hand-pressure; [A] = Material is considered non-friable solely in an intact and undisturbed state, however, may be rendered friable if pulverized or crumbled while in dry state.

Samples collected by **Adelaide** June 6, 2023

HA	Identified ACM	ACM Location(s)	Approx. Qty.	Condition	Friable? (Yes or No)
PACM	Electrical Wire Insulation and Panels	Throughout	Unknown	Unknown	No

HA	Identified ACM	ACM Location(s)	Approx. Qty.	Condition	Friable? (Yes or No)
PACM	Bathroom Mirror Mastic	Men's and Women's Bathrooms and Locker Rooms	11 Mirrors	Good	No

2.2 Summary of Identified Non-ACM

Samples collected by **Adelaide** June 6, 2023

Identified Non-ACM	Sample Location(s)
12x12 Brown/Red Mottled Floor Tile	2nd Floor
Black Floor Mastic	
2x4 Ceiling Tile – Large and Small Holes	
Debris on Top of Ceiling Tiles	
2x4 Ceiling Tile – Squiggles and Holes	
CMU Mortar	Throughout
4" Black Covebase and Mastic	
Yellow Carpet Mastic	2nd Floor
12x12 Green Mottled Floor Tile	
Drywall Ceiling and Joint Compound	Throughout
12x12 Brown and White Mottled Floor Tile	2nd Floor
12x12 White with Gray Specks Floor Tile	
Terrazzo Shower Base	Locker Rooms
Sealant at Shower	
Exterior Door Glazing Compound	Throughout
Exterior Door Sealant	
Concrete	
Brick Mortar	
Exterior Vertical Sealant	
Pin Mastic on Ductwork	Boiler Room
Wall Tile – Grout and Mudset	Kitchen
Floor Tile – Grout and Mudset	
Exterior Door Caulk	Throughout
Exterior Louver Caulk	

2.3 Summary of Identified LBP

Based on review of the data generated by the Viken Pb200e X-Ray Fluorescence (XRF) Analyzer(s), the following surfaces tested were identified as lead-based, as defined by HUD/EPA (equal to or in excess of 1.0 milligram per square centimeter):

Readings collected by **Adelaide** June 6, 2023

Location of LBP	LBP Component	Substrate	Color	Condition	Readings (mg/cm2)
NO Lead-based Paints identified above HUD/EPA standards of readings collected in reference to the above-mentioned scope of work.					

2.4 Summary of Identified PCB-containing Materials

Samples collected by **Adelaide** June 6, 2023

Sample #	Location / Description	Material Matrix	Color	Substrate	Analytical Result
NO PCB-containing materials were identified above the USEPA 40 CFR 761 threshold of 50 ppm(mg/kg) of samples collected/analyzed in reference to the above-mentioned scope of work.					

2.5 Observations

ASBESTOS-CONTAINING MATERIALS (ACM)
A visual inspection was performed, and homogeneous material types were established based on appearance, color and texture. The findings presented in this report are based upon reasonably available information and observed site conditions at the time the assessment was performed. The findings and conclusions of this report are not meant to be indicative of future conditions at the site and does not warrant against conditions that were not evident from visual observations or historical information obtained from others.

On June 6, 2023, representative bulk sampling was performed on suspect building materials for laboratory analysis and the following is a summary of installed building materials sampled as per the scope of work provided:

- Ceiling Materials – Ceiling Tiles, Drywall, Joint Compound.
- Wall Materials – CMU Mortar, Brick Mortar, Covebase and Mastic, Grout, Mudset
- Flooring Materials – Floor Tiles, Mastics, Grout, Mudset
- Miscellaneous Materials – Terrazzo, Sealants, Glazing Compound, Concrete, Pin Mastic
- Non-suspect Materials (not sampled) – Fiberglass Insulation, Wood, Glass, Metal.

3.0 Asbestos-containing Materials (ACM)

3.1 Field Procedures and Analysis Methodology

Guidelines used for the inspection were established by the U.S. 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) and Title 12 NYCRR Part 56-5.1. Field information was organized as per the AHERA concept of a

homogeneous area (HA); that is, suspect Asbestos-containing Materials (ACM) with similar age, appearance, and texture were grouped together, sampled and assessed for condition.

For the purposes of this inspection, suspect ACM has been placed in three material categories: thermal, surfacing, and miscellaneous. 1) Surfacing materials are those that are sprayed on, troweled on or otherwise applied to surfaces for fireproofing, acoustical, or decorative purposes (e.g., wall and ceiling plaster). 2) Thermal materials are those applied to heat pipes or other structural components to prevent heat loss or gain or prevent water condensation (e.g., pipe and fitting insulation, duct insulation, boiler flue). 3) Miscellaneous materials are interior building materials on structural components, structural members or fixtures, such as floor and ceiling tiles, etc. and do not include surfacing material or thermal system insulation.

SURFACING MATERIALS

Surfacing materials were grouped into homogeneous sampling areas. A homogeneous area contains material that is uniform in color and texture and appears identical in every other respect. Materials installed at different times belong to different sampling areas. Homogeneous areas were determined on per floor basis.

The following protocol was used for determining the number of samples to be collected:

- At least three bulk samples were collected from each homogeneous area that is 1,000 square feet or less.
- At least five bulk samples were collected from each homogeneous area that is greater than 1,000 square feet but less than or equal to 5,000 square feet.
- At least seven bulk samples were collected from each homogeneous area that is greater than 5,000 square feet.

THERMAL SYSTEM INSULATION (TSI)

The concept of homogeneous sampling areas applies equally well to thermal insulation as to surfacing material. A "typical" building may contain multiple insulated pipe runs from any combination of the following categories:

- Hot water supply and/or return
- Cold water supply
- Chilled water supply
- Steam supply and/or return
- Roof or system drain

The following protocol was used for determining the number of samples to be collected.

- Collect at least three bulk samples from each homogeneous area of thermal system insulation.
- Collect at least one bulk sample from each homogeneous area of patched thermal system insulation if the patched section is less than 6 linear or square feet.
- In a manner sufficient to determine whether the material is ACM or not ACM, collect a minimum of three bulk samples from each homogeneous insulated mechanical system tee, elbow, and valve.

Bulk samples are not collected from any homogeneous area where the certified inspector has determined that the thermal system insulation is fiberglass, foam glass, or rubber.

MISCELLANEOUS MATERIALS

Miscellaneous materials are grouped into different homogeneous areas and at least two bulk samples are collected from each homogeneous area as per the clarification letter from the EPA and the Professional Abatement Contractors of New York, Inc in November of 2007.

Samples collected were analyzed by a laboratory approved under the New York State Department of Health Environmental Laboratory Approval Program (NYSDOH ELAP). Samples were analyzed in the laboratory by Polarized Light Microscopy (PLM), Polarized Light Microscopy-NOB (PLM-NOB) and/or Quantitative Transmission Electron Microscopy (QTEM), as required. Sample collection and laboratory analysis were conducted in compliance with the requirements of Title 12 NYCRR Part 56-5.1, 29 CFR 1926.1101 and standard EPA & OSHA accepted methods. Samples consisting of multiple layers were separated and analyzed independently in the laboratory.

3.2 Regulatory Guidelines and Requirements for ACM

FEDERAL

In accordance with the Clean Air Act (CAA), the U.S. Environmental Protection Agency (EPA) established National Emission Standards for hazardous Air Pollutants (NESHAP) to protect the public from exposure to airborne pollutants. Asbestos was one of the air pollutants, which was addressed under the NESHAP 40 CFR Part 61. The purpose of asbestos NESHAP regulations is to protect the public health by minimizing the release of asbestos when facilities, which contain ACM, are being renovated or demolished. EPA is responsible for enforcing regulations related to asbestos during renovations and demolition, however, the CAA allows the EPA to delegate this authority to State and Local Agencies. Even after EPA delegate's responsibility to a state or Local agency, EPA retains the authority to oversee agency performance and to enforce NESHAP regulations as appropriate.

NEW YORK STATE

Asbestos in New York State is regulated under the Labor Law Section 906, Part 56 of Title 12 of the Official Compilation of Codes, Rules, and Regulations. Within the department and for the purpose of the Department of Labor, this part (rule) is known as Industrial Code Rule No. 56 (ICR 56) relating to hazards to the public safety and health, during the removal, encapsulation, or disturbance of friable asbestos, or any handling of ACM that may result in the release of asbestos fiber.

As specified in Title 12 NYCRR Part 56-5.1 (h) and (i), "If the building/structure asbestos survey finds that the portion of the building/structure to be demolished, renovated, remodeled, or have repair work contains ACM, PACM, suspect miscellaneous ACM assumed to be ACM, or asbestos material, which is impacted by the work, the owner or the owner's agent shall conduct, or cause to have conducted, asbestos removal performed by a licensed asbestos abatement contractor in conformance with all standards set forth in this Part. All ACM, PACM, suspect miscellaneous ACM assumed to be ACM, or asbestos material impacted by the demolition, renovation, remodeling or repair project shall be removed as per this Part, prior to access or disturbance by other uncertified trades or personnel. No demolition, renovation, remodeling or repair work shall be commenced by any owner or the owner's agent prior to the completion of the asbestos abatement in accordance with the notification requirements of this Part…All building/structure owners and asbestos abatement contractors on a demolition, renovation, remodeling, or repair project, which includes work covered by this part, shall inform all trades on the work site about PACM, ACM, asbestos material and suspect miscellaneous ACM…Bids may be advertised and contracts

awarded for demolition, remodeling, renovation, or repair work, but no work on the current intermediate portion of the project shall commence on the demolition, renovation, remodeling or repair work by any owner or agent prior to completion of all necessary asbestos abatement work for the current intermediate portion of the entire project, in conformance with all standards set forth in this Part." All work conducted should be in accordance with all legal requirements, including but not limited to U.S. Environmental Protection Agency (EPA) National Emissions Standards for Hazardous Air Pollutants (NESHAP) [40 CFR Part 61], New York State Industrial Code Rule 56 Asbestos Regulations (ICR 56) and Chapter 1 of Title 15 of the Rules of the City of New York Regulations, as applicable. Advance notification of the asbestos project to the USEPA, NYSDOL, and NYCDEP may be required.

CONCEALED ACM

In addition to the ACMs identified at the site, there is a possibility that concealed suspect ACM may exist at the building/structure. As such, if any concealed suspect ACM is encountered during future construction related activities, the work should immediately stop. Prior to resuming the work, the suspect ACM should either be 1) Sampled by an appropriately-certified asbestos professional and submitted to an Approved NYSDOH ELAP laboratory for asbestos analysis or 2) Presumed to be ACM (PACM) and removed by a licensed asbestos abatement contractor for disposal in accordance with all applicable regulations.

4.0 Lead-based Paint (LBP)

4.1 Applicable Standards/Guidelines for LBP

The U.S Department of Housing and Urban Development (HUD) defines the action level for lead-based paint as a lead content equal to or greater than 1.0 milligrams of lead per square centimeter of painted surface (≥1.0 mg Pb/cm^2) when measured with an XRF analyzer or 0.5 percent by weight when chemically tested. This definition is described in the HUD "Lead-Based Paint: Interim Guidelines for Hazard Identification and Abatement in Public and Indian Housing, September 1990". The state of New York's definition of the action level for lead-based paint is consistent with the level established by HUD.

Please note that although the HUD defines lead-based paint as paint having lead concentrations equal or greater than 1.0 mg/cm2, the Occupational Safety and Health Administration (OSHA) considers any concentration of lead in paint to be lead-containing paint. Regardless of the lead concentrations in paint, the contractor shall comply with 29 CFR 1926.62, OSHA regulations, and take precautionary measures for dust control and limit employee exposure to lead dust during the renovations.

Painted surfaces that would be impacted by planned activities such as drilling, cutting, scrapping, etc. and create dust should be properly addressed by following safe work practices, good housekeeping procedures and/or following proper abatement procedures. Grinding and sanding of paint without HEPA filter exhaust, open flame gas fired torch, unconfined abrasive blasting, and chemical strippers containing methylene chloride or other human carcinogenic chemicals are not recommended.

The Federal Resource Conservation and Recovery Act (RCRA) regulation governs the handling, transportation, and disposal of hazardous materials. Every demolition/renovation debris generator has the responsibility to determine whether the debris exhibits one or more of the characteristic wastes listed in subpart C of 40 CFR Part 261. In the case of demolition debris, lead in LBP is a characteristic waste, and therefore, it is the responsibility of the renovation/demolition debris generator to characterize the waste

prior to its disposal and, if found to be hazardous waste as defined by Federal Statutes, to be properly handled and disposed.

Metal objects painted with LBP are exempt from disposal regulations applicable to lead, provided they are properly recycled. All metal objects that are painted with LBP should be sent to a certified recycling facility.

This report is not Lead-based Paint abatement specification and should not be used for specifying removal methods or techniques.

4.2 XRF Information

Viken Pb200e X-Ray Fluorescence (XRF) Analyzer(s) were used to survey the building/structure or portion thereof identified to be demolished, renovated, remodeled or repaired for the presence of LBP. The Viken Pb200e XRF Analyzer(s) are using a sealed source of Co-57 with 6mCi sources, meeting HUD requirements for the analysis of paint films. During the analysis, the intensity of the x-rays is converted by the instrument's internal software into an estimate of the concentration of lead in the substance being analyzed. The results are interpreted as concentrations of lead in milligrams per square centimeter. This device is a field-screening tool, used to collect multiple readings in a short period of time. The method of measurement is based on spectrometric analysis of lead x-ray fluorescence within a controlled depth of interrogation. The reading is an estimate of lead content in all layers of paint. The results are displayed in milligrams per square centimeter (mg/cm2). The device(s) used for this inspection were the Viken Pb200e X-Ray Fluorescence (XRF) Analyzer(s) Serial Number 2104, Source date 4/1/23, Serial number 2231, Source date 5/15/22, Serial number 2595, Source date 2/15/23 and/or Serial number 2901, Source date 2/15/23.

5.0 PolyChlorinated Biphenyls (PCB)

5.1 Background and Protocol for PCBs

PolyChlorinated Biphenyls (PCB) are a group of manmade chemicals. PCBs were widely used in building materials and electrical products in the past. The U.S. Environmental Protection Agency banned the manufacturing and certain uses of PCBs in 1978, but buildings constructed or renovated between 1950 and 1978 may still have building materials and electrical products that contain PCBs. Examples of products that may contain PCBs include caulk, paint, glues, plastics, fluorescent lighting ballasts, transformers and capacitors.

PCBs are currently prohibited from being used in caulk and other commodities (U.S. EPA, 40 CFR 761). However, prior to 1977, PCBs were present in some caulking materials used in the construction of schools and other buildings. Studies have shown that concentrations of PCB can exceed 1% (10,000 ppm) by weight in some caulk materials. An investigation of 24 buildings in the Greater Boston Area revealed that one-third of the buildings tested (8 of 24) contained caulking materials with polychlorinated biphenyl (PCB) content exceeding 50 ppm by weight with an average concentration of 15,600 ppm or 1.5% (Herrick et al., 2004). These buildings included schools and other public buildings.

The U.S. EPA regulates the disposal of caulk, as well as soil and other materials contaminated with PCBs from caulk, if the concentration of PCBs exceeds 50 ppm. Such materials must be disposed at an appropriate approved or permitted facility.

U.S. EPA regulation 40 CFR 761 defines "PCB remediation waste" to include contaminated soil, and specifies a clean-up level of <1ppm without further conditions for unrestricted use in "high occupancy areas" (i.e., areas where individuals may be present for 335 hours or more per year). PCB caulk is defined as a PCB bulk product waste, and its disposal is subject to U.S. EPA regulations under the Toxic Substances Control Act (40 CFR761.62).

This protocol has been developed in consultation with the New York State Department of Health, Division of Environmental Health Assessment, Bureau of Toxic Substance Assessment to address concerns about properly managing caulk containing PCBs that will be disturbed during building renovation and maintenance.

CAULK SAMPLE COLLECTION

Buildings constructed or renovated between 1950 and 1977 have a potential to contain PCBs in existing caulk. Representative samples of caulking materials from these buildings prior to renovation or demolition work should be tested to determine whether the caulk is contaminated with PCBs. Professional judgement should be used to design the sampling plan for characterizing caulk throughout the building. The consultant should pay particular attention to construction and maintenance records and to the appearance of caulking materials (likenesses and differences). Samples should be taken from window frames or expansion joints that have not been repaired or replaced since 1977. Depending on specific information provided in the workplan developed by the project manager, such as window placement, compositing of some caulk samples might be appropriate. Caulk from different time periods or that have a different appearance should not be composited together.

It is important to note that caulk used during the time period of interest may also contain asbestos or lead. Therefore, the work plan should include testing, handling and disposal requirements appropriate for such regulated materials.

SOIL SAMPLE COLLECTION

Buildings constructed or renovated between 1950 and 1977, which have undergone further renovation after 1977, may have residual PCB contamination in adjacent soils. An adequate representation of surface soils should be tested to assess the potential for residual PCB contamination.

When designing a representative soil sampling plan, the likelihood of soil contamination from deteriorated or deteriorating caulk should be considered. Caulk that has in the past dried out and fallen to the ground is the most important source of soil contamination. Thus, sampling should include soil beneath windows where caulk has obviously deteriorated or been replaced because of previous deterioration. Areas subject to the stress of sun and prevailing weather (typically the southern and western side of each structure) should be included for sampling. These samples would provide a conservative evaluation of soil conditions due to an increased potential for material failure, possibly resulting in contamination of soil. Also, if earlier renovation or demolition work may have stockpiled potentially contaminated caulk in other school areas, the school should consider having soils in those areas tested as well.

Soil sampling should focus on areas of the building where ”banks” or “gangs” of windows exist/were replaced and areas of the structure where large expansion joints are located. This would provide a conservative evaluation of potential soil contamination and permit efficient sampling.

Any obvious pieces of caulk encountered during the collection of soil samples should be removed from the soil, categorized (with respect to location and depth) and treated as a separate potential sample.

Depth – At each soil sample location, soil should be collected in depth intervals of 0-2 inches, 2-6 inches and 6-12 inches. The surface soil sample (0-2 inches) should be collected from below the vegetative surface layer, if present.

Distance from Structure – Samples should be collected within 1 foot of the building and 5 feet from the building.

Samples should be collected in a manner that prevents cross-contamination. Augers or driven core samplers should be avoided, as any caulk caught on the edge of this type of tool could be driven to lower intervals. Using a designated trowel for each sample location and each interval of depth is encouraged. If the sampling tool is field cleaned between samples, do so in a manner that does not add solvent contamination to the environment.

NOTE
Sampling was performed by **Adelaide** in compliance with protocols outlined by New York State Education Department (NYSED) and USEPA 40 CFR 761, as described above. Only one sample per homogeneous area was required for analysis of suspect PCB-containing materials. Bulk sample(s) were properly packaged and forwarded, with associated Chain of Custody (COC), to York Analytical Laboratories, Inc., for analysis using method SW846-3550B/8082. The analysis will determine if the suspect material will be classified as PCB-containing at or above 50 ppm or mg/kg as per the EPA regulations. Copies of the analytical results are contained within attached appendices for review.

6.0 General Discussion

All construction personnel as well as individuals who have access to locations where asbestos-containing materials (ACM), lead-based paints (LBP) and/or polychlorinated biphenyls (PCB) exists should be informed of its presence and the proper work practices in these areas. Conspicuous labeling of all ACM is suggested to ensure personnel is adequately informed. Personnel should be informed not to rest, lean or store material or equipment on or near these surfaces and not to cut, saw, drill, sand or disturb ACM. All removal, disturbance, and repair of ACM should be performed in compliance with Title 12 NYCRR Part 56 by persons properly trained to handle ACM. Facility custodial and maintenance personnel should receive training commensurate with their work activities; as defined in 29 CFR 1910.1001.

7.0 Disclaimers

Adelaide certifies that the information contained within this report is based solely upon site observations and the results of laboratory analysis for samples collected during this survey/assessment. These observations and results are time dependent, subject to changing site conditions and revisions to Federal, State and Local regulations. **Adelaide** warrants that these findings have been promulgated after being prepared in general accordance with generally accepted practices in the abatement industries. **Adelaide** also recognizes that inspection laboratory data is not usually sufficient to make all abatement and management decisions. No other warranties are expressed or implied.

The materials sampled, as part of this survey, were limited to building materials potential affected by the provided scope of work only. All building materials outside the scope of work that have the potential to be disturbed, impacted, or if the scope of work is to change, are to be presumed asbestos-containing materials (PACM). Identified PACM **must** either be sampled by a licensed NYS Asbestos Inspector and/or abated/removed and disposed of by a licensed NYS Asbestos Abatement Contractor.

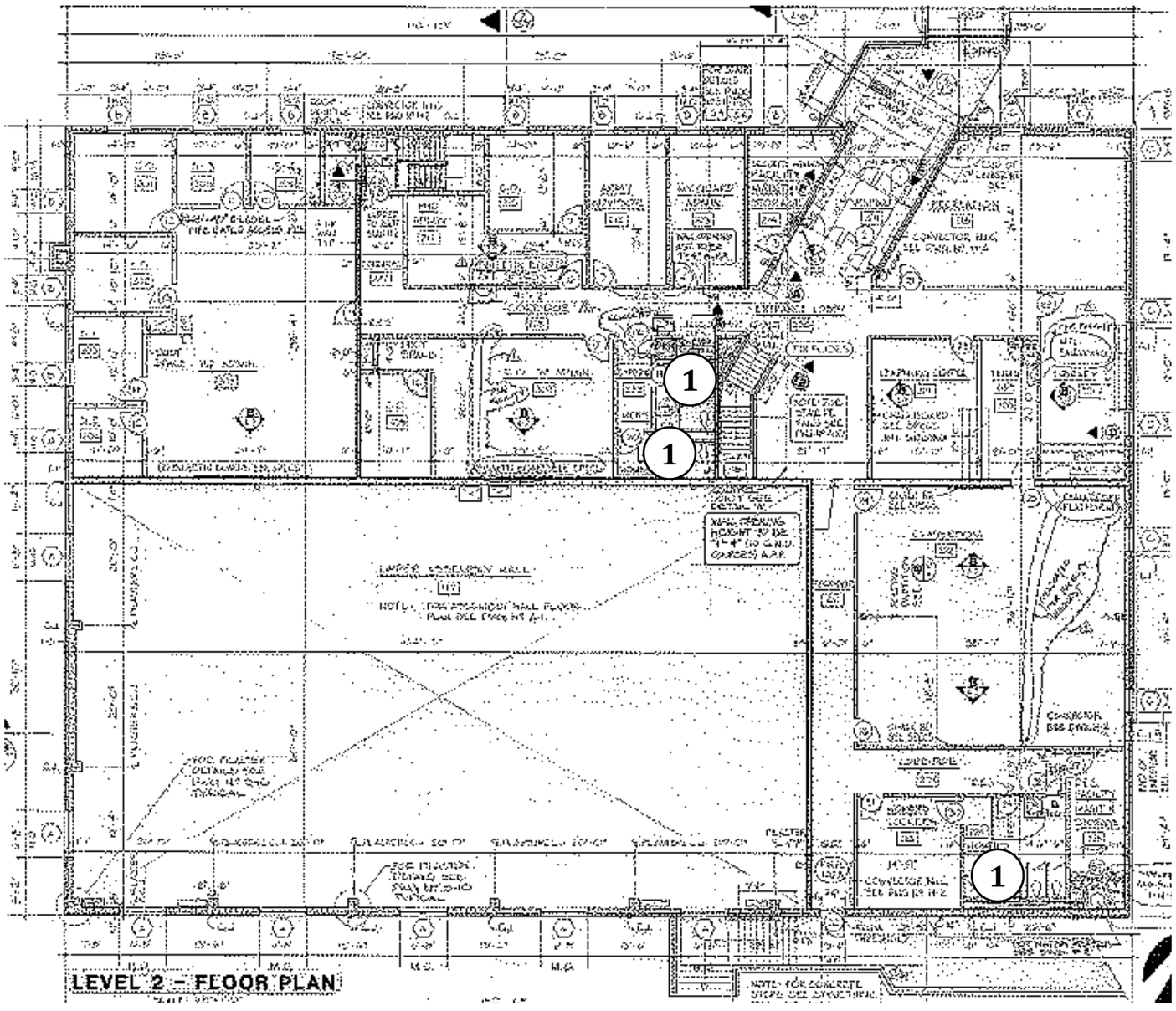
Due to the potential for concealed Asbestos-containing Materials (ACM) and/or other regulated materials, this report should not be construed to represent all ACM and/or regulated materials within the site(s). All quantities of ACM and/or other regulated materials identified, and all dimensions listed within this report are approximate and should be verified On-site.

This report is generated for the exclusive use of the client and is not designed to serve as a specification for abatement. The owner is strongly encouraged to contract with a consultant having a current Asbestos Project Designer Certificate as issued by New York State Department of Labor for the preparation of contract specifications, work plans, and/or drawings prior to requesting bids for the abatement or removal of the materials identified in this report.

NYSDOH issued an Interim Guidance Letter, on July 9, 2013, which outlined the approved testing alternative for materials containing vermiculite. Specifically, "...Where TSI, surfacing materials, or other PACM or miscellaneous suspect ACM contain greater than 10% vermiculite, Item 198.6 may be used to evaluate the asbestos content of the material; provided, however, that any test results using this method must be reported with the following conspicuous disclaimer: *"This method does not remove vermiculite and may underestimate the level of asbestos present in a sample containing greater than 10% vermiculite."* On July 22, 2014, NYSDOH issued a Regulatory Guidance Letter outlining the new approved analytical methods for testing sprayed-on fireproofing (SOFP) that contains vermiculite. NYSDOH authorized the use of ***two*** analytical methods to evaluate the asbestos content of SOFP that contains vermiculite. As per NYSDOH Guidelines, *"After October 31, 2014, one of the new methods **must** be used to test SOF-V, regardless of the percent of vermiculite."* On May 6, 2016, NYSDOH issued a Regulatory Guidance Letter outlining the new protocol for analytical procedure for surfacing materials (ie. plaster, stucco, etc.) that contain vermiculite. As per NYSDOH Guidelines, "*The original July 2013 and July 2014 letters addressed SOF-V only. Both NYS DOH's Item 198.8 and RJ Lee Group Method 055 shall now be applied to test for vermiculite in other Surfacing Material (SM) as defined in 12 NYCRR Part 56 (NYS Industrial Code Rule 56).*"

APPENDIX A

ACM LOCATION MAP(S)



ACM LEGEND: (see report for details)	
1	Assumed Mirror Mastic
PACM	Electrical Wire and Panels Throughout

Second Floor Plans - Asbestos Locations

Drawing Not to Scale

Adelaide ENVIRONMENTAL HEALTH
1511 Route 22
Brewster, NY 10509
Phone: (845) 278-7710
Fax: (845) 278-7750

CLIENT:
Greg Springer
Bergmann: Architects, Engineers, Planners
18 Corporate Woods Blvd., Suite 400
Albany, New York 12211

(Client) Project #

SURVEY LOCATION:
Yonkers Armory
2 Quincy Place
Yonkers, New York 10701

DATE: 6/13/2023

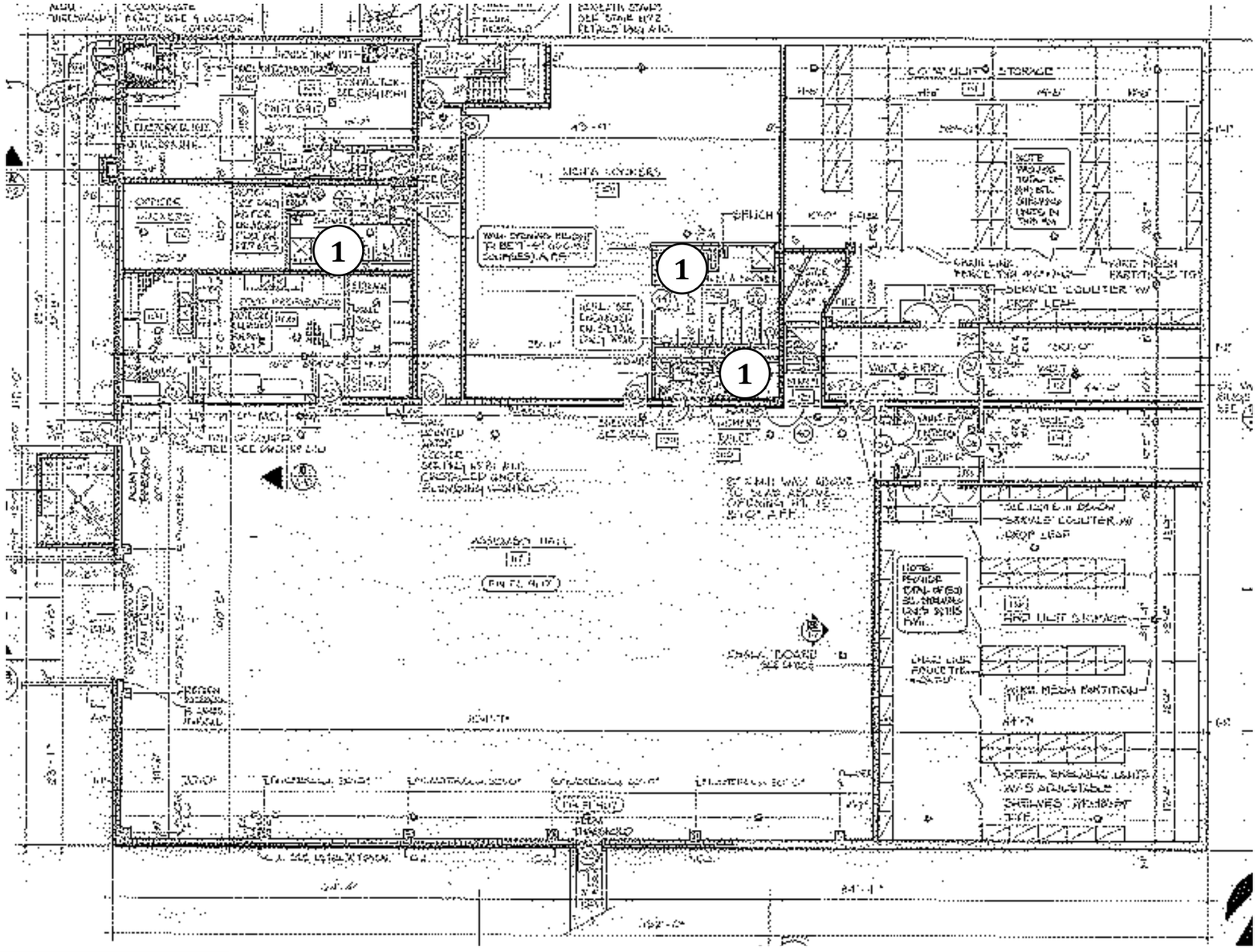
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ISSUED FOR:
Asbestos, Lead & PCB Survey

ADELAIDE PROJECT NO.:
BA:23168.00-IN

DRAWING PREPARED BY:
JPF

ASB-01



ACM LEGEND: (see report for details)	
1	Assumed Mirror Mastic
PACM	Electrical Wire and Panels Throughout

First Floor Plans - Asbestos Locations

Drawing Not to Scale

Adelaide ENVIRONMENTAL HEALTH
1511 Route 22
Brewster, NY 10509
Phone: (845) 278-7710
Fax: (845) 278-7750

CLIENT:
Greg Springer
Bergmann: Architects, Engineers, Planners
18 Corporate Woods Blvd., Suite 400
Albany, New York 12211

(Client) Project #

SURVEY LOCATION:
Yonkers Armory
2 Quincy Place
Yonkers, New York 10701

DATE: 6/13/2023

DRAWING VERSION: No. 1

ISSUED FOR:
Asbestos, Lead & PCB Survey

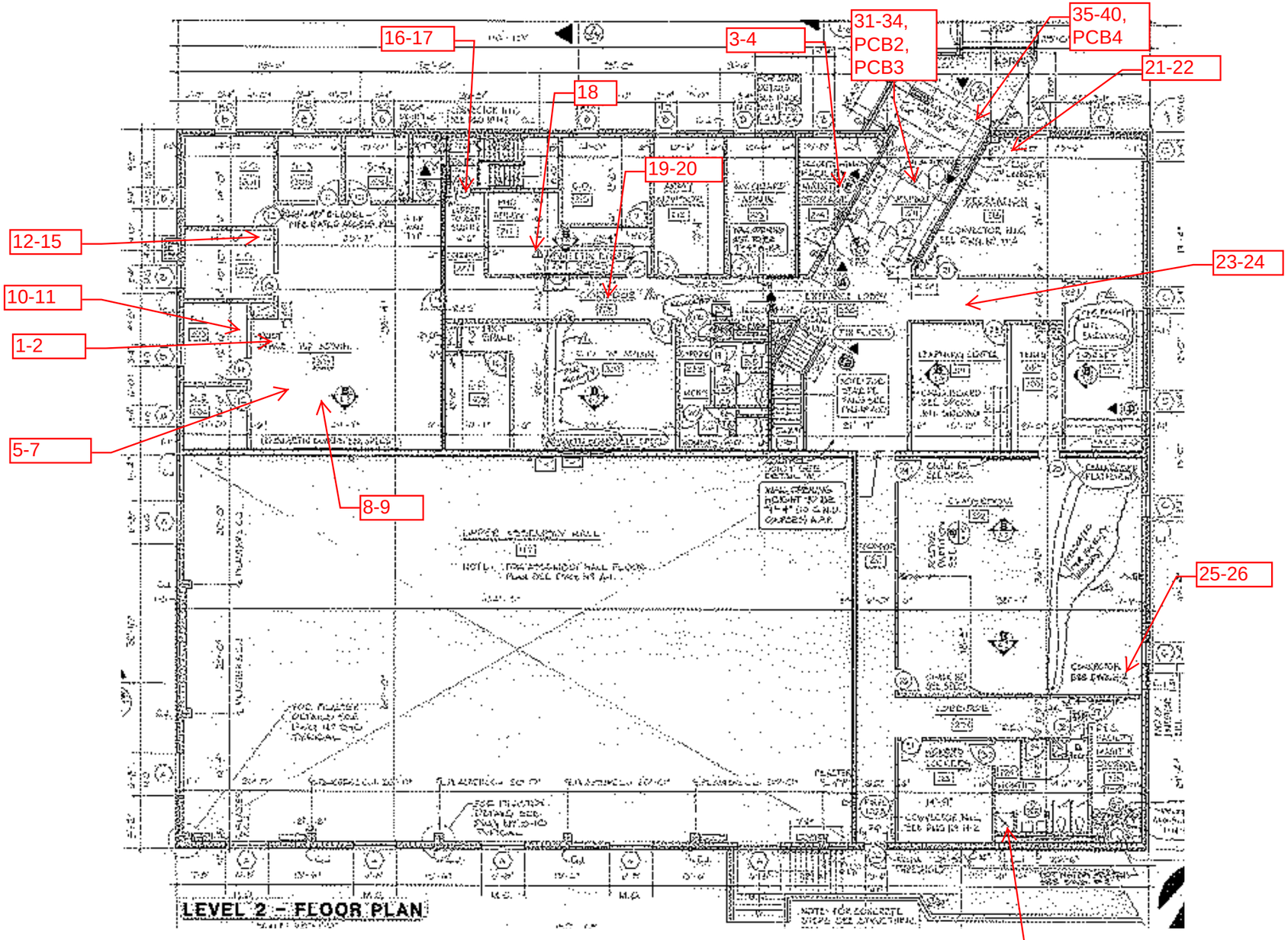
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BA:23168.00-IN

DRAWING PREPARED BY:
JPF

ASB-02

APPENDIX B

SAMPLE LOCATION MAP(S)



Second Floor Plans - Sample Locations

Drawing Not to Scale

Adelaide ENVIRONMENTAL HEALTH
1511 Route 22
Brewster, NY 10509
Phone: (845) 278-7710
Fax: (845) 278-7750

CLIENT:
Greg Springer
Bergmann: Architects, Engineers, Planners
18 Corporate Woods Blvd., Suite 400
Albany, New York 12211

(Client) Project #

SURVEY LOCATION:
Yonkers Armory
2 Quincy Place
Yonkers, New York 10701

DATE: 6/13/2023

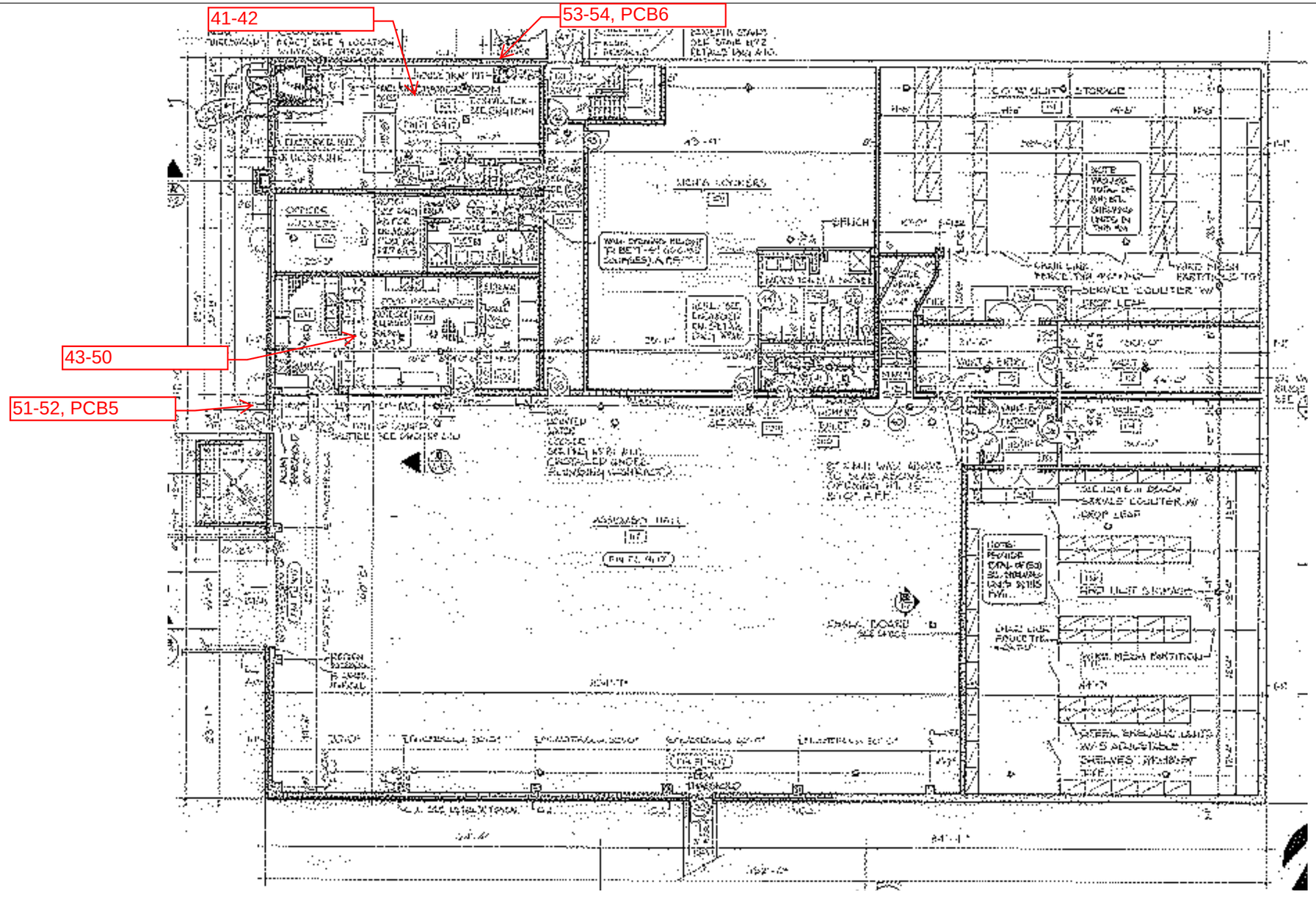
DRAWING VERSION: No. 1

ISSUED FOR:
Asbestos, Lead & PCB Survey

ADELAIDE PROJECT NO.:
BA:23168.00-IN

DRAWING PREPARED BY:
JPF

SL-01



First Floor Plans - Sample Locations

Drawing Not to Scale

Adelaide ENVIRONMENTAL HEALTH
1511 Route 22
Brewster, NY 10509
Phone: (845) 278-7710
Fax: (845) 278-7750

CLIENT:
Greg Springer
Bergmann: Architects, Engineers, Planners
18 Corporate Woods Blvd., Suite 400
Albany, New York 12211

(Client) Project #

SURVEY LOCATION:
Yonkers Armory
2 Quincy Place
Yonkers, New York 10701

DATE: 6/13/2023

DRAWING VERSION: No. 1

ISSUED FOR:
Asbestos, Lead & PCB Survey

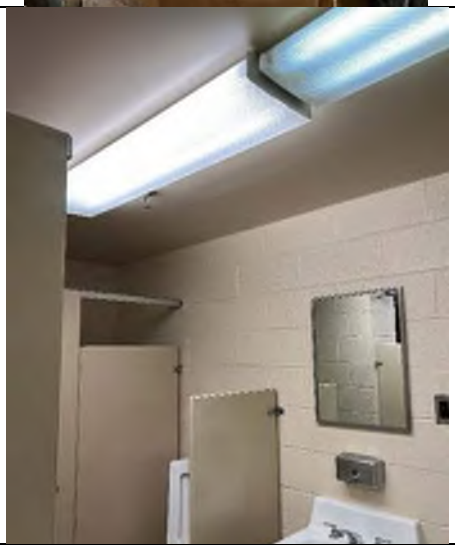
ADELAIDE PROJECT NO.:
BA:23168.00-IN

DRAWING PREPARED BY:
JPF

SL-02

APPENDIX C

ACM PHOTO(S)

PACM Electrical Wire Insulation and Panels	
PACM Electrical Wire Insulation and Panels	
PACM Mirror Mastic	

APPENDIX D

ASBESTOS ANALYTICAL RESULTS

Table I
Summary of Bulk Asbestos Analysis Results

OGSX:23168.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, New York 10701

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
01	1	1	0.226	17.4	81.7	0.9	NAD	NAD
Location: 2nd Floor - Room 207 - 12 x 12 F.T. - Brown / Red Mottled								
02	2	1	0.195	16.3	82.6	1.0	NAD	NAD
Location: 2nd Floor - Room 207 - 12 x 12 F.T. - Brown / Red Mottled								
03	3	2	0.142	79.8	15.9	4.3	NAD	NAD
Location: 2nd Floor - Room 214 - 12 x 12 F.T. - Black Mastic								
04	4	2	0.157	80.5	13.2	6.3	NAD	NAD
Location: 2nd Floor - Room 214 - 12 x 12 F.T. - Black Mastic								
05	5	3	0.188	24.9	12.0	63.1	NAD	NAD
Location: 2nd Floor - Room 214 - 2 x 4 C.T. - Large + Small Holes								
06	6	3	0.132	26.0	22.1	51.9	NAD	NAD
Location: 2nd Floor - Room 214 - 2 x 4 C.T. - Large + Small Holes								
07	7	4	0.227	55.4	18.6	26.0	NAD	NAD
Location: 2nd Floor - Room 214 - Debris On Top Of C.T.								
08	8	5	0.137	27.2	25.5	47.3	NAD	NAD
Location: 2nd Floor - Room 214 - 2 x 4 C.T. - Squiggles + Holes								
09	9	5	0.159	28.1	21.5	50.4	NAD	NAD
Location: 2nd Floor - Room 214 - 2 x 4 C.T. - Squiggles + Holes								
10	10	6	----	----	----	----	NAD	NA
Location: 2nd Floor - Room 214 - CMU Mortar								
11	11	6	----	----	----	----	NAD	NA
Location: 2nd Floor - Room 214 - CMU Mortar								
12L1	12	7	0.222	62.5	37.0	0.5	NAD	NAD
Location: 2nd Floor - Room 202 - Cove Base - 4" Black								
12L2	12	7	0.222	45.9	49.1	5.0	NAD	NAD
Location: 2nd Floor - Room 202 - Cove Base - 4" Black Mastic								
13L1	13	7	0.212	62.4	37.1	0.5	NAD	NAD
Location: 2nd Floor - Room 202 - Cove Base - 4" Black								
13L2	13	7	0.282	45.7	46.4	7.9	NAD	NAD
Location: 2nd Floor - Room 202 - Cove Base - 4" Black Mastic								
14	14	8	0.234	57.9	4.8	37.4	NAD	NAD
Location: 2nd Floor - Room 202 - Yellow Carpet Mastic								

See Reporting notes on last page

Table I
Summary of Bulk Asbestos Analysis Results

OGSX:23168.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, New York 10701

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
15	15	8	0.161	57.4	24.3	18.3	NAD	NAD
Location: 2nd Floor - Room 202 - Yellow Carpet Mastic								
16	16	9	0.265	17.6	79.9	2.5	NAD	NAD
Location: 2nd Floor - Hallway - 12 x 12 F.T. - Green Mottled								
17	17	9	0.280	16.9	82.3	0.8	NAD	NAD
Location: 2nd Floor - Hallway - 12 x 12 F.T. - Green Mottled								
18	18	10	0.423	26.8	11.1	62.1	NAD	NAD
Location: 2nd Floor - Room 211 - Debris Above C.T.								
19	19	11	----	----	----	----	NAD	NA
Location: 2nd Floor - Hallway - Drywall Ceiling								
20	20	11	----	----	----	----	NAD	NA
Location: 2nd Floor - Hallway - Drywall Ceiling								
21	21	12	0.239	20.8	61.7	17.5	NAD	NAD
Location: 2nd Floor - Room 218 - 12 x 12 F.T. - Brown + White Mottled								
22	22	12	0.260	19.8	59.2	21.0	NAD	NAD
Location: 2nd Floor - Room 218 - 12 x 12 F.T. - Brown + White Mottled								
23	23	13	----	----	----	----	NAD	NA
Location: 2nd Floor - Hallway - Joint Compound								
24	24	13	----	----	----	----	NAD	NA
Location: 2nd Floor - Hallway - Joint Compound								
25	25	14	0.208	19.6	72.6	7.8	NAD	NAD
Location: 2nd Floor - Room 222 - 12 x 12 F.T. - White W/ Gray Specks								
26	26	14	0.244	20.7	60.9	18.5	NAD	NAD
Location: 2nd Floor - Room 222 - 12 x 12 F.T. - White W/ Gray Specks								
27	27	15	----	----	----	----	NAD	NA
Location: 2nd Floor - Rm. 223 - Womens Locker - Terrazzo Shower Base								
28	28	15	----	----	----	----	NAD	NA
Location: 2nd Floor - Rm. 223 - Womens Locker - Terrazzo Shower Base								
29	29	16	0.141	32.0	65.3	2.7	NAD	NAD
Location: 2nd Floor - Rm. 223 - Womens Locker - Sealant At Shower								
30	30	16	0.140	30.7	67.0	2.4	NAD	NAD
Location: 2nd Floor - Rm. 223 - Womens Locker - Sealant At Shower								

See Reporting notes on last page

Table I
Summary of Bulk Asbestos Analysis Results

OGSX:23168.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, New York 10701

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
31	31	17	0.217	29.3	67.7	3.0	NAD	NAD
Location: 2nd Floor - Entrance Doors - Glazing Compound								
32	32	17	0.237	29.2	67.2	3.6	NAD	NAD
Location: 2nd Floor - Entrance Doors - Glazing Compound								
33	33	18	0.187	44.1	53.5	2.4	NAD	NAD
Location: 2nd Floor - Entrance Doors - Exterior Sealant								
34	34	18	0.157	44.9	52.6	2.6	NAD	NAD
Location: 2nd Floor - Entrance Doors - Exterior Sealant								
35	35	19	----	----	----	----	NAD	NA
Location: 2nd Floor - Concrete								
36	36	19	----	----	----	----	NAD	NA
Location: 2nd Floor - Concrete								
37	37	20	----	----	----	----	NAD	NA
Location: 2nd Floor - Brick Mortar								
38	38	20	----	----	----	----	NAD	NA
Location: 2nd Floor - Brick Mortar								
39	39	21	0.171	65.1	26.9	8.0	NAD	NAD
Location: 2nd Floor - Exterior Vertical Sealant								
40	40	21	0.184	65.2	25.9	8.9	NAD	NAD
Location: 2nd Floor - Exterior Vertical Sealant								
41	41	22	0.124	72.9	11.4	15.7	NAD	NAD
Location: 1st Floor - Boiler Room - Pin Mastic On Duct								
42	42	22	0.182	73.9	8.4	17.7	NAD	NAD
Location: 1st Floor - Boiler Room - Pin Mastic On Duct								
43	43	23	----	----	----	----	NAD	NA
Location: 1st Floor - Kitchen - Wall Tile - Grout								
44	44	23	----	----	----	----	NAD	NA
Location: 1st Floor - Kitchen - Wall Tile - Grout								
45	45	24	----	----	----	----	NAD	NA
Location: 1st Floor - Kitchen - Wall Tile - Mudset								
46	46	24	----	----	----	----	NAD	NA
Location: 1st Floor - Kitchen - Wall Tile - Mudset								

See Reporting notes on last page

Table I
Summary of Bulk Asbestos Analysis Results

OGSX:23168.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, New York 10701

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
47	47	25	----	----	----	----	NAD	NA
Location: 1st Floor - Kitchen - Floor Tile - Grout								
48	48	25	----	----	----	----	NAD	NA
Location: 1st Floor - Kitchen - Floor Tile - Grout								
49	49	26	----	----	----	----	NAD	NA
Location: 1st Floor - Kitchen - Floor Tile - Mudset								
50	50	26	----	----	----	----	NAD	NA
Location: 1st Floor - Kitchen - Floor Tile - Mudset								
51	51	27	0.187	62.0	27.5	10.6	NAD	NAD
Location: 1st Floor - Exterior - Door Caulk								
52	52	27	0.206	64.6	22.3	13.1	NAD	NAD
Location: 1st Floor - Exterior - Door Caulk								
53	53	28	0.170	60.7	11.7	27.6	NAD	NAD
Location: 1st Floor - Exterior - Louver Caulk								
54	54	28	0.103	59.9	5.8	34.2	NAD	NAD
Location: 1st Floor - Exterior - Louver Caulk								

Analyzed by: Gabriella Morozov 

Date: 6/8/2023

Reviewed by: Gabriella Morozov 

**Quantitative Analysis (Semi/Full); Bulk Asbestos Analysis - PLM by Appd E to Subpt E, 40 CFR 763 or NYSDOH ELAP 198.1 for New York friable samples or NYSDOH ELAP 198.6 for New York NOB samples; TEM (Semi/Full) by EPA 600/R-93/116 (or NYSDOH ELAP 198.4; for New York samples). Analysis using Hitachi, Model H7000-Noran 7 System, Microscope, Serial #: 747-05-06. NAD = no asbestos detected during a quantitative analysis; NA = not analyzed; Trace = <1%; (SOF-V) = Sprayed On Fireproofing containing Vermiculite; (SM-V) = Surfacing Material containing Vermiculite; Quantitation for beginning weights of <0.1 grams should be considered as qualitative only; Qualitative Analysis: Asbestos analysis results of "Present" or "NVA = No Visible Asbestos" represents results for Qualitative PLM or TEM Analysis only (no accreditation coverage available from any regulatory agency for qualitative analyses): NVLAP (PLM) 200546-0, NYSDOH ELAP Lab 11480, NJ Lab ID #NY031.

Warning Note: PLM limitation, only TEM will resolve fibers <0.25 micrometers in diameter. TEM bulk analysis is representative of the fine grained matrix material and may not be representative of non-uniformly dispersed debris for which PLM evaluation is recommended (i.e. soils and other heterogenous materials).

AmeriSci New York
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NEW YORK, NY 10016
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PLM Bulk Asbestos Report

Adelaide Environmental Health
Attn: John Soter
1511 Rte. 22, Suite C24

Brewster, NY 10509

Date Received 06/07/23
Date Examined 06/08/23
ELAP # 11480

AmeriSci Job # 223061619
P.O. #
Page 1 **of** 10

RE: OGSX:23168.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, New York 10701

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
1	223061619-01	***No***	NAD
1	**Location:** 2nd Floor - Room 207 - 12 x 12 F.T. - Brown / Red Mottled		(by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Brown/Red, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 0.9%			
2	223061619-02	***No***	NAD
1	**Location:** 2nd Floor - Room 207 - 12 x 12 F.T. - Brown / Red Mottled		(by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Brown/Red, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 1%			
3	223061619-03	***No***	NAD
2	**Location:** 2nd Floor - Room 214 - 12 x 12 F.T. - Black Mastic		(by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 4.3%			
4	223061619-04	***No***	NAD
2	**Location:** 2nd Floor - Room 214 - 12 x 12 F.T. - Black Mastic		(by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 6.3%			
5	223061619-05	***No***	NAD
3	**Location:** 2nd Floor - Room 214 - 2 x 4 C.T. - Large + Small Holes		(by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 63.1%			

See Reporting notes on last page

PLM Bulk Asbestos Report

OGSX:23168.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, New York 10701

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
6 3	223061619-06 **Location:** 2nd Floor - Room 214 - 2 x 4 C.T. - Large + Small Holes	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 51.9%			
7 4	223061619-07 **Location:** 2nd Floor - Room 214 - Debris On Top Of C.T.	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 26%			
8 5	223061619-08 **Location:** 2nd Floor - Room 214 - 2 x 4 C.T. - Squiggles + Holes	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 47.3%			
9 5	223061619-09 **Location:** 2nd Floor - Room 214 - 2 x 4 C.T. - Squiggles + Holes	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 50.4%			
10 6	223061619-10 **Location:** 2nd Floor - Room 214 - CMU Mortar	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
11 6	223061619-11 **Location:** 2nd Floor - Room 214 - CMU Mortar	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			

See Reporting notes on last page

PLM Bulk Asbestos Report

OGSX:23168.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, New York 10701

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
12 7	223061619-12L1 **Location:** 2nd Floor - Room 202 - Cove Base - 4" Black	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 0.5%			
12 7	223061619-12L2 **Location:** 2nd Floor - Room 202 - Cove Base - 4" Black Mastic	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Cream, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 5%			
13 7	223061619-13L1 **Location:** 2nd Floor - Room 202 - Cove Base - 4" Black	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 0.5%			
13 7	223061619-13L2 **Location:** 2nd Floor - Room 202 - Cove Base - 4" Black Mastic	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Cream, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 7.9%			
14 8	223061619-14 **Location:** 2nd Floor - Room 202 - Yellow Carpet Mastic	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Yellow, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 37.4%			
15 8	223061619-15 **Location:** 2nd Floor - Room 202 - Yellow Carpet Mastic	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Yellow, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 18.3%			

See Reporting notes on last page

PLM Bulk Asbestos Report

OGSX:23168.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, New York 10701

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
16 9	223061619-16 **Location:** 2nd Floor - Hallway - 12 x 12 F.T. - Green Mottled	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Green, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 2.5%			
17 9	223061619-17 **Location:** 2nd Floor - Hallway - 12 x 12 F.T. - Green Mottled	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Green, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 0.8%			
18 10	223061619-18 **Location:** 2nd Floor - Room 211 - Debris Above C.T.	***No***	NAD [1] (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 62.1%			
19 11	223061619-19 **Location:** 2nd Floor - Hallway - Drywall Ceiling	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: Gray/Brown, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 15%, Non-fibrous 85%			
20 11	223061619-20 **Location:** 2nd Floor - Hallway - Drywall Ceiling	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: Gray/Brown, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 15%, Non-fibrous 85%			
21 12	223061619-21 **Location:** 2nd Floor - Room 218 - 12 x 12 F.T. - Brown + White Mottled	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Brown, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 17.5%			

See Reporting notes on last page

PLM Bulk Asbestos Report

OGSX:23168.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, New York 10701

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
22 12	223061619-22 **Location:** 2nd Floor - Room 218 - 12 x 12 F.T. - Brown + White Mottled	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Brown, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 21%			
23 13	223061619-23 **Location:** 2nd Floor - Hallway - Joint Compound	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
24 13	223061619-24 **Location:** 2nd Floor - Hallway - Joint Compound	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
25 14	223061619-25 **Location:** 2nd Floor - Room 222 - 12 x 12 F.T. - White W/ Gray Specks	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 7.8%			
26 14	223061619-26 **Location:** 2nd Floor - Room 222 - 12 x 12 F.T. - White W/ Gray Specks	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 18.5%			
27 15	223061619-27 **Location:** 2nd Floor - Rm. 223 - Womens Locker - Terrazzo Shower Base	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: White/Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			

See Reporting notes on last page

PLM Bulk Asbestos Report

OGSX:23168.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, New York 10701

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
28 15	223061619-28 **Location:** 2nd Floor - Rm. 223 - Womens Locker - Terrazzo Shower Base	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: White/Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
29 16	223061619-29 **Location:** 2nd Floor - Rm. 223 - Womens Locker - Sealant At Shower	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 2.7%			
30 16	223061619-30 **Location:** 2nd Floor - Rm. 223 - Womens Locker - Sealant At Shower	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 2.4%			
31 17	223061619-31 **Location:** 2nd Floor - Entrance Doors - Glazing Compound	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 3%			
32 17	223061619-32 **Location:** 2nd Floor - Entrance Doors - Glazing Compound	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 3.6%			
33 18	223061619-33 **Location:** 2nd Floor - Entrance Doors - Exterior Sealant	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 2.4%			

See Reporting notes on last page

PLM Bulk Asbestos Report

OGSX:23168.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, New York 10701

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
34 18	223061619-34 **Location:** 2nd Floor - Entrance Doors - Exterior Sealant	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 2.6%			
35 19	223061619-35 **Location:** 2nd Floor - Concrete	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
36 19	223061619-36 **Location:** 2nd Floor - Concrete	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
37 20	223061619-37 **Location:** 2nd Floor - Brick Mortar	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
38 20	223061619-38 **Location:** 2nd Floor - Brick Mortar	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
39 21	223061619-39 **Location:** 2nd Floor - Exterior Vertical Sealant	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 8%			

See Reporting notes on last page

PLM Bulk Asbestos Report

OGSX:23168.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, New York 10701

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
40 21	223061619-40 **Location:** 2nd Floor - Exterior Vertical Sealant	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 8.9%			
41 22	223061619-41 **Location:** 1st Floor - Boiler Room - Pin Mastic On Duct	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Dark Brown, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 15.7%			
42 22	223061619-42 **Location:** 1st Floor - Boiler Room - Pin Mastic On Duct	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Dark Brown, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 17.7%			
43 23	223061619-43 **Location:** 1st Floor - Kitchen - Wall Tile - Grout	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: White, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
44 23	223061619-44 **Location:** 1st Floor - Kitchen - Wall Tile - Grout	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: White, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
45 24	223061619-45 **Location:** 1st Floor - Kitchen - Wall Tile - Mudset	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			

See Reporting notes on last page

PLM Bulk Asbestos Report

OGSX:23168.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, New York 10701

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
46 24	223061619-46 **Location:** 1st Floor - Kitchen - Wall Tile - Mudset	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
47 25	223061619-47 **Location:** 1st Floor - Kitchen - Floor Tile - Grout	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
48 25	223061619-48 **Location:** 1st Floor - Kitchen - Floor Tile - Grout	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
49 26	223061619-49 **Location:** 1st Floor - Kitchen - Floor Tile - Mudset	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
50 26	223061619-50 **Location:** 1st Floor - Kitchen - Floor Tile - Mudset	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
51 27	223061619-51 **Location:** 1st Floor - Exterior - Door Caulk	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 10.6%			

See Reporting notes on last page

PLM Bulk Asbestos Report

OGSX:23168.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, New York 10701

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
52 27	223061619-52 **Location:** 1st Floor - Exterior - Door Caulk	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 13.1%			
53 28	223061619-53 **Location:** 1st Floor - Exterior - Louver Caulk	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 27.6%			
54 28	223061619-54 **Location:** 1st Floor - Exterior - Louver Caulk	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 34.2%			

Reporting Notes:

(1) Analysis Results For Soil, Dust, Or Debris May Be Highly Variable Because Of The Heterogeneous Nature Of These Samples

Analyzed by: Kensen Caro
Date: 6/8/2023

Reviewed by: Gabriella Morozov

*NAD/NSD =no asbestos detected; NA =not analyzed; NA/PS=not analyzed/positive stop, (SOF-V) = Sprayed On Fireproofing containing Vermiculite; (SM-V) = Surfacing Material containing Vermiculite; PLM Bulk Asbestos Analysis using Motic, Model BA310 Pol Scope, Microscope, Serial #: 1190000538, by Appd E to Subpt E, 40 CFR 763 quantified by either CVES or 400 pt ct as noted for each analysis (NVLAP 200546-0), ELAP PLM Method 198.1 for NY friable samples, which includes the identification and quantitation of vermiculite, or ELAP 198.6 for NOB samples, or EPA 400 pt ct by EPA 600-M4-82-020 (NY ELAP Lab 11480); Note: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 (also see EPA Advisory for floor tile, FR 59,146,38970,8/1/94) National Institute of Standards and Technology Accreditation requirements mandate that this report must not be reproduced except in full without the approval of the lab.This PLM report relates ONLY to the items tested. RI Cert AAL-094, CT Cert PH-0186, Mass Cert AA000054, NJ Lab ID #NY031.

