



SED NO. 48-01-01-06-0-004-020
48-01-01-06-0-006-013
48-01-01-06-0-003-008
48-01-01-06-5-010-009
48-01-01-06-7-026-001

10 Brown Road
Ithaca, New York 14850
607-277-7100

Ithaca, New York
Farmingdale, New York
Albany, New York

VOLUME 1

MAHOPAC CENTRAL SCHOOL DISTRICT

MAHOPAC, NEW YORK

PROJECT NO. 121111-19002

RECONSTRUCTION AT
MAHOPAC HIGH SCHOOL
MAHOPAC MIDDLE SCHOOL
MAHOPAC FALLS SCHOOL
BUS GARAGE
NEW PUMP HOUSE

AUGUST 21, 2020

The engineer that has signed this document certifies that to the best of their knowledge, information and belief, the asbestos plans and specifications are in accordance with applicable requirements of the New York State Uniform Fire Prevention and Building Code, Construction Standards of the Commissioner of Education, New York State Department of Labor Part 56 of Title 12, and the United States Environmental Protection Agency Hazard Emergency Response ACT Regulations. Kevin C. Terry is accredited to the EPA and New York State under AHERA Regulations as an Asbestos Project Designer (Asbestos Handling Certificate Number 14-20336).

To the best of the Architect's knowledge, information and belief, the design of this project conforms to all applicable provisions of the New York State Uniform Fire Prevention and Building Code, the New York State Energy Conservation Code, and the building standards of the New York State Education Department.

SET NO. _____

TABLE OF CONTENTS

PROJECT MANUAL

Volume 1 of 2

BIDDING REQUIREMENTS AND CONDITIONS OF THE CONTRACT

00 01 10 Table of Contents 1 - 3

00 01 15 List of Drawing Sheets 1 - 6

00 11 13 Notice to Bidders 1 - 2

00 21 13 Instructions to Bidders (with 1 attachment) 1 - 7

00 41 00 Bid Forms

 General (with 3 attachments) 1 - 3

 Plumbing (with 3 attachments) 1 - 2

 Mechanical (with 3 attachments) 1 - 2

 Electrical (with 3 attachments) 1 - 3

 Hazardous (with 3 attachments) 1 - 2

 Casework (with 3 attachments) 1 - 2

 Site (with 3 attachments) 1 - 3

00 43 33 Proposed Products Form 1

00 43 36 Proposed Subcontractors Form 1

00 43 73 Proposed Schedule of Values Form 1

00 45 13 Bidder’s Qualifications Form 1-2

General Conditions of the Contract for Construction (AIA Document A232-2009) 1 - 73

Prevailing Wage Rates

PLEASE NOTE

All sections of the following **SPECIFICATIONS** are sequentially numbered, beginning with Page 1 and concluding with the last numbered page bearing the marking "END OF SECTION -- -- --".

Sections may include additional attachments as noted in following list of Specification sections.

SPECIFICATIONS

<u>SECTION TITLE</u>	<u>SECTION TITLE</u>
<u>DIVISION 01 - GENERAL REQUIREMENTS</u>	01 26 00 Contract Modification Procedures
01 08 00 General Commissioning Requirements	01 29 00 Payment Procedures
01 12 00 Summary of Project	01 31 00 Project Management and Coordination (with one attachment)
01 21 00 Allowances (with one attachment)	01 32 00 Construction Progress Documentation (with one attachment)
01 23 00 Alternates	
01 25 00 Substitution Procedures	

SECTION TITLE

- 01 33 00 Submittal Procedures (with three attachments)
- 01 35 26 Governmental Safety Requirements
- 01 40 00 Quality Requirements (with one attachment)
- 01 42 00 References
- 01 50 00 Temporary Facilities and Controls
- 01 60 00 Product Requirements
- 01 73 00 Execution
- 01 77 00 Closeout Procedures
- 01 78 23 Operation and Maintenance Data
- 01 78 39 Project Record Documents
- 01 79 00 Demonstration and Training

DIVISION 02 – EXISTING CONDITIONS

- 02 41 19 Selective Demolition
- 02 82 00 Asbestos Abatement
- 02 83 00 Lead-Safe Work Practices

DIVISION 03 - CONCRETE

- 03 30 00 Cast-in-Place Concrete
- 03 54 15 Moisture Control System

DIVISION 04 - MASONRY

- 04 20 00 Unit Masonry

DIVISION 05 - METALS

- 05 12 00 Structural Steel Framing
- 05 40 00 Cold-Formed Metal Framing
- 05 50 00 Metal Fabrications
- 05 52 13 Tube Railings (Stainless Steel)
- 05 53 13 Bar Gratings

DIVISION 06 – WOOD, PLASTICS, AND COMPOSITES

- 06 10 00 Rough Carpentry

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

- 07 53 23 EPDM Roofing
- 07 84 13 Penetration Firestopping
- 07 84 43 Joint Firestopping
- 07 92 00 Joint Sealants
- 07 95 13.13 Interior Expansion Cover Assemblies

DIVISION 08 - OPENINGS

- 08 11 13 Hollow Metal Doors and Frames
- 08 14 16 Flush Wood Doors
- 08 31 13 Access Doors and Frames
- 08 33 13 Coiling Counter Doors

SECTION TITLE

- 08 33 23 Overhead Coiling Doors
- 08 34 73 Sound Control Door Assemblies
- 08 36 13 Sectional Doors
- 08 41 13 Aluminum-Framed Entrances and Storefronts
- 08 43 29 Sliding Storefronts
- 08 46 00 Fire-Rated Glazed Opening Assemblies
- 08 56 53 Sliding Security Windows
- 08 80 00 Glazing

DIVISION 09 - FINISHES

- 09 21 16.23 Gypsum Board Shaft Wall Assemblies
- 09 22 16 Non-Structural Metal Framing
- 09 29 00 Gypsum Board
- 09 30 13 Ceramic Tiling
- 09 30 16 Quarry Tiling
- 09 30 19 Porcelain Tiling
- 09 51 13 Acoustical Panel Ceilings
- 09 51 33 Acoustical Metal Pan and Panel Ceilings
- 09 54 23 Linear Metal Slat Ceilings
- 09 61 00 Flooring Treatment
- 09 65 13 Resilient Base and Accessories
- 09 65 19 Resilient Tile Flooring
- 09 66 23 Resinous Matrix Terrazzo Flooring
- 09 67 23 Resinous Flooring
- 09 68 13 Tile Carpeting
- 09 72 00 Wall Coverings
- 09 84 33 Sound Absorbing Wall Units
- 09 91 00 Painting
- 09 96 00 High Performance Coatings

DIVISION 10 - SPECIALTIES

- 10 11 00 Visual Display Surfaces
- 10 14 00 Signage
- 10 14 53 Traffic Signage
- 10 21 23 Cubicles
- 10 28 00 Toilet and Shower Accessories
- 10 44 13 Fire Protection Cabinets
- 10 44 16 Fire Extinguishers
- 10 51 13 Metal Lockers
- 10 56 13 Metal Storage Shelving

DIVISION 11 - EQUIPMENT

- 11 40 00 Foodservice Equipment
- 11 53 63 Laboratory Equipment and Accessories
- 11 68 33 Athletic Field Equipment

SECTION TITLE

SECTION TITLE

DIVISION 12 - FURNISHINGS

- 12 24 13 Roller Window Shades
- 12 32 13 Manufactured Wood-Veneer-Faced Casework
- 12 32 17 Instrumental Storage Casework and Equipment
- 12 56 51 Library Furniture

DIVISION 13 - SPECIAL CONSTRUCTION

- 13 34 19 Metal Building Systems

DIVISION 14 - CONVEYING EQUIPMENT

- 14 42 00 Wheelchair Lifts

LIST OF DRAWING SHEETS

VOLUME 1 OF 2**HIGH SCHOOL**GENERAL INFORMATION

G001 Title Sheet
G100 Symbols and Abbreviations

PHASING

AG200 Site Phasing Plan
AG201 Basement Phasing Plan
AG202 Basement and First Floor Phasing Plans
AG210 First Floor Phasing Plan
AG220 Second Floor Phasing Plan

CODE COMPLIANCE

AG300 Site Code Compliance Plan
AG301 Basement Code Compliance Key Plan
AG302 First Floor Code Compliance Key Plan
AG303 Second Floor Code Compliance Key Plan
AG350 Code Compliance Review
AG351 Basement and First Floor Code Compliance Plan
AG352 First Floor Code Compliance Plan
AG353 Second Floor Code Compliance Plan

HAZARDOUS MATERIALS

AH100 Basement and First Floor Abatement Plans
AH101 Second Floor Abatement Plan
AH102 Roof Abatement Plan

CIVIL

AC100 Site Demolition Plan
AC101 Site Demolition Plan
AC110 Site Soil Erosion and Sediment Control Plan
AC111 Site Soil Erosion and Sediment Control Plan
AC120 Site Layout Plan
AC121 Site Layout Plan
AC130 Site Grading Plan
AC131 Site Grading Plan
AC140 Site Utility Plan
AC141 Site Utility Plan

ARCHITECTURAL

AA050 Basement Key Plan
AA051 First Floor Key Plan
AA052 Second Floor Key Plan
AA054 Roof Key Plan

ARCHITECTURAL (cont'd)

AA100	Demolition Partial Plans
AA101	Demolition Partial Plans
AA102	First Floor Plan - STEM
AA103	First Floor Plan - Music Suite
AA104	First Floor Plan - Main Entrance, Serving Area and Locker Room
AA105	Second Floor Plan - Library Media Center and Science Suite
AA106	Second Floor Plans - Science Suite
AA107	First Floor Plan - Shower Room
AA160	Reflected Ceiling Partial Plans
AA161	Reflected Ceiling Partial Plans
AA190	Roof Plan and Details
AA400	Interior Elevations
AA401	Interior Elevations
AA402	Interior Elevations
AA500	Plan Details
AA600	Door Schedule, Door Types and Window Types
AA601	Door and Window Details
AA700	Wall Types
AA750	Miscellaneous Details
AA800	Serving Area Equipment Layout
AA940	Details

STRUCTURAL

AS130	Partial Foundation and Framing Plans
AS160	Partial Roof Framing Plan - Area D
AS500	Foundation Details
AS530	Framing Details

MECHANICAL

AM050	Ground Floor Key Plan
AM051	First Floor Key Plan
AM052	Second Floor Key Plan
AM053	Roof Plan
AM100	Partial Ground Floor Plans - Area B
AM101	Partial Ground Floor Plans Areas C and D
AM102	Partial First Floor Plans Areas B and C
AM103	Partial First Floor Plans Areas B and C
AM104	First Floor Plans - Area D
AM105	Partial Second Floor Plans Areas B and C
AM106	Partial Second Floor Plans Area B and C
AM107	Partial Second Floor Plans - Area C
AM108	Second Floor Plans - Area D
AM500	Details
AM501	Details
AM600	Schedules
AM601	Schedules
AM700	Controls
AM701	Controls

ELECTRICAL

AE001	Electrical Site Demolition Plan
AE002	Electrical Site Plan - Site Lighting and Scoreboard
AE003	Electrical Site Plan - Pump House
AE050	Basement Key Plan
AE051	First Floor Key Plan
AE052	Second Floor Key Plan
AE100	Basement HVAC Power Demolition Plan
AE101	Partial Basement Demolition Plans
AE102	First Floor HVAC Power Demolition Plan
AE103	Partial First Floor Demolition Plans
AE104	Second Floor HVAC Power Demolition Plan
AE105	Partial Second Floor Demolition Plans
AE130	Basement Lighting Plan
AE131	First Floor Lighting Plan
AE132	Second Floor Lighting Plan
AE160	Basement HVAC Power Plan
AE161	Partial Basement Power & Communications Plans
AE162	First Floor HVAC Power Plan
AE163	Partial First Floor Power & Communications Plans
AE164	Second Floor HVAC Power Plan
AE165	Partial Second Floor Power & Communications Plans
AE166	Roof Power Plan
AE200	Basement Speaker, Clock and Fire Alarm Plan
AE201	First Floor Speaker, Clock and Fire Alarm Plan
AE202	Second Floor Speaker, Clock and Fire Alarm Plan
AE500	Details
AE501	Details
AE600	Schedules
AE601	Schedules
AE700	Single Line Diagram

PLUMBING

AP050	Basement Floor Key Plan
AP051	First Floor Key Plan
AP052	Second Floor Key Plan
AP400	Enlarged Water System and Maker Space Plans
AP401	Enlarged 105 Laydown and 106 Office Plans
AP402	Enlarged Band and Choral Rooms Plans
AP403	Enlarged Classrooms 135, 137, 139 and 141 Plans
AP404	Enlarged Classrooms 111, 113 and 115 Plans
AP405	Enlarged Science 234 and Physics 238 Plans
AP406	Enlarged Chemistry 242, 243 and Science 244 Plans
AP407	Enlarged Chemistry 235, 239 and 241 Plan
AP408	Enlarged Serving Line Plans and Schedule
AP500	Details
AP600	Schedules

VOLUME 2 OF 2

GENERAL

G002 Title Sheet
G100 Symbols and Abbreviations

MIDDLE SCHOOL

PHASING

BG200 Site Phasing Plan

CODE COMPLIANCE

BG300 Site Code Compliance Plan
BG350 Code Compliance Review
BG351 Code Compliance - Ground Floor and First Floor Key Plans
BG352 Code Compliance - Second Floor Key Plan

HAZARDOUS MATERIALS

BH100 Abatement Plan

CIVIL

BC100 Site Demolition Plan
BC110 Site Soil Erosion and Sediment Control Plan
BC120 Site Layout Plan
BC130 Site Grading Plan
BC140 Site Utility Plan

ARCHITECTURAL

BA100 Demolition, Construction and Reflected Ceiling Plans

MECHANICAL

BM050 Pump Room Ventilation Plan

ELECTRICAL

BE001 Site Demolition and Layout Plan
BE160 Second Floor Power Plan

PLUMBING

BP050 Second Floor Key Plan and Details
BP400 Enlarged Plans, Details and Schedule

FALLS ELEMENTARY SCHOOL

HAZARDOUS MATERIALS

FH100 Abatement Plan

ELECTRICAL

FE160 First Floor Power Plan

PLUMBING

FP050 First Floor Key Plan
FP400 Enlarged Plans, Details and Schedule

BUS GARAGE

CODE COMPLIANCE

GG051 Code Compliance Review - First and Second Floor Key Plans

HAZARDOUS MATERIALS

GH100 First Floor Abatement Plans

STRUCTURAL

GS130 Roof Framing Plan

MECHANICAL

GM130 Floor Plans

GM131 Schedules, Details and Controls

ELECTRICAL

GE160 First Floor Demolition and Power Plans

PUMP HOUSE

ARCHITECTURAL

HA100 First Floor, Reflected Ceiling and Roof Plans

HA200 Exterior Elevations and Building Sections

STRUCTURAL

HS130 Foundation Plan and Details

MECHANICAL

HM130 Floor Plan, Schedules, Details and Controls

ELECTRICAL

HE100 First Floor Lighting and Power & Communications Plan

PLUMBING

HP051 First Floor Plan, Details and Schedules

HP500 Details and Schedules

COMMON

ZC500 Site Details

ZC501 Site Details

ZC502 Site Details

ZC503 Site Details

ZC504 Site Details

ZC505 Site Details

ZC506 Site Details

ZG100 Overall Site Key Plan

COMMON (cont'd)

ZV001 Mahopac Campus – Survey – Layout 1
ZV002 Mahopac Campus – Survey – Layout 2
ZV003 Mahopac Campus – Survey – Layout 3
ZV004 Mahopac Campus – Survey – Layout 4
ZV005 Mahopac Campus – Survey – Layout 5

All drawings dated August 21, 2020.

NOTICE TO BIDDERS

NOTICE IS HEREBY GIVEN, that sealed Bids, in duplicate, are sought and requested by the Board of Education, Mahopac Central School District (hereinafter called "Owner"), for the Reconstruction to Mahopac High School, Mahopac Middle School, Mahopac Falls School, Bus Garage, and New Pump House.

Separate Bids are requested for the following Contracts:

- General
- Plumbing
- Mechanical
- Electrical
- Hazardous Material
- Casework and Lab Equipment
- Site

in accordance with the Drawings, Project Manual (including Conditions of the Contract and Specifications), and other Bidding and Contract Documents prepared by:

Tetra Tech Engineers, Architects & Landscape Architects, P.C. d/b/a
Tetra Tech Architects & Engineers
10 Brown Road
Ithaca, New York 14850

A pre-bid conference for potential Bidders and other interested parties will be held on Wednesday, February 10, 2021 at 3:30 pm local time in the Conference Room at Mahopac High School, 421 Baldwin Place Rd, Mahopac, New York 10541. The complete schedule is as follows:

3:30 pm	Pre-Bid Conference - Mahopac High School 421 Baldwin Place Rd., Mahopac, NY 10541
4:00 pm	Walkthrough – Site (All work is on one campus)
	Walkthrough – Mahopac High School 421 Baldwin Place Rd., Mahopac, NY 10541
	Walkthrough –Mahopac Middle School 425 Baldwin Place Rd, Mahopac, NY 10541
	Conference and Walkthrough – Mahopac Falls School 100 Myrtle Ave., Mahopac, NY 10541
	Walkthrough – Bus Garage 90 Myrtle Ave., Mahopac, NY 10541

Sealed Bids will be received by the Owner until Thursday, February 25, 2021 at 3:00 PM, local time at Mahopac Central School District Office, 179 East Lake Blvd., Mahopac, New York 10541 at which time and place Bids received will be publicly opened and read aloud.

For the convenience of potential Bidders and other interested parties, the Bidding Documents may be examined at the following locations:

Construction Market Data, 30 Technology Parkway South, Suite 100, Norcross, GA 30092-2912
Eastern Contractors Association, Inc., 6 Airline Drive, Colonie, NY 12205
Mohawk Valley Builders Exchange, 10 Main Street, Suite 202, Whitesboro, NY 13492
Northern New York Builders Exchange, 22074 Fabco Road, Watertown, New York 13601
The Builders Exchange of the Southern Tier, Inc.-East, 15 Belden Street, Binghamton, New York 13903
Construction Exchange of Buffalo & Western NY, 2660 William Street, Cheektowaga, NY 14227
Rochester Builders Exchange, 180 Linden Oaks, Suite 100, Rochester, NY 14625
Syracuse Builders Exchange, 6563 Ridings Rd., Syracuse, NY 13206
McGraw Hill Construction/Dodge, c/o Dataflow, 2215 Central Ave, Schenectady NY 12304
The Builders Exchange of the Southern Tier, Inc.-West, 65 E. Main. St., Falconer, NY 14733
Mahopac Central School District, 179 East Lake Boulevard, Mahopac, NY 10541
Tetra Tech Architects & Engineers, 10 Brown Road, Ithaca, New York 14850

Complete digital sets of Bidding Documents, drawings and specifications, may be obtained online as a download at www.tetratchaeplanroom.com 'public projects' for a non-refundable fee of \$49.00 (Forty Nine Dollars).

Complete hard copy sets of Bidding Documents, drawings and specifications, may be obtained online at www.tetratchaeplanroom.com 'public projects'. Checks shall be made payable to Mahopac Central School District in the sum of \$100.00 (One Hundred Dollars) for each set of documents. A scanned copy of the deposit check can be emailed to projects@revplans.com. Once the scanned copy of the executed deposit check is received, Bidding Documents will be shipped. Mail checks to Lohrius Blueprint, 226 Newtown Road, Plainview, New York 11803. Plan deposit is refundable in accordance with the terms in the Instructions to Bidders to all submitting bids. Any bidder requiring documents to be shipped shall make arrangements with the printer and pay for all packaging and shipping costs (either by providing FedEX/UPS account number or being charged a flat rate by the printer).

Please note REV www.tetratchaeplanroom.com is the designated location and means for distributing and obtaining all bid package information, electronic or hard copy. Only those Contract Documents obtained in this manner will enable a prospective bidder to be identified as a registered plan holder. The Provider takes no responsibility for the completeness of Contract Documents obtained from other sources. Contract Documents obtained from other sources may not be accurate or may not contain addenda that may have been issued.

All bid addenda will be transmitted to registered plan holders, regardless of receiving electronic or hard copy Bid Documents, via email and will be available at www.tetratchaeplanroom.com. Registered plan holders who have paid for hard copies of the bid documents will need to make the determination if hard copies of the addenda are required for their use, and coordinate directly with REV for hard copies of addenda to be issued. There will be no charge for registered plan holders to obtain hard copies of the bid addenda.

As bid security, each Bid shall be accompanied by a certified check or Bid Bond made payable to the Owner, in accordance with the amounts and terms described in the Instructions to Bidders.

The Owner requires Bids comply with bidding requirements indicated in the Instructions to Bidders. The Owner may, at its discretion, waive informalities in Bids, but is not obligated to do so, nor does it represent that it will do so. The Owner also reserves the right to reject any and all Bids. The Owner will not waive informalities which would give one Bidder substantial advantage or benefit not enjoyed by all affected Bidders. Bids may not be withdrawn before 45 days following the Bid opening thereof, unless an error is claimed by the Bidder in accordance with the Instructions to Bidders.

INSTRUCTIONS TO BIDDERS

ARTICLE 1

PROJECT AND BIDDING INFORMATION

1. Project Identification: Reconstruction to Mahopac High School, Mahopac Middle School, Mahopac Falls School, Bus Garage, and New Pump House.
 - a. Project Location:
 1. Mahopac High School – 421 Baldwin Place Rd, Mahopac, New York 10541.
 2. Mahopac Middle School – 425 Baldwin Place Rd, Mahopac, New York 10541.
 3. Mahopac Falls School – 100 Myrtle Ave, Mahopac, New York 10541.
 4. Bus Garage – 90 Myrtle Ave, Mahopac, New York 10541.
 5. New Pump House – 421 Baldwin Place Rd, Mahopac, New York 10541.

2. Owner: Mahopac Central School Districts
 - a. Address: 179 East Lake Boulevard, Mahopac, New York 10541-1666.

3. Bid Opening: Bids will be received until the following Bid opening date and time, at the following location:
 - a. Bid Opening Date and Time: Thursday, February 25, 2021 at 3:00 PM, local time
 - b. Bid Opening Location: Conference Room at Mahopac Central School District Office, 179 East Lake Blvd., 100 Myrtle Ave, Mahopac, New York 10541.

2. Bidders are invited to submit Bids for any, or all of, the following Contracts:
 - a. General
 - b. Plumbing
 - c. Mechanical
 - d. Electrical
 - e. Hazardous Material
 - f. Casework and Lab Equipment
 - g. Site

3. Access to the Project Site: Subject to Owner’s prior approval of timing, Bidders will be permitted access to Project site on Monday through Friday, from 9:00 am until 3:00 pm, except legal holidays.
 - a. Contact Owner’s representative designated below, prior to visiting Project site, to arrange access.
 - b. Owner’s representative: Michael Shore, Director of Facilities.

4. A pre-bid conference for potential Bidders and other interested parties will be held on Wednesday, February 10, 2021 at 3:30 pm local time in the Conference Room at Mahopac High School, 421 Baldwin Place Rd, Mahopac, New York 10541. The complete schedule is as follows:

3:30 pm	Pre-Bid Conference - Mahopac High School 421 Baldwin Place Rd., Mahopac, NY 10541
---------	--

4:00 pm Walkthrough – Site (All work is on one campus)

Walkthrough – Mahopac High School
421 Baldwin Place Rd., Mahopac, NY 10541

Walkthrough – Mahopac Middle School
425 Baldwin Place Rd, Mahopac, NY 10541

Conference and Walkthrough – Mahopac Falls School
100 Myrtle Ave., Mahopac, NY 10541

Walkthrough – Bus Garage
90 Myrtle Ave., Mahopac, NY 10541

5. Agreement Form: The following will be used as the basis for the form of agreement between the Owner and the Contractor (Owner-Contractor Agreement):
- a. Standard Form of Agreement Between Owner and Contractor, AIA Document A101CMa.

ARTICLE 2 DEFINITIONS

1. Definitions in the General Conditions of the Contract for Construction, AIA Document A201CMa, or in other Contract Documents are applicable to the Bidding Documents.
 - a. “Addenda”: Written or graphic instruments issued by the Architect prior to execution of the Contract which modify or interpret the Bidding Documents by additions, deletions, clarifications, or corrections.
 - b. “Bid”: Complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.
 - 1) “Base Bid”: Sum stated in the Bid for which Bidder offers to perform the Work described in the Bidding Documents as the base, to which Work may be added or from which Work may be deleted for sums stated for Alternates.
 - 2) “Alternates”: Amount stated in the Bid to be added to or deducted from the amount of the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.
 - c. “Bidder”: Person or entity who submits a Bid.

ARTICLE 3 BIDDING PROCEDURES

1. Bid Form: Complete the Bid Form provided, in duplicate, with all blank spaces for Base Bid and Alternates legibly completed in ink, or typewritten, in both words and figures.
 - a. In the event of a discrepancy between amounts written in words and figures, the amount written in words shall govern.
 - b. Bid Forms without amounts expressed both in words and figures will not be accepted.

2. Bid Attachments: Complete and submit the following attachments with the Bid Form:
 - a. Attachment #1: Non-Collusive Bidding Certification.
 - b. Attachment #2: Certified Corporate Resolution.
 - c. Attachment #3: Iranian Energy Divestment Certification

3. Bid Security:
 - a. Submit, with the Bid Form, bid security in the amount of five percent of the Base Bid, in any of the following forms:
 - 1) Certified check, payable to the Owner; or
 - 2) Bid Bond, payable to the Owner, on Bid Bond, AIA Document A310, or standard bid bond form, duly executed by the Bidder as principal, with a surety company acceptable to the Owner.
 - a) Affix a certified and current copy of the power of attorney for the attorney-in-fact who executes the required bond on behalf of the surety.
 - b. Within three days following the Bid opening, bid security will be returned to all Bidders, except the three apparent lowest Bidders.
 - 1) Within three days following execution of the Owner-Contractor Agreement, bid security will be returned to the three apparent lowest Bidders.
 - 2) If the Owner-Contractor Agreement has not been executed within 45 days following the Bid opening, bid security will be returned to the three apparent lowest Bidders, except as noted below.
 - c. Should the accepted Bidder, within 10 days following Notice of Award, fail or refuse to execute the Owner-Contractor Agreement and to provide the required performance and payment bonds, the accepted Bidder will be deemed to have abandoned the Contract and its bid security will be forfeited to the Owner.

4. Bid Submission: Submit each Bid, including attachments, in a sealed envelope bearing the Bidder's name and address, name of Contract, and name of Project. Deliver Bid to location specified no later than the Bid opening date and time indicated. Any Bid received after the Bid opening date and time indicated will be returned unopened.

5. Bid Withdrawal:
 - a. Bid may be withdrawn by the Bidder up until the date and time specified for opening of Bids.
 - b. Following the Bid opening, Bid may not be withdrawn before 45 days following the Bid opening, except in the case of Bidder error, as follows:
 - 1) If the Bidder claims an error in the Bid, submit a written notice to the Architect, within three days of the Bid opening, describing in detail the nature of the error, submitting documentary evidence or proof of such error.
 - a) Failure to deliver such notice and evidence or proof, within the time frame required, constitutes a waiver of Bidder's right to claim error.

- 2) Upon receipt of required notice and evidence or proof, the Owner, in consultation with the Architect, will determine if an excusable error has been made; and if so, the Owner may permit the Bid to be withdrawn. The Owner's determination will be conclusive upon the Bidder, its surety, and all who claim rights under the Bidder.

ARTICLE 4
BIDDING DOCUMENTS

1. Bidding Documents include the bidding requirements and the proposed Contract Documents, as follows:
 - a. Bidding requirements consist of the following:
 - 1) Notice to Bidders.
 - 2) Instructions to Bidders.
 - 3) Bid Form, with attachments.
 - 4) Proposed Products Form.
 - 5) Proposed Schedule of Values Form.
 - 6) Bidder's Qualifications Form.
 - b. Proposed Contract Documents consist of the following:
 - 1) Owner-Contractor Agreement.
 - 2) Conditions of the Contract.
 - 3) Drawings.
 - 4) Specifications.
 - 5) Addenda.
2. Bidding Document Interpretations or Corrections:
 - a. Submit requests for Bidding Document interpretation to the Architect, in writing using the provided Pre-Bid Request for Interpretation Form, at least five working days prior to the Bid opening.
 - b. Interpretations or corrections will be issued in the form of written Addenda. The Architect will not make oral interpretations or corrections.
 - c. Notification of addenda will be transmitted to registered plan holders via email and will be available to download at www.tetratchaeplanroom.com under "public projects".
 - 1) Failure of any Bidder to not download addenda and/or failure to receive any such Addendum by reason of not having registered as a plan holder in accordance with the bidding instructions, shall not relieve the Bidder from any obligation required by the Addendum.
3. Equivalent and Substitutions: The use of manufacturer's brand names, catalog numbers, and similar proprietary identifying data is intended to establish a standard of quality, appearance, and function for those items. It is not the intention of the Owner or the Architect to eliminate from consideration products that are equivalent in quality, appearance, and function to those identified.
 - a. Equivalent are pre-award and substitutions are post-award.

- b. Equivalents:
 - 1) On Proposed Products Form provided, as post-Bid information, identify and list proposed equivalents to specified products as follows:
 - a) Applicable Specification Section and paragraph.
 - b) Proposed manufacturer's name, product brand name, and catalog number of proposed equivalent.
 - c) Note any aspect of the specified product that the proposed equivalent cannot meet.
 - 2) Failure to identify and list proposed equivalents shall be deemed to mean the Bidder will furnish the materials or products indicated in the Contract Documents without exception.
- c. Substitutions: Refer to Division 01 Specification Section "Substitution Procedures".

ARTICLE 5
BIDDER'S REPRESENTATIONS

- 1. By submitting a Bid, Bidder represents that:
 - a. Bidder has visited and thoroughly inspected the Project site, and has become fully informed of the conditions relating to the Project;
 - b. Bidder has received, read, and is thoroughly familiar with the Bidding Documents, including all Addenda issued; and
 - c. Bidder has prepared its Bid based on the materials, equipment and systems required by the Bidding Documents or equivalents.

ARTICLE 6
BID CONSIDERATION

- 1. Opening of Bids: At the designated Bid opening date and time, Bids received will be publicly opened and read aloud.
- 2. Bid Rejection:
 - a. The Owner requires Bids comply with bidding requirements; however, the Owner may, at its discretion, waive informalities in Bids. The Owner is not obligated to do so and does not represent that it will do so. The Owner will not waive informalities which would give one Bidder substantial advantage or benefit not enjoyed by all affected Bidders.
 - b. The Owner reserves the right to reject any and all Bids not deemed in the best interests of the Owner, if in its judgment the public interest will be promoted thereby.
 - c. The Owner reserves the right to reject as "informal" any and all Bids which, in its opinion, are incomplete, conditional, obscure, or contain irregularities of any kind.
 - d. In rejecting a Bid, the Owner does not forfeit its right to accept the Bid for any other Contract contained in the Project; and the rejection of a Bid is not necessarily a finding by the Owner of any facts or circumstances which would preclude the Bidder from serving as a subcontractor on any portion of the Project.

3. Bid Acceptance: The Owner intends to award the Contract to the responsible Bidder whose Bid complies with conditions to render it formal, who is able to furnish approved surety bonds, and whose Bid is the lowest number of dollars as defined below.
 - a. Lowest Bid may be Base Bid plus any Alternates the Owner desires to accept.
 - b. If the acceptance of Alternates does not change the low Bidder, the Owner reserves the right to accept any or all Alternates within 45 days following Notice of Award.

ARTICLE 7
POST-BID INFORMATION

1. Contractor Qualifications: The Owner may make such investigations as it deems necessary to determine the ability of the Bidder to perform the Work.
 - a. The Bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request, including the provided Bidder's Qualifications Form.
 - b. The Owner reserves the right to reject any Bid if the evidence submitted, or investigation of Bidder fails to satisfy the Owner that the Bidder is properly qualified to carry out the obligations of the Contract and to complete the Work contemplated therein.
2. Owner's Financial Capability: Successful Bidder may submit request to Owner for information regarding Owner's financial arrangements for this Project in accordance with the General Conditions, no later than 30 days following the Bid opening.
3. Post-Bid Submittals:
 - a. The three apparent low Bidders shall submit the following completed forms within three days following the Bid opening:
 - 1) Proposed Products Form.
 - 2) Proposed Subcontractors Form.
 - 3) Proposed Schedule of Values Form.
 - 4) Upon request, Bidder's Qualifications Form.

ARTICLE 8
PERFORMANCE BOND AND PAYMENT BOND

1. Bond Requirements:
 - a. The successful Bidder shall furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder.
 - b. Bonds shall be obtained from a surety satisfactory to the Owner, authorized and licensed to do business in the state where the Project is located, and listed in the latest issue of the U.S. Treasury Circular 570. The amount of each bond shall be equal to 100 percent of the Contract Sum. The sufficiency of the bonds is subject to the approval of the Owner and bonds deemed insufficient by the Owner may be rejected.
 - c. Affix a certified and current copy of the power of attorney for the attorney-in-fact who executes the required bonds on behalf of the surety.

2. Time of Delivery and Form of Bonds:

- a. Deliver required bonds to the Owner not later than the date the Agreement is entered into.
- b. Use Performance Bond and Payment Bond, AIA Document A312, unless otherwise approved by the Owner.

ARTICLE 9
MISCELLANEOUS PROVISIONS

1. All applicable laws, ordinances, rules, and regulations of Federal, State, and other authorities having jurisdiction over the Project shall apply to the Contract throughout, and will be deemed included in the Contract as though herein written out in full.

- a. Sections of the New York State Labor Law (LL) and the New York State General Municipal Law (GML) include, but are not limited to, the following:

- 1) LL §220, subd. 2: Eight-hour day, 40-hour week.
- 2) LL §220, subd. 3 and LL §220-d: Minimum rate of wage and supplement.
- 3) LL §220-e: Prohibiting discrimination.
- 4) LL §222-a: Prevention of dust hazards.
- 5) GML §103-d: Statement of non-collusion in bids.
- 6) GML §106-b: Payment on public work contracts.
- 7) GML §108: Workmen's compensation insurance.
- 8) GML §109: Assignment of public contracts.

2. Time of Completion: Refer to Division 01 Section "Multiple Contract Summary – Project Schedule".

Attachment: Pre-Bid Request for Interpretation Form

END OF SECTION 00 21 13



INSTRUCTIONS TO BIDDERS
ATTACHMENT #1:
PRE-BID REQUEST FOR INTERPRETATION FORM

SUBMIT FORM BY EMAIL TO INE.Mahopac@tetrattech.com

Project No.: 121111-19002

Date:

Project Name: Reconstruction to Mahopac High School, Mahopac Middle School, Mahopac Falls School, Bus Garage, and New Pump House

Bidder Contact Person:
Bidder Company Name:
Bidder Phone:
Bidder Email Address:

Question Pertains to:

Drawing Number:
Plan Area:
Room Number:
Drawing Detail Number:
Specification Section:

Question: (Please be specific)

Review by Architect/Engineers:

Responded By: _____ **Date:** _____

Submit requests not less than 5 working days prior to the specified Bid Opening date and time. In the event that this question requires clarification or modification of the Bidding Documents, such written information can only be provided by formal Addendum, distributed to all plan holders.



10 Brown Rd
Ithaca, NY 14850
(607)277-7100

Ithaca, New York
Farmingdale, New York
Albany, New York

BID FROM (Bidder's Name) : _____

(Address) : _____

Bidder's Telephone : _____

Bidder's Facsimile (Fax) : _____

Bidder's E-mail Address : _____
(if applicable)

BID FORM
(submit in duplicate)

CONTRACT: CONTRACT 1 GC – GENERAL CONSTRUCTION WORK

PROJECT TITLE: RECONSTRUCTION TO
MAHOPAC HIGH SCHOOL
MAHOPAC MIDDLE SCHOOL
MAHOPAC FALLS SCHOOL
BUS GARAGE
NEW PUMP HOUSE

DATE: AUGUST 21, 2020

PROJECT NO.: 121111-19002

BID TO: Board of Education
Mahopac Central School District
179 East Lake Boulevard
Mahopac, New York 10541

The Bidder hereby certifies that it has examined and fully understands the requirements and intent of the Bidding Documents, including the Bidding Requirements and proposed Contract Documents; and proposes to furnish all labor, materials, and equipment necessary to complete the Work on, or before, the dates specified in the Contract Documents for the **BASE BID** sum of:

_____ (words)
_____ (\$ _____) (figures)

Show all amounts in both words and figures; in the event of a discrepancy between amounts written in words and figures, the amount written in words shall govern.

Refer to Division 01 Section "Allowances" for description of allowances to be included in the Base Bid above.

ALTERNATES

Indicate in the spaces provided below the amount to be added to or the amount to be deducted from (as applicable) the Base Bid if the Owner accepts the following Alternates described in Division 01 Section "Alternates".

Include in the amount of each Alternate, all labor, materials, overhead and profit, modification of Work specified in the Contract Documents, and additional work that may be required by acceptance of the Alternate.

ALTERNATE NO. 2 - HIGH SCHOOL LVT FLOORING

DEDUCT from the Base Bid the sum of:

_____ (\$ _____)
(words) (figures)

ALTERNATE NO. 3 - HIGH SCHOOL EPOXY FLOORING

DEDUCT from the Base Bid the sum of:

_____ (\$ _____)
(words) (figures)

LIST OF ADDENDA RECEIVED

No. _____ Date _____ No. _____ Date _____
No. _____ Date _____ No. _____ Date _____
No. _____ Date _____ No. _____ Date _____

BID ATTACHMENTS

Enclosed with this Bid are the following attachments:

- Attachment #1 - Non-Collusive Bidding Certification.
- Attachment #2 - Certified Corporate Resolution.
- Attachment #3 – Iranian Energy Divestment Certification

BID SECURITY

Enclosed with this Bid is bid security in the amount of five percent of the Base Bid.

EXECUTION OF CONTRACT

If written notice of the acceptance of this Bid is transmitted to the undersigned within 45 days following the Bid opening, the undersigned will, within 10 days following the Notice of Award, execute and transmit a Contract in the form as required by the Architect.

This Bid may be withdrawn at any time prior to the Bid opening.

SIGNATURE

() NAME OF BIDDER (Corporate Name)
() _____
() _____
(Corporate Seal) _____
() SIGNATURE (Corporate Officer)
() _____
() _____
() _____
() DATE: _____

BID FORM
ATTACHMENT #1

GENERAL CONDITIONS TO BID
NON-COLLUSIVE BIDDING CERTIFICATION

No bid will be accepted that does not have this form completely executed.

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 knowledge and belief:

- (a) 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 any competitor;
- (b) 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;
- (c) 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;
- (d) The person signing this bid or proposal certifies that he has fully informed himself regarding the accuracy of the statements contained in this certification, and under the penalties of perjury, affirms the truth thereof, such penalties being applicable to the bidder as well as to the person signing in its behalf;
- (e) That attached hereto (if corporate bidder) is a certified copy of resolution authorizing the execution of this certified by the signature of this bid or proposal in behalf of the corporate bidder.

(Individual)

(Corporation)

Dated: _____ By _____
(Signature of Officer)

This Non-Collusive Bidding Certificate must be submitted with the bid.

BID FORM
ATTACHMENT #2

CERTIFIED CORPORATE RESOLUTION

RESOLVED THAT _____ be authorized to sign and submit the bid or proposal of this corporation for the following project:

and to include in such bid or proposal the certificate as to non-collusion required by section one hundred three-d (103-d) of the general municipal law as to the act and deed of such corporation, and for any inaccuracies or mis-statements in such certificate this corporate bidder shall be liable under the penalties of perjury.

The foregoing is a true and correct copy of the resolution and adopted by

_____ at a meeting of its board of directors held on the
_____ day of _____ 20__ .

(Secretary)

BID FORM
ATTACHMENT #3

IRANIAN ENERGY DIVESTMENT CERTIFICATION

**Pursuant to Section 103-g
Of the New York State
General Municipal Law**

- A. By submission of this bid/proposal, each bidder/proposer and each person signing on behalf of any bidder/proposer 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 its knowledge and belief that each bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the New York State Finance Law.
- B. A Bid/Proposal shall not be considered for award, nor shall any award be made where the condition set forth in Paragraph A above has not been complied with; provided, however, that in any case the bidder/proposer cannot make the foregoing certification set forth in Paragraph A above, the bidder/proposer shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefore. Where Paragraph A above cannot be complied with, the Purchasing Unit to the political subdivision, public department, agency or official thereof to which the bid/proposal is made, or his designee, may award a bid/proposal, on a case by case business under the following circumstances:
1. The investment activities in Iran were made before April 12, 2012, the investment activities in Iran have not been expanded or renewed after April 12, 2012, and the Bidder/Proposer has adopted, publicized and is implementing a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran; or
 2. The political subdivision makes a determination that the goods or services are necessary for the political subdivision to perform its functions and that, absent such an exemption, the political subdivision would be unable to obtain the goods or services for which the contract is offered. Such determination shall be made in writing and shall be a public document.

Signature

Title

Date

Company



10 Brown Rd
Ithaca, NY 14850
(607)277-7100

Ithaca, New York
Farmingdale, New York
Albany, New York

BID FROM (Bidder's Name) : _____
(Address) : _____

Bidder's Telephone : _____

Bidder's Facsimile (Fax) : _____

Bidder's E-mail Address : _____
(if applicable)

BID FORM
(submit in duplicate)

CONTRACT: CONTRACT 2 PC – PLUMBING WORK

PROJECT TITLE: RECONSTRUCTION TO
MAHOPAC HIGH SCHOOL
MAHOPAC MIDDLE SCHOOL
MAHOPAC FALLS SCHOOL
BUS GARAGE
NEW PUMP HOUSE

DATE: AUGUST 21, 2020

PROJECT NO.: 121111-19002

BID TO: Board of Education
Mahopac Central School District
179 East Lake Boulevard
Mahopac, New York 10541

The Bidder hereby certifies that it has examined and fully understands the requirements and intent of the Bidding Documents, including the Bidding Requirements and proposed Contract Documents; and proposes to furnish all labor, materials, and equipment necessary to complete the Work on, or before, the dates specified in the Contract Documents for the **BASE BID** sum of:

_____ (words)
_____ (\$ _____) (figures)

Show all amounts in both words and figures; in the event of a discrepancy between amounts written in words and figures, the amount written in words shall govern.

LIST OF ADDENDA RECEIVED

No. _____ Date _____ No. _____ Date _____
No. _____ Date _____ No. _____ Date _____
No. _____ Date _____ No. _____ Date _____

BID ATTACHMENTS

Enclosed with this Bid are the following attachments:

- Attachment #1 - Non-Collusive Bidding Certification.
- Attachment #2 - Certified Corporate Resolution.
- Attachment #3 – Iranian Energy Divestment Certification

BID SECURITY

Enclosed with this Bid is bid security in the amount of five percent of the Base Bid.

EXECUTION OF CONTRACT

If written notice of the acceptance of this Bid is transmitted to the undersigned within 45 days following the Bid opening, the undersigned will, within 10 days following the Notice of Award, execute and transmit a Contract in the form as required by the Architect.

This Bid may be withdrawn at any time prior to the Bid opening.

SIGNATURE

() NAME OF BIDDER (Corporate Name)
()
()
(Corporate Seal) _____
() SIGNATURE (Corporate Officer)
()
() _____
()
() DATE: _____

BID FORM
ATTACHMENT #1

GENERAL CONDITIONS TO BID
NON-COLLUSIVE BIDDING CERTIFICATION

No bid will be accepted that does not have this form completely executed.

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 knowledge and belief:

- (a) 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 any competitor;
- (b) 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;
- (c) 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;
- (d) The person signing this bid or proposal certifies that he has fully informed himself regarding the accuracy of the statements contained in this certification, and under the penalties of perjury, affirms the truth thereof, such penalties being applicable to the bidder as well as to the person signing in its behalf;
- (e) That attached hereto (if corporate bidder) is a certified copy of resolution authorizing the execution of this certified by the signature of this bid or proposal in behalf of the corporate bidder.

(Individual)

(Corporation)

Dated: _____ By _____
(Signature of Officer)

This Non-Collusive Bidding Certificate must be submitted with the bid.

BID FORM
ATTACHMENT #2

CERTIFIED CORPORATE RESOLUTION

RESOLVED THAT _____ be authorized to sign and submit the bid or proposal of this corporation for the following project:

and to include in such bid or proposal the certificate as to non-collusion required by section one hundred three-d (103-d) of the general municipal law as to the act and deed of such corporation, and for any inaccuracies or mis-statements in such certificate this corporate bidder shall be liable under the penalties of perjury.

The foregoing is a true and correct copy of the resolution and adopted by

_____ at a meeting of its board of directors held on the
_____ day of _____ 20__ .

(Secretary)

BID FORM
ATTACHMENT #3

IRANIAN ENERGY DIVESTMENT CERTIFICATION

**Pursuant to Section 103-g
Of the New York State
General Municipal Law**

- A. By submission of this bid/proposal, each bidder/proposer and each person signing on behalf of any bidder/proposer 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 its knowledge and belief that each bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the New York State Finance Law.
- B. A Bid/Proposal shall not be considered for award, nor shall any award be made where the condition set forth in Paragraph A above has not been complied with; provided, however, that in any case the bidder/proposer cannot make the foregoing certification set forth in Paragraph A above, the bidder/proposer shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefore. Where Paragraph A above cannot be complied with, the Purchasing Unit to the political subdivision, public department, agency or official thereof to which the bid/proposal is made, or his designee, may award a bid/proposal, on a case by case business under the following circumstances:
1. The investment activities in Iran were made before April 12, 2012, the investment activities in Iran have not been expanded or renewed after April 12, 2012, and the Bidder/Proposer has adopted, publicized and is implementing a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran; or
 2. The political subdivision makes a determination that the goods or services are necessary for the political subdivision to perform its functions and that, absent such an exemption, the political subdivision would be unable to obtain the goods or services for which the contract is offered. Such determination shall be made in writing and shall be a public document.

Signature

Title

Date

Company



10 Brown Rd
Ithaca, NY 14850
(607)277-7100

Ithaca, New York
Farmingdale, New York
Albany, New York

BID FROM (Bidder's Name) : _____
(Address) : _____

Bidder's Telephone : _____

Bidder's Facsimile (Fax) : _____

Bidder's E-mail Address : _____
(if applicable)

BID FORM
(submit in duplicate)

CONTRACT: CONTRACT 3 HC – MECHANICAL WORK

PROJECT TITLE: RECONSTRUCTION TO
MAHOPAC HIGH SCHOOL
MAHOPAC MIDDLE SCHOOL
MAHOPAC FALLS SCHOOL
BUS GARAGE
NEW PUMP HOUSE

DATE: AUGUST 21, 2020

PROJECT NO.: 121111-19002

BID TO: Board of Education
Mahopac Central School District
179 East Lake Boulevard
Mahopac, New York 10541

The Bidder hereby certifies that it has examined and fully understands the requirements and intent of the Bidding Documents, including the Bidding Requirements and proposed Contract Documents; and proposes to furnish all labor, materials, and equipment necessary to complete the Work on, or before, the dates specified in the Contract Documents for the **BASE BID** sum of:

_____ (words)
_____ (\$ _____) (figures)

Show all amounts in both words and figures; in the event of a discrepancy between amounts written in words and figures, the amount written in words shall govern.

Refer to Division 01 Section "Allowances" for description of allowances to be included in the Base Bid above.

LIST OF ADDENDA RECEIVED

No. _____	Date _____	No. _____	Date _____
No. _____	Date _____	No. _____	Date _____
No. _____	Date _____	No. _____	Date _____

BID ATTACHMENTS

Enclosed with this Bid are the following attachments:

- Attachment #1 - Non-Collusive Bidding Certification.
- Attachment #2 - Certified Corporate Resolution.
- Attachment #3 – Iranian Energy Divestment Certification

BID SECURITY

Enclosed with this Bid is bid security in the amount of five percent of the Base Bid.

EXECUTION OF CONTRACT

If written notice of the acceptance of this Bid is transmitted to the undersigned within 45 days following the Bid opening, the undersigned will, within 10 days following the Notice of Award, execute and transmit a Contract in the form as required by the Architect.

This Bid may be withdrawn at any time prior to the Bid opening.

SIGNATURE

(	)	NAME OF BIDDER (Corporate Name)
()	_____
()	_____
(	)	Corporate Seal _____
(	)	SIGNATURE (Corporate Officer)
()	_____
()	_____
(	)	DATE: _____

BID FORM
ATTACHMENT #1

GENERAL CONDITIONS TO BID
NON-COLLUSIVE BIDDING CERTIFICATION

No bid will be accepted that does not have this form completely executed.

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 knowledge and belief:

- (a) 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 any competitor;
- (b) 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;
- (c) 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;
- (d) The person signing this bid or proposal certifies that he has fully informed himself regarding the accuracy of the statements contained in this certification, and under the penalties of perjury, affirms the truth thereof, such penalties being applicable to the bidder as well as to the person signing in its behalf;
- (e) That attached hereto (if corporate bidder) is a certified copy of resolution authorizing the execution of this certified by the signature of this bid or proposal in behalf of the corporate bidder.

(Individual)

(Corporation)

Dated: _____ By _____
(Signature of Officer)

This Non-Collusive Bidding Certificate must be submitted with the bid.

BID FORM
ATTACHMENT #2

CERTIFIED CORPORATE RESOLUTION

RESOLVED THAT _____ be authorized to sign and submit the bid or proposal of this corporation for the following project:

and to include in such bid or proposal the certificate as to non-collusion required by section one hundred three-d (103-d) of the general municipal law as to the act and deed of such corporation, and for any inaccuracies or mis-statements in such certificate this corporate bidder shall be liable under the penalties of perjury.

The foregoing is a true and correct copy of the resolution and adopted by

_____ at a meeting of its board of directors held on the
_____ day of _____ 20__ .

(Secretary)

BID FORM
ATTACHMENT #3

IRANIAN ENERGY DIVESTMENT CERTIFICATION

**Pursuant to Section 103-g
Of the New York State
General Municipal Law**

- A. By submission of this bid/proposal, each bidder/proposer and each person signing on behalf of any bidder/proposer 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 its knowledge and belief that each bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the New York State Finance Law.
- B. A Bid/Proposal shall not be considered for award, nor shall any award be made where the condition set forth in Paragraph A above has not been complied with; provided, however, that in any case the bidder/proposer cannot make the foregoing certification set forth in Paragraph A above, the bidder/proposer shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefore. Where Paragraph A above cannot be complied with, the Purchasing Unit to the political subdivision, public department, agency or official thereof to which the bid/proposal is made, or his designee, may award a bid/proposal, on a case by case business under the following circumstances:
1. The investment activities in Iran were made before April 12, 2012, the investment activities in Iran have not been expanded or renewed after April 12, 2012, and the Bidder/Proposer has adopted, publicized and is implementing a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran; or
 2. The political subdivision makes a determination that the goods or services are necessary for the political subdivision to perform its functions and that, absent such an exemption, the political subdivision would be unable to obtain the goods or services for which the contract is offered. Such determination shall be made in writing and shall be a public document.

Signature

Title

Date

Company



10 Brown Rd
Ithaca, NY 14850
(607)277-7100

Ithaca, New York
Farmingdale, New York
Albany, New York

BID FROM (Bidder's Name) : _____

(Address) : _____

Bidder's Telephone : _____

Bidder's Facsimile (Fax) : _____

Bidder's E-mail Address : _____
(if applicable)

BID FORM
(submit in duplicate)

CONTRACT: CONTRAC 4 EC – ELECTRICAL WORK

PROJECT TITLE: RECONSTRUCTION TO
MAHOPAC HIGH SCHOOL
MAHOPAC MIDDLE SCHOOL
MAHOPAC FALLS SCHOOL
BUS GARAGE
NEW PUMP HOUSE

DATE: AUGUST 21, 2020

PROJECT NO.: 121111-19002

BID TO: Board of Education
Mahopac Central School District
179 East Lake Boulevard
Mahopac, New York 10541

The Bidder hereby certifies that it has examined and fully understands the requirements and intent of the Bidding Documents, including the Bidding Requirements and proposed Contract Documents; and proposes to furnish all labor, materials, and equipment necessary to complete the Work on, or before, the dates specified in the Contract Documents for the **BASE BID** sum of:

_____ (words)

_____ (\$ _____) (figures)

Show all amounts in both words and figures; in the event of a discrepancy between amounts written in words and figures, the amount written in words shall govern.

Refer to Division 01 Section "Allowances" for description of allowances to be included in the Base Bid above.

ALTERNATES

Indicate in the spaces provided below the amount to be added to or the amount to be deducted from (as applicable) the Base Bid if the Owner accepts the following Alternates described in Division 01 Section "Alternates".

Include in the amount of each Alternate, all labor, materials, overhead and profit, modification of Work specified in the Contract Documents, and additional work that may be required by acceptance of the Alternate.



ALTERNATE NO. 1 - MIDDLE SCHOOL ATHLETIC FIELD

ADD to the Base Bid the sum of:

_____ (\$ _____)
(words) (figures)



LIST OF ADDENDA RECEIVED

No. _____	Date _____	No. _____	Date _____
No. _____	Date _____	No. _____	Date _____
No. _____	Date _____	No. _____	Date _____

BID ATTACHMENTS

Enclosed with this Bid are the following attachments:

- Attachment #1 - Non-Collusive Bidding Certification.
- Attachment #2 - Certified Corporate Resolution.
- Attachment #3 – Iranian Energy Divestment Certification

BID SECURITY

Enclosed with this Bid is bid security in the amount of five percent of the Base Bid.

EXECUTION OF CONTRACT

If written notice of the acceptance of this Bid is transmitted to the undersigned within 45 days following the Bid opening, the undersigned will, within 10 days following the Notice of Award, execute and transmit a Contract in the form as required by the Architect.

This Bid may be withdrawn at any time prior to the Bid opening.

SIGNATURE

(	)	NAME OF BIDDER (Corporate Name)
()	_____
()	_____
(	)	Corporate Seal
(	)	SIGNATURE (Corporate Officer)
()	_____
()	_____
(	)	DATE: _____

BID FORM
ATTACHMENT #1

GENERAL CONDITIONS TO BID
NON-COLLUSIVE BIDDING CERTIFICATION

No bid will be accepted that does not have this form completely executed.

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 knowledge and belief:

- (a) 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 any competitor;
- (b) 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;
- (c) 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;
- (d) The person signing this bid or proposal certifies that he has fully informed himself regarding the accuracy of the statements contained in this certification, and under the penalties of perjury, affirms the truth thereof, such penalties being applicable to the bidder as well as to the person signing in its behalf;
- (e) That attached hereto (if corporate bidder) is a certified copy of resolution authorizing the execution of this certified by the signature of this bid or proposal in behalf of the corporate bidder.

(Individual)

(Corporation)

Dated: _____ By _____
(Signature of Officer)

This Non-Collusive Bidding Certificate must be submitted with the bid.

BID FORM
ATTACHMENT #2

CERTIFIED CORPORATE RESOLUTION

RESOLVED THAT _____ be authorized to sign and submit the bid or proposal of this corporation for the following project:

and to include in such bid or proposal the certificate as to non-collusion required by section one hundred three-d (103-d) of the general municipal law as to the act and deed of such corporation, and for any inaccuracies or mis-statements in such certificate this corporate bidder shall be liable under the penalties of perjury.

The foregoing is a true and correct copy of the resolution and adopted by

_____ at a meeting of its board of directors held on the
_____ day of _____ 20__ .

(Secretary)

BID FORM
ATTACHMENT #3

IRANIAN ENERGY DIVESTMENT CERTIFICATION

**Pursuant to Section 103-g
Of the New York State
General Municipal Law**

- A. By submission of this bid/proposal, each bidder/proposer and each person signing on behalf of any bidder/proposer 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 its knowledge and belief that each bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the New York State Finance Law.
- B. A Bid/Proposal shall not be considered for award, nor shall any award be made where the condition set forth in Paragraph A above has not been complied with; provided, however, that in any case the bidder/proposer cannot make the foregoing certification set forth in Paragraph A above, the bidder/proposer shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefore. Where Paragraph A above cannot be complied with, the Purchasing Unit to the political subdivision, public department, agency or official thereof to which the bid/proposal is made, or his designee, may award a bid/proposal, on a case by case business under the following circumstances:
1. The investment activities in Iran were made before April 12, 2012, the investment activities in Iran have not been expanded or renewed after April 12, 2012, and the Bidder/Proposer has adopted, publicized and is implementing a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran; or
 2. The political subdivision makes a determination that the goods or services are necessary for the political subdivision to perform its functions and that, absent such an exemption, the political subdivision would be unable to obtain the goods or services for which the contract is offered. Such determination shall be made in writing and shall be a public document.

Signature

Title

Date

Company



10 Brown Rd
Ithaca, NY 14850
(607)277-7100

Ithaca, New York
Farmingdale, New York
Albany, New York

BID FROM (Bidder's Name) : _____

(Address) : _____

Bidder's Telephone : _____

Bidder's Facsimile (Fax) : _____

Bidder's E-mail Address : _____
(if applicable)

BID FORM
(submit in duplicate)

CONTRACT: CONTRACT 5 AB – HAZARDOUS MATERIALS WORK

PROJECT TITLE: RECONSTRUCTION TO
MAHOPAC HIGH SCHOOL
MAHOPAC MIDDLE SCHOOL
MAHOPAC FALLS SCHOOL
BUS GARAGE
NEW PUMP HOUSE

DATE: AUGUST 21, 2020

PROJECT NO.: 121111-19002

BID TO: Board of Education
Mahopac Central School District
179 East Lake Boulevard
Mahopac, New York 10541

The Bidder hereby certifies that it has examined and fully understands the requirements and intent of the Bidding Documents, including the Bidding Requirements and proposed Contract Documents; and proposes to furnish all labor, materials, and equipment necessary to complete the Work on, or before, the dates specified in the Contract Documents for the **BASE BID** sum of:

_____ (words)

_____ (\$ _____) (figures)

Show all amounts in both words and figures; in the event of a discrepancy between amounts written in words and figures, the amount written in words shall govern.

Refer to Division 01 Section "Allowances" for description of allowances to be included in the Base Bid above.

LIST OF ADDENDA RECEIVED

No. _____ Date _____ No. _____ Date _____
No. _____ Date _____ No. _____ Date _____
No. _____ Date _____ No. _____ Date _____

BID ATTACHMENTS

Enclosed with this Bid are the following attachments:

- Attachment #1 - Non-Collusive Bidding Certification.
- Attachment #2 - Certified Corporate Resolution.
- Attachment #3 – Iranian Energy Divestment Certification

BID SECURITY

Enclosed with this Bid is bid security in the amount of five percent of the Base Bid.

EXECUTION OF CONTRACT

If written notice of the acceptance of this Bid is transmitted to the undersigned within 45 days following the Bid opening, the undersigned will, within 10 days following the Notice of Award, execute and transmit a Contract in the form as required by the Architect.

This Bid may be withdrawn at any time prior to the Bid opening.

SIGNATURE

() NAME OF BIDDER (Corporate Name)
() _____
()
(Corporate Seal) _____
() SIGNATURE (Corporate Officer)
() _____
() _____
()
() DATE: _____

BID FORM
ATTACHMENT #1

GENERAL CONDITIONS TO BID
NON-COLLUSIVE BIDDING CERTIFICATION

No bid will be accepted that does not have this form completely executed.

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 knowledge and belief:

- (a) 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 any competitor;
- (b) 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;
- (c) 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;
- (d) The person signing this bid or proposal certifies that he has fully informed himself regarding the accuracy of the statements contained in this certification, and under the penalties of perjury, affirms the truth thereof, such penalties being applicable to the bidder as well as to the person signing in its behalf;
- (e) That attached hereto (if corporate bidder) is a certified copy of resolution authorizing the execution of this certified by the signature of this bid or proposal in behalf of the corporate bidder.

(Individual)

(Corporation)

Dated: _____ By _____
(Signature of Officer)

This Non-Collusive Bidding Certificate must be submitted with the bid.

BID FORM
ATTACHMENT #2

CERTIFIED CORPORATE RESOLUTION

RESOLVED THAT _____ be authorized to sign and submit the bid or proposal of this corporation for the following project:

and to include in such bid or proposal the certificate as to non-collusion required by section one hundred three-d (103-d) of the general municipal law as to the act and deed of such corporation, and for any inaccuracies or mis-statements in such certificate this corporate bidder shall be liable under the penalties of perjury.

The foregoing is a true and correct copy of the resolution and adopted by

_____ at a meeting of its board of directors held on the
_____ day of _____ 20__ .

(Secretary)

BID FORM
ATTACHMENT #3

IRANIAN ENERGY DIVESTMENT CERTIFICATION

**Pursuant to Section 103-g
Of the New York State
General Municipal Law**

- A. By submission of this bid/proposal, each bidder/proposer and each person signing on behalf of any bidder/proposer 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 its knowledge and belief that each bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the New York State Finance Law.
- B. A Bid/Proposal shall not be considered for award, nor shall any award be made where the condition set forth in Paragraph A above has not been complied with; provided, however, that in any case the bidder/proposer cannot make the foregoing certification set forth in Paragraph A above, the bidder/proposer shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefore. Where Paragraph A above cannot be complied with, the Purchasing Unit to the political subdivision, public department, agency or official thereof to which the bid/proposal is made, or his designee, may award a bid/proposal, on a case by case business under the following circumstances:
1. The investment activities in Iran were made before April 12, 2012, the investment activities in Iran have not been expanded or renewed after April 12, 2012, and the Bidder/Proposer has adopted, publicized and is implementing a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran; or
 2. The political subdivision makes a determination that the goods or services are necessary for the political subdivision to perform its functions and that, absent such an exemption, the political subdivision would be unable to obtain the goods or services for which the contract is offered. Such determination shall be made in writing and shall be a public document.

Signature

Title

Date

Company



10 Brown Rd
Ithaca, NY 14850
(607)277-7100

Ithaca, New York
Farmingdale, New York
Albany, New York

BID FROM (Bidder's Name) : _____
(Address) : _____

Bidder's Telephone : _____

Bidder's Facsimile (Fax) : _____

Bidder's E-mail Address : _____
(if applicable)

BID FORM
(submit in duplicate)

CONTRACT: CONTRACT 6 CE – CASEWORK AND LAB EQUIPMENT WORK

PROJECT TITLE: RECONSTRUCTION TO
MAHOPAC HIGH SCHOOL
MAHOPAC MIDDLE SCHOOL
MAHOPAC FALLS SCHOOL
BUS GARAGE
NEW PUMP HOUSE

DATE: AUGUST 21, 2020

PROJECT NO.: 121111-19002

BID TO: Board of Education
Mahopac Central School District
179 East Lake Boulevard
Mahopac, New York 10541

The Bidder hereby certifies that it has examined and fully understands the requirements and intent of the Bidding Documents, including the Bidding Requirements and proposed Contract Documents; and proposes to furnish all labor, materials, and equipment necessary to complete the Work on, or before, the dates specified in the Contract Documents for the **BASE BID** sum of:

_____ (words)
_____ (\$ _____) (figures)

Show all amounts in both words and figures; in the event of a discrepancy between amounts written in words and figures, the amount written in words shall govern.

Refer to Division 01 Section "Allowances" for description of allowances to be included in the Base Bid above.

LIST OF ADDENDA RECEIVED

No. _____	Date _____	No. _____	Date _____
No. _____	Date _____	No. _____	Date _____
No. _____	Date _____	No. _____	Date _____

BID ATTACHMENTS

Enclosed with this Bid are the following attachments:

- Attachment #1 - Non-Collusive Bidding Certification.
- Attachment #2 - Certified Corporate Resolution.
- Attachment #3 – Iranian Energy Divestment Certification

BID SECURITY

Enclosed with this Bid is bid security in the amount of five percent of the Base Bid.

EXECUTION OF CONTRACT

If written notice of the acceptance of this Bid is transmitted to the undersigned within 45 days following the Bid opening, the undersigned will, within 10 days following the Notice of Award, execute and transmit a Contract in the form as required by the Architect.

This Bid may be withdrawn at any time prior to the Bid opening.

SIGNATURE

(	)	NAME OF BIDDER (Corporate Name)
()	
()	_____
(	Corporate Seal)
(	)	SIGNATURE (Corporate Officer)
()	
()	_____
()	
(	)	DATE: _____

BID FORM
ATTACHMENT #1

GENERAL CONDITIONS TO BID
NON-COLLUSIVE BIDDING CERTIFICATION

No bid will be accepted that does not have this form completely executed.

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 knowledge and belief:

- (a) 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 any competitor;
- (b) 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;
- (c) 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;
- (d) The person signing this bid or proposal certifies that he has fully informed himself regarding the accuracy of the statements contained in this certification, and under the penalties of perjury, affirms the truth thereof, such penalties being applicable to the bidder as well as to the person signing in its behalf;
- (e) That attached hereto (if corporate bidder) is a certified copy of resolution authorizing the execution of this certified by the signature of this bid or proposal in behalf of the corporate bidder.

(Individual)

(Corporation)

Dated: _____ By _____
(Signature of Officer)

This Non-Collusive Bidding Certificate must be submitted with the bid.

BID FORM
ATTACHMENT #2

CERTIFIED CORPORATE RESOLUTION

RESOLVED THAT _____ be authorized to sign and submit the bid or proposal of this corporation for the following project:

and to include in such bid or proposal the certificate as to non-collusion required by section one hundred three-d (103-d) of the general municipal law as to the act and deed of such corporation, and for any inaccuracies or mis-statements in such certificate this corporate bidder shall be liable under the penalties of perjury.

The foregoing is a true and correct copy of the resolution and adopted by

_____ at a meeting of its board of directors held on the
_____ day of _____ 20__ .

(Secretary)

BID FORM
ATTACHMENT #3

IRANIAN ENERGY DIVESTMENT CERTIFICATION

**Pursuant to Section 103-g
Of the New York State
General Municipal Law**

- A. By submission of this bid/proposal, each bidder/proposer and each person signing on behalf of any bidder/proposer 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 its knowledge and belief that each bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the New York State Finance Law.
- B. A Bid/Proposal shall not be considered for award, nor shall any award be made where the condition set forth in Paragraph A above has not been complied with; provided, however, that in any case the bidder/proposer cannot make the foregoing certification set forth in Paragraph A above, the bidder/proposer shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefore. Where Paragraph A above cannot be complied with, the Purchasing Unit to the political subdivision, public department, agency or official thereof to which the bid/proposal is made, or his designee, may award a bid/proposal, on a case by case business under the following circumstances:
1. The investment activities in Iran were made before April 12, 2012, the investment activities in Iran have not been expanded or renewed after April 12, 2012, and the Bidder/Proposer has adopted, publicized and is implementing a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran; or
 2. The political subdivision makes a determination that the goods or services are necessary for the political subdivision to perform its functions and that, absent such an exemption, the political subdivision would be unable to obtain the goods or services for which the contract is offered. Such determination shall be made in writing and shall be a public document.

Signature

Title

Date

Company



10 Brown Rd
Ithaca, NY 14850
(607)277-7100

Ithaca, New York
Farmingdale, New York
Albany, New York

BID FROM (Bidder's Name) : _____
(Address) : _____

Bidder's Telephone : _____

Bidder's Facsimile (Fax) : _____

Bidder's E-mail Address : _____
(if applicable)

BID FORM
(submit in duplicate)

CONTRACT: CONTRACT 7 SW – SITE CONSTRUCTION WORK

PROJECT TITLE: RECONSTRUCTION TO
MAHOPAC HIGH SCHOOL
MAHOPAC MIDDLE SCHOOL
MAHOPAC FALLS SCHOOL
BUS GARAGE
NEW PUMP HOUSE

DATE: AUGUST 21, 2020

PROJECT NO.: 121111-19002

BID TO: Board of Education
Mahopac Central School District
179 East Lake Boulevard
Mahopac, New York 10541

The Bidder hereby certifies that it has examined and fully understands the requirements and intent of the Bidding Documents, including the Bidding Requirements and proposed Contract Documents; and proposes to furnish all labor, materials, and equipment necessary to complete the Work on, or before, the dates specified in the Contract Documents for the **BASE BID** sum of:

_____ (words)
_____ (\$ _____) (figures)

Show all amounts in both words and figures; in the event of a discrepancy between amounts written in words and figures, the amount written in words shall govern.

Refer to Division 01 Section "Allowances" for description of allowances to be included in the Base Bid above.

ALTERNATES

Indicate in the spaces provided below the amount to be added to or the amount to be deducted from (as applicable) the Base Bid if the Owner accepts the following Alternates described in Division 01 Section "Alternates".

Include in the amount of each Alternate, all labor, materials, overhead and profit, modification of Work specified in the Contract Documents, and additional work that may be required by acceptance of the Alternate.



ALTERNATE NO. 1 - MIDDLE SCHOOL ATHLETIC FIELD

ADD to the Base Bid the sum of:

_____ (\$ _____)
(words) (figures)



BID FORM
ATTACHMENT #1

GENERAL CONDITIONS TO BID
NON-COLLUSIVE BIDDING CERTIFICATION

No bid will be accepted that does not have this form completely executed.

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 knowledge and belief:

- (a) 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 any competitor;
- (b) 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;
- (c) 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;
- (d) The person signing this bid or proposal certifies that he has fully informed himself regarding the accuracy of the statements contained in this certification, and under the penalties of perjury, affirms the truth thereof, such penalties being applicable to the bidder as well as to the person signing in its behalf;
- (e) That attached hereto (if corporate bidder) is a certified copy of resolution authorizing the execution of this certified by the signature of this bid or proposal in behalf of the corporate bidder.

(Individual)

(Corporation)

Dated: _____ By _____
(Signature of Officer)

This Non-Collusive Bidding Certificate must be submitted with the bid.

BID FORM
ATTACHMENT #2

CERTIFIED CORPORATE RESOLUTION

RESOLVED THAT _____ be authorized to sign and submit the bid or proposal of this corporation for the following project:

and to include in such bid or proposal the certificate as to non-collusion required by section one hundred three-d (103-d) of the general municipal law as to the act and deed of such corporation, and for any inaccuracies or mis-statements in such certificate this corporate bidder shall be liable under the penalties of perjury.

The foregoing is a true and correct copy of the resolution and adopted by

_____ at a meeting of its board of directors held on the
_____ day of _____ 20__ .

(Secretary)

BID FORM
ATTACHMENT #3

IRANIAN ENERGY DIVESTMENT CERTIFICATION

**Pursuant to Section 103-g
Of the New York State
General Municipal Law**

- A. By submission of this bid/proposal, each bidder/proposer and each person signing on behalf of any bidder/proposer 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 its knowledge and belief that each bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the New York State Finance Law.
- B. A Bid/Proposal shall not be considered for award, nor shall any award be made where the condition set forth in Paragraph A above has not been complied with; provided, however, that in any case the bidder/proposer cannot make the foregoing certification set forth in Paragraph A above, the bidder/proposer shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefore. Where Paragraph A above cannot be complied with, the Purchasing Unit to the political subdivision, public department, agency or official thereof to which the bid/proposal is made, or his designee, may award a bid/proposal, on a case by case business under the following circumstances:
1. The investment activities in Iran were made before April 12, 2012, the investment activities in Iran have not been expanded or renewed after April 12, 2012, and the Bidder/Proposer has adopted, publicized and is implementing a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran; or
 2. The political subdivision makes a determination that the goods or services are necessary for the political subdivision to perform its functions and that, absent such an exemption, the political subdivision would be unable to obtain the goods or services for which the contract is offered. Such determination shall be made in writing and shall be a public document.

Signature

Title

Date

Company

NAME OF BIDDER _____

PROPOSED PRODUCTS FORM**SUBMITTED BY THREE LOW BIDDERS WITHIN THREE DAYS FOLLOWING BID OPENING**

In accordance with Articles 4 and 6 of the Instructions to Bidders, list specified products and corresponding proposed equivalent products below. Include additional pages as necessary.

Attach additional sheet explaining any aspect of the Contract Documents that cannot be complied with by the manufacturer or supplier of the proposed equivalent product.

Specified Product**Equivalent Product**

Technical Section: _____

Manufacturer: _____

Specified Product: _____

Product
Designation: _____

Technical Section: _____

Manufacturer: _____

Specified Product: _____

Product
Designation: _____

Technical Section: _____

Manufacturer: _____

Specified Product: _____

Product
Designation: _____

Technical Section: _____

Manufacturer: _____

Specified Product: _____

Product
Designation: _____

Technical Section: _____

Manufacturer: _____

Specified Product: _____

Product
Designation: _____

Technical Section: _____

Manufacturer: _____

Specified Product: _____

Product
Designation: _____

Technical Section: _____

Manufacturer: _____

Specified Product: _____

Product
Designation: _____

NAME OF BIDDER _____

PROPOSED SCHEDULE OF VALUES FORM

SUBMITTED BY THREE LOW BIDDERS WITHIN THREE DAYS FOLLOWING BID OPENING

For the convenience of the Owner's preliminary analysis of the Bid, list the value of the Work included in the Base Bid sum for each building:

Mahopac High School \$ _____

Mahopac Middle School \$ _____

Mahopac Falls School \$ _____

Bus Garage \$ _____

New Pump House \$ _____

Total Base Bid..... \$ _____

NAME OF BIDDER _____

BIDDER'S QUALIFICATIONS FORM

NOTARIZED AND SUBMITTED BY THREE LOW BIDDERS
WITHIN THREE DAYS FOLLOWING BID OPENING
UPON REQUEST BY ARCHITECT

All questions must be answered and the data given must be clear and comprehensive. If necessary, questions may be answered on separate attached sheet.

1. Name of Bidder:
2. Permanent main office address:
3. When organized:
4. If a corporation, where incorporated:
5. How many years have you been engaged in the contracting business under your present firm or trade name?
6. Contracts on hand: (List these, showing amount of each contract and the appropriate anticipated dates of completion.)
7. General character of work performed by your company:
8. Have you ever failed to complete any work awarded to you?
If so, where and why?
9. Have you ever defaulted on a contract?
If so, where and why?
10. List the more important projects recently completed by your company, stating the approximate cost for each, and the month and year completed.
11. List your major equipment available for this Contract.
12. List your experience in work similar to this project.
13. List the background and experience of the principal members of your organization, including officers.
14. List the work to be performed by Subcontractors and summarize the dollar value of each Subcontract.
15. Credit available: \$
16. Give bank reference:

17. Will you, upon request, fill out a detailed financial statement and furnish any other information that may be required by the Owner?
18. The undersigned hereby authorizes and requests any person, firm or corporation to furnish any information requested by the Owner in verification of the recitals comprising this Bidder's Qualifications Form.

Dated _____ this _____ date of _____, 20__ .

(Name of Bidder)

By _____

Title _____

State of _____)
) ss.

County of _____

_____ being duly sworn deposes and says that he is _____

_____ of _____

(Name of Organization)

and that the answers to the foregoing questions and all statements therein contained are true and correct.

Subscribed and sworn to before me

this _____ day of _____, 20__

My commission expires _____, 20__



AIA Document A232™ – 2009

General Conditions of the Contract for Construction, Construction Manager as Adviser Edition

for the following PROJECT:

(Name, and location or address)

Reconstruction at:
Mahopac High School
Mahopac Middle School
Mahopac Falls School
Bus Garage
New Pump House
Tt Project No. 121111-19002

THE CONSTRUCTION MANAGER:

(Name, legal status and address)

The Palombo Group
P.O. Box 4976
22 Noxon Street
Poughkeepsie, New York 12601

THE OWNER:

(Name, legal status and address)

Mahopac Central School District
179 East Lake Boulevard
Mahopac, New York 10541

THE ARCHITECT:

(Name, legal status and address)

Tetra Tech Engineers, Architects & Landscape Architects, P.C.
d/b/a Tetra Tech Architects & Engineers
10 Brown Road
Ithaca, New York 14850

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This document is intended to be used in conjunction with AIA Documents A132™–2009, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition; B132™–2009, Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition; and C132™–2009, Standard Form of Agreement Between Owner and Construction Manager as Adviser.

Init.

TABLE OF ARTICLES

- 1 GENERAL PROVISIONS**
- 2 OWNER**
- 3 CONTRACTOR**
- 4 ARCHITECT AND CONSTRUCTION MANAGER**
- 5 SUBCONTRACTORS**
- 6 CONSTRUCTION BY OWNER OR BY OTHER CONTRACTORS**
- 7 CHANGES IN THE WORK**
- 8 TIME**
- 9 PAYMENTS AND COMPLETION**
- 10 PROTECTION OF PERSONS AND PROPERTY**
- 11 INSURANCE AND BONDS**
- 12 UNCOVERING AND CORRECTION OF WORK**
- 13 MISCELLANEOUS PROVISIONS**
- 14 TERMINATION OR SUSPENSION OF THE CONTRACT**
- 15 CLAIMS AND DISPUTES**

Init.

AIA Document A232™ – 2009 (rev. 12/11) (formerly A201™ CMA – 1992). Copyright © 1992 and 2009 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 10:39:49 ET on 01/29/2021 under Order No.2191696418 which expires on 02/27/2022, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.

User Notes:

(1330534767)

INDEX

(Topics and numbers in bold are section headings.)

Acceptance of Nonconforming Work

9.6.6, 9.9.3, **12.3**

Acceptance of Work

9.6.6, 9.8.2, 9.9.3, 9.10.1, 9.10.3, **12.3**

Access to Work

3.16, 6.2.1, 12.1

Accident Prevention

10

Acts and Omissions

3.2.1, 3.2.2, 3.3.2, 3.12.8, 3.18, 8.3.1, 9.5.1, 10.1, 10.2.5, 13.4.2, 13.7

Addenda

1.1.1, 3.11, 4.2.14

Additional Costs, Claims for

3.2.4, 3.7.4, 3.7.5, 6.1.1, 7.3, 9.10.3, 9.10.4, 10.3, 10.4, 15.1.4

Additional Inspections and Testing

4.2.8, 12.2.1, 13.5

Additional Insured

11.1.4

Additional Time, Claims for

3.7.4, 3.7.5, 6.1.1, 7.3, 8.3, 10.3

Administration of the Contract

3.10, **4.2**

Advertisement or Invitation to Bid

1.1.1

Aesthetic Effect

4.2.19

Allowances

3.8, 7.3.8

All-risk Insurance

11.3.1, 11.3.1.1

Applications for Payment

4.2.7, 4.2.15, 7.3.9, 9.2, **9.3**, 9.4, 9.5.1, 9.7, 9.8.3, 9.10.1, 9.10.3, 9.10.5, 11.1.3, 14.2.4

Approvals

2.1.1, 2.2.2, 2.4, 3.1.4, 3.10.1, 3.10.2, 3.12.4 through 3.12.10, 3.13.2, 3.15.2, 4.2.9, 9.3.2, 13.4.2, 13.5

Arbitration

8.3.1, 11.3.10, 13.1, 15.3.2, **15.4**

ARCHITECT

4

Architect, Certificates for Payment

9.4

Architect, Definition of

4.1.1

Architect, Extent of Authority

5.2, 7.1.2, 7.3.7, 7.4, 9.3.1, 9.4, 9.5, 9.8.3, 9.8.4, 9.10.1, 9.10.3, 12.1, 12.2.1, 13.5.1, 13.5.2, 15.1.3, 15.2.1

Architect, Limitations of Authority and Responsibility

2.1.1, 3.12.8, 4.2.1, 4.2.2, 4.2.8, 4.2.13, 5.2.1, 9.6.4, 15.2

Architect's Additional Services and Expenses

2.4, 11.3.1.1, 12.2.1, 12.2.4, 13.5.2

Architect's Administration of the Contract

4.2, 9.4, 9.5, 15.2

Architect's Approvals

3.12.8

Architect's Authority to Reject Work

4.2.8, 12.1.2, 12.2.1

Architect's Copyright

1.5

Architect's Decisions

4.2.8, 7.3.9, 7.4, 8.1.3, 8.3.1, 9.2, 9.4, 9.5, 9.8.3, 9.9.2, 13.5.2, 14.2.2, 14.2.4, 15.2

Architect's Inspections

3.7.4, 4.2, 9.8.3, 9.9.2, 9.10.1, 13.5

Architect's Instructions

3.2.4, 7.4, 9.4

Architect's Interpretations

4.2.8, 4.2.17, 4.2.18

Architect's On-Site Observations

4.2.2, 9.4, 9.5.1, 9.10.1, 12.1.1, 12.1.2, 13.5

Architect's Project Representative

4.2.16

Architect's Relationship with Contractor

1.1.2, 1.5, 3.2.2, 3.2.3, 3.2.4, 3.3.1, 3.4.2, 3.5, 3.7.4, 3.9.2, 3.9.3, 3.10, 3.11, 3.12.8, 3.16, 3.18, 4.2, 5.2, 6.2.2, 8.2, 11.3.7, 12.1, 13.5

Architect's Relationship with Construction Manager

1.1.2, 9.3 through 9.10, 10.3, 13.5.1, 10.3, 11.3.7, 13.4.2, 13.5.4

Architect's Relationship with Subcontractors

1.1.2, 4.2.8, 5.3, 9.6.3, 9.6.4

Architect's Representations

9.4, 9.5, 9.10.1

Architect's Site Visits

4.2.2, 9.4, 9.5.1, 9.8.3, 9.9.2, 9.10.1, 13.5

Asbestos

10.3.1

Attorneys' Fees

3.18.1, 9.10.2, 10.3.3

Award of Other Contracts

6.1.1, 6.1.2

Award of Subcontracts and Other Contracts for Portions of the Work

5.2

Basic Definitions

1.1

Bidding Requirements

1.1.1, 5.2.1, 11.4.1

Binding Dispute Resolution

9.7, 11.3.9, 11.3.10, 13.1, 15.2.5, 15.2.6.1, 15.3.1, 15.3.2, 15.4.1

Init.

AIA Document A232™ – 2009 (rev. 12/11) (formerly **A201™ CMA** – 1992). Copyright © 1992 and 2009 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 10:39:49 ET on 01/29/2021 under Order No.2191696418 which expires on 02/27/2022, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.

User Notes:

(1330534767)

Boiler and Machinery Insurance

11.3.2

BONDS, INSURANCE AND

11

Bonds, Lien

7.3.7.4, 9.10.3

Bonds, Performance and Payment

7.3.7.4, 9.6.7, 9.10.3, 11.3.9, 11.4

Building Permit

2.2.2, 3.7.1

Capitalization

1.3

Certificate of Substantial Completion

9.8.3, 9.8.4, 9.8.5

Certificates for Payment

4.2.2, 9.3.3, 9.4, 9.5, 9.6.1, 9.6.6, 9.7, 9.10.1, 9.10.3,

15.1.3

Certificates of Inspection, Testing or Approval

13.5.4

Certificates of Insurance

9.3.2, 9.10.2, 11.1.3

Change Orders

1.1.1, 2.4, 3.4.2, 3.7.4, 3.8.2, 3.11, 3.12.8, 4.2.12,

4.2.13, 4.2.14, 5.2.3, 7.1.1, 7.1.2, 7.2, 7.3.2, 7.3.4,

7.3.6, 7.3.9, 7.3.10, 8.3.1, 9.3.1.1, 9.10.3, 10.3.2,

11.3.1.2, 11.3.4, 11.3.9, 12.1.2, 15.1.3

Change Orders, Definition of

7.2

Changes

7.1

CHANGES IN THE WORK

2.2.1, 3.4.2, 3.11, 3.12.8, 4.2.13, 4.2.14, 7, 8.3.1,

9.3.1.1

Claims, Definition of

15.1.1

CLAIMS AND DISPUTES

1.1.8, 3.2.4, 3.7.5, 6.1.1, 7.3.9, 8.3.2, 9.3.3, 9.10.3,

9.10.4, 10.3.3, 15, 15.4

Claims for Additional Cost

3.2.4, 3.7.5, 6.1.1, 7.3.9, 9.10.3, 9.10.4, 10.3.2, 10.4,

15.1.4

Claims for Additional Time

3.2.4, 3.7.5, 7, 8.3.2, 10.4, 15.1.5

Concealed or Unknown Conditions, Claims for

3.7

Claims for Damages

3.2.4, 3.18, 6.1.1, 6.2.5, 8.3.2, 9.3.3, 9.5.1.2, 9.10.2,

9.10.5, 10.3.3, 11.1.1, 11.3.5, 11.3.7, 15.1.6

Cleaning Up

3.15, 6.3

Commencement of Statutory Limitation Period

13.7

Commencement of the Work, Definition of

8.1.2

Communications, Owner to Architect

2.2.6

Communications, Owner to Construction Manager

2.2.6

Communications, Owner to Contractor

2.2.6

Communications Facilitating Contract

Administration

3.9.1, 4.2.6

COMPLETION, PAYMENTS AND

9

Completion, Substantial

4.2.15, 8.1.1, 8.1.3, 8.2.3, 9.4.3.3, 9.8, 9.9.1, 9.10.3,

12.2.1, 12.2.2, 13.7

Concealed or Unknown Conditions

3.7.4, 4.2.8, 8.3.1, 10.3

Conditions of the Contract

1.1.1

Consolidation or Joinder

15.4.4

CONSTRUCTION BY OWNER OR BY OTHER

CONTRACTORS

1.1.4, 6

Construction Change Directive, Definition of

7.3.1

Construction Change Directives

1.1.1, 3.4.2, 3.12.8, 4.2.12, 4.2.13, 7.1.1, 7.1.2, 7.1.3,

7.3, 9.3.1.1

Construction Manager, Building Permits

2.2.2

Construction Manager, Communications through

4.2.6

Construction Manager, Construction Schedule

3.10.1, 3.10.3

CONSTRUCTION MANAGER

4

Construction Manager, Definition of

4.1.2

Construction Manager, Documents and Samples at the Site

3.11

Construction Manager, Extent of Authority

3.12.7, 3.12.8, 4.1.3, 4.2.1, 4.2.4, 4.2.5, 4.2.9, 7.1.2,

7.2, 7.3.1, 8.3, 9.3.1, 9.4.1, 9.4.2, 9.4.3, 9.8.2, 9.8.3,

9.8.4, 9.9.1, 12.1, 12.2.1, 14.2.2, 14.2.4

Construction Manager, Limitations of Authority and Responsibility

4.2.5, 4.2.8, 13.4.2

Construction Manager, Submittals

4.2.9

Construction Manager's Additional Services and Expenses

12.2.1

Construction Manager's Administration of the Contract

4.2, 9.4, 9.5

Construction Manager's Approval

2.4, 3.10.1, 3.10.2

Init.

AIA Document A232™ – 2009 (rev. 12/11) (formerly **A201™ CMA** – 1992). Copyright © 1992 and 2009 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 10:39:49 ET on 01/29/2021 under Order No.2191696418 which expires on 02/27/2022, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.

User Notes:

(1330534767)

Construction Manager's Authority to Reject Work
4.2.8, 12.2.1

Construction Manager's Decisions
7.3.7, 7.3.9, 9.4.1, 9.5.1

Construction Manager's Inspections
4.2.8, 9.8.3, 9.9.2

Construction Manager's On-Site Observations
9.5.1

Construction Manager's Relationship with Architect
1.1.2, 4.2.1, 4.2.7, 4.2.8, 4.2.9, 4.2.13, 4.2.15, 4.2.16,
4.2.20, 9.2.1, 9.4.2, 9.5, 9.6.1, 9.6.3, 9.8.2, 9.8.3,
9.8.4, 9.9.1, 9.10.1, 9.10.2, 9.10.3, 11.1.3, 12.2.4,
13.5.1, 13.5.2, 13.5.4, 14.2.2, 14.2.4

Construction Manager's Relationship with Contractor
3.2.2, 3.2.3, 3.3.1, 3.5, 3.10.1, 3.10.2, 3.10.3, 3.11,
3.12.5, 3.12.6, 3.12.7, 3.12.8, 3.12.9, 3.12.10, 3.13.2,
3.14.2, 3.15.2, 3.16, 3.17, 3.18.1, 4.2.4, 4.2.5, 4.2.6,
4.2.9, 4.2.14, 4.2.17, 4.2.20, 5.2, 6.2.1, 6.2.2, 7.1.2,
7.2, 7.3.5, 7.3.7, 7.3.10, 8.3.1, 9.2, 9.3.1, 9.4.1, 9.4.2,
9.7, 9.8.2, 9.8.3, 9.8.4, 9.9.1, 9.10.1, 9.10.2, 9.10.3,
10.1, 10.3, 11.3.7, 12.1, 13.5.1, 13.5.2, 13.5.3, 13.5.4

Construction Manager's Relationship with Owner
2.2.2, 4.2.1, 10.3.2

Construction Manager's Relationship with Other
Contractors and Owner's Own Forces
4.2.4

Construction Manager's Relationship with
Subcontractors
4.2.8, 5.3, 9.6.3, 9.6.4

Construction Manager's Site Visits
9.5.1

Construction Schedules, Contractor's
3.10, 3.12.1, 3.12.2, 6.1.2, 15.1.5.2

Contingent Assignment of Subcontracts
5.4, 14.2.2.2

Continuing Contract Performance
15.1.3

Contract, Definition of
1.1.2

**CONTRACT, TERMINATION OR
SUSPENSION OF THE**
5.4.1.1, 11.3.9, 14

Contract Administration
3.1.3, 4.2, 9.4, 9.5

Contract Award and Execution, Conditions Relating
to
3.7.1, 3.10, 5.2, 6.1, 11.1.3, 11.3.6, 11.4.1

Contract Documents, Copies Furnished and Use of
1.5.2, 2.2.5, 5.3

Contract Documents, Definition of
1.1.1

Contract Performance During Arbitration
15.1.3

Contract Sum
3.7.4, 3.7.5, 3.8, 3.10.2, 5.2.3, 7.2, 7.3, 7.4, 9.1, 9.2,
9.5.1.4, 9.6.7, 9.7, 10.3.2, 11.3.1.1, 12.3, 14.2.4,
14.3.2, 15.1.4, 15.2.5

Contract Time
3.7.4, 3.7.5, 4, 3.10.2, 5.2.3, 7.2.3, 7.3.1, 7.3.5, 7.3.10,
7.4, 8.1.1, 8.2.1, 8.2.3, 8.3.1, 9.5.1, 9.7, 10.3.2, 12.1.1,
14.3.2, 15.1.5.1, 15.2.5

Contract Time, Definition of
8.1.1

CONTRACTOR
3

Contractor, Definition of
3.1.1

Contractor's Construction Schedules
3.10, 3.12.1, 3.12.2, 6.1.3, 15.1.5.2

Contractor's Employees
3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4.2.3, 4.2.6, 10.2, 10.3,
11.1.1, 11.3.7, 14.1, 14.2.1.1

Contractor's Liability Insurance
11.1

Contractor's Relationship with Other Contractors and
Owner's Own Forces
3.12.5, 3.14.2, 4.2.6, 6, 11.3, 12.1.2, 12.2.4

Contractor's Relationship with Subcontractors
1.2.2, 3.3.2, 3.18, 5, 9.6.2, 9.6.7, 9.10.2, 11.3.1.2,
11.3.7, 11.3.8, 14.2.1.2

Contractor's Relationship with the Architect
1.1.2, 1.5, 3.2.2, 3.2.3, 3.2.4, 3.4.2, 3.5, 3.7.4, 3.10.1,
3.11, 3.12, 3.16, 3.18, 5.2, 6.2.2, 7, 8.3.1, 9.2, 9.3, 9.4,
9.5, 9.7, 9.8, 9.9, 10.2.6, 10.3, 11.3.7, 12, 13.5, 15.1.2,
15.2.1

Contractor's Relationship with the Construction
Manager
1.1.2, 3.2.2, 3.2.3, 3.3.1, 3.5, 3.10.1, 3.10.2, 3.10.3,
3.11, 3.12.5, 3.12.7, 3.12.9, 3.12.10, 3.13.2, 3.14.2,
3.15.1, 3.16, 3.17, 3.18.1, 4.2.4, 4.2.5, 5.2, 6.2.1,
6.2.2, 7.1.2, 7.3.5, 7.3.7, 7.3.10, 8.3.1, 9.2, 9.3.1,
9.4.1, 9.4.2, 9.8.2, 9.9.1, 9.10.1, 9.10.2, 9.10.3, 10.1,
10.2.6, 10.3, 11.3.7, 12.1, 13.5.1, 13.5.2, 13.5.3,
13.5.4

Contractor's Representations
3.2.1, 3.2.2, 3.5, 3.12.6, 6.2.2, 8.2.1, 9.3.3, 9.8.2

Contractor's Responsibility for Those Performing the
Work
3.3.2, 3.18, 5.3, 6.1.3, 6.2, 9.5.1, 10.2.8

Contractor's Review of Contract Documents
3.2

Contractor's Right to Stop the Work
9.7

Contractor's Right to Terminate the Contract
14.1

Contractor's Submittals
3.10.2, 3.11, 3.12, 4.2.9, 9.2, 9.3, 9.8.2, 9.9.1, 9.10.2,
9.10.3, 11.1.3, 11.4.2

Contractor's Superintendent
3.9, 10.2.6

Contractor's Supervision and Construction
Procedures
1.2.2, 3.3, 3.4, 4.2.5, 4.2.7, 6.1, 6.2.4, 7.1.3, 7.3.5,
7.3.7, 8.2, 10, 12, 14, 15.1.3

Contractual Liability Insurance
11.1.1.8, 11.2, 11.3.1.5

Coordination and Correlation
1.2, 3.2, 3.3.1, 3.10, 3.12.6, 6.1.2, 6.2.1

Copies Furnished of Drawings and Specifications
1.5, 2.2.5, 3.11

Copyrights
1.5, 3.17

Correction of Work
2.3, 2.4, 9.4.1, 9.4.2, 9.8.2, 9.8.3, 9.9.1, 12.1.2, **12.2**

Correlation and Intent of the Contract Documents
1.2

Costs
2.4, 3.2.4, 3.7.3, 3.8.2, 3.15.2, 5.4.2, 6.1.1, 6.2.3, 7.3.3.3, 7.3.6, 7.3.7, 7.3.8, 7.3.9, 11.3.1.2, 11.3.1.3, 11.3.4, 11.3.9, 12.1, 12.2.1, 13.5, 14

Cutting and Patching
3.14, 6.2.5

Damage to Construction of Owner or Other Contractors
3.14.2, 6.2.4, 9.5.1.5, 10.2.1.2, 10.2.5, 10.4, 11.1.1, 11.3, 12.2.4

Damage to the Work
3.14.2, 9.9.1, 10.2.1.2, 10.2.5, 10.4, 11.3.1, 12.2.4

Damages, Claims for
3.2.4, 3.18, 6.1.1.1, 8.3.2, 10.3.3, 11.1.1, 11.3.5, 11.3.7, 14.2.4, 15.1.6

Damages for Delay
6.1.1, 8.3.3, 9.5.1.6, 9.7, 10.3.2, 15.1.5

Date of Commencement of the Work, Definition of
8.1.2

Date of Substantial Completion, Definition of
8.1.3

Day, Definition of
8.1.4

Decisions of the Architect
3.7.4, 4.2.7, 4.2.8, 4.2.10, 4.2.11, 4.2.13, 4.2.15, 4.2.16, 4.2.17, 4.2.18, 4.2.19, 4.2.20, 7.3.9, 8.1.3, 8.3.1, 9.2, 9.4, 9.5, 9.8.3, 9.8.4, 9.9.1, 10.1.2, 13.5.2, 14.2.2, 14.2.4, 15.1, 15.2

Decisions of the Construction Manager
7.3.7, 7.3.8, 7.3.9, 15.1, 15.2

Decisions to Withhold Certification
9.4.1, **9.5**, 9.7, 14.1.1.3

Defective or Nonconforming Work, Acceptance, Rejection and Correction of
2.3, 2.4, 3.5, 4.2.8, 6.2.5, 9.5.1, 9.6.6, 9.8.2, 9.9.3, 9.10.4, 12.2.1, 12.2.2

Definitions
1.1, 2.1.1, 3.1.1, 3.12.1, 3.12.2, 3.12.3, 4.1.1, 4.1.2, 7.2, 7.3.1, 8.1, 9.1, 9.8.1, 15.1.1

Delays and Extensions of Time
3.2, 3.7.4, 5.2.3, 7.2, 7.3.1, 7.4, **8.3**, 9.5.1, 9.7, 10.3.2, 10.4, 14.3.2, 15.1.5, 15.2.5

Disputes
7.3.8, 7.3.9, 9.3, 15.1, 15.2

DISPUTES, CLAIMS AND
3.2.4, 6.1.1, 6.3, 7.3.9, 9.3.3, **15**, 15.4

Documents and Samples at the Site
3.11

Drawings, Definition of
1.1.5

Drawings and Specifications, Ownership and Use
1.1.1, **1.5**, 2.2.5, 3.11, 5.3

Duty to Review Contract Documents and Field Conditions
3.2

Effective Date of Insurance
8.2.2, 11.1.2

Emergencies
10.4, 14.1.1.2, 15.1.4

Employees, Contractor's
3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.1, 3.18.2, 4.2.3, 4.2.6, 10.2, 10.3.3, 11.1.1, 11.3.7, 14.1, 14.2.1.1

Equipment, Labor, Materials and or
1.1.3, 1.1.6, 3.4, 3.5, 3.8.2, 3.8.3, 3.12.2, 3.12.3, 3.13.1, 3.15.1, 4.2.8, 4.2.7, 5.2.1, 6.2.1, 7.3.7, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1, 10.2.4, 14.2.2

Execution and Progress of the Work
1.1.3, 1.2.1, 1.2.2, 2.2.3, 2.2.5, 3.1, 3.3.1, 3.4.1, 3.5, 3.7.1, 3.10.1, 3.12, 3.14, 4.2, 6.2.2, 7.1.3, 7.3.5, 8.2, 9.5.1, 9.9.1, 10.2, 10.3, 12.2, 14.2, 14.3.1, 15.1.3

Extensions of Time
3.2.4, 3.7.4, 5.2.3, 7.2.3, 7.4, 8.3, 9.5.1, 9.7, 10.3.2, 10.4, 14.3, 15.1.5, 15.2.5

Failure of Payment
9.5.1.3, **9.7**, 13.6, 14.1.1.3, 14.1.3, 14.2.1.2, 15.1.4

Faulty Work (See Defective or Nonconforming Work)

Final Completion and Final Payment
4.2.1, 4.2.15, 9.8.2, **9.10**, 11.1.2, 11.1.3, 11.3.1, 11.3.5, 12.3, 15.2.1

Financial Arrangements, Owner's
2.2.1

GENERAL PROVISIONS
1

Governing Law
13.1

Guarantees (See Warranty and Warranties)

Hazardous Materials
10.2.4, **10.3**

Identification of Contract Documents
1.2.1

Identification of Subcontractors and Suppliers
5.2.1

Indemnification
3.18, 9.10.2, 10.3.3, 10.3.5, 10.3.6, 11.3.1.2, 11.3.7

Information and Services Required of the Owner
2.1.2, **2.2**, 4.2.6, 6.1.2, 6.2.5, 9.6.1, 9.6.4, 9.8, 9.9.1, 9.10.3, 10.3.2, 10.3.3, 11.2, 11.3.4, 13.5.1, 13.5.2, 14.1.1.4, 14.1.3, 15.1.2

Initial Decision
15.2

Init.

Initial Decision Maker, Definition of
1.1.8
Initial Decision Maker, Extent of Authority
14.2.2, 14.2.4, 15.1.3, 15.2.2, 15.2.3, 15.2.4, 15.2.5

Injury or Damage to Person or Property
3.18.1, 10.2.1, 10.2.2, **10.2.8**, 10.3, 10.3.3, 10.4,
11.1.1

Inspections
3.1.3, 3.7.1, 4.2.2, 9.8.2, 9.9.2, 9.10.1, 13.5

Instructions to Bidders
1.1.1

Instructions to the Contractor
3.1.4, 3.3.3, 3.7.1, 4.2.4, 5.2.1, 7, 8.2.2, 12.1, 13.5.2

Instruments of Service, Definition of
1.1.7, 1.5, 1.6

Insurance
6.1.1, 7.3.7, 8.2.2, 9.3.2, 9.8.4, 9.9.1, 9.10.2, 10.2.5,
11

Insurance, Boiler and Machinery
11.3.2

Insurance, Contractor's Liability
11.1
Insurance, Effective Date of
8.2.2, 11.1.2

Insurance, Loss of Use
11.3.3

Insurance, Owner's Liability
11.2

Insurance, Property
10.2.5, **11.3**

Insurance, Stored Materials
9.3.2, 11.3.1

INSURANCE AND BONDS
11
Insurance Companies, Consent to Partial Occupancy
9.9.1, 11.3.1.5

Insurance Companies, Settlement with
11.3.10

Intent of the Contract Documents
1.2, 4.2.18, 4.2.19, 7.4

Interest
9.7, **13.6**

Interpretation
1.4, 4.2.8, 4.2.17, 4.2.18

Interpretations, Written
4.2.17, 4.2.18, 4.2.20

Joinder and Consolidation of Claims Required
15.4.4

Judgment on Final Award
15.4.2

Labor and Materials, Equipment
1.1.3, 1.1.6, 3.4, 3.8.2, 3.8.3, 3.12.2, 3.12.3, 3.12.6,
3.12.10, 3.13.1, 3.15.1, 5.2.1, 6.2.1, 7.3.7, 9.3.2, 9.3.3,
9.5.1.3, 9.6, 9.10.2, 10.2.1.2, 11.3.1, 14.2.1, 14.2.2

Labor Disputes
8.3.1

Laws and Regulations
3.2.3, 3.2.4, 3.7, 3.13.1, 10.2.2, 10.2.3, 13.5.1, 14.2.1

Liens
2.1.2, 9.3.3, 9.10.2, 9.10.4, 15.2.8

Limitation on Consolidation or Joinder
15.4.4

Limitations, Statutes of
15.4.1

Limitations of Authority
3.12.4, 4.1.3, 4.2.16

Limitations of Liability
9.6.7, 11.1.1, 12.2

Limitations of Time
3.10.1, 4.2.17, 4.2.20, 8.2.1, 9.3.3, 9.6.1, 9.8.4, 9.10.2,
10.2, 11.1.3, 12.1.1, 12.2.2.2, 12.2.5, 13.7, 14.1.1,
15.2.6.1

Loss of Use Insurance
11.3.3

Material Suppliers
1.5.1, 1.5.2, 3.12, 4.2.6, 4.2.8, 9.3.1, 9.3.1.2, 9.3.3,
9.5.3, 9.6.4, 9.6.5, 9.6.7, 9.10.5, 11.3.1

Materials, Hazardous
10.2.4, **10.3**

Materials, Labor, Equipment and
1.1.3, 1.1.6, 1.5.1, 1.5.2, 3.4, 3.5, 3.8.2, 3.8.3, 3.12.2,
3.12.3, 3.12.6, 3.12.10, 3.13.1, 5.2.1, 6.2.1, 9.3.1,
9.3.2, 9.3.3, 9.5.1, 9.5.3, 9.6.4, 9.6.5, 9.6.7, 9.10.2,
9.10.5, 10.2.1, 10.2.4, 10.3

Means, Methods, Techniques, Sequences and
Procedures of Construction
3.3.1, 3.12.10, 4.2.5, 4.2.11

Mechanic's Lien
2.1.2, 15.2.8

Mediation
8.3.1, 10.3.5, 15.2.1, 15.2.5, 15.2.6, **15.3**, 15.4.1

Minor Changes in the Work
1.1.1, 3.12.8, 4.2.13, 7.1, **7.4**

MISCELLANEOUS PROVISIONS
13
Modifications, Definition of
1.1.1

Modifications to the Contract
1.1.1, 1.1.2, 3.11, 4.1.3, 4.2.14, 5.2.3, 7, 11.3.1

Mutual Responsibility
6.2

Nonconforming Work, Acceptance of
9.4.3, 9.8.3, **12.3**

Nonconforming Work, Rejection and Correction of
2.3, 2.4, 3.2.3, 3.7.3, 9.4.3.3, 9.8.2, 9.8.3, 9.9.1,
11.1.1, 12.2.2.1, 12.2.3, 12.2.4, 12.2.5

Notice
1.5, 2.1.2, 2.2.1, 2.4, 3.2.4, 3.3.1, 3.7.1, 3.7.2, 3.7.5,
3.9.2, 3.12.9, 5.2.1, 6.3, 9.4.1, 9.7, 9.10.1, 9.10.2,
10.2.2, 10.2.6, 10.2.8, 10.3.2, 11.3.6, 12.2.2.1, 13.3,
13.5.1, 13.5.2, 14.1.2, 14.2.2, 14.4.2, 15.1.2, 15.1.4,
15.1.5.1, 15.2, 15.4.1

Notice of Claims

3.7.2, 10.2.8, **15.1.2**, 15.4.1
Notice of Testing and Inspections
13.5.1, 13.5.2
Notices, Permits, Fees and
3.7, 7.3.7, 10.2.2
Observations, On-Site
3.2.1, 9.5.1, 12.1.1
Occupancy
2.2.2, 9.6.6, 9.9, 11.3.1.5
On-Site Inspections
4.2.2, 9.10.1, 9.4.4, 9.5.1
Orders, Written
4.2.7, 4.2.18, 4.2.20
Other Contracts and Contractors
1.1.4, 3.14.2, 4.2.9, 6, 11.3.7, 12.1.2

OWNER

2

Owner, Definition of
2.1.1

Owner, Information and Services Required of the
2.1.2, **2.2**, 4.2, 6.1.2, 6.1.3, 6.2.5, 9.3.2, 9.6.1, 9.6.4,
9.9.2, 9.10.2, 10.3.3, 11.2, 11.3, 13.5.1, 13.5.2, 14.1.1,
14.1.3, 15.1.3

Owner's Authority

1.5, 2.1.1, 2.3, 2.4, 3.4.2, 3.12.10, 3.14.2, 4.1.2, 4.1.3,
4.2.8, 4.2.9, 5.2.1, 5.2.4, 5.4.1, 6.1, 6.3, 7.2, 7.3.1,
8.2.2, 9.3.1, 9.3.2, 9.5.1, 9.6.4, 9.9.1, 9.10.2, 10.3.2,
11.3.3, 11.3.10, 12.2.2.1, 12.3, 13.5.2, 14.2, 14.3.1,
14.4, 15.2.7

Owner's Financial Capability

2.2.1, 13.2.2, 14.1.1

Owner's Liability Insurance

11.2

Owner's Relationship with Subcontractors

1.1.2, 5.2.1, 5.3, 5.4.1, 9.6.4, 9.10.2, 14.2.2

Owner's Right to Carry Out the Work

2.4, 12.2.4, 14.2.2

Owner's Right to Clean Up

6.3

**Owner's Right to Perform Construction with Own
Forces and to Award Other Contracts**

6.1

Owner's Right to Stop the Work

2.3

Owner's Right to Suspend the Work

14.3

Owner's Right to Terminate the Contract

14.2

**Ownership and Use of Drawings, Specifications
and Other Instruments of Service**

1.1.1, 1.1.5, **1.5**, 1.6, 3.11, 3.12.10, 3.17, 4.2.14,
4.2.18, 4.2.20

Partial Occupancy or Use

9.9, 11.3.1.5

Patching, Cutting and

3.14, 6.2.5

Patents and Copyrights, Royalties

3.17

Payment, Applications for

4.2.1, 4.2.7, 4.2.15, 7.3.9, 9.2, **9.3**, 9.4, 9.5, 9.7, 9.10.1,
9.10.3, 9.10.5, 11.1.3

Payment, Certificates for

4.2.15, 7.3.9, 9.3, **9.4**, 9.5, 9.6.1, 9.6.6, 9.7, 9.10.1,
9.10.3, 14.1.1.3, 15.1.3

Payment, Failure of

9.4.1, 9.5, **9.7**, 14.1.1.3

Payment, Final

4.2.1, 9.8.2, **9.10**, 11.1.2, 11.3.1, 11.3.5, 12.3, 15.2.1

Payment Bond, Performance Bond and

5.4.1, 7.3.7, 9.6.7, 9.10.2, 9.10.3, 11, **11.4**

Payments, Progress

9.3.1, 9.4.2, **9.6**

PAYMENTS AND COMPLETION

9, 14

Payments to Subcontractors

5.4.2, 9.3, 9.5.1.3, 9.5.3, 9.6.2, 9.6.3, 9.6.4, 9.6.7,
9.10.5, 14.2.1.2

PCB

10.3.1

Performance Bond and Payment Bond

5.4.1, 7.3.7, 9.6.7, 9.10.2, 9.10.3, 11, **11.4**

Permits, Fees, Notices and Compliance with Laws

2.2.2, **3.7**, 7.3.7.4, 10.2.2

PERSONS AND PROPERTY, PROTECTION OF 10

Polychlorinated Biphenyl

10.3.1

Product Data, Definition of

3.12.2

Product Data and Samples, Shop Drawings

3.11, **3.12**, 4.2.9, 4.2.10, 4.2.14

Progress and Completion

8.2, 9.3.1, 9.4.2, 9.6, 9.8, 9.10, 14.2.4, 15.1.6

Progress Payments

9.3.1, 9.4.2, **9.6**

Project, Definition of

1.1.4

Project Representatives

4.2.16

Property Insurance

10.2.5, **11.3**

Project Schedule

3.10.1, 3.10.3, 3.10.4, 4.2.2, 4.2.3, 4.2.4

PROTECTION OF PERSONS AND PROPERTY 10

Regulations and Laws

1.5, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 4.1.1, 9.6.4, 9.9.1,
10.2.2, 11.1, 11.4, 13.1, 13.4, 13.5.1, 13.5.2, 13.6,
14.1.1, 14.2.1, 15.2.8, 15.4

Rejection of Work

3.5, 4.2.8, 12.2.1

Releases of and Waivers and of Liens

9.10.2

init.

AIA Document A232® – 2009 (rev. 12/11) (formerly A201™ CMA – 1992). Copyright © 1992 and 2009 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 10:39:49 ET on 01/29/2021 under Order No.2191696418 which expires on 02/27/2022, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.

User Notes:

(1330534767)

Representations
 1.3, 2.2.1, 3.5, 3.12, 6.2.2, 8.2.1, 9.3.3, 9.4.3, 9.5.1, 9.8.2, 9.10.1
 Representatives
 2.1.1, 3.1.1, 3.9, 4.1.1, 4.2.1, 4.2.2, 4.2.10, 5.1.1, 5.1.2, 13.2.1
 Requests for Information
 4.2.20
 Resolution of Claims and Disputes
 15
 Responsibility for Those Performing the Work
 3.3.2, 3.7.3, 3.12.8, 3.18, 4.2.2, 4.2.5, 4.2.8, 5.3, 6.1.2, 6.2, 6.3, 9.5.1, 9.8.2, 10
 Retainage
 9.3.1, 9.6.2, 9.8.5, 9.9.1, 9.10.2, 9.10.3
Review of Contract Documents and Field Conditions by Contractor
 1.2.2, **3.2**, 3.7.3, 3.12.7
 Review of Contractor's Submittals by Owner, Construction Manager and Architect
 3.10.1, 3.10.2, 3.11, 3.12, 4.2, 5.2, 5.2, 9.2, 9.8.2
 Review of Shop Drawings, Product Data and Samples by Contractor
 3.12.5
Rights and Remedies
 1.1.2, 2.3, 2.4, 3.7.4, 3.15.2, 4.2.8, 5.3, 5.4, 6.1, 6.3, 7.3.1, 8.3, 9.5.1, 9.7, 10.2.5, 10.3, 12.2.2, 12.2.4, **13.4**, 14, 15.4
Royalties, Patents and Copyrights
3.17
 Rules and Notices for Arbitration
 15.4
Safety of Persons and Property
10.2, 10.3, 10.4
Safety Precautions and Programs
 3.3.1, 3.12, 4.2.5, 5.3, **10.1**, 10.2, 10.3, 10.4
 Samples, Definition of
 3.12.3
Samples, Shop Drawings, Product Data and Samples at the Site, Documents and
3.11
Schedule of Values
9.2, 9.3.1
 Schedules, Construction
 3.10, 3.12.1, 3.12.2, 6.1.2, 15.1.5.2
 Separate Contracts and Contractors
 1.1.4, 3.12.5, 3.14.2, 4.2.6, 4.2.11, 6, 8.3.1, 12.1.2
 Shop Drawings, Definition of
 3.12.1
Shop Drawings, Product Data and Samples
 3.11, **3.12**, 4.2.9, 4.2.10, 4.2.14
Site, Use of
3.13, 6.1.1, 6.2.1
 Site Inspections
 3.2.2, 3.3.3, 3.7.1, 3.7.4, 4.2.2, 4.2.3, 4.2.15, 9.4.3.3, 9.8.3, 9.9.2, 9.10.1, 13.5

Site Visits, Architect's
 3.7.4, 4.2.2, 4.2.15, 9.8.3, 9.9.2, 9.10.1, 13.5
 Special Inspections and Testing
 4.2.8, 12.2.1, 13.5
 Specifications, Definition of
 1.1.6
Specifications
 1.1.1, **1.1.6**, 1.2.2, 1.5, 3.11, 3.12.10, 3.17, 4.2.14
 Staffing Plan
 4.2.3
 Statute of Limitations
 12.2.5, 13.7, 15.4.1.1
 Stopping the Work
 2.3, 9.7, 10.3, 14.1
 Stored Materials
 6.2.1, 9.3.2, 10.2.1.2, 10.2.4
 Subcontractor, Definition of
 5.1.1
SUBCONTRACTORS
5
 Subcontractors, Work by
 1.2.2, 3.3.2, 3.12.1, 4.2.5, 5.2.3, 5.3, 5.4, 9.3.1.2, 9.6.7
Subcontractual Relations
5.3, 5.4, 9.3.1.2, 9.6.2, 9.6.3, 9.10, 10.2.1, 14.1, 14.2
 Submittals
 3.2.3, 3.10, 3.11, 3.12, 4.2.9, 4.2.10, 4.2.11, 5.2.1, 5.2.3, 7.3.7, 9.2, 9.3, 9.8, 9.9.1, 9.10.2, 9.10.3, 11.1.3
 Submittal Schedule
 3.10.2, 3.12.5, 4.2.9, 4.2.10
Subrogation, Waivers of
 6.1.1, **11.3.7**
Substantial Completion
 8.1.1, 8.1.3, 8.2.3, 9.4.3.3, **9.8**, 9.9.1, 9.10.3, 12.2.1, 12.2.2, 13.7
 Substantial Completion, Definition of
 9.8.1
 Substitution of Subcontractors
 5.2.3, 5.2.4
 Substitution of Architect
 4.1.4
 Substitution of Construction Manager
 4.1.4
 Substitutions of Materials
 3.4.2, 3.5, 7.3.8
 Sub-subcontractor, Definition of
 5.1.2
 Subsurface Conditions
 3.7.4
Successors and Assigns
13.2
Superintendent
3.9, 10.2.6
Supervision and Construction Procedures
 1.2.2, **3.3**, 3.4, 3.12.10, 4.2.2, 4.2.3, 4.2.5, 4.2.8, 4.2.9, 4.2.10, 4.2.11, 6.1.3, 6.2.4, 7.1.3, 7.3.7, 8.2, 8.3.1, 9.4.3.3, 10, 12, 14, 15.1.3

Init.