_____END OF REPORT_____

Adelaide Environmental Health Associates, Inc
1454 Rte. 22, Suite B202
Brewster, NY 10509
845-278-7710
845-278-7750 - fax

Site Address: Yonkers Armory	Date: 6/6/2023	Inspector: Jason Fullum
2 Quincy Place	Client Project #	
Yonkers, New York 10701	Project #: OGSX:23168.00-IN	

Sample ID #	Homogeneous Area	Floor Level	Sample Location/Description	Quantity (In Feet)	Friable Non Friable	Condition g, d, sd
1	1	2	Room 207 - 12x12 F.T. - Brown Red Mottled	980SF	NF	G
2	1	2				
3	2	2	Room 214 - - Black Mastic			
4	2	2				
5	3	2	- 2x4 C.T. - Large + Small Holes		NF	
6	3	2				
7	4	2	- Debris on Top of C.T.			SD
8	5	2	- 2x4 C.T. - Scissles + Holes			G
9	5	2				
10	6	2	- CMU Mortar			
11	6	2				
12	7	2	Room 202 - Coveblase - 4" Black + Mastic			
13	7	2				

Special Instructions/ Turnaround Time: 223061619

Stop at 1st Positive per Homogenous Area ***24 HR TAT***
Fax Results to 845-278-7750
E-Mail results to AdelaideLabResults@Adelaidellc.com and Jfullum@adelaidellc.com

Relinquished by:
Received by: Alexandra Vargas 6-7-23 1030
Relinquished by:
Received by:

Adelaide Environmental Health Associates, Inc
1454 Rte. 22, Suite B202
Brewster, NY 10509
845-278-7710
845-278-7750 - fax

Site Address: Yonkers Armory	Date: 6/6/2023	Inspector: Jason Fullum
2 Quincy Place	Client Project #	
Yonkers, New York 10701	Project #: OGSX:23168.00-IN	

Sample ID #	Homogeneous Area	Floor Level	Sample Location/Description	Quantity (In Feet)	Friable Non Friable	Condition g, d, sd
14	8	2	Room 202 - Yellow Carpet Mastic		NF	G
15	8	2	↓ ↓		↓	↓
16	9	2	Hallway - 12x12 F.T. - Green Mottled			
17	9	2	↓ ↓ ↓			
18	10	2	Room 211 - Debris above C.T.		F	SD
19	10	2	Hallway - Drywall Ceiling		F	G
20	11	2	↓ ↓		F	
21	12	2	Room 218 - 12x12 F.T. - Brown + White Mottled		NF	
22	12	2	↓ ↓ ↓		↓	
23	13	2	Hallway - Joint Compound		F	
24	13	2	↓ ↓		F	
25	14	2	Room 222 - 12x12 F.T. - White w/ Gray Specks		NF	
26	14	2	↓ ↓		↓	↓

Special Instructions/ Turnaround Time: 23061619

Stop at 1st Positive per Homogenous Area ***24 HR TAT***
Fax Results to 845-278-7750
E-Mail results to AdelaideLabResults@Adelaidellc.com and Jfullum@adelaidellc.com

Relinquished by:
Received by: Alexandra Vaccaro 6/23 1030
Relinquished by:
Received by:

Adelaide Environmental Health Associates, Inc
1454 Rte. 22, Suite B202
Brewster, NY 10509
845-278-7710
845-278-7750 - fax

Site Address: Yonkers Armory	Date: 6/6/2023	Inspector: Jason Fullum
2 Quincy Place	Client Project #	
Yonkers, New York 10701	Project #: OGSX:23168.00-IN	

Sample ID #	Homogeneous Area	Floor Level	Sample Location/Description	Quantity (In Feet)	Friable Non Friable	Condition g, d, sd
27	15	2	Rm. 223 - Women locker - Terrazzo Shower Pan		NF	D
28	15	2				D
29	16	2	- Sealant at Shower			D
30	16	2				D
31	17	2	Entrance Doors - Door Glazing Compound		NF	
32	17	2				
33	18	2	- Exterior Sealant			
34	18	2				
35	19	2	Concrete			
36	19	2				
37	20	2	Brick Mortar			
38	20	2				
39	21	2	Exterior Vertical Sealant			
40	21	2				

Special Instructions/ Turnaround Time: 223061619

Stop at 1st Positive per Homogenous Area ***24 HR TAT***
Fax Results to 845-278-7750
E-Mail results to AdelaideLabResults@Adelaidellc.com and Jfullum@adelaidellc.com

Relinquished by:
Received by: Alexandra Vuic 6/7/23 1030
Relinquished by:
Received by:

Adelaide Environmental Health Associates, Inc
1454 Rte. 22, Suite B202
Brewster, NY 10509
845-278-7710
845-278-7750 - fax

Site Address: Yonkers Armory	Date: 6/6/2023	Inspector: Jason Fullum
2 Quincy Place	Client Project #	
Yonkers, New York 10701	Project #: OGSX:23168.00-IN	

Sample ID #	Homogeneous Area	Floor Level	Sample Location/Description	Quantity (In Feet)	Friable Non Friable	Condition g, d, sd
41	22	1	Boiler Room - Pipe Mastic on Duct		NF	D
42	22	1				D
43	23	1	Kitchen - Wall Tile - Grout			
44	23	1				
45	24	1	- Mudset			
46	24	1				
47	25	1	- Floor Tile - Grout			
48	25	1				
49	26	1	- Mudset			
50	26	1				
51	27	1	Exterior - Door Caulk			
52	27	1				
53	28	1	- Louver Caulk			
54	28	1				

Special Instructions/ Turnaround Time: 223061619

Stop at 1st Positive per Homogenous Area ***24 HR TAT***
Fax Results to 845-278-7750
E-Mail results to AdelaideLabResults@Adelaidellc.com and Jfullum@adelaidellc.com

Relinquished by:
Received by: Alexandra Vian 6/23 1030
Relinquished by:
Received by:

APPENDIX E

XRF READINGS

Adelaide Environmental Heath Associates Inc.
1511 Route 22, Suite C-24
Brewster, New York 10509
Adelaide Project# BA:23168.00-IN
Project Name: Yonkers Armory
Inspector: Jason Fullum

Reading #	Date	Time	Space Type	Floor	Room	Component	Side	Substrate	Color	Condition	Lead Concentration (mg/cm2)	Result
1	6/6/2023	9:04:22	Armory		Calibration						0.9	Negative
2	6/6/2023	9:04:34	Armory		Calibration						0.9	Negative
3	6/6/2023	9:04:46	Armory		Calibration						0.9	Negative
4	6/6/2023	9:23:29	Armory	2nd Floor	207	Wall	A	CMU	Beige	Intact	-0.2	Negative
5	6/6/2023	9:24:00	Armory	2nd Floor	207	Door Case	A	Metal	Black	Intact	0.4	Negative
6	6/6/2023	9:24:27	Armory	2nd Floor	207	Door	A	Metal	Red	Intact	0.1	Negative
7	6/6/2023	9:25:07	Armory	2nd Floor	201	Door	A	Metal	Red	Intact	0	Negative
8	6/6/2023	9:25:31	Armory	2nd Floor	201	Door Case	A	Metal	Black	Intact	0.5	Negative
9	6/6/2023	9:25:58	Armory	2nd Floor	201	Wall	B	CMU	Black	Intact	-0.2	Negative
10	6/6/2023	10:29:25	Armory	2nd Floor	Hallway	Wall	B	CMU	Beige	Intact	-0.3	Negative
11	6/6/2023	10:30:21	Armory	2nd Floor	Hallway	Ceiling	Ceiling	Sheetrock	Beige	Intact	0.1	Negative
12	6/6/2023	11:18:54	Armory	2nd Floor	Hallway	Stair Handrail	A	Metal	Red	Intact	0.1	Negative
13	6/6/2023	11:19:20	Armory	2nd Floor	Hallway	Stair Stringer	A	Metal	Red	Intact	0.1	Negative
14	6/6/2023	11:19:35	Armory	2nd Floor	Hallway	Stair Riser	A	Metal	Red	Intact	0.2	Negative
15	6/6/2023	11:21:42	Armory	2nd Floor	Hallway	Ceiling	Ceiling	Sheetrock	Off White	Intact	0.1	Negative
16	6/6/2023	11:28:51	Armory	2nd Floor	Bathroom	Floor	Floor	Concrete	Grey	Intact	0	Negative
17	6/6/2023	11:30:19	Armory	2nd Floor	Bathroom	Floor	Floor	Concrete	Red	Intact	0	Negative
18	6/6/2023	11:30:37	Armory	2nd Floor	Bathroom	Floor	Floor	Concrete	Yellow	Intact	0	Negative
19	6/6/2023	11:31:02	Armory	2nd Floor	Bathroom	Wall	A	CMU	Yellow	Intact	-0.2	Negative
20	6/6/2023	11:31:26	Armory	2nd Floor	Bathroom	Ceiling	Ceiling	Sheetrock	Yellow	Intact	-0.2	Negative
21	6/6/2023	11:41:55	Armory	2nd Floor	223	Wall	D	CMU	Off White	Intact	-0.1	Negative
22	6/6/2023	11:42:25	Armory	2nd Floor	223	Door	A	Metal	Red	Intact	0	Negative
23	6/6/2023	11:42:48	Armory	2nd Floor	223	Door Case	A	Metal	Black	Intact	0.4	Negative
24	6/6/2023	11:43:21	Armory	2nd Floor	223	Floor	Floor	Concrete	Red	Intact	0	Negative
25	6/6/2023	11:43:50	Armory	2nd Floor	223	Wall	B	CMU	Yellow	Intact	-0.3	Negative
26	6/6/2023	11:45:02	Armory	2nd Floor	223	Ceiling	Ceiling	Sheetrock	Yellow	Intact	0	Negative
27	6/6/2023	13:30:04	Armory	1st Floor	Bathroom	Floor	Floor	Concrete	Green	Intact	0.2	Negative
28	6/6/2023	13:30:37	Armory	1st Floor	Bathroom	Wall	A	CMU	Beige	Intact	-0.1	Negative
29	6/6/2023	13:31:07	Armory	1st Floor	Bathroom	Ceiling	Ceiling	Sheetrock	Beige	Intact	-0.2	Negative
30	6/6/2023	13:33:44	Armory	1st Floor	Exterior	roll up door rail	C	Metal	Green	Intact	0	Negative
31	6/6/2023	13:34:32	Armory	1st Floor	Exterior	Door	C	Metal	Green	Intact	0.1	Negative
32	6/6/2023	13:34:50	Armory	1st Floor	Exterior	Exterior Door	C	Metal	Green	Intact	-0.1	Negative
33	6/6/2023	13:35:08	Armory	1st Floor	Exterior	Exterior Door Case	C	Metal	Green	Intact	0.4	Negative
34	6/6/2023	14:01:04	Armory	1st Floor	Exterior	Window Case	B	Metal	Green	Intact	0	Negative
35	6/6/2023	14:05:06	Armory		Calibration						0.9	Negative
36	6/6/2023	14:05:18	Armory		Calibration						1	Positive
37	6/6/2023	14:05:30	Armory		Calibration						1	Positive

APPENDIX F

PCB ANALYTICAL RESULTS

PHOENIX
Environmental Laboratories, Inc.

Thursday, June 15, 2023

Attn: Stephanie Soter
Adelaide Environmental Health Assoc,Inc
1511 Route 22, Suite C24
Brewster, NY 10509

Project ID: YONKERS ARMORY 23168.00
SDG ID: GCO21952
Sample ID#s: CO21952 - CO21957

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200. The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Sincerely yours,

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #M-CT007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B
NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Sample Id Cross Reference

June 15, 2023

SDG I.D.: GCO21952

Project ID: YONKERS ARMORY 23168.00

Client Id	Lab Id	Matrix
PCB1-WOMENS SHOWER	CO21952	BULK
PCB2-GLAZING	CO21953	CAULK
PCB3-EXT. DOOR CAULK	CO21954	CAULK
PCB4-EXT. SEALANT	CO21955	CAULK
PCB5- EXT. DOOR CAULK	CO21956	CAULK
PCB 6-LOUVER CAULK	CO21957	CAULK

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

June 15, 2023

FOR: Attn: Stephanie Soter
Adelaide Environmental Health Assoc,Inc
1511 Route 22, Suite C24
Brewster, NY 10509

Sample Information		Custody Information		Date	Time
Matrix:	BULK	Collected by:		06/06/23	
Location Code:	ADELAIDE	Received by:	MMN	06/07/23	17:16
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCO21952
Phoenix ID: CO21952

Project ID: YONKERS ARMORY 23168.00
Client ID: PCB1-WOMENS SHOWER

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Extraction for PCB	Completed				06/08/23	R/AW/SB/I	SW3540C
PCB (Soxhlet SW3540C)							
PCB-1016	ND	2900	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1221	ND	2900	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1232	ND	2900	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1242	ND	2900	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1248	ND	2900	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1254	ND	2900	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1260	ND	2900	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1262	ND	2900	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1268	ND	2900	ug/Kg	1	06/09/23	SC	SW8082A
QA/QC Surrogates							
% DCBP	55		%	1	06/09/23	SC	30 - 150 %
% DCBP (Confirmation)	40		%	1	06/09/23	SC	30 - 150 %
% TCMX	52		%	1	06/09/23	SC	30 - 150 %
% TCMX (Confirmation)	47		%	1	06/09/23	SC	30 - 150 %

Project ID: YONKERS ARMORY 23168.00 Phoenix I.D.: CO21952
Client ID: PCB1-WOMENS SHOWER

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level L=Biased Low
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

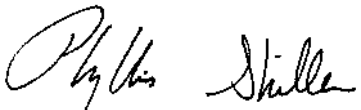
Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

PCB Comment:
Due to limited sample an elevated RL was reported.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.



Phyllis Shiller, Laboratory Director
June 15, 2023
Reviewed and Released by: Rashmi Makol, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH NY #11301

Analysis Report

June 15, 2023

FOR: Attn: Stephanie Soter
Adelaide Environmental Health Assoc,Inc
1511 Route 22, Suite C24
Brewster, NY 10509

Sample Information		Custody Information		Date	Time
Matrix:	CAULK	Collected by:		06/06/23	
Location Code:	ADELAIDE	Received by:	MMN	06/07/23	17:16
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCO21952
Phoenix ID: CO21953

Project ID: YONKERS ARMORY 23168.00
Client ID: PCB2-GLAZING

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Caulk Extraction for PCB	Completed				06/08/23	R/AW/SB/I	SW3540C
PCB (Soxhlet SW3540C)							
PCB-1016	ND	930	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1221	ND	930	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1232	ND	930	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1242	ND	930	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1248	ND	930	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1254	ND	930	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1260	ND	930	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1262	ND	930	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1268	ND	930	ug/Kg	1	06/09/23	SC	SW8082A
QA/QC Surrogates							
% DCBP	54		%	1	06/09/23	SC	30 - 150 %
% DCBP (Confirmation)	52		%	1	06/09/23	SC	30 - 150 %
% TCMX	57		%	1	06/09/23	SC	30 - 150 %
% TCMX (Confirmation)	55		%	1	06/09/23	SC	30 - 150 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level L=Biased Low
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.



Phyllis Shiller, Laboratory Director
June 15, 2023
Reviewed and Released by: Rashmi Makol, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY # 11301

Analysis Report

June 15, 2023

FOR: Attn: Stephanie Soter
Adelaide Environmental Health Assoc,Inc
1511 Route 22, Suite C24
Brewster, NY 10509

Sample Information		Custody Information		Date	Time
Matrix:	CAULK	Collected by:		06/06/23	
Location Code:	ADELAIDE	Received by:	MMN	06/07/23	17:16
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCO21952
Phoenix ID: CO21954

Project ID: YONKERS ARMORY 23168.00
Client ID: PCB3-EXT. DOOR CAULK

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Caulk Extraction for PCB	Completed				06/08/23	R/AW/SB/I	SW3540C
PCB (Soxhlet SW3540C)							
PCB-1016	ND	880	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1221	ND	880	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1232	ND	880	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1242	ND	880	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1248	ND	880	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1254	ND	880	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1260	ND	880	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1262	ND	880	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1268	ND	880	ug/Kg	1	06/09/23	SC	SW8082A
QA/QC Surrogates							
% DCBP	39		%	1	06/09/23	SC	30 - 150 %
% DCBP (Confirmation)	34		%	1	06/09/23	SC	30 - 150 %
% TCMX	31		%	1	06/09/23	SC	30 - 150 %
% TCMX (Confirmation)	31		%	1	06/09/23	SC	30 - 150 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

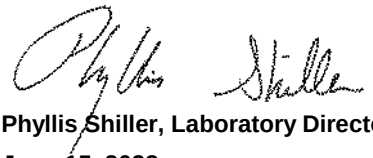
RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level L=Biased Low
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.



Phyllis Shiller, Laboratory Director
June 15, 2023
Reviewed and Released by: Rashmi Makol, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY # 11301

Analysis Report

June 15, 2023

FOR: Attn: Stephanie Soter
Adelaide Environmental Health Assoc,Inc
1511 Route 22, Suite C24
Brewster, NY 10509

Sample Information		Custody Information		Date	Time
Matrix:	CAULK	Collected by:		06/06/23	
Location Code:	ADELAIDE	Received by:	MMN	06/07/23	17:16
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCO21952
Phoenix ID: CO21955

Project ID: YONKERS ARMORY 23168.00
Client ID: PCB4-EXT. SEALANT

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Caulk Extraction for PCB	Completed				06/08/23	R/AW/SB/I	SW3540C
PCB (Soxhlet SW3540C)							
PCB-1016	ND	960	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1221	ND	960	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1232	ND	960	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1242	ND	960	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1248	ND	960	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1254	ND	960	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1260	ND	960	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1262	ND	960	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1268	ND	960	ug/Kg	1	06/09/23	SC	SW8082A
QA/QC Surrogates							
% DCBP	41		%	1	06/09/23	SC	30 - 150 %
% DCBP (Confirmation)	35		%	1	06/09/23	SC	30 - 150 %
% TCMX	36		%	1	06/09/23	SC	30 - 150 %
% TCMX (Confirmation)	36		%	1	06/09/23	SC	30 - 150 %

Project ID: YONKERS ARMORY 23168.00 Phoenix I.D.: CO21955
Client ID: PCB4-EXT. SEALANT

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

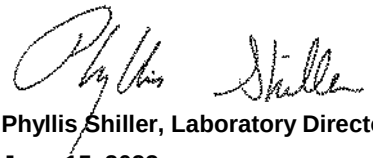
RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level L=Biased Low
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

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Phyllis Shiller, Laboratory Director
June 15, 2023
Reviewed and Released by: Rashmi Makol, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

June 15, 2023

FOR: Attn: Stephanie Soter
Adelaide Environmental Health Assoc,Inc
1511 Route 22, Suite C24
Brewster, NY 10509

Sample Information		Custody Information		Date	Time
Matrix:	CAULK	Collected by:		06/06/23	
Location Code:	ADELAIDE	Received by:	MMN	06/07/23	17:16
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCO21952
Phoenix ID: CO21956

Project ID: YONKERS ARMORY 23168.00
Client ID: PCB5- EXT. DOOR CAULK

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Caulk Extraction for PCB	Completed				06/08/23	R/AW/SB/I	SW3540C
PCB (Soxhlet SW3540C)							
PCB-1016	ND	600	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1221	ND	600	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1232	ND	600	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1242	ND	600	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1248	ND	600	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1254	ND	600	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1260	ND	600	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1262	ND	600	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1268	ND	600	ug/Kg	1	06/09/23	SC	SW8082A
QA/QC Surrogates							
% DCBP	43		%	1	06/09/23	SC	30 - 150 %
% DCBP (Confirmation)	36		%	1	06/09/23	SC	30 - 150 %
% TCMX	39		%	1	06/09/23	SC	30 - 150 %
% TCMX (Confirmation)	38		%	1	06/09/23	SC	30 - 150 %

Project ID: YONKERS ARMORY 23168.00 Phoenix I.D.: CO21956
Client ID: PCB5- EXT. DOOR CAULK

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

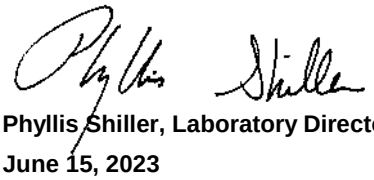
RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level L=Biased Low
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

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Phyllis Shiller, Laboratory Director
June 15, 2023
Reviewed and Released by: Rashmi Makol, Project Manager

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ACCREDITED IN ACCORDANCE WITH NY #11301

Analysis Report

June 15, 2023

FOR: Attn: Stephanie Soter
Adelaide Environmental Health Assoc,Inc
1511 Route 22, Suite C24
Brewster, NY 10509

Sample Information		Custody Information		Date	Time
Matrix:	CAULK	Collected by:		06/06/23	
Location Code:	ADELAIDE	Received by:	MMN	06/07/23	17:16
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCO21952
Phoenix ID: CO21957

Project ID: YONKERS ARMORY 23168.00
Client ID: PCB 6-LOUVER CAULK

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference	
Caulk Extraction for PCB	Completed				06/12/23	Q/AC1	SW3540C	
PCB (Soxhlet SW3540C)								
PCB-1016	ND	940	ug/Kg	1	06/13/23	SC	SW8082A	
PCB-1221	ND	940	ug/Kg	1	06/13/23	SC	SW8082A	
PCB-1232	ND	940	ug/Kg	1	06/13/23	SC	SW8082A	
PCB-1242	ND	940	ug/Kg	1	06/13/23	SC	SW8082A	
PCB-1248	ND	940	ug/Kg	1	06/13/23	SC	SW8082A	
PCB-1254	ND	940	ug/Kg	1	06/13/23	SC	SW8082A	
PCB-1260	ND	940	ug/Kg	1	06/13/23	SC	SW8082A	
PCB-1262	ND	940	ug/Kg	1	06/13/23	SC	SW8082A	
PCB-1268	ND	940	ug/Kg	1	06/13/23	SC	SW8082A	
QA/QC Surrogates								
% DCBP	17		%	1	06/13/23	SC	30 - 150 %	3
% DCBP (Confirmation)	17		%	1	06/13/23	SC	30 - 150 %	3
% TCMX	17		%	1	06/13/23	SC	30 - 150 %	3
% TCMX (Confirmation)	17		%	1	06/13/23	SC	30 - 150 %	3

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

3 = This parameter exceeds laboratory specified limits.

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level L=Biased Low
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

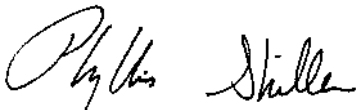
Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

PCB Comment:
Poor surrogate recovery was observed for PCBs. Sample was re-extracted with similar results.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

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Phyllis Shiller, Laboratory Director
June 15, 2023
Reviewed and Released by: Rashmi Makol, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

QA/QC Report

June 15, 2023

QA/QC Data

SDG I.D.: GCO21952

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 681421 (ug/Kg), QC Sample No: CO21956 10X (CO21952, CO21953, CO21954, CO21955, CO21956)										
Polychlorinated Biphenyls - Bulk										
PCB-1016	ND	170	99	91	8.4				40 - 140	30
PCB-1221	ND	170							40 - 140	30
PCB-1232	ND	170							40 - 140	30
PCB-1242	ND	170							40 - 140	30
PCB-1248	ND	170							40 - 140	30
PCB-1254	ND	170							40 - 140	30
PCB-1260	ND	170	106	107	0.9				40 - 140	30
PCB-1262	ND	170							40 - 140	30
PCB-1268	ND	170							40 - 140	30
% DCBP (Surrogate Rec)	107	%	111	106	4.6				30 - 150	30
% DCBP (Surrogate Rec) (Confirm	102	%	101	102	1.0				30 - 150	30
% TCMX (Surrogate Rec)	89	%	95	87	8.8				30 - 150	30
% TCMX (Surrogate Rec) (Confirm	82	%	89	82	8.2				30 - 150	30
Comment:										
A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.										
QA/QC Batch 681903 (ug/Kg), QC Sample No: CO21957 10X (CO21957)										
Polychlorinated Biphenyls										
PCB-1016	ND	170	101	105	3.9				40 - 140	30
PCB-1221	ND	170							40 - 140	30
PCB-1232	ND	170							40 - 140	30
PCB-1242	ND	170							40 - 140	30
PCB-1248	ND	170							40 - 140	30
PCB-1254	ND	170							40 - 140	30
PCB-1260	ND	170	115	121	5.1				40 - 140	30
PCB-1262	ND	170							40 - 140	30
PCB-1268	ND	170							40 - 140	30
% DCBP (Surrogate Rec)	104	%	100	109	8.6				30 - 150	30
% DCBP (Surrogate Rec) (Confirm	109	%	103	111	7.5				30 - 150	30
% TCMX (Surrogate Rec)	99	%	95	103	8.1				30 - 150	30
% TCMX (Surrogate Rec) (Confirm	98	%	95	102	7.1				30 - 150	30
Comment:										
A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.										

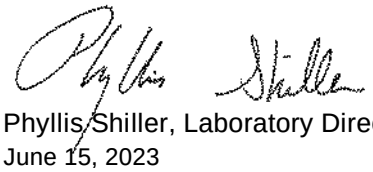
QA/QC Data

SDG I.D.: GCO21952

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference



Phyllis Shiller, Laboratory Director
June 15, 2023

Thursday, June 15, 2023

Criteria: None

State: NY

Sample Criteria Exceedances Report

GCO21952 - ADELAIDE

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
CO21952	$PCB_SOXR	PCB-1268	NY / Requested PCB RL /	ND	2900	1000	1000	ug/Kg
CO21952	$PCB_SOXR	PCB-1262	NY / Requested PCB RL /	ND	2900	1000	1000	ug/Kg
CO21952	$PCB_SOXR	PCB-1260	NY / Requested PCB RL /	ND	2900	1000	1000	ug/Kg
CO21952	$PCB_SOXR	PCB-1254	NY / Requested PCB RL /	ND	2900	1000	1000	ug/Kg
CO21952	$PCB_SOXR	PCB-1248	NY / Requested PCB RL /	ND	2900	1000	1000	ug/Kg
CO21952	$PCB_SOXR	PCB-1242	NY / Requested PCB RL /	ND	2900	1000	1000	ug/Kg
CO21952	$PCB_SOXR	PCB-1232	NY / Requested PCB RL /	ND	2900	1000	1000	ug/Kg
CO21952	$PCB_SOXR	PCB-1221	NY / Requested PCB RL /	ND	2900	1000	1000	ug/Kg
CO21952	$PCB_SOXR	PCB-1016	NY / Requested PCB RL /	ND	2900	1000	1000	ug/Kg

Phoenix Laboratories does not assume responsibility for the data contained in this exceedance report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

Environmental Laboratories, Inc.
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ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Comments

June 15, 2023 SDG I.D.: GCO21952

The following analysis comments are made regarding exceptions to criteria not already noted in the Analysis Report or QA/QC Report:

PCB Narration

AU-ECD5 06/13/23-1: CO21957

The following Continuing Calibration compounds did not meet % deviation criteria:
Samples: CO21957
Preceding CC 613B016 - None.
Succeeding CC 613B029 - DCBP SURR 23%L (15%)

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ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

NY Temperature Narration

June 15, 2023

SDG I.D.: GCO21952

The samples in this delivery group were received at 1.1°C.
(Note acceptance criteria for relevant matrices is above freezing up to 6°C)

Cooler: Yes ☐ No ☐
Coolant: IPK ☐ ICE ☐ No ☐
Temp ____ °C Pg ____ of ____

NY/NJ/PA CHAIN OF CUSTODY RECORD

PHOENIX Environmental Laboratories, Inc.

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: Makrina Nolan, makrina@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-1102

Contact Options:
☐ Phone:
☐ Fax:
☐ Email:

Customer: Adelaide
Address: 1511 Rte 22, Ste C24
Somerset, NJ 10505

Project: Yankee Armory 23168.00
Report to:
Invoice to:
QUOTE # :

Project P.O:

This section MUST be completed with Bottle Quantities.

Sampler's Signature: _____ Date: 6/6/23

Client Sample - Information / Identification

Matrix Code:
DW=Drinking Water GW=Ground Water SW=Surface Water WW=Waste Water
RW=Raw Water SE=Sediment SL=Sludge S=Soil SD=Solid W=Wipe
OIL=Oil B=Bulk L=Liquid

Analysis Request

PHOENIX USE ONLY SAMPLE #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	*MS/MSD (May be billable at analysis unit rate)	PCB's	BAS	GL Amber 8 oz. [ ] wt H_3PO_4 [ ] $NaHSO_4$	Soil VOA Vials [ ] methanol [ ] H_2O	GL Soil container ( ) oz	40 ml VOA Vial [ ] As is [ ] HCl	GL Amber 1000ml [ ] As is [ ] H_2SO_4	PL As is [ ] 250ml [ ] 500ml [ ] 1000ml	PL H_2SO_4 [ ] 250ml [ ] 500ml [ ] 1000ml	PL NaOH 250ml	PL HNO_3 250ml	Bacteria Bottle w/thio	Bacteria Bottle as is
21952	PCB1-Women Shower		6/6/23			X	1											
21953	PCB2-Glazing Compd		6/6/23			X	1											
21954	PCB3-Ext. Door Caulk		6/6/23			X	1											
21955	PCB4-Ext. Vert. Sealant		6/6/23			X	1											
21956	PCB5-Ext. Door Caulk		6/6/23			X	1											
21957	PCB6-Louver Caulk		6/6/23			X	1											

Relinquished by:	Accepted by:	Date:	Time:
		6.7.23	1000
		6-7-23	15:45
		6/7/23	17:16

Turnaround:
☐ 1 Day*
☐ 2 Days*
☐ 3 Days*
☐ 4 Days*
☐ 5 Days*
☐ Standard
* SURCHARGE APPLIES
7 DAYS

NJ
☐ Res. Criteria
☐ Non-Res. Criteria
☐ Impact to GW Soil Cleanup Criteria
☐ Impact to GW soil screen Criteria
☐ GW Criteria

NY
☐ TOGS GW
☐ CP-51 SOIL
☐ 375SCO Unrestricted Soil
☐ 375SCO Residential Soil
☐ 375SCO Residential Restricted Soil
☐ 375SCO Commercial Soil
☐ 375SCO Industrial Soil
☐ Subpart 5 DW

PA
☐ Clean Fill Limits
☐ PA-GW
☐ Reg Fill Limits
☐ PA Soil Restricted
☐ PA Soil non-restricted

State Samples Collected?
NY

Data Package:
☐ NJ Reduced Deliv. *
☐ NY Enhanced (ASP B) *
☐ Other

Comments, Special Requirements or Regulations:

Data Format:
☐ Phoenix Std Report ☐ EQuIS
☐ Excel ☐ NJ Hazsite EDD
☐ PDF ☐ NY EZ EDD (ASP)
☐ GIS/Key ☐ Other

*MS/MSD are considered site samples and will be billed as such in accordance with the prices quoted.

APPENDIX G

PERSONNEL AND LABORATORY CERTIFICATIONS

[redacted]

DIVISION OF SAFETY & HEALTH LIC[redacted]US, BLDG. 12, ALBANY, NY 12226

ASBESTOS HANDLING LICENSE

Adelaide Environmental Health Associates, Inc.
1511 Route 22, Suite C24, Brewster, NY, 10509

License Number: 29305
License Class: RESTRICTED
Date of Issue: 06/07/2023
Expiration Date: 07/31/2024
Duly Authorized Representative: John Soter

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.

Amy Phillips, Director
For the Commissioner of Labor

United States Environmental Protection Agency

This is to certify that

ADELAIDE ENVIRONMENTAL HEALTH ASSOCIATES INC

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

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 September 08, 2025

LBP-15081-2

Certification #

August 25, 2022

Issued On

Michelle Price, Chief

Lead, Heavy Metals, and Inorganics Branch

United States Environmental Protection Agency

This is to certify that

Adelaide Environmental Health Associates, Inc

has fulfilled the requirements of the Toxic Substances Control Act (TSCA) Section 402, and has received certification to conduct lead-based paint renovation, repair, and painting activities pursuant to 40 CFR Part 745.89

In the Jurisdiction of:

All EPA Administered States, Tribes, and Territories

This certification is valid from the date of issuance and expires December 05, 2027

NAT-15081-3

Certification #

August 03, 2022

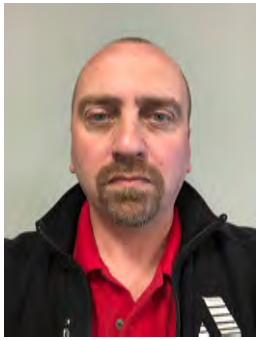
Issued On

Michelle Price, Chief

Lead, Heavy Metals, and Inorganics Branch

United States Environmental Protection Agency

This is to certify that



Jason P Fullum

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:

Risk Assessor

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 July 11, 2023

LBP-R-12098-2

Certification #

May 07, 2020

Issued On

Susan Schulz, Acting Chief

Chemicals and Multimedia Programs Branch

STATE OF NEW YORK - DEPARTMENT OF LABOR
ASBESTOS CERTIFICATE

N.Y.S



JASON P FULLUM
CLASS(EXPIRES)
C ATEC(02/24) D INSP(02/24)
E MGPL(02/24) H PM (02/24)
I PD (02/24)

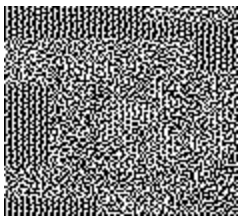
CERT# 97-20574
DMV# 375065936

MUST BE CARRIED ON ASBESTOS PROJECTS

EYES BLU
HAIR BRO
HGT 5' 11"

IF FOUND RETURN TO:
NYSDOL - L&C UNIT
ROOM 161A BUILDING 12
STATE OFFICE CAMPUS
ALBANY NY 12240

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER



Expires 12:01 AM April 01, 2024
Issued April 01, 2022
Revised March 30, 2023

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MS. KAROL H. LU
AMERICA SCIENCE TEAM NEW YORK, INC
117 EAST 30TH ST
NEW YORK, NY 10016

NY Lab Id No: 11480

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



Serial No.: 66402

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, 2024
Issued April 01, 2022
Revised March 30, 2023

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MS. PHYLLIS SHILLER
PHOENIX ENVIRONMENTAL LABS
587 EAST MIDDLE TURNPIKE
MANCHESTER, CT 06040

NY Lab Id No: 11301

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:

Polychlorinated Biphenyls

Aroclor 1262 (PCB-1262)	EPA 8082A
Aroclor 1262 (PCB-1262) in Oil	EPA 8082A
Aroclor 1268 (PCB-1268)	EPA 8082A
Aroclor 1268 (PCB-1268) in Oil	EPA 8082A
PCB 101	EPA 8082A
PCB 105	EPA 8082A
PCB 118	EPA 8082A
PCB 128	EPA 8082A
PCB 138	EPA 8082A
PCB 153	EPA 8082A
PCB 170	EPA 8082A
PCB 18	EPA 8082A
PCB 180	EPA 8082A
PCB 183	EPA 8082A
PCB 184	EPA 8082A
PCB 187	EPA 8082A
PCB 195	EPA 8082A
PCB 206	EPA 8082A
PCB 209	EPA 8082A
PCB 28	EPA 8082A
PCB 44	EPA 8082A
PCB 49	EPA 8082A
PCB 52	EPA 8082A
PCB 66	EPA 8082A
PCB 8	EPA 8082A
PCB 87	EPA 8082A
PCB Congeners, Total	EPA 8082A

Serial No.: 66336

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, 2024
Issued April 01, 2022
Revised March 30, 2023

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MS. PHYLLIS SHILLER
PHOENIX ENVIRONMENTAL LABS
587 EAST MIDDLE TURNPIKE
MANCHESTER, CT 06040

NY Lab Id No: 11301

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

Acrylates	
Acrylonitrile	EPA TO-15
Methyl methacrylate	EPA TO-15
Chlorinated Hydrocarbons	
1,2,4-Trichlorobenzene	EPA TO-15
Hexachlorobutadiene	EPA TO-15
Hexachloroethane	EPA TO-15
Metals I	
Lead, Total	EPA 29 (6010)
	EPA 7010
Polychlorinated Biphenyls	
PCBs and Aroclors	EPA TO-10A
Polynuclear Aromatics	
Naphthalene	EPA TO-15
Purgeable Aromatics	
1,2,4-Trimethylbenzene	EPA TO-15
1,2-Dichlorobenzene	EPA TO-15
1,3,5-Trimethylbenzene	EPA TO-15
1,3-Dichlorobenzene	EPA TO-15
1,4-Dichlorobenzene	EPA TO-15
2-Chlorotoluene	EPA TO-15
Benzene	EPA TO-15
Chlorobenzene	EPA TO-15
Ethyl benzene	EPA TO-15
Isopropylbenzene	EPA TO-15
m/p-Xylenes	EPA TO-15

Serial No.: 66338

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.

Kathy Hochul, Governor

Roberta Reardon, Commissioner

Contract Management

Contract Awards
Contract Management - 35th Fl.
Corning Tower
Empire State Plaza
Albany NY 12242

Schedule Year	2026 through 2027
Date Requested	08/21/2026
PRC#	2026024953

Location	State Armory
Project ID#	47477
Project Type	Renovate Armory

PREVAILING WAGE SCHEDULE FOR ARTICLE 8 PUBLIC WORK PROJECT

Attached is the current schedule(s) of the prevailing wage rates and prevailing hourly supplements for the project referenced above. A unique Prevailing Rate Case Number (PRC#) has been assigned to the schedule(s) for your project.

The schedule is effective from July 2026 through June 2027. All updates, corrections, posted on the 1st business day of each month, and future copies of the annual determination are available on the Department's website www.labor.ny.gov. Updated PDF copies of your schedule can be accessed by entering your assigned PRC# at the proper location on the website.

It is the responsibility of the contracting agency or its agent to annex and make part, the attached schedule, to the specifications for this project, when it is advertised for bids and /or to forward said schedules to the successful bidder(s), immediately upon receipt, in order to insure the proper payment of wages.

Please refer to the "General Provisions of Laws Covering Workers on Public Work Contracts" provided with this schedule, for the specific details relating to other responsibilities of the Department of Jurisdiction.

Upon completion or cancellation of this project, enter the required information and mail **OR** fax this form to the office shown at the bottom of this notice, **OR** fill out the electronic version via the NYSDOL website.

NOTICE OF COMPLETION / CANCELLATION OF PROJECT

Date Completed: _____ Date Cancelled: _____

Name & Title of Representative: _____

Phone: (518) 457-5589 Fax: (518) 485-1870
W. Averell Harriman State Office Campus, Bldg. 12, Room 130, Albany, NY 12240

General Provisions of Laws Covering Workers on Article 8 Public Work Contracts

Introduction

The Labor Law requires public work contractors and subcontractors to pay laborers, workers, or mechanics employed in the performance of a public work contract not less than the prevailing rate of wage and supplements (fringe benefits) in the locality where the work is performed.

Contractor Registry

Effective December 30, 2024 all contractors and subcontractors submitting bids or performing construction work on public work projects, or private projects covered by Article 8 of the Labor Law, are required to register with the New York State Department of Labor (NYSDOL) under Labor Law Section 220-i. To register, contractors and subcontractors must submit an application through NYSDOL's Contractor Registry portal which is available through the agency's Management System for Protecting Worker Rights (MPWR) https://mpwr-public.labor.ny.gov/en/login.

For additional information, please visit online.

Responsibilities of the Department of Jurisdiction

A Department of Jurisdiction (Contracting Agency) includes a state department, agency, board or commission: a county, city, town or village; a school district, board of education or board of cooperative educational services; a sewer, water, fire, improvement and other district corporation; a public benefit corporation; and a public authority awarding a public work contract.

The Department of Jurisdiction (Contracting Agency) awarding a public work contract MUST obtain a Prevailing Rate Schedule listing the hourly rates of wages and supplements due the workers to be employed on a public work project. This schedule may be obtained by completing and forwarding a "Request for wage and Supplement Information" form (PW 39) to the Bureau of Public Work. The Prevailing Rate Schedule MUST be included in the specifications for the contract to be awarded and is deemed part of the public work contract.

Upon the awarding of the contract, the law requires that the Department of Jurisdiction (Contracting Agency) furnish the following information to the Bureau: the name and address of the contractor, the date the contract was let and the approximate dollar value of the contract. To facilitate compliance with this provision of the Labor Law, a copy of the Department's "Notice of Contract Award" form (PW 16) is provided with the original Prevailing Rate Schedule.

The Department of Jurisdiction (Contracting Agency) is required to notify the Bureau of the completion or cancellation of any public work project. The Department's PW 200 form is provided for that purpose.

Both the PW 16 and PW 200 forms are available for completion online.

Hours

No laborer, worker, or mechanic in the employ of a contractor or subcontractor engaged in the performance of any public work project shall be permitted to work more than eight hours in any day or more than five days in any week, except in cases of extraordinary emergency. The contractor and the Department of Jurisdiction (Contracting Agency) may apply to the Bureau of Public Work for a dispensation permitting workers to work additional hours or days per week on a particular public work project.

Wages and Supplements

The wages and supplements to be paid and/or provided to laborers, workers, and mechanics employed on a public work project shall be not less than those listed in the current Prevailing Rate Schedule for the locality where the work is performed. If a prime contractor on a public work project has not been provided with a Prevailing Rate Schedule, the contractor must notify the Department of Jurisdiction (Contracting Agency) who in turn must request an original Prevailing Rate Schedule form the Bureau of Public Work. Requests may be submitted by: mail to NYSDOL, Bureau of Public Work, State Office Bldg. Campus, Bldg. 12, Rm. 130, Albany, NY 12226; Fax to Bureau of Public Work (518) 485-1870; or electronically at the NYSDOL website www.labor.ny.gov.

Upon receiving the original schedule, the Department of Jurisdiction (Contracting Agency) is REQUIRED to provide complete copies to all prime contractors who in turn MUST, by law, provide copies of all applicable county schedules to each subcontractor and obtain from each subcontractor, an affidavit certifying such schedules were received. If the original schedule expired, the contractor may obtain a copy of the new annual determination from the NYSDOL website www.labor.ny.gov.

The Commissioner of Labor makes an annual determination of the prevailing rates. This determination is in effect from July 1st through June 30th of the following year. The annual determination is available on the NYSDOL website

www.labor.ny.gov.

Payrolls and Payroll Records

Every contractor and subcontractor MUST keep original payrolls or transcripts subscribed and affirmed as true under penalty of perjury. As per Article 6 of the Labor law, contractors and subcontractors are required to establish, maintain, and preserve for not less than six (6) years, contemperaneous, true, and accurate payroll records. At a minimum, payrolls must show the following information for each person employed on a public work project: Name, Address, Last 4 Digits of Social Security Number, Classification(s) in which the worker was employed, Hourly wage rate(s) paid, Supplements paid or provided, and Daily and weekly number of hours worked in each classification.

The filing of payrolls to the Department of Jurisdiction is a condition of payment.Every contractor and subcontractor shall submit to the Department of Jurisdiction (Contracting Agency), 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. The Department of Jurisdiction (Contracting Agency) shall collect, review for facial validity, and maintain such payrolls.

In addition, the Commissioner of Labor may require contractors to furnish, with ten (10) days of a request, payroll records sworn to as their validity and accuracy for public work and private work. Payroll records include, but are not limited to time cards, work description sheets, proof that supplements were provided, cancelled payroll checks and payrolls. Failure to provide the requested information within the allotted ten (10) days will result in the withholding of up to 25% of the contract, not to exceed $100,000.00. If the contractor or subcontractor does not maintain a place of business in New York State and the amount of the contract exceeds $25,000.00, payroll records and certifications must be kept on the project worksite.

The prime contractor is responsible for any underpayments of prevailing wages or supplements by any subcontractor.

All contractors or their subcontractors shall provide to their subcontractors a copy of the Prevailing Rate Schedule specified in the public work contract as well as any subsequently issued schedules. A failure to provide these schedules by a contractor or subcontractor is a violation of Article 8, Section 220-a of the Labor Law.

All subcontractors engaged by a public work project contractor or its subcontractor, upon receipt of the original schedule and any subsequently issued schedules, shall provide to such contractor a verified statement attesting that the subcontractor has received the Prevailing Rate Schedule and will pay or provide the applicable rates of wages and supplements specified therein. (See NYS Labor Laws, Article 8 . Section 220-a).

Determination of Prevailing Wage and Supplement Rate Updates Applicable to All Counties

The wages and supplements contained in the annual determination become effective July 1st whether or not the new determination has been received by a given contractor. Care should be taken to review the rates for obvious errors. Any corrections should be brought to the Department's attention immediately. It is the responsibility of the public work contractor to use the proper rates. If there is a question on the proper classification to be used, please call the district office located nearest the project. Any errors in the annual determination will be corrected and posted to the NYSDOL website on the first business day of each month. Contractors are responsible for paying these updated rates as well, retroactive to July 1st.

When you review the schedule for a particular occupation, your attention should be directed to the dates above the column of rates. These are the dates for which a given set of rates is effective. To the extent possible, the Department posts rates in its possession that cover periods of time beyond the July 1st to June 30th time frame covered by a particular annual determination. Rates that extend beyond that instant time period are informational ONLY and may be updated in future annual determinations that actually cover the then appropriate July 1st to June 30th time period.

Withholding of Payments

When a complaint is filed with the Commissioner of Labor alleging the failure of a contractor or subcontractor to pay or provide the prevailing wages or supplements, or when the Commissioner of Labor believes that unpaid wages or supplements may be due, payments on the public work contract shall be withheld from the prime contractor in a sufficient amount to satisfy the alleged unpaid wages and supplements, including interest and civil penalty, pending a final determination.

When the Bureau of Public Work finds that a contractor or subcontractor on a public work project failed to pay or provide the requisite prevailing wages or supplements, the Bureau is authorized by Sections 220-b and 235.2 of the Labor Law to so notify the financial officer of the Department of Jurisdiction (Contracting Agency) that awarded the public work contract. Such officer MUST then withhold or cause to be withheld from any payment due the prime contractor on account of such contract the amount indicated by the Bureau as sufficient to satisfy the unpaid wages and supplements, including interest and any civil penalty that may be assessed by the Commissioner of Labor. The withholding continues until there is a final determination of the underpayment by the Commissioner of Labor or by the court in the event a legal proceeding is instituted for review of the determination of the Commissioner of Labor.

The Department of Jurisdiction (Contracting Agency) shall comply with this order of the Commissioner of Labor or of the court with respect to the release of the funds so withheld.

Summary of Notice Posting Requirements

The current Prevailing Rate Schedule must be posted in a prominent and accessible place on the site of the public work project. The prevailing wage schedule must be encased in, or constructed of, materials capable of withstanding adverse weather conditions and be titled "PREVAILING RATE OF WAGES" in letters no smaller than two (2) inches by two (2) inches.

The "Public Work Project" notice must be posted at the beginning of the performance of every public work contract, on each job site.

Every employer providing workers. compensation insurance and disability benefits must post notices of such coverage in the format prescribed by the Workers. Compensation Board in a conspicuous place on the jobsite.

Every employer subject to the NYS Human Rights Law must conspicuously post at its offices, places of employment, or employment training centers, notices furnished by the State Division of Human Rights.

Employers liable for contributions under the Unemployment Insurance Law must conspicuously post on the jobsite notices furnished by the NYS Department of Labor.

Apprentices

Employees cannot be paid apprentice rates unless they are individually registered in a program registered with the NYS Commissioner of Labor. The allowable ratio of apprentices to journeyworkers in any craft classification can be no greater than the statewide building trade ratios promulgated by the Department of Labor and included with the Prevailing Rate Schedule. An employee listed on a payroll as an apprentice who is not registered as above or is performing work outside the classification of work for which the apprentice is indentured, must be paid the prevailing journeyworker's wage rate for the classification of work the employee is actually performing.

NYSDOL Labor Law, Article 8, Section 220-3, require that only apprentices individually registered with the NYS Department of Labor may be paid apprenticeship rates on a public work project. No other Federal or State Agency of office registers apprentices in New York State.

Persons wishing to verify the apprentice registration of any person must do so in writing by mail, to the NYSDOL Office of Employability Development / Apprenticeship Training, State Office Bldg. Campus, Bldg. 12, Albany, NY 12226 or by Fax to NYSDOL Apprenticeship Training (518) 457-7154. All requests for verification must include the name and social security number of the person for whom the information is requested.

The only conclusive proof of individual apprentice registration is written verification from the NYSDOL Apprenticeship Training Albany Central office. Neither Federal nor State Apprenticeship Training offices outside of Albany can provide conclusive registration information.

It should be noted that the existence of a registered apprenticeship program is not conclusive proof that any person is registered in that program. Furthermore, the existence or possession of wallet cards, identification cards, or copies of state forms is not conclusive proof of the registration of any person as an apprentice.

Interest and Penalties

In the event that an underpayment of wages and/or supplements is found:

- Interest shall be assessed at the rate then in effect as prescribed by the Superintendent of Banks pursuant to section 14-a of the Banking Law, per annum from the date of underpayment to the date restitution is made.
- A Civil Penalty may also be assessed, not to exceed 25% of the total of wages, supplements, and interest due.

Debarment

Any contractor or subcontractor and/or its successor shall be ineligible to submit a bid on or be awarded any public work contract or subcontract with any state, municipal corporation or public body for a period of five (5) years when:

- Two (2) willful determinations have been rendered against that contractor or subcontractor and/or its successor within any consecutive six (6) year period.
- There is any willful determination that involves the falsification of payroll records or the kickback of wages or supplements.

Criminal Sanctions

Willful violations of the Prevailing Wage Law (Article 8 of the Labor Law) may be a felony punishable by fine or imprisonment of up to 15 years, or both.

Discrimination

No employee or applicant for employment may be discriminated against on account of age, race, creed, color, national origin, sex, disability or marital status.

No contractor, subcontractor nor any person acting on its behalf, 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 (NYS Labor Law, Article 8, Section 220-e(a)).

No contractor, subcontractor, nor any person acting on its behalf, shall in any manner, discriminate against or intimidate any employee on account of race, creed, color, disability, sex, or national origin (NYS Labor Law, Article 8, Section 220-e(b)).

The Human Rights Law also prohibits discrimination in employment because of age, marital status, or religion.

There may be deducted from the amount payable to the contractor under the contract a penalty of $50.00 for each calendar day during which such person was discriminated against or intimidated in violation of the provision of the contract (NYS Labor Law, Article 8, Section 220-e(c)).

The contract may be cancelled or terminated by the State or municipality. All monies due or to become due thereunder may be forfeited for a second or any subsequent violation of the terms or conditions of the anti-discrimination sections of the contract (NYS Labor Law, Article 8, Section 220-e(d)).

Every employer subject to the New York State Human Rights Law must conspicuously post at its offices, places of employment, or employment training centers notices furnished by the State Division of Human Rights.

Workers' Compensation

In accordance with Section 142 of the State Finance Law, the contractor shall maintain coverage during the life of the contract for the benefit of such employees as required by the provisions of the New York State Workers' Compensation Law.

A contractor who is awarded a public work contract must provide proof of workers' compensation coverage prior to being allowed to begin work.

The insurance policy must be issued by a company authorized to provide workers' compensation coverage in New York State. Proof of coverage must be on form C-105.2 (Certificate of Workers' Compensation Insurance) and must name this agency as a certificate holder.

If New York State coverage is added to an existing out-of-state policy, it can only be added to a policy from a company authorized to write workers' compensation coverage in this state. The coverage must be listed under item 3A of the information page.

The contractor must maintain proof that subcontractors doing work covered under this contract secured and maintained a workers' compensation policy for all employees working in New York State.

Every employer providing worker's compensation insurance and disability benefits must post notices of such coverage in the format prescribed by the Workers' Compensation Board in a conspicuous place on the jobsite.

Unemployment Insurance

Employers liable for contributions under the Unemployment Insurance Law must conspicuously post on the jobsite notices furnished by the New York State Department of Labor.

Kathy Hochul, Governor

Roberta Reardon, Commissioner

Contract Management

Contract Awards
Contract Management - 35th Fl.
Corning Tower
Empire State Plaza
Albany NY 12242

Schedule Year	2026 through 2027
Date Requested	08/21/2026
PRC#	2026024953

Location	State Armory
Project ID#	47477
Project Type	Renovate Armory

Notice of Contract Award

New York State Labor Law, Article 8, Section 220.3a requires that certain information regarding the awarding of public work contracts, be furnished to the Commissioner of Labor. One "Notice of Contract Award" (PW 16, which may be photocopied), **MUST** be completed for **EACH** prime contractor on the above referenced project.

Upon notifying the successful bidder(s) of this contract, enter the required information and mail **OR** fax this form to the office shown at the bottom of this notice, **OR** fill out the electronic version via the NYSDOL website.

Contractor Information
All information must be supplied

Federal Employer Identification Number: _____

Name: _____

Address: _____

_____

City: _____ State: _____ Zip: _____

Amount of Contract: $_____

Approximate Starting Date: ____/____/____

Approximate Completion Date: ____/____/____

Contract Type:

[ ] (01) General Construction
[ ] (02) Heating/Ventilation
[ ] (03) Electrical
[ ] (04) Plumbing
[ ] (05) Other : _____

Phone: (518) 457-5589 Fax: (518) 485-1870
W. Averell Harriman State Office Campus, Bldg. 12, Room 130, Albany, NY 12226

Social Security Numbers on Certified Payrolls:

The Department of Labor is cognizant of the concerns of the potential for misuse or inadvertent disclosure of social security numbers. Identity theft is a growing problem and we are sympathetic to contractors' concern regarding inclusion of this information on payrolls if another identifier will suffice.

For these reasons, the substitution of the use of the last four digits of the social security number on certified payrolls submitted to contracting agencies on public work projects is now acceptable to the Department of Labor. This change does not affect the Department's ability to request and receive the entire social security number from employers during its public work/ prevailing wage investigations.

Construction Industry Fair Play Act: Required Posting for Labor Law Article 25-B § 861-d

Construction industry employers must post the "Construction Industry Fair Play Act" notice in a prominent and accessible place on the job site. Failure to post the notice can result in penalties of up to $1,500 for a first offense and up to $5,000 for a second offense. The posting is included as part of this wage schedule. Additional copies may be obtained from the NYS DOL website, https://dol.ny.gov/public-work-and-prevailing-wage
If you have any questions concerning the Fair Play Act, please call the State Labor Department toll-free at 1-866-435-1499 or email us at: dol.misclassified@labor.ny.gov .

Worker Notification: (Labor Law §220, paragraph a of subdivision 3-a)

Effective June 23, 2020

This provision is an addition to the existing wage rate law, Labor Law §220, paragraph a of subdivision 3-a. It requires contractors and subcontractors to provide written notice to all laborers, workers or mechanics of the *prevailing wage and supplement rate* for their particular job classification *on each pay stub**. It also requires contractors and subcontractors to *post a notice* at the beginning of the performance of every public work contract *on each job site* that includes the telephone number and address for the Department of Labor and a statement informing laborers, workers or mechanics of their right to contact the Department of Labor if he/she is not receiving the proper prevailing rate of wages and/or supplements for his/her job classification. The required notification will be provided with each wage schedule, may be downloaded from our website *www.labor.ny.gov* or be made available upon request by contacting the Bureau of Public Work at 518-457-5589. *In the event the required information will not fit on the pay stub, an accompanying sheet or attachment of the information will suffice.

(12.20)

To all State Departments, Agency Heads and Public Benefit Corporations
IMPORTANT NOTICE REGARDING PUBLIC WORK ENFORCEMENT FUND

Budget Policy & Reporting Manual

B-610

Public Work Enforcement Fund

effective date December 7, 2005

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1. Purpose and Scope:

This Item describes the Public Work Enforcement Fund (the Fund, PWEF) and its relevance to State agencies and public benefit corporations engaged in construction or reconstruction contracts, maintenance and repair, and announces the recently-enacted increase to the percentage of the dollar value of such contracts that must be deposited into the Fund. This item also describes the roles of the following entities with respect to the Fund:

- New York State Department of Labor (DOL),
- The Office of the State of Comptroller (OSC), and
- State agencies and public benefit corporations.

2. Background and Statutory References:

DOL uses the Fund to enforce the State's Labor Law as it relates to contracts for construction or reconstruction, maintenance and repair, as defined in subdivision two of Section 220 of the Labor Law. State agencies and public benefit corporations participating in such contracts are required to make payments to the Fund.

Chapter 511 of the Laws of 1995 (as amended by Chapter 513 of the Laws of 1997, Chapter 655 of the Laws of 1999, Chapter 376 of the Laws of 2003 and Chapter 407 of the Laws of 2005) established the Fund.

3. Procedures and Agency Responsibilities:

The Fund is supported by transfers and deposits based on the value of contracts for construction and reconstruction, maintenance and repair, as defined in subdivision two of Section 220 of the Labor Law, into which all State agencies and public benefit corporations enter.

Chapter 407 of the Laws of 2005 increased the amount required to be provided to this fund to .10 of one-percent of the total cost of each such contract, to be calculated at the time agencies or public benefit corporations enter into a new contract or if a contract is amended. The provisions of this bill became effective August 2, 2005.

To all State Departments, Agency Heads and Public Benefit Corporations
IMPORTANT NOTICE REGARDING PUBLIC WORK ENFORCEMENT FUND

OSC will report to DOL on all construction-related ("D") contracts approved during the month, including contract amendments, and then DOL will bill agencies the appropriate assessment monthly. An agency may then make a determination if any of the billed contracts are exempt and so note on the bill submitted back to DOL. For any instance where an agency is unsure if a contract is or is not exempt, they can call the Bureau of Public Work at the number noted below for a determination. Payment by check or journal voucher is due to DOL within thirty days from the date of the billing. DOL will verify the amounts and forward them to OSC for processing.

For those contracts which are not approved or administered by the Comptroller, monthly reports and payments for deposit into the Public Work Enforcement Fund must be provided to the Administrative Finance Bureau at the DOL within 30 days of the end of each month or on a payment schedule mutually agreed upon with DOL.

Reports should contain the following information:

- Name and billing address of State agency or public benefit corporation;
- State agency or public benefit corporation contact and phone number;
- Name and address of contractor receiving the award;
- Contract number and effective dates;
- Contract amount and PWEF assessment charge (if contract amount has been amended, reflect increase or decrease to original contract and the adjustment in the PWEF charge); and
- Brief description of the work to be performed under each contract.

Checks and Journal Vouchers, payable to the "New York State Department of Labor" should be sent to:

Department of Labor
Administrative Finance Bureau-PWEF Unit
Building 12, Room 464
State Office Campus
Albany, NY 12226

Any questions regarding billing should be directed to NYSDOL's Administrative Finance Bureau-PWEF Unit at (518) 457-3624 and any questions regarding Public Work Contracts should be directed to the Bureau of Public Work at (518) 457-5589.

NEW YORK STATE OF OPPORTUNITY. Department of Labor

Required Notice under Article 25-B of the Labor Law

Attention All Employees, Contractors and Subcontractors: You are Covered by the Construction Industry Fair Play Act

The law says that you are an employee unless:

- You are free from direction and control in performing your job, **and**
- You perform work that is not part of the usual work done by the business that hired you, **and**
- You have an independently established business.

Your employer cannot consider you to be an independent contractor unless all three of these facts apply to your work.

It is against the law for an employer to misclassify employees as independent contractors or pay employees off the books.

Employee Rights: If you are an employee, you are entitled to state and federal worker protections. These include:

- Unemployment Insurance benefits, if you are unemployed through no fault of your own, able to work, and otherwise qualified,
- Workers' compensation benefits for on-the-job injuries,
- Payment for wages earned, minimum wage, and overtime (under certain conditions),
- Prevailing wages on public work projects,
- The provisions of the National Labor Relations Act, and
- A safe work environment.

It is a violation of this law for employers to retaliate against anyone who asserts their rights under the law. Retaliation subjects an employer to civil penalties, a private lawsuit or both.

Independent Contractors: If you are an independent contractor**, you must pay all taxes and Unemployment Insurance contributions required by New York State and Federal Law.**

Penalties for paying workers off the books or improperly treating employees as independent contractors:

• **Civil Penalty**	First offense: Up to $2,500 per employee Subsequent offense(s): Up to $5,000 per employee
• **Criminal Penalty**	First offense: Misdemeanor - up to 30 days in jail, up to a $25,000 fine and debarment from performing public work for up to one year. Subsequent offense(s): Misdemeanor - up to 60 days in jail or up to a $50,000 fine and debarment from performing public work for up to 5 years.

If you have questions about your employment status or believe that your employer may have violated your rights and you want to file a complaint, call the Department of Labor at (866) 435-1499 or send an email to dol.misclassified@labor.ny.gov. All complaints of fraud and violations are taken seriously. You can remain anonymous.

Employer Name:

IA 999 (09/16)

WE ARE YOUR DOL

NEW YORK STATE Department of Labor

New York State Department of Labor
Bureau of Public Work

Attention Employees

THIS IS A:

PUBLIC WORK PROJECT

If you are employed on this project as a **worker, laborer, or mechanic** you are entitled to receive the **prevailing wage and supplements rate** for the classification at which you are working.

Your pay stub and wage notice received upon hire must clearly state your wage rate and supplement rate.

Chapter 629 of the Labor Laws of 2007:

These wages are set by law and must be posted at the work site. They can also be found at: https://dol.ny.gov/bureau-public-work

If you feel that you have not received proper wages or benefits, please call our nearest office.*

Albany	(518) 457-2744	Patchogue	(631) 687-4882
Binghamton	(607) 721-8005	Rochester	(585) 258-4505
Buffalo	(716) 847-7159	Syracuse	(315) 428-4056
Garden City	(516) 228-3915	Utica	(315) 793-2314
New York City	(212) 932-2419	White Plains	(914) 997-9507
Newburgh	(845) 568-5287		

* For New York City government agency construction projects, please contact the Office of the NYC Comptroller at (212) 669-4443, or www.comptroller.nyc.gov – click on Bureau of Labor Law.

Contractor Name: _____

Project Location: _____

Requirements for OSHA 10 Compliance

Article 8 §220-h requires that when the advertised specifications, for every contract for public work, is $250,000.00 or more the contract must contain a provision requiring that every worker employed in the performance of a public work contract shall be certified as having completed an OSHA 10 safety training course. The clear intent of this provision is to require that all employees of public work contractors, required to be paid prevailing rates, receive such training “prior to the performing any work on the project.”

The Bureau will enforce the statute as follows:

All contractors and sub contractors must attach a copy of proof of completion of the OSHA 10 course to the first certified payroll submitted to the contracting agency and on each succeeding payroll where any new or additional employee is first listed.

Proof of completion may include but is not limited to:

- Copies of bona fide course completion card (*Note: Completion cards do not have an expiration date.)*
- Training roster, attendance record of other documentation from the certified trainer pending the issuance of the card.
- Other valid proof

**A certification by the employer attesting that all employees have completed such a course is not sufficient proof that the course has been completed.

Any questions regarding this statute may be directed to the New York State Department of Labor, Bureau of Public Work at 518-457-5589.

WICKS

Public work projects are subject to the Wicks Law requiring separate specifications and bidding for the plumbing, heating and electrical work, when the total project's threshold is $3 million in Bronx, Kings, New York, Queens and, Richmond counties; $1.5 million in Nassau, Suffolk and Westchester counties; and $500,000 in all other counties.

For projects below the monetary threshold, bidders must submit a sealed list naming each subcontractor for the plumbing, HVAC and electrical and the amount to be paid to each. The list may not be changed unless the public owner finds a legitimate construction need, including a change in specifications or costs or the use of a Project Labor Agreement (PLA), and must be open to public inspection.

Allows the state and local agencies and authorities to waive the Wicks Law and use a PLA if it will provide the best work at the lowest possible price. If a PLA is used, all contractors shall participate in apprentice training programs in the trades of work it employs that have been approved by the Department of Labor (DOL) for not less than three years. They shall also have at least one graduate in the last three years and use affirmative efforts to retain minority apprentices. PLA's would be exempt from Wicks, but deemed to be public work subject to prevailing wage enforcement.

The Commissioner of Labor shall have the power to enforce separate specification requirement s on projects, and may issue stop-bid orders against public owners for non-compliance.

Other new monetary thresholds, and similar sealed bidding for non-Wicks projects, would apply to certain public authorities including municipal housing authorities, NYC Construction Fund, Yonkers Educational Construction Fund, NYC Municipal Water Finance Authority, Buffalo Municipal Water Finance Authority, Westchester County Health Care Association, Nassau County Health Care Corp., Clifton-Fine Health Care Corp., Erie County Medical Center Corp., NYC Solid Waste Management Facilities, and the Dormitory Authority.

Contractors must pay subcontractors within a 7 days period.

(07.19)

Introduction to the Prevailing Rate Schedule

Information About Prevailing Rate Schedule

This information is provided to assist you in the interpretation of particular requirements for each classification of worker contained in the attached Schedule of Prevailing Rates.

Classification

It is the duty of the Commissioner of Labor to make the proper classification of workers taking into account whether the work is heavy and highway, building, sewer and water, tunnel work, or residential, and to make a determination of wages and supplements to be paid or provided. It is the responsibility of the public work contractor to use the proper rate. If there is a question on the proper classification to be used, please call the district office located nearest the project. District office locations and phone numbers are listed below.
Prevailing Wage Schedules are issued separately for "General Construction Projects" and "Residential Construction Projects" on a county-by-county basis.

General Construction Rates apply to projects such as: Buildings, Heavy & Highway, and Tunnel and Water & Sewer rates.
Residential Construction Rates generally apply to construction, reconstruction, repair, alteration, or demolition of one family, two family, row housing, or rental type units intended for residential use.
Some rates listed in the Residential Construction Rate Schedule have a very limited applicability listed along with the rate. Rates for occupations or locations not shown on the residential schedule must be obtained from the General Construction Rate Schedule. Please contact the local Bureau of Public Work office before using Residential Rate Schedules, to ensure that the project meets the required criteria.

*Contractor Registry (LL 220-I):
Labor Law Section 220-i requires that contractors obtain a Contractor Registry certificate of registration prior to bidding on or commencing work on a public or private project subject to prevailing wage requirements. Subcontractors also are prohibited from commencing work on covered employment unless they have received a Contractor Registry certificate. Contractors are required to submit their Certificate of Registration with their bid materials. A public database is available online to confirm registration at data.ny.gov to confirm registration validity. For additional information on how to register and the requirements, visit https://dol.ny.gov/public-work-contractor-and-subcontractorregistry-
landing.

Payrolls and Payroll Records

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 (3) years from the projects date of completion. Additionally, as per Article 6 of the Labor Law, contractors and subcontractors are required to establish, maintain, and preserve for not less that six (6) years, contemporaneous, true, and accurate payroll records.

At a minimum, payrolls must show the following information for each person employed on a public work project: Name; Address, Last 4 Digits of Social Security number, Classification(s) in which the worker was employed, Hourly wage rate(s) paid, Supplements paid or provided, and Daily and weekly number of hours worked in each classification.

Payroll records and transcripts are required to be kept on site during all the time that work under that contract is being performed.

NOTE: *For more detailed information regarding Article 9 prevailing wage contracts, please refer to "General Provisions of Laws Covering Workers on Article 9 Public Work Building Service Contracts".*

If you have any questions concerning the attached schedule or would like additional information, please write to:

New York State Department of Labor
Bureau of Public Work
State Office Campus, Bldg. 12
Albany, NY 12240

OR

Contact the nearest BUREAU of PUBLIC WORK District Office

District Office Locations:	Telephone #	FAX #
Bureau of Public Work - Albany	518-457-2744	518-485-0240
Bureau of Public Work - Binghamton	607-721-8005	607-721-8004
Bureau of Public Work - Buffalo	716-847-7159	716-847-7650
Bureau of Public Work - Garden City	516-228-3915	516-794-3518

Bureau of Public Work - Newburgh	845-568-5287	845-568-5332
Bureau of Public Work - New York City	212-932-2419	212-775-3579
Bureau of Public Work - Patchogue	631-687-4882	631-687-4902
Bureau of Public Work - Rochester	585-258-4505	585-258-4708
Bureau of Public Work - Syracuse	315-428-4056	315-428-4671
Bureau of Public Work - Utica	315-793-2314	315-793-2514
Bureau of Public Work - White Plains	914-997-9507	914-997-9523
Bureau of Public Work - Central Office	518-457-5589	518-485-1870

Paid Holidays

Paid Holidays are days for which an eligible employee receives a regular day's pay, but is not required to perform work. If an employee works on a day listed as a paid holiday, this remuneration is in addition to payment of the required prevailing rate for the work actually performed.

Overtime

At a minimum, all work performed on a public work project in excess of eight hours in any one day or more than five days in any workweek is overtime. The specific overtime requirements for each trade or occupation on a public work project may differ. Specific overtime requirements for each trade or occupation are contained in the prevailing rate schedules.

Overtime holiday pay is the premium pay that is required for work performed on specified holidays. It is only required where the employee actually performs work on such holidays.

The applicable holidays are listed under HOLIDAYS: OVERTIME. The required rate of pay for these covered holidays can be found in the OVERTIME PAY section listings for each classification.

Supplemental Benefits

Particular attention should be given to the supplemental benefit requirements. Although in most cases the payment or provision of supplements is straight time for all hours worked, some classifications require the payment or provision of supplements, or a portion of the supplements, to be paid or provided at a premium rate for premium hours worked. Supplements may also be required to be paid or provided on paid holidays, regardless of whether the day is worked. The Overtime Codes and Notes listed on the particular wage classification will indicate these conditions as required.

Effective Dates

When you review the schedule for a particular occupation, your attention should be directed to the dates above the column of rates. These are the dates for which a given set of rates is effective. The rate listed is valid until the next effective rate change or until the new annual determination which takes effect on July 1 of each year. Please Note: Updates to the Wage Schedule shall be made on a quarterly basis.

All contractors and subcontractors are required to pay the current prevailing rates of wages and supplements. If you have any questions please contact the Bureau of Public Work or visit the New York State Department of Labor website (www.labor.ny.gov) for current wage rate information.

Shift Work

If the timeline of the contract requires shift work be performed to meet deadlines, the BPWE will enforce the shift work rate as the required rate on the project whether or not shift work is specifically addressed in the contract.

Paid Prenatal Leave

Every employer shall be required to provide to its employees twenty hours of paid prenatal personal leave during any fifty-two week calendar period. Paid prenatal personal leave shall mean leave taken for the health care services received by an employee during their pregnancy or related to such pregnancy, including physical examinations, medical procedures, monitoring and testing, and discussions with a healthcare provider related to the pregnancy. Paid prenatal personal leave may be taken in hourly increments. Benefits for paid prenatal personal leave shall be paid in hourly installments. Employees shall receive compensation at the employee's regular rate of pay, or the applicable minimum wage established by the labor law, whichever is greater, for the use of Paid Prenatal leave.

Apprentice Training Ratios

The following are the allowable ratios of registered Apprentices to Journey-workers.

For example, the ratio 1:1,1:3 indicates the allowable initial ratio is one Apprentice to one Journeyworker. The Journeyworker must be in place on the project before an Apprentice is allowed. Then three additional Journeyworkers are needed before a second Apprentice is allowed. The last ratio repeats indefinitely. Therefore, three more Journeyworkers must be present before a third Apprentice can be hired, and so on.

Please call Apprentice Training Central Office at (518) 457-6820 if you have any questions.

Title (Trade)	Ratio
Boilermaker (Construction)	1:1,1:4

Boilermaker (Shop)	1:1,1:3
Carpenter (Bldg.,H&H, Pile Driver/Dockbuilder)	1:1,1:4
Carpenter (Residential)	1:1,1:3
Electrical (Outside) Lineman	1:1,1:2
Electrician (Inside)	1:1,1:3
Elevator/Escalator Construction & Modernizer	1:1,1:2
Glazier	1:1,1:3
Insulation & Asbestos Worker	1:1,1:3
Iron Worker	1:1,1:4
Laborer	1:1,1:3
Mason	1:1,1:4
Millwright	1:1,1:4
Op Engineer	1:1,1:5
Painter	1:1,1:3
Plumber & Steamfitter	1:1,1:3
Roofer	1:1,1:2
Sheet Metal Worker	1:1,1:3
Sprinkler Fitter	1:1,1:2

If you have any questions concerning the attached schedule or would like additional information, please contact the nearest BUREAU of PUBLIC WORK District Office or write to:

New York State Department of Labor
Bureau of Public Work
State Office Campus, Bldg. 12
Albany, NY 12226

District Office Locations:	Telephone #	FAX #
Bureau of Public Work - Albany	518-457-2744	518-485-0240
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Bureau of Public Work - Buffalo	716-847-7159	716-847-7650
Bureau of Public Work - Garden City	516-228-3915	516-794-3518
Bureau of Public Work - Newburgh	845-568-5287	845-568-5332
Bureau of Public Work - New York City	212-932-2419	212-775-3579
Bureau of Public Work - Patchogue	631-687-4882	631-687-4902
Bureau of Public Work - Rochester	585-258-4505	585-258-4708
Bureau of Public Work - Syracuse	315-428-4056	315-428-4671
Bureau of Public Work - Utica	315-793-2314	315-793-2514
Bureau of Public Work - White Plains	914-997-9507	914-997-9523
Bureau of Public Work - Central Office	518-457-5589	518-485-1870

Westchester County General Construction

Boilermaker — 08/01/2026

JOB DESCRIPTION Boilermaker **DISTRICT** 4

ENTIRE COUNTIES
Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, Westchester

WAGES

Per Hour:	07/01/2026	01/01/2027
Boilermaker	$ 70.38	$ 71.88
Repairs & Renovations	70.38	71.88

Repairs & Renovation: Includes Repairing, Renovating, and Replacement of parts to an existing unit(s).

SUPPLEMENTAL BENEFITS
Per Hour:

Boilermaker	33.5% of Hourly
Repair & Renovations	Wage Paid + $26.85

NOTE: "Hourly Wage Paid" shall include any and all premium(s) pay.

OVERTIME PAY
See (*B, O, **U) on OVERTIME PAGE
Note:* Includes 9th & 10th hours, double for 11th or more.
** Labor Day ONLY, if worked.

Repairs & Renovation see (B,E,Q) on OT Page

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 11, 12, 15, 25, 26, 29) on HOLIDAY PAGE

REGISTERED APPRENTICES
(1/2) Year Terms at the following percentage of Boilermaker's wage per hour:

1st	2nd	3rd	4th	5th	6th	7th
65%	70%	75%	80%	85%	90%	95%

SUPPLEMENTAL BENEFITS:

33.5% of Hourly Wage Paid Plus Amount Below:

1st	2nd	3rd	4th	5th	6th	7th
$20.36	$21.28	$22.22	$23.12	$24.07	$25.00	$25.93

NOTE: "Hourly Wage Paid" shall include any and all premium(s)

4-5

Broadband — 08/01/2026

JOB DESCRIPTION Broadband **DISTRICT** 4

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, Rockland, Suffolk, Westchester

PARTIAL COUNTIES
Orange: Entire County except Village of Greenwood Lake, Village of Highland Falls, Town of Tuxedo, and Town of Patterson

WAGES
NOTE: Applies to all public work and covered private projects, including those receiving ConnectAll funding subject to New York State Labor Law §224-E, solicited on or after July 1,2025. For all other projects solicited prior to July 1,2025 please see LINEMAN ELECTRICIAN(1)-TELEDATA

Per Hour:	07/01/2026	08/04/2026
Field Tech Install/Repair*	$ 55.59	$ 57.26

For outside work (excluding installation on building construction/alteration/renovation projects), stopping at first point of attachment (demarcation), installing/maintaining/repairing broadband internet service.

"Broadband", "Broadband Service", or "Broadband Internet" means mass-market retail service by wire or radio that provides the capability to transmit data to and receive data from all or substantially all internet endpoints, including any capabilities that are incidental to and enable the operation of the communications service, but excluding dial-up internet access service.

*NOTE: EXCLUDES work within ten(10) feet of High Voltage (600 Volts and over) transmussion lines. Please see LINEMAN rates.
*NOTE: Does not include the operation of equipment. Please see OPERATING ENGINEER rates.
*NOTE: Does not include groundmen/flagger/flagmen. Please see LABORER/LABORER-HEAVY/HIGHWAY rates.

SUPPLEMENTAL BENEFITS
Per Hour:

$ 23.54

OVERTIME PAY
See (B, K, *R) on OVERTIME PAGE
*Two and one half times the hourly rate after the 8th hour

HOLIDAY
Paid: See (5, 6, 7, 11, 12) on HOLIDAY PAGE
Overtime: See (5, 6, 7, 11, 12) on HOLIDAY PAGE

4-CWA-Dist1

Carpenter — 08/01/2026

JOB DESCRIPTION Carpenter **DISTRICT** 8

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES
Per hour: 07/01/2026

Piledriver	$ 62.59 + 10.16*
Dockbuilder	$ 62.59 + 10.16*

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker $ 47.48

OVERTIME PAY
See (B, E2, O) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE.

Paid: for 1st & 2nd yr.
Apprentices See (5,6,11,13,25)

Overtime: See (5,6,11,13,25) on HOLIDAY PAGE.

REGISTERED APPRENTICES
Wages per hour
(1)year terms:

1st	2nd	3rd	4th
$ 28.98 + 5.66*	$ 34.58 + 5.66*	$ 42.96 + 5.66*	$ 51.35 + 5.66*

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

Supplemental benefits per hour:

All Terms: $ 34.03

8-1556 Db

Carpenter — 08/01/2026

JOB DESCRIPTION Carpenter **DISTRICT** 8

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES
Per hour: 07/01/2026

Carpet/Resilient
Floor Coverer $ 60.05
+ 8.39*

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

INCLUDES HANDLING & INSTALLATION OF ARTIFICIAL TURF AND SIMILAR TURF INDOORS/OUTDOORS.

SUPPLEMENTAL BENEFITS
Per hour:
$ 42.24

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (18, 19) on HOLIDAY PAGE.

Paid for 1st & 2nd yr.
Apprentices See (5,6,11,13,16,18,19,25)
Overtime: See (5,6,11,13,16,18,19,25) on HOLIDAY PAGE.

REGISTERED APPRENTICES
Wage per hour - (1) year terms:

1st	2nd	3rd	4th
$ 26.54	$ 29.60	$ 34.05	$ 42.40
+ 2.00*	+ 2.54*	+ 3.00*	+ 3.94*

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

Supplemental benefits per hour:

1st	2nd	3rd	4th
$ 16.91	$ 18.13	$ 21.67	$ 22.98

8-2287

Carpenter 08/01/2026

JOB DESCRIPTION Carpenter **DISTRICT** 8

ENTIRE COUNTIES
Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES
Per Hour: 07/01/2026

Marine Construction:

Marine Diver $ 77.46
+ 10.16*

Marine Tender $ 57.00
+ 10.16*

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime

SUPPLEMENTAL BENEFITS
Per Hour:

Journeyworker $ 47.48

OVERTIME PAY
See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (18, 19) on HOLIDAY PAGE
Overtime: See (5, 6, 11, 13, 16, 18, 19, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES
Wages per hour:
One (1) year terms.

1st year	$ 28.98
	+ 5.66*
2nd year	34.58
	+ 5.66*
3rd year	42.96
	+ 5.66*
4th year	51.35
	+ 5.66*

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

Supplemental Benefits
Per Hour:

All terms	$ 34.03

8-1456MC

Carpenter — 08/01/2026

JOB DESCRIPTION Carpenter **DISTRICT** 8

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES
Per hour: 07/01/2026

Building

Millwright	$ 62.03
	+ 13.12*

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

SUPPLEMENTAL BENEFITS
Per hour:

Millwright	$ 46.66

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (18,19) on HOLIDAY PAGE.

Overtime: See (5,6,8,11,13,15,18,19,25) on HOLIDAY PAGE.

REGISTERED APPRENTICES
Wages per hour:
One (1) year terms:

1st.	2nd.	3rd.	4th.
$ 33.04	$ 38.89	$ 44.74	$ 56.44
+ 7.08*	+ 8.25*	+ 9.42*	+ 11.76*

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

Supplemental benefits per hour:
One (1) year terms:

1st.	2nd.	3rd.	4th.
$ 31.81	$ 34.34	$ 37.52	$ 41.94

8-740.1

Carpenter — 08/01/2026

JOB DESCRIPTION Carpenter **DISTRICT** 8

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES
Per Hour:

	07/01/2026
Timberman	$ 57.59
	+ 10.42*

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

SUPPLEMENTAL BENEFITS
Per Hour:
$ 46.79

OVERTIME PAY
See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY
Overtime: See (5, 6, 11, 13, 25) on HOLIDAY PAGE
Paid: See (1) on HOLIDAY PAGE.

Paid: for 1st & 2nd yr.
Apprentices See (5,6,11,13,25)

Overtime: See (5,6,11,13,25) on HOLIDAY PAGE.

REGISTERED APPRENTICES
Wages per hour:
One (1) year terms:

1st	2nd	3rd	4th
$ 26.96	$ 32.07	$ 39.72	$ 47.38
+ 5.71*	+ 5.71*	+ 5.71*	+ 5.71*

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

Supplemental benefits per hour:
All terms $ 33.78

8-1556 Tm

Carpenter — 08/01/2026

JOB DESCRIPTION Carpenter **DISTRICT** 8

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Queens, Richmond, Rockland, Westchester

PARTIAL COUNTIES
Orange: South of but including the following, Waterloo Mills, Slate Hill, New Hampton, Goshen, Blooming Grove, Mountainville, east to the Hudson River.
Putnam: South of but including the following, Cold Spring, TompkinsCorner, Mahopac, Croton Falls, east to Connecticut border.
Suffolk: West of Port Jefferson and Patchogue Road to Route 112 to the Atlantic Ocean.

WAGES

Per hour:	07/01/2026	10/18/2026
Core Drilling:		
Driller	$ 48.78	Additional
	+ 3.85*	+ $2.63
Driller Helper	$ 38.15	
	+ 3.85*	

Note: Hazardous Waste Pay Differential:
For Level C, an additional 15% above wage rate per hour
For Level B, an additional 15% above wage rate per hour
For Level A, an additional 15% above wage rate per hour
Note: Additional $3.00 per hour to be paid when required to work on water

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

SUPPLEMENTAL BENEFITS
Per hour:

Driller and Helper $ 32.37

OVERTIME PAY
See (B, G, P) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6, 13, 25) on HOLIDAY PAGE
Overtime: See (5, 6, 13, 25) on HOLIDAY PAGE

8-1536-CoreDriller

Carpenter - Building / Heavy&Highway — 08/01/2026

JOB DESCRIPTION Carpenter - Building / Heavy&Highway **DISTRICT** 11

ENTIRE COUNTIES
Putnam, Rockland, Westchester

WAGES
WAGES:(per hour)
Applies to CARPENTER BUILDING/HEAVY & HIGHWAY/TUNNEL:

	07/01/2026
Base Wage	$ 43.68
	+$6.69*

*For all hours paid straight or premium.

SHIFT WORK
SHIFT DIFFERENTIAL: When it is mandated by a Government Agency irregular or off shift can be worked. The Carpenter shall receive an additional fifteen percent (15%) of wage plus applicable benefits.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker $ 33.11

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
BUILDING:
Paid: See (1) on HOLIDAY PAGE.

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE.
- Holidays that fall on Sunday will be observed Monday.

HEAVY&HIGHWAY/TUNNEL:
Paid: See (5, 6, 25) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
- Holidays that fall on Sunday will be observed Monday
- Must be employed during the five (5) work days immediately preceding a holiday or during the five (5) work days following the paid holiday to receive holiday pay
- If an employee is entitled to a paid holiday, the employee is paid the Holiday wage and supplemental benefits whether they work or not. If an employee works the Holiday, the employee will receive holiday pay (including supplemental benefits), plus the applicable premium wage for working the Holiday. If an employee works in excess of 8 hours on Holiday, then benefits will be paid for any hours in excess of 8 hours.

REGISTERED APPRENTICES
1 year terms at the following wage rates:

1st	2nd	3rd	4th
$ 21.84	$ 26.21	$ 30.58	$ 34.94
+3.86*	+3.86*	+3.86*	+3.86*

*For all hours paid straight or premium

SUPPLEMENTAL BENEFITS per hour:

All terms $ 17.76

11-279.1B/HH

Electrician — 08/01/2026

JOB DESCRIPTION Electrician **DISTRICT** 9

ENTIRE COUNTIES
Bronx, Kings, New York, Queens, Richmond, Westchester

WAGES

Per hour:	07/01/2026	03/12/2027
Service Technician	$ 39.45	$ 40.45

Service and Maintenance on Alarm and Security Systems.

Maintenance, repair and /or replacement of defective (or damaged) equipment on, but not limited to, Burglar - Fire - Security - CCTV - Card Access - Life Safety Systems and associated devices. (Whether by service contract of T&M by customer request.)

SUPPLEMENTAL BENEFITS

Per hour:		
Journeyworker:	$ 23.33	$ 24.11

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6, 11, 15, 16, 17, 25, 26) on HOLIDAY PAGE
Overtime: See (5, 6, 11, 15, 16, 17, 25, 26) on HOLIDAY PAGE

9-3H

Electrician 08/01/2026

JOB DESCRIPTION Electrician **DISTRICT** 8

ENTIRE COUNTIES
Westchester

WAGES

Per hour:	07/01/2026	04/15/2027
Electrician/A-Technician	$ 58.75	$ 60.75
Teledata	58.75	60.75

See "M" rate for all work necessary to retrofit, service, maintain and repair all kinds of lighting fixtures and local lighting controls.

Note: On a job where employees are required to work on bridges over navigable waters, transmission towers, light poles, bosun chairs, swinging scaffolds , etc. 40 feet or more above the water or ground or under compressed air, or tunnel projects under construction or where assisted breathing apparatus is required, they will be paid at the rate of time and one-half for such work except on normal pole line or building construction work.

SUPPLEMENTAL BENEFITS

Per hour:		
Journeyworker	$ 65.07	$ 67.55

OVERTIME PAY
See (A, G, *J, P) on OVERTIME PAGE
*NOTE: Emergency work on Sunday and Holidays is at the time and one-half overtime rate.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE
Whenever any of the above holidays fall on Sunday, they will be observed on Monday. Whenever any of the above holidays fall on Saturday, they will be observed on Friday.

REGISTERED APPRENTICES
(1) year terms at the following wage rates:

	07/01/2026	04/15/2027
1st term	$ 18.00	$ 18.00
2nd term	19.50	19.50
3rd term	21.00	21.00
4th term	22.50	22.50
MIJ 1-12 months	28.25	28.25

MIJ 13-18 months	31.75	31.75

Supplemental Benefits per hour:

	07/01/2026	04/15/2027
1st term	$ 15.23	$ 15.73
2nd term	18.75	19.25
3rd term	19.77	20.27
4th term	20.78	21.28
MIJ 1-12 months	16.56	17.06
MIJ 13-18 months	17.02	17.52

8-3/W

Electrician — 08/01/2026

JOB DESCRIPTION Electrician **DISTRICT** 8

ENTIRE COUNTIES
Westchester

WAGES
Per hour

	07/01/2026	04/15/2027
Electrician - M	$ 34.25	$ 34.25

"M" rate for all work necessary to retrofit, service, maintain and repair all kinds of lighting fixtures and local lighting controls.

SUPPLEMENTAL BENEFITS

	07/01/2026	04/15/2027
Electrician - M	$ 17.35	$ 17.85

OVERTIME PAY
See (B, G, *J, P) on OVERTIME PAGE
*Note: Emergency work on Sunday and Holidays is at the time and one-half overtime rate.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE
Whenever any of the above holidays fall on Sunday, they will be observed on Monday. Whenever any of the above holidays fall on Saturday, they will be observed on Friday.

8-3m

Elevator Constructor — 08/01/2026

JOB DESCRIPTION Elevator Constructor **DISTRICT** 4

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk

PARTIAL COUNTIES
Rockland: Entire County except for the Township of Stony Point
Westchester: Entire County except for the Townships of Bedford, Lewisboro, Cortland, Mt. Kisco, North Salem, Pound Ridge, Somers and Yorktown.

WAGES
Per hour:

	07/01/2026	03/17/2027
Elevator Constructor	$ 86.43	$ 89.76
Modernization & Service/Repair	$ 68.06	$ 70.72

SUPPLEMENTAL BENEFITS
Per Hour:

Elevator Constructor	$ 48.96	$ 50.27

Modernization & Service/Repairs	$ 47.73	$ 49.00

OVERTIME PAY
Constructor See (D, M, T) on OVERTIME PAGE.

Modern/Service See (B, E5, P) on OVERTIME PAGE.

HOLIDAY
Paid: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES
WAGES PER HOUR:

6 MONTH TERMS:

1st Term*	2nd & 3rd Term*	4th & 5th Term	6th & 7th Term	8th & 9th Term
50%	50%	55%	65%	75%

* Note: 1st, 2nd, 3rd Terms are based on average of the Constructor, the Modernization and the Service/Repair wage.
Terms 4 thru 9 Based on the Journeyworker's wage of classification they are working in.

SUPPLEMENTAL BENEFITS:

	07/01/2026	03/17/2027
Elevator Constructor		
1st Term	$0.00	$ 0.00
2nd & 3rd Term	37.66	38.42
4th & 5th Term	38.80	39.62
6th & 7th Term	40.60	41.50
8th & 9th Term	42.39	43.39
Modernization & Service/Repair		
1st Term	$0.00	$ 0.00
2nd & 3rd Term	37.63	38.39
4th & 5th Term	38.37	39.17
6th & 7th Term	40.09	40.98
8th & 9th Term	41.81	42.79

Elevator Constructor — 08/01/2026

JOB DESCRIPTION Elevator Constructor **DISTRICT** 1

ENTIRE COUNTIES
Columbia, Dutchess, Greene, Orange, Putnam, Sullivan, Ulster

PARTIAL COUNTIES
Delaware: Towns of Andes, Bovina, Colchester, Davenport, Delhi, Harpersfield, Hemdon, Kortright, Meredith, Middletown, Roxbury, Hancock & Stamford
Rockland: Only the Township of Stony Point.
Westchester: Only the Townships of Bedford, Lewisboro, Cortland, Mt. Kisco, North Salem, Pound Ridge, Somers and Yorktown.

WAGES

Per Hour	07/01/2026	01/01/2027
Mechanic	$ 76.12	$ 79.37
Helper	70% of Mechanic Wage Rate	70% of Mechanic Wage Rate

SUPPLEMENTAL BENEFITS
Per hour

Journeyworker	$ 38.985*	$ 39.535*

*NOTE: Add 6% of regular hourly rate for all hours worked. Add 8% of regular hourly rate if more than 5 years of service.

OVERTIME PAY
See (D, O) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6, 15, 16) on HOLIDAY PAGE
Overtime: See (5, 6, 15, 16) on HOLIDAY PAGE

Note: When a paid holiday falls on Saturday, it shall be observed on Friday. When a paid holiday falls on Sunday, it shall be observed on Monday.

REGISTERED APPRENTICES
WAGES per hour: 1 year terms at the following percentage of the Elevator Constructor Mechanic wage.

0-6 months	6-12 months	2nd year	3rd year	4th year
50%	55%	65%	70%	80%

SUPPLEMENTAL BENEFITS per hour:

0-6 months: 6% of the regular hourly apprentice rate paid, no additional supplemental benefits.

All other terms: Same as Journeyworker

1-138

Glazier — 08/01/2026

JOB DESCRIPTION Glazier **DISTRICT** 8

ENTIRE COUNTIES
Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, Westchester

WAGES
Per hour:

	07/01/2026	11/01/2026
Glazier	$ 66.22	$ 67.20
Scaffolding, including swing scaffold	71.22	72.20
*Mechanical Equipment	67.23	68.20
**Repair & Maintenance	32.82	33.47

*Mechanical equipment, scissor jacks, man lifts, booms & buckets 30' or more, but not pipe scaffolding.
**Repair & Maintenance- All repair & maintenance work on a particular building whenever performed, where the total cumulative Repair & Maintenance contract value is under $202,000.

SUPPLEMENTAL BENEFITS
Per hour:

Glazier, Scaffolding and Mechanical Equipment	$ 44.81	$ 45.74
Repair & Maintenance	$ 26.01	$26.37

OVERTIME PAY
See (B, E, Q, V) on OVERTIME PAGE
For 'Repair & Maintenance' see (B, B2, I, S) on overtime page.

HOLIDAY
Paid: See (5, 6, 16, 25) on HOLIDAY PAGE
Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE
For 'Repair & Maintenance'
Paid: See(5, 6, 16, 25)
Overtime: See(5, 6, 16, 25)

REGISTERED APPRENTICES
Wage per hour:
(1) year terms at the following wage rates:

	07/01/2026	11/01/2026
1st term	$ 23.68	$ 24.06
2nd term	32.23	32.74
3rd term	42.89	43.55
4th term	52.47	53.23

Supplemental Benefits:
(Per hour)

1st term	$ 20.18	$ 20.56
2nd term	28.85	29.39
3rd term	34.77	35.45
4th term	38.18	38.95

8-1087 (DC9 NYC)

Insulator - Heat & Frost — 08/01/2026

JOB DESCRIPTION Insulator - Heat & Frost **DISTRICT** 8

ENTIRE COUNTIES
Dutchess, Orange, Putnam, Rockland, Westchester

WAGES

Per hour:	07/01/2026
Insulator/Fire Stop Work*	$ 64.27
Discomfort & Additional Training**	67.32

*Applies on all exclusive Fire Stop Work (When contract is for Fire Stop work only). No apprentices on these contracts only.

**Applies to work requiring; garb or equipment worn against the body not customarily worn by insulators; psychological evaluation ;special training, including but not limited to "Yellow Badge" radiation training

Note: Additional $10 a day for work 30 feet or more above floor or ground level.

SUPPLEMENTAL BENEFITS

Per hour:	
Insulator/Fire Stop Journeyworker:	$ 39.85
Discomfort & Additional Training:	$ 41.89

OVERTIME PAY
See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Note: Last working day preceding Christmas and New Years day, workers shall work no later than 12:00 noon and shall receive 8 hrs pay.

Overtime: See (2*, 4, 6, 16, 25) on HOLIDAY PAGE.
*Note: Labor Day triple time if worked.

REGISTERED APPRENTICES
(1) year terms:

Insulator Apprentices:

1st	2nd	3rd	4th
$ 35.09	$ 40.92	$ 46.76	$ 52.60

Discomfort & Additional Training Apprentices:

1st	2nd	3rd	4th
$ 36.61	$ 42.75	$ 48.89	$ 55.04

Supplemental Benefits paid per hour:

Insulator Apprentices:

1st term	$ 20.33
2nd term	24.23
3rd term	28.13
4th term	32.05

Discomfort & Additional Training Apprentices:

1st term	$ 21.34
2nd term	25.46
3rd term	29.56

4th term	33.68

8-91

Ironworker **08/01/2026**

JOB DESCRIPTION Ironworker **DISTRICT** 9

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Per Hour:	07/01/2026	01/01/2027 Additional
Stone Derrickmen Rigger	$ 78.46	$ 1.84
Stone Handset Derrickman	$ 76.51	$ 1.64

SUPPLEMENTAL BENEFITS

Per hour:	
Stone Derrickmen Rigger	$ 49.02
Stone Handset Derrickman	$ 48.01

OVERTIME PAY
See (B, D1, *E, Q, **V) on OVERTIME PAGE
*Time and one-half shall be paid for all work on Saturday up to eight (8) hours and double time shall be paid for all work thereafter.
** Benefits same premium as wages on Holidays only

HOLIDAY
Paid: See (18) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 25) on HOLIDAY PAGE
Work stops at schedule lunch break with full day's pay.

REGISTERED APPRENTICES
Wage per hour:

Stone Derrickmen Rigger:

	1st	2nd	3rd	4th
07/01/2026	$ 38.98	$ 55.17	$ 61.37	$ 67.56

Supplemental Benefits:
Per hour:

07/01/2026	$ 24.77	$ 37.34	$ 37.34	$ 37.34

Stone Handset:

1/2 year terms at the following hourly wage rate:

	1st	2nd	3rd	4th
07/01/2026	$ 37.51	$ 53.51	$ 59.51	$ 65.51

Supplemental Benefits:
Per hour:

07/01/2026	$ 24.75	$ 36.90	$ 36.90	$ 36.90

9-197D/R

Ironworker **08/01/2026**

JOB DESCRIPTION Ironworker **DISTRICT** 4

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Per Hour:	07/01/2026	01/01/2027 Additional
Ornamental	$ 48.65	$ 1.05*
Chain Link Fence	48.65	

Guide Rail 48.65

* To be allocated at a later date.

SUPPLEMENTAL BENEFITS
Per hour:
Journeyworker: $ 68.84

OVERTIME PAY
See (B, B1, Q, V) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES
1 year terms at the following wages per hour:

1st	2nd	3rd	4th
$ 25.98	$ 28.45	$ 30.80	$ 34.39

Supplemental Benefits per hour:

1st	2nd	3rd	4th
$ 17.29	$ 18.29	$ 19.29	$ 21.29

4-580-Or

Ironworker — 08/01/2026

JOB DESCRIPTION Ironworker **DISTRICT** 4

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES
PER HOUR:

	07/01/2026	01/01/2027
Ironworker:		Additional
Structural, Bridges, Machinery	$ 59.45	1.38*

* To be allocated at a later date.

SUPPLEMENTAL BENEFITS
Per hour paid:

Journeyman $ 95.26

OVERTIME PAY
See (B, B1, Q, *V) on OVERTIME PAGE
*NOTE: Benefits are calculated for every hour paid.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 18, 19) on HOLIDAY PAGE

REGISTERED APPRENTICES
6 month terms at the following wages per hour:

	1st	2nd	3rd-6th
07/01/2026	$ 30.87	$ 31.47	$ 32.08

Supplemental Benefits

PER HOUR PAID: $ 69.08

4-40/361-Str

Ironworker — 08/01/2026

JOB DESCRIPTION Ironworker **DISTRICT** 4

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

PARTIAL COUNTIES
Rockland: Southern section - south of Convent Road and east of Blue Hills Road.

WAGES

Per hour:	07/01/2026
Reinforcing & Metal Lathing:	$ 58.85

SUPPLEMENTAL BENEFITS

Per hour:	
Reinforcing & Metal Lathing	$ 46.42

OVERTIME PAY
See (B, E, Q, *X) on OVERTIME PAGE
Wages Per Hour:

At Time & One Half	$ 87.35
At Double Time	115.85

Supplemental Benefit Premiums for Overtime Hours worked:

At Time & One Half	$ 52.77
At Double Time	59.27

*Only $24.00 per hour for non worked hours

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 11, 13, 20, 21, 22, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES
(1) year terms at the following Wages Per Hour:

	1st	2nd	3rd	4th
Straight time	$ 22.55	$ 25.00	$ 28.00	$ 30.00
At Time & One Half	33.05	36.60	41.10	44.10
At Double Time	46.65	51.80	57.80	61.80

SUPPLEMENTAL BENEFITS Per Hour:

1st	2nd	3rd	4th
$ 18.17	$ 18.22	$ 17.22	$ 17.22

4-46Reinf

Laborer - Building — 08/01/2026

JOB DESCRIPTION Laborer - Building **DISTRICT** 8

ENTIRE COUNTIES
Putnam, Westchester

WAGES

Per hour	07/01/2026
Laborer	$ 46.26
"Base Wage"	$ 46.16**
Laborer/Asbestos & Hazardous Materials Removal	$ 50.35*
"Base Wage"	$ 50.25**

* Abatement/Removal of:
- Lead based or lead containing paint on materials to be repainted is classified as Painter.
- Asbestos containing roofs and roofing material is classified as Roofer.

** Overtime premiums are calculated using Laborer "Base Wage"

NOTE: Upgrade/Material condition work plan for work performed during non-outage under a wage formula of 90% wage/100% fringe benefits at nuclear power plants.

SUPPLEMENTAL BENEFITS

Per hour:	07/01/2026
Journeyworker	$ 34.10

OVERTIME PAY
See (B, E, E2, Q, *V) on OVERTIME PAGE
*Note: For Sundays and Holidays worked benefits are at the same premium as wages.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE
Whenever any of the above holidays fall on Sunday, they will be observed on Monday. Whenever any of the above holidays fall on Saturday, they will be observed on Friday.

REGISTERED APPRENTICES
LABORER ONLY
Hourly terms at the following wage:

	Level A	Level B	Level C	Level D
	0-1000	1001-2000	2001-3000	3001-4000
07/01/2026	$ 30.60	$ 35.35	$ 40.05	$ 42.05

Supplemental Benefits per hour:

Apprentices	
All terms	$ 25.95

8-235/B

Laborer - Heavy&Highway **08/01/2026**

JOB DESCRIPTION Laborer - Heavy&Highway **DISTRICT** 8

ENTIRE COUNTIES
Putnam, Westchester

WAGES
PUTNAM: APPLIES TO ALL HEAVY & HIGHWAY WORK EXCLUDING HIGHWAYS, STREETS, AND BRIDGES

GROUP I: Blaster, Quarry Master, Curbs/Asphalt Screedman, Pipe Jacking and Boring Operations Operator, Qualified Dead Condition Pipe Fuser (B Mechanic)

GROUP II: Burner, Drillers(jumbo, joy, wagon, air track, hydraulic), Drill Operator, Self Contained Rotary Drill, Curbs, Raker, Bar Person, Concrete Finisher.

GROUP III: Pavement Breakers, Jeeper Operator, Jack Hammer, Pneumatic Tools (all), Gas Driller, Guniting, Railroad Spike Puller, Pipelayer, Chain Saw, Deck winches on scows, Power Buggy Operator, Power Wheelbarrow Operator, Bar Person Helper, Compressed Airlance, Water Jet Lance.

GROUP IV: Concrete Laborers, Asph. Worker, Rock Scaler, Vibrator Oper., Bit Grinder, Air Tamper, Pumps, Epoxy (adhesives, fillers and troweled on), Barco Rammer, Concrete Grinder, Crack Router Operator, Guide Rail-digging holes and placing concrete and demolition when not to be replaced, distribution of materials and tightening of bolts.

GROUP V: Drillers Helpers, Common Laborer, Mason Tenders, Signal Person, Pit Person, Truck Spotter, Powder Person, Landscape/Nursery Person, Dump Person, Temp. Heat.

GROUP VIA: Asbestos/Toxic Waste Laborer-All removal (Roads, Tunnels, Landfills, etc.) Confined space laborer, Bio-remediation, Phyto-remediation, Lead or Hazardous material, Abatement Laborer.

Wages:(per hour)	07/01/2026
GROUP I	$ 53.95*
GROUP II	52.49*
GROUP III	52.05*
GROUP IV	51.68*
GROUP V	51.30*

GROUP VIA	53.46*
Operator Qualified	
Gas Mechanic(A Mech)	64.76*
Operator Qualified	
Gas Mechanic(1st yr.)	57.95*
Flagperson	44.43*

*NOTE: To calculate overtime premiums, deduct $0.12 from above wages

SHIFT WORK
A shift premium will be paid on Public Work contracts for off-shift or irregular shift work when mandated by the NYS D.O.T. or other Governmental Agency contracts. Employees shall receive an additional 15% per hour above current rate for all off-shift and irregular shift work. Premium pay shall be calculated using the 15% per hour differential as base rate.

SUPPLEMENTAL BENEFITS
Per hour:
Journeyworker: $ 30.58

OVERTIME PAY
See (B, E, P, R, S) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6, 8, 15, 25, 26) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 15, 25, 26) on HOLIDAY PAGE
NOTE: For Holiday Overtime: 5, 6 - Code 'S' applies
For Holiday Overtime: 8, 15, 25, 26 - Code 'R' applies

REGISTERED APPRENTICES

1st term	2nd term	3rd term	4th term
1-1000hrs	1001-2000hrs	2001-3000hrs	3001-4000hrs
$ 33.35	$ 38.48	$ 43.61	$ 48.74

Supplemental Benefits per hour:
$ 26.42

8-60H/H

Laborer - Tunnel — 08/01/2026

JOB DESCRIPTION Laborer - Tunnel **DISTRICT** 11

ENTIRE COUNTIES
Columbia, Dutchess, Greene, Orange, Otsego, Putnam, Rockland, Sullivan, Ulster, Westchester

PARTIAL COUNTIES
Chenango: Townships of Columbus, Sherburne and New Berlin.
Delaware: Townships of Andes, Bovina, Middletown, Roxbury, Franklin, Hamden, Stamford, Delhi, Kortright, Harpersfield, Merideth and Davenport.

WAGES
Class 1: All support laborers/sandhogs working above the shaft or tunnel.

Class 2: All laborers/sandhogs working in the shaft or tunnel.

Class 4: Safety Miners

Class 5: Site work related to Shaft/Tunnel

WAGES: (per hour)

	07/01/2026
Class 1	$ 60.30
Class 2	62.45
Class 4	68.85
Class 5	53.15

Toxic and hazardous waste, lead abatement and asbestos abatement work will be paid an additional $ 3.00 an hour.

SUPPLEMENTAL BENEFITS
Per hour:

Benefit 1	$ 39.23
Benefit 2	55.66
Benefit 3	72.08

Benefit 1 applies to straight time hours, paid holidays not worked.
Benefit 2 applies to over 8 hours in a day (M-F) and Saturday hours worked.
Benefit 3 applies to Sunday and Holiday hours worked.

OVERTIME PAY
See (B, E, Q, X) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6, 15, 25) on HOLIDAY PAGE
Overtime: See (5, 6, 15, 16, 25) on HOLIDAY PAGE
When a recognized Holidays falls on Saturday or Sunday, holidays falling on Saturday shall be recognized or observed on Friday and holidays falling on Sunday shall be recognized or observed on Monday. Employees ordered to work on the Saturday or Sunday of the holiday or on the recognized or the observed Friday or Monday for those holidays falling on Saturday or Sunday shall receive double time the established rate and benefits for the holiday.

REGISTERED APPRENTICES
FOR APPRENTICE RATES, refer to the appropriate Laborer Heavy & Highway wage rate contained in the wage schedule for the County and location where the work is to be performed.

11-17/60/235/754Tun

Lineman Electrician — 08/01/2026

JOB DESCRIPTION Lineman Electrician **DISTRICT** 6

ENTIRE COUNTIES
Westchester

WAGES
A Lineman/Technician shall perform all overhead aerial work. A Lineman/Technician on the ground will install all electrical panels, connect all grounds, install and connect all electrical conductors, assembly of all electrical materials, conduit, pipe or raceway; placing of fish wire; pulling of cables, wires or fiber optic cable through such raceways; splicing of conductors; dismantling of such structures, lines or equipment.

Crane Operators: Operation of any type of crane on line projects.
Crawler Backhoe: Operation of tracked excavator/crawler backhoe with 1/2 yard bucket or larger on line projects.
Digging Machine Operator: All other digging equipment and augering on line projects.

A Groundman/Truck Driver shall: Build and set concrete forms, handle steel mesh, set footer cages, transport concrete in a wheelbarrow, hand or machine concrete vibrator, finish concrete footers, mix mortar, grout pole bases, cover and maintain footers while curing in cold weather, operate jack hammer, operate hand pavement breaker, tamper, concrete and other motorized saws, as a drill helper, operate and maintain generators, water pumps, chainsaws, sand blasting, operate mulching and seeding machine, air tools, electric tools, gas tools, load and unload materials, hand shovel and/or broom, prepare and pour mastic and other fillers, assist digger operator equipment/operator in ground excavation and restoration, landscape work and painting. Only when assisting a lineman technician, a groundman/truck driver may assist in installing conduit, pipe, cables and equipment.

NOTE: Includes Teledata Work within ten (10) feet of High Voltage Transmission Lines. Also includes digging of holes for poles, anchors, footer, and foundations for electrical equipment.

-----Below rates applicable on all electrical overhead and underground distribution and maintenance work and overhead and underground transmission line work, electrical substations, switching structures, continuous pipe-type underground fluid or gas filled transmission conduit and cable installations, maintenance jobs or projects, railroad catenary installations and maintenance, third rail installations, the bonding of rails and the installation of fiber optic cable. Includes access matting for line work.

Per hour:	07/01/2026	05/03/2027	05/01/2028
Group A:			
Lineman, Tech, Welder	$ 67.64	$ 70.24	$ 73.01
Crane, Crawler Backhoe	67.64	70.24	73.01
Cable Splicer-Pipe Type	74.40	77.26	80.31
Cert. Welder-Pipe Type	71.02	73.75	76.66
Group B:			
Digging Mach Operator	$ 60.88	$ 63.22	$ 65.71
Group C:			
Tractor Trailer Driver	$ 57.49	$ 59.70	$ 62.06
Groundman, Truck Driver	54.11	56.19	58.41
Equipment Mechanic	54.11	56.19	58.41
Group D:			
Flagger	$ 37.20	$ 38.63	$ 40.16

Additional 3% per hour above regular rate for entire crew when a helicopter is used. This will increase to 5% on May 3, 2027.

SHIFT WORK

The following rates will apply on all contracting agency mandated multiple shifts of at least five (5) days duration worked between the hours listed below:

1ST SHIFT	8:00 AM TO 4:30 PM REGULAR RATE
2ND SHIFT	4:30 PM TO 1:00 AM REGULAR RATE PLUS 17.3%
3RD SHIFT	12:30 AM TO 9:00 AM REGULAR RATE PLUS 31.4%

SUPPLEMENTAL BENEFITS

Per hour:

	07/01/2026	05/03/2027	05/01/2028
Group A	$ 32.91*	$ 34.41*	$ 35.91*
Group B	$ 28.91*	$ 30.41*	$ 31.91*
Group C	$ 28.51*	$ 29.71*	$ 30.91*
Group D	$ 28.41*	$ 29.54*	$ 30.67*

*NOTE: Plus 7% of the hourly wage paid. The 7% is based on the straight time rate or the premium time rate.

OVERTIME PAY

See (B, E, Q, X) on OVERTIME PAGE. NOTE: Double time for emergency work designated by the Contracting Agency.
WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked. Contractor is still responsible to pay the hourly benefit amount for each hour worked.

HOLIDAY

Paid	See (5, 6, 8, 15, 25) on HOLIDAY PAGE
Overtime	See (5, 6, 8, 15, 25) on HOLIDAY PAGE

NOTE: All paid holidays falling on Saturday shall be observed on the preceding Friday. All paid holidays falling on Sunday shall be observed on the following Monday. Supplements for holidays paid at straight time.

REGISTERED APPRENTICES

WAGES per hour: 1000 hour terms at the following percentage of the applicable Journeyworker's Lineman wage.

1st	2nd	3rd	4th	5th	6th	7th
60%	65%	70%	75%	80%	85%	90%

SUPPLEMENTAL BENEFITS per hour:

	07/01/2026	05/03/2027	05/01/2028
All terms:	$ 28.41*	$ 29.54*	$ 30.67*

*NOTE: Plus 7% of the hourly wage paid. The 7% is based on the straight time rate or the premium time rate.

6-1249aWest

Lineman Electrician - Teledata — 08/01/2026

JOB DESCRIPTION Lineman Electrician - Teledata **DISTRICT** 6

ENTIRE COUNTIES

Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Rensselaer, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

WAGES

NOTE: Applies to all public work and covered private projects, including those receiving ConnectAll funding subject to LL 224-E,solicited prior to July 1, 2025. For all projects, excluding dial-up internet access service, solicited on or after July 1, 2025, please see BROADBAND

Per hour:	07/01/2026	01/04/2027	01/03/2028	01/01/2029
Cable Splicer	$ 42.03	$ 43.30	$ 44.59	$ 45.93
Installer, Repairman	39.89	41.09	42.32	43.59
Teledata Lineman	39.89	41.09	42.32	43.59
Tech., Equip. Operator	39.89	41.09	42.32	43.59
Groundman/Flagger	21.14	21.78	22.43	23.10

For outside work, stopping at first point of attachment (demarcation).

NOTE: EXCLUDES Teledata work within ten (10) feet of High Voltage (600 volts and over) transmission lines. For this work, please see LINEMAN.

SHIFT WORK
The following rates apply when the contracting agency mandates multiple shifts of at least five (5) days duration are worked. When two (2) or three (3) shifts are worked the following rates apply:

1ST SHIFT	REGULAR RATE
2ND SHIFT	REGULAR RATE PLUS 10%
3RD SHIFT	REGULAR RATE PLUS 15%

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 6.18 plus 4%*	$ 6.43 plus 5%*	$ 6.43 plus 6%*	$ 6.68 plus 7%*

*NOTE: The percentage (%) listed above is based on the hourly wage paid, straight time rate or premium time rate.

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE
WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked. Contractor is still responsible to pay the hourly benefit amount for each hour worked.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 16) on HOLIDAY PAGE

6-1249LT - Teledata

Lineman Electrician - Traffic Signal, Lighting — 08/01/2026

JOB DESCRIPTION Lineman Electrician - Traffic Signal, Lighting **DISTRICT** 6

ENTIRE COUNTIES
Westchester

WAGES
Lineman/Technician shall perform all overhead aerial work. A Lineman/Technician on the ground will install all electrical panels, connect all grounds, install and connect all electrical conductors which includes, but is not limited to road loop wires; conduit and plastic or other type pipes that carry conductors, flex cables and connectors, and to oversee the encasement or burial of such conduits or pipes.

Crane Operators: Operation of any type of crane on Traffic Signal/Lighting projects.
Crawler Backhoe: Operation of tracked excavator/crawler backhoe with 1/2 yard bucket or larger on Traffic Signal/Lighting projects.
Digging Machine Operator: All other digging equipment and augering on Traffic Signal/Lighting projects.

A Groundman/Groundman Truck Driver shall: Build and set concrete forms, handle steel mesh, set footer cages, transport concrete in a wheelbarrow, hand or machine concrete vibrator, finish concrete footers, mix mortar, grout pole bases, cover and maintain footers while curing in cold weather, operate jack hammer, operate hand pavement breaker, tamper, concrete and other motorized saws, as a drill helper, operate and maintain generators, water pumps, chainsaws, sand blasting, operate mulching and seeding machine, air tools, electric tools, gas tools, load and unload materials, hand shovel and/or broom, prepare and pour mastic and other fillers, assist digger operator/equipment operator in ground excavation and restoration, landscape work and painting. Only when assisting a lineman technician, a groundman/truck driver may assist in installing conduit, pipe, cables and equipment.

A flagger's duties shall consist of traffic control only.

Per hour:	07/01/2026	05/03/2027	05/01/2028
Group A:			
Lineman, Technician	$ 61.18	$ 63.52	$ 66.01
Crane, Crawler Backhoe	61.18	63.52	66.01
Certified Welder	64.24	66.70	69.31
Group B:			
Digging Machine	$ 55.06	$ 57.17	$ 59.41
Group C:			
Tractor Trailer Driver	$ 52.00	$ 53.99	$ 56.11
Groundman, Truck Driver	48.94	50.82	52.81
Equipment Mechanic	48.94	50.82	52.81
Group D:			

Flagger	$ 36.71	$ 38.11	$ 39.61

Above rates are applicable for installation, testing, operation, maintenance and repair on all Traffic Control (Signal) and Illumination (Lighting) projects, Traffic Monitoring Systems, and Road Weather Information Systems. Includes digging of holes for poles, anchors, footer foundations for electrical equipment; assembly of all electrical materials or raceway; placing of fish wire; pulling of cables, wires or fiber optic cable through such raceways; splicing of conductors; dismantling of such structures, lines or equipment.

SHIFT WORK
The following rates will apply on all contracting agency mandated multiple shifts of at least five (5) days duration worked between the hours listed below:

1ST SHIFT	8:00 AM TO 4:30 PM REGULAR RATE
2ND SHIFT	4:30 PM TO 1:00 AM REGULAR RATE PLUS 17.3%
3RD SHIFT	12:30 AM TO 9:00 AM REGULAR RATE PLUS 31.4%

SUPPLEMENTAL BENEFITS
Per hour:

	07/01/2026	05/03/2027	05/01/2028
Group A	$ 32.91*	$ 34.41*	$ 35.91*
Group B	$ 28.91*	$ 30.41*	$ 31.91*
Group C	$ 28.51*	$ 29.71*	$ 30.91*
Group D	$ 28.41*	$ 29.54*	$ 30.67*

*NOTE: Plus 7% of the hourly wage paid. The 7% is based on the straight time rate or the premium time rate.

OVERTIME PAY
See (B, E, Q, X) on OVERTIME PAGE. NOTE: Double time for emergency work designated by the Contracting Agency.
WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked. Contractor is still responsible to pay the hourly benefit amount for each hour worked.

HOLIDAY
Paid: See (5, 6, 8, 15, 25) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 15, 25) on HOLIDAY PAGE
NOTE: All paid holidays falling on Saturday shall be observed on the preceding Friday. All paid holidays falling on Sunday shall be observed on the following Monday. Supplements for holidays paid at straight time.

REGISTERED APPRENTICES
WAGES per hour: 1000 hour terms at the following percentage of the applicable Journeyworker's Lineman wage.

1st	2nd	3rd	4th	5th	6th	7th
60%	65%	70%	75%	80%	85%	90%

SUPPLEMENTAL BENEFITS per hour:

	07/01/2026	05/03/2027	05/01/2028
All terms:	$ 28.41*	$ 29.54*	$ 30.67*

*NOTE: Plus 7% of the hourly wage paid. The 7% is based on the straight time rate or the premium time rate.

6-1249aWestLT

Mason - Building — 08/01/2026

JOB DESCRIPTION Mason - Building **DISTRICT** 11

ENTIRE COUNTIES
Putnam, Rockland, Westchester

PARTIAL COUNTIES
Orange: Only the Township of Tuxedo.

WAGES
Per hour:

	07/01/2026
Bricklayer	$ 50.15
Cement Mason	50.15
Plasterer/Stone Mason	50.15
Pointer/Caulker	50.15

Additional $1.00 per hour for power saw work
Additional $0.50 per hour for swing scaffold or staging work

SHIFT WORK
SHIFT WORK: When shift work or an irregular workday is mandated or required by state, federal, county, local or other governmental agency contracts, the following premiums apply:
Irregular workday requires 15% premium
Second shift an additional 15% of wage plus benefits to be paid
Third shift an additional 25% of wage plus benefits to be paid

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 40.15

OVERTIME PAY
OVERTIME:

Cement Mason	See (B, E, Q, W) on OVERTIME PAGE.
All Others	See (B, E, E2, Q) on OVERTIME PAGE.

HOLIDAY

Paid:	See (1) on HOLIDAY PAGE
Overtime:	See (5, 6, 16, 25) on HOLIDAY PAGE

Whenever any of the above holidays fall on Sunday, they will be observed on Monday. Whenever any of the above holidays fall on Saturday, they will be observed on Friday.

REGISTERED APPRENTICES
Wages per hour:

750 hour terms at the following percentage of Journeyworker's wage

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

Supplemental Benefits per hour

750 hour terms at the following percentage of Journeyworker supplements

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

11-5wp-b

Mason - Building — 08/01/2026

JOB DESCRIPTION Mason - Building **DISTRICT** 9

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES
Building

Wages per hour:	07/01/2026	01/01/2027 Additional
Mosaic & Terrazzo Mechanic	$ 62.82	$ 1.06
Mosaic & Terrazzo Finisher	61.22	

SUPPLEMENTAL BENEFITS
Per hour:

Mosaic & Terrazzo Mechanic	$ 31.91* + $11.63
Mosaic & Terrazzo Finisher	$ 31.91* + 11.61

*This portion of benefits subject to same premium rate as shown for overtime wages.

OVERTIME PAY
See (A, E, Q) on OVERTIME PAGE
Deduct $7.00 from hourly wages before calculating overtime.

HOLIDAY

Paid:	See (1) on HOLIDAY PAGE
Overtime:	See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

Easter Sunday is an observed holiday.Holidays falling on a Saturday will be observed on that Saturday. Holidays falling on a Sunday will be celebrated on the Monday.

REGISTERED APPRENTICES

Wages Per hour:

	1st 0-1500	2nd 1501-3000	3rd 3001-3750	4th 3751-4500	5th 4501-5250	6th 5251-6000
07/01/2026	$25.90	$33.30	$40.85	$42.00	$50.56	$57.05

Supplemental Benefits per hour:

07/01/2026	$7.26* + 4.07	$9.33* + 5.23	$15.99* + 6.98	$24.31* + 8.14	$25.21* + 9.32	$28.21* + 10.46

*This portion of benefits subject to same premium rate as shown for overtime wages.