Surety
5.4.1.2, 9.8.5, 9.10.2, 9.10.3, 14.2.2, 15.2.7

Surety, Consent of
9.10.2, 9.10.3

Surveys
1.1.7, 2.2.3

Suspension by the Owner for Convenience
14.3

Suspension of the Work
5.4.2, 14.3

Suspension or Termination of the Contract
5.4.1.1, 14

Taxes
3.6, 3.8.2.1, 7.3.7.4

Termination by the Contractor
14.1, 15.1.6

Termination by the Owner for Cause
5.4.1.1, **14.2, 15.1.6**

Termination by the Owner for Convenience
14.4

Termination of the Contractor
14.2.2

TERMINATION OR SUSPENSION OF THE CONTRACT
14

Tests and Inspections
3.1.4, 3.3.3, 4.2.2, 4.2.6, 4.2.8, 9.4.3.3, 9.8.3, 9.9.2, 9.10.1, 10.3.2, 12.2.1, **13.5**

TIME
8

Time, Delays and Extensions of
3.2.4, 3.7.4, 5.2.3, 7.2, 7.3.1, 7.4, **8.3, 9.5.1, 10.3.2, 14.3.2, 15.1.5, 15.2.5**

Time Limits
2.1.2, 2.2, 2.4, 3.2.2, 3.10, 3.11, 3.12.5, 3.15.1, 4.2.1, 5.2, 5.3, 5.4, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1, 9.3.3, 9.4.1, 9.4.2, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 11.1.3, 11.4, 12.2, 13.5, 13.7, 14, 15

Time Limits on Claims
3.7.4, 10.2.8, **13.7, 15.1.2**

Title to Work
9.3.2, 9.3.3

Transmission of Data in Digital Form
1.6

UNCOVERING AND CORRECTION OF WORK
12

Uncovering of Work
12.1

Unforeseen Conditions, Concealed or Unknown
3.7.4, 8.3.1, 10.3

Unit Prices
7.3.3.2, 7.3.4

Use of Documents
1.1.1, 1.5, 2.2.5, 3.12.6, 5.3

Use of Site
3.13, 6.1.1, 6.2.1

Values, Schedule of
9.2, 9.3.1

Waiver of Claims by the Architect
13.4.2

Waiver of Claims by the Construction Manager
13.4.2

Waiver of Claims by the Contractor
9.10.5, 13.4.2, 15.1.6

Waiver of Claims by the Owner
9.9.3, 9.10.3, 9.10.4, 12.2.2.1, 13.4.2, 14.2.4, 15.1.6

Waiver of Consequential Damages
14.2.4, 15.1.6

Waiver of Liens
9.10.2, 9.10.4

Waivers of Subrogation
6.1.1, **11.3.7**

Warranty
3.5, 4.2.15, 9.3.3, 9.8.4, 9.9.1, 9.10.4, 12.2.2

Weather Delays
15.1.5.2

Work, Definition of
1.1.3

Written Consent
1.5.2, 3.4.2, 3.7.4, 3.12.8, 3.14.2, 4.1.3, 9.3.2, 9.8.5, 9.9.1, 9.10.2, 9.10.3, 10.3.2, 11.4.1, 13.2, 13.4.2, 15.4.4.2

Written Interpretations
4.2.17, 4.2.18

Written Notice
2.3, 2.4, 3.3.1, 3.9, 3.12.9, 3.12.10, 5.2.1, 5.3, 5.4.1.1, 8.2.2, 9.4, 9.5.1, 9.7, 9.10, 10.2.2, 10.3, 11.1.3, 12.2.2, 12.2.4, **13.3, 13.5.2, 14, 15.4.1**

Written Orders
1.1.1, 2.3, 3.9, 7, 8.2.2, 12.1, 12.2, 13.5.2, 14.3.1, 15.1.2

ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 **The Contract Documents.** The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement), and consist of the Agreement, Conditions of the Contract (General and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. The Contract Documents include the Notice to Bidders, Instructions to Bidders, sample forms, and the Contractor's bid.

§ 1.1.2 **The Contract.** The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and the Construction Manager or the Construction Manager's consultants, (3) between the Owner and the Architect or the Architect's consultants, (4) between the Contractor and the Construction Manager or the Construction Manager's consultants, (5) between the Owner and a Subcontractor or Sub-subcontractor (6) between the Construction Manager and the Architect, or (7) between any persons or entities other than the Owner and Contractor. The Construction Manager and Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of their duties.

§ 1.1.3 **The Work.** The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 **The Project.** The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by other Multiple Prime Contractors and by the Owner's own forces, including persons or entities under separate contracts not administered by the Construction Manager.

§ 1.1.5 **The Drawings.** The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

§ 1.1.6 **The Specifications.** The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 **Instruments of Service.** Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 **Initial Decision Maker.** The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2 and certify termination of the Agreement under Section 14.2.2.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.2.3.1 In the event of conflicts or discrepancies among the Contract Documents, interpretations will be based on the following priorities:

- .1 Modifications, as defined in Section 1.1.1.
- .2 The Agreement.
- .3 Addenda, with those of later date having precedence over those of earlier date.
- .4 The General Conditions of the Contract for Construction.
- .5 Division 01 of the Specifications.
- .6 Drawings and remaining Divisions of the Specifications.

In the case of conflicts or discrepancies between Drawings and Divisions of the Specifications (other than Division 01), or within or among the Contract Documents and not clarified by Addendum, the Architect will determine which takes precedence in accordance with Sections 4.2.11, 4.2.12, and 4.2.13.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and will retain all common law, statutory and other reserved rights, including copyrights. The Contractor, Subcontractors, sub-subcontractors, and material or equipment suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect, or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers are authorized to use and reproduce the Instruments of Service provided to them solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect's consultants.

§ 1.6 Transmission of Data in Digital Form

If the parties intend to transmit Instruments of Service or any other information or documentation in digital form, they shall endeavor to establish necessary protocols governing such transmissions, unless otherwise already provided in the Agreement or the Contract Documents.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization, other than Change Orders adjusting the Contract Sum. Except as otherwise provided in Article 4, the Construction Manager and the Architect do not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

..

Init.

(Paragraph deleted)

§ 2.2 Information and Services Required of the Owner

(Paragraph deleted)

§ 2.2.2 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities. Unless otherwise provided under the Contract Documents, the Owner, through the Construction Manager, shall secure and pay for the building permit.

§ 2.2.3 The Owner shall furnish, upon request only and as necessary to complete this work, surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.2.4 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

(Paragraph deleted)

§ 2.2.5 The Owner shall furnish the Contractor 2 copies of the Contract Documents, including one set to be used for the Project Record Drawings. The Contractor may purchase additional copies at the cost of reproduction, postage and handling.

§ 2.2.6 The Owner shall endeavor to forward all communications to the Contractor through the Construction Manager and shall contemporaneously provide the same communications to the Architect about matters arising out of or relating to the Contract Documents.

§ 2.3 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.4 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a five-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses (which may include, but not be limited to, reasonable attorneys' fees incurred by the Owner) and compensation for the Construction Manager's and Architect's and their respective consultants' additional services made necessary by such default, neglect or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect, after consultation with the Construction Manager. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

§ 2.5 ACCELERATION CLAUSE

§ 2.5.1 The Owner reserves the right to accelerate the work of the Contract. In the event that the Owner directs acceleration, such directive will be only in written form. The Contractor shall keep cost and other project records related to the acceleration directive separately from normal project costs and records and shall provide a written record of acceleration cost to the Owner on a daily basis.

§ 2.5.2 In the event that the Contractor believes that some action or inaction on the part of the Owner constitutes an

Init.

acceleration directive, the Contractor shall immediately notify the Owner in writing that the Contractor considers the actions an acceleration directive, with copies to the Architect and Construction Manager. This written notification shall detail the circumstances of the claimed acceleration directive. The Contractor shall not accelerate their work efforts until the Owner responds in writing to the written notification. If acceleration is then directed or required by the Owner, all cost records referred to above shall be maintained by the Contractor and provided to the Owner on a daily basis.

§ 2.5.3 In order to preserve a claim to recover additional costs due to acceleration, the Contractor must document that additional expenses were incurred and paid by the Contractor. Labor costs recoverable will be only overtime or shift premium costs or the cost of additional laborers brought to the site to accomplish the accelerated work effort. Equipment costs recoverable will be only the cost of added equipment mobilized to the site to accomplish the accelerated work effort.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The plural term "Multiple Prime Contractors" refers to persons or entities who perform construction under contracts with the Owner that are administered by the Construction Manager. The term does not include the Owner's own forces, including persons or entities under separate contracts not administered by the Construction Manager.

§ 3.1.3 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.4 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Construction Manager or Architect in their administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has carefully examined the Contract Documents and the site, and represents that the Contractor is thoroughly familiar with the nature and location of the Work, the site, the specific conditions under which the Work is to be performed, and all matters which may in any way affect the Work or its performance. The Contractor further represents that as a result of such examinations and investigations, the Contractor thoroughly understands the Contract Documents and their intent and purpose, and is familiar with all applicable codes, ordinances, laws, regulations, and rules as they apply to the Work, and that the Contractor will abide by same. Claims for additional time or additional compensation as a result of the Contractor's failure to follow the foregoing procedure and to familiarize itself with all local conditions and the Contract Documents will not be permitted..

§ 3.2.2.1 Do not scale Drawings. Follow figure dimensions, confirming on site.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.2.3, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information submitted in writing on such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents. If the Contractor performs any construction activity which involves an error, inconsistency or omission in the Contract Documents without first providing notice to the Owner, Architect and Construction Manager of such condition and receiving authorization to

Init.

proceed, the Contractor shall assume responsibility for such performance and shall bear an appropriate amount of the attributable costs for correction.

(Paragraph deleted)

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall make Claims in writing as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.2.5 Where existing conditions are obscured or concealed from the Owner or Architect's view prior to the start of this Project's construction activities, portrayal of such conditions in the documents is based on reasonable implications and assumptions. The Owner and Architect do not imply or guarantee to the Contractor in any way that such portrayals in the Documents are accurate or true.

§ 3.2.5.1 Physical investigations and testing of existing conditions were not undertaken by the Architect, unless so indicated in the Contract Documents.

§3.2.5.2 The Contractor may submit requests for information to the Architect to help facilitate the Contractor's performance of the contract. Prior to submitting each request for information, the Contractor shall first carefully study and compare the Contract Documents, field conditions, other Owner provided information, Contractor prepared Coordination Drawings, and prior Project correspondence and documentation to determine that the information to be requested is not reasonably obtainable from such sources.

§ 3.2.5.3 Each request for information shall be submitted to the Construction Manager, in writing. Each request for information shall identify the specific sources which were reviewed by the Contractor in an effort to determine the information requested, and a statement to the effect that the information being requested could not be determined from such sources.

§ 3.2.5.4 The Contractor shall submit each request for information sufficiently in advance of the date by which such information is requested in order to allow the Architect sufficient time, in the Architect's professional judgment, to permit adequate review and response and to permit Contractor compliance with the latest construction schedule.

§ 3.2.5.5 The Construction Manager shall maintain a log at the Project site that sequentially numbers and lists each request for information. This log shall contain the Drawings reference or Specification section to which the request pertains, the date of the request, to whom the request was made, by whom the request was made, the nature of the request, and the Architect's resolution thereof. This log shall be reviewed at each Project meeting and the status of the requests for information shall be made part of the minutes of such meetings.

§ 3.2.5.6 The Contractor shall reimburse the Owner amounts charged to the Owner by the Architect or Construction Manager for responding to Contractor requests for information where such information is available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, other Owner provided information, Contractor prepared Coordination Drawings, or prior Project correspondence or documentation.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instruction concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods,

Init.

techniques, sequences or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner, the Construction Manager, and the Architect and shall not proceed with that portion of the Work without further written instructions from the Architect, through the Construction Manager. The Contractor shall be responsible for and coordinate any and all inspections required by any governmental body having jurisdiction over the project. Failure to obtain any permits, licenses or other approvals because of the failure of the Contractor to conform to this requirement shall not extend the Contract time, and the Contractor shall not be entitled to any increase in the contract sum therefor. In addition, any additional costs and/or expenses of any nature incurred by the Owner as a result of the Contractor's failure to conform to this requirement shall constitute a charge against the Contractor's contract. Each contractor shall be responsible for complying with union regulations existing under current labor agreements in performing construction work on the project.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of the Project already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.3.4 During period of active Construction, consult daily and cooperate with the Construction Manager. On a daily basis, keep the Construction Manager and Architect notified of when Work will be starting, restarting, suspended and temporarily or permanently concluding.

§ 3.3.5 Within 15 days of the date of the Notice to Proceed, each Contractor shall submit to the Construction Manager and Architect a list of all Contractor's principal staff assignments, including the Superintendent and other personnel in attendance at the site; identify individuals, their duties and responsibilities.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work authorized by the Architect in accordance with Sections 3.12.8 or 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect, in consultation with the Construction Manager, and in accordance with a Change Order or Construction Change Directive.

§ 3.4.2.1 After the Contract has been executed, the Owner, Construction Manager and Architect will consider requests for the substitution of products in place of those specified only under the conditions set forth in the General Requirements (Division 01 of the Specifications). By making requests for substitutions, the Contractor:

- .1 represents that it has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified;
- .2 represents that it will provide the same warranty for the substitution as it would have provided for the product specified;
- .3 certifies that the cost data presented is complete and includes all related costs for the substituted product and for Work that must be changed as a result of the substitution, except for the Architect's redesign costs, and waives all claims for additional costs related to the substitution that subsequently become apparent; and
- .4 shall coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.4.5 The Owner shall be entitled to reimbursement from the Contractor for amounts paid to the Construction

init.

AIA Document A232[®] – 2009 (rev. 12/11) (formerly A201[™] CMA – 1992). Copyright © 1992 and 2009 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 10:39:49 ET on 01/29/2021 under Order No. 2191696418 which expires on 02/27/2022, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents[®] Terms of Service. To report copyright violations, e-mail copyright@aia.org.

User Notes:

(1330534767)

Manager and Architect for reviewing the Contractor's proposed substitutions for convenience after the period noted in Division 01 Section "Substitution Procedures" and for the Architect making agreed-upon changes in the Drawings and Specifications resulting from such substitutions.

§ 3.5 Warranty

The Contractor warrants to the Owner, Construction Manager, and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform with the requirements of the Contract Documents and will be free from defects. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Construction Manager or Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work or portions thereof provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

The Owner is exempt from payment of Federal, State, local taxes, and from payment of sales and compensating use taxes of the State of New York and of cities and counties on all materials and supplies sold to the Owner pursuant to the provisions of this Contract. These taxes are not to be included in bids. This exemption does not, however, apply to tools, machinery, equipment, or other property leased by, or to the Contractor or a subcontractor; and the Contractor and its subcontractor shall be responsible for, and pay, any and all applicable taxes, including sales and compensating use taxes, on such leased tools, machinery, equipment or other property.

§ 3.7 Permits, Fees, Notices, and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Owner, through the Construction Manager, shall secure and pay for the building permit. The Contractor shall secure and pay for other permits, fees, licenses and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.1.1 The Owner shall secure the building permit from the New York State Education Department.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.2.1 In accordance New York State Labor Law Article 8, Section 220, subd. 3-a(a), the Contractor shall submit to the Owner within 30 days after issuance of Contractor's first payroll, and every 30 days thereafter, a transcript of the original payroll record, subscribed and affirmed as true under the penalties of perjury.

§ 3.7.2.2 The Contractor shall comply with all applicable New York State Department of Labor requirements, including the provision that every worker employed in performance of a public work contract shall be certified as having completed an OSHA 10-hour safety training course. The Contractor and subcontractor shall be solely responsible for compliance with this requirement with respect to their employees. The Contractor's or subcontractor's failure to comply with this requirement shall not transfer or in any way impose the responsibility for worker safety upon the Owner or the Architect.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 **Concealed or Unknown Conditions.** If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice in writing to the Owner, Construction Manager, and the Architect before

conditions are disturbed and in no event later than 3 days after first observance of the conditions. The Architect and Construction Manager will promptly investigate such conditions and, if the Architect, in consultation with the Construction Manager, determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect, in consultation with the Construction Manager, determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner, Construction Manager, and Contractor in writing, stating the reasons. If the Owner or Contractor disputes the Architect's determination or recommendation, either party may proceed as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner, Construction Manager, and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents:

- .1 Allowances shall cover the cost to the Contractor and Subcontractors of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's and Subcontractors costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 Whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.
- .4 Allowances do not include the Contractor's overhead and profit, including the costs of bonds, insurance, administration and supervision, which costs should be carried as part of the Contract Sum.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.8.4 Refer to Division 01 Section "Allowances" for additional information.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site full time during performance of the Work. The Superintendent shall be the same individual throughout the duration of the Project unless the Owner consents to a change. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner and Architect through the Construction Manager, the name and qualifications of a proposed superintendent. The Construction Manager may reply within 14 days to the Contractor in writing stating (1) whether the Owner, the Construction Manager, or the Architect has reasonable objection to the proposed superintendent or (2) that any of them require additional time to review. Failure of the Construction Manager to reply within the 14 day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner, Construction Manager or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information and the Construction Manager's approval a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project schedule to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work. The Contractor shall cooperate with the Construction Manager in scheduling and performing the Contractor's Work to avoid conflict with, and as to cause no delay in, the work or activities of other Multiple Prime Contractors or the construction or operations of the Owner's own forces.

§ 3.10.2 The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter update it as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Construction Manager's and Architect's approval. The Architect and Construction Manager's approval shall not unreasonably be delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Construction Manager and Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals. The contractor's submittal schedule shall be in compliance with the project manual requirements regarding timelines for submission of submittals.

§ 3.10.3 The Contractor shall participate with other Contractors, the Construction Manager and Owner in reviewing and coordinating all schedules for incorporation into the Project schedule that is prepared by the Construction Manager. The Contractor shall make revisions to the construction schedule as deemed necessary by the Construction Manager to conform to the Project schedule.

§ 3.10.4 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner, Construction Manager and Architect and incorporated into the approved Project schedule.

§ 3.11 Documents and Samples at the Site

The Contractor shall maintain at the site for the Owner one copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These documents shall be available to the Architect and delivered to the Construction Manager for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. Their purpose is to demonstrate the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect and Construction Manager is subject to the limitations of Sections 4.2.9 through 4.2.11. Informational submittals upon which the Construction Manager and Architect are not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Construction Manager or Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Construction Manager Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of other Multiple Prime Contractors or the Owner's own forces. The Contractor shall cooperate with the Construction

Manager in the coordination of the Contractor's Shop Drawings, Product Data, Samples and similar submittals with related documents submitted by other Multiple Prime Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents to the Owner, Construction Manager, and Architect, that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been reviewed and approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Construction Manager and Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Construction Manager and Architect on previous submittals. In the absence of such written notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

§ 3.12.11 The Construction Manager's and Architect's review of Contractor's submittals will be limited to examination of an initial submittal and 1 resubmittal. The Owner is entitled to obtain reimbursement from the Contractor for amounts paid to the Architect for evaluation of additional resubmittals.

§ 3.13 Use of Site

§ 3.13.1 The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.13.2 The Contractor shall coordinate the Contractor's operations with, and secure the approval of, the Construction Manager before using any portion of the site.

§ 3.13.3 The Contractor shall be responsible for enforcing the following rules of conduct for its personnel and those of its subcontractors, sub-subcontractors, and suppliers at the Project site, and the Owner's Project Representative shall provide interpretations should a question arise if the rules of conduct are being adequately enforced by the Contractor:

- .1 No smoking or use of tobacco products.
- .2 No drinking of alcoholic beverages or use of controlled substances.
- .3 No working, or presence on site, under the influence of alcoholic beverages or controlled substances.
- .4 No use of indecent language or display of indecent images, publications or terms.
- .5 No use of radios or other entertainment devices.
- .6 No horseplay or dangerous behavior.
- .7 No firearms or other weapons.
- .8 No communication with staff or students.

§ 3.13.4 The Contractor shall require its personnel and those of its subcontractors, sub-subcontractors and suppliers to wear visible photo-identification badges acceptable to the Owner, at all times for identification and security purposes. All personnel must wear a yellow safety vest with the Prime or Subcontractor company name at all times when on project site.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting and patching shall be restored to the condition existing prior to the cutting, fitting and patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner's own forces or of other Multiple Prime Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner's own forces or by other Multiple Prime Contractors except with written consent of the Construction Manager, Owner and such other Multiple Prime Contractors; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the other Multiple Prime Contractors or the Owner the Contractor's consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract daily. At completion of the Work the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents daily, the Owner, or Construction Manager with the Owner's approval, may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner, Construction Manager and Architect access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner, Construction Manager and Architect harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner, Architect, or Construction Manager. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect through the Construction Manager.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Construction Manager, Architect, Construction Manager's and Architect's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees and litigation costs, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

ARTICLE 4 ARCHITECT AND CONSTRUCTION MANAGER

§ 4.1 General

§ 4.1.1 The Owner shall retain an architect lawfully licensed to practice architecture or an entity lawfully practicing architecture in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 4.1.2 The Owner shall retain a construction manager lawfully licensed to practice construction management or an entity lawfully practicing construction management in the jurisdiction where the Project is located. That person or entity is identified as the Construction Manager in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 4.1.3 Duties, responsibilities and limitations of authority of the Construction Manager as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner and Construction Manager. Duties, responsibilities and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner and Architect. Consent shall not be unreasonably withheld.

§ 4.1.4 If the employment of the Construction Manager or Architect is terminated, the Owner shall employ a successor construction manager or architect as to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Construction Manager or Architect, respectively.

§ 4.2 Administration of the Contract

§ 4.2.1 The Construction Manager and Architect will provide administration of the Contract as described in the Contract Documents and will be the Owner's representatives during construction until the date the Architect issues the final Certificate for Payment. The Construction Manager and Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and report to the Owner and Construction Manager (1) known deviations from the Contract Documents and from the most recent Project schedule prepared by the Construction Manager, and (2) defects and deficiencies observed in the Work.

§ 4.2.2.1 The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for site visits made necessary by the fault of the Contractor or by defects and deficiencies in the Work.

Init.

§ 4.2.2.2 The Owner is entitled to reimbursement from the Contractor for amounts paid to the Construction Manager for site visits made necessary by the fault of the Contractor or by defects and deficiencies in the Work.

§ 4.2.3 The Construction Manager shall provide a staffing plan to include one or more representatives who shall be in attendance at the Project site whenever the Work is being performed. The Construction Manager will determine in general if the Work observed is being performed in accordance with the Contract Documents, will keep the Owner reasonably informed of the progress of the Work, and will report to the Owner and Architect (1) known deviations from the Contract Documents and the most recent Project schedule, and (2) defects and deficiencies observed in the Work.

§ 4.2.4 The Construction Manager will schedule and coordinate the activities of the Contractor and other Multiple Prime Contractors in accordance with the latest approved Project schedule.

§ 4.2.5 The Construction Manager, except to the extent required by Section 4.2.4, and Architect will not have control over, or charge of, construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, except as provided in Section 3.3.1, and neither will be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. Neither the Construction Manager nor the Architect will have control over or charge of or be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or of any other persons or entities performing portions of the Work.

§ 4.2.6 **Communications Facilitating Contract Administration.** Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Construction Manager, and shall contemporaneously provide the same communications to the Architect about matters arising out of or relating to the Contract Documents. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with other Multiple Prime Contractors shall be through the Construction Manager and shall be contemporaneously provided to the Architect if those communications are about matters arising out of or related to the Contract Documents. Communications by and with the Owner's own forces shall be through the Owner.

§ 4.2.7 The Construction Manager and Architect will review and certify all Applications for Payment by the Contractor, in accordance with the provisions of Article 9.

§ 4.2.8 The Architect and Construction Manager have authority to reject Work that does not conform to the Contract Documents and will notify each other about the rejection. The Construction Manager shall determine in general whether the Work of the Contractor is being performed in accordance with the requirements of the Contract Documents and notify the Owner, Contractor and Architect of defects and deficiencies in the Work. Whenever the Construction Manager considers it necessary or advisable, the Construction Manager will have authority to require additional inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, upon written authorization of the Owner, whether or not such Work is fabricated, installed or completed. The foregoing authority of the Construction Manager will be subject to the provisions of Sections 4.2.18 through 4.2.20 inclusive, with respect to interpretations and decisions of the Architect. However, neither the Architect's nor the Construction Manager's authority to act under this Section 4.2.8 nor a decision made by either of them in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect or the Construction Manager to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons performing any of the Work.

§ 4.2.9 The Construction Manager will receive and promptly review for conformance with the submittal requirements of the Contract Documents, all submittals from the Contractor such as Shop Drawings, Product Data and Samples. Where there are Multiple Prime Contractors, the Construction Manager will also check and coordinate the information contained within each submittal received from Contractor and other Multiple Prime Contractors, and transmit to the Architect those recommended for approval. By submitting Shop Drawings, Product Data, Samples and similar submittals, the Construction Manager represents to the Owner and Architect that the Construction Manager has reviewed and recommended them for approval. The Construction Manager's actions will be with reasonable promptness while allowing sufficient time to permit adequate review by the Architect.

§ 4.2.10 The Architect will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Upon the Architect's completed review, the Architect shall transmit its submittal review to the Construction Manager.

§ 4.2.11 Review of the Contractor's submittals by the Construction Manager and Architect is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Construction Manager and Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5 and 3.12. The Construction Manager and Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Construction Manager and Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.12 The Construction Manager, with the assistance of the Architect, will prepare Change Orders and Construction Change Directives.

§ 4.2.13 The Construction Manager and the Architect will take appropriate action on Change Orders or Construction Change Directives in accordance with Article 7. and the Architect will have authority to order minor changes in the Work as provided in Section 7.4. The Architect, in consultation with the Construction Manager, will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.14 Utilizing the documents provided by the Contractor, the Construction Manager will maintain at the site for the Owner one copy of all Contract Documents, approved Shop Drawings, Product Data, Samples and similar required submittals, in good order and marked currently to record all changes and selections made during construction. These will be available to the Architect and the Contractor, and will be delivered to the Owner upon completion of the Project.

§ 4.2.15 The Construction Manager will assist the Architect in conducting inspections to determine the dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion in conjunction with the Architect pursuant to Section 9.8; and receive and forward to the Owner written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10. The Construction Manager will forward to the Architect a final Application and Certificate for Payment or final Project Application and Project Certificate for Payment upon the Contractor's compliance with the requirements of the Contract Documents.

§ 4.2.16 If the Owner and Architect agree, the Architect will provide one or more project representatives to assist in carrying out the Architect's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

§ 4.2.17 The Architect will interpret and decide matters concerning performance under, and requirements of the Contract Documents on written request of the Construction Manager, Owner or Contractor through the Construction Manager. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.18 Interpretations and decisions of the Architect will be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions so rendered in good faith.

§ 4.2.19 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.20 The Construction Manager will receive and review requests for information from the Contractor, and forward each request for information to the Architect, with the Construction Manager's recommendation. The Architect will review and respond in writing to the Construction Manager to requests for information about the Contract Documents. The Construction Manager's recommendation and the Architect's response to each request will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

§ 4.2.20.1 Contractor's requests for information shall be prepared and submitted in accordance with Division 01 Section "Project Management and Coordination". The Architect will return without action requests for information that do not conform to the Contract Documents.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include other Multiple Prime Contractors or subcontractors of other Multiple Prime Contractors.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Construction Manager for review by the Owner, Construction Manager and Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Construction Manager may reply within 14 days to the Contractor in writing stating (1) whether the Owner, the Construction Manager or the Architect has reasonable objection to any such proposed person or entity or, (2) that the Construction Manager, Architect or Owner requires additional time for review. Failure of the Construction Manager, Owner, or Architect to reply within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner, Construction Manager or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner, Construction Manager or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner, Construction Manager or Architect has no reasonable objection.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person or entity previously selected if the Owner, Construction Manager or Architect makes reasonable objection to such substitution.

§ 5.2.5 The Contractor shall perform at least 25 > percent of the cost of the Contract (not including the costs of materials, insurance, bonds, submittals and similar items) with its own employees.

§ 5.3 Subcontractual Relations

By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including responsibility for safety of the Subcontractor's Work, which the Contractor, by these Documents, assumes toward the Owner, Construction Manager and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner, Construction Manager and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make

available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

- § 5.4.1** Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that
- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor in writing; and
 - .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon such assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor Contractor or other entity. If the Owner assigns the subcontract to a successor Contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor Contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY OTHER CONTRACTORS

§ 6.1 Owner's Right to Perform Construction with Own Forces and to Award Other Contracts

§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, which include persons or entities under separate contracts not administered by the Construction Manager, and to award other contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Article 15.

§ 6.1.2 When the Owner performs construction or operations with the Owner's own forces including persons or entities under separate contracts not administered by the Construction Manager, the Owner shall provide for coordination of such forces with the Work of the Contractor, who shall cooperate with them.

§ 6.1.3 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights that apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11 and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner's own forces, Construction Manager and other Multiple Prime Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner's own forces or other Multiple Prime Contractors, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Construction Manager and Architect apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the Owner's own forces or other Multiple Prime Contractors' completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

Init.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs, including costs that are payable to a separate contractor or to other Multiple Prime Contractors because of the Contractor's delays, improperly timed activities or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner, separate contractors, or other Multiple Prime Contractors as provided in Section 10.2.5.

§ 6.2.5 The Owner and other Multiple Prime Contractors shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, other Multiple Prime Contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Construction Manager, with notice to the Architect, will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Construction Manager, Architect and Contractor; a Construction Change Directive requires agreement by the Owner, Construction Manager and Architect and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work.

§ 7.1.4 The allowance for the combined overhead and profit included in the total cost to the Owner shall be as follows:

- .1 Five percent (5%) of the costs of labor and material for overhead.
- .2 An additional ten percent (10%) of the value of labor and materials for profit. When Contractor uses its Subcontractor to perform the work, overhead and profit shall be determined at five percent (5%) of the Subcontractor's cost for labor, equipment and materials, if any.
- .3 The allowance for the combine overhead and profit (for Contractor, subcontractor, suppliers and contractors of a lower-tier) included in the total cost to the Owner cannot exceed a maximum fee of fifteen percent (15%) of the cost.
- .4 The additional bond charges for the total change order, two percent (2%) of the cost shall also apply to Deduct Change orders.

§ 7.2 Change Orders

A Change Order is a written instrument prepared by the Construction Manager and signed by the Owner, Construction Manager, Architect and Contractor, stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Construction Manager and signed by the Owner, Construction Manager and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.7.

§ 7.3.4 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 7.3.5 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Construction Manager and Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.6 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.7 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Construction Manager shall determine the method and the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Construction Manager may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.7 shall be limited to the following:

- .1 Costs of labor, including social security and unemployment insurance, fringe benefits required by agreement or custom, and workers compensation insurance directly related to the Work;
- .2 Costs of materials, supplies and equipment, including cost of transportation (not normal commute to work vehicles), to the Project site, directly related to the Work, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools and equipment normally encumbered to perform the work,, whether rented from the Contractor or

(Paragraphs deleted)
others.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Construction Manager and Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Construction Manager and Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Construction Manager and Architect determine to be reasonably justified. The interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Construction Manager and Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Construction Manager shall prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect has authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes will be effected by written order issued through the Construction Manager and shall be binding on the Owner and Contractor.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8. The Work of this Project shall be substantially complete on or before the dates indicated in Milestone Construction Schedule for those portions of the Work so stipulated. Actual damages may be assessed by the Owner if specified completion dates are not adhered to by the Contractor.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner, Owner's own forces, Construction Manager, Architect, any of the other Multiple Prime Contractors or an employee of any of them, or by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control; or by other causes that the Architect, based on the recommendation of the Construction Manager, determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 The Owner shall not be liable to the Contractor and/or any subcontractor for claims or damages of any nature caused by or arising out of delays. The sole remedy against the Owner for delays shall be the allowance of additional time for completion of the Work, the amount of which shall be subject to the claims procedure set forth herein. Except to the extent, if any, expressly prohibited by law, the Contractor expressly agrees not to make and hereby waives any claim for damages for delay, including, but not limited to, those resulting from increased labor or material costs; directions given or not given by the Owner, Construction Manager or Architect, including scheduling and coordination of the Work; the Architect's preparation of drawings and specifications or review of shop drawings and requests for instruction(s); or, on account of any delay, obstruction or hindrance for any cause whatsoever by the Owner, Construction Manager, Architect, or any other contractor on the project, whether or not foreseeable or

Init.

anticipated. The Contractor agrees that its sole right and remedy therefor shall be an extension of time, if appropriate. **IT IS EMPHASIZED THAT NO MONETARY RECOVERY MAY BE OBTAINED BY THE CONTRACTOR FOR DELAY AGAINST THE OWNER, CONSTRUCTION MANAGER, OR ARCHITECT BASED ON ANY REASON AND THAT THE CONTRACTOR'S SOLE REMEDY, IF APPROPRIATE, IS ADDITIONAL TIME."**

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.2 Schedule of Values

Where the Contract is based on a Stipulated Sum or Guaranteed Maximum Price, the Contractor shall submit to the Construction Manager, before the first Application for Payment, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Construction Manager and Architect may require, including copies of the Contractor-Subcontractor agreements, if requested. This schedule, unless objected to by the Construction Manager or Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. The Construction Manager shall forward to the Architect the Contractor's schedule of values.

§ 9.3 Applications for Payment

§ 9.3.1 At least fifteen days before the date established for each progress payment, the Contractor shall submit to the Construction Manager an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner, Construction Manager or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and shall reflect retainage if provided for in the Contract Documents. The form of Application for Payment, duly notarized, shall be a current authorized edition of AIA Document G732-2009, Application and Certificate for Payment, Construction Manager as Adviser Edition, modified as follows:

In "Summary of Changes in the Work", delete "including Construction Change Directives"

In Architect's signature item, delete "(NOTE: If Multiple Prime Contractors are responsible for performatting (sic) portions of the Project, the Architect's Certification is not required)."

Alternative payment application forms are not permitted. AIA Document G732 shall be supported by a current authorized edition of AIA Document G703-1992, Continuation Sheet.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Construction Manager and Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or material supplier unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.1.3 Until Substantial Completion, the Owner shall pay 95 percent of the amount due the Contractor on account of progress payments. At Substantial Completion, the Architect may authorize remaining partial payments to be made in full, less twice the value of items remaining to be completed and an amount necessary to satisfy any outstanding claims, liens, or judgments.

§ 9.3.1.4 "Applications for Payment must be accompanied by any and all releases of liens for previous applications from Contractor and his/her subcontractors and a sworn and notarized statement that all subcontractors have been paid to at least 95% of previously requisitioned sums.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location

agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site. . The Owner shall have the right, at any time on reasonable notice to inspect materials and equipment which have been stored off the site in accordance with this paragraph.

§ 9.3.2.1 Procedures required by Owner shall include, but are not necessarily limited to, submission by the Contractor to the Architect, with, of bills of sale and bills of lading for such materials and equipment, provision of opportunity for Architect's visual verification that such materials and equipment are in fact in storage, and, if stored off-site, submission by the Contractor of verification that such materials and equipment are stored in a bonded warehouse.

§ 9.3.2.2 All such materials and equipment, including materials and equipment stored on-site but not yet incorporated into the Work, upon which partial payments have been made shall become the property of the Owner, but the care and protection of such materials and equipment shall remain the responsibility of the Contractor until incorporation into the Work, including maintaining insurance coverage on a replacement cost basis without voluntary deductible.

§ 9.3.2.3 Proof of insurance for items stored off site and copies of invoices are to be provided with Applications for Payment requesting payment for stored materials.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 Construction Manager will, within seven days after the Construction Manager's receipt of the Contractor's Application for Payment, review the Application, certify the amount the Construction Manager determines is due the Contractor, and forward the Contractor's Application and Certificate for Payment to the Architect. Within seven days after the Architect receives the Contractor's Application for Payment from the Construction Manager, the Architect will either issue to the Owner a Certificate for Payment, with a copy to the Construction Manager, for such amount as the Architect determines is properly due, or notify the Construction Manager and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Section 9.5.1. The Construction Manager will promptly forward to the Contractor the Architect's notice of withholding certification.

(Paragraphs deleted)

§ 9.4.4 The Construction Manager's certification of an Application for Payment shall be based upon the Construction Manager's evaluation of the Work and the information provided as part of the Application for Payment. The Construction Manager's certification will constitute a representation that, to the best of the Construction Manager's knowledge, information and belief, the Work has progressed to the point indicated and the quality of the Work is in accordance with the Contract Documents. The certification will also constitute a recommendation to the Architect and Owner that the Contractor be paid the amount certified.

§ 9.4.5 The Architect's issuance of a Certificate for Payment shall be based upon the Architect's evaluation of the Work, the recommendation of the Construction Manager, and information provided as part of the Application for Payment. The Architect's certification will constitute a representation that, to the best of the Architect's knowledge, information and belief, the Work has progressed to the point indicated, that the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified.

§ 9.4.6 The representations made pursuant to Sections 9.4.4 and 9.4.5 are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Construction Manager or Architect.

§ 9.4.7 The issuance of a separate Certificate for Payment will not be a representation that the Construction Manager or Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed the Contractor's construction means, methods, techniques, sequences or procedures, (3) reviewed copies of

requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Construction Manager or Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Construction Manager's or Architect's opinion the representations to the Owner required by Section 9.4.4 and 9.4.5 cannot be made. If the Construction Manager or Architect is unable to certify payment in the amount of the Application, the Construction Manager will notify the Contractor and Owner as provided in Section 9.4.1 and 9.4.3. If the Contractor, Construction Manager and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Construction Manager or Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence or subsequent observations, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Construction Manager's or Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from the acts and omissions described in Section 3.3.2 because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a separate contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.
- .8 failure of Contractor to provide executed supplementary bid forms, performance and payment bonds or a current Certificate of Insurance.

§ 9.5.2 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.3 If the Architect or Construction Manager withholds certification for payment under Section 9.5.1, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or material or equipment suppliers to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Construction Manager.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Construction Manager and Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Construction Manager will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Construction Manager and Architect on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and material and equipment suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors to ascertain whether they have been properly paid. Neither the Owner, Construction Manager nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor except as may otherwise be required by law.

§ 9.6.5 Contractor payments to material and equipment suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

(Paragraphs deleted)

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use.

(Paragraphs deleted)

§ 9.8.3 No later than 14 days prior to the Contract-scheduled date of Substantial Completion, the Contractor shall issue a letter to the Architect (and CM) confirming their work is ready for the Substantial Completion inspection. No later than seven days after Contract-scheduled date of Substantial Completion (including authorized adjustments), the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. Absence the contractor letter confirming readiness of work, the Architect may elect to postpone the substantial completion inspection. If the Architect's on-site observation discloses any item which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another on-site observation by the Architect to determine the actual date of Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate.

.1 The Architect and Construction Manager will perform no more than one on-site observation to determine whether the Work or a designated portion thereof has attained Substantial Completion in accordance with the Contract Documents. The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect and Construction Manager for any additional on-site observations.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents. The payment shall be sufficient to increase the total payments to one-hundred percent (100%) of the Contract Sum, less two times the value of any remaining items to be completed and any amount necessary to satisfy claims, liens or judgments against the Contractor which have not been suitably discharged, as determined by the Architect assisted by the Construction Manager.

Init.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Section 11.3.1.5 and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect after consultation with the Construction Manager.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Construction Manager, Contractor and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment

(Paragraph deleted)

§ 9.10.1 On or within seven (7) days following the date of Final Completion (as established in the bid documents or modified by Change Order) the Architect will conduct a final inspection of the work. As a result of that inspection, the Architect will issue a Final Inspection Report. This report will document the condition of the work and will render a formal opinion as to the whether or not the work or designated portion is complete. If, as a result of the Architect's inspection, it is determined that the work is not complete and in accordance with the Contract Documents, the Architect shall notify the Owner and Contractor in writing of this opinion. This notice will include the Final Inspection Report documenting the conditions of the work and will be considered a formal notice to the Contractor of their failure to fulfill the terms and conditions of their contract.

If as a result of this inspection, it is determined that the work is complete, the Contractor shall submit their Final Payment Application and Certificate for Payment. The Architect will then certify and issue the final Certificate for Payment stating that to the best of the Architects knowledge, information and belief, and on the basis of the Architect's periodic site visits and inspections, the Work has been completed in accordance with the terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for payment will constitute a further representation that the conditions listed in section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled. The final Certificate for Payment will not be issued until all work on the final inspection report is completed or corrected.

.1 The Architect will perform no more than one on-site observation to determine whether the Work or a designated portion thereof has attained Final Completion in accordance with the Contract Documents. The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for any additional on-site observations.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect through the Construction Manager (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner and (6) all Project closeout documents per the General Requirements of the Contract. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are

Init.

made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Construction Manager and Architect so confirm, the Owner shall, upon application by the Contractor and certification by the Construction Manager and Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect through the Construction Manager prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents; or
- .3 terms of special warranties required by the Contract Documents.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

§ 9.10.6 In the event the Contractor does not achieve final completion within one hundred and twenty (120) days after the date of Substantial Completion, allowing for any approved extensions of the Contract time, Contractor shall not be entitled to any further payment and Contractor hereby agrees that such failure to complete the work within the time set forth above shall constitute a waiver of all claims by the Contractor to any money that may be due. This provision shall not operate as a waiver by the Owner of any claims or remedies of any nature against the Contractor arising out of the Contract.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract. The Contractor shall submit the Contractor's safety program to the Construction Manager for review and coordination with the safety programs of other Contractors.

The Construction Manager's responsibilities for review and coordination of safety programs shall not extend to direct control over or charge of the acts or omissions of the Contractors, Subcontractors, agents or employees of the Contractors or Subcontractors, or any other persons performing portions of the Work and not directly employed by the Construction Manager.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors;
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction; and
- .4 construction or operations by the Owner or other Contractors.

§ 10.2.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

Init.

§ 10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.4.1 When use or storage of explosives, or other hazardous materials, substances or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall give the Owner and Construction Manager reasonable advance notice.

§ 10.2.4.2 If the Contract Documents require the Contractor to handle materials or substances that under certain circumstances may be designated as hazardous, the Contractor shall handle such materials in an appropriate manner.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2, 10.2.1.3 and 10.2.1.4 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2, 10.2.1.3 and 10.2.1.4, except damage or loss attributable to acts or omissions of the Owner, Construction Manager or Architect or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner, Construction Manager and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to, asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner, Construction Manager and Architect in writing.

§ 10.3.2 Upon receipt of the Contractor's written notice, the Owner shall obtain the services of a licensed laboratory to verify a presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor, Construction Manager and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor, the Construction Manager and the Architect will promptly reply to the Owner in writing stating whether or not any of them has reasonable objection to the persons or entities proposed by the Owner. If the Contractor, Construction Manager or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor, the Construction Manager and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the

Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shut-down, delay and start-up.

§ 10.3.2.1 Exception is made for the Contractor expressly retained for the removal of lead, asbestos or polychlorinated (PCB) from the site. In this condition, all Contract Specifications and Drawings shall govern the handling of this material.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Construction Manager, Architect, their consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall indemnify the Owner for the cost and expense the Owner incurs (1) for remediation of a material or substance the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

(Paragraph deleted)

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Liability Insurance

§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- .1 Claims under workers' compensation, disability benefit and other similar employee benefit acts which are applicable to the Work to be performed, including private entities performing Work at the site and exempt from the coverage on account of number of employees or occupation, which entities shall maintain voluntary compensation coverage at the same limits specified for mandatory coverage for the duration of the Project;
- .2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees or persons or entities excluded by statute from the requirements of Section 11.1.1.1 but required by the Contract Documents to provide the insurance required by that section;
- .3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
- .4 Claims for damages insured by usual personal injury liability coverage;
- .5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
- .6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle; and

- .7 Claims for bodily injury or property damage arising out of completed operations; and
- .8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18.

§ 11.1.2 The insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

§ 11.1.2.1 The limits for Worker's Compensation and Employers' Liability insurance shall meet statutory limits mandated by State and Federal Laws. If (1) limits in excess of those required by statute are to be provided, (2) the employer is not statutorily bound to obtain such insurance coverage, or (3) additional coverages are required, additional coverages and limits for such insurance shall be as follows: Proof of coverage of such liability insurance must be on the approved specific form, as required by the New York State Workers' Compensation Board. ACORD certificates are not acceptable.

§ 11.1.2.2 The limits for Commercial General Liability insurance including coverage for Premises-Operations, Independent Contractors' Protective, Products-Completed Operations, Contractual Liability, Personal Injury and Broad Form Property Damage (including coverage for Explosion, Collapse and Underground hazards) shall be as follows:

- \$1,000,000 Each Occurrence
- \$2,000,000 General Aggregate
- \$1,000,000 Personal and Advertising Injury
- \$2,000,000 Products-Completed Operations Aggregate
- \$ 100,000 Fire Damage
- \$ 10,000 Medical Expense

- .1 The policy shall be endorsed to have the General Aggregate apply to this Project only.
- .2 The Contractual Liability insurance shall include coverage sufficient to meet the obligations in AIA Document A201-2007 under Section 3.18.
- .3 Products and Completed Operations insurance shall be maintained for a minimum period of at least <1> year after the expiration of the period for correction of Work.

§ 11.1.2.3 Automobile Liability insurance (owned, non-owned and hired vehicles) for bodily injury and property damage: \$1,000,000 Each Accident

§ 11.1.2.4 Umbrella or Excess Liability coverage: \$10,000,000 each occurrence and in the aggregate. Such coverage shall be provided on a follow form basis.

§ 11.1.2.5 Owners Contractors Protective Insurance \$2,000,000 per occurrence/\$4,000,000 aggregate with the Owner as the named insured.

§ 11.1.3 Certificates of insurance acceptable to the Owner shall be submitted to the Construction Manager for transmittal to the Owner with a copy to the Architect prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage shall be furnished by the Contractor with reasonable promptness. The Contractor shall provide writing notification to the Owner of the cancellation or expiration of any insurance required by Section 11.1. The Contractor shall provide such written notice within five (5) business days of the date the Contractor is first aware of the cancellation or expiration, or is first aware that the cancellation or expiration is threatened or otherwise may occur, whichever comes first.

Init.

§ 11.1.3.1 If this insurance is written on a Commercial General Liability policy form, the certificates shall be ACORD form 25 Certificate of Liability Insurance, completed and supplemented with Supplemental Attachment for ACORD Certificate of Insurance 25 (Attachment #1 of General Conditions), and ACORD Form 101 Additional Remarks Schedule as applicable.

§ 11.1.4 The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Construction Manager, the Construction Manager's consultants, the Owner, the Architect, and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations. The Contractor shall use ISO additional insured endorsements CG 20 38 04 13 and CG 20 37.

§ 11.1.5 The Contractor shall require any subcontractors to (1) Name the Owner as an additional insured on a primary and noncontributory basis; (2) Use ISO additional insured endorsements CG 20 38 04 13 and CG 20 37.

§ 11.1.6 The policy naming the Owner as an additional insured shall (1) be an insurance policy from an A.M. Best rated "secured" or better insurer, authorized to conduct business in New York State; and (2) state that the organization's coverage shall be primary and non-contributory coverage for the Owner, its Board of Education, employees and volunteers.

§ 11.1.7 The certificate of insurance must describe the specific services provided by the contractor (e.g., roofing, carpentry, plumbing) that are covered by the liability policies.

§ 11.1.8 At the Owner's request, the Contractor shall provide a copy of the declaration page of the liability and umbrella policies with a list of endorsements and forms. If so requested, the contractor will provide a copy of the policy endorsements and forms.

§ 11.1.9 A fully completed New York Construction Certificate of Liability Insurance Addendum (ACORD 855 2014/05) must be included with the certificates of insurance.

§ 11.1.10 The Contractor agrees to indemnify the Owner for any applicable deductibles and self-insured retentions.

§ 11.1.11 Contractor acknowledges that failure to obtain such insurance on behalf of the Owner constitutes a material breach of contract and subjects it to liability for damages, indemnification and all other legal remedies available to the Owner.

§ 11.2 Owner's Liability Insurance

The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.

§ 11.3 Property Insurance

§ 11.3.1 Unless otherwise provided, the Contractor shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

§ 11.3.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any

Init.

applicable legal requirements, and shall cover reasonable compensation for the Architect's, Contractor's, and Construction Manager's services and expenses required as a result of such insured loss.

(Paragraph deleted)

§ 11.3.1.3 If the property insurance requires deductibles, the Contractor shall pay costs not covered because of such deductibles.

§ 11.3.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

§ 11.3.1.5 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance

§ 11.3.1.6 The insurance required by Section 11.3 is not intended to cover machinery, tools or equipment owned or rented by the Contractor that are utilized in the performance of the Work but not incorporated into the permanent improvements. The Contractor shall, at the Contractor's own expense, provide insurance coverage for owned or rented machinery, tools or equipment, which shall be subject to the provisions of Section 11.3.7.

§ 11.3.2 **Boiler and Machinery Insurance.** The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Construction Manager, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

§ 11.3.3 **Loss of Use Insurance.** The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

§ 11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

§ 11.3.5 If during the Project construction period the Owner insures properties, real or personal or both, adjoining or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Section 11.3.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

§ 11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Section 11.3, if requested in writing by the Contractor. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.

§ 11.3.7 **Waivers of Subrogation.** The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees each of the other, and (2) the Construction Manager, Architect, Architect's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Section 11.3 or other property insurance applicable to the Work, except such rights as the Owner and Contractor may have to the proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Construction Manager, Construction Manager's consultants, Architect, Architect's consultants, Owner's separate contractors described in Article 6, if any, and the

Init.

subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

§ 11.3.8 A loss insured under the Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

§ 11.3.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

"§ 11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power.

(Paragraph deleted)

§ 11.4 Performance Bond and Payment Bond

(Paragraph deleted)

§ 11.4.1 The Contractor shall furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder. Bonds shall be obtained from a surety satisfactory to the Owner, licensed to do business in the state where the Project is located, and listed in the latest issue of the United States Treasury Circular 570, and the cost thereof shall be included in the Contract Sum. The amount of each bond shall be equal to 100 percent of the Contract Sum. The sufficiency of the bonds is subject to the approval of the Owner and bonds deemed insufficient by the Owner may be rejected.

§ 11.4.1.1 The Contractor shall deliver the required bonds to the Owner not later than the date the Agreement is entered into, on AIA Document A312-2010, Performance Bond and Payment Bond.

§ 11.4.1.2 The Contractor shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of the power of attorney.

§ 11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Construction Manager's or Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by either, be uncovered for their observation and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered which the Construction Manager or Architect has not specifically requested to observe prior to its being covered, the Construction Manager or Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, such costs and the cost of correction shall be at the Contractor's expense

unless the condition was caused by the Owner or one of the other Contractors in which event the Owner shall be responsible for payment of such costs.

§ 12.2 Correction of Work

§ 12.2.1 Before or After Substantial Completion

The Contractor shall promptly correct Work rejected by the Construction Manager or Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Construction Manager's and Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof, or after the date for commencement of warranties established under Section 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.4.

§ 12.2.2.2 The one-year period shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors or other Multiple Prime Contractors caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

(Paragraphs deleted)

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to covenants, agreements and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other.

Init.

If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such assignment.

§ 13.3 Written Notice

Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity or to an officer of the corporation for which it was intended; or if delivered at or sent by registered or certified mail or by courier service providing proof of delivery to, the last business address known to the party giving notice.

§ 13.4 Rights and Remedies

§ 13.4.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

§ 13.4.2 No action or failure to act by the Owner, Construction Manager, Architect or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed in writing.

§ 13.5 Tests and Inspections

§ 13.5.1 Tests, inspections and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Construction Manager and Architect timely notice of when and where tests and inspections are to be made so that the Construction Manager and Architect may be present for such procedures. The Owner shall bear costs of (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor.

§ 13.5.2 If the Construction Manager, Architect, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Section 13.5.1, the Construction Manager and Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Construction Manager and Architect of when and where tests and inspections are to be made so that the Construction Manager and Architect may be present for such procedures. Such costs except as provided in Section 13.5.3, shall be at the Owner's expense.

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the Construction Manager's and Architect's services and expenses shall be at the Contractor's expense.

§ 13.5.4 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Construction Manager for transmittal to the Architect.

§ 13.5.5 If the Construction Manager or Architect is to observe tests, inspections or approvals required by the Contract Documents, the Construction Manager or Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

Init.

§ 13.6 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

§ 13.7 Time Limits on Claims

The Owner and the Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and the Contractor waive all claims and causes of action not commenced in accordance with this Section 13.7.

§ 13.8 Equal Opportunity

§ 13.8.1 The Contractor shall maintain policies of employment as follows:

.1 The Contractor and the Contractor's subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, or national origin. The Contractor shall take affirmative action to insure that applicants are employed, and that employees are treated during employment without regard to their race, religion, color, sex, or natural origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notice setting forth the policies of non-discrimination.

.2 The Contractor and the Contractor's subcontractors shall, in all solicitations or advertisement for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex or national origin.

§ 13.9 Wage Rates

§ 13.9.1 The Contractor shall comply with Prevailing Wage Rates issued and periodically updated, by the New York State Department of Labor, for the location and duration of the Project.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency that requires all Work to be stopped; or
- .3 Because the Construction Manager has not certified or the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, repeated suspensions, delays or interruptions of the entire Work by the

Owner as described in Section 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon thirty days' written notice to the Owner, Construction Manager and Architect, terminate the Contract and recover from the Owner payment for Work properly executed.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon thirty additional days' written notice to the Owner, Construction Manager and Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
- .3 disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority;
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents;
- .5 breaches any warranty made by the Contractor under or pursuant to the Contract Documents; or
- .6 fails to furnish the Owner with assurances satisfactory to the Owner evidencing the Contractor's ability to complete the Work in compliance with all of the requirements of the Contract Documents..

§ 14.2.2 When any of the above reasons exist, the Owner may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work. The costs of finishing the Work include, without limitations, all reasonable attorney's fees, additional Architect/Engineering and Construction Manager costs, insurance, additional interest because of any delay in completing the Work, and all other direct and indirect and consequential damages incurred by the Owner by reason of the termination of the Contractors stated herein..

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Construction Manager's and Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and the Contract Time may be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Section 14.3.1. No adjustment shall be made to the extent:

- .1 that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of this Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 Notwithstanding any other provision to the contrary in this Agreement, the Owner reserves the right at any time and in its absolute discretion to terminate the services of the Contractor and/or the Work for the Owner's convenience and without cause by giving written notice to the Contractor. This termination for the convenience of the Owner provision allows and authorizes the Owner to terminate this Agreement at any time and for any reason whatsoever. This right may be exercised by the Owner in its complete discretion.

§ 14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In the case of such termination for the Owner's convenience, the Contractor shall be entitled to, and the Owner shall reimburse the Contractor for, an equitable portion of the Contractor's fee based on the portion of the Work properly completed before the effective date of termination and for any other reasonable costs attributable to such termination. Contractor's entitlement to payment for all such work shall be predicated on its performance of such work in accordance with the Contract Documents as certified by the Architect and Construction Manager. Contractor shall be entitled to no other payment and waives any claim for damages.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 **Definition.** A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim.

§ 15.1.2 **Notice of Claims.** Claims by either the Owner or Contractor must be initiated by written notice to the other party and to the Initial Decision Maker with a copy sent to the Construction Manager and Architect, if the Construction Manager and or Architect is not serving as the Initial Decision Maker. Claims by either party must be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.2.1 Written notice shall contain a heading stating "Notice of Claim" to clearly identify it as such. Such notice shall set forth in detail the circumstances that form the basis for the Claim and shall include the following:

- .1 Clear statement of claim matter, including background and chronology.
- .2 Documentation in support of claim matter.
- .3 Documentation in support of claimed damages.
- .4 Certification by responsible officer of claimant.

§ 15.1.3 **Continuing Contract Performance.** Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents. The Construction Manager will prepare Change Orders and the Architect will issue a Certificate for Payment or Project Certificate for Payment in accordance with the decisions of the Initial Decision Maker.

§ 15.1.4 **Claims for Additional Cost.** If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.3.

Init.

§ 15.1.5 Claims for Additional Time

§ 15.1.5.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary.

§ 15.1.5.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

§ 15.1.5.3 Claims for increase in the Contract Time shall set forth in detail the circumstances that form the basis for the Claim, the date upon which each cause of delay began to affect the progress of the Work, the date upon which each cause of delay ceased to affect the progress of the Work and the number of days' increase in the Contract Time claimed as a consequence of each such cause of delay. The Contractor shall provide such supporting documentation as the Owner may require including, where appropriate, a revised construction schedule indicating all the activities affected by the circumstances forming the basis of the Claim.

§ 15.1.5.4 The Contractor shall not be entitled to a separate increase in the Contract Time for each one of the number of causes of delay which may have concurrent or interrelated effects on the progress of the Work, or for concurrent delays due to the fault of the Contractor.

§ 15.1.6 Claims for Consequential Damages. The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those arising under Sections 10.3, 10.4, 11.3.9, and 11.3.10, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Initial Decision Maker with no decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the

response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect and Construction Manager, if the Architect or Construction Manager is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of an initial decision, demand in writing that the other party file for mediation within 60 days of the initial decision. If such a demand is made and the party receiving the demand fails to file for mediation within the time required, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.6 shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order.

§ 15.3.3 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

(Paragraphs deleted)

Additions and Deletions Report for AIA® Document A232™ – 2009

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 10:39:49 ET on 01/29/2021.

PAGE 1

Reconstruction at:

Mahopac High School

Mahopac Middle School

Mahopac Falls School

Bus Garage

New Pump House

Tt Project No. 121111-19002

...

The Palombo Group

P.O. Box 4976

22 Noxon Street

Poughkeepsie, New York 12601

...

Mahopac Central School District

179 East Lake Boulevard

Mahopac, New York 10541

...

(Name, legal status and address)

Tetra Tech Engineers, Architects & Landscape Architects, P.C.

d/b/a Tetra Tech Architects & Engineers

10 Brown Road

Ithaca, New York 14850

PAGE 11

§ 1.1.1 The Contract Documents. The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement), and consist of the Agreement, Conditions of the Contract (~~General, Supplementary (General and other Conditions),~~ Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. ~~Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of addenda relating to bidding requirements).~~ The Contract Documents include the Notice to Bidders, Instructions to Bidders, sample forms, and the Contractor's bid.

PAGE 12

Additions and Deletions Report for AIA Document A232™ – 2009 (rev. 12/11) (formerly A201™ CMA – 1992). Copyright © 1992 and 2009 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 10:39:49 ET on 01/29/2021 under Order No.2191696418 which expires on 02/27/2022, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.

User Notes:

(1330534767)

§ 1.2.3.1 In the event of conflicts or discrepancies among the Contract Documents, interpretations will be based on the following priorities:

- .1 Modifications, as defined in Section 1.1.1.
- .2 The Agreement.
- .3 Addenda, with those of later date having precedence over those of earlier date.
- .4 The General Conditions of the Contract for Construction.
- .5 Division 01 of the Specifications.
- .6 Drawings and remaining Divisions of the Specifications.

In the case of conflicts or discrepancies between Drawings and Divisions of the Specifications (other than Division 01), or within or among the Contract Documents and not clarified by Addendum, the Architect will determine which takes precedence in accordance with Sections 4.2.11, 4.2.12, and 4.2.13.

...

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or ~~authorization~~ authorization, other than Change Orders adjusting the Contract Sum. Except as otherwise provided in Article 4, the Construction Manager and the Architect do not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

..

~~§ 2.1.2~~ The Owner shall furnish to the Contractor within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

.

~~§ 2.2.1~~ Prior to commencement of the Work, the Contractor may request in writing that the Owner provide reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. Thereafter, the Contractor may only request such evidence if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) a change in the Work materially changes the Contract Sum; or (3) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due. The Owner shall furnish such evidence as a condition precedent to commencement or continuation of the Work or the portion of the Work affected by a material change. After the Owner furnishes the evidence, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.3 The Owner shall furnish, upon request only and as necessary to complete this work, surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

PAGE 13

~~§ 2.2.5~~ Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.2.5 The Owner shall furnish the Contractor 2 copies of the Contract Documents, including one set to be used for the Project Record Drawings. The Contractor may purchase additional copies at the cost of reproduction, postage and handling.

...

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ~~ten-day~~ five-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses (which may include, but not be limited to, reasonable attorneys' fees incurred by the Owner) and compensation for the Construction Manager's and Architect's and their respective consultants' additional services made necessary by such default, neglect or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect, after consultation with the Construction Manager. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

§ 2.5 ACCELERATION CLAUSE

§ 2.5.1 The Owner reserves the right to accelerate the work of the Contract. In the event that the Owner directs acceleration, such directive will be only in written form. The Contractor shall keep cost and other project records related to the acceleration directive separately from normal project costs and records and shall provide a written record of acceleration cost to the Owner on a daily basis.

§ 2.5.2 In the event that the Contractor believes that some action or inaction on the part of the Owner constitutes an acceleration directive, the Contractor shall immediately notify the Owner in writing that the Contractor considers the actions an acceleration directive, with copies to the Architect and Construction Manager. This written notification shall detail the circumstances of the claimed acceleration directive. The Contractor shall not accelerate their work efforts until the Owner responds in writing to the written notification. If acceleration is then directed or required by the Owner, all cost records referred to above shall be maintained by the Contractor and provided to the Owner on a daily basis.

§ 2.5.3 In order to preserve a claim to recover additional costs due to acceleration, the Contractor must document that additional expenses were incurred and paid by the Contractor. Labor costs recoverable will be only overtime or shift premium costs or the cost of additional laborers brought to the site to accomplish the accelerated work effort. Equipment costs recoverable will be only the cost of added equipment mobilized to the site to accomplish the accelerated work effort.

PAGE 14

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has ~~visited the site, become generally familiar with local~~ carefully examined the Contract Documents and the site, and represents that the Contractor is thoroughly familiar with the nature and location of the Work, the site, the specific conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents, performed, and all matters which may in any way affect the Work or its performance. The Contractor further represents that as a result of such examinations and investigations, the Contractor thoroughly understands the Contract Documents and their intent and purpose, and is familiar with all applicable codes, ordinances, laws, regulations, and rules as they apply to the Work, and that the Contractor will abide by same. Claims for additional time or additional compensation as a result of the Contractor's failure to follow the foregoing procedure and to familiarize itself with all local conditions and the Contract Documents will not be permitted..

§ 3.2.2.1 Do not scale Drawings. Follow figure dimensions, confirming on site.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as ~~the~~ as the information furnished by the Owner pursuant to Section 2.2.3, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall

promptly report to the ~~Construction Manager and Architect~~ any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information submitted ~~to the Construction Manager in writing on~~ such form as the ~~Construction Manager and Architect~~ may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents. If the Contractor performs any construction activity which involves an error, inconsistency or omission in the Contract Documents without first providing notice to the Owner, Architect and Construction Manager of such condition and receiving authorization to proceed, the Contractor shall assume responsibility for such performance and shall bear an appropriate amount of the attributable costs for correction.

~~§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Construction Manager and Architect any nonconformity discovered by or made known to the Contractor as a request for information submitted to Construction Manager in such form as the Construction Manager and Architect may require.~~

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall make Claims in writing as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.2.5 Where existing conditions are obscured or concealed from the Owner or Architect's view prior to the start of this Project's construction activities, portrayal of such conditions in the documents is based on reasonable implications and assumptions. The Owner and Architect do not imply or guarantee to the Contractor in any way that such portrayals in the Documents are accurate or true.

§ 3.2.5.1 Physical investigations and testing of existing conditions were not undertaken by the Architect, unless so indicated in the Contract Documents.

§3.2.5.2 The Contractor may submit requests for information to the Architect to help facilitate the Contractor's performance of the contract. Prior to submitting each request for information, the Contractor shall first carefully study and compare the Contract Documents, field conditions, other Owner provided information, Contractor prepared Coordination Drawings, and prior Project correspondence and documentation to determine that the information to be requested is not reasonably obtainable from such sources.

§ 3.2.5.3 Each request for information shall be submitted to the Construction Manager, in writing, . Each request for information shall identify the specific sources which were reviewed by the Contractor in an effort to determine the information requested, and a statement to the effect that the information being requested could not be determined from such sources.

§ 3.2.5.4 The Contractor shall submit each request for information sufficiently in advance of the date by which such information is requested in order to allow the Architect sufficient time, in the Architect's professional judgment, to permit adequate review and response and to permit Contractor compliance with the latest construction schedule.

§ 3.2.5.5 The Construction Manager shall maintain a log at the Project site that sequentially numbers and lists each request for information. This log shall contain the Drawings reference or Specification section to which the request pertains, the date of the request, to whom the request was made, by whom the request was made, the nature of the request, and the Architect's resolution thereof. This log shall be reviewed at each Project meeting and the status of the requests for information shall be made part of the minutes of such meetings.

§ 3.2.5.6 The Contractor shall reimburse the Owner amounts charged to the Owner by the Architect or Construction Manager for responding to Contractor requests for information where such information is available to the Contractor

from a careful study and comparison of the Contract Documents, field conditions, other Owner provided information, Contractor prepared Coordination Drawings, or prior Project correspondence or documentation.

PAGE 15

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instruction concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner, the Construction Manager, and the Architect and shall not proceed with that portion of the Work without further written instructions from the Architect, through the Construction Manager. ~~If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any loss or damage arising solely from those Owner required means, methods, techniques, sequences or procedures.~~ The Contractor shall be responsible for and coordinate any and all inspections required by any governmental body having jurisdiction over the project. Failure to obtain any permits, licenses or other approvals because of the failure of the Contractor to conform to this requirement shall not extend the Contract time, and the Contractor shall not be entitled to any increase in the contract sum therefor. In addition, any additional costs and/or expenses of any nature incurred by the Owner as a result of the Contractor's failure to conform to this requirement shall constitute a charge against the Contractor's contract. Each contractor shall be responsible for complying with union regulations existing under current labor agreements in performing construction work on the project.

PAGE 16

§ 3.3.4 During period of active Construction, consult daily and cooperate with the Construction Manager. On a daily basis, keep the Construction Manager and Architect notified of when Work will be starting, restarting, suspended and temporarily or permanently concluding.

§ 3.3.5 Within 15 days of the date of the Notice to Proceed, each Contractor shall submit to the Construction Manager and Architect a list of all Contractor's principal staff assignments, including the Superintendent and other personnel in attendance at the site; identify individuals, their duties and responsibilities.

...

§ 3.4.2.1 After the Contract has been executed, the Owner, Construction Manager and Architect will consider requests for the substitution of products in place of those specified only under the conditions set forth in the General Requirements (Division 01 of the Specifications). By making requests for substitutions, the Contractor:

- .1 represents that it has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified;
- .2 represents that it will provide the same warranty for the substitution as it would have provided for the product specified;
- .3 certifies that the cost data presented is complete and includes all related costs for the substituted product and for Work that must be changed as a result of the substitution, except for the Architect's redesign costs, and waives all claims for additional costs related to the substitution that subsequently become apparent; and
- .4 shall coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.

§ 3.4.5 The Owner shall be entitled to reimbursement from the Contractor for amounts paid to the Construction Manager and Architect for reviewing the Contractor's proposed substitutions for convenience after the period noted in Division 01 Section "Substitution Procedures" and for the Architect making agreed-upon changes in the Drawings and Specifications resulting from such substitutions.

The Contractor warrants to the Owner, Construction Manager, and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform with the requirements of the Contract Documents and will be free from defects, ~~except for those inherent in the quality of the Work the Contract Documents require or permit.~~ defects. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Construction Manager or Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

PAGE 17

The Owner is exempt from payment of Federal, State, local taxes, and from payment of sales and compensating use taxes of the State of New York and of cities and counties on all materials and supplies sold to the Owner pursuant to the provisions of this Contract. These taxes are not to be included in bids. This exemption does not, however, apply to tools, machinery, equipment, or other property leased by, or to the Contractor or a subcontractor; and the Contractor and its subcontractor shall be responsible for, and pay, any and all applicable taxes, including sales and compensating use taxes, on such leased tools, machinery, equipment or other property.

...

§ 3.7.1.1 The Owner shall secure the building permit from the New York State Education Department.

§ 3.7.2.1 In accordance New York State Labor Law Article 8, Section 220, subd. 3-a(a), the Contractor shall submit to the Owner within 30 days after issuance of Contractor's first payroll, and every 30 days thereafter, a transcript of the original payroll record, subscribed and affirmed as true under the penalties of perjury.

§ 3.7.2.2 The Contractor shall comply with all applicable New York State Department of Labor requirements, including the provision that every worker employed in performance of a public work contract shall be certified as having completed an OSHA 10-hour safety training course. The Contractor and subcontractor shall be solely responsible for compliance with this requirement with respect to their employees. The Contractor's or subcontractor's failure to comply with this requirement shall not transfer or in any way impose the responsibility for worker safety upon the Owner or the Architect.

§ 3.7.4 Concealed or Unknown Conditions. If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice in writing to the Owner, Construction Manager, and the Architect before conditions are disturbed and in no event later than ~~21~~3 days after first observance of the conditions. The Architect and Construction Manager will promptly investigate such conditions and, if the Architect, in consultation with the Construction Manager, determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect, in consultation with the Construction Manager, determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner, Construction Manager, and Contractor in writing, stating the reasons. If the Owner or Contractor disputes the Architect's determination or recommendation, either party may proceed as provided in Article 15.

PAGE 18

- .1 Allowances shall cover the cost to the Contractor and Subcontractors of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's and Subcontractors costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and

- .3 Whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.
- .4 Allowances do not include the Contractor's overhead and profit, including the costs of bonds, insurance, administration and supervision, which costs should be carried as part of the Contract Sum.

...

§ 3.8.4 Refer to Division 01 Section "Allowances" for additional information.

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site full time during performance of the Work. The Superintendent shall be the same individual throughout the duration of the Project unless the Owner consents to a change. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

PAGE 19

§ 3.10.2 The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter update it as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Construction Manager's and Architect's approval. The Architect and Construction Manager's approval shall not unreasonably be delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Construction Manager and Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals. The contractors submittal schedule shall be in compliance with the project manual requirements regarding timelines for submission of submittals.

§ 3.10.3 The Contractor shall participate with other Contractors, the Construction Manager and Owner in reviewing and coordinating all schedules for incorporation into the Project schedule that is prepared by the Construction Manager. The Contractor shall make revisions to the construction schedule ~~and submittal schedule~~ as deemed necessary by the Construction Manager to conform to the Project schedule.

...

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Construction Manager Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents ~~in accordance with the Project submittal schedule approved by the Construction Manager and Architect, or in the absence of an approved Project submittal schedule,~~ with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of other Multiple Prime Contractors or the Owner's own forces. The Contractor shall cooperate with the Construction Manager in the coordination of the Contractor's Shop Drawings, Product Data, Samples and similar submittals with related documents submitted by other Multiple Prime Contractors.

PAGE 20

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design

concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

§ 3.12.11 The Construction Manager's and Architect's review of Contractor's submittals will be limited to examination of an initial submittal and 1 resubmittal. The Owner is entitled to obtain reimbursement from the Contractor for amounts paid to the Architect for evaluation of additional resubmittals.

PAGE 21

§ 3.13.3 The Contractor shall be responsible for enforcing the following rules of conduct for its personnel and those of its subcontractors, sub-subcontractors, and suppliers at the Project site, and the Owner's Project Representative shall provide interpretations should a question arise if the rules of conduct are being adequately enforced by the Contractor:

- .1 No smoking or use of tobacco products.
- .2 No drinking of alcoholic beverages or use of controlled substances.
- .3 No working, or presence on site, under the influence of alcoholic beverages or controlled substances.
- .4 No use of indecent language or display of indecent images, publications or terms.
- .5 No use of radios or other entertainment devices.
- .6 No horseplay or dangerous behavior.
- .7 No firearms or other weapons.
- .8 No communication with staff or students.

§ 3.13.4 The Contractor shall require its personnel and those of its subcontractors, sub-subcontractors and suppliers to wear visible photo-identification badges acceptable to the Owner, at all times for identification and security purposes. All personnel must wear a yellow safety vest with the Prime or Subcontractor company name at all times when on project site.

...

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the ~~Contract~~. Contract daily. At completion of the Work the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the ~~Contract Documents~~, Documents daily, the Owner, or Construction Manager with the Owner's approval, may do so and the Owner shall be entitled to reimbursement from the Contractor.

PAGE 22

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Construction Manager, Architect, Construction Manager's and Architect's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' ~~fees~~, fees and litigation costs, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

...

§ 4.1.3 Duties, responsibilities and limitations of authority of the Construction Manager ~~as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner and Construction Manager.~~ Duties, responsibilities and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the ~~Owner, Construction Manager, Architect and Contractor.~~ Owner and Architect. Consent shall not be unreasonably withheld.

...

§ 4.2.2.1 The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for site visits made necessary by the fault of the Contractor or by defects and deficiencies in the Work.

§ 4.2.2.2 The Owner is entitled to reimbursement from the Contractor for amounts paid to the Construction Manager for site visits made necessary by the fault of the Contractor or by defects and deficiencies in the Work.

PAGE 23

§ 4.2.9 The Construction Manager will receive and promptly review for conformance with the submittal requirements of the Contract Documents, all submittals from the Contractor such as Shop Drawings, Product Data and Samples. Where there are Multiple Prime Contractors, the Construction Manager will also check and coordinate the information contained within each submittal received from Contractor and other Multiple Prime Contractors, and transmit to the Architect those recommended for approval. By submitting Shop Drawings, Product Data, Samples and similar submittals, the Construction Manager represents to the Owner and Architect that the Construction Manager has reviewed and recommended them for approval. The Construction Manager's actions will be ~~taken in accordance with the Project submittal schedule approved by the Architect or, in the absence of an approved Project submittal schedule,~~ with reasonable promptness while allowing sufficient time to permit adequate review by the Architect.

§ 4.2.10 The Architect will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken ~~in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule,~~ with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Upon the Architect's completed review, the Architect shall transmit its submittal review to the Construction Manager.

PAGE 24

§ 4.2.12 The Construction Manager ~~Manager, with the assistance of the Architect,~~ will prepare Change Orders and Construction Change Directives.

PAGE 25

§ 4.2.20.1 Contractor's requests for information shall be prepared and submitted in accordance with Division 01 Section "Project Management and Coordination". The Architect will return without action requests for information that do not conform to the Contract Documents.

...

§ 5.2.3 If the Owner, Construction Manager or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner, Construction Manager or Architect has no reasonable objection. ~~If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.~~

...

§ 5.2.5 The Contractor shall perform at least 25 > percent of the cost of the Contract (not including the costs of materials, insurance, bonds, submittals and similar items) with its own employees.

PAGE 27

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs, including costs that are payable to a separate contractor or to other Multiple Prime Contractors because of the Contractor's delays, improperly timed

activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of delays, improperly timed activities, damage to the Work or defective construction by the Owner's own forces or other Multiple Prime Contractors.

...

§ 7.1.4 The allowance for the combined overhead and profit included in the total cost to the Owner shall be as follows:

- .1 Five percent (5%) of the costs of labor and material for overhead.
- .2 An additional ten percent (10%) of the value of labor and materials for profit. When Contractor uses its Subcontractor to perform the work, overhead and profit shall be determined at five percent (5%) of the Subcontractor's cost for labor, equipment and materials, if any.
- .3 The allowance for the combine overhead and profit (for Contractor, subcontractor, suppliers and contractors of a lower-tier) included in the total cost to the Owner cannot exceed a maximum fee of fifteen percent (15%) of the cost.
- .4 The additional bond charges for the total change order, two percent (2%) of the cost shall also apply to Deduct Change orders.

PAGE 28

- .1 Costs of labor, including social security, old age security and unemployment insurance, fringe benefits required by agreement or custom, and workers compensation insurance; insurance directly related to the Work;
- .2 Costs of materials, supplies and equipment, including cost of transportation, transportation (not normal commute to work vehicles), to the Project site, directly related to the Work, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, tools and equipment normally encumbered to perform the work,, whether rented from the Contractor or others;
- .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and
- .5 Additional costs of supervision and field office personnel directly attributable to the change others.

PAGE 29

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8. The Work of this Project shall be substantially complete on or before the dates indicated in Milestone Construction Schedule for those portions of the Work so stipulated. Actual damages may be assessed by the Owner if specified completion dates are not adhered to by the Contractor.

...

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner, Owner's own forces, Construction Manager, Architect, any of the other Multiple Prime Contractors or an employee of any of them, or by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control; or by delay authorized by the Owner pending mediation and arbitration, or by other causes that the Architect, based on the recommendation of the Construction Manager, determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine.

...

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents. The Owner shall not be liable to the Contractor and/or any subcontractor for claims or damages of any nature caused by or arising out of delays. The sole remedy against the Owner for delays shall be the allowance of additional time for completion of the Work, the amount of which shall be subject to the claims procedure set forth herein. Except to the extent, if any, expressly prohibited by law, the Contractor expressly agrees not to make and hereby waives any claim for damages for delay, including, but not limited to, those resulting from increased labor or material costs; directions given or not given by the Owner, Construction Manager or Architect, including scheduling

and coordination of the Work; the Architect's preparation of drawings and specifications or review of shop drawings and requests for instruction(s); or, on account of any delay, obstruction or hindrance for any cause whatsoever by the Owner, Construction Manager, Architect, or any other contractor on the project, whether or not foreseeable or anticipated. The Contractor agrees that its sole right and remedy therefor shall be an extension of time, if appropriate. **IT IS EMPHASIZED THAT NO MONETARY RECOVERY MAY BE OBTAINED BY THE CONTRACTOR FOR DELAY AGAINST THE OWNER, CONSTRUCTION MANAGER, OR ARCHITECT BASED ON ANY REASON AND THAT THE CONTRACTOR'S SOLE REMEDY, IF APPROPRIATE, IS ADDITIONAL TIME.**

PAGE 30

Where the Contract is based on a Stipulated Sum or Guaranteed Maximum Price, the Contractor shall submit to the Construction Manager, before the first Application for Payment, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Construction Manager and Architect may ~~require~~require, including copies of the Contractor-Subcontractor agreements, if requested. This schedule, unless objected to by the Construction Manager or Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. ~~In the event there is one Contractor, the~~ The Construction Manager shall forward to the Architect the Contractor's schedule of values. ~~If there are Multiple Prime Contractors responsible for performing different portions of the Project, the Construction Manager shall forward the Multiple Prime Contractors' schedules of values only if requested by the Architect.~~

...

§ 9.3.1 At least fifteen days before the date established for each progress payment, the Contractor shall submit to the Construction Manager an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner, Construction Manager or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and shall reflect retainage if provided for in the Contract Documents. The form of Application for Payment, duly notarized, shall be a current authorized edition of AIA Document G732-2009, Application and Certificate for Payment, Construction Manager as Adviser Edition, modified as follows:

In "Summary of Changes in the Work", delete "including Construction Change Directives"
In Architect's signature item, delete "(NOTE: If Multiple Prime Contractors are responsible for performatting (sic) portions of the Project, the Architect's Certification is not required)."

Alternative payment application forms are not permitted. AIA Document G732 shall be supported by a current authorized edition of AIA Document G703-1992, Continuation Sheet.

...

§ 9.3.1.3 Until Substantial Completion, the Owner shall pay 95 percent of the amount due the Contractor on account of progress payments. At Substantial Completion, the Architect may authorize remaining partial payments to be made in full, less twice the value of items remaining to be completed and an amount necessary to satisfy any outstanding claims, liens, or judgments.

§ 9.3.1.4 "Applications for Payment must be accompanied by any and all releases of liens for previous applications from Contractor and his/her subcontractors and a sworn and notarized statement that all subcontractors have been paid to at least 95% of previously requisitioned sums.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site. The Owner shall have the right, at

any time on reasonable notice to inspect materials and equipment which have been stored off the site in accordance with this paragraph.

§ 9.3.2.1 Procedures required by Owner shall include, but are not necessarily limited to, submission by the Contractor to the Architect, with, of bills of sale and bills of lading for such materials and equipment, provision of opportunity for Architect's visual verification that such materials and equipment are in fact in storage, and, if stored off-site, submission by the Contractor of verification that such materials and equipment are stored in a bonded warehouse.

§ 9.3.2.2 All such materials and equipment, including materials and equipment stored on-site but not yet incorporated into the Work, upon which partial payments have been made shall become the property of the Owner, but the care and protection of such materials and equipment shall remain the responsibility of the Contractor until incorporation into the Work, including maintaining insurance coverage on a replacement cost basis without voluntary deductible.

§ 9.3.2.3 Proof of insurance for items stored off site and copies of invoices are to be provided with Applications for Payment requesting payment for stored materials.

PAGE 31

~~§ 9.4.1 Where there is only one Contractor, the Construction Manager will, within seven days after the Construction Manager's receipt of the Contractor's Application for Payment, review the Application, certify the amount the Construction Manager determines is due the Contractor, and forward the Contractor's Application and Certificate for Payment to the Architect. Within seven days after the Architect receives the Contractor's Application for Payment from the Construction Manager, the Architect will either issue to the Owner a Certificate for Payment, with a copy to the Construction Manager, for such amount as the Architect determines is properly due, or notify the Construction Manager and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Section 9.5.1. The Construction Manager will promptly forward to the Contractor the Architect's notice of withholding certification.~~

~~§ 9.4.2 Where there are Multiple Prime Contractors performing portions of the Project, the Construction Manager will, within seven days after the Construction Manager receives the Multiple Prime Contractors' Applications for Payment: (1) review the Applications and certify the amount the Construction Manager determines is due each of the Multiple Prime Contractors; (2) prepare a Summary of Contractors' Applications for Payment by combining information from each Multiple Prime Contractors' application with information from similar applications for progress payments from other Multiple Prime Contractors; (3) prepare a Project Application and Certificate for Payment; (4) certify the amount the Construction Manager determines is due all Multiple Prime Contractors; and (5) forward the Summary of Contractors' Applications for Payment and Project Application and Certificate for Payment to the Architect.~~

~~§ 9.4.3 Within seven days after the Architect receives the Project Application and Project Certificate for Payment and the Summary of Contractors' Applications for Payment from the Construction Manager, the Architect will either issue to the Owner a Project Certificate for Payment, with a copy to the Construction Manager, for such amount as the Architect determines is properly due, or notify the Construction Manager and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Section 9.5.1. The Construction Manager will promptly forward the Architect's notice of withholding certification to the Contractors.~~

~~§ 9.4.4 The Construction Manager's certification of an Application for Payment or, in the case of Multiple Prime Contractors, a Project Application and Certificate for Payment shall be based upon the Construction Manager's evaluation of the Work and the information provided as part of the Application for Payment. The Construction Manager's certification will constitute a representation that, to the best of the Construction Manager's knowledge, information and belief, the Work has progressed to the point indicated and the quality of the Work is in accordance with the Contract Documents. The certification will also constitute a recommendation to the Architect and Owner that the Contractor be paid the amount certified.~~

~~§ 9.4.5 The Architect's issuance of a Certificate for Payment or in the case of Multiple Prime Contractors, Project Application and Certificate for Payment, shall be based upon the Architect's evaluation of the Work, the recommendation of the Construction Manager, and information provided as part of the Application for Payment or Project Application for Payment. The Architect's certification will constitute a representation that, to the best of the Architect's knowledge, information and belief, the Work has progressed to the point indicated, that the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified.~~

...

§ 9.4.7 The issuance of a separate Certificate for Payment ~~or a Project Certificate for Payment~~ will not be a representation that the Construction Manager or Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed the Contractor's construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

PAGE 32

§ 9.5.1 The Construction Manager or Architect may withhold a Certificate for Payment ~~or Project Certificate for Payment~~ in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Construction Manager's or Architect's opinion the representations to the Owner required by Section 9.4.4 and 9.4.5 cannot be made. If the Construction Manager or Architect is unable to certify payment in the amount of the Application, the Construction Manager will notify the Contractor and Owner as provided in Section 9.4.1 and 9.4.3. If the Contractor, Construction Manager and Architect cannot agree on a revised amount, the Architect will promptly issue ~~a Certificate for Payment or a Project Certificate for Payment~~ for the amount for which the Architect is able to make such representations to the Owner. The Construction Manager or Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence or subsequent observations, may nullify the whole or a part of a ~~Certificate for Payment or Project Certificate for Payment~~ previously issued, to such extent as may be necessary in the Construction Manager's or Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from the acts and omissions described in Section 3.3.2 because of

...

- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual ~~or liquidated~~ damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.
- .8 failure of Contractor to provide executed supplementary bid forms, performance and payment bonds or a current Certificate of Insurance.

...

§ 9.5.3 If the Architect or Construction Manager withholds certification for payment under Section 9.5.1, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or material or equipment suppliers to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Construction Manager ~~and both will reflect such payment on the next Certificate for Payment Manager.~~

...

§ 9.6.1 After the Architect has issued a Certificate for Payment ~~or Project Certificate for Payment~~, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Construction Manager and Architect.

...

§ 9.6.3 The Construction Manager will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the ~~Owner~~, Construction Manager and Architect on account of portions of the Work done by such Subcontractor.

PAGE 33

§ 9.7 Failure of Payment

~~If the Construction Manager and Architect do not issue a Certificate for Payment or a Project Certificate for Payment, through no fault of the Contractor, within fourteen days after the Construction Manager's receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in~~

the Contract Documents the amount certified by the Construction Manager and Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' written notice to the Owner, Construction Manager and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut down, delay and start-up, plus interest as provided for in the Contract Documents.

...
§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall notify the Construction Manager, and the Contractor and Construction Manager shall jointly prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the list, the Architect, assisted by the Construction Manager, will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the list, which is not sufficiently complete in accordance with the requirements of the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect, assisted by the Construction Manager, to determine Substantial Completion.

§ 9.8.4 When the Architect, assisted by the Construction Manager, determines that the Work or designated portion thereof is substantially complete, the Construction Manager will prepare, and the Construction Manager and Architect shall execute a Certificate of Substantial Completion that shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.3 No later than 14 days prior to the Contract-scheduled date of Substantial Completion, the Contractor shall issue a letter to the Architect (and CM) confirming their work is ready for the Substantial Completion inspection. No later than seven days after Contract-scheduled date of Substantial Completion (including authorized adjustments), the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. Absence the contractor letter confirming readiness of work, the Architect may elect to postpone the substantial completion inspection. If the Architect's on-site observation discloses any item which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another on-site observation by the Architect to determine the actual date of Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate.

.1 The Architect and Construction Manager will perform no more than one on-site observation to determine whether the Work or a designated portion thereof has attained Substantial Completion in accordance with the Contract Documents. The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect and Construction Manager for any additional on-site observations.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents. The payment shall be sufficient to increase the total payments to one-hundred percent (100%) of the Contract Sum, less two times the value of any remaining items to be completed and any amount necessary to satisfy claims, liens or judgments against the Contractor which have not been suitably discharged, as determined by the Architect assisted by the Construction Manager.

PAGE 34

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Section 11.3.1.5 and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. ~~When the Contractor considers a portion substantially complete, the Contractor and Construction Manager shall jointly prepare and submit a list to the Architect as provided under Section 9.8.2.~~ Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect after consultation with the Construction Manager.

...

~~**§ 9.10.1** Upon completion of the Work, the Contractor shall forward to the Construction Manager a written notice that the Work is ready for final inspection and acceptance and shall also forward to the Construction Manager a final Contractor's Application for Payment. Upon receipt, the Construction Manager will evaluate the completion of Work of the Contractor and then forward the notice and Application, with the Construction Manager's recommendations, to the Architect who will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Construction Manager and Architect will promptly issue a final Certificate for Payment or Project Certificate for Payment stating that to the best of their knowledge, information and belief, and on the basis of their on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Construction Manager's and Architect's final Certificate for Payment or Project Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.~~

§ 9.10.1 On or within seven (7) days following the date of Final Completion (as established in the bid documents or modified by Change Order) the Architect will conduct a final inspection of the work. As a result of that inspection, the Architect will issue a Final Inspection Report. This report will document the condition of the work and will render a formal opinion as to the whether or not the work or designated portion is complete. If, as a result of the Architect's inspection, it is determined that the work is not complete and in accordance with the Contract Documents, the Architect shall notify the Owner and Contractor in writing of this opinion. This notice will include the Final Inspection Report documenting the conditions of the work and will be considered a formal notice to the Contractor of their failure to fulfill the terms and conditions of their contract.

If as a result of this inspection, it is determined that the work is complete, the Contractor shall submit their Final Payment Application and Certificate for Payment. The Architect will then certify and issue the final Certificate for Payment stating that to the best of the Architects knowledge, information and belief, and on the basis of the Architect's periodic site visits and inspections, the Work has been completed in accordance with the terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for payment will constitute a further representation that the conditions listed in section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled. The final Certificate for Payment will not be issued until all work on the final inspection report is completed or corrected.

.1 The Architect will perform no more than one on-site observation to determine whether the Work or a designated portion thereof has attained Final Completion in accordance with the Contract Documents. The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for any additional on-site observations.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect through the Construction Manager (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect ~~and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, effect,~~ (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final ~~payment and~~ (5) ~~payment,~~ (5) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by ~~the Owner, the Owner and~~ (6) all Project closeout documents per the General Requirements of the Contract. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

PAGE 35

§ 9.10.6 In the event the Contractor does not achieve final completion within one hundred and twenty (120) days after the date of Substantial Completion, allowing for any approved extensions of the Contract time, Contractor shall not be entitled to any further payment and Contractor hereby agrees that such failure to complete the work within the time set forth above shall constitute a waiver of all claims by the Contractor to any money that may be due. This provision shall not operate as a waiver by the Owner of any claims or remedies of any nature against the Contractor arising out of the Contract.

PAGE 36

§ 10.2.4.1 When use or storage of explosives, or other hazardous materials, substances or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall give the Owner and Construction Manager reasonable advance notice.

§ 10.2.4.2 If the Contract Documents require the Contractor to handle materials or substances that under certain circumstances may be designated as hazardous, the Contractor shall handle such materials in an appropriate manner.

...

§ 10.3.2 Upon receipt of the Contractor's written notice, the Owner shall obtain the services of a licensed laboratory to verify a presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor, Construction Manager and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor, the Construction Manager and the Architect will promptly reply to the Owner in writing stating whether or not any of them has reasonable objection to the persons or entities proposed by the Owner. If the Contractor, Construction Manager or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor, the Construction Manager and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall ~~resumed~~ resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shut-down, delay and start-up.

§ 10.3.2.1 Exception is made for the Contractor expressly retained for the removal of lead, asbestos or polychlorinated (PCB) from the site. In this condition, all Contract Specifications and Drawings shall govern the handling of this material.

PAGE 37

~~§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall indemnify the Contractor for all cost and expense thereby incurred.~~

...

- .1 Claims under workers' compensation, disability benefit and other similar employee benefit acts which are applicable to the Work to be ~~performed;~~performed, including private entities performing Work at the site and exempt from the coverage on account of number of employees or occupation, which entities shall maintain voluntary compensation coverage at the same limits specified for mandatory coverage for the duration of the Project;
- .2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's ~~employees;~~employees or persons or entities excluded by statute from the requirements of Section 11.1.1.1 but required by the Contract Documents to provide the insurance required by that section;

PAGE 38

§ 11.1.2.1 The limits for Worker's Compensation and Employers' Liability insurance shall meet statutory limits mandated by State and Federal Laws. If (1) limits in excess of those required by statute are to be provided, (2) the employer is not statutorily bound to obtain such insurance coverage, or (3) additional coverages are required, additional coverages and limits for such insurance shall be as follows: Proof of coverage of such liability insurance must be on the approved specific form, as required by the New York State Workers' Compensation Board. ACORD certificates are not acceptable.

§ 11.1.2.2 The limits for Commercial General Liability insurance including coverage for Premises-Operations, Independent Contractors' Protective, Products-Completed Operations, Contractual Liability, Personal Injury and Broad Form Property Damage (including coverage for Explosion, Collapse and Underground hazards) shall be as follows:

\$1,000,000 Each Occurrence
\$2,000,000 General Aggregate
\$1,000,000 Personal and Advertising Injury
\$2,000,000 Products-Completed Operations Aggregate
\$ 100,000 Fire Damage
\$ 10,000 Medical Expense

- .1 The policy shall be endorsed to have the General Aggregate apply to this Project only.
- .2 The Contractual Liability insurance shall include coverage sufficient to meet the obligations in AIA Document A201-2007 under Section 3.18.
- .3 Products and Completed Operations insurance shall be maintained for a minimum period of at least <1> year after the expiration of the period for correction of Work.

§ 11.1.2.3 Automobile Liability insurance (owned, non-owned and hired vehicles) for bodily injury and property damage: \$1,000,000 Each Accident

§ 11.1.2.4 Umbrella or Excess Liability coverage: \$10,000,000 each occurrence and in the aggregate. Such coverage shall be provided on a follow form basis.

§ 11.1.2.5 Owners Contractors Protective Insurance \$2,000,000 per occurrence/\$4,000,000 aggregate with the Owner as the named insured.

§ 11.1.3 Certificates of insurance acceptable to the Owner shall be submitted to the Construction Manager for transmittal to the Owner with a copy to the Architect prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. ~~These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner.~~ An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage shall be furnished by the Contractor with reasonable promptness. The Contractor shall provide writing notification to the Owner of the cancellation or expiration of any insurance required by Section 11.1. The Contractor shall provide such written notice within five (5) business days of the date the Contractor is first aware of the cancellation or expiration, or is first aware that the cancellation or expiration is threatened or otherwise may occur, whichever comes first.

§ 11.1.3.1 If this insurance is written on a Commercial General Liability policy form, the certificates shall be ACORD form 25 Certificate of Liability Insurance, completed and supplemented with Supplemental Attachment for ACORD Certificate of Insurance 25 (Attachment #1 of General Conditions), and ACORD Form 101 Additional Remarks Schedule as applicable.

§ 11.1.4 The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Construction Manager, the Construction Manager's consultants, the Owner, the Architect, and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations. The Contractor shall use ISO additional insured endorsements CG 20 38 04 13 and CG 20 37.

§ 11.1.5 The Contractor shall require any subcontractors to (1) Name the Owner as an additional insured on a primary and noncontributory basis; (2) Use ISO additional insured endorsements CG 20 38 04 13 and CG 20 37.

§ 11.1.6 The policy naming the Owner as an additional insured shall (1) be an insurance policy from an A.M. Best rated "secured" or better insurer, authorized to conduct business in New York State; and (2) state that the organization's coverage shall be primary and non-contributory coverage for the Owner, its Board of Education, employees and volunteers.

§ 11.1.7 The certificate of insurance must describe the specific services provided by the contractor (e.g., roofing, carpentry, plumbing) that are covered by the liability policies.

§ 11.1.8 At the Owner's request, the Contractor shall provide a copy of the declaration page of the liability and umbrella policies with a list of endorsements and forms. If so requested, the contractor will provide a copy of the policy endorsements and forms.

§ 11.1.9 A fully completed New York Construction Certificate of Liability Insurance Addendum (ACORD 855 2014/05) must be included with the certificates of insurance.

§ 11.1.10 The Contractor agrees to indemnify the Owner for any applicable deductibles and self-insured retentions.

§ 11.1.11 Contractor acknowledges that failure to obtain such insurance on behalf of the Owner constitutes a material breach of contract and subjects it to liability for damages, indemnification and all other legal remedies available to the Owner.

PAGE 39

§ 11.3.1 Unless otherwise provided, the ~~Owner~~ Contractor shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract modifications and cost of materials supplied or installed by others, comprising total value for the entire

Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

PAGE 40

~~§ 11.3.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance that will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.~~

§ 11.3.1.3 If the property insurance requires deductibles, the Owner-Contractor shall pay costs not covered because of such deductibles.

...

§ 11.3.1.5 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of ~~insurance~~insurance

§ 11.3.1.6 The insurance required by Section 11.3 is not intended to cover machinery, tools or equipment owned or rented by the Contractor that are utilized in the performance of the Work but not incorporated into the permanent improvements. The Contractor shall, at the Contractor's own expense, provide insurance coverage for owned or rented machinery, tools or equipment, which shall be subject to the provisions of Section 11.3.7.

...

§ 11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Section ~~11.3~~11.3, if requested in writing by the Contractor. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.

PAGE 41

"§ 11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power.

~~§ 11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement. If the Owner and Contractor have selected arbitration as the method of binding dispute resolution, the Owner as fiduciary shall make settlement with insurers or distribution of insurance proceeds in accordance with the direction of the arbitrators.~~

~~§ 11.4.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.~~

§ 11.4.1 The Contractor shall furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder. Bonds shall be obtained from a surety satisfactory to the Owner, licensed to do business in the state

where the Project is located, and listed in the latest issue of the United States Treasury Circular 570, and the cost thereof shall be included in the Contract Sum. The amount of each bond shall be equal to 100 percent of the Contract Sum. The sufficiency of the bonds is subject to the approval of the Owner and bonds deemed insufficient by the Owner may be rejected.

§ 11.4.1.1 The Contractor shall deliver the required bonds to the Owner not later than the date the Agreement is entered into, on AIA Document A312-2010, Performance Bond and Payment Bond.

§ 11.4.1.2 The Contractor shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of the power of attorney.

PAGE 42

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof, or after the date for commencement of warranties established under Section 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. ~~During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. condition~~ If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.4.

...

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located except that, if the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located.

PAGE 44

§ 13.8 Equal Opportunity

§ 13.8.1 The Contractor shall maintain policies of employment as follows:

.1 The Contractor and the Contractor's subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, or national origin. The Contractor shall take affirmative action to insure that applicants are employed, and that employees are treated during employment without regard to their race, religion, color, sex, or natural origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notice setting forth the policies of non-discrimination.

.2 The Contractor and the Contractor's subcontractors shall, in all solicitations or advertisement for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex or national origin.

§ 13.9 Wage Rates

§ 13.9.1 The Contractor shall comply with Prevailing Wage Rates issued and periodically updated, by the New York State Department of Labor, for the location and duration of the Project.

...

- .2 An act of government, such as a declaration of national emergency that requires all Work to be stopped;
or
- .3 Because the Construction Manager has not certified or the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4, or because the Owner has not made payment on a Certificate for Payment within the time stated in the ~~Contract Documents;~~ Documents.
- ~~.4 The Owner has failed to furnish to the Contractor promptly, upon the Contractor's request, reasonable evidence as required by Section 2.2.1..~~

PAGE 45

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon ~~seven-thirty days'~~ written notice to the Owner, Construction Manager and Architect, terminate the Contract and recover from the Owner payment for Work ~~executed including reasonable overhead and profit, costs incurred by reason of such termination, and damages properly executed.~~

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon ~~seven-thirty~~ additional days' written notice to the Owner, Construction Manager and Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

...

- .1 ~~repeatedly~~ refuses or fails to supply enough properly skilled workers or proper materials;

...

- .3 ~~repeatedly~~ disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority;~~or~~
- .4 otherwise is guilty of substantial breach of a provision ~~of the Contract Documents of the Contract Documents;~~
- ~~.5 breaches any warranty made by the Contractor under or pursuant to the Contract Documents; or~~
- ~~.6 fails to furnish the Owner with assurances satisfactory to the Owner evidencing the Contractor's ability to complete the Work in compliance with all of the requirements of the Contract Documents..~~

§ 14.2.2 When any of the above reasons exist, the ~~Owner, after consultation with the Construction Manager, and upon certification by the Initial Decision Maker that sufficient cause exists to justify such action,~~ Owner may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

...

- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work. The costs of finishing the Work include, without limitations, all reasonable attorney's fees, additional Architect/Engineering and Construction Manager costs, insurance, additional interest because of any delay in completing the Work, and all other direct and

indirect and consequential damages incurred by the Owner by reason of the termination of the Contractors stated herein..

...

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Construction Manager's and Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. ~~The amount to be paid to the Contractor or Owner, as the case may be, shall, upon application, be certified by the Initial Decision Maker after consultation with the Construction Manager, and this obligation for payment shall survive termination of the Contract.~~

...

§ 14.3.2 The Contract Sum and the Contract Time shall may be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Section 14.3.1. ~~Adjustment of the Contract Sum shall include profit.~~ No adjustment shall be made to the extent:

PAGE 46

§ 14.4.1 ~~The Owner may, at any time, terminate the Contract. Notwithstanding any other provision to the contrary in this Agreement, the Owner reserves the right at any time and in its absolute discretion to terminate the services of the Contractor and/or the Work for the Owner's convenience and without cause, cause by giving written notice to the Contractor. This termination for the convenience of the Owner provision allows and authorizes the Owner to terminate this Agreement at any time and for any reason whatsoever. This right may be exercised by the Owner in its complete discretion.~~

...

§ 14.4.3 ~~In the case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed to, and the Owner shall reimburse the Contractor for, an equitable portion of the Contractor's fee based on the portion of the Work properly completed before the effective date of termination and for any other reasonable costs attributable to such termination. Contractor's entitlement to payment for all such work shall be predicated on its performance of such work in accordance with the Contract Documents as certified by the Architect and Construction Manager. Contractor shall be entitled to no other payment and waives any claim for damages.~~

...

§ 15.1.2.1 Written notice shall contain a heading stating "Notice of Claim" to clearly identify it as such. Such notice shall set forth in detail the circumstances that form the basis for the Claim and shall include the following:

- .1 Clear statement of claim matter, including background and chronology.
- .2 Documentation in support of claim matter.
- .3 Documentation in support of claimed damages.
- .4 Certification by responsible officer of claimant.

PAGE 47

§ 15.1.5.3 Claims for increase in the Contract Time shall set forth in detail the circumstances that form the basis for the Claim, the date upon which each cause of delay began to affect the progress of the Work, the date upon which each cause of delay ceased to affect the progress of the Work and the number of days' increase in the Contract Time claimed as a consequence of each such cause of delay. The Contractor shall provide such supporting documentation as the Owner may require including, where appropriate, a revised construction schedule indicating all the activities affected by the circumstances forming the basis of the Claim.

§ 15.1.5.4 The Contractor shall not be entitled to a separate increase in the Contract Time for each one of the number of causes of delay which may have concurrent or interrelated effects on the progress of the Work, or for concurrent delays due to the fault of the Contractor.

...

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. ~~Nothing contained in this Section 15.1.6 shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.~~

PAGE 48

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. ~~If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.~~

...

~~§ 15.4 Arbitration~~

~~§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.~~

~~§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.~~

~~§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.~~

~~§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.~~

~~§ 15.4.4 Consolidation or Joinder~~

~~§ 15.4.4.1 Either party, at its sole discretion, may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).~~

~~§ 15.4.4.2 Either party, at its sole discretion, may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.~~

~~§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as the Owner and Contractor under this Agreement.~~

Certification of Document's Authenticity

AIA® Document D401™ – 2003

I, Kim Ruebel, hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 10:39:49 ET on 01/29/2021 under Order No. 2191696418 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A232™ – 2009, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition, as published by the AIA in its software, other than those additions and deletions shown in the associated Additions and Deletions Report.

(Signed)

(Title)

(Dated)



Andrew M. Cuomo, Governor

Roberta Reardon, Commissioner

Mahopac Central School Distric
Christopher Glaubitz, Project Manager
Tetra Tech Archs & Engs
10 Brown Road
Ithaca NY 14850

Schedule Year 2020 through 2021
Date Requested 08/20/2020
PRC# 2020008787

Location 179 East Lake Boulevard
Project ID# 121111-19002
Project Type Reconstruction at Mahopac Schools and New Pump House

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 Wage Case Number (PRC#) has been assigned to the schedule(s) for your project.

The schedule is effective from July 2020 through June 2021. 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.

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.

There are very few exceptions to this rule. Complete information regarding these exceptions is available on the ["Request for a dispensation to work overtime" form \(PW30\)](#) and ["4 Day / 10 Hour Work Schedule" form \(PW 30.1\)](#).

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 12240; 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, 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.

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 12240 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.



Andrew M. Cuomo, Governor

Roberta Reardon, Commissioner

Mahopac Central School Distric
Christopher Glaubitz, Project Manager
Tetra Tech Archs & Engs
10 Brown Road
Ithaca NY 14850

Schedule Year 2020 through 2021
Date Requested 08/20/2020
PRC# 2020008787

Location 179 East Lake Boulevard
Project ID# 121111-19002
Project Type Reconstruction at Mahopac Schools and New Pump House

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: \$ _____	Contract Type:	
Approximate Starting Date: ____/____/____	<input type="checkbox"/> (01) General Construction	
Approximate Completion Date: ____/____/____	<input type="checkbox"/> (02) Heating/Ventilation	
	<input type="checkbox"/> (03) Electrical	
	<input type="checkbox"/> (04) Plumbing	
	<input type="checkbox"/> (05) Other : _____	

Phone: (518) 457-5589 Fax: (518) 485-1870
W. Averell Harriman State Office Campus, Bldg. 12, Room 130, Albany, NY 12240

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, www.labor.ny.gov. <https://labor.ny.gov/formsdocs/ui/IA999.pdf>

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)

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 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.

(05.19)

**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

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 12240

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.

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)

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.

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:
www.labor.ny.gov

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) 568-5156		

* 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 or 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 requirements 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.

Payrolls and Payroll Records

Contractors and subcontractors are required to establish, maintain, and preserve for not less than six (6) years, contemporaneous, true, and accurate payroll records.

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.

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. However, 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. 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.

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 12240

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

Putnam County General Construction

Boilermaker **08/01/2020**

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:	07/01/2020	01/01/2021
Boilermaker	\$ 61.24	\$63.38
Repairs & Renovations	61.24	63.38

SUPPLEMENTAL BENEFITS

Per Hour:	07/01/2020	01/01/2021
Boilermaker	32% of hourly	32% of hourly
Repair \$ Renovations	Wage Paid + \$ 25.35	Wage Paid + TBA

NOTE: "Hourly Wage Paid" shall include any and all premium(s) pay.

Repairs & Renovation Includes replacement of parts and repairs & renovation of existing unit.

OVERTIME PAY

See (D, O) on OVERTIME PAGE
 Repairs & Renovation see (B,E,Q)

HOLIDAY

Paid: See (8, 16, 23, 24) on HOLIDAY PAGE
 Overtime: See (5, 6, 8, 11, 12, 15, 16, 22, 23, 24, 25) on HOLIDAY PAGE

NOTE: *Employee must work in pay week to receive Holiday Pay.
 **Employee gets 4 times the hourly wage rate for working Labor Day.

REGISTERED APPRENTICES

Wage per hour:
 (1/2) Year Terms at the following percentage of Boilermaker's Wage

1st	2nd	3rd	4th	5th	6th	7th
65%	70%	75%	80%	85%	90%	95%

Supplemental Benefits Per Hour:

	07/01/2020	01/01/2021
Apprentice(s)	32% of Hourly Wage Paid Plus Amount Below	32% of Hourly Wage Paid Plus Amount Below
1st Term	\$ 19.38	\$ TBA
2nd Term	20.24	TBA
3rd Term	21.08	TBA
4th Term	21.94	TBA
5th Term	22.79	TBA
6th Term	23.65	TBA
7th Term	24.48	TBA

NOTE: "Hourly Wage Paid" shall include any and all premium(s)

4-5

Carpenter **08/01/2020**

JOB DESCRIPTION Carpenter

DISTRICT 8

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES

Per hour: 07/01/2020

Piledriver	\$ 55.93
Dockbuilder	\$ 55.93

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker \$ 52.44

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
	\$22.37	\$27.97	\$36.35	\$44.74

Supplemental benefits per hour:

All Terms: \$ 34.34

8-1556 Db

Carpenter

08/01/2020

JOB DESCRIPTION Carpenter

DISTRICT 8

ENTIRE COUNTIES

Putnam

WAGES

Per hour: 07/01/2020

Carpet/Resilient

Floor Coverer \$ 40.79

INCLUDES HANDLING & INSTALLATION OF ARTIFICIAL TURF AND SIMILAR TURF INDOORS/OUTDOORS.

SUPPLEMENTAL BENEFITS

Per hour:

\$ 37.17

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
	\$16.29	\$20.17	\$26.00	\$31.82

Supplemental Benefits per hour - All apprentice terms:

\$ 26.86

8-2287Pn

Carpenter

08/01/2020

JOB DESCRIPTION Carpenter

DISTRICT 8

ENTIRE COUNTIES

Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES

Per Hour: 07/01/2020

Marine Construction:

Marine Diver \$ 70.80
Marine Tender 50.34

SUPPLEMENTAL BENEFITS

Per Hour:

Journeyworker \$ 52.34

OVERTIME PAY

See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (18, 19) on HOLIDAY PAGE
Overtime: See (5, 6, 10, 11, 13, 16, 18, 19) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wages per hour:
One (1) year terms.

1st year \$ 22.37
2nd year 27.97
3rd year 36.35
4th year 44.74

Supplemental Benefits
Per Hour:

All terms \$ 34.34

8-1456MC

Carpenter

08/01/2020

JOB DESCRIPTION Carpenter

DISTRICT 8

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES

Per hour: 07/01/2020

Building
Millwright \$ 55.70

SUPPLEMENTAL BENEFITS

Per hour:

Millwright \$ 54.16

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (18,19) on HOLIDAY PAGE.

Overtime See (5,6,8,11,13,18,19,25) on HOLIDAY PAGE.

REGISTERED APPRENTICES

Wages per hour:
One (1) year terms:

1st.	2nd.	3rd.	4th.
\$29.99	\$35.44	\$40.89	\$51.79

Supplemental benefits per hour:
One (1) year terms:

1st.	2nd.	3rd.	4th.
\$34.79	\$38.49	\$42.84	\$49.60

Carpenter **08/01/2020**

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: 07/01/2020 10/18/2020

Core Drilling: Additional
Driller \$ 41.19 \$ 2.00

Driller Helper 32.62

Note: Hazardous Waste Pay Differential:

For Level C, an additional 10% above wage rate per hour

For Level B, an additional 10% above wage rate per hour

For Level A, an additional 10% above wage rate per hour

Note: When required to work on water: an additional \$ 0.50 per hour.

SUPPLEMENTAL BENEFITS

Per hour: 07/01/2020

Driller and Helper \$ 27.95

OVERTIME PAY

OVERTIME: See (B,E,K*,P,R**) on OVERTIME PAGE.

HOLIDAY

Paid: See (5,6) on HOLIDAY PAGE.

Overtime: * See (5,6) on HOLIDAY PAGE.

** See (8,10,11,13) on HOLIDAY PAGE.

8-1536-CoreDriller

Carpenter **08/01/2020**

JOB DESCRIPTION Carpenter **DISTRICT 8**

ENTIRE COUNTIES

Bronx, Kings, New York, Putnam, Queens, Richmond

PARTIAL COUNTIES

Nassau: That portion of the county that lies west of Seaford Creek and south of the Southern State Parkway.

WAGES

Per hour: 07/01/2020

Show Exhibit \$ 54.50

Bldg. Carpenter 54.00*

* Not applicable in Putnam County

SUPPLEMENTAL BENEFITS

Per hour worked:

Show Exhibit \$ 51.23

Bldg. Carpenter 46.73

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

Wages per hour: Show Exhibit

(1) year terms:

1st.	2nd.	3rd.	4th.
\$21.80	\$27.25	\$35.43	\$43.60

Supplemental benefits per hour:

All terms \$ 33.79

Wages per hour: Bldg. Carpenter

(1) year terms:

1st	2nd	3rd	4th
\$19.20	\$22.20	\$26.45	\$34.33

Supplemental benefits per hour:

1st	2nd	3rd	4th
\$15.80	\$17.30	\$20.90	\$22.90

8-EXHIB

Carpenter - Building / Heavy&Highway

08/01/2020

JOB DESCRIPTION Carpenter - Building / Heavy&Highway

DISTRICT 11

ENTIRE COUNTIES

Putnam, Rockland, Westchester

WAGES

WAGES:(per hour)

	07/01/2020	07/01/2021
BUILDING/HEAVY & HIGHWAY/TUNNEL:		Additional
Carpenter	\$ 45.30	\$ 0.40

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.

NOTE: Carpenters employed in the removal or abatement of asbestos or any toxic or hazardous material or required to work near asbestos or any toxic or hazardous material and required to wear protective equipment shall receive two (2) hours extra pay per day, plus applicable supplemental benefits.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker \$ 31.53

OVERTIME PAY

BUILDING:

See (B, E, Q) on OVERTIME PAGE.

HEAVY&HIGHWAY/TUNNEL:

See (B, E, P, *R, **T, X) on OVERTIME PAGE.

*R applies to Heavy&Highway/Tunnel Overtime Holiday Code 25 with benefits at straight time rate.

**T applies to Heavy&Highway/Tunnel Overtime Holiday Codes 5 & 6 with benefits at straight time rate.

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 including benefits.

Overtime: See (5, 6, 25) on HOLIDAY PAGE.

REGISTERED APPRENTICES

1 year terms at the following wage rates:

Indentured after July 1 2016

1st	2nd	3rd	4th	5th
\$ 22.40	\$ 26.16	\$ 28.05	\$ 29.93	\$ 33.70

Indentured before July 1 2016

1st	2nd	3rd	4th
\$ 22.40	\$ 26.16	\$ 29.93	\$ 33.70

SUPPLEMENTAL BENEFITS per hour:

All terms \$ 16.28

11-279.1B/HH

Electrician

08/01/2020

JOB DESCRIPTION Electrician

DISTRICT 11

ENTIRE COUNTIES

Orange, Putnam, Rockland

PARTIAL COUNTIES

Dutchess: Towns of Fishkill, East Fishkill, and Beacon.

WAGES

Per hour:

	07/01/2020	04/01/2021
Electrician Wireman/Technician	\$ 46.00	\$ 47.00

SHIFT DIFFERENTIAL: On Public Work in New York State when shift work is mandated either in the job specifications or by the contracting agency, the following rates apply:

Shift worked between 4:30pm & 12:30am	\$ 53.97	\$ 55.15
Shift worked between 12:30am & 8:30am	\$ 60.46	\$ 61.77

NOTE ADDITIONAL AMOUNTS PAID FOR THE FOLLOWING WORK LISTED BELOW (subject to overtime premiums):

- On jobs where employees are required to work from boatswain chairs, swinging scaffolds, etc., forty (40) feet or more above the ground, or under compressed air, using Scottair packs, gas masks or in shafts or tunnels, they shall receive an additional \$2.00 per hour above the regular straight time rate.
- Journeyman Wireman when performing welding or cable splicing: \$2.00 above the Journeyman Wireman rate of pay.
- Journeyman Wireman required to have a NYS Asbestos Certificate: \$2.00 above the Journeyman Wireman rate of pay.
- Journeyman Wireman required to have a CDL: \$2.00 above the Journeyman Wireman rate of pay.

SUPPLEMENTAL BENEFITS

Per hour:

	07/01/2020	04/01/2021
Journeyman	\$ 32.38 plus 3% of straight or premium wage	\$ 33.69 plus 3% of straight or premium wage

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 13, 15, 16, 25) on HOLIDAY PAGE

When the holiday falls on a Saturday it is observed the Friday before. When the holiday falls on a Sunday it is observed on the Monday after.