9-7/3

Mason - Building — 08/01/2026

JOB DESCRIPTION Mason - Building **DISTRICT** 9

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES

Per hour:	07/01/2026	12/07/2026 Additional	06/07/2027 Additional
Tile Setters	$ 66.35	$ 1.28	$ 1.41

SUPPLEMENTAL BENEFITS

Per Hour:

$ 30.56*
+8.56

*This portion of benefits subject to same premium rate as shown for overtime wages.

OVERTIME PAY

See (B, *E, Q, V) on OVERTIME PAGE
Work beyond 10 hours on Saturday shall be paid at double the hourly wage rate.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 11, 15, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wage per hour:

750 hour terms at the following wage rate:

	1st 1-750	2nd 751-1500	3rd 1501-2250	4th 2251-3000	5th 3001-3750	6th 3751-4500	7th 4501-5250	8th 5251-6000	9th 6001-6750	10th 6501-7000
07/01/2026	$23.09	$28.32	$35.65	$40.86	$44.67	$48.38	$52.23	$57.45	$59.83	$66.35

Supplemental Benefits per hour:

	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
07/01/2026	$13.05* + $.77	$13.05* + $.82	$16.16* + $.93	$16.16* + $.98	$17.16* +$1.45	$18.66* +$1.51	$19.66* +$1.94	$19.66* +$1.99	$19.96* +$4.59	$30.56* +$8.56

*This portion of benefits subject to same premium rate as shown for overtime wages.

9-7/52

Mason - Building — 08/01/2026

JOB DESCRIPTION Mason - Building **DISTRICT** 9

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Per hour:	07/01/2026	01/04/2027 Additional
Building-Marble Restoration:		
Marble, Stone & Terrazzo Polisher	$ 48.72	$ 0.57

SUPPLEMENTAL BENEFITS

Per Hour:	
Journeyworker	
Building-Marble Restoration:	
Marble, Stone & Polisher	$ 32.78

OVERTIME PAY
See (B, *E, Q, V) on OVERTIME PAGE
* On Saturdays, 8th hour and successive hours paid at double hourly rate.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 11, 15, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES
WAGES per hour:

900 hour term at the following wage:

	1st 1-900	2nd 901-1800	3rd 1801-2700	4th 2701
07/01/2026	$ 34.10	$ 38.97	$ 43.84	$ 48.72
Supplemental Benefits Per Hour:				
07/01/2026	$ 31.28	$ 31.78	$ 32.29	$ 32.78

9-7/24-MP

Mason - Building — 08/01/2026

JOB DESCRIPTION Mason - Building **DISTRICT** 9

ENTIRE COUNTIES
Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, Westchester

WAGES
Per Hour:

	07/01/2026	01/04/2027 Additional
Marble Cutters & Setters	$ 65.61	$ 0.75

SUPPLEMENTAL BENEFITS
Per Hour:

Journeyworker	$ 41.38

OVERTIME PAY
See (B, E, Q, V) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES
Wage Per Hour:

750 hour terms at the following wage

1st	2nd	3rd	4th	5th	6th	7th	8th

	0-3000	3001-3750	3751-4500	4501-5250	5251-6000	6001-6750	6751-7500	7500+
07/01/2026	$28.35	$42.51	$46.05	$49.59	$53.14	$55.76	$65.61	$65.61

Supplemental Benefits per hour:

	1st	2nd	3rd	4th	5th	6th	7th	8th
07/01/2026	$27.95	$30.68	$31.37	$32.05	$32.73	$39.34	$41.38	$41.38

9-7/4

Mason - Building — 08/01/2026

JOB DESCRIPTION Mason - Building **DISTRICT** 9

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES

Per hour:	07/01/2026	12/07/2026 Additional	06/07/2027 Additional
Tile Finisher	$ 50.93	$ 1.05*	$ 1.15*

*To be allocated at a later date.

SUPPLEMENTAL BENEFITS
Per Hour:
$ 27.16*
+ $8.37

* This portion of benefits is subject to same premium rate as shown for overtime wages.

OVERTIME PAY
See (A, *E, Q) on OVERTIME PAGE
*Double time rate after 10 hours on Saturdays

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 11, 15, 16, 25) on HOLIDAY PAGE

9-7/88-tf

Mason - Building — 08/01/2026

JOB DESCRIPTION Mason - Building **DISTRICT** 9

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Per hour:	07/01/2026	01/04/2027 Additional
Marble, Stone, Maintenance Finishers:	$ 28.56	$ 0.41

Note 1: An additional $2.00 per hour for time spent grinding floor using "60 grit" and below.
Note 2: Flaming equipment operator shall be paid an additional $25.00 per day.

SUPPLEMENTAL BENEFITS
Per Hour:

Marble, Stone
Maintenance Finishers: $ 16.54

OVERTIME PAY
See (B, *E, Q, V) on OVERTIME PAGE

*Double hourly rate after 8 hours on Saturday

HOLIDAY
Paid: See (5, 6, 8, 11, 15, 25) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 11, 15, 25) on HOLIDAY PAGE
1st term apprentice gets paid for all observed holidays.

REGISTERED APPRENTICES
WAGES per hour:

	07/01/2026
0-750	$ 23.78
751-1500	24.43
1501-2250	25.07
2251-3000	25.70
3001-3750	26.65
3751-4500	27.93
4501+	28.56

Supplemental Benefits:
Per hour:

0-750	$ 12.61
751-1500	13.12
1501-2250	13.65
2251-3000	14.18
3001-3750	14.97
3751-4500	16.01
4501+	16.54

9-7/24M-MF

Mason - Building / Heavy&Highway — 08/01/2026

JOB DESCRIPTION Mason - Building / Heavy&Highway **DISTRICT** 9

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES
Per hour:

	07/01/2026	01/04/2027 Additional
Marble-Finisher	$ 51.04	$ 0.53

SUPPLEMENTAL BENEFITS
Journeyworker:
Per hour

Marble- Finisher	$ 38.46

OVERTIME PAY
See (B, E, Q, V) on OVERTIME PAGE
Work beyond 8 hours on a Saturday shall be paid at double the rate.

HOLIDAY
Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE
When an observed holiday falls on a Sunday, it will be observed the next day.

9-7/20-MF

Mason - Heavy&Highway — 08/01/2026

JOB DESCRIPTION Mason - Heavy&Highway **DISTRICT** 11

ENTIRE COUNTIES
Putnam, Rockland, Westchester

PARTIAL COUNTIES
Orange: Only the Township of Tuxedo.

WAGES
Per hour:

	07/01/2026
Bricklayer	$ 50.65
Cement Mason	50.65
Marble/Stone Mason	50.65

Plasterer	50.65
Pointer/Caulker	50.65

Additional $1.00 per hour for power saw work
Additional $0.50 per hour for swing scaffold or staging work

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 40.15

OVERTIME PAY

Cement Mason	See (B, E, Q, W)
All Others	See (B, E, Q,)

HOLIDAY

Paid:	See (5, 6, 16, 25) on HOLIDAY PAGE
Overtime:	See (5, 6, 16, 25) on HOLIDAY PAGE

- Whenever any of the above holidays fall on Sunday, they will be observed on Monday. Whenever any of the above holidays fall on Saturday, they will be observed on Friday.
- Supplemental Benefits are not paid for paid Holiday
- If Holiday is worked, Supplemental Benefits are paid for hours worked.
- Whenever an Employee works within three (3) calendar days before a holiday, the Employee shall be paid for the Holiday.

REGISTERED APPRENTICES
Wages per hour:

750 hour terms at the following percentage of Journeyworker's wage

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

Supplemental Benefits per hour

750 hour terms at the following percentage of Journeyworker's supplements

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

11-5WP-H/H

Operating Engineer - Building — 08/01/2026

JOB DESCRIPTION Operating Engineer - Building **DISTRICT** 9

ENTIRE COUNTIES
Bronx, Kings, New York, Putnam, Queens, Richmond, Westchester

PARTIAL COUNTIES
Dutchess: that part of Dutchess County lying south of the North City Line of the City of Poughkeepsie.

WAGES
NOTE: Construction surveying
Party Chief--One who directs a survey party
Instrument Man--One who runs the instrument and assists Party Chief.
Rodman--One who holds the rod and assists the Survey Crew

Wages:(Per Hour) 07/01/2026

Building Construction:

Party Chief	$ 81.94
Instrument Man	60.49
Rodman	40.63

Steel Erection:

Party Chief	$ 84.04
Instrument Man	63.19
Rodman	43.31

Heavy Construction-NYC counties only:
(Foundation, Excavation.)

Party Chief	$ 88.97
Instrument man	66.04
Rodman	55.85

SUPPLEMENTAL BENEFITS

Per Hour:	07/01/2026
Building Construction	$ 29.45* + 7.65
Steel Erection	31.25* + 7.65
Heavy Construction	32.06* + 7.64

* This portion subject to SAME premium as wages

Non-Worked Holiday Supplemental Benefit:
$ 22.48

OVERTIME PAY
See (A, B, E, Q) on OVERTIME PAGE
Code "A" applies to Building Construction and is subject to double the rate after 7 hours on Saturdays.
Code "B" applies to Heavy Construction and Steel Erection and is subject to double the rate after 8 hours on Saturdays.

HOLIDAY
Paid: See (5, 6, 9, 11, 15, 16, 25) on HOLIDAY PAGE
Overtime: See (5, 6, 9, 11, 15, 16, 25) on HOLIDAY PAGE

9-15Db

Operating Engineer - Building 08/01/2026

JOB DESCRIPTION Operating Engineer - Building **DISTRICT** 8

ENTIRE COUNTIES
Putnam, Westchester

PARTIAL COUNTIES
Dutchess: All the counties of Westchester and Putnam and the southern part of Dutchess County defined by the northern boundary line of the City of Poughkeepsie, then due east to Route 115, then north along Route 115 to Bedell Road, then east along Bedell Road to Van Wagner Road, then north along Van Wagner Road to Bower Road, then east along Bower Road to Route 44 and along Route 44 east to Route 343, then along Route 343 east to the northern boundary of Town of Dover Plains and east along the northern boundary of Town of Dover Plains to the border line of the State of Connecticut and bordered on the west by the middle of the Hudson River.

WAGES
GROUP I:
Cranes (All Types up to 49 tons), Boom Trucks, Cherry Pickers (All Types), Clamshell Crane, Derrick (Stone and Steel), Dragline, Franki Pile Rig or similar, High Lift (Lull or similar) with crane attachment and winch used for hoisting or lifting, Hydraulic Cranes, Pile Drivers, Potain and similar.

Cranes (All types 50-99 tons), Drill Rig Casa Grande (CAT or similar), Franki Pile Rig or similar, Hydraulic Cranes (All types including Crawler Cranes- No specific boom length).

Cranes (All types 100 tons and over), All Tower Cranes, All Climbing Cranes irrespective of manufacturer and regardless of how the same is rigged, Franki Pile Rig or similar, Conventional Cranes (All types including Crawler Cranes-No specific boom length), Hydraulic Cranes.

GROUP I-A: Barber Green Loader-Euclid Loader, Bulldozer, Carrier-Trailer Horse, Concrete Cleaning Decontamination Machine Operator, Concrete-Portable Hoist, Conway or Similar Mucking Machines, Elevator & Cage, Excavators all types, Front End Loaders, Gradall, Shovel, Backhoe, etc.(Crawler or Truck), Heavy Equipment Robotics Operator/Mechanic, Hoist Engineer-Material, Hoist Portable Mobile Unit, Hoist(Single, Double or Triple Drum), Horizontal Directional Drill Locator, Horizontal Directional Drill Operator and Jersey Spreader, Letourneau or Tournapull(Scrapers over 20 yards Struck), Lift Slab Console, etc., Lull HiLift or Similar, Master Environmental Maintenance Mechanics, Mucking Machines Operator/Mechanic or Similar Type, Overhead Crane, Pavement Breaker(Air Ram), Paver(Concrete), Post Hole Digger, Power House Plant, Road Boring Machine, Road Mix Machine, Ross Carrier and Similar Machines, Rubber tire double end backhoes and similar machines, Scoopmobile Tractor-Shovel Over 1.5 yards, Shovel (Tunnels), Spreader (Asphalt) Telephie(Cableway), Tractor Type Demolition Equipment, Trenching Machines-Vermeer Concrete Saw Trencher and Similar, Ultra High Pressure Waterjet Cutting Tool System, Vacuum Blasting Machine operator/mechanic, Winch Truck A Frame.

GROUP I-B: Compressor (Steel Erection), Mechanic (Outside All Types), Negative Air Machine (Asbestos Removal), Push Button (Buzz Box) Elevator.

GROUP II: Compactor Self-Propelled, Concrete Pump, Crane Operator in Training (Over 100 Tons), Grader, Machines Pulling Sheep's Foot Roller, Roller (4 ton and over), Scrapers (20 yards Struck and Under), Vibratory Rollers, Welder.

GROUP III-A: Asphalt Plant, Concrete Mixing Plants, Forklift (All power sources), Joy Drill or similar, Tractor Drilling Machine, Loader (1 1/2 yards and under), Portable Asphalt Plant, Portable Batch Plant, Portable Crusher, Skid Steer (Bobcat or similar), Stone Crusher, Well Drilling Machine, Well Point System.

GROUP III-B: Compressor Over 125 cu. Feet, Conveyor Belt Machine regardless of size, Compressor Plant, Ladder Hoist, Stud Machine.

GROUP IV-A: Batch Plant, Concrete Breaker, Concrete Spreader, Curb Cutter Machine, Finishing Machine-Concrete, Fine Grading Machine, Hepa Vac Clean Air Machine, Material Hopper(sand, stone, cement), Mulching Grass Spreader, Pump Gypsum etc, Pump-Plaster-Grout-Fireproofing. Roller(Under 4 Ton),Spreading and Fine Grading Machine, Steel Cutting Machine, Siphon Pump, Tar Joint Machine, Television Cameras for Water, Sewer, Gas etc. Turbo Jet Burner or Similar Equipment, Vibrator (1 to 5).

GROUP IV-B: Compressor (all types), Heater (All Types), Fire Watchman, Lighting Unit (Portable & Generator) Pump, Pump Station(Water, Sewer, Portable, Temporary), Welding Machine (Steel Erection & Excavation).

GROUP V: Mechanics Helper, Motorized Roller (walk behind), Stock Attendant, Welder's Helper, Maintenance Engineer Crane(75 ton and over).

Group VI-A: Welder Certified
GROUP VI-B: Utility Man, Warehouse Man.

WAGES: (per hour)

	07/01/2026	03/01/2027
GROUP I		
Cranes- up to 49 tons	$ 71.19	$ 73.11
Cranes- 50 tons to 99 tons	73.69	75.69
Cranes- 100 tons and over	84.27	86.64
GROUP I-A	62.20	63.80
GROUP I-B	57.24	58.67
GROUP II	59.98	61.50
GROUP III-A	57.75	59.20
GROUP III-B	54.93	56.28
GROUP IV-A	57.16	58.58
GROUP IV-B	48.17	49.28
GROUP V	52.01	53.25
Group VI-A	61.05	62.61
GROUP VI-B		
Utility Man	49.30	50.45
Warehouse Man	51.72	52.95

An additional 20% of wage to be paid when required to wear protective equipment on hazardous/toxic waste projects.
Engineers operating cranes with booms 100 feet but less than 149 feet in length will be paid an additional $2.00 per hour.
Engineers operating cranes with booms 149 feet or over in length will be paid an additional $3.00 per hour.
Loader operators over 5 cubic yard capacity additional .50 per hour.
Shovel operators over 4 cubic yard capacity additional $1.00 per hour.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 34.42	$ 36.17

OVERTIME PAY
See (B, E, Q, V) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6, 8, 15, 25, 26) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 15, 25, 26, 28) on HOLIDAY PAGE

8-137B

Operating Engineer - Heavy&Highway 08/01/2026

JOB DESCRIPTION Operating Engineer - Heavy&Highway **DISTRICT** 8

ENTIRE COUNTIES
Putnam, Westchester

PARTIAL COUNTIES
Dutchess: All the counties of Westchester and Putnam and the southern part of Dutchess County defined by the northern boundary line of the City of Poughkeepsie, then due east to Route 115, then north along Route 115 to Bedell Road, then east along Bedell Road to Van Wagner Road, then north along Van Wagner Road to Bower Road, then east along Bower Road to Route 44 and along Route 44 east to Route 343, then along Route 343 east to the northern boundary of Town of Dover Plains and east along the northern boundary of Town of Dover Plains to the border line of the State of Connecticut and bordered on the west by the middle of the Hudson River.

WAGES
GROUP I: Boom Truck, Cherry Picker, Clamshell, Crane, (Crawler, Truck),
Dragline, Drill Rig (Casa Grande, Cat, or Similar), Floating Crane (Crane on Barges) under 100 tons, Gin Pole, Hoist Engineer-Concrete (Crane-Derrick-Mine Hoist), Knuckle Boom Crane, Rough Terrain Crane.

GROUP I-A: Auger (Truck or Truck Mounted), Boat Captain, Bulldozer-All Sizes, Central Mix Plant Operator, Chipper (all types), Close Circuit T.V., Combination Loader/Backhoe, Compactor with Blade, Concrete Finishing Machine, Gradall, Grader (Motor Grader), Elevator & Cage (Materials or Passenger), Excavator (and all attachments), Front End Loaders (1 1/2 yards and over), High Lift Lull and similar, Hoist (Single, Double, Triple Drum), Hoist Portable Mobile Unit, Hoist Engineer (Material), Jack and Bore Machine, Log Skidders, Mill Machines, Mucking Machines, Overhead Crane, Paver (concrete), Post Pounder (of any type), Push Cats, Road Reclaimer, Robot Hammer (Brokk or similar), Robotic Equipment (Scope of Engineer Schedule), Ross Carrier and similar, Scrapers (20 yard struck and over), Side Boom, Slip Form Machine, Spreader (Asphalt), Trenching Machines (Telephies-Vermeer Concrete Saw), Tractor Type Demolition Equipment, Vacuum Truck. Vibratory Roller(Riding) or Roller used in mainline paving operations.

GROUP I-B: Asphalt Mobile Conveyor/Transfer Machine, Road Paver (Asphalt).

GROUP II-A: Ballast Regulators, Compactor Self Propelled, Fusion Machine, Rail Anchor Machines, Roller (4 ton and over), Scrapers (20 yard struck and under).

GROUP II-B: Mechanic (Outside) All Types, Shop Mechanic.

GROUP III: Air Tractor Drill, Asphalt Plant, Batch Plant, Boiler (High Pressure), Concrete Breaker (Track or Rubber Tire), Concrete Pump, Concrete Spreader, Excavator Drill, Farm Tractor, Forklift (all types), Gas Tapping (Live), Hydroseeder, Loader (1 1/2 yards and under), Locomotive (all sizes), Machine Pulling Sheeps Foot Roller, Portable Asphalt Plant, Portable Batch Plant, Portable Crusher (Apprentice), Powerhouse Plant, Roller (under 4 ton), Sheer Excavator, Skid Steer/Bobcat, Stone Crusher, Sweeper (with seat), Well Drilling Machine.

GROUP IV: Service Person (Grease Truck), Deckhand.

GROUP IV-B: Conveyor Belt Machine (Truck Mounted), Heater (all types), Lighting Unit (Portable), Maintenance Engineer (For Crane Only), Mechanics Helper, Pump (Fireproofing), Pumps-Pump Station/Water/Sewer/Gypsum/Plaster, etc., Pump Truck (Sewer Jet or Similar), Welders Helper, Welding Machine (Steel Erection), Well Point System.

GROUP V: All Tower Cranes-All Climbing Cranes and all cranes of 100-ton capacity or greater (3900 Manitowac or similar) irrespective of manufacturer and regardless of how the same is rigged, Hoist Engineer (Steel), Engineer-Pile Driver, Jersey Spreader, Pavement Breaker/Post Hole Digger.

WAGES: Per hour:	07/01/2026	03/01/2027
Group I	$ 72.77	$ 75.10
Group I-A	63.97	65.99
Group I-B	67.49	69.64
Group II-A	61.21	63.14
Group II-B	63.17	65.17
Group III	60.12	62.01
Group IV	54.49	56.18
Group IV-B	46.59	48.01
Group V		
Engineer All Tower, Climbing and Cranes of 100 Tons	82.61	85.29
Hoist Engineer(Steel)	74.67	77.07
Engineer(Pile Driver)	79.73	82.31
Jersey Spreader, Pavement Breaker (Air Ram)Post Hole Digger	62.66	64.64

Engineers operating cranes with booms 100 feet but less than 149 feet in length will be paid an additional $2.00 per hour over the rate listed in the Wage Schedule. Engineers operating cranes with booms 149 feet or over in length will be paid an additional $3.00 per hour over the rate listed in the Wage Schedule. Loader and Excavator Operators: over 5 cubic yards capacity $0.50 per hour over the rate listed in the Wage Schedule. Shovel Operators: over 4 cubic yards capacity $1.00 per hour over the rate listed in the Wage Schedule.

SHIFT WORK

A 15% premium on all hours paid, including overtime hours for 2nd and 3rd shifts on all government mandated off-shift work

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker:	$ 38.08 up to 40 Hours	$ 39.68 up to 40 hours
	After 40 hours $ 27.63* PLUS $ 1.45 on all hours worked	After 40 hours $ 28.68* PLUS $ 1.50 on all hours worked

*This amount is subject to premium

OVERTIME PAY
See (B, E, P, *R, **U) on OVERTIME PAGE
* For Holiday codes 8,15,25,26 code R applies
** For Holiday codes 5 & 6 code U applies

HOLIDAY
Paid: See (5, 6, 8, 15, 25, 26, 28) on HOLIDAY PAGE
Overtime See (5, 6, 8, 15, 25, 26) on OVERTIME PAGE

* For Holiday codes 8,15,25,26 code R applies
** For Holiday codes 5 & 6 code U applies

Note: If employees are required to work on Easter Sunday they shall be paid at the rate of triple time.

REGISTERED APPRENTICES
(1)year terms at the following rate.

1st term	$ 38.38	$ 39.59
2nd term	44.78	46.19
3rd term	51.18	52.79
4th term	57.57	59.39

Supplemental Benefits per hour:

	$ 29.08	$ 30.18

8-137HH

Operating Engineer - Heavy&Highway — 08/01/2026

JOB DESCRIPTION Operating Engineer - Heavy&Highway **DISTRICT** 9

ENTIRE COUNTIES
Putnam, Westchester

PARTIAL COUNTIES
Dutchess: South of the North city line of Poughkeepsie

WAGES
Party Chief - One who directs a survey party
Instrument Man - One who runs the instrument and assists Party Chief
Rodman - One who holds the rod and in general, assists the Survey Crew
Categories cover GPS & Underground Surveying

Per Hour:	07/01/2026
Party Chief	$ 85.77
Instrument Man	63.48
Rodman	53.53

SUPPLEMENTAL BENEFITS
Per Hour: 07/01/2026

All Categories
Straight Time: $ 32.06* + $7.64

Premium:
Time & 1/2 $ 48.09* + $7.64

Double Time $ 64.12* + $7.64

*This portion is subject to the SAME premium as wages.

Non-Worked Holiday Supplemental Benefits:
$ 22.47

OVERTIME PAY
See (B, *E, Q) on OVERTIME PAGE
* Doubletime paid on all hours in excess of 8 hours on Saturday

HOLIDAY
Paid: See (5, 6, 7, 11, 12) on HOLIDAY PAGE
Overtime: See (5, 6, 7, 11, 12) on HOLIDAY PAGE

Operating Engineer - Heavy&Highway - Tunnel 08/01/2026

JOB DESCRIPTION Operating Engineer - Heavy&Highway - Tunnel **DISTRICT** 8

ENTIRE COUNTIES
Putnam, Westchester

PARTIAL COUNTIES
Dutchess: All the counties of Westchester and Putnam and the southern part of Dutchess County defined by the northern boundary line of the City of Poughkeepsie, then due east to Route 115, then north along Route 115 to Bedell Road, then east along Bedell Road to Van Wagner Road, then north along Van Wagner Road to Bower Road, then east along Bower Road to Route 44 and along Route 44 east to Route 343, then along Route 343 east to the northern boundary of Town of Dover Plains and east along the northern boundary of Town of Dover Plains to the border line of the State of Connecticut and bordered on the west by the middle of the Hudson River.

WAGES
GROUP I: Boom Truck, Cherry Picker, Clamshell, Crane(Crawler, Truck), Dragline, Drill Rig Casa Grande(Cat or Similar), Floating Crane(Crane on Barge-Under 100 Tons), Hoist Engineer(Concrete/Crane-Derrick-Mine Hoist), Knuckle Boom Crane, Rough Terrain Crane.

GROUP I-A: Auger(Truck or Truck Mounted), Boat Captain, Bull Dozer-all sizes, Central Mix Plant Operator, Chipper-all types, Close Circuit T.V., Combination Loader/Backhoe, Compactor with Blade, Concrete Finishing Machine, Gradall, Grader(Motor Grader), Elevator & Cage(Materials or Passengers), Excavator(and all attachments), Front End Loaders(1 1/2 yards and over), High Lift Lull, Hoist(Single, Double, Triple Drum), Hoist Portable Mobile Unit, Hoist Engineer(Material), Jack and Bore Machine, Log Skidder, Milling Machine, Moveable Concrete Barrier Transfer & Transport Vehicle, Mucking Machines. Overhead Crane, Paver(Concrete), Post Pounder of any type, Push Cats, Road Reclaimer, Robot Hammer(Brokk or similar), Robotic Equipment(Scope of Engineer Schedule), Ross Carrier and similar machines, Scrapers(20 yards struck and over), Side Boom, Slip Form Machine, Spreader(Asphalt), Trenching Machines, Telephies-Vermeer Concrete Saw, Tractor type demolition equipment, Vacuum Truck, Vibratory Roller (Riding) used in mainline paving operations.

GROUP I-B: Asphalt Mobile Conveyor/Transfer Machine, Road Paver(Asphalt).

GROUP II-A: Ballast Regulators, Compactor(Self-propelled), Fusion Machine, Rail Anchor Machines, Roller(4 ton and over), Scrapers(20 yard struck and under).

GROUP II-B: Mechanic(outside)all types, Shop Mechanic.

GROUP III: Air Tractor Drill, Asphalt Plant, Batch Plant, Boiler(High Pressure), Concrete Breaker(Track or Rubber Tire), Concrete Pump, Concrete Spreader, Excavator Drill, Farm Tractor, Forklift(all types of power), Gas Tapping(Live), Hydroseeder, Loader(1 1/2 yards and under), Locomotive(all sizes), Machine Pulling Sheeps Foot Roller, Portable Asphalt Plant, Portable Batch Plant, Portable Crusher(Apprentice), Powerhouse Plant, Roller(under 4 ton), Sheer Excavator, Skidsteer/Bobcat, Stone Crusher, Sweeper(with seat), Well Drilling Machine.

GROUP IV-A: Service Person(Grease Truck), Deckhand.

GROUP IV-B: Conveyor Belt Machine(Truck Mounted), Heater(all types), Lighting Unit(Portable), Maintenance Engineer(for Crane only), Mechanics Helper, Pump(Fireproofing), Pumps-Pump Station/Water/Sewer/Gypsum/Plaster, etc., Pump Truck(Sewer Jet or similar), Welding Machine(Steel Erection), Welders Helper.

GROUP V-A: Engineer(all Tower Cranes, all Climbing Cranes & all Cranes of 100 ton capacity or greater),Hoist Engineer(Steel-Sub Structure), Engineer-Pile Driver, Jersey-Spreader, Pavement breaker, Post Hole Digger

WAGES: (per hour)

	07/01/2026	03/01/2027
GROUP I	$ 72.77	$ 75.10
GROUP I-A	63.97	65.99
GROUP I-B	67.49	69.64
GROUP II-A	61.21	63.14
GROUP II-B	63.17	65.17
GROUP III	60.12	62.01
GROUP IV-A	54.49	56.18
GROUP IV-B	46.59	48.01

GROUP V-A		
Engineer-Cranes	82.61	85.29
Engineer-Pile Driver	79.73	82.31
Hoist Engineer	74.67	77.07
Jersey Spreader/Post Hole Digger	62.66	64.64

An additional 20% of wage to be paid when required to wear protective equipment on hazardous/toxic waste projects.
Operators required to use two buckets pouring concrete on other than road pavement shall receive $0.50 per hour over scale.
Engineers operating cranes with booms 100 feet but less than 149 feet in length will be paid an additional $2.00 per hour.
Engineers operating cranes with booms 149 feet or over in length will be paid an additional $3.00 per hour.
Operators of shovels with a capacity over (4) cubic yards shall be paid an additional $1.00 per hour.
Operators of loaders with a capacity over (5) cubic yards shall be paid an additional $0.50 per hour.

SHIFT WORK
A 15% premium on all hours paid, including overtime hours for 2nd and 3rd shifts
on all government mandated off-shift work

SUPPLEMENTAL BENEFITS
Per hour:
Journeyworker:

$ 38.08 up to 40 hours	$ 39.68 up to 40 hours
After 40 hours: $27.63 plus $1.45 on all hours worked	After 40 hours: $28.68 plus $1.50 on all hours worked

OVERTIME PAY
See (E, P, *R, **T, ***U) on OVERTIME PAGE
*For Holiday codes 8, 15, 25, 26, code R applies.
**For Holiday code 28, code T applies.
***For Holiday codes 5 & 6, code U applies.

HOLIDAY
Paid: See (5, 6, 8, 15, 25, 26) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 15, 25, 26) on HOLIDAY PAGE
For Holiday codes 5 & 6, code U applies.
For Holiday codes 8, 15, 25, 26, code R applies.
If employees are required to work on Easter Sunday, they shall be paid at the rate of triple time.

REGISTERED APPRENTICES
(1)year terms at the following rates:

1st term	$ 38.38	$ 39.59
2nd term	44.78	46.19
3rd term	51.18	52.79
4th term	57.57	59.39
Supplemental Benefits per hour:		
All terms	$ 29.08	$ 30.18

8-137Tun

Operating Engineer - Marine Dredging — 08/01/2026

JOB DESCRIPTION Operating Engineer - Marine Dredging **DISTRICT** 4

ENTIRE COUNTIES
Albany, Bronx, Cayuga, Clinton, Columbia, Dutchess, Essex, Franklin, Greene, Jefferson, Kings, Monroe, Nassau, New York, Orange, Oswego, Putnam, Queens, Rensselaer, Richmond, Rockland, St. Lawrence, Suffolk, Ulster, Washington, Wayne, Westchester

WAGES
These wage rates do not apply to Operating Engineers on land-based construction projects. For those projects, refer to the Operating Engineers Heavy/Highway rates. The wage rates listed below apply specifically to all equipment and operators involved in marine dredging work within navigable waters located in the counties listed above.

Per Hour:	07/01/2026	10/01/2026

CLASS A1 Deck Captain, Leverman, Mechanical Dredge Operator, Licensed Tug Operator with MOTV	$ 48.48	$ 49.94
CLASS A2 Crane Operator (360 swing)	43.20	44.50
CLASS B Dozer, Front Loader Operator (On Land)	To conform to Operating Engineer Prevailing Wage in locality where work is being performed including benefits.	
CLASS B1 Derrick Operator (180 swing), Spider/Spill Barge Operator I/II, Fill Placer, Engineer, Chief Mate, Electrician,Chief Welder,Maintenance Engineer, Licensed Boat, Crew Boat Operator	41.93	43.18
CLASS B2 Certified Welder	39.46	40.65
CLASS C1 Drag Barge Operator, Steward, Mate, Assistant Fill Placer	38.38	39.53
CLASS C2 Boat Operator	37.15	38.26
CLASS D Shoreman, Deckhand, Oiler, Rodman, Scowman, Cook, Messman, Porter/Janitor	30.86	31.79

SUPPLEMENTAL BENEFITS
Per Hour:
THE FOLLOWING SUPPLEMENTAL BENEFITS APPLY TO ALL CATEGORIES

All Classes:	7% of Hourly Straight time wage + $12.00.	7.5% of Hourly Straight time wage + $12.00.

- Additional $0.63 per hour for Overtime hours

OVERTIME PAY
See (B2, F, R) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 15, 26) on HOLIDAY PAGE

4-25a-MarDredge

Operating Engineer - Survey Crew - Consulting Engineer — 08/01/2026

JOB DESCRIPTION Operating Engineer - Survey Crew - Consulting Engineer **DISTRICT** 9

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, Suffolk, Westchester

PARTIAL COUNTIES
Dutchess: That part in Duchess County lying South of the North City line of Poughkeepsie.

WAGES
Feasibility and preliminary design surveying, any line and grade surveying for inspection or supervision of construction.

Per hour: Survey Classifications	07/01/2026
Party Chief	$ 51.16
Instrument Man	42.44
Rodman	36.92

SUPPLEMENTAL BENEFITS
Per Hour:

All Crew Members: $ 24.53

OVERTIME PAY
OVERTIME:.... See (B, E*, Q, V) ON OVERTIME PAGE.
*Double-time paid on the 9th hour on Saturday.

HOLIDAY
Paid: See (5, 6, 7, 11, 16) on HOLIDAY PAGE
Overtime: See (5, 6, 7, 11, 16) on HOLIDAY PAGE

9-15dconsult

Painter — 08/01/2026

JOB DESCRIPTION Painter **DISTRICT** 8

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, Suffolk, Westchester

WAGES

Per hour:	07/01/2026	05/01/2027 Additional
Brush	$ 55.76	$2.77*
Abatement/Removal of lead based or lead containing paint on materials to be repainted.	55.76	
Spray & Scaffold	$ 58.76	
Fire Escape	58.76	
Decorator	58.76	
Paperhanger/Wall Coverer	57.27	

*To be allocated at a later date.

SHIFT WORK
Agency/Government mandated off-shift work to be paid at time and one-half the hourly wage.

SUPPLEMENTAL BENEFITS
Per hour:

Paperhanger	$ 39.86
All others	36.72
Paperhanger Premium	45.26
Premium	41.23**

**Applies only to "All others" category, not paperhanger journeyworker.

OVERTIME PAY
See (A, F, R) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES
One (1) year terms at the following wage rate.

Per hour:	07/01/2026
Appr 1st term...	$ 21.18
Appr 2nd term...	27.40
Appr 3rd term...	33.30
Appr 4th term...	44.67

Supplemental benefits:
Per Hour:

Appr 1st term...	$ 18.06
Appr 2nd term...	22.14
Appr 3rd term...	25.59

Appr 4th term... 32.55

8-NYDC9-B/S

Painter 08/01/2026

JOB DESCRIPTION Painter **DISTRICT** 8

ENTIRE COUNTIES
Putnam, Suffolk, Westchester

PARTIAL COUNTIES
Nassau: All of Nassau except the areas described below: Atlantic Beach, Ceaderhurst, East Rockaway, Gibson, Hewlett, Hewlett Bay, Hewlett Neck, Hewlett Park, Inwood, Lawrence, Lido Beach, Long Beach, parts of Lynbrook, parts of Oceanside, parts of Valley Stream, and Woodmere. Starting on the South side of Sunrise Hwy in Valley Stream running east to Windsor and Rockaway Ave., Rockville Centre is the boundary line up to Lawson Blvd. turn right going west all the above territory. Starting at Union Turnpike and Lakeville Rd. going north to Northern Blvd. the west side of Lakeville road to Northern blvd. At Northern blvd. going east the district north of Northern blvd. to Port Washington Blvd. West of Port Washington blvd.to St.Francis Hospital then north of first traffic light to Port Washington and Sands Point, Manor HAven, Harbour Acres.

WAGES

Per hour:	07/01/2026	05/01/2027
		Additional
Drywall Taper:	$ 55.76	$ 2.77*
Scaffold:	$ 58.76	

* To be allocated a later date.

SHIFT WORK
Agency/Government mandated off-shift work to be paid at time and one-half hourly wage

SUPPLEMENTAL BENEFITS
Per hour:
Journeyworker $ 36.72

OVERTIME PAY
See (A, F, R) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES
Wages - Per Hour:

1500 hour terms at the following wage rate:

1st term	$ 21.18
2nd term	27.40
3rd term	33.30
4th term	44.67

Supplemental Benefits - Per hour:
One year term (1500 hours) at the following dollar amount.

1st year	$ 18.06
2nd year	22.14
3rd year	25.59
4th year	32.55

8-NYDCT9-DWT

Painter - Bridge & Structural Steel 08/01/2026

JOB DESCRIPTION Painter - Bridge & Structural Steel **DISTRICT** 8

ENTIRE COUNTIES
Albany, Bronx, Clinton, Columbia, Dutchess, Essex, Franklin, Fulton, Greene, Hamilton, Kings, Montgomery, Nassau, New York, Orange, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Suffolk, Sullivan, Ulster, Warren, Washington, Westchester

WAGES
Per Hour:
STEEL:

Bridge Painting:	07/01/2026	10/01/2026
	$ 57.00*	Additional
	+ 12.90**	+ 3.64***

ADDITIONAL $7.00 per hour for POWER TOOL/SPRAY, whether straight time or overtime.

*NOTE: All premium wages are to be calculated on base rate per hour only.

** For the period of May 1st to November 15th, this amount is payable up to 40 hours. For the period of Nov 16th to April 30th, this amount is payable up to 50 hours. EXCEPTION: First and last week of employment, and for the weeks of Memorial Day, Independence Day and Labor Day, where the amount is paid for the actual number of hours worked (50 hour cap).

*** To be allocated a later date

NOTE: Generally, for Bridge Painting Contracts, ALL WORKERS on and off the bridge (including Flagmen) are to be paid Painter's Rate; the contract must be ONLY for Bridge Painting.

SHIFT WORK

When directly specified in public agency or authority contract documents for an employer to work a second shift and works the second shift with employees other than from the first shift, all employees who work the second shift will be paid 10% of the base wage shift differential in lieu of overtime for the first eight (8) hours worked after which the employees shall be paid at time and one half of the regular wage rate. When a single irregular work shift is mandated in the job specifications or by the contracting agency, wages shall be paid at time and one half for single shifts between the hours of 3pm-11pm or 11pm-7am.

SUPPLEMENTAL BENEFITS

Per Hour:
Journeyworker:

$ 13.49
+ 31.67*

OVERTIME PAY

See (B, F, R) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (4, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wage - Per hour:
Apprentices: (1) year terms.

	07/01/2026
1st year	$ 22.80* + 5.64**
2nd year	$ 34.20* + 7.74**
3rd year	$ 45.60* + 10.31**

*NOTE: All premium wages are to be calculated on base rate per hour only.

** For the period of May 1st to November 15th, this amount is payable up to 40 hours. For the period of Nov 16th to April 30th, this amount is payable up to 50 hours. EXCEPTION: First and last week of employment, and for the weeks of Memorial Day, Independence Day and Labor Day, where the amount is paid for the actual number of hours worked (50 hour cap).

Supplemental Benefits - Per hour:

1st year	$ 13.74
2nd year	$ 8.09* + 18.99
3rd year	$ 10.79* + 25.34

*Portion not applicable to May 1st to November 15th and Nov 16th to April 30th period mentioned above.

8-DC-9/806/155-BrSS

Painter - Line Striping **08/01/2026**

JOB DESCRIPTION Painter - Line Striping **DISTRICT** 8

ENTIRE COUNTIES
Albany, Clinton, Columbia, Dutchess, Essex, Franklin, Fulton, Greene, Hamilton, Montgomery, Nassau, Orange, Putnam, Rensselaer, Rockland, Saratoga, Schenectady, Schoharie, Suffolk, Sullivan, Ulster, Warren, Washington, Westchester

WAGES
Per hour:

Painter (Striping-Highway):	07/01/2026	04/01/2027
Striping-Machine Operator*	$ 36.93	$ 38.45
Linerman Thermoplastic	44.44	46.22

Note: * Includes but is not limited to: Positioning of cones and directing of traffic using hand held devices. Excludes the Driver/Operator of equipment used in the maintenance and protection of traffic safety.

SHIFT WORK
When directly specified in public agency or authority contract documents there shall be a 30% night shift premium pay differential for all work performed after 9:00pm and before 5:00am.

SUPPLEMENTAL BENEFITS
Per hour paid:
Journeyworker:

Striping Machine Operator:	$ 24.95	$ 25.60
Linerman Thermoplastic:	24.95	25.60

OVERTIME PAY
See (B, B2, E2, F, S) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 20) on HOLIDAY PAGE
Overtime: See (5, 20) on HOLIDAY PAGE

REGISTERED APPRENTICES
One (1) year terms at the following wage rates:

	07/01/2026
1st Term:	$ 21.18
2nd Term:	27.40
3rd Term:	33.30

Supplemental Benefits per hour:

1st term:	$ 18.06
2nd term:	22.14
3rd term:	25.59

8-1456-LS

Painter - Metal Polisher 08/01/2026

JOB DESCRIPTION Painter - Metal Polisher **DISTRICT** 8

ENTIRE COUNTIES
Albany, Allegany, Bronx, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Kings, Lewis, Livingston, Madison, Monroe, Montgomery, Nassau, New York, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Suffolk, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

WAGES

	07/01/2026
Metal Polisher	$ 41.33
Metal Polisher*	42.43
Metal Polisher**	45.33

*Note: Applies on New Construction & complete renovation
** Note: Applies when working on scaffolds over 34 feet.

SUPPLEMENTAL BENEFITS
Per Hour:

Journeyworker:
All classifications $ 13.99

OVERTIME PAY
See (B, E, P, T) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6, 11, 15, 16, 25, 26) on HOLIDAY PAGE
Overtime: See (5, 6, 11, 15, 16, 25, 26) on HOLIDAY PAGE

REGISTERED APPRENTICES
Wages per hour:
One (1) year term at the following wage rates:

	07/01/2026
1st year	$ 20.67
2nd year	22.73
3rd year	24.80
1st year*	$ 21.06
2nd year*	23.17
3rd year*	25.34
1st year**	$ 23.17
2nd year**	25.23
3rd year**	27.30

*Note: Applies on New Construction & complete renovation
** Note: Applies when working on scaffolds over 34 feet.

Supplemental benefits:
Per hour:

1st year	$ 9.19
2nd year	9.19
3rd year	9.19

8-8A/28A-MP

Plumber — 08/01/2026

JOB DESCRIPTION Plumber **DISTRICT** 8

ENTIRE COUNTIES
Putnam, Westchester

WAGES
Per hour:

	07/01/2026
Plumber and Steamfitter	$ 66.83

SHIFT WORK

SHIFT WORK:
When directly specified in public agency or authority contract documents, shift work outside the regular hours of work shall be comprised of eight (8) hours per shift not including Saturday, Sundays and holidays. One half (1/2) hour shall be allowed for lunch after the first four (4) hours of each shift. Wage and Fringes for shift work shall be straight time plus a shift premium of twenty-five (25%) percent. A minimum of five days Monday through Friday must be worked to establish shift work.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker $ 46.79

OVERTIME PAY
See (B, E, E2, Q, V) on OVERTIME PAGE
OVERTIME:... See on OVERTIME PAGE.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES
(1)year terms at the following wages:

1st Term	$ 24.95
2nd Term	28.59
3rd Term	33.07
4th Term	47.01
5th Term	50.42

Supplemental Benefits per hour:

1st term	$ 19.16
2nd term	21.42
3rd term	25.44
4th term	33.77
5th term	35.82

8-21.1-ST

Plumber - HVAC / Service — 08/01/2026

JOB DESCRIPTION Plumber - HVAC / Service **DISTRICT** 8

ENTIRE COUNTIES
Dutchess, Putnam, Westchester

PARTIAL COUNTIES
Delaware: Only the townships of Middletown and Roxbury
Ulster: Entire County(including Wallkill and Shawangunk Prisons) except for remainder of Town of Shawangunk and Towns of Plattekill, Marlboro, and Wawarsing.

WAGES
Per hour: 07/01/2026

HVAC Service	$ 45.43
	+ $ 4.52*

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker HVAC Service
$ 33.34

OVERTIME PAY
See (B, F, R) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6, 16, 25) on HOLIDAY PAGE
Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES
HVAC SERVICE
(1)year terms at the following wages:

1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.
$ 20.56	$ 24.42	$ 30.35	$ 37.33	$ 40.63
+$2.45*	+$2.79*	+$3.34*	+$4.00*	+$4.26*

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

Supplemental Benefits per hour:

Apprentices 07/01/2026

1st term	$ 22.81
2nd term	24.68
3rd term	26.69
4th term	29.49
5th term	31.46

8-21.1&2-SF/Re/AC

Plumber - Jobbing & Alterations — 08/01/2026

JOB DESCRIPTION Plumber - Jobbing & Alterations **DISTRICT** 8

ENTIRE COUNTIES
Dutchess, Putnam, Westchester

PARTIAL COUNTIES
Ulster: Entire county (including Wallkill and Shawangunk Prisons in Town of Shawangunk) EXCEPT for remainder of Town of Shawangunk, and Towns of Plattekill, Marlboro, and Wawarsing.

WAGES

Per hour:	07/01/2026
Journeyworker:	$ 52.14

Repairs, replacements and alteration work is any repair or replacement of a present plumbing system that does not change existing roughing or water supply lines.

SHIFT WORK
When directly specified in public agency or authority contract documents, shift work outside the regular hours of work shall be comprised of eight (8) hours per shift not including Saturday, Sundays and holidays. One half (1/2) hour shall be allowed for lunch after the first four (4) hours of each shift. Wage and Fringes for shift work shall be straight time plus a shift premium of twenty-five (25%) percent. A minimum of five days Monday through Friday must be worked to establish shift work.

SUPPLEMENTAL BENEFITS

Per hour:	
Journeyworker	$ 38.99

OVERTIME PAY
See (B, *E, E2, Q, V) on OVERTIME PAGE
*When used as a make-up day, hours after 8 on Saturday shall be paid at time and one half.

HOLIDAY

Paid:	See (1) on HOLIDAY PAGE
Overtime:	See (5, 6, 8, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES
(1) year terms at the following wages:

1st year	$ 22.32
2nd year	24.83
3rd year	27.16
4th year	38.07
5th year	40.25

Supplemental Benefits per hour:

1st year	$ 13.07
2nd year	15.31
3rd year	19.67
4th year	26.65
5th year	28.88

8-21.3-J&A

Roofer 08/01/2026

JOB DESCRIPTION Roofer **DISTRICT** 9

ENTIRE COUNTIES
Bronx, Dutchess, Kings, New York, Orange, Putnam, Queens, Richmond, Rockland, Sullivan, Ulster, Westchester

WAGES

Per Hour:	07/01/2026	05/01/2027 Additional
Roofer/Waterproofer	$ 52.50 + $7.00*	+ $ 3.00

* This portion is not subjected to overtime premiums.

Note: Abatement/Removal of Asbestos containing roofs and roofing material is classified as Roofer.

SUPPLEMENTAL BENEFITS
Per Hour: $ 33.12

OVERTIME PAY
See (B, H) on OVERTIME PAGE

Note: An observed holiday that falls on a Sunday will be observed the following Monday.

HOLIDAY
Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES
(1) year term apprentices indentured prior to 01/01/2023

1st	2nd	3rd	4th
$ 18.38	$ 26.25	$ 31.50	$ 39.38
	+ 3.50*	+ 4.20*	+ 5.26*

Supplemental Benefits:

1st	2nd	3rd	4th
$ 4.32	$ 16.94	$ 20.17	$ 25.03

* This portion is not subjected to overtime premiums.

(1) year term apprentices indentured after 01/01/2023

1st	2nd	3rd	4th	5th
$ 19.95	$ 23.63	$ 26.25	$ 31.50	$ 39.38
	+ 3.16*	+ 3.50*	+ 4.20*	+ 5.26*

Supplemental Benefits:

1st	2nd	3rd	4th	5th
$ 8.15	$ 15.32	$ 16.94	$ 20.17	$ 25.03

* This portion is not subjected to overtime premiums.

9-8R

Sheetmetal Worker — 08/01/2026

JOB DESCRIPTION Sheetmetal Worker **DISTRICT** 8

ENTIRE COUNTIES
Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, Westchester

WAGES

	07/01/2026
SheetMetal Worker	$ 53.48
	+ 3.81*

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

SHIFT WORK
For all NYS D.O.T. and other Governmental mandated off-shift work:
12% increase for additional shifts for a minimum of five (5) days

SUPPLEMENTAL BENEFITS
Journeyworker $ 48.71

OVERTIME PAY
See (B, E, Q,) on OVERTIME PAGE.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 15, 16, 23) on HOLIDAY PAGE
Whenever any of the above holidays fall on Sunday, they will be observed on Monday. Whenever any of the above holidays fall on Saturday, they will be observed on Friday.

REGISTERED APPRENTICES

1st	2nd	3rd	4th	5th	6th	7th	8th
$ 21.80	$ 22.61	$ 25.12	$ 27.61	$ 30.13	$ 32.67	$ 35.65	$ 38.61
+ 1.52*	+ 1.71*	+ 1.91*	+ 2.10*	+ 2.29*	+ 2.48*	+ 2.67*	+ 2.86*

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

Supplemental Benefits per hour:

Apprentices	
1st term	$ 19.09
2nd term	23.39
3rd term	25.99
4th term	28.59
5th term	31.18
6th term	33.76

7th term	35.89
8th term	38.04

8-38

Sheetmetal Worker — 08/01/2026

JOB DESCRIPTION Sheetmetal Worker **DISTRICT** 4

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES
Per Hour:

	07/01/2026	08/01/2026
Sign Erector	$ 62.00	$ 64.00

NOTE: For Structurally Supported Overhead Highway Signs (See STRUCTURAL IRON WORKER CLASSIFICATION)

SUPPLEMENTAL BENEFITS
Per Hour:

Sign Erector	$ 59.58	$ 60.62

OVERTIME PAY
See (B, F, S) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6, 10, 11, 12, 16, 25) on HOLIDAY PAGE
Overtime: See (5, 6, 10, 11, 12, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES
Per Hour:
6 month Terms at the following percentage of Sign Erectors wage rate:

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
35%	40%	45%	50%	55%	60%	65%	70%	75%	80%

SUPPLEMENTAL BENEFITS Per Hour:

07/01/2026

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
$ 19.04	$ 21.62	$ 24.21	$ 26.79	$36.17	$ 39.36	$ 43.50	$ 46.77	$ 50.05	$ 53.32

08/01/2026

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
$ 19.45	$ 22.09	$ 24.72	$ 27.36	$36.81	$ 40.07	$ 44.29	$ 47.62	$ 50.95	$ 54.29

4-137-SE

Sprinkler Fitter — 08/01/2026

JOB DESCRIPTION Sprinkler Fitter **DISTRICT** 1

ENTIRE COUNTIES
Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, Westchester

WAGES
Per hour

	07/01/2026	01/01/2027	04/01/2027	01/01/2028
Sprinkler Fitter	$ 60.78	$ 60.78	$ 64.37	$ 64.37

SUPPLEMENTAL BENEFITS
Per hour

Journeyworker	$ 32.66	$ 33.66	$ 33.66	$ 34.66

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

Note: When a holiday falls on Sunday, the following Monday shall be considered a holiday and all work performed on either day shall be at the double time rate. When a holiday falls on Saturday, the preceding Friday shall be considered a holiday and all work performed on either day shall be at the double time rate.

REGISTERED APPRENTICES

One Half Year terms at the following wage per hour:

	07/01/2026	01/01/2027	04/01/2027	01/01/2028
1st Term	$ 30.87	$ 30.87	$ 32.42	$ 32.42
2nd Term	34.46	34.46	36.19	36.19
3rd Term	37.34	37.34	39.20	39.20
4th Term	40.21	40.21	42.22	42.22
5th Term	42.36	42.36	44.48	44.48
6th Term	45.95	45.95	48.25	48.25
7th Term	48.82	48.82	51.27	51.27
8th Term	51.70	51.70	54.28	54.28
9th Term	54.57	54.57	57.30	57.30
10th Term	57.44	57.44	60.31	60.31
Supplemental Benefits per hour:				
1st & 2nd Term	$ 10.23	$ 11.23	$ 11.23	$ 12.23
3rd & 4th Term	22.79	23.79	23.79	24.79
All Other Terms	23.04	24.04	24.04	25.04

1-669.2

Teamster - Building / Heavy&Highway — 08/01/2026

JOB DESCRIPTION Teamster - Building / Heavy&Highway **DISTRICT** 8

ENTIRE COUNTIES

Putnam, Westchester

WAGES

GROUP A: Straight Trucks (6-wheeler and 10-wheeler), A-frame, Winch, Dynamite Seeding, Mulching, Agitator, Water, Attenuator, Light Towers, Cement (all types), Suburban, Station Wagons, Cars, Pick Ups, any vehicle carrying materials of any kind.
GROUP AA: Tack Coat
GROUP B: Tractor & Trailers (all types).
GROUP BB: Tri-Axle,14 Wheeler
GROUP C: Low Boy (carrying equipment).
GROUP D: Fuel Trucks, Tire Trucks.
GROUP DD: Tow Truck/Flatbed Single axle.
GROUP E: Off-road Equipment (over 40 tons): Athey Wagons, Belly Dumps, Articulated Dumps, Trailer Wagons.
GROUP F: Off-road Equipment (over 40 tons) Euclid, DJB.
GROUP G: Off-road Equipment (under 40 tons) Athey Wagons, Belly Articulated Dumps, Trailer Wagons, Tracker/Crawler Dump Truck.
GROUP H: Off-road Equipment(under 40 tons), Euclid.
GROUP HH: Off-road Equipment(under 40 tons) D.J.B.
GROUP I: Off-road Equipment(under 40 tons) Darts.
GROUP II: Off-road Equipment(under 40 tons) RXS.

WAGES:(per hour)

	07/01/2026
GROUP A	$ 49.61*
GROUP AA	52.61*
GROUP B	50.23*
GROUP BB	49.73*
GROUP C	52.36*
GROUP D	50.06*
GROUP DD	38.74*
GROUP E	50.61*
GROUP F	51.61*
GROUP G	50.36*
GROUP H	50.98*
GROUP HH	51.36*
GROUP I	51.11*
GROUP II	51.48*

* To calculate premium wage, subtract $ .10 from the hourly wage.

Note: Fuel truck operators on construction sites addit. $5.00 per day.

For work on hazardous/toxic waste site addit. 20% of hourly rate.

Note: For aggregate and asphalt delivery, the applicable prevailing rate is based on the type of vehicle operated.

SHIFT WORK
When mandated by the contracting agency, DOT, or any governmental agency contracts shall receive a shift differential of fifteen (15%) above the wage rate for all work performed during the irregular shift.

SUPPLEMENTAL BENEFITS
Per hour:
Journeyworker

First 40 hours	$ 40.83
Over 40 hours	31.64

OVERTIME PAY
See (B, E, P, *R, **T) on OVERTIME PAGE
*For code (8,15,25,26) code R applies
**For code (5,6) code T applies

HOLIDAY
Paid: See (5, 6, 8, 15, 25, 26) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 15, 25, 26) on HOLIDAY PAGE

8-456

Welder 08/01/2026

JOB DESCRIPTION Welder **DISTRICT** 1

ENTIRE COUNTIES
Albany, Allegany, Bronx, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Kings, Lewis, Livingston, Madison, Monroe, Montgomery, Nassau, New York, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Suffolk, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

WAGES
Per hour 07/01/2026

Welder: To be paid the same rate of the mechanic performing the work.*

*EXCEPTION: If a specific welder certification is required, then the 'Certified Welder' rate in that trade tag will be paid.

OVERTIME PAY

HOLIDAY

1-As Per Trade

Overtime Codes

Following is an explanation of the code(s) listed in the OVERTIME section of each classification contained in the attached schedule. Additional requirements may also be listed in the HOLIDAY section.

NOTE: Supplemental Benefits are 'Per hour worked' (for each hour worked) unless otherwise noted

(AA)	Time and one half of the hourly rate after 7 and one half hours per day
(A)	Time and one half of the hourly rate after 7 hours per day
(B)	Time and one half of the hourly rate after 8 hours per day
(B1)	Time and one half of the hourly rate for the 9th & 10th hours week days and the 1st 8 hours on Saturday. Double the hourly rate for all additional hours
(B2)	Time and one half of the hourly rate after 40 hours per week
(B3)	Time and one half of the hourly rate after 40 straight hours per week
(C)	Double the hourly rate after 7 hours per day
(C1)	Double the hourly rate after 7 and one half hours per day
(D)	Double the hourly rate after 8 hours per day
(D1)	Double the hourly rate after 9 hours per day
(E)	Time and one half of the hourly rate on Saturday
(E1)	Time and one half 1st 4 hours on Saturday; Double the hourly rate all additional Saturday hours
(E2)	Saturday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather
(E3)	Between November 1st and March 3rd Saturday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather, provided a given employee has worked between 16 and 32 hours that week
(E4)	Sunday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather
(E5)	Double time after 8 hours on Saturdays
(F)	Time and one half of the hourly rate on Saturday and Sunday
(G)	Time and one half of the hourly rate on Saturday and Holidays
(H)	Time and one half of the hourly rate on Saturday, Sunday, and Holidays
(I)	Time and one half of the hourly rate on Sunday
(J)	Time and one half of the hourly rate on Sunday and Holidays
(K)	Time and one half of the hourly rate on Holidays
(L)	Double the hourly rate on Saturday
(M)	Double the hourly rate on Saturday and Sunday
(N)	Double the hourly rate on Saturday and Holidays
(O)	Double the hourly rate on Saturday, Sunday, and Holidays
(P)	Double the hourly rate on Sunday
(Q)	Double the hourly rate on Sunday and Holidays
(R)	Double the hourly rate on Holidays

(S)	Two and one half times the hourly rate for Holidays
(S1)	Two and one half times the hourly rate the first 8 hours on Sunday or Holidays One and one half times the hourly rate all additional hours.
(T)	Triple the hourly rate for Holidays
(U)	Four times the hourly rate for Holidays
(V)	Including benefits at SAME PREMIUM as shown for overtime
(W)	Time and one half for benefits on all overtime hours.
(X)	Benefits payable on Paid Holiday at straight time. If worked, additional benefit amount will be required for worked hours. (Refer to other codes listed.)

Holiday Codes

PAID Holidays:

Paid Holidays are days for which an eligible employee receives a regular day's pay, but is not required to perform work. If an employee works on a day listed as a paid holiday, this remuneration is in addition to payment of the required prevailing rate for the work actually performed.

OVERTIME Holiday Pay:

Overtime holiday pay is the premium pay that is required for work performed on specified holidays. It is only required where the employee actually performs work on such holidays. The applicable holidays are listed under HOLIDAYS: OVERTIME. The required rate of pay for these covered holidays can be found in the OVERTIME PAY section listings for each classification.

Following is an explanation of the code(s) listed in the HOLIDAY section of each classification contained in the attached schedule. The Holidays as listed below are to be paid at the wage rates at which the employee is normally classified.

(1)	None
(2)	Labor Day
(3)	Memorial Day and Labor Day
(4)	Memorial Day and July 4th
(5)	Memorial Day, July 4th, and Labor Day
(6)	New Year's, Thanksgiving, and Christmas
(7)	Lincoln's Birthday, Washington's Birthday, and Veterans Day
(8)	Good Friday
(9)	Lincoln's Birthday
(10)	Washington's Birthday
(11)	Columbus Day
(12)	Election Day
(13)	Presidential Election Day
(14)	1/2 Day on Presidential Election Day
(15)	Veterans Day
(16)	Day after Thanksgiving
(17)	July 4th
(18)	1/2 Day before Christmas
(19)	1/2 Day before New Years
(20)	Thanksgiving
(21)	New Year's Day
(22)	Christmas
(23)	Day before Christmas
(24)	Day before New Year's
(25)	Presidents' Day
(26)	Martin Luther King, Jr. Day
(27)	Memorial Day
(28)	Easter Sunday

(29) Juneteenth

New York State Department of Labor - Bureau of Public Work
State Office Building Campus
Building 12 - Room 130
Albany, New York 12226

REQUEST FOR WAGE AND SUPPLEMENT INFORMATION

As Required by Articles 8 and 9 of the NYS Labor Law

Fax (518) 485-1870 or mail this form for new schedules or for determination for additional occupations.

This Form Must Be Typed

Submitted By: (Check Only One) ☐ Contracting Agency ☐ Architect or Engineering Firm ☐ Public Work District Office Date:

A. Public Work Contract to be let by: (Enter Data Pertaining to Contracting/Public Agency)

1. Name and complete address ☐ (Check if new or change)

Telephone Fax

E-Mail:

2. NY State Units (see Item 5).

- ☐ 01 DOT
- ☐ 02 OGS
- ☐ 03 Dormitory Authority
- ☐ 04 State University Construction Fund
- ☐ 05 Mental Hygiene Facilities Corp.
- ☐ 06 OTHER N.Y. STATE UNIT
- ☐ 07 City
- ☐ 08 Local School District
- ☐ 09 Special Local District, i.e., Fire, Sewer, Water District
- ☐ 1O Village
- ☐ 11 Town
- ☐ 12 County
- ☐ 13 Other Non-N.Y. State (Describe)

3. SEND REPLY TO ☐ (check if new or change)
Name and complete address:

Telephone Fax

E-Mail:

4. SERVICE REQUIRED. Check appropriate box and provide project information.

☐ New Schedule of Wages and Supplements.

APPROXIMATE BID DATE :

☐ Additional Occupation and/or Redetermination

PRC NUMBER ISSUED PREVIOUSLY FOR THIS PROJECT :

OFFICE USE ONLY

B. PROJECT PARTICULARS

5. Project Title _____

Description of Work _____

Contract Identification Number _____

Note: For NYS units, the OSC Contract No. _____

6. Location of Project:
Location on Site _____

Route No/Street Address _____

Village or City _____

Town _____

County _____

7. Nature of Project - Check One:

- ☐ 1. New Building
- ☐ 2. Addition to Existing Structure
- ☐ 3. Heavy and Highway Construction (New and Repair)
- ☐ 4. New Sewer or Waterline
- ☐ 5. Other New Construction (Explain)
- ☐ 6. Other Reconstruction, Maintenance, Repair or Alteration
- ☐ 7. Demolition
- ☐ 8. Building Service Contract

8. OCCUPATION FOR PROJECT :

- ☐ Construction (Building, Heavy Highway/Sewer/Water)
- ☐ Tunnel
- ☐ Residential
- ☐ Landscape Maintenance
- ☐ Elevator maintenance
- ☐ Exterminators, Fumigators
- ☐ Fire Safety Director, NYC Only
- ☐ Fuel Delivery
- ☐ Guards, Watchmen
- ☐ Janitors, Porters, Cleaners, Elevator Operators
- ☐ Moving furniture and equipment
- ☐ Trash and refuse removal
- ☐ Window cleaners
- ☐ Other (Describe)

9. Does this project comply with the Wicks Law involving separate bidding? YES ☐ NO ☐

10. Name and Title of Requester

Signature

SEE PAGE TWO FOR LAWS RELATING TO PUBLIC WORK CONTRACTS

NEW YORK STATE DEPARTMENT OF LABOR
Bureau of Public Work - Debarment List

LIST OF EMPLOYERS INELIGIBLE TO BID ON OR BE AWARDED ANY PUBLIC WORK CONTRACT

Under Article 8 and Article 9 of the NYS Labor Law, a contractor, sub-contractor and/or its successor shall be debarred and ineligible to submit a bid on or be awarded any public work or public building service contract/sub-contract with the state, any municipal corporation or public body for a period of five (5) years from the date of debarment when:

- Two (2) final determinations have been rendered within any consecutive six-year (6) period determining that such contractor, sub-contractor and/or its successor has WILLFULLY failed to pay the prevailing wage and/or supplements;
- One (1) final determination involves falsification of payroll records or the kickback of wages and/or supplements.

The agency issuing the determination and providing the information, is denoted under the heading 'Fiscal Officer'. DOL = New York State Department of Labor; NYC = New York City Comptroller's Office; AG = New York State Attorney General's Office; DA = County District Attorney's Office.

Debarment Database: To search for contractors, sub-contractors and/or their successors debarred from bidding or being awarded any public work contract or subcontract under NYS Labor Law Articles 8 and 9, or under NYS Workers' Compensation Law Section 141-b, access the database at this link: https://apps.labor.ny.gov/EDList/searchPage.do

For inquiries please call 518-457-5589.

NYSDOL Bureau of Public Work Debarment List 08/14/2026

Article 8

AGENCY	Fiscal Officer	FEIN	EMPLOYER NAME	EMPLOYER DBA NAME	ADDRESS	DEBARMENT START DATE	DEBARMENT END DATE
DOL	DOL	*****5784	A.J.M. TRUCKING, INC.		PO BOX 2064 MONROE NY 10950	02/12/2024	02/12/2029
DOL	DOL		AKHLAQ OULAKH		4307 28TH AVE ASTORIA NY 11103	10/11/2024	10/11/2029
DOL	DOL		ALEXANDER DELISA		411 THEODORE FREMND SUITE 206RYE NY 10580	09/03/2025	09/03/2030
DOL	NYC		ALL COUNTY SEWER & DRAIN, INC.		7 GREENFIELD DR WARWICK NY 10990	03/25/2022	03/25/2027
DOL	DOL	*****8387	AMERICAN PAVING & MASONRY, CORP.		8 FOREST AVE GLEN COVE NY 11542	05/24/2024	05/24/2029
DOL	DOL	*****8654	AMERICAN PAVING, INC.		8 FORREST AVE. GLEN COVE NY 11542	05/24/2024	05/24/2029
DOL	NYC	*****8017	AMIN ELECTRICAL CORP.		97-23 218TH STREET QUEENS VILLAGE NY 11429	12/04/2025	12/04/2030
DOL	DOL		ANGELO STANCO		8 FOREST AVE. GLEN COVE NY 11542	05/24/2024	05/24/2029
DOL	DOL		ANGELO TONDO		449 WEST MOMBSHA ROAD MONROE NY 10950	06/06/2022	06/06/2027
DOL	DOL	*****4231	ANKER'S ELECTRIC SERVICE, INC.		10 SOUTH 5TH ST LOCUST VALLEY NY 11560	09/26/2022	09/26/2027
DOL	DOL		ANTHONY CASALE		20 HEATHER RIDGE ROAD TROY NY 12180	05/20/2025	05/20/2030
DOL	DOL		ANTHONY MONGELLI		PO BOX 2064 MONROE NY 10950	02/12/2024	02/12/2029
DOL	DOL	*****8421	B & B DRYWALL, INC		206 WARREN AVE APT 1WHITE PLAINS NY 10603	12/14/2021	12/14/2026
DOL	DOL	*****3932	B ROC CONSTRUCTION INC		7307 WOODSIDE ROAD VICTOR NY 14564	05/06/2025	05/06/2030
DOL	DA	*****2404	BJA RENOVATION, CORP		33 DOLLARD DR NORTH BABYLON NY 11703	03/19/2025	03/19/2030
DOL	DOL	*****5078	BLACK RIVER TREE REMOVAL, LLC		29807 ANDREWS ROAD BLACK RIVER NY 13032	10/17/2023	10/17/2028
DOL	DOL		C.M.C CONTRACTORS, INC.		500 WEST PUTNAM AVE SUITE 400GREENWICH CT 06830	09/03/2025	09/03/2030
DOL	DOL		CARLOS F. ESCOBAR		411 THEODORE FREMD AVE SUITE 206RYE NY 10580	09/03/2025	09/03/2030
DOL	DOL		CARLOS FIGUEROA		411 THEODORE FREMND AVE SUITE 206RYE NY 10580	09/03/2025	09/03/2030
DOL	DOL	*****4155	CASA BUILDERS, INC.	FRIEDLANDER CONSTRUCTION	64 N PUTT CONNERS ROAD NEW PALTZ NY 12561	05/10/2023	05/10/2028
DOL	DOL		CESAREO TULA		120 SEARS AVE ELMSFORD NY 10523	09/26/2025	09/26/2030
DOL	DOL	*****2292	CHAMPION MAINTENANCE CONTRACTORS, INC.		211 SOUTH RIDGE STREET RYE BROOK NY 10573	09/03/2025	09/03/2030
DOL	NYC	*****2117	CHARAN ELECTRICAL ENTERPRISES		9-11 40TH AVENUE LONG ISLAND CITY NY 11101	09/26/2023	09/26/2028
DOL	DOL		CHARLES CASALE		55 MAIN AVENUE WYNANTSKILL NY 12198	05/20/2025	05/20/2030
DOL	DOL		CHARLES CASALE		55 MAIN AVENUE WYNANTSKILL NY 12198	05/20/2025	05/20/2030
DOL	DOL		CHRISTOPHER PEROSI		5507 NESCONSET HIGHWAY MT. SINAI NY 11766	07/17/2025	07/17/2030
DOL	DOL	*****2281	CORRAO TRUCKING, INC.		PO BOX 393 NANUET NY 10954	09/17/2024	09/17/2029
DOL	DOL		CRAIG JOHANSEN		10 SOUTH 5TH ST LOCUST VALLEY NY 11560	09/26/2022	09/26/2027
DOL	DOL	*****7619	DANCO CONSTRUCTION UNLIMITED INC.		485 RAFT AVENUE HOLBROOK NY 11741	10/19/2021	10/19/2026
DOL	DOL		DANIEL DELISA		211 SOUTH RIDGE STREET RYE BROOK NY 10573	09/03/2025	09/03/2030
DOL	DOL		DANIEL LOHAN		6836 N. LEXINGTON LANE NILES IL 60714	05/28/2026	05/28/2031
DOL	DOL		DANIEL ROBERT MCNALLY		7 GREENFIELD DRIVE WARWICK NY 10990	03/25/2022	03/25/2027
DOL	DOL		DARWIN PEGUESE		6400 BALTIMORE NATIONAL SUITE 602CANTONSVILLE NY 21228	10/24/2024	10/24/2029
DOL	DOL		DAVID FRIEDLANDER		64 NORTH PUTT CORNERS RD NEW PALTZ NY 12561	05/10/2023	05/10/2028
DOL	DOL		DENISE NAGLE		36 OAKWOOD TRAIL S AL MONROE NY 10950	10/29/2025	10/29/2030

NYSDOL Bureau of Public Work Debarment List 08/14/2026

Article 8

DOL	DOL		DINA TAYLOR		64 N PUTT CONNERS RD NEW PALTZ NY 12561	05/10/2023	05/10/2028
DOL	DOL	*****2337	EGL DRAINAGE SOLUTION & REPAIRS LLC		5507 NESCONSET HIGHWAY MT. SINAI NY 11766	07/17/2025	07/17/2030
DOL	DOL	*****0780	EMES HEATING & PLUMBING CONTR		5 EMES LANE MONSEY NY 10952	01/20/2002	01/20/3002
DOL	DOL		EMIL KISZKO		84 DIAMOND ST BROOKLYN NY 11222	07/18/2024	07/18/2029
DOL	DOL	*****3298	EMJACK CONSTRUCTION CORP.		84 DIAMOND ST BROOKLYN NY 11222	07/18/2024	07/18/2029
DOL	DOL	*****3298	EMJACK CONSTRUCTION LLC		4192 SIR ANDREW CIRCLE DOYLESTOWN PA 18902	07/18/2024	07/18/2029
DOL	NYC		ENRICO MANETTA		101 MALBA DR. WHITESTONE NY 11357	04/01/2026	04/01/2031
DOL	DOL		EUGENIUSZ "GINO" KUCHAR		195 KINGSLAND AVE BROOKLYN NY 11222	12/22/2023	12/22/2028
DOL	DOL	*****2998	G.E.M. AMERICAN CONSTRUCTION CORP.		195 KINGSLAND AVE BROOKLYN NY 11222	12/22/2023	12/22/2028
DOL	DA		GEORGE LUCEY		150 KINGS STREET BROOKLYN NY 11231	01/19/1998	01/19/2998
DOL	NYC		GHANSHYAM AMIN		97-23 218TH STREET QUEENS VILLAGE NY 11429	12/04/2025	12/04/2030
DOL	DA		GIOVANNA TRAVALJA		3735 9TH ST LONG ISLAND CITY NY 11101	01/05/2023	01/05/2028
DOL	DA		GIOVANNI NAPOLITANO		2501 BAYVIEW AVENUE WANTAGH NY 11793	02/21/2024	02/21/2029
DOL	DA	*****0213	GORILLA CONTRACTING GROUP, LLC		505 MANHATTAN AVE WEST BABYLON NY 11704	10/05/2023	10/05/2028
DOL	DA	*****4760	GTX CONSTRUCTION ASSOCIATES, CORP		2501 BAYVIEW AVE WANTAGH NY 11793	02/21/2024	02/21/2029
DOL	DOL		HENRY WICKE A/K/A HENRY WICKE, JR.		36 OAKWOOD TRAIL S AL MONROE NY 10950	10/29/2025	10/29/2030
DOL	DOL		HERBERT CLEMEN		42 FOWLER AVENUE CORTLAND MANOR NY 10567	01/24/2023	01/24/2028
DOL	DOL		HERBERT CLEMEN		42 FOWLER AVENUE CORTLAND MANOR NY 10567	10/25/2022	10/25/2027
DOL	DOL	*****6961	HUNTER ELEVATOR COMPANY, INC.		36 OAKWOOD TRAIL S AL MONROE NY 10950	10/29/2025	10/29/2030
DOL	DOL	*****2397	ISLAND BREEZE MARINE, INC.		6400 BALTIMORE NATIONAL CANTONSVILLE MD 21228	10/24/2024	10/24/2029
DOL	DOL	*****5010	J. LINDSLEY ENTERPRISE, LLC		1002 STATE ROUTE 176 FULTON NY 13069	07/30/2025	07/30/2030
DOL	DOL	*****0241	J. LINDSLEY ROOFING, LLC		211 NORTH 2ND STREET FULTON NY 13069	07/30/2025	07/30/2030
DOL	DOL		J.M.J CONSTRUCTION		151 OSTRANDER AVENUE SYRACUSE NY 13205	11/21/2022	11/21/2027
DOL	DOL		J.R. NELSON CONSTRUCTION		531 THIRD STREET ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL		J.R. NELSON CONSTRUCTION		531 THIRD STREET ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL		J.R. NELSON CONSTRUCTION		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		J.R. NELSON, LLC		531 THIRD STREET ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL		J.R. NELSON, LLC		531 THIRD STREET ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL		J.R. NELSON, LLC		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		J.R.N COMPANIES, LLC		531 THIRD STREET ALBANY NY 12206	12/12/2022	12/12/2027
DOL	DOL		J.R.N COMPANIES, LLC		531 THIRD STREET ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL		J.R.N COMPANIES, LLC		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL	*****1147	J.R.N. CONSTRUCTION, LLC		531 THIRD ST ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL	*****1147	J.R.N. CONSTRUCTION, LLC		531 THIRD ST ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL	*****1147	J.R.N. CONSTRUCTION, LLC		531 THIRD ST ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		JAMES J. BAKER		7901 GEE ROAD CANASTOTA NY 13032	08/17/2021	08/17/2026
DOL	DOL		JAMES LINDSLEY		211 NORTH 2ND STREET FULTON NY 13069	07/30/2025	07/30/2030

DOL	DOL		JASON P. RACE		3469 STATE RT. 69 PERISH NY 13131	09/29/2021	09/29/2026
DOL	DOL		JASON P. RACE		3469 STATE RT. 69 PERISH NY 13131	02/09/2022	02/09/2027
DOL	DOL		JASON P. RACE		3469 STATE RT. 69 PERISH NY 13131	11/15/2022	11/15/2027
DOL	DOL		JASON P. RACE		3469 STATE RT. 69 PERISH NY 13131	03/01/2022	03/01/2027
DOL	DOL	*****7993	JBS DIRT, INC.		7901 GEE ROAD CANASTOTA NY 13032	08/17/2021	08/17/2026
DOL	DOL	*****2435	JEFFEL D. JOHNSON	JMJ7 AND SON	5553 CAIRNSTRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JEFFEL JOHNSON ELITE CARPENTER REMODEL AND CONSTRUCTION		C2 EVERGREEN CIRCLE LIVERPOOL NY 13090	11/21/2022	11/21/2027
DOL	DOL	*****2435	JEFFREY M. JOHNSON	JMJ7 AND SON	5553 CAIRNS TRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JENNIFER LINDSLEY		211 NORTH 2ND STREET FULTON NY 13069	07/30/2025	07/30/2030
DOL	DOL		JERRY DASTON		36 OAKWOOD TRAIL S AL MONROE NY 10950	10/29/2025	10/29/2030
DOL	DOL		JMJ7 & SON CONSTRUCTION, LLC		5553 CAIRNS TRAIL LIVERPOOL NY 13041	11/21/2022	11/21/2027
DOL	DOL		JMJ7 AND SONS CONTRACTORS		5553 CAIRNS TRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JMJ7 CONTRACTORS		7014 13TH AVENUE BROOKLYN NY 11228	11/21/2022	11/21/2027
DOL	DOL		JMJ7 CONTRACTORS AND SONS		5553 CAIRNS TRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JMJ7 CONTRACTORS, LLC		5553 CAIRNS TRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JOHN NAGLE A/K/A JOHN NAGLE, JR.		36 OAKWOOD TRAIL S AL MONROE NY 10950	10/29/2025	10/29/2030
DOL	DOL		JONATHAN DELISA		411 THEODORE FREMND AVE SUITE 206RYE NY 10580	09/03/2025	09/03/2030
DOL	DOL		JORGE FIGUEROA		411 THEODORE FRMND AVE SUITE 206RYE NY 10580	09/03/2025	09/03/2030
DOL	DA		JOSEPH DEMASCO		33 DOLLARD DRIVE NORTH BABYLON NY 11703	01/30/2026	01/30/2031
DOL	DA		JOSEPH DEMASCO		33 DOLLARD DRIVE NORTH BABYLON NY 11703	03/19/2025	03/19/2030
DOL	DOL		JOSEPH HALL		937 US ROUTE 11 CENTRAL SQUARE NY 13036	10/21/2024	10/21/2029
DOL	DOL	*****2271	JOSEPH HALL COMPANIES LLC		937 US ROUTE 11 CENTRAL SQUARE NY 13036	10/21/2024	10/21/2029
DOL	DOL		JOSEPH K. SALERNO		1010 TILDEN AVE UTICA NY 13501	07/24/2023	07/24/2028
DOL	DOL		JOSEPH K. SALERNO II		1010 TILDEN AVE UTICA NY 13501	07/24/2023	07/24/2028
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	02/09/2022	02/09/2027
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	11/15/2022	11/15/2027
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	09/29/2021	09/29/2026
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	03/01/2022	03/01/2027
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	03/01/2022	03/01/2027
DOL	DOL		JRN CONSTRUCTION CO, LLC		1024 BROADWAY ALBANY NY 12204	11/07/2023	11/07/2028
DOL	DOL	*****1147	JRN CONSTRUCTION, LLC		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL	*****1147	JRN CONSTRUCTION, LLC		531 THIRD STREET ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL	*****1147	JRN CONSTRUCTION, LLC		531 THIRD STREET ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL		JRN PAVING, LLC		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		JRN PAVING, LLC		531 THIRD STREET ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL		JRN PAVING, LLC		531 THIRD STREET ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL		JULIUS AND GITA BEHREND		5 EMES LANE MONSEY NY 10952	11/20/2002	11/20/3002

DOL	DOL		KEAN INDUSTRIES, LLC		2345 RT. 52 SUITE 2NHOPEWELL JUNCTION NY 12533	12/18/2023	12/18/2028
DOL	DOL		KEVIN FUNEZ URBINA A/K/A KEVIN FUNEZ		1009 LYNDALE AVE TRENTON NJ 08629	12/16/2024	12/16/2029
DOL	DOL		KIMBERLY F. BAKER		7901 GEE ROAD CANASTOTA NY 13032	08/17/2021	08/17/2026
DOL	DOL	*****8760	KJ&J CONSTRUCTION, LLC		1009 LYNDALE AVE TRENTON NJ 08629	12/16/2024	12/16/2029
DOL	DOL		KMA GROUP II, INC.		29-10 38TH AVENUE LONG ISLAND CITY NY 11101	10/11/2023	10/11/2028
DOL	DOL	*****1833	KMA GROUP INC.		29-10 38TH AVENUE LONG ISLAND CITY NY 11101	10/11/2023	10/11/2028
DOL	DOL		KMA INSULATION, INC.		29-10 38TH AVENUE LONG ISLAND CITY NY 11101	10/11/2023	10/11/2028
DOL	DOL		KRIN HEINEMANN		2345 ROUTE 52, SUITE 2N HOPEWELL JUNCTION NY 12533	12/18/2023	12/18/2028
DOL	NYC		KULWANT S. DEOL		9-11 40TH AVENUE LONG ISLAND CITY NY 11101	09/26/2023	09/26/2028
DOL	DA	*****8816	LAKE CONSTRUCTION AND DEVELOPMENT CORPORATION		150 KINGS STREET BROOKLYN NY 11231	08/19/1998	08/19/2998
DOL	DOL		LEROY E. NELSON JR		531 THIRD ST ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		LEROY E. NELSON JR		531 THIRD ST ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL		LEROY E. NELSON JR		531 THIRD ST ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL	*****3716	LIGHTNIN ELECTRIC INC.		3418 NORTHERN BLVD SUITE 5-27LONG ISLAND CITY NY 11101	12/13/2024	12/13/2029
DOL	AG	*****3291	LINTECH ELECTRIC, INC.		3006 TILDEN AVE BROOKLYN NY 11226	02/16/2022	02/16/2027
DOL	DOL		LIZETTE PONCE		411 THEODORE FREMND AVE SUITE 206RYE NY 10580	09/03/2025	09/03/2030
DOL	NYC	*****7516	MANCO ENTERPRISES OF NY, INC.		44-17 54TH DR. MASPETH NY 11378	04/01/2026	04/01/2031
DOL	NYC	*****1783	MANETTA ENTERPISES, INC. D/B/A MANETTA INDUSTRIES		44-17 54TH DR. MASPETH NY 11378	04/01/2026	04/01/2031
DOL	DA		MANUEL P TOBIO		150 KINGS STREET BROOKLYN NY 14444	08/19/1998	08/19/2998
DOL	DA		MANUEL TOBIO		150 KINGS STREET BROOKLYN NY 11231	08/19/1998	08/19/2998
DOL	DOL	*****1320	MJC MASON CONTRACTING, INC.		42 FOWLER AVENUE CORTLAND MANOR NY 10567	10/25/2022	10/25/2027
DOL	DOL	*****1320	MJC MASON CONTRACTING, INC.		42 FOWLER AVENUE CORTLAND MANOR NY 10567	01/24/2023	01/24/2028
DOL	DOL		MOHAMMAD MIAN		8269 21ST ST BELLEROSE NY 11426	12/22/2022	12/22/2027
DOL	NYC		NASEER CHAUDHRY		2349 BRAGG STREET BROOKLYN NY 11229	04/22/2025	04/22/2030
DOL	DOL	*****7790	NATIONAL BUILDING & RESTORATION CORP		1010 TILDEN AVE UTICA NY 13501	07/24/2023	07/24/2028
DOL	DOL	*****1797	NATIONAL CONSTRUCTION SERVICES, INC		1010 TILDEN AVE UTICA NY 13501	07/24/2023	07/24/2028
DOL	NYC		NAVIT SINGH		402 JERICHO TURNPIKE NEW HYDE PARK NY 11040	08/10/2022	08/10/2027
DOL	DOL		NELCO CONTRACTING, LLC		1024 BROADWAY ALBANY NY 12204	11/07/2023	11/07/2028
DOL	DA		NICHOLAS BARNETT		33 DOLLARD DR BABYLON NY 11703	03/04/2025	03/04/2030
DOL	DOL		NICHOLAS RAO		411 THEODORE FREMND AVE SUITE 206RYE NY 10580	09/03/2025	09/03/2030
DOL	DA		NICHOLAS T. ANALITIS		505 MANHATTAN AVE WEST BABYLON NY 11704	10/05/2023	10/05/2028
DOL	DOL		NICHOLE E. FRASER A/K/A NICHOLE RACE		3469 STATE RT. 69 PERISH NY 13131	03/01/2022	03/01/2027
DOL	DOL		NICHOLE E. FRASER A/K/A NICHOLE RACE		3469 STATE RT. 69 PERISH NY 13131	11/15/2022	11/15/2027
DOL	DOL		NICHOLE E. FRASER A/K/A NICHOLE RACE		3469 STATE RT. 69 PERISH NY 13131	09/29/2021	09/29/2026
DOL	DOL		NICHOLE E. FRASER A/K/A NICHOLE RACE		3469 STATE RT. 69 PERISH NY 13131	02/09/2022	02/09/2027

NYSDOL Bureau of Public Work Debarment List 08/14/2026

Article 8

DOL	DOL		NIKOLA NTONI		3418 NORTHERN BLVD SUITE 5-27LONG ISLAND CITY NY 11101	12/13/2024	12/13/2029
DOL	NYC	*****6971	NN CONSTRUCTION, INC.		2349 BRAGG STREET BROOKLYN NY 11229	04/22/2025	04/22/2030
DOL	NYC	*****5643	NYC LINE CONTRACTORS, INC.		402 JERICHO TURNPIKE NEW HYDE PARK NY 11040	08/10/2022	08/10/2027
DOL	DOL		PATRICK PENNACCHIO		2345 RT. 52 SUITE 2NHOPEWELL JUNCTION NY 12533	12/18/2023	12/18/2028
DOL	DOL		PATRICK PENNACCHIO		2345 RT. 52 SUITE 2NHOPEWELL JUNCTION NY 12533	12/18/2023	12/18/2028
DOL	DOL	*****4168	PHANTOM CONSTRUCTION CORP.		95-27 116TH STREET QUEENS NY 11419	07/12/2024	07/12/2029
DOL	DOL	*****4168	PHANTOM CONSTRUCTION CORP.		95-27 116TH STREET QUEENS NY 11419	05/28/2024	05/28/2029
DOL	DOL	*****2041	QUALITY STEEL ERECTORS INC.		6836 N. LEXINGTON LANE NILES IL 60714	05/28/2026	05/28/2031
DOL	DOL	*****4772	R.W. LOBDELL CONSTRUCTION LLC		635 WEST DRYDEN ROAD FREEVILLE NY 13068	01/31/2025	01/31/2030
DOL	DOL	*****2633	RAW POWER ELECTRIC CORP.		3 PARK CIRCLE MIDDLETOWN NY 10940	07/11/2022	07/11/2027
DOL	DOL		ROBBYE BISSESAR		89-51 SPRINGFIELD BLVD QUEENS VILLAGE NY 11427	01/11/2003	01/11/3003
DOL	DOL		ROMEO WARREN		161 ROBYN RD MONROE NY 10950	07/11/2022	07/11/2027
DOL	DOL		ROSA GARCIA		411 THEODORE FRMND AVE SUITE 206RYE NY 10580	09/03/2025	09/03/2030
DOL	DOL	*****7172	RZ & AL INC.		198 RIDGE AVENUE VALLEY STREAM NY 11581	06/06/2022	06/06/2027
DOL	DA	*****0476	SAMCO ELECTRIC CORP.		3735 9TH ST LONG ISLAND CITY NY 11101	01/05/2023	01/05/2028
DOL	DA		SILVANO TRAVALJA		3735 9TH ST LONG ISLAND CITY NY 11101	01/05/2023	01/05/2028
DOL	NYC	*****3661	SPANIER BUILDING MAINTENANCE CORP		200 OAK DRIVE SYOSSET NY 11791	03/14/2022	03/14/2027
DOL	DOL		STANADOS KALOGELAS		485 RAFT AVENUE HOLBROOK NY 11741	10/19/2021	10/19/2026
DOL	DOL	*****3496	STAR INTERNATIONAL INC		89-51 SPRINGFIELD BLVD QUEENS VILLAGE NY 11427	08/11/2003	08/11/3003
DOL	DOL		STEVEN DELISA		411 THEODORE FREMND AVE SUITE 206RYE NY 10580	09/03/2025	09/03/2030
DOL	DOL	*****9150	SURGE INC.		8269 21ST STREET BELLEROSE NY 11426	12/22/2022	12/22/2027
DOL	DOL		SYED MUHAMMAD S. JAFRI A/K/A SHARRUKH JAFRI		4307 28TH AVE ASTORIA NY 11103	10/11/2024	10/11/2029
DOL	DOL		SYED RAZA		198 RIDGE AVENUE NY 11581	06/06/2022	06/06/2027
DOL	DOL		TARLOK SINGH		95-27 116TH STREET QUEENS NY 11419	05/28/2024	05/28/2029
DOL	DOL		TARLOK SINGH		95-27 116TH STREET QUEENS NY 11419	07/12/2024	07/12/2029
DOL	DOL	*****4855	TECH INDUSTRIES LLC		20 HEATHER RIDGE ROAD TROY NY 12180	05/20/2025	05/20/2030
DOL	DOL	*****2426	THE MATRUKH GROUP, INC.		4307 28TH AVE PO BOX 9082ASTORIA NY 11103	10/11/2024	10/11/2029
DOL	DOL		THOMAS LOBDELL		635 WEST DRYDEN ROAD FREEVILLE NY 13068	01/31/2025	01/31/2030
DOL	DOL		TIMOTHY PERCY		29807 ANDREWS ROAD BLACK RIVER NY 13612	10/17/2023	10/17/2028
DOL	DA	*****1050	TRI STATE CONSTRUCTION OF NY CORP.		50-39 175TH PLACE FRESH MEADOWS NY 11365	03/28/2022	03/28/2027
DOL	DOL	*****8485	TULA PLUMBING AND HEATING LLC		120 SEARS AVE ELMSFORD NY 10523	09/26/2025	09/26/2030
DOL	DOL	*****8210	UPSTATE CONCRETE & MASONRY CONTRACTING CO INC		449 WEST MOMBSHA ROAD MONROE NY 10950	06/06/2022	06/06/2027
DOL	DOL		VINCENT CORRAO		PO BOX 393 NANUET NY 10954	09/17/2024	09/17/2029
DOL	DOL		WILLIAM A BELL		7307 WOODSIDE ROAD VICTOR NY 14564	05/06/2025	05/06/2030
DOL	DOL	*****8266	WILLIAM CHRIS MCCLENDON	MCCLENDON ASPHALT PAVING	1646 FALLS STREET NIAGARA FALLS NY 14303	05/01/2023	05/01/2028

NYSDOL Bureau of Public Work Debarment List 08/14/2026

Article 8

DOL	DOL		WILLIAM CHRIS MCCLENDON		1646 FALLS STREET NIAGARA FALLS NY 14303	05/01/2023	05/01/2028
DOL	DOL		WILLIAM SCRIVENS		4192 SIR ANDREW CIRCLE DOYELSTOWN PA 18902	07/18/2024	07/18/2029
DOL	DOL	*****9494	WND CONSTRUCTION LLC		411 THEODORE FREMD AVENUE SUITE 206RYE NY 10580	09/03/2025	09/03/2030
DOL	DOL		XENOFON EFTHIMIADIS		29-10 38TH AVENUE LONG ISLAND CITY NY 11101	10/11/2023	10/11/2028

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RENOVATION SURVEY
FOR
ASBESTOS-CONTAINING MATERIALS, LEAD-BASED PAINT & PCBs

PERFORMED AT:

Yonkers Armory
2 Quincy Place
Yonkers, New York 10701
Adelaide Project# BA:23168.00-IN
OGS Project# 47477

PREPARED FOR:

Greg Springer
Bergmann: Architects, Engineers, Planners
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Albany, New York 12211

PREPARED BY:
Jason Fullum
June 15, 2023

REVIEWED BY:



Stephanie A. Soter
President

TABLE OF CONTENTS

1.0		**Introduction**	1
	1.1	Scope of Work / Project Personnel	1
	1.2	Executive Summary	1
	1.3	**Conclusions and Recommendations**	1
	1.4	Asbestos-containing Materials (ACM)	2
	1.5	Lead-based Paint (LBP)	2
	1.6	PolyChlorinated Biphenyls (PCB)	2
2.0		**Summary of Hazardous Materials**	2
	2.1	Summary of Identified ACM/PACM	2
	2.2	Summary of Identified Non-ACM	3
	2.3	Summary of Identified LBP	3
	2.4	Summary of Identified PCB-containing Materials	4
	2.5	Observations	4
3.0		**Asbestos-containing Materials (ACM)**	4
	3.1	Field Procedures and Analysis Methodology	4
	3.2	Regulatory Guidelines and Requirements of ACM	6
4.0		**Lead-based Paint (LBP)**	7
	4.1	Applicable Standards/Guidelines for LBP	7
	4.2	XRF Information	8
5.0		**PolyChlorinated Biphenyls (PCB)**	8
	5.1	Background and Protocol for PCBs	8
6.0		**General Discussion**	10
7.0		**Disclaimers**	10

APPENDICES

ACM Location Map(s)	A
Sample Location Map(s)	B
ACM Photo(s)	C
Asbestos Analytical Results	D
XRF Readings	E
PCB Analytical Results	F
Personnel and Laboratory Certifications	G

1.0 Introduction

1.1 Scope of Work / Project Personnel

Adelaide Environmental Health Associates, Inc. **(Adelaide)** performed an Asbestos, Lead and PCB Survey for Building/Structure Demolition, Renovation, Remodeling and/or Repair, in conformance with ALL Federal, State and Local regulations for Bergmann:

SURVEY LOCATION(S):	Yonkers Armory, 2 Quincy Place, Yonkers, New York 10701
SURVEY DATE(S):	June 6, 2023
SCOPE OF WORK:	Entire building renovation excluding the roof.
SCOPE OF WORK BUILDING/ STRUCTURE PLANS UTILIZED:	As built drawings from 1985 were utilized for the inspection.
CERTIFIED ADELAIDE PERSONNEL:	Jason Fullum (NYS Asbestos Inspector/Cert. #97-20574 and EPA Lead-based Paint Risk Assessor/Cert. #LBP-R-12098-2)
SITE CONTACT(S):	Trentin Reese - Bergmann

1.2 Executive Summary

On June 6, 2023, **Adelaide** inspected the first floor, second floor and exterior areas that will be affected by the proposed scope of work for suspect ACM, LBP and PCBs.

SUSPECT HAZARDOUS MATERIAL	SAMPLE(S)/LAYER(S)/ READING(S) COLLECTED	SAMPLE(S) / HOMOGENEOUS AREA(S) IDENTIFIED POSITIVE
Asbestos-containing Materials (ACM):	56	0
Lead-based Paint (LBP):	31 (plus calibrations)	0
PolyChlorinated Biphenyls (PCB):	6	0

The following indicates assumed materials due to live electric at the time of the inspection.

- PACM electrical wiring insulation and panels, mirror mastic

There are **asbestos materials that will be impacted** by this scope of work as described in section 1.1. These materials are listed in section 2.1.

1.3 Conclusions and Recommendations

The following conclusions and recommendations are prepared by **Adelaide** as per the provided scope of work for Building/Structure Demolition, Renovation, Remodeling and/or Repair. Should the scope of work change, it is recommended that the findings be revisited to determine if additional sampling will be required to satisfy ALL Federal, State and Local regulations.

The materials sampled, as part of this survey, were limited to building materials potential affected by the provided scope of work only. All building materials outside the scope of work that have the potential to be disturbed, impacted, or if the scope of work is to change, are to be presumed asbestos-containing materials (PACM). Identified PACM **must** either be sampled by a licensed NYS Asbestos Inspector and/or abated/removed and disposed of by a licensed NYS Asbestos Abatement Contractor.

1.4 Asbestos-containing Materials (ACM)

- This survey concluded that the materials listed in Section 2.1 are assumed ***positive for asbestos***.

- There are asbestos materials that will be impacted by this scope of work. These materials are listed in section 2.1. Refer to Appendix A for the approximate location of the above materials in the affected scope of work.

- Subpart 56-5(h) of 12 NYCRR Part 56 requires that no demolition, renovation, remodeling, or repair work be commenced by any owner or the owner's agent prior to the completion of asbestos abatement. Asbestos abatement must be performed by an asbestos abatement contractor that maintains a current asbestos handling license and employs NYSDOL/NYCDEP certified asbestos handlers and supervisors. It is recommended that a 12 NYCRR 56 certified Project Monitor oversee abatement activities.

- Subpart 56-5(g) of 12 NYCRR Part 56 specifies requirements for transmittal of asbestos survey information by the owner or owner's agent. (1) One copy of the asbestos survey report shall be sent to the local government entity charged with issuing a permit for such demolition, renovation, remodeling, or repair work under applicable State or local laws. (2) If controlled demolition or pre-demolition activities will be performed, one copy of the asbestos survey report shall be submitted to the appropriate Asbestos Control Bureau district office. (3) One copy of the asbestos survey report must be kept on the construction site throughout the duration of the asbestos project and any associated demolition, renovation, remodeling, or repair project.

1.5 Lead-based Paint (LBP)

- This survey concluded that the readings summarized in Section 2.3 and Appendix E tested ***negative for lead-based paint.***

1.6 PolyChlorinated Biphenyls (PCB)

- This survey concluded that the materials listed in Section 2.4 and Appendix F tested ***negative for PCBs.***

2.0 Summary of Hazardous Materials

2.1 Summary of Identified ACM/PACM

KEY: **ACM** = Materials containing greater than 1% of asbestos; **HA** = Homogeneous Area; **LF** = Linear Feet; **SF** = Square Feet; **PACM** = Presumed Asbestos-containing Materials; **Friable** = ACM capable of being released into air, and which can be crumbled, pulverized, powdered, crushed or exposed by hand-pressure; [A] = Material is considered non-friable solely in an intact and undisturbed state, however, may be rendered friable if pulverized or crumbled while in dry state.

Samples collected by **Adelaide** June 6, 2023

HA	Identified ACM	ACM Location(s)	Approx. Qty.	Condition	Friable? (Yes or No)
PACM	Electrical Wire Insulation and Panels	Throughout	Unknown	Unknown	No

HA	Identified ACM	ACM Location(s)	Approx. Qty.	Condition	Friable? (Yes or No)
PACM	Bathroom Mirror Mastic	Men's and Women's Bathrooms and Locker Rooms	11 Mirrors	Good	No

2.2 Summary of Identified Non-ACM

Samples collected by **Adelaide** June 6, 2023

Identified Non-ACM	Sample Location(s)
12x12 Brown/Red Mottled Floor Tile	2nd Floor
Black Floor Mastic	
2x4 Ceiling Tile – Large and Small Holes	
Debris on Top of Ceiling Tiles	
2x4 Ceiling Tile – Squiggles and Holes	
CMU Mortar	Throughout
4" Black Covebase and Mastic	
Yellow Carpet Mastic	2nd Floor
12x12 Green Mottled Floor Tile	
Drywall Ceiling and Joint Compound	Throughout
12x12 Brown and White Mottled Floor Tile	2nd Floor
12x12 White with Gray Specks Floor Tile	
Terrazzo Shower Base	Locker Rooms
Sealant at Shower	
Exterior Door Glazing Compound	Throughout
Exterior Door Sealant	
Concrete	
Brick Mortar	
Exterior Vertical Sealant	
Pin Mastic on Ductwork	Boiler Room
Wall Tile – Grout and Mudset	Kitchen
Floor Tile – Grout and Mudset	
Exterior Door Caulk	Throughout
Exterior Louver Caulk	

2.3 Summary of Identified LBP

Based on review of the data generated by the Viken Pb200e X-Ray Fluorescence (XRF) Analyzer(s), the following surfaces tested were identified as lead-based, as defined by HUD/EPA (equal to or in excess of 1.0 milligram per square centimeter):

Readings collected by **Adelaide** June 6, 2023

Location of LBP	LBP Component	Substrate	Color	Condition	Readings (mg/cm2)
NO Lead-based Paints identified above HUD/EPA standards of readings collected in reference to the above-mentioned scope of work.					

2.4 Summary of Identified PCB-containing Materials

Samples collected by **Adelaide** June 6, 2023

Sample #	Location / Description	Material Matrix	Color	Substrate	Analytical Result
NO PCB-containing materials were identified above the USEPA 40 CFR 761 threshold of 50 ppm(mg/kg) of samples collected/analyzed in reference to the above-mentioned scope of work.					

2.5 Observations

ASBESTOS-CONTAINING MATERIALS (ACM)
A visual inspection was performed, and homogeneous material types were established based on appearance, color and texture. The findings presented in this report are based upon reasonably available information and observed site conditions at the time the assessment was performed. The findings and conclusions of this report are not meant to be indicative of future conditions at the site and does not warrant against conditions that were not evident from visual observations or historical information obtained from others.

On June 6, 2023, representative bulk sampling was performed on suspect building materials for laboratory analysis and the following is a summary of installed building materials sampled as per the scope of work provided:

- Ceiling Materials – Ceiling Tiles, Drywall, Joint Compound.
- Wall Materials – CMU Mortar, Brick Mortar, Covebase and Mastic, Grout, Mudset
- Flooring Materials – Floor Tiles, Mastics, Grout, Mudset
- Miscellaneous Materials – Terrazzo, Sealants, Glazing Compound, Concrete, Pin Mastic
- Non-suspect Materials (not sampled) – Fiberglass Insulation, Wood, Glass, Metal.

3.0 Asbestos-containing Materials (ACM)

3.1 Field Procedures and Analysis Methodology

Guidelines used for the inspection were established by the U.S. 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) and Title 12 NYCRR Part 56-5.1. Field information was organized as per the AHERA concept of a

homogeneous area (HA); that is, suspect Asbestos-containing Materials (ACM) with similar age, appearance, and texture were grouped together, sampled and assessed for condition.

For the purposes of this inspection, suspect ACM has been placed in three material categories: thermal, surfacing, and miscellaneous. 1) Surfacing materials are those that are sprayed on, troweled on or otherwise applied to surfaces for fireproofing, acoustical, or decorative purposes (e.g., wall and ceiling plaster). 2) Thermal materials are those applied to heat pipes or other structural components to prevent heat loss or gain or prevent water condensation (e.g., pipe and fitting insulation, duct insulation, boiler flue). 3) Miscellaneous materials are interior building materials on structural components, structural members or fixtures, such as floor and ceiling tiles, etc. and do not include surfacing material or thermal system insulation.

SURFACING MATERIALS

Surfacing materials were grouped into homogeneous sampling areas. A homogeneous area contains material that is uniform in color and texture and appears identical in every other respect. Materials installed at different times belong to different sampling areas. Homogeneous areas were determined on per floor basis.

The following protocol was used for determining the number of samples to be collected:

- At least three bulk samples were collected from each homogeneous area that is 1,000 square feet or less.
- At least five bulk samples were collected from each homogeneous area that is greater than 1,000 square feet but less than or equal to 5,000 square feet.
- At least seven bulk samples were collected from each homogeneous area that is greater than 5,000 square feet.

THERMAL SYSTEM INSULATION (TSI)

The concept of homogeneous sampling areas applies equally well to thermal insulation as to surfacing material. A "typical" building may contain multiple insulated pipe runs from any combination of the following categories:

- Hot water supply and/or return
- Cold water supply
- Chilled water supply
- Steam supply and/or return
- Roof or system drain

The following protocol was used for determining the number of samples to be collected.

- Collect at least three bulk samples from each homogeneous area of thermal system insulation.
- Collect at least one bulk sample from each homogeneous area of patched thermal system insulation if the patched section is less than 6 linear or square feet.
- In a manner sufficient to determine whether the material is ACM or not ACM, collect a minimum of three bulk samples from each homogeneous insulated mechanical system tee, elbow, and valve.

Bulk samples are not collected from any homogeneous area where the certified inspector has determined that the thermal system insulation is fiberglass, foam glass, or rubber.

MISCELLANEOUS MATERIALS

Miscellaneous materials are grouped into different homogeneous areas and at least two bulk samples are collected from each homogeneous area as per the clarification letter from the EPA and the Professional Abatement Contractors of New York, Inc in November of 2007.

Samples collected were analyzed by a laboratory approved under the New York State Department of Health Environmental Laboratory Approval Program (NYSDOH ELAP). Samples were analyzed in the laboratory by Polarized Light Microscopy (PLM), Polarized Light Microscopy-NOB (PLM-NOB) and/or Quantitative Transmission Electron Microscopy (QTEM), as required. Sample collection and laboratory analysis were conducted in compliance with the requirements of Title 12 NYCRR Part 56-5.1, 29 CFR 1926.1101 and standard EPA & OSHA accepted methods. Samples consisting of multiple layers were separated and analyzed independently in the laboratory.

3.2 Regulatory Guidelines and Requirements for ACM

FEDERAL

In accordance with the Clean Air Act (CAA), the U.S. Environmental Protection Agency (EPA) established National Emission Standards for hazardous Air Pollutants (NESHAP) to protect the public from exposure to airborne pollutants. Asbestos was one of the air pollutants, which was addressed under the NESHAP 40 CFR Part 61. The purpose of asbestos NESHAP regulations is to protect the public health by minimizing the release of asbestos when facilities, which contain ACM, are being renovated or demolished. EPA is responsible for enforcing regulations related to asbestos during renovations and demolition, however, the CAA allows the EPA to delegate this authority to State and Local Agencies. Even after EPA delegate's responsibility to a state or Local agency, EPA retains the authority to oversee agency performance and to enforce NESHAP regulations as appropriate.

NEW YORK STATE

Asbestos in New York State is regulated under the Labor Law Section 906, Part 56 of Title 12 of the Official Compilation of Codes, Rules, and Regulations. Within the department and for the purpose of the Department of Labor, this part (rule) is known as Industrial Code Rule No. 56 (ICR 56) relating to hazards to the public safety and health, during the removal, encapsulation, or disturbance of friable asbestos, or any handling of ACM that may result in the release of asbestos fiber.

As specified in Title 12 NYCRR Part 56-5.1 (h) and (i), "If the building/structure asbestos survey finds that the portion of the building/structure to be demolished, renovated, remodeled, or have repair work contains ACM, PACM, suspect miscellaneous ACM assumed to be ACM, or asbestos material, which is impacted by the work, the owner or the owner's agent shall conduct, or cause to have conducted, asbestos removal performed by a licensed asbestos abatement contractor in conformance with all standards set forth in this Part. All ACM, PACM, suspect miscellaneous ACM assumed to be ACM, or asbestos material impacted by the demolition, renovation, remodeling or repair project shall be removed as per this Part, prior to access or disturbance by other uncertified trades or personnel. No demolition, renovation, remodeling or repair work shall be commenced by any owner or the owner's agent prior to the completion of the asbestos abatement in accordance with the notification requirements of this Part…All building/structure owners and asbestos abatement contractors on a demolition, renovation, remodeling, or repair project, which includes work covered by this part, shall inform all trades on the work site about PACM, ACM, asbestos material and suspect miscellaneous ACM…Bids may be advertised and contracts

awarded for demolition, remodeling, renovation, or repair work, but no work on the current intermediate portion of the project shall commence on the demolition, renovation, remodeling or repair work by any owner or agent prior to completion of all necessary asbestos abatement work for the current intermediate portion of the entire project, in conformance with all standards set forth in this Part." All work conducted should be in accordance with all legal requirements, including but not limited to U.S. Environmental Protection Agency (EPA) National Emissions Standards for Hazardous Air Pollutants (NESHAP) [40 CFR Part 61], New York State Industrial Code Rule 56 Asbestos Regulations (ICR 56) and Chapter 1 of Title 15 of the Rules of the City of New York Regulations, as applicable. Advance notification of the asbestos project to the USEPA, NYSDOL, and NYCDEP may be required.

CONCEALED ACM

In addition to the ACMs identified at the site, there is a possibility that concealed suspect ACM may exist at the building/structure. As such, if any concealed suspect ACM is encountered during future construction related activities, the work should immediately stop. Prior to resuming the work, the suspect ACM should either be 1) Sampled by an appropriately-certified asbestos professional and submitted to an Approved NYSDOH ELAP laboratory for asbestos analysis or 2) Presumed to be ACM (PACM) and removed by a licensed asbestos abatement contractor for disposal in accordance with all applicable regulations.

4.0 Lead-based Paint (LBP)

4.1 Applicable Standards/Guidelines for LBP

The U.S Department of Housing and Urban Development (HUD) defines the action level for lead-based paint as a lead content equal to or greater than 1.0 milligrams of lead per square centimeter of painted surface (≥1.0 mg Pb/cm^2) when measured with an XRF analyzer or 0.5 percent by weight when chemically tested. This definition is described in the HUD "Lead-Based Paint: Interim Guidelines for Hazard Identification and Abatement in Public and Indian Housing, September 1990". The state of New York's definition of the action level for lead-based paint is consistent with the level established by HUD.

Please note that although the HUD defines lead-based paint as paint having lead concentrations equal or greater than 1.0 mg/cm2, the Occupational Safety and Health Administration (OSHA) considers any concentration of lead in paint to be lead-containing paint. Regardless of the lead concentrations in paint, the contractor shall comply with 29 CFR 1926.62, OSHA regulations, and take precautionary measures for dust control and limit employee exposure to lead dust during the renovations.

Painted surfaces that would be impacted by planned activities such as drilling, cutting, scrapping, etc. and create dust should be properly addressed by following safe work practices, good housekeeping procedures and/or following proper abatement procedures. Grinding and sanding of paint without HEPA filter exhaust, open flame gas fired torch, unconfined abrasive blasting, and chemical strippers containing methylene chloride or other human carcinogenic chemicals are not recommended.

The Federal Resource Conservation and Recovery Act (RCRA) regulation governs the handling, transportation, and disposal of hazardous materials. Every demolition/renovation debris generator has the responsibility to determine whether the debris exhibits one or more of the characteristic wastes listed in subpart C of 40 CFR Part 261. In the case of demolition debris, lead in LBP is a characteristic waste, and therefore, it is the responsibility of the renovation/demolition debris generator to characterize the waste

prior to its disposal and, if found to be hazardous waste as defined by Federal Statutes, to be properly handled and disposed.

Metal objects painted with LBP are exempt from disposal regulations applicable to lead, provided they are properly recycled. All metal objects that are painted with LBP should be sent to a certified recycling facility.

This report is not Lead-based Paint abatement specification and should not be used for specifying removal methods or techniques.

4.2 XRF Information

Viken Pb200e X-Ray Fluorescence (XRF) Analyzer(s) were used to survey the building/structure or portion thereof identified to be demolished, renovated, remodeled or repaired for the presence of LBP. The Viken Pb200e XRF Analyzer(s) are using a sealed source of Co-57 with 6mCi sources, meeting HUD requirements for the analysis of paint films. During the analysis, the intensity of the x-rays is converted by the instrument's internal software into an estimate of the concentration of lead in the substance being analyzed. The results are interpreted as concentrations of lead in milligrams per square centimeter. This device is a field-screening tool, used to collect multiple readings in a short period of time. The method of measurement is based on spectrometric analysis of lead x-ray fluorescence within a controlled depth of interrogation. The reading is an estimate of lead content in all layers of paint. The results are displayed in milligrams per square centimeter (mg/cm2). The device(s) used for this inspection were the Viken Pb200e X-Ray Fluorescence (XRF) Analyzer(s) Serial Number 2104, Source date 4/1/23, Serial number 2231, Source date 5/15/22, Serial number 2595, Source date 2/15/23 and/or Serial number 2901, Source date 2/15/23.

5.0 PolyChlorinated Biphenyls (PCB)

5.1 Background and Protocol for PCBs

PolyChlorinated Biphenyls (PCB) are a group of manmade chemicals. PCBs were widely used in building materials and electrical products in the past. The U.S. Environmental Protection Agency banned the manufacturing and certain uses of PCBs in 1978, but buildings constructed or renovated between 1950 and 1978 may still have building materials and electrical products that contain PCBs. Examples of products that may contain PCBs include caulk, paint, glues, plastics, fluorescent lighting ballasts, transformers and capacitors.

PCBs are currently prohibited from being used in caulk and other commodities (U.S. EPA, 40 CFR 761). However, prior to 1977, PCBs were present in some caulking materials used in the construction of schools and other buildings. Studies have shown that concentrations of PCB can exceed 1% (10,000 ppm) by weight in some caulk materials. An investigation of 24 buildings in the Greater Boston Area revealed that one-third of the buildings tested (8 of 24) contained caulking materials with polychlorinated biphenyl (PCB) content exceeding 50 ppm by weight with an average concentration of 15,600 ppm or 1.5% (Herrick et al., 2004). These buildings included schools and other public buildings.

The U.S. EPA regulates the disposal of caulk, as well as soil and other materials contaminated with PCBs from caulk, if the concentration of PCBs exceeds 50 ppm. Such materials must be disposed at an appropriate approved or permitted facility.

U.S. EPA regulation 40 CFR 761 defines "PCB remediation waste" to include contaminated soil, and specifies a clean-up level of <1ppm without further conditions for unrestricted use in "high occupancy areas" (i.e., areas where individuals may be present for 335 hours or more per year). PCB caulk is defined as a PCB bulk product waste, and its disposal is subject to U.S. EPA regulations under the Toxic Substances Control Act (40 CFR761.62).

This protocol has been developed in consultation with the New York State Department of Health, Division of Environmental Health Assessment, Bureau of Toxic Substance Assessment to address concerns about properly managing caulk containing PCBs that will be disturbed during building renovation and maintenance.

CAULK SAMPLE COLLECTION

Buildings constructed or renovated between 1950 and 1977 have a potential to contain PCBs in existing caulk. Representative samples of caulking materials from these buildings prior to renovation or demolition work should be tested to determine whether the caulk is contaminated with PCBs. Professional judgement should be used to design the sampling plan for characterizing caulk throughout the building. The consultant should pay particular attention to construction and maintenance records and to the appearance of caulking materials (likenesses and differences). Samples should be taken from window frames or expansion joints that have not been repaired or replaced since 1977. Depending on specific information provided in the workplan developed by the project manager, such as window placement, compositing of some caulk samples might be appropriate. Caulk from different time periods or that have a different appearance should not be composited together.

It is important to note that caulk used during the time period of interest may also contain asbestos or lead. Therefore, the work plan should include testing, handling and disposal requirements appropriate for such regulated materials.

SOIL SAMPLE COLLECTION

Buildings constructed or renovated between 1950 and 1977, which have undergone further renovation after 1977, may have residual PCB contamination in adjacent soils. An adequate representation of surface soils should be tested to assess the potential for residual PCB contamination.

When designing a representative soil sampling plan, the likelihood of soil contamination from deteriorated or deteriorating caulk should be considered. Caulk that has in the past dried out and fallen to the ground is the most important source of soil contamination. Thus, sampling should include soil beneath windows where caulk has obviously deteriorated or been replaced because of previous deterioration. Areas subject to the stress of sun and prevailing weather (typically the southern and western side of each structure) should be included for sampling. These samples would provide a conservative evaluation of soil conditions due to an increased potential for material failure, possibly resulting in contamination of soil. Also, if earlier renovation or demolition work may have stockpiled potentially contaminated caulk in other school areas, the school should consider having soils in those areas tested as well.

Soil sampling should focus on areas of the building where ”banks” or “gangs” of windows exist/were replaced and areas of the structure where large expansion joints are located. This would provide a conservative evaluation of potential soil contamination and permit efficient sampling.

Any obvious pieces of caulk encountered during the collection of soil samples should be removed from the soil, categorized (with respect to location and depth) and treated as a separate potential sample.

Depth – At each soil sample location, soil should be collected in depth intervals of 0-2 inches, 2-6 inches and 6-12 inches. The surface soil sample (0-2 inches) should be collected from below the vegetative surface layer, if present.

Distance from Structure – Samples should be collected within 1 foot of the building and 5 feet from the building.

Samples should be collected in a manner that prevents cross-contamination. Augers or driven core samplers should be avoided, as any caulk caught on the edge of this type of tool could be driven to lower intervals. Using a designated trowel for each sample location and each interval of depth is encouraged. If the sampling tool is field cleaned between samples, do so in a manner that does not add solvent contamination to the environment.

NOTE
Sampling was performed by **Adelaide** in compliance with protocols outlined by New York State Education Department (NYSED) and USEPA 40 CFR 761, as described above. Only one sample per homogeneous area was required for analysis of suspect PCB-containing materials. Bulk sample(s) were properly packaged and forwarded, with associated Chain of Custody (COC), to York Analytical Laboratories, Inc., for analysis using method SW846-3550B/8082. The analysis will determine if the suspect material will be classified as PCB-containing at or above 50 ppm or mg/kg as per the EPA regulations. Copies of the analytical results are contained within attached appendices for review.

6.0 General Discussion

All construction personnel as well as individuals who have access to locations where asbestos-containing materials (ACM), lead-based paints (LBP) and/or polychlorinated biphenyls (PCB) exists should be informed of its presence and the proper work practices in these areas. Conspicuous labeling of all ACM is suggested to ensure personnel is adequately informed. Personnel should be informed not to rest, lean or store material or equipment on or near these surfaces and not to cut, saw, drill, sand or disturb ACM. All removal, disturbance, and repair of ACM should be performed in compliance with Title 12 NYCRR Part 56 by persons properly trained to handle ACM. Facility custodial and maintenance personnel should receive training commensurate with their work activities; as defined in 29 CFR 1910.1001.

7.0 Disclaimers

Adelaide certifies that the information contained within this report is based solely upon site observations and the results of laboratory analysis for samples collected during this survey/assessment. These observations and results are time dependent, subject to changing site conditions and revisions to Federal, State and Local regulations. **Adelaide** warrants that these findings have been promulgated after being prepared in general accordance with generally accepted practices in the abatement industries. **Adelaide** also recognizes that inspection laboratory data is not usually sufficient to make all abatement and management decisions. No other warranties are expressed or implied.

The materials sampled, as part of this survey, were limited to building materials potential affected by the provided scope of work only. All building materials outside the scope of work that have the potential to be disturbed, impacted, or if the scope of work is to change, are to be presumed asbestos-containing materials (PACM). Identified PACM **must** either be sampled by a licensed NYS Asbestos Inspector and/or abated/removed and disposed of by a licensed NYS Asbestos Abatement Contractor.

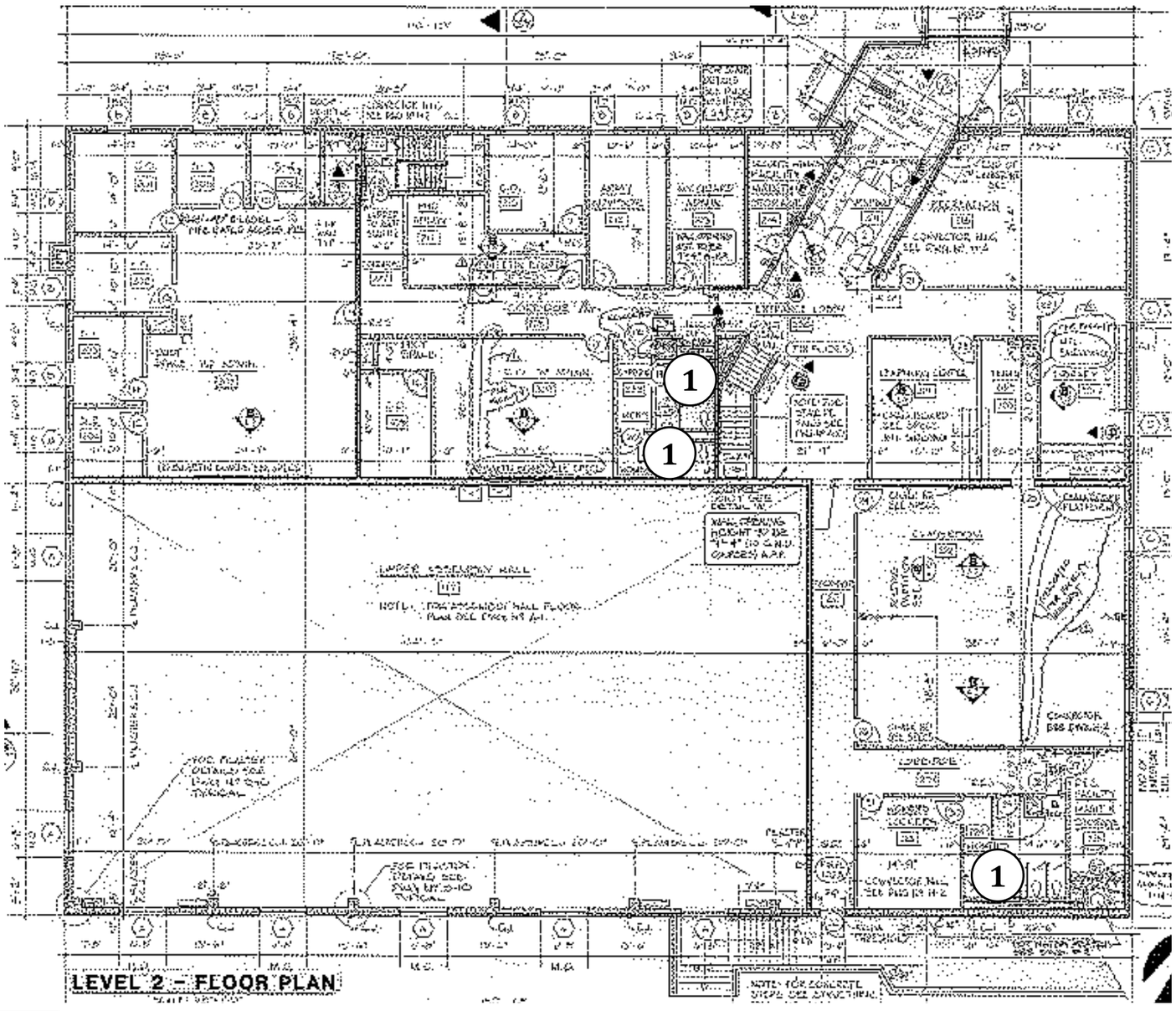
Due to the potential for concealed Asbestos-containing Materials (ACM) and/or other regulated materials, this report should not be construed to represent all ACM and/or regulated materials within the site(s). All quantities of ACM and/or other regulated materials identified, and all dimensions listed within this report are approximate and should be verified On-site.