REGISTERED APPRENTICES

WAGES:

(1)year terms at the following rates

07/01/2020	1st	2nd	3rd	4th	5th	6th
1st Shift	\$ 13.20	\$ 17.60	\$ 22.00	\$ 26.40	\$ 30.80	\$ 33.00
2nd Shift	15.49	20.65	25.81	30.98	36.14	38.72
3rd Shift	17.35	23.13	28.91	34.70	40.48	43.47
04/01/2021	1st	2nd	3rd	4th	5th	6th
1st Shift	\$ 13.50	\$ 18.00	\$ 22.50	\$ 27.00	\$ 31.50	\$ 33.75
2nd Shift	15.84	21.12	26.40	31.68	36.96	39.60
3rd Shift	17.74	23.66	29.57	35.48	41.40	44.36

SUPPLEMENTAL BENEFITS per hour:

07/01/2020

1st term	\$ 14.92 plus 3% of straight or premium wage
2nd term	\$ 16.42 plus 3% of straight or premium wage
3rd term	\$ 18.42 plus 3% of straight or premium wage
4th term	\$ 19.92 plus 3% of straight or premium wage

5th & 6th term	\$ 21.92 plus 3% of straight or premium wage
09/01/2020	
1st term	\$ 15.81 plus 3% of straight or premium wage
2nd term	\$ 16.31 plus 3% of straight or premium wage
3rd term	\$ 18.31 plus 3% of straight or premium wage
4th term	\$ 19.81 plus 3% of straight or premium wage
5th term	\$ 21.81 plus 3% of straight or premium wage
6th term	\$ 22.31 plus 3% of straight or premium wage

11-363/1

Elevator Constructor **08/01/2020**

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	07/01/2020	01/01/2021
Mechanic	\$ 60.49	\$62.51
Helper	70% of Mechanic Wage Rate	70% of Mechanic Wage Rate

Four (4), ten (10) hour days may be worked for New Construction and Modernization Work at straight time during a week, Monday thru Thursday or Tuesday thru Friday.

***Four (4), ten (10) hour days are not permitted for Contract Work/Repair Work

NOTE - In order to use the '4 Day/10 Hour Work Schedule' as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule', form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS

Per hour	07/01/2020	01/01/2021
Journeyman/Helper	\$ 34.765*	\$ 34.825*

(*)Plus 6% of regular hourly if less than 5 years of service. Plus 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:				
0-6 mo*	6-12 mo	2nd yr	3rd yr	4th yr
50 %	55 %	65 %	70 %	80 %

(*)Plus 6% of the hourly rate, no additional supplemental benefits.

Supplemental Benefits per hour worked:

Same as Journeyman/Helper

1-138

Glazier **08/01/2020**

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:	7/01/2020	5/31/2021 Additional
Glazier	\$ 57.55	\$ 2.00
*Scaffolding	58.55	
Glass Tinting & Window Film	29.17	
**Repair & Maintenance	29.17	

*Scaffolding includes swing scaffold, mechanical equipment, scissor jacks, man lifts, booms & buckets 24' or more, but not pipe scaffolding.

**Repair & Maintenance- All repair & maintenance work on a particular building, whenever performed, where the total cumulative contract value is under \$148,837. All Glass tinting, window film, regardless of material or intended use, and all affixing of decals to windows or glass.

SUPPLEMENTAL BENEFITS

Per hour:	7/01/2020
Journeyworker	\$ 34.59
Glass tinting & Window Film	20.29
Repair & Maintenance	20.29

OVERTIME PAY

See (B,H,V) on OVERTIME PAGE.

For 'Repair & Maintenance' and 'Glass Tinting & Window Film' see (B, B2, I, S) on overtime page.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
 Overtime: See (4, 6, 16, 25) on HOLIDAY PAGE
 For 'Repair & Maintenance' and 'Glass Tinting & Window Film' Only
 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:

	7/01/2020
1st term	\$ 20.14
2nd term	28.21
3rd term	34.10
4th term	45.80

Supplemental Benefits:
 (Per hour)

1st term	\$ 16.16
2nd term	22.76
3rd term	25.16
4th term	29.73

8-1087 (DC9 NYC)

Insulator - Heat & Frost

08/01/2020

JOB DESCRIPTION Insulator - Heat & Frost

DISTRICT 8

ENTIRE COUNTIES

Dutchess, Orange, Putnam, Rockland, Westchester

WAGES

Per hour:	07/01/2020	05/31/2021
Insulator	\$ 55.00	\$ 2.00
Discomfort & Additional Training**	57.96	
Fire Stop Work*	29.44	

* 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 \$0.50 per hour for work 30 feet or more above floor or ground level.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker \$ 34.35

Discomfort & Additional Training 36.30

Fire Stop Work:
 Journeyworker 17.52

OVERTIME PAY

See (B, E, E2, Q, *T) 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
\$ 29.44	\$ 34.55	\$ 39.66	\$ 44.78

Discomfort & Additional Training Apprentices:

1st	2nd	3rd	4th
\$ 30.99	\$ 36.41	\$ 41.83	\$ 47.26

Supplemental Benefits paid per hour:

Insulator Apprentices:

1st term	\$ 17.52
2nd term	20.89
3rd term	24.25
4th term	27.61

Discomfort & Additional Training Apprentices:

1st term	\$ 18.50
2nd term	22.06
3rd term	25.62
4th term	29.18

Ironworker

08/01/2020

JOB DESCRIPTION Ironworker

DISTRICT 11

ENTIRE COUNTIES

Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster

WAGES

Per hour:

07/01/2020

Structural	\$ 48.98
Reinforcing*	48.98
Ornamental	48.98
Chain Link Fence	48.98

*NOTE: For Reinforcing classification ONLY, Ironworker 4-46Reinf rates apply in Rockland County's southern section (south of Convent Road and east of Blue Hills Road).

On Government Mandated Irregular Work Days or Shift Work, the following wage will be paid:

1st Shift	\$ 48.98
2nd Shift	62.38
3rd Shift	66.85

**Note- Any shift that works past 12:00 midnight shall receive the 3rd shift differential.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman	\$ 40.35
------------	----------

OVERTIME PAY

See (B1, Q, V) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 16) on HOLIDAY PAGE

If a holiday falls on Saturday, it will be observed Friday. If a holiday falls on Sunday, it will be observed Monday.

REGISTERED APPRENTICES

Wages:

(1) year terms at the following wage:

	1st yr	2nd yr	3rd yr	4th yr
1st Shift	\$ 24.49	\$ 29.39	\$ 34.29	\$ 39.18
2nd Shift	33.35	39.16	44.97	50.76
3rd Shift	36.31	42.42	48.53	54.63

Supplemental Benefits per hour:

1st year	\$ 34.60
2nd year	35.75
3rd year	36.90
4th year	38.05

11-417

Laborer - Building

08/01/2020

JOB DESCRIPTION Laborer - Building

DISTRICT 8

ENTIRE COUNTIES

Putnam, Westchester

WAGES

07/01/2020

Laborer	\$ 35.30 plus \$4.60**
---------	---------------------------

Laborer - Asbestos & Hazardous Materials Removal	\$ 41.55*
---	-----------

* 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.

** This portion is not subject to overtime premium.

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: 07/01/2020

Journeyworker	\$ 26.40
---------------	----------

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

REGISTERED APPRENTICES

LABORER ONLY

Hourly terms at the following wage:

Level A	Level B	Level C	Level D	Level E
0-1000	1001-2000	2001-3000	3001-4000	4001+
\$ 23.90	\$ 27.50	\$ 31.50	\$ 38.00	\$ 39.80

Supplemental Benefits per hour:

Apprentices

Level A	\$ 12.35
Level B	15.20
Level C	17.80
Level D	18.20
Level E	26.40

8-235/B

Laborer - Heavy&Highway

08/01/2020

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 and Quarry Master

GROUP II: Burner, Drillers(jumbo, joy, wagon, air track, hydraulic), Drill Operator, Self Contained Rotary Drill, Curbs/ Asphalt Screedman/Raker, Bar Person.

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.

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

Wages:(per hour) 07/01/2020

GROUP I	\$44.45*
GROUP II	43.10*
GROUP III	42.70*
GROUP IV	42.35*
GROUP V	42.00*
GROUP VIA	44.00*
Operator Qualified	
Gas Mechanic	54.45*
Flagperson	35.65*

*NOTE: To calculate overtime premiums, deduct \$0.10 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 regular and irregular shift work. Premium pay shall be calculated using the 15% per hour differential as base rate.

SUPPLEMENTAL BENEFITS

Per hour:
 Journeyworker:
 First 40 Hours
 Per Hour \$24.35
 Over 40 Hours
 Per Hour 18.10

OVERTIME PAY

See (B, E, P, R, S) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 8, 9, 15, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 9, 15, 25) on HOLIDAY PAGE

NOTE: For Holiday Overtime: 5, 6 - Code 'S' applies
 For Holiday Overtime: 8, 9, 15, 25 - Code 'R' applies

REGISTERED APPRENTICES

	1st term 1-1000hrs	2nd term 1001-2000hrs	3rd term 2001-3000hrs	4th term 3001-4000hrs
07/01/2020	\$ 23.90	\$ 28.20	\$ 32.50	\$ 36.70

Supplemental Benefits per hour:

1st term	\$ 3.85 - After 40 hours: \$ 3.60
2nd term	\$ 3.95 - After 40 hours: \$ 3.60
3rd term	\$ 4.45 - After 40 hours: \$ 4.00
4th term	\$ 5.00 - After 40 hours: \$ 4.50

8-60H/H

Laborer - Heavy&Highway

08/01/2020

JOB DESCRIPTION Laborer - Heavy&Highway

DISTRICT 8

ENTIRE COUNTIES

Putnam

WAGES

APPLIES ONLY TO HIGHWAYS-STREETS and BRIDGES-

GROUP # 1:

Flagperson, Placing & maintenance of all flares, cones, lights, signs, barricades, traffic patterns and all reflective type materials for traffic control, custodial work, traffic directors, temporary heat or light tenders, tool room.

GROUP # 2:

All Other Classifications not listed in Group # 1 or Group # 3

GROUP # 3:

Asphalt Raker, Asphalt Screedman, Drilling Equipment Only Where a Separate Air Compressor Unit Supplies Power, Laser Beam Operator, Metal Form Setters/Aligners (sidewalk), Blaster.

WAGES per hour 07/01/2020

Group # 1	\$ 34.35*
Group # 2	\$ 38.11*
Group # 3	\$ 39.11*

*Subtract \$.50 to calculate overtime premium

Note: All employees working on a project that requires Hazwopper Certification will receive \$1.00 per hour over job classification rate of pay. All employees who work an irregular work day that starts after 9:00 AM on a governmental mandated work schedule shall be paid an additional 15% per hour.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman \$ 24.15

OVERTIME PAY

See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 16, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

Note: Whenever a holidays falls on Sunday, it will be observed on the following Monday.

REGISTERED APPRENTICES

Wages per hour

1000 HOUR YEAR TERMS

1st Term	\$ 20.10
2nd Term	23.10
3rd Term	28.85
4th Term	33.60
5th Term	35.85

Note: All employees working on a project that requires Hazwopper Certification will receive \$1.00 per hour over job classification rate of pay. All employees who work an irregular work day that starts after 9:00 AM on a governmental mandated work schedule shall be paid an additional 15% per hour.

Supplemental Benefits per hour:

1st Term	\$ 12.70
2nd Term	16.30
3rd Term	16.30
4th Term	16.30
5th Term	24.70

8-235h/b

Laborer - Tunnel

08/01/2020

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)

	07/01/2020	07/01/2021	07/01/2022
Class 1	\$ 50.45	\$ 51.95	\$ 53.45
Class 2	52.60	54.10	55.60
Class 4	59.00	60.50	62.00
Class 5	42.25	43.50	44.80

Toxic and hazardous waste, lead abatement and asbestos abatement work will be paid an additional \$ 3.00 an hour.

SHIFT DIFFERENTIAL...On all Government mandated irregular shift work:

- Employee shall be paid at time and one half the regular rate Monday through Friday.
- Saturday shall be paid at 1.65 times the regular rate.
- Sunday shall be paid at 2.15 times the regular rate.

SUPPLEMENTAL BENEFITS

Per hour:

Benefit 1	\$ 32.15	\$ 33.25	\$ 34.45
Benefit 2	48.15	49.80	51.60
Benefit 3	64.15	66.35	68.75

Benefit 1 applies to straight time hours, paid holidays not worked.

Benefit 2 applies to over 8 hours in a day (M-F), irregular shift work hours worked, 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

08/01/2020

JOB DESCRIPTION Lineman Electrician

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, Wyoming, Yates

WAGES

Per hour:

NOTE: Includes Teledata Work within ten (10) feet of High Voltage Transmission Lines

Below rates applicable on all overhead and underground distribution and maintenance work, and all overhead and underground transmission line work and the installation of fiber optic cable where no other construction trades are or have been involved. (Ref #14.01.01)

07/01/2020

Lineman, Technician	\$ 53.50
Crane, Crawler Backhoe	53.50
Welder, Cable Splicer	53.50
Digging Mach. Operator	48.15
Tractor Trailer Driver	45.48
Groundman, Truck Driver	42.80
Equipment Mechanic	42.80
Flagman	32.10

Additional \$1.00 per hour for entire crew when a helicopter is used.

Below rates applicable on all electrical sub-stations, switching structures, fiber optic cable and all other work not defined as "Utility outside electrical work". (Ref #14.02.01-A)

Lineman, Technician	\$ 53.50
Crane, Crawler Backhoe	53.50
Cable Splicer	58.85
Certified Welder -	
Pipe Type Cable	56.18
Digging Mach. Operator	48.15
Tractor Trailer Driver	45.48
Groundman, Truck Driver	42.80
Equipment Mechanic	42.80
Flagman	32.10

Additional \$1.00 per hour for entire crew when a helicopter is used.

Below rates apply on switching structures, maintenance projects, railroad catenary install/maintenance third rail installation, bonding of rails and pipe type cable and installation of fiber optic cable. (Ref #14.02.01-B)

Lineman, Tech, Welder	\$ 54.82
Crane, Crawler Backhoe	54.82
Cable Splicer	60.30
Certified Welder -	
Pipe Type Cable	57.56

Digging Mach. Operator	49.34
Tractor Trailer Driver	46.60
Groundman, Truck Driver	43.86
Equipment Mechanic	43.86
Flagman	32.89

Additional \$1.00 per hour for entire crew when a helicopter is used.

Below rates applicable on all overhead and underground transmission line work & fiber optic cable where other construction trades are or have been involved. This applies to transmission line work only, not other construction. (Ref #14.03.01)

Lineman, Tech, Welder	\$ 56.01
Crane, Crawler Backhoe	56.01
Cable Splicer	56.01
Digging Mach. Operator	50.41
Tractor Trailer Driver	47.61
Groundman, Truck Driver	44.81
Equipment Mechanic	44.81
Flagman	33.61

Additional \$1.00 per hour for entire crew when a helicopter is used.

NOTE: 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 %

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day. Tuesday thru Friday may be worked with no make-up day.

NOTE - In order to use the '4 Day/10 Hour Work schedule', as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS

Per hour worked (also required on non-worked holidays):

The following SUPPLEMENTAL BENEFITS apply to all classification categories of CONSTRUCTION, TRANSMISSION and DISTRIBUTION.

Journeyman	\$ 24.90
	*plus 6.75% of hourly wage

*The 6.75% is based on the hourly wage paid, straight time rate or premium rate.

OVERTIME PAY

See (B, E, Q,) on OVERTIME PAGE. *Note* Double time for all emergency work designated by the Dept. of Jurisdiction.

NOTE: 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, 13, 25) on HOLIDAY PAGE plus Governor of NYS Election Day.
Overtime	See (5, 6, 8, 13, 25) on HOLIDAY PAGE plus Governor of NYS Election Day.

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 Journeyman Lineman wage.

1st	2nd	3rd	4th	5th	6th	7th
60%	65%	70%	75%	80%	85%	90%

SUPPLEMENTAL BENEFITS per hour: Same as Journeyman

Lineman Electrician - Teledata

08/01/2020

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

Per hour:

For outside work, stopping at first point of attachment (demarcation).

	07/01/2020	01/01/2021
Cable Splicer	\$ 33.77	\$ 34.78
Installer, Repairman	\$ 32.05	\$ 33.01
Teledata Lineman	\$ 32.05	\$ 33.01
Tech., Equip. Operator	\$ 32.05	\$ 33.01
Groundman	\$ 16.99	\$ 17.50

NOTE: EXCLUDES Teledata work within ten (10) feet of High Voltage (600 volts and over) transmission lines. For this work please see LINEMAN.

NOTE: THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED MULTIPLE SHIFTS OF AT LEAST FIVE (5) DAYS DURATION WORKED:

1ST SHIFT	REGULAR RATE
2ND SHIFT	REGULAR RATE PLUS 10%
3RD SHIFT	REGULAR RATE PLUS 15%

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman	\$ 5.06	\$ 5.06
	*plus 3% of wage paid	*plus 3% of wage paid

*The 3% is based on the hourly wage paid, straight time rate or premium rate.

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

NOTE: 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

08/01/2020

JOB DESCRIPTION Lineman Electrician - Traffic Signal, Lighting

DISTRICT 6

ENTIRE COUNTIES

Columbia, Dutchess, Orange, Putnam, Rockland, Ulster

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.

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.
 (Ref #14.01.02)

Per hour:	07/01/2020
Lineman, Technician	\$ 47.48
Crane, Crawler Backhoe	47.48
Certified Welder	49.85
Digging Machine	42.73
Tractor Trailer Driver	40.36
Groundman, Truck Driver	37.98
Equipment Mechanic	37.98
Flagman	28.49

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.

NOTE: 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%

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day. Tuesday thru Friday may be worked with no make-up day.

NOTE - In order to use the '4 Day/10 Hour Work schedule', as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS

Per hour worked (but also required on non-worked holidays):

Journeyman	\$ 24.90
	*plus 6.75% of hourly wage

* The 6.75% is based on the hourly wage paid, straight time rate or premium rate.

Supplements paid at STRAIGHT TIME rate for holidays.

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE. *Note* Double time for all emergency work designated by the Dept. of Jurisdiction.

NOTE: 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, 13, 25) on HOLIDAY PAGE and Governor of NYS Election Day.

Overtime: See (5, 6, 8, 13, 25) on HOLIDAY PAGE and Governor of NYS Election Day.

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.

	07/01/2020
1st term	\$ 28.49
2nd term	30.86
3rd term	33.24
4th term	35.61
5th term	37.98
6th term	40.36
7th term	42.73

SUPPLEMENTAL BENEFITS per hour: Same as Journeyman

6-1249aReg8LT

Lineman Electrician - Tree Trimmer

08/01/2020

JOB DESCRIPTION Lineman Electrician - Tree Trimmer

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, Wyoming, Yates

WAGES

Applies to line clearance, tree work and right-of-way preparation on all new or existing energized overhead or underground electrical, telephone and CATV lines. This also would include stump removal near underground energized electrical lines, including telephone and CATV lines.

Per hour:	07/01/2020	01/03/21	01/02/22	01/01/23
Tree Trimmer	\$ 26.56	\$ 27.36	\$ 28.25	\$ 29.59
Equipment Operator	23.49	24.19	24.98	26.17
Equipment Mechanic	23.49	24.19	24.98	26.17
Truck Driver	19.56	20.15	20.80	21.79
Groundman	16.11	16.59	17.13	17.94
Flag person	11.61	11.96	12.35	12.94

SUPPLEMENTAL BENEFITS

Per hour worked (but also required on non-worked holidays):

Journeyman	\$ 9.98 *plus 3% of hourly wage	\$ 9.98 *plus 3% of hourly wage	\$ 10.23 *plus 3% of hourly wage	\$ 10.48 *plus 3% of hourly wage
------------	---------------------------------------	---------------------------------------	--	--

* The 3% is based on the hourly wage paid, straight time rate or premium rate.

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

NOTE: 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, 16, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 15, 16, 25) on HOLIDAY PAGE

NOTE: All paid holidays falling on a Saturday shall be observed on the preceding Friday.

All paid holidays falling on a Sunday shall be observed on the following Monday.

6-1249TT

Mason - Building

08/01/2020

JOB DESCRIPTION Mason - Building

DISTRICT 9

ENTIRE COUNTIES

Dutchess, Orange, Putnam, Sullivan, Ulster

WAGES

Per hour:	07/01/2020	12/07/2020
Building:		
Tile, Marble,& Terrazzo		Additional
Mechanic/Setter	\$54.63	\$0.79

SUPPLEMENTAL BENEFITS

Per Hour:

Journeyworker:	\$ 22.31* + \$7.50
----------------	-----------------------

* This portion of benefits subject to same premium rate as shown for overtime wages.

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

Double time rate applies after 10 hours

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 11, 15, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wage per hour:

(Counties of Orange & Putnam)

750 hour terms at the following wage rate:

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
1-	751-	1501-	2251-	3001-	3751-	4501-	5251-	6001-	6751-
750	1500	2250	3000	3750	4500	5250	6000	6750	7500
07/01/2020									
\$20.35	\$25.11	\$32.09	\$36.83	\$40.25	\$43.50	\$46.95	\$51.69	\$54.34	\$58.19

Supplemental Benefits per hour:
 (Counties of Orange & Putnam)

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$12.55*	\$12.55*	\$15.06*	\$15.06*	\$16.06*	\$17.56*	\$18.56*	\$18.56*	\$16.56*	\$21.81*
+\$0.66	+\$0.70	+\$0.80	+\$0.85	+\$1.23	+\$1.27	+\$1.62	+\$1.67	+\$5.82	+\$6.31

Wages per hour:
 (Counties of Dutchess, Sullivan, Ulster)

750 hour terms at the following wage rate:

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
1-	751-	1501-	2251-	3001-	3751-	4501-	5251-	6001-	6751-
750	1500	2250	3000	3750	4500	5250	6000	6750	7500
\$19.16	\$23.16	\$25.14	\$29.14	\$31.81	\$35.32	\$38.52	\$41.52	\$43.05	\$46.30

Supplemental Benefits per hour:
 (Counties of Dutchess, Sullivan, Ulster)

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$12.55*	\$12.55*	\$14.56*	\$14.56*	\$15.56*	\$16.06*	\$16.56*	\$17.56*	\$15.56*	\$20.31*
+\$0.64	+\$0.68	+\$0.73	+\$0.77	+\$1.14	+\$1.18	+\$1.52	+\$1.56	+\$6.08	+\$6.16
									9-7/52B

Mason - Building **08/01/2020**

JOB DESCRIPTION Mason - Building **DISTRICT 9**

ENTIRE COUNTIES
 Dutchess, Orange, Putnam, Sullivan, Ulster

WAGES
 Per hour: 07/01/2020 12/07/2020
 Building
 Tile, Marble, & Additional
 Terrazzo Finisher \$ 45.12 \$0.67

SUPPLEMENTAL BENEFITS
 Journeyworker:

 Per Hour \$ 19.16*
+ \$7.37

*This portion of benefits subject to same premium rate as shown for overtime wages

OVERTIME PAY
 See (A, *E, Q) on OVERTIME PAGE
 Double time rate applies after 10 hours on Saturdays.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 11, 15, 16, 25) on HOLIDAY PAGE

9-7/88B-tf

Mason - Building

08/01/2020

JOB DESCRIPTION Mason - Building

DISTRICT 11

ENTIRE COUNTIES

Putnam, Rockland, Westchester

PARTIAL COUNTIES

Orange: Only the Township of Tuxedo.

WAGES

Per hour:

07/01/2020

Bricklayer	\$ 42.09
Cement Mason	42.09
Plasterer/Stone Mason	42.09
Pointer/Caulker	42.09

Additional \$1.00 per hour for power saw work
Additional \$0.50 per hour for swing scaffold or staging work

SHIFT WORK: When shift work or an irregular work day is mandated or required by state, federal, county, local or other governmental agency contracts, the following premiums apply:

- Irregular work day 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:

Journeyman	\$ 35.00
------------	----------

OVERTIME PAY

OVERTIME:

Cement Mason See (B, E, Q, W) on OVERTIME PAGE.
All Others See (B, E, Q) on OVERTIME PAGE.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) 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 Journeyman'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 journeyman supplements

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

Apprentices indentured before June 1st, 2011 receive full journeyman benefits

11-5wp-b

Mason - Building

08/01/2020

JOB DESCRIPTION Mason - Building

DISTRICT 9

ENTIRE COUNTIES

Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, Westchester

WAGES

Wages:

07/01/2020

01/14/2021

Additional

Marble Cutters & Setters \$ 60.35 \$0.95

SUPPLEMENTAL BENEFITS

Per Hour:

Journeyworker \$ 37.24

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	9th	10th
1-750	751-1500	1501-2250	2251-3000	3001-3750	3751-4500	4501-5250	5251-6000	6001-6751	6751-7500
07/01/2020									
\$24.15	\$27.15	\$30.16	\$33.19	\$36.20	\$39.20	\$42.15	\$45.26	\$51.28	\$57.34

Supplemental Benefits per hour:

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$20.14	\$21.58	\$23.02	\$24.42	\$25.85	\$27.29	\$28.72	\$30.12	\$32.98	\$35.81

9-7/4

Mason - Heavy&Highway **08/01/2020**

JOB DESCRIPTION Mason - Heavy&Highway

DISTRICT 11

ENTIRE COUNTIES

Putnam, Rockland, Westchester

PARTIAL COUNTIES

Orange: Only the Township of Tuxedo.

WAGES

Per hour:

07/01/2020

Bricklayer	\$ 42.60
Cement Mason	42.60
Marble/Stone Mason	42.60
Plasterer	42.60
Pointer/Caulker	42.60

Additional \$1.00 per hour for power saw work

Additional \$0.50 per hour for swing scaffold or staging work

SHIFT WORK: When shift work or an irregular work day is mandated or required by state, federal, county, local or other governmental contracts, the following rates apply:

Irregular work day 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:

Journeyman \$ 34.99

OVERTIME PAY

Cement Mason See (B, E, Q, W, X)

All Others See (B, E, Q, X)

HOLIDAY

Paid: See (5, 6, 15, 25) on HOLIDAY PAGE
 Overtime: See (5, 6, 15, 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 Journeyman'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 journeyman supplements

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

Apprentices indentured before June 1st, 2011 receive full journeyman benefits

11-5WP-H/H

Operating Engineer - Building

08/01/2020

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) 07/01/2020

Building Construction:

Party Chief	\$ 74.75
Instrument Man	\$ 59.53
Rodman	\$ 40.79

Steel Erection:

Party Chief	\$ 78.44
Instrument Man	\$ 62.74
Rodman	\$ 44.39

Heavy Construction-NYC counties only:
 (Foundation, Excavation.)

Party Chief	\$ 83.87
Instument man	\$ 63.61
Rodman	\$ 54.59

SUPPLEMENTAL BENEFITS

Per Hour: 07/01/2020

Building Construction & Steel \$ 22.85* + 6.90

Heavy Construction \$ 23.10* + 6.90

* This portion subject to same premium as wages

Non-Worked Holiday Supplemental Benefit:
\$ 16.45

OVERTIME PAY

See (A, B, E, Q) on OVERTIME PAGE

Code "A" applies to Building Construction and has double the rate after 7 hours on Saturdays.

Code "B" applies to Heavy Construction and Steel Erection and had 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

08/01/2020

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.

GROUP VI-B: Utility Man, Warehouse Man.

WAGES: (per hour)

07/01/2020

GROUP I	
Cranes- up to 49 tons	\$ 61.70
Cranes- 50 tons to 99 tons	63.86
Cranes- 100 tons and over	72.99
GROUP I-A	53.95
GROUP I-B	49.68
GROUP II	52.03
GROUP III-A	50.11
GROUP III-B	47.67
GROUP IV-A	49.60
GROUP IV-B	41.85
GROUP V	45.17
GROUP VI-A	52.96
GROUP VI-B	
Utility Man	42.83
Warehouse Man	44.92

An additional 20% to wage 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:

07/01/2020

Journeyworker	\$ 28.52
---------------	----------

OVERTIME PAY

OVERTIME:..... See (B, E,P,R*,T**,U***,V) on OVERTIME PAGE.

HOLIDAY

Paid:..... See (5, 6, 11, 12, 15, 25) on HOLIDAY PAGE.

Overtime:..... See (5, 6, 11, 12, 15, 25) on HOLIDAY PAGE.

* For Holiday codes 11, 12, 15, 25, code R applies.

** For Holiday code 28, code T applies

*** For Holiday codes 5 & 6, code U applies

8-137B

Operating Engineer - Heavy&Highway

08/01/2020

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.

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), Vibratory Roller (Riding), Welder.

GROUP II-B: Mechanic (Outside) All Types.

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).

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: 07/01/2020

Group I	\$ 62.38
Group I-A	54.95
Group I-B	57.92
Group II-A	52.61
Group II-B	54.26
Group III	51.68
Group IV-A	46.93
Group IV-B	40.24
Group V-A	
Engineer All Tower, Climbing and Cranes of 100 Tons	70.72
Hoist Engineer(Steel)	64.00
Engineer(Pile Driver)	68.27
Jersey Spreader,Pavement Breaker (Air Ram)Post Hole Digger	53.83

SHIFT DIFFERENTIAL:

A 15% premium on all hours paid, including overtime hours for 2nd, 3rd shifts on all government mandated off-shift work

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.

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday; Friday may be used as a make-up day.

NOTE - In order to use the 4 Day/10 Hour Work schedule Registration for Use of 4 Day/10 Hour Work Schedule, form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker:	07/01/2020
	\$ 30.50 up to 40 Hours
	After 40 hours \$ 21.35* PLUS \$ 1.15 on all hours worked

*This amount is subject to premium

OVERTIME PAY

See (B, E, E2, P, *R, **U) on OVERTIME PAGE

HOLIDAY

Paid:..... See (5, 6, 8, 9, 15, 25) on HOLIDAY PAGE

Overtime..... See (5, 6, 8, 9, 15, 25) on OVERTIME PAGE

* For Holiday codes 8,9,15,25 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.

07/01/2020

1st term	\$ 27.48
2nd term	32.97
3rd term	38.47
4th term	43.96

Supplemental Benefits per hour:

\$ 22.50

8-137HH

Operating Engineer - Heavy&Highway

08/01/2020

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: 07/01/2020

Party Chief \$ 81.06

Instrument Man 61.32

Rodman 52.53

SUPPLEMENTAL BENEFITS

Per Hour: 07/01/2020

All Categories
Straight Time: \$ 23.10* plus \$6.90

Premium:
Time & 1/2 \$ 34.65* plus \$6.90

Double Time \$ 46.20* plus \$6.90

Non-Worked Holiday Supplemental Benefits:
\$ 16.45

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

9-15Dh

Operating Engineer - Heavy&Highway - Tunnel

08/01/2020

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.

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), Vibratory Roller(riding), Welder.

GROUP II-B: Mechanic(outside)all types.

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).

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)

07/01/2020

GROUP I	\$ 62.38
GROUP I-A	54.95
GROUP I-B	57.92
GROUP II-A	52.61
GROUP II-B	54.26
GROUP III	51.68
GROUP IV-A	46.93
GROUP IV-B	40.24
GROUP V-A	
Engineer-Cranes	70.72
Engineer-Pile Driver	68.27
Hoist Engineer	64.00
Jersey Spreader	53.83
Pavement Breaker	53.83
Post Hole Digger	53.83

SHIFT DIFFERENTIAL:

A 15% premium on all hours paid, including overtime hours for 2nd, 3rd shifts

on all government mandated off-shift work

An additional 20% to wage 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.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker:

07/01/2020

\$ 22.50

+ \$8.00

(Limited to first 40 hours)

OVERTIME PAY

See (D, O, *U, V) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 8, 9, 15, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 9, 15, 25) on HOLIDAY PAGE

* Note: 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 rates:

07/01/2020

1st term \$ 27.48

2nd term 32.97

3rd term 38.47

4th term 43.96

Supplemental Benefits per hour:

07/01/2020

All terms \$ 22.50

8-137Tun

Operating Engineer - Marine Dredging

08/01/2020

JOB DESCRIPTION Operating Engineer - Marine Dredging

DISTRICT 4

ENTIRE COUNTIES

Albany, Bronx, Cayuga, Chautauqua, Clinton, Columbia, Dutchess, Erie, Essex, Franklin, Greene, Jefferson, Kings, Monroe, Nassau, New York, Niagara, Orange, Orleans, Oswego, Putnam, Queens, Rensselaer, Richmond, Rockland, St. Lawrence, Suffolk, Ulster, Washington, Wayne, Westchester

WAGES

These wages do not apply to Operating Engineers on land based construction projects. For those projects, please see the Operating Engineer Heavy/Highway Rates. The wage rates below for all equipment and operators are only for marine dredging work in navigable waters found in the counties listed above.

Per Hour: 07/01/2020 10/01/2020

CLASS A1 \$ 40.31 \$ 41.42

Deck Captain, Leverman
 Mechanical Dredge Operator
 Licensed Tug Operator 1000HP or more.

CLASS A2 35.92 36.91

Crane Operator (360 swing)

CLASS B To conform to Operating Engineer
 Dozer, Front Loader
 Operator on Land Prevailing Wage in locality where work
 is being performed including benefits.

CLASS B1 34.86 35.82

Derrick Operator (180 swing)

Spider/Spill Barge Operator
 Operator II, Fill Placer,
 Engineer, Chief Mate, Electrician,
 Chief Welder, Maintenance Engineer
 Licensed Boat, Crew Boat Operator

CLASS B2 Certified Welder	32.82	33.72
------------------------------	-------	-------

CLASS C1 Drag Barge Operator, Steward, Mate, Assistant Fill Placer	31.92	32.80
---	-------	-------

CLASS C2 Boat Operator	30.89	31.74
---------------------------	-------	-------

CLASS D Shoreman, Deckhand, Oiler, Rodman, Scowman, Cook, Messman, Porter/Janitor	25.66	26.37
--	-------	-------

SUPPLEMENTAL BENEFITS

Per Hour:

THE FOLLOWING SUPPLEMENTAL BENEFITS APPLY TO ALL CATEGORIES

All Classes A & B	07/01/2020 \$11.58 plus 7.5% of straight time wage, Overtime hours add \$ 0.63	10/01/2020 \$11.98 plus 8% of straight time wage, Overtime hours add \$ 0.63
All Class C	\$11.28 plus 7.5% of straight time wage, Overtime hours add \$ 0.48	11.68 plus 8% of straight time wage, Overtime hours add \$ 0.48
All Class D	\$10.98 plus 7.5% of straight time wage, Overtime hours add \$ 0.33	11.38 plus 8% of straight time wage, Overtime hours add \$ 0.33

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 **08/01/2020**

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 Dutchess 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: 07/01/2020
 Survey Classifications

Party Chief	\$ 45.32
Instrument Man	37.85
Rodman	33.14

SUPPLEMENTAL BENEFITS

Per Hour:

All Crew Members: \$ 19.50

OVERTIME PAY

OVERTIME:.... See (B, E*, Q, V) ON OVERTIME PAGE.

*Doubletime 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

08/01/2020

JOB DESCRIPTION Painter

DISTRICT 8

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, Suffolk, Westchester

WAGES

Per hour: 07/01/2020

Brush \$ 49.20*

Abatement/Removal of lead based or lead containing paint on materials to be repainted. 49.20*

Spray & Scaffold \$ 52.20*

Fire Escape 52.20*

Decorator 52.20*

Paperhanger/Wall Coverer 51.96*

*Subtract \$ 0.10 to calculate premium rate.

SUPPLEMENTAL BENEFITS

Per hour: 07/01/2020

Paperhanger \$ 30.70

All others 28.81

Premium 32.10**

**Applies only to "All others" category,not paperhanger journeyworker.

OVERTIME PAY

See (A, H) 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: 07/01/2020

Appr 1st term... \$ 19.12*

Appr 2nd term... 24.52*

Appr 3rd term... 29.72*

Appr 4th term... 39.75*

*Subtract \$ 0.10 to calculate premium rate.

Supplemental benefits:

Per Hour: 07/01/2020

Appr 1st term... \$ 14.32

Appr 2nd term... 17.78

Appr 3rd term... 20.50

Appr 4th term... 25.89

8-NYDC9-B/S

Painter

08/01/2020

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: 07/01/2020
 Drywall Taper \$ 49.20*

*Subtract \$ 0.10 to calculate premium rate.

SUPPLEMENTAL BENEFITS

Per hour: 07/01/2020
 Journeyman \$ 28.81

OVERTIME PAY

See (A, H) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
 Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wages - Per Hour: 07/01/2020

1500 hour terms at the following wage rate:

1st term \$ 19.12*
 2nd term 24.52*
 3rd term 29.72*
 4th term 39.75*

*Subtract \$ 0.10 to calculate premium rate.

Supplemental Benefits - Per hour:

One year term (1500 hours) at the following dollar amount.

1st year \$ 14.32
 2nd year 17.78
 3rd year 20.40
 4th year 25.89

8-NYDCT9-DWT

Painter - Bridge & Structural Steel

08/01/2020

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: 07/01/2020 10/01/2020 10/01/2021
 \$ 50.25 \$ 51.50 \$ 53.00
 + 7.88* + 8.63* + 9.63*

ADDITIONAL \$6.00 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 (no cap).

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:	07/01/2020	10/01/2020	10/01/2021
	\$ 10.20	\$ 10.90	\$ 10.90
	+ 29.65*	+ 30.00*	+ 30.60*

* 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 (no cap).

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

	07/01/2020	10/01/2020	10/01/2021
1st year	\$ 20.10 + 3.15*	\$ 20.60 + 3.45*	\$ 21.20 + 3.86*
2nd year	\$ 30.15 + 4.73*	\$ 30.90 + 5.18*	\$ 31.80 + 5.78*
3rd year	\$ 40.20 + 6.30*	\$ 41.20 + 6.90*	\$ 42.40 + 7.71*
Supplemental Benefits - Per hour:			
1st year	\$.25 + 11.86*	\$.25 + 12.00*	\$.25 + 12.24*
2nd year	\$ 10.20 + 17.79*	\$ 10.90 + 18.00*	\$ 10.90 + 18.36*
3rd year	\$ 10.20 + 23.72*	\$ 10.90 + 24.00*	\$ 10.90 + 24.48*

NOTE: All premium wages are to be calculated on base rate per hour only.

8-DC-9/806/155-BrSS

Painter - Line Striping

08/01/2020

JOB DESCRIPTION Painter - Line Striping

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:

	07/01/2020	07/01/2021	07/01/2022
Painter (Striping-Highway):			
Striping-Machine Operator*	\$ 30.10	\$ 30.32	\$ 31.53
Linerman Thermoplastic	\$ 36.53	\$ 36.93	\$ 38.34

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.

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day.

NOTE - In order to use the '4 Day/10 Hour Work Schedule,' as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS

Per hour paid:	07/01/2020	07/01/2021	07/01/2022
Journeyworker:			
Striping Machine Operator:	\$ 9.16	\$ 10.03	\$ 10.03
Linerman Thermoplastic:	\$ 9.16	\$ 10.03	\$ 10.03

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:

	07/01/2020	07/01/2021	07/01/2022
1st Term:	\$ 12.04	\$ 12.12	\$ 12.61
2nd Term:	\$ 18.06	\$ 18.19	\$ 19.82
3rd Term:	\$ 24.08	\$ 24.26	\$ 25.22

Supplemental Benefits per hour:

1st term:	\$ 9.16	\$ 10.03	\$ 10.03
2nd Term:	\$ 9.16	\$ 10.03	\$ 10.03
3rd Term:	\$ 9.16	\$ 10.03	\$ 10.03

8-1456-LS

Painter - Metal Polisher

08/01/2020

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

	07/01/2020
Metal Polisher	\$ 36.33
Metal Polisher*	37.43
Metal Polisher**	40.33

*Note: Applies on New Construction & complete renovation

** Note: Applies when working on scaffolds over 34 feet.

SUPPLEMENTAL BENEFITS

Per Hour:	07/01/2020
-----------	------------

Journeyworker:
 All classification \$ 9.94

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, 9, 11, 15, 16, 25, 26) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wages per hour:
 One (1) year term at the following wage rates:

07/01/2020

1st year	\$ 16.00
2nd year	17.00
3rd year	18.00
1st year*	\$ 16.39
2nd year*	17.44
3rd year*	18.54
1st year**	\$ 18.50
2nd year**	19.50
3rd year**	20.50

*Note: Applies on New Construction & complete renovation
 ** Note: Applies when working on scaffolds over 34 feet.

Supplemental benefits:
 Per hour:

1st year	\$ 6.69
2nd year	6.69
3rd year	6.69

8-8A/28A-MP

Plumber **08/01/2020**

JOB DESCRIPTION Plumber

DISTRICT 8

ENTIRE COUNTIES

Putnam, Westchester

WAGES

Per hour:
 07/01/2020

Plumber and Steamfitter	\$ 57.86
----------------------------	----------

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	\$ 37.56
---------------	----------

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	\$ 21.44
2nd Term	24.62
3rd Term	28.42
4th Term	40.61
5th Term	43.58

Supplemental Benefits per hour:

1st term	\$ 15.59
2nd term	17.38
3rd term	20.69
4th term	27.20
5th term	28.82

8-21.1-ST

Plumber - HVAC / Service

08/01/2020

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: 07/01/2020

HVAC Service \$ 39.68
+ \$ 4.32*

*Note: This portion of wage is not subject to overtime premium.

SUPPLEMENTAL BENEFITS

Per hour: 07/01/2020

Journeyworker HVAC Service

\$ 25.14

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:

07/01/2020				
1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.
\$ 18.05	\$ 21.33	\$ 26.66	\$ 32.76	\$ 35.46
+\$2.37*	+\$2.67*	+\$3.22*	+\$3.84*	+\$4.07*

*Note: This portion of wage is not subject to overtime premium.

Supplemental Benefits per hour:

Apprentices 07/01/2020

1st term	\$ 19.03
2nd term	20.09
3rd term	21.30
4th term	22.90
5th term	24.07

8-21.1&2-SF/Re/AC

Plumber - Jobbing & Alterations **08/01/2020**

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: 07/01/2020
Journeyworker: \$ 44.91

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 \$ 31.60

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 \$ 19.52
2nd year 21.65
3rd year 23.42
4th year 32.92
5th year 34.76

Supplemental Benefits per hour:

1st year \$ 10.21
2nd year 12.05
3rd year 15.88
4th year 21.42
5th year 23.29

8-21.3-J&A

Roofer **08/01/2020**

JOB DESCRIPTION Roofer

DISTRICT 9

ENTIRE COUNTIES

Bronx, Dutchess, Kings, New York, Orange, Putnam, Queens, Richmond, Rockland, Sullivan, Ulster, Westchester

WAGES

Per Hour: 07/01/2020
Roofer/Waterproofer \$ 44.25
+ \$7.00*

* This portion is not subject to overtime premiums.

Note: Abatement/Removal of Asbestos containing roofs and roofing material is classified as Roofer.

SUPPLEMENTAL BENEFITS

Per Hour: \$ 27.87

OVERTIME PAY

See (B, H) on OVERTIME PAGE

Note: An observed holiday that falls on a Sunday will be observed the following Monday.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES

(1) year term

	1st	2nd	3rd	4th
	\$ 15.49	\$ 22.13	\$ 26.55	\$ 33.19
		+ 3.00*	+ 4.20*	+ 5.26*

Supplements:

	1st	2nd	3rd	4th
	\$ 3.57	\$ 14.10	\$ 16.85	\$ 20.98

9-8R

Sheetmetal Worker

08/01/2020

JOB DESCRIPTION Sheetmetal Worker

DISTRICT 8

ENTIRE COUNTIES

Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, Westchester

WAGES

	07/01/2020
SheetMetal Worker	\$ 43.65
	+ 3.27*

*This portion is not subject to overtime premiums.

SHIFT WORK

For all NYS D.O.T. and other Governmental mandated off-shift work:

10% increase for additional shifts for a minimum of five (5) days

SUPPLEMENTAL BENEFITS

Journeyworker \$ 42.55

OVERTIME PAY

OVERTIME:.. 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

REGISTERED APPRENTICES

1st	2nd	3rd	4th	5th	6th	7th	8th
\$ 16.16	\$ 18.18	\$ 20.21	\$ 22.23	\$ 24.24	\$ 26.27	\$ 28.77	\$ 31.27
+ 1.31*	+ 1.47*	+ 1.64*	+ 1.80*	+ 1.96*	+ 2.13*	+ 2.29*	+ 2.45*

*This portion is not subject to overtime premiums.

Supplemental Benefits per hour:

Apprentices

1st term	\$ 18.31
2nd term	20.60
3rd term	22.88
4th term	25.19
5th term	27.47
6th term	29.75
7th term	31.56
8th term	33.39

8-38

Sprinkler Fitter

08/01/2020

JOB DESCRIPTION Sprinkler Fitter

DISTRICT 1

ENTIRE COUNTIES

Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, Westchester

WAGES

Per hour
 07/01/2020
 Sprinkler \$ 45.52
 Fitter

SUPPLEMENTAL BENEFITS

Per hour

Journey person \$ 27.57

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

Wages per hour

One Half Year terms at the following percentage of journey person's wage.

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$ 21.97	\$ 24.41	\$ 26.59	\$ 29.02	\$ 31.45	\$ 33.88	\$ 36.31	\$ 38.74	\$ 41.17	\$ 43.60

Supplemental Benefits per hour

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$ 8.27	\$ 8.27	\$ 18.70	\$ 18.70	\$ 18.95	\$ 18.95	\$ 18.95	\$ 18.95	\$ 18.95	\$ 18.95 1-669.2

Teamster - Building / Heavy&Highway

08/01/2020

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 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.

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)

07/01/2020

GROUP A	\$ 42.47*
GROUP AA	45.27*
GROUP B	43.09*
GROUP BB	42.59*
GROUP C	45.22*
GROUP D	42.92*
GROUP E	43.47*
GROUP F	44.47*
GROUP G	43.22*
GROUP H	43.84*
GROUP HH	44.22*
GROUP I	43.97*

GROUP II 44.34*

* To calculate premium wage, subtract \$.20 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.

Shift Differential:NYS DOT or other Governmental Agency contracts shall receive a shift differential of Fifteen(15%)percent above the wage rate

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday.

NOTE - In order to use the '4 Day/10 Hour Work schedule', as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker

First 40 hours	\$ 33.64
41st-45th hours	15.18
Over 45 hours	0.26

OVERTIME PAY

See (B, E, P, R) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 8, 9, 15, 25) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 9, 15, 25) on HOLIDAY PAGE

8-456

Welder

08/01/2020

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 07/01/2020

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
- (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) Saturday and 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



**New York State Department of Labor - Bureau of Public Work
State Office Building Campus
Building 12 - Room 130
Albany, New York 12240**

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)

- | | |
|---|--|
| <input type="checkbox"/> 01 DOT | <input type="checkbox"/> 07 City |
| <input type="checkbox"/> 02 OGS | <input type="checkbox"/> 08 Local School District |
| <input type="checkbox"/> 03 Dormitory Authority | <input type="checkbox"/> 09 Special Local District, i.e.,
Fire, Sewer, Water District |
| <input type="checkbox"/> 04 State University
Construction Fund | <input type="checkbox"/> 10 Village |
| <input type="checkbox"/> 05 Mental Hygiene
Facilities Corp. | <input type="checkbox"/> 11 Town |
| <input type="checkbox"/> 06 OTHER N.Y. STATE UNIT | <input type="checkbox"/> 12 County |
| | <input type="checkbox"/> 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 :

- | | |
|--|---|
| <input type="checkbox"/> Construction (Building, Heavy
Highway/Sewer/Water) | <input type="checkbox"/> Guards, Watchmen |
| <input type="checkbox"/> Tunnel | <input type="checkbox"/> Janitors, Porters, Cleaners,
Elevator Operators |
| <input type="checkbox"/> Residential | <input type="checkbox"/> Moving furniture and
equipment |
| <input type="checkbox"/> Landscape Maintenance | <input type="checkbox"/> Trash and refuse removal |
| <input type="checkbox"/> Elevator maintenance | <input type="checkbox"/> Window cleaners |
| <input type="checkbox"/> Exterminators, Fumigators | <input type="checkbox"/> Other (Describe) |
| <input type="checkbox"/> Fire Safety Director, NYC Only | |

9. Has this project been reviewed for compliance with the Wicks Law involving separate bidding? YES NO

10. Name and Title of Requester _____

Signature

NYSDOL Bureau of Public Work Debarment List 07/28/2020

Article 8

AGENCY	Fiscal Officer	FEIN	EMPLOYER NAME	EMPLOYER DBA NAME	ADDRESS	DEBARMENT START DATE	DEBARMENT END DATE
DOL	NYC	****9839	A.J.S. PROJECT MANAGEMENT, INC.		149 FIFTH AVENUE NEW YORK NY 10010	12/29/2016	12/29/2021
DOL	DOL	****3344	ACT INC		6409 LAND O LAKES BLVD LAND O LAKES FL 34638	11/10/2015	11/10/2020
DOL	DOL	****4018	ADIRONDACK BUILDING RESTORATION INC.		4156 WILSON ROAD EAST TABERG NY 13471	03/26/2019	03/26/2024
DOL	AG	****1812	ADVANCED BUILDERS & LAND DEVELOPMENT, INC.		400 OSER AVE #2300HAUPPAUGE NY 11788	09/11/2019	09/11/2024
DOL	DOL	****1687	ADVANCED SAFETY SPRINKLER INC		261 MILL ROAD P.O BOX 296EAST AURORA NY 14052	07/29/2015	07/29/2020
DOL	DOL	****1687	ADVANCED SAFETY SPRINKLER INC		261 MILL ROAD P.O BOX 296EAST AURORA NY 14052	05/29/2019	05/29/2024
DOL	NYC	****6775	ADVENTURE MASONRY CORP.		1535 RICHMOND AVENUE STATEN ISLAND NY 10314	12/13/2017	12/13/2022
DOL	NYC		AGOSTINHO TOME		405 BARRETTO ST BRONX NY 10474	05/31/2018	05/31/2023
DOL	DOL		AJ TORCHIA		10153 ROBERTS RD SAUQUOIT NY 13456	08/09/2016	08/09/2021
DOL	DOL	****3344	ALL CATASTROPHE CONSTRUCTION TEAM INC	ACT INC	6409 LAND O LAKES BLVD LAND O LAKES FL 34638	11/10/2015	11/10/2020
DOL	DOL		AMADEO J TORCHIA	TORCHIA'S HOME IMPROVEMENT	10153 ROBERTS RD SAUQUOIT NY 13456	08/09/2016	08/09/2021
DOL	NYC		AMJAD NAZIR		2366 61ST ST BROOKLYN NY 11204	12/15/2016	12/15/2021
DOL	DOL		ANGELO F COKER			12/04/2018	12/04/2023
DOL	NYC		ANISUL ISLAM		C/O RELIANCE GENERAL CONS 644 OCEAN PARKWAYBROOKLYN NY 11230	09/02/2015	09/02/2020
DOL	DOL		ANITA SALERNO		158 SOLAR ST SYRACUSE NY 13204	01/07/2019	01/07/2024
DOL	NYC		ANTHONY J SCLAFANI		149 FIFTH AVE NEW YORK NY 10010	12/29/2016	12/29/2021
DOL	DOL		ANTHONY PERGOLA		3 WEST MAIN ST/SUITE 208 ELMSFORD NY 10323	01/23/2017	01/23/2022
DOL	DOL		ANTONIO ESTIVEZ		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL	****3020	APCO CONTRACTING CORP		24 SOUTH MARYLAND AVENUE PORT WASHINGTON NY 11050	09/24/2012	09/02/2020
DOL	DOL		ARNOLD A. PAOLINI		1250 BROADWAY ST BUFFALO NY 14212	02/03/2020	02/03/2025
DOL	NYC		ARSHAD MEHMOOD		168-42 88TH AVENUE JAMAICA NY 11432	11/20/2019	11/20/2024
DOL	DOL		ARVINDER ATWAL		65 KENNETH PLACE NEW HYDE PARK NY 11040	07/19/2017	07/19/2022
DOL	NYC	****4779	ASTORIA GENERAL CONTRACTING CORP		35-34 31ST STREET LONG ISLAND CITY NY 11106	09/02/2015	09/02/2020
DOL	NYC	****7217	ASTRO COMMUNICATIONS OF NY CORP		79 ALEXANDER AVE- STE 36A BRONX NY 10454	10/30/2015	10/30/2020
DOL	NYC	****6683	ATLAS RESTORATION CORP.		35-12 19TH AVENUE ASTORIA NY 11105	08/02/2017	08/02/2022
DOL	NYC	****5532	ATWAL MECHANICALS, INC		65 KENNETH PLACE NEW HYDE PARK NY 11040	07/19/2017	07/19/2022
DOL	NYC	****2591	AVI 212 INC.		260 CROPEY AVENUE APT 11GBROOKLYN NY 11214	10/30/2018	10/30/2023
DOL	AG		AVTAR SINGH		116-24 127TH STREET SOUTH OZONE PARK NY 11420	12/22/2015	12/22/2020
DOL	AG		BALDEV SINGH		116-24 127TH STREET SOUTH OZONE PARK NY 11420	12/22/2015	12/22/2020
DOL	NYC		BALWINDER SINGH		421 HUDSON ST SUITE C5NEW YORK NY 10014	02/20/2019	02/20/2024
DOL	DOL		BARRY KINNEY		6409 LAND O LAKES BLVD LAND O LAKES FL 34638	11/10/2015	11/10/2020

NYSDOL Bureau of Public Work Debarment List 07/28/2020

Article 8

DOL	NYC	****3915	BEACON RESTORATION INC		SUITE B-8 782 PELHAM PARKWAY SOUTHBRONX NY 10462	04/21/2016	04/21/2021
DOL	NYC	****8416	BEAM CONSTRUCTION, INC.		50 MAIN ST WHITE PLAINS NY 10606	01/04/2019	01/04/2024
DOL	DOL		BIAGIO CANTISANI			06/12/2018	06/12/2023
DOL	DOL	****4512	BOB BRUNO EXCAVATING, INC		5 MORNINGSIDE DR AUBURN NY 13021	05/28/2019	05/28/2024
DOL	DOL		BOGDAN MARKOVSKI		370 W. PLEASANTVIEW AVE SUITE 2.329HACKENSACK NJ 07601	02/11/2019	02/11/2024
DOL	DOL	****8551	BRANDY'S MASONRY		216 WESTBROOK STREET P O BOX 304SAYRE PA 18840	08/09/2016	08/09/2021
DOL	DOL	****1449	BRRESTORATION NY INC		140 ARCADIA AVENUE OSWEGO NY 13126	09/12/2016	09/12/2021
DOL	DOL		BRUCE MORSEY		C/O KENT HOLLOW SIDING LL 29A BRIDGE STREETNEW MILFORD CT 06776	01/15/2016	01/15/2021
DOL	DOL		BRUCE P. NASH JR.		5841 BUTTERNUT ROAD EAST SYRACUSE NY 13057	09/12/2018	09/12/2023
DOL	DOL	****0225	C&D LAFACE CONSTRUCTION, INC.		8531 OSWEGO RD BALDWINVILLE NY 13027	02/03/2020	01/09/2023
DOL	DOL	****8809	C.B.E. CONTRACTING CORPORATION		310 MCGUINNESS BLVD GREENPOINT NY 11222	03/07/2017	03/07/2022
DOL	DOL	****9383	C.C. PAVING AND EXCAVATING, INC.		2610 SOUTH SALINA ST SUITE 12SYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	NYC		CALVIN WALTERS		465 EAST THIRD ST MT. VERNON NY 10550	09/09/2019	09/09/2024
DOL	DOL		CANTISANI & ASSOCIATES LTD		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CANTISANI HOLDING LLC			06/12/2018	06/12/2023
DOL	DOL		CARIBBEAN POOLS		C/O DOUGLAS L MALARKEY 64 VICTORIA DRIVEBINGHAMTON NY 13904	02/04/2016	02/04/2021
DOL	DOL		CARMEN RACHETTA		8531 OSWEGO RD BALDWINVILLE NY 13027	02/03/2020	02/03/2025
DOL	DOL		CARMENA RACHETTA		8531 OSWEGO ROAD BALDWINVILLE NY 13027	02/03/2020	01/09/2023
DOL	DOL	****3812	CARMODY "2" INC			06/12/2018	06/12/2023
DOL	DOL	****1143	CARMODY BUILDING CORP	CARMODY CONTRACTIN G AND CARMODY CONTRACTIN G CORP.	442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CARMODY CONCRETE CORPORATION			06/12/2018	06/12/2023
DOL	DOL		CARMODY ENTERPRISES, LTD.		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CARMODY INC		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL	****3812	CARMODY INDUSTRIES INC			06/12/2018	06/12/2023
DOL	DOL		CARMODY MAINTENANCE CORPORATION		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CARMODY MASONRY CORP		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL	****8809	CBE CONTRACTING CORP		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	AG		CESAR J. AGUDELO		81-06 34TH AVENUE APT. 6EJACKSON HEIGHTS NY 11372	02/07/2018	02/07/2023
DOL	DOL	****7655	CHAMPION CONSTRUCTION SERVICES CORP		2131 SCHENECTADY AVENUE BROOKLYN NY 11234	11/18/2015	11/18/2020
DOL	DOL		CHARLES ZIMMER JR		216 WESTBROOK STREET P O BOX 304SAYRE PA 18840	08/09/2016	08/09/2021
DOL	DOL		CHRISTINE J HEARNE		C/O CJ-HEARNE CONSTRUCTIO 131 PONCE DE LEON AVE NEATLANTA GA 30308	12/01/2015	12/01/2020
DOL	DOL		CHRISTOPHER J MAINI		19 CAITLIN AVE JAMESTOWN NY 14701	09/17/2018	09/17/2023

NYS DOL Bureau of Public Work Debarment List 07/28/2020

Article 8

DOL	DOL		CHRISTOPHER PAPASTEFANOU A/K/A CHRIS PAPASTEFANOU		1445 COMMERCE AVE BRONX NY 10461	05/30/2019	05/30/2024
DOL	DOL	****0671	CJ-HEARNE CONSTRUCTION CO		SUITE 204 131 PONCE DE LEON AVENUE ATLANTA GA 30308	12/01/2015	12/01/2020
DOL	DOL	****1927	CONSTRUCTION PARTS WAREHOUSE, INC.	CPW	5841 BUTTERNUT ROAD EAST SYRACUSE NY 13057	09/12/2018	09/12/2023
DOL	NYC	****2164	CREATIVE TRUCKING INC		58-83 54TH STREET MASPETH NY 11378	02/26/2016	02/26/2021
DOL	DOL	****2524	CSI ELECTRICAL & MECHANICAL INC		42-32 235TH ST DOUGLSTON NY 11363	01/14/2019	01/14/2024
DOL	DOL	****7761	D L MALARKEY CONSTRUCTION		64 VICTORIA DRIVE BINGHAMTON NY 13904	02/04/2016	02/04/2021
DOL	DOL	****7888	D L MALARKEY CONSTRUCTION INC		64 VICTORIA DRIVE BINGHAMTON NY 13904	02/04/2016	02/04/2021
DOL	DOL	****5629	DAKA PLUMBING AND HEATING LLC		2561 ROUTE 55 POUGHQUAG NY 12570	02/19/2016	02/19/2021
DOL	NYC		DALJIT KAUR BOPARAI		185-06 56TH AVE FRESH MEADOW NY 11365	10/17/2017	10/17/2022
DOL	DOL		DANICA IVANOSKI		61 WILLETT ST. PASSAIC NJ 07503	10/26/2016	10/26/2021
DOL	DOL		DARIAN L COKER		2610 SOUTH SALINA ST SUITE 2CSYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	DOL		DAVID MARTINEZ		C/O EMPIRE TILE INC 6 TREMONT COURTHUNTINGTON STATION NY 11746	03/08/2016	03/08/2021
DOL	NYC		DAVID WEINER		14 NEW DROP LANE 2ND FLOOR STATEN ISLAND NY 10306	11/14/2019	11/14/2024
DOL	DOL		DEBBIE STURDEVANT		29 MAPLEWOOD DRIVE BINGHAMTON NY 13901	02/21/2017	02/21/2022
DOL	AG		DEBRA MARTINEZ		31 BAY ST BROOKLYN NY 11231	03/28/2018	03/28/2023
DOL	DOL		DEDA GAZIVODAN		C/O DAKA PLUMBING AND H 2561 ROUTE 55POUGHQUAG NY 12570	02/19/2016	02/19/2021
DOL	DOL		DELPHI PAINTING & DECORATING CO INC		1445 COMMERCE AVE BRONX NY 10461	05/30/2019	05/30/2024
DOL	DOL		DENNIS SCHWANDTNER		C/O YES SERVICE AND REPAIR 145 LODGE AVE HUNTINGTON STATION NY 11476	08/09/2016	08/09/2021
DOL	DOL		DF CONTRACTORS OF ROCHESTER, INC.		1835 DAANSEN RD. PALMYRA NY 14522	05/16/2017	05/16/2022
DOL	DOL		DF CONTRACTORS, INC.		1835 DAANSEN RD. PALMYRA NY 14522	05/16/2017	05/16/2022
DOL	NYC		DIMITRIOS KOUTSOUKOS		C/O ASTORIA GENERAL CONTR 35-34 31ST STREET LONG ISLAND CITY NY 11106	09/02/2015	09/02/2020
DOL	NYC		DIMITRIOS TSOUMAS		35-12 19TH AVENUE ASTORIA NY 11105	08/02/2017	08/02/2022
DOL	DOL		DOMENICO LAFACE		8531 OSWEGO RD BALDWINSVILLE NY 13027	02/03/2020	01/09/2023
DOL	DOL	****3242	DONALD R. FORSAY	DF LAWN SERVICE	1835 DAANSEN RD. PALMYRA NY 14522	05/16/2017	05/16/2022
DOL	DOL		DONALD R. FORSAY		1835 DAANSEN RD. PALMYRA NY 14522	05/16/2017	05/16/2022
DOL	DOL		DORIS SKODA		C/O APCO CONTRACTING CORP 24 SOUTH MARYLAND AVENUE PORT WASHINGTON NY 11050	09/24/2012	09/02/2020
DOL	NYC	****7404	DOSANJH CONSTRUCTION CORP		9439 212TH STREET QUEENS VILLAGE NY 11428	02/25/2016	02/25/2021
DOL	DOL		DOUGLAS L MALARKEY	MALARKEY CONSTRUCTION	64 VICTORIA DRIVE BINGHAMTON NY 13904	02/04/2016	02/04/2021
DOL	NYC		DUARTE LOPES		66-05 WOODHAVEN BLVD. STE 2 REGO PARK NY 11374	04/20/2017	04/20/2022
DOL	DOL		E C WEBB		6409 LAND O LAKES BLVD LAND O LAKES FL 34638	11/10/2015	11/10/2020
DOL	DOL	****5175	EAGLE MECHANICAL AND GENERAL CONSTRUCTION LLC		11371 RIDGE RD WOLCOTT NY 14590	02/03/2020	02/03/2025

NYSDOL Bureau of Public Work Debarment List 07/28/2020

Article 8

DOL	DOL		EARL L WILSON	WILSON BROTHER DRYWALL CONTRACTORS	36 ABERSOLD STREET ROCHESTER NY 14621	08/31/2015	08/31/2020
DOL	DOL		EAST COAST PAVING		2238 BAKER RD GILLET PA 16923	03/12/2018	03/12/2023
DOL	NYC	****4269	EAST PORT EXCAVATION & UTILITIES		601 PORTION RD RONKONKOMA NY 11779	11/18/2016	11/18/2021
DOL	DOL	****0780	EMES HEATING & PLUMBING CONTR		5 EMES LANE MONSEY NY 10952	01/20/2002	01/20/3002
DOL	DOL	****3270	EMPIRE TILE INC		6 TREMONT COURT HUNTINGTON STATION NY 11746	03/08/2016	03/08/2021
DOL	NYC	****5917	EPOCH ELECTRICAL, INC		97-18 50TH AVE CORONA NY 11368	04/19/2018	04/19/2024
DOL	DOL	****7403	F & B PAINTING CONTRACTING INC		2 PARKVIEW AVENUE HARRISON NY 10604	09/26/2016	09/26/2021
DOL	DOL		FAIGY LOWINGER		11 MOUNTAIN RD 28 VAN BUREN DRMONROE NY 10950	03/20/2019	03/20/2024
DOL	DOL		FAY MATTHEW		C/O CHAMPION CONSTRUCTION 2131 SCHENECTADY AVENUEBROOKLYN NY 11234	11/18/2015	11/18/2020
DOL	DOL		FAZIA GINA ALI-MOHAMMED	C/O CHAMPION CONSTRUCTION	2131 SCHENECTADY AVENUE BROOKLYN NY 11234	11/18/2015	11/18/2020
DOL	DOL		FRANK BENEDETTO		19 CATLIN AVE JAMESTOWN NY 14701	09/17/2018	09/17/2023
DOL	DOL		FRANK BENEDETTO		C/O F & B PAINTING CONTRA 2 PARKVIEW AVENUEHARRISON NY 10604	09/26/2016	09/26/2021
DOL	DOL	****4722	FRANK BENEDETTO AND CHRISTOPHER J MAINI	B & M CONCRETE	19 CAITLIN AVE JAMESTOWN NY 14701	09/17/2018	09/17/2023
DOL	NYC		FRANK MAINI		1766 FRONT ST YORKTOWN HEIGHTS NY 10598	01/17/2018	01/17/2023
DOL	NYC	****6616	G & G MECHANICAL ENTERPRISES, LLC.		1936 HEMPSTEAD TURNPIKE EAST MEDOW NY 11554	11/29/2019	11/29/2024
DOL	DOL		GABRIEL FRASSETTI			04/10/2019	04/10/2024
DOL	DOL		GALINDA ROTENBERG		C/O GMDV TRANS INC 67-48 182ND STREETFRESH MEADOWS NY 11365	06/24/2016	06/24/2021
DOL	DOL		GEOFF CORLETT		415 FLAGGER AVE #302STUART FL 34994	10/31/2018	10/31/2023
DOL	DA		GEORGE LUCEY		150 KINGS STREET BROOKLYN NY 11231	01/19/1998	01/19/2998
DOL	DOL		GIGI SCHNECKENBURGER		261 MILL RD EAST AURORA NY 14052	05/29/2019	05/29/2024
DOL	DOL		GIOVANNI LAFACE		8531 OSWEGO RD BALDWINSVILLE NY 13027	02/03/2020	01/09/2023
DOL	NYC	****3164	GLOBE GATES INC	GLOBAL OVERHEAD DOORS	405 BARRETTO ST BRONX NY 10474	05/31/2018	05/31/2023
DOL	DOL	****5674	GMDV TRANS INC		67-48 182ND STREET FRESH MEADOWS NY 11365	06/24/2016	06/24/2021
DOL	NYC		GREAT ESTATE CONSTRUCTION, INC.		327 STAGG ST BROOKLYN NY 11206	10/10/2017	10/10/2022
DOL	DOL		GREGORY S. OLSON		P.O BOX 100 200 LATTA BROOK PARKHORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL		HANS RATH		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	NYC		HARMEL SINGH		15 CLINTON LANE HICKSVILLE NY 11801	02/25/2016	02/25/2021
DOL	NYC		HAROLD KUEMMEL		58-83 54TH STREET MASPETH NY 11378	02/26/2016	02/26/2021
DOL	NYC	****3228	HEIGHTS ELEVATOR CORP.		1766 FRONT ST YORKTOWN HEIGHTS NY 10598	01/17/2018	01/17/2023
DOL	DOL		HENRY VAN DALRYMPLE		2663 LANTERN LANE ATLANTA GA 30349	12/01/2015	12/01/2020
DOL	DOL	****8282	IDEMA DEVELOPMENT INC		91 COLLEGE AVENUE POUGHKEEPSIE NY 12603	12/04/2015	12/04/2020

NYS DOL Bureau of Public Work Debarment List 07/28/2020

Article 8

DOL	DOL	****8282	IDEMA GENERAL CONTRACTORS INC		91 COLLEGE AVENUE POUGHKEEPSIE NY 12603	12/04/2015	12/04/2020
DOL	DOL	****7001	INTEGRATED CONSTRUCTION & POWER SYSTEMS INC		SUITE 100 2105 W GENESEE STREETS YRACUSE NY 13219	01/06/2016	01/06/2021
DOL	DOL	****5131	INTEGRITY MASONRY, INC.	M&R CONCRETE	722 8TH AVE WATERVLIET NY 12189	06/05/2018	06/05/2023
DOL	DOL		IRENE KASELIS		32 PENNINGTON AVE WALDWICK NJ 07463	05/30/2019	05/30/2024
DOL	AG		J A M CONSTRUCTION CORP		SUITE 125 265 SUNRISE HIGHWAY ROCKVILLE CENTRE NY 10457	04/07/2016	04/07/2021
DOL	DOL		J.A. HIRES CADWALLADER		P.O BOX 100 200 LATTABROOK PARKHORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL		JAMES B RHYNDERS		91 COLLEGE AVENUE POUGHKEEPSIE NY 12603	12/04/2015	12/04/2020
DOL	DOL		JAMES C. DELGIACCO		722 8TH AVE WATERVLIET NY 12189	06/05/2018	06/05/2023
DOL	DOL		JAMES E RHYNDERS		91 COLLEGE AVENUE POUGHKEEPSIE NY 12603	12/04/2015	12/04/2020
DOL	AG		JAMES FALCONE		SUITE 125 265 SUNRISE HIGHWAY ROCKVILLE CENTRE NY 10457	04/07/2016	04/07/2021
DOL	DOL		JAMES LIACONE		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL		JAMES RACHEL		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL		JAMES RHYNDERS SR		91 COLLEGE AVENUE POUGHKEEPSIE NY 12603	12/04/2015	12/04/2020
DOL	DOL		JASON W MILLIMAN		C/O ROCHESTER ACOUSTICAL P O BOX 799 HILTON NY 14468	02/19/2016	02/19/2021
DOL	DOL	****5368	JCH MASONRY & LANDSCAPING INC.		35 CLINTON AVE OSSINING NY 10562	09/12/2018	09/12/2023
DOL	NYC		JENNIFER GUERRERO		1936 HEMPSTEAD TURNPIKE EAST MEADOW NY 11554	11/29/2019	11/29/2024
DOL	DOL		JESSICA WHITESIDE		C/O BRRESTORATION NY INC 140 ARCADIA AVENUE OSWEGO NY 13126	09/12/2016	09/12/2021
DOL	AG		JOHN ANTHONY MASSINO		36-49 204TH STREET BAYSIDE NY 11372	02/07/2018	02/07/2023
DOL	DOL		JOHN F. CADWALLADER		200 LATTABROOK PARK HORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL	****4612	JOHN F. CADWALLADER, INC.	THE GLASS COMPANY	P.O BOX 100 200 LATTABROOK PARKHORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL		JOHN GOCEK		14B COMMERCIAL AVE ALBANY NY 12065	11/14/2019	11/14/2024
DOL	AG	****0600	JOHNCO CONTRACTING, INC.		36-49 204TH STREET BAYSIDE NY 11372	02/07/2018	02/07/2023
DOL	DOL		JON E DEYOUNG		261 MILL RD P.O BOX 296 EAST AURORA NY 14052	07/29/2015	07/29/2020
DOL	DOL		JON E DEYOUNG		261 MILL RD P.O BOX 296 EAST AURORA NY 14052	05/29/2019	05/29/2024
DOL	DOL		JORI PEDERSEN		415 FLAGER AVE #302 STUART FL 34994	10/31/2018	10/31/2023
DOL	DOL		JOSE CHUCHUCA		35 CLINTON AVE OSSINING NY 10562	09/12/2018	09/12/2023
DOL	AG		JOSEPH FALCONE		SUITE 125 265 SUNRISE HIGHWAY ROCKVILLE CENTRE NY 10457	04/07/2016	04/07/2021
DOL	NYC		JOSEPH FOLEY		66-05 WOODHAVEN BLVD. STE 2 REGO PARK NY 11374	04/20/2017	04/20/2022
DOL	DOL	****9273	JOSEPH M LOVETRO		P O BOX 812 BUFFALO NY 14220	08/09/2016	08/09/2021
DOL	NYC		JOSEPH MARTINO		1535 RICHMOND AVENUE STATEN ISLAND NY 10314	12/13/2017	12/13/2022
DOL	DOL		JOY MARTIN		2404 DELAWARE AVE NIGARA FALLS NY 14305	09/12/2018	09/12/2023
DOL	DOL		JULIUS AND GITA BEHREND		5 EMES LANE MONSEY NY 10952	11/20/2002	11/20/3002

NYS DOL Bureau of Public Work Debarment List 07/28/2020

Article 8

DOL	DOL	****5062	K R F SITE DEVELOPMENT INC		375 LAKE SHORE DRIVE PUTNAM VALLEY NY 10579	01/23/2017	01/23/2022
DOL	NYC		K.S. CONTRACTING CORP.		29 PHILLIP DRIVE PARSIPPANY NJ 07054	02/13/2017	02/13/2022
DOL	DOL		KATIE BURDICK		2238 BAKER RD GILLET PA 16923	03/12/2018	03/12/2023
DOL	DOL		KENNETH FIORENTINO		375 LAKE SHORE DRIVE PUTNAM VALLEY NY 10579	01/23/2017	01/23/2022
DOL	DOL	****9732	KENT HOLLOW SIDING LLC		29A BRIDGE STREET NEW MILFORD CT 06776	01/15/2016	01/15/2021
DOL	DOL		KIM SOROCENSKI		C/O SOLUTION MATTERS INC 198 NORWOOD ROADPORT JEFFERSON NY 11776	11/19/2015	11/19/2020
DOL	DOL	****3490	L & M CONSTRUCTION/DRYWALL INC.		1079 YONKERS AVE YONKERS NY 10704	08/07/2018	08/07/2023
DOL	DA	****8816	LAKE CONSTRUCTION AND DEVELOPMENT CORPORATION		150 KINGS STREET BROOKLYN NY 11231	08/19/1998	08/19/2998
DOL	AG	****4643	LALO DRYWALL, INC.		221 OLD FORD ROAD NEW PLATZ NY 12561	05/20/2016	05/20/2021
DOL	DOL	****4505	LARAPINTA ASSOCIATES INC		29 MAPLEWOOD DRIVE BINGHAMTON NY 13901	02/21/2017	02/21/2022
DOL	DOL		LAVERN GLAVE		161 ROBYN RD MONROE NY 10950	01/30/2018	01/30/2023
DOL	DOL	****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	06/24/2016	09/19/2022
DOL	DOL	****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	06/24/2016	09/19/2022
DOL	DOL	****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL	****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL	****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	01/17/2017	09/19/2022
DOL	DOL	****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL	****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL	****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	08/14/2017	09/19/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	08/14/2017	08/14/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	01/17/2017	09/19/2022
DOL	DA	****4460	LONG ISLAND GLASS & STOREFRONTS, LLC		4 MANHASSET TRL RIDGE NY 11961	09/06/2018	09/06/2023
DOL	AG	****4216	LOTUS-C CORP.		81-06 34TH AVENUE APT. 6EJACKSON HEIGHTS NY 11372	02/07/2018	02/07/2023
DOL	NYC		LUBOMIR PETER SVOBODA		27 HOUSMAN AVE STATEN ISLAND NY 10303	12/26/2019	12/26/2024
DOL	AG		LUIS MARTINEZ	LALO DRYWALL	211 MAIN ST. NEW PALTZ NY 12561	05/20/2016	05/20/2021
DOL	NYC		M & L STEEL & ORNAMENTAL IRON CORP.		27 HOUSMAN AVE STATEN ISLAND NY 10303	12/26/2019	12/26/2024
DOL	DOL		M ANVER BEIG		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	AG	****6957	M B DIN CONSTRUCTION INC		8831 20TH AVENUE/SUITE 6E BROOKLYN NY 11214	11/17/2015	11/17/2020
DOL	DOL		M. ANVER BEIG		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	NYC	****9590	MACK GLASSNAUTH IRON WORKS INC		137 LIBERTY AVENUE BROOKLYN NY 11212	12/21/2015	12/21/2020
DOL	DOL	****1784	MADISON AVE CONSTRUCTION CORP		39 PENNY STREET WEST ISLIP NY 11795	11/02/2016	11/02/2021

NYSDOL Bureau of Public Work Debarment List 07/28/2020

Article 8

DOL	DOL		MALARKEY'S BAR & GRILL LLC		64 VICTORIA DRIVE BINGHAMTON NY 13904	02/04/2016	02/04/2021
DOL	DOL	****0705	MALARKEY'S PUB & GRUB LLC		64 VICTORIA DRIVE BINGHAMTON NY 13904	02/04/2016	02/04/2021
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	NYC		MAREK FABIJANOWSKI		50 MAIN ST WHITE PLAINS NY 10606	01/04/2019	01/04/2024
DOL	DOL		MARIACHI'S PIZZERIA		C/O DOUGLAS L MALARKEY 64 VICTORIA DRIVE BINGHAMTON NY 13904	02/04/2016	02/04/2021
DOL	DOL		MARK MIONIS		6409 LAND O LAKES BLVD LAND O LAKES FL 34638	11/10/2015	11/10/2020
DOL	NYC		MARTINE ALTER		1010 NORTHERN BLVD. GREAT NECK NY 11021	03/09/2017	03/09/2022
DOL	DOL		MARVIN A STURDEVANT		29 MAPLEWOOD DRIVE BINGHAMTON NY 13901	02/21/2017	02/21/2022
DOL	DOL		MASONRY CONSTRUCTION, INC.		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL	****3333	MASONRY INDUSTRIES, INC.		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	NYC		MATINA KARAGIANNIS		97-18 50TH AVE CORONA NY 11368	04/19/2018	04/19/2023
DOL	DOL		MATTHEW IDEMA GENERAL CONTRACTORS INC		91 COLLEGE AVENUE POUGHKEEPSIE NY 12603	12/04/2015	12/04/2020
DOL	DOL		MATTHEW P. KILGORE		4156 WILSON ROAD EAST TABERG NY 13471	03/26/2019	03/26/2024
DOL	DOL		MAURICE GAWENO		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL	****6416	MCCALL MASONRY		P O BOX 304 SAYRE PA 18840	08/09/2016	08/09/2021
DOL	DOL		MCLEAN "MIKKI BEANE"		1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL		MCLEAN "MIKKI" DRAKE		1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL		MCLEAN M DRAKE-BEANE		1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL	****9445	MCLEAN M WALSH	ELITE PROFESSIONAL PAINTING OF CNY	1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL	****9445	MCLEAN M WALSH	ELITE PROFESSIONAL PAINTING OF CNY	1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	NYC	****5330	METRO DUCT SYSTEMS INC		1219 ASTORIA BOULEVARD LONG ISLAND CITY NY 11102	04/16/2014	11/19/2020
DOL	DOL		MICHAEL A PASCARELLA		SUITE 100 2105 WEST GENESEE STREET SYRACUSE NY 13219	01/06/2016	01/06/2021
DOL	NYC		MICHAEL HIRSCH		C/O MZM CORP 163 S MAIN STREET NEW CITY NY 10956	01/28/2016	01/28/2021
DOL	DOL		MICHAEL LENIHAN		1079 YONKERS AVE UNIT 4 YONKERS NY 10704	08/07/2018	08/07/2023
DOL	AG		MICHAEL RIGLIETTI		31 BAY ST BROOKLYN NY 11231	03/28/2018	03/28/2023
DOL	DOL		MICHAEL WILSON	WILSON BROTHER DRYWALL CONTRACTORS	36 ABERSOLD STREET ROCHESTER NY 14621	08/31/2015	08/31/2020
DOL	DOL	****4829	MILESTONE ENVIRONMENTAL CORPORATION		704 GINESI DRIVE SUITE 29 MORGANVILLE NJ 07751	04/10/2019	04/10/2024
DOL	NYC	****9926	MILLENNIUM FIRE PROTECTION, LLC		325 W. 38TH STREET SUITE 204 NEW YORK NY 10018	11/14/2019	11/14/2024
DOL	NYC	****0627	MILLENNIUM FIRE SERVICES, LLC		14 NEW DROP LNE 2ND FLOOR STATEN ISLAND NY 10306	11/14/2019	11/14/2024
DOL	AG		MOHAMMED N CHATHA		8831 20TH AVENUE/SUITE 6E BROOKLYN NY 11214	11/17/2015	11/17/2020
DOL	DOL	****2737	MOUNTAIN'S AIR INC		2471 OCEAN AVENUE- STE 7A BROOKLYN NY 11229	09/24/2012	09/18/2020

NYS DOL Bureau of Public Work Debarment List 07/28/2020

Article 8

DOL	NYC	****3826	MOVING MAVEN OF NY, INC.		1010 NORTHERN BLVD. GREAT NECK NY 11021	03/09/2017	03/09/2022
DOL	NYC	****3550	MOVING MAVEN, INC		1010 NORTHERN BLVD. GREAT NECK NY 11021	03/09/2017	03/09/2022
DOL	AG		MSR ELECTRICAL CONSTRUCTION CORP.		31 BAY ST BROOKLYN NY 11231	03/28/2018	03/28/2023
DOL	DOL		MUHAMMAD BEIG		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	DOL		MUHAMMAD BEIG		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	DOL		MUHAMMAD PERVAIZ		C/O CHAMPION CONSTRUCTION 2131 SCHENECTADY AVENUE BROOKLYN NY 11234	11/18/2015	11/18/2020
DOL	NYC	****3613	MZM CORP		163 S MAIN STREET NEW CITY NY 10956	01/28/2016	01/28/2021
DOL	DA	****9786	NATIONAL INSULATION & GC CORP		180 MILLER PLACE HICKSVILLE NY 11801	12/12/2018	12/12/2023
DOL	NYC	****4839	NEW YORK RIGGING CORP		58-83 54TH STREET MASPETH NY 11378	02/26/2016	02/26/2021
DOL	NYC		NICHOLAS FILIPAKIS		7113 FORT HAMILTON PARKWA BROOKLYN NY 11228	12/09/2016	12/09/2021
DOL	DOL	****6966	NORTH COUNTRY DRYWALL AND PAINT		23167 COUNTY ROUTE 59 DEXTER NY 13634	10/24/2016	10/24/2021
DOL	DOL	****0065	NORTHEAST LANDSCAPE AND MASONRY ASSOC		3 WEST MAIN ST/SUITE 208 ELMSFORD NY 10523	01/23/2017	01/23/2022
DOL	DOL	****1845	OC ERECTERS, LLC A/K/A OC ERECTERS OF NY INC.		1207 SW 48TH TERRACE DEERFIELD BEACH FL 33442	01/16/2018	01/16/2023
DOL	NYC	****0818	ONE TEN RESTORATION, INC.		2366 61ST ST BROOKLYN NY 11204	12/15/2016	12/15/2021
DOL	NYC		ORSON ARROYO		C/O METRO DUCT SYSTEMS 12-19 ASTORIA BOULEVARD LONG ISLAND CITY NY 11102	04/16/2014	11/19/2020
DOL	NYC		PARESH SHAH		29 PHILLIP DRIVE PARSIPPANY NJ 07054	02/13/2017	02/13/2022
DOL	NYC	****9422	PELIUM CONSTRUCTION, INC.		22-33 35TH ST. ASTORIA NY 11105	12/30/2016	12/30/2021
DOL	DOL		PETER M PERGOLA		3 WEST MAIN ST/SUITE 208 ELMSFORD NY 10523	01/23/2017	01/23/2022
DOL	DOL		PIERRE LAPORT		224 COUNTY HIGHWAY 138 BROADALBIN NY 12025	03/07/2017	03/07/2022
DOL	DOL	****1543	PJ LAPORT FLOORING INC		224 COUNTY HIGHWAY 138 BROADALBIN NY 12025	03/07/2017	03/07/2022
DOL	NYC	****5771	PMJ ELECTRICAL CORP		7113 FORT HAMILTON PARKWA BROOKLYN NY 11228	12/09/2016	12/09/2021
DOL	DOL	****0466	PRECISION BUILT FENCES, INC.		1617 MAIN ST PEEKSKILL NY 10566	03/03/2020	03/03/2025
DOL	NYC	****4532	PROFESSIONAL PAVERS CORP.		66-05 WOODHAVEN BLVD. REGO PARK NY 11374	04/20/2017	04/20/2022
DOL	DA	****6817	QUADRANT METAL BUILDINGS LLC		2740 SW MARTIN DOWNS BLVD PALM CITY FL 34990	08/25/2016	08/25/2021
DOL	NYC		RAMESHWAR ASU		137 LIBERTY AVENUE BROOKLYN NY 11212	12/21/2015	12/21/2020
DOL	DOL	****1068	RATH MECHANICAL CONTRACTORS, INC.		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	DOL	****2633	RAW POWER ELECTRIC CORP		3 PARK CIRCLE MIDDLETOWN NY 10940	01/30/2018	01/30/2023
DOL	AG	****7015	RCM PAINTING INC.		69-06 GRAND AVENUE 2ND FLOOR MASPETH NY 11378	02/07/2018	02/07/2023
DOL	DOL		REGINALD WARREN		161 ROBYN RD MONROE NY 10950	01/30/2018	01/30/2023
DOL	NYC	****3461	RELIANCE GENERAL CONSTRUCTION INC		644 OCEAN PARKWAY BROOKLYN NY 11230	09/02/2015	09/02/2020
DOL	DA		RIANN MULLER		2740 SW MARTIN DOWNS BLVD PALM CITY FL 34990	08/25/2016	08/25/2021
DOL	DOL	****9148	RICH T CONSTRUCTION		107 WILLOW WOOD LANE CAMILLUS NY 13031	11/13/2018	11/13/2023
DOL	DOL		RICHARD MACONE		8617 THIRD AVE BROOKLYN NY 11209	09/17/2018	09/17/2023

NYSDOL Bureau of Public Work Debarment List 07/28/2020

Article 8

DOL	DOL		RICHARD REGGIO		1617 MAIN ST PEEKSKILL NY 10566	03/03/2020	03/03/2025
DOL	DOL	****9148	RICHARD TIMIAN	RICH T CONSTRUCTI ON	108 LAMONT AVE SYRACUSE NY 13209	10/16/2018	10/16/2023
DOL	DOL		RICHARD TIMIAN JR.		108 LAMONT AVE SYRACUSE NY 13209	10/16/2018	10/16/2023
DOL	DOL		RICHARD TIMIAN JR.		108 LAMONT AVE SYRACUSE NY 13209	11/13/2018	11/13/2023
DOL	DOL		ROBBYE BISSEsar		89-51 SPRINGFIELD BLVD QUEENS VILLAGE NY 11427	01/11/2003	01/11/3003
DOL	DOL		ROBERT A. VALERINO		3841 LANYARD COURT NEW PORT RICHEY FL 34652	07/09/2019	07/09/2024
DOL	DOL		ROBERT BRUNO		3 GAYLORD ST AUBURN NY 13021	11/15/2016	11/15/2021
DOL	DOL		ROBERT BRUNO		5 MORNINGSIDE DRIVE AUBURN NY 13021	05/28/2019	05/28/2024
DOL	NYC		ROBERT HOHMAN		149 FIFTH AVE NEW YORK NY 10010	12/29/2016	12/29/2021
DOL	DOL	****3859	ROCHESTER ACOUSTICAL CORP		P O BOX 799 HILTON NY 14468	02/19/2016	02/19/2021
DOL	DOL		RODERICK PUGH		404 OAK ST SUITE 101SYRACUSE NY 13203	07/23/2018	07/23/2023
DOL	DOL	****4880	RODERICK PUGH CONSTRUCTION INC.		404 OAK ST SUITE 101SYRACUSE NY 13203	07/23/2018	07/23/2023
DOL	NYC		RODNEY SCOTT		201 HEMPSTEAD AVE WEST HEMPSTEAD NY 11552	10/30/2015	10/30/2020
DOL	DOL		ROMEO WARREN		161 ROBYN RD MONROE NY 10950	01/30/2018	01/30/2023
DOL	DOL		RONALD MESSEN		14B COMMERCIAL AVE ALBANY NY 12065	11/14/2019	11/14/2024
DOL	DOL		ROSEANNE CANTISANI			06/12/2018	06/12/2023
DOL	DOL		RYAN ALBIE		21 S HOWELLS POINT ROAD BELLPORT NY 11713	02/21/2017	02/21/2022
DOL	DOL	****3347	RYAN ALBIE CONTRACTING INC		21 S HOWELLS POINT ROAD BELLPORT NY 11713	02/21/2017	02/21/2022
DOL	DOL	****1365	S & L PAINTING, INC.		11 MOUNTAIN ROAD P.O BOX 408MONROE NY 10950	03/20/2019	03/20/2024
DOL	DOL	****7730	S C MARTIN GROUP INC.		2404 DELAWARE AVE NIAGARA FALLS NY 14305	09/12/2018	09/12/2023
DOL	NYC		SABIR MUHAMMED		SUITE B-8 782 PELHAM PARKWAY SOUTHBRONX NY 10462	04/21/2016	04/21/2021
DOL	DOL		SALVATORE A FRESINA			08/26/2016	08/26/2021
DOL	DOL		SAM FRESINA			08/26/2016	08/26/2021
DOL	NYC	****0349	SAM WATERPROOFING INC		168-42 88TH AVENUE APT.1 AJAMAICA NY 11432	11/20/2019	11/20/2024
DOL	NYC		SANDEEP BOPARAI		185-06 56TH AVE FRESH MEADOW NY 11365	10/17/2017	10/17/2022
DOL	NYC	****2117	SCOTT ELECTRICAL SERVICE, LLC.		201 HEMPSTEAD AVE WEST HEMPSTEAD NY 11552	10/30/2015	10/30/2020
DOL	DOL	****9751	SCW CONSTRUCTION		544 OLD ROUTE 23 ACRE NY 12405	02/14/2017	02/14/2022
DOL	AG		SERGIO RAYMUNDO		109 DUBOIS RD. NEW PALTZ NY 12561	05/20/2016	05/20/2021
DOL	NYC	****6597	SHAIRA CONSTRUCTION CORP.		421 HUDSON STREET SUITE C5NEW YORK NY 10014	02/20/2019	02/20/2024
DOL	DOL	****1961	SHANE BURDICK	CENTRAL TRAFFIC CONTROL, LLC.	2238 BAKER ROAD GILLET PA 16923	03/12/2018	03/12/2023
DOL	DOL		SHANE BURDICK		2238 BAKER ROAD GILLET PA 16923	03/12/2018	03/12/2023
DOL	DOL		SHANE NOLAN		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL		SHULEM LOWINGER		11 MOUNTAIN ROAD 28 VAN BUREN DRMONROE NY 10950	03/20/2019	03/20/2024
DOL	DOL	****0816	SOLAR ARRAY SOLUTIONS, LLC		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023

NYSDOL Bureau of Public Work Debarment List 07/28/2020

Article 8

DOL	DOL	****4025	SOLUTION MATTERS INC		198 NORWOOD ROAD PORT JEFFERSON NY 11776	11/19/2015	11/19/2020
DOL	DOL	****2221	SOUTH BUFFALO ELECTRIC, INC.		1250 BROADWAY ST BUFFALO NY 14212	02/03/2020	02/03/2025
DOL	DOL	****3496	STAR INTERNATIONAL INC		89-51 SPRINGFIELD BLVD QUEENS VILLAGE NY 11427	08/11/2003	08/11/3003
DOL	DOL	****6844	STEAM PLANT AND CHX SYSTEMS INC.		14B COMMERCIAL AVENUE ALBANY NY 12065	11/14/2019	11/14/2024
DOL	DOL	****9933	STEED GENERAL CONTRACTORS, INC.		1445 COMMERCE AVE BRONX NY 10461	05/30/2019	05/30/2024
DOL	DOL		STEFANOS PAPASTEFANOU, JR. A/K/A STEVE PAPASTEFANOU, JR.		256 WEST SADDLE RIVER RD UPPER SADDLE RIVER NJ 07458	05/30/2019	05/30/2024
DOL	DOL	****9751	STEPHEN C WAGAR		544 OLD ROUTE 23 ACRE NY 12405	02/14/2017	02/14/2022
DOL	DOL		STEVE TATE		415 FLAGER AVE #302STUART FL 34994	10/31/2018	10/31/2023
DOL	NYC		STEVEN GOVERNALE		601 PORTION RD RONKONKOMA NY 11779	11/18/2016	11/18/2021
DOL	DOL		STEVEN MARTIN		2404 DELWARE AVE NIAGARA FALLS NY 14305	09/12/2018	09/12/2023
DOL	DOL		STEVEN P SUCATO		15-68 208TH STREET BAYSIDE NY 11360	06/23/2016	06/23/2021
DOL	DOL		STEVEN TESTA		50 SALEM STREET - BLDG B LYNNFIELD MA 01940	01/23/2017	01/23/2022
DOL	NYC	****9432	SUBLINK LTD		346 THIRD AVENUE PELHAM NY 10803	11/19/2015	11/19/2020
DOL	NYC	****5863	SUKHMANY CONSTRUCTION, INC.		185-06 56TH AVE FRESH MEADOW NY 11365	10/17/2017	10/17/2022
DOL	DOL	****1060	SUNN ENTERPRISES GROUP, LLC		370 W. PLEASANTVIEW AVE SUITE 2.329HACKENSACK NJ 07601	02/11/2019	02/11/2024
DOL	DOL	****8209	SYRACUSE SCALES, INC.		158 SOLAR ST SYRACUSE NY 13204	01/07/2019	01/07/2024
DOL	DOL		TALAILA OCAMPA		1207 SW 48TH TERRACE DEERFIELD BEACH FL 33442	01/16/2018	01/16/2023
DOL	DOL	****9852	TAP STEEL INC		ROUTE 26 3101 P O BOX 457CONSTABLEVILLE NY 13325	01/28/2016	01/28/2021
DOL	DOL		TERRY THOMPSON		11371 RIDGE RD WOLCOTT NY 14590	02/03/2020	02/03/2025
DOL	DOL		TEST		P.O BOX 123 ALBANY NY 12204	05/20/2020	05/20/2025
DOL	DOL	****5570	TESTA CORP		50 SALEM STREET - BLDG B LYNNFIELD MA 01940	01/23/2017	01/23/2022
DOL	DOL	****5766	THE COKER CORPORATION	COKER CORPORATIO N	2610 SOUTH SALINA ST SUITE 14SYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	DOL	****8174	THE DALRYMPLE CORPORATION		UNIT 278 541 10TH STREET NWLANTA GA 30318	12/01/2015	12/01/2020
DOL	DOL	****8174	THE DALRYMPLE GROUP LLC		289 JONESBORO RD/ STE 216 MCDONOUGH GA 30253	12/01/2015	12/01/2020
DOL	DOL		TIMOTHY A PALUCK		C/O TAP STEEL INC RTE 26 3101/ P O BOX 457CONSTABLEVILLE NY 13325	01/28/2016	01/28/2021
DOL	DOL	****3453	TORCHIA'S HOME IMPROVEMENT		10153 ROBERTS RD SAUQUOIT NY 13456	08/09/2016	08/09/2021
DOL	DOL	****8311	TRIPLE B FABRICATING, INC.		61 WILLETT ST. PASSAIC NJ 07503	10/26/2016	10/26/2021
DOL	DOL	****9407	TURBO GROUP INC		15-68 208TH STREET BAYSIDE NY 11360	06/23/2016	06/23/2021
DOL	DOL	****6392	V.M.K CORP.		8617 THIRD AVE BROOKLYN NY 11209	09/17/2018	09/17/2023
DOL	NYC		VALERIE VISCONTI		346 THIRD AVENUE PELHAM NY 10803	11/19/2015	11/19/2020
DOL	NYC	****7361	VIALE HOLDINGS, INC.	MOVING MAVEN	1010 NORTHERN BLVD. GREAT NECK NY 11021	03/09/2017	03/09/2022
DOL	DOL		VICTOR ALICANTI		42-32 235TH ST DOUGLSTON NY 11363	01/14/2019	01/14/2024
DOL	DOL		VICTOR ROTENBERG		C/O GMDV TRANS INC 67048 182ND STREETFRESH MEADOWS NY 11365	06/24/2016	06/24/2021
DOL	NYC		VIKTAR PATONICH		2630 CROPSY AVE BROOKLYN NY 11214	10/30/2018	10/30/2023

NYS DOL Bureau of Public Work Debarment List 07/28/2020

Article 8

DOL	DOL		VIKTORIA RATH		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	NYC		VITO GARGANO		1535 RICHMOND AVE STATEN ISLAND NY 10314	12/13/2017	12/13/2022
DOL	NYC	****3673	WALTERS AND WALTERS, INC.		465 EAST AND THIRD ST MT. VERNON NY 10550	09/09/2019	09/09/2024
DOL	DOL		WAYNE LIVINGSTON JR	NORTH COUNTRY DRYWALL AND PAINT	23167 COUNTY ROUTE 59 DEXTER NY 13634	10/24/2016	10/24/2021
DOL	DOL	****3296	WESTERN NEW YORK CONTRACTORS, INC.		3841 LAYNARD COURT NEW PORT RICHEY FL 34652	07/09/2019	07/09/2024
DOL	DOL		WHITE PLAINS CARPENTRY CORP		442 ARMONK RD	06/12/2018	06/12/2023
DOL	DOL		WILLIAM C WATKINS		1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL		WILLIAM DEAK		C/O MADISON AVE CONSTR CO 39 PENNY STREETWEST ISLIP NY 11795	11/02/2016	11/02/2021
DOL	DOL	****6195	WILSON BROTHER DRYWALL CONTRACTORS		36 ABERSOLD STREET ROCHESTER NY 14621	08/31/2015	08/31/2020
DOL	DOL	****4043	WINDSHIELD INSTALLATION NETWORK, INC.		200 LATTA BROOK PARK HORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL	****4730	XGD SYSTEMS, LLC	TDI GOLF	415 GLAGE AVE #302STUART FL 34994	10/31/2018	10/31/2023
DOL	DOL	****7345	YES SERVICE AND REPAIRS CORPORATION		145 LODGE AVE HUNTINGTON STATION NY 11476	08/09/2016	08/09/2021
DOL	DOL		YURIY IVANIN		C/O MOUNTAIN'S AIR INC 2471 OCEAN AVENUE-STE 7ABROOKLYN NY 11229	09/24/2012	09/18/2020
DOL	NYC		ZAKIR NASEEM		30 MEADOW ST BROOKLYN NY 11206	10/10/2017	10/10/2022
DOL	NYC	****8277	ZHN CONTRACTING CORP		30 MEADOW ST BROOKLYN NY 11206	10/10/2017	10/10/2022

SECTION 01 08 00 - GENERAL COMMISSIONING REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 01 Specification Sections, apply to this Section.
- B. Owner's Project Requirements and Basis-of-Design documentation are included by reference for information only.

1.2 SUMMARY

A. Section Includes:

1. General requirements for coordinating and scheduling commissioning.
2. Commissioning meetings.
3. Commissioning reports.
4. Test equipment, instrumentation, and tools (including, but not limited to, proprietary test equipment, instrumentation, and tools) required to perform tests.
5. Use of test equipment, instrumentation, and tools for commissioning.
6. Construction checklist requirements, including, but not limited to, installation checks, startup, performance tests, and performance test demonstration.
7. Commissioning tests and commissioning test demonstration.
8. Adjusting, verifying, and documenting identified systems and assemblies.
9. Work to correct commissioning issues.
10. Work to repeat tests when equipment and systems fail acceptance criteria.

B. Related Requirements:

1. Section 01 33 00 "Submittal Procedures" for submittal procedures requirements for commissioning.
2. Section 01 77 00 "Closeout Procedures" for certificate of Construction Phase Commissioning Completion submittal requirements.
3. Section 01 78 23 "Operation and Maintenance Data" for preliminary operation and maintenance data submittal.
4. Section 23 08 00 "Commissioning of HVAC" for technical commissioning requirements for HVAC systems.
5. Individual Technical Specifications and Drawings: Equipment and systems design and installation, startup, field quality-control testing, and additional requirements indicated in the Contract Documents.

1.3 DEFINITIONS

- A. Acceptance Criteria: Threshold of acceptable work quality or performance specified for a commissioning activity, including, but not limited to, construction checklists, performance tests, performance test demonstrations, commissioning tests and commissioning test demonstrations.
- B. Basis-of-Design Document: A document prepared by Owner, Architect, or Commissioning Authority that records concepts, calculations, decisions, and product selections used to comply with Owner's Project Requirements and to suit applicable regulatory requirements, standards, and guidelines.
- C. Commissioning Authority: An entity engaged by Owner, and identified in Section 011000 "Summary," to evaluate Commissioning-Process Work.
- D. Commissioning Plan: A document, prepared by Commissioning Authority, that outlines the organization, schedule, allocation of resources, and documentation requirements of commissioning.
- E. Commissioning: A quality-focused process for verifying and documenting that the facility and all of its systems and assemblies are planned, designed, installed, and tested to comply with Owner's Project Requirements. The requirements specified here are limited to the construction phase commissioning activities. The scope of commissioning is defined in Section 011200 "Multiple Contract Summary."
- F. Construction Phase Commissioning Completion: The stage of completion and acceptance of commissioning when resolution of deficient conditions and issues discovered during commissioning and retesting until acceptable results are obtained has been accomplished. Owner will establish in writing the date Construction Phase Commissioning Completion is achieved. See Section 017700 "Closeout Procedures" for certificate of Construction Phase Commissioning Completion submittal requirements.
 - 1. Commissioning is complete when the work specified in this Section and related Sections has been completed and accepted, including, but not limited to, the following:
 - a. Completion of tests and acceptance of test results.
 - b. Resolution of issues, as verified by retests performed and documented with acceptance of retest results.
 - c. Comply with requirements in Section 017900 "Demonstration and Training."
 - d. Completion and acceptance of submittals and reports.
- G. Owner's Project Requirements: A document written by Owner, Architect, or Commissioning Authority that details the functional requirements of a project and the expectations of how it will be used and operated, including Project goals, measurable performance criteria, cost considerations, benchmarks, success criteria, and supporting information.
- H. Owner's Witness: Commissioning Authority, Owner's Project Manager, or Architect-designated witness authorized to authenticate test demonstration data and to sign completed test data forms.

- I. "Systems," "Assemblies," "Subsystems," "Equipment," and "Components": Where these terms are used together or separately, they shall mean "as-built" systems, assemblies, subsystems, equipment, and components.
- J. Test: Performance tests, performance test demonstrations, commissioning tests, and commissioning test demonstrations.
- K. Sampling Procedures and Tables for Inspection by Attributes: As defined in ASQ Z1.4.

1.4 COMPENSATION

- A. Should Architect, Commissioning Authority, other Owner's witness, or Owner's staff perform additional services or incur additional expenses due to actions of Contractor listed below, compensate Owner for such additional services and expenses.
 - 1. Failure to provide timely notice of commissioning activities schedule changes.
 - 2. Failure to meet acceptance criteria for test demonstrations.
- B. Contractor shall compensate Owner for such additional services and expenses at the rate of \$175.00 per labor hour plus the current per mile rate for personnel travelling plus per diem allowances for meals and lodging according to current U.S. General Services Administration (GSA) Per Diem Rates.

1.5 COMMISSIONING TEAM

- A. Members Appointed by Contractor(s):
 - 1. Commissioning Coordinator: A person or entity employed by Contractor to manage, schedule, and coordinate commissioning.
 - 2. Project superintendent and other employees that Contractor may deem appropriate for a particular portion of the commissioning.
 - 3. Subcontractors, installers, suppliers, and specialists that Contractor may deem appropriate for a particular portion of the commissioning.
 - 4. Appointed team members shall have the authority to act on behalf of the entity they represent.
- B. Members Appointed by Owner:
 - 1. Commissioning Authority, plus consultants that Commissioning Authority may deem appropriate for a particular portion of the commissioning.
 - 2. Owner representative(s), facility operations and maintenance personnel, plus other employees, separate contractors, and consultants that Owner may deem appropriate for a particular portion of the commissioning.
 - 3. Architect / Engineer, plus employees and consultants that Architect may deem appropriate for a particular portion of the commissioning.

1.6 SUBMITTALS

- A. Comply with requirements in Section 013300 "Submittal Procedures" for submittal procedures general requirements for commissioning.
- B. Commissioning Plan Information:
 - 1. List of Contractor-appointed commissioning team members to include specific personnel and subcontractors to the performance of the various commissioning requirements.
 - 2. Schedule of commissioning activities, integrated with the construction schedule. Comply with requirements in Section 013200 "Construction Progress Documentation" for construction schedule general requirements for commissioning.
 - 3. Contractor personnel and subcontractors to participate in each test.
 - 4. List of instrumentation required for each test to include identification of parties that will provide instrumentation for each test.
- C. Commissioning Coordinator Letter of Authority:
 - 1. Within 10 days after approval of Commissioning Coordinator qualifications, submit a letter of authority for Commissioning Coordinator, signed by a principal of Contractor's firm. Letter shall authorize Commissioning Coordinator to do the following:
 - a. Make inspections required for commissioning.
 - b. Coordinate, schedule, and manage commissioning of Contractor, subcontractors, and suppliers.
 - c. Obtain documentation required for commissioning from Contractor, subcontractors, and suppliers.
 - d. Report issues, delayed resolution of issues, schedule conflicts, and lack of cooperation or expertise on the part of members of the commissioning team.
- D. Commissioning Coordinator Qualification Data: For entity coordinating Contractor's commissioning activities to demonstrate their capabilities and experience.
 - 1. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.
- E. Commissioning schedule.
- F. Two-week look-ahead schedules.

G. List test instrumentation, equipment, and monitoring devices. Include the following information:

1. Make, model, serial number, and application for each instrument, equipment, and monitoring device.
2. Brief description of intended use.
3. Calibration record showing the following:
 - a. Calibration agency, including name and contact information.
 - b. Last date of calibration.
 - c. Range of values for which calibration is valid.
 - d. Certification of accuracy.
 - e. N.I.S.T. traceability certification for calibration equipment.
 - f. Due date of the next calibration.

H. Construction Checklists:

1. Material checks.
2. Installation checks.
3. Startup procedures, where required.

I. Test Reports:

1. Pre-Startup Report: Prior to start up of equipment or a system, submit signed, completed construction checklists.
2. Test Data Reports: At the end of each day in which tests are conducted, submit test data for tests performed.
3. Commissioning Issues Reports: Daily, at the end of each day in which tests are conducted, submit commissioning issue reports for tests for which acceptable results were not achieved.
4. Weekly Progress Report: Weekly, at the end of each week in which tests are conducted, submit a progress report.
5. Data Trend Logs: Submit data trend logs at the end of the trend log period.
6. System Alarm Logs: Daily, at the start of days following a day in which tests were performed, submit print-out of log of alarms that occurred since the last log was printed.

1.7 CLOSEOUT SUBMITTALS

A. Commissioning Report:

1. At Construction Phase Commissioning Completion, include the following:
 - a. Pre-startup reports.

- b. Approved test procedures.
 - c. Test data forms, completed and signed.
 - d. Progress reports.
 - e. Commissioning issues report log.
 - f. Commissioning issues reports showing resolution of issues.
 - g. Correspondence or other documents related to resolution of issues.
 - h. Other reports required by commissioning.
 - i. List unresolved issues and reasons they remain unresolved and should be exempted from the requirements for Construction Phase Commissioning Completion.
 - j. Report shall include commissioning work of Contractor.
- B. Request for Certificate of Construction Phase Commissioning Completion.
 - C. Operation and Maintenance Data: For proprietary test equipment, instrumentation, and tools to include in operation and maintenance manuals.

1.8 QUALITY ASSURANCE

- A. Commissioning Coordinator Qualifications:
 - 1. Certification of commissioning process expertise. The following certifications are acceptable upon receipt of information demonstrating that certification is current and in good standing. Owner reserves the right to accept or reject other certifications as evidence of qualification.
 - a. Certified Commissioning Professional, by Building Commissioning Association.
 - b. Certified Building Commissioning Professional, by Association of Energy Engineers.
 - c. Existing Building Commissioning Professional, by Association of Energy Engineers.
 - d. Commissioning Process Management Professional, by American Society of Heating, Refrigerating and Air-Conditioning Engineers.
 - e. Accredited Commissioning Process Authority Professional, by University of Wisconsin.
 - f. Accredited Commissioning Process Manager, by University of Wisconsin.
 - g. Accredited Green Commissioning Process Provider, by University of Wisconsin.
 - 2. Absent one of the certifications above, provide documented experience on at least three projects of similar scope and complexity commissioning systems of similar complexity to those contained in these documents. Provide written references from the lead Commissioning Authority of each project attesting to applicant experience, responsibilities, and proven capabilities in regards to commissioning being equal to those required to gain one of the listed certifications. Each reference must be certified in accordance with the above requirements.
- B. Calibration Agency Qualifications: Certified by The American Association of Laboratory Accreditation that the calibration agency complies with minimum requirements of ISO/IEC 17025.

1.9 COMMISSIONING AUTHORITY'S RESPONSIBILITIES

- A. Commissioning Authority Responsibilities: Comply with requirements in Section 011200 "Summary of Multiple Contracts."

PART 2 - PRODUCTS

2.1 TEST EQUIPMENT, INSTRUMENTATION, AND TOOLS

- A. Test equipment and instrumentation required to perform the commissioning shall remain the property of Contractor unless otherwise indicated.
- B. Test equipment and instrumentation required to perform commissioning shall comply with the following criteria:
 - 1. Be manufactured for the purpose of testing and measuring tests for which they are being used and have an accuracy to test and measure system performance within the tolerances required to determine acceptable performance.
 - 2. Calibrated and certified.
 - a. Calibration performed and documented by a qualified calibration agency according to national standards applicable to the tools and instrumentation being calibrated. Calibration shall be current according to national standards or within test equipment and instrumentation manufacturer's recommended intervals, whichever is more frequent, but not less than within six months of initial use on Project. Calibration tags permanently affixed.
 - b. Repair and recalibrate test equipment and instrumentation if dismantled, dropped, or damaged since last calibrated.
 - 3. Maintain test equipment and instrumentation.
 - 4. Use test equipment and instrumentation only for testing or monitoring Work for which they are designed.

2.2 PROPRIETARY TEST EQUIPMENT, INSTRUMENTATION, AND TOOLS

- A. Proprietary test equipment, instrumentation, and tools are those manufactured or prescribed by tested equipment manufacturer and required for work on its equipment as a condition of equipment warranty, or as otherwise required to service, repair, adjust, calibrate, or perform work on its equipment.
 - 1. Identify proprietary test equipment, instrumentation, and tools required in the test equipment identification list submittal.
 - 2. Proprietary test equipment, instrumentation, and tools shall become the property of Owner at Substantial Completion.

2.3 REPORT FORMAT AND ORGANIZATION

A. General Format and Organization:

1. Record report on compact disk.
2. Electronic Data: Portable document format (PDF); a single file with outline-organized bookmarks for major and minor tabs and tab contents itemized for specific reports.

B. Commissioning Report:

1. Include a table of contents and an index to each test.
2. Include major tabs for each Specification Section.
3. Include minor tabs for each test.
4. Within each minor tab, include the following:
 - a. Test specification.
 - b. Pre-startup reports.
 - c. Approved test procedures.
 - d. Test data forms, completed and signed.
 - e. Commissioning issue reports, showing resolution of issues, and documentation related to resolution of issues pertaining to a single test. Group data forms, commissioning issue reports showing resolution of issues, and documentation related to resolution of issues for each test repetition together within the minor tab, in reverse chronological order (most recent on top).

PART 3 - EXECUTION

3.1 PREPARATION

- A. Review preliminary construction checklists and preliminary test procedures and data forms.

3.2 CONSTRUCTION CHECKLISTS

- A. Construction checklists cannot modify or conflict with the Contract Documents.
- B. Create construction checklists based on actual systems and equipment to be included in Project.
- C. Material Checks: Compare specified characteristics and approved submittals with materials as received. Include factory tests and other evaluations, adjustments, and tests performed prior to shipment, if applicable.

1. Services connection requirements, including configuration, size, location, and other pertinent characteristics.
 2. Included optional features.
 3. Delivery Receipt Check: Inspect and record physical condition of materials and equipment on delivery to Project site, including agreement with approved submittals, cleanliness and lack of damage.
- D. Installation Checklists: must in general document that equipment and systems are installed and started in accordance with the contract document requirements. See attachment #1 for sample checklists for a small group of representative equipment. Develop checklists in similar format with line items required designed to insure proper installation by installers:
1. Location according to Drawings and approved Shop Drawings.
 2. Configuration.
 3. Compliance with manufacturers' written installation instructions.
 4. Attachment to structure.
 5. Access clearance to allow for maintenance, service, repair, removal, and replacement without the need to disassemble or remove other equipment or building elements. Access coordinated with other building elements and equipment, including, but not limited to, ceiling and wall access panels, in a manner consistent with OSHA fall-protection regulations and safe work practices.
 6. Utility connections are of the correct characteristics, as applicable.
 7. Correct labeling and identification.
- E. Startup Checks: Verify readiness of equipment to be energized. Include manufacturer's standard startup procedures and forms.
- F. Startup: Perform and document initial operation of equipment to prove that it is installed properly and operates as intended according to manufacturer's standard startup procedures, minimum.
- G. Performance Tests:
1. Static Tests: As specified elsewhere, including, but not limited to, duct and pipe leakage tests, insulation-resistance tests, and water-penetration tests.
 2. Component Performance Tests: Tests evaluate the performance of an input or output of components under a full range of operating conditions.
 3. Equipment and Assembly Performance Tests: Test and evaluate performance of equipment and assemblies under a full range of operating conditions and loads.
 4. System Performance Tests: Test and evaluate performance of systems under a full range of operating conditions and loads.
 5. Intersystem Performance Tests: Test and evaluate the interface of different systems under a full range of operating conditions and loads.

- H. Deferred Construction Checklists: Obtain Owner approval of proposed deferral of construction checklists, including proposed schedule of completion of each deferred construction checklist, before submitting request for Certificate of Construction Phase Commissioning Completion. When approved, deferred construction checklists may be completed after date of Construction Phase Commissioning Completion. Include the following in request for Certificate of Construction Phase Commissioning Completion:
 - 1. Identify deferred construction checklists by number and title.
 - 2. Provide a target schedule for completion of deferred construction checklists.
 - 3. Written approval of proposed deferred construction checklists, including approved schedule of completion of each deferred construction checklist.

- I. Delayed Construction Checklists: Obtain Owner approval of proposed delayed construction checklists, including proposed schedule of completion of each delayed construction checklist, before submitting request for Certificate of Construction Phase Commissioning Completion. When approved, delayed construction checklists may be completed after date of Construction Phase Commissioning Completion. Include the following in request for Certificate of Construction Phase Commissioning Completion:
 - 1. Identify delayed construction checklist by construction checklist number and title.
 - 2. Provide a target schedule for completion of delayed construction checklists.
 - 3. Written approval of proposed delayed construction checklists, including approved schedule of completion of each delayed construction checklist.

3.3 GENERAL EXECUTION REQUIREMENTS

- A. Schedule and coordinate commissioning with the construction schedule.
- B. Perform activities identified in construction checklists, including tests, and document results of actions as construction proceeds.
- C. Perform test demonstrations for Owner's witness. Unless otherwise indicated in specific testing requirements, demonstrate tests for 100 percent of work to which the test applies.
- D. Report test data and commissioning issue resolutions.
- E. Schedule personnel to participate in and perform Commissioning-Process Work.
- F. Installing contractors' commissioning responsibilities include, but are not limited to, the following:
 - 1. Operating the equipment and systems they install during tests.
 - 2. In addition, installing contractors may be required to assist in tests of equipment and systems with which their work interfaces.