This report is generated for the exclusive use of the client and is not designed to serve as a specification for abatement. The owner is strongly encouraged to contract with a consultant having a current Asbestos Project Designer Certificate as issued by New York State Department of Labor for the preparation of contract specifications, work plans, and/or drawings prior to requesting bids for the abatement or removal of the materials identified in this report.

NYSDOH issued an Interim Guidance Letter, on July 9, 2013, which outlined the approved testing alternative for materials containing vermiculite. Specifically, "...Where TSI, surfacing materials, or other PACM or miscellaneous suspect ACM contain greater than 10% vermiculite, Item 198.6 may be used to evaluate the asbestos content of the material; provided, however, that any test results using this method must be reported with the following conspicuous disclaimer: *"This method does not remove vermiculite and may underestimate the level of asbestos present in a sample containing greater than 10% vermiculite."* On July 22, 2014, NYSDOH issued a Regulatory Guidance Letter outlining the new approved analytical methods for testing sprayed-on fireproofing (SOFP) that contains vermiculite. NYSDOH authorized the use of ***two*** analytical methods to evaluate the asbestos content of SOFP that contains vermiculite. As per NYSDOH Guidelines, *"After October 31, 2014, one of the new methods **must** be used to test SOF-V, regardless of the percent of vermiculite."* On May 6, 2016, NYSDOH issued a Regulatory Guidance Letter outlining the new protocol for analytical procedure for surfacing materials (ie. plaster, stucco, etc.) that contain vermiculite. As per NYSDOH Guidelines, "*The original July 2013 and July 2014 letters addressed SOF-V only. Both NYS DOH's Item 198.8 and RJ Lee Group Method 055 shall now be applied to test for vermiculite in other Surfacing Material (SM) as defined in 12 NYCRR Part 56 (NYS Industrial Code Rule 56).*"

APPENDIX A

ACM LOCATION MAP(S)



ACM LEGEND: (see report for details)	
1	Assumed Mirror Mastic
PACM	Electrical Wire and Panels Throughout

Second Floor Plans - Asbestos Locations

Drawing Not to Scale

Adelaide ENVIRONMENTAL HEALTH
1511 Route 22
Brewster, NY 10509
Phone: (845) 278-7710
Fax: (845) 278-7750

CLIENT:
Greg Springer
Bergmann: Architects, Engineers, Planners
18 Corporate Woods Blvd., Suite 400
Albany, New York 12211

(Client) Project #

SURVEY LOCATION:
Yonkers Armory
2 Quincy Place
Yonkers, New York 10701

DATE: 6/13/2023

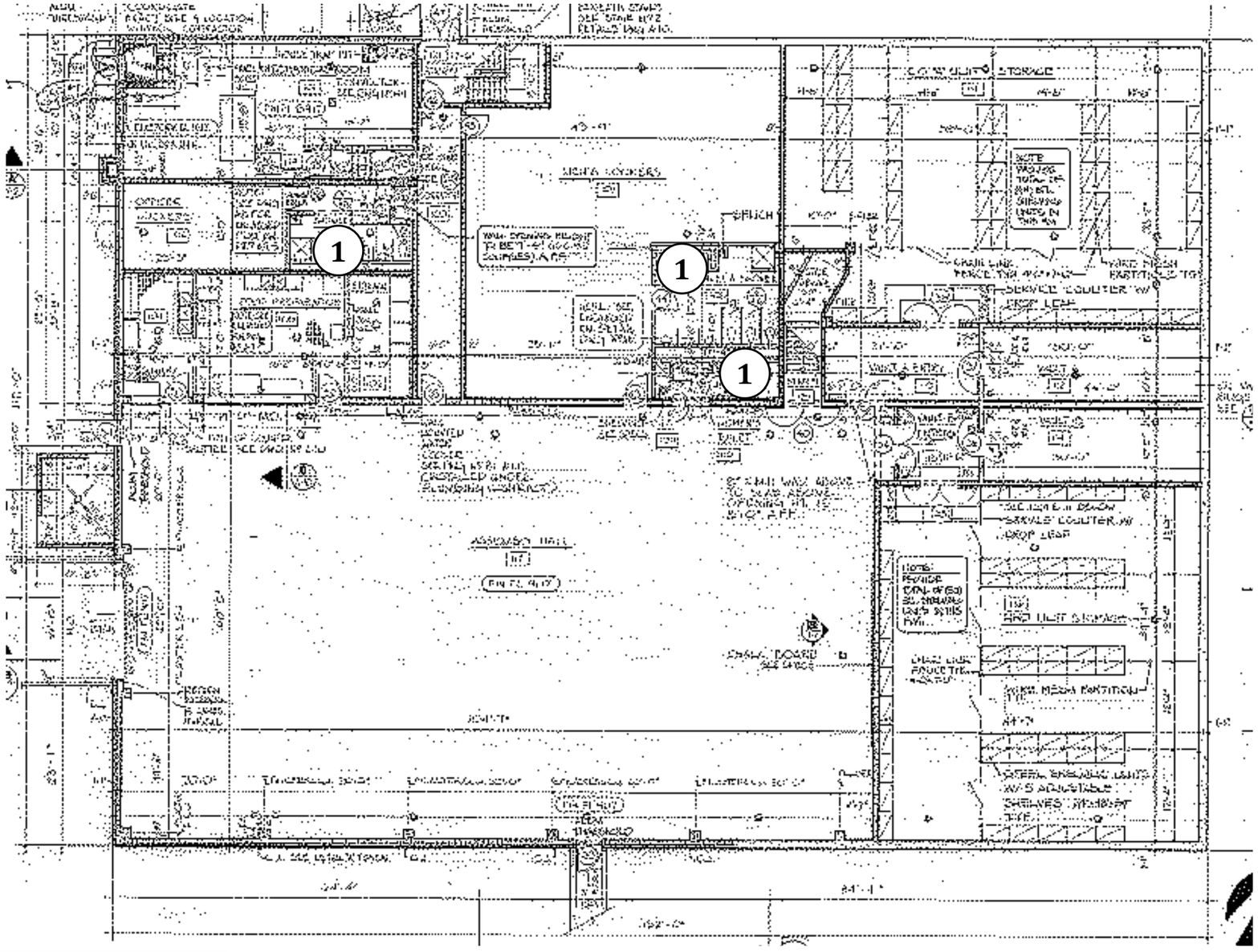
DRAWING VERSION: No. 1

ISSUED FOR:
Asbestos, Lead & PCB Survey

ADELAIDE PROJECT NO.:
BA:23168.00-IN

DRAWING PREPARED BY:
JPF

ASB-01



ACM LEGEND: (see report for details)	
1	Assumed Mirror Mastic
PACM	Electrical Wire and Panels Throughout

First Floor Plans - Asbestos Locations

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Yonkers Armory
2 Quincy Place
Yonkers, New York 10701

DATE: 6/13/2023

DRAWING VERSION: No. 1

ISSUED FOR:
Asbestos, Lead & PCB Survey

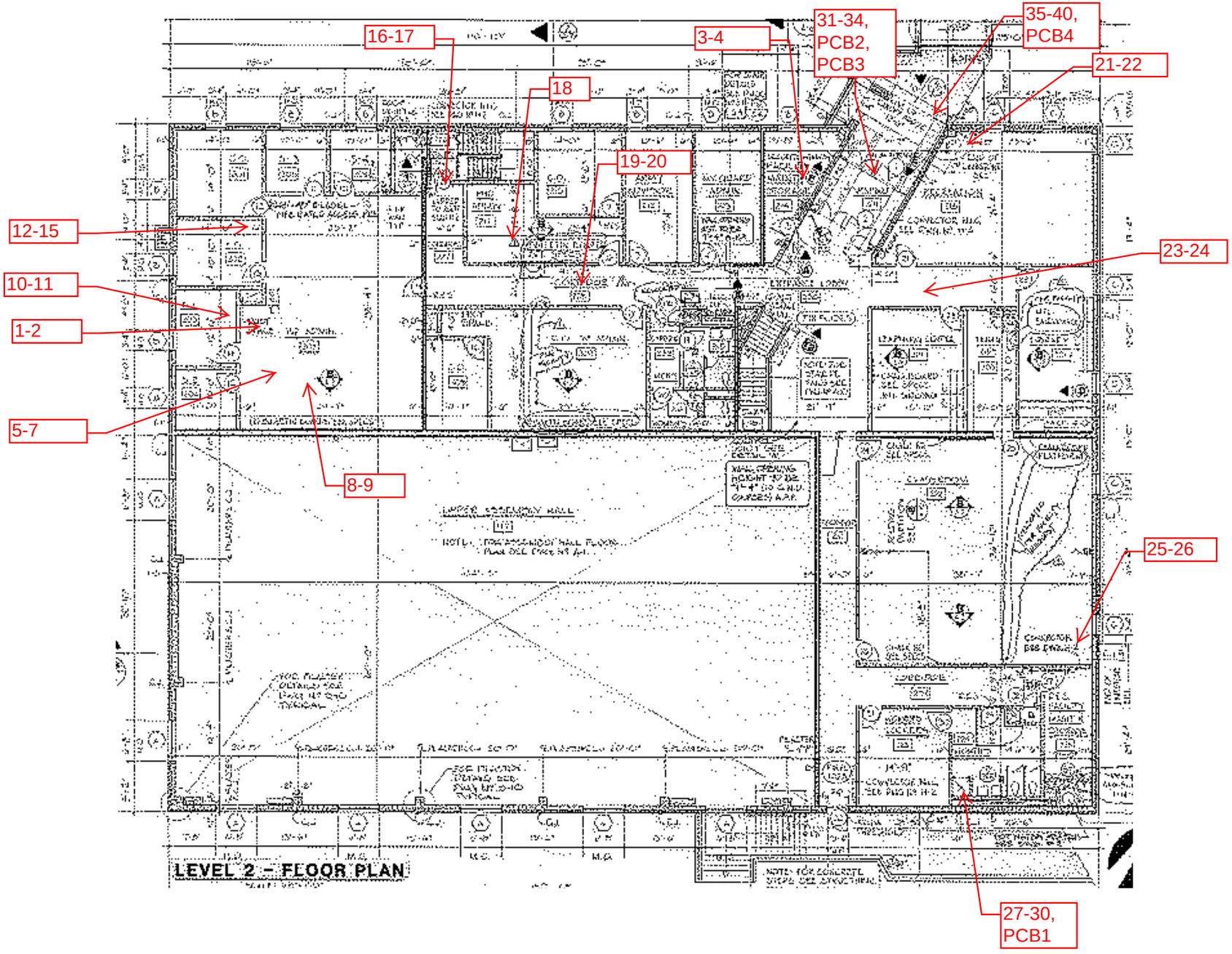
ADELAIDE PROJECT NO.:
BA:23168.00-IN

DRAWING PREPARED BY:
JPF

ASB-02

APPENDIX B

SAMPLE LOCATION MAP(S)



Second Floor Plans - Sample Locations

Drawing Not to Scale

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1511 Route 22
Brewster, NY 10509
Phone: (845) 278-7710
Fax: (845) 278-7750

CLIENT:
Greg Springer
Bergmann: Architects, Engineers, Planners
18 Corporate Woods Blvd., Suite 400
Albany, New York 12211

(Client) Project #

SURVEY LOCATION:
Yonkers Armory
2 Quincy Place
Yonkers, New York 10701

DATE: 6/13/2023

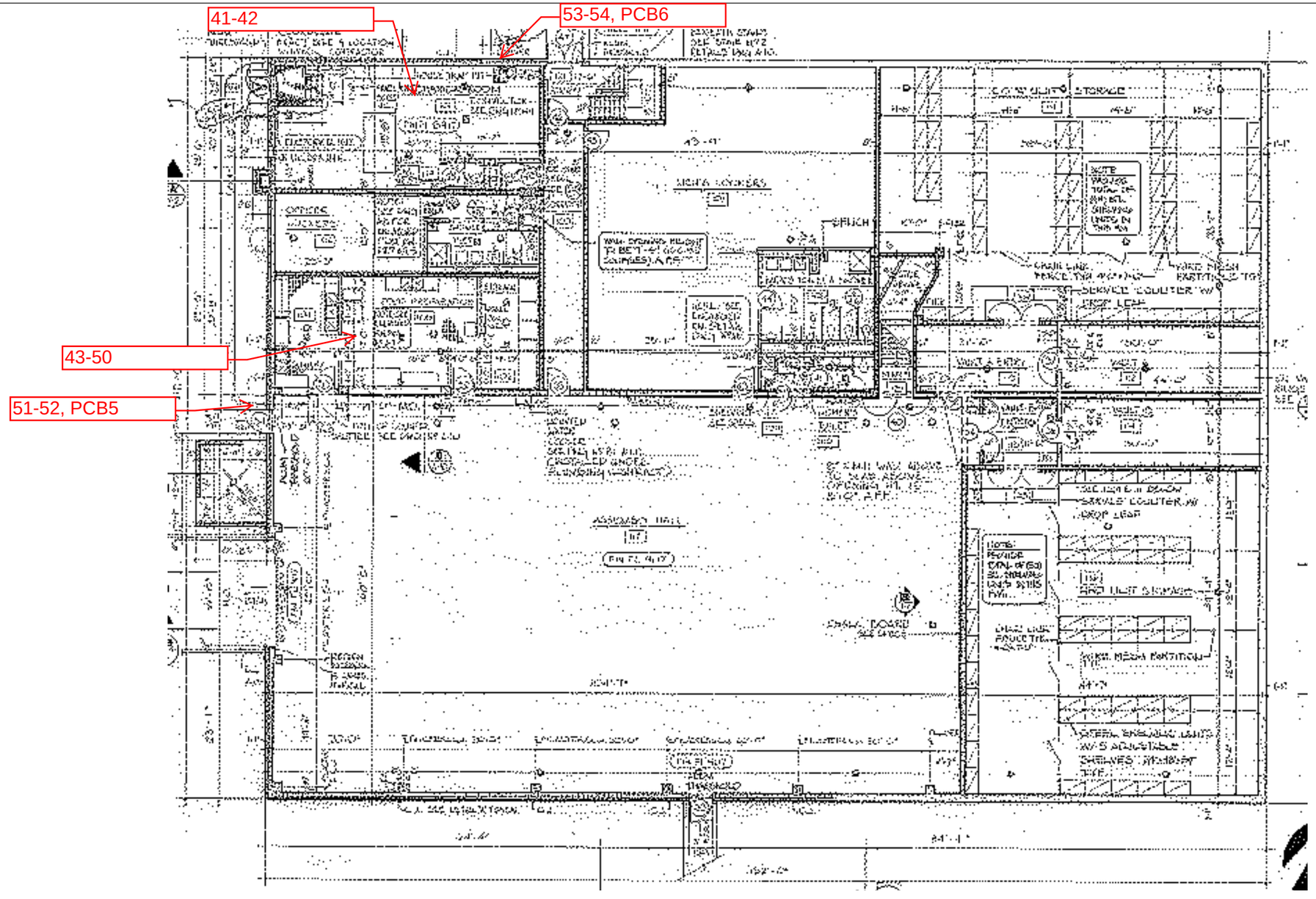
DRAWING VERSION: No. 1

ISSUED FOR:
Asbestos, Lead & PCB Survey

ADELAIDE PROJECT NO.:
BA:23168.00-IN

DRAWING PREPARED BY:
JPF

SL-01



First Floor Plans - Sample Locations

Drawing Not to Scale

Adelaide ENVIRONMENTAL HEALTH
1511 Route 22
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Phone: (845) 278-7710
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(Client) Project #

SURVEY LOCATION:
Yonkers Armory
2 Quincy Place
Yonkers, New York 10701

DATE: 6/13/2023

DRAWING VERSION: No. 1

ISSUED FOR:
Asbestos, Lead & PCB Survey

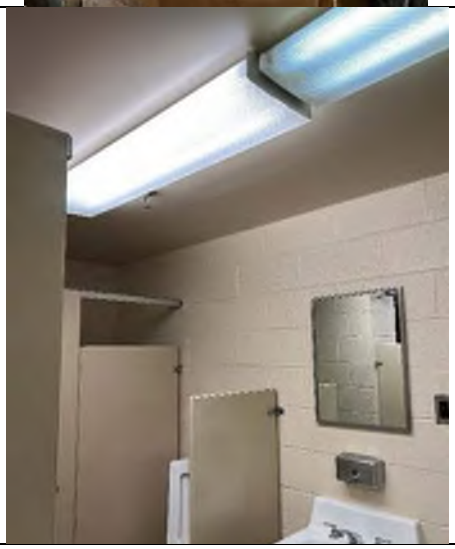
ADELAIDE PROJECT NO.:
BA:23168.00-IN

DRAWING PREPARED BY:
JPF

SL-02

APPENDIX C

ACM PHOTO(S)

PACM Electrical Wire Insulation and Panels	
PACM Electrical Wire Insulation and Panels	
PACM Mirror Mastic	

APPENDIX D

ASBESTOS ANALYTICAL RESULTS

Table I
Summary of Bulk Asbestos Analysis Results

OGSX:23168.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, New York 10701

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
01	1	1	0.226	17.4	81.7	0.9	NAD	NAD
Location: 2nd Floor - Room 207 - 12 x 12 F.T. - Brown / Red Mottled								
02	2	1	0.195	16.3	82.6	1.0	NAD	NAD
Location: 2nd Floor - Room 207 - 12 x 12 F.T. - Brown / Red Mottled								
03	3	2	0.142	79.8	15.9	4.3	NAD	NAD
Location: 2nd Floor - Room 214 - 12 x 12 F.T. - Black Mastic								
04	4	2	0.157	80.5	13.2	6.3	NAD	NAD
Location: 2nd Floor - Room 214 - 12 x 12 F.T. - Black Mastic								
05	5	3	0.188	24.9	12.0	63.1	NAD	NAD
Location: 2nd Floor - Room 214 - 2 x 4 C.T. - Large + Small Holes								
06	6	3	0.132	26.0	22.1	51.9	NAD	NAD
Location: 2nd Floor - Room 214 - 2 x 4 C.T. - Large + Small Holes								
07	7	4	0.227	55.4	18.6	26.0	NAD	NAD
Location: 2nd Floor - Room 214 - Debris On Top Of C.T.								
08	8	5	0.137	27.2	25.5	47.3	NAD	NAD
Location: 2nd Floor - Room 214 - 2 x 4 C.T. - Squiggles + Holes								
09	9	5	0.159	28.1	21.5	50.4	NAD	NAD
Location: 2nd Floor - Room 214 - 2 x 4 C.T. - Squiggles + Holes								
10	10	6	----	----	----	----	NAD	NA
Location: 2nd Floor - Room 214 - CMU Mortar								
11	11	6	----	----	----	----	NAD	NA
Location: 2nd Floor - Room 214 - CMU Mortar								
12L1	12	7	0.222	62.5	37.0	0.5	NAD	NAD
Location: 2nd Floor - Room 202 - Cove Base - 4" Black								
12L2	12	7	0.222	45.9	49.1	5.0	NAD	NAD
Location: 2nd Floor - Room 202 - Cove Base - 4" Black Mastic								
13L1	13	7	0.212	62.4	37.1	0.5	NAD	NAD
Location: 2nd Floor - Room 202 - Cove Base - 4" Black								
13L2	13	7	0.282	45.7	46.4	7.9	NAD	NAD
Location: 2nd Floor - Room 202 - Cove Base - 4" Black Mastic								
14	14	8	0.234	57.9	4.8	37.4	NAD	NAD
Location: 2nd Floor - Room 202 - Yellow Carpet Mastic								

See Reporting notes on last page

Table I
Summary of Bulk Asbestos Analysis Results

OGSX:23168.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, New York 10701

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
15	15	8	0.161	57.4	24.3	18.3	NAD	NAD
Location: 2nd Floor - Room 202 - Yellow Carpet Mastic								
16	16	9	0.265	17.6	79.9	2.5	NAD	NAD
Location: 2nd Floor - Hallway - 12 x 12 F.T. - Green Mottled								
17	17	9	0.280	16.9	82.3	0.8	NAD	NAD
Location: 2nd Floor - Hallway - 12 x 12 F.T. - Green Mottled								
18	18	10	0.423	26.8	11.1	62.1	NAD	NAD
Location: 2nd Floor - Room 211 - Debris Above C.T.								
19	19	11	----	----	----	----	NAD	NA
Location: 2nd Floor - Hallway - Drywall Ceiling								
20	20	11	----	----	----	----	NAD	NA
Location: 2nd Floor - Hallway - Drywall Ceiling								
21	21	12	0.239	20.8	61.7	17.5	NAD	NAD
Location: 2nd Floor - Room 218 - 12 x 12 F.T. - Brown + White Mottled								
22	22	12	0.260	19.8	59.2	21.0	NAD	NAD
Location: 2nd Floor - Room 218 - 12 x 12 F.T. - Brown + White Mottled								
23	23	13	----	----	----	----	NAD	NA
Location: 2nd Floor - Hallway - Joint Compound								
24	24	13	----	----	----	----	NAD	NA
Location: 2nd Floor - Hallway - Joint Compound								
25	25	14	0.208	19.6	72.6	7.8	NAD	NAD
Location: 2nd Floor - Room 222 - 12 x 12 F.T. - White W/ Gray Specks								
26	26	14	0.244	20.7	60.9	18.5	NAD	NAD
Location: 2nd Floor - Room 222 - 12 x 12 F.T. - White W/ Gray Specks								
27	27	15	----	----	----	----	NAD	NA
Location: 2nd Floor - Rm. 223 - Womens Locker - Terrazzo Shower Base								
28	28	15	----	----	----	----	NAD	NA
Location: 2nd Floor - Rm. 223 - Womens Locker - Terrazzo Shower Base								
29	29	16	0.141	32.0	65.3	2.7	NAD	NAD
Location: 2nd Floor - Rm. 223 - Womens Locker - Sealant At Shower								
30	30	16	0.140	30.7	67.0	2.4	NAD	NAD
Location: 2nd Floor - Rm. 223 - Womens Locker - Sealant At Shower								

See Reporting notes on last page

Table I
Summary of Bulk Asbestos Analysis Results

OGSX:23168.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, New York 10701

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
31	31	17	0.217	29.3	67.7	3.0	NAD	NAD
Location: 2nd Floor - Entrance Doors - Glazing Compound								
32	32	17	0.237	29.2	67.2	3.6	NAD	NAD
Location: 2nd Floor - Entrance Doors - Glazing Compound								
33	33	18	0.187	44.1	53.5	2.4	NAD	NAD
Location: 2nd Floor - Entrance Doors - Exterior Sealant								
34	34	18	0.157	44.9	52.6	2.6	NAD	NAD
Location: 2nd Floor - Entrance Doors - Exterior Sealant								
35	35	19	----	----	----	----	NAD	NA
Location: 2nd Floor - Concrete								
36	36	19	----	----	----	----	NAD	NA
Location: 2nd Floor - Concrete								
37	37	20	----	----	----	----	NAD	NA
Location: 2nd Floor - Brick Mortar								
38	38	20	----	----	----	----	NAD	NA
Location: 2nd Floor - Brick Mortar								
39	39	21	0.171	65.1	26.9	8.0	NAD	NAD
Location: 2nd Floor - Exterior Vertical Sealant								
40	40	21	0.184	65.2	25.9	8.9	NAD	NAD
Location: 2nd Floor - Exterior Vertical Sealant								
41	41	22	0.124	72.9	11.4	15.7	NAD	NAD
Location: 1st Floor - Boiler Room - Pin Mastic On Duct								
42	42	22	0.182	73.9	8.4	17.7	NAD	NAD
Location: 1st Floor - Boiler Room - Pin Mastic On Duct								
43	43	23	----	----	----	----	NAD	NA
Location: 1st Floor - Kitchen - Wall Tile - Grout								
44	44	23	----	----	----	----	NAD	NA
Location: 1st Floor - Kitchen - Wall Tile - Grout								
45	45	24	----	----	----	----	NAD	NA
Location: 1st Floor - Kitchen - Wall Tile - Mudset								
46	46	24	----	----	----	----	NAD	NA
Location: 1st Floor - Kitchen - Wall Tile - Mudset								

See Reporting notes on last page

Table I
Summary of Bulk Asbestos Analysis Results

OGSX:23168.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, New York 10701

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
47	47	25	----	----	----	----	NAD	NA
Location: 1st Floor - Kitchen - Floor Tile - Grout								
48	48	25	----	----	----	----	NAD	NA
Location: 1st Floor - Kitchen - Floor Tile - Grout								
49	49	26	----	----	----	----	NAD	NA
Location: 1st Floor - Kitchen - Floor Tile - Mudset								
50	50	26	----	----	----	----	NAD	NA
Location: 1st Floor - Kitchen - Floor Tile - Mudset								
51	51	27	0.187	62.0	27.5	10.6	NAD	NAD
Location: 1st Floor - Exterior - Door Caulk								
52	52	27	0.206	64.6	22.3	13.1	NAD	NAD
Location: 1st Floor - Exterior - Door Caulk								
53	53	28	0.170	60.7	11.7	27.6	NAD	NAD
Location: 1st Floor - Exterior - Louver Caulk								
54	54	28	0.103	59.9	5.8	34.2	NAD	NAD
Location: 1st Floor - Exterior - Louver Caulk								

Analyzed by: Gabriella Morozov 

Date: 6/8/2023

Reviewed by: Gabriella Morozov 

**Quantitative Analysis (Semi/Full); Bulk Asbestos Analysis - PLM by Appd E to Subpt E, 40 CFR 763 or NYSDOH ELAP 198.1 for New York friable samples or NYSDOH ELAP 198.6 for New York NOB samples; TEM (Semi/Full) by EPA 600/R-93/116 (or NYSDOH ELAP 198.4; for New York samples). Analysis using Hitachi, Model H7000-Noran 7 System, Microscope, Serial #: 747-05-06. NAD = no asbestos detected during a quantitative analysis; NA = not analyzed; Trace = <1%; (SOF-V) = Sprayed On Fireproofing containing Vermiculite; (SM-V) = Surfacing Material containing Vermiculite; Quantitation for beginning weights of <0.1 grams should be considered as qualitative only; Qualitative Analysis: Asbestos analysis results of "Present" or "NVA = No Visible Asbestos" represents results for Qualitative PLM or TEM Analysis only (no accreditation coverage available from any regulatory agency for qualitative analyses): NVLAP (PLM) 200546-0, NYSDOH ELAP Lab 11480, NJ Lab ID #NY031.

Warning Note: PLM limitation, only TEM will resolve fibers <0.25 micrometers in diameter. TEM bulk analysis is representative of the fine grained matrix material and may not be representative of non-uniformly dispersed debris for which PLM evaluation is recommended (i.e. soils and other heterogenous materials).

AmeriSci New York
117 EAST 30TH ST.
NEW YORK, NY 10016
TEL: (212) 679-8600 • FAX: (212) 679-3114

PLM Bulk Asbestos Report

Adelaide Environmental Health
Attn: John Soter
1511 Rte. 22, Suite C24

Brewster, NY 10509

Date Received 06/07/23
Date Examined 06/08/23
ELAP # 11480

AmeriSci Job # 223061619
P.O. #
Page 1 **of** 10

RE: OGSX:23168.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, New York 10701

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
1	223061619-01	***No***	NAD
1	**Location:** 2nd Floor - Room 207 - 12 x 12 F.T. - Brown / Red Mottled		(by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Brown/Red, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 0.9%			
2	223061619-02	***No***	NAD
1	**Location:** 2nd Floor - Room 207 - 12 x 12 F.T. - Brown / Red Mottled		(by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Brown/Red, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 1%			
3	223061619-03	***No***	NAD
2	**Location:** 2nd Floor - Room 214 - 12 x 12 F.T. - Black Mastic		(by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 4.3%			
4	223061619-04	***No***	NAD
2	**Location:** 2nd Floor - Room 214 - 12 x 12 F.T. - Black Mastic		(by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 6.3%			
5	223061619-05	***No***	NAD
3	**Location:** 2nd Floor - Room 214 - 2 x 4 C.T. - Large + Small Holes		(by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 63.1%			

See Reporting notes on last page

PLM Bulk Asbestos Report

OGSX:23168.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, New York 10701

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
6 3	223061619-06 **Location:** 2nd Floor - Room 214 - 2 x 4 C.T. - Large + Small Holes	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 51.9%			
7 4	223061619-07 **Location:** 2nd Floor - Room 214 - Debris On Top Of C.T.	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 26%			
8 5	223061619-08 **Location:** 2nd Floor - Room 214 - 2 x 4 C.T. - Squiggles + Holes	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 47.3%			
9 5	223061619-09 **Location:** 2nd Floor - Room 214 - 2 x 4 C.T. - Squiggles + Holes	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 50.4%			
10 6	223061619-10 **Location:** 2nd Floor - Room 214 - CMU Mortar	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
11 6	223061619-11 **Location:** 2nd Floor - Room 214 - CMU Mortar	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			

See Reporting notes on last page

PLM Bulk Asbestos Report

OGSX:23168.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, New York 10701

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
12 7	223061619-12L1 **Location:** 2nd Floor - Room 202 - Cove Base - 4" Black	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 0.5%			
12 7	223061619-12L2 **Location:** 2nd Floor - Room 202 - Cove Base - 4" Black Mastic	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Cream, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 5%			
13 7	223061619-13L1 **Location:** 2nd Floor - Room 202 - Cove Base - 4" Black	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 0.5%			
13 7	223061619-13L2 **Location:** 2nd Floor - Room 202 - Cove Base - 4" Black Mastic	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Cream, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 7.9%			
14 8	223061619-14 **Location:** 2nd Floor - Room 202 - Yellow Carpet Mastic	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Yellow, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 37.4%			
15 8	223061619-15 **Location:** 2nd Floor - Room 202 - Yellow Carpet Mastic	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Yellow, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 18.3%			

See Reporting notes on last page

PLM Bulk Asbestos Report

OGSX:23168.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, New York 10701

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
16 9	223061619-16 **Location:** 2nd Floor - Hallway - 12 x 12 F.T. - Green Mottled	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Green, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 2.5%			
17 9	223061619-17 **Location:** 2nd Floor - Hallway - 12 x 12 F.T. - Green Mottled	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Green, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 0.8%			
18 10	223061619-18 **Location:** 2nd Floor - Room 211 - Debris Above C.T.	***No***	NAD [1] (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 62.1%			
19 11	223061619-19 **Location:** 2nd Floor - Hallway - Drywall Ceiling	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: Gray/Brown, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 15%, Non-fibrous 85%			
20 11	223061619-20 **Location:** 2nd Floor - Hallway - Drywall Ceiling	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: Gray/Brown, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 15%, Non-fibrous 85%			
21 12	223061619-21 **Location:** 2nd Floor - Room 218 - 12 x 12 F.T. - Brown + White Mottled	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Brown, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 17.5%			

See Reporting notes on last page

PLM Bulk Asbestos Report

OGSX:23168.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, New York 10701

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
22 12	223061619-22 **Location:** 2nd Floor - Room 218 - 12 x 12 F.T. - Brown + White Mottled	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Brown, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 21%			
23 13	223061619-23 **Location:** 2nd Floor - Hallway - Joint Compound	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
24 13	223061619-24 **Location:** 2nd Floor - Hallway - Joint Compound	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
25 14	223061619-25 **Location:** 2nd Floor - Room 222 - 12 x 12 F.T. - White W/ Gray Specks	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 7.8%			
26 14	223061619-26 **Location:** 2nd Floor - Room 222 - 12 x 12 F.T. - White W/ Gray Specks	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 18.5%			
27 15	223061619-27 **Location:** 2nd Floor - Rm. 223 - Womens Locker - Terrazzo Shower Base	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: White/Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			

See Reporting notes on last page

PLM Bulk Asbestos Report

OGSX:23168.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, New York 10701

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
28 15	223061619-28 **Location:** 2nd Floor - Rm. 223 - Womens Locker - Terrazzo Shower Base	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: White/Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
29 16	223061619-29 **Location:** 2nd Floor - Rm. 223 - Womens Locker - Sealant At Shower	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 2.7%			
30 16	223061619-30 **Location:** 2nd Floor - Rm. 223 - Womens Locker - Sealant At Shower	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 2.4%			
31 17	223061619-31 **Location:** 2nd Floor - Entrance Doors - Glazing Compound	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 3%			
32 17	223061619-32 **Location:** 2nd Floor - Entrance Doors - Glazing Compound	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 3.6%			
33 18	223061619-33 **Location:** 2nd Floor - Entrance Doors - Exterior Sealant	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 2.4%			

See Reporting notes on last page

PLM Bulk Asbestos Report

OGSX:23168.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, New York 10701

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
34 18	223061619-34 **Location:** 2nd Floor - Entrance Doors - Exterior Sealant	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 2.6%			
35 19	223061619-35 **Location:** 2nd Floor - Concrete	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
36 19	223061619-36 **Location:** 2nd Floor - Concrete	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
37 20	223061619-37 **Location:** 2nd Floor - Brick Mortar	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
38 20	223061619-38 **Location:** 2nd Floor - Brick Mortar	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
39 21	223061619-39 **Location:** 2nd Floor - Exterior Vertical Sealant	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 8%			

See Reporting notes on last page

PLM Bulk Asbestos Report

OGSX:23168.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, New York 10701

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
40 21	223061619-40 **Location:** 2nd Floor - Exterior Vertical Sealant	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 8.9%			
41 22	223061619-41 **Location:** 1st Floor - Boiler Room - Pin Mastic On Duct	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Dark Brown, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 15.7%			
42 22	223061619-42 **Location:** 1st Floor - Boiler Room - Pin Mastic On Duct	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Dark Brown, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 17.7%			
43 23	223061619-43 **Location:** 1st Floor - Kitchen - Wall Tile - Grout	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: White, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
44 23	223061619-44 **Location:** 1st Floor - Kitchen - Wall Tile - Grout	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: White, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
45 24	223061619-45 **Location:** 1st Floor - Kitchen - Wall Tile - Mudset	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			

See Reporting notes on last page

PLM Bulk Asbestos Report

OGSX:23168.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, New York 10701

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
46 24	223061619-46 **Location:** 1st Floor - Kitchen - Wall Tile - Mudset	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
47 25	223061619-47 **Location:** 1st Floor - Kitchen - Floor Tile - Grout	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
48 25	223061619-48 **Location:** 1st Floor - Kitchen - Floor Tile - Grout	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
49 26	223061619-49 **Location:** 1st Floor - Kitchen - Floor Tile - Mudset	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
50 26	223061619-50 **Location:** 1st Floor - Kitchen - Floor Tile - Mudset	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
51 27	223061619-51 **Location:** 1st Floor - Exterior - Door Caulk	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 10.6%			

See Reporting notes on last page

PLM Bulk Asbestos Report

OGSX:23168.00-IN; Yonkers Armory; 2 Quincy Place, Yonkers, New York 10701

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
52 27	223061619-52 **Location:** 1st Floor - Exterior - Door Caulk	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 13.1%			
53 28	223061619-53 **Location:** 1st Floor - Exterior - Louver Caulk	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 27.6%			
54 28	223061619-54 **Location:** 1st Floor - Exterior - Louver Caulk	***No***	NAD (by NYS ELAP 198.6) by Kensen Caro on 06/08/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 34.2%			

Reporting Notes:

(1) Analysis Results For Soil, Dust, Or Debris May Be Highly Variable Because Of The Heterogeneous Nature Of These Samples

Analyzed by: Kensen Caro
Date: 6/8/2023

Reviewed by: Gabriella Morozov

*NAD/NSD =no asbestos detected; NA =not analyzed; NA/PS=not analyzed/positive stop, (SOF-V) = Sprayed On Fireproofing containing Vermiculite; (SM-V) = Surfacing Material containing Vermiculite; PLM Bulk Asbestos Analysis using Motic, Model BA310 Pol Scope, Microscope, Serial #: 1190000538, by Appd E to Subpt E, 40 CFR 763 quantified by either CVES or 400 pt ct as noted for each analysis (NVLAP 200546-0), ELAP PLM Method 198.1 for NY friable samples, which includes the identification and quantitation of vermiculite, or ELAP 198.6 for NOB samples, or EPA 400 pt ct by EPA 600-M4-82-020 (NY ELAP Lab 11480); Note: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 (also see EPA Advisory for floor tile, FR 59,146,38970,8/1/94) National Institute of Standards and Technology Accreditation requirements mandate that this report must not be reproduced except in full without the approval of the lab.This PLM report relates ONLY to the items tested. RI Cert AAL-094, CT Cert PH-0186, Mass Cert AA000054, NJ Lab ID #NY031.

_____END OF REPORT_____

Adelaide Environmental Health Associates, Inc
1454 Rte. 22, Suite B202
Brewster, NY 10509
845-278-7710
845-278-7750 - fax

Site Address: Yonkers Armory	Date: 6/6/2023	Inspector: Jason Fullum
2 Quincy Place	Client Project #	
Yonkers, New York 10701	Project #: OGSX:23168.00-IN	

Sample ID #	Homogeneous Area	Floor Level	Sample Location/Description	Quantity (In Feet)	Friable Non Friable	Condition g, d, sd
1	1	2	Room 207 - 12x12 F.T. - Brown Red Mottled	980SF	NF	G
2	1	2				
3	2	2	Room 214 - - Black Mastic			
4	2	2				
5	3	2	- 2x4 C.T. - Large + Small Holes		NF	
6	3	2				
7	4	2	- Debris on Top of C.T.			SD
8	5	2	- 2x4 C.T. - Scissles + Holes			G
9	5	2				
10	6	2	- CMU Mortar			
11	6	2				
12	7	2	Room 202 - Coveblase - 4" Black + Mastic			
13	7	2				

Special Instructions/ Turnaround Time: 223061619

Stop at 1st Positive per Homogenous Area ***24 HR TAT***
Fax Results to 845-278-7750
E-Mail results to AdelaideLabResults@Adelaidellc.com and Jfullum@adelaidellc.com

Relinquished by:
Received by: Alexandra Vargas 6-7-23 1030
Relinquished by:
Received by:

Adelaide Environmental Health Associates, Inc
1454 Rte. 22, Suite B202
Brewster, NY 10509
845-278-7710
845-278-7750 - fax

Site Address: Yonkers Armory	Date: 6/6/2023	Inspector: Jason Fullum
2 Quincy Place	Client Project #	
Yonkers, New York 10701	Project #: OGSX:23168.00-IN	

Sample ID #	Homogeneous Area	Floor Level	Sample Location/Description	Quantity (In Feet)	Friable Non Friable	Condition g, d, sd
14	8	2	Room 202 - Yellow Carpet Mastic		NF	G
15	8	2	↓ ↓		↓	↓
16	9	2	Hallway - 12x12 F.T. - Green Mottled			
17	9	2	↓ ↓ ↓			
18	10	2	Room 211 - Debris above C.T.		F	SD
19	10	2	Hallway - Drywall Ceiling		F	G
20	11	2	↓ ↓		F	
21	12	2	Room 218 - 12x12 F.T. - Brown + White Mottled		NF	
22	12	2	↓ ↓ ↓		↓	
23	13	2	Hallway - Joint Compound		F	
24	13	2	↓ ↓		F	
25	14	2	Room 222 - 12x12 F.T. - White w/ Gray Specks		NF	
26	14	2	↓ ↓		↓	↓

Special Instructions/ Turnaround Time: 23061619

Stop at 1st Positive per Homogenous Area ***24 HR TAT***
Fax Results to 845-278-7750
E-Mail results to AdelaideLabResults@Adelaidellc.com and Jfullum@adelaidellc.com

Relinquished by:
Received by: Alexandra Vaccaro 6/23 1030
Relinquished by:
Received by:

Adelaide Environmental Health Associates, Inc
1454 Rte. 22, Suite B202
Brewster, NY 10509
845-278-7710
845-278-7750 - fax

Site Address: Yonkers Armory	Date: 6/6/2023	Inspector: Jason Fullum
2 Quincy Place	Client Project #	
Yonkers, New York 10701	Project #: OGSX:23168.00-IN	

Sample ID #	Homogeneous Area	Floor Level	Sample Location/Description	Quantity (In Feet)	Friable Non Friable	Condition g, d, sd
27	15	2	Rm. 223 - Women locker - Terrazzo Shower Pan		NF	D
28	15	2				D
29	16	2	- Sealant at Shower			D
30	16	2				D
31	17	2	Entrance Doors - Door Glazing Compound		NF	
32	17	2				
33	18	2	- Exterior Sealant			
34	18	2				
35	19	2	Concrete			
36	19	2				
37	20	2	Brick Mortar			
38	20	2				
39	21	2	Exterior Vertical Sealant			
40	21	2				

Special Instructions/ Turnaround Time: 223061619

Stop at 1st Positive per Homogenous Area ***24 HR TAT***
Fax Results to 845-278-7750
E-Mail results to AdelaideLabResults@Adelaidellc.com and Jfullum@adelaidellc.com

Relinquished by:
Received by: Alexandra Vuic 6/7/23 1030
Relinquished by:
Received by:

Adelaide Environmental Health Associates, Inc
1454 Rte. 22, Suite B202
Brewster, NY 10509
845-278-7710
845-278-7750 - fax

Site Address: Yonkers Armory	Date: 6/6/2023	Inspector: Jason Fullum
2 Quincy Place	Client Project #	
Yonkers, New York 10701	Project #: OGSX:23168.00-IN	

Sample ID #	Homogeneous Area	Floor Level	Sample Location/Description	Quantity (In Feet)	Friable Non Friable	Condition g, d, sd
41	22	1	Boiler Room - Pipe Mastic on Duct		NF	D
42	22	1				D
43	23	1	Kitchen - Wall Tile - Grout			
44	23	1				
45	24	1	- Mudset			
46	24	1				
47	25	1	- Floor Tile - Grout			
48	25	1				
49	26	1	- Mudset			
50	26	1				
51	27	1	Exterior - Door Caulk			
52	27	1				
53	28	1	- Louver Caulk			
54	28	1				

Special Instructions/ Turnaround Time: 223061619

Stop at 1st Positive per Homogenous Area ***24 HR TAT***
Fax Results to 845-278-7750
E-Mail results to AdelaideLabResults@Adelaidellc.com and Jfullum@adelaidellc.com

Relinquished by:
Received by: Alexandra Vian 6/23 1030
Relinquished by:
Received by:

APPENDIX E

XRF READINGS

Adelaide Environmental Heath Associates Inc.
1511 Route 22, Suite C-24
Brewster, New York 10509
Adelaide Project# BA:23168.00-IN
Project Name: Yonkers Armory
Inspector: Jason Fullum

Reading #	Date	Time	Space Type	Floor	Room	Component	Side	Substrate	Color	Condition	Lead Concentration (mg/cm2)	Result
1	6/6/2023	9:04:22	Armory		Calibration						0.9	Negative
2	6/6/2023	9:04:34	Armory		Calibration						0.9	Negative
3	6/6/2023	9:04:46	Armory		Calibration						0.9	Negative
4	6/6/2023	9:23:29	Armory	2nd Floor	207	Wall	A	CMU	Beige	Intact	-0.2	Negative
5	6/6/2023	9:24:00	Armory	2nd Floor	207	Door Case	A	Metal	Black	Intact	0.4	Negative
6	6/6/2023	9:24:27	Armory	2nd Floor	207	Door	A	Metal	Red	Intact	0.1	Negative
7	6/6/2023	9:25:07	Armory	2nd Floor	201	Door	A	Metal	Red	Intact	0	Negative
8	6/6/2023	9:25:31	Armory	2nd Floor	201	Door Case	A	Metal	Black	Intact	0.5	Negative
9	6/6/2023	9:25:58	Armory	2nd Floor	201	Wall	B	CMU	Black	Intact	-0.2	Negative
10	6/6/2023	10:29:25	Armory	2nd Floor	Hallway	Wall	B	CMU	Beige	Intact	-0.3	Negative
11	6/6/2023	10:30:21	Armory	2nd Floor	Hallway	Ceiling	Ceiling	Sheetrock	Beige	Intact	0.1	Negative
12	6/6/2023	11:18:54	Armory	2nd Floor	Hallway	Stair Handrail	A	Metal	Red	Intact	0.1	Negative
13	6/6/2023	11:19:20	Armory	2nd Floor	Hallway	Stair Stringer	A	Metal	Red	Intact	0.1	Negative
14	6/6/2023	11:19:35	Armory	2nd Floor	Hallway	Stair Riser	A	Metal	Red	Intact	0.2	Negative
15	6/6/2023	11:21:42	Armory	2nd Floor	Hallway	Ceiling	Ceiling	Sheetrock	Off White	Intact	0.1	Negative
16	6/6/2023	11:28:51	Armory	2nd Floor	Bathroom	Floor	Floor	Concrete	Grey	Intact	0	Negative
17	6/6/2023	11:30:19	Armory	2nd Floor	Bathroom	Floor	Floor	Concrete	Red	Intact	0	Negative
18	6/6/2023	11:30:37	Armory	2nd Floor	Bathroom	Floor	Floor	Concrete	Yellow	Intact	0	Negative
19	6/6/2023	11:31:02	Armory	2nd Floor	Bathroom	Wall	A	CMU	Yellow	Intact	-0.2	Negative
20	6/6/2023	11:31:26	Armory	2nd Floor	Bathroom	Ceiling	Ceiling	Sheetrock	Yellow	Intact	-0.2	Negative
21	6/6/2023	11:41:55	Armory	2nd Floor	223	Wall	D	CMU	Off White	Intact	-0.1	Negative
22	6/6/2023	11:42:25	Armory	2nd Floor	223	Door	A	Metal	Red	Intact	0	Negative
23	6/6/2023	11:42:48	Armory	2nd Floor	223	Door Case	A	Metal	Black	Intact	0.4	Negative
24	6/6/2023	11:43:21	Armory	2nd Floor	223	Floor	Floor	Concrete	Red	Intact	0	Negative
25	6/6/2023	11:43:50	Armory	2nd Floor	223	Wall	B	CMU	Yellow	Intact	-0.3	Negative
26	6/6/2023	11:45:02	Armory	2nd Floor	223	Ceiling	Ceiling	Sheetrock	Yellow	Intact	0	Negative
27	6/6/2023	13:30:04	Armory	1st Floor	Bathroom	Floor	Floor	Concrete	Green	Intact	0.2	Negative
28	6/6/2023	13:30:37	Armory	1st Floor	Bathroom	Wall	A	CMU	Beige	Intact	-0.1	Negative
29	6/6/2023	13:31:07	Armory	1st Floor	Bathroom	Ceiling	Ceiling	Sheetrock	Beige	Intact	-0.2	Negative
30	6/6/2023	13:33:44	Armory	1st Floor	Exterior	roll up door rail	C	Metal	Green	Intact	0	Negative
31	6/6/2023	13:34:32	Armory	1st Floor	Exterior	Door	C	Metal	Green	Intact	0.1	Negative
32	6/6/2023	13:34:50	Armory	1st Floor	Exterior	Exterior Door	C	Metal	Green	Intact	-0.1	Negative
33	6/6/2023	13:35:08	Armory	1st Floor	Exterior	Exterior Door Case	C	Metal	Green	Intact	0.4	Negative
34	6/6/2023	14:01:04	Armory	1st Floor	Exterior	Window Case	B	Metal	Green	Intact	0	Negative
35	6/6/2023	14:05:06	Armory		Calibration						0.9	Negative
36	6/6/2023	14:05:18	Armory		Calibration						1	Positive
37	6/6/2023	14:05:30	Armory		Calibration						1	Positive

APPENDIX F

PCB ANALYTICAL RESULTS

PHOENIX
Environmental Laboratories, Inc.

Thursday, June 15, 2023

Attn: Stephanie Soter
Adelaide Environmental Health Assoc,Inc
1511 Route 22, Suite C24
Brewster, NY 10509

Project ID: YONKERS ARMORY 23168.00
SDG ID: GCO21952
Sample ID#s: CO21952 - CO21957

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200. The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Sincerely yours,

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #M-CT007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B
NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Sample Id Cross Reference

June 15, 2023

SDG I.D.: GCO21952

Project ID: YONKERS ARMORY 23168.00

Client Id	Lab Id	Matrix
PCB1-WOMENS SHOWER	CO21952	BULK
PCB2-GLAZING	CO21953	CAULK
PCB3-EXT. DOOR CAULK	CO21954	CAULK
PCB4-EXT. SEALANT	CO21955	CAULK
PCB5- EXT. DOOR CAULK	CO21956	CAULK
PCB 6-LOUVER CAULK	CO21957	CAULK

PHOENIX

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ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

June 15, 2023

FOR: Attn: Stephanie Soter
Adelaide Environmental Health Assoc,Inc
1511 Route 22, Suite C24
Brewster, NY 10509

Sample Information		Custody Information		Date	Time
Matrix:	BULK	Collected by:		06/06/23	
Location Code:	ADELAIDE	Received by:	MMN	06/07/23	17:16
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCO21952
Phoenix ID: CO21952

Project ID: YONKERS ARMORY 23168.00
Client ID: PCB1-WOMENS SHOWER

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Extraction for PCB	Completed				06/08/23	R/AW/SB/I	SW3540C
PCB (Soxhlet SW3540C)							
PCB-1016	ND	2900	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1221	ND	2900	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1232	ND	2900	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1242	ND	2900	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1248	ND	2900	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1254	ND	2900	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1260	ND	2900	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1262	ND	2900	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1268	ND	2900	ug/Kg	1	06/09/23	SC	SW8082A
QA/QC Surrogates							
% DCBP	55		%	1	06/09/23	SC	30 - 150 %
% DCBP (Confirmation)	40		%	1	06/09/23	SC	30 - 150 %
% TCMX	52		%	1	06/09/23	SC	30 - 150 %
% TCMX (Confirmation)	47		%	1	06/09/23	SC	30 - 150 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level L=Biased Low
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

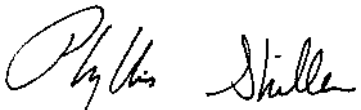
Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

PCB Comment:
Due to limited sample an elevated RL was reported.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

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Phyllis Shiller, Laboratory Director
June 15, 2023
Reviewed and Released by: Rashmi Makol, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH NY #11301

Analysis Report

June 15, 2023

FOR: Attn: Stephanie Soter
Adelaide Environmental Health Assoc,Inc
1511 Route 22, Suite C24
Brewster, NY 10509

Sample Information		Custody Information		Date	Time
Matrix:	CAULK	Collected by:		06/06/23	
Location Code:	ADELAIDE	Received by:	MMN	06/07/23	17:16
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCO21952
Phoenix ID: CO21953

Project ID: YONKERS ARMORY 23168.00
Client ID: PCB2-GLAZING

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Caulk Extraction for PCB	Completed				06/08/23	R/AW/SB/I	SW3540C
PCB (Soxhlet SW3540C)							
PCB-1016	ND	930	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1221	ND	930	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1232	ND	930	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1242	ND	930	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1248	ND	930	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1254	ND	930	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1260	ND	930	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1262	ND	930	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1268	ND	930	ug/Kg	1	06/09/23	SC	SW8082A
QA/QC Surrogates							
% DCBP	54		%	1	06/09/23	SC	30 - 150 %
% DCBP (Confirmation)	52		%	1	06/09/23	SC	30 - 150 %
% TCMX	57		%	1	06/09/23	SC	30 - 150 %
% TCMX (Confirmation)	55		%	1	06/09/23	SC	30 - 150 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level L=Biased Low
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

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Phyllis Shiller, Laboratory Director
June 15, 2023
Reviewed and Released by: Rashmi Makol, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY # 11301

Analysis Report

June 15, 2023

FOR: Attn: Stephanie Soter
Adelaide Environmental Health Assoc,Inc
1511 Route 22, Suite C24
Brewster, NY 10509

Sample Information		Custody Information		Date	Time
Matrix:	CAULK	Collected by:		06/06/23	
Location Code:	ADELAIDE	Received by:	MMN	06/07/23	17:16
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCO21952
Phoenix ID: CO21954

Project ID: YONKERS ARMORY 23168.00
Client ID: PCB3-EXT. DOOR CAULK

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Caulk Extraction for PCB	Completed				06/08/23	R/AW/SB/I	SW3540C
PCB (Soxhlet SW3540C)							
PCB-1016	ND	880	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1221	ND	880	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1232	ND	880	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1242	ND	880	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1248	ND	880	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1254	ND	880	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1260	ND	880	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1262	ND	880	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1268	ND	880	ug/Kg	1	06/09/23	SC	SW8082A
QA/QC Surrogates							
% DCBP	39		%	1	06/09/23	SC	30 - 150 %
% DCBP (Confirmation)	34		%	1	06/09/23	SC	30 - 150 %
% TCMX	31		%	1	06/09/23	SC	30 - 150 %
% TCMX (Confirmation)	31		%	1	06/09/23	SC	30 - 150 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

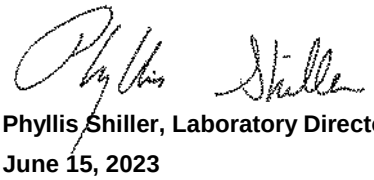
RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level L=Biased Low
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

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Phyllis Shiller, Laboratory Director
June 15, 2023
Reviewed and Released by: Rashmi Makol, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY # 11301

Analysis Report

June 15, 2023

FOR: Attn: Stephanie Soter
Adelaide Environmental Health Assoc,Inc
1511 Route 22, Suite C24
Brewster, NY 10509

Sample Information		Custody Information		Date	Time
Matrix:	CAULK	Collected by:		06/06/23	
Location Code:	ADELAIDE	Received by:	MMN	06/07/23	17:16
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCO21952
Phoenix ID: CO21955

Project ID: YONKERS ARMORY 23168.00
Client ID: PCB4-EXT. SEALANT

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Caulk Extraction for PCB	Completed				06/08/23	R/AW/SB/I	SW3540C
PCB (Soxhlet SW3540C)							
PCB-1016	ND	960	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1221	ND	960	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1232	ND	960	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1242	ND	960	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1248	ND	960	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1254	ND	960	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1260	ND	960	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1262	ND	960	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1268	ND	960	ug/Kg	1	06/09/23	SC	SW8082A
QA/QC Surrogates							
% DCBP	41		%	1	06/09/23	SC	30 - 150 %
% DCBP (Confirmation)	35		%	1	06/09/23	SC	30 - 150 %
% TCMX	36		%	1	06/09/23	SC	30 - 150 %
% TCMX (Confirmation)	36		%	1	06/09/23	SC	30 - 150 %

Project ID: YONKERS ARMORY 23168.00 Phoenix I.D.: CO21955

Client ID: PCB4-EXT. SEALANT

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

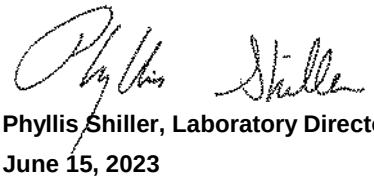
RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level L=Biased Low
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

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Phyllis Shiller, Laboratory Director

June 15, 2023

Reviewed and Released by: Rashmi Makol, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

June 15, 2023

FOR: Attn: Stephanie Soter
Adelaide Environmental Health Assoc,Inc
1511 Route 22, Suite C24
Brewster, NY 10509

Sample Information		Custody Information		Date	Time
Matrix:	CAULK	Collected by:		06/06/23	
Location Code:	ADELAIDE	Received by:	MMN	06/07/23	17:16
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCO21952
Phoenix ID: CO21956

Project ID: YONKERS ARMORY 23168.00
Client ID: PCB5- EXT. DOOR CAULK

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Caulk Extraction for PCB	Completed				06/08/23	R/AW/SB/I	SW3540C
PCB (Soxhlet SW3540C)							
PCB-1016	ND	600	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1221	ND	600	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1232	ND	600	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1242	ND	600	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1248	ND	600	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1254	ND	600	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1260	ND	600	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1262	ND	600	ug/Kg	1	06/09/23	SC	SW8082A
PCB-1268	ND	600	ug/Kg	1	06/09/23	SC	SW8082A
QA/QC Surrogates							
% DCBP	43		%	1	06/09/23	SC	30 - 150 %
% DCBP (Confirmation)	36		%	1	06/09/23	SC	30 - 150 %
% TCMX	39		%	1	06/09/23	SC	30 - 150 %
% TCMX (Confirmation)	38		%	1	06/09/23	SC	30 - 150 %

Project ID: YONKERS ARMORY 23168.00 Phoenix I.D.: CO21956

Client ID: PCB5- EXT. DOOR CAULK

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

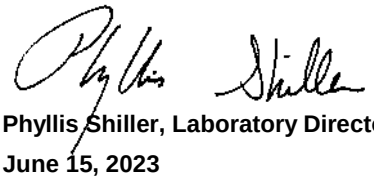
RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level L=Biased Low
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

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Phyllis Shiller, Laboratory Director

June 15, 2023

Reviewed and Released by: Rashmi Makol, Project Manager

PHOENIX

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587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH NY #11301

Analysis Report

June 15, 2023

FOR: Attn: Stephanie Soter
Adelaide Environmental Health Assoc,Inc
1511 Route 22, Suite C24
Brewster, NY 10509

Sample Information		Custody Information		Date	Time
Matrix:	CAULK	Collected by:		06/06/23	
Location Code:	ADELAIDE	Received by:	MMN	06/07/23	17:16
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCO21952
Phoenix ID: CO21957

Project ID: YONKERS ARMORY 23168.00
Client ID: PCB 6-LOUVER CAULK

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference	
Caulk Extraction for PCB	Completed				06/12/23	Q/AC1	SW3540C	
PCB (Soxhlet SW3540C)								
PCB-1016	ND	940	ug/Kg	1	06/13/23	SC	SW8082A	
PCB-1221	ND	940	ug/Kg	1	06/13/23	SC	SW8082A	
PCB-1232	ND	940	ug/Kg	1	06/13/23	SC	SW8082A	
PCB-1242	ND	940	ug/Kg	1	06/13/23	SC	SW8082A	
PCB-1248	ND	940	ug/Kg	1	06/13/23	SC	SW8082A	
PCB-1254	ND	940	ug/Kg	1	06/13/23	SC	SW8082A	
PCB-1260	ND	940	ug/Kg	1	06/13/23	SC	SW8082A	
PCB-1262	ND	940	ug/Kg	1	06/13/23	SC	SW8082A	
PCB-1268	ND	940	ug/Kg	1	06/13/23	SC	SW8082A	
QA/QC Surrogates								
% DCBP	17		%	1	06/13/23	SC	30 - 150 %	3
% DCBP (Confirmation)	17		%	1	06/13/23	SC	30 - 150 %	3
% TCMX	17		%	1	06/13/23	SC	30 - 150 %	3
% TCMX (Confirmation)	17		%	1	06/13/23	SC	30 - 150 %	3

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

3 = This parameter exceeds laboratory specified limits.

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level L=Biased Low
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

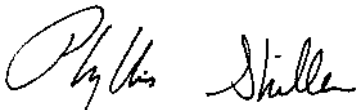
Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

PCB Comment:
Poor surrogate recovery was observed for PCBs. Sample was re-extracted with similar results.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

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Phyllis Shiller, Laboratory Director
June 15, 2023
Reviewed and Released by: Rashmi Makol, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102

NY # 11301

QA/QC Report

June 15, 2023

QA/QC Data

SDG I.D.: GCO21952

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 681421 (ug/Kg), QC Sample No: CO21956 10X (CO21952, CO21953, CO21954, CO21955, CO21956)										
Polychlorinated Biphenyls - Bulk										
PCB-1016	ND	170	99	91	8.4				40 - 140	30
PCB-1221	ND	170							40 - 140	30
PCB-1232	ND	170							40 - 140	30
PCB-1242	ND	170							40 - 140	30
PCB-1248	ND	170							40 - 140	30
PCB-1254	ND	170							40 - 140	30
PCB-1260	ND	170	106	107	0.9				40 - 140	30
PCB-1262	ND	170							40 - 140	30
PCB-1268	ND	170							40 - 140	30
% DCBP (Surrogate Rec)	107	%	111	106	4.6				30 - 150	30
% DCBP (Surrogate Rec) (Confirm	102	%	101	102	1.0				30 - 150	30
% TCMX (Surrogate Rec)	89	%	95	87	8.8				30 - 150	30
% TCMX (Surrogate Rec) (Confirm	82	%	89	82	8.2				30 - 150	30
Comment:										
A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.										
QA/QC Batch 681903 (ug/Kg), QC Sample No: CO21957 10X (CO21957)										
Polychlorinated Biphenyls										
PCB-1016	ND	170	101	105	3.9				40 - 140	30
PCB-1221	ND	170							40 - 140	30
PCB-1232	ND	170							40 - 140	30
PCB-1242	ND	170							40 - 140	30
PCB-1248	ND	170							40 - 140	30
PCB-1254	ND	170							40 - 140	30
PCB-1260	ND	170	115	121	5.1				40 - 140	30
PCB-1262	ND	170							40 - 140	30
PCB-1268	ND	170							40 - 140	30
% DCBP (Surrogate Rec)	104	%	100	109	8.6				30 - 150	30
% DCBP (Surrogate Rec) (Confirm	109	%	103	111	7.5				30 - 150	30
% TCMX (Surrogate Rec)	99	%	95	103	8.1				30 - 150	30
% TCMX (Surrogate Rec) (Confirm	98	%	95	102	7.1				30 - 150	30
Comment:										
A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.										

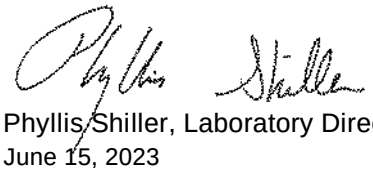
QA/QC Data

SDG I.D.: GCO21952

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference



Phyllis Shiller, Laboratory Director
June 15, 2023

Thursday, June 15, 2023

Criteria: None

State: NY

Sample Criteria Exceedances Report

GCO21952 - ADELAIDE

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
CO21952	$PCB_SOXR	PCB-1268	NY / Requested PCB RL /	ND	2900	1000	1000	ug/Kg
CO21952	$PCB_SOXR	PCB-1262	NY / Requested PCB RL /	ND	2900	1000	1000	ug/Kg
CO21952	$PCB_SOXR	PCB-1260	NY / Requested PCB RL /	ND	2900	1000	1000	ug/Kg
CO21952	$PCB_SOXR	PCB-1254	NY / Requested PCB RL /	ND	2900	1000	1000	ug/Kg
CO21952	$PCB_SOXR	PCB-1248	NY / Requested PCB RL /	ND	2900	1000	1000	ug/Kg
CO21952	$PCB_SOXR	PCB-1242	NY / Requested PCB RL /	ND	2900	1000	1000	ug/Kg
CO21952	$PCB_SOXR	PCB-1232	NY / Requested PCB RL /	ND	2900	1000	1000	ug/Kg
CO21952	$PCB_SOXR	PCB-1221	NY / Requested PCB RL /	ND	2900	1000	1000	ug/Kg
CO21952	$PCB_SOXR	PCB-1016	NY / Requested PCB RL /	ND	2900	1000	1000	ug/Kg

Phoenix Laboratories does not assume responsibility for the data contained in this exceedance report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY # 11301

Analysis Comments

June 15, 2023 SDG I.D.: GCO21952

The following analysis comments are made regarding exceptions to criteria not already noted in the Analysis Report or QA/QC Report:

PCB Narration

AU-ECD5 06/13/23-1: CO21957

The following Continuing Calibration compounds did not meet % deviation criteria:
Samples: CO21957
Preceding CC 613B016 - None.
Succeeding CC 613B029 - DCBP SURR 23%L (15%)

Environmental Laboratories, Inc.
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ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

NY Temperature Narration

June 15, 2023

SDG I.D.: GCO21952

The samples in this delivery group were received at 1.1°C.
(Note acceptance criteria for relevant matrices is above freezing up to 6°C)

Cooler: Yes ☐ No ☐
Coolant: IPK ☐ ICE ☐ No ☐
Temp ____ °C Pg ____ of ____

NY/NJ/PA CHAIN OF CUSTODY RECORD

PHOENIX Environmental Laboratories, Inc.

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: Makrina Nolan, makrina@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-1102

Contact Options:
☐ Phone:
☐ Fax:
☐ Email:

Customer: Adelaide
Address: 1511 Rte 22, Ste C24
Somerset, NJ 10505

Project: Yankee Armory 23168.00
Report to:
Invoice to:
QUOTE # :

Project P.O:

This section MUST be completed with Bottle Quantities.

Sampler's Signature: _____ Date: 6/6/23

Client Sample - Information / Identification

Matrix Code:
DW=Drinking Water GW=Ground Water SW=Surface Water WW=Waste Water
RW=Raw Water SE=Sediment SL=Sludge S=Soil SD=Solid W=Wipe
OIL=Oil B=Bulk L=Liquid

Analysis Request

PHOENIX USE ONLY SAMPLE #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	*MS/MSD (May be billable at analysis unit rate)	PCB's	BAS	GL Amber 8 oz. [ ] wt H_3PO_4 [ ] $NaHSO_4$	Soil VOA Vials [ ] methanol [ ] H_2O	GL Soil container ( ) oz	40 ml VOA Vial [ ] As is [ ] HCl	GL Amber 1000ml [ ] As is [ ] H_2SO_4	PL As is [ ] 250ml [ ] 500ml [ ] 1000ml	PL H_2SO_4 [ ] 250ml [ ] 500ml [ ] 1000ml	PL NaOH 250ml	PL HNO_3 250ml	Bacteria Bottle w/thio	Bacteria Bottle as is
21952	PCB1-Women Shower		6/6/23			X	1											
21953	PCB2-Glazing Compd		6/6/23			X	1											
21954	PCB3-Ext. Door Caulk		6/6/23			X	1											
21955	PCB4-Ext. Vert. Sealant		6/6/23			X	1											
21956	PCB5-Ext. Door Caulk		6/6/23			X	1											
21957	PCB6-Louver Caulk		6/6/23			X	1											

Relinquished by:	Accepted by:	Date:	Time:
		6.7.23	1000
		6-7-23	15:45
		6/7/23	17:16

Turnaround:
☐ 1 Day*
☐ 2 Days*
☐ 3 Days*
☐ 4 Days*
☐ 5 Days*
☐ Standard
* SURCHARGE APPLIES
7 DAYS

NJ
☐ Res. Criteria
☐ Non-Res. Criteria
☐ Impact to GW Soil Cleanup Criteria
☐ Impact to GW soil screen Criteria
☐ GW Criteria

NY
☐ TOGS GW
☐ CP-51 SOIL
☐ 375SCO Unrestricted Soil
☐ 375SCO Residential Soil
☐ 375SCO Residential Restricted Soil
☐ 375SCO Commercial Soil
☐ 375SCO Industrial Soil
☐ Subpart 5 DW

PA
☐ Clean Fill Limits
☐ PA-GW
☐ Reg Fill Limits
☐ PA Soil Restricted
☐ PA Soil non-restricted

State Samples Collected?
NY

Data Package:
☐ NJ Reduced Deliv. *
☐ NY Enhanced (ASP B) *
☐ Other

Comments, Special Requirements or Regulations:

Data Format:
☐ Phoenix Std Report ☐ EQuIS
☐ Excel ☐ NJ Hazsite EDD
☐ PDF ☐ NY EZ EDD (ASP)
☐ GIS/Key ☐ Other

*MS/MSD are considered site samples and will be billed as such in accordance with the prices quoted.

APPENDIX G

PERSONNEL AND LABORATORY CERTIFICATIONS

WE ARE YOUR DOL

NEW YORK STATE | Department of Labor

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

ASBESTOS HANDLING LICENSE

Adelaide Environmental Health Associates, Inc.
1511 Route 22, Suite C24, Brewster, NY, 10509

License Number: 29305
License Class: RESTRICTED
Date of Issue: 06/07/2023
Expiration Date: 07/31/2024
Duly Authorized Representative: John Soter

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.

Amy Phillips, Director
For the Commissioner of Labor

United States Environmental Protection Agency

This is to certify that

ADELAIDE ENVIRONMENTAL HEALTH ASSOCIATES INC

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

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 September 08, 2025

LBP-15081-2

Certification #

August 25, 2022

Issued On

Michelle Price, Chief

Lead, Heavy Metals, and Inorganics Branch

United States Environmental Protection Agency

This is to certify that

Adelaide Environmental Health Associates, Inc

has fulfilled the requirements of the Toxic Substances Control Act (TSCA) Section 402, and has received certification to conduct lead-based paint renovation, repair, and painting activities pursuant to 40 CFR Part 745.89

In the Jurisdiction of:

All EPA Administered States, Tribes, and Territories

This certification is valid from the date of issuance and expires December 05, 2027

NAT-15081-3

Certification #

August 03, 2022

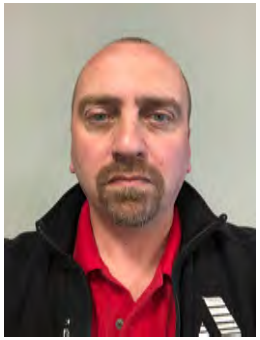
Issued On

Michelle Price, Chief

Lead, Heavy Metals, and Inorganics Branch

United States Environmental Protection Agency

This is to certify that



Jason P Fullum

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:

Risk Assessor

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 July 11, 2023

LBP-R-12098-2

Certification #

May 07, 2020

Issued On

Susan Schulz, Acting Chief

Chemicals and Multimedia Programs Branch

STATE OF NEW YORK - DEPARTMENT OF LABOR
ASBESTOS CERTIFICATE

N.Y.S



JASON P FULLUM
CLASS(EXPIRES)
C ATEC(02/24) D INSP(02/24)
E MGPL(02/24) H PM (02/24)
I PD (02/24)

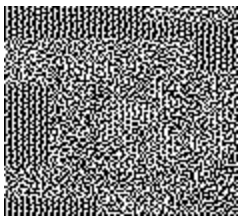
CERT# 97-20574
DMV# 375065936

MUST BE CARRIED ON ASBESTOS PROJECTS

EYES BLU
HAIR BRO
HGT 5' 11"

IF FOUND RETURN TO:
NYSDOL - L&C UNIT
ROOM 161A BUILDING 12
STATE OFFICE CAMPUS
ALBANY NY 12240

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER



Expires 12:01 AM April 01, 2024
Issued April 01, 2022
Revised March 30, 2023

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MS. KAROL H. LU
AMERICA SCIENCE TEAM NEW YORK, INC
117 EAST 30TH ST
NEW YORK, NY 10016

NY Lab Id No: 11480

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



Serial No.: 66402

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, 2024
Issued April 01, 2022
Revised March 30, 2023

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MS. PHYLLIS SHILLER
PHOENIX ENVIRONMENTAL LABS
587 EAST MIDDLE TURNPIKE
MANCHESTER, CT 06040

NY Lab Id No: 11301

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:

Polychlorinated Biphenyls

Aroclor 1262 (PCB-1262)	EPA 8082A
Aroclor 1262 (PCB-1262) in Oil	EPA 8082A
Aroclor 1268 (PCB-1268)	EPA 8082A
Aroclor 1268 (PCB-1268) in Oil	EPA 8082A
PCB 101	EPA 8082A
PCB 105	EPA 8082A
PCB 118	EPA 8082A
PCB 128	EPA 8082A
PCB 138	EPA 8082A
PCB 153	EPA 8082A
PCB 170	EPA 8082A
PCB 18	EPA 8082A
PCB 180	EPA 8082A
PCB 183	EPA 8082A
PCB 184	EPA 8082A
PCB 187	EPA 8082A
PCB 195	EPA 8082A
PCB 206	EPA 8082A
PCB 209	EPA 8082A
PCB 28	EPA 8082A
PCB 44	EPA 8082A
PCB 49	EPA 8082A
PCB 52	EPA 8082A
PCB 66	EPA 8082A
PCB 8	EPA 8082A
PCB 87	EPA 8082A
PCB Congeners, Total	EPA 8082A

Serial No.: 66336

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, 2024
Issued April 01, 2022
Revised March 30, 2023

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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MS. PHYLLIS SHILLER
PHOENIX ENVIRONMENTAL LABS
587 EAST MIDDLE TURNPIKE
MANCHESTER, CT 06040

NY Lab Id No: 11301

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

Acrylates	
Acrylonitrile	EPA TO-15
Methyl methacrylate	EPA TO-15
Chlorinated Hydrocarbons	
1,2,4-Trichlorobenzene	EPA TO-15
Hexachlorobutadiene	EPA TO-15
Hexachloroethane	EPA TO-15
Metals I	
Lead, Total	EPA 29 (6010)
	EPA 7010
Polychlorinated Biphenyls	
PCBs and Aroclors	EPA TO-10A
Polynuclear Aromatics	
Naphthalene	EPA TO-15
Purgeable Aromatics	
1,2,4-Trimethylbenzene	EPA TO-15
1,2-Dichlorobenzene	EPA TO-15
1,3,5-Trimethylbenzene	EPA TO-15
1,3-Dichlorobenzene	EPA TO-15
1,4-Dichlorobenzene	EPA TO-15
2-Chlorotoluene	EPA TO-15
Benzene	EPA TO-15
Chlorobenzene	EPA TO-15
Ethyl benzene	EPA TO-15
Isopropylbenzene	EPA TO-15
m/p-Xylenes	EPA TO-15

Serial No.: 66338

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.

SAMPLE FIRESTOP SCHEDULE

Project No:	Contractor Name and Address:	Date Submitted:
Project Title:	Supplier/Installer Name and Address:	Company Field Advisor Name and Address:
	Manufacturer Name and Address:	

Method of Protection for through-penetration in fire-resistance rated construction.

Manufacturer's Product Reference Numbers and/or Drawing Numbers	U.L., FM, Wamock Hersey or Omega Point Lab Penetration Design Nos.	Penetrating Item Description: Material, Size, Insulated, Combustible	Maximum Allowable Annular Space or Maximum Size Opening	Wall type Construction		Floor Type Construction	Fire Resistance Rating of Wall or Floor (Hourly)	F Rating	T Rating (floors Only)
				DES.	CONST.				
Example No. 1 DCFSS-130	UL #130	Maximum 4" Steel Pipe Non-Insulated		P4	6" CMU	N.A.	1 Hour	1 Hour	N.A.
Example No. 2 5300-ICF88.01	UL #591	Maximum 4" PVC Pipe		N.A.	N.A.	UL # D916	3 Hour	1 Hour	2 Hour

NEW YORK STATE OF OPPORTUNITY. Office of General Services

Design and Construction
Division of Construction, 35th Floor, Corning Tower
The Governor Nelson A. Rockefeller Empire State Plaza
Albany, New York 12242
Phone: (518) 474-0331 FAX: (518) 474-8201

SCHEDULE OF SUBMITTALS

PROJECT NO.: 47477-C

FACILITY: YONKERS STATE ARMORY

CONTRACTOR:

PROJECT MANAGER: KELLY PERIARD

DESIGN CONSULTANT: BELL & SPINA ARCHITECTS-ENGINEERS, PC

ENGINEER-IN-CHARGE:

LEGEND

PACK: SUBMITTAL PACKAGE

SD: SHOP DRAWINGS

PD: PRODUCT DATA

EPD: ENVIRONMENTAL PRODUCT DECLARATION

SAM: SAMPLES

QCS: QUALITY CONTROL SUBMITTALS

LEED: LEED SUBMITTALS

CCS: CONTRACT CLOSEOUT SUBMITTALS

SUBMITTAL REVIEW RESPONSIBILITY:
F: OGS FIELD OFFICE
F/O: OGS FIELD OFFICE / OFFICE (ALBANY)
D: CONSULTANT / DESIGNER
S: OGS SCHEDULING DEPARTMENT
RSM: Regional Safety Manager

INSTRUCTIONS TO THE CONTRACTOR

1. Refer to **Section 013300 Submittals** of the Project Manual for general requirements regarding submittals and to **Section 017716 - CONTRACT CLOSEOUT** for project closeout submittals.
2. Refer to Sections of the specifications indicated herein for details of the requirements for each submittal listed.
3. Indicate in the rows (spaces) following each item:
a. Critical submittals and long lead items (mark with an 'X'). Some critical submittals may already be identified by the design team. Confirm that these are critical submittals.
b. The date the item will be submitted, and date approval is required (allow at least 3 weeks), and the date delivery of the material or equipment is necessary for completion of the work in accordance with the Progress Schedule. The date entered for the submittal is the last date a substitution will be considered. Proposed substitutions must be made prior to the date entered if more than one substitution is to be submitted for approval. Spaces which contain N/A do not require dates.
4. An example of a Submittal Transmittal (BDC-42) can be located at: http://www.ogs.ny.gov/BU/DC/forms/ContractorConstForms.asp
5. Submit Contract Closeout Submittals (CCS) prior to final inspection.

INSTRUCTIONS TO THE CONSULTANT / DESIGNER

1. Cut and paste required information from each Division (Div.X) tab and place in the S.O.S. tab.
2. Delete Division (Div.X) tabs after the S.O.S. tab has been in-filled.
3. Indicate F, F/O or D in column E. Items in Div.1 have defaults that can be modified as necessary.
4. Indicate items that are critical submittals in column F.
Note:
The following list of submittals is furnished for your convenience in scheduling submittals. The list is not warranted to be complete and does not take precedence over the contract documents. Enter additional submittals, as required and modify this schedule to the specific project. This S.O.S. will be used to populate the submittals website log.

NEW YORK STATE OF OPPORTUNITY. Office of General Services

Design and Constr
Division of Construction, 34th Floor, Corni
The Governor Nelson A. Rockefeller Empire St
Albany, New Yo
Phone: (518) 474-0331 FAX: (518)

SCHEDULE OF SUBMITTALS

PROJECT NO.: 47477-C

SUBMITTALS FOR APPROVAL				Send to:	Critical Submittals	Contractor's Project Allow at least 4 weeks fo (allows time for any resu	
Spec Section	Sub Section	Type	Description	F F/O D S	Mark "X" for all that apply	Projected Transmittal Date:	Projected Approval Date:
007213			**GENERAL CONDITIONS**				
007213	**6.1**	**PD**	ARTICLE 6: Designate in writing competent supervision and/or management representatives as required - include contact number in case of an emergency after work hours, including weekends and holidays (see 011000 Summary of Work)	F			
007213	**8.1**	**PD**	ARTICLE 8: Permits and licenses	F			
011100			**SAFETY**				
011100	**1.4 A**	**QCS**	Site Specific Safety Plan	RSM			
011100	**1.4 B**	**QCS**	Employee Safety Orientation Training and Documentation	D/F			
013300			**SUBMITTALS**				
013300	**1.6**	**PD**	Schedule of Submittals Acknowledgement	F	X		
014339			**MOCKUP REQUIREMENTS**				
014339	**1.2**	**SD**	Mockup Plan: Copy of proposed plan	F			
017329			**REMOVALS, CUTTING AND PATCHING**				
017329	**1.6 A**	**QCS**	Qualification Data: Professional Engineer.	F			
017329	**1.6 B**	**QCS**	Schedule of Selective Demolition Actiities	F			
017329	**1.6 C**	**QCS**	Predemolition Photographs or Video	F			
017716			**CONTRACT CLOSEOUT**				
017716	**1.4**	**CCS**	Project Record Documents	F			
017716	**1.5**	**CCS**	Operation and Maintenance	F			
017716	**1.6**	**CCS**	Warranties	F			
017716	**1.7**	**CCS**	Spare Parts and Maintenance Materials	F			
017900			**VIDEO TRAINING PROGRAMS**				
017900	**1.3 A**	**CCS**	Instruction Program	F			
017900	**1.3 B**	**CCS**	Documentation: Attendance Roster, Evaluations	F			
				F			
024115			**SITE DEMOLITION**				
024115	**1.2 G**	**PD**	Pre-demolition Photographs or Video	D			
024115	**1.2 D 1**	**QCS**	Permits	D			
024115	**1.2 D 2**	**QCS**	Demolition Plan	D			
024115	**1.2 E**	**QCS**	Proposed Protection Measures	D			
024115	**1.2 F**	**QCS**	Schedule of Site Demolition Activities	D/F			
028213			**ASBESTOS ABATEMENT**				
028213	**2.1**	**PD**	Disposal Bags	D			

SCHEDULE OF SUBMITTALS

PROJECT NO.: 47477-C

SUBMITTALS FOR APPROVAL				Send to:	Critical Submittals	Contractor's Project Allow at least 4 weeks fo (allows time for any resu	
Spec Section	Sub Section	Type	Description	F F/O D S	Mark "X" for all that apply	Projected Transmittal Date:	Projected Approval Date:
028213	**2.3**	**PD**	Glove Bags	D			
028213	**2.4**	**PD**	Negative Air Pressure Units	D			
028213	**2.5**	**PD**	Plastic Sheets	D			
028213	**2.6**	**PD**	Respirators	D			
028213	**2.7**	**PD**	Vacuum Cleaners	D			
028213	**1.7 E 1**	**QCS**	Asbestos Site Specific Variance Submittals; if a site specific variance is sought submit the following: One copy of the completed DOSH-751 and DOSH-465 forms	D			
028213	**1.7 E 2**	**QCS**	Asbestos Site Specific Variance Submittals; if a site specific variance is sought submit the following: One copy of the New York State Department of Labor site specific variance decision.	D			
028213	**1.7 F 1**	**QCS**	Notification Compliance Data	D			
028213	**1.7 F 2**	**QCS**	Asbestos Removal Company Data	D			
028213	**1.7 F 3**	**QCS**	Asbestos Worker Certification Data	D			
028213	**1.7 F 4**	**QCS**	Work Plan	D/F			
028213	**1.7 F 5**	**QCS**	Waste Transporter Permit	D			
028213	**1.7 F 6**	**QCS**	NYS Part 360 Landfill Permit	D			
028213	**1.7 F 7**	**QCS**	Negative Air Pressure Equipment	D			
028213	**1.7 G**	**QCS**	Asbestos Work Closeout Submittals (waste shipment records and disposal site receipts).	F			
028213	**1.7 H 1**	**CCS**	Daily Log	F			
028213	**1.7 H 2**	**CCS**	Personal Air Monitoring Data	F			
028304			**HANDLING OF LEAD CONTAINING MATERIALS**				
028304	**1.6 D 1**	**QCS**	Lead Handling Worker's Qualifications Data	D			
028304	**1.6 D 2**	**QCS**	Lead Handling Detailed Work Plan	D			
028304	**1.6 D 3**	**QCS**	Lead Handling Waste Transporter Permit	D			
028304	**1.6 E**	**QCS**	Operation and Maintenance Data	D/F			
028304	**1.6 F 1**	**CCS**	Assessment Report compiled by a testing lab	D/F			
028304	**1.6 F 2**	**CCS**	Disposal Site Receipts	D/F			
031000			**CONCRETE FORMING AND ACCESSORIES**				
031000	**1.5 E**	**SD**	Exposed vertical concrete walls	D			
031000	**1.5 D 1**	**PD**	Exposed Surface Form-Facing Material	D			
031000	**1.5 D 2**	**PD**	Concealed Surface Form-Facing Material	D			
031000	**1.5 D 3**	**PD**	Pan-Type Forms	D			
031000	**1.5 D 4**	**PD**	Form Ties	D			
031000	**1.5 D 5**	**PD**	Waterstops	D			
031000	**1.5 D 6**	**PD**	Form-Release Agent	D			
031000	**1.5 F 1**	**SAM**	Waterstops	D			
031000	**1.5 F 2**	**SAM**	Form Liners	D			
031000	**1.5 G**	**QCS**	Qualification Data: For testing and inspection agency.	D			
031000	**1.5 H**	**QCS**	Research Reports: For insulating concrete forms indicating compliance with International Code Council Acceptance Criteria AC353	D			
031000	**1.5 I**	**QCS**	Field quality-control reports	D/F			

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031000	**1.5 J**	**QCS**	Minutes of preinstallation conference	D/F			
032000			**CONCRETE REINFORCING**				
032000	**1.4 F**	**SD**	Placing drawings that comply with ACI SP-066	D			
032000	**1.4 D 1**	**PD**	Each type of steel reinforcement	D			
032000	**1.4 D 2**	**PD**	Epoxy repair coating	D			
032000	**1.4 D 3**	**PD**	Zinc repair material	D			
032000	**1.4 D 4**	**PD**	Bar supports	D			
032000	**1.4 F**	**SD**	Placing drawings that comply with ACI SP-066	D			
032000	**1.4 G**	**SD**	Construction Joint Layout	D			
032000	**1.4 H**	**SD**	Delegated-Design Submittal	D			
032000	**1.4 E**	**EPD**	Environmental Product Declaration	D			
032000	**1.4 I**	**QCS**	Welding Certificates	D			
032000	**1.4 J**	**QCS**	Material Certificates	D			
032000	**1.4 K**	**QCS**	Material Test Reports	D			
032000	**1.4 L**	**QCS**	Field Quality-Control Reports	D/F			
032000	**1.4 M**	**QCS**	Minutes of Preinstallation Conference	D/F			
033000			**CAST-IN-PLACE CONCRETE**				
033000	**1.4 E 1**	**PD**	Mix Design	D			
033000	**1.4 E 2**	**PD**	Portland Cement	**D**			
033000	**1.4 E 3**	**PD**	Fly Ash	**D**			
033000	**1.4 E 4**	**PD**	Slag Cement	D			
033000	**1.4 E 5**	**PD**	Silica Fume	D			
033000	**1.4 E 6**	**PD**	Performance-based hydraulic cement	D			
033000	**1.4 E 7**	**PD**	Aggregates	D			
033000	**1.4 E 8**	**PD**	Admixtures	D			
033000	**1.4 E 9**	**PD**	Vapor Retarders	D			
033000	**1.4 E 10**	**PD**	Curing Materials	D			
033000	**1.4 E 11**	**PD**	Joint Fillers	D			
033000	**1.4 E 12**	**PD**	Repair Materials	D			
033000	**1.4 F**	**EPD**	Environmental Product Declaration	D			
033000	**1.4 G**	**PD**	Design Mixtures	D			
033000	**1.4 H 1**	**SD**	Construction Joint Layout	D			
033000	**1.4 I**	**QCS**	Concrete Schedule	D			
033000	**1.4 J**	**QCS**	Qualification Data	D			
033000	**1.4 K**	**QCS**	Material Certificates	D			
033000	**1.4 L**	**QCS**	Material Test Reports	**D**			
033000	**1.4 M**	**QCS**	Research Reports	**D**			
033000	**1.4 N**	**QCS**	Preconstruction test reports	**D**			
033000	**1.4 O**	**QCS**	Field quality-control reports	**D/F**			
033000	**1.4 P**	**QCS**	Minutes of preinstallation conference	**D/F**			
040110			**MASONRY CLEANING**				
040110	**2.1**	**PD**	Cleaning Materials	D			
040110	**2.2**	**PD**	Accessory Materials	D			
040110	**2.3**	**PD**	Chemical Cleaning Solutions	D			
040110	**1.6 E**	**QCS**	Qualification Data: For chemical-cleaner manufacturer.	D			

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040110	**1.6 F**	**QCS**	Cleaning Program	D/F			
040120-63			**BRICK MASONRY REPAIR**				
040120-63	**2.2**	**PD**	Masonry Materials	D			
040120-63	**2.3**	**PD**	Mortar Materials	D			
040120-63	**2.4**	**PD**	Manufactured Repair Materials	D			
040120-63	**2.5**	**PD**	Accessory Materials	D			
040120-63	**2.6**	**PD**	Mortar Mixes	D			
040120-63	**1.6 E 1**	**SAM**	Sand Types Used for Mortar	D			
040120-63	**1.6 E 2**	**SAM**	Patching Compound	D			
040120-63	**1.6 E 3**	**SAM**	Include similar Samples of accessories involving color selection.	D			
040120-63	**1.6 F 1**	**SAM**	Verification - Each type of brick unit to be used for replacing existing units	D			
040120-63	**1.6 F 2**	**SAM**	Verification - Each type of patching compound in the form of briquettes, at least 3 inches long by 1-1/2 inches wide	D			
040120-63	**1.6 F 3**	**SAM**	Verification - Accessories: Each type of accessory and miscellaneous support.	D			
040120-63	**1.7 A**	**QCS**	Qualification Data	D			
042000			**UNIT MASONRY**				
042000	**1.5 E 1**	**SD**	Masonry Units	D			
042000	**1.5 E 2**	**SD**	Reinforcing Steel	D			
042000	**1.5 E 3**	**SD**	Fabricated Flashing	D			
042000	**2.3**	**PD**	Unit Masonry, General	D			
042000	**2.4**	**PD**	Concrete Masonry Units	D			
042000	**2.5**	**PD**	Masonry Lintels	D			
042000	**2.6**	**PD**	Brick	D			
042000	**2.7**	**PD**	Mortar and Grout Materials	D			
042000	**2.8**	**PD**	Reinforcement	D			
042000	**2.9**	**PD**	Ties and Anchors	D			
042000	**2.10**	**PD**	Embedded Flashing Materials	D			
042000	**2.11**	**PD**	Post Installed Anchors	D			
042000	**2.12**	**PD**	Miscellaneous Masonry Accessories	D			
042000	**2.13**	**PD**	Masonry-Cell Fill	D			
042000	**2.14**	**PD**	Masonry Cleaners	D			
042000	**2.15**	**PD**	Mortar and Grout Mixes	D			
042000	**1.5 F 1**	**SAM**	Weep Holes/Cavity Vents	D			
042000	**1.5 G 1**	**SAM**	Verification - Weep Holes	D			
042000	**1.5 G 2**	**SAM**	Verification - Accessories Embedded in Masonry	D			
042000	**1.5 H**	**QCS**	Qualification Data: For testing agency.	D			
042000	**1.5 I 1**	**QCS**	Material Certificates - Masonry Units	D			
042000	**1.5 I 2**	**QCS**	Material Certificates - Integral Water Repellant used in CMUSs.	D			
042000	**1.5 I 3**	**QCS**	Material Certificates - Cementitious Materials	D			
042000	**1.5 I 4**	**QCS**	Material Certificates - Mortar Admixtures	D			
042000	**1.5 I 5**	**QCS**	Material Certificates - Preblended, dry mortar mixes	D			
042000	**1.5 I 6**	**QCS**	Material Certificates - Grout Mixes	D			

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042000	**1.5 I 7**	**QCS**	Material Certificates - Reinforcing Bars	D			
042000	**1.5 I 8**	**QCS**	Material Certificates - Joint Reinforcement	D			
042000	**1.5 I 9**	**QCS**	Material Certificates - Anchors, Ties and Metal Accessories	D			
042000	**1.5 J**	**QCS**	Mix Designs: For each type of mortar and grout.	D			
042000	**1.5 K**	**QCS**	Statement of Compressive Strength of Masonry	D			
042000	**1.5 L**	**QCS**	Cold Weather and Hot Weather Procedures	D			
051200			**STRUCTURAL STEEL FRAMING**				
051200	**1.6 G**	**SD**	Full detailed drawings of structural-steel components.	D			
051200	**1.6 E 1**	**PD**	Structural-Steel Materials	D			
051200	**1.6 E 2**	**PD**	High-Strength, Bolt-Nut Washer Assemblies	D			
051200	**1.6 E 3**	**PD**	Shear Stud Connectors	D			
051200	**1.6 E 4**	**PD**	Anchor Rods	D			
051200	**1.6 E 5**	**PD**	Threaded Rods	D			
051200	**1.6 E 6**	**PD**	Forged-steel Hardware	D			
051200	**1.6 E 7**	**PD**	Slide Bearings	D			
051200	**1.6 E 8**	**PD**	Prefabricated Building Columns	D			
051200	**1.6 E 9**	**PD**	Shop Primer	D			
051200	**1.6 E 10**	**PD**	Galvanized-steel Primer	D			
051200	**1.6 E 11**	**PD**	Etching Cleaner	D			
051200	**1.6 E 12**	**PD**	Galvanized Repair Paint	D			
051200	**1.6 E 13**	**PD**	Shrinkage-resistant Grout	D			
051200	**1.6 F**	**EPD**	Environmental Product Declaration	D			
051200	**1.6 H**	**QCS**	Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs)	D			
051200	**1.6 I**	**QCS**	Material Data	D			
051200	**1.6 J**	**QCS**	Delegated-Design Submittal	D			
051200	**1.6 K**	**QCS**	Qualification Data	D			
051200	**1.6 L**	**QCS**	Welding Certificates	D			
051200	**1.6 M**	**QCS**	Paint Compatibility Certificates	D			
051200	**1.6 N**	**QCS**	Mill Test Reports for Structural-Steel Materials, including chemical and physical properties.	D			
051200	**1.6 O 1**	**QCS**	Product Test Reports - Bolts, nuts, and washers, including mechanical properties and chemical analysis.	D			
051200	**1.6 O 2**	**QCS**	Product Test Reports - Direct-tension indicators.	D			
051200	**1.6 O 3**	**QCS**	Product Test Reports - Tension-control, high-strength, bolt-nut-washer assemblies.	D			
051200	**1.6 O 4**	**QCS**	Product Test Reports - Shear stud connectors.	D			
051200	**1.6 P**	**QCS**	Survey of Existing Conditions	D/F			
051200	**1.6 Q**	**QCS**	Source Quality-Control Reports	D/F			
051200	**1.6 R**	**QCS**	Field Quality-Control Reports	K			
053100			**STEEL DECKING**				
053100	**1.3 G**	**SD**	Include layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.	D			

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053100	**1.3 E 1**	**PD**	Roof Deck	D			
053100	**1.3 E 2**	**PD**	Composite Floor Deck	D			
053100	**1.3 E 3**	**PD**	Noncomposite Form Deck	D			
053100	**1.3 F**	**EPD**	Environmental Product Declaration	D			
053100	**1.3 H**	**QCS**	Welding Certificates	D			
053100	**1.3 I**	**QCS**	Product Certificates: For each type of steel deck	D			
053100	**1.3 J 1**	**QCS**	Product Test Reports - Power-Actuated Mechanical Fasteners	D			
053100	**1.3 J 2**	**QCS**	Product Test Reports - Screw Fasteners	D			
053100	**1.3 K**	**QCS**	Research Reports: For steel deck, from UNIFORM CODE-ES.	D			
053100	**1.3 L**	**QCS**	Source Quality-Control Reports	D			
053100	**1.3 M**	**QCS**	Field Quality-Control Reports	F			
054000			**COLD-FORMED METAL FRAMING**				
054000	**1.3 F**	**SD**	Full detailed drawings of cold-formed steel framing.	D			
054000	**1.3 D 1**	**PD**	Cold-Formed Steel Framing Materials	D			
054000	**1.3 D 2**	**PD**	Load-Bearing Wall Framing	D			
054000	**1.2 D 3**	**PD**	Exterior Non-Load-Bearing Wall Framing	D			
054000	**1.3 D 4**	**PD**	Interior Non-Load-Bearing Wall Framing	D			
054000	**1.3 D 5**	**PD**	Vertical Deflection Clips	D			
054000	**1.3 D 6**	**PD**	Connection Components	D			
054000	**1.3 D 7**	**PD**	Single Deflection Track	D			
054000	**1.3 D 8**	**PD**	Ceiling Joist Framing	D			
054000	**1.3 D 9**	**PD**	Soffit Framing	D			
054000	**1.3 D 10**	**PD**	Self-Drilling Screw Fasteners	D			
054000	**1.3 D 11**	**PD**	Sill Seater Gasket	D			
054000	**1.3 E**	**EPD**	Environmental Product Declaration	D			
054000	**1.3 G**	**QCS**	Qualification Data: For testing agency	D			
054000	**1.3 H**	**QCS**	Welding Certificates	D			
054000	**1.3 I**	**QCS**	Product Certificates: For each type of code-compliance certification for studs and tracks.	D			
054000	**1.3 J 1**	**QCS**	Product Test Reports - Steel Sheet	D			
054000	**1.3 J 2**	**QCS**	Product Test Reports - Expansion Anchors	D			
054000	**1.3 J 3**	**QCS**	Product Test Reports - Power-Actuated Anchors	D			
054000	**1.3 J 4**	**QCS**	Product Test Reports - Mechanical Fasteners	D			
054000	**1.3 J 7**	**QCS**	Product Test Reports - Miscellaneous Structural Clips and Accessories.	D			
054000	**1.3 K**	**QCS**	Research Reports - Nonstandard cold-formed steel framing	D			
054000	**1.3 L**	**QCS**	Source Quality-Control Reports	D			
				D			
055000			**METAL FABRICATIONS**				
055000	**1.3 F**	**SD**	Full detailed drawings of metal fabrications.	D			
055000	**1.3 D 1**	**PD**	Fasteners	D			
055000	**1.3 D 2**	**PD**	Shop Primers	D			
055000	**1.3 D 3**	**PD**	Shrinkage-Resisting Grout	D			
055000	**1.3 D 4**	**PD**	Manufactured Metal Ladders	D			
055000	**1.3 D 5**	**PD**	Metal Bollards	D			

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055000	**1.3 D 6**	**PD**	Floor Grating	D			
055000	**1.3 D 7**	**PD**	Metal Downspout Boots	D			
055000	**1.3 E**	**EPD**	Environmental Product Declaration	D			
055000	**1.3 G**	**QCS**	Qualification Data	D			
055000	**1.3 H**	**QCS**	Mill Certificates: Signed by stainless steel manufacturers, certifying that products furnished comply with requirements.	D			
055000	**1.3 I**	**QCS**	Welding Certificates	D			
055000	**1.3 J**	**QCS**	Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.	D			
055000	**1.3 K**	**QCS**	Research Reports: For post-installed anchors.	D			
055000	**1.3 L**	**QCS**	Source Quality-Control Reports	D			
055113			**METAL PAN STAIRS**				
055113	**1.4 E**	**SD**	Full detailed drawings of work and welding procedure specifications (WPS).	D			
055113	**1.4 D 1**	**PD**	Perforated Metal	D			
055113	**1.4 D 2**	**PD**	Abrasive Nosings	D			
055113	**1.4 D 3**	**PD**	Shop Primer Products	D			
055113	**1.4 D 4**	**PD**	Abrasive-coating Finish to Formed-metal Stairs	D			
055113	**1.4 D 5**	**PD**	Handrail Wall Brackets	D			
055113	**1.4 D 6**	**PD**	Grout	D			
055113	**1.4 F**	**QCS**	Welding Certificates	D			
055113	**1.4 G**	**QCS**	Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers.	D			
055113	**1.4 H**	**QCS**	Source Quality-Control Reports	D			
055213			**PIPE AND TUBE RAILINGS**				
055213	**1.4 E**	**SD**	Include plans, elevations, sections, details, attachments to other work, and welding procedure specifications (WPS).	D			
055213	**1.4 D 1**	**PD**	Manufacturer's Product Lines of Mechanically Connected Railings	D			
055213	**1.4 D 2**	**PD**	Expanded Metal Infill Panels	D			
055213	**1.4 D 3**	**PD**	Perforated Metal Infill Panels	D			
055213	**1.4 D 4**	**PD**	Woven-wire Mesh Infill Panels	D			
055213	**1.4 D 5**	**PD**	Fasteners	D			
055213	**1.4 D 6**	**PD**	Post-installed Anchors	D			
055213	**1.4 D 7**	**PD**	Handrail Brackets	D			
055213	**1.4 D 8**	**PD**	Shop Primer	D			
055213	**1.4 D 9**	**PD**	Intermediate Coats and Topcoats	D			
055213	**1.4 D 10**	**PD**	Bituminous Paint	D			
055213	**1.4 D 11**	**PD**	Nonshrink, Nonmetallic Grout	D			
055213	**1.4 D 12**	**PD**	Anchoring Cement	D			
055213	**1.4 D 13**	**PD**	Metal Finishes	D			
055213	**1.4 D 14**	**PD**	Paint Products	D			

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055213	**1.4 G 1**	**SAM**	Verification - Sections of each distinctly different linear railing member, including handrails, top rails, posts, and balusters, including finish.	D			
055213	**1.4 G 2**	**SAM**	Verification - Fittings and Brackets	D			
055213	**1.4 G 3**	**SAM**	Verification - Assembled Sample of Railing System	D			
055213	**1.4 H**	**QCS**	Delegated-Design Submittal	D			
055213	**1.4 I**	**QCS**	Qualification Data	D			
055213	**1.4 J**	**QCS**	Welding Certificates	D			
055213	**1.4 K**	**QCS**	Mill Certificates: Signed by manufacturers of stainless steel products.	D			
055213	**1.4 L**	**QCS**	Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers.	D			
055213	**1.4 M**	**QCS**	Product Test Reports: For tests on railings performed by a qualified testing agency, in accordance with ASTM E894 and ASTM E935.	D			
055213	**1.4 N**	**QCS**	Research Reports: For post-installed anchors, from UNIFORM CODE-ES or other qualified testing agency acceptable to authorities having jurisdiction.	D			
055213	**1.4 O**	**QCS**	Source Quality-Control Reports	D			
061000			**ROUGH CARPENTRY**				
061000	**2.1**	**PD**	Wood Products, General	D			
061000	**2.2**	**PD**	Fire-Retardant-Treated Materials	D			
061000	**2.3**	**PD**	Miscellaneous Lumber	D			
061000	**2.4**	**PD**	Plywood Backing Panels	D			
061000	**2.5**	**PD**	Fasteners	D			
061000	**2.6**	**PD**	Metal Framing Anchors	D			
061000	**1.4 E 1**	**QCS**	Evaluation Reports - Fire-retardant-treated Wood	D			
061000	**1.4 E 2**	**QCS**	Evaluation Reports - Power-driven Fasteners	D			
061000	**1.4 E 3**	**QCS**	Evaluation Reports - Metal Framing Anchors	D			
061600			**SHEATHING**				
061600	**2.2**	**PD**	Wood Panel Products	D			
061600	**2.3**	**PD**	Preservative-Treated Plywood	D			
061600	**2.4**	**PD**	Fire-Retardant-Treated Plywood	D			
061600	**2.5**	**PD**	Wall Sheathing	D			
061600	**2.6**	**PD**	Parapet Sheathing	D			
061600	**2.7**	**PD**	Fasteners	D			
061600	**2.8**	**PD**	Sheathing Joint-and-Penetration Treatment Materials	D			
061600	**1.4 A**	**QCS**	Products Certificates: From air-barrier and water-resistant glass-mat gypsum sheathing manufacturer.	D			
061600	**1.4 B**	**QCS**	Product Test Reports: For each air-barrier and water-resistant glass-mat gypsum sheathing assembly.	D			

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064219			**PLASTIC-LAMINATE-FACED WOOD PANELING**				
064219	**1.6 E**	**SD**	Full detailed drawings of flush wood paneling and apply AWI Quality Certification Program labeling.	D			
064219	**2.1**	**PD**	Paneling, General	D			
064219	**2.2**	**PD**	Plastic-Laminate-Faced Wood Paneling	D			
064219	**2.3**	**PD**	Materials	D			
064219	**2.4**	**PD**	Fire-Retardant-Treated Materials	D			
064219	**2.5**	**PD**	Installation Materials	D			
064219	**1.6 F**	**SAM**	For each exposed product and for each color and texture specified, in manufacturer's or fabricator's standard size.	D			
064219	**1.6 G**	**SAM**	For each type of plastic laminate.	D			
064219	**1.6 H**	**SAM**	Verification - For each type of exposed laminate.	D			
064219	**1.6 I**	**QCS**	Product Certificates: For each type of product.	D			
064219	**1.6 J**	**QCS**	Evaluation Reports: For fire-retardant-treated materials, from the Uniform Code.	D			
064219	**1.7 A**	**QCS**	Qualification Data: Fabricator Qualifications	D			
064219	**1.7 B**	**QCS**	Qualification Data: For Installer	D			
066000			**SOLID PLASTIC FABRICATIONS**				
066000	**1.1 B**	**SD**	Show fabrication details and connection to adjacent Work	D			
066000	**2.2 A**	**PD**	Solid Plastic Panels	D			
066000	**1.1 D 1**	**SAM**	Solid Plastic Panels	D			
066400	**1.1 D 1 a**	**SAM**	Color Samples	D			
066400	**1.1 E 1**	**QCS**	Fabricator's and Installer's Qualification Data	D			
066400	**1.1 F 1**	**CCS**	Maintenance Data: Deliver 2 copies, covering the installed products, to the Director's Representative	D			
070150			**MODIFICATIONS TO EXISTING WARRANTIED ROOF SYSTEM**				
070150	**1.4 E**	**PACK**	Submit the product data and quality control submittals specified below at the same time in one complete package	D			
070150	**1.4 F 1**	**PD**	Membrane manufacturer's installation instructions and details for the Work of this Section	D			
070150	**1.4 F 2**	**PD**	All materials required for the the Work of this Section	D			
070150	**1.4 G 1**	**QCS**	Applicator's Certification	D			
070150	**1.4 G 2**	**QCS**	Material Certification	D			
070150	**1.4 G 3**	**QCS**	Warranty Certification	D			
072100			**THERMAL INSULATION**				
072100	**1.3 D 1**	**PD**	Polyisocyanurate foam-plastic board insulation	D			
072100	**1.3 D 2**	**PD**	Mineral-wool blanket insulation	D			
072100	**1.3 D 3**	**PD**	Mineral-fiber blanket insulation	D			
072100	**1.3 D 4**	**PD**	Spray-foam insulation	D			

SCHEDULE OF SUBMITTALS

PROJECT NO.: 47477-C

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Spec Section	Sub Section	Type	Description	F F/O D S	Mark "X" for all that apply	Projected Transmittal Date:	Projected Approval Date:
072100	**1.3 E 1**	**SAM**	Blanket, Batt or Roll	D			
072100	**1.3 E 2**	**SAM**	Rigid Type	D			
072100	**1.3 F**	**QCS**	Product Test Reports: For each product, for tests performed by a qualified testing agency.	D			
072100	**1.3 G**	**QCS**	Research Reports: For foam-plastic insulation, from UNIFORM CODE-ES.	D			
072500			**WEATHER BARRIERS**				
072500	**1.3 E**	**SD**	Show details of building paper wrap at terminations, openings, and penetrations. Show details of flexible flashing applications.	D			
072500	**2.1**	**PD**	Water-Resistive Barrier	D			
072500	**2.2**	**PD**	Flexible Flashing	D			
072600			**VAPOR RETARDERS**				
072600	**2.1 B**	**PD**	Sheet Retarder	D			
072600	**2.2 B**	**PD**	Vapor Barrier Fasteners	D			
072600	**2.2 C**	**PD**	Vapor-Retarder Tape	D			
072600	**2.2 D**	**PD**	Sealant	D			
072600	**1.4 E 1**	**SAM**	Vapor Barrier Material	D			
072600	**1.4 E 2**	**SAM**	Pressure-Sensitive Tape	D			
072600	**1.4 F**	**QCS**	Product Test Reports: For each product, for tests performed by a qualified testing agency.	D			
072700			**AIR BARRIERS**				
072700	**2.1**	**PD**	Air Barriers	D			
072700	**2.3**	**PD**	Components	D			
072700	**2.4**	**PD**	Accessories	D			
072700	**1.6 D**	**QCS**	Design Calculations	D			
072700	**1.6 E**	**QCS**	Manufacturer's Installation Instructions	D			
074213-19			**INSULATED METAL WALL PANELS**				
074213-19	**1.3 E**	**SD**	Full detailed drawings of metal panels.	D			
074213-19	**2.2**	**PD**	Foamed-Insulation-Core Metal Wall Panels	D			
074213-19	**2.3**	**PD**	Miscellaneous Materials	D			
074213-19	**2.5**	**PD**	Finishes	D			
074213-19	**1.3 F**	**SAM**	For each type of metal panel indicated with factory-applied color finishes.	D			
074213-19	**1.3 G**	**SAM**	Verification - For each type of exposed finish.	D			
074213-19	**1.3 H 1**	**QCS**	Qualification Data: For Installer.	D			
074213-19	**1.3 H 2**	**QCS**	Product Test Reports: For each product, tests performed by a qualified testing agency.	D			
074213-19	**1.3 H 3**	**QCS**	Field Quality-Control Reports.	D			
074213-19	**1.3 H 4**	**QCS**	Sample Warranties: For special warranties.	D			
074213-19	**1.3 I**	**CCS**	Maintenance Data: For metal panels to include in maintenance manuals.	F			
075323			**ETHYLENE-PROPYLENE-DIENE-MONOMER (EDPM) ROOFING**				

SCHEDULE OF SUBMITTALS

PROJECT NO.: 47477-C

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075323	**1.4 E**	**PACK**	Submit the shop drawings, product data, samples, and quality control submittals specified below at the same time as a package.	D			
075323	**1.4 L**	**SD**	Full detailed drawings of roofing.	D			
075323	**2.2**	**PD**	System Description	D			
075323	**2.3**	**PD**	Ethylene-Propylene-Diene-Terpolymer (EPDM) Roofing	D			
075323	**2.4**	**PD**	Auxiliary Roofing Materials	D			
075323	**2.5**	**PD**	Substrate Boards	D			
075323	**2.6**	**PD**	Vapor Retarder	D			
075323	**2.7**	**PD**	Roof Insulation	D			
075323	**2.8**	**PD**	Insulation Accessories	D			
075323	**2.9**	**PD**	Hot Stack Flashing	D			
075323	**2.1**	**PD**	Walkways	D			
075323	**1.4 M 1**	**SAM**	Roof membrane and flashings of color required	D			
075323	**1.4 M 2**	**SAM**	EPDM Cover Tape	D			
075323	**1.4 M 3**	**SAM**	Inseam Tape	D			
075323	**1.4 M 4**	**SAM**	Insulation	D			
075323	**1.4 M 5**	**SAM**	Substrate Board	D			
075323	**1.4 M 6**	**SAM**	Walkway pads or rolls, of color required	D			
075323	**1.4 M 7**	**SAM**	Torch-Applied Vapor Retarder	D			
075323	**1.4 J**	**PD**	Letter of Assembly	D			
075323	**1.4 N 1**	**QCS**	Wind Uplift Resistance	D			
075323	**1.4 N 2**	**QCS**	Fire Hazard Certification	D			
075323	**1.4 M 3**	**QCS**	Qualification Data: For Installer and manufacturer.	D			
075323	**1.4 M 4**	**QCS**	Material Certificates	D			
075323	**1.4 M 5**	**QCS**	Product Test Reports	D			
075323	**1.4 M 6**	**QCS**	Evaluation Reports	D			
075323	**1.4 M 7**	**QCS**	Field Test Reports	D/F			
075323	**1.4 M 8**	**QCS**	Field Quality-Control Reports	D/F			
075323	**1.4 O 1**	**CCS**	Sample Warranties: For manufacturer's special warranties.	F			
075323	**1.5 A**	**CCS**	Maintenance Data: For roofing system to include in maintenance manuals.	F			
075323	**1.5 A**	**CCS**	Maintenance Materials Submittals	F			
076200			**SHEET METAL FLASHING AND TRIM**				
076200	**1.5 E**	**SD**	Full detailed drawings for sheet metal flashing and trim.	D			
076200	**2.2**	**PD**	Sheet Metals	D			
076200	**2.3**	**PD**	Miscellaneous Materials	D			
076200	**2.3 I**	**PD**	Manufacturer's Installation Instructions	D			
076200	**1.5 F 1**	**SAM**	Sheet Metal Flashing	D			
076200	**1.5 F 2**	**SAM**	Trim, Metal Closures, Expansion Joints, Joint Intersections, and Miscellaneous Fabrications	D			
076200	**1.5 F 3**	**SAM**	Unit-Type Accessories and Miscellaneous Materials	D			
076200	**1.5 F 4**	**SAM**	Kynar Coated Aluminum Samples	D			
076200	**1.5 G**	**QCS**	Qualification Data: For fabricator.	D			
076200	**1.5 I**	**QCS**	Manufacturer’s Installation Instructions	D			

SCHEDULE OF SUBMITTALS

PROJECT NO.: 47477-C

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076200	**1.10**	**CCS**	Special Warranty	F			
076200	**1.6 A**	**CCS**	Maintenance Data	F			
077200			**ROOF ACCESSORIES**				
077200	**1.4 E**	**SD**	Full detailed drawings for roof accessories.	D			
	2.2	**PD**	Ballasted Fall Protection Rail System	D			
077200	**2.3**	**PD**	Pre-Manufactured Plumbing Vent Flashings	D			
077200	**2.4**	**PD**	Plumbing Vent Pipe Extensions	D			
077200	**2.5**	**PD**	Pipe Chase Housing	D			
077200	**2.6**	**PD**	Pipe/Conduit Supports	D			
077200	**2.7**	**PD**	Sleeper Equipment Supports	D			
077200	**2.8**	**PD**	Metal Roof Drains	D			
077200	**2.9**	**PD**	Fixed Access Ladder / Stair	D			
077200	**2.10**	**PD**	Grease Guards	D			
077200	**1.4 F 1**	**CCS**	Operation and Maintenance Data	F			
078413			**PENETRATION FIRESTOPPING**				
078413	**1.6 D**	**PACK**	Submit the Product Data, Samples, Quality Control Submittals and Firestop Schedule at the same time as a package.	D			
078413	**2.2**	**PD**	Penetration Firestopping Systems	D			
078413	**2.3**	**PD**	Fill Materials	D			
078413	**2.4**	**PD**	Mixing	D			
078413	**1.6 F**	**QCS**	Product Schedule	D			
078413	**1.6 G 1**	**QCS**	Design Data	D			
078413	**1.6 G 2**	**QCS**	Installer's Qualifications Data	D			
078413	**1.6 G 3**	**QCS**	Company Field Advisor Data	D			
078413	**1.6 H**	**QCS**	Firestop Schedule	D			
078413	**1.6 I**	**QCS**	Product Test Reports	D			
078413	**1.6 J**	**CCS**	Installer Certificates	F			
078443			**JOINT FIRESTOPPING**				
078443	**2.2**	**PD**	Joint Firestopping Systems	D			
078443	**1.4 E**	**QCS**	Product Schedule	D			
078443	**1.4 F**	**QCS**	Qualification Data: For Installer.	D			
078443	**1.4 G**	**QCS**	Product Test Reports	D			
078443	**1.5 A**	**CCS**	Installer Certificates	F			
079200			**JOINT SEALANTS**				
079200	**2.2**	**PD**	Silicone Joint Sealants	D			
079200	**2.3**	**PD**	Mildew-Resistant Joint Sealants	D			
079200	**2.4**	**PD**	Butyl Joint Sealants	D			
079200	**2.5**	**PD**	Latex Joint Sealants	D			
079200	**2.6**	**PD**	Preformed, Foam Joint Seals	D			
079200	**2.7**	**PD**	Flame and Smoke Resistant Intumescent Sealants	D			
079200	**1.3 F 1**	**SAM**	Sealants	D			
079200	**1.3 F 2**	**SAM**	Joint Fillers	D			
079200	**1.3 F 3**	**SAM**	Joint Primer/Sealer/Conditions	D			

SCHEDULE OF SUBMITTALS

PROJECT NO.: 47477-C

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079200	**1.3 F 4**	**SAM**	Backer Rods	D			
079200	**1.3 F 5**	**SAM**	Bond Breaker Tape	D			
079200	**1.3 G**	**SAM**	Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.	D			
079200	**1.3 H**	**SAM**	Verification - For each kind and color of joint sealant required.	D			
079200	**1.3 E 1**	**QCS**	Installer's Qualifications Data	D			
079200	**1.3 E 2**	**QCS**	Qualification Data: Company Field Advisor Data	D			
079200	**1.4 B 1**	**QCS**	Testing Agency Qualifications	D			
079200	**1.3 J**	**QCS**	Sample Warranties	D			
081113			**HOLLOW METAL DOORS AND FRAMES**				
081113	**1.5 E**	**SD**	Full detailed drawings that indicate exact position of access door units and any special installation conditions.	D			
081113	**2.2**	**PD**	Interior Standard Steel Doors and Frames	D			
081113	**2.3**	**PD**	Exterior Standard Steel Doors and Frames	D			
081113	**2.4**	**PD**	Borrowed Lites	D			
081113	**2.5**	**PD**	Hollow Metal Panels	D			
081113	**2.6**	**PD**	Frame Anchors	D			
081113	**2.7**	**PD**	Materials	D			
081113	**2.8**	**PD**	Fabrication	D			
081113	**2.9**	**PD**	Steel finishes	D			
081113	**2.10**	**PD**	Louvers	D			
081113	**1.5 F**	**SAM**	Initial Selection: For hollow-metal doors and frames with factory-applied color finishes.	D			
081113	**1.5 G**	**SAM**	Verification: Finishes: For each type of exposed finish required, prepared on Samples of not less than 3 by 5 inches.	D			
081113	**1.5 H**	**QCS**	Product Schedule	D			
081113	**1.5 I**	**QCS**	Product Test Reports	D			
081113	**1.5 J**	**QCS**	Field quality control reports	D			
081113	**1.6 A**	**CCS**	Record Documents	F			
083313			**COILING COUNTER DOORS**				
083313	**1.2 E**	**SD**	Full detailed drawings for each installation and for special components not dimensioned or detailed in manufacturer's product data.	D			
083313	**2.2**	**PD**	Counter Door Assembly	D			
083313	**2.3**	**PD**	Door Curtain Materials and Fabrication	D			
083313	**2.4**	**PD**	Hoods	D			
083313	**2.5**	**PD**	Locking Devices	D			
083313	**2.6**	**PD**	Curtain Accessories	D			
083313	**2.7**	**PD**	Counterbalance Mechanism	D			
083313	**2.8**	**PD**	Manual Door Operators	D			
083313	**2.9**	**PD**	General Finish Requirements	D			
083313	**2.10**	**PD**	Steel and Galvanized-Steel Finishes	D			

SCHEDULE OF SUBMITTALS

PROJECT NO.: 47477-C

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083313	**1.2 F**	**SAM**	Manufacturer's finish charts showing full range of colors and textures available for units with factory-applied finishes.	D			
083313	**1.2 G**	**QCS**	Maintenance Data	D			
083313	**1.2 H**	**CCS**	Installer Qualification Data	F			
083323			**OVERHEAD COILING DOORS**				
083323	**1.2 E**	**SD**	Full detailed drawings for each installation and for special components not dimensioned or detailed in manufacturer's product data.	D			
083323	**2.3**	**PD**	Door Assembly	D			
083323	**2.5 A**	**PD**	Door Curtains	D			
083323	**2.5 B**	**PD**	Curtain Jamb Guides	D			
083323	**2.6**	**PD**	Hoods	D			
083323	**2.7**	**PD**	Locking Devices	D			
083323	**2.8**	**PD**	Curtain Accessories	D			
083323	**2.9**	**PD**	Counterbalance Mechanism	D			
083323	**2.10**	**PD**	Electric Door Operators	D			
083323	**2.11**	**PD**	General Finish Requirements	D			
083323	**2.12**	**PD**	Steel and Galvanized-Steel Finishes	D			
083323	**1.2 F**	**SAM**	Initial Selection: Manufacturer's finish charts showing full range of colors and textures available for units with factory-applied finishes.	D			
083323	**1.2 G 1**	**QCS**	Qualification Data: For Installer	D			
083323	**1.2 G 2**	**QCS**	Sample Warranty	D			
083323	**1.2 H 1**	**CCS**	Replacement Parts List	F			
083323	**1.2 H 2**	**CCS**	Special Warranty	F			
083323	**1.2 H 3**	**CCS**	Maintenance Data	F			
083323	**1.3 A**	**CCS**	Installer Qualification Data	F			
084113			**ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS**				
084113	**1.3 E**	**SD**	Full detailed drawings for aluminum-framed entrances and storefronts.	D			
084113	**2.3**	**PD**	Storefront Systems	D			
084113	**2.4**	**PD**	Entrance Door Systems	D			
084113	**2.5**	**PD**	Entrance Door Hardware	D			
084113	**2.6**	**PD**	Glazing	D			
084113	**2.7**	**PD**	Materials	D			
084113	**2.8**	**PD**	Accessories	D			
084113	**1.3 F**	**SAM**	Initial Selection: For units with factory-applied color finishes.	D			
084113	**1.3 G**	**SAM**	Verification - For each type of exposed finish required.	D			
084113	**1.3 H 1**	**SAM**	Fabrication - Joinery	D			
084113	**1.3 H 2**	**SAM**	Fabrication - Anchorage	D			
084113	**1.3 H 3**	**SAM**	Fabrication - Expansion Provisions	D			
084113	**1.3 H 4**	**SAM**	Fabrication - Glazing	D			
084113	**1.3 H 5**	**SAM**	Fabrication - Flashing and Drainage	D			
084113	**1.3 I**	**QCS**	Entrance Door Hardware Schedule	D			
084113	**1.4 A**	**QCS**	Qualification Data: For Installer	D			