3.4 COMMISSIONING COORDINATOR RESPONSIBILITIES

- A. Management and Coordination: Manage, schedule, and coordinate commissioning, including, but not limited to, the following:
1. Coordinate with subcontractors on their commissioning responsibilities and activities.
 2. Obtain, assemble, and submit commissioning documentation.
 3. Attend periodic on-site commissioning meetings. Comply with requirements in Section 01 31 00 "Project Management and Coordination."
 4. Develop and maintain the commissioning schedule. Integrate commissioning schedule into the construction schedule. Update schedule at specified intervals.
 5. Review and comment on preliminary test procedures and data forms.
 6. Report inconsistencies and issues in system operations.
 7. Verify that tests have been completed and results comply with acceptance criteria, and that equipment and systems are ready before scheduling test demonstrations.
 8. Direct and coordinate test demonstrations.
 9. Coordinate witnessing of test demonstrations by Owner's witness.
 10. Coordinate and manage training. Be present during training sessions to direct video recording, present training and direct the training presentations of others. Comply with requirements in Section 017900 "Demonstration and Training."
 11. Prepare and submit specified commissioning reports.
 12. Track commissioning issues until resolution and retesting is successfully completed.
 13. Retain original records of Commissioning-Process Work, organized as required for the commissioning report. Provide Owner's representative access to these records on request.
 14. Assemble and submit commissioning report.

3.5 COMMISSIONING TESTING

- A. Quality Control: Construction checklists, including tests, are quality-control tools designed to improve the functional quality of Project. Test demonstrations evaluate the effectiveness of Contractor's quality-control process.
- B. Owner's witness will be present to witness commissioning work requiring the signature of an owner's witness, including, but not limited to, test demonstrations. Owner's project manager will coordinate attendance by Owner's witness with Contractor's published commissioning schedule. Owner's witness will provide no labor or materials in the commissioning work. The only function of Owner's witness will be to observe and comment on the progress, completion, and results of commissioning.

- C. Construction Checklists:
1. Complete construction checklists as Work is completed.
 2. Distribute construction checklists to installers before they start work.
 3. Installers:
 - a. Verify installation using approved construction checklists as Work proceeds.
 - b. Complete and sign construction checklists daily for work performed during the preceding day.
 4. Provide Commissioning Authority access to construction checklists.
- D. Installation Compliance Issues: Record as an installation compliance issue Work found to be incomplete, inaccessible, at variance with the Contract Documents, nonfunctional, or that does not comply with construction checklists. Record installation compliance issues on the construction checklist at the time they are identified. Record corrective action and how future Work should be modified before signing off the construction checklist.
- E. Pre-Startup Audit: Prior to executing startup procedures, review completed installation checks to determine readiness for startup and operation. Report conditions, which, if left uncorrected, adversely impact the ability of systems or equipment to operate satisfactorily or to comply with acceptance criteria. Prepare pre-startup report for each system.
- F. Test Procedures and Test Data Forms:
1. Test procedures shall define the step-by-step procedures to be used to execute tests and test demonstrations.
 2. Test procedures shall be specific to the make, model, and application of the equipment and systems being tested.
 3. Completed test data forms are the official records of the results of tests.
 4. Commissioning Authority will provide to Contractor preliminary test procedures and test data forms for performance tests and commissioning tests after approval of Product Data, Shop Drawings, and preliminary operation and maintenance manual. Test procedures will in general be designed to demonstrate that operating characteristics conform to any or all required and / or approved performance characteristics.
 5. Review preliminary test procedures and test data forms and provide comments within 14 days of receipt from Commissioning Authority. Review shall address the following:
 - a. Equipment protection and warranty issues, including, but not limited to, manufacturers' installation and startup recommendations, and operation and maintenance instructions.

- b. Applicability of the procedure to the specific software, equipment, and systems approved for installation.
 6. After Contractor has reviewed and commented on the preliminary test procedures and test data forms, Commissioning Authority will revise and reissue the approved revised test procedures and test data forms marked "Approved for Testing."
 7. Use only approved test procedures and test data forms marked "Approved for Testing" to perform and document tests and test demonstrations.
- G. Performance of Tests:
1. The sampling rate for tests is 100 percent. The sampling rate for test demonstrations is 100 percent unless otherwise indicated.
 2. Perform and complete each step of the approved test procedures in the order listed.
 3. Record data observed during performance of tests on approved data forms at the time of test performance and when the results are observed.
 4. Record test results that are not within the range of acceptable results on commissioning issue report forms in addition to recording the results on approved test procedures and data forms according to the "Commissioning Compliance Issues" Paragraph in this Article.
 5. On completion of a test, sign the completed test procedure and data form. Tests for which test procedures and data forms are incomplete, not signed, or which indicate performance that does not comply with acceptance criteria will be rejected. Tests for which test procedures and data forms are rejected shall be repeated and results resubmitted.
- H. Performance of Test Demonstration:
1. Perform test demonstrations on a sample of tests after test data submittals are approved. The sampling rate for test demonstrations shall be 100 percent of components which are not typical of at least 10, and shall be 25% of components which are typical of at least 10, unless otherwise indicated in the individual test specification.
 2. Notify Owner's witness at least seven days in advance of each test demonstration.
 3. Perform and complete each step of the approved test procedures in the order listed.
 4. Record data observed during performance of test demonstrations on approved data forms at the time of demonstration and when the results are observed.
 5. Provide full access to Owner's witness to directly observe the performance of all aspects of system response during the test demonstration. On completion of a test demonstration, sign the completed data form and obtain signature of Owner's witness at the time of the test to authenticate the reported results.

6. Test demonstration data forms not signed by Contractor and Owner's witness at the time of the completion of the procedure will be rejected. Test demonstrations for which data forms are rejected shall be repeated and results shall be resubmitted.
 - a. Exception for Failure of Owner's Witness to Attend: Failure of Owner's witness to be present for agreed-on schedule of test demonstration shall not delay Contractor. If Owner's witness fails to attend a scheduled test, Contractor shall proceed with the scheduled test. On completion, Contractor shall sign the data form for Contractor and for Owner's witness, and shall note the absence of Owner's witness at the scheduled time and place.
7. False load test requirements are specified in related sections.
 - a. Where false load testing is specified, provide temporary equipment, power, controls, wiring, piping, valves, and other necessary equipment and connections required to apply the specified load to the system. False load system shall be capable of steady-state operation and modulation at the level of load specified. Equipment and systems permanently installed in this work shall not be used to create the false load without Architect's written approval.

I. Deferred Tests:

1. Deferred Tests List: Identify, in the request for Certificate of Construction Phase Commissioning Completion, proposed deferred tests or other tests approved for deferral until specified seasonal or other conditions are available. When approved, deferred tests may be completed after the date of Construction Phase Commissioning Completion. Identify proposed deferred tests in the request for Certificate of Construction Phase Commissioning Completion as follows:
 - a. Identify deferred tests by number and title.
 - b. Provide a target schedule for completion of deferred tests.
2. Schedule and coordinate deferred tests. Schedule deferred tests when specified conditions are available. Notify Architect and Commissioning Authority at least seven calendar days (minimum) in advance of tests.
3. Where deferred tests are specified, coordinate participation of necessary personnel and of Architect, Commissioning Authority, and Owner's witness. Schedule deferred tests to minimize occupant and facility impact. Obtain Architect's approval of the proposed schedule.

J. Delayed Tests:

1. Delayed Tests List: Identify, in the request for Certificate of Construction Phase Commissioning Completion, proposed delayed tests. Obtain Owner approval of proposed delayed tests, including proposed schedule of completion of each delayed test, before submitting request for Certificate of Construction Phase Commissioning Completion. Include the following in the request for Certificate of Construction Phase Commissioning Completion:

- a. Identify delayed tests by test number and title.
 - b. Written approval of proposed delayed tests, including approved schedule of completion of delayed tests.
2. Schedule and coordinate delayed tests. Schedule delayed tests when conditions that caused the delay have been rectified. Notify Architect and Commissioning Authority at least seven calendar days (minimum) in advance of tests.
 3. Where delayed tests are approved, coordinate participation of necessary personnel and of Architect, Commissioning Authority, and Owner's witness. Schedule delayed tests to minimize occupant and facility impact. Obtain Architect's approval of the proposed schedule.

K. Commissioning Compliance Issues:

1. Test results that are not within the range of acceptable results are commissioning compliance issues.
2. Track and report commissioning compliance issues until resolution and retesting are successfully completed.
3. If a test demonstration fails, determine the cause of failure. Direct timely resolution of issue and then repeat the demonstration. If a test demonstration must be repeated due to failure caused by Contractor work or materials, reimburse Owner for billed costs for the participation in the repeated demonstration.
4. Test Results: If a test demonstration fails to meet the acceptance criteria, perform the following:
 - a. Complete a commissioning compliance issue report form promptly on discovery of test results that do not comply with acceptance criteria.
 - b. Submit commissioning compliance issue report form within 24 hours of the test.
 - c. Determine the cause of the failure.
 - d. Establish responsibility for corrective action if the failure is due to conditions found to be Contractor's responsibility.
5. Commissioning Compliance Issue Report: Provide a commissioning compliance issue report for each issue. Do not report multiple issues on the same commissioning compliance issue report.
 - a. Exception: If an entire class of devices is determined to exhibit the identical issue, they may be reported on a single commissioning compliance issue report. (For example, if all return-air damper actuators that are specified to fail to the open position are found to fail to the closed position, they may be reported on a single commissioning issue report. If a single commissioning issue report is used for multiple commissioning compliance issues, each device shall be identified in the report, and the total number of devices at issue shall be identified.
 - b. Complete and submit Part 1 of the commissioning compliance issue report immediately when the condition is observed.

- c. Record the commissioning compliance issue report number and describe the deficient condition on the data form.
 - d. Resolve commissioning compliance issues promptly. Complete and submit Part 2 of the commissioning compliance issue report when issues are resolved.
6. Diagnose and correct failed test demonstrations as follows:
- a. Perform diagnostic tests and activities required to determine the fundamental cause of issues observed.
 - b. Record each step of the diagnostic procedure prior to performing the procedure. Update written procedure as changes become necessary.
 - c. Record the results of each step of the diagnostic procedure.
 - d. Record the conclusion of the diagnostic procedure on the fundamental cause of the issue.
 - e. Determine and record corrective measures.
 - f. Include diagnosis of fundamental cause of issues in commissioning compliance issue report.
7. Retest:
- a. Schedule and repeat the complete test procedure for each test demonstration for which acceptable results are not achieved. Obtain signature of Owner's witness on retest data forms. Repeat test demonstration until acceptable results are achieved. Except for issues that are determined to result from design errors or omissions, or other conditions beyond Contractor's responsibility, compensate Owner for direct costs incurred as the result of repeated test demonstrations to achieve acceptable results.
 - b. For each repeated test demonstration, submit a new test data form, marked "Retest."
8. Do not correct commissioning compliance issues during test demonstrations.
- a. Exceptions will be allowed if the cause of the issue is obvious and resolution can be completed in less than five minutes. If corrections are made under this exception, note the deficient conditions on the test data form and issue a commissioning compliance issue report. A new test data form, marked "Retest," shall be initiated after the resolution has been completed.

3.6 COMMISSIONING MEETINGS

- A. Commissioning Authority will schedule and conduct commissioning meetings. Comply with requirements in Section 013100 "Project Management and Coordination."

3.7 SEQUENCING

- A. Sequencing of Commissioning Verification Activities: For a particular material, item of equipment, assembly, or system, perform the following in the order listed unless otherwise indicated:
1. Construction Checklists:
 - a. Material checks.
 - b. Installation checks.
 - c. Start up, as appropriate. Some startup may depend on component performance. Such startup may follow component performance tests on which the startup depends.
 - d. Performance Tests:
 - 1) Static tests, as appropriate.
 - 2) Component performance tests. Some component performance tests may depend on completion of startup. Such component performance tests may follow startup.
 - 3) Equipment and assembly performance tests.
 - 4) System performance tests.
 - 5) Intersystem performance tests.
 2. Commissioning tests.
- B. Before performing commissioning tests, verify that materials, equipment, assemblies, and systems are delivered, installed, started, and adjusted to perform according to construction checklists.
- C. Verify readiness of materials, equipment, assemblies, and systems by performing tests prior to performing test demonstrations. Notify Architect if acceptable results cannot be achieved due to conditions beyond Contractor's control or responsibility.
- D. Commence tests as soon as installation checks for materials, equipment, assemblies, or systems are satisfactorily completed. Tests of a particular system may proceed prior to completion of other systems, provided the incomplete work does not interfere with successful execution of test.

3.8 SCHEDULING

- A. Commence commissioning as early in the construction period as possible.
- B. Commissioning Schedule: Integrate commissioning into Contractor's construction schedule. See Section 01 32 00 "Construction Progress Documentation."

1. Include detailed commissioning activities in monthly updated Contractor's construction schedule and short interval schedule submittals.
2. Schedule the start date and duration for the following commissioning activities:
 - a. Submittals.
 - b. Preliminary operation and maintenance manual submittals.
 - c. Installation checks.
 - d. Startup, where required.
 - e. Performance tests.
 - f. Performance test demonstrations.
 - g. Commissioning tests.
 - h. Commissioning test demonstrations.
3. Schedule shall include a line item for each installation check, startup, and test activity specific to the equipment or systems involved.
4. Determine milestones and prerequisites for commissioning. Show commissioning milestones, prerequisites, and dependencies in monthly updated critical-path-method construction schedule and short interval schedule submittals.

C. Two-Week Look-Ahead Commissioning Schedule:

1. Two weeks prior to the beginning of tests, submit a detailed two-week look-ahead schedule. Thereafter, submit updated two-week look-ahead schedules weekly for the duration of commissioning.
2. Two-week look-ahead schedules shall identify the date, time, beginning location, Contractor personnel required, and anticipated duration for each startup or test activity.
3. Use two-week look-ahead schedules to notify and coordinate participation of Owner's witnesses.

D. Owner's Witness Coordination:

1. Coordinate Owner's witness participation via Architect.
2. Notify Architect of commissioning schedule changes at least two work days in advance for activities requiring the participation of Owner's witness.

3.9 COMMISSIONING REPORTS

A. Test Reports:

1. Pre-startup reports include observations of the conditions of installation, organized into the following sections:
 - a. Equipment Model Verification: Compare contract requirements, approved submittals, and provided equipment. Note inconsistencies.

- b. Preinstallation Physical Condition Checks: Observe physical condition of equipment prior to installation. Note conditions including, but not limited to, physical damage, corrosion, water damage, or other contamination or dirt.
 - c. Preinstallation Component Verification Checks: Verify components supplied with the equipment, preinstalled or field installed, are correctly installed and functional. Verify external components required for proper operation of equipment correctly installed and functional. Note missing, improperly configured, improperly installed, or nonfunctional components.
 - d. Summary of Installation Compliance Issues and Corrective Actions: Identify installation compliance issues and the corrective actions for each. Verify that issues noted have been corrected.
 - e. Evaluation of System Readiness for Startup: For each item of equipment for each system for which startup is anticipated, document in summary form acceptable to Owner completion of equipment model verification, preinstallation physical condition checks, preinstallation component verification checks, and completion of corrective actions for installation compliance issues.
2. Test data reports include the following:
- a. "As-tested" system configuration. Complete record of conditions under which the test was performed, including, but not limited to, the status of equipment, systems, and assemblies; temporary adjustments and settings; and ambient conditions.
 - b. Data and observations, including, but not limited to, data trend logs, recorded during the tests.
 - c. Signatures of individuals performing and witnessing tests.
 - d. Data trend logs accumulated overnight from the previous day of testing.
3. Commissioning Compliance Issues Reports: Report as commissioning compliance issues results of tests and test demonstrations that do not comply with acceptance criteria. Report only one issue per commissioning compliance issue report. Use sequentially numbered facsimiles of commissioning compliance issue report form included in this Section, or other form approved by Owner. Distribute commissioning compliance issue reports to parties responsible for taking corrective action. Identify the following:
- a. Commissioning compliance issue report number. Assign unique, sequential numbers to individual commissioning compliance issue reports when they are created, to be used for tracking.
 - b. Action distribution list.
 - c. Report date.
 - d. Test number and description.
 - e. Equipment identification and location.

- f. Briefly describe observations about the performance associated with failure to achieve acceptable results. Identify the cause of failure if apparent.
 - g. Diagnostic procedure or plan to determine the cause (include in initial submittal).
 - h. Diagnosis of fundamental cause of issues as specified below (include in resubmittal).
 - i. Fundamental cause of unacceptable performance as determined by diagnostic tests and activities.
 - j. When issues have been resolved, update and resubmit the commissioning issue report forms by completing Part 2. Identify resolution taken and the dates and initials of the persons making the entries.
 - k. Schedule for retesting.
4. Weekly progress reports include information for tests conducted since the preceding report and the following:
- a. Completed data forms.
 - b. Equipment or system tested, including test number, system or equipment tag number and location, and notation about the apparent acceptability of results.
 - c. Activities scheduled but not conducted per schedule.
 - d. Commissioning compliance issue report log.
 - e. Schedule changes for remaining Commissioning-Process Work, if any.
5. Data trend logs shall be initiated and running prior to the time scheduled for the test demonstration.
- a. Trend log data format shall be multiple data series graphs. Where multiple data series are trend logged concurrently, present the data on a common horizontal time axis. Individual data series may be presented on a segmented vertical axis to avoid interference of one data series with another, and to accommodate different axis scale values. Graphs shall be sufficiently clear to interpret data within the accuracy required by the acceptance criteria.
 - b. Attach to the data form printed trend log data collected during the test or test demonstration.
 - c. Record, print out, and attach to the data form operator activity during the time the trend log is running. During the time the trend log is running, operator intervention not directed by the test procedure invalidates the test results.
6. System Alarm Logs: Record and print out a log of alarms that occurred since the last log was printed. Evaluate alarms to determine if the previous day's work resulted in any conditions that are not considered "normal operation."

- a. Conditions that are not considered "normal operation" shall be reported on a commissioning issue report attached to the alarm log. Resolve as necessary. The intent of this requirement is to discover control system points or sequences left in manual or disabled conditions, equipment left disconnected, set points left with abnormal values, or similar conditions that may have resulted from failure to fully restore systems to normal, automatic control after test completion.

3.10 CERTIFICATE OF CONSTRUCTION PHASE COMMISSIONING COMPLETION

- A. When Contractor considers that construction phase commissioning, or a portion thereof which Owner agrees to accept separately, is complete, Contractor shall prepare and submit to Owner and Commissioning Authority through Architect a comprehensive list of items to be completed or corrected. Failure to include an item on such list does not alter Contractor's responsibility to complete commissioning.
- B. On receipt of Contractor's list, Commissioning Authority will make an inspection to determine whether the construction phase commissioning or designated portion thereof is complete. If Commissioning Authority's inspection discloses items, whether or not included on Contractor's list, which are not sufficiently complete as defined in "Construction Phase Commissioning Completion" Paragraph in the "Definitions" Article, Contractor shall, before issuance of the Certificate of Construction Phase Completion, complete or correct such items on notification by Commissioning Authority. In such case, Contractor shall then submit a request for another inspection by Commissioning Authority to determine construction phase commissioning completion.
- C. Contractor shall promptly correct deficient conditions and issues discovered during commissioning. Costs of correcting such deficient conditions and issues, including additional testing and inspections, the cost of uncovering and replacement, and compensation for Architect's and Commissioning Authority's services and expenses made necessary thereby, shall be at Contractor's expense.
- D. When construction phase commissioning or designated portion is complete, Commissioning Authority will prepare a Certificate of Construction Phase Commissioning that shall establish the date of completion of construction phase commissioning. Certificate of Construction Phase Commissioning Completion shall be submitted prior to requesting inspection for determining date of Substantial Completion.

END OF SECTION 01 80 00

SECTION 01 12 00 - SUMMARY OF PROJECT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including the General and Supplemental Conditions and Division 1 Specification Section, apply to this Section.

1.2 SUMMARY

- A. Project Identification: Project consists of but is not limited to the renovation of the existing High School (Science Classrooms, Library Renovations, Music Room Renovations, Security Entrance Renovations, STEM Classrooms, HVAC Upgrades) and Site work at the High School / Middle School and work at the Falls Elementary School.
 - 1. Project Location:
 - a. Project site located in Mahopac, New York, construction to be located at the existing Mahopac High School, Mahopac Middle School and Falls Elementary School
 - 2. Owner: Mahopac Central School District
179 East Lake Blvd.
Mahopac, NY 10541
- B. Architect Identification: The Contract Documents, dated August 21, 2020, were prepared for the Project by Tetra Tech Architects, 10 Brown Road, Ithaca NY 14850, unless otherwise indicated.
- C. The work includes alterations for the Mahopac High School, Middle School and Falls Elementary School.
- D. All materials, equipment, and methods of construction shall comply with all of the requirements of the latest edition of The New York State Building Code, and the regulations of NY State Education Department.

1.3 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General Conditions and Division 0 & 1 Specification Sections, apply to this Section.

1.4 THE CONTRACT

- A. The Project will be constructed under a multiple prime contracting arrangement with the Owner awarding and holding the separate Contracts. Each contractor shall furnish all labor, material, tools, equipment, supervision, layout, delivery, trucking, shop drawings, submittals, etc. necessary to complete the work described in the Division of Work of their respective Contracts, and based upon a complete set of Contract Documents.
- B. Scope of work for each Prime Contractor is defined in Section 01 12 00 and takes precedence over all drawing notes that may refer to scoping.
- C. Each Contractor has been given the opportunity prior to bid to inspect the entire Project site for interferences to their Contract work, and agrees to accept the site as it exists on the date of the bid opening.

- D. It is the Owner's intention to continue to occupy the existing buildings and site for normal School operations during the Construction process. The Contractors all agree to:
1. Cooperate with the Owner's personnel in maintaining and facilitating access to the School buildings and its facilities by the School staff, Students, Owner's agents, service consultants and the public, throughout the construction process.
 2. Keep driveways and entrances serving the occupied School buildings clear and available to the Owner, the Owner's employees, the public, and to emergency vehicles at all times. Do not obstruct access to, or use these areas for parking, staging of equipment or materials. All access through these existing areas must be coordinated in advance and in accordance with the Owner's usage and occupancy schedule.
 3. Schedule construction operations so as to minimize any conflicts or interruptions to the daily school functions. Coordinate any necessary interruptions with the designated project representative.
 4. All existing Owner occupied areas of buildings (not turned over to the Project Contractors) need to remain operational at all times. The contractors are responsible to maintain all systems, such as but not limited to: fire alarm, clocks, electric, public address system, gas service, heat etc.
- E. Each Prime Contractor shall:
1. **Strive to maintain a safe environment for its employees, clients and vendors. The prime contractors efforts for an effective response to the Novel Coronavirus (COVID-19) Pandemic will be guided by and in accordance with all applicable federal, state and local laws and guidelines issued by public health authorities such as the Centers for Disease Control and other governmental agencies.**
 2. Provide field-engineering services, in addition to those provided by the General Work Prime Contract, to install site utilities included in the applicable Prime Contract.
 3. Coordinate construction schedule information in order to formulate one master schedule for the entire Project.
 4. Provide all required PPE and reflective vests to be worn by all on-site personnel at all times.
 5. Provide erosion and Sediment Control, and dewatering as it relates to any excavation associated with its own Prime Contract.
 6. Provide sanitary hand solution and potable drinking water for its own employees.
 7. Provide access to all concealed systems as required for system maintenance and repair for items installed in their Prime Contract. This specifically talks to access panels needed for future maintenance by the district.
 8. Provide and maintain material lifting equipment required for the completion of their Contract requirements, and complying with NYS Labor Laws, OSHA Regulations, and other Federal, State, and local laws.
 9. Provide and maintain additional temporary stairs, ladders, ramps, scaffolding, and platforms required specifically for completion of work of their own Contract, and as further detailed in this section. All work needs to comply with the NYS Labor Laws, OSHA regulation, and other Federal, State, and local laws.
 10. Provide Fire Prevention materials and equipment for fire protection related to the work of their own Prime Contract. Provide fire extinguishers, fire blankets, and fire watch during all cutting and welding operations.
 11. Provide any supplemental lighting required to install the work of its own Contract, beyond the minimum OSHA levels provided under the Electrical Work Prime Contract.
 12. Provide any supplemental heat required to install the work of its own Contract, beyond the levels owed by the General Work Contractor.

13. Provide traffic control for deliveries, and equipment needed to perform the work of their own Prime Contract.
14. Provide protection of its own finished Work, after installation, until accepted by the Owner.
15. Provide fire caulking for any penetration related to the work for its own Prime Contract.
16. Provide final cleaning per Spec Section 01 77 00.
17. Provide any office and storage trailers required to complete the work of their own Prime Contract.
18. Provide for a thorough final cleaning of the site, building, and equipment provided under their Prime Contract immediately before the final inspection. Each Prime Contractor is responsible for cleaning and dust and debris generated from the work of their own Contract.
 - a. Maintain areas in a cleaned condition until the Owner occupies the space.
 - b. Personnel: Experienced workman or professional cleaners approved by the Construction Manager.

1.5 SUMMARY OF WORK

- A. The work will be constructed under multiple prime contracts. One set of contract documents is issued covering the multiple contracts. Each Prime Contract is defined as:
 1. CONTRACT 1 GC - GENERAL CONSTRUCTION WORK
 2. CONTRACT 2 PC - PLUMBING WORK
 3. CONTRACT 3 MC - MECHANICAL WORK
 4. CONTRACT 4 EC - ELECTRICAL WORK
 5. CONTRACT 5 AB - HAZARDOUS MATERIALS WORK
 6. CONTRACT 6 CE – CASEWORK AND LAB EQUIPMENT WORK
 7. CONTRACT 7 SW – SITE CONSTRUCTION WORK
 8. STATE CONTRACT – BUILDING CONTROLS (*for coordination purposes*)

1.6 WORK UNDER SEPARATE CONTRACTS

- A. The project will be constructed under a multiple-prime contracting arrangement
- B. One set of documents is issued covering all multiple prime contracts. Each prime contractor is to review ALL drawings and specifications for complete understanding and knowledge of the work.
- C. The following Contract Documents are specifically included and defined as integral to each Prime Contract.
 1. Bidding Requirements
 2. Performance and Payment Bonds
 3. Conditions of the Contract, including
 - a. General Conditions & Supplementary Conditions
 - b. Insurance Requirements
 - c. NYS Prevailing Wage Rates.
- D. Extent of Contract: Unless the Contract Documents contain a more specific description of the Work, names and terminology on Drawings and in Specification Sections determine which contract includes a specific element of Project.

1. Unless otherwise indicated, the Work described in this Section for each contract shall be complete systems and assemblies, including products, components, accessories, and installation required by the Contract Documents.
 2. The General Construction Work Contract shall provide shoring and bracing and excavation for all work within the existing building, and all excavation and backfill for other contractors related to building renovation work. The General Construction Work contractor is to refer to Mechanical, Electrical and Plumbing drawings for locations of utilities requiring shoring, bracing, excavation and backfilling. The Site Work Construction Contract shall provide shoring and bracing and excavation for all work outside of the existing building, and all excavation and backfill for other contractors related to site renovation work and athletic field work.
 3. Concrete for the Work of each contract shall be provided by each contract for its own Work, unless specifically assigned to another Contract.
 4. Provide all cutting & patching associated with the Work of its Prime Contract. All patching is to be performed by mechanics qualified and experienced with the materials and finishes being patched, and hired by the responsible Prime Contractor.
 5. Firestopping for the Work of each contract shall be provided by each contract for its own Work. Firestopping shall comply with Division 7 Section "Through Penetration Firestop Systems".
 6. Access doors not shown on Architectural drawings and required for access to junction boxes, valves and similar equipment for the Work of each contract shall be furnished by each contract for its own Work to the General Construction Contractor for installation. *(Unless noted otherwise, installation by the General Construction Contractor is N.I.C., and will be accomplished by use of a portion of the contingency allowance).*
 7. Lead Based Paint precautions for the Work of each contract shall be provided by each contract for its own Work. Each Prime Contractor shall provide procedures for OSHA Lead precautions.
 8. Each Prime Contractor shall designate an experienced full time superintendent to supervise the work of the Prime Contractor, who shall always be present on the job site when work is being performed; this person shall be familiar with Project and authorized to conclude matters relating to progress. This person shall also represent their company at weekly contractor meetings.
 9. Termination and removal of its temporary facilities shall be provided by each contract for its own Work.
- E. Temporary Facilities and Controls: In addition to specific responsibilities for temporary facilities and controls indicated in this Section and in Division 1 Section 01 50 00 "Temporary Facilities and Controls," each Contract is responsible for the following:
1. Installation, operation, maintenance, and removal of each temporary facility usually considered as its own normal construction activity, and costs and use charges associated with each facility
 2. Generators, plug-in electric power cords and extension cords, supplementary plug-in task lighting, and special lighting necessary exclusively for its own activities.
 3. Its own field office complete with necessary furniture, utilities, and telephone service.
 4. Its own storage and fabrication sheds.
 5. Temporary heat for construction at isolated work areas.
 6. Temporary enclosures for its own construction activities.
 7. Hoisting requirements for its own construction activities.

8. Each Prime Contractor is to stockpile his debris on a daily basis, and place it in the dumpster. **Dumpsters will be provided by each Contractor for their own work.** Waste disposal facilities, including collection and legal disposal of its own hazardous, dangerous, unsanitary, or other harmful waste materials will be by the Hazardous Material Abatement Contractor.
9. Secure lockup of its own tools, materials, and equipment.
10. Construction aids and miscellaneous services and facilities necessary exclusively for its own construction activities.
11. Safety procedures as dictated by the district, OSHA, and the NYS Department of Labor.
12. Labor for daily clean-up.

1.7 CONTRACT 1 - GENERAL CONSTRUCTION WORK

- A. The Work of the General Construction Work Contract includes but is not limited to, the following descriptions:
 1. Includes Architectural, Structural, Masonry, Roofing, Finishes, Blocking for Casework, plus other construction operations traditionally recognized as General Work Construction. This includes, but is not limited to, *all work shown* on the following:
 - a. **Drawings:**
 - 1) All "G" series Drawings (General)
 - 2) All "AG, BG series Drawings (Code Compliance)
 - 3) All "AA, BA, HA" series Drawings (Architectural)
 - 4) All "AS, GS, HS" series Drawings (Structural)
 - 5) All (Mechanical, Electrical, Plumbing) drawings as required for coordination of penetration work
 2. Coordination:
 - a. Coordination with the work of all of the other contractors.
 3. Demolition:
 - a. Contractor is asked to make every effort to visit the site to review existing conditions prior to bidding the project. A sign in sheet will be kept to verify compliance with this request.
 - b. Removal of masonry walls, doors, and interior partitions as required for new work. General work contractor is responsible for shoring, demolition and protection of areas associated with new work.
 - c. Construction of necessary barriers separating construction areas from all other occupied areas.
 - d. Removal and replacement of finishes noted on plans.
 - e. Removal and disposal of miscellaneous equipment including all existing wall mounted specialty items and/or equipment not shown if impacting work to be restored / demolished.
 - f. Provide protection to all casework, doors, and woodwork to remain intact. Take extra care with trim to be removed, salvaged, tagged for identification, and stored until final installation.
 - g. Removal of finishes noted on plans including but not limited to flooring, ceilings, and misc. items attached to existing walls to be removed.
 - h. Coordinate shutdown of water and / or electric with trades associated with the area of demolition. See demolition plans for additional demolition notes.
 - i. Removal and disposal of attached furniture, appliances, double tier lockers, and architectural woodwork.
 - j. Removal of existing store front systems, patch to match.

- k. All roof penetrations at the existing building as required for work of the mechanical contractor. Hire qualified installers so as not to void existing warrantee that is in place.
 - l. All cutting and patching necessary for work of this contract, including layout, sleeves, coring, debris removal, sawcuts of existing slabs, providing lintels, drywall work, plaster work, grouting, painting, ceiling removal and replacement, etc.
4. Temporary Facilities
- a. Provide temporary access and continuous exits in and out of all construction areas.
 - b. Provide dust protection and temporary fencing.
 - c. Provide continuous exits.
 - d. Provide all site signage, see temporary facilities section.
 - e. Provide all temporary partitions, egress doors, and temporary fencing as shown on staging plan. Restore all areas to original condition upon completion.
 - f. Provide Temporary Facilities indicated as Work of this Contract in Division 1 Section 01 50 00, "Temporary Facilities and Controls"
5. New Construction:
- a. Provide new premanufactured metal building.
 - b. Provide services of a licensed surveyor for building layout, elevation and as-built foundation location.
 - c. Work separation line between building and site is defined at 5' outside the building perimeter wall. Site contractor (Contract #7) shall prepare building to defined sub-grades elevation compacted in place (minus 1'-0" from finish floor). The General Work Contractor (Contract #1) is responsible for building excavation, backfill and slab sub-base (from minus 1'-0" from finish floor to required sub-base elevation). The Site Work Contractor (Contract #7) shall be responsible for the construction of all exterior concrete pads. The General Work Contractor (Contract #1) is responsible for all steps, concrete ramps, and railing attached to the building. The Site Contractor (Contract #7) shall be responsible to prepare the area to sub-grade. The Site Contractor shall be responsible to then pick up the site work construction from the base of and ramp or the base of the bottom riser serving the steps. The Site Work Contractor (Contract #7) shall be responsible for all concrete sidewalks. Any exterior doorway not furnished with sidewalks shall be provided with a concrete pad 5'-0" x 5'-0" for a single door and 5'-0" x 10'-0" for a pair of doors, installed by the General Work Contractor (Contract #1).
 - d. Provide shoring and bracing and excavation for all work related to new building, and all excavation for other contractors related to new building. Limit of excavation shall be within five (5) feet of building foundation.
 - e. The General Construction Work Contract shall perform all necessary trenching and excavation, backfilling, and compaction and field required concrete for all trades within the building AND within the footprint of the New Pump House.
 - f. Provide access doors that are shown on Architectural drawings.
 - g. Provide labor, material and equipment to install all exterior louvers that are furnished by the Heating Work Contractor as part of their system. Install per details on "Architectural" and "HVAC" drawings, and seal the perimeter with approved sealant per spec sections under 07 92 00.
 - h. Provide repairs to masonry and concrete structures and openings. Patch to match exterior and interior finishes.

- i. Provide self leveling underlayment where required to allow for acceptable flooring installation. Pay particular attention to floor areas to be abated and renovation of floors in science rooms and general classroom areas. Also pay particular attention to areas where the General Work Contractor is to sawcut the existing floor slabs for any Mechanical, Electrical, and Plumbing Work Contractors.
- j. **The General Construction** Contractor is to provide rough openings in walls and floors, including lintels and any required structural framing for penetrations as part of their own Prime Contract unless specifically shown to be under another Prime Contract. All lintels and / or framing are to be sized in accordance with the lintel schedules and standard details within the contract documents. Installation is to be performed by a mechanic qualified and experienced with the materials and finishes being altered or installed. Submit to the Construction Manager the name and qualification of the subcontractor performing the installation prior to starting the work.
- k. Provide all steel beams and associated lintels at new openings as shown. Coordinate with mechanical trades. Removal and replacement of ceilings as required to perform this work.
- l. Provide rough and finish carpentry.
- m. Provide architectural woodwork.
- n. Provide thermal and moisture protection.
- o. Provide interior / exterior doors, frames, builders' hardware, interior glazing systems, glazing and finishing for same. Provide miscellaneous steel required at new openings, coordinate with all prime contracts. Power for electrical hardware to be provided by the Electrical Contractor.
- p. Provide gypsum wallboard and finishing for same.
- q. Provide finishes including terrazzo flooring, tile flooring, resilient vinyl tile, carpeting, painting, suspended acoustical ceilings, and ceramic tile. Provide high performance coatings.
- r. Clean and Polish existing terrazzo where shown to remain at areas where cutting and patching are required. Provide terrazzo floor finish to match at all plumbing tie in areas.
- s. Provide all signage, fire-protection specialties, visual display boards, (as indicated).
- t. Provide building paper protection over finished product. Include maintenance of protection and removal of paper. Contractor shall anticipate that all existing areas to receive new flooring shall require both light grinding and self leveling underlayment. Provide additional flash-patching where old walls were removed. Provide building paper protection over finished product.
- u. Provide all roofing work for existing building. Roof blocking and plywood, including:
 - 1) All roof patching work is to adhere to existing warranty currently in place.
 - 2) Provide roof penetrations and blocking for mechanical equipment curbs.
 - 3) For cutting holes through existing deck, the following shall apply:
 - a) General Construction contractor shall cut and remove material.
 - b) All contractors requiring holes shall provide the necessary layout.
 - c) Temporary and final roofing / flashing and weather-tight protection for roof at the existing roof shall be by the General Construction Contractor.
 - 4) See Mechanical drawings for extent of work

- v. Contractor shall include paint, stone, brick, ceiling tile, gypsum, plaster, terrazzo, and floor tile patch to match existing at the following conditions (patching shall commence one tile distant from the affected areas):
 - 1) At all removed existing walls.
 - 2) At all removed existing millwork and casework items.
 - 3) At all new door openings cut through existing walls.
 - 4) At all new walls in existing construction.
- w. Include (furnish, and install, unless noted otherwise):
 - 1) Provide interior equipment and housekeeping pads.
 - 2) Include in base bid to furnish and install the following access doors beyond those already shown on drawings:
 - a) One 18" x 18" fire-rated access doors for gypsum wallboard construction.
 - b) One 18" x 18" fire-rated access doors for masonry construction.
 - c) Two 12" x 12" stainless steel access doors for masonry construction.
 - d) Two 8" x 8" non-rated, primed steel, trimless, access doors for gypsum wallboard construction.
- 6. General Requirements, including but not limited to, additional items specifically indicated as the Work of this Contract.
- 7. Provide multiple shift work as needed to complete work as shown on milestone schedule. Schedule shows a significant amount of work to be performed second shift. ***"Two Work Shifts" will be required to perform the scheduled work.***
- 8. Provide for a thorough cleaning of the windows and panels immediately before final inspection.
 - a. Maintain wall systems in a cleaned condition until the Owner occupies the space.
 - b. Personnel: Experienced workman or professional cleaners approved by the Construction Manager.
- 9. Provide for a very thorough cleaning of the site and building (interior and exterior) immediately before final inspection.
 - a. Maintain areas in a cleaned condition until the Owner occupies the space.
 - b. Personnel: Experienced workman or professional cleaners approved by the Construction Manager.
 - c. Areas where new floor tile is installed are to be finished with three coats of wax.
- B. The Work of the General Construction Contract includes but is not limited to the Work that is specified in the Project Manual(s) and as shown on the drawings that form the contract plans. The Contractor is directed to examine all drawings since certain details and/or notes may appear anywhere therein that apply to his/her particular work. This prime contract is defined as, and includes, all Sections in the Divisions indicated by reference, and specific Sections noted:
 - 1. Division 0 – Procurement and Contracting Requirement, all Sections.
 - 2. Division 1 –General Requirements, all Sections, including Temporary Facilities indicated.
 - 3. Division 2 – Selective Demolition and Lead-Safe Work Practices
 - 4. Division 3 – Concrete, all Sections.
 - 5. Division 4 – Masonry, all Sections.
 - 6. Division 5 – Metals, all Sections.
 - 7. Division 6 – Woods, Plastics and Composites, all Sections.
 - 8. Division 7 –Thermal and Moisture Protection, all Sections.
 - 9. Division 8 – Openings, all Sections
 - 10. Division 9 – Finishes, all Sections.
 - 11. Division 10 – Specialties, all Sections, ***except for Section 10 14 53 – Traffic Signage***

12. Division 11 – Equipment, all Sections, *except for Section 11 68 33 – Athletic Field Equipment and Section 11 53 63 Laboratory Equipment and Accessories*
13. Division 12 – Furnishings, *Section 12 24 13 Roller Window Shades*
14. Division 13 – Special Construction, all Sections
15. Division 14 – Conveying Equipment, all Sections

1.8 CONTRACT 2 - PLUMBING WORK CONTRACT

- A. The Work of the Plumbing Construction Work Contract includes but is not limited to, the following descriptions:
1. Includes Plumbing Equipment, Piping, valves, control systems, plus other construction operations traditionally recognized as plumbing work. This includes, but is not limited to, all work shown on the Plumbing drawings, and applicable information shown on all other drawings, unless noted otherwise. It also includes Administrative and coordination responsibilities.
 - a. Drawings:
 - 1) All “G” series Drawings (General)
 - 2) All “AG, BG series Drawings (Code Compliance)
 - 3) All “AP, BP, FP, HP” series Drawings (Plumbing)
 - 4) All (Architectural) drawings as required for coordination of under-slab and penetration work
 2. Coordination:
 - a. Coordination with the work of all the other contractors.
 3. Demolition:
 - a. Removal of items as shown and/or required. Coordinate shutoffs with General Contractor during demolition.
 - b. All cutting and patching necessary for work of this contract, including layout, sleeves, coring, debris removal, sawcuts, lintels (furnish and install), drywall work, plaster work, grouting, painting, ceiling removal and replacement, etc.
 4. Temporary Facilities
 - a. Provide Temporary Facilities indicated as Work of this Contract in Division 1 Section 01 50 00, “Temporary Facilities and Controls”
 5. Construction:
 - a. **The General Construction** Contractor is to provide rough openings in walls and floors, including lintels and any required structural framing for penetrations as part of their own Prime Contract unless specifically shown to be under another Prime Contract. All lintels and / or framing are to be sized in accordance with the lintel schedules and standard details within the contract documents. Installation is to be performed by a mechanic qualified and experienced with the materials and finishes being altered or installed. Submit to the Construction Manager the name and qualification of the subcontractor performing the installation prior to starting the work. Plumbing Contractor is responsible for layout.
 - b. Provide water, gas, vacuum, and acid waste lines and connect to all fixtures provided under the Casework and Lab Equipment contract at the science classrooms.
 - c. Provide acid neutralization tanks
 - d. Provide water distribution pumps, meters and gauges as needed.
 - e. Provide all insulation, painting and labeling of new plumbing piping.
 - f. Provide all hot and cold water piping to other Contractor provided sinks, faucets and appliances. Make all final connections.

- g. Provide all testing, balancing and disinfection of all new and modified plumbing systems.
 - h. All fees required for inspections and permits.
 - i. Provide support framing for plumbing equipment.
 - j. Furnish access doors for plumbing access (to be installed by GC)
 - k. Provide firestopping and sealing at all plumbing penetrations
 - l. Provide Plumbing service and connections to fume hoods
 - m. Provide Emergency Gas Shutoff Valves
6. General Requirements, including but not limited to, additional items specifically indicated as the Work of this Contract.
 7. Provide multiple shift work as needed to complete work as shown on milestone schedule. Schedule shows a significant amount of work to be performed second shift. ***“Two Work Shifts” will be required to perform the scheduled work.***

- B. The Work of the Plumbing Work Contract includes but is not limited to the Work that is specified in the Project Manual(s) and as shown on the drawings that form the contract plans. The Contractor is directed to examine all drawings since certain details and/or notes may appear anywhere therein that apply to his/her particular work. This prime contract is defined as, and includes, all Sections in the Divisions indicated by reference, and specific Sections noted:
1. Division 0 – Procurement and Contracting Requirement, all Sections.
 2. Division 1 –General Requirements all Sections, including Temporary Facilities indicated
 3. Section 07 84 13, Through Penetration Firestop Systems, as required for the Work of this Contract
 4. Section 07 92 00, Joint Sealants, as required for the Work of this Contract
 5. Division 22 – Plumbing, all Sections.

1.9 CONTRACT 3 - MECHANICAL WORK CONTRACT

- A. Work of this Contract includes, but is not limited to, the following descriptions:
1. Includes HVAC Equipment, Piping, ductwork, control systems, plus other construction operations traditionally recognized as heating, ventilating and cooling work. This includes, but is not limited to, all work shown on the Mechanical drawings, and applicable information shown on all other drawings, unless noted otherwise. It also includes Administrative and coordination responsibilities.
 - a. Drawings:
 - 1) All “G” series Drawings (General)
 - 2) All “AG, BG series Drawings (Code Compliance)
 - 3) All “AM, BM, GM, HM, ” series Drawings (Mechanical)
 - 4) All (Architectural) drawings as required for coordination of penetration work
 2. Coordination:
 - a. Coordination with the work of all of the other contractors.
 3. Demolition
 - a. Provide demolition of all HVAC equipment, and piping as shown and as required at the existing building.
 - b. Provide demolition of all unit ventilators, provide temporary protection for openings.
 - c. Controls Contractor responsible for decommissioning control valves, valve actuators and control tubing shown to be removed under this contract. HVAC contractor to closely coordinate demo of units with Controls contractor.

- d. All cutting and patching necessary for work of this contract, including layout, sleeves, coring, debris removal, sawcuts, lintels (furnish and install), drywall work, plaster work, grouting, painting, ceiling removal and replacement, etc.
- 4. Temporary Facilities
 - a. Provide Temporary Facilities indicated as Work of this Contract in Division 1 Section 01 50 00, "Temporary Facilities and Controls"
- 5. Construction:
 - a. **The General Construction** Contractor is to provide rough openings in walls and floors, including lintels and any required structural framing for penetrations as part of their own Prime Contract unless specifically shown to be under another Prime Contract. All lintels and / or framing are to be sized in accordance with the lintel schedules and standard details within the contract documents. Installation is to be performed by a mechanic qualified and experienced with the materials and finishes being altered or installed. Submit to the Construction Manager the name and qualification of the subcontractor performing the installation prior to starting the work. Mechanical Contractor is responsible for layout.
 - b. Install all control components furnished by others into air and hydronic systems as required maintaining the integrity of the system:
 - 1) Install motor actuated dampers.
 - 2) Install airflow measuring stations.
 - 3) Install airside temperature and pressure sensors.
 - 4) Install hydronic control valves.
 - 5) Install hydronic temperature and pressure sensor wells.
 - 6) Provide personnel to assist with commissioning work of the EMCS as required for controls of the work of this contract. Refer to section 23 05 93, Testing, Adjusting and Balancing for HVAC.
 - c. Provide and install new exhaust fans, controls and ductwork as shown.
 - d. Provide Hydronic and Refrigerant piping and pumps.
 - e. Provide unit heaters and humidifiers.
 - f. Provide Air Handling Units and Roof top condensing units.
 - g. Provide Fan Coil Units.
 - h. Supply exterior louvers for installation by the General Construction Work Contractor.
 - i. Provide and install new unit heaters, piping controls.
 - j. Provide and install ducting for other Contractor provided fume hoods.
 - k. Provide contractor filters, final replacement filters and final duct cleaning.
 - l. Provide and install all insulation, painting and labeling of new and modified piping, ductwork and equipment.
 - m. Provide all testing, adjusting and balancing of all new and existing modified HVAC systems.
 - n. All fees required for inspections and permits.
 - o. Provide support framing for HVAC equipment, ie mechanical equipment curbs.
 - p. Furnish access doors for HVAC access (to be installed by GC)
 - q. Provide firestopping and sealing at all HVAC penetrations
 - r. Furnish motor controllers/disconnects to Electrical Contract for installation and wiring.
 - s. Provide the necessary layout for all roofing penetrations to the General Work Contractor. Provide curbs for mechanical equipment.
 - t. Venting and roof mounted exhaust fans for fume hoods by Mechanical Contractor

- u. Connections below Science Casework counters (by Plumbing, Mechanical, and Electrical Contractors)
 - v. Provide owner training / commissioning of equipment and controls
 6. General Requirements, including but not limited to, additional items specifically indicated as the Work of this Contract.
 7. Provide multiple shift work as needed to complete work as shown on milestone schedule. Schedule shows a significant amount of work to be performed second shift. ***“Two Work Shifts” will be required to perform the scheduled work.***
- B. ***Section 23 09 00 - Instrumentation and Control for HVAC, is included in the HVAC Contract but for coordination and ancillary work purposes only. Coordinate with the Controls Contractor during all demolition and new work. Provide ancillary controls work as stated. Extensive coordination between HVAC & Controls contractor will be required as portions of the existing building are brought on line with the new equipment. Both contractors will be responsible to ensure all systems remain active as necessary to provide adequate heat to various sections of the building and the owner must have control over both old and new systems during construction.***
- C. The Work of the MECHANICAL Work Contract includes but is not limited to the Work that is specified in the Project Manual(s) and as shown on the drawings that form the contract plans. The Contractor is directed to examine all drawings since certain details and/or notes may appear anywhere therein that apply to his/her particular work. This prime contract is defined as, and includes, all Sections in the Divisions indicated by reference, and specific Sections noted:
1. Division 0 –Procurement and Contracting Requirement, all Sections.
 2. Division 1 –General Requirements all Sections, including Temporary Facilities indicated
 3. Section 07 84 13, Through Penetration Firestop Systems, as required for the Work of this Contract
 4. Section 07 92 00, Joint Sealants, as required for the Work of this Contract
 5. Division 23 – HVAC, all Sections.
- 1.10 CONTRACT 4 - ELECTRICAL WORK CONTRACT
- A. Work of this Contract includes, but is not limited to, the following descriptions:
1. Includes Electrical Distribution Service, Lighting, CATV systems, Communications, Fire Alarm, Intercom Systems, Security Systems, Emergency Lighting, and other systems traditionally recognized as Electrical work. This includes but is not limited to, all work shown on the Electrical Drawings, and applicable information shown on all other Drawings, unless noted otherwise. It also includes administrative and coordination responsibilities.
 - a. Drawings:
 - 1)All “G” series Drawings (General)
 - 2)All “AG, BG series Drawings (Code Compliance)
 - 3)All “AE, BE, FE, GE, HE” series Drawings (Electrical)
 - 4)All (Architectural) drawings as required for coordination of penetration work
 2. Coordination:
 - a. Coordination with the work of all of the other contractors.
 3. Demolition:
 - a. Removal of items as shown and/or required.
 - b. Removal and disconnections of electrical devices in walls, ceilings and floors scheduled to be removed in the portion of the building to remain.

- c. Removal of lighting fixtures scheduled to be removed in the portion of the building to remain.
- d. Coordinate with the General Work Contractor for necessary shutdowns.
- e. Removal of exterior lighting fixtures and wiring.
- f. Removal of existing unit ventilators power back to panel.
- g. All cutting and patching necessary for work of this contract, including layout, sleeves, coring, debris removal, sawcuts, lintels (furnish and install), drywall work, plaster work, grouting, painting, ceiling removal and replacement, etc.
4. Temporary Facilities
 - a. Provide Temporary Facilities indicated as Work of this Contract in Division 1 Section 01 50 00, "Temporary Facilities and Controls"
5. Construction:
 - a. **The General Construction** Contractor is to provide rough openings in walls and floors, including lintels and any required structural framing for penetrations as part of their own Prime Contract unless specifically shown to be under another Prime Contract. All lintels and / or framing are to be sized in accordance with the lintel schedules and standard details within the contract documents. Installation is to be performed by a mechanic qualified and experienced with the materials and finishes being altered or installed. Submit to the Construction Manager the name and qualification of the subcontractor performing the installation prior to starting the work. Mechanical Contractor is responsible for layout.
 - b. Provide power to new SCIENCE ROOM CASEWORK, LIBRARY CASEWORK, STEM CASEWORK, AND LAB EQUIPMENT as shown. Coordinate electrical cutouts and electrical backsplash locations with Casework Contractor.
 - c. Provide ALL wiring to ALL HVAC equipment. (Install motor controllers/disconnects supplied by HVAC Contract)
 - d. Provide power to all ADA hardware and electric hardware shown in door hardware schedule. Provide control wiring and connection for electrified door hardware
 - e. Provide all interior and exterior lighting including lighting control.
 - f. Provide all fire alarms, CATV , and networking systems.
 - g. Provide public address systems, including full installation and training.
 - h. Provide all cutting and patching required installing all electrical fixtures, devices, wire and conduit.
 - i. Provide all fees required for inspections and permits.
 - j. Provide support framing for Electrical equipment and conduits.
 - k. Furnish access doors for electrical access (to be installed by GC)
 - l. Provide firestopping and sealing of all electrical penetrations
 - m. Provide owner training
 - n. Provide telecommunications
 - o. Provide and maintain a temporary electric service, including lighting and power, for any site office trailers off of the temporary service being provided above. Maximum of 1 trailer per Prime Contractor. Each trailer to have a 100 amp, 240 Volt single-phase connections. Assume a diversified peak connected load factor of 12KW per trailer.
 - p. Electrical service and final connections to fume hoods (by Electrical Contractor)
 - q. Connections below Science Room Casework counters (by Plumbing, Mechanical, and Electrical Contractors)
 - r. Emergency Shutoff Switches and Solenoids at Science Room Casework (by Electrical Contractor)
6. General Requirements, including but not limited to, additional items specifically indicated as the Work of this Contract.

7. Provide multiple shift work as needed to complete work as shown on milestone schedule. Schedule shows a significant amount of work to be performed second shift. ***“Two Work Shifts” will be required to perform the scheduled work.***

B. The Work of the Electrical Work Contract includes but is not limited to the Work that is specified in the Project Manual(s) and as shown on the drawings that form the contract plans. The Contractor is directed to examine all drawings since certain details and/or notes may appear anywhere therein that apply to his/her particular work. This prime contract is defined as, and includes, all Sections in the Divisions indicated by reference, and specific Sections noted:

1. Division 0 –Procurement and Contracting Requirement, all Sections.
2. Division 1 –General Requirements all Sections, including Temporary Facilities indicated
3. Section 07 84 13, Through Penetration Firestop Systems, as required for the Work of this Contract.
4. Section 07 92 00, Joint Sealants, as required for the Work of this Contract
5. Division 8 – All door Sections as they relate to electrified or operated doors.
6. Division 11 - Section 11 40 00, Food Service Equipment (as relates to this contract for power connections to equipment) and Section 11 53 63 Laboratory Equipment and Accessories (as relates to this contract for power connections to equipment)
7. Division 12 - Section 12 32 13, Manufactured Wood Veneer Faced Casework and Section 12 56 51 Library Furniture (as relates to this contract for power connections to equipment).
8. Division 14 - All sections (as relates to this contract for power connections to equipment)
9. Division 23 - All sections (as relates to this contract for power connections to equipment)
10. Division 26 - Electrical - All Sections.
11. Division 27 - Communications - All Sections.
12. Division 28 – Electronic Safety and Security - All Sections.

1.11 CONTRACT 5 - HAZARDOUS MATERIAL ABATEMENT CONTRACT

A. Work of this Contract includes, but is not limited to, the following descriptions:

1. Includes Hazardous Materials abatement/removal plus other construction operations traditionally recognized as Hazardous Materials Construction. This includes, but is not limited to, *all work shown* on the Hazardous Materials Drawings, and any applicable information shown on the S drawings, unless noted otherwise. It also includes administrative and coordination responsibilities.
 - a. Drawings:
 - 1) All “G” series Drawings (General)
 - 2) All “AG, BG series Drawings (Code Compliance)
 - 3) All “AH, BH, FH, GH” series Drawings (Hazardous Materials)
 - 4) All (Architectural) drawings as required for coordination of demolition work
2. Coordination:
 - a. Coordination with the work of all of the other contractors.
3. Demolition:
 - a. Asbestos containing material removal as shown in the contract documents and disposal per Code Rule 56.
 - b. Construction of hard barriers separating abatement areas from all other areas.
4. Temporary Facilities
 - a. Provide Temporary Facilities indicated as Work of this Contract in Division 1 Section 01 50 00, “Temporary Facilities and Controls”

5. Construction:
 - a. Provide temporary weather tight and secure closure panels at building openings used for negative air systems.
6. General Requirements, including but not limited to, additional items specifically indicated as the Work of this Contract.
7. Provide multiple shift work as needed to complete work as shown on milestone schedule. Schedule shows a significant amount of work to be performed second shift. ***“Two Work Shifts” will be required to perform the scheduled work.***

B. The Work of the Hazardous Material Abatement Work Contract includes, but is not limited to, the Work that is specified in the Project Manual(s) and as shown on the drawings that form the contract plans. The Contractor is directed to examine all drawings since certain details and/or notes may appear anywhere therein that apply to his/her particular work. This prime contract is defined as, and includes, the following listed sections:

1. Division 0 –Procurement and Contracting Requirement, all Sections.
2. Division 1 –General Requirements all Sections, including Temporary Facilities indicated
3. Section 07 84 13, Through Penetration Firestop Systems, as required for the Work of this Contract.
4. Section 07 92 00, Joint Sealants, as required for the Work of this Contract.
5. Division 2 – Existing Conditions, (as relates to this contract for removal of hazardous materials)

1.12 CONTRACT 6 - CASEWORK AND LAB EQUIPMENT CONTRACT

A. Work of this Contract includes, but is not limited to, the following descriptions:

1. Includes all Casework and Lab Equipment, and associated products, plus other construction operations traditionally recognized as Casework and Lab Equipment Work. This includes, but is not limited to, all work shown on the “AA” drawings reflecting Casework and Lab Equipment work, and applicable information shown on the AS drawings, unless noted otherwise. It also includes Administrative and coordination responsibilities.
 - a. Drawings:
 - 1) All “G” series Drawings (General)
 - 2) All “AG, BG series Drawings (Code Compliance)
 - 3) All “AA” series Drawings (Architectural) as it pertains to casework
 - 4) All (Mechanical, Electrical, Plumbing) drawings as required for coordination of all associated work
2. Coordination:
 - a. Coordination with the work of all of the other contractors.
3. Demolition:
 - a. All cutting and patching necessary for work of this contract, including layout, sleeves, coring, debris removal, sawcuts, lintels (furnish and install), drywall work, plaster work, grouting, painting, ceiling removal and replacement, etc.
4. Temporary Facilities
 - a. Provide Temporary Facilities indicated as Work of this Contract in Division 1 Section 01 50 00, “Temporary Facilities and Controls”.
5. Construction:
 - a. Provide all new CASEWORK AND LAB EQUIPMENT AND ACCESSORIES as mentioned in specifications and shown on drawings. Coordinate with other prime contracts for locations and connections/disconnections.

- b. Furnish and install Casework including base cabinets, wall cases, tall cases, cabinets for supporting fume hoods and cabinet hardware, fillers, scribes, cut outs, goggle cabinets, emergency centers including fire blanket, fire extinguisher and first aid kit, upright rods at teacher demo, epoxy resin counter tops, drying racks and sinks, loose tables, caulking, all equipment furnished, delivered and installed. Casework includes all storage components, accessory items, closures, fillers, and framing necessary for a complete installation, as identified by manufacturers product/model number, or reference thereto.
- c. Lab casework, cabinets, epoxy countertops and *integral sinks*, drawer and cabinet door hardware, all fixtures and mounted lab equipment above counter top, fume hoods and related enclosures, desks, chairs, eye wash stations, and gas cocks as specified on the design documents. Fume hoods to include all water, lab gas, electrical service fittings and to have piping and wiring within fume hoods for service fittings, light fixtures, fan switches and all other devices with the fume hood.
- d. Furnish water, gas fixtures, emergency eye wash/shower, drench hose, equipment furnished by casework contractor installation and final connections by other trades. Provide laboratory controls as specified. Coordinate with Mechanical, Plumbing, and Electrical Contractors as required.
- e. Casework Contractor shall furnish and install fume hoods and associated enclosures. Mechanical Contractor to provide roof exhaust fans, related ductwork and connections to fume hoods. Electrical Contractor to provide wiring and related coordination for fume hoods, associated lighting, rooftop exhaust fans, and fume hood alarms. Plumbing Contractor to provide plumbing services and connections to fume hoods. Casework Contractor to provide overall coordination of each Contractor's scope and sequencing relative to fume hoods.
- f. Furnish and install interior epoxy resin window sills integral and/or transition with casework tops.
- g. Provide all proper approved colored caulking for your scope of work. Furnish and install caulking at the interior perimeter of all curtain wall frames, aluminum window frames, all sills, and material transitions. Caulk material and color used to be compatible with other assemblies. Contractor responsible for including cost of compatible material in base bid. Caulk material and color selection shall be approved by Architect and Construction Manager prior to application.
- h. Provide all miscellaneous wood blocking, ledgers, and scribing as required to install cabinets and countertops. Lab Casework Contractor to scribe fit all casework and counters.
- i. Casework Contractor to locate and permanently secure new lab tables to floor. Coordinate work with all prime contractors. Casework Contractor to furnish and install plug to epoxy resin sinks. Plumbing Contractor to provide trap and connection to plug. Set epoxy resin sinks and/or troughs according to manufacturers recommendations.
- j. All adjustment of drawers, hinges, cabinets, hardware, must be done prior to punchlist and Contractor must certify in writing that all adjustments are complete. This includes transmission of all keys prior to substantial completion and verifying they all work in their specified locks. Cabinets are to be keyed alike in each classroom.
- k. Casework to be delivered early to acclimate to the space for duration specified by the manufacturer. Contractor to coordinate sequencing and schedule to accommodate for such.

- l. Provide coordination with General Construction, Mechanical, Electrical, and Plumbing contractors for their respective installation of devices furnished within this Scope of Work.
 - m. Workmen: Install casework under the supervision of the **manufacturer's representative** with factory-trained mechanics certified by manufacturer.
 - n. Venting and roof mounted exhaust fans for fume hoods (by Mechanical Contractor)
 - o. Electrical service and final connections to fume hoods (by Electrical Contractor)
 - p. Plumbing service and connections to fume hoods (by Plumbing Contractor)
 - q. Connections below counters (by Plumbing, Mechanical, and Electrical Contractors)
 - r. Emergency Gas Shutoff Valves (by Plumbing and Mechanical Contractor)
 - s. Emergency Shutoff Switches and Solenoids (by Electrical Contractor)
6. General Requirements, including but not limited to, additional items specifically indicated as the Work of this Contract.
7. Provide multiple shift work as needed to complete work as shown on milestone schedule. Schedule shows a significant amount of work to be performed second shift. ***“Two Work Shifts” will be required to perform the scheduled work.***

- B. The Work of the Casework and Lab Equipment Contract includes but is not limited to the Work that is specified in the Project Manual(s) and as shown on the drawings that form the contract plans. The Contractor is directed to examine all drawings since certain details and/or notes may appear anywhere therein that apply to his/her particular work. This prime contract is defined as, and includes, all Sections in the Divisions indicated by reference, and specific Sections noted:
1. Division 0 –Procurement and Contracting Requirement, all Sections.
 2. Division 1 –General Requirements all Sections, including Temporary Facilities indicated.
 3. Division 6 – Woods, Plastics and Composites, all Sections as it relates to installation of the casework.
 4. Section 07 84 13, Through Penetration Firestop Systems, as required for the Work of this Contract
 5. Section 07 92 00, Joint Sealants, as required for the Work of this Contract
 6. Division 11 – Equipment, Section 11 53 63 Laboratory Equipment and Accessories
 7. Division 12 – Furnishings, Section 12 32 13 – Manufactured Wood –Veneer-Faced Casework, Section 12 32 17 Instrument Storage Casework and Equipment, and Section 12 56 51 Library Furniture

1.13 CONTRACT 7 – SITE WORK CONSTRUCTION

- A. The Work of the Site Work Contract, includes but is not limited to, the following descriptions:
1. Landscape, Site plus other construction operations traditionally recognized as Site Work Construction. This includes, but is not limited to, *all work shown* on the following:
 - a. Drawings:
 - 1) All “G” series Drawings (General)
 - 2) All “AG, BG series Drawings (Code Compliance)
 - 3) All “AC, BC” series Drawings (Civil)
 - 4) All “ZV, ZC” series Drawings (Site Details and Surveys)
 - 5) All (Mechanical, Electrical, Plumbing) drawings as required for coordination of all associated work

Mahopac Central School District
Reconstruction to Mahopac High School, Mahopac Middle School and Falls ES
Project No. 121111-19002
SUMMARY OF PROJECT

01 12 00-18

2. Coordination:
 - a. Coordination with the work of all of the other contractors including but not limited to the synthetic turf state contract.
3. Demolition:
 - a. Removal of curbing, roadways, bituminous paving, and concrete walks
 - b. Removal and relocation of trees, shrubs and ground cover.
 - c. Removal of all underground utilities and/or equipment as shown or described.
 - d. Removal of existing sports fields and associated utilities.
 - e. Removal of existing surfacing and fencing.
 - f. Removal of existing associated structures.
 - g. Removal and disposal of miscellaneous equipment including equipment not shown if impacting work to be demolished.
 - h. Removal of unsuitable fill including rock to suitable depth
4. Temporary Facilities
 - a. Provide temporary silt fencing around athletic field areas being renovated.
 - b. Provide temporary roads/ access and continuous exits in and out of all construction areas.
 - c. Provide all necessary erosion control measures specific to renovation of the athletic fields and all parking / circulation. See drawings and specifications for SWPP requirements.
 - d. Provide wash out area for construction vehicles.
 - e. Prime Contractor is to stockpile his debris on a daily basis, and place it in the dumpster.
 - f. Provide Temporary Facilities indicated as Work of this Contract in Division 1 Section 01500, "Temporary Facilities and Controls"
5. New Construction:
 - a. Work separation line between building and site is defined at 5' outside the building perimeter wall. Site contractor (Contract #7) shall prepare building to defined subgrades elevation compacted in place (minus 1'-0" from finish floor). The General Work Contractor (Contract #1) is responsible for building excavation, backfill and slab sub-base (from minus 1'-0" from finish floor to required sub-base elevation). The Site Work Contractor (Contract #7) shall be responsible for the construction of all exterior concrete pads. The General Work Contractor (Contract #1) is responsible for all steps, concrete ramps, and railing attached to the building. The Site Contractor (Contract #7) shall be responsible to prepare the area to sub-grade. The Site Contractor shall be responsible to then pick up the site work construction from the base of and ramp or the base of the bottom riser serving the steps. The Site Work Contractor (Contract #7) shall be responsible for all concrete sidewalks. Any exterior doorway not furnished with sidewalks shall be provided with a concrete pad 5'-0" x 5'-0" for a single door and 5'-0" x 10'-0" for a pair of doors, installed by the General Work Contractor (Contract #1).
 - b. Provide excavations and earthwork including topsoil stripping, stockpiling and fill for the Site Work Contract. Provide shoring, bracing, excavation and backfill for all other contractors from five (5) feet outside building foundation.
 - c. Earthwork shall consist of all necessary site clearing and grubbing, excavation and backfill to establish new footprints and associated grade for structures. Provide site grading, grassing and restoration, as well as related work as shown on the plans and as specified herein.

- 1) GENERAL: All earthwork shall be confined to the construction area as shown on the plans, and shall be done in an approved manner with proper equipment. Earthwork shall be suspended during rain and inclement weather, or when unsatisfactory field conditions are encountered, unless otherwise directed by the CONSTRUCTION MANAGER. At all times during construction, the CONTRACTOR shall maintain proper drainage in the construction area, and shall take all measures necessary for erosion and sediment control.
 - 2) Existing Utilities: CONTRACTOR shall take every precaution to protect existing utility services from damage during construction operations. If damage occurs, the OWNER of the utility shall be notified immediately and repairs shall be made promptly at the CONTRACTOR'S expense. All repair work shall be satisfactory to the CONSTRUCTION MANAGER and the OWNER of the utility. When interruptions of existing utilities occur, temporary service shall be provided as approved by the CONSTRUCTION MANAGER and OWNER of the utility.
- d. SITE GRADING: Granular Fill below road and parking lot.
- 1) Site grading shall conform to the lines and grades indicated by the finish contours on the plans. Where topsoil, porous pavement, aggregate surfacing, and other items are shown, rough grade shall be finished to such depth below finish grade as necessary to accommodate these items. All areas where structures are to be built on fill shall be stripped to such depth as necessary to remove turf, roots, organic matter and other objectionable materials.
 - 2) Excavation: Excavation shall be made to the exact elevations, slopes, and limits shown on the plans.
 - 3) Dressing Off: All cuts, fills and slopes shall be neatly dressed off to the required grade or subgrade, as indicated on the plans.
 - 4) Cleanup: Cleanup of the site shall be made upon completion of grading work or any major part thereof. Unless otherwise noted, excess or surplus material shall be wasted and dressed off on the site, or adjacent thereto, to the CONSTRUCTION MANAGER'S satisfaction. Excess or surplus material wasted in off-site spoil areas shall be spread and leveled as directed.
 - 5) Topsoil Placement: Topsoil shall consist of a natural friable loam, occurring usually in a surface layer 6 to 18 inches thick, and free of roots, grass, weeds, stone and other foreign matter. Topsoil may be obtained from the graded area, if available, and stockpiled for future use. Otherwise, the CONTRACTOR shall provide topsoil from other sources at his own expense. All topsoil shall be acceptable to the CONSTRUCTION MANAGER. Topsoil shall be placed on the entire graded area as shown on the plans, or as directed by the CONSTRUCTION MANAGER. Topsoil shall be distributed to a depth of 4 inches, measured loose, and dressed off neatly to finish grade, with all debris removed.
- e. Perimeter underground storm systems at new building to be provided by the Site Work Contractor (Contract #7)
- f. Provide site work related to the new water system upgrades tied to existing well systems. Coordinate any required shutdowns of the water system with the Owner and Construction Manager.

- g. Provide site work related to all sports field events including but not limited to the following:
 - 1) Football Practice Fields including any associated irrigation systems. ***The Synthetic Carpet and Carpet Installation will be purchased off of state contract. The site contractor will be responsible for all subbase, subbase planarity, and infrastructure associated with the new synthetic field. The site work contractor is responsible for all work except for the synthetic carpet and installation of carpet. Final acceptance of subbase planarity from synthetic carpet manufacturer will be required prior to installation.***
 - h. Provide concrete sidewalks, asphalt paving, final landscaping, site appurtenances and curbing. Provide driveway and parking lot paving and drainage as shown.
 - i. Provide suitable fill to replace unsuitable fill.
 - j. Provide stream channel improvements.
 - k. Provide underground storm systems.
 - l. Provide all site fencing and landscaping
 - m. Provide construction entrance.
 - n. Provide standard duty access roads.
 - o. The Site Work Contract shall perform all necessary excavation, backfilling, and compaction and field required concrete. The electrical work contractor will provide conduit and manholes for electrical duct bank and data / security bank only.
 - p. Provide thermal and moisture protection.
 - q. Provide:
 - 1) All site signage, see temporary facilities section
 - 2) Erosion controls and all necessary documentation and regular inspections of erosion control.
 - 3) Contractor shall obtain and pay for any permits, inspections, or certifications from governing authorities having jurisdiction over the work to be performed, or over the finished product to be installed by this Contractor. Project Building Permit is by others.
6. General Requirements, including but not limited to, additional items specifically indicated as the Work of this Contract.

B. The Work of the Site Work Contract includes but is not limited to the Work that is specified in the Project Manual(s) and as shown on the drawings that form the contract plans. The Contractor is directed to examine all drawings since certain details and/or notes may appear anywhere therein that apply to his/her particular work. This prime contract is defined as, and includes, all Sections in the Divisions indicated by reference, and specific Sections noted:

- 1. Division 1 –General Requirements, all Sections, including Temporary Facilities indicated.
- 2. Division 2 – Existing Conditions - all Sections.
- 3. Division 3 – Concrete - all Sections.
- 4. Division 7 – Thermal and Moisture Protection – as it pertains to joint sealants
- 5. Division 11 – Equipment – Section 11 68 33 Athletic Field Equipment
- 6. Division 26 – Electrical – all Sections as it pertains to required trenching for site electrical.
- 7. Division 31 – Earthwork – all Sections
- 8. Division 32 – Exterior Improvements – all Sections, ***except for Synthetic Turf. The new synthetic turf including installation will be purchased off of state contract by the Owner. Strict coordination will be required.***
- 9. Division 33 – Utilities – all Sections

- C. The Site Work Contract is responsible for installation of and maintenance of all Temporary Erosion and Sediment Control measure for the duration of the project as specified and associated Pollution Control for SPDES Sites.”

1.14 STATE CONTRACT - CONTROLS WORK:

- A. The Owner intends to procure Controls Work through a State Contract agreement. The Work of the Controls Contract includes but is not limited to the Work that is specified in the Project Manual(s) and as shown on the drawings that form the contract documents. The Contractor is directed to examine ALL drawings and specifications since certain details and/or notes may appear anywhere therein that apply to his/her particular work. The buildings are currently controlled by a combination of original pneumatic controls, electric controls, standalone electronic controls, and a partial direct digital control (DDC) automation system. Final intent is to have essentially all control systems removed and replaced with a new single Electronic Digital Energy Management and Control System utilizing new components and programming as specified in section 23 09 00 and as shown on the drawings. Division 23 – Section 23 09 00 Instrumentation and Control for HVAC is included in the Mechanical Contract but for coordination and ancillary work purposes only. The Controls Contractor will have the following responsibilities:

1. This prime contract is defined as, and includes, Drawings and Specifications as indicated by reference, and any other construction operations traditionally recognized as Controls Work.
 - a. Drawings:
 - 1) All “G” series Drawings (General)
 - 2) All “M” series Drawings (Mechanical) as it relates to this prime contract
 - b. Specifications:
 - 1) Division 1 –General Requirements, all Sections, including Temporary Facilities indicated.
 - 2) Division 2 – Existing Conditions, Section 02 41 19, Selective Structure Demolition as it pertains to the work of this contract.
 - 3) Division 23 – HVAC, Section 23 09 00, Instrumentation and Control for HVAC.
2. Coordination with the Mechanical Contractor, Plumbing Contractor, and other Prime Contractors as required.
 - a. Furnish all components to be installed by other Prime Contractors in ample time to be installed within the construction schedule.
 - b. ***Extensive coordination between HVAC & Controls contractors will be required as portions of the existing building are brought on line with the equipment. Both contractors will be responsible to ensure both systems remain active as necessary to provide adequate heat per New York State Education Department requirements to various sections of the building and the owner must have control over both systems during construction.***
3. Demolition, including removal and proper disposal of the following equipment and material:

- a. Demolition of existing thermostats and removal of the existing digital/pneumatic controllers, except electronic stand-alone controls for split air conditioning systems shown as existing to remain with new monitoring controls.
 - b. Controls contractor shall coordinate and direct HVAC contractor to remove all control tubing associated with components being removed or already abandoned in equipment rooms and the existing ceiling spaces above corridors and occupied spaces.
 - c. The controls air compressors, driers, filters and miscellaneous equipment associated with the controls air supply system, including all power wiring of the compressors and driers back to the distribution power panel.
 - d. All existing temperature control panels including the contents, and legal disposal of same including mercury switches.
 - e. All existing pneumatic damper actuators.
 - f. All pneumatic and electric relays, enclosures and unused conduit and tubing.
 - g. Remove abandoned wiring, except existing wire mold may be left abandoned in place.
 - h. ALL existing controls to be removed under this contract and closely coordinated with HVAC contractor. Prior to removal of any controls, district should be notified so they may have the opportunity to identify existing items to be turned over. All other controls will be disposed of properly under this contract.
4. New Work:
- a. Provide controls complete as required for the mechanical work as specified and as shown on the drawings, except for ancillary work by the other Prime Contracts as described in this section and as described in section 23 09 00.
 - b. Division 23 – Section 23 09 00 Instrumentation and Control for HVAC along with all other referenced Division 23 technical sections, Divisions 26 and 27, and all referenced codes and standards, are part of this contract.
5. General Requirements, including but not limited to, additional items specifically indicated as the Work of this Contract.
6. Provide multiple shift work as needed to complete work as shown on milestone schedule. Schedule shows a significant amount of work to be performed second shift. ***“Two Work Shifts” will be required to perform the scheduled work.***

1.15 ADDITIONAL SCOPING

- A. Definition of Extent of Prime Contract Work; Additional Prime Contract Work not previously described
1. All Prime Contractors are responsible for reviewing plans and specs as it pertains to their scope of work mentioned in the contract documents. Scopes of work referenced may be found in multiple locations throughout the plans and specifications.
 2. Local custom and trade union jurisdictional settlements do not control the scope of work included in each prime contract. When a potential jurisdictional dispute or similar interruption of work is first identified or threatened, the affected prime contracts shall promptly negotiate a reasonable settlement to avoid or minimize the pending interruption and delays.

3. All OSHA safety and hazardous materials regulations will be enforced on this project. All Contractors must submit a safety program, a hazardous materials program, (all required data must be maintained at the job site) and attend safety meetings. Toolbox talks will be required from each prime contractor.
4. All Contractors are responsible for any debris caused by their work. A daily clean-up and disposal is required by each Contractor for the periods which that Contractor is performing work on site, on a day selected by the Construction Manager. Each trade will assign at least one person to the weekly clean-up; the name of this person is to be submitted to the Construction Manager. Any Contractor not providing personnel will be “back-charged” for labor provided by the Construction Manager.
5. All Contractors are responsible for cutting/patching required to complete their work. All exposed finishes must be ready to receive paint, etc.; all concealed openings (piping, ductwork, conduit, etc.) must be repaired to comply with specified wall or deck conditions.
6. Multiple Crews: To maintain the project schedule, each Prime Contractor is to provide multiple crews. Each crew is to be furnished with its own supervision, cranes, scaffold and other means necessary to maintain the Project Schedule.
7. Supervision: The proposed project manager and field superintendent for the project is to have at least five years experience in the proposed position. Each successful bidder shall submit resumes to the Construction Manager for the proposed project manager and field superintendent for the project. This information will be reviewed with the Owner, Architect and Construction Manager for approval. Should the Project Manager and/or Superintendent prove unqualified for the position at any point in the project, the Construction Manager shall issue a letter stating that the person is to be removed from involvement in the project. Action by the contractor must be made within seven working days of receipt of such letter.
8. In existing construction, each Prime Contractor is to provide all labor and material for their own rough openings, including all lintels, and any required structural framing for penetrations as part of their Prime Contract. All lintels and / or structural framing are to be sized in accordance with the schedules and standard details within the contract documents. Installation is to be performed by a mechanic qualified and experienced with the materials and finishes being altered or installed. Submit the name and qualifications of the subcontractor that is performing the installation prior to starting the work.
9. General Construction Work Contractor (Contract #1) shall provide shoring as may be required during construction.
10. Miscellaneous steel including stairs and loose lintels shall be furnished and installed by General Contractor (Contract #1). Coordinate with all contracts.
11. When selective demolition or cutting and patching (all demolition necessary for work of their contract, including layout, sleeves, coring, debris removal, sawcuts, drywall work, plaster work, grouting, painting, ceiling removal, etc) is required solely by another prime contract to perform their work it shall be by the Prime Contractor requiring the work to achieve the result indicated. Under this condition, the prime contractor needing the demolition to perform the work will accomplish the demolition and the cutting and patching as indicated in Subparagraph 5 above.
12. Each prime contractor shall return areas disturbed by their work activities to condition prior to start of work.
13. Each prime contractor shall maintain within its field office a complete and current set of Contract Documents (including any Addenda, Change Orders, and Modifications thereto), approved shop drawings, samples, color schedules and other data pertinent to the Project.

14. Each prime contractor is to survey existing work and submit to the Construction Manager a list of damaged areas (i.e. plaster walls, woodwork) prior to commencing work. Any damaged areas not identified prior to the work shall be the responsibility of the contractor/ Contractors working in that area. Construction Manager will have photos of existing conditions on file for reference.
15. All Roof penetration work, existing and new, is assigned as follows:
 - a. All blocking, flashing, and cutting of roof material and installation are by the General Construction Contractor.
 - b. Support framing for roof, and floor penetrations and equipment suspended from steel structure is by General Construction Work Contract (Contract #1). All hung lintels are by General Construction Work Contract (Contract #1).
 - c. Cutting of roof deck is by the General Construction Work Contractor and coordinated with prime contractor requiring the penetration.
 - d. Roof curbs are furnished by the HVAC Contractor (Contract # 3) and set in place by the General Construction Work Contractor.
 - e. The General Construction Work Contractor shall provide all required boot, pitch pocket, flashing materials, etc., for making roofing penetrations by other trades watertight.
 - f. The General Construction Work Contractor is responsible for cabling or roping off all roof openings in an OSHA approved manner. Provide all necessary fall protection.
16. The General Construction Work Contract (Contract #1) and Site Construction Work Contract (Contract #7) are required to submit a construction and submittal schedule based on the milestone dates to the Construction Manager for review and comment no later than 2 weeks after a Notice to Proceed for the work is issued. The other prime contractors (Contract #2 through #6) have 5 days to complete their construction and submittal schedules after the Construction Manager distributes the General Construction Contractor's schedule.
17. Unless a specific item or material is noted as to remain the Owner's property or to become the Contractor's property (or similar words), any material having salvage or reuse value shall be inspected by the Owner. If the Owner wishes to retain this material, it shall be turned over to him on the site where directed. If the Owner designates the material as scrap, it shall become the Construction Manager's property and removed from the site. Material having salvage value shall be carefully removed. If the Construction Manager designates the material as scrap, it shall become the contractor's property and removed from the site. Material having salvage value shall be carefully removed.
18. When the building is occupied and fire alarm and safety system work is in progress, the Electrical Contractor (Contract #4) shall continuously maintain the existing building's fire alarm and detection system and exit and emergency lighting system or provisions must be made by the Electrical Contractor to provide equivalent safety. Electrical Contractor must notify the local fire department of any non-operating systems.
19. Electrical Contractor (Contract #4) shall be responsible for all electrical conduit and associated work on site. Electrical Contractor (Contract #4) shall coordinate and install conduits and duct bank. The Electrical contractor shall coordinate with all local utilities for installation of their work.
20. All personnel required to be on site shall at all times have all required personnel protective equipment on at all times.
21. All personnel on site shall at all times have a photo ID displayed where visible. Those without will be removed from site at once. If the same individual fails to have the ID a second time they will be removed from site and not be allowed back on site.

1.16 TESTING

- A. Required testing and test procedures are indicated under each Division of the Technical Specifications. Other testing shall be performed per generally accepted standards.
- B. The Architect shall reserve the right to require additional information as is deemed necessary to fully evaluate testing results.
- C. The Owner shall employ and pay for an independent testing and inspection agency for testing requirements of their work as assigned by this scope of work. All testing shall be per technical specification requirements The Prime Contractor requiring testing will notify the Construction Manager twenty four hours in advance of the required testing to allow for coordination and scheduling. Failure to give sufficient notice will require the prime contractor to pay for alternate testing to satisfy the specification.

1.17 WORK SEQUENCE

- A. The Work will be conducted to provide the least possible interference to the activities of the Owner's personnel.
- B. All contract scopes of work in unoccupied areas of work can be performed weekdays according to milestone schedule. Please see schedule for scheduled second shift work. Work cannot be performed in occupied areas. Work shall be scheduled off-hours, vacations and weekends for occupied areas. A Construction Manager Superintendent must be on site at all times that work is being performed. If a contractor fails to maintain the progress as indicated by the milestone schedule by no other fault but its own, and requires overtime to complete the work; the contractor shall make arrangements with the Construction Manager 24 hours in advance and pay for a Construction Manager's superintendent at \$125.00 per hour. In the event that the cause for delay is multi-contract, then the costs shall be distributed evenly among contracts. Advise the Construction Manager 48 hours prior to commencing work inside the building.
- C. Coordination of any utility and/or power interruption must be done with the Construction Manager. Shutdowns must occur during off-hours and on days when the building is not occupied by the owner.
- D. Construction access to the site shall be limited to those designated for contractor's personnel, equipment and deliveries by the Owner. Contractors' staging, parking and storage shall be coordinated by the Construction Manager.
- E. Each Contractor shall inspect the site and review the AHERA report on file for the presence of asbestos. Unless otherwise noted, there will be asbestos containing material in place that will require work to take place in the vicinity of, around and/or next to. Each prime contractor that will be working above ceilings, demolishing, in crawl spaces, boiler rooms and all other areas that may contain asbestos per the AHERA report, shall employ "Allied Trades: certified/licensed tradesman as part of the onsite workforce".

1.18 OCCUPANCY REQUIREMENTS

- A. The General Work Contractor (Contract #1) shall provide indoor air quality management as specified by the Department of Labor and OSHA for the building, when the building is enclosed, as determined by the Construction Manager.

1. Provide an exhaust air system for the project indoor areas that could produce fumes, VOC's off-gasses, gasses, dusts, mists, or other emissions.
 2. Exhaust air system for the project areas that could produce emissions listed in Paragraph 1 shall be utilized.
 3. Provide temporary partitions and air seals to prevent the migration of airborne contaminants from unoccupied areas to occupied areas when applicable.
- B. Quality assurance:
1. Maintain a negative pressure between the work area and the space surrounding the work area.
 2. Before start of work, submit a design for the exhaust air system. Do not begin work until approval of the Owner is obtained.
 - a. The number of machines required.
 - b. Location of the machines in the work space.
 - c. Description of the methods used to test air flow and pressure differential.
- C. System operation:
1. A sufficient quantity of exhaust fans in existing window openings or other approved locations shall be operated in accordance with the following applicable standards.
 2. Exhaust air system shall operate for a minimum of 72 hours after work is completed, or until all materials have cured sufficiently as to stop out gassing of fumes or odors and area has been ventilated to remove all detectable traces of odors and fumes.
 3. Maintain twenty-five (25) feet clearance from all temporary exhaust outlets to all active building outdoor air intakes.
- 1.19 PROJECT MILESTONE SCHEDULE
- A. Project Milestone schedule and Site Logistics Plan to be distributed via the first addendum.
 - B. All Prime Contractors are required to submit a schedule based on the milestone dates to the Construction Manager for review and comment no later than 10 days after a Notice to Proceed for the work is issued.
- 1.20 ALLOWANCES
- A. See Specification Section 01 21 00.
- 1.21 ALTERNATES
- A. The Contractor shall state where requested on the Bid Form the amount to be added to or deducted from the base bid for the alternates described in Section 01 23 00 - Alternates.

END OF SECTION 01 12 00

SECTION 01 21 00 - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements governing allowances.
- B. Types of allowances include the following:
 - 1. Contingency allowances.

1.3 ACTION SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances.

1.4 INFORMATIONAL SUBMITTALS

- A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.
- B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.
- C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.5 COORDINATION

- A. Coordinate allowance items with other portions of the Work.

1.6 CONTINGENCY ALLOWANCES

- A. Use the contingency allowance only as directed by Architect for Owner's purposes.
- B. Allowance shall include cost to Contractor of specific products and materials under allowance and shall include taxes, freight, and delivery to Project site. Contractor's costs for receiving and handling at Project site, labor, installation, and similar costs related to products and materials under allowance shall be included as part of the allowance.

- C. Overhead and profit related to the allowance shall be included as part of the Contract Sum and not part of the allowance.

1.7 ALLOWANCE PROCEDURES

- A. Authorization for use of allowances is documented through Allowance Access Authorization form provided in the Project Manual, accompanied by substantiating data.
- B. At Project closeout, unused amounts remaining in the allowances will be credited to Owner by Change Order.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.2 SCHEDULE OF ALLOWANCES - GENERAL CONTRACT

- A. Allowance No. GC-1 Contingency Allowance: Include the sum of \$75,000 for use according to Owner's instructions.

3.3 SCHEDULE OF ALLOWANCES - PLUMBING CONTRACT

- A. Allowance No. PC-1 Contingency Allowance: Include the sum of \$20,000 for use according to Owner's instructions.

3.4 SCHEDULE OF ALLOWANCES - MECHANICAL CONTRACT

- A. Allowance No. HC-1 Contingency Allowance: Include the sum of \$40,000 for use according to Owner's instructions.

3.5 SCHEDULE OF ALLOWANCES - ELECTRICAL CONTRACT

- A. Allowance No. EC-1 Contingency Allowance: Include the sum of \$40,000 for use according to Owner's instructions.

3.6 SCHEDULE OF ALLOWANCES – HAZARDOUS MATERIALS CONTRACT

- A. Allowance No. AB-1 Contingency Allowance: Include the sum of \$15,000 for use according to Owner's instructions.

3.7 SCHEDULE OF ALLOWANCES – CASEWORK AND LAB EQUIPMENT CONTRACT

- A. Allowance No. CE-1 Contingency Allowance: Include the sum of \$15,000 for use according to Owner's instructions.

3.8 SCHEDULE OF ALLOWANCES - SITE CONTRACT

- A. Allowance No. SC-1 Contingency Allowance: Include the sum of \$100,000 for use according to Owner's instructions.

Attachment: Allowance Access Authorization

END OF SECTION 01 21 00

ALLOWANCE ACCESS AUTHORIZATION:

Project:

Architect: Tetra Tech Architects & Engineers

Project No. 121111-19002

Contractor:

AAA No.:

Initiation Date:

The Allowance is allocated as follows:

Total original Contract Allowance was:	\$
Amount of Contract Allowance Access previously authorized:	\$
Adjusted Contract Allowance prior to this authorization is:	\$
The amount of available Allowance will Decrease by this Access Authorization:	\$
The remaining Contract Allowance, after this Access Authorization will be:	\$

**Recommended by:
Architect**

**Recommended by:
Construction Manager [if applicable]**

By (Signature): _____

By (Signature): _____

Date: _____

Date: _____

**Accepted by:
Contractor**

**Approved by:
Owner**

By (Signature): _____

By (Signature): _____

Date: _____

Date: _____

SECTION 01 23 00 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
 - 2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration.
- C. Execute accepted alternates under the same conditions as other work of the Contract.
- D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate No. 1: Middle School Athletic Field.

1. This Alternate affects more than one Contract, as follows:

- a. **Site Contract:** Perform work associated with synthetic turf field installation as indicated on Sheets BC100, BC110, BC120, BC130 and BC140, including all relevant details and specifications.
- b. **Electrical Contract:** Perform work associated with scoreboard underground electric relocation as indicated on Sheet BE001.

B. Alternate No. 2: High School LVT Flooring

1. This Alternate affects one Contract, as follows:

- a. **General Contract:** Provide Vinyl Composition Floor Tile - VCT flooring in lieu of High Performance Luxury Vinyl Tile - LVT flooring in Rooms 105, 106, 142, and 143, and as specified in Section 09 65 19 RESILIENT TILE FLOORING.

C. Alternate No. 3: High School Epoxy Flooring

1. This Alternate affects one Contract, as follows:

- a. **General Contract:** Provide Vinyl Composition Floor Tile - VCT flooring in lieu of Decorative Resinous Flooring - Epoxy flooring in Rooms 111, 113, 115, 235, 238, 239, 242, 243, and 244, and as specified in Section 09 67 23 RESINOUS FLOORING and Section 09 65 19 RESILIENT TILE FLOORING. VCT floor pattern to be issued during construction- pattern consisting of field color and up to 40% accent color- refer to general finish notes for the number of colors changes room to room.

END OF SECTION 01 23 00

SECTION 01 25 00 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.

1.3 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor,
 - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product.
 - 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Owner.

1.4 ACTION SUBMITTALS

- A. Substitution Requests: Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Substitution Request Form: Use the “Request for Substitution” form attached to this Specification Section. Complete all sections of the form.
 - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Information to support identification of the proposed substitution as “for Cause” or “for Convenience”.
 - b. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
 - c. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.

- d. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - e. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - f. Samples, where applicable or requested.
 - g. Certificates and qualification data, where applicable or requested.
 - h. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
 - i. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - j. Evidence of compliance with building code in effect for Project.
 - k. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - l. Cost information, including a proposal of change, if any, in the Contract Sum.
 - m. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
 - n. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation. Such additional information or documentation may include detailed side-by-side comparison charts of the specified product and the proposed substitution, and other data. Only one substitution request for each product will be considered. Architect will make final determination as to whether the substitution is "for Cause" or "for Convenience".
- a. Architect will notify Contractor through Construction Manager of acceptance or rejection of proposed substitution.
 - b. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.

1.5 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials.

1.6 PROCEDURES

- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change.
 - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Substitution request is fully documented and properly submitted.
 - c. Requested substitution will not adversely affect Contractor's construction schedule.
 - d. Requested substitution is compatible with other portions of the Work.
 - e. Requested substitution has been coordinated with other portions of the Work.
 - f. Requested substitution provides specified warranty.
 - g. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Architect will consider requests for substitution if received within 15 days after the Notice of Award. Requests received after that time may be considered or rejected at discretion of Architect.
 - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

- a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
- b. Requested substitution does not require extensive revisions to the Contract Documents.
- c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
- d. Substitution request is fully documented and properly submitted.
- e. Requested substitution will not adversely affect Contractor's construction schedule.
- f. Requested substitution is compatible with other portions of the Work.
- g. Requested substitution has been coordinated with other portions of the Work.
- h. Requested substitution provides specified warranty.
- i. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 3 - EXECUTION (Not Used)

Attachment: Request for Substitution Form

END OF SECTION 01 25 00



.....
This form must be completely filled in with all relevant data by the Prime Contractor and submitted to the Architect in accordance with Project Manual Requirements for consideration before any request to change the drawing or specification requirements will be considered.

REFERENCE DATA

Project name: _____ Date of Request: _____
Location: _____ Architect's Project No.: _____
Request by Contractor: _____
Address: _____
Contact person: _____ Phone: _____ Email: _____

SUBSTITUTION REQUEST DATA

(Provide statement indicating why specified product, fabrication or installation cannot be provided.)
SUBSTITUTION REQUESTED IS FOR: _____ Reason for request: _____
 Named product. _____
 Product type, material, finish or formulation. _____
 Fabrication or installation methods. _____
Note whether substitution is for cause or convenience: _____
PRODUCT / MATERIAL / METHOD FOR WHICH SUBSTITUTION IS REQUESTED IS SHOWN ON THE FOLLOWING DOCUMENTS:
Specification: Section No.: _____ Page(s): _____ Paragraph/Item No.: _____
Drawings: (List No's of all Drawings affected): _____

DETAILED COMPARISON

Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.

COST/BENEFIT ANALYSIS

Describe in detail any alteration to any other part of the Works required by use of the requested substitution, including work by other Prime Contractors:

If applicable total net cost of any such other project required alterations, including overhead and profit: \$ _____
(Indicate if cost is an "Add" or "Deduct" to contract sum.

Benefits to Owner other than financial: _____

Schedule impact (Note any impact on project schedule by proposed substitution): _____

ADDITIONAL INFORMATION REQUIRED

PRIME CONTRACTOR TO PROVIDE ADDITIONAL INFORMATION AS NECESSARY AND ATTACH THE FOLLOWING INFORMATION:

1. Manufacturer's technical data sheets on proposed products, including test results as applicable.
2. Manufacturer's standard form of warranty.
3. Letter on manufacturer's letterhead stating that manufacturer will warrant products as specified, if specification requires specific warranties not included in manufacturer's standard form of warranty.
4. Letter(s) from other Prime Contractor(s) responsible for works affected by proposed substitution which state the total cost(s) of all such work, if any alteration of other work is required. Prime Contractor submitting this Request for Substitution will be responsible to fully reimburse the Owner for all such additional costs; processed via a deduct Change Order.

CONTRACTOR'S CERTIFICATION

1. BY SUBMISSION OF THIS SUBSTITUTION REQUEST AND PER SIGNATURE BELOW, CONTRACTOR CERTIFIES THIS SUBSTITUTION REQUEST HAS BEEN REVIEWED AND APPROVED BY THE CONTRACTOR IN ACCORDANCE WITH THE PROJECT MANUAL REQUIREMENTS.
2. BY SUBMISSION OF THIS SUBSTITUTION REQUEST AND PER SIGNATURE BELOW CONTRACTOR CERTIFIES THE PROPOSED SUBSTITUTION COMPLIES WITH ALL APPLICABLE REQUIREMENTS OF THE CONTRACT DOCUMENTS AND REFERENCED CODES AND STANDARDS.
3. BY SUBMISSION OF THIS SUBSTITUTION REQUEST AND PER SIGNATURE BELOW CONTRACTOR HEREBY WAIVES ALL RIGHTS TO ADDITIONAL COMPENSATION OR TIME THAT MAY SUBSEQUENTLY BECOME NECESSARY BECAUSE OF FAILURE OF PROPOSED MATERIAL TO PRODUCE THE INDICATED AND REQUIRED RESULTS.

Name of Authorized Contractor Representative: _____

Signature of Authorized Contractor Representative: _____

Name of Contractor _____

Date _____

SECTION 01 26 00 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

1.3 MINOR CHANGES IN THE WORK

- A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, via the electronic form procedures outlined in Division 01 Section "Project Management and Coordination" and during the preconstruction conference.

1.4 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect will issue a description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time, via the electronic form procedures outlined in Division 01 Section "Project Management and Coordination" and during preconstruction conference. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
 - 2. Unless otherwise noted, within 14 days after receipt of Proposal Request, submit a quotation listing adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change.

- d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - e. Quotation Form: Use forms acceptable to Architect.
- B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may submit a request for a change to the Architect through Construction Manager.
- 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
 - 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - 4. Include costs of labor and supervision directly attributable to the change.
 - 5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - 6. Comply with requirements in Division 01 Section "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
 - 7. Proposal Request Form: Use form acceptable to Architect.

1.5 ADMINISTRATIVE CHANGE ORDERS

- A. Allowance Adjustment: See Division 01 Section "Allowances" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect actual costs of allowances.
- B. Unit-Price Adjustment: See Division 01 Section "Unit Prices" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit-price work.

1.6 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Proposal Request response, Architect will issue a Change Order for signatures of Owner, Architect, Construction Manager and Contractor .

1.7 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Architect may issue a Construction Change Directive. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - 1. Construction Change Directive contains a description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
 - 1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 26 00

SECTION 01 29 00 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.3 DEFINITIONS

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.
- B. AIA Document: Current, authorized editions of standard forms issued by the American Institute of Architects (AIA).
 - 1. Where AIA Documents are identified in this Section, the use of facsimiles of AIA documents or non-AIA documents is prohibited.

1.4 SCHEDULE OF VALUES

- A. Submit the schedule of values to Architect through Construction Manager at earliest possible date, but no later than fourteen 14 days before the date scheduled for submittal of initial Applications for Payment.
- B. Format and Content:
 - 1. Use AIA Document G703 as form for schedule of values, with entries typewritten. Unless noted otherwise, provide the following:
 - a. Subschedules for Separate Elements of Work: Provide subschedules for each building.
 - 1) List allowances on subschedules only where exclusively part of separate element of work.
 - b. Summary Schedule: Provide summary schedule listing each subschedule and its total and each allowance; total of all subschedules and allowances shall equal the Contract Sum.

2. Identification: Include the following Project identification on the schedule of values:
 - a. Project name and location.
 - b. Architect's project number.
 - c. Contractor's name and address.
 - d. Date of submittal.
3. Use the Project Manual table of contents as a guide to establish line items for the schedule of values. Provide line item(s) for each Specification Section.
4. Arrange the schedule of values to indicate the following for each item listed, completing columns A, B and C of AIA Document G703:
 - a. Column A: Indicate Specification Section number.
 - b. Column B: Indicate Specification Section title, and provide separate line items for labor and materials.
 - c. Column C: Provide separate line item dollar values for labor and materials. Round amounts to nearest whole dollar.
5. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment. In addition to line items for each applicable specification section, include the following:
 - a. Multiple line items for amounts in excess of five percent of Contract Sum, broken out to subcomponents equaling not greater than five percent each.
 - b. Project Startup:
 - 1) Include separate line items for project startup requirements, including the following separate line items:
 - a) Insurance, based on actual invoice amount.
 - b) Performance and payment bonds, based on actual invoice amount.
 - c) Mobilization.
 - d) Temporary facilities and controls.
 - c. Allowances: Provide a separate line item in the schedule of values for each allowance.
 - d. Submittals – Include a minimum of One percent of contract sum.
 - e. Supervision: Include a minimum of One percent of contract sum.
 - f. Safety and field Reports: Include a minimum of One percent of Contract Sum.
 - g. Coordination Drawings: Provide a separate line item in the schedule of values for Coordination Drawings. Include a minimum of the following percentages of Contract Sum.
 - 1) Mechanical Contract: Two percent of the Contract Sum.
 - 2) All Other Contracts: Two percent of the Contract Sum.

- h. Meetings: Provide a separate line item in the schedule of values for Contractor attendance at meetings. Include a minimum of One percentage of Contract Sum.
 - i. Wood Blocking: Provide a separate line item in the schedule of values for wood blocking.
 - a. Testing and Balancing (TAB): Include a minimum of Two of the Contract Sum (Mechanical Contract: Four) as separate line items for testing and balancing requirements, as follows:
 - 1) Pre-TAB activities (20% of TAB).
 - 2) TAB activities (40% of TAB).
 - 3) Final TAB reports. (40% of TAB).
 - b. Punch List: Three percent of Contract Sum.
 - c. Project Closeout:
 - 1) Include separate line items for project closeout requirements, as follows:
 - a) Demobilization.
 - b) Warranties.
 - c) Final cleaning.
 - d) Operation and maintenance manuals.
 - e) Project record documents.
 - f) Demonstration and training.
 - 2) The total value of all project closeout line items shall equal to not less than the following:
 - a) General Contract: Two percent of the Contract Sum.
 - b) Plumbing Contract: Two percent of the Contract Sum.
 - c) Mechanical Contract: Two percent of the Contract Sum.
 - d) Electrical Contract: Two percent of the Contract Sum.
 - e) Site Contract: Two percent of the Contract Sum.
6. Each item in the schedule of values shall be complete. Include total cost and proportionate share of general overhead and profit for each item.

1.5 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications as certified by Architect and Construction Manager.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
 - 1. Submit draft copy of Application for Payment seven (7) days prior to due date for review by Construction Manager.

- C. Application for Payment Forms: Use AIA Document G732 and AIA Document G703 as form for Applications for Payment.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Construction Manager will return incomplete applications without action.
1. Entries shall match data on the schedule of values.
 2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received.
 3. Include amounts of fully-executed Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
1. Enter in column F (Materials Presently Stored) of AIA Document G703 the value of materials presently stored for which payment is sought. Recalculate the total of the column at the end of each pay period. This value covers both materials newly stored for which payment is sought and materials previously stored which are not yet incorporated into the Project. Payment by the Owner for stored materials does not result in a deduction from this column. Only as materials are incorporated into the Project is their value deducted from this column and incorporated into column E (Work Completed--This Period.).
 2. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.
 3. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
- F. Transmittal: Submit three (3) signed and notarized original copies of each Application for Payment to Construction Manager.
- G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
 2. Schedule of values.
 3. Contractor's construction schedule.
 4. Certificates of insurance and insurance policies.
 5. Performance and payment bonds.
- H. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited to, two originals and two copies each of the following:

1. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
2. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
3. AIA Document G707, "Consent of Surety to Final Payment."

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 29 00



Project: _____

Project No.: _____ **Contract Type:** _____

Contractor: _____ **Subcontractor:** _____

Reason for Request:

Application for Payment No.: _____ **Date:** _____

1. **Material Identification**

Description:	Quantity:
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Provide Specific Location of Materials Stored:

2. **Material Value** \$ _____

Attach an Invoice or Quantified Statement of Value.

3. **Certificate of Insurance**

Attach a Certificate of Insurance for the above specified materials. Certificate shall name _____
(Name of District)
as a loss payee with respect to the specified materials.

4. **Transfer of Title**

The Contractor hereby agrees to transfer complete ownership of all listed materials to _____
(Name of District)
at the time payment is made to Contractor for the above referenced Application for Payment. The Contractor remains responsible for all contractual requirements for the above listed materials including complete installation and providing all warranties.

Signed _____ Date _____

SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General coordination procedures.
 - 2. Digital data files.
 - 3. Coordination drawings.
 - 4. Owner's Project Representative activities.
 - 5. Electronic form procedures.
 - 6. Requests for Information (RFIs).
 - 7. Project meetings.

1.3 COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, which depend on each other for proper installation, connection, and operation. Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components.
 - 2. Coordinate installation of different components with other contractors to ensure maximum performance and accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of Contractor's construction schedule.
 - 2. Installation and removal of temporary facilities and controls.
 - 3. Project meetings.
 - 4. Project closeout activities.

- C. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

1.4 DIGITAL DATA FILES

- A. Architect's Digital Data Files: Upon request, and at Architect's sole discretion, electronic copies of the Contract Drawings may be provided by Architect for Contractor's use in preparing submittals.
 - 1. Architect may furnish Contractor digital data drawing files of the Contract Drawings for use in preparing Shop Drawings.
 - a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
 - b. Format: The Contract Drawings may be available in AutoCAD and .pdf formats.
 - 1) Architect's charge for drawings in AutoCAD format: \$50 per drawing.
 - 2) Architect's charge for drawings in .pdf format: \$50 per request.
 - c. Contractor shall fill out and submit a Request for Electronic Drawing Files form included in Project Manual for any drawing files.
 - d. Contractor shall also execute a Terms of Electronic File Transfer (TOFT) included in Project Manual for any drawing files furnished in AutoCAD format.
 - e. The following drawings may be furnished for the appropriate discipline:
 - 1) Roof plans.

1.5 OWNER'S PROJECT REPRESENTATIVE ACTIVITIES

- A. Project Representative shall:
 - 1. Serve as liaison between Architect, Contractor[s] and Owner.
 - 2. Perform on-site observations of the progress and quality of the Work as may be reasonably necessary to assist the Architect determine, in general, if the Work is being performed in a manner indicating that the Work when completed will be in conformance with the Contract Documents. Notify the Architect if, in the Project Representative's opinion, Work does not conform to the Contract Documents or requires special inspection or testing.
 - 3. Monitor the Contractor's construction schedules on an ongoing basis and alert the Architect to conditions that may lead to delays in completion of the Work.
 - 4. Coordinate shared access to work areas.

5. Coordinate and issue written approvals for acceptable interruptions of utilities and potentially disruptive activities.
6. Receive and review suggestions proposed by the Contractor, and submit them, together with recommendations, to the Architect.
7. Attend all meetings and report to the Architect on the proceedings.
8. Notify Architect when tests required by the Contract Documents and inspections by authorities having jurisdiction will be performed. Observe tests required by the Contract Documents and inspections by authorities having jurisdiction. Record and report to the Architect on test procedures, inspections, and results. Verify testing is performed in accordance with specified requirements and at appropriate times.
9. Maintain records at the construction site in an orderly manner, including correspondence, Contract Documents, Change Orders, Construction Change Directives, reports of meetings, Shop Drawings, Product Data and similar submittals; supplementary drawings, color schedules and requests for payment; and names, addresses and telephone numbers of the Contractors, Subcontractors and principal material suppliers.
10. Maintain a daily log of activities at the site, including weather conditions, nature and location of Work being performed, verbal instructions and interpretations given to the Contractor, and specific observations. Record any occurrence or Work that might result in a claim for a change in Contract Sum or Contract Time. Maintain a list of visitors, their titles, and time and purpose of their visit.
11. Notify the Architect if any portion of the Work requiring Shop Drawings, Product Data or Samples is commenced before such submittals have been approved by the Architect. Receive and log Samples required at the site, notify the Architect when they are ready for examination, record the Architect's action and maintain custody of approved Samples.
12. Review the Contractor's record copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications at intervals appropriate to the stage of construction and notify the Architect of any apparent failure by the Contractor to maintain up-to-date records.
13. Review Applications for Payment and forward to the Architect with recommendations for disposition.
14. Assist the Architect in conducting inspections to determine the date or dates of Substantial Completion and the date of final completion.
15. Assist the Architect in receipt and transmittal to the Owner of documentation required of the Contractor at completion of the Work.

B. Project Representative shall not:

1. Authorize deviations from the Contract Documents.
2. Approve submittals or substitute materials or equipment.

3. Personally conduct or participate in tests or third party inspections.
4. Assume any of the responsibilities of the Contractor's superintendent or of Subcontractors.
5. Expedite the Work for the Contractor.
6. Have control over or charge of or be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work.
7. Authorize or suggest that the Owner occupy the Project in whole or in part.

1.6 ELECTRONIC FORM PROCEDURES

- A. Use Architect's electronic form procedures for the following functions:
 1. Request for Information (RFI) forms and logs.
 2. Architect's Supplemental Instruction (ASI) forms and logs. Refer to Division 01 Section "Contract Modification Procedures".
 3. Proposal Request (PR) forms and logs. Refer to Division 01 Section "Contract Modification Procedures".
- B. Contractor and other parties granted access by the Architect to Project electronic form procedures shall follow instructions issued by the Architect during the preconstruction conference.

1.7 REQUESTS FOR INFORMATION (RFIs)

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified, via the electronic form procedures outlined.
 1. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of others.
- B. Content of the RFI: Include a detailed description of item needing information or interpretation and the following:
 1. Project number.
 2. RFI number.
 3. Contract number and title.
 4. Name of Contractor.
 5. Name of Contractor's contact person.
 6. Email address of Contractor's contact person.

7. RFI subject.
 8. Question: Fully describe question or information requested. Include:
 - a. Specification Section number and title and related paragraphs, as appropriate.
 - b. Drawing number and detail references, as appropriate.
 - c. Field dimensions and conditions, as appropriate.
 - d. Contractor's suggested resolution. If Contractor's solution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 9. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow reasonable time for Architect's response for each RFI.
1. The following RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for coordination information already indicated in the Contract Documents.
 - d. Requests for adjustments in the Contract Time or the Contract Sum.
 - e. Requests for interpretation of Architect's actions on submittals.
 - f. Incomplete RFIs or inaccurately prepared RFIs.
 2. Architect's action may include a request for additional information.
 3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 01 Section "Contract Modification Procedures."
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect and Construction Manager in writing within seven days of receipt of the RFI response.
- D. On receipt of Architect's action, immediately distribute the RFI response to affected parties. Review response and notify Architect and Construction Manager within seven days if Contractor disagrees with response.
- E. Electronic RFI Log: Architect will maintain a tabular log of RFIs organized by RFI number.

1.8 PROJECT MEETINGS

- A. Preconstruction Conference: Construction Manager will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner, Construction Manager and Architect, but no later than 15 days after date of Notice of Award.
1. Attendees: Authorized representatives of Owner, Construction Manager, Architect, and their consultants; Contractor and its superintendent; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Designation of key personnel and their duties.
 - b. Lines of communications.
 - c. Bonds and insurance.
 - d. Subcontract list.
 - e. Schedule of values.
 - f. Payment request estimate.
 - g. Applications for Payment.
 - h. Contractor's construction schedule.
 - i. Submittals.
 - j. Electronic form procedures (RFIs, ASIs, PRs).
 - k. Procedures for processing Change Orders and Construction Change Directives.
 - l. Quality control.
 - m. Adjoining properties.
 - n. Project schedule.
 - o. Contractor review of Contract Documents, including Drawings and Specifications.
 - p. Project meetings.
 - q. Project closeout procedures.
 - r. Electronic drawings.
 - s. AIA and Word documents.
 3. Report: Construction Manager will prepare and distribute meeting report.
- B. Structural Preconstruction Conference: Construction Manager will schedule and conduct a structural preconstruction conference, at a time convenient to Owner, Construction Manager and Architect.
1. Attendees: Authorized representatives of Owner, Owner's testing agency, Construction Manager, Architect, and their consultants; Geotechnical Engineer of Record; Contractor and its superintendent; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Discuss items of significance, including the following:
 - a. Procedures for testing and inspecting.
 - b. Submittals.
 - c. Testing, placing, curing and finishing structural concrete.

- d. Hot/cold weather concrete construction.
 - e. Fabrication and erection of structural steel.
 - f. Attaching metal floor and roof deck, as applicable.
 - g. Procedures for constructing composite slabs, as applicable.
 - h. Procedures for unit masonry control joints, grouting, and workmanship.
 - i. Hot/cold weather masonry construction.
 - j. Cold formed metal framing.
 - k. Roles of each party regarding the above work items.
3. Report: Construction Manager will prepare and distribute meeting report.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
- 1. Review each Specification Section for requirements for preinstallation conferences.
 - a. No later than 15 days after date of Notice of Award, submit to Architect complete listing of preinstallation conferences to be held.
 - 2. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect and Construction Manager of scheduled meeting dates.
 - 3. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. Contract Documents.
 - b. Deliveries.
 - c. Submittals.
 - d. Review of mockups.
 - e. Time schedules.
 - f. Weather limitations.
 - g. Manufacturer's written instructions.
 - h. Warranty requirements.
 - i. Compatibility of materials.
 - j. Acceptability of substrates.
 - k. Temporary facilities and controls.
 - l. Space and access limitations.
 - m. Testing and inspecting requirements.
 - n. Installation procedures.
 - o. Coordination with other work.
 - p. Required performance results.
 - q. Protection of adjacent work.
 - 4. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 - 5. Reporting: Distribute report of the meeting to each party present and to other parties requiring information.

6. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Progress Meetings: Construction Manager will conduct progress meetings at biweekly intervals, unless otherwise necessitated.
1. Attendees: In addition to representatives of Owner, Construction Manager, and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Review report of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Review present and future needs of each entity present, including the following:
 - 1) Report of progress since previous meeting.
 - 2) Architect/Engineer discussion items.
 - 3) Status of ASIs, PRs, Change Orders.
 - 4) Status of submittals.
 - 5) Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule.
 - a) Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - b) Review schedule for next period.
 - 6) Date of Substantial Completion.
 - 7) Status of RFIs.
 - 8) Owner discussion items.
 - 9) Discussion items for each Contract.
 - 10) General and administrative items, including such items as:
 - a) Project documentation.
 - b) Prohibitions.
 - c) Identification cards.
 - d) Separation.

- e) Egress.
 - f) Conservation.
3. Report: Construction Manager will prepare and distribute the meeting report to each party present and to parties requiring information.
- E. Health and Safety Committee Meetings: Owner will conduct health and safety committee meetings as needed, in accordance with requirements of Regulations of the Commissioner of Education, Part 155 (8 NYCRR 155), Section 155.5(c)(2).
- 1. Attendees: In addition to representatives of the Owner and Construction Manager, each contractor shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 2. Agenda: Discuss items of significance, including the following:
 - a. Health and safety matters related to the construction project.
 - 3. Report: Owner will prepare and distribute meeting report to each party present and to parties requiring information.
- F. Project Closeout Conference: Construction Manager will schedule and conduct a project closeout conference, at a time convenient to Owner, Construction Manager and Architect, but no later than 90 days prior to each scheduled date of Substantial Completion.
- 1. Attendees: Authorized representatives of Owner, Construction Manager, Architect, and their consultants; Contractor and its superintendent; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 2. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
 - a. Preparation of record documents.
 - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
 - c. Submittal of written warranties.
 - d. Requirements for preparing operations and maintenance data.
 - e. Requirements for delivery of material samples, attic stock, and spare parts.
 - f. Requirements for demonstration and training.
 - g. Owner's occupancy requirements.
 - h. Responsibility for removing temporary facilities and controls.
 - 3. Report: Construction Manager will prepare and distribute meeting report.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

Attachment: Request for Electronic Drawing Files
Terms of Electronic File Transfer (TOFT)

END OF SECTION 01 31 00



Cornell Business + Technology Park
10 Brown Road
Ithaca, New York 14850
Tel. (607) 277-7100
Fax (607) 277-1410

Request for Electronic Drawing Files – Business Office

Prime Contractor Name:
Prime Contractor Address:
Contact to Receive Invoice:
Project Name:
Project Number:
Project Manager:

Drawing Type: Some drawings may be only available as a PDF file and may NOT be available as an AutoCAD file.

PDF Files (\$50 per request) AutoCAD type files (\$50 per file)

For PDF files:

List each Drawing # Requested – If requesting entire set note “All”.

For AutoCAD files:

Number of drawing files

List each Drawing # Requested

Contractor Signature _____



Cornell Business + Technology Park
10 Brown Road
Ithaca, New York 14850
Tel. (607) 277-7100
Fax (607) 277-1410

Terms of Electronic File Transfer (TOFT)

.....
The purpose of this document is to establish the terms of use and liability related to the electronic transfer of files from Tetra Tech Engineers, Architects & Landscape Architects, P.C. d/b/a Tetra Tech Architects & Engineers (hereinafter "Tetra Tech") to the Recipient (designated below). This Agreement covers all electronic files transmitted to the Recipient, associated with the Project(s) listed below, that are not otherwise covered by a contractual agreement to provide such files.