SCHEDULE OF SUBMITTALS

PROJECT NO.: 47477-C

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084113	**1.3 J 1**	**QCS**	Energy Performance Certificates	D			
084113	**1.3 J 2**	**QCS**	Source Quality-Control Reports	D			
084113	**1.3 J 3**	**QCS**	Sample Warranties	D			
084113	**1.3 K**	**CCS**	Maintenance Data	F			
084413			**GLAZED ALUMINUM CURTAIN WALLS**				
084413	**1.2 G**	**SD**	Full detailed drawings for glazed aluminum curtain walls.	D			
084413	**2.3**	**PD**	Glazed Aluminum Curtain Wall Systems	D			
084413	**2.4**	**PD**	Glazing	D			
084413	**2.5**	**PD**	Materials	D			
084413	**2.6**	**PD**	Accessories	D			
084413	**1.2 H**	**SAM**	Initial Selection: For units with factory-applied color finishes.	D			
084413	**1.2 I**	**SAM**	Verification - For each type of exposed finish required.	D			
084413	**1.2 J 1**	**SAM**	Fabrication - Joinery	D			
084413	**1.2 J 2**	**SAM**	Fabrication - Anchorage	D			
084413	**1.2 J 3**	**SAM**	Fabrication - Expansion Provisions	D			
084413	**1.2 J 4**	**SAM**	Fabrication - Glazing	D			
084413	**1.2 J 5**	**SAM**	Fabrication - Flashing and Drainage	D			
084413	**1.2 E 1**	**QCS**	Qualification Data: For Installer	D			
084413	**1.2 E 2**	**QCS**	Energy Performance Certificates	D			
084413	**1.2 E 3**	**QCS**	Product Test Reports	D			
084413	**1.2 E 4**	**QCS**	Source Quality-Control Reports	D			
084413	**1.2 E 5**	**QCS**	Field Quality-Control Reports	D			
084413	**1.2 E 6**	**QCS**	Sample Warranties	D			
084413	**1.4 B**	**QCS**	Preconstruction Laboratory Mockup Testing	D			
084413	**1.2 K 1**	**CCS**	Maintenance Data	F			
085113			**ALUMINUM WINDOWS**				
085113	**1.2 E**	**SD**	Full detailed drawings for aluminum windows.	D			
085113	**2.3**	**PD**	Aluminum Windows	D			
085113	**2.4**	**PD**	Accessories	D			
085113	**1.2 F 1**	**SAM**	Corner section for each type of window unit and for each color specified.	D			
085113	**1.2 F 2**	**SAM**	Manufacturer’s standard color finishes for selection	D			
085113	**1.2 G**	**QCS**	Product Schedule	D			
085113	**1.2 H 1**	**QCS**	Qualification Data: For manufacturer and Installer.	D			
085113	**1.2 H 2**	**QCS**	Product Test Reports	D			
085113	**1.2 H 3**	**QCS**	Sample Warranties	D			
087100			**DOOR HARDWARE**				
087100	**1.6 E**	**SD**	Full detailed drawings including diagrams for power, signal, and control wiring; and details of interface of electrified door hardware and building safety and security systems.	D			
087100	**1.6 F**	**SAM**	For each exposed product in each finish specified, in manufacturer's standard size.	D			

SCHEDULE OF SUBMITTALS

PROJECT NO.: 47477-C

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087100	**1.6 G**	**SAM**	Initial Selection: For each type of exposed finish	D			
087100	**1.6 H**	**SAM**	Verification: For each type of exposed product, in each finish specified.	D			
087100	**2.3**	**PD**	Hinges	D			
087100	**2.4**	**PD**	Self-Closing Hinges And Pivots	D			
087100	**2.5**	**PD**	Center-Hung And Offset Pivots	D			
087100	**2.6**	**PD**	Continuous Hinges	D			
087100	**2.7**	**PD**	Concealed Hinges	D			
087100	**2.8**	**PD**	Mechanical Locks And Latches	D			
087100	**2.9**	**PD**	Auxiliary Locks	D			
087100	**2.10**	**PD**	Electric Strikes	D			
087100	**2.11**	**PD**	Electromagnetic Locks	D			
087100	**2.12**	**PD**	Electromechanical Locks	D			
087100	**2.13**	**PD**	Exit Locks and Exit alarms	D			
087100	**2.14**	**PD**	Surface Bolts	D			
087100	**2.15**	**PD**	Manual Flush Bolts	D			
087100	**2.16**	**PD**	Automatic and Self-Latching Flush Bolts	D			
087100	**2.17**	**PD**	Exit Devises and Auxiliary Items	D			
087100	**2.18**	**PD**	Lock Cylinders	D			
087100	**2.19**	**PD**	Keying	D			
087100	**2.20**	**PD**	Key Control System	D			
087100	**2.21**	**PD**	Operating Trim	D			
087100	**2.22**	**PD**	Accessories for Pairs of Doors	D			
087100	**2.23**	**PD**	Surface Closers	D			
087100	**2.24**	**PD**	Concealed Closers	D			
087100	**2.25**	**PD**	Closer Holder Release Devices	D			
087100	**2.26**	**PD**	Mechanical Stops and Holders	D			
087100	**2.27**	**PD**	Electromagnetic Stops and Holders	D			
087100	**2.28**	**PD**	Overhead Stops and Holders	D			
087100	**2.29**	**PD**	Door Gasketing	D			
087100	**2.30**	**PD**	Thresholds	D			
087100	**2.31**	**PD**	Sliding Door Hardware	D			
087100	**2.32**	**PD**	Folding Door Hardware	D			
087100	**2.33**	**PD**	Metal Protective Trim Units	D			
087100	**2.34**	**PD**	Auxiliary Door Hardware	D			
087100	**2.35**	**PD**	Auxiliary Electrified Door Hardware	D			
087100	**1.6 I**	**QCS**	Door Hardware Schedule	D			
087100	**1.6 J**	**QCS**	Keying Schedule	D			
087100	**1.6 K**	**QCS**	Qualification Data: For Installer and Architectural Hardware Consultant	D			
087100	**1.6 L**	**QCS**	Product Certificates	D			
087100	**1.6 M**	**QCS**	Product Test Reports	D			
087100	**1.6 N**	**QCS**	Field quality-control reports.	D			
087100	**1.6 O**	**QCS**	Sample Warranty	D			
087100	**1.7 A**	**CCS**	Maintenance Data	F			
087100	**1.7 B**	**CCS**	Schedules	F			
087100	**1.8 A 1**	**CCS**	Door Hardware: Provide 2 of each type of hardware for future use	F			
087100	**1.8 A 2**	**CCS**	Electrical Parts: Provide 1 of each type of electrical item for future use	F			

SCHEDULE OF SUBMITTALS

PROJECT NO.: 47477-C

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Spec Section	Sub Section	Type	Description	F F/O D S	Mark "X" for all that apply	Projected Transmittal Date:	Projected Approval Date:
088000			**GLAZING**				
088000	**2.3**	**PD**	Glass Products, General	D			
088000	**2.4**	**PD**	Glass Products	D			
088000	**2.5**	**PD**	Insulating Glass	D			
088000	**2.6**	**PD**	Glazing Sealants	D			
088000	**2.7**	**PD**	Miscellaneous Glazing Materials	D			
088000	**1.5 E**	**EPD**	Environmental Product Declaration	D			
088000	**1.5 F 1**	**SAM**	Insulating glass	D			
088000	**1.5 F 2**	**SAM**	Clear Ceramic glass	D			
088000	**1.5 F 3**	**SAM**	Spandrel glass.	D			
088000	**1.5 G**	**SAM**	For sealants and colored spacers, in 12-inch lengths. Install sealant Samples between two strips of material representative in color of adjoining framing system.	D			
088000	**1.5 H**	**QCS**	Glazing Schedule	D			
088000	**1.5 I 1**	**QCS**	Product Certificates	D			
088000	**1.5 I 2**	**QCS**	Preconstruction adhesion and compatibility test report	D			
088000	**1.5 I 3**	**QCS**	Sample Warranties	D			
088000	**1.6 A**	**QCS**	Fabricated-Glass Manufacturer Qualifications	D			
088000	**1.6 B**	**QCS**	Installer Qualifications	D			
088300			**MIRRORS**				
088300	**1.2 E**	**SD**	Include mirror elevations, edge details, mirror hardware, and attachment details.	D			
088300	**2.2**	**PD**	Silvered Flat Glass Mirrors	D			
088300	**2.3**	**PD**	Miscellaneous Materials	D			
088300	**2.4**	**PD**	Mirror Hardware	D			
088300	**2.5**	**PD**	Fabrication	D			
088300	**1.2 F 1**	**SAM**	Mirrors	D			
088300	**1.2 F 2**	**SAM**	Mirror Clips	D			
088300	**1.2 F 3**	**SAM**	Mirror Trim	D			
088300	**1.2 G 1**	**QCS**	Qualification Data: For Installer.	D			
088300	**1.2 G 2**	**QCS**	Product Certificates	D			
088300	**1.2 G 3**	**QCS**	Sample Warranty	D			
088300	**1.2 H**	**CCS**	Maintenance Data	F			
089119			**FIXED LOUVERS**				
089119	**1.3 E**	**SD**	Full detailed drawings for louvers and accessories.	D			
089119	**2.3**	**PD**	Fixed Extruded-Aluminum Louvers	D			
089119	**2.4**	**PD**	Louver Screens	D			
089119	**1.3 F**	**SAM**	For each type of metal finish required.	D			
089119	**1.3 G**	**QCS**	Sample Warranties	D			
089516			**WALL VENTS**				
089516	**2.2**	**PD**	Wall Vents (Brick Vents)	D			
089516	**1.2 E**	**SAM**	For each type of metal finish required.	D			
089516	**1.3 A**	**QCS**	Evaluation Reports	D			

SCHEDULE OF SUBMITTALS

PROJECT NO.: 47477-C

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089516	**1.3 B**	**QCS**	Sample Warranties	D			
090561			**MOISTURE VAPOR EMISSION CONTROL**				
090561	**1.3 E**	**PD**	Qualification Data: For Installer and Manufacturer	**D**			
090561	**1.3 F**	**PD**	Product Test Reports	**D**			
0909561	**1.3 G**	**PD**	Preinstallation testing reports	D			
090561	**1.3 H**	**PD**	Field quality-control reports	D			
090561	**2.2**	**PD**	MVE-Control System	D			
090561	**2.3**	**PD**	Accessories	**D**			
092116			**GYPSUM BOARD ASSEMBLIES**				
092116	**2.1**	**PD**	Gypsum Board	**D**			
092116	**2.2**	**PD**	Fasteners	**D**			
092116	**2.3**	**PD**	Trim	D			
092116	**2.4**	**PD**	Accessories	D			
092116	**2.5**	**PD**	Joint Treatment Materials	D			
092116	**1.3 E 1**	**SAM**	Gypsum Board	**D**			
092116	**1.3 E 2**	**SAM**	Fasteners	**D**			
092116	**1.3 E 3**	**SAM**	Adhesive	**D**			
093013			**CERAMIC TILING**				
093013	**1.5 E**	**SD**	Full detailed drawings of each type of tile and tile pattern.	D			
093013	**2.3**	**PD**	Tile Products	D			
093013	**2.4**	**PD**	Thresholds	D			
093013	**2.5**	**PD**	Tile Backing Panels	D			
093013	**2.6**	**PD**	Waterproof Membrane	D			
093013	**2.7**	**PD**	Crack Isolation Membrane	D			
093013	**2.8**	**PD**	Setting Materials	D			
093013	**2.9**	**PD**	Grout Materials	D			
093013	**2.10**	**PD**	Miscellaneous Materials	D			
093013	**2.11**	**PD**	Mixing Mortars and Grout	D			
093013	**1.5 F**	**SAM**	Initial Selection: For tile, grout, and accessories involving color selection.	D			
093013	**1.5 G 1**	**SAM**	Verification - Full-size units of each type and composition of tile and for each color and finish required.	D			
093013	**1.5 G 2**	**SAM**	Verification - Full-size units of each type of trim and accessory.	D			
093013	**1.5 G 3**	**SAM**	Verification - Stone Thresholds	D			
093013	**1.5 G 4**	**SAM**	Verification - Metal Edge Strips	D			
093013	**1.5 H**	**QCS**	Qualification Data: For Installer.	D			
093013	**1.5 I**	**QCS**	Master Grade Certificates	D			
093013	**1.5 J**	**QCS**	Product Certificates	D			
093013	**1.5 K**	**QCS**	Product Test Reports	D			
093013	**1.5 L**	**QCS**	Field Quality Control Reports	D			
093013	**1.6 A**	**QCS**	Maintenance Material Submittals	F			
093023			**GLASS MOSAIC TILING**				

SCHEDULE OF SUBMITTALS

PROJECT NO.: 47477-C

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093023	**1.5 E**	**SD**	Full detailed drawings of each type of tile and tile pattern.	D			
093023	**2.3**	**PD**	Tile Products	D			
093023	**2.4**	**PD**	Tile Backing Panels	D			
093023	**2.5**	**PD**	Setting Materials	D			
093023	**2.6**	**PD**	Grout Materials	D			
093023	**2.7**	**PD**	Miscellaneous Materials	D			
093023	**2.8**	**PD**	Mixing Mortars and Grout	D			
093023	**1.5 F**	**SAM**	Initial Selection: For tile, grout, and accessories involving color selection.	D			
093023	**1.5 G 1**	**SAM**	Verification - Full-size units of each type and composition of tile and for each color and finish required.	D			
093023	**1.5 H**	**QCS**	Qualification Data: For Installer.	D			
093023	**1.5 I**	**QCS**	Master Grade Certificates	D			
093023	**1.5 J**	**QCS**	Product Certificates	D			
093023	**1.5 K**	**QCS**	Product Test Reports	D			
093023	**1.6 A**	**QCS**	Maintenance Material Submittals	D/F			
095123			**ACOUSTICAL TILE CEILINGS**				
095123	**1.5 D**	**PACK**	Submit the Product Data, Samples, Quality Control Submittals and Firestop Schedule at the same time as a package.	D			
095123	**1.5 I**	**SD**	Coordination Drawings	D			
095123	**2.3**	**PD**	Acoustical Tiles ACT-1	D			
095123	**2.4**	**PD**	Metal Suspension System ACT-1	D			
095123	**2.5**	**PD**	Acoustical Tiles ACT-2	D			
095123	**2.6**	**PD**	Metal Suspension System ACT-2	D			
095123	**2.7**	**PD**	Accessories	D			
095123	**2.8**	**PD**	Metal Edge Molding and Trim	D			
095123	**1.5 F**	**SAM**	For each exposed product and for each color and texture specified.	D			
095123	**1.5 G**	**SAM**	Initial Selection: For components with factory-applied finishes.	D			
095123	**1.5 H 1**	**SAM**	Verification - Acoustical Tiles	D			
095123	**1.5 H 2**	**SAM**	Verification - Concealed Suspension-System Members	D			
095123	**1.5 H 3**	**SAM**	Verification - Exposed Moldings and Trim	D			
095123	**1.5 H 4**	**SAM**	Verification - Fasteners	D			
095123	**1.5 H 5**	**SAM**	Verification - Wire	D			
095123	**1.5 J 1**	**QCS**	Installer's Qualifications Data	D			
095123	**1.6 A**	**CCS**	Maintenance Data	F			
095123	**1.7 A**	**CCS**	Maintenance Materials	F			
096513			**RESILIENT BASE AND ACCESSORIES**				
096513	**2.1**	**PD**	Thermoset-Rubber Base RB-1	D			
096513	**2.2**	**PD**	Thermoset-Rubber Base RB-2	D			
096513	**2.3**	**PD**	Installation Materials	D			
096513	**1.2 E**	**SAM**	For each exposed product, color and texture specified.	D			
096513	**1.2 F**	**QCS**	Product Schedule	D			

SCHEDULE OF SUBMITTALS

PROJECT NO.: 47477-C

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096513	**1.3 A**	**QCS**	Maintenance Material Submittals	D/F			
096566			**RESILIENT ATHLETIC FLOORING**				
096566	**1.4 E**	**SD**	Shop Drawings: Show installation details and locations	D			
096566	**2.1**	**PD**	Interlocking Rubber Floor Tilke AF-1	D			
096566	**1.4 F**	**SAM**	Samples: For each exposed product and for each type, color, and pattern specified, 6-inch- square in size and of the same thickness	D			
096566	**1.4 G**	**SAM**	Samples for Initial Selection: For each type of resilient athletic flooring	D			
096566	**1.4 H**	**SAM**	Samples for Verification: For each type, color, and pattern of flooring specified, 6-inch- square in size and of same thickness and material indicated for the Work	D			
096566	**1.5 A**	**QCS**	Maintenance Data	D			
096566	**1.6**	**QCS**	Maintenance Material Submittals	D			
096723			**RESINOUS FLOORING**				
096723	**2.1**	**PD**	Resinous Flooring and Base (ERF-1)	D			
096723	**2.2**	**PD**	Resinous Flooring and Base (ERF-2)	D			
096723	**2.3**	**PD**	Accessory Materials	D			
096723	**1.4 E**	**SAM**	Verification - For each resinous flooring system required and for each color and texture specified.	D			
096723	**1.4 F**	**QCS**	Product Schedule	D			
096723	**1.4 G**	**QCS**	Installer's Qualifications Data	D			
096723	**1.4 H**	**QCS**	Material Certificates	D			
096723	**1.4 I**	**QCS**	List of Completed Installations	D			
096723	**1.4 J**	**QCS**	Material Test Reports	D			
096723	**1.4 K**	**QCS**	Field Quality-Control Reports	D			
096723	**1.5 A**	**CCS**	Maintenance Data	F			
096813			**TILE CARPETING**				
096813	**2.1**	**PD**	Carpet Tile CPT-1	D			
096813	**2.2**	**PD**	Carpet Tile CPT-2	D			
096813	**2.3**	**PD**	Installation Accessories	D			
096813	**1.5 E 1**	**SAM**	Carpet Tile	D			
096813	**1.5 E 2**	**SAM**	Exposed Edge, Transition and Other Accessory Stripping.	D			
096813	**1.5 F**	**QCS**	Product Schedule	D			
096813	**1.5 G**	**QCS**	Qualification Data: For Installer.	D			
096813	**1.5 H**	**QCS**	Product Test Reports	D			
096813	**1.5 I**	**QCS**	Sample Warranty	D			
096813	**1.6**	**CCS**	Maintenance Data	F			
096813	**1.7**	**QCS**	Maintenance Material Submittals	D			
097200			**WALL COVERINGS**				
097200	**1.4 E**	**SD**	Show location and extent of each wall-covering type. Indicate pattern placement, veneer matching seams and termination points	D			

SCHEDULE OF SUBMITTALS

PROJECT NO.: 47477-C

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097200	**2.2**	**PD**	Vinyl Wall Covering WC-1	D			
097200	**2.3**	**PD**	Vinyl Wall Covering WC-2, WC-5 through WC-9	D			
097200	**2.4**	**PD**	Vinyl Wall Covering WC-3	D			
097200	**2.5**	**PD**	Vinyl Wall Covering WC-4	D			
097200	**1.4 F**	**SAM**	For each type of wall covering and for each color, pattern, texture, and finish specified.	D			
097200	**1.4 G**	**QCS**	Product Schedule	D			
097200	**1.4 H**	**QCS**	Product Test Reports	D			
097200	**1.5 A**	**CCS**	Maintenance Data	F			
097200	**1.6 A**	**QCS**	Maintenance Material Submittals	D			
098436			**SOUND-ABSORBING CEILING UNITS**				
098436	**1.5 E**	**SD**	Full detailed drawings for unit assembly and installation.	D			
098436	**1.5 H**	**SD**	Coordination Drawings	D			
098436	**2.3**	**PD**	Sound-Absorbing Ceiling Units	D			
098436	**2.4**	**PD**	Materials	D			
098436	**1.5 F**	**SAM**	Initial Selection: For each color option.	D			
098436	**1.5 G 1**	**SAM**	Verification - Panel Edge	D			
098436	**1.5 G 2**	**SAM**	Verification - Core Material	D			
098436	**1.5 G 3**	**SAM**	Verification - Mounting Devices	D			
098436	**1.5 G 4**	**SAM**	Verification - Assembled Panels	D			
098436	**1.5 I**	**QCS**	Product Certificates	D			
098436	**1.5 J**	**QCS**	Sample Warranty	D			
098436	**1.6**	**CCS**	Maintenance Data	D			
098436	**1.7**	**QCS**	Maintenance Material Submittals	D			
099114			**EXTERIOR PAINTING (MPI STANDARDS)**				
099114	**2.3**	**PD**	Paint Materials	D			
099114	**2.4**	**PD**	Source Quality Control	D			
099114	**1.4 F**	**SAM**	Each Type of Topcoat Product	D			
099114	**1.4 G**	**SAM**	Initial Selection: For Each Type of Topcoat Product	D			
099114	**1.4 H**	**SAM**	Verification - For Each Type of Paint System and Each Color and Gloss of Topcoat	D			
099114	**1.4 D**	**QCS**	Painting Schedule	D			
099114	**1.4 I**	**QCS**	Contractor's Qualifications	D			
099114	**1.4 J**	**QCS**	Certification of Volatile Organic Compounds	D			
099123			**INTERIOR PAINTING (MPI STANDARDS)**				
099123	**2.3**	**PD**	Paint Materials	D			
099123	**1.4 F**	**SAM**	Verification - For Each Type of Paint System and Each Color and Gloss of Topcoat	D			
099123	**1.4 D**	**QCS**	Painting Schedule	D			
099123	**1.4 G**	**QCS**	Contractor's Qualifications	D			
099123	**1.4 H**	**QCS**	Certification of Volatile Organic Compounds	D			
101419			**DIMENSIONAL LETTER SIGNAGE**				
101419	**1.3 E**	**SD**	Full detailed drawings for signs.	D			
101419	**2.1**	**PD**	Dimensional Characters	D			

SCHEDULE OF SUBMITTALS

PROJECT NO.: 47477-C

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101419	**2.2**	**PD**	Dimensional Character Materials	D			
101419	**2.3**	**PD**	Accessories	D			
101419	**1.3 F**	**SAM**	Initial Selection: For each type of sign assembly, exposed component, and exposed finish.	D			
101419	**1.3 G**	**SAM**	Verification - For each type of sign assembly showing all components and with the required finish(es), in manufacturer's standard size unless otherwise indicated.	D			
101419	**1.3 H**	**QCS**	Product Schedule	D			
101419	**1.3 I**	**QCS**	Qualification Data: For Installer and manufacturer.	D			
101419	**1.3 J**	**QCS**	Sample Warranty	D			
101419	**1.4 A**	**CCS**	Maintenance Data	F			
101423.16			**ROOM-IDENTIFICATION PANEL SIGNAGE**				
101423.16	**1.6 E**	**SD**	Full detailed drawings for room-identification signs.	D			
101423.16	**2.2**	**PD**	Room-Identification Signs	D			
101423.16	**2.3**	**PD**	Sign Materials	D			
101423.16	**2.4**	**PD**	Accessories	D			
101423.16	**1.6 F**	**SAM**	Initial Selection: For each type of sign assembly, exposed component, and exposed finish.	D			
101423.16	**1.6 G**	**SAM**	Verification - For each type of sign assembly showing all components and with the required finish(es), in manufacturer's standard size unless otherwise indicated.	D			
101423.16	**1.6 H**	**QCS**	Product Schedule	D			
101423.16	**1.6 I**	**QCS**	Qualification Data: For fabricator	D			
101423.16	**1.6 J**	**QCS**	Sample Warranty	D			
101423.16	**1.7 A**	**CCS**	Maintenance Data	D			
101423.16	**1.8**	**QCS**	Maintenance Material Submittals	F			
102113.19			**PLASTIC TOILET COMPARTMENTS**				
102113.19	**1.3 E**	**SD**	Full detailed drawings for solid-plastic toilet compartments.	D			
102113.19	**2.2**	**PD**	Solid-Plastic Toilet Compartments	D			
102113.19	**2.3**	**PD**	Hardware and Accessories	D			
102113.19	**1.3 F**	**SAM**	Initial Selection: Manufacturer's Standard Color Sheets	D			
102113.19	**1.3 G**	**SAM**	Verification - Actual sample of finished products for each type of toilet compartment indicated.	D			
102113.19	**1.4 A**	**CCS**	Maintenance Data	D			
102113.19	**1.5**	**QCS**	Maintenance Material Submittals	F			
102116.19			**PLASTIC SHOWER COMPARTMENTS**				
102116.19	**1.3 E**	**SD**	Full detailed drawings for shower and dressing compartments.	D			
102116.19	**2.2**	**PD**	Shower Receptors	D			
102116.19	**1.3 F**	**SAM**	Initial Selection: For each type of receptor material indicated.	D			
102116.19	**1.3 G**	**SAM**	Verification - Each type of hardware and accessory.	D			

SCHEDULE OF SUBMITTALS

PROJECT NO.: 47477-C

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102116.19	**1.4 H**	**QCS**	Product Certificates	D			
102116.19	**1.4 A**	**QCS**	Maintenance Data	D			
102233			**ACCORDIAN FOLDING PARTITIONS**				
102233	**1.6 E**	**SD**	Full detailed drawings for accordion folding partitions.	D			
102233	**1.6 H**	**SD**	Coordination Drawings	D			
102233	**1.6 I**	**SD**	Setting Drawings	D			
102233	**2.2**	**PD**	Accordian Folding Partition	**D**			
102233	**2.3**	**PD**	Components	D			
102233	**2.4**	**PD**	Suspension Systems	D			
102233	**2.5**	**PD**	Electric Operators	D			
102233	**2.6**	**PD**	Facing Materials	D			
102233	**1.6 F**	**SAM**	Initial Selection: For each type of exposed material, facing material, and finish indicated.	D			
102233	**1.6 G**	**SAM**	Verification - For each type of exposed material, facing material, and finish indicated.	D			
102233	**1.6 J**	**QCS**	Qualification Data: For manufacturer and Installer.	D			
102233	**1.6 K**	**QCS**	Product Certificates	D			
102233	**1.6 L**	**QCS**	Sample Warranty	D			
102233	**1.7 A**	**CCS**	Operation and Maintenance Data	F			
102600			**WALL AND DOOR PROTECTION**				
102600	**1.3 E**	**SD**	For each type of wall and door protection showing locations and extent	D			
102600	**2.3**	**PD**	Corner Guards	D			
102600	**2.4**	**PD**	Abuse-Resistant Sheet Wall Covering	D			
102600	**1.3 F**	**SAM**	Initial Selection:For each type of exposed finish on the following products, prepared on Samples	D			
102600	**1.3 G**	**QCS**	Sample Warranty	D			
102600	**1.4 A**	**CCS**	Maintenance Data	F			
102600	**1.5**	**QCS**	Maintenance Material Submittals	F			
102800			**TOILET, BATH, AND LAUNDRY ACCESSORIES**				
102800	**2.2**	**PD**	Public-Use Washroom Accessories	D			
102800	**2.3**	**PD**	Public-Use Shower Room Accessories	D			
102800	**2.4**	**PD**	Healthcare Accessories	D			
102800	**2.5**	**PD**	Childcare Accessories	D			
102800	**2.6**	**PD**	Underlavatory Guards	D			
102800	**2.7**	**PD**	Custodial Accessories	D			
102800	**1.4 E**	**SAM**	For each exposed product and finish specified, full size.	D			
102800	**1.4 F**	**QCS**	Product Schedule	D			
102800	**1.4 G**	**QCS**	Sample Warranty	D			
102800	**1.5**	**CCS**	Maintenance Data: For accessories to include in maintenance manuals	F			
102800	**1.6**	**CCS**	Maintenance Data	F			
104413			**FIRE PROTECTION CABINETS**				

SCHEDULE OF SUBMITTALS

PROJECT NO.: 47477-C

SUBMITTALS FOR APPROVAL				Send to:	Critical Submittals	Contractor's Project Allow at least 4 weeks fo (allows time for any resu	
Spec Section	Sub Section	Type	Description	F F/O D S	Mark "X" for all that apply	Projected Transmittal Date:	Projected Approval Date:
104413	**1.3 E**	**SD**	Full detailed drawings for fire-protection cabinets.	D			
104413	**2.3**	**PD**	Fire-Protection Cabinet	D			
104413	**1.3 G**	**SAM**	For each type of exposed finish required.	D			
104413	**1.3 H**	**SAM**	Verification - For each type of exposed finish required.	D			
104413	**1.4 A**	**CCS**	Maintenance Data	F			
104416			**FIRE EXTINGUISHERS**				
104416	**2.2**	**PD**	Portable, Hand-Carried Fire Extinguishers	D			
104416	**1.2 E**	**QCS**	Warranty	D			
104416	**1.3 A**	**CCS**	Operation and Maintenance Data	F			
115213			**PROJECTION SCREENS**				
115213	**1.3 F**	**SD**	Show layouts and types of front-projection screens	D			
115213	**2.3**	**PD**	Electrically Operated, Front-Projection Screens	D			
115213	**1.3 G**	**SAM**	Initial Selection:For each type of exposed finish	D			
115213	**1.3 H**	**SAM**	Samples for Verification: For each type of exposed finish, in manufacturer's standard sizes	D			
115213	**1.3 I**	**QCS**	Project Schedule	D			
115213	**1.4**	**CCS**	Maintenance Data	F			
122413			**ROLLER WINDOW SHADES**				
122413	**1.2 E**	**SD**	Fabrication and installation details for roller shades.	D			
122413	**2.2**	**PD**	Manually Operated Shades with Single Rollers	D			
122413	**2.3**	**PD**	Motor-Operated, Single-Roller Shades	D			
122413	**2.4**	**PD**	Shadeband Materials	D			
122413	**1.2 F**	**SAM**	Initial Selection: For each type and color of shadeband material.	D			
122413	**1.2 G**	**SAM**	Verification - For each type of roller shade.	D			
122413	**1.2 H**	**QCS**	Product Schedule	D			
122413	**1.2 I 1**	**QCS**	Qualification Data: For Installer.	D			
122413	**1.2 I 2**	**QCS**	Product Certificates	D			
122413	**1.2 I 3**	**QCS**	Product Test Reports	D			
122413	**1.2 J**	**CCS**	Operation and Maintenance Data	F			
122413	**1.2 K**	**QCS**	Maintenance Material Submittals	F			
123216			**MANUFACTURED PLASTIC-LAMINATE-CLAD CASEWORK**				
123216	**1.5 E**	**SD**	Full detailed drawings for plastic-laminate-clad casework	D			
123216	**2.2**	**PD**	General Requirements for Casework	D			
123216	**2.3**	**PD**	Plastic Laminate-Clad Casework	D			
123216	**2.4**	**PD**	Casework Hardware and Accessories	D			
123216	**2.5**	**PD**	Materials	D			
123216	**1.5 F**	**SAM**	Initial Selection: For casework and hardware finishes.	D			
123216	**1.5 G 1**	**SAM**	Verification - Plastic Laminates	D			
123216	**1.5 G 2**	**SAM**	Verification - Thermally Fused Laminate Panels	D			

SCHEDULE OF SUBMITTALS

PROJECT NO.: 47477-C

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Spec Section	Sub Section	Type	Description	F F/O D S	Mark "X" for all that apply	Projected Transmittal Date:	Projected Approval Date:
123216	**1.5 G 3**	**SAM**	Verification - Base Cabinet	D			
123216	**1.5 G 4**	**SAM**	Verification - Wall Cabinet	D			
123216	**1.5 G 5**	**SAM**	Verification - Full-Size Samples	D			
123216	**1.5 H 1**	**QCS**	Qualification Data: For casework manufacturer and Installer.	D			
123216	**1.5 H 2**	**QCS**	Sample Warranty	D			
123216	**1.5 H 3**	**QCS**	Field Quality-Control Reports	F			
123216	**1.5 I**	**CCS**	Quality Standard Compliance Certificates	F			
123640			**STONE COUNTERTOPS**				
123640	**1.2 F**	**SD**	Full detailed drawings including plans, sections, details, and attachments to other work.	D			
123640	**2.2**	**PD**	Quartz Surfacing, SS-2	D			
123640	**2.3**	**PD**	Adhesives, Grout, Sealants and Stone Accessories	D			
123640	**2.4**	**PD**	Stone Fabrication, General	D			
123640	**2.5**	**PD**	Stone Countertops	D			
123640	**1.2 G**	**SAM**	Verification - For each stone type indicated.	D			
123640	**1.2 D 1**	**QCS**	Qualification Data: For fabricator.	D			
123640	**1.2 D 2**	**QCS**	Material Test Reports	D			
123640	**1.2 H**	**CCS**	Maintenance Data	F			
142000			**ELEVATORS (NEW INSTALLATIONS)**				
142000	**1.9 E**	**PACK**	Submit the shop drawings, product data, samples, and quality control submittals at the same time as a package except: Control System Wiring Diagrams and Test Reports	D			
142000	**1.9 F 1**	**SD**	Hoistway, sections and layouts showing reaction points with reactions	D			
142000	**1.9 F 2**	**SD**	Entrance and car details	D			
142000	**1.9 F 3**	**SD**	Details of doors, frames and sills	D			
142000	**1.9 F 4**	**SD**	Control system wiring diagrams	D			
142000	**1.9 F 5**	**SD**	Car and lobby fixture details	D			
142000	**1.9 F 6**	**SD**	Machine and emergency brake drawings per manufacturer's drawings	D			
142000	**2.1**	**PD**	Elevator Equipment	D			
142000	**2.3**	**PD**	Elevator Car	D			
142000	**2.4**	**PD**	Entrance Fixtures	D			
142000	**2.5**	**PD**	Entrances	D			
142000	**2.6**	**PD**	Mechanical	D			
142000	**2.7**	**PD**	Microprocessor Logic Controller	D			
142000	**2.8**	**PD**	Painting	D			
142000	**2.9**	**PD**	Handicap Access Signs	D			
142000	**2.10**	**PD**	Code Data Plate	D			
142000	**1.9 H 1**	**SAM**	Color Selections	D			
142000	**1.9 I 1**	**QCS**	Installer's Qualifications Data	D			
142000	**1.9 I 2**	**QCS**	Test Reports - Acceptance Test Report	D			
142000	**1.9 I 3**	**QCS**	Certificate by the Company Field Advisor notarized certifying that the equipment meets contract requirements	D			
142000	**1.9 J 1**	**CCS**	Operation and Maintenance Data - 2 copies	F			

SCHEDULE OF SUBMITTALS

PROJECT NO.: 47477-C

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142000	**1.9 J 2**	**CCS**	Deliver all Portable diagnostic keyboards and/or programming tools	F			
142000	**1.13 A**	**CCS**	Special Manufacturer's Warranty	F			
142000	**1.14**	**CCS**	Initial Maintenance Service	F			
310000			**EARTHWORK**				
310000	**1.6 D**	**PD**	Existing Conditions	D			
310000	**1.6 E**	**PD**	Qualification Data: For qualified testing agency	D			
310001			**EARTHWORK MATERIALS**				
310001	**2.1 A**	**PD**	Select Granular Material	D			
310001	**2.1 B**	**PD**	Subbase Course Type 2	D			
310001	**2.1 C**	**PD**	Selected Fill	D			
310001	**2.1 D**	**PD**	Cushion Material	D			
310001	**2.1 E**	**PD**	Topsoil	D			
310001	**2.2 A**	**PD**	Geotextile - Separation for foundation drains, underdrains, undercuts	D			
310001	**2.3 A**	**PD**	Warning Tape	D			
310001	**2. 3 B**	**PD**	Detectable Warning Tape	D			
310001	**1.4 G 1**	**SAM**	Select Granular Material	F			
310001	**1.4 G 2**	**SAM**	Subbase Course Type 2	F			
310001	**1.4 G 3**	**SAM**	Selected Fill	F			
310001	**1.4 G 4**	**SAM**	Cushion Material	F			
310001	**1.4 G 5**	**SAM**	River Stone	F			
310001	**1.4 G 6**	**SAM**	Topsoil	F			
310001	**1.4 E**	**QCS**	Qualification Data: For ASTM certified soils testing agency.	D			
310001	**1.4 F**	**QCS**	Material Test Reports: For each [on-site] [and] [borrow] soil material proposed for fill and backfill.	D			
310001	**1.4 H 1**	**QCS**	Source Quality-Control Submittals - Subbase Materials: Provide name and location of source and the NYSDOT Source Number. If the material is not being taken from an approved NYSDOT source, the soil laboratory test results for gradation and soundness tests performed by an ASTM certified soils laboratory will be required.	D			
310001	**1.4 H 2**	**QCS**	Source Quality-Control Submittals - Other Aggregates: Provide name and location of source and soil laboratory test results for gradation and soundness tests performed by an ASTM certified soils laboratory.	D			
310001	**1.4 H 3**	**QCS**	Source Quality-Control Submittals - Topsoil: Topsoil used on this project shall be tested by a certified soils laboratory for organic matter, Ph value, and gradation, and must be approved before placement.	D			
310001	**1.4 I**	**QCS**	Supplier's Certificate	D			
312500			**EROSION AND SEDIMENTATION CONTROLS**				
312500	**2.1**	**PD**	Pipe Materials	D			

SCHEDULE OF SUBMITTALS

PROJECT NO.: 47477-C

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321216			**ASPHALT PAVING**				
321216	**2.1**	**PD**	Aggregates	**D**			
321216	**2.2**	**PD**	Asphalt Materials	**D**			
321216	**1.6 F 1**	**PD**	Asphalt Designs: Certification, by authorities having jurisdiction, of approval of each asphalt design proposed for the Work.	**D**			
321216	**1.6 F 2**	**PD**	Asphalt Designs: Batch plant name, NYSDOT Plant Number, and location of asphalt plant for each asphalt design proposed for the Work.	**D**			
321216	**1.6 F 3**	**PD**	Asphalt Mix Design Test results that are less than 6 months old for each mix proposed for the Work.	**D**			
321216	**1.6 E**	**EPD**	Environmental Product Declaration	D			
321216	**1.6 H**	**QCS**	Qualification Data	**D**			
321216	**1.6 I**	**QCS**	Material Delivery Tickets for Pavement Materials	**F**			
321216	**1.6 J**	**QCS**	Field Quality-Control Reports	**D**			
321313			**CONCRETE PAVING**				
321313	**1.4 F**	**PD**	Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.	D			
321313	**2.2**	**PD**	Forms	D			
321313	**2.3**	**PD**	Steel Reinforcement	D			
321313	**2.4**	**PD**	Concrete Materials	D			
321313	**2.5**	**PD**	Curing Materials	D			
321313	**2.6**	**PD**	Related Materials	D			
321313	**2.7**	**PD**	Concrete Mixtures	D			
321313	**2.8**	**PD**	Concrete Mixing	D			
321313	**1.4 E**	**EPD**	Environmental Product Declaration	D			
321313	**1.4 G**	**QCS**	Material Certificates	D			
321313	**1.4 H**	**QCS**	Data: Name and Location of batch plant for concrete paving	D			
321313	**1.4 I**	**QCS**	Ready-Mix-Concrete Manufacturer Qualifications	D			
321373			**CONCRETE PAVING JOINT SEALANTS**				
321373	**2.2**	**PD**	Cold-Applied Joint Sealants	D			
321373	**2.3**	**PD**	Joint-Sealant Backer Materials	D			
321373	**2.4**	**PD**	Primers	D			
321373	**2.5**	**PD**	Color of Materials	D			
321373	**1.3 E**	**QCS**	Product Certificates: For each type of joint sealant and accessory.	D			
321613			**CONCRETE CURBS AND GUTTERS**				
321613	**2.2**	**PD**	Forms	D			
321613	**2.3**	**PD**	Concrete Materials	D			
321613.23	**2.4**	**PD**	Fiber Reinforcement	D			
321613	**2.5**	**PD**	Curing Materials	D			
321613	**2.6**	**PD**	Related Materials	D			
321613	**2.7**	**PD**	Concrete Mixtures	D			

SCHEDULE OF SUBMITTALS

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321613	1.5 F	PD	Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.	D			
321613	1.5 E	EPD	Environmental Product Declaration	D			
321613	1.5 G	QCS	Qualification Data	D			
321613	1.5 H	QCS	Material Certificates from Manufacturer	D			
321613	1.5 I	QCS	Data: Name and location of batch plant for concrete paving	D			
321613	1.5 J	QCS	Ready-Mix-Concrete Manufacturer Qualifications	D			
321723			**PAVEMENT MARKINGS**				
321723	2.1	PD	Pavement Markings	D			
321723	1.3 E	SAM	For each exposed product and for each color and texture specified; on rigid backing, 8 inches square.	F			
321723	1.3 F	QCS	Certification: Affidavit by the paint applicator, certifying that the materials comply with the current regulatory requirements in effect at the time products were delivered and applied.	D			
323113			**CHAIN LINK FENCES AND GATES**				
323113	1.4 E	SD	Complete detailed drawings for each height and style of fence and gate required. Include separate schedule for each listing all materials required and technical data such as size, weight, and finish, to ensure conformance to specifications.	D			
323113	2.1	PD	Class B Steel Tubing	D			
323113	2.2	PD	STEEL FRAMEWORK (FOR FENCES UP TO 6'-0" HIGH) - End Posts, Corner Posts and Pull Posts	D			
323113	2.3	PD	Steel Fabric	D			
323113	2.4	PD	Swing Gate Posts	D			
323113	2.5	PD	Swing Gate Frames	D			
323113	2.6	PD	Swing Gate Hardware	D			
323113	2.7 A	PD	Rails and Post Braces	D			
323113	2.7 B	PD	Fittings and Post Tops	D			
323113	2.7 C	PD	Stretcher Bars	D			
323113	2.7 D	PD	Metal Bands (for securing stretcher bars)	D			
323113	2.7 E	PD	Wire Ties	D			
323113	2.7 F	PD	Truss Rods	D			
323113	2.7 G	PD	Concrete	D			
323113	2.7 H	PD	Cold Galvanizing Compound	D			
323113	2.7 I	PD	Tension Wire	D			
323113	2.7 J	PD	Angle Beams, I Beams, and Steel Shapes	D			
323113	2.7 K	PD	Bolts and Nuts	D			
323113	2.7 L	PD	Expansion Anchors	D			
323113	2.7 M	PD	Nonshrink, Nonmetallic Grout	D			
323113	2.7 N	PD	Aluminum Slats	D			
323113	1.4 G	EPD	Environmental Product Declaration	D			

SCHEDULE OF SUBMITTALS

PROJECT NO.: 47477-C

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323113	**1.4 H 1**	**SAM**	Fence Fabric	D			
323113	**1.4 H 2**	**SAM**	Fence and Gate Posts	D			
323113	**1.4 H 3**	**SAM**	Miscellaneous Materials and Accessories	D			
323113	**1.4 I 1**	**QCS**	Test Reports: Security coils test procedure report.	D			
323113	**1.4 I 2**	**QCS**	Security Coils Certification: Affidavit by the Company Field Advisor, certifying that the installation of the security coils meets the Contract requirements.	D			
329200			**TURF AND GRASSES**				
329200	**2.1**	**PD**	Seed	D			
329200	**2.2**	**PD**	Mulches	D			
329200	**1.3 D**	**QCS**	Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture, stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.	D			
344113			**TRAFFIC SIGNS**				
344113	**1.3 D**	**SD**	Show shop drawings, not necessarily to scale, but sufficient enough in detail to show color, wording, lettering size and style, overall sign size, construction details and installation details for each type of sign	D			
347115			**SITE BOLLARDS**				
347115	**2.1**	**PD**	Bollards	D			
347115	**2.2 A**	**PD**	Polyethylene	D			
347115	**2.2 B 1**	**PD**	Anchors, Fasteners, Fittings, and Hardware	D			
347115	**2.2 C**	**PD**	Nonshrink, Nonmetallic Grout	D			
347115	**2.2 D**	**PD**	Erosion-Resistant Anchoring Cement	D			
347115	**1.4 E**	**EPD**	Environmental Product Declaration	D			
347115	**1.5 A**	**CCS**	Maintenance Data	F			

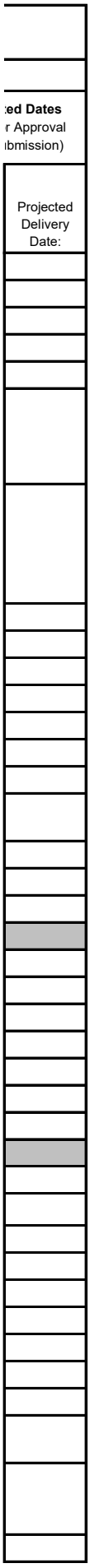
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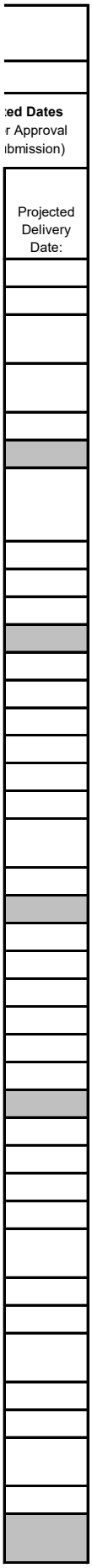

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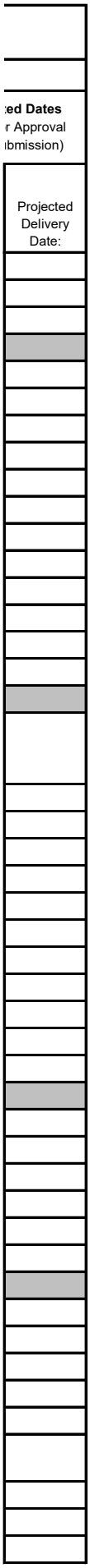

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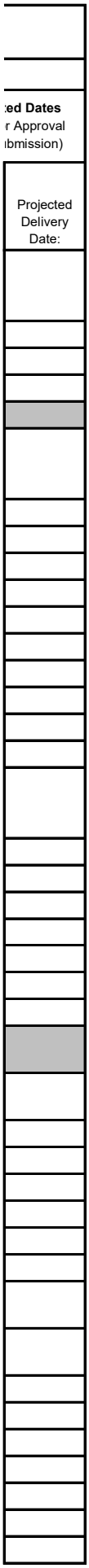

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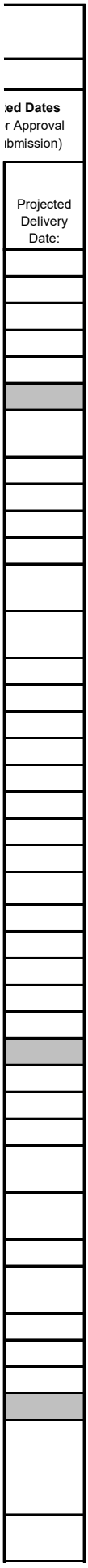

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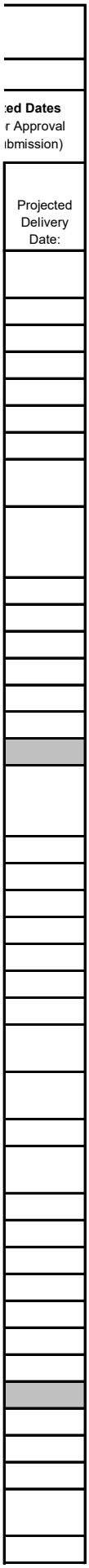

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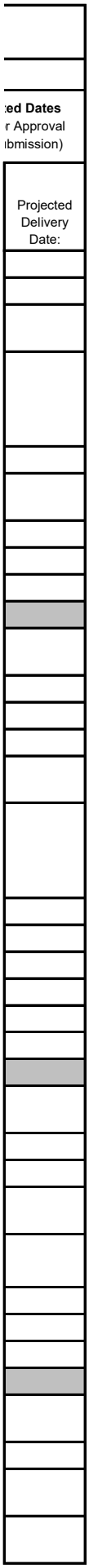

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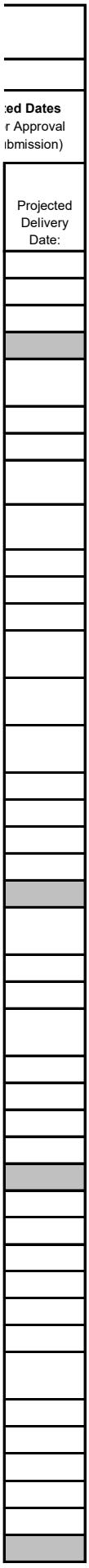

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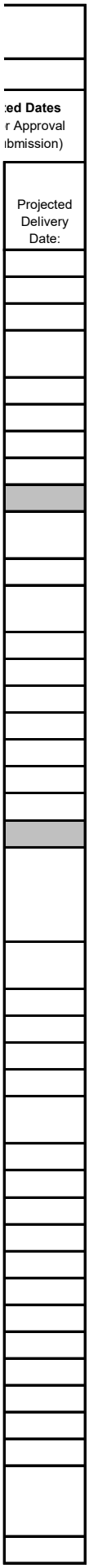

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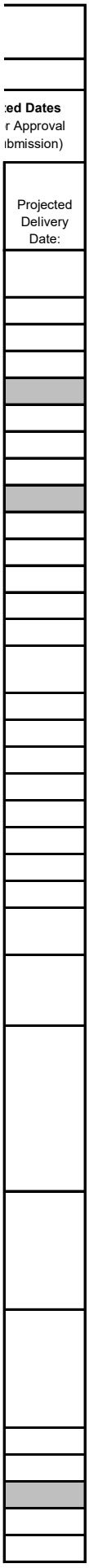

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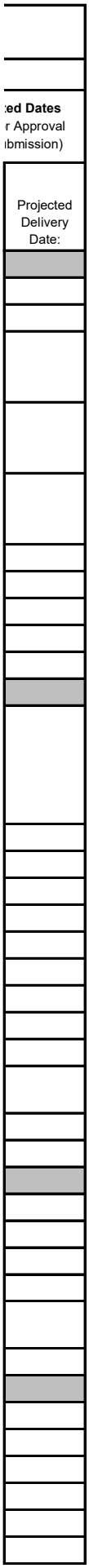

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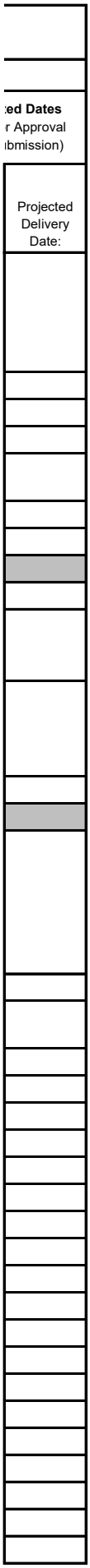

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SDVOB UTILIZATION PLAN

☐ **Initial Plan** ☐ **Revised plan** **Contract/Solicitation #** _____

INSTRUCTIONS: This Utilization Plan must contain a detailed description of the supplies and/or services to be provided by each NYS **Certified** Service-Disabled Veteran-Owned Business (SDVOB) under the contract. By submission of this Plan, the Bidder/Contractor commits to making good faith efforts in the utilization of SDVOB subcontractors and suppliers as required by the SDVOB goals contained in the Solicitation/Contract. Making false representations or providing information that shows a lack of good faith as part of, or in conjunction with, the submission of a Utilization Plan is prohibited by law and may result in penalties including, but not limited to, termination of a contract for cause, loss of eligibility to submit future bids, and/or withholding of payments. Firms that do not perform commercially useful functions may not be counted toward SDVOB utilization. Attach additional sheets if necessary.

BIDDER/CONTRACTOR INFORMATION		**SDVOB Goals In Contract**
Bidder/Contractor Name:	NYS Vendor ID:	%
Bidder/Contractor Address (Street, City, State and Zip Code):		
Bidder/Contractor Telephone Number:	Contract Work Location/Region:	
Contract Description/Title:		

CONTRACTOR INFORMATION			
Prepared by (Signature):	Name and Title of Preparer:	Telephone Number:	Date:
Email Address:			

If unable to meet the SDVOB goals set forth in the solicitation/contract, bidder/contractor must submit a request for waiver on the SDVOB Waiver Form.

SDVOB Subcontractor/Supplier Name:		
Please identify the person you contacted:	Federal Identification No.:	Telephone No.:
Address:	Email Address:	
Detailed description of work to be provided by subcontractor/supplier:		
Dollar Value of subcontracts/supplies/services (When $ value cannot be estimated, provide the estimated % of contract work the SDVOB will perform): $_____ or _____%		

SDVOB Subcontractor/Supplier Name:		
Please identify the person you contacted:	Federal Identification No.:	Telephone No.:
Address:	Email Address:	
Detailed Description of work to be provided by subcontractor/supplier:		
Dollar Value of subcontracts/supplies/services (When $ value cannot be estimated, provide the estimated % of contract work the SDVOB will perform): $_____ or _____%		

FOR OGS USE ONLY				
OGS Authorized Signature:		☐ **Accepted**	☐ **Accepted as Noted**	☐ **Notice of Deficiency**
NAME (Please Print):	**SDVOB %/$** ____	____	**Date Received:**	**Date Processed:**
Comments:				

NYS CERTIFIED SDVOB SUBCONTRACTOR/SUPPLIER INFORMATION: The directory of New York State Certified SDVOBs can be viewed at: https://ogs.ny.gov/Veterans/default.asp

Note: All listed Subcontractors/Suppliers will be contacted and verified by OGS.

ADDITIONAL SHEET

Bidder/Contractor Name:	**Contract/Solicitation #**_____

SDVOB Subcontractor/Supplier Name:		
Please identify the person you contacted:	Federal Identification No.:	Telephone No.:
Address:	Email Address:	
Detailed Description of work to be provided by subcontractor/supplier:		
Dollar Value of subcontracts/supplies/services (When $ value cannot be estimated, provide the estimated % of contract work the SDVOB will perform): $_____ or _____%		
SDVOB Subcontractor/Supplier Name:		
Please identify the person you contacted:	Federal Identification No.:	Telephone No.:
Address:	Email Address:	
Detailed Description of work to be provided by subcontractor/supplier:		
Dollar Value of subcontracts/supplies/services (When $ value cannot be estimated, provide the estimated % of contract work the SDVOB will perform): $_____ or _____%		
SDVOB Subcontractor/Supplier Name:		
Please identify the person you contacted:	Federal Identification No.:	Telephone No.:
Address:	Email Address:	
Detailed Description of work to be provided by subcontractor/supplier:		
Dollar Value of subcontracts/supplies/services (When $ value cannot be estimated, provide the estimated % of contract work the SDVOB will perform): $_____ or _____%		
SDVOB Subcontractor/Supplier Name:		
Please identify the person you contacted:	Federal Identification No.:	Telephone No.:
Address:	Email Address:	
Detailed Description of work to be provided by subcontractor/supplier:		
Dollar Value of subcontracts/supplies/services (When $ value cannot be estimated, provide the estimated % of contract work the SDVOB will perform)): $_____ or _____%		
SDVOB Subcontractor/Supplier Name:		
Please identify the person you contacted:	Federal Identification No.:	Telephone No.:
Address:	Email Address:	
Detailed Description of work to be provided by subcontractor/supplier:		
Dollar Value of subcontracts/supplies/services (When $ value cannot be estimated, provide the estimated % of contract work the SDVOB will perform): $_____ or _____%		

NEW YORK STATE OF OPPORTUNITY. | Office of General Services | Division of Service-Disabled Veterans' Business Development

Instructions for Completing the Monthly SDVOB Compliance Report – SDVOB 101

The SDVOB Monthly Reporting Form is to be completed by the Contractor/Vendor, and submitted by the 10th day of *each* month for the duration of the Contract. This form should include **all** (e.g. SDVOB and non SDVOB) Subcontractors and/or Suppliers assigned by the Contractor/Vendor to perform work during the contract. This reporting should also include payments made by your Subcontractors and/or Suppliers to SDVOB firms.

Complete the form as specified below.

Contract No.	Indicate the OGS Contract No.
Contractor/Vendor Name and Address	Provide your firm's name and address.
Federal ID No.	Enter your firm's Federal ID No.
Goals	Indicate SDVOB participation goals.
Reporting Period	Fill in the month and year of reporting period. One copy must be submitted with final payment application.
Description of Project	Briefly describe the work you are providing under the terms of this contract.
Firm Name and Address	Provide the name, address and phone number of **all** Subcontractors/Suppliers assigned by the Contractor/Vendor on this contract or purchase agreement(s).
Federal ID No.	Enter the Subcontractor's/Supplier's Federal ID No. If no Federal ID No. has been assigned, provide only the owner's last four (4) digits of his or her Social Security No.
Payment This Month	Indicate the amount paid *this month* to each Subcontractor/Supplier. If there was no income activity for a Subcontractor/Supplier, please check the box indicating "No Payment This Month."
Contract Amount	Enter the total contract amount or purchase agreement(s) amount for each Subcontractor/Supplier.
Description of Work/Supplies	Briefly describe the work performed or supplies provided by each Subcontractor/Supplier.

Submit to:

Design & Construction SDVOB Compliance Specialist
35th Floor, Corning Tower
Albany, New York 12242
Email: DCSDVOB@ogs.ny.gov

CONTRACTOR'S MONTHLY SDVOB COMPLIANCE REPORT (DUE ON THE 10TH DAY OF EACH MONTH FOR THE PRECEDING MONTH'S ACTIVITY AS EVIDENCE TOWARDS ACHIEVEMENT OF THE SDVOB GOALS ON THE CONTRACT)

Contract No.: _____

Contractor/Vendor Name, Address and Phone No.:	Contractor/Vendor Federal ID No.:	SDVOB Goals	Reporting Period	
	Description of Project:	%	Month	Year

Firm Name, Address and Phone Number (List All Firms)	Description of Work or Supplies Provided	Designation		Payment This Month	Contract Amount
Federal ID No.:		☐ SDVOB ☐ Sub ☐ Broker ☐ Joint Venture ☐ Written Contract	☐ Supplier ☐ Team ☐ Other ☐ No Written Contract	☐ No Payment This Month	
Federal ID No.:		☐ SDVOB ☐ Sub ☐ Broker ☐ Joint Venture ☐ Written Contract	☐ Supplier ☐ Team ☐ Other ☐ No Written Contract	☐ No Payment This Month	
Federal ID No.:		☐ SDVOB ☐ Sub ☐ Broker ☐ Joint Venture ☐ Written Contract	☐ Supplier ☐ Team ☐ Other ☐ No Written Contract	☐ No Payment This Month	
Federal ID No.:		☐ SDVOB ☐ Sub ☐ Broker ☐ Joint Venture ☐ Written Contract	☐ Supplier ☐ Team ☐ Other ☐ No Written Contract	☐ No Payment This Month	

_____ Signature

_____ Print Name and Title

_____ Date

Submission of this form constitutes the Contractor's acknowledgement as to the accuracy of the information contained herein. Failure to submit complete and accurate information may result in a finding of noncompliance, non-responsibility, suspension and/or termination of the Contract.

For OGS Use Only	
Reviewed By:	Date:

APPLICATION FOR WAIVER OF SDVOB PARTICIPATION GOAL

(must be submitted before requesting final payment on the Contract)

Section 1: Basic Information

Contractor's Name:	Federal Identification Number:
Street Address:	E-Mail Address:
City, State, Zip Code:	Telephone: ( ) -

Contract Number:	SDVOB CONTRACT GOALS %

Section 2: Type of SDVOB Waiver Requested

☐ Total	☐ Partial	If partial waiver, please enter the revised SDVOB percentage:	%

Please explain the reason for the waiver request:

Section 3: Supporting Documentation

Provide the following documentation as evidence of your good faith efforts to meet the SDVOB goals set forth in the contract and in support of your waiver application:

- ❑ **Attachment A.** Copies of solicitations to SDVOBs and any responses thereto.
- ❑ **Attachment B.** Explanation of the specific reasons each SDVOB that responded to Bidders/Contractors' solicitation was not selected.
- ❑ **Attachment C.** Dates of any pre-bid, pre-award or other meetings attended by Contractor, if any, scheduled by OGS with certified SDVOBs whom OGS determined were capable of fulfilling the SDVOB goals set forth in the contract.
- ❑ **Attachment D.** Information describing the specific steps undertaken to reasonably structure the contract scope of work for the purpose of subcontracting with, or obtaining supplies from, certified SDVOBs.
- ❑ **Attachment E.** Other information deemed relevant to the request.

Section 4: Signature and Contact Information

By signing and submitting this form, the contractor certifies that a good faith effort has been made to promote SDVOB participation pursuant to the SDVOB requirements set forth under the solicitation or Contract. Failure to submit complete and accurate information may result in a finding of noncompliance, non-responsibility, and a suspension or termination of the contract.

Prepared By: (Signature)	Date:
Name and Title of Preparer (Print or Type)	

For OGS Use Only	
Reviewed By:	Date:
Decision: ☐ Full SDVOB waiver granted ☐ Partial SDVOB waiver granted; revised SDVOB goal: _____ % ☐ SDVOB waiver denied	
Approved By:	Date:
Date Notice of Determination Sent:	
Comments	