Project(s) & Project #s: _____

Recipient of Electronic Files:

Company Name: _____
Company Address: _____

Terms of Electronic File Transfer:

1. The electronic files (Files) furnished by Tetra Tech to the person or entity receiving the Files (Recipient) are provided only for the convenience of the Recipient, and only for its sole use. RECIPIENT AGREES THAT, BY OPENING THE PACKAGE CONTAINING THE FILES, RECIPIENT SHALL BE BOUND BY AND SUBJECT TO THE TERMS OF THIS DISCLAIMER.
2. Recipient recognizes that the Files may not be adequate or appropriate for Recipient's needs. In the case of any defects in the Files or any discrepancies between the Files and the hardcopy of the Files bearing the seal of Tetra Tech's professional registrant (if applicable), the sealed hardcopy shall govern. Recipient accepts the Files on an "as-is" basis, with any and all faults. There are no express warranties made by Tetra Tech with respect to the Files, and any implied warranties are excluded.
3. WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXCLUDED. Tetra Tech assumes no responsibility for the accuracy or completeness of the Files, and any use or reuse of such electronic data for any purpose shall be at the Recipient's sole risk.
4. Furthermore, in consideration of the use of the electronic data and the Files, Recipient agrees, to the fullest extent permitted by law, to defend (by legal counsel selected by Tetra Tech), indemnify, and hold Tetra Tech harmless from any and all claims, damages, losses, costs, and expenses, including attorney's fees and court costs (including the costs of any appeals) arising out of or resulting from Recipient's use, reuse, or use by others, regardless of whether such claims, damages, losses, costs, and expenses are caused in whole or in part by Tetra Tech. The duty to defend, indemnify, and hold Tetra Tech harmless shall apply regardless of whether such claims, damages, losses, costs, and expenses arise out of causes of action for tort, including negligence, contract, warranty, or strict liability.
5. The Recipient agrees to the following use restrictions of the electronic files:
 - a. The use of these files is limited only to the operation and maintenance of the above referenced project(s).

6. By signing below, the Recipient accepts full responsibility for the use of all electronic files received from and/or produced by Tetra Tech for the Project(s) listed above and any documents, instructions, or otherwise produced there from by the Recipient along with all Terms of Electronic Transfer indicated herein. A copy of this Agreement, executed by Tetra Tech, will be provided before or with the first electronic file transmittal.

Signature Type or Print Name Title Date

SECTION 01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Contractor's construction schedule.
 - 2. Reports.

1.3 INFORMATIONAL SUBMITTALS

- A. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period. Follow format outlined in attachment at end of this Section.
- B. Site Condition Reports: Submit at time of discovery of differing conditions.
- C. Special Reports: Submit at time of unusual event.

1.4 COORDINATION

- A. Secure time commitments for performing critical elements of the Work from entities involved.
- B. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

1.5 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for commencement of the Work to date of final completion.
- B. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

1.6 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

- A. Gantt-Chart Schedule: Submit a comprehensive, horizontal, Gantt-chart-type, Contractor's construction schedule per requirements of Division 01 Section "Multiple Contract Project Summary – Project Schedule".
 - 1. Format: Refer to accompanying "Format for Construction Schedule".

- B. Preparation: Indicate each significant construction activity separately, by Specification Section, coordinated with the schedule of values. Provide line item(s) for each Specification Section.
- C. Schedule Updating: At bi-weekly intervals, update schedule to reflect actual construction progress and activities.
- D. Distribution: Distribute copies of approved schedule to Architect, Construction Manager, Owner, separate contractors, testing and inspecting agencies, and other parties with a need-to-know schedule responsibility.
 - 1. When revisions are made, distribute updated schedules to the same parties.

1.7 REPORTS

- A. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.
- B. Special Reports: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

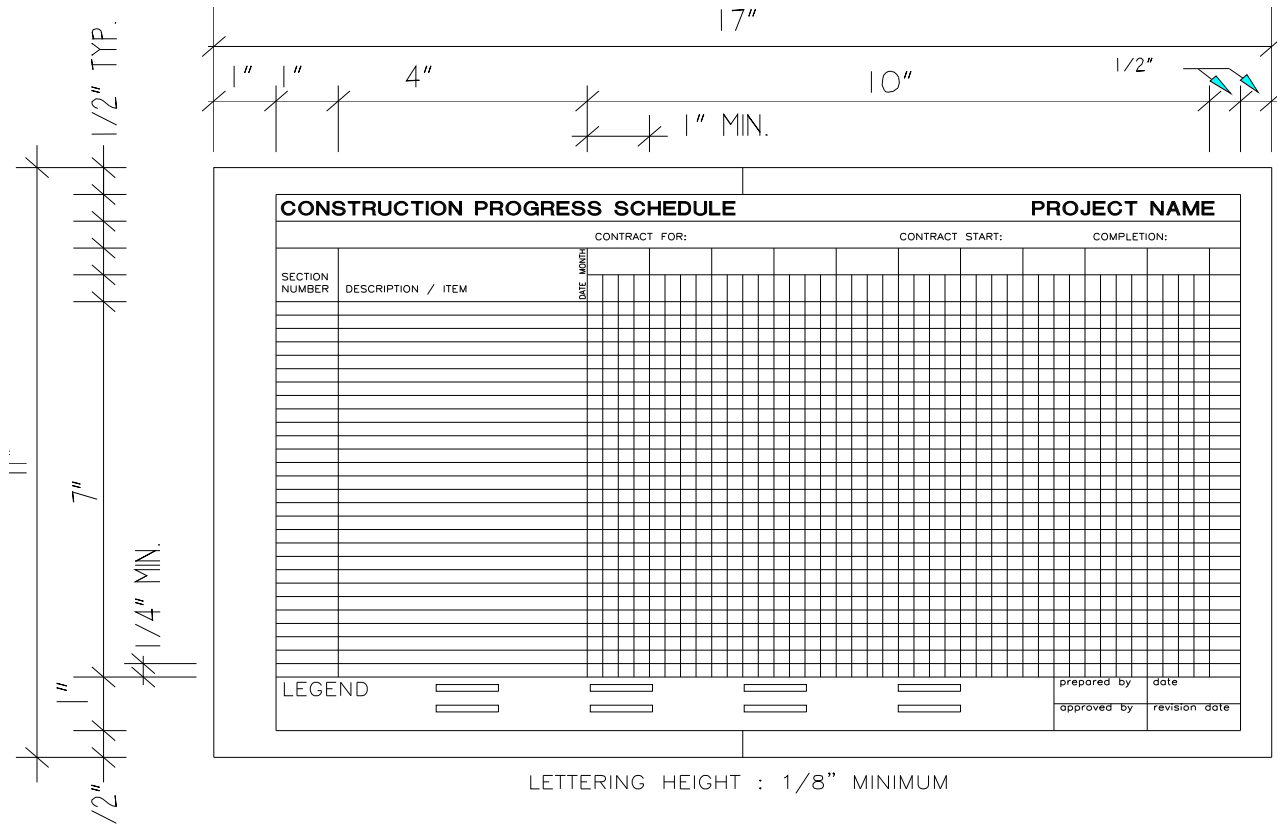
Attachment: Format for Construction Schedule

END OF SECTION 01 32 00

SECTION 01 32 00 - PROJECT SCHEDULE - Attachment #1

FORMAT FOR
CONSTRUCTION SCHEDULE

(Refer to SECTION 01 32 00, Article 2.2)



Format

Provide separate bar for each item in sequential order from beginning of Project to completion with the following information included for each item:

- Related Technical Specification number.
- Distinct graphic delineation, indicating area of building where schedule item is located.
- Shop drawing submittal date and required acceptance date.
- Product procurement date and anticipated delivery date.
- Projected start and completion dates for each item.

SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes requirements for the administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
 - 1. Process designated submittals for the Project electronically through designated Electronic Submittal System. PDF files must be opened, viewed, modified and printed using Adobe Acrobat PDF software to view reviewer comments/stamps.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's and Construction Manager's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. As-Specified Products: Products to be incorporated into Project as specified by manufacturer name and product designation in Part 2 of technical specifications, intended to be installed as specified in Part 3 of technical specifications, and from a product category specifically identified as eligible to be considered as an "as-specified product" in the Action Submittals Article in Part 1 of technical specifications.
- C. Informational Submittals: Written and graphic information and physical samples that do not require Architect's and Construction Manager's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."
- D. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.
- E. Electronic Submittal System: A method to transmit certain electronic submittals between the Contractor, Construction Manager, Architect, and Owner, using Submittal Exchange website service.
 - 1. For consistency, the standard file format will be PDF. Convert paper originals and other file formats to PDF prior to submission.
 - 2. In the event of system malfunction, process submittals in accordance with the Architect's instructions, until the system malfunction has been corrected.

3. For this Project, process the following submittal types through the designated electronic submittal system:
 - a. Product Data.
 - b. Sustainable Design Submittals.
 - c. Shop Drawings.
 - d. Product Schedules.
 - e. Qualification Data.
 - f. Certificates (Welding, Installer, Manufacturer, Product, and Material, as applicable).
 - g. Test Reports (Material, Product, Preconstruction, Compatibility, and Field, as applicable).
 - h. Research Reports.
 - i. Warranty (sample).
 - j. Design Data, including calculations.
 - k. Coordination Drawings.
 - l. Delegated-Design Services Certifications.

4. For Samples, provide electronic submittal of Sample cover sheet, identifying location and actual delivery date of Samples. Deliver Samples to location (Architect's office, Project site, etc.) as directed by the Architect.

1.4 COLOR SCHEDULE

- A. Color Schedule: Within 30 days after date of Notice of Award, submit a complete list of proposed manufacturers and complete product designations (i.e. model, grade, series, product line, etc.) for each item requiring color selection by Architect.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. 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. Where indicated, submit all submittal items required for each Specification Section concurrently.
 3. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Architect and Construction Manager reserve the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

- B. Processing Time: Allow sufficient time for submittal review, including time for resubmittals. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
- C. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:
1. Include a cover sheet on each submittal item for identification. Do not combine different submittals under same cover sheet; only one submittal is to be provided per email.
 - a. Cover Sheet Form: Use PDF version of sample form included in Project Manual. Complete each item on form, sign and date. Architect will furnish PDF version of sample form.
 2. Name submittal file as directed by Architect.
 3. Transmit each submittal via Electronic Submittal System.
 4. Transmit each submittal to Architect using the Submittal Exchange website www.submittalexchange.com.
- D. Resubmittals: Make resubmittals in same form and, for non-electronic submittals, in the same number of copies as initial submittal.
1. Note date and content of revision in label or title block and clearly indicate extent of revision.
 2. Resubmit submittals until they are marked with approval notation from Architect and Construction Manager.
 3. Refer to the General Conditions for provisions allowing Owner to obtain reimbursement from the Contractor for amounts paid to the Architect for evaluation of certain resubmittals.
- E. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities.
- F. Use for Construction: Retain complete electronic copies of submittals on Project site during Construction. Also maintain one complete set of hard paper copies of all approved submittals on Project site during Construction. Use only final action submittals that are marked with approval notation from Architect and Construction Manager.
- G. Use of As-Specified Verification Form: The As-Specified Verification Form is intended to reduce certain action submittal paperwork for select products to be incorporated into the Work. If product to be incorporated into Project is specified by name and product designation in Part 2 of the Technical Specification Section and is from a product category specifically identified as eligible to be considered as an “as-specified product” in the Action Submittals Article in Part 1 of technical specifications, submit “**As-Specified Verification Form**” attached to this Specification Section.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. All products provided for use in construction of this Project are to be free of asbestos. Refer to Division 01 Section “Closeout Procedures” for certification required to be provided. The Owner may provide random testing of installed products/ construction for asbestos content. Any Contractor-installed product found to contain asbestos shall be classified as defective work. Defective work shall be corrected by the Contractor as specified in the General Conditions.

1.7 SUBMITTAL PROCEDURES, GENERAL

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1.8 ELECTRONIC SUBMITTAL REQUIREMENTS

- A. Use the designated electronic submittal system for submittals in this Article.
 - 1. 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.
 - 2. Transmit each submittal to Construction Manager and Architect using the Submittal Exchange website, www.submittalexchange.com.
 - 3. For Action Submittals, Architect / Engineer and Construction Manager review comments will be made available on the Submittal Exchange website for downloading. Contractor will receive email notice of completed review.
 - 4. Distribution of reviewed submittals to subcontractors and suppliers is the responsibility of the Contractor.
 - 5. After award of contract, training will be provided by Submittal Exchange regarding use of website and PDF submittals. Contact Submittal Exchange at 1-800-714-0024.
 - 6. Internet Service and Equipment Requirements:
 - a. Email address and Internet access at Contractor’s main office.
 - b. Adobe Acrobat (www.adobe.com), for applying electronic stamps and comments.
 - 7. Contractor shall bear the cost of the Submittal Exchange project subscription.
 - 8. Retain one electronic copy of all approved submittals, as part of the project records required at Project Closeout.
 - 9. Tetra Tech Architects and Engineers will be the Submittal Exchange Project Leader and Subscriber.

- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
1. Mark submittal to show which products and options are applicable.
 2. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Statement of compliance with specified referenced standards.
 - c. Testing by recognized testing agency.
 3. For equipment, include the following in addition to the above, as applicable:
 - a. Printed performance curves.
 - b. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
- C. As-Specified Submittals: Complete the “**As-Specified Verification Form**”.
1. Refer to the Action Submittals Article of technical specification sections. If the product to be incorporated into the Project is an “as-specified product” as defined in this Section, then submit “**As-Specified Verification Form**” in lieu of Product Data, otherwise submit full Product Data.
 2. Do not use “**As-Specified Verification Form**” unless specifically indicated in technical specification.
 3. The “**As-Specified Verification Form**” alone serves as the submittal for the specific product and no additional action submittal data is due at the time of the submittal. The full specific product technical data, however, is required to be included in the Operation and Maintenance Manual. Comply with requirements specified in Division 01 Section “Operation and Maintenance Data”.
- D. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data, unless submittal based on Architect's digital data drawing files is otherwise permitted.
1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Schedules.
 - c. Compliance with specified standards.
 - d. Notation of dimensions established by field measurement.
 - e. Relationship and attachment to adjoining construction clearly indicated.
 - f. Seal and signature of professional engineer if specified.
- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
 2. Manufacturer and product name, and model number if applicable.
 3. Number and name of room or space.
- F. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- G. Certificates:
1. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.
 2. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
 3. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
 4. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
 5. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- H. Test Reports:
1. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
 2. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
 3. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
 4. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

5. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- I. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project.
- J. Warranty: Submit sample warranties as required in individual Specification Sections.
- K. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
- L. Coordination Drawing Submittals: Comply with requirements specified in Division 01 Section "Project Management and Coordination."
- M. Delegated-Design Services Certification: Submit certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

1.9 NON-ELECTRONIC SUBMITTAL REQUIREMENTS

- A. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
 1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of applicable Specification Section.
 3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

- a. Number of Samples: Submit two full sets of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Deliver one set to Architect's office, deliver the other set to the construction trailer at the job site.
5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
- a. Number of Samples: Submit two sets of Samples. Deliver one set to Architect's office, deliver the other set to the construction trailer at the job site.
 - 1) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- B. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.
 2. Number and title of related Specification Section(s) covered by subcontract.
 3. Submit subcontract list in the following format:
 - a. Number of Copies: Four paper copies of subcontractor list, unless otherwise indicated. Architect will return one copy.
- C. List of Key Personnel Names: No later than 15 days after date of Notice of Award, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site.
1. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including emergency, office, and cellular telephone numbers and email addresses.
 - a. Number of Copies: Four paper copies of key personnel list, unless otherwise indicated.

1.10 MISCELLANEOUS SUBMITTAL REQUIREMENTS

- A. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Division 01 Section "Closeout Procedures."

- B. Maintenance Data: Comply with requirements specified in Division 01 Section "Operation and Maintenance Data."

1.11 DELEGATED-DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
 - 2. All delegated designers shall be licensed in the State of NY and shall affix their stamp and signature to the accepted submittal.

1.12 CONTRACTOR'S REVIEW

- A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Identify any deviations from Contract Document requirements. Mark cover sheet with approval before submitting to Architect and Construction Manager.
 - 1. Sign and date statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.
 - 2. If using Adobe Acrobat to electronically sign the Submittal Cover Sheet do not use the Certify Sign, Time Stamp feature as this will lock the document for further editing.

1.13 ARCHITECT'S AND CONSTRUCTION MANAGER'S ACTION

- A. General: Architect and Construction Manager will not review submittals that do not bear Contractor's approval and will return them without action.
- B. Action Submittals: Architect and Construction Manager will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect and Construction Manager will mark submittal appropriately to indicate action, as follows:
 - 1. Final Unrestricted Release: 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. Final-but-Restricted Release: Where the submittal is marked "Approved as Noted," the Work covered by the submittal may proceed provided it complies both with Architect's notations and corrections on the submittal and the Contract Documents. Final acceptance will depend on that compliance.

3. Resubmit: Where the submittal is marked "Approved, Revise and Return Corrected Copies," the Work covered by the submittal may proceed provided it complies both with Architect's notations and corrections on the submittal and the Contract Documents. Revise submittal according to Architect's notations and corrections and return corrected copies. Final acceptance will depend on that compliance.
 4. Rejected: Where the submittal is marked "Rejected," do not proceed with the Work covered by the submittal. Prepare a new submittal for a product that complies with the Contract Documents.
 5. Incomplete - Resubmit: Where the submittal is marked "Incomplete, Submit Additional Information," do not proceed with the Work covered by the submittal. Prepare additional information requested, or required by the Contract Documents, that indicates compliance with requirements, and resubmit.
- C. Informational Submittals: Architect and Construction Manager will review each submittal and will not return it, or will return it if it does not comply with requirements.
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Limit information submitted to specific products indicated. Do not submit extraneous matter. Submittals containing excessive extraneous matter will be returned for resubmittal without review.
- F. Submittals not required by the Contract Documents may be returned by the Architect without action.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

Attachments: Cover Sheet
 As-Specified Verification Form
 Delegated Design Submittal Form

END OF SECTION 01 33 00

CONTRACTOR: _____

SUBMITTAL DATE ____ / ____ / ____

Check following as applicable:

- First Submission
- Re-submission

ARCHITECT: Tetra Tech Architects & Engineers

PROJECT IDENTIFICATION

Architect's
Project No.: 121111-19002

Proj. Name: Reconstruction at Mahopac CSD / New Pump House

Location: _____

PRODUCT IDENTIFICATION

Specification Section No. _____

A/E Submittal No. _____

Name of Product: _____

Name of Manufacturer: _____

SUBCONTRACTOR

SUPPLIER

RELATIONSHIP TO STRUCTURE

Building
Name _____

(Room #) _____ (Room Name)

Contract Drawing No.: _____

DEVIATION FROM CONTRACT DOCUMENTS: _____

CONTRACTOR COMMENTS: _____

ARCHITECT'S COMMENTS: _____

CONTRACTOR'S STAMP

CONTRACTOR'S CERTIFICATION

I CERTIFY THAT THIS SUBMITTAL HAS BEEN REVIEWED AND APPROVED BY THE CONTRACTOR IN ACCORDANCE WITH THE GENERAL CONDITIONS. PRODUCTS/MATERIALS ARE FREE OF ASBESTOS AS REQUIRED BY THE CONTRACT DOCUMENTS.

BY _____

CONSTRUCTION MANAGER'S CERTIFICATION

I CERTIFY THAT THIS SUBMITTAL HAS BEEN REVIEWED AND APPROVED BY THE CONSTRUCTION MANAGER IN ACCORDANCE WITH THE GENERAL CONDITIONS.

BY _____

CM Submittal No. _____

RESERVED FOR USE BY TETRA TECH

ACTION SUBMITTAL:

- Approved
- Approved As Noted
- Approved, Revise and Return Corrected Copies
- Rejected
- Incomplete, Submit Additional Information

INFORMATIONAL SUBMITTAL:

- No Action Taken
- Returned for Resubmittal

Reviewed By: _____

Date: _____

Reviewed only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. Review not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. Review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences or procedures.



As-Specified Verification Form

Project Number: 121111-19001

Project Title: Reconstruction at Mahopac CSD / New Pump House

Technical Specification Section: _____
 (Include Section Number and Title as shown in Project Manual)

A/E Submittal No.: _____

Specified Product: _____
 (Include manufacturer's name and product designation)

The undersigned, hereinafter called the Contractor, hereby warrants that the Specified Product listed above will be incorporated into the Project in accordance with requirements specified in the Technical Specification Section identified above without modification or alteration.

By acceptance of this form, Tetra Tech Architects & Engineers (hereinafter called Tetra Tech), agrees that limited submittals identified in the Technical Specification Section identified above are not required, unless otherwise stated in the Submittals article in the Technical Specification Section.

The Contractor is advised that use of this As-Specified Verification Form does not relieve the Contractor from providing remaining submittal documentation required in Technical Specification sections and all information required in Division 1 Closeout section of the Project Manual or from complying with requirements of the General Conditions.

Products/Materials are free of asbestos as required by the Contract Documents.

(Name of Contractor)

(Authorized Signature)

(Title of Signatory)

(Date)

RESERVED FOR USE BY TETRA TECH

ACTION SUBMITTAL:

Approved

Rejected

Reviewed By: _____

Date: _____

Reviewed only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. Review not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. Review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences or procedures.

DELEGATED DESIGN SUBMITTAL

CONTRACTOR: _____

SUBMITTAL DATE ____/____/____

DESIGN PROFESSIONAL: _____

Check following as applicable:

- First Submission
- Re-submission

ARCHITECT: Tetra Tech Architects & Engineers

PROJECT IDENTIFICATION

Architect's
Project No.: 121111-19002
Proj. Name: Reconstruction at Mahopac CSD / New Pump House
Location: _____

PRODUCT IDENTIFICATION

Specification Section No. _____
A/E Submittal No. _____
Name of Product: _____
Name of Manufacturer: _____

SUBCONTRACTOR

SUPPLIER

RELATIONSHIP TO STRUCTURE

Building
Name _____
(Room #) (Room Name)

Contract Drawing No.: _____

DEVIATION FROM CONTRACT DOCUMENTS:

DESIGN PROFESSIONAL'S COMMENTS: _____

CONTRACTOR COMMENTS: _____

ARCHITECT'S COMMENTS: _____

CONSTRUCTION MANAGER'S CERTIFICATION

I certify that this submittal has been reviewed and approved by the Construction Manager in accordance with the General Conditions.

BY _____

CM Submittal No. _____

CONTRACTOR'S STAMP

DESIGN PROFESSIONAL'S CERTIFICATION

I certify that I am a design professional currently licensed in New York State and confirm my responsibility for work included in this submittal in accordance with the General Conditions. Further, I certify that to the best of my knowledge, information and belief, the plans and specifications are in accordance with applicable requirements of the New York State Uniform Fire Prevention and Building Code, the State Energy Conservation Construction Code and construction standards of the Education Department.

BY _____

CONTRACTOR'S CERTIFICATION

I certify that this submittal has been reviewed and approved by the Contractor in accordance with the General Conditions. Products/Materials Are free of asbestos as required by the Contract Documents.

BY _____

RESERVED FOR USE BY TETRA TECH
ACTION SUBMITTAL:
<input type="checkbox"/> Approved
<input type="checkbox"/> Approved As Noted
<input type="checkbox"/> Approved, Revise and Return Corrected Copies
<input type="checkbox"/> Rejected
<input type="checkbox"/> Incomplete, Submit Additional Information
INFORMATIONAL SUBMITTAL:
<input type="checkbox"/> No Action Taken
<input type="checkbox"/> Returned for Resubmittal
Reviewed By: _____
Date: _____
Reviewed only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. Review not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. Review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences or procedures.

SECTION 01 35 26 – GOVERNMENTAL SAFETY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Safety requirements included in 8 NYCRR 155.5 Uniform Safety Standards for School Construction and Maintenance Projects.

1.3 PERFORMANCE REQUIREMENTS

- A. General Performance: Provide all measures, including (but not limited to) materials, equipment, and procedures, required to comply with following requirements of 8 NYCRR 155.5 Uniform Safety Standards for School Construction and Maintenance Projects.
- B. Certificate of Occupancy:
 - 1. 8 NYCRR 155.5 (a): “The occupied portion of any school building shall always comply with the minimum requirements necessary to maintain a certificate of occupancy.”
- C. General Safety and Security Standards for Construction Projects:
 - 1. 8 NYCRR 155.5 (e)(1): “All construction materials shall be stored in a safe and secure manner.”
 - 2. 8 NYCRR 155.5 (e)(2): “Fences around construction supplies or debris shall be maintained.”
 - 3. 8 NYCRR 155.5 (e)(3): “Gates shall always be locked unless a worker is in attendance to prevent unauthorized entry.”
 - 4. 8 NYCRR 155.5 (e)(4): “During exterior renovation work, overhead protection shall be provided for any sidewalks or areas immediately beneath the work site or such areas shall be fenced off and provided with warning signs to prevent entry.”
 - 5. 8 NYCRR 155.5 (e)(5): “Workers shall be required to wear photo identification badges at all times for identification and security purposes while working at occupied sites.”

D. Separation of Construction Areas from Occupied Spaces:

1. 8 NYCRR 155.5 (f): “Construction areas which are under the control of a contractor and therefore not occupied by district staff or students shall be separated from occupied areas. Provisions shall be made to prevent the passage of dust and contaminants into occupied parts of the building. Periodic inspection and repairs of the containment barriers must be made to prevent exposure to dust or contaminants. Gypsum board must be used in exit ways or other areas that require fire rated separation. Heavy duty plastic sheeting may be used only for a vapor, fine dust or air infiltration barrier, and shall not be used to separate occupied spaces from construction areas.”
2. 8 NYCRR 155.5 (f)(1): “A specific stairwell and/or elevator should be assigned for construction worker use during work hours. In general, workers may not use corridors, stairs or elevators designated for students or school staff.”

E. Cleaning Occupied Areas:

1. 8 NYCRR 155.5 (f)(2): “Large amounts of debris must be removed by using enclosed chutes or a similar sealed system. There shall be no movement of debris through halls of occupied spaces of the building. No material shall be dropped or thrown outside the walls of the building.”
2. 8 NYCRR 155.5 (f)(3): “All occupied parts of the building affected by renovation activity shall be cleaned at the close of each workday. School buildings occupied during a construction project shall maintain required health, safety and educational capabilities at all times that classes are in session.”

F. Exiting and Ventilation:

1. 8 NYCRR 155.5(g): Maintain exiting and ventilation during school construction projects.
2. 8 NYCRR 155.5(g)(1): “Required exits, temporary stairs, ramps, exit signs, and door hardware shall be provided at all times.”
3. 8 NYCRR 155.5(g)(2): “Required ventilation to occupied spaces affected by construction will be maintained during the project.”

G. Noise Control:

1. 8 NYCRR 155.5 (i): “Construction and maintenance operations shall not produce noise in excess of 60 dba in occupied spaces or shall be scheduled for times when the building or affected building spaces are not occupied or acoustical abatement measures shall be taken.”

H. Control of Fumes, Gases and Contaminants:

1. 8 NYCRR 155.5 (j): The contractor shall be responsible for the control of chemical fumes, gases, and other contaminants produced by welding, gasoline or diesel engines, roofing, paving, painting, and other fumes to ensure they do not enter occupied portions of the building or air intakes.

I. “Off-Gassing” of Volatile Organic Compounds:

1. 8 NYCRR 155.5 (j)(1): The contractor shall be responsible to ensure that activities and materials which result in "off-gassing" of volatile organic compounds such as glues, paint, furniture, carpeting, wall coverings, drapery, etc. are scheduled, cured or ventilated in accordance with manufacturer’s recommendations before a space can be occupied.

J. Asbestos Isolation:

1. 8 NYCRR 155.5 (k): “Large and small asbestos abatement projects as defined by 12 NYCRR 56 shall not be performed while the building is occupied.” Note, it is NYSED’s interpretation that the term "building", as referenced in this section of 8 NYCRR 155.5, means a wing or major section of a building that can be completely isolated from the rest of the building with sealed non-combustible construction. The isolated portion of the building must contain exits that do not pass through the occupied portion and ventilation systems must be physically separated and sealed at the isolation barrier.
2. Exterior work such as roofing, flashing, siding, or soffit work may be performed on occupied buildings provided proper variances are in place as required, and complete isolation of ventilation systems and at windows is provided. Care must be taken to schedule work so that classes are not disrupted by noise or visual distraction.

K. Lead and Asbestos Testing:

1. 8 NYCRR 155.5 (c)(1): “All school areas to be disturbed during renovation or demolition shall be tested for lead and asbestos.”
 - a. Asbestos and Asbestos-Containing Materials:
 - 1) Be advised that asbestos and asbestos-containing materials are required to be abated as part of this Project. Refer to Division 02 Section “Asbestos Abatement”.
 - a) The extent of asbestos to be abated as part of the Project is indicated on Drawings included in the Contract Documents.
 - b) Prior to beginning Work, review Owner’s “Asbestos Management Plan” to ensure asbestos or asbestos-containing materials identified in that document are not disturbed.
 - 2) Be advised that if materials suspected to be asbestos, or to contain asbestos, that are not included in the Project and not identified in the Contract Documents are encountered during construction, immediately notify Owner and take precautions as required to avoid disturbing materials until directed by Owner.

3) Transmission Electron Microscopy (TEM): All asbestos abatement work that requires clearance air sampling in accordance with New York State Industrial Code Rule 56 shall have clearance air samples collected and analyzed using Transmission Electron Microscopy as per the Asbestos Hazard Emergency Response Act (40 CFR 763). Refer to Division 02 Section "Asbestos Abatement".

b. Lead and Lead-Containing Materials:

1) Be advised that a lead inspection has been performed as required by New York State Education Department and a copy of the lead inspection report is available at the Owner's offices.

L. Code Rule 56:

1. 8 NYCRR 155.5(k): "All asbestos abatement projects shall comply with all applicable Federal and State laws including but not limited to the New York State Department of Labor industrial code rule 56 (12 NYCRR 56), and the Federal Asbestos Hazard Emergency Response Act (AHERA), 40 CFR part 763 (Code of Federal Regulations, 1998 Edition, Superintendent of Public Documents, U.S. Government Printing Office, Washington, DC 20402; 1998; available at the Office of Facilities Planning, Education Building Annex, Room 1060, State Education Department, Albany, NY 12234."

M. Lead:

1. 8 NYCRR 155.5 (l): Surfaces that will be disturbed by reconstruction must have a determination made as to the presence of lead. Projects which disturb surfaces that contain lead shall have in the specifications a plan prepared by a certified Lead Risk Assessor or Supervisor which details provisions for occupant protection, worksite preparation, work methods, cleaning and clearance testing which are in general accordance with the HUD Guidelines.

a. Be advised that lead and lead-containing materials are required to be disturbed or removed as part of this Project. Refer to Division 02 Section "Lead-Safe Work Practices".

1) The extent of lead to be disturbed or removed as part of the project is indicated on Drawings included in the Contract Documents.

b. Contractor is responsible for complying with requirements of all applicable federal, state and local regulations, including (but not limited to) OSHA Lead in Construction Standard 29 CFR 1926.62, when construction activities involve disturbance of materials containing 1.0 mg/sq cm or 0.5 percent of lead or less, including (but not limited to) lead-based paint, ceramic tile, and similar materials.

c. If materials suspected to contain lead above 1.0 mg/sq cm or above 0.5 percent that are not included in Project or identified in Contract Documents are encountered during construction, immediately notify Owner and take applicable precautions to avoid disturbing materials until directed by Owner.

N. Disposal of Lead Abatement Waste:

1. Test all debris from lead abatement activities to determine whether it is hazardous or non-hazardous waste.
2. Transport and dispose of debris determined to be hazardous waste in accordance with applicable regulations.
3. Package, label, and mark all hazardous waste materials in accordance with applicable requirements of 49 CFR 173, 178 and 179.
4. Maintain hazardous waste manifest from date of transport until date of disposal, destruction or recycling.
5. Return fully executed hazardous waste manifests to Owner within 60 days after date waste accepted by initial transporter.
6. Dispose of material determined to be Construction and Demolition Debris in accordance with 6 NYCRR 360 and 364. Provide trip tickets or other documentation clearly identifying generating site, Owner, transporter, disposal site and amount of material removed from site, transported to and disposed of at disposal site.
7. Refer to Division 02 Section "Lead-Safe Work Practices" for additional requirements.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 35 26

SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, Construction Manager, or authorities having jurisdiction are not limited by provisions of this Section.

1.3 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect or Construction Manager.
- C. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- D. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

- E. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 SUBMITTALS

- A. Informational Submittals:
 - 1. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility sent to authorities having jurisdiction before starting work on the following systems:
 - a. Seismic-force-resisting system, designated seismic system, or component listed in the designated seismic system quality-assurance plan prepared by Architect.
 - b. Main wind-force-resisting system or a wind-resisting component listed in the wind-force-resisting system quality-assurance plan prepared by Architect.
 - 2. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
 - 3. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
 - a. Specification Section number and title.
 - b. Entity responsible for performing tests and inspections.
 - c. Description of test and inspection.
 - d. Identification of applicable standards.
 - e. Identification of test and inspection methods.
 - f. Number of tests and inspections required.
 - g. Time schedule or time span for tests and inspections.

1.6 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
1. Date of issue.
 2. Project title and number.
 3. Name, address, and telephone number of testing agency.
 4. Dates and locations of samples and tests or inspections.
 5. Names of individuals making tests and inspections.
 6. Description of the Work and test and inspection method.
 7. Identification of product and Specification Section.
 8. Complete test or inspection data.
 9. Test and inspection results and an interpretation of test results.
 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 12. Name and signature of laboratory inspector.
 13. Recommendations on retesting and reinspecting.
- B. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.7 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.

- F. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
 - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
 - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- G. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

1.8 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
 - 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
 - 2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
 - 1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
 - 2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 - 3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.

4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. **Manufacturer's Field Services:** Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 01 Section "Submittal Procedures."
- D. **Manufacturer's Technical Services:** Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- E. **Retesting/Reinspecting:** Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- F. **Testing Agency Responsibilities:** Cooperate with Architect, Construction Manager, Project Representative, and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Architect, Construction Manager, Project Representative, and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 6. Do not perform any duties of Contractor.
- G. **Associated Services:** Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 4. Facilities for storage and field curing of test samples.

5. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 6. Security and protection for samples and for testing and inspecting equipment at Project site.
- H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.
1. Distribution: Distribute schedule to Owner, Architect, Construction Manager, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.9 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Owner will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, as indicated in Statement of Special Inspections attached to this Section, and as follows:
1. Notifying Architect, Construction Manager, Project Representative, and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 2. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect, through Construction Manager, with copy to Contractor and to authorities having jurisdiction.
 3. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
 4. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 5. Retesting and reinspecting corrected work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
 - 1. Date test or inspection was conducted.
 - 2. Description of the Work tested or inspected.
 - 3. Date test or inspection results were transmitted to Architect.
 - 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's, Construction Manager's, and Project Representative's reference during normal working hours.

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
 - 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Division 01 Section "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

Attachment: Statement of Special Inspections

END OF SECTION 01 40 00



TETRA TECH
ARCHITECTS & ENGINEERS

STATEMENT OF SPECIAL INSPECTIONS

Project: Mahopac Phase 1
Location: Mahopac, NY
Owner: Mahopac Central School District

This *Statement of Special Inspections* is submitted as a condition for permit issuance in accordance with the Special Inspection and Structural Testing requirements of the Building Code of New York State... It includes a schedule of Special Inspection services applicable to this project. *Refer to individual technical specification sections for additional testing requirements.*

This document includes the following parts:

Qualifications of Inspectors and Testing Technicians

Schedule of Special Inspection Services

Qualifications of Inspectors and Testing Technicians

The qualifications of all personnel performing Special Inspection and testing activities are subject to the approval of the Building Official. The credentials of all Inspectors and testing technicians shall be provided if requested.

Key for Minimum Qualifications of Inspection Agents:

When the Registered Design Professional in Responsible Charge deems it appropriate that the individual performing a stipulated test or inspection have a specific certification or license as indicated below, such designation shall appear below the *Qualifications* on the Schedule.

PE	Structural Engineer – a licensed PE specializing in the design of building structures
PE/GE	Geotechnical Engineer – a licensed PE specializing in soil mechanics and foundations
EIT	Engineer-In-Training – a graduate engineer who has passed the Fundamentals of Engineering examination

American Concrete Institute (ACI) Certification

ACI-CFTT	Concrete Field Testing Technician – Grade 1
ACI-CCI	Concrete Construction Inspector
ACI-LTT	Laboratory Testing Technician – Grade 1&2
ACI-STT	Strength Testing Technician

American Welding Society (AWS) Certification

AWS-CWI	Certified Welding Inspector
AWS/AISC-SSI	Certified Structural Steel Inspector

American Society of Non-Destructive Testing (ASNT) Certification

ASNT	Non-Destructive Testing Technician – Level II or III.
------	---

International Code Council (ICC) Certification

ICC-SMSI	Structural Masonry Special Inspector
ICC-SWSI	Structural Steel and Welding Special Inspector
ICC-SFSI	Spray-Applied Fireproofing Special Inspector
ICC-PCSI	Prestressed Concrete Special Inspector
ICC-RCSI	Reinforced Concrete Special Inspector

National Institute for Certification in Engineering Technologies (NICET)

NICET-CT	Concrete Technician – Levels I, II, III & IV
NICET-ST	Soils Technician - Levels I, II, III & IV
NICET-GET	Geotechnical Engineering Technician - Levels I, II, III & IV

Association of the Wall and Ceilings Industries International (AWCI)

AWCI 12-B	Standard Practice for the Testing and Inspection of Field Applied Thin-Film Intumescent Fire-Resistive Materials; an Annotated Guide.
-----------	---

Schedule of Special Inspection Services

INSPECTION AND TESTING <i>("Continuous" & "Periodic" defined by the Code; refer to applicable Technical Specification Section for specific frequency requirements)</i>	REQUIRED <i>(Required if checked; Not Applicable if not checked)</i>	TECHNICAL SPECIFICATION SECTION <i>(Refer to for additional information)</i>	CONTINUOUS	PERIODIC
Cast-in-Place Concrete (1705.3)				
1. Inspection of reinforcing steel and verify placement	<input checked="" type="checkbox"/>	03 30 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Inspection of reinforcing steel welding:				
a. Verification of ASTM A706 material	<input type="checkbox"/>	03 30 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Inspect single-pass fillet welds, maximum 5/16"	<input type="checkbox"/>	03 30 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Inspect all other welds	<input type="checkbox"/>	03 30 00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Inspection of anchors to be installed in concrete prior to and during placement	<input checked="" type="checkbox"/>	03 30 00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Inspect anchors post-installed in hardened concrete				
a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads.	<input type="checkbox"/>	03 30 00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Mechanical anchors and adhesive anchors not defined in 4a.	<input checked="" type="checkbox"/>	03 30 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Verify use of required design mix	<input checked="" type="checkbox"/>	03 30 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Sampling fresh concrete for fabricating specimens for strength testing, perform slump and air content tests, and measure temperature of concrete	<input checked="" type="checkbox"/>	03 30 00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Inspection of concrete and shotcrete placement for proper application techniques	<input checked="" type="checkbox"/>	03 30 00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8. Verify maintenance of specified curing temperature and techniques	<input checked="" type="checkbox"/>	03 30 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9. 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 structural slabs	<input checked="" type="checkbox"/>	03 30 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10. Inspection of formwork for shape, location and dimensions of the concrete member being formed	<input checked="" type="checkbox"/>	03 30 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Inspection of post-tensioning operations	<input type="checkbox"/>	03 38 16	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Precast Concrete (1705.3)				
1. Inspection of reinforcing steel	<input type="checkbox"/>	03 41 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Verify use of required design mix	<input type="checkbox"/>	03 41 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Inspection of prestressed operations				
a. Application of prestressing forces	<input type="checkbox"/>	03 41 00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Grouting of bonded prestressing tendons in the seismic-force-resisting system	<input type="checkbox"/>	03 41 00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Sampling fresh concrete; slump, air content, temperature, strength test specimens	<input type="checkbox"/>	03 41 00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Inspection of formwork for shape, location and dimensions of the concrete member being formed	<input type="checkbox"/>	03 41 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Inspection of concrete placement for proper application techniques	<input type="checkbox"/>	03 41 00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Inspection for maintenance of specified curing temperature and techniques	<input type="checkbox"/>	03 41 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Erection of precast concrete members	<input type="checkbox"/>	03 41 00, 03 48 10	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Fabricated Items (1704.2.5 and 1705.10)				
1. Inspection of structural, load-bearing or lateral load-resisting members or assemblies as noted on Contract Documents that are fabricated in a fabricator's shop	<input type="checkbox"/>	?? ?? ??	<input type="checkbox"/>	<input type="checkbox"/>
Exceptions:				
a. The fabricator has been approved to perform work without special inspections per NYSBC 1704.2.5.1.				
b. The members or assemblies are to be fabricated on site. Then refer to the respective material categories for inspections.				

Masonry (1705.4)				
Level 1	<input type="checkbox"/>	04 20 00		
1. Prior to construction, verify certificates of compliance used in masonry construction	<input type="checkbox"/>	04 20 00	<input type="checkbox"/>	<input type="checkbox"/>
Level 2 Level 3	<input type="checkbox"/> Level 2 <input type="checkbox"/> Level 3	04 20 00		
1. Prior to construction, verify compliance with the approved submittals.	<input type="checkbox"/>	04 20 00	<input type="checkbox"/>	<input type="checkbox"/>
2. Prior to construction, verify $f'm$, except where specifically exempted by the Code	<input type="checkbox"/>	04 20 00	<input type="checkbox"/>	<input type="checkbox"/>
3. During construction, verify Slump flow and Visual Stability Index (VSI) when self-consolidating grout is delivered to the project site	<input type="checkbox"/>	04 20 00	<input type="checkbox"/>	<input type="checkbox"/>
4. During construction, verify $f'm$ for every 5,000 sqft	<input type="checkbox"/>	04 20 00	<input type="checkbox"/>	<input type="checkbox"/>
5. During construction, verify proportions of materials in premixed or preblended mortar, and grout other than self-consolidating grout, as delivered to the project site.	<input type="checkbox"/>	04 20 00	<input type="checkbox"/>	<input type="checkbox"/>
6. At start of masonry construction, verify to ensure compliance:				
a. Proportions of site prepared mortar.	<input type="checkbox"/>	04 20 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Grade, type and size of reinforcement, connectors, and anchor bolts.	<input type="checkbox"/>	04 20 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Sample panel construction.	<input type="checkbox"/>	04 20 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7. Prior to grouting, verify that the following are in compliance:				
a. Grout space	<input type="checkbox"/>	04 20 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Placement of reinforcement, connectors, and anchor bolts	<input type="checkbox"/>	04 20 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Proportions of site-prepared grout	<input type="checkbox"/>	04 20 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. During construction, verify compliance of the following:				
a. Materials and procedures with the approved submittals.	<input type="checkbox"/>	04 20 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Placement of masonry units and mortar joint construction.	<input type="checkbox"/>	04 20 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Size and location of structural members.	<input type="checkbox"/>	04 20 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Type, size and location of anchors including anchorage of masonry to structural members, frames or other construction	<input type="checkbox"/>	04 20 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Welding of reinforcing bars	<input type="checkbox"/>	04 20 00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f. Preparation, construction and protection of masonry during cold or hot weather	<input type="checkbox"/>	04 20 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g. Placement of grout.	<input type="checkbox"/>	04 20 00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. Observe preparation of grout specimens, mortar specimens and/or prisms	<input type="checkbox"/>	04 20 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Structural Steel (1705.2.1)				
1. Minimum inspections prior to welding per AISC 360 (including but not limited to material verification, welder qualification and fit-up of joints).	<input checked="" type="checkbox"/>	05 12 00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Minimum inspections during welding per AISC 360	<input checked="" type="checkbox"/>	05 12 00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
a. Placement and installation of steel headed stud anchors	<input type="checkbox"/>	05 12 00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Verification of ASTM A 706 material	<input type="checkbox"/>	05 12 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Testing of resisting flexural and axial forces in intermediate and special moment frames, and boundary elements of special reinforced concrete shear walls and shear reinforcement.	<input type="checkbox"/>	05 12 00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Minimum inspections after welding per AISC 360 (including but not limited to size, length and location of welds; welds meet visual acceptance criteria; and repair activities)	<input checked="" type="checkbox"/>	05 12 00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Inspection of welding via UT for CJP groove welds subject to transversely applied tension loading in butt, T-, and Corner joints				
a. Risk Category III or IV structures	<input checked="" type="checkbox"/>	05 12 00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Risk Category II structures	<input type="checkbox"/>	05 12 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Minimum inspections prior to high-strength bolting (except for snug-tight joints) per AISC 360 (including but not limited to material verification of high-strength bolts, nuts, and washers; and bolting procedures)	<input checked="" type="checkbox"/>	05 12 00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Minimum inspections during high-strength bolting (except for snug-tight joints) per AISC 360 (included but not limited to assemblies and positioning)	<input checked="" type="checkbox"/>	05 12 00		
a. For pretension/slip-critical connections using turn-of-nut with match marking method, direct-tension-indicator method, or twist-off-type tension control bolt method.	<input checked="" type="checkbox"/>	05 12 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. For pretension/slip-critical connections using calibrated wrench method or turn-of-nut method without matchmarking	<input checked="" type="checkbox"/>	05 21 00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Minimum inspections after high-strength bolting per AISC 360	<input checked="" type="checkbox"/>	05 21 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Inspection of fabricated and/or erected steel to verify compliance with the construction drawings.	<input checked="" type="checkbox"/>	05 21 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
a. Details such as bracing and stiffeners	<input checked="" type="checkbox"/>	05 21 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Member locations	<input checked="" type="checkbox"/>	05 21 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Joint details	<input checked="" type="checkbox"/>	05 21 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9. Inspection during placement of anchor rods and other embedded items supporting structural steel for compliance with construction drawings.	<input checked="" type="checkbox"/>	05 21 00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8. Material verification of structural steel: Identification markings to conform to ASTM standards specified in the approved construction documents	<input type="checkbox"/>	05 12 00	<input type="checkbox"/>	<input type="checkbox"/>

Open-Web Steel Joists and Joist Girders (1705.2.3)				
1. Installation of open-web steel joists and joist girders				
a. End connections – welded or bolted per SJI	<input type="checkbox"/>	05 21 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Bridging – horizontal or diagonal				
1. Standard bridging per SJI	<input type="checkbox"/>	05 21 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Bridging that differs from SJI specification	<input type="checkbox"/>	05 21 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Cold-Formed Steel Deck (1705.2.2)				
1. Inspection or Execution Tasks Prior to Deck Placement per SDI QA/QC (including but not limited to compliance of materials with construction documents)	<input type="checkbox"/>	05 31 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Inspection or Execution Tasks After to Deck Placement per SDI QA/QC (including but not limited to compliance of installation with construction documents)	<input type="checkbox"/>	05 31 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Inspection or Execution Tasks Prior to Welding per SDI QA/QC (including but not limited to verification of procedures and certifications)	<input type="checkbox"/>	05 31 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Inspection or Execution Tasks During Welding per SDI QA/QC	<input type="checkbox"/>	05 31 00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Inspection or Execution Tasks After Welding per SDI QA/QC (including but not limited to size, length and location of welds; welds meet visual acceptance criteria; and repair activities)	<input type="checkbox"/>	05 31 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Inspection or Execution Tasks Prior to Mechanical Fastening per SDI QA/QC (including but not limited to material verification)	<input type="checkbox"/>	05 31 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7. Inspection or Execution Tasks During Mechanical Fastening per SDI QA/QC (including but not limited to verification of positioning and installation)	<input type="checkbox"/>	05 31 00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8. Inspection or Execution Tasks After Mechanical Fastening per SDI QA/QC (including but not limited to verification of spacing, type and location; repair activities)	<input type="checkbox"/>	05 31 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Cold-Formed Steel Trusses (1705.2.4)				
1. For trusses spanning 60 feet or greater:				
a. Verify the temporary installation restraint/bracing is installed per the approved truss submittal package.	<input type="checkbox"/>	05 40 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Verify the permanent individual truss member restraint/bracing is installed per the approved truss submittal package.	<input type="checkbox"/>	05 40 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Wood Construction (170505)				
1. For Metal-plate connected wood trusses spanning 60 feet or greater:				
a. Verify the temporary installation restraint/bracing is installed per the approved truss submittal package.	<input type="checkbox"/>	06 10 00, 06 16 00, 06 17 53	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Verify the permanent individual truss member restraint/bracing is installed per the approved truss submittal package.	<input type="checkbox"/>	06 10 00, 06 16 00, 06 17 53	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Inspect High-load diaphragms for grade and thickness of sheathing material; nominal size of framing members; fastener diameter and length; fastener layout and spacing	<input type="checkbox"/>	06 10 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Exterior Insulation and Finish Systems (EIFS) (1705.16)				
Not required if water-resistive barrier is installed with a means of draining moisture to the exterior. Also not required for EIFS applications over masonry or concrete walls.	<input type="checkbox"/>	07 24 13	<input type="checkbox"/>	<input type="checkbox"/>
1. Inspection of water-resistive batter coating when installed over a sheathing substrate.				

Sprayed Fire-resistant Materials (1705.14)				
1. Verify surface preparation in accordance with manufacturer's written instructions.	<input type="checkbox"/>	07 81 00	<input type="checkbox"/>	<input type="checkbox"/>
2. Verify temperature and area ventilation before and after application in accordance with manufacturer's written instructions.	<input type="checkbox"/>	07 81 00	<input type="checkbox"/>	<input type="checkbox"/>
3. Verify thickness of sprayed fire-resistant materials				
a. Minimum of 4 measurements per 1,000 sq ft of floor, roof and wall assembly areas, or part thereof at each story.	<input type="checkbox"/>	07 81 00	<input type="checkbox"/>	<input type="checkbox"/>
b. Minimum of 25% of structural members at each story.	<input type="checkbox"/>	07 81 00	<input type="checkbox"/>	<input type="checkbox"/>
4. Verify density of sprayed fire-resistant materials.				
a. Minimum of one sample per 2,500 sq ft of floor, roof and wall assembly areas, or part thereof at each story.	<input type="checkbox"/>	07 81 00	<input type="checkbox"/>	<input type="checkbox"/>
b. Minimum of one sample from each type of structural framing member per 2,500 sq ft of floor area or part thereof at each story.				
5. Verify cohesive/adhesive bond strength of sprayed fire-resistant materials.				
a. Minimum of one sample per 2,500 sq ft of floor, roof and wall assembly areas or part thereof at each story.	<input type="checkbox"/>	07 81 00	<input type="checkbox"/>	<input type="checkbox"/>
b. Minimum of one sample from each type of structural framing member per 2,500 sq ft of floor area or part thereof at each story	<input type="checkbox"/>	07 81 00	<input type="checkbox"/>	<input type="checkbox"/>
c. Bond tests to qualify a primer, paint, or encapsulant when acceptable bond strength performance between those coatings and the fire-resistant material has not been determined.	<input type="checkbox"/>	07 81 00	<input type="checkbox"/>	<input type="checkbox"/>

Mastic and Intumescent Fire-resistant Coatings (1705.15)				
1. Verify surface preparation, application, and thickness when applied to structural elements and decks in accordance with AWCI 12-B	<input type="checkbox"/>	07 81 00	<input type="checkbox"/>	<input type="checkbox"/>

Fire-Resistant Penetrations and Joints (1705.17)				
1. Inspection of through-penetrations and membrane penetration firestops in buildings in Risk Category III or IV per ASTM E2174	<input type="checkbox"/>	07 84 13, 07 84 43	<input type="checkbox"/>	<input type="checkbox"/>
2. Inspections of fire-resistant joint systems and perimeter fire barrier systems in buildings in Risk Category III or IV per ASTM E2393	<input type="checkbox"/>	07 84 13, 07 84 43	<input type="checkbox"/>	<input type="checkbox"/>

Soils (1705.6)				
1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity	<input checked="" type="checkbox"/>	31 20 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Verify excavations are extended to proper depth and have reached proper material	<input checked="" type="checkbox"/>	31 20 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Perform classification and testing of compacted fill materials	<input checked="" type="checkbox"/>	31 20 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill	<input checked="" type="checkbox"/>	31 20 00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Prior to placement of compacted fill, inspect subgrade and verify that site has been prepared properly	<input checked="" type="checkbox"/>	31 20 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Driven Deep Foundations (1705.7)				
1. Verify element materials, sizes and lengths comply with the requirements	<input type="checkbox"/>	31 62 13, 31 62 16, 31 62 19, 31 22 23	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Determine capacities of test elements and conduct additional load tests, as required	<input type="checkbox"/>	31 62 13, 31 62 16, 31 62 19, 31 22 23	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Inspect driving operations and maintain complete and accurate records for each element	<input type="checkbox"/>	31 62 13, 31 62 16, 31 62 19, 31 22 23	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Verify placement locations and plumbness, confirm type and size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and document any damage to foundation element	<input type="checkbox"/>	31 62 13, 31 62 16, 31 62 19, 31 22 23	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. For steel elements, perform additional special inspections in accordance with 1705.2	<input type="checkbox"/>	31 62 13, 31 62 16, 31 62 19, 31 22 23	<input type="checkbox"/>	<input type="checkbox"/>
6. For concrete elements and concrete-filled elements, perform additional special inspections in accordance with Section 1705.3	<input type="checkbox"/>	31 62 13, 31 62 16, 31 62 19, 31 22 23	<input type="checkbox"/>	<input type="checkbox"/>
7. For specialty elements, perform additional inspections	<input type="checkbox"/>	31 62 13, 31 62 16, 31 62 19, 31 22 23	<input type="checkbox"/>	<input type="checkbox"/>

Cast-In-Place Deep Foundations (1705.8)				
1. Inspect drilling operations and maintain complete and accurate records for each element	<input type="checkbox"/>	31 63 16, 31 63 29	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Verify placement locations and plumbness, confirm element diameters, bell diameters (if applicable), lengths, embedment into bedrock (if applicable), and adequate end bearing strata capacity. Record concrete or grout volumes.	<input type="checkbox"/>	31 63 16, 31 63 29	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. For concrete elements, perform tests and additional special inspections in accordance with Section 1705.3	<input type="checkbox"/>	31 63 16, 31 63 29	<input type="checkbox"/>	<input type="checkbox"/>

Helical Pile Foundations (1705.9)				
1. Inspect installation operations and maintain complete and accurate records for each pier	<input type="checkbox"/>	??	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Verify and record installation equipment used, pile dimensions, tip elevations, final depth, final installation torque other data as required	<input type="checkbox"/>	??	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Wind Resistance Inspections (1705.11)				
1. Structural wood – of elements in main windforce-resisting system				
a. Inspection of gluing operations.	<input type="checkbox"/>	06 10 00, 06 16 00, 06 17 53	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Inspection of nailing, bolting, anchoring and other fastening	<input type="checkbox"/>	06 10 00, 06 16 00, 06 17 53	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Cold-formed steel light-frame construction – of elements in main windforce-resisting systems.				
a. Inspection of welding operations	<input type="checkbox"/>	05 40 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Inspection of screw attachment, bolting, anchoring and other fastening	<input type="checkbox"/>	05 40 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Wind-resisting components:				
a. Inspection of roof covering, roof deck and roof framing connections	<input type="checkbox"/>	05 12 00, 05 21 00, 05 31 00, 07 53 23	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Inspection of exterior wall covering and wall connections to roof and floor diaphragms and framing	<input type="checkbox"/>	04 20 00, 07 24 13, 08 41 13, 08 44 13	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Seismic Resistance Inspections (1705.12)				
1. Structural steel:				
SDC B, C, D, E, or F – refer to 1705.12.1.1 for exceptions	<input type="checkbox"/>	05 12 00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
a. Seismic force-resisting systems – inspection in accordance with AISC 341				
SDC B (R>3), C (R>3), D, E, or F	<input type="checkbox"/>	05 12 00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Structural steel elements - inspection in accordance with AISC 341				
SDC C, D, E, or F, refer to 1705.12.2 for exceptions				
2. Structural wood, seismic-force-resisting systems:				
a. Inspection of field gluing operations.	<input type="checkbox"/>	06 10 00, 06 17 00, 06 17 53	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Inspection of nailing, bolting, anchoring and other fastening	<input type="checkbox"/>	06 10 00, 06 17 00, 06 17 53	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Cold-formed steel framing - of elements in seismic-force-resisting systems				
a. Inspection of welding operations of seismic-force-resisting systems	<input type="checkbox"/>	05 40 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Inspection of screw attachment, bolting, anchoring and other fastening	<input type="checkbox"/>	05 40 00	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SDC C, D, E or F; coord with 13.2.2 of ASCE 7	<input type="checkbox"/>	??	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Designated seismic systems – Inspection systems requiring Seismic Qualification per ASCE 7. Verify label, anchorage and mounting conforms to certificate of compliance				

5. Architectural components				
a. Inspection of erection and fastening of exterior cladding	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Inspection of erection and fastening of interior and exterior nonbearing walls	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Inspection of erection and fastening of interior and exterior veneer	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Access floors – inspection of anchorage	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Mechanical and electrical components:				
SDC C, D, E or F				
a. Inspection of anchorage of electrical equipment for emergency power systems	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
SDC E or F				
b. Inspection of anchorage installation or other electrical equipment	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
SDC C, D, E or F				
c. Inspection of installation and anchorage of piping systems and associated mechanical units designed to carry hazardous materials	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
SDC C, D, E, or F				
d. Inspection of installation and anchorage of ductwork designed to carry hazardous materials	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
SDC, C, D, E, or F				
e. Inspection of installation and anchorage of vibration isolation systems	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
SDC, C, D, E, or F				
f. Inspection of installation of mechanical and electrical equipment where automatic fire sprinkler systems are installed to verify clearances	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
SDC B, C, D, E or F				
7. Seismic isolation system: Inspection during fabrication and installation of isolator units and energy dissipation devices that are part of the seismic isolation system	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
SDC D, E or F				
8. Cold-formed steel special bolted moment frames: Inspection during installation of frames part of the seismic isolation system	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Seismic Resistance Structural Testing				
1. Structural steel:				
SDC B, C, D, E, or F		05 12 00	<input type="checkbox"/>	<input type="checkbox"/>
a. Seismic force-resisting systems: Non-destructive testing in accordance with quality assurance requirements of AISC 341	<input type="checkbox"/>			
b. Structural steel elements: nondestructive testing in accordance with the quality assurance requirements of AISC 341	<input type="checkbox"/>	05 12 00	<input type="checkbox"/>	<input type="checkbox"/>
SDC B, C, D, E, or F			<input type="checkbox"/>	<input type="checkbox"/>
2. Nonstructural Components: Confirm certification of compliance of seismic qualification for supports and attachments has been submitted by manufacturer for specified systems	<input type="checkbox"/>			
SDC C, D, E or F		??	<input type="checkbox"/>	<input type="checkbox"/>
3. Designated seismic systems: Confirm certification of compliance of seismic qualification has been submitted for designated seismic systems	<input type="checkbox"/>			
SDC B, C, D, E, or F			<input type="checkbox"/>	<input type="checkbox"/>
4. Seismic isolation systems: Testing per ASCE 7, Section 17.8	<input type="checkbox"/>			

Structural Observations				
One or more of: RC IV; high-rise building; special structures as determined by RDP; required by building official	<input type="checkbox"/>			
1. Structural observations for structures				
SDC D, E, or F where RC III or IV or SDC E where RC I or II and > 2 stories above grade plane				
2. Structural observations for seismic resistance	<input type="checkbox"/>			
V = 130 mph or greater and RC III or IV				
3. Structural observations for wind resistance	<input type="checkbox"/>			

SECTION 01 42 00 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 DEFINITIONS

- A. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- B. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
- C. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- D. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- E. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project Site.
- F. "Provide": Furnish and install, complete and ready for the intended use.

1.3 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
 - 1. When the building code in effect for the Project cites a different edition, comply with the building code-cited edition.
- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.4 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. AA - Aluminum Association (The); www.aluminum.org.
2. AABC - Associated Air Balance Council; www.aabc.com.
3. AAMA - American Architectural Manufacturers Association; www.aamanet.org.
4. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
5. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
6. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
7. ABBA - Air Barrier Association of America; www.airbarrier.org.
8. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
9. ACI - American Concrete Institute; (Formerly: ACI International); www.concrete.org.
10. ACPA - American Concrete Pipe Association; www.concrete-pipe.org.
11. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
12. AF&PA - American Forest & Paper Association; www.afandpa.org.
13. AGA - American Gas Association; www.aga.org.
14. AHAM - Association of Home Appliance Manufacturers; www.aham.org.
15. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
16. AI - Asphalt Institute; www.asphaltinstitute.org.
17. AIA - American Institute of Architects (The); www.aia.org.
18. AISC - American Institute of Steel Construction; www.aisc.org.
19. AISI - American Iron and Steel Institute; www.steel.org.
20. AITC - American Institute of Timber Construction; www.aitc-glulam.org.
21. ALSC - American Lumber Standard Committee, Incorporated; www.alsc.org.
22. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
23. ANSI - American National Standards Institute; www.ansi.org.
24. AOSA - Association of Official Seed Analysts, Inc.; www.aosaseed.com.
25. APA - APA - The Engineered Wood Association; www.apawood.org.
26. APA - Architectural Precast Association; www.archprecast.org.
27. API - American Petroleum Institute; www.api.org.
28. ARI - Air-Conditioning & Refrigeration Institute; (See AHRI).
29. ARI - American Refrigeration Institute; (See AHRI).
30. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.
31. ASCE - American Society of Civil Engineers; www.asce.org.
32. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (See ASCE).
33. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
34. ASME - ASME International; (American Society of Mechanical Engineers); www.asme.org.
35. ASNT - American Society for Nondestructive Testing (The); www.asnt.org.
36. ASSE - American Society of Safety Engineers (The); www.asse.org.
37. ASSE - American Society of Sanitary Engineering; www.asse-plumbing.org.
38. ASTM - ASTM International; www.astm.org.
39. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
40. AWCI - Association of the Wall and Ceiling Industry; www.awci.org.

41. AWEA - American Wind Energy Association; www.awea.org.
42. AWI - Architectural Woodwork Institute; www.awinet.org.
43. AWMAC - Architectural Woodwork Manufacturers Association of Canada; www.awmac.com.
44. AWPA - American Wood Protection Association; www.awpa.com.
45. AWS - American Welding Society; www.aws.org.
46. AWWA - American Water Works Association; www.awwa.org.
47. BHMA - Builders Hardware Manufacturers Association; www.buildershardware.com.
48. BIA - Brick Industry Association (The); www.gobrick.com.
49. BICSI - BICSI, Inc.; www.bicsi.org.
50. BIFMA - BIFMA International; (Business and Institutional Furniture Manufacturer's Association); www.bifma.com.
51. BISSC - Baking Industry Sanitation Standards Committee; www.bissc.org.
52. BWF - Badminton World Federation; (Formerly: International Badminton Federation); www.bwfbadminton.org.
53. CDA - Copper Development Association; www.copper.org.
54. CE – Conformite Europeenne; <http://ec.europa.eu/growth/single-market/ce-marking/>.
55. CEA - Canadian Electricity Association; www.electricity.ca.
56. CEA - Consumer Electronics Association; www.ce.org.
57. CFFA - Chemical Fabrics & Film Association, Inc.; www.chemicalfabricsandfilm.com.
58. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
59. CGA - Compressed Gas Association; www.cganet.com.
60. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
61. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.
62. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
63. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
64. CPA - Composite Panel Association; www.pbmdf.com.
65. CPPA – (Formerly: Corrugated Polyethylene Pipe Association; a Division of the Plastic Pipe Institute); www.plasticpipe.org/drainage/.
66. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
67. CRRC - Cool Roof Rating Council; www.coolroofs.org.
68. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
69. CSA - Canadian Standards Association; www.csa.ca.
70. CSA - CSA International; (Formerly: IAS - International Approval Services); www.csa-international.org.
71. CSI - Construction Specifications Institute (The); www.csinet.org.
72. CSSB - Cedar Shake & Shingle Bureau; www.cedarbureau.org.
73. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); www.cti.org.
74. CWC - Composite Wood Council; (See CPA).
75. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
76. DHI - Door and Hardware Institute; www.dhi.org.
77. ECA - Electronic Components Association;(See ECIA).
78. ECAMA - Electronic Components Assemblies & Materials Association; (See ECIA).
79. ECIA – Electronic Components Industry Association; www.eciaonline.org.
80. EIA - Electronic Industries Alliance; (See TIA).
81. EIMA - EIFS Industry Members Association; www.eima.com.
82. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
83. ESD - ESD Association; (Electrostatic Discharge Association); www.esda.org.
84. ESTA - Entertainment Services and Technology Association; (See PLASA).
85. ETL - Intertek (See Intertek); www.intertek.com.
86. EVO - Efficiency Valuation Organization; www.evo-world.org.

87. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
88. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
89. FM Approvals - FM Approvals LLC; www.fmglobal.com.
90. FM Global - FM Global; (Formerly: FMG - FM Global); www.fmglobal.com.
91. FRSA - Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.; www.floridarroof.com.
92. FSA - Fluid Sealing Association; www.fluidsealing.com.
93. FSC - Forest Stewardship Council U.S.; www.fscus.org.
94. FSEC - Florida Solar Energy Center; www.fsec.ucf.edu.
95. GA - Gypsum Association; www.gypsum.org.
96. GANA - Glass Association of North America; www.glasswebsite.com.
97. GS - Green Seal; www.greenseal.org.
98. HI - Hydraulic Institute; www.pumps.org.
99. HI/GAMA - Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).
100. HMMA - Hollow Metal Manufacturers Association; (See NAAMM).
101. HPVA - Hardwood Plywood & Veneer Association; www.hpva.org.
102. HPW - H. P. White Laboratory, Inc.; www.hpwhite.com.
103. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
104. IAS – International Accreditation Service; www.iasonline.org.
105. IAS - International Approval Services; (See CSA).
106. ICBO - International Conference of Building Officials; (See ICC).
107. ICC - International Code Council; www.iccsafe.org.
108. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
109. ICPA - International Cast Polymer Alliance; www.icpa-hq.org.
110. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
111. IEC - International Electrotechnical Commission; www.iec.ch.
112. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
113. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); www.ies.org.
114. IESNA - Illuminating Engineering Society of North America; (See IES).
115. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
116. IGCC - Insulating Glass Certification Council; www.igcc.org.
117. IGMA - Insulating Glass Manufacturers Alliance; www.igmaonline.org.
118. IGSHPA - International Ground Source Heat Pump Association; www.igshpa.okstate.edu.
119. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.
120. Intertek - Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); www.intertek.com.
121. ISA - International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); www.isa.org.
122. ISAS - Instrumentation, Systems, and Automation Society (The); (See ISA).
123. ISFA - International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); www.isfanow.org.
124. ISO - International Organization for Standardization; www.iso.org.
125. ISSFA - International Solid Surface Fabricators Association; (See ISFA).
126. ITU - International Telecommunication Union; www.itu.int/home.
127. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.
128. LMA - Laminating Materials Association; (See CPA).
129. LPI - Lightning Protection Institute; www.lightning.org.

130. MBMA - Metal Building Manufacturers Association; www.mbma.com.
131. MCA - Metal Construction Association; www.metalconstruction.org.
132. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
133. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
134. MHIA - Material Handling Industry of America; www.mhia.org.
135. MIA - Marble Institute of America; www.marble-institute.com.
136. MMPA - Moulding & Millwork Producers Association; (Formerly: Wood Moulding & Millwork Producers Association); www.wmmpa.com.
137. MPI - Master Painters Institute; www.paintinfo.com.
138. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; www.mss-hq.org.
139. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.
140. NACE - NACE International; (National Association of Corrosion Engineers International); www.nace.org.
141. NADCA - National Air Duct Cleaners Association; www.nadca.com.
142. NAIMA - North American Insulation Manufacturers Association; www.naima.org.
143. NALP – National Association of Landscape Professionals (Formerly Professional Landcare Network); www.landscapeprofessionals.org.
144. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.
145. NBI – New Buildings Institute; www.newbuildings.org.
146. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.
147. NCMA - National Concrete Masonry Association; www.ncma.org.
148. NEBB - National Environmental Balancing Bureau; www.nebb.org.
149. NECA - National Electrical Contractors Association; www.necanet.org.
150. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.
151. NEMA - National Electrical Manufacturers Association; www.nema.org.
152. NETA - InterNational Electrical Testing Association; www.netaworld.org.
153. NFHS - National Federation of State High School Associations; www.nfhs.org.
154. NFPA - National Fire Protection Association; www.nfpa.org.
155. NFPA - NFPA International; (See NFPA).
156. NFRC - National Fenestration Rating Council; www.nfrc.org.
157. NHLA - National Hardwood Lumber Association; www.nhla.com.
158. NICET - National Institute for Certification in Engineering Technologies; www.nicet.org.
159. NLGA - National Lumber Grades Authority; www.nlga.org.
160. NOFMA - National Oak Flooring Manufacturers Association; (See NWFA).
161. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
162. NRCA - National Roofing Contractors Association; www.nrca.net.
163. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
164. NSF - NSF International; www.nsf.org.
165. NSPE - National Society of Professional Engineers; www.nspe.org.
166. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.
167. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
168. NWFA - National Wood Flooring Association; www.nwfa.org.
169. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
170. PDI - Plumbing & Drainage Institute; www.pdionline.org.
171. PLANET - Professional Landcare Network; (See NALP).
172. PLASA - PLASA; (Formerly: ESTA - Entertainment Services and Technology Association); www.plasa.org.
173. PTI - Post-Tensioning Institute; www.post-tensioning.org.
174. RCSC - Research Council on Structural Connections; www.boltcouncil.org.

175. RFCI - Resilient Floor Covering Institute; www.rfci.com.
176. RIS - Redwood Inspection Service; www.redwoodinspection.com.
177. SAE - SAE International; www.sae.org.
178. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
179. SDI - Steel Deck Institute; www.sdi.org.
180. SDI - Steel Door Institute; www.steeldoor.org.
181. SEFA - Scientific Equipment and Furniture Association; www.sefalabs.com.
182. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).
183. SGCC - Safety Glazing Certification Council; www.sgcc.org.
184. SIA - Security Industry Association; www.siaonline.org.
185. SJI - Steel Joist Institute; www.steeljoist.org.
186. SMA - Screen Manufacturers Association; www.smainfo.org.
187. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
188. SMPTE - Society of Motion Picture and Television Engineers; www.smpte.org.
189. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
190. SPIB - Southern Pine Inspection Bureau; www.spib.org.
191. SPRI - Single Ply Roofing Industry; www.spri.org.
192. SRCC - Solar Rating and Certification Corporation; www.solar-rating.org.
193. SSINA - Specialty Steel Industry of North America; www.ssina.com.
194. SSPC - SSPC: The Society for Protective Coatings; www.sspc.org.
195. STI - Steel Tank Institute; www.steeltank.com.
196. SWI - Steel Window Institute; www.steelwindows.com.
197. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
198. TABB - Testing, Adjusting and Balancing Bureau; www.tabbcertified.org.
199. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
200. TCNA - Tile Council of North America, Inc.; www.tileusa.com.
201. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.tema.org.
202. TIA - Telecommunications Industry Association; (Formerly: TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance); www.tiaonline.org.
203. TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance; (See TIA).
204. TMS - The Masonry Society; www.masonrysociety.org.
205. TPI - Truss Plate Institute; www.tpinst.org.
206. TPI - Turfgrass Producers International; www.turfgrasssod.org.
207. TRI - Tile Roofing Institute; www.tilerroofing.org.
208. UFAC - Upholstered Furniture Action Council; www.ufac.org.
209. UL - Underwriters Laboratories Inc.; www.ul.com.
210. ULC - Underwriters Laboratories of Canada; www.ulc.ca.
211. UNI - Uni-Bell PVC Pipe Association; www.uni-bell.org.
212. USAV - USA Volleyball; www.usavolleyball.org.
213. USBA - United States Badminton Association; www.usabadminton.org.
214. USGBC - U.S. Green Building Council; www.usgbc.org.
215. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
216. WA - Wallcoverings Association; www.wallcoverings.org.
217. WASTEC - Waste Equipment Technology Association; www.wastec.org.
218. WCLIB - West Coast Lumber Inspection Bureau; www.wclib.org.
219. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
220. WDMA - Window & Door Manufacturers Association; www.wdma.com.

221. WI - Woodwork Institute; (Formerly: WIC - Woodwork Institute of California); www.wicnet.org.
222. WMMPA - Wood Moulding & Millwork Producers Association; (See MMPA).
223. WSRCA - Western States Roofing Contractors Association; www.wsrca.com.
224. WWPA - Western Wood Products Association; www.wwpa.org.

B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.

1. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
2. ICC - International Code Council; www.iccsafe.org.
3. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.

C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. COE - Army Corps of Engineers; www.usace.army.mil.
2. CPSC - Consumer Product Safety Commission; www.cpsc.gov.
3. DOC - Department of Commerce; National Institute of Standards and Technology; www.nist.gov.
4. DOD - Department of Defense; <http://quicksearch.dla.mil>.
5. DOE - Department of Energy; www.energy.gov.
6. EPA - Environmental Protection Agency; www.epa.gov.
7. FAA - Federal Aviation Administration; www.faa.gov.
8. FCC - Federal Communications Commission; www.fcc.gov.
9. FG - Federal Government Publications; www.gpo.gov.
10. GSA - General Services Administration; www.gsa.gov.
11. HUD - Department of Housing and Urban Development; www.hud.gov.
12. LBL - Lawrence Berkeley National Laboratory; Environmental Energy Technologies Division; <http://eetd.lbl.gov>.
13. NIST - National Institute of Standards and Technology; www.nist.gov.
14. OSHA - Occupational Safety & Health Administration; www.osha.gov.
15. SD - Department of State; www.state.gov.
16. TRB - Transportation Research Board; National Cooperative Highway Research Program; www.trb.org.
17. USDA - Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; www.ars.usda.gov.
18. USDA - Department of Agriculture; Rural Utilities Service; www.usda.gov.
19. USDJ - Department of Justice; Office of Justice Programs; National Institute of Justice; www.ojp.usdoj.gov.
20. USP - U.S. Pharmacopeia; www.usp.org.
21. USPS - United States Postal Service; www.usps.com.

D. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. ADAAG - Accessibility Guidelines for Buildings and Facilities, Available from United States Access Board; www.access-board.gov.
2. AHERA - Asbestos Hazard Emergency Response Act, Available from US Environmental Protection Agency; www.epa.gov.
3. BCNYS - Building Code of New York State, Available from New York State Department of State; www.dos.ny.gov/DCEA/.
4. CFR - Code of Federal Regulations; Available from Government Printing Office; www.gpo.gov/fdsys.
5. DOD - Department of Defense; Military Specifications and Standards; Available from Department of Defense Single Stock Point; <http://quicksearch.dla.mil>.
6. DSCC - Defense Supply Center Columbus; (See FS).
7. FED-STD - Federal Standard; (See FS).
8. FS - Federal Specification; Available from DLA Document Services; www.quicksearch.dla.mil.
 - a. Available from Defense Standardization Program; www.dsp.dla.mil.
 - b. Available from General Services Administration; www.gsa.gov.
 - c. Available from National Institute of Building Sciences/Whole Building Design Guide; www.wbdg.org/ccb.
9. IBC - International Building Code, Available from International Code Council; www.iccsafe.org.
10. LEED - Leadership in Energy and Environmental Design (Green Building Rating Systems), Available from U.S. Green Building Council; www.usgbc.org.
11. MILSPEC - Military Specification and Standards; (See DOD).
12. NEC - National Electrical Code, Available from NFPA (National Fire Protection Association); www.nfpa.org.
13. NSPC - National Standard Plumbing Code, Available from Plumbing-Heating-Cooling Contractors Association; www.phccweb.org.
14. NYSED/MPS - New York State Education Department Manual of Planning Standards, Available from New York State Education Department (Facilities Planning); www.p12.nysed.gov/facplan/forms.html.
15. USAB - United States Access Board; www.access-board.gov.
16. UFAS - Uniform Federal Accessibility Standards Available from Access Board; www.access-board.gov.
17. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (See USAB).

E. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. CBHF - State of California; Department of Consumer Affairs; Bureau of Electronic Appliance and Repair, Home Furnishings and Thermal Insulation; www.bearhfti.ca.gov.
2. NYSDEC - New York State Department of Environmental Conservation; www.dec.ny.gov.
3. NYSDOH - New York State Department of Health; www.health.ny.gov.
4. NYSDOT - New York State Department of Transportation; www.dot.ny.gov.
5. NYSED - New York State Education Department (Facilities Planning); www.p12.nysed.gov/facplan/.
6. NYSERDA - New York State Energy Research and Development Authority; www.nyserda.ny.gov.
7. OSHPD - Office of Statewide Health Planning and Development (State of California); www.oshpd.ca.gov.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 42 00

**Mahopac Central School District
Reconstruction to Mahopac High School, Mahopac Middle School and Falls ES
Project No. 121111-19002**

SECTION 01 50 00 - TEMPORARY FACILITIES & CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes requirements for temporary facilities and controls, including temporary utilities, support facilities, and security and protection.
- B. Temporary utilities include, but are not limited to, the following:
 - 1. Water service and distribution.
 - 2. Temporary electric power and light.
 - 3. Temporary heat.
 - 4. Ventilation.
 - 5. Telephone service.
 - 6. Sanitary facilities, including drinking water.
 - 7. Storm and sanitary sewer.
- C. Support facilities include, but are not limited to, the following:
 - 1. Field offices and storage sheds.
 - 2. Architects/Engineers field office.
 - 3. Temporary roads and paving.
 - 4. Dewatering facilities and drains.
 - 5. Temporary enclosures.
 - 6. Hoists and temporary elevator use.
 - 7. Temporary project identification signs and bulletin boards.
 - 8. Waste disposal services.
 - 9. Rodent and pest control.
 - 10. Construction aids and miscellaneous services and facilities.
- D. Security and protection facilities include, but are not limited to, the following:
 - 1. Temporary fire protection.
 - 2. Barricades, warning signs, and lights.
 - 3. Environmental protection.
 - 4. Tree and plant protection.
 - 5. Pest control.
 - 6. Security enclosure and lockup.
 - 7. Temporary enclosures.
 - 8. Temporary partitions.

**Mahopac Central School District
Reconstruction to Mahopac High School, Mahopac Middle School and Falls ES
Project No. 121111-19002**

1.2 DIVISION OF RESPONSIBILITIES

- A. General: Each prime contractor is specifically assigned certain responsibilities for temporary services and facilities to be used by other prime contractors, and other nonprime contractors and separate entities at the site, Owner's workforces, Construction Manager, Architect, testing agencies, personnel of governing authorities, and personnel authorized to be at project site during contract time. The General Construction Work Contractor (Contract #1) is responsible for providing temporary facilities and controls that are not normal construction activities of other prime contractors and are not specifically assigned otherwise by the Contract Documents.

1.3 USE CHARGES

- A. General: Cost or use charges for temporary facilities are not chargeable to the Owner or the Architect. The Architect will not accept a prime contractor's cost or use charges for temporary services or facilities as a basis of claim for an adjustment in the Contract Sum or the Contract Time.
- B. Water Service: Use water from the Owner's existing water system without metering and without payment of use charges if available. If not available contractor must supply water required for the performance of their work.
- C. Electric Power Service: Temporary electric power including set-up, maintenance and use charges is the responsibility of the Electrical Work Contractor (Contract #4).
1. Use of electric power from the Owner's permanent power system (when operational) will be granted to all prime contractors without payment of use charges.
 2. Electrical Work Contractor (Contract #4) is to supply power to all job trailers including the construction manager's job trailer. See site logistics plan.

1.4 SUBMITTALS

- A. Temporary Utilities: The prime contractor shall submit reports of tests, inspections, meter readings, and similar procedures performed on temporary utilities.
- B. Implementation and Termination Schedule: Within 15 days of the date established for submittal of the Contractor's Construction Schedule, each prime contractor shall submit a schedule indicating implementation and termination of each temporary utility for which the Contractor is responsible.
- C. Temporary Signage: Provide shop drawings, indicating the size and layout of the signs, color choices for Owner selection and installation details. Temporary site signage is by the Site work contractor.

1.5 QUALITY ASSURANCE

- A. Regulations: The prime contractor shall comply with industry standards and with applicable laws and regulations of authorities having jurisdiction including, but not limited to, the following:
1. Building code requirements.
 2. Health and safety regulations.
 3. Utility company regulations.
 4. Police, fire department and rescue squad rules.
 5. Environmental protection regulations.

**Mahopac Central School District
Reconstruction to Mahopac High School, Mahopac Middle School and Falls ES
Project No. 121111-19002**

- B. Standards: The prime contractor shall comply with NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations," ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition," and NECA Electrical Design Library "Temporary Electrical Facilities."
1. Trade Jurisdictions: Assigned responsibilities for installation and operation of temporary utilities are not intended to interfere with the normal application of trade regulations and union jurisdictions.
 2. Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.6 PROJECT CONDITIONS

- A. Temporary Utilities: The prime contractor shall prepare a schedule indicating dates for implementation and termination of each temporary utility for which the Contractor is responsible. At the earliest feasible time, when acceptable to the Owner, change over from use of temporary service to use of permanent service.
1. Temporary Use of Permanent Facilities: The Installer of each permanent service shall assume responsibility for its operation, maintenance, and protection during use as a construction facility prior to the Owner's acceptance, regardless of previously assigned responsibilities.
- B. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Relocate temporary services and facilities as the Work progresses. Do not overload facilities or permit them to interfere with progress. Take necessary fire-prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on-site.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: The prime contractor shall provide new materials. If acceptable to the Architect, undamaged, previously used materials in serviceable condition may be used. Provide materials suitable for use intended.
- B. Lumber and Plywood: Comply with requirements in Division 6 Section "Rough Carpentry."
1. For job-built temporary offices, shops, and sheds within the construction area, provide UL-labeled, fire-treated lumber and plywood for framing, sheathing, and siding.
 2. For signs and directory boards, provide exterior-type, Grade B-B high-density concrete form overlay plywood of sizes and thicknesses indicated.
 3. For fences and vision barriers, provide minimum 3/8-inch- thick exterior plywood.
 4. For safety barriers, sidewalk bridges, and similar uses, provide minimum 5/8-inch- thick exterior plywood.
- C. Pavement: Comply with Division 2 Pavement Sections

**Mahopac Central School District
Reconstruction to Mahopac High School, Mahopac Middle School and Falls ES
Project No. 121111-19002**

- D. Insulation: Unfaced mineral-fiber blanket manufactured from glass, slag wool, or rock wool; with maximum flame spread and smoke developed indices of 25 and 50, respectively.
- E. Gypsum Wallboard: Provide gypsum wallboard on interior walls of temporary offices.
- F. Roofing Materials: Provide UL Class A standard-weight asphalt shingles or UL Class C mineral-surfaced roll roofing on roofs of job-built temporary offices, shops, and sheds.
- G. Paint: Comply with requirements of Division 9 Section "Painting."
 - 1. For job-built temporary offices, shops, sheds, fences, and other exposed lumber and plywood, provide exterior-grade acrylic-latex emulsion over exterior primer.
 - 2. For sign panels and applied graphics, provide exterior-grade alkyd gloss enamel over exterior primer.
 - 3. For interior walls of temporary offices, provide 2 coats interior latex-flat wall paint.
- H. Tarpaulins: Provide waterproof, fire-resistant, UL-labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures, provide translucent, nylon-reinforced, laminated polyethylene or polyvinyl chloride, fire-retardant tarpaulins.
- I. Water: Provide potable water approved by local health authorities.
- J. Open-Mesh Fencing: Provide 0.12-inch- thick, galvanized 2-inch chainlink fabric fencing 6 feet high with galvanized barbed-wire top strand and galvanized steel pipe posts, 1-1/2 inches I.D. for line posts and 2-1/2 inches I.D. for corner posts.

2.2 EQUIPMENT

- A. General: The prime contractor shall provide new equipment. If acceptable to the Architect, undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.
- B. Water Hoses: Provide 3/4-inch heavy-duty, abrasion-resistant, flexible rubber hoses 100 feet long, with pressure rating greater than the maximum pressure of the water distribution system. Provide adjustable shutoff nozzles at hose discharge.
- C. Electrical Outlets: Provide properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-V plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.
- D. Electrical Power Cords: Provide grounded extension cords. Use hard-service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.
- E. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered-glass enclosures, where exposed to breakage. Provide exterior fixtures where exposed to moisture.
- F. Heating Units: Provide temporary heating units that have been tested and labeled by UL, FM, or another recognized trade association related to the type of fuel being consumed.

**Mahopac Central School District
Reconstruction to Mahopac High School, Mahopac Middle School and Falls ES
Project No. 121111-19002**

- G. **Temporary Offices:** Each prime contractor shall provide its own prefabricated or mobile units or similar job-built construction with lockable entrances, operable windows, and serviceable finishes. Provide heated and air-conditioned units on foundations adequate for normal loading.
- H. **Temporary Toilet Units:** Provide self-contained, single-occupant toilet units of the chemical, aerated recirculation, or combustion type. Provide units properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.
- I. **Fire Extinguishers:** Provide hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for the exposures.
 - 1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

PART 3 - EXECUTION

3.1 TEMPORARY UTILITY INSTALLATION

- A. **General:** Engage the appropriate local utility company to install temporary service or connect to existing service. Where the company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with company recommendations.
 - 1. Arrange with the company and existing users for a time when service can be interrupted, if necessary, to make connections for temporary services.
 - 2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.
 - 3. Obtain easements to bring temporary utilities to the site where the Owner's easements cannot be used for that purpose.
- B. **Water Service:** All primes shall provide and maintain temporary water service and distribution for the scope of their work. Piping of sizes and pressures adequate for construction and hose bibs on site as to provide service to all areas of construction activities as directed by the Architect, as required throughout the construction period.
 - 1. Water service shall be potable and modified as required or as directed by the Architect, as Work progressed.
 - a. **Sterilization:** Sterilize temporary water piping prior to use.
 - 2. **Wash Facilities:** Install wash facilities supplied with potable water at convenient locations for personnel who handle materials that require wash up. Dispose of drainage properly. Supply cleaning compounds appropriate for each type of material handled.
 - 3. **Drinking Water Facilities:** Provide bottled water to employees.
 - a. The Prime Contractors shall provide containerized, tap-dispenser, bottled-water drinking-water units, including paper cup supply.
 - 4. Provide safety showers, eyewash fountains, and similar facilities for convenience, safety, and sanitation of personnel where applicable by OSHA.
 - 5. Users shall provide their own hoses to points of need, but shall practice prudent conservation.

**Mahopac Central School District
Reconstruction to Mahopac High School, Mahopac Middle School and Falls ES
Project No. 121111-19002**

C. Temporary Heat:

1. Upon erection of the new pump house or as indicated by the milestone schedule, whichever is sooner, the General Work Contractor (Contract #1) shall provide temporary heating equipment and all fuel necessary to continue construction work at proper heated conditions in the buildings. The means and methods shall be as field determined for specific buildings and/or areas. In no case shall temperature be less than 55°F; electrical power and connections shall be by Electrical Work Contractor (Contract #4); gas piping by the Plumbing Work Contractor (Contract #2). Ventilation requirements by the General Work Contractor (Contract #1)
2. The General Construction Work Contractor (Contract #1) shall provide manpower for maintenance, operation and supervision for the temporary heating system, first and second shifts where applicable.
3. The Owner will not accept utilization of permanent HVAC system for temporary heat until project acceptance.
4. Temporary heating plants utilizing electric power as energy source, shall not be used on this project.
5. Temporary Heating and Cooling for Isolated work area: Each prime contractor shall provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select safe equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce the ambient condition required and minimize energy consumption.
6. Use of gasoline-burning space heaters, open flame, or salamander-type heating units is prohibited.

D. Temporary Electric Power Service: The Electrical Work Contractor (Contract #4) shall provide and maintain temporary electric service consisting of main power hook-up and panel board and temporary lighting for site and existing building. Temporary service shall be maintained during all work days, and shall comply with all codes and regulations. System shall be modified as required or as directed by the Construction Manager as work progresses. Each Prime shall provide power distribution for its own use from EC's panel.

- Electrical service:

1. Obtain temporary service from existing building service or local power pole. If practical, power to each location shall be tapped at transformer vault or main distribution panel, ahead of main breakers to minimize demand on service equipment from operations. Over-current protection shall be installed as required.
2. Provide disconnect at connection to service.
3. Provide service conductors and equipment.
4. Minimum power characteristics: 240/120 volt, single phase.
5. Provide distribution equipment, feeders, and branch circuit panelboards to serve:
 - a. Temporary lighting.
 - b. Temporary convenience receptacles. (4 gang outlet boxes to allow for 50' extension cord; enough to accommodate requirements of the entire building)
 - c. To accommodate construction operations requiring power, use of power tools, electric heating and start up testing of permanent electric powered equipment prior to its permanent connection to electrical system.

**Mahopac Central School District
Reconstruction to Mahopac High School, Mahopac Middle School and Falls ES
Project No. 121111-19002**

6. Each Contractor shall provide his own extension lines, and other special equipment; welding equipment shall run from generator trucks.
 7. The Electrical Work Contract (Contract #4) shall be responsible for initial connections and final demolition of all temporary fixtures and wiring at direction of the Construction Manager.
 8. The Electrical Work Contract (Contract #4) Contractor shall maintain OSHA standards for power and foot candle levels in all areas while workers occupy the space. The temporary lighting shall be energized daily at 6:50 A.M. to 4:35 P.M. as a minimum duration until permanent fixtures are installed.
 9. Not unlike other equipment in this contract, upon installation, the temporary electric system becomes the property of the Owner and shall not be controlled by any one contractor.
 10. Temporary Site Lighting: Electrical Work Contract (Contract #4) to maintain existing exterior Lighting to adequately light the entrances and exits of project site. Temporary lighting shall be controlled by time clocks and lighting contactors; settings to be coordinated by the Construction Manager.
 11. Each Prime Contractor will be responsible for hookup of their own project trailers to temporary electric pedestal. If abused, power from temporary service will be disconnected. The Electric Contractor shall erect poles safely sufficient for site power and telephone service. All installations shall conform to strictest standards. The E.C. shall disconnect all items upon project completion.
- E. Temporary Telephones: Each Prime Contractor shall provide temporary telephone service throughout the construction period for all personnel engaged in construction activities.
1. Contractors are required to lease or purchase a cellular telephone – to be used by their site superintendents for communication with the other primes and the Architect.
 2. Provide telephone lines for the following:
 - a. Provide a dedicated telephone line for a fax machine in each prime contractor's field office.
 - b. At each telephone, post a list of important telephone numbers.
- F. Sanitary Facilities: The General Work Contractor (Contract #1) shall provide temporary portable chemical toilet facilities for all construction personnel. Comply with regulations and health codes for the type, number, location, operation, and maintenance of fixtures and facilities. Install where facilities will best serve the Project's needs. ***At a minimum, Porta Jons will be required at the Middle School and the High School site for all trades.***
1. Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Provide covered waste containers for used material.
 2. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy. Use of pit-type privies will not be permitted.
 - a. Provide separate facilities for male and female personnel.
- G. Temporary Construction:
1. Temporary bridging, decks, hoists, lifts, scaffolding, and cranes shall be the responsibility of Contractor requiring same.

**Mahopac Central School District
Reconstruction to Mahopac High School, Mahopac Middle School and Falls ES
Project No. 121111-19002**

2. Provide temporary partitions to separate construction area from adjacent occupied areas. Construct partitions with non-combustible materials or fire-retardant plywood and seal seams and gaps to control transmission of dust to occupied areas. After completion of work, remove partitions and restore surfaces damaged by temporary provisions. This work is the responsibility of the General Work Contractor (Contract #1) where applicable.
 3. Temporary entrances and exits to the building, shall be furnished, installed and maintained under the General Work Contractor (Contract #1) as directed by the Construction Manager. Exits shall be maintained for exiting in emergency conditions until permanent structures are in place.
- H. Daily cleanup
1. Dumpsters are to be provided by each contractor for the performance of their own work. Dumpsters will be inspected to assure they are not misused and removed and hauled to a recycling center off site for processing. THE OWNER NOR THE CONSTRUCTION MANAGER will not be responsible for the removal of any hazardous materials, this will be the responsibility of the prime contractor doing the same.
 2. The maintenance of a clean work site shall be the responsibility of each Contractor.
 3. Each Contractor shall remove own debris daily from work area to waste disposal containers (dumpsters), time lapse not acceptable.
 4. The condition of cleanliness in which an area is found, is the condition each Contractor shall leave.
 5. Each and every Contractor working on site shall submit manpower on Friday at 8 A.M. to work as a team to remove debris to dumpsters until complete. At discretion of Construction Manager, a Contractor not complying may be back-charged for work performed by others. The responsibility of broom cleaning and debris disposal remains with each trade for their work and shall include use of sweeping compound.
 6. Final cleaning shall be the responsibility of each Prime Contractor for his/her own work.
 7. Protection of Work: Each Prime Contractor is reminded to temporarily protect work in place until accepted by the Owner per Article 10 of the General Conditions of the Contract.
 8. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 3 days during normal weather or 1 day when the temperature is expected to rise above 80°F (27°C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material lawfully. First aid requirements are the responsibility of each Contractor. Retain paragraph above where potable water is accessible from permanent or temporary lines. Where potable water is not available, retain paragraph below.

3.2 INSTALLATION

- A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.

**Mahopac Central School District
Reconstruction to Mahopac High School, Mahopac Middle School and Falls ES
Project No. 121111-19002**

- B. The prime contractor shall provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.
- C. The prime Contractor will be responsible for hookup of their own project trailers. Use of energy, including heat (shall be set back at night) if practical from electric service will be available. If abused, power from temporary service will be disconnected. All installations shall conform to strictest standards.

3.3 SUPPORT FACILITIES INSTALLATION

- A. Each Prime contractor is to have a field office. Locate field offices, storage sheds, sanitary facilities, and other temporary construction and support facilities for easy access as directed by the Construction Manager.
 - 1. Maintain support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.
- B. Provide incombustible construction for offices, shops, and sheds located within the construction area or within 30 feet of building lines. Comply with requirements of NFPA 241.
- C. Field Offices: Each prime contractor shall provide an insulated, weathertight temporary office of sufficient size to accommodate required office personnel at the Project Site. Keep the office clean and orderly for use for small meetings. Furnish and equip offices as follows:
 - 1. Furniture: Furnish with a desk and chairs, a 2-drawer file cabinet, plan table, plan rack, and a bookcase.
 - 2. Equip with a water cooler and private toilet complete with water closet, lavatory, and medicine cabinet unit with a mirror.
- D. Storage and Fabrication Sheds: Install storage and fabrication sheds sized, furnished, and equipped to accommodate materials and equipment involved, including temporary utility service. Sheds may be open shelters or fully enclosed spaces within the building or elsewhere on-site.
- E. Temporary Parking/Staging and Access Roads
 - 1. Temporary roads are installed and/or maintained by the Site Work Contractor (Contract #7) where designated on site logistics plans.
 - 2. Contractors will be permitted to utilize existing roads, as designated (as segregated by the Owner - if required).
 - 3. Road Cleaning: Maintain roads and walkways in an acceptably clean condition. This includes the removal of debris daily, if required, and/or a minimum of once a week due to all project traffic. Road cleaning equipment to be wet/vacuum type. The Site Work Contractor (Contract #7) will clean the roads affected by all contract work. The Site Work Contractor (Contract #7) will maintain roads until project completion.
 - 4. Contractor Parking/ Staging Area: Site Construction Work Contractor (Contract #7) shall maintain access for suitable parking areas as indicated on Logistics plans. Re-grade, re-seed and restore any areas disturbed by parking/ staging.
 - a. Parking Areas: Includes contractors' employees and construction vehicle parking. Minimum of 6" reference Item. #304.3 course.

**Mahopac Central School District
Reconstruction to Mahopac High School, Mahopac Middle School and Falls ES
Project No. 121111-19002**

- b. Access Roads: Includes access roads for delivery through staging area to building work areas, and to equipment and storage areas and sheds. Minimum of 9” reference Item. #304.3 course.
 5. Temporary parking by construction personnel shall be allowed only in areas so designated.
 6. Traffic Regulations:
 - a. Utilize only entrances/temporary roads as designated
 - b. Construction parking will not be allowed adjacent to residential buildings, additions or monuments.
 7. Traffic Controls: The Site Construction Work Contractor (Contract #7) provide temporary traffic controls at junction of temporary roads with public roads. Include warning signs for public traffic and “STOP” signs for entrance onto public roads. Comply with requirements of authorities having jurisdiction.
- F. De-watering Facilities and Drains:
1. For temporary drainage and dewatering facilities and operations not directly associated with construction activities included under individual Sections, comply with dewatering requirements of applicable Division 2 Sections. Where feasible, use the same facilities. Maintain the site, excavations, and construction free of water.
 2. For temporary drainage and de-watering facilities and operations directly associated with the building and other construction activities, comply with Division 2; General Work Contractor (Contract #1) and Site Construction Work Contractor (Contract #7) are directly responsible for de-watering of all associated excavations.
- G. Temporary Enclosures: The General Work Contractor (Contract #1) shall provide temporary enclosure for protection of construction in progress and completed, from exposure, foul weather, other construction operations, and similar activities as follows unless otherwise noted:
1. Install tarpaulins securely, with incombustible wood framing and other materials. Close openings of 25 sq. ft. (2.3 sq. m) or less with plywood of similar materials.
 2. Close openings through floor decks and horizontal surfaces with load-bearing, wood-framed construction.
 3. Where temporary wood or plywood enclosure exceeds 100 sq. ft. (9.2 sq. m) in area, use UL-labeled, fire-retardant treated material for framing and main sheathing.
 4. Generally, temporary closures for specific openings for a prime contractor to perform their work openings are the responsibility of Contractor creating the opening and shall be installed to protect building from exterior elements.
 5. Temporary partitions shall be installed at all openings where additions connect to existing buildings, and where required to protect areas, spaces, property, personnel, students, and faculty; to separate and control dust, debris, noise, access, sight, fire areas, safety and security and to separate phased construction areas per the phasing plan. Temporary partitions shall be installed and maintained. Construction material and methods to suit need as determined by Construction Manager.
 6. Temporary Lifts and Hoists: Provide facilities for hoisting materials and employees. Truck cranes and similar devices used for hoisting materials are considered “tools and equipment” and not temporary facilities.

**Mahopac Central School District
Reconstruction to Mahopac High School, Mahopac Middle School and Falls ES
Project No. 121111-19002**

- H. Temporary Signs: Prepare signs to provide directional information to construction personnel and visitors as follows: The Site Work Contractor (Contract #7) shall furnish and install construction signage as required:
- a. Engage an experienced sign painter to apply graphics. Comply with details indicated.
 - b. For construction traffic control/flow at entrances/exits, as designated by the Owner (3 required)
 - c. To direct visitors (2 required)
 - d. For construction parking (2 required)
 - e. To direct deliveries (2 required)
 - f. For warning signs as required
 - g. Per OSHA standards as necessary
 - h. For trailer identification
 - i. Temporary exit signs
- I. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F. Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material lawfully.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Operations of the Contractor may not block, hinder, impede, or otherwise inhibit the safe and expeditious exiting of the building's occupants during an emergency.
- B. In the event of an emergency, (designated by the sounding of the fire alarm system) all construction activities must immediately cease. Contractor's work force will evacuate themselves from work areas and remain outside of work areas until the "all clear" is given. No work operations will be tolerated during the evacuation of the building or during an emergency.
- C. Temporary Facility Changeover: Except for using permanent fire protection as soon as available, do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion, or longer, as requested by the Architect.
- D. Temporary Fire Protection: General Work Contractor (Contract #1) shall provide, until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10, "Standard for Portable Fire Extinguishers," and NFPA 241, "Standard for Safeguarding Construction, Alterations, and Demolition Operations."
1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.
 2. Store combustible materials in containers in fire-safe locations.
 3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for fighting fires. Prohibit smoking in hazardous fire-exposure areas.

**Mahopac Central School District
Reconstruction to Mahopac High School, Mahopac Middle School and Falls ES
Project No. 121111-19002**

4. Provide supervision of welding operations, combustion-type temporary heating units, and similar sources of fire ignition.
 5. Permanent Fire Protection: At the earliest feasible date in each area of the Project, complete installation of the permanent fire-protection facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities.
- E. Fall Protection:
1. The General Work Contractor (Contract #1) shall provide temporary cable top & mid railings per OSHA regulations around mechanical floor openings. Most of the exterior can be done by running cables from column to column, but some areas may require you to install posts as well. Include toe boards around perimeter and openings where required. The Prime Contractor must provide his own means for providing OSHA approved fall protection for his work persons. Temporary railings removed by a Prime Contractor for some reason other than constructing the permanent wall, must be immediately replaced by that Prime Contractor.
 2. The General Work Contractor (Contract #1) shall rope off all roof openings in an OSHA approved manner. Include fluorescent ribbons or flags to accent the ropes
- F. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erecting structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed, provide lighting, including flashing red or amber lights.
- G. Enclosure Fence: The Site Work Contractor (Contract #7) shall before, excavation begins, install an enclosure fence with lockable entrance gates. Locate where indicated, or enclose the entire site or the portion determined sufficient to accommodate construction operations. Install in a manner that will prevent people, dogs, and other animals from easily entering the site, except by the entrance gates.
1. Provide open-mesh, 8-foot high chainlink fencing with posts at 8-feet on center, set in a compacted mixture of gravel and earth.
 2. Provide min. 3 double swing access gates and man gates. Each gate is to have a chain and padlock.
 - a. Provide (2) keys for each lock to the Construction Manager.
 3. Remove fence upon completion of all exterior activities or sooner if directed by Architect.
- H. Security Enclosure and Lockup: Site Construction Work Contractor (Contract #7) shall install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft and similar violations of security.
1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.
- I. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways, and subsoil might be contaminated or polluted or that other undesirable effects might result. Avoid using tools and equipment that produce harmful noise. Restrict use of noise-making tools and equipment to hours that will minimize complaints from persons or firms near the site.

**Mahopac Central School District
Reconstruction to Mahopac High School, Mahopac Middle School and Falls ES
Project No. 121111-19002**

3.5 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
- B. Maintenance: Maintain facilities and good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
 - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
 - 2. Protection: Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.
- C. Termination and Removal: Unless the Construction Manager requests that it be maintained longer, remove each temporary facility when the need has ended, when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are the property of each prime contractor. The Owner reserves the right to take possession of project identification signs.
 - 2. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where the area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil in the area. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at the temporary entrances, as required by the governing authority.
 - 3. At Substantial Completion, clean and renovate permanent facilities used during the construction period including, but not limited to, the following:
 - a. Replace air filters and clean inside of ductwork and housings.
 - b. Replace significantly worn parts and parts subject to unusual operating conditions.
 - c. Replace lamps burned out or noticeably dimmed by hours of use.

END OF SECTION 01 50 00

SECTION 01 60 00 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

1.3 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 - 2. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products.

1.4 ACTION SUBMITTALS

- A. Comparable Product Request Submittal: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.

2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor through Construction Manager of approval or rejection of proposed comparable product request.

- a. Form of Approval: As specified in Division 01 Section "Submittal Procedures."

- B. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
 2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

- B. The use of asbestos containing building materials is prohibited.

1. Contractor is responsible for providing closeout documentation certifying no asbestos containing building materials have been used in the Work.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

- B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

C. Storage:

1. Store products to allow for review and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
6. Protect stored products from damage and liquids from freezing.

1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 2. Warranty periods related to Boilers and Accessory Equipment, and Air Conditioning Equipment do not begin until one year after the date of substantial completion.
 3. See individual Specification Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Division 01 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.

3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:

1. Products:

- a. Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.

2. Manufacturers:

- a. Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.

3. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers, or a product by an unnamed manufacturer that complies with requirements. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.

C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Division 01 Section "Substitution Procedures" for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

- A. Conditions for Consideration of Comparable Products: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:
1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 3. Evidence that proposed product provides specified warranty.
 4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
 5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 60 00

SECTION 01 73 00 - EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
 - 1. Examination of conditions.
 - 2. Preparation for construction.
 - 3. Construction layout.
 - 4. Field engineering and surveying.
 - 5. Installation of the Work.
 - 6. Cutting and patching.
 - 7. Progress cleaning.
 - 8. Starting and adjusting.
 - 9. Protection of installed construction.
 - 10. Correction of the Work.

1.3 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For land surveyor and professional engineer.
- B. Structural Layout Plan: Survey of Structural Grid in relation to existing building(s).

1.5 CLOSEOUT SUBMITTALS

- A. Certificates: Submit certificate signed by professional engineer certifying that location and elevation of improvements comply with requirements.
- B. Certified Surveys: Submit two copies signed by land surveyor.

1.6 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.
- B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated.
- C. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
 - 1. Structural Elements: When cutting and patching structural elements, shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection
 - 2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
 - 3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
 - 4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- D. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.
 - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 - 2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 - 3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Division 01 Section "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect and Construction Manager promptly.
- B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.
 - 1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
 - 2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 - 3. Inform installers of lines and levels to which they must comply.
 - 4. Check the location, level and plumb, of every major element as the Work progresses.
 - 5. Notify Architect and Construction Manager when deviations from required lines and levels exceed allowable tolerances.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
 - 1. Structural Layout Plan: Perform Survey of Structural Grid as provided in Contract Documents, including any specific Layout Notes and/or Plan. Provide Structural Layout Plan for review by Engineer prior to performing any additional work.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect and Construction Manager.

3.4 FIELD ENGINEERING

- A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
 - 1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect or Construction Manager. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect and Construction Manager before proceeding.

2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- B. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points.
1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
 2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
 3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.
- C. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.

3.5 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
1. Make vertical work plumb and make horizontal work level.
 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
 4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces, unless otherwise indicated.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- G. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
 2. Allow for building movement, including thermal expansion and contraction.
 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 CUTTING AND PATCHING

- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Adjacent Occupied Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.
- G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction.
1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.

3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 6. Proceed with patching after construction operations requiring cutting are complete.
- H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
1. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
 2. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
 3. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
 4. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
- I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.7 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.

2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
 - a. Use containers intended for holding waste materials of type to be stored.
 4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
1. Remove liquid spills promptly.
 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Division 01 Section "Temporary Facilities and Controls."
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.8 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

- B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

3.9 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.10 CORRECTION OF THE WORK

- A. Repair or remove and replace damaged, defective, or nonconforming Work. Restore damaged substrates and finishes.
 - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Architect may issue "Construction Deficiency Report" for items identified by Architect as needing correction. Promptly repair or remove and replace defective construction identified in Construction Deficiency Report. Provide written notification to Architect when identified item has been corrected.
- C. Restore permanent facilities used during construction to their specified condition.
- D. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- E. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- F. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 01 73 00

SECTION 01 77 00 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Substantial Completion procedures.
 - 2. Final completion procedures.
 - 3. Warranties.
 - 4. Final cleaning.
 - 5. Repair of the Work.

1.3 SUBSTANTIAL COMPLETION PROCEDURES

- A. Submittals Prior to Substantial Completion: Complete the following before Contract-scheduled date of Substantial Completion:
 - 1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, electrical inspection reports, preliminary balance reports, and similar releases.
 - 2. Submit notarized letter on Contractor's letterhead certifying no asbestos containing building materials have been used in the Work. Also include a copy in the Operation and Maintenance Manuals.
 - 3. Submit testing, adjusting, and balancing records. Also include a copy in the Operation and Maintenance Manuals.
 - 4. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- B. **Procedures Prior to Substantial Completion:** Complete the following before Contract-scheduled date of Substantial Completion:
 - 1. Advise Owner of pending insurance changeover requirements.
 - 2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.

3. Complete startup and testing of systems and equipment.
 4. Perform preventive maintenance on equipment used prior to Substantial Completion. Maintenance to be performed by a factory authorized service representative so as not to void the equipment warranty.
 5. Advise Owner of changeover in heat and other utilities.
 6. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 7. Complete all items on any Field Observation and Construction Deficiency Reports and submit a copy of the reports to the Architect and Construction Manager identifying how each item was addressed in detail, including the date of completion.
 8. Complete final cleaning requirements as specified below, including touchup painting.
 9. Repair and restore marred exposed finishes to eliminate visual defects.
- C. Inspection: No later than 14 days prior to the Contract-scheduled date of Substantial Completion, submit a letter to the Architect and Construction Manager confirming the work is ready for the Substantial Completion inspection. No later than seven days after Contract-scheduled date of Substantial Completion (including authorized adjustments), the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. Absent the Contractor letter confirming readiness of work, the Architect may elect to postpone the Substantial Completion inspection.
1. Additional Inspections: Request additional Substantial Completion inspections when the work that was not complete for the scheduled Substantial Completion inspection is now ready to inspect.
 - a. Costs for such additional Substantial Completion inspections will be deducted from sums otherwise due the Contractor by deduct Change Order.
 2. Results of completed inspection will form the basis of requirements for final completion.

1.4 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before final inspection for determining final completion, complete the following:
1. Submit copy of Architect's Substantial Completion inspection list of items to be completed or corrected. The copy of the list shall state that each item has been completed or otherwise resolved for acceptance, what corrective action was taken, and the date of completion. Items that are in dispute shall have an explanation attached.
 2. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Division 01 Section "Demonstration and Training."

3. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, property surveys, and similar final record information.
 4. Submit closeout submittals specified in individual Specification Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 5. Submit maintenance material submittals specified in individual Specification Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Owner. Label with manufacturer's name and model number where applicable. All keys shall be tagged and labeled.
 6. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 7. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."
- B. Inspection: No later than seven days after the Contract-scheduled date for final completion, Architect and Construction Manager will proceed with the final completion inspection. The Architect will review the final Certificate for Payment after the inspection or will notify the Contractor of the outstanding items that must be completed or corrected before the certificate will be processed.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete has been completed or corrected. The Owner and Architect and Construction Manager reserve the right to add items to the Substantial Completion and final completion inspection lists as long as it is part of the Contractor's work. Complete all Contract requirements prior to the final completion inspection to avoid any further re-inspection cost.
 - a. Costs for such reinspections and any costs for extension of the Architect's and Construction Manager's services will be deducted from sums otherwise due the Contractor.

1.5 SUBMITTAL OF PROJECT WARRANTIES

- A. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual. Warranties for all equipment, materials, and systems on the Project are to start no sooner than the date of substantial completion. Provide extended warranties for all equipment, materials, and systems that may have been turned over to the Owner for its use regardless of the phased completion of the Project.
- B. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
 1. Submit two digital media copies, PDF on thumb drive.

C. Warranties in Paper Form:

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
4. Submit two paper copies, as listed above.

D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
1. Complete the following cleaning operations before inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.

- c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Remove surface dust and dirt from all vertical and horizontal painted surfaces. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - g. Sweep concrete floors broom clean in unoccupied spaces using sweeping compound that is compatible with new finishes.
 - h. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
 - i. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - j. Remove labels that are not permanent.
 - k. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - l. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - m. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - n. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
 - o. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
 - p. Leave Project clean and ready for occupancy.
- C. Construction Waste Disposal: Comply with waste disposal requirements in Division 01 Section "Temporary Facilities and Controls."

3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations before inspection for determination of Substantial Completion.

- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to condition acceptable to Owner and Construction Manager.
1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
 2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that already show evidence of repair or restoration.
 - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
 3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
 4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 01 77 00

SECTION 01 78 23 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals.

1.3 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Manual Format: Submit operation and maintenance manuals in the following format:
 - 1. Two paper copies as listed below.
 - 2. Two digital media copies, PDF format on thumb drive.

1.4 FORMAT OF OPERATION AND MAINTENANCE MANUALS

- A. Manuals, Paper Copy: Submit manuals in the form of hard-copy, bound and labeled volumes.
 - 1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents.
 - a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
 - b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
 - 2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.

3. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 4. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.
- B. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
 2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

1.5 REQUIREMENTS FOR OPERATION AND MAINTENANCE MANUALS

- A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
1. Title Page: Include the following information:
 - a. Subject matter included in manual.
 - b. Name and address of Project.
 - c. Date of submittal.
 - d. Name and contact information for Contractor.
 2. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
 - a. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
 3. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

1.6 OPERATION AND MAINTENANCE MANUALS

- A. Operation Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
 - a. Product name and model number. Use designations for products indicated on Contract Documents.
 - b. Manufacturer's name.
 - c. Equipment identification with serial number of each component.
 - d. Equipment function.
 - e. Complete nomenclature and number of replacement parts.
 2. Operating Procedures: Include the following, as applicable:
 - a. Startup procedures.
 - b. Routine and normal operating instructions.
 - c. Regulation and control procedures.
 - d. Normal shutdown instructions.
 - e. Seasonal and weekend operating instructions.
 - f. Special operating instructions and procedures.
 3. Emergency Procedures: Include the following, as applicable:
 - a. Instructions on stopping.
 - b. Shutdown instructions for each type of emergency.
 - c. Operating instructions for conditions outside normal operating limits.
 - d. Special operating instructions and procedures.
 4. Wiring diagrams.
 5. Control diagrams.
 6. Piped system diagrams.
 - a. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.
 7. Precautions against improper use.
 8. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- B. Maintenance Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, manufacturers' maintenance documentation, maintenance and service schedules, spare parts list and source information, maintenance service contracts, repair materials and sources, and warranties and bonds, as described below.

1. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
2. Product Information: Include the following, as applicable:
 - a. Product name and model number.
 - b. Manufacturer's name.
 - c. Color, pattern, and texture.
 - d. Material and chemical composition.
 - e. Reordering information for specially manufactured products.
3. Maintenance Procedures: Include manufacturer's written recommendations and the following:
 - a. Inspection procedures.
 - b. Types of cleaning agents to be used and methods of cleaning.
 - c. List of cleaning agents and methods of cleaning detrimental to product.
 - d. Schedule for routine cleaning and maintenance.
 - e. Repair instructions.
4. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
 - a. Standard maintenance instructions and bulletins.
 - b. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 - c. Identification and nomenclature of parts and components.
 - d. List of items recommended to be stocked as spare parts.
5. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
 - a. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
 - b. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
6. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
7. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
8. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

9. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - a. Include procedures to follow and required notifications for warranty claims.

1.7 MANUAL PREPARATION

- A. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
- B. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
 1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
- C. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
 1. Do not use original project record documents as part of operation and maintenance manuals.
- D. Submittals: Include copy of each product submittal approved by Architect.
 1. If the "As-Specified Verification Form" was used as the product submittal, include all pertinent product data as described in this Section.
- E. Safety Data Sheets (SDS): Include copy of SDS for each product installed.
- F. Comply with Division 01 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 78 23

SECTION 01 78 39 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for project record documents, including the following:
 - 1. Record Drawings.
 - 2. Miscellaneous record submittals.

1.3 CLOSEOUT SUBMITTALS

- A. Record Drawings: Contractor to submit a full set of marked-up record drawings pertaining to their contract. Provide each drawing, whether or not changes and additional information were recorded. Comply with the following:
 - 1. Submit one full size set of the original, marked-up record prints.
 - 2. Submit two digital media copies, in color, in PDF format on thumb drives. PDFs to be saved and submitted as one file.
- B. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities.
 - 1. Submit two paper copies of each submittal.

1.4 RECORD DRAWINGS

- A. Record Prints: Architect will provide Contractor with one paper set of Contract Drawings at beginning of Work at no cost.
 - 1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an acceptable drawing technique.
 - c. Record data as soon as possible after obtaining it.
 - d. Record and check the markup before enclosing concealed installations.

2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Revisions to routing of piping and conduits.
 - d. Revisions to electrical circuitry.
 - e. Locations of concealed internal utilities.
 - f. Changes made by Addendum.
 - g. Changes made by Architect's Supplemental Instruction (ASI) forms.
 - h. Changes made by Change Order or Construction Change Directive.
 - i. Changes made following Architect's written orders.
 3. Mark record sets with red, permanent marker.
- B. Record Digital Data Files: Prepare a full set of digital data files of the Contract Drawings from the marked-up record prints.
- C. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location. Indicate name of Contractor.
1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 2. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.

1.5 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

1.6 RECORDING AND MAINTENANCE

- A. Maintenance of Record Documents: Store record documents in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's, Construction Manager's, and Owner's reference during normal working hours.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 78 39

SECTION 01 79 00 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
 - 1. Demonstration of operation of systems, subsystems, and equipment.
 - 2. Instruction in operation and maintenance of systems, subsystems, and equipment.
 - 3. Demonstration and training video recordings.

1.3 CLOSEOUT SUBMITTALS

- A. Attendance Record: For each demonstration and training session, submit list of participants, subjects covered, and length of instruction time.
- B. Demonstration and Training Video Recordings: Submit two copies of each demonstration and training session.
 - 1. Identification: On each copy, provide an applied label with the following information:
 - a. Name of Project.
 - b. Name of Architect.
 - c. Name of Construction Manager.
 - d. Name of Contractor.
 - e. Name of service representative providing training.
 - f. Name of instructor.
 - g. Date of video recording.

1.4 QUALITY ASSURANCE

- A. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 01 Section "Quality Requirements," experienced in operation and maintenance procedures and training.

1.5 COORDINATION

- A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

1.6 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training for each system and for equipment not part of a system, as required by individual Specification Sections. Include instruction for the following as applicable to the system, equipment, or component:
1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
 - a. System, subsystem, and equipment descriptions.
 - b. Operating standards.
 2. Documentation: Review the following items in detail:
 - a. Manuals.
 - b. Warranties and bonds.
 3. Operations: Include the following, as applicable:
 - a. Startup procedures.
 - b. Routine and normal operating instructions.
 - c. Regulation and control procedures.
 - d. Safety procedures.
 - e. Normal shutdown instructions.
 - f. Operating procedures for emergencies.
 - g. Seasonal and weekend operating instructions.
 - h. Special operating instructions and procedures.
 4. Adjustments: Include the following:
 - a. Noise and vibration adjustments.
 - b. Economy and efficiency adjustments.
 5. Troubleshooting: Include the following:
 - a. Diagnostic instructions.
 - b. Test and inspection procedures.
 6. Maintenance: Include the following:
 - a. Types of cleaning agents to be used and methods of cleaning.
 - b. Procedures for routine cleaning
 - c. Procedures for preventive maintenance.
 - d. Procedures for routine maintenance.
 7. Repairs: Include the following:
 - a. Diagnosis instructions.
 - b. Repair instructions.

1.7 INSTRUCTION

- A. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
- B. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
 - 1. Schedule training with Owner, through Construction Manager, with at least seven days' advance notice.

1.8 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

- A. Digital Video Recordings: Provide high-resolution, digital video in MPEG format, produced by a digital camera with minimum sensor resolution of 12 megapixels and capable of recording in full HD mode.
 - 1. Submit video recordings on CD-ROM or thumb drive.
- B. Preproduced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 79 00

SECTION 02 41 19 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 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.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.
- B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse.
- C. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
 - 1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.5 PREINSTALLATION MEETINGS

- A. Predemolition Conference: Conduct conference at Project site.
 - 1. Inspect and discuss condition of construction to be selectively demolished.
 - 2. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress.

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.

1.6 SUBMITTALS, GENERAL

- A. General: Submit all informational submittals required by this Section concurrently.

1.7 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For refrigerant recovery technician.
- 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 Owner'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.
- C. Predemolition Inventory:
 1. Submit list of items to be removed and salvaged as part of selective demolition work.
 2. Submit list of items to be removed and reinstalled as part of selective demolition work.
- D. Predemolition Photographs or Video: Show existing conditions, including finish surfaces, that might be misconstrued as damage caused by demolition operations. Submit photos or video recordings on thumb drive before Work begins. Include copy of key plan indicating each photograph's or video's location and direction.
 1. Submit digital media as originally recorded in the digital camera, without alteration, manipulation, editing, or modification.
 2. Photographs: Provide high-resolution color images in JPG format, produced by a digital camera with minimum sensor size of 12 megapixels.
 - a. Name each image with date photograph was taken, location, and unique sequential number keyed to accompanying key plan in file name.
 3. Video: Provide high-resolution, digital video in MPEG format, produced by a digital camera with minimum sensor resolution of 12 megapixels.
 - a. Name each video recording with date video recording was recorded, location, and unique sequential number keyed to accompanying key plan in file name.
 - b. Begin narration of each video recording with Contractor's name, videographer's name, and location in Project.
 - 1) Describe scenes on video recording by audio narration.
 - 2) Confirm date and time at beginning and end of recording.

1.8 CLOSEOUT SUBMITTALS

- A. Inventory:
 - 1. Submit a list of items that have been removed and salvaged.
 - 2. Submit a list of items that have been removed and reinstalled.
- B. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.
- C. Warranties: Documentation indicating that existing warranties are still in effect after completion of selective demolition.

1.9 QUALITY ASSURANCE

- A. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

1.10 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: Present in buildings and structures to be selectively demolished. A report on the presence of hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present.
 - 1. Hazardous material remediation is specified elsewhere in the Contract Documents.
 - 2. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified elsewhere in the Contract Documents.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

1.11 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and restore materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so as not to void existing warranties. Notify warrantor before proceeding. Existing warranties include the following:
 - 1. Roofing.
- B. Notify warrantor on completion of selective demolition, and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

1.12 COORDINATION

- A. Arrange selective demolition schedule so as not to interfere with Owner's operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSP A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- B. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
- C. Engage a professional engineer to perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
 - 1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

- D. Verify that hazardous materials have been remediated before proceeding with building demolition operations.
- E. Record existing conditions by use of preconstruction photographs or video.
 - 1. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by demolition operations.
 - 2. Inventory and record the condition of items to be removed and reinstalled. Provide photographs or video of conditions that might be misconstrued as damage caused by demolition operations.
- F. Beginning selective demolition constitutes Contractor's acceptance of conditions.

3.2 PREPARATION

- A. Refrigerant: Before starting demolition, remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.3 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. Arrange to shut off utilities with utility companies.
 - 2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
 - 3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.
 - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
 - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
 - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
 - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.

- e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
- f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
- g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

3.4 PROTECTION

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 - 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 - 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
 - 5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Division 01 Section "Temporary Facilities and Controls."
- B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
 - 1. Strengthen or add new supports when required during progress of selective demolition.
- C. Remove temporary barricades and protections where hazards no longer exist.

3.5 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.

2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
 5. Maintain adequate ventilation when using cutting torches.
 6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 9. Dispose of demolished items and materials promptly.
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- C. Removed and Salvaged Items:
1. Clean salvaged items.
 2. Pack or crate items after cleaning. Identify contents of containers.
 3. Store items in a secure area until delivery to Owner.
 4. Transport items to Owner's storage area designated by Owner.
 5. Protect items from damage during transport and storage.
- D. Removed and Reinstalled Items:
1. Clean and restore items to functional condition adequate for intended reuse.
 2. Pack or crate items after cleaning and restoring. Identify contents of containers.
 3. Protect items from damage during transport and storage.
 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

- E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.6 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, and then remove concrete between saw cuts.
- B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.
- C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, and then break up and remove.
- D. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for 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.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and 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.

3.8 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.

END OF SECTION 02 41 19

SECTION 02 82 00 – ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Asbestos abatement quality assurance requirements, including personnel training and certification.
2. Work sequence requirements.
3. Personnel protective equipment.
4. Construction facilities and temporary controls for asbestos abatement, including containment barriers, engineering controls and decontamination facilities to ensure contamination from areas where abatement activities occur does not migrate to other areas.
5. Procedures for performing asbestos-containing material abatement, including (but not limited to) repair of existing flooring surfaces after completion of abatement.
6. Project monitoring and testing services for asbestos abatement, including requirements for air sampling and monitoring during asbestos abatement activities.
7. Requirements for transport and disposal of asbestos abatement waste materials by legal and appropriate means.

- B. In accordance with 8 NYCRR 155 and ICR 56 asbestos testing has been performed in areas to be disturbed by scheduled renovation or demolition. Testing information is available for review at the Owner's administrative offices.

1.3 CODES AND REFERENCES

- A. The following codes and references apply:

1. Asbestos Hazard Emergency Response Act - 40 CFR Part 763.
2. ASTM E 1368 – Standard Practice for Visual Inspection of Asbestos Abatement Projects.
3. National Emission Standards for Hazardous Air Pollutants; Asbestos-40 CFR 61, Subparts A and M.
4. New York State Industrial Code Rule 56 - 12 NYCRR Part 56 (ICR 56).

5. New York State Hazardous Wastes Management Regulations - 6 NYCRR 360 and 364.
6. OSHA
 - a. 29 CFR 1910.134 – Respiratory Protection
 - b. 29 CFR 1910.1001 – Asbestos
 - c. 29 CFR 1926.1101 – Asbestos for Construction
 - d. 29 CFR 1926.2 – Variances from Safety and Health Standards
 - e. 29 CFR 1926.1200 – Confined Spaces for Construction
7. NYSDOH Asbestos Safety Program Requirements – 10 NYCRR Part 73

B. Failure to expressly refer to applicable code, regulation, standard, law and ordinance within Contract Documents does not imply that applicable regulatory requirements are not applicable to the Project.

1.4 DEFINITIONS

A. Refer to 12 NYCRR Part 56–2.1 for standard definitions. Additional terms are as follows:

1. Asbestos Abatement Work: Encapsulation, enclosure, repair, removal and disposal of asbestos-containing materials in accordance with all applicable codes, regulations, standards, laws and ordinances.
2. Dust and Debris: Visible particles, fragments, or chunks of material, large enough to have settled in the work area by virtue of their weight, that are presumed to have originated from the material abated by the response action, or from a fiber release episode.
3. Manual Removal: Removal work undertaken using only manually powered equipment such as scrapers, brushes, spud bars, etc. Manual removal does not include tools that are powered by electrical motors, compressed air, hydraulic fluid, combustion engines, etc.
4. Residue: Visible material which remains on the abated surface due to incomplete removal and cleaning.
5. Unremoved Material: Any material which was required to be removed by a response action but remains substantially undisturbed.
6. Visual Inspection: The activities associated with detecting the presence of visible residue, dust and debris, or unremoved material and verifying the absence thereof at the completion of a response action.

1.5 ACRONYMS

- A. ACM: Asbestos Containing Materials.
- B. HEPA: High Efficiency Particulate Air filter which is capable of trapping and retaining 99.97 percent of all mono-dispersed particles of 0.3 microns in diameter or larger.

- C. NAD: No Asbestos Detected.
- D. NOB: Non-friable asbestos materials embedded in flexible-to-rigid asphalt or vinyl matrices, including but not limited to flooring materials, adhesives, mastics, asphalt shingles, roofing materials and caulks.
- E. PPE: Personal Protective Equipment.
- F. RACM: Regulated Asbestos Containing Material.
- G. TSI: Thermal System Insulation.

1.6 SUBMITTALS, GENERAL

- A. Submit all action submittals and informational submittals (except Employee Training and Certification Documentation) required by this Section concurrently.

1.7 PRE_ABATEMENT SUBMITTALS

- A. Product Data: For each type of product indicated. Submit MSDS and SDS for each type of chemical to be utilized. Include a summary table or narrative detailing the intended usage of each chemical/product.
 - 1. Chemical mastic removers.
 - 2. Encapsulants.
 - 3. Fire Rated Caulking or Expansion Foams
- B. Quality Control Submittals:
 - 1. USEPA Notification, including all updates.
 - 2. NYSDOL Notification, including all amended notifications.
 - 3. Copy of ICR 56 Notification to Building Occupants
 - 4. NYSDEC "Industrial Waste Hauler Permit".
 - 5. NYSDOL Asbestos Handling License.
 - 6. Proposed Specific Variances from ICR 56.
 - 7. Approved Specific Variances from ICR 56.
 - 8. Work-plan identifying work areas, local exhaust system locations, areas of proposed decontamination units, waste trailers, temporary power/utility, barriers, and boundaries of each regulated area.

9. New Flooring Warranty when chemical mastic removal methods are used. Contractor(s) electing to utilize chemical mastic removal methods shall provide, for all new flooring being applied over such areas, an flooring warranty equivalent to that of the new flooring warranty provided by the manufacturer.

1.8 POST-ABATEMENT SUBMITTALS

- A. Notification of intended waste transporter and disposal site. Notification shall include draft manifest clearly identifying type of waste, transporter to be utilized, and disposal facility.
- B. Waste Manifests for RACM and Trip Tickets for all other waste.
- C. Results of any bulk sample analysis, area air sample analysis or OSHA compliance air sample analysis.
- D. Copy of Project record.
- E. Copy of the supervisor Project log, including training and certification documentation for all workers and supervisors who performed any work on site during the course of the project.
- F. Record drawings, which identify:
 1. The extents of each abatement work area.
 2. All locations where asbestos materials were removed.
 3. Amount of asbestos materials removed, per location.
 4. Where partial removal occurred, the amount of remaining asbestos material, per location.

1.9 QUALITY ASSURANCE

- A. Qualifications:
 1. Asbestos Abatement Firm:
 - a. Licensing: Possess valid Asbestos-Handling License issued by Commissioner of Labor of New York State.
 - b. Supervision: Full-time, on-site supervisor for each site.
 - c. Personnel Training Requirements. Provide, to Project Monitor, valid training and certification documentation for new employees prior to employees beginning work.
 - 1) Abatement Personnel: Successfully completed USEPA asbestos handler training course (initial or refresher) or USEPA approved asbestos contractor supervisor course (initial or refresher) within the previous 12 months, in accordance with 40 CFR 763. Acceptable documentation is the NYSDOH form DOH - 2832.

- 2) Abatement Supervisory Personnel: Successfully completed USEPA asbestos contractor/supervisor training course (initial or refresher) within previous 12 months, in accordance with 40 CFR 763. Acceptable documentation is the NYSDOH form DOH - 2832.
 - d. Personnel Certification Requirements:
 - 1) Abatement Personnel: Possess valid asbestos handling certificate or valid asbestos supervisor certificate, issued by New York State Department of Labor in accordance with ICR 56.
 - 2) Abatement Supervisory Personnel: Possess valid asbestos supervisor certificate issued by New York State Department of Labor in accordance with ICR 56.
2. Project Monitoring and Air Sampling Firm:
 - a. Employed by Owner with valid asbestos handling license issued by NYSDOL and employing individuals performing project monitoring and air sampling duties possessing asbestos handling certificates issued by NYSDOL for following categories:
 - 1) Asbestos Air Sampling Technician.
 - 2) Asbestos Project Monitor.
 - b. Contractor responsible for abatement shall not perform air sampling (except for OSHA compliance sampling) or project monitoring. Contractor shall notify Owner and Architect of any conflict of interest between itself and party responsible for project air sampling and monitoring.
3. Laboratories Performing Phase Contrast Microscopy (PCM) Air Sample Analysis (By Owner):
 - a. Possess valid Environmental Laboratory Approval Program (ELAP) certificate issued by New York State Department of Health for category of Environmental Analysis/Air and Emissions, subcategory of Asbestos Fibers.
 - b. Enrolled in American Industrial Hygiene Association's Proficiency Analytical Testing Program for PCM.
 - c. Use National Institute for Occupational Safety and Health (NIOSH) Method 7400 entitled "Fibers" published in NIOSH Manual of Analytical Methods, 3rd Edition. Second Supplement, August 1987.
4. Laboratories Performing Transmission Electron Microscopy (TEM) Air Sample Analysis (By Owner):
 - a. Possess valid Certificate of Accreditation issued by United State Department of Commerce's National Institute of Standards and Technology (NIST) for Airborne Asbestos Fiber Analysis.

- b. Use TEM methodology as required by Appendix A to Subpart E of the AHERA regulations 40 CFR 763.
- 5. Laboratories Performing Polarized Light Microscopy (PLM) and Transmission Electron Microscopy (TEM) Bulk Sample Analysis (By Owner):
 - a. Possess valid Environmental Laboratory Approval Program (ELAP) certificate issued by New York State Department of Health for the category of Environmental Analysis / Solid and Hazardous Waste, subcategory of Asbestos in Friable Material and/or Non-Friable Material appropriate to analysis performed.
 - b. Possess valid Certificate of Accreditation issued by United States Department of Commerce's National Institute of Standards and Technology (NIST) for Bulk Asbestos Fiber Analysis.
- B. Regulatory Requirements: Comply with all federal, state, and local codes, laws, ordinances, standards and regulations applicable to asbestos abatement work, transport and disposal, including (but not limited to) standards referenced in "Codes and References" Article.

1.10 NOTIFICATIONS

- A. Comply with the following notification requirements:
 - 1. New York State Department of Labor: Submit notification to Division of Safety and Health Asbestos Control Bureau as required in ICR 56 such that notification is received not fewer than 10 days prior to commencement of Project. Include payment of all related notification fees and other notification expenses.
 - 2. United States Environmental Protection Agency (USEPA): Submit notification to USEPA at following address such that notification is received not fewer than 10 days prior to commencement of Project:
 - Asbestos NESHAP Coordinator
 - Air & Waste Management Division
 - USEPA Region 2
 - 26 Federal Plaza
 - New York, New York 10278
 - 3. Building Occupant Notification: Provide notification to building occupants not fewer than 10 days prior to mobilization or start of preparation work. Ensure notifications are posted in accordance with ICR 56, and remain in place. Contractor shall be responsible for maintaining and replacing notifications if damaged or removed.

1.11 VARIANCES

- A. Variances from ICR 56: Use any Applicable Variances issued by New York State Department of Labor (NYSDOL) and any Specific Variances issued by NYSDOL and approved by the Owner and Architect. Remain solely responsible for complying with provisions of variances used.

1. Obtain any and all variances from ICR 56 which may be necessary or desired to perform the Work.
2. Contractor-Obtained Variances: Provide copies of all Petitions for Variance requested by Contractor or subcontractors to Owner, Construction Manager and Architect prior to submission of Petition for Variance to NYSDOL.
 - a. Comply with following requirements for all Petitions for Variance:
 - 1) Provide adequate protection from contaminating areas outside work area.
 - 2) Provide adequate relief from air sampling requirements, including relief from air sampling requirements on days when no active abatement work occurs.
 - 3) Conform to overall design criteria for Project.
 - 4) Protect facility from damage as result of conditions of Petition for Variance.
 - b. Contractor retains responsibility for providing all additional conditions, equipment, and other provisions imposed by NYSDOL as part of NYSDOL acceptance of Petition for Variance.
 - c. Extensions of time for performance of asbestos abatement work will not be granted to compensate for NYSDOL review of Contractor-obtained variances.
 - d. Contractor is responsible for all fees and expenses related to submission of any Petitions for Variance.

1.12 PROJECT CONDITIONS

- A. Project/Site Access Limitations: Restrict access to all work areas. Immediately report any access by unauthorized individuals to Owner and Project Monitor.

1.13 PRE-FIRE PLAN

- A. Pre-Fire Plan, indicating primary and secondary emergency escape routes from the work area, local exhaust system locations, decontamination units, waste-out units, access tunnels, temporary facilities, location of fire extinguishers, and location of negative air emergency disconnect switch (if required).
- B. Plan shall be reviewed with all personnel to enter the work area and shall be posted in the decon area as well as in the work area.

1.14 ASBESTOS LOGS/PROJECT RECORD

- A. Maintain a project log as part of ICR 56 during the abatement phase of the work with all information required by ICR 56 and as described herein.

- B. Make project log available on site at all times when a project as defined by ICR 56 is active.
- C. At a minimum, comply with ICR 56 requirements and as follows:
 - 1. Asbestos Abatement Contractor Project Log (Supervisor's Daily Project Log): As per 12 NYCRR 56-7.3.
 - 2. Non-abatement Asbestos Contractor responsible for Air Sampling (Air Sampling Log): As per 12 NYCRR 56-4.5.
 - 3. Non-abatement Asbestos Contractor responsible for Project Monitoring (Project Monitoring Log):
 - a. Name of the firm and the certified Project Monitor(s) performing project monitoring duties.
 - b. Dates of project.
 - c. Observations, per work area regarding:
 - 1) The stage of completion of the work.
 - 2) Schedule concerns.
 - 3) Work that may be out of compliance with project documents or pertinent asbestos regulations.
 - 4) Asbestos abatement contractor corrections to barriers/required cleaning of areas outside of the work area.
 - 5) Removal of work area containment by asbestos abatement contractor.
 - 6) Hidden conditions.
 - 7) Other relevant information.
 - d. Information about potential change orders or work performed for which the asbestos abatement contractor contends is outside the scope of work.
 - e. Coordination with asbestos abatement contractor or others to resolve identified issues.
 - f. Resolution of identified issues.
 - g. Project Monitor final visual inspections and final clearance.
 - h. At a minimum, document project observations and other information by work area and day with additional entries to accurately describe the project status.
 - 4. Where the same non-abatement asbestos contractor is responsible for both air sampling and project monitoring, one project log containing all required components of the Air Sampling Log and the Project Monitoring Log shall suffice.

- D. Project Record: At all sites where there is an active project, a project record is required as per ICR 56-3.4 (a) (2).
1. The asbestos abatement contractor shall act as the Owner's representative as it relates to responsibility for the following portions of the Project Record required by ICR 56-3.4 (a) (2):
 - a. Copies of licenses of all entities involved with the project.
 - b. Copies of all supervisors and handler certificates.
 - c. Copies of notifications and amendments.
 - d. Copies of all variances, amendments and re-openings being used for the project.
 - e. A copy of all air sampling results, including method of analysis, by date for the entire asbestos project, organized by regulated abatement work area.
 - f. The supervisor's daily log with entry/exit logs organized by date.
 - g. All bulk sample data including all asbestos inspections and surveys completed for affected portions of the building, structure and work site.
 2. The asbestos contractor performing air sampling on this Project shall act as the Owner's representative as it relates to responsibility for the following portions of the Project Record required by ICR 56-3.4 (a) (2):
 - a. A copy of the air sample log if the Air Sampling Technician is on site. If the Air Sampling Technician is not on site, a copy of the air sample log shall be supplied within 24 hours of the request to produce a copy thereof.
 3. The asbestos contractor performing project monitoring on this project shall act as the Owner's representative as it relates to responsibility for the following portions of the Project Record required by ICR 56-3.4 (a) (2):
 - a. A copy of the Project Monitor's daily logs during abatement (if a Project Monitor is used on the project).

1.15 SEQUENCING AND SCHEDULING

- A. Timing of Abatement Preparation and Removal Operations:
1. Coordinate abatement preparation and removal work to allow for removal or demolition work by other entities, prior to commencing abatement preparation or removal activities, where such activities will not disturb ACM.
 2. Where items scheduled to be removed, relocated, or demolished by others will impact ACM, coordinate with other entities regarding temporary relocation of these items during abatement activities. Work that will disturb ACM must be performed by the Contractor responsible for abatement activities.
- B. Completion: Complete Asbestos Abatement Work in accordance with construction schedule requirements specified in Division 01 Section "Multiple Contract Summary" with each phase considered distinct and separate for purpose of schedule and substantial completion.

1. Substantial Completion of a phase occurs when all of the following occur:
 - a. All components of the phase have passed visual inspection by Project Monitor.
 - b. Satisfactory clearance air sampling is achieved for each portion of the phase.
 - c. All containment barriers have been removed.
 - d. Areas are returned to Owner.
 2. If Contractor fails to achieve substantial completion within specified schedule requirements, all costs associated with extension of schedule, including (but not limited to) Architect time and expenses, air sampling costs, project monitoring costs, direct costs incurred by Owner, and costs to accelerate sample analysis shall be deducted from final payment.
- C. Restrictions on Working Hours: Schedule work only during regular working hours, as established for Project. Do not use overtime or multiple shifts with "overtime" defined as any time in excess of 8 hours in single day, work on weekends, or work on holidays.
- D. Changes in Working Hours: Advise Project Monitor of any changes in hours or days which Contractor will be on site, at least 24 hours prior to change. Contractor retains all liability resulting from Contractor's failure to make required notification.
- E. Security: Contractor shall maintain the security of the work areas for which they are performing work in, have modified the existing facilities, or are utilizing for staging area.

PART 2 - PRODUCTS

2.1 NON-ASBESTOS PRODUCTS

- A. No products containing asbestos may be used on this project, including but not limited to the following: for temporary construction, work area containment, restoration or renovation work.

2.2 EQUIPMENT

- A. Respirators: Provide respirators jointly approved as acceptable for protection by National Institute for Occupational Safety and Health (NIOSH) under provisions of 30 CFR Part 11.
1. Supply and use respirators in accordance with 29 CFR 1910.134 and 29 CFR 1926.1101.
 2. Provide respirators, filters and ancillary supplies as required for employees and authorized visitors.
 3. Account for hazards other than asbestos in respirator selection.
- B. Protective Clothing: Provide disposable protective clothing complying with requirements of 29 CFR 1926.1101 that is disposed of after one use. Provide disposable clothing as required for employees and authorized visitors.

- C. Asbestos Abatement Construction Facilities and Controls: Provide all materials and equipment in compliance with requirements of:
 - 1. NYS Industrial Code Rule 56.
 - 2. 29 CFR 1926.1101.

- D. Project Monitoring and Testing Services Equipment (By Owner):
 - 1. Transmission Electron Microscopy (TEM) Air Sampling Cassettes: Use commercially available 25 mm or 37 mm cassettes.
 - a. Filter Media: Use sample collection filters which are either:
 - 1) Polycarbonate with pore size less than or equal to 0.4 micrometers; or
 - 2) Mixed cellulose ester having pore size less than or equal to 0.45 micrometers.
 - 2. Phase Contrast Microscopy (PCM) Air Sampling Cassettes: Use commercially available 25 mm cassettes.
 - a. Filter Media: Use mixed cellulose ester sample collection filters with pore size of 0.8 micrometers.
 - 3. Use only new cassettes. Reloaded cassettes are not acceptable.

2.3 ENCAPSULANTS

- A. Encapsulants shall conform to USEPA requirements, shall contain no toxic or hazardous substances and no solvent.

2.4 FIRE RATED SEALANTS

- A. All sealants to be used shall meet minimum 2-hour fire rating as per ASTM E-814.
- B. Sealant shall be either a polyurethane based expansion foam or a silicone based caulk system.
 - 1. Fire-rated expansion foams shall be manufacturer-colored pink so as to identify its rating. Acceptable products include:
 - a. ABESCO FP200 Fire Rated Expansion Foam,
 - b. FlameShield Fire Rated Expansion Foam, or
 - c. Pyroplex-Fire Rated Expanding Foam.
 - 2. Fire-rated caulking materials are not required to be manufacturer-colored pink. Acceptable products include:
 - a. DAP Fire-Stop Fire Rated Silicon Sealant, and
 - b. Hilti CP 601S Elastomeric Firestop Sealant.

3. Fire-rated caulking may require the use of backer material per manufacturer instructions.
- C. All sealants shall be applied per manufacturer instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 GENERAL REQUIREMENTS

- A. The Contractor shall not permit eating, smoking, drinking, chewing or applying cosmetics in the regulated area.

3.3 PROTECTION

- A. Provide personal protective equipment as required by 29 CFR 1926.1101 at no cost to employees or authorized visitors.
- B. Institute respirator program in accordance with 29 CFR 1910.134 (b), (d), (e) and (f).
- C. Use protective clothing and respirators whenever asbestos containing materials are being disturbed, abated, cleaned up, containerized or stored in vehicle or container used to transport waste to landfill.
- D. Institute medical surveillance program in accordance with 29 CFR 1926.1101 for all employees performing or supervising asbestos handling work, entering work area containment, or using respirator.

3.4 PREPARATION

- A. Perform all preparation work in accordance with Industrial Code Rule 56 and 29 CFR 1926.1101.
- B. Do not begin asbestos abatement activities until all of following have occurred:
 1. Monitoring Firm has completed background air sampling as required.
 2. All preparation work, including installation of decontamination enclosure systems and engineering controls (ex. negative air pressure equipment, etc.) is complete.
 3. The Project Monitor has inspected containment area.
 4. The Project Monitor has given written authorization to proceed.

C. Decontamination Facilities And Practices

1. The Contractor shall establish a decontamination area in accordance with ICR 56 for the decontamination of employees, material and equipment. The Contractor shall ensure that employees enter and exit the regulated area through the decontamination area.
2. Decontamination Facility – Remote
 - a. Construct decontamination facilities in accordance with ICR 56 and as follows:
 - 1) Personal decontamination facility minimum requirements:
 - a) Where remote decontamination facilities are allowed, construction of the decontamination facility shall include an additional airlock after the equipment room and which shall include a lockable door. An additional airlock is required at the entrance to the containment / regulated area and shall include a lockable door.
 - 2) Waste decontamination facility minimum requirements
 - a) Where remote decontamination facilities are allowed in small and large work areas shall have a washroom constructed between the work area and airlock.

D. Large and Small Asbestos Work Area Preparation - Interior Work:

1. Ensure occupants vacate work area prior to starting preparation. Post caution signs at all approaches to asbestos abatement work area.
 - a. Do not conduct asbestos abatement activities in occupied buildings. Provide exits from isolated portion of building that do not pass through occupied portions of building. Physically separate and seal ventilation systems passing through occupied portions of building at isolation barrier.
 - 1) “Building”: As defined by New York State Education Department, references to “building” in this Section means wing or major section of structure that can be completely isolated from other portions of the structure with sealed non-combustible construction.
 - b. Where interior abatement occurs, isolate wing or major section of building from occupied portions of building with sealed isolation barriers constructed of non-combustible materials. Provide exits from isolated portion of building that do not pass through occupied portions of building. Physically separate and seal ventilation systems passing through occupied portions of building at isolation barrier.
 - c. Do not remove isolation barriers until satisfactory TEM clearance sampling results have been obtained as required by New York State Education Department.

2. Shut down and secure electric power to asbestos abatement work area. Provide temporary power and lighting in accordance with all applicable codes and requirements of project schedule.
 - a. Ensure all power to asbestos abatement work area from outside area passes through ground-fault interrupter at source of power.
 - b. Confirm which electrical circuits that pass through the asbestos abatement work area, but do not serve the asbestos work area, cannot be shut down.
 - c. If electrical circuits, machinery or other electrical systems pass through, but do not service the work area and cannot be shut down, isolate, protect and label such systems as per ICR 56-7.7 (a).
3. Install or construct a personal decontamination enclosure system fully complying with ICR 56-7.5.
 - a. Secure personal decontamination enclosure system to prevent unauthorized entry.
 - b. Remote decontamination system enclosures shall only be used when allowed by ICR 56, or if a petition for variance from ICR 56 is accepted by Owner and Architect and approved by NYSDOL.
 - 1) Confirm that remote decontamination enclosure system location will allow access to regulated work areas without adversely affecting use of the building by Owner or other entities.
 - 2) Provide additional airlocks as required by ICR 56.
4. Shut down and isolate heating, ventilating and air conditioning systems.
5. Pre-clean and remove all movable objects. Pre-clean all fixed objects and other items to remain and enclosed with two distinct and separate layers of plastic sheeting. Pre-clean asbestos abatement work area.
6. Install isolation barriers in accordance with ICR 56-7.11.
7. Install negative pressure equipment fully complying with ICR 56-7.8.
 - a. Provide a manometer for all OSHA Class I work areas.
 - 1) Maintain a minimum of -0.02 column inches of water pressure differential relative to pressure outside the work area.
 - 2) Document the manometer reading at least twice per work shift.
 - 3) At a minimum, provide four air changes per hour or as modified by ICR 56 or a specific variance for particular materials, containment or other requirements.

8. Maintain emergency and fire exits from asbestos abatement work area in accordance with all applicable codes.
9. In boiler areas, shut down and seal burner and boiler accesses and breechings.
10. Shut down elevators that run through asbestos abatement work area or isolate them in accordance with ICR 56-7.11.
11. Install or construct waste decontamination enclosure system fully complying with ICR 56-7.5 and secure to prevent unauthorized entry.
 - a. Waste decontamination system enclosures shall be constructed and functional prior to completion of work area preparation.
 - b. Where a remote personal decontamination system enclosure is allowed comply with the following additional requirements:
 - 1) Small and Large Size Regulated Abatement Work Areas: Construct an additional chamber attached to the regulated work area for use in conjunction with the existing airlock as a contiguous waste decontamination enclosure.
 - 2) Minor Size Regulated Abatement Work Area: No additional chamber required.

E. Negative Pressure Tent Enclosures:

1. Negative pressure tent enclosures may be used in the following circumstances:
 - a. Any amount of gross abatement of exterior and interior non-friable ACM.
 - b. Any amount of glovebag abatement of friable TSI.
 - c. Gross abatement of Minor or Small amounts of friable ACM.
2. Construct negative pressure tent regulated abatement work area enclosures as per ICR 56-7.11 (f) (1).

F. Removal of Ceilings and Components:

1. Where non-ACM suspended ceilings and components exist below friable ACM:
 - a. Complete all preparation work, including all plasticizing, decontamination enclosure construction and instituting negative pressure, up to the suspended ceiling.
 - b. Remove ceiling tiles and components and dispose or decontaminate as required.
 - c. Mounted objects or fixtures shall be disposed of or decontaminated and supported in place if scheduled for reuse.
 - d. Complete preparation work above ceiling.

G. Plasticizing Floors, Walls and Ceilings:

1. Plasticize and seal floors, walls and ceilings as per ICR 56-7.11 or as modified elsewhere in ICR 56 or in accordance with a specific variance from ICR 56 which is approved by NYSDOL and accepted by the Owner and Architect.

H. Pre-Abatement Settling Period: For all Small and Large size regulated abatement work areas where negative pressure equipment is required, upon completion of construction of all isolation barriers and decontamination system enclosures, including the establishment of the negative air system and prior to beginning actual abatement activities, at a minimum, allow 4-hour settling period to insure that barriers remain intact and secured to walls and fixtures.

3.5 ABATEMENT PROCEDURES

A. Perform all asbestos abatement work in accordance with ICR 56 and 29 CFR 1926.1101.

B. Work Area Entry and Exit Procedures: All personnel enter and exit asbestos abatement work area through personal decontamination enclosure system. Post pertinent regulations, personal protection requirements, work area entry and exit procedures, and emergency procedures in clean room.

1. Entry/Exit Log: Ensure all persons sign Entry/Exit Log for each entry and exit. Include at least the following information in Entry/Exit Log:

- a. Project name.
- b. Building name.
- c. Unique work area description.
- d. Date.
- e. Statement that signature acknowledges review and understanding of posted regulations, personal protection requirements, work area entry and exit procedures, and emergency procedures.
- f. Printed name, signature, social security number, NYS asbestos certificate number, entry time and exit time for each individual.

2. Asbestos Abatement Work Area Entry:

- a. Initially proceed to clean room and remove all clothing and put on disposable coveralls, head covering, foot covering and gloves.
- b. Put on NIOSH-approved respiratory protection appropriate to airborne concentrations of asbestos.
- c. Use clean respirators and protective clothing for each separate entry into asbestos abatement work area.

- d. Inspect respirators prior to each use and test for proper seal using quantitative or qualitative fit checks.
 - e. Proceed through personal decontamination enclosure system to equipment room and collect necessary tools and put on any additional clothing before entry into asbestos abatement work area.
3. Asbestos Abatement Work Area Exit:
- a. Before leaving asbestos abatement work area, remove gross contamination from outside of respirators and protective clothing on all personnel by brushing, wet cleaning, and HEPA vacuuming.
 - b. Proceed to equipment room.
 - c. Remove all disposable coveralls, head covering, foot covering and gloves and deposit into labeled containers for disposal.
 - d. Store reusable contaminated clothing, footwear, head gear and gloves in equipment room when not in use in asbestos abatement work area.
 - e. Still wearing respirators, enter shower for decontamination.
 - f. Proceed to clean room and put on clothing.
4. Remote Decontamination Procedure Modifications: If remote decontamination enclosures systems are allowed by ICR 56, modify asbestos abatement work area entry and exit procedures as follows:
- a. Designate a pathway from the regulated abatement work area to the personal decontamination system or next regulated abatement work area that is cordoned off and has appropriate signage as per ICR 56.
 - b. Confirm that location of designated pathway will not adversely affect the operations of the Owner or other entities.
 - c. Put on two suits (coveralls, head covering and foot covering) when putting on disposable clothing.
 - d. Provide attached airlock for each remote asbestos abatement work area and at the entrance to the equipment room of the remote decontamination enclosure system.
 - e. Prior to leaving asbestos abatement work area, HEPA-vacuum and/or wet wipe outer suit, enter airlock, remove outer suit, don a clean set of protective clothing.
 - f. Where provisions of specific variance vary from above, most stringent requirements apply.

C. Asbestos Removal – General Requirements:

1. Wetting Requirements: Wet asbestos materials frequently with amended water, and allow sufficient time for penetration to occur prior to abatement activities.
2. Handling: Directly bag or drop asbestos material on detachment from substrate into flexible catch basin for subsequent bagging.
 - a. Chutes: Use dust tight, enclosed, inclined chutes for asbestos material dropped distances greater than 10 feet.
 - b. Handling Large Components: Wrap large components, removed intact, in two: layers of plastic sheeting, secure and make airtight with tape.
 - c. Sharp-Edged Components: Place asbestos waste material with sharp-edged components that may tear plastic bags or sheeting into hard wall containers and seal airtight.
3. Daily Cleanup Procedures: Perform cleanup of loose asbestos material whenever enough loose asbestos material has been removed to fill single leak-tight container of type suitable for material properties. Perform cleanup at least once per day prior to close of each working day. Keep asbestos material wet until cleaned up.

D. Equipment and Waste Container Decontamination and Removal Procedures:

1. Wet clean or HEPA-vacuum external surfaces of contaminated containers and equipment in asbestos abatement work area before moving items into waste decontamination enclosure system airlock. Do not enter airlock.
2. Remove these contaminated items from airlock using individuals stationed in washroom during waste removal operations.
3. Once in waste decontamination enclosure system, clean external surfaces of contaminated containers and equipment and clean equipment second time by wet cleaning.
4. Dry any excessive pooled or beaded liquid from cleaned containers of asbestos material and equipment, place in uncontaminated plastic bags or sheeting as required by characteristics of item, and seal airtight.
5. Move clean re-containerized items into airlock leading to holding area. Do not enter airlock until waste removal is finished for that period.
6. Provide individuals dressed in clean personal protective equipment that has entered from uncontaminated areas to move containers and equipment from airlock and place in holding area.
7. Place cleaned containers of asbestos material and equipment in watertight carts with doors or tops that close and can be secured. Hold these carts in holding area until removal. Wet-clean or HEPA-vacuum carts at least once each day.

8. When waste decontamination enclosure is part of personal decontamination enclosure, do not remove waste during shift change or when otherwise occupied.

E. Asbestos Removal – Additional Requirements:

1. Multiple Abatement within a Single Regulated Abatement Area: Perform abatement of multiple materials from the same regulated work area as per ICR 56-8.6.
2. Non-Friable Flooring and/or Mastic Removal:
 - a. Completely remove flooring and mastic from the substrate. Mastic removal is incomplete if any residual floor tile mastic can be removed from the surface, edges, corners, pits or cracks.
 - b. Concrete Substrate Mastic Removal Options:
 - 1) Where only mechanical/manual mastic removal methods are allowed, no chemical mastic removal agents are allowed. Perform work using full work area preparation and attached decontamination system enclosures. All provisions as per ICR 56-7, ICR 56-8 and ICR 56-9 apply.
 - 2) Where mechanical/manual methods are utilized, contractor must repair damage to the concrete substrate caused by removal and patch and repair existing floor substrate as required, providing smooth, level surface acceptable to receive new flooring materials.
 - 3) Use chemical mastic removal agents only in accordance with chemical abatement alternate as noted in Division 01 Section “Alternates”.
 - 4) Where chemical mastic removal agents are used:
 - a) Prevent odors and/or vapors from migrating to interior spaces. Provide additional air changes as necessary to prevent migration.
 - b) Prevent chemical mastic removal agents from soaking into cracks or adjacent materials.
 - c) Completely neutralize and clean all residual chemical mastic removal agents from the substrate and adjacent surfaces.
 - d) Comply with manufacturer’s recommendation for use and cleanup.
 - e) Contractor is responsible for the disposal of and any additional requirements or costs related to waste generated by the mastic removal activities.
 - f) Work may be performed in accordance with ICR 56-11.7.

- g) Use of chemical mastic removal methods voids new flooring manufacturer's warranty. Contractor(s) electing to utilize chemical mastic removal methods shall provide an equivalent warranty to that of the new flooring warranty.
- 5) Where soy-based chemical mastic removal agents are used, they shall meet the following minimum standards:
- a) Hazardous Materials Identification System (HMIS) rating (HMIS III) not exceeding: Health – 0, Flammability – 1, Physical Hazard – 0.
 - b) National Fire Protection Association (NFPA) rating not exceeding: Health Hazard – 0, Flammability – 1, Instability – 0.
 - c) Chemical mastic removal agents limited to soy based mastic removal agents to reduce the possibility of indoor air quality issues during, or subsequent to, application of chemical mastic removal agents.
 - d) Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, *Franmar Chemical, Inc.; BEAN-e-doo Mastic Remover and AG Environmental Products, LLC; SoyGold 1100 Solvent.*
 - e) Mechanical/manual methods may be used in lieu of soy based chemical mastic removers at the contractor's discretion.
- 6) Where petroleum-based chemical mastic removal agents are used, they shall meet the following minimum standards:
- a) Hazardous Materials Identification System (HMIS) rating (HMIS III) not exceeding: Health – 1, Flammability – 2, Physical Hazard – 0.
 - b) National Fire Protection Association (NFPA) rating not exceeding: Health Hazard – 0, Flammability – 1, Instability – 0.
 - c) Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, *Sentinel Products, Inc.; 747 Fresh Scent Mastic Remover and ARAMSCO; Chemsafe 100 Low Odor Mastic Remover.*
 - d) Mechanical/manual methods or soy-based mastic remover may be used in lieu of petroleum-based mastic removers at contractor's discretion.
- 7) Where chemical mastic removal agents are not allowed, the following minimum standards shall be met:
- a) Perform wholesale mastic removal using mechanical/manual methods and use manual methods to remove mastic in smaller areas (i.e. around floor penetrations, in corners, or in closets).

- b) Maximum tolerance from original floor level: 1/8 inch.
 - c) Chemical mastic removal agents of any kind are not allowed.
- 8) Coordinate with flooring Installer to ensure removal of existing flooring is provided in manner acceptable for installation of new flooring materials, including coordination of requirements for abrasive removal of existing flooring adhesives and mastics.
- 9) Patch and repair existing floor substrate as required providing smooth, level surface acceptable to receive new flooring materials.
- a) **Applicator Qualifications:** Ensure patching and repair materials are applied by applicator experienced in application of patching and repair materials and with at least 3 successfully completed applications of similar materials in similar applications.
 - b) **Coordination:** Review proposed patching and repair materials with flooring Installer to ensure compatibility between new flooring materials and patching and repair materials.
 - c) **Levelness Tolerances:** Apply floor patching and repair materials to provide levelness of floor substrate within at least 1/4 inch in 10 feet, unless more stringent levelness recommended or required by finish flooring manufacturer. Coordinate with flooring Installer prior to applying patching and repair materials to confirm required levelness tolerances.
- 10) Patching Floor Substrates Abated by Mechanical Means:
- a) **Flash Patching over Floor Substrates Abated by Mechanical Methods:** Apply Portland cement-based self-drying cementitious flash patching material similar to *Ardex Engineered Cements; ARDEX Feather Finish*, to damaged areas with 1/8 inch or less depressions.
 - b) **Patching over Floor Substrates Abated by Mechanical Methods:** Apply Portland cement-based self-drying cementitious patching material similar to *Ardex Engineered Cements; ARDEX SD-P*, to damaged areas with depressions over 1/8 inch deep.
 - c) **Self-Leveling over Floor Substrates Abated by Mechanical Means:** Apply Portland cement-based cementitious self-leveling material similar to *Ardex Engineered Cements; ARDEX K 15 Self-Leveling Underlayment Concrete*, to large damaged areas where flash-patching and patching described above cannot provide smooth, level surface acceptable to receive new flooring materials.
- 11) Patching Floor Substrates Abated by Chemical Methods: Apply a high strength cement and powdered polymer self-leveling floor underlayment material. Product to meet the following performance requirements:

- a) Compatible with application over chemical abatement residues.
 - b) Thickness of application: minimum thickness of 1/8 inch up to maximum thickness of 2 inches. Thickness over 2 inches to be achievable with the addition of aggregate.
 - c) Compressive Strength (ASTM C 109/mod – Air cure only): 4100 psi at 28 days.
 - d) Flexural Strength (ASTM C 348): 1000 psi at 28 days.
 - e) Flammability(ASTM E84): Flame Spread -0-, Fuel Contribution -0-, Smoke Development -0-.
 - f) Walkable: 3 hours at 70 deg F.
 - g) Products complying with above specified requirements include *Ardex Engineered Cements; ARDEX LU-100 Self-Leveling Flooring Underlayment.*
- c. Wood Substrate:
- 1) ACM Mastic: Unless otherwise indicated, remove and dispose of the wood underlayment in its entirety as asbestos containing or contaminated material. Removal includes all fasteners, felts, etc.
 - 2) Non-ACM Mastic: Unless otherwise indicated, the wood underlayment and residual mastic shall remain in place after removal of the ACM floor tile
3. Removal of ACM Ceilings, Walls or Other Components that Expose Areas Beyond:
- a. Where removal of an ACM component or system, e.g. ceiling or wall, may expose openings to adjacent areas:
 - 1) Complete all preparation work, including, plasticizing, installation of decontamination systems and instituting negative pressure.
 - 2) Carefully remove the component or system at the perimeter and penetrations prior to gross removal.
 - 3) Clean the area around any and all exposed openings.
 - 4) Install critical barriers on all exposed openings.
 - 5) If any additional openings are exposed during gross removal, immediately stop work, clean the area around the exposed opening and install critical barriers.

4. Glovebag Removal Operations:
 - a. Glovebag removals are limited to non-planar surfaces, such as pipes or ducts, unless a variance is granted by the NYSDOL and accepted by the Owner and Architect.
 - b. All glovebag removal work shall be performed within a negative pressurized regulated abatement work area as per ICR 56-7.11 (f) (1).
 - c. Perform all glovebag removal work in accordance with ICR 56-8.4 (a).
 - d. When abating pipe or duct insulation, the pipe or duct insulation diameter worked shall not exceed one half the bag working length.

3.6 WORK STOPPAGE CRITERIA

A. Work Stoppage Level Criteria During Abatement:

1. At any time during abatement activities, stop work immediately for inspection and repair of barriers if:
 - a. Air samples collected outside of work area indicate airborne asbestos fiber concentrations at or above 0.01 fibers per cubic centimeter, or background level, whichever is greater;
 - b. Visible emissions are observed outside a regulated abatement work area; or
 - c. Water leaks are observed outside a regulated abatement work area.
2. Work stoppage due to elevated air results shall require:
 - a. Inspection and repair of barriers and negative air ventilation systems as necessary.
 - b. Clean up of surfaces outside of the regulated abatement work area using HEPA-vacuums and wet-cleaning methods prior to resumption of abatement activities.
 - c. A summary of the elevated results, clean up activities, the results of barrier and negative air system inspections including any necessary repairs, to be documented in the asbestos abatement contractor supervisor's daily project log.
 - d. Work methods shall be altered accordingly to reduce fiber concentrations to acceptable levels.
3. Work stoppage due to visible emissions or water leaks outside a regulated abatement work area shall require:
 - a. Isolate HVAC systems.
 - b. Isolate uncontaminated areas.
 - c. Install critical barriers.

- d. Negative air pressure equipment ventilation.
- e. All accumulations of asbestos waste material shall be containerized and removed.
- f. All surfaces in the regulated abatement work area shall be wet-cleaned using rags, mops and sponges.
- g. After the first cleaning, at least twelve hours shall be allowed for asbestos to settle. Thereafter, all objects and surfaces in the regulated abatement work area shall be HEPA vacuumed and wet-cleaned.
- h. All remaining contaminated equipment and containerized waste shall be removed from the regulated abatement work area.
- i. Clearance air sampling shall be conducted, as per the schedule for air sampling and analysis.

3.7 FINAL CLEANING AND CLEARANCE PROCEDURES

- A. Post-Abatement Cleaning: Ensure negative pressure ventilation units remain in continuous operation during settling periods and cleaning. Do not proceed to subsequent stage of cleaning; sheeting removal or clearance air sampling until cleaning has been properly completed. Following completion of all stripping work, HEPA-vacuum and wet clean surfaces from which asbestos material has been removed.
 - 1. Inspection: Provide for Project Monitor to visually inspect entire asbestos abatement work area at completion of each cleaning to determine whether removal and cleaning has been properly completed.
 - a. Any debris and/or residual material in asbestos abatement work area shall be assumed to be asbestos containing material.
 - b. Cleaning not considered properly completed until debris and residue has been cleaned or removed.
 - 2. First Cleaning: Wet clean all surfaces in asbestos abatement work area first using rags, mops and sponges.
 - 3. Encapsulant Use During Cleanup: After first cleaning, prior to first sheeting removal and after asbestos abatement work area has been rendered free of visible residue, apply thin coat of encapsulation agent to any surfaces in asbestos abatement work area not subject to removal or other remediation activities. Do not apply encapsulant to any surface involved in asbestos removal or other remediation activities prior to obtaining satisfactory clearance air monitoring results.
 - 4. First Sheeting Removal: After first cleaning, observe a settling period equal to or greater than that required by ICR 56-9.1 (f) before continuing. Remove cleaned exposed barrier layer of plastic sheeting from walls and floors. Keep windows, doors, HVAC system vents and all other openings sealed. Keep in place and use decontamination systems.

5. Second Cleaning and Sheeting Removal: Then HEPA-vacuum or wet clean all objects and surfaces in asbestos abatement work area. Remove remaining plastic on walls and floors only. Keep all windows, HVAC system vents and all other openings sealed.
6. Third Cleaning After second cleaning, observe a settling period equal to or greater than that required by ICR 56-9.1 (f) before continuing with HEPA-vacuuming and then wet cleaning all surfaces in asbestos abatement work area.
7. Removal of Waste, Tools and Equipment: Remove from asbestos abatement work area and from holding area and decontaminate tools and equipment.
8. Where an exemption from multiple cleaning and sheeting removal exists in ICR 56-9.1 (e) or specific variance granted by NYSDOL and accepted by the Owner and Architect, modify cleaning and sheeting removal to reflect that in ICR 56-9.1 (e) or specific variance.

B. Supervisor Post Abatement Visual Inspection:

1. After all required abatement and cleanings, the asbestos abatement contractor supervisor shall perform a visual inspection for completeness of abatement and cleaning.
2. The asbestos abatement supervisor visual inspection must determine that abatement and cleaning have been properly completed as per the project documents and all pertinent regulations prior to commencement of the Project Monitor visual inspection.
3. Contractor supervisor shall document in the Project Log that abatement and cleaning have been satisfactorily completed in accordance with project documents and all pertinent regulations.

C. Project Monitor Visual Inspection:

1. After all required abatement, cleanings and the asbestos abatement contractor supervisor visual inspection, the Project Monitor shall perform a visual inspection for completeness of abatement and completeness of cleanup as per project documents and the current ASTM E 1368.
2. Upon satisfactory completion of the required Project Monitor visual inspection, an entry shall be made into the asbestos abatement contractor supervisor's daily log by both the supervisor and the Project Monitor, detailing the findings of the visual inspection.
3. The full name and NYSDOL asbestos handling certificate number of the Project Monitor shall also be documented in the supervisor's daily log.

D. Clearance Air Monitoring (By Owner):

1. After Project Monitor has performed visual inspection and provisionally determined that removal and cleaning have been properly completed, Project Monitor shall conduct clearance air monitoring.

- a. Removal and cleaning not considered properly completed until asbestos abatement work area has achieved satisfactory clearance air sampling in accordance with this Section.
 - b. During clearance air monitoring, negative air pressure equipment shall remain in continuous operation.
2. Failure of Clearance Air Monitoring:
- a. Satisfactory clearance air sampling is achieved only when requirements of ICR 56, AHERA under 40 CFR 763 and New York State Education Department have been met.
 - b. Re-clean any asbestos abatement work area or other area not meeting satisfactory clearance air monitoring results criteria for any of the following:
 - 1) ICR 56 .
 - 2) AHERA under 40 CFR 763, using wet methods with negative air pressure equipment operating as required by ICR 56.
 - c. Project Monitor shall collect new samples in same locations for each asbestos abatement work area with air samples not meeting clearance air monitoring results criteria.
 - d. Repeat cleaning, air sampling, monitoring, and analysis until satisfactory clearance air monitoring results are achieved throughout entire asbestos abatement work area.
 - e. Failure of clearance air monitoring indicates that Contractor did not properly complete abatement activity:
 - 1) Contractor shall perform all cleaning at no additional cost to Owner.
 - 2) Contractor shall reimburse Owner for all costs associated with project monitoring, air sampling and air sample analysis during additional cleaning and clearance air sampling.
 - 3) Contractor remains responsible for complying with all specified schedules and timing.

3.8 WORK AREA REMOVAL PROCEDURES

A. Removal of Work Area Containment:

- 1. Remove all remaining plastic sheeting, barriers, decontamination facilities; negative pressure equipment and ancillary items only after satisfactory clearance air monitoring results are achieved.

2. Notify Project Monitor immediately if any residual asbestos-containing debris is discovered during removal of plastic sheeting, barriers, decontamination facilities, negative pressure equipment and ancillary items, and clean up debris in accordance with ICR 56-9.3.
3. Clean all tape, glue, staples, etc. used in abatement process.
4. Repair any damage to walls, floors, ceilings, fixtures, or other items not scheduled for demolition or abatement to at least pre-abatement condition. Where finishes are damaged, refinish or repaint entire object or to nearest break in surface of walls, ceilings, soffits, etc.
5. Where partial occupancy by Owner is required, portion of asbestos abatement work will not be considered returned to Owner until entire containment is removed and Owner can use space for intended purpose or other entities can occupy space for additional work as applicable.

3.9 FIELD QUALITY CONTROL

- A. Inspection of Barriers: Provide inspection of all barriers at least twice daily by Asbestos Supervisor and record inspections and observations in daily project log.
- B. Repairs to Barriers and/or Enclosure Systems: Repair damage and defects in barriers and enclosure systems immediately upon discovery and prior to resumption of abatement activities.
- C. Testing of Barriers and Enclosure Systems: Use smoke tubes with negative air pressure ventilation units in operation to test effectiveness of asbestos abatement work area barriers and personal and waste decontamination enclosure systems. Perform these tests prior to beginning of abatement activities and at least once daily afterwards until satisfactory clearance air monitoring results are achieved. Document test results, observations and modifications in daily project log.
- D. Testing By Owner:
 1. Intent: Project Monitoring and Air Sampling provided by Owner intended to:
 - a. Monitor Contractor's compliance with plans, specifications and asbestos related regulatory requirements.
 - b. Fulfill air-sampling requirements of ICR 56, 40 CFR 763 and New York State Education Department.
 2. Where no air sampling is required by applicable regulations, Owner reserves the right, without incurring any obligation to perform air sampling for any or all stages or portions of the work.

3. Contractor Requirements:

- a. Provide access to asbestos abatement work areas for Project Monitor/Air Sampling Technician employed by Owner to observe all asbestos abatement work and collect air samples as required by ICR 56, 40 CFR 763 and New York State Education Department.
- b. Provide adequate lighting, ladders, scaffolding, and similar items to enable Project Monitor/Air Sampling Technician to perform visual inspections of all surfaces within asbestos abatement work areas.
- c. Provide sufficient temporary electrical power to locations within asbestos abatement work areas as required to supply high volume air sampling pumps for daily and clearance air samples.
- d. Do not perform any air monitoring functions under ICR 56. Notify Owner and Architect immediately of any conflict of interest between Contractor and any firm providing project monitoring, air sampling or laboratory analysis.
- e. Contractor retains complete and total responsibility for complying with plans, specifications and all regulatory requirements.

E. Air Sampling Procedures:

1. Flow Rate, Capacity and Chain of Custody:

- a. Flow Rate: Between 2 and 10 liters per minute.
- b. Calibration: Pre-calibrate and post-calibrate pumps with each use.
- c. Chain of Custody: Transport all samples under chain of custody.
- d. Clearance Air Sampling Equipment Placement: Place air sampling equipment within asbestos abatement work area at random around asbestos abatement work area. If asbestos abatement work area contains number of rooms equivalent to required number of samples, place sampler in each room. When number of rooms is greater than required number of samples, select representative sample of rooms. Do not place in corners of rooms or near obstructions.

2. Analysis Time:

- a. PCM Clearance Air Sample Analysis: Provide overnight delivery of the samples to the laboratory. Maximum turnaround time from receipt of the samples at laboratory until receipt of faxed results is 12 hours. Ensure maximum time between sample collection and analysis of all samples is 48 hours.
- b. TEM Clearance Air Sample Analysis: Provide overnight delivery of the samples to the laboratory. Maximum turnaround time from receipt of the samples at laboratory until receipt of faxed results is 24 hours. Ensure maximum time between sample collection and analysis of all samples is 48 hours.

3. Air Sample Blanks:
 - a. PCM Air Samples: Submit blank sample cassettes daily equal to 10 percent of the total number of samples collected that day, but not less than 2 cassette blanks per day.
 - b. TEM Air Samples: Submit 1 sealed blank and 2 field blanks for each set of clearance samples.

- F. Air Sampling Required by New York State Education Department: In addition to clearance air sampling requirements included in ICR 56 and AHERA regulations – 40 CFR 763, provide TEM clearance air samples collected and analyzed per AHERA for all projects where clearance air samples are required by ICR 56.

- G. Air Sampling Required by ICR 56:
 1. Method of Analysis: At a minimum, use PCM analysis as method of analysis for ICR 56 compliance sampling. Owner reserves the right to allow TEM clearance air samples without PCM samples and where PCM analysis results in fiber counts exceeding air clearance levels, Owner reserves right to use TEM analysis to obtain more accurate asbestos fiber count.
 2. Variance: Where provisions of specific variance differ from ICR 56 and provisions specified in this Section, comply with provisions of specific variance. Where provisions of a specific variance differ from AHERA regulations, the more stringent provisions shall prevail.
 3. Background Air Sampling (prior to start of Project): Collect minimum 1 air sample from inside and outside of each area with minimum volume collected of 1500 liters.
 4. Pre-Abatement Air Sampling (Area Preparation): Collect pre-abatement air samples on at least 1 day during work area preparation with minimum 1500 liters volume collected.
 - a. Large Asbestos Abatement Projects: Collect minimum of 5 samples inside and outside of each asbestos abatement work area. Where area is greater than 25,000 square feet, collect additional representative area sample for every 5,000 square feet.
 - b. Small Asbestos Projects: Collect minimum of 3 samples inside and outside of each asbestos abatement work area.
 - c. Minor Asbestos Projects: Collect minimum of 1 sample inside and outside of each asbestos abatement work area.
 5. During Abatement: Collect air samples daily when actual abatement activities have begun, preparation or other work prior to beginning actual abatement activities has disturbed asbestos containing materials, or preparation or other work prior to beginning actual abatement activities can reasonably be anticipated to disturb asbestos.
 - a. Large Asbestos Projects: Collect samples as required by ICR 56-17.3.

- b. Quantity: Collect as close to 1500 liters as possible without exceeding flow rate of 10 liters per minute. Continue sample collection during entire workday.
6. Post Abatement (Clearance Air Monitoring):
- a. Drying Time:
 - 1) Do not begin sampling until period equal to or greater than that required by ICR 56-9.1 (f) final cleaning has been completed and no visible pools of liquid or condensation remain. Use aggressive sampling techniques as per ICR 56-17.
 - 2) Negative air pressure equipment shall remain in continuous operation during clearance air monitoring
 - b. Minimum Collection Volume: 1500 liters.
 - c. Large Asbestos Abatement Projects: Collect minimum of 5 samples inside and outside of each asbestos abatement work area. Where area is greater than 25,000 square feet, collect additional representative area sample for every 5,000 square feet.
 - d. Small Asbestos Projects: Collect minimum of 5 samples inside and 3 samples outside of each asbestos abatement work area.
 - e. Minor Asbestos Projects: Collect minimum of 5 samples inside and 1 sample outside of each asbestos abatement work area.
 - f. Clearance Criteria: Clearance air monitoring results considered satisfactory when every sample demonstrates airborne concentration of asbestos fibers less than 0.01 fibers per cubic centimeter or background level, whichever is greater.

H. Clearance Air Sampling Required by AHERA Regulations 40 CFR 763:

- 1. Clearance air sampling requirements for compliance with AHERA regulations provided in addition to ICR 56 requirements.
 - a. For all clearance air sampling for compliance with the AHERA Regulations, 40 CFR 763, 5 samples shall be collected within each regulated abatement work area.
 - b. Where PCM air samples are allowed by AHERA, collect and analyze additional PCM samples to supplement samples collected for compliance with ICR 56 for a minimum of 5 samples collected within the regulated abatement work area.
 - c. Where TEM air samples are required by AHERA, collect and analyze TEM air samples required by AHERA in lieu of PCM air samples required by ICR 56. Collect a minimum of 5 samples within each regulated abatement work area.

2. Required Analysis:

- a. Type of Analysis: Provide TEM analysis when more than 160 square feet or 260 linear feet of asbestos containing material are removed within containment barriers used to isolate functional space. Do not separate contiguous portions of material subject to abatement conducted concurrently or at approximately same time within same building to qualify for PCM analysis.
- b. TEM Sampling:
 - 1) Sample Volumes - Collect sample volumes as follows:
 - a) 25 mm Cassettes: Between 1,199 and 1,800 liters of air.
 - b) 37 mm Cassettes: Between 2,799 and 4,000 liters of air.
 - 2) Sample Number - Collect and submit following samples:
 - a) Within Containment Barriers: 5 samples.
 - b) Outside Containment Barriers: 5 samples.
 - c) Submit 1 sealed blank and 2 field blanks.
 - 3) Clearance Criteria:
 - a) Results considered satisfactory and asbestos abatement activity considered complete when average of 5 samples collected inside containment barriers does not exceed 70 structures per square millimeter.
 - b) If average of 5 samples collected inside containment barriers exceeds 70 structures per square millimeter, Owner may elect to compare results of 5 samples collected inside containment barriers to remaining samples. If concentration of asbestos on 5 samples collected within barriers is not statistically different from concentration of asbestos of 5 samples collected outside of containment barriers when analyzed and compared as per Appendix A of Subpart E of 40 CFR 763, clearance air monitoring results considered satisfactory and asbestos abatement activity considered to be complete.
- c. PCM Sample Analysis:
 - 1) Sample Volume: Collect minimum of 1500 liters of air.
 - 2) Sample Number: Collect 5 samples within containment barriers.
 - 3) Clearance Criteria: Results considered satisfactory and asbestos abatement activity considered complete when each of 5 samples collected inside containment barriers is less than 0.01 fibers per square centimeter.

3.10 CLEANING

- A. Daily Cleaning of Enclosures: HEPA vacuum and/or wet clean personal and waste decontamination enclosure systems at end of each day of abatement activities.

3.11 ASBESTOS WASTE DISPOSAL PROCEDURES

- A. All waste generated as part of the asbestos project shall be removed from the site within 10 days after successful completion of satisfactory clearance air sampling and dismantling of all regulated abatement work areas at the site.
- B. Regulated Asbestos Containing Material (RACM): Category I non-friable asbestos-containing material that does not become friable is not considered to be RACM. All other waste materials removed as part of asbestos abatement work, including (but not limited to) friable asbestos-containing material, Category II non-friable asbestos-containing materials, plastic sheeting, disposable clothing and filters from control devices are considered to be RACM.
 - 1. Adequately wet and properly containerize or seal in leak-tight wrapping all RACM.
 - 2. Label all containers or wrapped material in accordance with requirements of OSHA in 29 CFR 1926.1101 (j) (2) with labels printed in letters of sufficient size and contrast to be readily visible and legible. Include following information on labels:
 - a. Name of waste generator.
 - b. Location where waste was generated.
 - c. Name of abatement contractor.
 - 3. Provide written notification a minimum of 5 days prior to transport of waste to each disposal site utilized. Notification shall include a draft manifest indicating which disposal site and transporter will be used, and which type of waste is included in the shipment. Purpose of notification is to verify if landfill and transporter are permitted and match the submitted items.
 - 4. Deposit all RACM as soon as practical at waste disposal site operated in accordance with 40 CFR Part 61.154 and 6 NYCRR 364.
 - 5. Line all vehicles used to transport RACM off site with two layers of plastic sheeting sealed leak-tight.
 - 6. When RACM is transported off site (regardless of amount), transport using vehicles with valid Industrial Waste Hauler Permit for asbestos containing material as per 6 NYCRR 364.
 - 7. Identify vehicles used to transport RACM during loading, during entire time vehicle is on site, and during unloading as per 40 CFR 61.149.

8. Maintain waste shipment records as per 40 CFR 61.150, and provide copy of waste shipment records to disposal site owners or operators when RACM is delivered to disposal site. Return copy of waste shipment record, signed by owner or operator of designated disposal site, to Owner within 35 days of date waste was accepted by initial transporter.
- C. All Other Waste: Category I non-friable material may be transported and disposed of as Construction and Demolition debris in accordance with 6 NYCRR 360 and 364. Contractor is responsible for maintaining Category I non-friable material in non-friable condition if intended to be disposed of as construction and demolition debris. Provide trip tickets or other documentation clearly identifying amount of material removed from site, transported to disposal site and disposed of including at least:
1. Name, address and telephone of waste generator.
 2. Approximate quantity.
 3. Name and telephone number of disposal site operator.
 4. Name and physical site location of disposal site.
 5. Name, address and telephone number of transporter.
- D. Contractor is responsible to confirm if flow control measures (if in effect in the county of operation) permits use of the proposed landfill.

END OF SECTION 02 82 00

SECTION 02 83 00 – LEAD SAFE WORK PRACTICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Lead safe work practices quality assurance requirements including personnel training.
- 2. Project monitoring and testing services for lead related work, including requirements for sampling and monitoring during lead related activities.
- 3. Requirements for transport and disposal of lead waste materials by legal and appropriate means.

- B. Lead inspections have been performed at the High School and Bus Garage in accordance with New York State Education Department requirements and a copy of the lead inspection reports are available in the Owner's offices for review. No lead inspections have been performed at the Middle School, Falls Elementary School, or the Pump House.

- 1. High School & Bus Garage

- a. All painted and glazed surfaces not identified as Lead-Based Paint shall be treated as lead containing. All contractors shall comply with OSHA requirements for work which disturbs lead containing materials.

- 2. Middle School, Falls Elementary School, Pump House

- a. All painted and glazed surfaces shall be presumed to be Lead-Based Paint and shall be treated as such, as described herein.

1.3 CODES AND REFERENCES

- A. The following codes and references apply:

- 1. New York State Department of Environmental Conservation (DEC):

- a. 6 NYCRR 360 - Solid Waste Management Facilities.
- b. 6 NYCRR 364 - Waste Transporter Permits.
- c. 6 NYCRR 370 - Hazardous Waste Management System: General.
- d. 6 NYCRR 371 - Identification and Listing of Hazardous Wastes.
- e. 6 NYCRR 372 - Hazardous Waste Manifest and Related Standards for Generators, Transporters and Facilities.

- f. 6 NYCRR 373-1 - Hazardous Waste Treatment, Storage and Disposal Facility Permitting Requirements.
 - g. 6 NYCRR 373-2 - Final Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities.
 - h. 6 NYCRR 373-3 - Interim Status Standards Regulations for Owners and Operators of Hazardous Waste Facilities.
 - i. 6 NYCRR 376 - Land Disposal Restrictions.
2. Occupational Safety and Health Administration (OSHA) - 29 CFR 1926.62 - Safety and Health Regulations for Construction - Lead.
 3. United States Department of Transportation (DOT):
 - a. 49 CFR 171 - General Information, Regulations, and Definitions.
 - b. 49 CFR 172 - Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements.
 - c. 49 CFR 173 - Shippers - General Requirements for Shipments and Packagings.
 - d. 49 CFR 174 - Carriage by Rail.
 - e. 49 CFR 175 - Carriage by Aircraft.
 - f. 49 CFR 176 - Carriage by Vessel.
 - g. 49 CFR 177 - Carriage by Public Highway.
 - h. 49 CFR 178 - Specifications for Packagings.
 - i. 49 CFR 179 - Specifications for Tank Cars.
 - j. 49 CFR 180 - Continuing Qualification and Maintenance of Packagings.
 4. United States Environmental Protection Agency (USEPA):
 - a. 40 CFR Part 260 - Hazardous Waste Management System: General.
 - b. 40 CFR Part 261 - Identification and Listing of Hazardous Waste.
 - c. 40 CFR Part 262 - Standards Applicable to Generators of Hazardous Waste.
 - d. 40 CFR Part 263 - Standards Applicable to Transporters of Hazardous Waste.
 - e. 40 CFR Part 264 - Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.
 - f. 40 CFR Part 265 - Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.
 - g. 40 CFR Part 266 - Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities.
 - h. 40 CFR Part 268 - Land Disposal Restrictions.
 - i. 40 CFR Part 270 - EPA Administered Permit Programs: The Hazardous Waste Permit Program.
 - j. 40 CFR Part 745, Subpart L - Lead-Based Paint Activities.
 5. United States Department of Housing and Urban Development (HUD)
 - a. Guidelines for the Evaluation and Control of Lead-Based Paint Hazards In Housing.
- B. Failure to expressly refer to applicable code, regulation, standard, law and ordinance within Contract Documents does not imply that applicable regulatory requirements are not applicable to the Project.

1.4 DEFINITIONS

- A. Lead-Based Paint: Paint or other surface coatings that contain lead equal to or greater than 1.0 mg/cm² or 0.5 percent by weight.
- B. Lead Containing Materials: Paint or other surface coatings that contain less than 1.0 mg/cm² or 0.5 percent by weight.
- C. Lead Safe Work Practices: Lead safe work practices provide for disturbance of lead, including removal and disposal of lead-based paint; lead containing dust; and lead contaminated soil in accordance with the “HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing”, all applicable codes, regulations, standards, laws and ordinances and this Section.
- D. Surface Coatings: Paint, shellac, varnish, glaze coat of ceramic tile or block or any other coating including wallpaper that covers painted surfaces.

1.5 ACRONYMS

- A. LBP: Lead-Based Paint.

1.6 SUBMITTALS, GENERAL

- A. Submit all action submittals and informational submittals (except Employee Training and Certification Documentation) required by this Section concurrently.

1.7 ACTION SUBMITTALS

- A. Quality Control Submittals:
 - 1. Valid Waste Transporter Permit, issued by New York State Department of Environmental Conservation.
 - 2. Written communication from designated treatment, storage or disposal facility that it:
 - a. Is authorized to receive and dispose of waste products generated by this Project.
 - b. Has capacity to receive and dispose of waste products generated by this Project.
 - c. Will provide or assure that ultimate disposal method indicated on manifest for particular hazardous waste(s) will be followed.
 - 3. Instruction regarding requirements for distribution of waste manifest as manifest is completed, at time of shipment.

4. Emergency Contact List: List providing means to contact applicable individuals and agencies in event of emergency at any time of day or night and including at least the following individuals and agencies:
 - a. Contractor Personnel:
 - 1) Project manager.
 - 2) Project supervisor.
 - b. Sampling Organization: On site sampling technician.
 - c. Owner.
 - d. Local police department.
 - e. Local fire department.
 - f. Local hospital and ambulance service.

1.8 INFORMATIONAL SUBMITTALS

- A. Qualification Data: Employee Training and Certification Documentation: Valid training and certification documentation for new employees prior to employees beginning work.

1.9 CLOSEOUT SUBMITTALS

- A. Daily Logs.
- B. Sign In Sheets.
- C. Laboratory Analysis for clearance sampling.
- D. Documentation of Hazardous Waste Determination: Toxicity Characteristic Leachate Procedure sample analysis and documentation that identifies the material(s) sampled.
- E. New York State Uniform Hazardous Waste Manifest or manifest as required by the state where the waste is disposed, for waste that is known or determined to be hazardous, and Trip Tickets for all other waste.

1.10 QUALITY ASSURANCE

- A. Qualifications:
 1. Contractor:
 - a. Supervision: Full-time, on-site supervisor for each site.

- b. Personnel Certification Requirements:
 - 1) Lead-Based Paint Personnel: Maintain current USEPA certification to engage in lead-based paint activities per 40 CFR 745.226.
 - 2) Lead-Based Paint Supervisory Personnel: Maintain current USEPA certification as a lead-based paint abatement supervisor per 40 CFR 745.226.
 - c. Personnel Training Requirements: In addition to the training requirements for USEPA certification, all lead personnel or lead supervisory personnel, including any personnel entering lead activity areas, shall have training as required by 29 CFR 1926.62.
2. Owner's Sampling/Monitoring Firm: Independent of Contractor and possessing current USEPA certification to perform lead-based paint activities.
- a. Personnel Certification:
 - 1) Monitoring: Possess current USEPA certification, as per 40 CFR 745, subpart L, as either "Risk Assessor" or "Inspector".
 - 2) Final Inspection or Clearance Testing: Possess current USEPA certifications, as per 40 CFR 745, subpart L, as either "Risk Assessor" or "Inspector".
3. Lead Analysis Laboratories:
- a. Maintain current National Lead Laboratory Accreditation Program (NLLAP) accreditation.
 - b. Maintain current New York State Environmental Laboratory Approval Program (ELAP) accreditation in each method of analysis used.
 - c. Use most recent version of specified test method.
 - d. Analyze samples for waste characterization using:
 - 1) Toxicity Characteristic Leachate Procedure - EPA Method 1311.
 - 2) Analysis by one of following:
 - a) Inductively Coupled Plasma-Atomic Emission Spectrometry - EPA Method 6010.
 - b) Inductively Coupled Plasma-Mass Spectrometry - EPA Method 6020.
 - c) Lead (Atomic Absorption, Direct Aspiration) - EPA Method 7420.
 - d) Lead (Atomic Absorption, Furnace Technique) - EPA Method 7421.

- e. Analyze air samples for lead for total lead (if required) using one of following:
 - 1) Lead by Flame Atomic Absorption Spectrophotometer - NIOSH 7082.
 - 2) Lead by Graphite Furnace Atomic Absorption Spectrophotometer - NIOSH 7105.
 - 3) Elements by Inductively Coupled Argon Plasma, Atomic Emission Spectroscopy - NIOSH 7300.

- f. Analyze wipe samples, paint chip samples and soil samples using one of following methods:
 - 1) Inductively Coupled Plasma-Atomic Emission Spectrometry - EPA Method 6010.
 - 2) Inductively Coupled Plasma-Mass Spectrometry - EPA Method 6020.
 - 3) Lead (Atomic Absorption, Direct Aspiration) - EPA Method 7420.
 - 4) Lead (Atomic Absorption, Furnace Technique) - EPA Method 7421.

B. Regulatory Requirements:

- 1. Hazardous Waste Generator Status: Owner is “Conditionally Exempt Small Quantity Generator” as defined by 6 NYCRR 371 and 40CFR 260. Schedule removal, on-site storage, and transport as required to maintain Owner’s status as “Conditionally Exempt Small Quantity Generator”.

1.11 PROJECT CONDITIONS

- A. Project/Site Access Limitations: Restrict access to all work areas. Immediately report any access by unauthorized individuals to Owner and Project Monitor.

1.12 SEQUENCING AND SCHEDULING

- A. Completion: Complete lead hazard control activities in accordance with construction schedule requirements specified in Section 01 12 00 “Multiple Contract Summary-Project Schedule” with each phase considered distinct and separate for purpose of schedule and substantial completion.
 - 1. Substantial Completion of a phase occurs when all of the following occur:
 - a. All components of the phase have passed visual inspection by Supervisor.
 - b. Satisfactory clearance criteria are achieved for each portion of the phase.
 - c. All containment barriers have been removed.
 - d. Areas are returned to Owner.

 - 2. If Contractor fails to achieve substantial completion within specified schedule requirements, all costs associated with extension of schedule, including (but not limited to) sampling costs, monitoring costs, direct costs incurred by Owner, and costs to accelerate sample analysis shall be deducted from final payment.

- B. Restrictions on Working Hours: Schedule work only during regular working hours, as established for Project. Do not use overtime or multiple shifts with "overtime" defined as any time in excess of 8 hours in single day, work on weekends, or work on holidays.
- C. Changes in Working Hours: Advise Owner of any changes in hours or days when lead hazard control activities will be conducted on site, at least 24 hours prior to change. Contractor retains all liability resulting from Contractor's failure to make required notification.

PART 2 - PRODUCTS

2.1 EQUIPMENT

- A. Respirators: Provide respirators jointly approved as acceptable for protection by National Institute for Occupational Safety and Health (NIOSH) under provisions of 30 CFR Part 11.
 - 1. Supply and use respirators in accordance with 29 CFR 1910.134 and 29 CFR 1926.62.
 - 2. Provide respirators, filters and ancillary supplies as required for employees and authorized visitors.
 - 3. Account for hazards other than lead in respirator selection.
- B. Protective Clothing: Provide disposable protective clothing complying with requirements of 29 CFR 1926.62 that is disposed of after one use. Provide disposable clothing as required for employees and authorized visitors.
- C. Lead-Related Construction Facilities and Controls:
 - 1. Polyethylene sheeting (plastic sheeting) - 6-mil thickness, sized to minimize seams.
 - 2. Tape and/or adhesive spray capable of sealing joints in adjacent polyethylene sheets and for attachment of polyethylene sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including use of amended water.
 - 3. Polyethylene waste disposal bags - 6-mil thickness with preprinted labels.
 - 4. HEPA filtered negative pressure equipment.
 - 5. HEPA filtered vacuums.
 - 6. Water filtration, 3 stage with final filtration to at least 5 microns.
 - 7. Barrier tape.
 - 8. Warning signs.
 - 9. Hygiene facilities as required by 29 CFR 1926.62 including showers, cleansing agents and disposable towels.

10. Lead specific detergent, similar to:
 - a. LSZ, Inc.; Ledizolv.
 - b. Sentinel Products, Inc.; Sentinel 805.

D. Testing Services Equipment:

1. Wipe Testing:
 - a. Disposable wipe meeting following criteria:
 - 1) Contains low background lead levels (less than 5 µg/wipe).
 - 2) Single thickness.
 - 3) Durable and does not tear easily.
 - 4) Does not contain aloe.
 - 5) Can be digested in laboratory.
 - 6) Shown to yield 80-120 percent recovery rates from samples spiked with leaded dust (not lead in solution).
 - 7) Remains moist during wipe sampling process (wipes containing alcohol that do not dry out may be used).
 - 8) Are acceptable to laboratory performing analysis.
 - b. Non-sterilized non-powdered disposable gloves.
 - c. Non-sterilized polyethylene centrifuge tubes (50 ml size) or equivalent hard-shell container that can be rinsed quantitatively in laboratory.
2. Air Sampling Cassettes: Commercially available 37 mil cassettes, using mixed cellulose ester sample collection filters with pore size of 0.8 micrometers. Use only new cassettes; reloaded cassettes not acceptable.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions for compliance with requirements for conditions affecting performance of the Work.
- B. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 DE MINIMIS WORK LEVELS

- A. De minimis disturbance of lead-based paint is defined as work that does not disturb LBP coated surfaces that total more than:
 1. 20 square feet on exterior surfaces;
 2. 2 square feet in any one interior room or space; or
 3. 10 percent of the total surface area on an interior or exterior type of component with a small surface area. Examples include window sills, baseboards, and trim.

- B. Disturbance of lead-based paint that is determined to be at de minimis levels may be performed using the following work methods:
 - 1. None of the “Unacceptable Removal Methods” listed below are used.
 - 2. Work area preparation in full compliance with Level 1 work area preparation.
 - 3. Methods to minimize the creation of dust are used. Methods include, but are not limited to, misting the area to be disturbed, drilling through a wet sponge, using nail fasteners instead of pre-drilling and using screw fasteners.
 - 4. Any generated dust is wet cleaned and appropriately disposed.
 - 5. Clearance sampling consists of a visual inspection by the supervisor to confirm that no dust or debris remains in the area work occurred.

3.3 PROTECTION

- A. Provide personal protective equipment as required by 29 CFR 1926.62 at no cost to employees or authorized visitors.
- B. Institute respirator program in accordance with 29 CFR 1926.62 and 29 CFR 1910.134 (b), (d), (e) and (f).
- C. Use protective clothing and respirators whenever lead is being disturbed, abated, cleaned up, containerized or stored in vehicle or container used to transport waste to landfill.
- D. Institute medical surveillance program in accordance with 29 CFR 1926.26 for all employees performing or supervising lead handling work, entering work area containment, or using respirator.

3.4 PREPARATION

- A. Prior to all other preparation activities, construct decontamination facilities adjacent to lead work area, consisting of:
 - 1. Dirty area changing room.
 - 2. Shower room.
 - 3. Clean area changing room.
 - 4. Airlock at each entrance and between each room.
 - 5. Floors, walls and ceilings sealed with 2 layers of plastic sheeting.
 - 6. Provision of privacy while using decontamination facilities.
- B. Exterior Preparation (Other Than Windows):
 - 1. Seal all openings to interior of building within 20 feet of lead work area, except windows or doors may be closed and locked with two layers of plastic sheeting.

2. Install single layer of plastic sheeting on ground extending 10 feet beyond perimeter of lead work area in all directions. Anchor or tape plastic sheeting to building to avoid gaps between sheeting and building. Secure all plastic to prevent movement; wood studs or similar objects acceptable.
3. Install barrier tape and warning signs at 20-foot perimeter from lead work area.
4. Move all movable objects 20 feet from lead work area.
5. Seal fixed objects and large objects that cannot be moved with a single layer of plastic sheeting.

C. Window Treatment or Removal Preparation:

1. Close all windows within 20 feet of lead activities.
2. Attach single layer of plastic sheeting on ground extending 5 feet beyond perimeter of lead activity in all directions. Anchor or tape plastic sheeting to building to prevent gaps between sheeting and building. Secure all plastic to prevent movement; wood studs or similar objects acceptable.
3. Install barrier tape and warning signs at 20-foot perimeter from lead work area.
4. Where lead activities occur outside structure, seal interior of affected window with two layers of plastic sheeting.
5. Where lead activities occur within structure, provide at least lead work area preparation conforming to Interior Preparation, Level 2, specified below.
6. Move all movable objects 20 feet from lead work area.
7. Seal fixed objects and large objects that cannot be moved with single layer of plastic sheeting.

D. Interior Preparation:

1. Level 1: Dust removal and lead disturbance of no more than 2 square feet of painted surface per room.
 - a. Single layer of plastic sheeting on floor extending 5 feet beyond perimeter of treated area in all directions.
 - b. Barrier tape and warning signs at all entrances to room.
 - c. Ventilation systems turned off and all vents within 5 feet of treated surfaces sealed with plastic sheeting.
 - d. Move furniture and movable objects at least 5 feet from treated surfaces.
 - e. Seal fixed objects and large objects that cannot be moved with plastic sheeting.
 - f. Provide negative pressure equipment where large supplies of fresh air are required to control exposure to other hazardous substances, such as solvent vapors.

2. Level 2: Lead disturbance of 2 square feet to 10 square feet of painted surface per room, where all work in all rooms will be completed in one day.
 - a. Apply 2 layers of plastic over entire floor.
 - b. Install airlock at entrance to lead work area or room.
 - c. Install barrier tape and warning signs at all entrances to room.
 - d. Turn off ventilation systems and seal all vents with plastic sheeting.
 - e. Move furniture and movable objects from lead work area.
 - f. Seal fixed objects and large objects that cannot be moved with a single layer of plastic sheeting.
 - g. Provide negative pressure equipment where large supplies of fresh air are required to control exposure to other hazardous substances, such as solvent vapors.

3. Level 3: Lead disturbance of 2 square feet to 10 square feet of painted surface per room, where work in all rooms will be completed in not more than 5 work days.
 - a. Apply 2 layers of plastic over entire floor.
 - b. Install airlock at entrance to lead work area or room. Airlock not required on doors between adjacent rooms within lead work area.
 - c. Post warning signs at entrances to building.
 - d. Install barrier tape and warning signs at all entrances to room.
 - e. Seal or lock any entrances to room or lead work area not to be used.
 - f. Turn off ventilation systems and seal all vents with plastic sheeting.
 - g. Move furniture and movable objects from lead work area.
 - h. Seal fixed objects and large objects that cannot be moved with a single layer of plastic sheeting.
 - i. Provide negative pressure equipment where large supplies of fresh air are required to control exposure to other hazardous substances, such as solvent vapors.

4. Level 4: Lead disturbance of more than 10 square feet of painted surface per room.
 - a. Apply 2 layers of plastic over entire floor.
 - b. Install airlock at entrance to lead work area or room. Airlock not required on doors between adjacent rooms within lead work area.
 - c. Post warning signs at entrances to building.
 - d. Install barrier tape and warning signs at all entrances to room.
 - e. Seal or lock any entrances to room or lead work area not to be used.
 - f. Turn off ventilation systems and seal all vents with plastic sheeting.
 - g. Move furniture and movable objects from lead work area.
 - h. Seal fixed objects and large objects that cannot be moved with a single layer of plastic sheeting.
 - i. Provide negative pressure equipment where large supplies of fresh air are required to control exposure to other hazardous substances, such as solvent vapors.

- E. Do not begin lead disturbance or removal activities until all preparation work, including installation of decontamination enclosure systems and any required engineering controls, including negative air pressure equipment, has been completed.

3.5 LEAD WORK PROCEDURES

- A. Exterior Lead Work Constraints: Do not proceed with lead activities if wind speeds are greater than 20 miles per hour. Stop lead activities and proceed with cleanup activities before rain begins.
- B. Unacceptable Removal Methods:
 - 1. Open flame burning or torching (includes propane-fueled heat grids).
 - 2. Machine sanding or grinding without HEPA local vacuum exhaust tool.
 - 3. Hydroblasting or high-pressure wash.
 - 4. Abrasive blasting or sandblasting without HEPA vacuum exhaust tool.
 - 5. Heat guns operating above 1,100 deg F.
 - 6. Methylene chloride paint removal products.
 - 7. Dry scraping.
- C. Acceptable Removal Methods: Since acceptable methods are not appropriate or acceptable for every item or location, refer to Drawings for approved removal methods for individual items and locations.
 - 1. Component Removal:
 - a. Mist all disturbed paint and dust and maintain in moist condition.
 - b. Entirely remove indicated components.
 - c. Wet scrape residual paint from adjacent unpainted surfaces. Do not damage adjacent surfaces.
 - d. Collect all paint chips, dust and debris and seal in 6 mil plastic bags.
 - e. Seal removed building components in 6 mil plastic sheeting or 6 mil plastic bags.
 - 2. Heat Gun Removal (operating at less than 1,100 deg F):
 - a. Provide fire extinguishers in lead work area, and ensure adequate electrical power is available.
 - b. Use in limited areas only.
 - c. Do not gouge or abrade substrate.
 - 3. Wet Scraping:
 - a. Apply adequate water to moisten surface completely; avoid large amounts of water on floor or ground.
 - b. Do not moisten areas near electrical circuits.
 - c. Use spray bottles or wet sponge attached to scraper.
 - 4. Offsite Stripping:
 - a. Apply paint removers in accordance with manufacturer's recommendations.
 - b. Test paint remover in inconspicuous location approved by Architect to avoid damage to substrate.

- c. Identify building component to ensure reinstallation in same location.
 - d. Mist all paint and dust disturbed and maintain in moist condition.
 - e. Remove components indicated on Drawings entirely. Wet scrape residual paint from adjacent unpainted surfaces. Do not damage adjacent surfaces.
 - f. Collect all paint chips, dust and debris and seal in 6 mil plastic bags. Seal removed building components in plastic sheeting. Inform offsite paint remover regarding presence of lead-based paint before shipping;
 - g. Do not reinstall components until removal of residual paint and cleaning is complete and satisfactory clearance sampling achieved.
5. Onsite Stripping:
- a. Apply paint removers in accordance with manufacturer's recommendations.
 - b. Test paint remover in inconspicuous location approved by Architect to avoid damage to substrate.
 - c. Do not damage adjacent surfaces.
 - d. Collect all paint chips, dust and debris and seal in 6 mil plastic bags.
- D. Work Stoppage Criteria During Lead Activities:
- 1. During lead related activities, stop work immediately if damaged containment barriers are discovered or if dust or paint chips are discovered outside of lead work area.
 - 2. Prior to resumption of lead activities, perform cleanup of areas adjacent to lead work area using HEPA vacuums or wet cleaning methods.
- E. Clean Up Procedures:
- 1. Exterior:
 - a. At end of each day, whether or not lead related activities are complete, clean up and store all removed components, debris, and plastic sheeting drop cloths in lockable containers with solid floors, walls and ceilings until transported off site.
 - b. HEPA vacuum and wash all plastic sheeting with lead specific detergent.
 - c. Place all plastic sheeting used to cover ground and seal openings to interior of building in containers.
 - 2. Interior:
 - a. Conduct ongoing cleaning during lead related activities, including regular removal of large and small debris.
 - b. Clean up visible debris and components prior to leaving lead work site at end of work shift.
 - c. Decontaminate all tools, equipment, and worker protection gear before removing from contaminated areas.

- d. Wait at least 1 hour after active lead removal or disturbance has ceased before final cleaning.
 - e. Final cleaning includes HEPA vacuum, wet wash, and HEPA vacuum cycle:
 - 1) HEPA vacuum all surfaces in room (ceilings, walls, trim, and floors), starting with ceiling and working down, moving toward entry door. Completely clean each room before beginning clean up in another room.
 - 2) Wash all surfaces with lead-specific detergent, changing cleaning solution after completing cleaning in every room.
 - 3) Repeat HEPA vacuuming of all surfaces in room (ceilings, walls, trim, and floors), starting with ceiling and working down, moving toward entry door. Completely clean each room before clean up in another room.
 - f. After completing all disturbance, removal and cleaning activities, provide access to areas for Owner's monitoring firm to perform visual examination to ensure that all removal has been completed and all visible dust and debris have been removed. Correct all incomplete lead work prior to clearance sampling.
- F. Clearance Monitoring: After supervisor and monitor have performed visual inspection and have provisionally determined that removal and cleaning have been properly completed, monitor begins clearance monitoring. Removal and cleaning not properly completed until lead work area achieves satisfactory clearance sampling in accordance with this Section.
- G. Removal of Work Area Containment:
- 1. Do not remove remaining plastic sheeting, barriers, decontamination facilities, negative pressure equipment and ancillary items until satisfactory clearance air monitoring results are achieved.
 - 2. Notify Owner immediately if any residual lead debris is identified during removal of plastic sheeting, barriers, decontamination facilities, negative pressure equipment and ancillary items, and clean up debris.
 - 3. Clean all tape, glue, staples, etc. used in lead work process.
 - 4. Repair damage to walls, floors, ceilings, fixtures, or other items not scheduled for demolition or lead work to pre-lead work condition. Where finishes are damaged, refinish or repaint entire object or to nearest break in surface of walls, ceilings, soffits, etc.
 - 5. Remove entire containment when partial occupancy by Owner is required before Owner occupies area or other entities occupy space for additional construction as required.
 - 6. Paint or otherwise seal treated surfaces not scheduled for painting.

3.6 WASTE SEGREGATION AND CHARACTERIZATION

- A. Segregate waste in following categories:
 - 1. Removed components (considered construction and demolition debris for bidding purposes).
 - 2. Paint chips, dust and filters from HEPA vacuums (considered hazardous waste for bidding purposes).
 - 3. Respirator filter cartridges, rags, sponges, mops, scrapers and other materials used for testing lead work, and clean-up (considered construction and demolition debris for bidding purposes).
 - 4. Contaminated soil (considered hazardous waste for bidding purposes).
 - 5. Cleaned plastic sheeting and disposable work clothes (considered construction and demolition debris for bidding purposes).
- B. Sample each container of waste to determine if it is characterized as hazardous waste, treating each sample as follows:
 - 1. Prepare using Toxicity Characteristic Leachate Procedure, EPA method 1311.
 - 2. Analyze for lead using EPA method 6010, 6020, 7420 or 7421.
 - 3. Analyze for any other hazardous characteristic introduced into waste by lead procedures.
- C. Consider cleaned plastic sheeting and disposable work clothes not sufficiently cleaned as hazardous waste and dispose as hazardous waste at no additional cost to Owner.
- D. Maintain each waste category above in separate hard-walled lockable containers until waste characterization is complete. If waste is mixed from different categories, dispose all mixed waste as hazardous waste at no additional cost to Owner.

3.7 FIELD QUALITY CONTROL

- A. Inspection of Barriers: Provide inspection of all barriers at least twice daily by Contractor's Supervisor and record inspections and observations in daily project log.
- B. Repairs to Barriers and/or Enclosure Systems: Repair damage and defects in barriers and enclosure systems immediately upon discovery and prior to resumption of lead activities.
- C. Testing By Owner: Owner reserves right to obtain independent monitoring and sampling services to provide independent documentation regarding compliance with regulatory requirements. Where Owner provides monitoring, sampling (or both), use most stringent results from inspections, daily air sampling and clearance sampling.
- D. Contractor Requirements:
 - 1. Provide air sampling as required by 29 CFR 1926.62.

2. Provide sampling and analysis for waste characterization.
 3. Provide access to lead work areas for Owner's Monitor/Sampling Technician to observe all lead related work and collect samples.
 4. Provide adequate lighting, ladders, scaffolding, and similar items to enable Monitor/Sampling Technician to perform visual inspections of all surfaces within lead work areas.
 5. Provide sufficient temporary electrical power to locations within lead work areas as required to supply high volume air sampling pumps for daily and clearance air samples.
 6. Do not perform any monitoring functions with Contractor's personnel or with firms wholly or partly owned by Contractor. Notify Owner and Architect immediately of any conflict of interest between Contractor and any firm providing monitoring, sampling or laboratory analysis.
 7. Contractor retains complete and total responsibility for complying with Contract Documents and all regulatory requirements.
- E. Area Air Sampling Procedures (if used): Comply with provisions of NIOSH 7082.
- F. Clearance Sampling Procedures:
1. Timing of Clearance Sampling: Do not begin clearance sampling until:
 - a. All lead related work and cleaning work has ceased.
 - b. All personnel have left lead work area.
 - c. Minimum 1 hour settling period has elapsed.
 2. Exterior Work Area Clearance:
 - a. Background Sampling:
 - 1) Background sampling is optional and for informational purposes only. If elected to be performed, determine required clearance sampling strategy.
 - 2) Collect representative samples of same number and kind as required for clearance.
 - 3) Hold samples until after lead disturbance, removal, cleaning, clearance sampling and sample analysis is complete.
 - 4) If any sample results are above clearance criteria, analyze background samples for comparison with clearance sample results.
 - 5) Background sampling intended for informational purposes only and does not relieve the contractor from meeting below clearance criteria.
 - b. Clearance Wipe Sampling:
 - 1) Collect minimum of 1 sample from horizontal surfaces in immediate area of lead work on each side of building where lead work occurs.

- 2) Collect minimum of 1 window trough sample on each floor and each side of building where lead work occurs.
- 3) If applicable, collect minimum of 1 additional window trough sample on floor below lead work for each side of building where lead work occurs.
- 4) Refer to U.S. Department of Housing and Urban Development Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, Appendix 13.1: Wipe Sampling for Settled Lead-Contaminated Dust for sampling requirements.
- 5) Use the Lead Hazard Control Clearance Dust Sampling Form (Single Surface Sampling) Form 15.2, from U.S. Department of Housing and Urban Development Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing to document following:
 - a) Sample locations.
 - b) Surface area sampled.
 - c) Project information.
 - d) Chain of custody information.
 - e) Signatures.
- 6) Clearance Level: 400 $\mu\text{g}/\text{sq ft}$.

c. Clearance Soil Sampling:

- 1) Clearance wipe sampling consists of composite samples, consisting of 2 to 4 component samples.
- 2) Collect 1 composite sample from each side of building on which lead work occurs.
- 3) Refer to U.S. Department of Housing and Urban Development Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, Appendix 13.3: Soil Sampling Protocol For Housing for sampling requirements.
- 4) Use Lead Hazard Control Clearance Soil Sampling Form (Composite Sampling Only) Form 15.3, from U.S. Department of Housing and Urban Development Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing to document following:
 - a) Sample locations.
 - b) Surface area sampled.
 - c) Project information.
 - d) Chain of custody information.
 - e) Signatures.
- 5) Clearance Level: 400 $\mu\text{g}/\text{g}$.

3. Interior Work Area Clearance:

a. Background Sampling:

- 1) Background sampling is optional and for informational purposes only. If elected to be performed, determine required clearance sampling strategy.
- 2) Collect representative samples of same number and kind as required for clearance.
- 3) Hold samples until after lead disturbance, removal, cleaning, clearance sampling and sample analysis is complete.
- 4) If any of sample results are above clearance criteria, analyze background samples for comparison with clearance sample results.
- 5) Background sampling intended for informational purposes only and does not relieve the contractor from meeting below clearance criteria.

b. Clearance Wipe Sampling:

- 1) Collect minimum 2 dust samples from at least 4 rooms. If lead work occurs in less than 4 rooms, collect samples where no lead work occurred.
- 2) Collect 1 floor sample in each room where lead work occurred.
- 3) Collect 1 interior windowsill or window trough per room where lead work occurred, alternating between rooms.
- 4) For 20 percent of rooms where lead work occurs, collect 1 floor sample outside of room in uncontaminated space, but within 10 feet of airlock.
- 5) For each room over 2,000 square feet, collect 1 additional floor sample for every 2,000 square feet and collect 1 floor sample outside of room in uncontaminated space, but within 10 feet of airlock.
- 6) Refer to U.S. Department of Housing and Urban Development Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, Appendix 13.1: Wipe Sampling for Settled Lead-Contaminated Dust for sampling requirements.
- 7) Use Lead Hazard Control Clearance Dust Sampling Form (Single Surface Sampling) Form 15.2, from U.S. Department of Housing and Urban Development Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing to document following:
 - a) Sample locations.
 - b) Surface area sampled.
 - c) Project information.
 - d) Chain of custody information.
 - e) Signatures.

8) Satisfactory Clearance Level:

- a) Bare and Carpeted Floors: 10 µg/sq ft.
- b) Interior Window Sills: 100 µg/ sq ft.
- c) Window Troughs: 400 µg/sq ft.

G. Failure of Clearance Sampling:

1. Clearance criteria achieved when:
 - a. All scheduled lead removal is complete.
 - b. No dust or debris remains within lead work area.
 - c. Clearance sample results are below clearance level or background whichever is greater.
2. Re-clean any lead work area or other area not meeting clearance criteria.
3. Where clearance criteria are not met for soil, remove 2 inches of soil from perimeter of 20 feet around building, or portion thereof, where lead was removed or wherever paint chips are found, whichever is greater.
4. Sampling technician collects new samples in approximately same locations for each lead work area with samples not meeting clearance criteria.
5. Repeat cleaning, sampling, monitoring, and analysis until satisfactory clearance criteria are achieved.
6. Failure of clearance monitoring indicates lead activity has not been properly completed; Contractor performs additional cleaning at no additional cost to Owner, including sampling and sample analysis during additional cleaning and clearance sampling. Contractor remains responsible for complying with all specified schedules and timing.

3.8 PACKAGING, TRANSPORTATION AND WASTE DISPOSAL

- A. Perform additional surveys as hazardous material disposal progresses to detect hazards resulting from hazardous material disposal activities.
- B. Use hazardous waste characterization performed in accordance with “Waste Segregation and Characterization” Article above to document and confirm classification of waste. Prior to removing waste from site, confirm in writing to Owner:
 1. Results of waste characterization testing.
 2. Identification of waste documented to have waste classification identified in “Waste Segregation and Characterization”.
 3. Identification of waste characterization varying from “Waste Segregation and Characterization”.

- C. Packaging: Package, label, and mark all hazardous waste materials in accordance with applicable requirements of 49 CFR 173, 178 and 179.
- D. Temporary On-Site Storage and Protection: Provide storage on site of hazardous materials removed from service and scheduled for disposal complying with requirements of 6 NYCRR 372.2 (a) (8). Do not exceed 180 days storage on site.
- E. Hazardous Waste Determination: Provide analysis required by treatment, storage or disposal facility to document hazardous waste determination.
- F. Hazardous Waste Manifests:
 - 1. Maintain manifest from date of transport until date of disposal, destruction or recycling.
 - 2. Return fully executed manifests to Owner within 60 days of date waste accepted by initial transporter.
 - 3. Use following type of manifest as applicable:
 - a. If waste disposed of in New York State or if waste disposed in state not requiring use of specific manifest form, use New York State Uniform Hazardous Waste Manifest.
 - b. If waste disposed of in state other than New York State and use of specific manifest form is required, use manifest required by state where waste is disposed in lieu of New York State Uniform Hazardous Waste Manifest.
 - 4. Complete manifest and deliver to Owner for review and signature.
 - 5. Retain copies of manifest required to remain with hazardous waste shipment and deliver remaining copies to Owner.
 - 6. Advise Owner regarding required distribution of manifest, both verbally and in writing.
- G. Disposal: Transport hazardous waste to treatment or disposal facility complying with following requirements:
 - 1. Permitted, licensed or registered by state to dispose of hazardous waste.
 - 2. Possesses interim status to dispose of hazardous waste.
 - 3. Authorized to manage hazardous waste under Resource Conservation and Recovery Act (RCRA).
 - 4. Beneficially uses/re-uses or legitimately recycles/reclaims waste; or treats waste prior to beneficial use/reuse or legitimate recycling/reclamation.
- H. Construction and Demolition Debris: Dispose of material determined to be construction and demolition debris as such in accordance with 6 NYCRR 360 and 364. Provide trip tickets or other documentation clearly identifying amount of material removed from site, transported to disposal site and disposed of, including at least:
 - 1. Name, address and telephone of waste generator.
 - 2. Approximate quantity.

3. Name and telephone of disposal site operator.
4. Name and physical site location of disposal site.
5. Name, address and telephone number of transporter.

END OF SECTION 02 83 00

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, accessories, placement procedures, and finishes, for the following:
 - 1. Footings.
 - 2. Foundation walls.
 - 3. Slabs-on-grade.
 - 4. Concrete reconstruction and corrective work.

1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

1.4 SUBMITTALS

- A. Action Submittals:
 - 1. Product Data: For each type of product indicated.
 - a. Crystalline waterproofing admixture.
 - b. Vapor barrier.
 - c. Concrete sealer.
 - d. Curing compound.
 - e. Slab control joint sealer.
 - f. Penetrating silane sealer.
 - g. Grout.
 - h. Chemical anchor adhesives.
 - i. Corrective mortar (industry name is Repair mortar).
 - j. Thin coat patching mortar.
 - k. Corrective overlayment (industry name is Repair overlayment).
 - 2. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments. Pumping of concrete requires a mix design specifically prepared and previously used for pumping.

- a. Indicate amounts of mixing water to be withheld for later addition at Project site.
 - b. Include compressive strength test reports.
 - c. Include all ingredient certifications and product data concurrently.
3. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement. Show all concrete wall and footing reinforcement on elevation drawings at a scale not less than 1/4-inch = 1 ft. Do not submit placement plans showing only piece marks referencing a cut list.

B. Informational Submittals:

1. Material Certificates: For each type of the following, signed by manufacturers or suppliers:
 - a. Reinforcing bars.
 - b. Cementitious materials.
2. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:
 - a. Aggregates.
 - b. Vapor Barrier.
3. Proposed curing method for all concrete elements.
4. Curing compound compatibility with floor finishes and adhesives certificate.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.
- B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
- C. Testing Agency Qualifications: An independent agency, qualified according to ASTM C 1077 and ASTM E 329 to perform material evaluation tests and to design concrete mixtures.
 1. Personnel performing laboratory tests shall be 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. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.

- E. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

- 1. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage. Avoid damaging coatings on steel reinforcement.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

- A. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces. VOC compliant.
 - 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
- C. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

2.2 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.

2.3 REINFORCEMENT ACCESSORIES

- A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.
- B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

2.4 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:

1. Portland Cement: ASTM C 150, Type I. Supplement with the following (optional):
 - a. Fly Ash: ASTM C 618, Class F or C.
 - b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
 2. Blended Hydraulic Cement: ASTM C 595 - Type IS, portland blast-furnace slag; Type IP, portland-pozzolan; Type I (PM), pozzolan-modified portland; or Type I (SM), slag-modified portland cement.
- B. Normal-Weight Aggregates:
1. Provide aggregates from a single source.
 2. ASTM C 33, Class 3S coarse aggregate or better, graded.
 3. Maximum Coarse-Aggregate Size:
 - a. Slabs on Grade: 1-1/2 inches nominal.
 - b. All Other Concrete: 1 inch nominal.
 4. Fine Aggregate: ASTM C 33. Free of materials with deleterious reactivity to alkali in cement.
- C. Water: ASTM C 1602/C 1602M and potable.

2.5 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C 260.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing chlorides.
1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
 3. Accelerating Admixture: ASTM C 494/C 494M, Type C.
 4. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
 5. Water-Reducing and Accelerating Admixture: ASTM C 494/C 494M, Type E.
 6. Mid-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type A or Type F. Water content reduction to be greater than 7%.
 7. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
 8. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
 9. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.6 VAPOR BARRIER

- A. Vapor Barrier: Water-vapor transmission rate (permeance) less than 0.015 perms (gr/ft²/hr/in-Hg), in accordance with ASTM E 1745. The product must meet water-vapor transmission rate (0.01 perms) requirement for both the new material and the ASTM E 1745 mandatory conditioning tests (ASTM E 1745; paragraphs 7.12 through 7.15.) Provide all manufacturers' accessories required for complete installation including mastic and seam tape. Seam tape to be provided with a water-vapor transmission rate of 0.3 perms or lower.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Layfield Construction Materials; VaporFlex 15.
 - b. Reef Industries, Inc.; Griffolyn Vaporguard.
 - c. Stego Industries, LLC; Stego Wrap 15 mil Class A.

2.7 CURING MATERIALS

- A. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap–polyethylene sheet.
- B. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1-D, Class B, dissipating, with fugitive dye.
- C. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

2.8 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ½-inch rigid, extruded polystyrene insulation (at exterior walls,) ASTM D 1751, asphalt-saturated cellulosic fiber, or ASTM D 1752, cork or self-expanding cork.
- B. Slab Control Joint Sealer: Two-component, self-leveling, flexible, 100 percent solids, epoxy resin and adhesive with a Type A shore durometer hardness of 80 per ASTM D 2240 and conforming to ACI 302.1R (5.12-Joint Materials).
 - 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. Chem Masters; PolyTops 480.
 - b. Euclid Chemical Company (The); Euco 800.
 - c. Sika Corporation; Sikadur 51 SL.
- C. Penetrating, Silane Sealer: Single component, minimum 40% silane, waterbased slab sealer that forms chemical bond to the concrete. VOC compliant.
 - 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. BASF Construction Chemicals; Enviroseal 40.
 - b. Chem Masters; Aquanil Plus 40.
 - c. Dayton Superior Corporation; Weather Worker 40% J29WB.

- D. Bond breakers: Waterborne, VOC compliant form release agent.
- E. Grout: ASTM C 1107, factory-packaged, shrinkage-resistant, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.
- F. Chemical Anchor Adhesives: Heavy duty, two component injectable adhesive designed to be dispensed using double chamber gun with mixing nozzle. Adhesives in capsule form will not be accepted.
 - 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. Hilti, Inc.; Hit-HY 200; Hit-Ice
 - b. ITW Redhead; Epcon C6.
 - c. Powers Fasteners, Inc.; AC100+ Gold.

2.9 RECONSTRUCTION AND CORRECTIVE MATERIALS

- A. Corrective Mortar (Industry name is Repair Mortar): Site-mixed Portland-cement mix for vertical and overhead surfaces. Mix dry-pack corrective mortar, consisting of one part shrinkage-compensating, Portland cement to two and one-half parts fine aggregate passing a No. 16 sieve by damp, loose volume, using only enough water for handling and placing.
- B. Thin Coat Patching Mortar: Polymer modified, Portland cement, suitable for interior and exterior applications. Featheredge up to 3/16 inch. For thicker applications manufacturer's recommendations to extend mix with an aggregate may apply.
 - 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. BASF Construction Chemicals; Chemrex Levelprep.
 - b. ChemMasters, Inc.; ChemFlow HS.
 - c. Euclid Chemical Company (The); Duraltop Flowable Mortar.
- C. Corrective Overlayment (Industry name is 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. For thicker applications manufacturer's recommendations to extend mix with an aggregate may apply.
 - 1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
 - 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 according to ASTM C 109/C 109M.

2.10 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, according to ACI 301.
 - 1. Use a qualified independent 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: 25 percent, but if used, a minimum of 15 percent.
 - 2. Combined Fly Ash and Pozzolan: 25 percent.
 - 3. Ground Granulated Blast-Furnace Slag: 50 percent.
 - 4. Combined Fly Ash or Pozzolan and Ground Granulated Blast-Furnace Slag: 50 percent portland cement minimum, with fly ash or pozzolan not exceeding 25 percent.
- C. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.
- D. Admixtures: Use admixtures according to manufacturer's written instructions.
 - 1. Use water-reducing, high-range water-reducing or plasticizing admixture in all concrete. Design mix for optimum placement and workability.
 - 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
 - 3. Use a mid-range, water-reducing admixture in pumped concrete, all concrete slabs (including concrete walks), concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.

2.11 CONCRETE MIXTURES FOR BUILDING ELEMENTS

- A. Footings, Piers, or Foundation Walls,: Proportion normal-weight concrete mixture as follows:
 - 1. Minimum Compressive Strength: 4000 psi at 28 days.
 - 2. Maximum Water-Cementitious Materials Ratio: 0.50.
 - 3. Slump Limit: 4 inches, plus or minus 1 inch; or 8 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.
 - 4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 1-inch nominal maximum aggregate size.
- B. Interior Slabs-on-Grade: Proportion normal-weight concrete mixture as follows:
 - 1. Minimum Compressive Strength: 3500 psi at 28 days.
 - 2. Maximum Water-Cementitious Materials Ratio: 0.50.

3. Minimum Cementitious Materials Content: 470 lb/cu. yd..
4. Slump Limit: 4 inches, plus or minus 1 inch.
5. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.
6. Synthetic Macro-Fiber: Uniformly disperse in concrete mixture, at concrete batch facility, at manufacturer's recommended rate, but not less than 3.0 lb/cu. yd..

2.12 CONCRETE MIXTURES FOR EXTERIOR CONCRETE

- A. Exterior Slabs (concrete pads, walks and curbs): Proportion normal-weight concrete mixture as follows:
 1. Minimum Compressive Strength: 4500 psi at 28 days.
 2. Maximum Water-Cementitious Materials Ratio: 0.45.
 3. Slump Limit: 4 inches, plus or minus 1 inch; or 8 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.
 4. Air Content: 5.5 percent, plus or minus 1.5 percent at point of delivery for 1-1/2-inch nominal maximum aggregate size.
 5. Synthetic Macro-Fiber: Uniformly disperse in concrete mixture, at concrete batch facility, at manufacturer's recommended rate, but not less than 3.0 lb/cu. yd..

2.13 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that subgrade conditions are satisfactory prior to forming or pouring concrete. Owner's Testing Agency shall inspect slab and footing subgrade prior to placing concrete.
- B. Verify that reinforcing, including masonry dowels, is properly in place prior to pouring concrete.
- C. Verify that formwork is complete and properly secured prior to placing concrete.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.
- E. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:
 - 1. Class B, 1/4 inch for rough-formed finished surfaces to receive parging.
 - 2. Class D, 1 inch for concealed, rough-formed finished surfaces.
- D. Construct forms tight enough to prevent loss of concrete mortar.
- E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
 - 1. Install keyways, reglets, recesses, and the like, for easy removal.
 - 2. Do not use rust-stained steel form-facing material.
- F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- H. Chamfer exterior corners and edges of permanently exposed concrete.
- I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
- J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.3 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. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."

2. Install leveling plates, bearing plates, railing sleeves, brackets, and all other embedded steel items shown on Drawings.

3.4 REMOVING AND REUSING FORMS

- A. General: 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 supports weight of concrete in place until concrete has achieved at least 75 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 provide corrective work to surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.5 VAPOR BARRIERS

- A. Place, protect, and correct vapor barrier according to ASTM E 1643 and manufacturer's written instructions.
 1. Lap joints 6 inches and seal with manufacturer's recommended tape.

3.6 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
 1. Do not cut or puncture vapor barrier. Correct damage and reseal vapor barrier before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

- E. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.
- F. Field bending or straightening of bars partially embedded in concrete is permitted only where shown on the Drawings.
- G. All openings in concrete walls with a dimension of one foot or greater are to have two #5 bars on all sides of opening, unless noted otherwise.

3.7 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
 - 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
 - 2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
 - 3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
 - 4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
 - 5. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
 - 6. Roughen surface of hardened concrete, wet surface, and immediately pour fresh concrete against wet surface.
- C. Control joints in Slabs-on-Grade: 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. 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 will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks. Space joints as shown on Drawings or, if not indicated, at 12 feet average spacing and not exceeding 15 feet. Locate joints at column centerlines where possible.

- D. Isolation Joints in Slabs-on-Grade: 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.
 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 Division 07 Section "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.

3.8 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301, (4.3.2.1 Slump Adjustment.)
1. With each concrete mixture submittal, indicate amounts of mixing water to be withheld for later addition at Project site.
 2. Water added must not increase the water-cement ratio past the approved mix design ratio.
 3. Add additional water reducer or plasticizer to mix instead of adding water to achieve flowable, workable concrete. Do not add water to concrete after adding these admixtures to mixture.
 4. Do not add water after truck is more than half empty.
- C. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. 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.

- D. 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. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 2. Maintain reinforcement in position on chairs during concrete placement.
 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
 4. Slope surfaces uniformly to drains where required.
 5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.
- E. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
1. 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.
 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- F. Hot-Weather Placement: Comply with ACI 301 and ACI 305R and as follows:
1. 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 to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

3.9 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects corrected and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
1. Apply to concrete surfaces not exposed to public view.

- B. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.10 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.
 - 1. Apply float finish to surfaces to receive trowel finish.
- C. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
 - 1. Flatness and Levelness: Finish surfaces to the following tolerances, according to ASTM E 1155, for a randomly trafficked floor surface:
 - a. Conventional: Specified overall values of flatness, F(F) 20; and of levelness, F(L) 15; with minimum local values of flatness, F(F) 15; and of levelness, F(L) 10; for thickset tile finishes and all other floor finishes not noted below.
 - b. Moderately Flat: Specified overall values of flatness, F(F) 25; and of levelness, F(L) 20; with minimum local values of flatness, F(F) 17; and of levelness, F(L) 15; for slabs to receive carpeting, vinyl composition tile, and linoleum.
 - 2. Finish and measure surface so gap at any point between concrete surface and an unveled, freestanding, 10-ft.-long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/4 inch.
 - 3. For all floor finish classifications, also measure floor finish tolerances after slab has cured and dried out, within 2 weeks before installation of floor finish materials to establish compliance with flooring manufacturer's tolerance requirements and to determine if corrective leveling is required.
- D. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces to receive carpet, vinyl composition tile. While concrete is still plastic, slightly scarify surface with a fine broom.
 - 1. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.
- E. Broom Finish: Apply a broom finish to exterior concrete walks, slabs, platforms, steps, ramps, and elsewhere as indicated.

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application. For synthetic fiber reinforced concrete, pull broom in a single direction and do not excessively overlap previously textured concrete.
- F. Exposed Architectural Concrete Surfaces: Use the same finish procedure for all pours. All pours to be done in similar weather conditions. Use breathable sealer after set to prevent efflorescence.
- G. Exterior Concrete Walks and Slabs: Apply penetrating, silane sealer per manufacturer's instructions.

3.11 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.
- B. Equipment Bases and Foundations:
 1. Coordinate sizes and locations of concrete bases with actual equipment provided.
 2. Construct concrete bases 4 inches high unless otherwise indicated; and extend base not less than 6 inches in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated or unless required for seismic anchor support.
 3. Minimum Compressive Strength: 4000 psi at 28 days.
 4. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.
 5. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base, and anchor into structural concrete substrate.
 6. Prior to pouring concrete, place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 7. Cast anchor-bolt insert into bases. Install anchor bolts to elevations required for proper attachment to supported equipment.

3.12 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 and 305R for hot-weather protection during curing.
- B. Slabs: Protect slabs within building from precipitation accumulation. Immediately remove water, snow or ice from surface of slabs within building regardless if source is from precipitation, construction activities, etc.

- C. Evaporation Retarder: Apply evaporation retarder to unformed 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. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.
- E. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
- F. Cure concrete according to ACI 308.1, by one of the following methods:
 - 1. 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. Cure for not less than seven days. Immediately correct any holes or tears during curing period using cover material and waterproof tape.
 - a. Use moisture-retaining covers to cure all interior slabs on grade.
 - 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 correct damage during curing period.

3.13 SEALED CONCRETE

- A. Sealer: Prepare, apply, and finish sealer according to manufacturer's written instructions.
 - 1. Remove curing compounds, sealers, oil, dirt, laitance, and other contaminants and complete surface corrective work.
 - 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. Rinse with water; remove excess material until surface is dry. Apply a second coat in a similar manner if surface is rough or porous.

3.14 JOINT SEALING

- A. Prepare, clean, and install slab control joint sealer according to manufacturer's written instructions.
 - 1. Defer joint sealing until concrete has aged at least one month(s). Do not seal joints until construction traffic has permanently ceased.

- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.
- C. Install semirigid joint sealer full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint sealer flush with top of joint after hardening.

3.15 CONCRETE SURFACE CORRECTIVE WORK

- A. Defective Concrete: Correct and patch defective areas when approved by Architect. Remove and replace concrete that cannot be corrected and patched to Architect's approval.
- B. Correcting 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. Limit cut depth to 3/4 inch. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with corrective mortar before bonding agent has dried. Fill form-tie voids with corrective mortar or cone plugs secured in place with bonding agent.
 - 2. Correct defects on surfaces exposed to view by blending white Portland cement and standard Portland cement so that, when dry, corrective mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
 - 3. Correct defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.
- C. Correcting Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
 - 1. Correct finished surfaces containing defects. Surface defects include 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.
 - 2. After concrete has cured at least 14 days, correct high areas by grinding.
 - 3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with thin coat patching mortar. Finish corrected areas to blend into adjacent concrete.
- D. Perform structural reconstruction of existing concrete according to the Drawings.

3.16 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports, except where noted.
- B. Contractor to supply all batch tickets to Owner's testing agency. Batch tickets to note w/c ratio and amount of water allowed to be added at Project site.
- C. Inspections:
 - 1. Steel reinforcement placement.
 - 2. Chemical Anchors: Test 5% of all chemical anchors in tension, randomly selected but in varied locations. Testing to be in accordance with ASTM E 488 to the approved manufacturer's allowable loads. Concrete must cure a minimum of 3 days prior to testing. Do not test anchors until after the anchor manufacturer's recommended curing time. If an anchor fails during this test additional anchors may be requested to be tested as directed by the Architect.
 - 3. Headed bolts and studs.
 - 4. Verification of use of required design mixture.
 - 5. Concrete placement, including conveying and depositing.
 - 6. Curing procedures and maintenance of curing temperature.
 - 7. Verification of concrete strength before removal of shores and forms from beams and slabs.
 - 8. Vapor barrier inspection after installation. To be performed by the vapor barrier manufacturer. Verify correct installation according to specifications and details. To be performed no more than 48 hours prior to slab pour.
- D. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
 - 1. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day, nor less than once per each 5000 square foot of surface area of walls or slabs.
 - 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. Include corresponding concrete mix batch tickets with each test report.
 - 3. Indicate amount of water added to batch at Project site.

4. Slump: ASTM C 143/C 143M; 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. Measure after slump adjustment. Pumped concrete is to be tested at point of placement, with an additional slump test taken at point of delivery.
5. Compressive-Strength Tests: ASTM C 39/C 39M;
 - a. Test two standard cured specimens at 7 days, three specimens at 28 days, and retain one specimen for testing at 56 days as deemed necessary by Architect.
 - b. Test two field-cured specimens at 28 days.
 - c. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
 - d. If one specimen in the test shows evidence of improper sampling, molding or testing, discard the specimen and consider the strength of the remaining cylinders to be the test result. If more than one specimen in a test shows any defects, discard the entire test.
6. Test for workability and air content of each synthetic fiber reinforced concrete mixture composite sample taken according to ASTM C172 (except that wet-sieving is not permitted) and whenever consistency of concrete appears to vary, according to ASTM C 1116.
7. 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.
8. Test results shall be reported in writing to Architect, 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.
9. Nondestructive Testing: Impact-echo, ultrasonic methods, or other nondestructive methods may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
10. 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 Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
11. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

12. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

END OF SECTION 03 30 00

SECTION 03 54 15 – MOISTURE CONTROL SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes moisture control system for concrete surfaces below hydraulic-cement-based underlayment and interior floor coverings.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Moisture control system.
 - 2. Sand.
 - 3. Crack and joint filler.
 - 4. Patching compound.

- B. Warranty: Sample of special warranty.

1.5 INFORMATIONAL SUBMITTALS

- A. Manufacturer Certificates: Signed by manufacturers of moisture control system, underlayment and floor covering system certifying that products are compatible.
- B. Agreement to Warranty: Signed by manufacturer of moisture control system confirming agreement to warranty the system.
- C. Qualification Data: For Installer.

1.6 CLOSEOUT SUBMITTALS

- A. Warranty: Executed special warranty.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Installer who is approved by manufacturer for application of moisture control system products required for this Project.
- B. Product Compatibility: Manufacturers of moisture control system, underlayment and floor covering system certify in writing that products are compatible.
- C. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store materials to comply with manufacturer's written instructions to prevent deterioration from moisture or other detrimental effects.

1.9 PROJECT CONDITIONS

- A. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ambient temperature and humidity, ventilation, and other conditions affecting moisture control system performance.
 - 1. Place moisture control system only when ambient temperature and temperature of substrates are between 50 and 80 deg F. Expedite installation if substrate and site conditions are above 70 deg F.
 - 2. Place moisture control system only when building is enclosed, with permanent HVAC system operating.

1.10 COORDINATION

- A. Coordinate application of moisture control system with requirements of underlayment products, specified in other Division 03 Sections, and with requirements of floor covering products, including adhesives, specified in Division 09 Sections, to ensure compatibility of products.

1.11 WARRANTY

- A. Special Warranty: Moisture control system manufacturer's standard form in which manufacturer agrees to repair or replace moisture control system that does not comply with requirements to properly control moisture within specified warranty period.
 - 1. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MOISTURE CONTROL SYSTEM

- A. Moisture Control System: One-component epoxy-based moisture control system –“Ardex MC Rapid” consisting of primer, P-4 and sealer coats.
- B. Sand: Fine sand less than 1/50 of an inch in grain size or 98.5 percent passing sieve size #35.
- C. Crack and Joint Filler: Two-part epoxy crack and joint filler.
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Ardex Ardifix Joint Sealant.
- D. Patching Compound: Portland cement-based smoothing compound.
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Ardex; K-60, K-301 and MRP.
- E. Water: Potable and at a temperature of not more than 70 deg F.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for conditions affecting performance.
 - 1. File pre-installation checklist with manufacturer and obtain manufacturer’s written agreement to warranty and confirmation of approval to proceed.
 - 2. Proceed with application only after unsatisfactory conditions have been corrected.
- B. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 PREPARATION

- A. General: Prepare and clean substrate according to manufacturer's written instructions.
 - 1. Treat nonmoving substrate cracks according to manufacturer's written instructions to prevent cracks from telegraphing (reflecting) through moisture control system.
- B. Concrete Substrates: Mechanically remove, according to manufacturer's written instructions, laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants that might impair moisture control system bond. Prepare surface to achieve minimum surface profile of ICRI CSP #3 (light shot blast).

1. Apply patching compound to pre-smooth concrete where mechanical preparation results in a surface exceeding limits set by moisture control system manufacturer.
- C. Testing: Test substrates for moisture vapor emissions in accordance with either of the following methods:
1. Moisture Testing Method 1: Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates do not exceed a maximum moisture-vapor-emission rate of 20 lb.
 2. Moisture Testing Method 2: Perform relative humidity test, ASTM F 2170. Proceed with installation only after substrates do not exceed a maximum relative humidity of 95 percent as measured by a Wagner Rapid RH probe.

3.3 APPLICATION

- A. General: Mix and apply moisture control system components according to manufacturer's written instructions.
1. Close areas to traffic during moisture control system application and for time period after application recommended in writing by manufacturer.
 2. Coordinate application of components to provide optimum substrate and intercoat adhesion.
 3. At substrate expansion, isolation, and other moving joints, allow joint of same width to continue through moisture control system.
- B. Apply primer over prepared substrate at manufacturer's recommended spreading rate.
- C. Apply sealer coat over primer at manufacturer's recommended spreading rate. While sealer coat is fresh, broadcast sand layer at manufacturer's recommended spreading rate.
- D. Unless otherwise recommended by manufacturer, allow system to cure for at least 16 hours before broom sweeping and vacuuming to remove excess sand.
- E. Do not allow traffic of any type on unprotected moisture control system.
- F. Apply compatible underlayment over moisture control system after time period recommended in writing by manufacturer.

3.4 PROTECTION

- A. Protect moisture control system during installation of construction over system and for remainder of construction period.

END OF SECTION 03 54 15

SECTION 04 20 00 - UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Concrete masonry units.
 - 2. Concrete building brick.
 - 3. Mortar and grout.
 - 4. Miscellaneous masonry accessories.
- B. Products Installed but not Furnished under This Section:
 - 1. Steel lintels in unit masonry.

1.3 DEFINITIONS

- A. CMU(s): Concrete masonry unit(s).

1.4 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. CMUs.
 - 2. Concrete building brick.
 - 3. Portland cement.
 - 4. Hydrated lime.
 - 5. Portland cement-lime mix.
 - 6. Aggregate for mortar.
 - 7. Aggregate for grout.
 - 8. Uncoated-steel reinforcing bars.
 - 9. Reinforcing bar positioners.
 - 10. Masonry-joint reinforcement for single-wythe masonry.
 - 11. Anchors for connecting CMU to existing masonry.

12. Adjustable anchors for connecting to structural steel framing.
13. Adjustable anchors for connecting to structural steel columns at isolated pilasters.
14. Joint stabilization anchors.
15. Top-of-wall wind clips.
16. Top-of-wall concealed wind anchors.

B. **As-Specified Data:** If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below, otherwise submit full Product Data for the following:

1. Compressible filler.
2. Preformed control-joint gaskets.

C. **Shop Drawings:** For the following:

1. **Reinforcing Steel:** Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315. Show elevations of reinforced walls.
2. **Concrete Masonry Control Joint Layout Plans:** Show all concrete masonry unit control joint locations, at minimum 1/8 inch = 1 ft. scale.
 - a. For each joint, indicate type of control joint; i.e., at columns, indicate if joint is provided by the masonry grouted into the column web, or by a joint-stabilization anchor.
 - b. Indicate control joint location and type in accordance with the typical masonry plan details shown on the Drawings and as specified.

1.6 INFORMATIONAL SUBMITTALS

A. **Material Certificates:** For each type and size of the following:

1. **Masonry units.**
 - a. Include material test reports substantiating compliance with requirements.
 - b. For masonry units, include data and calculations establishing average net-area compressive strength of units.
2. **Cementitious materials.** Include name of manufacturer, brand name, and type.
3. **Preblended, dry mortar mixes.** Include description of type and proportions of ingredients.
4. **Grout mixes.** Include description of type and proportions of ingredients.
5. **Reinforcing bars.**
6. **Joint reinforcement.**
7. **Anchors, ties, and metal accessories.**

- B. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
 - 1. Include test reports, according to ASTM C1019, for grout mixes required to comply with compressive strength requirement.
- C. 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.

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.
- 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.

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.

2.3 UNIT MASONRY, GENERAL

- A. Masonry Standard: Comply with TMS 602, 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 and will be within 20 feet vertically and horizontally of a walking surface.
- 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 bullnose units for outside corners unless otherwise indicated.
- B. CMUs: ASTM C90.
 - 1. Density Classification: Lightweight unless otherwise indicated.

2. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.
3. Exposed Faces: Provide uniform fine texture units suitable for painting.

C. Concrete Building Brick: ASTM C55.

1. Density Classification: Lightweight.
2. Size (Actual Dimensions): 3-5/8 inches wide by 2-1/4 inches high by 7-5/8 inches long.

2.5 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C150/C150M, 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. Aggregate for Mortar: ASTM C144.

E. Aggregate for Grout: ASTM C404.

F. Water: Potable.

2.6 REINFORCEMENT

A. Uncoated-Steel Reinforcing Bars: ASTM A615/A615M or ASTM A996/A996M, Grade 60.

B. 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 (9 gage) steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars 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. Heckmann Building Products Inc., Div. of Mechanical Plastics Corp.; Wire Rebar Positioner (376).
 - b. Hohmann & Barnard, Inc.; RB Rebar Positioners or RB-Twin Rebar Positioners.
 - c. Wire-Bond; Figure 8 Rebar Positioners.

C. Masonry-Joint Reinforcement, General: ASTM A951/A951M.

1. Interior Walls: Hot-dip galvanized carbon steel.
2. Wire Size for Side Rods: 0.148-inch diameter (9 gage).
3. Wire Size for Cross Rods: 0.148-inch diameter (9 gage).
4. Wire Size for Veneer Ties: 0.187-inch diameter.

5. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o.c.
 6. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.
- D. Masonry-Joint Reinforcement for Single-Wythe Masonry: Horizontal ladder type with single pair of side rods.
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. Heckmann Building Products Inc., Div. of Mechanical Plastics Corp.; Ladder-Type Masonry Wall Reinforcement (1100).
 - b. Hohmann & Barnard, Inc.; 220 Ladder Mesh Reinforcement.
 - c. Wire-Bond; Series 200 Ladder Mesh 2 Wire.

2.7 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. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A82/A82M, with ASTM A153/A153M, Class B-2 coating.
 2. Stainless Steel Wire: ASTM A580/A580M, Type 304.
 3. Steel Sheet, Galvanized after Fabrication: ASTM A1008/A1008M, Commercial Steel, with ASTM A153/A153M, Class B coating.
 4. Stainless Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304.
 5. Steel Plates, Shapes, and Bars: ASTM A36/A36M.
- C. Anchors for Connecting CMU to Existing Masonry: Corrugated strips formed from 0.060-inch-thick (16 gage) steel sheet, hot-dip galvanized after fabrication, 1-1/4 inch wide, with 1-1/2 inch bend.
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. Heckmann Building Products Inc., Div. of Mechanical Plastics Corp.; #187 Hole-Type Brick Veneer Anchor.
 - b. Wire-Bond; #2501 Veneer Anchor Corrugated.
- D. Adjustable Anchors for Connecting to Structural Steel Framing: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
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. Hohmann & Barnard, Inc.; 359-C - Weld-On Ties and VBT – Vee Byna-Ties.

- b. Wire-Bond; #1000C Type I Continuous Weld-On Anchors and #1100 Triangular Ties.
 - 2. Anchor Section for Welding to Steel Frame: Crimped 1/4-inch-diameter, hot-dip galvanized steel wire.
 - 3. Tie Section: Triangular-shaped wire tie made from 0.187-inch-diameter, hot-dip galvanized steel wire.
- E. Adjustable Anchors for Connecting to Structural Steel Columns at Isolated Pilasters: Provide anchors that allow vertical adjustment.
- 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. Hohmann & Barnard, Inc.; 345-BT Flexible Tie.
 - b. Wire-Bond; #2102 Dovetail Triangular Tie.
 - 2. Anchor Section: Tab formed from 0.105-inch-thick (12 gage) steel sheet, hot-dip galvanized after fabrication.
 - 3. Tie Section: Triangular-shaped wire tie made from 0.187-inch-diameter, hot-dip galvanized steel wire, sized to extend within one inch of masonry face.
- F. Joint Stabilization Anchors: Provide anchors that bond masonry walls across expansion and control joints while allowing lateral movement, made from hot-dip galvanized-steel.
- 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. Heckmann Building Products Inc., Div. of Mechanical Plastics Corp.; Control Joint Anchor (353).
 - b. Hohmann & Barnard, Inc.; Slip-Set Stabilizer.
 - c. Wire-Bond; #1700 Control Joint Anchor.
- G. Top-of-Wall Wind Clips: Provide bent, galvanized steel plate clips as detailed on Drawings.
- H. Top-of-Wall Concealed Wind Anchors: Provide hot dip galvanized steel anchors with a deflection sleeve as detailed on Drawings.
- 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. Heckmann Building Products Inc., Div. of Mechanical Plastics Corp.; #419 Pin Type Stabilizing Wall Anchor (419) with Plastic Tube (421).
 - b. Hohmann & Barnard, Inc.; Partition Top Anchor, PTA 420 HS with PTA Tube.
 - c. Wire-Bond; PTA #4301 Partition Top Anchor with PTA tube.

2.8 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.
 - 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. Hohmann & Barnard, Inc.; NS – Closed Cell Neoprene Sponge.
 - b. Wire-Bond; #3300 Expansion Joint.
- 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.
 - 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. Hohmann & Barnard, Inc.; RS Series – Rubber Control Joint.
 - b. Wire-Bond; Rubber Control Joint.

2.9 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.
- 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 concrete masonry unit backup in exterior walls, masonry bearing walls, shear walls and masonry below grade or in contact with earth, use Type S. Not for use in masonry veneer construction.
 - 2. Use Type N mortar in all masonry veneer construction and in all masonry construction other than noted in the requirements for Type S mortar above.
- 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 for dimensions of grout spaces and pour height.

2. Proportion grout in accordance with ASTM C476, Table 1 or 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/C143M.

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. Verify that foundations are within tolerances specified.
 2. Verify that reinforcing dowels are properly placed.
 3. 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. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

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.

3.3 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. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 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.

3.4 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: 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 2 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.
 2. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Division 07 Section "Joint Firestopping."

3.5 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. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

3.6 MASONRY-JOINT REINFORCEMENT

- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 1/2 inch. Lap reinforcement a minimum of 6 inches.
1. Space reinforcement not more than 16 inches o.c.
 2. 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 returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.7 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 2 inches 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.

3.8 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.

1. Locate joints as indicated on Drawings; if not indicate, locate vertical joints not more than 24 feet o.c. for control joints in concrete masonry.

B. Form control joints in concrete masonry as follows:

1. Install preformed control-joint gaskets designed to fit standard sash block.
2. At steel columns, construct control-joint according to Drawings.

3.9 LINTELS

- A. Install steel lintels where indicated.
- B. Provide minimum bearing of 8 inches at each jamb unless otherwise indicated.

3.10 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.

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 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.

3.11 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.

B. Inspections: Special inspections according to Level 2 in TMS 402.

1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
2. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.
3. Place grout only after inspectors have verified proportions of site-prepared grout.

- C. Testing Prior to Construction: One set of tests.
- D. Testing Frequency: One set of tests for each 5000 sq. ft. of wall area or portion thereof.
- E. Concrete Masonry Unit Test: For each type of unit provided, according to ASTM C140 for compressive strength.
- F. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, according to ASTM C780.
- G. Grout Test (Compressive Strength): For each mix provided, according to ASTM C1019.
- H. Reinforcement Inspections: Inspect reinforcement for size and placement.
- I. Grout and Mortar Inspection: Inspect grout and mortar mixing operations to ensure mix proportions and procedures comply with specified requirements.
- J. Tie and Anchor Inspections: Inspect ties and anchors for type, spacing, and proper installation.
- K. Accessories Inspections: Inspect accessories for type and proper installation.

3.12 CORRECTING, 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 Architect's approval of sample cleaning before proceeding with cleaning of masonry.
 3. Clean concrete masonry by applicable cleaning methods indicated in NCMA TEK 8-4A.

END OF SECTION 04 20 00

SECTION 05 12 00 - STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Structural steel.
 - 2. Primer.
 - 3. Grout.

1.3 DEFINITIONS

- A. Structural Steel: Elements of structural-steel frame, as classified by AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

1.4 SUBMITTALS

- A. Action Submittals:
 - 1. Product Data: For each type of product indicated.
 - a. High-strength bolts, nuts and washers
 - b. Threaded rods
 - c. Post-installed Anchors
 - d. Galvanizing repair paint
 - e. Grout
 - 2. Shop Drawings: Show fabrication of structural-steel components.
 - a. Erection Plans and Details: Include member layout, dimensions, elevations, member sizes, erection details, and all information required for erection.
 - 1) Submit erection plans and obtain Architect's approval prior to submitting fabrication details.
 - b. Fabrication Details: Submit drawings indicating all details necessary for shop fabrication and erection of each individual steel member.
 - 1) Detail simple shear connections to withstand loads indicated and comply with other information and restrictions indicated.

- a) Select and complete connections using AISC 360 and LRFD.
 - b) Provide connections, at a minimum, sized for beam end reactions shown on Drawings and per Tables 10-1, 10-2, 10-3 or 10-4, AISC Steel Construction Manual. Unless otherwise noted, beam end reactions are given at factored load level.
- 2) Include details of cuts, connections, splices, camber, holes, and other pertinent data.
 - 3) Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
 - 4) Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical high-strength bolted connections.

1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD is preferred. At least 10 projects completed of a similar size and scope to Project.
 1. If fabricator is not designated an AISC-Certified Plant, see Source Quality Control Article for Contractor responsibilities.
- B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- C. Comply with applicable provisions of the following specifications and documents:
 1. AISC 303.
 2. AISC 360.
 3. RCSC's "Specification for Structural Joints Using ASTM A325 or A490 Bolts."

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.
 1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

- B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.
 - 1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
 - 2. Clean and relubricate bolts and nuts that become dry or rusty before use.
 - 3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F 1852 fasteners and for retesting fasteners after lubrication.

1.7 COORDINATION

- A. 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.

PART 2 - PRODUCTS

2.1 STRUCTURAL-STEEL MATERIALS

- A. W-Shapes: ASTM A 992/A 992M.
- B. Channels: ASTM A 572/A 572M, Grade 50.
- C. Angles, Plate and Bar: ASTM A 36/A 36M.
- D. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B, structural tubing.

2.2 BOLTS, CONNECTORS, AND ANCHORS

- A. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy-hex steel structural bolts, 3/4-inch diameter unless noted otherwise on Drawings; ASTM A 563, Grade C, heavy-hex carbon-steel nuts; and ASTM F 436, Type 1, hardened carbon-steel washers; all with plain finish.
- B. Headed Anchor Rods: ASTM F 1554, Grade 36, straight.
 - 1. Nuts: ASTM A 563 heavy-hex carbon steel.
 - 2. Plate Washers: ASTM A 36/A 36M carbon steel.
 - 3. Washers: ASTM F 436, Type 1, hardened carbon steel.
 - 4. Finish: Plain.
- C. Threaded Rods: ASTM A 36/A 36M.
 - 1. Nuts: ASTM A 563 heavy-hex carbon steel.
 - 2. Washers: ASTM F 436, Type 1, hardened carbon steel.
 - 3. Finish: Plain.
- D. Postinstalled Anchors: chemical anchors.
 - 1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5 unless otherwise indicated.

2. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 2 stainless-steel bolts, ASTM F 593, and nuts, ASTM F 594.
3. Chemical Anchor Adhesives: Heavy duty, two component injectable adhesive designed to be dispensed using double chamber gun with mixing nozzle. Adhesives in capsule form will not be accepted.
 - a. Products for anchoring into concrete: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) Hilti, Inc.; Hit-HY 200; Hit-Ice.
 - 2) ITW Redhead; Epcon C6; Epcon A7.
 - 3) Powers Fasteners, Inc.; AC100+ Gold.

2.3 PRIMER

- A. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction.
- B. Provide primers that comply with Division 09 Sections "High Performance Coatings" and "Painting" and the following:
 1. Interior Structural Steel : Refer to First Coat for Steel, Structural Steel in Interior High-Performance Coating Schedule: General Use.
- C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it and meeting ASTM A 780.

2.4 GROUT

- A. Grout: ASTM C 1107, factory-packaged, shrinkage-resistant, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.5 FABRICATION

- A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC 360.
 1. Camber structural-steel members where indicated.
 2. Fabricate beams with rolling camber up.
 3. Identify high-strength structural steel according to ASTM A 6/A 6M and maintain markings until structural steel has been erected.
 4. Mark and match-mark materials for field assembly.
- B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
 1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1/D1.1M.

- C. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces. Holes to be standard holes unless shown otherwise on Drawings.
- 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 according to SSPC-SP 3, "Power Tool Cleaning."
- F. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel framing 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.

2.6 SHOP CONNECTIONS

- A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
 - 1. Joint Type: Snug tightened or pretensioned.
- B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

2.7 SHOP PRIMING

- A. Shop prime the following structural steel members only:
 - 1. Interior structural steel exposed to view, and interior lintels.
 - 2. Structural steel in exterior walls and lintels in exterior walls.
- B. For members to receive primer leave following locations unprimed:
 - 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. Galvanized surfaces unless noted to be primed.
- C. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to Division 09 Section "High Performance Coatings".
 - 1. ASTM D 6386, "Standard Practice for Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Painting," for galvanized surfaces noted to be painted.

D. Priming:

1. Immediately after surface preparation, apply one coat of primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness as listed below. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.
2. Stripe paint corners, crevices, bolts, welds, and sharp edges.
3. 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.

2.8 SOURCE QUALITY CONTROL

- A. Testing Agency: If fabricator is not designated an AISC-Certified Plant then the Contractor shall engage an independent testing and inspecting agency to perform shop tests and inspections and prepare test reports.
1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.
- B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.
- C. Bolted Connections: Shop-bolted connections shall be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- D. Welded Connections: Shop welds will be visually inspected according to AWS D1.1/D1.1M.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify, with 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 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.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

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.

3.3 ERECTION

- A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.
- B. Base Bearing 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 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 shrinkage-resistant grouts.
- C. Column Base Plates and Anchor Bolts: Not designed to resist lateral loads and overturning during erection; base plates and anchor bolts are designed only to comply with the minimum requirements of the OSHA "Safety Standards for Steel Erection".
- D. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."
- E. 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 will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
 - 1. Level and plumb individual members of structure.
 - 2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.
- F. Splice members only where indicated.
- G. Do not use thermal cutting during erection.
- H. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

3.4 FIELD CONNECTIONS

- A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
 - 1. Joint Type: Snug tightened.

- B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
 - 1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
 - 2. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances in AISC's "Code of Standard Practice for Steel Buildings and Bridges" for mill material.

3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform tests and inspections as described below.
- B. Bolted Connections: Bolted connections will be inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- C. Welded Connections: Field welds will be visually inspected according to AWS D1.1/D1.1M.
- D. Postinstalled Chemical Anchors: Test 5% of all chemical anchors in tension, randomly selected but in varied locations. Testing to be in accordance with ASTM E 488 to the approved manufacturer's allowable loads. Concrete or masonry wall must cure a minimum of 3 days prior to testing. Do not test anchors until after the anchor manufacturer's recommended curing time. If an anchor fails during this test additional anchors may be requested to be tested as directed by the Architect.
- E. Record position and alignment of erected steel. Compare with required tolerances.
- F. Verify compliance with details shown on approved drawings such as bracing, stiffening, member location, and proper application of joint details at each connection.
- G. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

3.6 REPAIRS AND PROTECTION

- A. Field Corrections: Do not field correct any framing member or connection without prior approval of Architect. Submit detail of proposed field correction to Architect including component sizes, dimensions, weld sizes, cut locations, etc.

END OF SECTION 05 12 00

SECTION 05 40 00 - COLD-FORMED METAL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following cold-formed metal framing (“CFMF”) elements:
 - 1. Interior load-bearing wall framing.

1.3 SUBMITTALS

- A. General: Submit all action submittals and informational submittals required by this Section concurrently.
- B. Action Submittals:
 - 1. Product Data: For each type of cold-formed metal framing product and accessory indicated.
 - 2. Shop Drawings: Show layout, spacings, sizes, thicknesses, and types of cold-formed metal framing; fabrication; and fastening and anchorage details, including mechanical fasteners. Show reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.
- C. Informational Submittals:
 - 1. Welding certificates.
 - 2. Qualification Data: For testing agency and installer. Submit written certification or similar documentation signed by applicable subcontractor, or Contractor indicating compliance with applicable “Qualifications” requirements specified below in “Quality Assurance” article.
 - 3. Product Test Reports: From a qualified testing agency, unless otherwise stated, indicating that each of the following complies with requirements, based on evaluation of comprehensive tests for current products:
 - a. Steel sheet.
 - b. Expansion anchors.
 - c. Power-actuated anchors.
 - d. Mechanical fasteners.
 - e. Miscellaneous structural clips and accessories.

1.4 QUALITY ASSURANCE

- A. Cold-formed Metal Framing Installer Qualifications: At least 5 years experience in construction of cold-formed metal framing systems similar in scope to application shown on Documents with record of successful in-service performance for prior projects.
- B. 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.
- C. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code--Steel," and AWS D1.3, "Structural Welding Code--Sheet Steel."
- D. AISI Specifications and Standards: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" and its "Standard for Cold-Formed Steel Framing - General Provisions."
 - 1. Comply with AISI's "Standard for Cold-Formed Steel Framing - Header Design."

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Packing and Shipping: Deliver materials and components to Site in manufacturer's unopened packages, containers or bundles, fully identified with brand name, type, grade and identification of manufacturer or supplier.
- B. Protect cold-formed metal framing from corrosion, deformation, and other damage during delivery, storage, and handling.
- C. Store cold-formed metal framing, protect with a waterproof covering, and ventilate to avoid condensation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering cold-formed metal framing that may be incorporated into the Work include, but are not limited to, the following:
 - 1. AllSteel Products, Inc.
 - 2. ClarkWestern Building Systems, Inc.
 - 3. Dietrich Metal Framing; a Worthington Industries Company.
 - 4. MarinoWare; a division of Ware Industries.
 - 5. MBA Building Supplies, Inc.
 - 6. Super Stud Building Products, Inc.
 - 7. United Metal Products, Inc.
 - 8. Telling Industries, LLC.

2.2 MATERIALS

- A. Steel Sheet: ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of grade and coating weight as follows:
 - 1. Grade: As required by structural performance.
 - 2. Coating: G60, A60, AZ50, or GF30.

2.3 LOAD-BEARING WALL FRAMING

- A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as indicated on drawings.
- B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with straight flanges, and as indicated on drawings.
- C. Steel Box or Back-to-Back Headers: Manufacturer's standard C-shapes used to form header beams, of web depths indicated, punched, with stiffened flanges, and as indicated on drawings.

2.4 FRAMING ACCESSORIES

- A. Fabricate steel-framing accessories from steel sheet, ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of same grade and coating weight used for framing members.
- B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:
 - 1. Supplementary framing.
 - 2. Bracing, bridging, and solid blocking.
 - 3. Anchor clips.
 - 4. End clips.
 - 5. Foundation clips.
 - 6. Joist hangers and end closures.

2.5 ANCHORS, CLIPS, AND FASTENERS

- A. Steel Shapes and Clips: ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of grade and coating weight matching associated member.
- B. Anchor Bolts: ASTM F 1554, Grade 36, threaded carbon-steel hex-headed bolts and carbon-steel nuts; and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A 153/A 153M, Class C.
- C. Expansion Anchors: Fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 5 times design load, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.
- D. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 10 times design load, as determined by testing per ASTM E 1190 conducted by a qualified independent testing agency.

- E. Mechanical Fasteners: ASTM C 1513, corrosion-resistant-coated, self-drilling, self-tapping steel drill screws.
 - 1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.
- F. Welding Electrodes: Comply with AWS standards.

2.6 MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: ASTM A 780.
- B. Nonmetallic, Nonshrink Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage-compensating agents, and plasticizing and water-reducing agents, complying with ASTM C 1107, with fluid consistency and 30-minute working time.
- C. Shims: Load bearing, high-density multimer plastic, nonleaching.
- D. Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to match width of bottom track or rim track members.

2.7 FABRICATION

- A. Fabricate cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI specifications and standards, manufacturer's written instructions, and requirements in this Section.
 - 1. Fabricate framing assemblies using jigs or templates.
 - 2. Cut framing members by sawing or shearing; do not torch cut.
 - 3. Fasten cold-formed metal framing members by welding, screw fastening, clinch fastening, or riveting as standard with fabricator. Wire tying of framing members is not permitted.
 - a. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
 - b. Locate mechanical fasteners and install according to Shop Drawings, with screw penetrating joined members by not less than three exposed screw threads.
 - 4. Fasten other materials to cold-formed metal framing by welding, bolting, or screw fastening, according to Shop Drawings.
 - 5. Splices in axially loaded members not acceptable.
- B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies to prevent damage or permanent distortion.

- C. Fabrication Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet 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 metal framing assembly to a maximum out-of-square tolerance of 1/8 inch.
- D. Touch-up all welds with galvanizing primer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine supporting substrates and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.
- B. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Install load bearing shims or grout between the underside of wall bottom track or rim track and the top of foundation wall or slab at stud or joist locations to ensure a uniform bearing surface on supporting concrete or masonry construction.
- B. Install sealer gaskets to isolate the underside of wall bottom track or rim track and the top of foundation wall or slab at stud or joist locations.

3.3 INSTALLATION, GENERAL

- A. Cold-formed metal framing may be shop or field fabricated for installation, or it may be field assembled.
- B. Install cold-formed metal framing according to AISI's "Standard for Cold-Formed Steel Framing - General Provisions", manufacturer's written instructions, Drawings, and approved Shop Drawings 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 metal framing and accessories plumb, square, and true to line, and with connections securely fastened.
 - 1. Cut framing members by sawing or shearing; do not torch cut.
 - 2. Fasten cold-formed metal framing members by welding, screw fastening, clinch fastening, or riveting. Wire tying of framing members is not permitted.
 - a. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
 - b. Locate mechanical fasteners and install according to Shop Drawings, and complying with requirements for spacing, edge distances, and screw penetration.
- E. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.
- F. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.
- G. Do not bridge building expansion and control joints with cold-formed metal framing. Independently frame both sides of joints.
- H. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's standard punched openings.
- I. Erection Tolerances: Install cold-formed metal framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet 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.

3.4 LOAD-BEARING WALL INSTALLATION

- 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 approved Shop Drawings.
- B. Squarely seat studs against top and bottom tracks with gap not exceeding of 1/8 inch between the end of wall framing member and the web of track. Fasten both flanges of studs to top and bottom tracks. Space studs as follows:
 - 1. Maximum Stud Spacing: 16 inches.
- 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. 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 as indicated.
- G. Install headers and sills for wall openings wider than stud spacing. Locate headers and sills at openings as indicated. 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 as indicated on approved Shop Drawings. Fasten jamb members together to uniformly distribute loads.
 - 2. Install runner 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 48 inches. Fasten at each stud intersection. Install bridging prior to application of loads. Bridging may be any of the following types:
 - 1. Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs with a minimum of 2 screws into each flange of the clip angle for framing members up to 6 inches deep.
 - 2. Combination of flat, taut, steel sheet straps of width and thickness indicated on approved Shop Drawings 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.
 - 3. Proprietary bridging bars installed according to manufacturer's written instructions.
- 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 FIELD QUALITY CONTROL

- A. Testing: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports. Contractor to provide access to construction for inspections to verify conformance with provisions of Contract Documents and approved Shop Drawings. Inspections to include but not limited to, the following:
 - 1. Verify member sizes, configuration and spacing.
 - 2. Inspect screwed and welded connections.
 - 3. Inspect weld quality.
 - 4. Verify field welder's certification.
 - 5. Verify galvanizing primer has been applied to all welds and damaged galvanized surfaces.
 - 6. Verify compliance with details shown on approved drawings such as bracing, stiffening, member location, and proper application of joint details at each connection.
- B. Field and shop welds will be subject to testing and inspecting.
- C. Testing agency will report test results promptly and in writing to Contractor and Architect.
- D. Remove and replace work where test results indicate that it does not comply with specified requirements.
- E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.6 REPAIRS AND PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed metal framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed metal framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION 05 40 00

SECTION 05 50 00 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Steel framing and supports for mechanical and electrical equipment.
- 2. Steel framing and supports for applications where framing and supports are not specified in other Sections.
- 3. Loose bearing and leveling plates for applications where they are not specified in other Sections.

- B. Products furnished, but not installed, under this Section:

- 1. Loose steel lintels.
- 2. Anchor bolts indicated to be cast into concrete or built into unit masonry.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For the following:

- 1. Slotted channel framing.
- 2. Grout.

- B. Shop Drawings: Show fabrication and installation details for metal fabrications.

- 1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

1.5 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to the following:

- 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.6 COORDINATION

- A. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

PART 2 - PRODUCTS

2.1 METALS, GENERAL

- 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.

2.2 FERROUS METALS

- A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- B. Steel Tubing: ASTM A 500, cold-formed steel tubing.
- C. Slotted Channel Framing: Cold-formed metal box channels (struts) complying with MFMA-4.
 - 1. Size of Channels: 1-5/8 by 1-5/8 inches or as indicated on drawings.
 - 2. Material: Galvanized steel, ASTM A 653/A 653M, structural steel, Grade 33, with G90 coating; 0.108-inch nominal thickness.
 - 3. Fasteners and Fittings: Appropriate to situation and as recommend by manufacturer.

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 B 633 or ASTM F 1941, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
- B. Post-installed Anchors: chemical anchors.
 - 1. Chemical Anchor Adhesives: Heavy duty, two component injectable adhesive designed to be dispensed using double chamber gun with mixing nozzle. Adhesives in capsule form will not be accepted.
 - a. Products for anchoring into concrete: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) Hilti, Inc.; Hit-HY 200; Hit-Ice.
 - 2) ITW Redhead; Epcon C6; Epcon A7.
 - 3) Powers Fasteners, Inc.; AC100+ Gold.

2.4 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- B. Primer:
 - 1. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction.
 - 2. Provide primers that comply with Division 09 Sections “High Performance Coatings” and “Painting” and the following:
 - a. Interior Structural Steel: Refer to First Coat for Steel, Structural Steel in Interior High-Performance Coating Schedule: General Use.
- C. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.5 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 will be 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.
 - 1. 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.

2.7 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.

2.8 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.

2.9 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 strap anchors for embedding in concrete.

2.10 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Finish metal fabrications after assembly.
- C. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

2.11 STEEL AND IRON FINISHES

- A. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to Division 09 Sections "High Performance Coatings" and "Painting".
 - 1. For galvanized surfaces noted to be painted, comply with ASTM D 6386, "Standard Practice for Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Painting".
- B. Shop prime iron and steel items unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.
 - 1. Metal Fabrications: For all iron and steel items (except those noted below), shop prime with alkyd primer.
 - 2. Exterior Wall Metal Fabrications: For all iron and steel items occurring in exterior walls, shop prime with urethane primer.
- C. Shop Priming: Immediately after surface preparation, apply one coat of primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness as listed below. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Beginning installation constitutes Contractor's acceptance of substrates and conditions.
- B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- C. 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.

- D. 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.
- E. 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.
- F. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.
- B. Anchor supports for operable partitions securely to and rigidly brace from building structure.
- C. Install slotted channel framing with manufacturer recommended fasteners and fittings and follow manufacturer recommended instructions.

3.3 INSTALLING BEARING AND LEVELING PLATES

- A. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of plates.
- B. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with grout.
 1. Use nonshrink, nonmetallic grout in exposed locations unless otherwise indicated.
 2. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.4 ADJUSTING AND CLEANING

- A. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Division 09 Section "High-Performance Coatings."
- B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION 05 50 00

SECTION 05 52 13 - TUBE RAILINGS (STAINLESS STEEL)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Stainless-steel tube railings.
 - 2. Stainless-steel fittings, brackets, and other railing accessories.

1.3 COORDINATION

- A. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.
- B. Schedule installation so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

1.4 SUBMITTALS, GENERAL

- A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

- A. Product Data: For the following:
 - 1. Stainless-steel tube.
 - 2. Fasteners.
 - 3. Railing brackets, fittings, and anchors.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
- C. Samples: For each type of exposed finish required.

1.6 INFORMATIONAL SUBMITTALS

- A. Mill Certificates: Signed by manufacturers of stainless-steel products certifying that products furnished comply with requirements.

1.7 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of railing from single source from single manufacturer.
- B. Welding Qualifications: Qualify procedures and personnel according to the following:
 - 1. AWS D1.6/D1.6M, "Structural Welding Code - Stainless Steel."
- C. Shop Conditions: Maintain shop conditions in a clean manner to prevent contamination of stainless-steel surfaces.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

1.9 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 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 flange tapped for concealed anchorage to threaded hanger bolt and that provides minimum 1-1/2-inch clearance from inside face of handrail to finished wall surface.

2.2 STAINLESS STEEL

- A. Tubing: ASTM A 269, Grade MT 316L.
- B. Castings: ASTM A 743/A 743M, Grade CF 8M or CF 3M.
- C. Sheet, Strip, Plate, and Flat Bar: ASTM A 666, Type 316L.
- D. Bars and Shapes: ASTM A 276, Type 316L.

2.3 FASTENERS

- A. General: Provide the following:
 - 1. Stainless-Steel Railings: Type 316 stainless-steel fasteners.
 - 2. Provide exposed fasteners with finish matching 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 indicated 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 exposed fasteners are unavoidable or are the standard fastening method for railings indicated.
 - 2. Provide tamper-resistant flat-head machine screws for exposed fasteners unless otherwise indicated.

2.4 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
 - 1. For stainless-steel railings, provide type and alloy as recommended by producer of metal to be welded and as required for color match, strength, and compatibility in fabricated items.

2.5 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. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
- C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- D. Form work true to line and level with accurate angles and surfaces.
- E. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.
- F. Connections: Fabricate railings with welded connections unless otherwise indicated.

- G. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove flux immediately.
 - 4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.
- H. Form Changes in Direction as Follows:
 - 1. As detailed.
- I. 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.
- J. Close exposed ends of railing members with prefabricated end fittings.
- K. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns.
- L. Brackets, Flanges, Fittings, and Anchors: Provide stainless-steel wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.
 - 1. Concealed Anchorage Brackets (Cast Type):
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide R & B Wagner, Inc.; Handrail Bracket 1729-2, or comparable product.
 - 1) Description: Cast round saddle with tapped mounting hole, brushed satin finish, Type 304.
 - a) Secure handrail to bracket with countersunk, tamper-resistant screws.
 - 2. At brackets and fittings fastened to 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.

2.6 STAINLESS-STEEL FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Remove tool and die marks and stretch lines, or blend into finish.
- C. Grind and polish surfaces to produce uniform, directionally textured, polished finish indicated, free of cross scratches. Run grain with long dimension of each piece.

- D. Stainless Steel Tubing Finishes:
 - 1. 180-Grit Polished Finish: Uniform, directionally textured finish.
- E. Stainless Steel Sheet and Plate Finishes:
 - 1. Directional Satin Finish: ASTM A 489/A 480, No. 4.
- F. Passivating: When polishing is completed, passivate all surfaces, including areas sensitive to corrosion, including welded areas and adjacent heat-affected zones, perforated surfaces, etc. Follow passivating procedure established by standard industry best practices to thoroughly remove embedded foreign matter and leave surfaces chemically clean. Rinse thoroughly.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine gypsum board assemblies, where reinforced to receive anchors, to verify that locations of concealed reinforcements are clearly marked for Installer. Locate reinforcements and mark locations if not already done.
- B. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION, GENERAL

- A. Fit exposed connections together to form tight, hairline joints.
- B. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
 - 1. Do not weld, cut, or abrade surfaces of railing components that are coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
 - 2. 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.
- C. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
- D. Adjust railings before anchoring to ensure matching alignment at abutting joints.
- E. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.3 RAILING CONNECTIONS

- A. Welded Connections: Use fully welded joints for permanently connecting railing components, unless otherwise indicated. Comply with requirements for welded connections in "Fabrication" Article whether welding is performed in the shop or in the field.

3.4 ATTACHING RAILINGS

- A. Return railing ends at walls to within 1/2 inch of wall; provide fully-welded end closure of railings, ground smooth.
- B. Attach railings to wall with wall brackets. Provide brackets with minimum 1-1/2 inch clearance from inside face of handrail and finished wall surface.
 - 1. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.
- C. Secure wall brackets to building construction as follows:
 - 1. For steel-framed partitions, use toggle bolts installed through flanges of steel framing or through concealed steel reinforcements.

3.5 ADJUSTING AND CLEANING

- A. Clean stainless steel by washing thoroughly with clean water and soap and rinsing with clean water and wiping dry.

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 so no evidence remains of correction work. Return items that cannot be refinished in field to shop; make required alterations and refinish entire unit or provide new units.

END OF SECTION 05 52 13

SECTION 05 53 13 - BAR GRATINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Metal bar gratings.

1.3 COORDINATION

- A. Coordinate installation of anchorages for gratings, grating frames, and supports. 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, GENERAL

- A. General: Submit all action submittals and informational submittals required by this Section concurrently.
- B. Action submittals
 - 1. Product Data: For the following:
 - a. Welded bar gratings.
 - b. Clips and anchorage devices for gratings.
 - c. Galvanizing repair paint.
 - 2. Shop Drawings: Include plans, sections, details, and attachments to other work.

1.5 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to the AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.6 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with gratings by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 1. Borden Metal Products (Canada) Limited.
 2. Fisher & Ludlow.
 3. Harsco Industrial IKG, a division of Harsco Corporation.
 4. MLP Steel Company; Laurel Steel Products Division.

2.2 METAL BAR GRATINGS

- A. Metal Bar Grating Standards: Comply with NAAMM MBG 531, "Metal Bar Grating Manual."
- B. Welded Steel Grating:
 1. Grating Mark 19-W-4 (1-1/2 x 1/8) STEEL: 1-1/2-by-1/8-inch bearing bars at 1-3/16 inch o.c., and crossbars at 4 inches o.c.
 2. Traffic Surface: Serrated.
 3. Steel Finish: Hot-dip galvanized with a coating weight of not less than 1.8 oz./sq. ft. of coated surface.
- C. Band Bars: Weld to entire perimeter of each section. Include anchors and fasteners of type indicated or, if not indicated, as recommended by manufacturer for attaching to supports.

2.3 FERROUS METALS

- A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- B. Steel Bars for Bar Gratings: ASTM A 36/A 36M or steel strip, ASTM A 1011/A 1011M or ASTM A 1018/A 1018M.
- C. Wire Rod for Bar Grating Crossbars: ASTM A 510.
- D. Uncoated Steel Sheet: ASTM A 1011/A 1011M, structural steel, Grade 30.
- E. Galvanized-Steel Sheet: ASTM A 653/A 653M, structural quality, Grade 33, with G90 coating.

2.4 FASTENERS

- A. General: Unless otherwise indicated, provide Type 316 stainless-steel fasteners. Select fasteners for type, grade, and class required.

- B. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel bolts, nuts, and, where indicated, flat washers; ASTM F 593 for bolts and ASTM F 594 for nuts, Alloy Group 2.
- C. Post-Installed Anchors: Chemical anchors capable of sustaining, without failure, a load equal to 6 times the load imposed when installed in unit masonry and 4 times the load imposed when installed in concrete, as determined by testing according to ASTM E 488/E 488M, conducted by a qualified independent testing agency.
 - 1. Material: Alloy Group 2 stainless-steel bolts, ASTM F 593, and nuts, ASTM F 594.

2.5 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy that is welded.
- B. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

2.6 FABRICATION

- A. Shop Assembly: Fabricate grating sections in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- B. Cut, drill, and punch material 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 from materials of size, thickness, and shapes indicated, but not less than that needed to support indicated loads.
- D. Fit exposed connections accurately together to form hairline joints.
- E. Welding: Comply with AWS recommendations and 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.
- F. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space the anchoring devices to secure gratings, frames, and supports rigidly in place and to support indicated loads.
- G. Removable Grating Sections: Fabricate with banding bars attached by welding to entire perimeter of each section. Include anchors and fasteners of type indicated or, if not indicated, as recommended by manufacturer for attaching to supports.

1. Provide no fewer than four saddle clips for each grating section composed of rectangular bearing bars 3/16 inch or less in thickness and spaced 15/16 inch or more o.c., with each clip designed and fabricated to fit over two bearing bars.
2. Furnish galvanized malleable-iron flange clamp with galvanized bolt for securing grating to supports. Furnish as a system designed to be installed from above grating by one person.
 - 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) Kee Safety, Ltd; Grating Clip.
 - 2) LNA Solutions, a Kee Safety company; Grate-Fast.
- H. Fabricate cutouts in grating sections for penetrations indicated. Arrange cutouts to permit grating removal without disturbing items penetrating gratings.
 1. Edge-band openings in grating that interrupt four or more bearing bars with bars of same size and material as bearing bars.
- I. Do not notch bearing bars at supports to maintain elevation.

2.7 STEEL FINISHES

- A. Finish gratings, frames, and supports after assembly.
- B. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M for other steel and iron products.

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.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION, GENERAL

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing gratings to in-place construction. 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 gratings. Set units accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
- C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete or masonry.

- D. Fit exposed connections accurately together to form hairline joints.
- E. Field Welding: Comply with AWS recommendations and 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.

3.3 INSTALLING METAL BAR GRATINGS

- A. General: Install gratings to comply with recommendations of referenced metal bar grating standards that apply to grating types and bar sizes indicated, including installation clearances and standard anchoring details.
- B. Attach removable units to supporting members with type and size of clips and fasteners indicated or, if not indicated, as recommended by grating manufacturer for type of installation conditions shown.
- C. Attach nonremovable units to supporting members by welding where both materials are same; otherwise, fasten by bolting as indicated above.

3.4 ADJUSTING AND CLEANING

- A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780/A 780M.

END OF SECTION 05 53 13

SECTION 06 10 00 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Preservative-treated lumber.
 - 2. Fire-retardant-treated lumber and plywood.
 - 3. Miscellaneous lumber.
 - 4. Fasteners.

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, GENERAL

- A. General: Submit all action submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site
 - 1. Preservative-Treated Lumber:
 - a. Include data for preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.

2. Fire-Retardant Treated Lumber and Plywood:
 - a. 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.
 - b. 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 D 5664.
3. Miscellaneous lumber (non-treated).
4. Fasteners.

1.6 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.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber and plywood flat with spacers beneath and between each bundle to provide air circulation. Protect lumber and plywood from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 PRESERVATIVE-TREATED LUMBER

- 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.
 2. Dress lumber, S4S, unless otherwise indicated.
 3. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.
 4. Dimension Lumber Items: Construction or No. 2 grade lumber of any of the following species:
 - a. Hem-fir (north); NLGA.

- b. Mixed southern pine or southern pine; SPIB.
 - c. Spruce-pine-fir; NLGA.
 - d. Hem-fir; WCLIB or WWPA.
 - e. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.
5. 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.
- B. Preservative Treatment by Pressure Process: AWP A U1; Use Category UC2 for interior construction not in contact with ground, Use Category UC3b for exterior 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.
- C. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.
- D. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
- E. Application: Treat items indicated on Drawings, and the following:
- 1. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.

2.2 FIRE-RETARDANT-TREATED LUMBER AND PLYWOOD

- 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. 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.
 - 2. Dress lumber, S4S, unless otherwise indicated.
 - 3. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.
 - 4. Dimension Lumber Items: Construction or No. 2 grade.
 - a. Species:
 - 1) Hem-fir (north); NLGA.
 - 2) Southern pine; SPIB.
 - 3) Douglas fir-larch; WCLIB or WWPA.

- 4) Spruce-pine-fir; NLGA.
 - 5) Douglas fir-south; WWPA.
 - 6) Hem-fir; WCLIB or WWPA.
 - 7) Douglas fir-larch (north); NLGA.
 - 8) Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.
- C. Plywood: DOC PS 1, Exposure 1, C-D Plugged, fire-retardant treated, in thickness indicated or, if not indicated, not less than 3/4-inch nominal thickness.
- D. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, 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 D 2898. 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 D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.
 4. Design Value Adjustment Factors: Treated lumber shall be tested according to ASTM D 5664 and design value adjustment factors shall be calculated according to ASTM D 6841.
- E. Kiln-dry lumber after treatment to maximum moisture content of 19 percent. Kiln-dry plywood after treatment to maximum moisture content of 15 percent.
- F. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.
- G. Application: Treat items indicated on Drawings, and the following:
1. Concealed blocking.
 2. Plywood backing panels.

2.3 MISCELLANEOUS LUMBER (NON-TREATED)

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
1. Blocking.
 2. Nailers.
 3. Furring.
 4. Grounds.

- B. Dimension Lumber Items: Construction or No. 2 grade lumber of any of the following species:
 - 1. Hem-fir (north); NLGA.
 - 2. Mixed southern pine or southern pine; SPIB.
 - 3. Spruce-pine-fir; NLGA.
 - 4. Hem-fir; WCLIB or WWPA.
 - 5. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.
- C. Concealed Boards: 19 percent maximum moisture content and any of the following species and grades:
 - 1. Mixed southern pine or southern pine; No. 3 grade; SPIB.
 - 2. Hem-fir or hem-fir (north); Standard or No. 3 Common grade; NLGA, WCLIB, or WWPA.
 - 3. Spruce-pine-fir (south) or spruce-pine-fir; Standard or No. 3 Common grade; NeLMA, NLGA, WCLIB, or WWPA.
- 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.

2.4 FASTENERS

- A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.
 - 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 F 1667.
- C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
- D. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01 or ICC-ES AC193 as appropriate for the substrate.
 - 1. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Beginning installation constitutes Contractor's acceptance of substrates and conditions.
- B. 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 furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.

- C. 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.
- D. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
- E. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:
 - 1. Fire block furred spaces of walls, at each floor level, at ceiling, and at not more than 96 inches o.c. with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.
- F. 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.
- G. Comply with AWWA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
- H. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. Table 2304.10.1, "Fastening Schedule," in building Code in effect for Project.
 - 2. ICC-ES evaluation report for fastener.
- I. Use steel common 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 between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

3.2 WOOD BLOCKING AND NAILER INSTALLATION

- A. Install where indicated and where required for screeding or attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
 - 1. Provide 1/4-inch vent space between each length of blocking.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

3.3 WOOD FURRING INSTALLATION

- A. Install level and plumb with closure strips at edges and openings. Shim with wood as required for tolerance of finish work.

END OF SECTION 06 10 00

SECTION 07 53 23 - EPDM ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This section covers cutting and patching of existing Johns Manville fully adhered EPDM roofing system. All work is to be performed by a licensed Johns Manville applicator and is to meet all Johns Manville existing 30-year warranty requirements.
- B. Section includes:
 - 1. Adhered EPDM membrane roofing system.
 - 2. Cover board.
 - 3. Roof insulation and accessories.
 - 4. Walkway pads.
 - 5. Roof information decals.

1.3 DEFINITIONS

- A. Roofing Terminology: See ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definitions of terms related to roofing work in this Section.

1.4 PERFORMANCE REQUIREMENTS

- A. General Performance: Installed membrane roofing 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. Membrane roofing and base flashings shall remain watertight.
 - 1. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.
 - 2. Impact Resistance: Roofing system shall resist impact damage when tested according to ASTM D 3746 or ASTM D 4272.
- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.

- C. Roofing System Design: Provide membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressures provided below calculated according to the requirements of the Building Code of New York State, which references ASCE/SEI 7.
 - 1. Wind Speed:
 - a. Ultimate design wind speed: As indicated on Drawings.
 - b. Nominal design wind speed: As indicated on Drawings.
- D. FM Global Listing: Provide membrane roofing, base flashings, and component materials that comply with requirements in FM Global 4450 and FM Global 4470 as part of a membrane roofing system, and that are listed in FM Global's "RoofNav" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings.
- E. Low slope metal flashing is to comply with ANSI/SPRI ES-1.

1.5 SUBMITTALS, GENERAL

- A. General: Submit all action submittals and informational submittals (except field quality-control reports) required by this Section concurrently.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. EPDM.
 - 2. Sheet flashing.
 - 3. Bonding adhesive.
 - 4. Seaming material.
 - 5. Membrane cleaner.
 - 6. Lap sealant.
 - 7. Water cutoff mastic.
 - 8. Metal termination bars.
 - 9. Membrane reinforcement fasteners.
 - 10. Miscellaneous accessories.
 - 11. Primer.
 - 12. Polyisocyanurate board insulation.
 - 13. Insulation fasteners.
 - 14. Insulation adhesive.
 - 15. Flexible walkway pads.
 - 16. Cover board.
- B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Base flashings and membrane terminations.
 - 2. Tapered insulation, including slopes, drain sump locations, crickets and tapered edge strips and R-values.

3. EPDM roofing insulation fastening pattern for corner, perimeter and field-of-roof locations.
- C. Qualification Data: For qualified Installer, Installer's superintendent, and manufacturer.
 - D. Manufacturer Certificate: Signed by roofing manufacturer certifying that membrane roofing system complies with requirements specified in "Performance Requirements" Article.
 1. Submit evidence of compliance with performance requirements.
 2. For any materials not manufactured or supplied by the membrane roofing system manufacturer, submit evidence indicating membrane roofing system manufacturer's approval of such materials.
 - E. Warranties: Sample of special warranties and special Project warranties.

1.7 CLOSEOUT SUBMITTALS

- A. Field Quality Control Reports.
- B. Maintenance Data: For membrane roofing system to include in maintenance manuals, including all information necessary for maintaining warranty coverage.
- C. Warranty: Executed special warranties and special Project warranties.

1.8 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer that has actively marketed the specified system for the past five years, and that is UL listed and FM Global approved for membrane roofing system identical to that used for this Project.
- B. Installer Qualifications: An experienced, qualified firm that is approved, authorized, or licensed by membrane roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty, and has successfully completed a minimum of three (3) similar sized projects in the last five (5) years. References to be submitted upon request by Architect.
 1. Installer's Superintendent Qualifications: An experienced superintendent who is trained and approved by membrane roofing system manufacturer, to oversee installation on-site of membrane roofing system at all times roofing work is in progress.
 2. Provide adequate number of experienced workers regularly engaged in this type of work who are skilled in the application techniques of the materials specified.
 3. Installer is approved by warrantor of existing Johns Manville fully adhered EPDM roofing system.
- C. Source Limitations: Obtain components including roof insulation and fasteners for membrane roofing system from same manufacturer as membrane roofing or approved by membrane roofing manufacturer.

- D. Manufacturer's Non-sales Technical Representative Inspections: The manufacturer shall provide a non-sales technical representative at intervals described below:
1. Pre-installation Roofing Conference as outlined below.
 2. The installer shall schedule a minimum of one interim inspection to be performed when roofing membrane installation work is approximately 50% complete to confirm proper procedures are being followed and to determine whether or not corrective work will be required prior to the final warranty inspection.
 3. Upon completion of the installation, the installer shall arrange for an inspection to be performed in order to determine whether or not corrective work will be required before the warranty will be issued. The Architect and Owner shall be notified seventy-two (72) hours prior to the manufacturer's inspection.
- E. Exterior Fire-Test Exposure: ASTM E 108 (UL 790), Class A; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.
- F. R-values: Identify insulation R-values with manufacturer's markings in accordance with building code applicable to Project.
- G. Preinstallation Roofing Conference: Conduct conference at Project site.
1. Meet with Owner, Architect, testing and inspecting agency representative, roofing Installer, roofing Installer's superintendent, roofing system manufacturer's technical representative, deck 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.
 4. Review deck substrate conditions and finishes for compliance with requirements, 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 will affect roofing system.
 7. Review temporary protection requirements for roofing system during and after installation.
 8. Review building occupancy, safety, HVAC and equipment shut-downs, noise levels and other items that will affect the building occupants on or near the site.

1.9 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 disposed of liquid material that cannot be applied within its stated shelf life.
 - 2. Material Safety Data Sheets (MSDS) must be on location at all times during the transportation, storage and application of materials.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location or on raised platform with weather- and wind-protective covering. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.
 - 1. Remove wet materials from Project site.
- D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.10 PROJECT CONDITIONS

- A. 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.
- B. Proceed with work such that recently completed roof areas are not subjected to construction traffic. Recently completed roof areas shall be protected and inspected upon completion for possible damage.

1.11 COORDINATION

- A. Coordinate construction operations on or adjacent to roof, included in different Sections, which depend on each other for proper installation, connection, and operation.
- B. Remove only as much existing roofing system as can be covered with new roofing system during the same day. All building areas are to remain watertight at all times. The contractor is responsible for any damage associated with roof replacement work. Schedule and execute work to prevent leaks and excessive traffic on completed roof sections. Exercise care to provide protection for the interior of the building and to ensure water and roofing debris does not flow beneath any completed sections of the roof system. Do not disrupt activities in occupied spaces.

1.12 WARRANTY

- A. Special Warranty: Manufacturer's Total System "edge to edge" Warranty, without monetary limitation, in which manufacturer agrees to repair or replace components of membrane roofing system that fail in materials or workmanship within specified warranty period. Pro-rated warranties are not acceptable.
1. Special warranty includes all labor and material for membrane roofing, base flashings, roof insulation, fasteners, cover boards, roofing accessories, and other components of membrane roofing system.
 2. Special warranty includes coverage for wind damage sustained up to wind speeds specified in "Performance Requirements" Article.
 3. Warranty Period: 30 years from date of Substantial Completion.
 4. All work is to be in compliance with existing Johns Manville EPDM Roof System 30-year warranty.
- B. Special Project Warranty: Roofing Installer agrees to repair or replace, without monetary limitation, membrane roofing work as necessary to correct faulty and defective work and as necessary to maintain work in a watertight condition. This warranty, signed by the roofing Installer, covers the Work of this Section, including all components of roofing system such as EPDM membrane roofing, auxiliary membrane roofing materials, substrate boards and fasteners, vapor/air retarder, roof insulation, insulation accessories, and walkway pads, for the following warranty period:
1. Warranty Period: 2 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 EPDM MEMBRANE ROOFING

- A. EPDM: ASTM D 4637, Type I, non-reinforced, uniform, fire-retardant, flexible EPDM sheet.
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. Johns Manville.
 2. Thickness: 90 mils, nominal.
 3. Sheet Width: Maximum allowable for applicable installation.
 4. Exposed Face Color: Black.

2.2 AUXILIARY MEMBRANE ROOFING MATERIALS

- A. General: Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use and compatible with membrane roofing.
 - 1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction including New York State VOC OTC regulations.
- B. Sheet Flashing: 60-mil-thick EPDM, partially cured or cured, according to application.
- C. Bonding Adhesive: Manufacturer's standard low VOC (Volatile Organic Compound) adhesive.
- D. Primer: Manufacturer's standard low VOC (Volatile Organic Compound) primer.
- E. Membrane Cleaner: Manufacturer's standard membrane cleaner.
- F. Seaming Material: Manufacturer's standard, synthetic-rubber polymer primer and 6-inch-wide minimum, butyl splice tape with release film.
 - 1. At Contractor's option, splice tape may be factory-applied to membrane sheet.
- G. Lap Sealant: Manufacturer's standard, single-component sealant.
- H. Water Cutoff Mastic: Manufacturer's standard butyl mastic sealant.
- I. Metal Termination Bars: Manufacturer's standard, predrilled/prepunched holes at 6" o.c. extruded aluminum bars, approximately 1 by 1/8 inch thick; with sealant ledge and Series 300 stainless steel fasteners.
- J. Fasteners: Factory-applied electrocoated epoxy steel fasteners and metal plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening membrane to substrate, and acceptable to roofing system manufacturer.
 - 1. Fasteners at Wood-Preservative-Treated Lumber: Screws complying with ASME B18.6.1. Series 300 stainless steel, non-magnetic, torx or square drive, #10, length as required to provide minimum embedment of 1 1/2" into substrate.
 - 2. Fasteners at Termination Bars: Series 300 stainless steel drive pin fasteners for masonry substrate embedment, Series 300 stainless steel screw-type fasteners at wood substrate embedment.
- K. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet 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.

2.3 ROOF INSULATION

- A. General: Preformed roof insulation boards manufactured or approved by EPDM membrane roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated and that produce FM Global-approved roof insulation.

- B. Provide minimum thickness required to provide minimum R-value of not less than 30 for all areas of roofing assembly, and not less than thicknesses indicated on Drawings. Thicknesses indicated on Drawings represent thickness for insulation including cover board. Total R-values include R-values for insulation and cover board.
 - 1. Insulation board size:
 - a. For adhesive application, provide 4' x 4' foot board size.
 - b. For mechanically attached application, provide 4' x 8' foot board size.
- C. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 2, fiber reinforced facer on both major surfaces.
 - 1. Provide insulation tested as part of an assembly that satisfactorily passes UL 1256.
- D. Tapered Insulation: Provide factory-tapered insulation boards fabricated to slope of 1/8 inch per 12 inches unless otherwise indicated. Provide factory-tapered insulation crickets fabricated to a slope of 1/2 inch per 12 inches unless otherwise indicated.
- E. Provide preformed saddles, crickets, tapered edge strips, drain sumps, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.
- F. Provide tapered fiberboard transition strips at cricket perimeters.

2.4 INSULATION ACCESSORIES

- A. General: Furnish roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with membrane roofing.
- B. Fasteners: (*Typical for fastening base layer of insulation to steel deck areas, all upper layers of insulation and cover board to be adhered*) Factory-applied epoxy electrocoated steel fasteners and metal plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening roof insulation and cover boards to substrate, and acceptable to roofing system manufacturer. Use to attach base layer of insulation to steel deck.
 - 1. Provide white fasteners where underside of roof deck will remain exposed to view.
- C. Bead-Applied Insulation Adhesive: (*Typical for fastening all layers of insulation and cover board to gypsum, tectum and concrete plank deck areas and upper layers of insulation and cover board at steel deck areas*) Insulation manufacturer's recommended bead-applied, low-rise, one or multicomponent urethane adhesive formulated to attach roof insulation to substrate or to another insulation layer.
 - 1. Use to attach one layer of roof insulation to another layer of roof insulation.
 - 2. Use to attach cover board to roof insulation.
- D. Cover Board: High density polyisocyanurate foam core laminated to coated-glass fiber-mat facers, ASTM C 1289, D 3273, D 1621, D 2126, C 209 & C 518, UL 790, compressive strength of 100 psi min., 1/2 inch thick, R-Value = 2.5. Provide 4' x 8' board size for mechanically attached application, provide 4' x 4' board size for adhesive application.

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. Johns Manville; ProtectoR HD Cover Board.

2.5 WALKWAY PADS

- A. Flexible Walkway pads: Factory-formed, nonporous, heavy-duty, solid-rubber, slip-resisting, surface-textured walkway pads, approximately 3/16 inch thick, with factory-applied tape, and acceptable to membrane roofing system manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:
 1. Verify that roof openings and penetrations are in place and curbs are set and braced and that 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 steel roof deck is solid, securely attached, clean and dry, and flutes are clean of all dust, dirt and debris.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing 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. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.3 INSULATION INSTALLATION

- A. Coordinate installing membrane roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.

- B. Comply with membrane roofing system and insulation manufacturer's written instructions for installing roof insulation.
- C. Install tapered insulation under area of roofing to conform to slopes indicated.
- D. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches in each direction.
- E. Install insulation such that manufacturer's R-value markings are readily observable in accordance with building code in effect for Project.
- F. Construct tapered sumps at roof drain locations as shown on Drawings.
- G. Provide tapered edge strips at cricket perimeters and any other locations where required to provide a smooth transition.
- H. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
- I. Mechanically Fastened Insulation: (*Typical at steel deck areas*) Install base layer of insulation and secure to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.
 - 1. Thoroughly clean surface of steel deck including removing all material from flute areas.
 - 2. Fasten insulation to resist uplift pressure at corners, perimeter, and field of roof and in compliance with "Performance Requirements" Article, minimum quantity: one fastener per 2 sf at field and perimeter, one fastener per 1 sf at corners.
 - 3. Locate fasteners to penetrate top flutes of steel deck and to extend no further than elevation of bottom flute of steel deck.
- J. Adhered Insulation: Install each layer of insulation and adhere to substrate as follows:
 - 1. Thoroughly clean and prime surface of gypsum, tectum, concrete deck and base layers of insulation.
 - 2. Set each layer of insulation in ribbons of insulation adhesive, at a maximum of 4 inches on center at all field, perimeter and corner roof areas, firmly pressing and maintaining insulation in place.
- K. 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. Loosely butt cover boards together and adhere to substrate per "Adhered Insulation" paragraph above.

3.4 ADHERED MEMBRANE ROOFING INSTALLATION

- A. In addition to all specified requirements, follow all manufacturer's requirements to meet specified and accepted manufacturer's warranty requirements.

- B. Thoroughly clean substrate of all debris, projections, and substances detrimental to membrane installation.
- C. Adhere membrane roofing over area to receive roofing according to membrane roofing system manufacturer's written instructions. Unroll membrane roofing and allow to relax before installing.
- D. Start installation of membrane roofing in presence of membrane roofing system manufacturer's technical personnel.
- E. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- F. Bonding Adhesive: Apply 100 percent coverage to substrate and underside of membrane roofing at rate required by manufacturer and allow to partially dry before installing membrane roofing. Do not apply to splice area of membrane roofing.
- G. In addition to adhering, mechanically fasten membrane roofing securely at terminations, penetrations, angle changes and perimeters.
- H. Apply membrane roofing with side laps shingled with slope of roof deck where possible.
- I. Place membrane carefully to avoid wrinkles and fish mouths. Apply pressure to the membrane surface in accordance with manufacturer's instructions to obtain maximum contact between the membrane and substrate.
- J. Tape Seam Installation: Clean and prime both faces of splice areas, apply splice tape, and firmly roll side and end laps of overlapping membrane roofing according to manufacturer's written instructions to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of membrane roofing seams and terminations.
 - 1. At Contractor's option, utilize manufacturer's factory-applied splice tape system.
- K. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.
- L. Spread sealant or mastic bed over deck drain flange at roof drains and securely seal membrane roofing in place with clamping ring.
- M. Install membrane roofing and auxiliary materials to tie in to existing membrane roofing to maintain weather-tightness of transition and to not void warranty for existing membrane roofing system.

3.5 BASE FLASHING INSTALLATION

- A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane 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.

3.6 WALKWAY PAD INSTALLATION

- A. Flexible Walkway Pads: Install walkway products in locations indicated. Adhere walkway products to substrate according to roofing system manufacturer's written instructions leaving 1 ½" space between pads.

3.7 FIELD QUALITY CONTROL

- A. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.
- B. Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.
- C. Additional inspections, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.8 PROTECTING AND CLEANING

- A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.
- B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements, repair substrates and repair or reinstall membrane 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 07 53 23

SECTION 07 84 13 - PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Penetrations in fire-resistance-rated walls.
 - 2. Penetrations in horizontal assemblies.
 - 3. Penetrations in smoke barriers.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 SUBMITTALS, GENERAL

- A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Penetrations in fire-resistance-rated walls.
 - 2. Penetrations in horizontal assemblies.
 - 3. Penetrations in smoke barriers.
- B. Sustainable Design Submittals:
 - 1. Product Data: For sealants, indicating VOC content.
- C. Product Schedule: For each penetration firestopping system. Include type of penetration, illustration of firestopping system, and design designation of qualified testing and inspecting agency.

1.6 INFORMATIONAL SUBMITTALS

- A. 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 of Firestop Contractors," or been evaluated by UL and found to comply with its "Qualified Firestop Contractor Program Requirements."

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.

1.10 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.
- C. Notify Owner at least seven days in advance of time when Work that requires testing or inspecting will be performed.

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."

- B. Exposed Penetration Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, per ASTM E 84.
 - 1. Sealant shall have a VOC content of 250 g/L or less.
- C. Mold Resistance: Provide penetration firestopping with mold and mildew resistance rating of zero as determined by ASTM G 21.

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.
 - 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. 3M Fire Protection Products.
 - b. Hilti, Inc.
 - c. RectorSeal.
- B. Penetrations in Fire-Resistance-Rated Walls: Penetration firestopping systems with ratings determined per ASTM E 814 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 E 814 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.
- 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. 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. Cast-in-Place Firestop Devices: Factory-assembled devices for use in cast-in-place concrete floors and consisting of an outer sleeve lined with an intumescent strip, a flange attached to one end of the sleeve for fastening to concrete formwork, and a neoprene gasket.
- B. Latex Sealants: Single-component latex formulations that do not re-emulsify after cure during exposure to moisture.
- C. Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.
- D. Intumescent Composite Sheets: Rigid panels consisting of aluminum-foil-faced intumescent elastomeric sheet bonded to galvanized-steel sheet.
- E. Intumescent Putties: Nonhardening, water-resistant, intumescent putties containing no solvents or inorganic fibers.
- F. Intumescent Wrap Strips: Single-component intumescent elastomeric sheets with aluminum foil on one side.
- G. Mortars: Prepackaged dry mixes consisting of a blend of inorganic binders, hydraulic cement, fillers and lightweight aggregate formulated for mixing with water at Project site to form a nonshrinking, homogeneous mortar.
- H. Pillows/Bags: Reusable heat-expanding pillows/bags consisting of glass-fiber cloth cases filled with a combination of mineral-fiber, water-insoluble expansion agents, and fire-retardant additives. Where exposed, cover openings with steel-reinforcing wire mesh to protect pillows/bags from being easily removed.
- I. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.
- J. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants.

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. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

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.
- 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. Owner will engage a qualified testing agency to perform tests and inspections according to ASTM E 2174.
- 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.

3.7 PENETRATION FIRESTOPPING SYSTEM SCHEDULE

- A. Where UL-classified systems are indicated, they refer to system numbers in UL's "Fire Resistance Directory" under product Category XHEZ.
- B. For each location where a penetration occurs, provide a firestopping system selected from the floor and wall system below that complies with this Section and is suitable for the penetration conditions indicated for the Project.

FLOOR FIRESTOPPING SYSTEMS LISTED USING THE ALPHA-ALPHA-NUMERIC IDENTIFICATION SYSTEM PUBLISHED IN UL'S FIRE RESISTANCE DIRECTORY, VOLS. 2A - 2B				
TYPE OF PENETRANT	FLOOR PENETRATION SYSTEMS (FIRST ALPHA COMPONENT = C OR F)			
	CONCRETE FLOORS WITH A MINIMUM THICKNESS LESS THAN OR EQUAL TO 5 INCHES (127 MM)	CONCRETE FLOORS WITH A MINIMUM THICKNESS OF MORE THAN 5 INCHES (127 MM)	FRAMED FLOORS	FLOOR-CEILING ASSEMBLIES CONSISTING OF CONCRETE WITH MEMBRANE PROTECTION
NO PENETRATING ITEMS	C-AJ-0001-0999 or F-A-0001-0999	C-BJ-0001-0999 or F-B-0001-0999	F-C-1001-1999	
METALLIC PIPE, CONDUIT, OR TUBING	C-AJ-1001-1999 or F-A-1001-1999	C-BJ-1001-1999, C-BK-1001-1999, or F-B-1001-1999	F-C-1001-1999	F-E-1001-1999
NONMETALLIC PIPE, CONDUIT, OR TUBING	C-AJ-2001-2999 or F-A-2001-2999	C-BJ-2001-2999, C-BK-2001-2999, or F-B-2001-2999	F-C-2001-2999	F-E-2001-2999
ELECTRICAL CABLES	C-AJ-3001-3999 or F-A-3001-3999	C-BJ-3001-3999, C-BK-3001-3999, or F-B-3001-3999	F-C-3001-3999	F-E-3001-3999
CABLE TRAYS WITH ELECTRICAL CABLES	C-AJ-4001-4999 or F-A-4001-4999	C-BJ-4001-4999 or F-B-4001-4999		
INSULATED PIPES	C-AJ-5001-5999 or F-A-5001-5999	C-BJ-5001-5999, C-BK-5001-5999, or F-B-5001-5999	F-C-5001-5999	F-E-5001-5999
MISCELLANEOUS ELECTRICAL PENETRANTS	C-AJ-6001-6999 or F-A-6001-6999	C-BJ-6001-6999		
MISCELLANEOUS MECHANICAL PENETRANTS	C-AJ-7001-7999 or F-A-7001-7999	C-BJ-7001-7999 or F-B-7001-7999	F-C-7001-7999	F-E-7001-7999
GROUPINGS OF PENETRATIONS	C-AJ-8001-8999 or F-A-8001-8999	C-BJ-8001-8999 or F-B-8001-8999	F-C-8001-8999	F-E-8001-8999

WALL FIRESTOPPING SYSTEMS LISTED USING THE ALPHA-ALPHA-NUMERIC IDENTIFICATION SYSTEM PUBLISHED IN UL'S FIRE RESISTANCE DIRECTORY, VOLS. 2A - 2B				
TYPE OF PENETRANT	WALL PENETRATION SYSTEMS (FIRST ALPHA COMPONENT = C OR W)			
	CONCRETE OR MASONRY WALLS WITH A MINIMUM THICKNESS LESS THAN OR EQUAL TO 8 INCHES (203 MM)	CONCRETE OR MASONRY WALLS WITH A MINIMUM THICKNESS OF MORE THAN 8 INCHES (203 MM)	FRAMED WALLS	COMPOSITE PANEL WALLS
NO PENETRATING ITEMS	C-AJ-0001-0999, C-BJ-0001-0999, or W-J-0001-0999		W-L-000-1-0999	
METALLIC PIPE, CONDUIT, OR TUBING	C-AJ-1001-1999, C-BJ-1001-1999, or W-J-1001-1999	C-BK-1001-1999 or W-K-1001-1999	W-L-1001-1999	W-N-1001-1999
NONMETALLIC PIPE, CONDUIT, OR TUBING	C-AJ-2001-2999, C-BJ-2001-2999, or W-J-2001-2999	C-BK-2001-2999 or W-K-2001-2999	W-L-2001-2999	W-N-2001-2999
ELECTRICAL CABLES	C-AJ-3001-3999, C-BJ-3001-3999, or W-J-3001-3999	C-BK-3001-3999 or W-K-3001-3999	W-L-3001-3999	
CABLE TRAYS WITH ELECTRICAL CABLES	C-AJ-4001-4999, C-BJ-4001-4999, or W-J-4001-4999	W-K-4001-4999	W-L-4001-4999	
INSULATED PIPES	C-AJ-5001-5999, C-BJ-5001-5999, or W-J-5001-5999	C-BK-5001-5999	W-L-5001-5999	W-N-5001-5999
MISCELLANEOUS ELECTRICAL PENETRANTS	C-AJ-6001-6999, C-BJ-6001-6999, or W-BJ-6001-6999		W-L-6001-6999	
MISCELLANEOUS MECHANICAL PENETRANTS	C-AJ-7001-7999, C-BJ-7001-7999, or W-J-7001-7999		W-L-7001-7999	W-N-7001-7999
GROUPINGS OF PENETRATIONS	C-AJ-8001-8999, C-BJ-8001-8999, or W-J-8001-8999		W-L-8001-8999	
GROUPINGS OF PENETRATIONS	C-AJ-8001-8999, C-BJ-8001-8999, or W-J-8001-8999		W-L-8001-8999	

END OF SECTION 07 84 13

SECTION 07 84 43 - JOINT FIRESTOPPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General 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.
 - 2. Joints in smoke barriers.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 SUBMITTALS, GENERAL

- A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Joints in or between fire-resistance-rated constructions.
 - 2. Joints in smoke barriers.
- B. Sustainable Design Submittals:
 - 1. Product Data: For sealants, indicating VOC content.
- C. Product Schedule: For each joint firestopping system. Include location, illustration of firestopping system, and design designation of qualified testing agency.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.

1.7 CLOSEOUT SUBMITTALS

- A. Installer Certificates: From Installer indicating that joint 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 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."

1.9 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.

1.10 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.
- C. Notify Owner at least seven days in advance of time when Work that requires testing or inspecting will be performed.

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 authorities having jurisdiction.
 - 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."

- B. Exposed Joint Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.

- 1. Sealant shall have a VOC content of 250 g/L or less.

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.
 - 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. 3M Fire Protection Products.
 - b. Hilti, Inc.
 - c. RectorSeal.
- B. Joints in or between Fire-Resistance-Rated Construction: Provide joint firestopping systems with ratings determined per ASTM E 1966 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 in Smoke Barriers: Provide fire-resistive joint systems with ratings determined per UL 2079 based on testing at a positive pressure differential of 0.30-inch wg.
 - 1. L-Rating: Not exceeding 5.0 cfm/ft. of joint at both ambient and elevated temperatures.
- D. 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.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Surface Cleaning: Before installing joint firestopping systems, clean joints immediately to comply with joint firestopping 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 joint firestopping system.
- C. Install fill materials for joint firestopping systems by proven techniques to produce the following results:
 - 1. Fill voids and cavities formed by joints and forming materials as required to achieve fire-resistance ratings indicated.
 - 2. Apply materials so they contact and adhere to substrates formed by joints.
 - 3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 IDENTIFICATION

- A. 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 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 and inspecting agency.
4. Date of installation.
5. Manufacturer's name.
6. Installer's name.

3.5 FIELD QUALITY CONTROL

- A. Inspecting Agency: Owner will engage a qualified testing agency to perform tests and inspections according to ASTM E 2393.
- 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 fire-resistive joint 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.
- B. Head-of-Wall, Fire-Resistive Joint Firestopping Systems:
 1. UL-Classified Systems:
 - a. Basis-of-Design: HW-D-0045 and HW-D-0081.

END OF SECTION 07 84 43

SECTION 07 92 00 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Silicone joint sealants.
 - 2. Urethane joint sealants.
 - 3. Mildew-resistant joint sealants.
 - 4. Latex joint sealants.
 - 5. Acoustical joint sealants.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.
 - 1. Cylindrical sealant backings.
 - 2. Bond-breaker tape.
- B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below, otherwise submit full Product Data for the following:
 - 1. Silicone, S, NS, 100/50, NT sealant.
 - 2. Urethane, S, NS, 25, NT sealant.
 - 3. Urethane, S, P, 25, T, NT sealant.
 - 4. Silicone, mildew resistant, acid curing, S, NS, 25, NT sealant.
 - 5. Acrylic latex sealant.
 - 6. Acoustical sealant.
- C. Sustainable Design Submittals:
 - 1. Product Data: For sealants, indicating VOC content.

- D. Samples: Manufacturer's color charts showing the full range of colors available for each product exposed to view.
- E. Joint-Sealant Schedule: Include the following information:
 - 1. Joint-sealant application, joint location, and designation.
 - 2. Joint-sealant manufacturer and product name.
 - 3. Joint-sealant formulation.

1.5 FIELD CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or 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 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. VOC Content: Sealants and sealant primers shall comply with the following:
 - 1. Architectural sealants shall have a VOC content of 250 g/L or less.
 - 2. Sealants and sealant primers for nonporous surfaces shall have a VOC content of 250 g/L or less.
 - 3. Sealants and sealant primers for porous substrates shall have a VOC content of 775 g/L or less.
- C. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range. Multiple colors may be selected.

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. Dow Chemical Company (The); DOWSIL790 Silicone Building Sealant.
 - b. GE/Momentive Performance Materials Inc.; SCS2700 SilPruf LM.
 - c. Pecora Corporation; 890NST.
 - d. Tremco Incorporated; Spectrem 1.
2. Joint-Sealant Application: Joints in vertical surfaces.
 - a. Exterior Joint Locations:
 - 1) Construction joints in cast-in-place concrete.
 - 2) Joints between metal panels.
 - 3) Perimeter joints between materials listed above and frames of exterior openings.
 - 4) Other joints as indicated.
 - b. Interior Joint Locations:
 - 1) Perimeter joints of exterior openings.
 - 2) Other joints as indicated.

2.3 URETHANE JOINT SEALANTS

- A. Urethane, S, NS, 25, NT: Single-component, nonsag, nontraffic-use, plus 25 percent and minus 25 percent movement capability, urethane joint sealant; ASTM C920, Type S, Grade NS, Class 25, 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. BASF Corporation; MasterSeal TX 1.
 - b. Polymeric Systems, Inc.; Flexiprene 1000.
 2. Joint-Sealant Application: Joints up to 1 inch wide in horizontal nontraffic surfaces.
 - a. Exterior Joint Locations:
 - 1) Control and expansion joints in ceilings and other overhead surfaces.
 - 2) Other joints as indicated.
 - b. Interior Joint Locations:
 - 1) Control and expansion joints in ceilings and other overhead surfaces.
 - 2) Other joints as indicated.
- B. Urethane, S, P, 25, T, NT: Single-component, pourable, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C920, Type S, Grade P, Class 25, Uses T and 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. BASF Corporation; MasterSeal SL 1.
 - b. Polymeric Systems, Inc.; Flexiprene PSI-952.
 - c. Sherwin-Williams Company (The); Loxon SL1.
2. Joint-Sealant Application: Joints up to 1 inch wide in horizontal traffic surfaces.
 - a. Exterior Joint Locations:
 - 1) Isolation and contraction joints in cast-in-place concrete slabs.
 - 2) Other joints as indicated.
 - b. Interior Joint Locations:
 - 1) Isolation joints in cast-in-place concrete slabs.
 - 2) Control and expansion joints in tile flooring.
 - 3) Other joints as indicated.

2.4 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, Acid Curing, S, NS, 25, NT: Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 25, 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. Dow Chemical Company (The); DOWSIL786 Silicone Sealant.
 - b. GE/Momentive Performance Materials Inc.; SCS1700 Sanitary.
 2. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces.
 - a. Joint Sealant Location:
 - 1) Tile control and expansion joints where indicated.
 - 2) Other joints as indicated.

2.5 LATEX JOINT SEALANTS

- A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C834, Type OP.
 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; AC-20 +Silicone.
 - b. Tremco Incorporated; Tremflex 834.
2. Joint-Sealant Application: Interior joints in vertical surfaces not subject to significant movement.
- a. Joint Locations:
 - 1) Vertical joints on exposed surfaces of interior unit masonry and gypsum board walls and partitions.
 - 2) Perimeter joints between interior wall surfaces and frames of openings.
 - 3) Other joints as indicated.

2.6 ACOUSTICAL JOINT SEALANTS

- A. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex acoustical sealant complying with ASTM C834.
 - 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. Grabber Construction Products; Acoustical Sound & Smoke Sealant.
 - b. Pecora Corporation; AC-20 FTR.
 - c. USG Corporation; Sheetrock Brand Acoustical Sealant.

2.7 JOINT-SEALANT BACKING

- A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C1330, Type C (closed-cell material with a surface skin), Type O (open-cell material) 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.
- C. 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.

2.8 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.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

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.
 - 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.
- 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 OF JOINT SEALANTS

- 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. 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 INSTALLATION OF ACOUSTICAL JOINT SEALANTS

- A. Comply with acoustical joint-sealant manufacturer's written installation instructions unless more stringent requirements apply.

- B. Stud Partition Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical joint sealant. Install acoustical joint sealants at both faces of partitions, at perimeters, and through penetrations. Comply with ASTM C919, ASTM C1193, and manufacturer's written recommendations for closing off sound-flanking paths around or through assemblies, including sealing partitions to underside of floor slabs above acoustical ceilings.
- C. Acoustical Ceiling Areas: Apply acoustical joint sealant at perimeter edge moldings of acoustical ceiling areas in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.

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 correct damaged or deteriorated joint sealants immediately so installations with corrected areas are indistinguishable from original work.

END OF SECTION 07 92 00

SECTION 07 95 13.13 - INTERIOR EXPANSION JOINT COVER ASSEMBLIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes interior expansion joint cover assemblies.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, accessories, and finishes for expansion joint cover assemblies.
- B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below, otherwise submit full Product Data for the following:
 - 1. Glide-plate wall joint covers.
 - 2. Glide-plate ceiling joint covers.
- C. Shop Drawings: For each expansion joint cover assembly.
 - 1. Include plans, elevations, sections, details, splices, block-out requirement, attachments to other work, and line diagrams showing entire route of each expansion joint.
 - 2. Where expansion joint cover assemblies change planes, provide isometric or clearly detailed drawing depicting how components interconnect.
- D. Samples: For each type of exposed finish.
- E. Expansion Joint Cover Assembly Schedule: Include the following information in tabular form:
 - 1. Manufacturer and model number for each expansion joint cover assembly.
 - 2. Expansion joint cover assembly location cross-referenced to Drawings.
 - 3. Nominal joint width.
 - 4. Materials, colors, and finishes.
 - 5. Fire-resistance ratings.

PART 2 - PRODUCTS

2.1 ASSEMBLY DESCRIPTION

- A. Furnish units in longest practicable lengths to minimize field splicing.
- B. Include factory-fabricated closure materials and transition pieces, T-joints, corners, curbs, cross-connections, and other accessories as required to provide continuous expansion joint cover assemblies.
- C. Source Limitation: Obtain expansion control systems from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance Ratings: Provide expansion joint cover assemblies with fire barriers identical to those of systems tested for fire resistance according to UL 2079 or ASTM E1966 by a qualified testing agency.
 - 1. Hose Stream Test: Wall-to-wall and wall-to-ceiling assemblies shall be subjected to hose stream testing.

2.3 WALL EXPANSION JOINT COVERS

- A. Glide-Plate Wall Joint Cover: Recessed assembly consisting of center plate that slides in and out of slots in metal frames fixed to sides of joint gap.
 - 1. Wall-to-Wall Type:
 - a. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:
 - 1) Balco; a CSW Industrials Company; (Glide Plate) 6000 Series, 6GW-1.
 - 2) Construction Specialties, Inc.; Allway Metal AFW-100.
 - 3) MM Systems Corporation; Metal Wall & Ceiling System FX-K-1-1.
 - b. Nominal Joint Width: One inch.
 - c. Fire-Resistance Rating: Not less than that of adjacent construction.
 - d. Exposed Metal:
 - 1) Aluminum: Clear anodic, Class II finish.

2.4 CEILING EXPANSION JOINT COVERS

- A. Glide-Plate Ceiling Joint Cover: Recessed assembly consisting of center plate that slides in and out of slots in metal frames fixed to sides of joint gap.

1. Ceiling-to-Ceiling Type:

- a. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:
 - 1) Balco; a CSW Industrials Company; (Glide Plate) 6000 Series, 6GW-1.
 - 2) Construction Specialties, Inc.; Allway Metal AFW-100.
 - 3) MM Systems Corporation; Metal Wall & Ceiling System FX-K-1-1.
- b. Nominal Joint Width: One inch.
- c. Fire-Resistance Rating: Not less than that of adjacent construction.
- d. Exposed Metal:
 - 1) Aluminum: Clear anodic, Class II finish.

2.5 MATERIALS

- A. Aluminum: ASTM B221, Alloy 6063-T5 for extrusions; ASTM B209, Alloy 6061-T6 for sheet and plate.
 - 1. Apply manufacturer's standard protective coating on aluminum surfaces to be placed in contact with cementitious materials.
- B. Fire Barriers: Any material or material combination, when fire tested after cycling, designated to resist the passage of flame and hot gases through a movement joint and to comply with performance criteria for required fire-resistance rating.

2.6 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

2.7 ACCESSORIES

- A. Manufacturer's stainless-steel attachment devices. Include anchors, clips, fasteners, set screws, spacers, and other accessories compatible with material in contact, as indicated or required for complete installations.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces where expansion joint cover assemblies will be installed for installation tolerances and other conditions affecting performance of the Work.
- B. Notify Architect where discrepancies occur that will affect proper expansion joint cover assembly installation and performance.

- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Prepare substrates according to expansion joint cover assembly manufacturer's written instructions.
- B. Coordinate and furnish anchorages, setting drawings, and instructions for installing expansion joint cover assemblies. Provide fasteners of metal, type, and size to suit type of construction indicated and to provide for secure attachment of expansion joint cover assemblies.

3.3 INSTALLATION

- A. Comply with manufacturer's written instructions for storing, handling, and installing expansion joint cover assemblies and materials unless more stringent requirements are indicated.
- B. Metal Frames: Perform cutting, drilling, and fitting required to install expansion joint cover assemblies.
 - 1. Install frames in continuous contact with adjacent surfaces.
 - a. Shimming is not permitted.
 - 2. Install in true alignment and proper relationship to joints and adjoining finished surfaces measured from established lines and levels.
 - 3. Adjust for differences between actual structural gap and nominal design gap due to ambient temperature at time of installation.
 - 4. Cut and fit ends to accommodate thermal expansion and contraction of metal without buckling of frames.
 - 5. Locate anchors at interval recommended by manufacturer, but not less than 3 inches from each end and not more than 24 inches o.c.
- C. Install with hairline mitered corners where expansion joint cover assemblies change direction or abut other materials.
- D. Terminate exposed ends of expansion joint cover assemblies with field- or factory-fabricated termination devices.
- E. Fire-Resistance-Rated Assemblies: Coordinate installation of expansion joint cover assembly materials and associated work so complete assemblies comply with performance requirements.
 - 1. Fire Barriers: Install fire barriers to provide continuous, uninterrupted fire resistance throughout length of joint, including transitions and field splices.

3.4 PROTECTION

- A. Do not remove protective covering until finish work in adjacent areas is complete. When protective covering is removed, clean exposed metal surfaces to comply with manufacturer's written instructions.
- B. Protect the installation from damage by work of other Sections. Where necessary due to heavy construction traffic, remove and properly store cover plates or seals and install temporary protection over expansion joint cover assemblies. Reinstall cover plates or seals prior to Substantial Completion.

END OF SECTION 07 95 13.13

SECTION 08 11 13 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes:
 - 1. Interior standard steel doors and frames.
 - 2. Exterior standard steel doors and frames.

1.3 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings according to ANSI/SDI A250.8. (Nominal gage equivalents are listed in parentheses.)

1.4 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.

1.5 SUBMITTALS, GENERAL

- A. General: Submit all action submittals and informational submittals (except field quality-control reports) required by this Section and by Division 08 Section "Door Hardware" concurrently.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, fire-resistance ratings, temperature-rise ratings, and finishes.
 - 1. Interior standard steel doors and frames.
 - 2. Exterior standard steel doors and frames.
 - 3. Frame anchors.

B. Shop Drawings: Include the following:

1. Elevations of each door type.
2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
4. Locations of reinforcement and preparations for hardware.
5. Details of each different wall opening condition.
6. Details of 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.

C. 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.

1.7 INFORMATIONAL SUBMITTALS

- A. Energy Performance Certification: For each type of thermally-rated door assembly for tests performed by a qualified testing agency indicating compliance with performance requirements.
- B. Field quality control reports.

1.8 CLOSEOUT SUBMITTALS

- A. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

1.9 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.
- B. Deliver welded frames with two removable spreader bars across bottom of frames.
- 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 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 1. Ceco Door; ASSA ABLOY.

2. Curries Company; ASSA ABLOY.
3. Pioneer Industries.

2.2 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 and temperature-rise limits 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. Temperature-Rise Limit: At vertical exit enclosures and exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F above ambient after 30 minutes of standard fire-test exposure.
- B. Thermally Rated Door Assemblies: Provide door assemblies with U-factor of not more than 0.37 deg Btu/F x h x sq. ft. when tested according to ASTM C1363.
- C. Air Infiltration: Provide exterior door assemblies with air leakage of not more than 0.20 cfm/sq. ft. when tested according to NFRC 400.

2.3 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. Heavy-Duty Doors and Frames: ANSI/SDI A250.8, Level 2; ANSI/SDI A250.4, Level B. At all interior locations, except as otherwise indicated .
 1. Doors:
 - a. Type: As indicated in the Door and Frame Schedule.
 - b. Thickness: 1-3/4 inches.
 - c. Face: Uncoated steel sheet, minimum thickness of 0.042 inch (18-gage).
 - d. Edge Construction: Model 2, Seamless, continuously welded seam dressed smooth.
 - e. Edge Bevel: Bevel lock edge 1/8 inch in 2 inches.
 - f. Core: Vertical steel stiffener. Fill space between stiffeners with glass- or mineral-fiber insulation.

- g. Fire-Rated Core: Manufacturer's vertical steel stiffener, with space between stiffeners filled with glass- or mineral-fiber insulation or laminated mineral board core for fire-rated and temperature-rise-rated doors.
- 2. Frames:
 - a. Materials: Uncoated steel sheet, minimum thickness of 0.053 inch (16-gage).
 - b. Construction: Full profile welded in factory.
 - 3. Exposed Finish: Prime.

2.4 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. Extra-Heavy-Duty Doors and Frames: ANSI/SDI A250.8, Level 3; ANSI/SDI A250.4, Level A. At exterior locations.

- 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 0.053 inch (16-gage), with minimum A60 coating.
 - d. Edge Construction: Model 2, Seamless, continuously welded seam dressed smooth.
 - e. Edge Bevel: Bevel lock edge 1/8 inch in 2 inches.
 - 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 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: Polyurethane, or polyurethane with vertical steel stiffeners, to comply with required U-factor.
- 2. Frames:
 - a. Materials: Metallic-coated steel sheet, minimum thickness of 0.067 inch (14-gage), with minimum A60 coating.
 - b. Construction: Full profile welded in factory, thermally broken.
- 3. Exposed Finish: Prime.

2.5 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. Floor Anchors for Concrete Slabs with Underlayment: Adjustable-type anchors with extension clips, allowing not less than 2-inch height adjustment. Terminate bottom of frames at top of underlayment.

D. Material: ASTM A879/A879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.

1. For anchors built into exterior walls, steel sheet complying with ASTM A1008/A1008M or ASTM A1011/A1011M; hot-dip galvanized according to ASTM A153/A153M, Class B.

2.6 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

C. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B.

D. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A153/A153M.

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. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.7 FABRICATION

- A. Door Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.
- B. 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. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 - 2. Grout Guards: Formed from same material as frames, not less than 0.016 inch thick (26-gage). Weld guards to frame at back of hardware mortises in frames to be grouted.
 - 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. Double-Door Frames: Drill stop in head jamb to receive two door silencers.
- C. 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.

2.8 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.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Remove shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make restored 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.

3.3 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. Field apply bituminous coating to backs of frames that will be filled with grout containing antifreezing agents.
 - c. Install door silencers in frames before grouting.
 - 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. Metal-Stud Partitions: 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.
 - a. For grouted frames, brace or fasten frames in such a manner that will prevent the pressure of grout from deforming the frame members. Hand trowel grout into place. Grout mixed to a thinner, "pumpable" consistency is not acceptable.
 - 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.
 3. Smoke-Control Doors: Install doors according to NFPA 105.

3.4 FIELD QUALITY CONTROL

- A. Inspection Agency: Engage a qualified inspector to perform inspections and to furnish reports to Architect.
- B. Inspections:
 1. Fire-Rated Door Inspections: Inspect each fire-rated door according to NFPA 80, Section 5.2.
- C. Correct or remove and replace installations where inspections indicate that they do not comply with specified requirements.
- D. Reinspect corrected or replaced installations to determine if replaced or corrected door assembly installations comply with specified requirements.
- E. Prepare and submit separate inspection report for each fire-rated door assembly indicating compliance with each item listed in NFPA 80.

3.5 RESTORATION

- 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 restore with galvanizing touch-up paint according to manufacturer's written instructions.

END OF SECTION 08 11 13

SECTION 08 14 16 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Five-ply flush wood veneer-faced doors for transparent finish.
2. Factory finishing flush wood doors.
3. Factory fitting flush wood doors to frames and factory machining for hardware.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals and informational submittals required by this Section and by Division 08 Sections “Door Hardware” and “Glazing” concurrently.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product, including the following:

1. Door core materials and construction.
2. Door face type and characteristics.
3. Door trim for openings.
4. Factory-finishing specifications.

B. Sustainable Design Submittals:

1. Product Data: For adhesives, indicating product contains no urea formaldehyde.
2. Product Data: For composite wood products, indicating product contains no urea formaldehyde.

C. Shop Drawings: Indicate location, size, and hand of each door; elevation of each type of door; construction details not covered in Product Data; and the following:

1. Door schedule indicating door location, type, size, fire protection rating, and swing.
2. Door elevations, dimension and locations of hardware, lite cutouts, and glazing thicknesses.
3. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
4. Dimensions and locations of blocking for hardware attachment.
5. Dimensions and locations of mortises and holes for hardware.

6. Clearances and undercuts.
7. Requirements for veneer matching.
8. Doors to be factory finished and application requirements.

D. Samples:

1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches, for each material and finish. For each wood species and transparent finish, provide set of three Samples showing typical range of color and grain to be expected in finished Work.

E. Sample Warranty: For special warranty.

1.5 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

- A. Special warranties.
- B. 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. Comply with requirements of referenced standard and manufacturer's written instructions.
- B. Package doors individually in plastic bags or cardboard cartons.
- C. Mark each door on bottom rail with opening number used on Shop Drawings.

1.8 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and temperature and relative humidity are maintained at levels designed for building occupants for the remainder of construction period.

1.9 WARRANTY

- A. Special Warranty: Manufacturer agrees to correct or replace doors that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, the following:
 - a. Delamination of veneer.
 - b. Warping (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section.
 - c. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.

2. Warranty shall also include installation and finishing that may be required due to correction or replacement of defective doors.
3. Warranty Period for Solid-Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Wood 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 in accordance with UL 10C or NFPA 252.
- B. 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 in accordance with UL 1784 and installed in compliance with NFPA 105.

2.2 FLUSH WOOD DOORS, GENERAL

- A. Quality Standard: In addition to requirements specified, comply with ANSI/WDMA I.S. 1A.
 1. The Contract Documents contain requirements that may be more stringent than the referenced quality standard. Comply with the Contract Documents in addition to those of the referenced quality standard.
- B. Adhesives: Do not use adhesives that contain urea formaldehyde.
- C. Composite Wood Products: Products shall be made without urea formaldehyde.

2.3 SOLID-CORE FIVE-PLY FLUSH WOOD VENEER-FACED DOORS FOR TRANSPARENT FINISH

- A. Interior Doors:
 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to:
 - a. Marshfield-Algoma by Masonite Architectural.
 - b. Oshkosh Door Company.
 - c. VT Industries, Inc.
 2. Performance Grade: ANSI/WDMA I.S. 1A Extra Heavy Duty.
 3. ANSI/WDMA I.S. 1A Grade: Custom.

4. Faces: Single-ply, wood veneer not less than 1/50 inch thick.
 - a. Species: Select white maple.
 - b. Cut: Plain sliced (flat sliced).
 - c. Match between Veneer Leaves: Book match.
 - d. Assembly of Veneer Leaves on Door Faces: Running match.
 - e. Pair and Set Match: Provide for doors hung in same opening or separated only by mullions.

5. Exposed Vertical and Top Edges: Same species as faces - Architectural Woodwork Standards edge Type A.
 - a. Fire-Rated Single Doors: Provide edge construction with intumescent seals concealed by outer stile. Comply with specified requirements for exposed vertical edges.
 - b. Fire-Rated Pairs of Doors: Provide fire-retardant stiles that are listed and labeled for applications indicated without formed-steel edges and astragals. Provide stiles with concealed intumescent seals. Comply with specified requirements for exposed edges.
 - c. Mineral-Core Doors: At hinge stiles, provide laminated-edge construction with improved screw-holding capability and split resistance. Comply with specified requirements for exposed edges.
 - 1) Screw-Holding Capability: 550 lbf in accordance with WDMA T.M. 10.

6. Core for Non-Fire-Rated Doors:
 - a. WDMA I.S. 10 structural composite lumber.
 - 1) Screw Withdrawal, Door Face: 550 lbf.
 - 2) Screw Withdrawal, Vertical Door Edge: 550 lbf.

7. Core for Fire-Rated Doors: As required to achieve fire-protection rating indicated on Drawings.
 - a. Blocking for Mineral-Core Doors: Provide composite blocking with improved screw-holding capability approved for use in doors of fire-protection ratings indicated on Drawings as needed to eliminate through-bolting hardware.

8. Construction: Five plies, hot-pressed bonded (vertical and horizontal edging is bonded to core), with entire unit abrasive planed before veneering.

2.4 LIGHT FRAMES AND LOUVERS

- A. Wood Beads for Light Openings in Wood Doors: Provide manufacturer's standard wood beads unless otherwise indicated.
 1. Wood Species: Same species as door faces.

2. Profile: Flush rectangular beads.
3. At wood-core doors with 20-minute fire-protection ratings, provide wood beads and metal glazing clips approved for such use.

2.5 FABRICATION

- A. Factory fit doors to suit frame-opening sizes indicated.
 1. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.
 2. Comply with NFPA 80 requirements for fire-rated doors.
- B. Factory machine doors for hardware that is not surface applied.
 1. Locate hardware to comply with DHI-WDHS-3.
 2. Comply with final hardware schedules, door frame Shop Drawings, ANSI/BHMA-156.115-W, and hardware templates.
 3. Coordinate with hardware mortises in metal frames, to verify dimensions and alignment before factory machining.
 4. For doors scheduled to receive electrified locksets, provide factory-installed raceway and wiring to accommodate specified hardware.
- C. Openings: Factory cut and trim openings through doors.
 1. Light Openings: Trim openings with moldings of material and profile indicated.
 2. Glazing: Factory install glazing in doors indicated to be factory finished. Comply with applicable requirements in Division 08 Section "Glazing."

2.6 FACTORY FINISHING

- A. Comply with referenced quality standard for factory finishing.
 1. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
 2. Finish faces, all four edges, edges of cutouts, and mortises.
 3. Stains and fillers may be omitted on bottom edges, edges of cutouts, and mortises.
- B. Factory finish doors.
- C. Transparent Finish:
 1. ANSI/WDMA I.S. 1A Grade: Custom.
 2. Finish: ANSI/WDMA I.S. 1A TR-8 UV Cured Acrylated Polyester/Urethane
 3. Staining: As selected by Architect from manufacturer's full range.
 4. Sheen: Satin.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and installed door frames, with Installer present, before hanging doors.
 - 1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
 - 2. Reject doors with defects.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

- A. Hardware: For installation, see Division 08 Section "Door Hardware."
- B. Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.
 - 1. Install fire-rated doors in accordance with NFPA 80.
 - 2. Install smoke- and draft-control doors in accordance with NFPA 105.
- C. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.
- D. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

3.3 FIELD QUALITY CONTROL

- A. Inspection Agency: Engage a qualified inspector to perform inspections and to furnish reports to Architect.
- B. Inspections:
 - 1. Fire-Rated Door Inspections: Inspect each fire-rated door in accordance with NFPA 80, Section 5.2.
- C. Correct or remove and replace installations where inspections indicate that they do not comply with specified requirements.
- D. Reinspect corrected or replaced installations to determine if replaced or corrected door assembly installations comply with specified requirements.
- E. Prepare and submit separate inspection report for each fire-rated door assembly indicating compliance with each item listed in NFPA 80.

3.4 ADJUSTING

- A. Operation: Rehang or replace doors that do not swing or operate freely.
- B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be corrected or refinished if Work complies with requirements and shows no evidence of correction or refinishing.

END OF SECTION 08 14 16

SECTION 08 31 13 - ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes access doors and frames for walls and ceilings.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include construction details, fire ratings, material descriptions, dimensions of individual components and profiles, and finishes.
- B. As-Specified Data: If the product to be incorporated in the Work is as specified by manufacturer name and product designation in this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below; otherwise submit full Product Data for the following:
 - 1. Flush access doors with exposed flanges.
 - 2. Stainless-steel flush access doors with exposed flanges.
 - 3. Fire-rated, flush access doors with exposed flanges.
 - 4. Stainless-steel, fire-rated, flush access doors with exposed flanges.

- C. Product Schedule: For access doors and frames.

1.5 INFORMATIONAL SUBMITTALS

- A. Field quality control reports.

1.6 CLOSEOUT SUBMITTALS

- A. Record Documents: For fire-rated doors, list of applicable room name and number in which access door is located.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Access Doors and Frames: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection and temperature-rise limit ratings indicated, according to NFPA 252 or UL 10B.

2.2 ACCESS DOORS AND FRAMES

A. Flush Access Doors with Exposed Flanges:

1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:
 - a. Karp Associates, Inc.; Model DSC-214M Universal Flush Access Door.
 - b. Milcor Company; Series M – Architectural Grade Flush Steel Access Door.
 - c. Nystrom, Inc.; NT Architectural Access Door.
2. Description: Face of door flush with frame, with exposed flange and concealed hinge.
3. Locations: Walls, where indicated on Drawings and, if not indicated, as follows:
 - a. In painted CMU exposed to view.
 - b. Concealed locations not exposed to view (i.e., above lay-in ceilings and in mechanical and other utility rooms).
4. Door Size: As indicated on Drawings, or if not indicated, not less than 24 by 24 inches.
5. Uncoated Steel Sheet for Door: Nominal 0.075 inch, 14 gage, factory primed.
6. Frame Material: Same material and finish as door; nominal 0.060 inch, 16 gage.
7. Latch and Lock: Cam latch, screwdriver operated with interior release.

B. Stainless-Steel Flush Access Doors with Exposed Flanges:

1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:
 - a. Karp Associates, Inc.; Model DSC-214M Universal Flush Access Door.
 - b. Nystrom, Inc.; NT Architectural Access Door.
2. Description: Face of door flush with frame, with exposed flange and concealed hinge.
3. Locations: Walls, where indicated on Drawings and, if not indicated, as follows:
 - a. In painted gypsum board exposed to view.
 - b. In ceramic tile exposed to view.

4. Door Size: As indicated on Drawings, or if not indicated, not less than 24 by 24 inches.
5. Stainless Steel Sheet for Door: Not less than nominal 0.062 inch, 16 gage, ASTM A480/A480M No. 4 finish.
6. Frame Material: Same material, thickness, and finish as door.
7. Latch and Lock: Cam latch, screwdriver operated with interior release.

2.3 FIRE-RATED ACCESS DOORS AND FRAMES

A. Fire-Rated, Flush Access Doors with Exposed Flanges:

1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:
 - a. Karp Associates, Inc.; Model KRP-150FR Universal Fire Rated Access Door.
 - b. Milcor Company; Series UFR – Universal Fire-Rated Access Door.
 - c. Nystrom, Inc.; IT Insulated Fire-Rated Access Door.
2. Description: Door face flush with frame, with a core of mineral-fiber insulation enclosed in sheet metal; with exposed flange, self-closing door, and continuous piano hinge.
3. Locations: Walls, where indicated on Drawings and, if not indicated, as follows:
 - a. In fire-rated construction.
4. Door Size: As indicated on Drawings, or if not indicated, not less than 24 by 24 inches.
5. Fire-Resistance Rating: Not less than 1-1/2 hours.
6. Temperature-Rise Rating: 250 deg F at the end of 30 minutes.
7. Uncoated Steel Sheet for Door: Nominal 0.036 inch, 20 gage, factory primed.
8. Frame Material: Same material and finish as door; nominal 0.060 inch, 16 gage.
9. Latch and Lock: Self-latching door hardware, operated by key with interior release.

B. Stainless-Steel, Fire-Rated, Flush Access Doors with Exposed Flanges:

1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:
 - a. Karp Associates, Inc.; Model KRP-150FR Universal Fire Rated Access Door.
 - b. Nystrom, Inc.; IT Insulated Fire-Rated Access Door.
2. Description: Door face flush with frame, with a core of mineral-fiber insulation enclosed in sheet metal; with exposed flange, self-closing door, and continuous piano hinge.

3. Locations: Walls, as indicated on Drawings and, if not indicated, as follows:
 - a. In fire-rated construction.
4. Door Size: As indicated on Drawings, or if not indicated, not less than 24 by 24 inches.
5. Fire-Resistance Rating: Not less than 1-1/2 hours.
6. Temperature-Rise Rating: 250 deg F at the end of 30 minutes.
7. Stainless Steel Sheet for Door: Nominal 0.038 inch, 20 gage, ASTM A480/A480M No. 4 finish.
8. Frame Material: Same material and finish as door; nominal 0.062 inch, 16 gage.
9. Latch and Lock: Self-latching door hardware, operated by key with interior release.

2.4 MATERIALS

- A. Steel Plates, Shapes, and Bars: ASTM A36/A36M.
- B. Steel Sheet: Uncoated or electrolytic zinc coated, ASTM A879/A879M, with cold-rolled steel sheet substrate complying with ASTM A1008/A1008M, Commercial Steel (CS), exposed.
- C. Stainless Steel Plate, Sheet, and Strip: ASTM A240/A240M or ASTM A666, Type 304. Remove tool and die marks and stretch lines, or blend into finish.
- D. Stainless Steel Flat Bars: ASTM A666, Type 304. Remove tool and die marks and stretch lines, or blend into finish.
- E. Frame Anchors: Same material as door face.
- F. Inserts, Bolts, and Anchor Fasteners: Hot-dip galvanized steel according to ASTM A153/A153M or ASTM F2329.

2.5 FABRICATION

- A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.
- B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.
- C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish mounting holes, attachment devices and fasteners of type required to secure access doors to types of supports indicated.
- D. Latch and Lock Hardware:
 1. Quantity: Furnish number of latches and locks required to hold doors tightly closed.
 2. Keys: Furnish two keys per lock and key all locks alike.

2.6 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- D. Painted Finishes: Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.
 - 1. Factory Primed: Apply manufacturer's standard, baked-enamel or powder-coat primer immediately after surface preparation and pretreatment.
- E. Stainless Steel Finishes:
 - 1. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.
 - 2. Polished Finish: ASTM A480/A480M No. 4 finish. Grind and polish surfaces to produce uniform finish, free of cross scratches.
 - a. Run grain of directional finishes with long dimension of each piece.
 - b. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

- A. Comply with manufacturer's written instructions for installing access doors and frames.

3.3 FIELD QUALITY CONTROL

- A. Inspection Agency: Engage a qualified inspector to perform inspections and to furnish reports to Architect.

- B. Inspections:
 - 1. Fire-Rated Door Inspections: Inspect each fire-rated access door in accordance with NFPA 80, section 5.2.
- C. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.
- D. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.
- E. Prepare and submit separate inspection report for each fire-rated access door indicating compliance with each item listed in NFPA 80.

3.4 ADJUSTING

- A. Adjust doors and hardware, after installation, for proper operation.

END OF SECTION 08 31 13

SECTION 08 33 13 - COILING COUNTER DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Fire-rated counter door assemblies.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. 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. Include rated capacities, operating characteristics, electrical characteristics, and furnished accessories.
 - 3. Include description of automatic closing device and testing and resetting instructions.
- B. As-Specified Data: If the product to be incorporated in the Work is as specified by manufacturer name and product designation in this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below, otherwise submit full Product Data for the following:
 - 1. Fire-rated counter door assemblies.
- C. 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. Show locations of controls, locking devices, detectors or replaceable fusible links, and other accessories.
 - 5. Include diagrams for power, signal, and control wiring.

D. Samples: Manufacturer's finish charts showing full range of colors and textures available for units with factory-applied finishes.

1. Include Samples of laminate-clad counter panel product for each type, color, pattern, and surface finish.

1.5 INFORMATIONAL SUBMITTALS

A. Field quality control reports.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For coiling counter doors to include in maintenance manuals.
- B. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

1.7 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.

2.2 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Door Assemblies: Complying with NFPA 80; listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at as close to neutral pressure as possible according to NFPA 252 or UL 10B.
 1. Smoke Control: Where indicated, provide doors that are listed and labeled with the letter "S" on the fire-rating label by a qualified testing agency for smoke- and draft-control based on testing according to UL 1784; with maximum air-leakage rate of 3.0 cfm/sq. ft. of door opening at 0.10 inch wg for both ambient and elevated temperature tests.

2.3 FIRE-RATED COUNTER DOOR ASSEMBLY

A. Fire-Rated Counter Door: Overhead fire-rated coiling door formed with curtain of interlocking metal slats.

1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:
 - a. Clopay Building Products Co.; Model CERC10 Rolling Counter Fire Doors.
 - b. CornellCookson, LLC; Model ERC10 Rolling Counter Fire Shutters.
 - c. Wayne-Dalton Corp.; FireStar Model 540 Fire-Rated Counter Shutters.
- B. Fire Rating: 3/4 hour.
- C. Door Curtain Material: Galvanized steel.
- D. Door Curtain Slats: Flat profile slats of 1-1/2-inch to 2-inch center-to-center height.
- E. Curtain Jamb Guides: Galvanized steel with exposed finish matching curtain slats.
- F. Hood: Match curtain material and finish.
- G. Mounting: Face of wall.
- H. Sill Configuration: Fire-rated, laminate counter.
 1. High-Pressure Decorative Laminate: Match color, pattern, and finish as selected by Architect from manufacturer's full range.
- I. Locking Devices: Equip door with locking device assembly.
 1. Locking Device Assembly: Cremone-type, both jamb sides locking bars, operable from inside and outside with cylinders.
- J. Electric Door Operator:
 1. Usage Classification: Standard duty, up to 25 cycles per hour and up to 90 cycles per day.
 2. Operator Location: As indicated on Drawings.
 3. Motor Exposure: Interior.
 4. Motor Electrical Characteristics:
 - a. Horsepower: Per manufacturer's recommendation.
 - b. Voltage:
 - 1) 115-V ac, single phase, 60 Hz.
 5. Auxiliary Manual Operation: Push-up type.
 6. Obstruction-Detection Device: Automatic electric sensor edge on bottom bar; self-monitoring type.
 - a. Sensor Edge Bulb Color: Black.

7. Control Station(s): Where indicated on Drawings.
 8. Other Equipment: Audible and visual signals.
- K. Curtain Accessories: Equip door with smoke seals, automatic closing device, astragal and push/pull handles.
- L. Door Finish:
1. Powder-Coated Finish: Color as selected by Architect from manufacturer's full range, including custom colors.

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 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/A653M, with G90 zinc coating; nominal sheet thickness (coated) of not less than 0.034 inch (22 gage); 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.

2.6 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: Not less than nominal 0.028-inch-thick (24 gage), hot-dip galvanized-steel sheet with G90 zinc coating, complying with ASTM A653/A653M.
 2. Include automatic drop baffle on fire-rated doors to guard against passage of smoke or flame.

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: As specified in Division 08 Section "Door Hardware" and keyed to building keying system.
 - 2. Keys: Two for each cylinder.
- B. Safety Interlock Switch: Equip power-operated doors with safety interlock switch to disengage power supply when door is locked.

2.8 CURTAIN ACCESSORIES

- A. Smoke Seals: Equip each fire-rated door with replaceable smoke-seal perimeter gaskets or brushes for smoke and draft control as required for door listing and labeling by a qualified testing agency.
- B. Astragal: Equip each door bottom bar with a replaceable, adjustable, continuous, compressible gasket of flexible vinyl, rubber, or neoprene as a cushion bumper.
- C. Push/Pull Handles: Equip each push-up-operated or emergency-operated door with lifting handles on each side of door, finished to match door.
- D. Pole Hooks: Provide pole hooks and poles for doors more than 84 inches high.
- E. Automatic-Closing Device: Equip each fire-rated door with an automatic-closing device or holder-release mechanism and governor unit complying with NFPA 80 and an easily tested and reset release mechanism. Release mechanism for motor-operated doors shall allow testing without mechanical release of the door. Automatic-closing device shall be designed for activation by the following:
 - 1. Replaceable fusible links with temperature rise and melting point of 165 deg F interconnected and mounted on both sides of door opening.
 - 2. Manufacturer's standard UL-labeled smoke detector and door-holder-release devices.
 - 3. Manufacturer's standard UL-labeled heat detector and door-holder-release devices.
 - 4. Building fire-detection, smoke-detection, and -alarm systems.

2.9 COUNTER DOOR ACCESSORIES

- A. Fire-Rated, Laminate Counter: Fire-door manufacturer's high-pressure, decorative laminate-covered countertop; UL or ITS tested and labeled for 1-1/2-hour fire rating for approved use with fire-door assembly.

2.10 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.

2.11 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.
- 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. and not more than 12 in./sec., 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 fire-rated doors, activation delays closing.
1. Electric Sensor Edge: Automatic safety sensor edge, located within astragal 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.
- 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. Type: 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.
- 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.

2.12 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.

2.13 STEEL AND GALVANIZED-STEEL FINISHES

- A. 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.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

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.
- C. Fire-Rated Doors: Install according to NFPA 80.
- D. Smoke-Control Doors: Install according to NFPA 80 and NFPA 105.

3.3 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections and to furnish reports to Architect.
- B. Perform the following tests and inspections:
 - 1. Test door release, closing, and alarm operations when activated by smoke detector or building's fire-alarm system. Test manual operation of closed door. Reset door-closing mechanism after successful test.
 - 2. Fire-Rated Door Inspections: Inspect each fire-rated door in accordance with NFPA 80, section 5.2.
- C. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.
- D. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.

- E. Prepare and submit separate inspection report for each fire-rated door assembly indicating compliance with each item listed in NFPA 80.

3.4 STARTUP SERVICE

- A. Engage a factory-authorized service representative to perform startup service.
 - 1. Complete installation and startup checks according to manufacturer's written instructions.
 - 2. 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.
- 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 factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain coiling counter doors.

END OF SECTION 08 33 13

SECTION 08 33 23 - OVERHEAD COILING DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Fire-rated service doors.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type and size of overhead coiling door and accessory. Include construction details, material descriptions, dimensions of individual components, profiles for slats, and finishes. Include rated capacities, operating characteristics, electrical characteristics, and furnished accessories. Include for fire-rated doors, description of fire-release system including testing and resetting instructions.
- B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below, otherwise submit full Product Data for the following:
 - 1. Fire-rated service door assembly.
- C. Shop Drawings: For each installation and for special components not dimensioned or detailed in manufacturer's product data. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 2. Wiring Diagrams: For power, signal, and control wiring.
- D. Samples: Manufacturer's finish charts showing full range of colors and textures available for units with factory-applied finishes.

1.5 INFORMATIONAL SUBMITTALS

- A. Field quality control reports.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For overhead coiling doors to include in maintenance manuals.
- B. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for both installation and maintenance of units required for this Project.
- B. Source Limitations: Obtain overhead coiling doors from single source from single manufacturer.
 - 1. Obtain operators and controls from overhead coiling door manufacturer.
- C. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at as close to neutral pressure as possible according to NFPA 252 or UL 10B.
- 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.
- E. Regulatory Requirements: Comply with applicable provisions in the U.S. Department of Justice's "2010 ADA Standards for Accessible Design", ICC A117.1, and building code in effect for Project.

PART 2 - PRODUCTS

2.1 DOOR CURTAIN MATERIALS AND CONSTRUCTION

- A. Door Curtains: Fabricate overhead coiling-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 A 653/A 653M, with G90 (Z275) zinc coating; nominal sheet thickness (coated) of not less than 0.040inch (20 gage) and as required to meet requirements.
- B. Endlocks for Service Doors: Malleable-iron casings galvanized after fabrication, secured to curtain slats with galvanized rivets or high-strength nylon. Provide locks on not less than alternate curtain slats for curtain alignment and resistance against lateral movement.

- C. Bottom Bar for Service Doors: Consisting of two angles, each not less than 1-1/2 by 1-1/2 by 1/8 inch thick; fabricated from manufacturer's standard hot-dip galvanized steel, stainless steel, or aluminum extrusions to match curtain slats and finish.
- D. Astragal for Interior Doors: Equip each door bottom bar with a replaceable, adjustable, continuous, compressible gasket of flexible vinyl, rubber, or neoprene as a cushion bumper.
- E. 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.

2.2 HOOD

- 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 (Z275) zinc coating, complying with ASTM A 653/A 653M.
 - 2. Include automatic drop baffle on fire-rated doors to guard against passage of smoke or flame.

2.3 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: Provide cylinders specified in Division 08 Section "Door Hardware" and keyed to building keying system.
- B. Safety Interlock Switch: Equip power-operated doors with safety interlock switch to disengage power supply when door is locked.

2.4 CURTAIN ACCESSORIES

- A. Smoke Seals: Equip each fire-rated door with smoke-seal perimeter gaskets for smoke and draft control as required for door listing and labeling by a qualified testing agency.
- B. Push/Pull Handles: Equip each push-up-operated or emergency-operated door with lifting handles on each side of door, finished to match door.
 - 1. Provide pull-down straps or pole hooks for doors more than 84 inches high.

- C. Automatic-Closing Device for Fire-Rated Doors: Equip each fire-rated door with an automatic-closing device that is inoperative during normal door operations and that has a governor unit complying with NFPA 80 and an easily tested and reset release mechanism designed to be activated by the following:
1. Replaceable fusible links with temperature rise and melting point of 165 deg F interconnected and mounted on both sides of door opening.
 2. Manufacturer's standard UL-labeled smoke detector and door-holder-release devices.
 3. Manufacturer's standard UL-labeled heat detector and door-holder-release devices.
 4. Building fire-detection and fire-alarm systems and manufacturer's standard door-holder-release devices.
 5. Smoke and heat detectors with auxiliary contacts tied into fusible links via the fire alarm panel.

2.5 COUNTERBALANCING 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, welded or 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. Spring Balance: 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.

2.6 ELECTRIC DOOR OPERATORS

- A. General: Electric door operator assembly of size and capacity recommended and provided by door manufacturer for door specified, with electric motor and factory-prewired motor controls, starter, gear-reduction unit, solenoid-operated brake, clutch, remote-control stations, control devices, integral gearing for locking door, and accessories required for proper operation.
1. Comply with NFPA 70.
 2. Provide 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. Electric Motors: Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements specified in Section 11 05 13 "Common Motor Requirements for Equipment" unless otherwise indicated.
1. Electrical Characteristics:
 - a. Phase: Polyphase.
 - b. Volts: 208 V.
 - c. Hertz: 60.
 2. Motor Type and Controller: Reversible motor and controller (disconnect switch) for motor exposure indicated.
 3. Motor Size: Minimum size as indicated. 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. and not more than 12 in./sec., without exceeding nameplate ratings or service factor.
 4. Operating Controls, Controllers (Disconnect Switches), Wiring Devices, and Wiring: Manufacturer's standard unless otherwise indicated.
 5. Coordinate wiring requirements and electrical characteristics of motors and other electrical devices with building electrical system and each location where installed.
- C. 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.
- D. Obstruction Detection Device: Equip motorized door with indicated external automatic safety sensor capable of protecting full width of door opening. For fire-rated doors, activation delays closing.
1. Photoelectric Sensor: Manufacturer's standard system designed to detect an obstruction in door opening without contact between door and obstruction.
 2. 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.
- E. Remote-Control Station: Momentary-contact, three-button control station with push-button controls labeled "Open," "Close," and "Stop."
1. Interior units, full-guarded, surface-mounted, heavy-duty type, with general-purpose NEMA ICS 6, Type 1 enclosure.
- F. 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 30 lbf.

- G. 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.
- H. Motor Removal: Design operator so motor may be removed without disturbing limit-switch adjustment and without affecting emergency manual operation.
- I. Audible and Visual Signals: Audible alarm and visual indicator lights in compliance with regulatory requirements for accessibility.

2.7 FIRE-RATED SERVICE DOOR ASSEMBLY

- A. Fire-Rated Service Door: Overhead fire-rated coiling door formed with curtain of interlocking metal slats.
 - 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. Cornell Cookson, LLC; Rolling Fire Door ERD11.
 - b. Overhead Door Corporation; FireKing Series 630.
- B. Fire Rating: 1-1/2 hours.
- C. Door Curtain Material: Galvanized steel.
- D. Door Curtain Slats: Flat profile slats of 2-1/4-inch to 2-5/8-inch center-to-center height.
- E. Curtain Jamb Guides: Galvanized steel with exposed finish matching curtain slats.
- F. Hood: Galvanized steel.
 - 1. Mounting: Face of wall.
- G. Locking Devices: Equip door with locking device assembly.
 - 1. Locking Device Assembly: Cremone type, both jamb sides locking bars, operable from inside and outside with cylinders.
- H. Electric Door Operator:
 - 1. Motor Exposure: Interior.
 - 2. Obstruction Detection Device: Automatic photoelectric sensor or electric sensor edge on bottom bar.
 - 3. Other Equipment: Audible and visual signals.

I. Door Finish:

1. Powder-Coated Finish: Color as selected by Architect from manufacturer's full range, including custom colors.

2.8 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.

2.9 STEEL AND GALVANIZED-STEEL FINISHES

- A. 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.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

- 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, 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 regulatory requirements for accessibility.
- D. Fire-Rated Doors: Install according to NFPA 80.

3.3 STARTUP SERVICE

- A. Engage a factory-authorized service representative to perform startup service.
 - 1. Perform installation and startup checks according to manufacturer's written instructions.
 - 2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
 - 3. Test door closing when activated by detector or alarm-connected fire-release system. Reset door-closing mechanism after successful test.

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.
- C. Adjust seals to provide tight fit around entire perimeter.

3.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain overhead coiling doors.

END OF SECTION 08 33 23

SECTION 08 34 73 - SOUND CONTROL DOOR ASSEMBLIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Wood sound-control doors.
 - 2. Steel frames and sound-control seals.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include sound ratings, construction details, material descriptions, core descriptions, and finishes.
 - 1. Wood sound-control doors.
 - 2. Sound-control frames.
 - 3. Sound-control hardware.
- B. Sustainable Design Submittals:
 - 1. Product Data: For adhesives, indicating product contains no urea formaldehyde.
 - 2. Product Data: For composite wood products, indicating product contains no urea formaldehyde.
- C. Shop Drawings: Include the following:
 - 1. Elevations of door design.
 - 2. Details of sound-control seals, door bottoms, and thresholds.
 - 3. Details of doors, including vertical and horizontal edge details.
 - 4. Frame details, including dimensioned profiles and metal thicknesses.
 - 5. Locations of reinforcement and preparations for hardware.
 - 6. Details of wall opening condition.
 - 7. Details of anchorages, joints, and connections.
 - 8. Details of accessories.

- D. Samples:
 - 1. Finishes: For each type of exposed finish required, prepared on Samples of not less than 3 by 5 inches.
- E. Schedule: Provide a schedule of sound-control door assemblies prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with the Door Hardware Schedule.
- F. Warranty: Sample of special warranty.

1.5 INFORMATIONAL SUBMITTALS

- A. Field Test Reports: Indicate and interpret test results for compliance with performance requirements of installed sound control doors.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For sound-control door assemblies to include in maintenance manuals.
- B. Warranty: Executed special warranty.

1.7 QUALITY ASSURANCE

- A. Source Limitations: Obtain sound-control door assemblies, including doors, frames, sound-control seals, hinges (when integral for sound control), thresholds, and other items essential for sound control, from single source from single manufacturer.
- B. Sound Rating: Provide sound-control door assemblies identical to those of assemblies tested as sound-retardant units by an acoustical testing agency, and have the following minimum rating:
 - 1. STC Rating: As indicated in the Door Schedule as determined by ASTM E 413 when tested in an operable condition according to ASTM E 90 and ASTM E 1408. If not otherwise indicated, provide sound-control door assemblies with a minimum STC rating of 53.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver doors and frames palletized, wrapped, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
 - 1. Provide additional protection to prevent damage to finish of factory-finished wood doors.
- B. Shipping Spreaders: Deliver welded frames with two removable spreader bars across bottom of frames, attached to jambs and mullions.

- C. Store doors and frames under cover at Project site. Place units in a vertical position with heads up, spaced by blocking, on minimum 4-inch-high, wood blocking. Avoid using nonvented plastic or canvas shelters that could create a humidity chamber.
 - 1. If wrappers on doors become wet, remove cartons immediately. Provide a minimum of 1/4-inch space between each stacked door to permit air circulation.

1.9 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install wood sound-control wood doors until spaces are enclosed and weatherproof, wet work in spaces 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: Verify actual dimensions of openings by field measurements before fabrication.

1.10 COORDINATION

- A. Coordinate installation of anchorages for sound-control door assemblies. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

1.11 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of sound-control door assemblies that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Failure to meet sound rating requirements.
 - b. Faulty operation of sound seals.
 - c. Deterioration of metals, metal finishes, and other materials beyond normal use or weathering.
 - d. Wood doors that are warped (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section, or show telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.
 - 2. Warranty Period for Wood Doors: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 WOOD SOUND-CONTROL DOORS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Krieger Specialty Products Company, NC5-WD3-9353, or comparable product.

- B. Description: Provide flush-design sound-control doors, 1-3/4 inches thick; with manufacturer's standard sound-retardant core as required to provide STC rating indicated. Fabricate according to WDMA 1.S.1-A.
- C. Materials: Comply with Division 08 Section "Flush Wood Doors" for grade, faces, veneer matching, fabrication, finishing, and other requirements unless otherwise indicated.
- D. Finishes:
 - 1. Factory finish sound-control wood doors to match doors specified in Division 08 Section "Flush Wood Doors."

2.2 SOUND-CONTROL FRAMES

- A. Description: Fabricate sound-control door frames with corners mitered, reinforced, and continuously welded full depth and width of frame. Fabricate according to ANSI/NAAMM-HMMA 865.
 - 1. Weld frames according to NAAMM-HMMA 820.
 - 2. Interior Frames: Fabricate from cold-rolled steel sheet unless otherwise indicated, 0.075-inch nominal thickness, or thicker as required to provide STC rating indicated.
 - 3. Hardware Reinforcement: Fabricate according to ANSI/NAAMM-HMMA 865 of same material as face sheets.
 - 4. Head Reinforcement: Reinforce frames with metallic-coated steel channel or angle stiffener, 0.108-inch nominal thickness, welded to head.
 - 5. Jamb Anchors:
 - a. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.048-inch nominal thickness uncoated steel unless otherwise indicated.
 - 6. Floor Anchors: Not less than 0.079-inch nominal thickness metallic-coated steel, and as follows:
 - a. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.
 - 7. Plaster Guards: Metallic-coated steel sheet, not less than 0.026 inch thick.
- B. Materials:
 - 1. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B, suitable for exposed applications.
- C. Finishes:
 - 1. Prime Finish: Apply manufacturer's standard primer immediately after cleaning and pretreating.

- a. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

2.3 SOUND-CONTROL HARDWARE

- A. Description: Provide manufacturer's standard sound-control system, including head and jamb seals, door bottoms, cam-lift hinges, and thresholds, as required by testing to achieve STC rating indicated.
 - 1. Compression Seals: One-piece units; consisting of closed-cell sponge neoprene seal held in place by metal retainer; with retainer cover of same material as door frame; attached to door frame with concealed screws.
 - 2. Door Bottoms: Neoprene or silicone gasket held in place by metal housing; mortised into bottom edge of door.
 - 3. Cam-Lift Hinges: Full-mortise template type that raises door 1/2 inch when door is fully open; with hardened pin; fabricated from stainless steel.
 - 4. Thresholds: Flat, smooth, unfluted type as recommended by manufacturer; fabricated from aluminum.
 - a. Finish: Clear anodic finish.
- B. Other Hardware: Comply with requirements in Division 08 Section "Door Hardware."

2.4 SOUND-CONTROL ACCESSORIES

- A. Grout: Comply with ASTM C 476, with a slump of not more than 4 inches as measured according to ASTM C 143/C 143M.
- B. Corrosion-Resistant Coating: Cold-applied asphalt mastic, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.5 FABRICATION

- A. Sound-Control Wood Door Fabrication: Factory fit doors to suit frame-opening sizes indicated, with uniform clearances and bevels according to referenced quality standard, unless otherwise indicated. Comply with final door hardware schedules and hardware templates.
 - 1. Locate door hardware as indicated, or if not indicated, according to DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
 - a. Coordinate measurements of hardware mortises in steel frames to verify dimensions and alignment before factory machining.

- B. Sound-Control Frame Fabrication: Fabricate sound-control frames to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.
1. Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible. Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated from same thickness metal as frames.
 2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 3. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
 4. Jamb Anchors: Provide number and spacing of anchors as follows:
 - a. Stud Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
 - 1) Four anchors per jamb from 60 to 90 inches in height.
 5. Hardware Preparation: Factory prepare sound-control frames to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping, according to the Door Hardware Schedule and templates furnished as specified in Division 08 Section "Door Hardware."
 - a. Reinforce frames to receive nontemplated mortised and surface-mounted door hardware.
 - b. Locate hardware as indicated, or if not indicated, according to NAAMM-HMMA 831, "Recommended Hardware Locations for Custom Hollow Metal Doors and Frames."
 6. Plaster Guards: Weld guards to frame at back of hardware cutouts and glazing-stop screw and sound-control seal preparations to close off interior of openings in frames to be grouted.
 7. Tolerances: Fabricate frames to tolerances indicated in ANSI/NAAMM-HMMA 865.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of sound-control door assemblies.

- B. Examine roughing-in for embedded and built-in anchors to verify actual locations of sound-control door frame connections before frame installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Remove shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.
- B. Prior to installation and with installation spreaders in place, adjust and securely brace sound-control door frames to the following tolerances:
 - 1. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - 2. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 - 3. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - 4. Plumbness: Plus or minus 1/16 inch, measured at jambs on a perpendicular line from head to floor.
- C. Drill and tap doors and frames to receive nontemplated mortised and surface-mounted door hardware.

3.3 INSTALLATION

- A. General: Install sound-control door assemblies plumb, rigid, properly aligned, and securely fastened in place; comply with manufacturer's written instructions.
- B. Frames: Install sound-control door frames in sizes and profiles indicated.
 - 1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
 - a. Remove temporary braces only after frames or bucks have been properly set and secured.
 - b. Check squareness, twist, and plumbness of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
 - c. Apply corrosion-resistant coatings coating to backs of frames to be filled with mortar, grout, and plaster containing antifreezing agents.
 - 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor and secure with postinstalled expansion anchors.
 - a. Floor anchors may be set with powder-actuated fasteners instead of postinstalled expansion anchors, if so indicated and approved on Shop Drawings.

3. Grouted Frames: Solidly fill space between frames and substrate with grout. Take precautions, including bracing frames, to ensure that frames are not deformed or damaged by grout forces.
 4. Installation Tolerances: Adjust sound-control door frames for squareness, alignment, twist, and plumbness 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 on a perpendicular line from head to floor.
- C. Doors: Fit sound-control doors accurately in frames, within clearances indicated below. Shim as necessary.
1. Non-Fire-Rated Doors: Fit non-fire-rated doors accurately in frames with the following clearances:
 - a. Jambs: 1/8 inch.
 - b. Head with Cam-Lift Hinges: As required by manufacturer, but not more than 3/8 inch.
 - c. Sill: Manufacturer's standard.
 - d. Between Edges of Pairs of Doors: 1/8 inch.
- D. Sound-Control Seals: Where seals have been prefit and preinstalled in the factory and subsequently removed for shipping, reinstall seals and adjust according to manufacturer's written instructions.
- E. Cam-Lift Hinges: Install hinges according to manufacturer's written instructions.
- F. Thresholds: Set thresholds in full bed of sealant complying with requirements in Division 07 Section "Joint Sealants."

3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Testing Services: Perform testing for verification that assembly complies with STC rating requirements.
 1. Field tests shall be conducted according to ASTM E 336, with results calculated according to ASTM E 413. Acceptable field NIC values shall be within 5 dB of laboratory STC values.
 2. Inspection Report: Acoustical testing agency shall submit report in writing to Architect and Contractor within 24 hours after testing.

3. If tested door fails, replace or rework all sound control door assemblies to bring them into compliance at Contractor's expense.
 - a. Additional testing and inspecting at Contractor's expense will be performed to determine if replaced or additional work complies with specified requirements.
- C. Prepare test and inspection reports.

3.5 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and adjust seals, door bottoms, and other sound-control hardware items right before final inspection. Leave work in complete and proper operating condition.
- B. Remove and replace defective work, including defective or damaged sound seals and doors and frames that are warped, bowed, or otherwise unacceptable.
 1. Adjust gaskets, gasket retainers, and retainer covers to provide contact required to achieve STC rating.
- C. Clean grout off sound-control door frames immediately after installation.
- D. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying primer.

END OF SECTION 08 34 73



SECTION 08 36 13 - SECTIONAL DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes electrically operated sectional doors.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type and size of sectional door and accessory.
 - 1. Include construction details, material descriptions, dimensions of individual components, profile door sections, and finishes.
 - 2. Include rated capacities, operating characteristics, electrical characteristics, and furnished accessories.
- B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for item listed below, otherwise submit full Product Data for the following:
 - 1. Steel sectional door.
- C. 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. 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. Include diagrams for power, signal, and control wiring.
- D. Samples: For units with factory-applied finishes.
 - 1. Include Samples of accessories involving color selection.

- E. Delegated-Design Submittal: For sectional doors indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- F. Warranties: Sample of Project-specific special warranties.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For sectional doors to include in maintenance manuals.
- B. Warranties: Executed special warranties.

1.6 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.
- B. Regulatory Requirements: Comply with applicable provisions in the U.S. Department of Justice's "2010 ADA Standards for Accessible Design", ICC A117.1, and building code in effect for Project.

1.7 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of sectional doors that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use; rust through.
 - b. Delamination of exterior or interior facing materials.
 - 2. Warranty Period: Ten years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS, GENERAL

- A. Source Limitations: Obtain sectional doors from single source from single manufacturer.
 - 1. Obtain operators and controls from sectional door manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. General Performance: Sectional doors shall comply with performance requirements specified without failure due to defective manufacture, fabrication, installation, or other defects in construction and without requiring temporary installation of reinforcing components.
- B. Structural Performance, Exterior Doors: Capable of withstanding the design wind loads.
 - 1. Design Wind Load: As indicated on Drawings.
 - 2. Testing: According to ASTM E 330 or DASMA 108 for garage doors and complying with the acceptance criteria of DASMA 108.
 - 3. Deflection Limits: Design sectional doors to withstand design wind loads without evidencing permanent deformation or disengagement of door components.
 - a. Deflection of door sections in horizontal position (open) shall not exceed 1/120 of the door width.
 - b. Deflection of horizontal track assembly shall not exceed 1/240 of the door height.

2.3 DOOR ASSEMBLY

- A. Steel Sectional Door: Sectional door formed with hinged sections and fabricated according to DASMA 102 unless otherwise indicated.
 - 1. Clopay Building Products Company; Model 3722.
 - 2. Overhead Door Corporation; Thermacore 596.
 - 3. Raynor Garage Doors; ThermaSeal TM220.
 - 4. Wayne Dalton; Thermospan 200-20.
- 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. Air Infiltration: Maximum rate of 0.4 cfm/sq. ft. at 15 and 25 mph when tested according to ASTM E 283 or DASMA 105.
- D. R-Value: 17.4 deg F x h x sq. ft./Btu.
- E. Steel Sections: Zinc-coated (galvanized) steel sheet.
 - 1. Section Thickness: 2 inches.
 - 2. Exterior-Face, Steel Sheet Thickness: 0.040-inch-nominal coated thickness.
 - a. Surface: Manufacturer's standard.
 - 3. Insulation: Foamed in place.
 - 4. Interior Facing Material: Zinc-coated (galvanized) steel sheet with a nominal coated thickness of 0.022 inch.

- F. Track Configuration: Standard-lift track.
- G. Weatherseals: Fitted to bottom and top and around entire perimeter of door. Provide combination bottom weatherseal and sensor edge.
- H. Roller-Tire Material: Case-hardened steel.
- I. Locking Devices: Equip door with locking device assembly.
 - 1. Locking Device Assembly: Cremone type, both jamb sides, locking bars, operable from outside with cylinder.
- J. Counterbalance Type: Torsion spring.
- K. Electric Door Operator:
 - 1. Usage Classification: Standard duty, up to 25 cycles per hour and up to 90 cycles per day.
 - 2. Operator Type: Trolley.
 - 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 feet or lower.
 - 4. Motor Exposure: Interior, clean, and dry.
 - 5. Emergency Manual Operation: Push-up type.
 - 6. Obstruction-Detection Device: Automatic photoelectric sensor or electric sensor edge on bottom section; self-monitoring type.
 - 7. Control Station: Where indicated on Drawings.
 - 8. Other Equipment: Audible and visual signals.
- L. Door Finish:
 - 1. Baked-Enamel or Powder-Coat Finish: Color and gloss as selected by Architect from manufacturer's full range.
 - 2. Finish of Interior Facing Material: Finish as selected by Architect from manufacturer's full range.

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 STEEL DOOR SECTIONS

- A. Exterior Section Faces and Frames: Zinc-coated (galvanized), cold-rolled, commercial steel (CS) sheet, complying with ASTM A 653/A 653M, with indicated zinc coating and thickness.
 - 1. Fabricate section faces from single sheets to provide sections not more than 24 inches high and of indicated thickness. Roll horizontal meeting edges to a continuous, interlocking, keyed, rabbeted, shiplap, or tongue-in-groove weather-resistant seal, with a reinforcing flange return.
 - 2. For insulated doors, provide sections with continuous thermal-break construction, separating the exterior and interior faces of door.
- B. Section Ends and Intermediate Stiles: Enclose open ends of sections with channel end stiles formed from galvanized-steel sheet not less than 0.064-inch-nominal coated thickness and welded to door section. Provide intermediate stiles formed from not less than 0.064-inch-thick galvanized-steel sheet, cut to door section profile, and welded in place. Space stiles not more than 48 inches apart.
- C. Reinforce bottom section with a continuous channel or angle conforming to bottom-section profile.
- D. Reinforce sections with continuous horizontal and diagonal reinforcement, as required to stiffen door and for wind loading. Provide galvanized-steel bars, struts, trusses, or strip steel, formed to depth and bolted or welded in place. Ensure that reinforcement does not obstruct vision lites.
- E. Provide reinforcement for hardware attachment.
- F. Foamed-in-Place Thermal Insulation: Insulate interior of steel sections with door manufacturer's standard CFC-free polyurethane insulation, foamed in place to completely fill interior of section and pressure bonded to face sheets to prevent delamination under wind load, and with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, according to ASTM E 84. Enclose insulation completely within steel sections and the interior facing material, with no exposed insulation.
- G. Interior Facing Material: Zinc-coated (galvanized), cold-rolled, commercial steel (CS) sheet, complying with ASTM A 653/A 653M, with indicated thickness.
- H. Fabricate sections so finished door assembly is rigid and aligned, with tight hairline joints and free of warp, twist, and deformation.

2.6 TRACKS, SUPPORTS, AND ACCESSORIES

- A. Tracks: Manufacturer's standard, galvanized-steel track system of configuration indicated, sized for door size and weight, designed for lift type indicated and clearances indicated on Drawings, Provide complete system including brackets, bracing, and reinforcement to ensure rigid support of ball-bearing roller guides for required door type, size, weight, and loading.
 - 1. Galvanized Steel: ASTM A 653/A 653M, minimum G60 zinc coating.

2. Slope tracks at an angle from vertical or design tracks to ensure tight closure at jambs when door unit is closed.
 3. Track Reinforcement and Supports: Galvanized-steel members to support track without sag, sway, and vibration during opening and closing of doors. Slot vertical sections of track spaced 2 inches apart for door-drop safety device.
 - a. For Vertical Track: Continuous reinforcing angle attached to track and attached to wall with jamb brackets.
 - b. For Horizontal Track: Continuous reinforcing angle from curve in track to end of track, attached to track and supported at points by laterally braced attachments to overhead structural members.
- B. Weatherseals: Replaceable, adjustable, continuous, compressible weather-stripping gaskets of flexible vinyl, rubber, or neoprene fitted to bottom and top of sectional door unless otherwise indicated.

2.7 HARDWARE

- A. General: Heavy-duty, corrosion-resistant hardware, with hot-dip galvanized, stainless-steel, or other corrosion-resistant fasteners, to suit door type.
- B. Hinges: Heavy-duty, galvanized-steel hinges of not less than 0.079-inch-nominal coated thickness at each end stile and at each intermediate stile, according to manufacturer's written recommendations for door size. Attach hinges to door sections through stiles and rails with bolts and lock nuts or lock washers and nuts. Use rivets or self-tapping fasteners where access to nuts is impossible. Provide double-end hinges where required, for doors more than 16 feet wide unless otherwise recommended by door manufacturer.
- C. Rollers: Heavy-duty rollers with steel ball-bearings in case-hardened steel races, mounted with varying projections to suit slope of track. Extend roller shaft through both hinges where double hinges are required. Provide 3-inch-diameter roller tires for 3-inch-wide track and 2-inch-diameter roller tires for 2-inch-wide track.
- D. Push/Pull Handles: Equip each push-up operated or emergency-operated door with galvanized-steel lifting handles on each side of door, finished to match door.

2.8 LOCKING DEVICES

- A. Retain requirements in this article to suit Project. Locking Device Assembly: Fabricate with cylinder lock, spring-loaded deadbolt, operating handle, cam plate, and adjustable locking bars to engage through slots in tracks.
 1. Lock Cylinders: Cylinders specified in Division 08 Section "Door Hardware" and keyed to building keying system.
- B. Safety Interlock Switch: Equip power-operated doors with safety interlock switch to disengage power supply when door is locked.

2.9 COUNTERBALANCE MECHANISM

- A. Torsion Spring: Counterbalance mechanism consisting of adjustable-tension torsion springs fabricated from steel-spring wire complying with ASTM A 229/A 229M, mounted on torsion shaft made of steel tube or solid steel. Provide springs designed for number of operation cycles indicated.
- B. Cable Drums and Shaft for Doors: Cast-aluminum or gray-iron casting cable drums mounted on torsion shaft and grooved to receive door-lifting cables as door is raised. Mount counterbalance mechanism with manufacturer's standard ball-bearing brackets at each end of torsion shaft.
- C. Cables: Galvanized-steel, multistrand, lifting cables with cable safety factor of at least 5 to 1.
- D. Cable Safety Device: Include a spring-loaded steel or spring-loaded bronze cam mounted to bottom door roller assembly on each side and designed to automatically stop door if either lifting cable breaks.
- E. Bracket: Provide anchor support bracket as required to connect stationary end of spring to the wall and to level the shaft and prevent sag.
- F. Bumper: Provide spring bumper at each horizontal track to cushion door at end of opening operation.

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 Type: Unit consisting of electric motor, gears, pulleys, belts, sprockets, chains, and controls needed to operate door and meet required usage classification.
 - 1. Trolley: Trolley operator mounted to ceiling above and to rear of door in raised position and directly connected to door with drawbar.
 - 2. Jackshaft, Center Mounted: Jackshaft operator mounted on the inside front wall above door and connected to torsion shaft with an adjustable coupling or drive chain.
 - 3. Jackshaft, Side Mounted: Jackshaft operator mounted on the inside front wall on right or left side of door and connected to torsion shaft with an adjustable coupling or drive chain.

- D. Motors: Reversible-type motor with controller (disconnect switch) for motor exposure indicated.
1. Electrical Characteristics:
 - a. Phase: Polyphase.
 - b. Volts: 208 V.
 - c. Hertz: 60.
 2. Motor Size: Minimum size as indicated. 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. and not more than 12 in./sec., without exceeding nameplate ratings or service factor.
 3. Operating Controls, Controllers (Disconnect Switches), Wiring Devices, and Wiring: Manufacturer's standard unless otherwise indicated.
 4. Coordinate wiring requirements and electrical characteristics of motors and other electrical devices with building electrical system and each location where installed.
 5. Use adjustable motor-mounting bases for belt-driven operators.
- E. Limit Switches: Equip 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 Device: External entrapment protection consisting of indicated automatic safety sensor capable of protecting full width of door opening. Activation of device immediately stops and reverses downward door travel.
1. Photoelectric Sensor: Manufacturer's standard system designed to detect an obstruction in door opening without contact between door and obstruction.
 - a. Self-Monitoring Type: Designed to interface with door operator control circuit to detect damage to or disconnection of sensing device. When self-monitoring feature is activated, door closes only with sustained pressure on close button.
 2. Electric Sensor Edge: Automatic safety sensor edge, located within astragal or weather stripping mounted to bottom section. 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.
- 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.
 2. Exterior-Mounted Units: Full-guarded, standard-duty, surface-mounted, weatherproof type, NEMA ICS 6, Type 4 enclosure, key operated.

- H. Emergency Manual Operation: Equip electrically powered door with capability for emergency manual operation. Design manual mechanism so required force for door operation does not exceed 25 lbf.
- 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.
- K. Audible and Visual Signals: Audible alarm and visual indicator lights in compliance with regulatory requirements for accessibility.

2.11 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM/NOMMA's "Metal Finishes Manual for Architectural and Metal Products (AMP 500-06)" 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. 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.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

- A. Install sectional doors and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports; according to manufacturer's written instructions and as specified.

- B. Tracks:
 - 1. Fasten vertical track assembly to opening jambs and framing, spaced not more than 24 inches apart.
 - 2. Hang horizontal track assembly from structural overhead framing with angles or channel hangers attached to framing by welding or bolting, or both. Provide sway bracing, diagonal bracing, and reinforcement as required for rigid installation of track and door-operating equipment.
- C. Accessibility: Install sectional doors, switches, and controls along accessible routes in compliance with regulatory requirements for accessibility.
- D. Power-Operated Doors: Install according to UL 325.

3.3 STARTUP SERVICES

- A. Engage a factory-authorized service representative to perform startup service.
 - 1. Complete installation and startup checks according to manufacturer's written instructions.
 - 2. Test and adjust controls and safety devices. Replace damaged and malfunctioning controls and equipment.

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.
- C. Adjust doors and seals to provide weather-resistant fit around entire perimeter.
- D. Touch-up Painting: Immediately after welding galvanized materials, clean welds and abraded galvanized surfaces and repair galvanizing to comply with ASTM A 780/A 780M.

3.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain sectional doors.

END OF SECTION 08 36 13

SECTION 08 41 13 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Storefront framing.
 - 2. Swing entrance doors.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section and by Division 08 Sections "Door Hardware" and "Glazing" concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 - 1. Entrance door hardware.
 - 2. Accessories.
- B. As-Specified Data: If the product to be incorporated in the Work is as specified by manufacturer name and product designation in this Specification Section, submit the "**As-Specified Verification Form**" (attached to Division 01 Section "Submittal Procedures") for each item listed below, otherwise submit full Product Data for the following:
 - 1. Nonthermal interior framing.
 - 2. Nonthermal interior entrance doors.
- C. Shop Drawings: For aluminum-framed entrances and storefronts. Include plans, elevations, sections, full-size details, and attachments to other work.
 - 1. Show provisions for coordination with door hardware, electrically operated door hardware, and access control and security systems.
- D. Samples: For each type of exposed finish required, in manufacturer's standard sizes.

- E. Delegated-Design Submittal: For aluminum-framed entrances and storefronts indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- F. Warranties: Sample of Project-specific special warranties.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For aluminum-framed entrances and storefronts to include in maintenance manuals.
- B. Warranties: Executed special warranties.

1.6 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 Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

1.7 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 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.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain all components of aluminum-framed entrance and storefront system, including framing and accessories, and entrance doors when available, from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Division 01 Section "Quality Requirements," to design aluminum-framed entrances and storefronts.
- B. 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 structural movements.
 - d. Loosening or weakening of fasteners, attachments, and other components.
 - e. Failure of operating units.
- C. Structural Loads:
 - 1. Design Loads: As indicated on Drawings.
- D. 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.
 - a. Operable Units: Provide a minimum 1/16-inch clearance between framing members and operable units.

2.3 STOREFRONT SYSTEMS, GENERAL

- A. Types: Provide the following storefront system types in locations indicated on Drawings:
 - 1. Nonthermal Interior Framing.
- B. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.
 - 1. Glazing System: Retained mechanically with gaskets on four sides.
 - 2. Glazing Plane: Center.
 - 3. Finish: Clear anodic finish.
 - 4. Fabrication Method: Field-fabricated stick system.
 - 5. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
 - 6. 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 NONTHERMAL INTERIOR FRAMING

- A. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:
 - 1. EFCO Corporation; Series 402.
 - 2. Kawneer; Trifab VersaGlaze 450 2-inch sightline.
 - 3. Special-Lite, Inc.; SL- 245 FG.
 - 4. YKK AP America Inc.; YES 45 FI (single glazed).
- B. Framing Size: 2-inch by 4-1/2-inch.

2.5 ENTRANCE DOOR SYSTEMS, GENERAL

- A. Types: Provide the following entrance door types in locations indicated on Drawings:
 - 1. Nonthermal Interior Entrance Doors.
- B. Entrance Doors: Manufacturer's standard glazed entrance doors for manual-swing or automatic operation.
 - 1. Door Construction: 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.
 - a. Thermal Construction: High-performance plastic connectors separate aluminum members exposed to the exterior from members exposed to the interior.

2. Bottom Rail: Height to comply with accessibility requirements.
3. Glazing Stops and Gaskets: Square, snap-on, extruded-aluminum stops and preformed gaskets.
 - a. Provide nonremovable glazing stops on outside of door.

2.6 NONTHERMAL INTERIOR ENTRANCE DOORS

- A. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:
 1. EFCO Corporation; Series D500.
 2. Kawneer; 500 Standard.
 3. YKK AP America Inc.; Model 50D.
- B. Depth: 1-3/4-inch.
- C. Door Design: Wide stile, 5-inch nominal width.

2.7 ENTRANCE DOOR HARDWARE

- A. Entrance Door Hardware: Hardware not specified in this Section is specified in Division 08 Section "Door Hardware."
- B. General: Provide entrance door hardware and entrance door hardware sets indicated in door and frame schedule for each entrance door, to comply with requirements in this Section.
 1. Opening-Force Requirements:
 - a. Egress Doors: Not more than 15 lbf to release the latch and not more than 30 lbf to set the door in motion and not more than 15 lbf to open the door to its minimum required width.
 - b. Accessible Interior Doors: Not more than 5 lbf to fully open door.
- C. Removable Mullions: BHMA A156.3 extruded aluminum.
 1. When used with panic exit devices, provide keyed removable mullions listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305. Use only mullions that have been tested with exit devices to be used.
- D. Weather Stripping: Manufacturer's standard replaceable components.
 1. Compression Type: Made of ASTM D 2000 molded neoprene or ASTM D 2287 molded PVC.
 2. Sliding Type: AAMA 701/702, made of wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.

- E. Thresholds: BHMA A156.21 raised thresholds beveled with a slope of not more than 1:2, with maximum height of 1/2 inch.

2.8 GLAZING

- A. Glazing: Comply with Division 08 Section "Glazing."
- B. Glazing Gaskets: Manufacturer's standard sealed-corner pressure-glazing system of black, resilient elastomeric glazing gaskets, setting blocks, and shims or spacers.
- C. Glazing Sealants: As recommended by manufacturer.

2.9 MATERIALS

- A. Sheet and Plate: ASTM B 209.
- B. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221.
- C. Extruded Structural Pipe and Tubes: ASTM B 429/B 429M.
- D. Structural Profiles: ASTM B 308/B 308M.
- E. Steel Reinforcement:
 - 1. Structural Shapes, Plates, and Bars: ASTM A 36/A 36M.
 - 2. Cold-Rolled Sheet and Strip: ASTM A 1008/A 1008M.
 - 3. Hot-Rolled Sheet and Strip: ASTM A 1011/A 1011M.
 - 4. 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.

2.10 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.
- 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 A 123/A 123M or ASTM A 153/A 153M 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.

2.11 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.
 - 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. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.
- F. Entrance Doors: Reinforce doors as required for installing entrance door hardware.
- G. 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.
- H. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.12 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

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.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

A. General:

- 1. Comply with manufacturer's written instructions.
- 2. Do not install damaged components.
- 3. Fit joints to produce hairline joints free of burrs and distortion.
- 4. Rigidly secure nonmovement joints.
- 5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.
- 6. Seal perimeter and other joints watertight unless otherwise indicated.

B. 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.

C. Set continuous sill members and flashing in full sealant bed, as specified in Division 07 Section "Joint Sealants," to produce weathertight installation.

D. Install components plumb and true in alignment with established lines and grades.

E. Install operable units level and plumb, securely anchored, and without distortion. Adjust weather-stripping contact and hardware movement to produce proper operation.

F. Install glazing as specified in Division 08 Section "Glazing."

G. Entrance Doors: Install doors to produce smooth operation and tight fit at contact points.

- 1. 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.

3.3 ERECTION TOLERANCES

- A. Erection Tolerances: 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.

3.4 MAINTENANCE SERVICE

- A. Entrance Door Hardware:
1. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of entrance door hardware.

END OF SECTION 08 41 13

SECTION 08 43 29 - SLIDING STOREFRONTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes manually operated, sliding storefronts.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section and by Division 08 Sections “Door Hardware” and “Glazing” concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each configuration of sliding storefront indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. As-Specified Data: If the product to be incorporated in the Work is as specified by manufacturer name and product designation in this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below, otherwise submit full Product Data for the following:
 - 1. Sliding storefront.
- C. Shop Drawings: For each sliding storefront installation.
 - 1. Include plans, elevations, sections, hardware mounting heights, and attachment details.
- D. Samples: For each type of exposed finish required, in manufacturer's standard sizes.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For sliding storefronts to include in maintenance manuals.

1.6 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 Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

1.7 FIELD CONDITIONS

- A. Field Measurements: Verify actual dimensions of openings to receive sliding storefronts by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 MANUFACTURERS, GENERAL

- A. Source Limitations: Obtain sliding storefronts from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Opening Force: Not more than 5 lbf to fully open door.
- B. Regulatory Requirements: Comply with applicable provisions in the U.S. Department of Justice "2010 ADA Standards for Accessible Design", ICC A117.1, and building Code in effect for Project.

2.3 SLIDING STOREFRONT ASSEMBLIES

- A. General: Provide manufacturer's sliding storefront indicated including door leaves, sidelites, framing, headers, rollers and roller tracks, and accessories required for a complete installation.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Kawneer Company Inc.; Series 1010 Sliding Mall Front, or comparable product, including, but not limited to, products by:
 - a. Oldcastle Building Envelope.
- B. Sliding Storefront:
 - 1. Floor Track: Not greater than 1/2-inch height, full width of storefront.
 - 2. Glazing Stops and Gaskets: Square.
 - 3. Glazing: Clear tempered (Type FC).
 - 4. Finish framing, door(s), sidelite(s), and header with Class II, clear anodic finish.

2.4 COMPONENTS

- A. Framing Members: Extruded aluminum, minimum 0.070-inch thick and reinforced as required to support imposed loads.
- B. Stile and Rail Doors: 1-3/8-inch-thick, glazed doors with extruded-aluminum tubular stile and rail members. Mechanically fasten corners with reinforcing brackets that are welded or incorporate concealed tie rods that span full length of top and bottom rails. Provide interlocks to sliding and fixed panels.
- C. Sidelites: 1-3/8-inch-deep sidelites with extruded-aluminum tubular stile and rail members matching door design and finish. Provide interlocks to sliding panels.
- D. Glazing: As specified in Division 08 Section "Glazing."
- E. Headers: Fabricated from extruded aluminum and extending full width of storefront.
- F. Rollers and Roller Tracks: Assembly that allows vertical adjustment; consisting of stainless-steel wheels operating on a continuous roller track. Provide minimum of two roller wheel assemblies for each active leaf.
- G. Brackets and Reinforcements: High-strength aluminum with nonstaining, nonferrous shims for aligning system components.
- H. Fasteners and Accessories: Corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

2.5 HARDWARE

- A. General: Provide units in sizes and types recommended by sliding storefront entrance and hardware manufacturers for entrances and uses indicated. Finish exposed parts to match door finish.
- B. Pulls: Recessed units on both sides of each operable door.
- C. Deadlocks: Operated by exterior cylinder and interior thumb turn.
 - 1. Deadbolts: Laminated-steel hook, mortise type, BHMA A156.5, Grade 1.
 - 2. Cylinders: As specified in Division 08 Section "Door Hardware."
- D. Weather Stripping: Replaceable components.
 - 1. Compression Type: ASTM D2000, molded neoprene or ASTM D2287, molded PVC.
 - 2. Sliding Type: AAMA 701/702, wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.
- E. Sweeps: Nylon brush sweep mounted to underside of door bottom.
- F. Hardware not specified in this Section is specified in Division 08 Section "Door Hardware."

2.6 FABRICATION

- A. General: Factory fabricate sliding storefront components to designs, sizes, and thicknesses indicated and to comply with indicated standards.
1. Fabricate aluminum components before finishing.
 2. 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.
 3. Use concealed fasteners to greatest extent possible. Where exposed fasteners are required, use countersunk Phillips flat-head machine screws, finished to match framing.
 - a. Where fasteners are subject to loosening or turning out from structural movements or vibration, use self-locking devices.
 - b. Reinforce members as required to receive fastener threads.
 4. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.
- B. Framing: Provide sliding storefronts as prefabricated assemblies. Complete fabrication, assembly, finishing, hardware application, and other work before shipment to Project site.
1. Fabricate tubular and channel frame assemblies with welded or mechanical joints. Provide subframes and reinforcement as required for a complete system to support required loads.
 2. Perform fabrication operations in manner that prevents damage to exposed finish surfaces.
 3. Form profiles that are straight and free of defects or deformations.
 4. Provide components with concealed fasteners and anchor and connection devices.
 5. Fabricate components with accurately fitted joints, with ends coped or mitered to produce hairline joints free of burrs and distortion.
 6. Provide anchorage and alignment brackets for concealed support of assembly from the building structure.
- C. Doors: Factory fabricated and assembled in profiles indicated. Reinforce as required to support imposed loads and for installing hardware.
- D. Glazing: Fabricate framing with minimum glazing edge clearances for thickness and type of glazing indicated, according to GANA's "Glazing Manual."
- E. Hardware: Factory install hardware to the greatest extent possible; remove only as required for final finishing operation and for delivery to and installation at Project site. Cut, drill, and tap for factory-installed hardware before applying finishes.

2.7 MATERIALS

- A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
 - 1. Extruded Bars, Rods, Profiles, and Tubes: ASTM B221.
 - 2. Sheet and Plate: ASTM B209.
- B. Sealants and Joint Fillers: As specified in Division 07 Section "Joint Sealants."
- C. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

2.8 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM/NOMMA 500 for recommendations for applying and designating finishes.
- B. Apply anodic finishes to formed metal after fabrication unless otherwise indicated.
- C. Appearance of Finished Work: Noticeable variations in same piece are unacceptable.

2.9 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances, support, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

- A. General: Install sliding storefronts according to manufacturer's written instructions.
 - 1. Do not install damaged components. Fit frame joints to produce hairline joints free of burrs and distortion. Rigidly secure nonmovement joints. Seal joints.
 - 2. Where aluminum contacts dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.
 - 3. Where aluminum contacts concrete or masonry, protect against corrosion by painting contact surfaces with bituminous coating.

- B. Install sliding storefronts plumb, true in alignment with established lines and grades, and without warp or rack of framing members and doors. Anchor securely in place.
 - 1. Install surface-mounted hardware using concealed fasteners to greatest extent possible.
 - 2. Set headers, roller assemblies, tracks, operating brackets, and guides level and true to location with anchorage for permanent support.
- C. Glazing: Install glazing as specified in Division 08 Section "Glazing."
- D. Sealants: Comply with requirements in Division 07 Section "Joint Sealants" for installing sealants, fillers, and gaskets.
 - 1. Set framing members, floor tracks, and flashings in full sealant bed.
 - 2. Seal perimeter of framing members with sealant.

3.3 ADJUSTING

- A. Adjust operating hardware and moving parts to function smoothly and lubricate as recommended by manufacturer.
- B. Adjust force to open door panels.

3.4 CLEANING AND PROTECTION

- A. Clean glass and metal surfaces promptly after installation. Remove excess glazing and sealant compounds, dirt, and other substances. Correct damaged finish to match original finish.
- B. Comply with requirements in Division 08 Section "Glazing" for cleaning and protecting glass.

END OF SECTION 08 43 29

SECTION 08 46 00 – FIRE-RATED GLAZED OPENING ASSEMBLIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Fire-protection-rated glazed opening assemblies.
 - 2. Fire-resistance-rated storefront systems.

1.3 DEFINITIONS

- A. Fire-Protection Rating: The period of time that an opening protective will maintain the ability to confine a fire as determined by tests specified in Section 716 of the building Code in effect for the Project.
- B. Fire-Rated Glazed Opening Assemblies: Glazed opening assemblies configured as either possessing a fire-protection rating or a fire-resistance rating.
- C. Fire-Resistance Rating: The period of time a building element, component or assembly maintains the ability to confine a fire, continues to perform a given structural function, or both, as determined by tests, or the methods based on tests, prescribed in Section 703 of the building Code in effect for the Project.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section and by Division 08 Sections “Door Hardware” and “Glazing” concurrently.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 - 1. Door hardware.
 - 2. Accessories.

- B. **As-Specified Data:** If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below, otherwise submit full Product Data for the following:
 - 1. Fire-protection-rated glazed opening assemblies, 20-minute, interior.
 - 2. Fire-protection-rated glazed opening assemblies, 45-minute, interior.
 - 3. Fire-resistance-rated storefront systems, 60-minute, interior.
- C. **Shop Drawings:** For fire-rated glazed opening assemblies. Include plans, elevations, sections, full-size details, and attachments to other work.
 - 1. Verify actual locations and dimensions of structural supports for curtain walls by field measurements before fabrication and indicate measurements on Shop Drawings.
 - 2. Show provisions for coordination with door hardware, electrically operated door hardware, and access control and security systems.
- D. **Samples:** For each type of exposed finish required, in manufacturer’s standard sizes.
- E. **Product Schedule:** For fire-rated glazed opening assemblies. Use same designations as indicated on Drawings.
- F. **Sample Warranty:** For special warranty.

1.7 CLOSEOUT SUBMITTALS

- A. **Maintenance Data:** For fire-rated glazed opening assemblies to include in maintenance manuals.
- B. **Executed Warranty:** For special warranty.

1.8 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 Architect, except with Architect’s approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

1.9 COORDINATION

- A. **Coordinate requirements for installation of door hardware, electrified door hardware, and access control and security systems.**

1.10 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of fire-rated glazed opening assemblies that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures, including, 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. Failure of operating components.
 - 2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain framing from single source from single manufacturer and glazing from single manufacturer acceptable in writing from the framing manufacturer, for each fire-rated glazed opening assembly.

2.2 PERFORMANCE REQUIREMENTS

- A. General Performance: Comply with performance requirements specified, as determined by testing of fire-rated glazed opening assemblies representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.
 - 1. Fire-rated glazed opening assemblies 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 structural movements.
 - d. Loosening or weakening of fasteners, attachments, and other components.
 - e. Failure of operating units.
- B. Structural Loads:
 - 1. 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.
 - a. Operable Units: Provide a minimum 1/16-inch clearance between framing members and operable units.
- D. Fire-Protection-Rated Door Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
- E. Fire-Protection-Rated Window Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 257 or UL 9.
- F. Fire-Resistance-Rated Assemblies: Complying with NFPA 80 and listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction for fire-resistance ratings indicated, based on testing according to ASTM E119 or UL 263.

2.3 FIRE-PROTECTION-RATED GLAZED OPENING ASSEMBLIES

- A. Fire-Protection-Rated Glazed Opening Assemblies: 20-minute, interior, fire-protection-rated glazed opening assemblies. Provide the following:
1. Aluminum Units:
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide the following, or comparable product:
 - 1) Aluflam North America; Fire-Rated Aluminum Fixed Windows FW-EI20 and Full Vision Doors and Frames.
 - a) Glazing: Vetrotech Saint-Gobain; Pyroswiss 20 (Glass Type FP) as specified in Division 08 Section "Glazing."
 - b) Finish: Clear anodic finish.
- B. Fire-Protection-Rated Glazed Opening Assemblies: 45-minute, interior, fire-protection-rated glazed opening assemblies. Provide the following:
1. Aluminum Units:
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide the following, or comparable product:

- 1) Aluflam North America; Fire-Rated Aluminum Fixed Windows FW-EI45 and Full Vision Doors and Frames.
 - a) Glazing for Interior Units: Vetrotech Saint-Gobain; Contraflam 45 (Glass Type FPI) as specified in Division 08 Section "Glazing."
 - b) Finish: Clear anodic finish.

2.4 FIRE-RESISTANCE-RATED STOREFRONT SYSTEMS

- A. Fire-Resistance-Rated Storefront Systems: 60-minute, interior, fire-resistance-rated storefront systems. Provide one of the following:

1. Aluminum-and-Steel Units:

- a. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:

- 1) Safti First; GPX Architectural Series Fire Resistive Framing and Doors.

- a) Glazing for Interior Units: Safti First; SuperLite II-XL 60 (Glass Type FRD) as specified in Division 08 Section "Glazing."
- b) Finish: Clear anodic finish.

- 2) Technical Glass Products; Fireframes Aluminum Series and Fireframes Heat Barrier Series doors, with extruded aluminum cover caps.

- a) Glazing for Interior Units: Technical Glass Products; Pilkington Pyrostop (Glass Type FRI) as specified in Division 08 Section "Glazing."
- b) Finish: Clear anodic finish.

2.5 DOOR HARDWARE

- A. Door Hardware: Hardware not specified in this Section is specified in Division 08 Section "Door Hardware."

- B. General: Provide door hardware and door hardware sets indicated in door and frame schedule for each entrance door, to comply with requirements in this Section.

1. Opening-Force Requirements:

- a. Egress Doors: Not more than 15 lbf to release the latch and not more than 30 lbf to set the door in motion and not more than 15 lbf to open the door to its minimum required width.
- b. Accessible Interior Doors: Not more than 5 lbf to fully open door.

- C. Removable Mullions: BHMA A156.3 extruded aluminum.
 - 1. When used with panic exit devices, provide keyed removable mullions listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305. Use only mullions that have been tested with exit devices to be used.
- D. Weather Stripping: Manufacturer's standard replaceable components.
 - 1. Compression Type: Made of ASTM D 2000 molded neoprene or ASTM D 2287 molded PVC.
 - 2. Sliding Type: AAMA 701/702, made of wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.
- E. Weather Sweeps: Manufacturer's standard adjustable exterior-door bottom sweep with concealed fasteners on mounting strip.
- F. Thresholds: BHMA A156.21 raised thresholds beveled with a slope of not more than 1:2, with maximum height of 1/2 inch.

2.6 GLAZING

- A. Glazing: Comply with Division 08 Section "Glazing."
- B. Glazing Gaskets: As recommended by manufacturer.
- C. Glazing Sealants: As recommended by manufacturer.

2.7 MATERIALS

- A. Aluminum:
 - 1. Sheet and Plate: ASTM B 209.
 - 2. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221.
 - 3. Extruded Structural Pipe and Tubes: ASTM B 429/B 429M.
 - 4. Structural Profiles: ASTM B 308/B 308M.
- B. Steel:
 - 1. Structural Shapes, Plates, and Bars: ASTM A 36/A 36M.
 - 2. Cold-Rolled Sheet and Strip: ASTM A 1008/A 1008M.
 - 3. Hot-Rolled Sheet and Strip: ASTM A 1011/A 1011M.
 - 4. 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.
- 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 A 123/A 123M or ASTM A 153/A 153M 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.
 - 6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
- D. Door Frames: Reinforce as required to support loads imposed by door operation and for installing door hardware.
- E. Doors: Reinforce doors as required for installing door hardware.
- F. Door Hardware Installation: Factory install door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed door hardware before applying finishes.
- G. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings

2.10 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.

2.11 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, 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 of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

- A. General:
 - 1. Comply with manufacturer's written instructions.
 - 2. Do not install damaged components.
 - 3. Fit joints to produce hairline joints free of burrs and distortion.
 - 4. Rigidly secure nonmovement joints.
 - 5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.
 - 6. Seal perimeter and other joints watertight unless otherwise indicated.
- B. 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.
- C. Set continuous sill members and flashing in full sealant bed, as specified in Division 07 Section "Joint Sealants," to produce weathertight installation.

- D. Install components plumb and true in alignment with established lines and grades.
- E. Install operable units level and plumb, securely anchored, and without distortion. Adjust weather-stripping contact and hardware movement to produce proper operation.
- F. Install glazing as specified in Division 08 Section "Glazing."
- G. Doors: Install doors to produce smooth operation and tight fit at contact points.
 - 1. Field-Installed Door Hardware: Install surface-mounted door hardware according to door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

3.3 ERECTION TOLERANCES

- A. Erection Tolerances: Install fire-rated glazed opening assemblies 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.

3.4 ADJUSTING, CLEANING, AND PROTECTION

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.

3.5 MAINTENANCE SERVICE

- A. Door Hardware:
 - 1. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware

END OF SECTION 08 46 00

SECTION 08 56 53 – SLIDING SECURITY WINDOWS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Sliding, transaction security windows.

1.3 COORDINATION

- A. Coordinate installation of anchorages for security windows. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, anchor bolts, and items with integral anchors, that are to be embedded in adjacent construction. Deliver such items to Project site in time for installation.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 SUBMITTALS, GENERAL

- A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include construction details, material descriptions, dimensions of individual components and profiles, weights and finishes for window units.
 - 1. Sliding, transaction security windows.
- B. Shop Drawings: For security windows.
 - 1. Include plans, elevations, sections, and attachment details.
 - 2. Hardware for sliding window units.
 - 3. Glazing details.

1.7 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each type of security window indicated as ballistics resistant, for tests performed by a qualified testing agency.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Pack security windows in wood crates for shipment.
- B. Label security window packaging with drawing designation.
- C. Store crated security windows on raised blocks to prevent moisture damage.

1.9 FIELD CONDITIONS

- A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Attack Resistance: Provide units identical to those tested for compliance with requirements indicated, and as follows:
 - 1. Ballistics Resistance: Listed and labeled as Level 1 when tested according to UL 752.

2.2 SLIDING, TRANSACTION SECURITY WINDOWS

- A. Provide sliding, transaction security windows.
 - 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. Quikserv Corp.
 - b. Ready Access, Inc.
- B. Configuration: One fixed-glazed panel and one horizontal-sliding glazed panel.
- C. Operation: Manual open/self-closing.
- D. Framing: Fabricate perimeter framing, mullions, and glazing stops from aluminum.
- E. Sliding Window Hardware: Provide roller track designed for overhead support of manufacturer's standard carrier supporting horizontal-sliding glazed panel with manufacturer's standard self-closing mechanism mounted in header. Provide self-latching and self-locking pull and lock with two keys for each horizontal-sliding glazed panel. Provide with security bar.

- F. Glazing and Glazing Materials: Comply with requirements in Division 08 Section " Glazing" and as follows:
1. Ballistics-Resistant Glazing:
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide Global Security Glazing; Lexgard MP750, or comparable product.
 - b. Three-ply clear, abrasion-resistant polycarbonate and acrylic laminate; UL 752, Level 1.
- G. Materials:
1. Mild Steel Plates, Shapes, and Bars: ASTM A36/A36M.
 2. Metallic-Coated Steel Sheet: ASTM A653/A653M, CS (Commercial Steel), Type B; with G60 zinc (galvanized) or A60 zinc-iron-alloy (galvannealed) coating designation.
 3. Stainless-Steel Sheet, Strip, Plate, and Flat Bars: ASTM A666 or ASTM A240/A240M, austenitic stainless steel, Type 304.
 4. Aluminum Extrusions: ASTM B221. Provide alloy and temper recommended by manufacturer for strength, corrosion resistance, and application of required finish, but not less than 22,000-psi ultimate tensile strength.
 5. Aluminum Sheet and Plate: ASTM B209.

2.3 FABRICATION

- A. General: Fabricate security windows to provide a complete system for assembly of components and anchorage of window units.
1. Provide units that are reglazable from the secure side without dismantling the attack side of framing.
- B. Framing: Miter or cope corners the full depth of framing; weld and dress smooth.
1. Fabricate framing with manufacturer's standard, internal opaque armoring in thicknesses required for security windows to comply with ballistics-resistance performance indicated.
- C. Glazing Stops: Finish glazing stops to match security window framing.
1. Attack-Side (Exterior) Glazing Stops: Welded or integral to framing.
 2. Secure-Side (Interior) Glazing Stops: Removable, coordinated with glazing indicated.
- D. Metal Protection: Separate dissimilar metals to protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.
- E. Preglazed Fabrication: Preglaze window units at factory, where required for applications indicated. Installation orientation of glazing to meet performance requirements. Comply with requirements in Division 08 Section " Glazing."

2.4 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM/NOMMA 500 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.

2.5 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

2.6 ACCESSORIES

- A. Concealed Bolts: ASTM A307, Grade A unless otherwise indicated.
- B. Embedded Plate Anchors: Fabricated from mild steel shapes and plates, minimum 3/16 inch thick; with minimum 1/2-inch-diameter, headed studs welded to back of plate.
- C. Glazing Strips and Weather Stripping: Manufacturer's standard replaceable components.
 - 1. Compression Type: Molded EPDM or neoprene gaskets complying with ASTM D2000, Designations 2BC415 to 3BC620; molded PVC gaskets complying with ASTM D2287; or molded, expanded EPDM or neoprene gaskets complying with ASTM C509, Grade 4.
 - 2. Sliding Type: AAMA 701/702, made of wool, polypropylene, or nylon woven pile with nylon-fabric backing.
- D. Miscellaneous Glazing Materials: Provide material, size, and shape complying with requirements of glass manufacturers and with a proven record of compatibility with surfaces contacted in installation.
 - 1. Cleaners, Primers, and Sealers: Type recommended by sealant or gasket manufacturer.
 - 2. Setting Blocks: Elastomeric material with a Shore A durometer hardness of 85, plus or minus 5.
 - 3. Spacers: Elastomeric blocks or continuous extrusions with a Shore A durometer hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
 - 4. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).
- E. Anchors, Clips, and Window Accessories: Stainless steel; hot-dip, zinc-coated steel or iron, complying with ASTM B633; provide sufficient strength to withstand design pressures indicated.
- F. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

- G. Sealants: For sealants required within fabricated security windows, provide type recommended by manufacturer for joint size and movement. Sealant shall remain permanently elastic, nonshrinking, and nonmigrating.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of security windows.
- B. Examine roughing-in for embedded and built-in anchors to verify actual locations of security window connections before security window installation.
- C. Inspect built-in and cast-in anchor installations, before installing security windows, to verify that anchor installations comply with requirements.
 - 1. Remove and replace anchors where inspections indicate that they do not comply with specified requirements. Reinspect after repairs or replacements are made.
 - 2. Perform additional inspections to determine compliance of replaced or additional work.
- D. For factory-installed glazing materials whose orientation (secure or attack side) is critical for performance, verify installation orientation.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.
- F. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing security windows to in-place construction. Include threaded fasteners for inserts, security fasteners, and other connectors.
- B. Fasteners: Install security windows using fasteners recommended by manufacturer with head style appropriate for installation requirements, strength, and finish of adjacent materials. Provide stainless-steel fasteners.
- C. Sealants: Comply with requirements in Division 07 Section "Joint Sealants" for installing sealants, fillers, and gaskets.
- D. Metal Protection: Where dissimilar metals will contact each other, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended in writing by manufacturer for this purpose. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

3.3 ADJUSTING

- A. Adjust horizontal-sliding, transaction security windows to provide a tight fit at contact points for smooth operation and a secure enclosure.
- B. Remove and replace defective work, including security windows that are warped, bowed, or otherwise unacceptable.

3.4 CLEANING AND PROTECTION

- A. Clean surfaces promptly after installation of security windows. Take care to avoid damaging the finish. Remove excess glazing and sealant compounds, dirt, and other substances.
 - 1. Lubricate sliding security window hardware.
- B. Clean glass of preglazed security windows promptly after installation. Comply with requirements in Division 08 Section " Glazing" for cleaning and maintenance.
- C. Provide temporary protection to ensure that security windows are without damage at time of Substantial Completion.

3.5 DEMONSTRATION

- A. Train Owner's maintenance personnel to adjust, operate, and maintain operable security windows.

END OF SECTION 08 56 53

SECTION 087100 – DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes commercial door hardware for the following:
 - 1. Swinging doors.
 - 2. Other doors to the extent indicated.
- B. Door hardware includes, but is not necessarily limited to, the following:
 - 1. Mechanical door hardware.
 - 2. Electromechanical door hardware.
 - 3. Cylinders specified for doors in other sections.
- C. Related Sections:
 - 1. Division 08 Section “Hollow Metal Doors and Frames”.
 - 2. Division 08 Section “Flush Wood Doors”.
 - 3. Division 08 Section “Aluminum-Framed Entrances and Storefronts”.
- D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
 - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 - 2. ICC/IBC - International Building Code.
 - 3. NFPA 70 - National Electrical Code.
 - 4. NFPA 80 - Fire Doors and Windows.
 - 5. NFPA 101 - Life Safety Code.
 - 6. NFPA 105 - Installation of Smoke Door Assemblies.
 - 7. State Building Codes, Local Amendments.
- E. Standards: All hardware specified herein shall comply with the following industry standards:
 - 1. ANSI/BHMA Certified Product Standards - A156 Series
 - 2. UL10C – Positive Pressure Fire Tests of Door Assemblies

1.3 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - 1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
 - 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
 - 3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
 - h. Warranty information for each product.
 - 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Shop Drawings: Details of electrified access control hardware indicating the following:
 - 1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:
 - a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
 - b. Complete (risers, point-to-point) access control system block wiring diagrams.
 - c. Wiring instructions for each electronic component scheduled herein.

2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.
- D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.
- E. Informational Submittals:
1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.
- F. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.

1.4 QUALITY ASSURANCE

- A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.
- B. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- C. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.
- D. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.
1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
 2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.

- E. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.
- F. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
 - 1. Function of building, purpose of each area and degree of security required.
 - 2. Plans for existing and future key system expansion.
 - 3. Requirements for key control storage and software.
 - 4. Installation of permanent keys, cylinder cores and software.
 - 5. Address and requirements for delivery of keys.
- G. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.
 - 1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
 - 2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
 - 3. Review sequence of operation narratives for each unique access controlled opening.
 - 4. Review and finalize construction schedule and verify availability of materials.
 - 5. Review the required inspecting, testing, commissioning, and demonstration procedures
- H. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.6 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.
- B. Door Hardware and Electrical Connections: Coordinate the layout and installation of scheduled electrified door hardware and related access control equipment with required connections to source power junction boxes, low voltage power supplies, detection and monitoring hardware, and fire and detection alarm systems.
- C. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
 - 1. Structural failures including excessive deflection, cracking, or breakage.
 - 2. Faulty operation of the hardware.
 - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 4. Electrical component defects and failures within the systems operation.
- C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.
- D. Special Warranty Periods:
 - 1. Seven years for heavy duty cylindrical (bored) locks and latches.
 - 2. Five years for exit hardware.
 - 3. Twenty five years for manual overhead door closer bodies.
 - 4. Two years for electromechanical door hardware.

1.8 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.
- B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:
 - 1. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.
- C. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 HANGING DEVICES

- A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.
 - 1. Quantity: Provide the following hinge quantity:
 - a. Two Hinges: For doors with heights up to 60 inches.
 - b. Three Hinges: For doors with heights 61 to 90 inches.
 - c. Four Hinges: For doors with heights 91 to 120 inches.
 - d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.
 - 2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
 - a. Widths up to 3'0": 4-1/2" standard or heavy weight as specified.
 - b. Sizes from 3'1" to 4'0": 5" heavy weight.
 - 3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
 - a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
 - b. Interior Doors: Ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
 - 4. Hinge Options: Comply with the following:

- a. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.
5. Manufacturers:
- a. Bommer Industries (BO) - LB Series.
 - b. Hager Companies (HA) - CB Series.
 - c. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - TA Series.
- B. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 certified continuous geared hinge. with minimum 0.120-inch thick extruded 6060 T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.
1. Manufacturers:
- a. Bommer Industries (BO).
 - b. Hager Companies (HA).
 - c. Pemko Products; ASSA ABLOY Architectural Door Accessories (PE).
- C. Pin and Barrel Continuous Hinges: ANSI/BHMA A156.26 Grade 1-600 certified pin and barrel continuous hinges with minimum 14 gauge Type 304 stainless steel hinge leaves, concealed teflon coated stainless pin, and twin self-lubricated nylon bearings at each knuckle separation. Factory trim hinges to suit door height and prepare for electrical cut-outs.
1. Manufacturers:
- a. Markar Products; ASSA ABLOY Architectural Door Accessories (MR).
 - b. Pemko Products; ASSA ABLOY Architectural Door Accessories (PE).

2.3 POWER TRANSFER DEVICES

- A. Electric Door Wire Harnesses: Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.
1. Provide one each of the following tools as part of the base bid contract:
- a. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - Electrical Connecting Kit: QC-R001.

- b. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - Connector Hand Tool: QC-R003.
 2. Manufacturers:
 - a. Hager Companies (HA) - Quick Connect.
 - b. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) – QC-C Series.
- 2.4 DOOR OPERATING TRIM
- A. Flush Bolts and Surface Bolts: ANSI/BHMA A156.3 and A156.16, Grade 1, certified.
 1. Flush bolts to be furnished with top rod of sufficient length to allow bolt retraction device location approximately six feet from the floor.
 2. Furnish dust proof strikes for bottom bolts.
 3. Surface bolts to be minimum 8” in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable.
 4. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
 5. Manufacturers:
 - a. Ives (IV).
 - b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
 - c. Trimco (TC).
 - B. Coordinators: ANSI/BHMA A156.3 certified door coordinators consisting of active-leaf, hold-open lever and inactive-leaf release trigger. Model as indicated in hardware sets.
 1. Manufacturers:
 - a. Ives (IV).
 - b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
 - c. Trimco (TC).
 - C. Door Push Plates and Pulls: ANSI/BHMA A156.6 certified door pushes and pulls of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.
 1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
 2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
 3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
 4. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets.

5. Manufacturers:

- a. Hiawatha, Inc. (HI).
- b. Ives (IV).
- c. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).

2.5 CYLINDERS AND KEYING

- A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.
- B. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets and exit devices, unless otherwise indicated.
 1. Manufacturers:
 - a. Corbin Russwin Hardware (RU).
 - b. Sargent Manufacturing (SA).
 - c. Schlage (SC).
- C. Cylinders: Original manufacturer cylinders complying with the following:
 1. Mortise Type: Threaded cylinders with rings and cams to suit hardware application.
 2. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
 3. Bored-Lock Type: Cylinders with tailpieces to suit locks.
 4. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
 5. Keyway: Match Facility Standard.
- D. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:
 1. Interchangeable Cores: Core insert, removable by use of a special key; usable with other manufacturers' cylinders.
- E. Keying System: Each type of lock and cylinders to be factory keyed.
 1. Conduct specified "Keying Conference" to define and document keying system instructions and requirements.
 2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
 3. Existing System: Field verify and key locks to match Owner's existing system.
- F. Key Quantity: Provide the following minimum number of keys:
 1. Change Keys per Cylinder: Two (2)
 2. Master Keys (per Master Key Level/Group): Five (5).
 3. Construction Keys (where required): Ten (10).

4. Construction Control Keys (where required): Two (2).
 5. Permanent Control Keys (where required): Two (2).
- G. Construction Keying: Provide construction master keyed cylinders.
- H. Construction Keying: Provide temporary keyed construction cores.
- I. Key Registration List (Bitting List):
1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
 2. Provide transcript list in writing or electronic file as directed by the Owner.
- J. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project.
1. Manufacturers:
 - a. Lund Equipment (LU).
 - b. MMF Industries (MM).
 - c. Telkee (TK).
- K. Key Control Software: Provide one network version of "Key Wizard" branded key management software package that includes one year of technical support and upgrades to software at no charge. Provide factory key system formatted for importing into "Key Wizard" software.
- 2.6 MECHANICAL LOCKS AND LATCHING DEVICES
- A. Cylindrical Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.2, Series 4000, Grade 1 certified.
1. Furnish with solid cast levers, standard 2 3/4" backset, and 1/2" (3/4" at paired openings) throw brass or stainless steel latchbolt.
 2. Locks are to be non-handed and fully field reversible.
 3. Extended cycle test: Locks to have been cycle tested in ordinance with ANSI/BHMA 156.2 requirements to 2 million cycles.
 4. Manufacturers:
 - a. Corbin Russwin Hardware (RU) – CL3300 Series.
 - b. Sargent Manufacturing (SA) – 10 Line.
 - c. Schlage (SC) – ND Series.

2.7 LOCK AND LATCH STRIKES

- A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:
1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
 2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
 3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
 4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.
- B. Standards: Comply with the following:
1. Strikes for Mortise Locks and Latches: BHMA A156.13.
 2. Strikes for Bored Locks and Latches: BHMA A156.2.
 3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
 4. Dustproof Strikes: BHMA A156.16.

2.8 ELECTRIC STRIKES

- A. Surface Mounted Rim Electric Strikes: Surface mounted rim exit device electric strikes conforming to ANSI/BHMA A156.31, Grade 1, and UL Listed for both Burglary Resistance and for use on fire rated door assemblies. Construction includes internally mounted solenoid with two heavy-duty, stainless steel locking mechanisms operating independently to provide tamper resistance. Strikes tested for a minimum of 500,000 operating cycles. Provide strikes with 12 or 24 VDC capability supplied standard as fail-secure unless otherwise specified. Option available for latchbolt and latchbolt strike monitoring indicating both the position of the latchbolt and locked condition of the strike. Strike requires no cutting to the jamb prior to installation.
1. Manufacturers:
 - a. Adams Rite (AD) - 74 Series.
 - b. Folger Adam (FO) - 310-4 Series.
 - c. HES (HS) - 9400/9500/9600/9700/9800 Series.
- B. Provide electric strikes with in-line power controller and surge suppressor by the same manufacturer as the strike with the combined products having a five year warranty.

2.9 CONVENTIONAL EXIT DEVICES

- A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

1. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
 2. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer's catalog and template book for specific requirements.
 3. Except on fire rated doors, provide exit devices with key cylinder dogging device to hold the pushbar and latch in a retracted position. Provide LD (less dogging) option for non-fire rated doors with intruder function.
 4. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.
 5. Flush End Caps: Provide flush end caps made of architectural metal in the same finish as the devices as in the Hardware Sets. Plastic end caps will not be acceptable.
 6. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.
 - a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
 - b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.
 7. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.
 8. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2" wide stiles.
 9. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
 10. Rail Sizing: Provide exit device rails factory sized for proper door width application.
 11. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.
- B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 certified panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Exit device latch to be stainless steel, pullman type, with deadlock feature.
1. Manufacturers:
 - a. Corbin Russwin Hardware (RU) - ED4000 / ED5000 Series.
 - b. Sargent Manufacturing (SA) - 80 Series.

- c. Von Duprin (VD) - 35A/98 XP Series.
- C. Tube Steel Removable Mullions: ANSI/BHMA A156.3 removable steel mullions with malleable-iron top and bottom retainers and a primed paint finish.
- 1. Provide keyed removable feature where specified in the Hardware Sets.
 - 2. Provide stabilizers and mounting brackets as required.
 - 3. Provide electrical quick connection wiring options as specified in the hardware sets.
 - 4. Manufacturers:
 - a. Corbin Russwin Hardware (RU) - 700/900 Series.
 - b. Sargent Manufacturing (SA) - 980S Series.
 - c. Von Duprin (VD) - 9954 Series.

2.10 DOOR CLOSERS

- A. All door closers specified herein shall meet or exceed the following criteria:
- 1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers including installation and adjusting information on inside of cover.
 - 2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
 - 3. Cycle Testing: Provide closers which have surpassed 15 million cycles in a test witnessed and verified by UL.
 - 4. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the physically handicapped, provide units complying with ANSI ICC/A117.1.
 - 5. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
 - 6. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
 - 7. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.
- B. Door Closers, Surface Mounted (Large Body Cast Iron): ANSI/BHMA A156.4, Grade 1 surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and

fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control.

1. Manufacturers:
 - a. Corbin Russwin Hardware (RU) - DC8000 Series.
 - b. Norton Door Controls (NO) – 9500 Series.
 - c. Sargent Manufacturing (SA) - 281 Series.

2.11 SURFACE MOUNTED CLOSER HOLDERS

- A. Electromagnetic Door Holders: Certified ANSI A156.15 electromagnetic door holder/releases with a minimum 20 to 40 pounds holding power and single coil construction able to accommodate 12VDC, 24VAC, 24VDC and 120VAC. Coils to be independently wound, employing an integral fuse and armatures to include a positive release button.

1. Manufacturers:
 - a. Rixson (RF) - 980/990 Series.
 - b. Sargent Manufacturing (SA) - 1560 Series.

2.12 ARCHITECTURAL TRIM

- A. Door Protective Trim

1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1" LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
3. Where plates are applied to fire rated doors with the top of the plate more than 16" above the bottom of the door, provide plates complying with NFPA 80. Consult manufacturer's catalog and template book for specific requirements for size and applications.
4. Protection Plates: ANSI/BHMA A156.6 certified protection plates (kick, armor, or mop), fabricated from the following:
 - a. Stainless Steel: 300 grade, 050-inch thick.
5. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
6. Manufacturers:

- a. Hiawatha, Inc. (HI).
- b. Ives (IV).
- c. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).

2.13 DOOR STOPS AND HOLDERS

- A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.
- B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.
 1. Manufacturers:
 - a. Hiawatha, Inc. (HI).
 - b. Ives (IV).
 - c. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
- C. Overhead Door Stops and Holders: ANSI/BHMA A156.8, Grade 1 certified overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.
 1. Manufacturers:
 - a. Rixson Door Controls (RF).
 - b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
 - c. Sargent Manufacturing (SA).

2.14 ARCHITECTURAL SEALS

- A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.
- B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.
 1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

- C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.
 - 1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NPFA 252, Standard Methods of Fire Tests of Door Assemblies.
- D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.
- E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- F. Manufacturers:
 - 1. National Guard Products (NG).
 - 2. Pemko Products; ASSA ABLOY Architectural Door Accessories (PE).
 - 3. Reese Enterprises, Inc. (RE).

2.15 ELECTRONIC ACCESSORIES

- A. Intelligent Switching Power Supplies: Provide power supplies with single, dual or multi-voltage configurations at 12 and/or 24VDC. Power Supply shall have battery backup function with an integrated battery charging circuit. The power supply shall have a standard, integrated Fire Alarm Interface (FAI). The power supply shall provide capability for secondary voltage, power distribution, direct lock control and network monitoring through add on modules. The power supply shall be expandable up to 16 individually protected outputs. Output modules shall provide individually protected, continuous outputs and/or individually protected, relay controlled outputs. Network modules shall provide remote monitoring functions such as status reporting, fault reporting and information logging.
 - 1. Manufacturers:
 - a. Securitron (SU) - AQL Series.

2.16 FABRICATION

- A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.17 FINISHES

- A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware
- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

- A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.
- B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

- A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.
 - 1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
- B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
 - 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 - 2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
 - 3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
 - 4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

- C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
- D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."
- E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

- A. Field Inspection (Punch Report): Reference Division 01 Section "Closeout Procedures" for project punch and reporting requirements including compliance with approved submittals and verification door hardware is properly installed, operating 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.

3.6 CLEANING AND PROTECTION

- A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.
- B. Clean adjacent surfaces soiled by door hardware installation.
- C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

- A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SETS

A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

1. Quantities listed are for each pair of doors, or for each single door.
2. The supplier is responsible for handling and sizing all products.
3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate selection for the material and application.

B. Manufacturer's Abbreviations:

1. MK - McKinney
2. MR - Markar
3. PE - Pemko
4. RO - Rockwood
5. SA - SARGENT
6. AD - Adams Rite
7. HS - HES
8. RF - Rixson
9. SU - Securitron
10. OT - Other

Hardware Sets

Set: 1.0

Description: Alum Vestibule Pair - Card Access; Remote Release

2 Continuous Hinge	CFM-HD1 Series		PE
1 Key Removable Mullion	L980S	PC	SA
1 Exit Device (rim, NL, CD)	16 72 8804 862	US32D	SA
1 Exit Device (rim, EO, CD)	16 72 8810 862	US32D	SA
4 Core (SFIC)	Provided by Owner	US26D	00
1 Electric Strike	9600-LBM	630	HS
1 SMART Pac Bridge Rectifier	2005M3		HS
2 Concealed Overhead Stop	1-X36	630	RF
2 Door Closer	281 O; P10 (per spec)	EN	SA
1 Threshold (coord w/ details)	271A FHSL14SS		PE
1 Mullion Gasket	5110BL		PE
1 Wire Harness (head to J-box)	QC-CxxxP		MK
1 Mullion Wire Harness	QC-Cxxx (coord moxex connectors)		MK
1 Power Supply	AQL4-E1 Series		SU

1 Remote Release Switch	By Security Vendor	00
1 Card Reader	By Security Vendor	OT
1 Weather/Perimeter Seals	Supplied with door/frame assembly	00

Notes:

Operation: Door is normally closed and locked. Valid card at reader or signal from remote switch unlocks door for momentary access. Monitoring by door position switch. During a loss of power the door will default to secure. Free egress at all times. Lock status will not change when the fire detection/suppression systems are activated. Outside key override.

Set: 2.0

Description: Alum Vestibule Pair

2 Continuous Hinge	CFM-HD1 Series		PE
1 Key Removable Mullion	L980S	PC	SA
1 Exit Device (rim, NL, CD)	16 72 8804 862	US32D	SA
1 Exit Device (rim, EO, CD)	16 72 8810 862	US32D	SA
4 Core (SFIC)	Provided by Owner	US26D	00
2 Concealed Overhead Stop	1-X36	630	RF
2 Door Closer	281 O; P10 (per spec)	EN	SA
1 Threshold (coord w/ details)	271A FHSL14SS		PE
1 Mullion Gasket	5110BL		PE
1 Weather/Perimeter Seals	Supplied with door/frame assembly		00

Set: 3.0

Description: Exterior Pump House

1 Continuous Hinge	CFM-HD1 Series		PE
1 Storeroom Lock	72 10G04 LL	US26D	SA
1 Core (SFIC)	Provided by Owner	US26D	00
1 Door Closer	281 O; P10 (per spec)	EN	SA
1 Door Stop	401; 404; 441CU (or per spec)	US26D	RO
1 Threshold (coord w/ details)	273x292AFGPK FHSL14SS-2		PE
1 Head & Jamb Gasketing	2891APK		PE
1 Sweep	3452APK		PE

Set: 4.0

Description: Classroom; Serving Pair

2 Continuous Hinge	CFM-HD1 Series		PE
1 Key Removable Mullion	L980S	PC	SA
2 Exit Device (rim, intruder)	(12 or LD) 49 72 8816 ETL	US32D	SA
3 Core (SFIC)	Provided by Owner	US26D	00
2 Thumb-Turn Cylinder (inside)	124-46TL RED QSPAR NC-C11	US26D	SA
2 Door Closer	281 O; P10 (per spec)	EN	SA
2 Kick Plate	K1050 10" 4BE CSK	US32D	RO
2 Door Stop	401; 404; 441CU (or per spec)	US26D	RO
1 Mullion Gasket	5110BL		PE
1 Head & Jamb Seal (adhesive)	S88BL		PE

1 Astragal (adhesive, edge mount) S771C PE

Set: 5.0

Description: Band; Choral; Library; Serving

3 Hinge (heavy weight)	T4A3786 (qty, size, nrp per spec)	US26D	MK
1 Exit Device (rim, intruder)	(12 or LD) 49 72 8816 ETL	US32D	SA
1 Core (SFIC)	Provided by Owner	US26D	00
1 Thumb-Turn Cylinder (inside)	124-46TL RED QSPAR NC-C11	US26D	SA
1 Door Closer	281 O; P10 (per spec)	EN	SA
1 Kick Plate	K1050 10" 4BE CSK	US32D	RO
1 Door Stop	401; 404; 441CU (or per spec)	US26D	RO
1 Head & Jamb Seal (adhesive)	S88BL		PE
1 Auto Dr Bott (concealed)	434ARL x ACP112BL		PE

Set: 6.0

Description: Corridor Pair - Hold Open

2 Continuous Hinge	CFM-HD1 Series		PE
2 Exit Device (SVR,LBR,NL)	(12 or 16) 72 NB8706 ETL	US32D	SA
2 Core (SFIC)	Provided by Owner	US26D	00
2 Door Closer	281 O; P10 (per spec)	EN	SA
2 Kick Plate	K1050 10" 4BE CSK	US32D	RO
2 Electromagnetic Holder	998M (or to suit conditions)	689	RF
1 Head & Jamb Seal (adhesive)	S88BL		PE
1 Astragal (adhesive, edge mount)	S771C		PE

Notes: Doors are normally held open. When they are closed, they are locked, entry by key only. Free egress at all times.

Interface with building fire alarm/security system to release door(s) from hold open.

Set: 7.0

Description: Alum Stair/Lobby

1 Continuous Hinge	CFM-HD1 Series		PE
1 Exit Device (rim, intruder)	(12 or LD) 49 72 8816 ETL	US32D	SA
1 Core (SFIC)	Provided by Owner	US26D	00
1 Thumb-Turn Cylinder (inside)	124-46TL RED QSPAR NC-C11	US26D	SA
1 Concealed Overhead Stop	1-X36	630	RF
1 Door Closer	281 O; P10 (per spec)	EN	SA
1 Kick Plate	K1050 10" 4BE CSK	US32D	RO
1 Weather/Perimeter Seals	Supplied with door/frame assembly		00

Notes: Coordinate hardware with door assembly mfr.

Set: 8.0

Description: Alum Library

1 Continuous Hinge	CFM-HD1 Series		PE
--------------------	----------------	--	----

1 Exit Device (rim, intruder)	(12 or LD) 49 72 8816 ETL	US32D	SA
1 Core (SFIC)	Provided by Owner	US26D	00
1 Thumb-Turn Cylinder (inside)	124-46TL RED QSPAR NC-C11	US26D	SA
1 Door Closer	281 O; P10 (per spec)	EN	SA
1 Kick Plate	K1050 10" 4BE CSK	US32D	RO
1 Door Stop	401; 404; 441CU (or per spec)	US26D	RO
1 Weather/Perimeter Seals	Supplied with door/frame assembly		00

Notes: Coordinate hardware with door assembly mfr.

Set: 9.0

Description: Alum Classrom; Lab; Security

1 Continuous Hinge	CFM-HD1 Series		PE
1 Dormitory Lock	72 10G54 LL x Red Button SPAR02898		US26D
	SA		
1 Core (SFIC)	Provided by Owner	US26D	00
1 Door Closer	281 O; P10 (per spec)	EN	SA
1 Kick Plate	K1050 10" 4BE CSK	US32D	RO
1 Door Stop	401; 404; 441CU (or per spec)	US26D	RO
1 Weather/Perimeter Seals	Supplied with door/frame assembly		00

Notes: Coordinate hardware with door assembly mfr. Review panic hardware requirements with code official (typ).

Set: 10.0

Description: Classroom

3 Hinge (heavy weight)	T4A3786 (qty, size, nrp per spec)	US26D	MK
1 Dormitory Lock	72 10G54 LL x Red Button SPAR02898	US26D	SA
1 Core (SFIC)	Provided by Owner	US26D	00
1 Door Closer	281 O; P10 (per spec)	EN	SA
1 Kick Plate	K1050 10" 4BE CSK	US32D	RO
1 Door Stop	401; 404; 441CU (or per spec)	US26D	RO
1 Head & Jamb Seal (adhesive)	S88BL		PE

Set: 11.0

Description: Serving Pair - In-swing; Hold Open

6 Hinge (heavy weight)	T4A3786 (qty, size, nrp per spec)	US26D	MK
1 Dust Proof Strike	570	US26D	RO
1 Flush Bolt Set (self-latching)	2845; 2945	US26D	RO
1 Dormitory Lock	72 10G54 LL x Red Button SPAR02898	US26D	SA
1 Core (SFIC)	Provided by Owner	US26D	00
1 Coordinator	1700	Black	RO
2 Door Closer	281 O; P10 (per spec)	EN	SA
2 Kick Plate	K1050 10" 4BE CSK	US32D	RO
2 Electromagnetic Holder	998M (or to suit conditions)	689	RF
1 Head & Jamb Seal (adhesive)	S88BL		PE

1 Astragal	357SP		PE
1 Astragal (adhesive, edge mount)	S771C		PE

Notes: Interface with building fire alarm system to release door(s) from hold open.

Set: 12.0

Description: Office; Study

3 Hinge (heavy weight)	T4A3786 (qty, size, nrp per spec)	US26D	MK
1 Dormitory Lock	72 10G54 LL x Red Button SPAR02898	US26D	SA
1 Core (SFIC)	Provided by Owner	US26D	00
1 Door Stop	401; 404; 441CU (or per spec)	US26D	RO
3 Silencer	608		RO

Set: 13.0

Description: Study Pod

1 Hardware	Supplied with door assembly		00
------------	-----------------------------	--	----

Set: 14.0

Description: Fan Room Pair

2 Continuous Hinge	FM300	630	MR
1 Dust Proof Strike	570	US26D	RO
2 Flush Bolt (manual)	555	US26D	RO
1 Storeroom Lock	72 10G04 LL	US26D	SA
2 Concealed Overhead Stop	1-X36	630	RF
1 Threshold (coord w/ details)	271A FHSL14SS		PE
1 Head & Jamb Seal (adjustable)	322CSN		PE
2 Auto Door Bottom (surface)	STC4131CPK		PE
1 Astragal (outswing doors)	355CS		PE

Notes: Coordinate hardware with STC door mfr.

Set: 15.0

Description: Storage; Pump Room

3 Hinge (heavy weight)	T4A3786 (qty, size, nrp per spec)	US26D	MK
1 Storeroom Lock	72 10G04 LL	US26D	SA
1 Core (SFIC)	Provided by Owner	US26D	00
1 Door Closer	281 O; P10 (per spec)	EN	SA
1 Kick Plate	K1050 10" 4BE CSK	US32D	RO
1 Door Stop	401; 404; 441CU (or per spec)	US26D	RO
1 Head & Jamb Seal (adhesive)	S88BL		PE

Set: 16.0

Description: Sliding Display Doors

1 Mortise Deadlock (hook bolt)	MS1850S 5	628	AD
--------------------------------	-----------	-----	----

1 Core (SFIC)	Provided by Owner	US26D	00
1 Cylinder as required	72 42	US15	SA
1 Hardware	Supplied with door assembly		00

Notes: Coordinate hardware with door mfr.

Set: 17.0

Description: Locker Room

1 Continuous Hinge	CFM-HD1 Series		PE
1 Exit Device (rim, intruder)	(12 or LD) 49 72 8816 ETL	US32D	SA
1 Core (SFIC)	Provided by Owner	US26D	00
1 Thumb-Turn Cylinder (inside)	124-46TL RED QSPAR NC-C11	US26D	SA
1 Door Closer	281 O; P10 (per spec)	EN	SA
1 Kick Plate	K1050 10" 4BE CSK	US32D	RO
1 Door Stop	401; 404; 441CU (or per spec)	US26D	RO
3 Silencer	608		RO

END OF SECTION 087100

SECTION 08 80 00 - GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Glass products.
 - 2. Fire-protection-rated glazing.
 - 3. Fire-resistance-rated glazing.
 - 4. Laminated-glass security glazing.

1.3 DEFINITIONS

- A. Fire-Protection-Rated Glazing: Glazing in rated doors and openings up to 45 minutes (with certain exceptions), limited in size, and not capable of blocking radiant heat.
- B. Fire-Resistance-Rated Glazing: Glazing that prevents spread of fire and smoke and radiant heat; used in rated wall and door applications 60 minutes and above without size limitations (generally to maximum size tested).
- C. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.
- D. Glass Thicknesses: Indicated by thickness designations in millimeters in accordance with ASTM C1036.
- E. IBC: International Building Code.

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.
- B. Coordinate framing types to provide proper framing fire rating.

1.5 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress.
2. Review, discuss, and coordinate the interrelationship of glazing with other components, including framing.
3. Review temporary protection requirements for glazing during and after installation.

1.6 SUBMITTALS, GENERAL

- A. General: Submit all action submittals and informational submittals required by this Section and by Division 08 Sections "Fire-Rated Glazed Opening Assemblies", "Flush Wood Doors", "Aluminum-Framed Entrances and Storefronts", and "Sliding Storefronts" concurrently.

1.7 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. As-Specified Data: If the product to be incorporated in the Work is as specified by manufacturer name and product designation in this Specification Section, submit the "**As-Specified Verification Form**" (attached to Division 01 Section "Submittal Procedures") for each item listed below; otherwise submit full Product Data for the following:
 1. Fully tempered float glass.
 2. Fire-protection-rated glazing.
 3. Fire-resistance-rated glazing.
 4. Laminated-glass security glazing.
- C. Sustainable Design Submittals:
 1. Product Data: For sealants, indicating VOC content.
- D. Samples: For each type of the following products; 12 inches square.
 1. Fire-protection-rated glazing, including clear and etched/sandblasted types.
 2. Fire-resistance-rated glazing, including clear and etched/sandblasted types.
 3. Laminated-glass security glazing.
- E. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.
- F. Sample Warranties: For special warranties.

1.8 INFORMATIONAL SUBMITTALS

- A. Preconstruction adhesion and compatibility test report.

1.9 CLOSEOUT SUBMITTALS

- A. Warranties: Executed special warranties.

1.10 PRECONSTRUCTION TESTING

- A. Preconstruction Adhesion and Compatibility Testing: Test each glass product, tape sealant, gasket, glazing accessory, and glass-framing member for adhesion to and compatibility with elastomeric glazing sealants.
1. Testing is not required if data are submitted based on previous testing of current sealant products and glazing materials matching those submitted.
 2. Use ASTM C1087 to determine whether priming and other specific joint-preparation techniques are required to obtain rapid, optimum adhesion of glazing sealants to glass, tape sealants, gaskets, and glazing channel substrates.
 3. Test no fewer than eight Samples of each type of material, including joint substrates, shims, sealant backings, secondary seals, and miscellaneous materials.
 4. Schedule enough time for testing and analyzing results to prevent delaying the Work.
 5. For materials failing tests, submit sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.

1.11 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.

1.12 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.

1.13 WARRANTY

- A. Manufacturer's Special Warranty for Laminated Glass: Manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard. "Laminated Glass", as used in this paragraph, includes fire-resistance-rated laminated glass with intumescent interlayer.
1. Warranty Period: 5 years from date of Substantial Completion.

- B. Manufacturer's Special Warranty on Tempered Glazing Units with Clear Intumescent Interlayer: Manufacturer agrees to replace units that deteriorate within specified warranty period. Deterioration of tempered glazing units with clear intumescent interlayer is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning glass contrary to manufacturer's written instructions. Evidence of failure is air bubbles within units, or obstruction of vision by contamination or deterioration of intumescent interlayer.
1. Warranty Period: 5 years from date of Substantial Completion.
- C. Manufacturer's Special Warranty for Laminated-Glass Security Glazing: Manufacturer agrees to replace laminated-glass security glazing units that deteriorate within specified warranty period. Deterioration of laminated glass security glazing is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass security glazing contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard. "Laminated-Glass Security Glazing", as used in this paragraph, includes clear laminated-glass security glazing.
1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Glass: For each glass type, obtain from single manufacturer.
- B. Source Limitations for Glazing Accessories: For each product and installation method, obtain from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. General: Installed glazing systems shall withstand normal thermal movement 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. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.
- C. Security Glazing: Installed security glazing shall withstand security-related loads and forces without damage to the glazing beyond that allowed by referenced standards.
- D. 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 monolithic-glass lites, properties are based on units with lites 6 mm thick.
 2. For laminated-glass lites, properties are based on products of construction indicated.

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. NGA Publications: "Laminated Glazing Reference Manual" and "Glazing Manual."
- B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
- C. Fire-Protection-Rated Glazing Labeling: Permanently mark fire-protection-rated glazing with certification label of a testing agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name; test standard; whether glazing is permitted to be used in doors or openings; if permitted in openings, whether glazing has passed hose-stream test; whether glazing meets 450 deg F temperature-rise limitation; and fire-resistance rating in minutes.
- D. Fire-Resistance-Rated Glazing Labeling: Permanently mark fire-resistance-rated glazing with certification label of a testing agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, test standard, that glazing is approved for use in walls, and fire-resistance rating in minutes.
- E. 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.
- F. 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: 6 mm.
- G. Strength: Where heat-strengthened float glass is indicated, provide heat-strengthened 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. Clear Annealed Float Glass: ASTM C1036, Type I, Class 1 (clear), Quality-Q3.
- B. 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.
 - 2. Clear Glass:
 - a. Type FC: Fully tempered clear float glass.
 - 1) Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:

- a) AGC Glass Company North America, Inc.; Clear Float.
 - b) Guardian Glass, LLC; Clear Float.
 - c) Vitro Architectural Glass; Clear.
- 2) Minimum Thickness: 6 mm.
 - 3) Safety glazing required.

2.5 FIRE-PROTECTION-RATED GLAZING

- A. Fire-Protection-Rated Glazing: Listed and labeled by a testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on positive-pressure testing according to NFPA 257 or UL 9, including hose-stream test, and shall comply with NFPA 80.
- B. Appearance: Provide fire-protection-rated glazing without haze and with visual clarity and transparency indistinguishable from clear fully tempered float glass.
- C. Fire-Protection-Rated Tempered Glass: Fire-protection-rated tempered glass; complying with 16 CFR 1201, Category II.
 - 1. Type **FP**: Fire-protection-rated tempered glass, exempted from the hose-stream test.
 - a. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:
 - 1) Safiti First Fire Rated Glazing Solutions; SuperLite I.
 - 2) Technical Glass Products; Fireglass 20.
 - 3) Vetrotech Saint-Gobain; Pyroswiss 20 (etched or sandblasted where indicated).
 - b. Rating: 20 minutes.
 - c. Thickness: 6 mm.
 - d. Safety glazing required.
 - e. Etched or Sandblasted Pattern: As selected by Architect from manufacturer's full range.

2.6 FIRE-RESISTANCE-RATED GLAZING

- A. Fire-Resistance-Rated Glazing: Listed and labeled by a testing agency acceptable to authorities having jurisdiction, for fire-resistance ratings indicated, based on testing according to ASTM E 119 or UL 263.
- B. Fire-Resistance-Rated Laminated Glass with Intumescent Interlayers: Laminated glass made from multiple plies of uncoated, ultraclear float glass; with intumescent interlayers; complying with 16 CFR 1201, Category II.

1. Type **FRI**: Fire-resistance-rated laminated glass with intumescent interlayer.
 - a. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:
 - 1) Technical Glass Products; Pilkington Pyrostop (etched or sandblasted where indicated).
 - b. Rating: 60 minutes.
 - c. Thickness: 23-33 mm.
 - d. Safety glazing required.
 - e. Etched or Sandblasted Pattern: As selected by Architect from manufacturer's full range.
- C. Fire-Resistance-Rated Tempered Glazing Units with Clear Intumescent Interlayer: Glazing units made from two or more lites of uncoated, fully tempered, ultraclear float glass; with a perimeter edge seal enclosing a cavity filled with optically clear, intumescent polymer; complying with 16 CFR 1201, Category II.
 1. Type **FRD**: Fire-resistance-rated tempered glazing units with clear intumescent interlayer.
 - a. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:
 - 1) Safti First Fire Rated Glazing Solutions; SuperLite II-XL60 (etched or sandblasted where indicated).
 - b. Rating: 60 minutes.
 - c. Thickness: 29 mm.
 - d. Safety glazing required.
 - e. Etched or Sandblasted Pattern: As selected by Architect from manufacturer's full range.

2.7 LAMINATED-GLASS SECURITY GLAZING

- A. Laminated-Glass Security Glazing: ASTM C1172. Use materials that have a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation.
 1. Performance Standard: Provide laminated-glass security glazing complying with the following:
 - a. 5-aa1 assault test-rated for 12 minutes, as a continuous attack.

- 1) Withstand a minimum of 5 shots from a military-style assault rifle with a minimum caliber of 7.62 mm.
- 2) Withstand a minimum of abuse as applied by a single assailant at full force and including strikes with feet, bricks, hammers, baseball bats, and sledgehammers without stoppage.
 - b. Failure is defined as a tear in the security glazing large enough to allow an object 4 inches in diameter or more to pass through, or separation made between the glass and surrounding frame.
 - c. Product shall not be damaged or scratched by scissors, writing implements, razor blades, or the use of any similar sharp object.
 - d. Product performance shall be proven by testing with installation in framing of similar type, size and bite, as that required for this Project.
2. Interlayer Thickness: Provide thickness needed to comply with requirements.
3. Interlayer Color: Clear.
4. Appearance: Provide laminated-glass security glazing without haze and with visual clarity and transparency indistinguishable from clear fully tempered float glass.
5. Type **SCL**: Clear laminated-glass security glazing.
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide Laminated Technologies Inc.; SG5 by School Guard Glass, or comparable product.
 - b. Safety glazing required.

2.8 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. Sealant shall have a VOC content of 250 g/L or less.
4. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.

2.9 GLAZING TAPES

- A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C1281 and AAMA 800 for products indicated below:
 - 1. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
 - 2. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.
- B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:
 - 1. AAMA 810.1, Type 1, for glazing applications in which tape acts as primary sealant.
 - 2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.10 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. Elastomeric material with Shore A durometer hardness of 85, plus or minus 5.
 - 2. Type recommended in writing by sealant or glass manufacturer.
- D. Spacers:
 - 1. Elastomeric 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. Elastomeric material with Shore A durometer hardness per manufacturer's written instructions.
 - 2. Type recommended in writing by sealant or glass manufacturer.
- F. Cylindrical Glazing Sealant Backing: ASTM C1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

2.11 GLAZING ACCESSORIES FOR FIRE-RATED GLAZING PRODUCTS

- A. Provide glazing gaskets, glazing sealants, glazing tapes, setting blocks, spacers, edge blocks, and other glazing accessories that are compatible with glazing products and each other and are approved by testing agencies that listed and labeled fire-rated glazing products with which products are used for applications and fire ratings indicated.
- B. Glazing Sealants for Fire-Rated Glazing Products: Neutral-curing silicone glazing sealant complying with ASTM C920, Type S, Grade NS, Class 50, Use NT. Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated.
 - 1. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.
- C. Perimeter Insulation for Fire-Rated Glazing: Product that is approved by testing agency that listed and labeled fire-rated glazing product with which it is used for application and fire rating indicated.

2.12 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.

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. Minimum required face and edge clearances.
 - 3. Effective sealing between joints of glass-framing members.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

- B. For fire-rated glazing units, examine glazing units to locate fire side and protected side. Label or mark units as needed so that fire side and protected side are readily identifiable. Do not use materials that leave visible marks in the completed Work.
- C. For laminated-glass security glazing, examine glazing units to locate attack or threat side and protected side. Label or mark units as needed so that attack or threat side and protected side are readily identifiable. Do not 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.
 - 1. For fire-rated glazing, use methods approved by testing agencies that listed and labeled fire-rated glazing products.
- 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.
 - 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-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 etched or sandblasted sides occur consistently as directed by Architect.

- J. For fire-resistant glazing, set glass lites with proper orientation so that surfaces face fire side or protected side as specified.
- K. For laminated-glass security glazing, set glass lites with proper orientation so that surfaces face attack or threat side or protected side as specified.
- L. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.
- M. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended in writing by gasket manufacturer.

3.4 TAPE GLAZING

- A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- C. 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 tight 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 tight 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 at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, 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.

END OF SECTION 08 80 00

SECTION 09 21 16.23 - GYPSUM BOARD SHAFT WALL ASSEMBLIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes gypsum board shaft wall assemblies.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each component of gypsum board shaft wall assembly.
 - 1. Studs and tracks.
- B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below, otherwise submit full Product Data for the following:
 - 1. Gypsum shaftliner board.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and support them on risers on a flat platform to prevent sagging.

1.6 FIELD CONDITIONS

- A. Environmental Limitations: Comply with gypsum-shaftliner-board manufacturer's written instructions.
- B. Do not install finish panels until installation areas are enclosed and conditioned.
- C. Do not install panels that are wet, moisture damaged, or mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, and irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

2.2 GYPSUM BOARD SHAFT WALL ASSEMBLIES

- A. Fire-Resistance Rating: As indicated.

- B. Gypsum Shaftliner Board:

1. Moisture- and Mold-Resistant Type X: ASTM C 1396/C 1396M; manufacturer's proprietary fire-resistive liner panels with ASTM D 3273 mold-resistance score of 10 as rated according to ASTM D 3274, 1 inch thick, and with double beveled long edges.

- 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) CertainTeed Corporation; M2 Tech Shaftliner.
- 2) National Gypsum Company; Gold Bond Brand Fire-Shield Shaftliner XP Gypsum Panels.
- 3) USG Corporation; Sheetrock Brand Mold Tough Gypsum Liner Panels.

- C. Non-Load-Bearing Steel Framing, General: Complying with ASTM C 645 requirements for metal unless otherwise indicated and complying with requirements for fire-resistance-rated assembly indicated.

1. Protective Coating: ASTM A 653/A 653M, G40, hot-dip galvanized unless otherwise indicated.

- D. Studs: Manufacturer's standard profile for repetitive, corner, and end members as follows:

1. Depth: As indicated.
2. Minimum Base-Metal Thickness: 0.033 inch.

- E. Tracks: Manufacturer's standard J-profile track with manufacturer's standard long-leg length, but at least 2 inches long and matching studs in depth.

1. Minimum Base-Metal Thickness: 0.033 inch.

- F. Finish Panels: Gypsum board as specified in Division 09 Section "Gypsum Board."

- G. Sound Attenuation Blankets: As specified in Division 09 Section "Gypsum Board."

2.3 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with shaft wall manufacturer's written instructions.
- B. Trim Accessories: Cornerbead, edge trim, and control joints of material and shapes as specified in Division 09 Section "Gypsum Board" that comply with gypsum board shaft wall assembly manufacturer's written instructions for application indicated.
- C. Steel Drill Screws: ASTM C 1002 unless otherwise indicated.
- D. Track Fasteners: Power-driven fasteners of size and material required to withstand loading conditions imposed on shaft wall assemblies without exceeding allowable design stress of track, fasteners, or structural substrates in which anchors are embedded.
 - 1. Expansion Anchors: Fabricated from corrosion-resistant materials, with allowable load or strength design capacities calculated according to ICC-ES AC193 and ACI 318 greater than or equal to the design load, as determined by testing per ASTM E 488/E 488M conducted by a qualified testing agency.
 - 2. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with allowable load capacities calculated according to ICC-ES AC70, greater than or equal to the design load, as determined by testing per ASTM E 1190 conducted by a qualified testing agency.
- E. Reinforcing: Galvanized-steel reinforcing strips with 0.0538 inch minimum thickness of base metal (uncoated).
- F. Acoustical Sealant: Division 07 Section " Joint Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, or mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

- A. General: Install gypsum board shaft wall assemblies to comply with requirements of fire-resistance-rated assemblies indicated and manufacturer's written installation instructions.

- B. Do not bridge building expansion joints with shaft wall assemblies; frame both sides of expansion joints with furring and other support.
- C. Install supplementary framing in gypsum board shaft wall assemblies around openings and as required for blocking, bracing, and support of gravity and pullout loads of fixtures, equipment, services, heavy trim, furnishings, wall-mounted door stops, and similar items that cannot be supported directly by shaft wall assembly framing.
 - 1. Reinforcing: Provide where items attach directly to shaft wall assembly as indicated on Drawings; accurately position and secure behind at least one layer of face panel.
- D. Penetrations: At penetrations in shaft wall, maintain fire-resistance rating of shaft wall assembly by installing supplementary steel framing around perimeter of penetration and fire protection behind boxes containing wiring devices and similar items.
- E. Isolate perimeter of gypsum panels from building structure to prevent cracking of panels while maintaining continuity of fire-rated construction.
- F. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect while maintaining fire-resistance rating of gypsum board shaft wall assemblies.
- G. Sound-Rated Shaft Wall Assemblies: Seal gypsum board shaft walls with acoustical sealant at perimeter of each assembly where it abuts other work and at joints and penetrations within each assembly.
- H. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

3.3 PRE-ENCLOSURE REVIEW

- A. Notify Architect prior to applying panels to allow observation of framing installation.

3.4 PROTECTION

- A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- B. Remove and replace panels that are wet, moisture damaged, or mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, and irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 09 21 16.23

SECTION 09 22 16 - NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Non-load-bearing steel framing systems for interior partitions.
 - 2. Suspension systems for interior ceilings and soffits.
 - 3. Grid suspension systems for gypsum board ceilings.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Studs and tracks.
 - 2. Slip-type head joints.
 - 3. Flat strap and backing plate.
 - 4. Cold-rolled channel bridging.
 - 5. Hat-shaped, rigid furring channels.
 - 6. Resilient furring channels.
 - 7. Hanger attachments to concrete.
 - 8. Flat hangers.
 - 9. Carrying channels (main runners).
 - 10. Isolation strips at exterior walls.
- B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below, otherwise submit full Product Data for the following:
 - 1. Grid suspension system for gypsum board ceilings.

1.5 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of code-compliance certification for studs and tracks.

1.6 QUALITY ASSURANCE

- A. 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, the Steel Framing Industry Association, or the Steel Stud Manufacturers Association.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated, according to ASTM E 119 by an independent testing agency.

2.2 FRAMING SYSTEMS

- A. Framing Members, General: Comply with ASTM C 754 for conditions indicated.
 - 1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal unless otherwise indicated.
 - 2. Protective Coating: ASTM A 653/A 653M, G40, hot-dip galvanized unless otherwise indicated.
- B. Studs and Tracks: ASTM C 645.
 - 1. Steel Studs and Tracks:
 - a. Minimum Base-Metal Thickness: 0.0329 inch.
 - b. Depth: As indicated on Drawings.
 - c. Minimum Track Leg Length: 1-1/4 inches.
- C. Slip-Type Head Joints: Where indicated, provide the following:
 - 1. Deflection Track: Steel sheet top track manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; with minimum track leg length of 2 inches; in thickness not less than indicated for studs and in width to accommodate depth of studs.
- D. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.
 - 1. Minimum Base-Metal Thickness: 0.0538 inch.

- E. Cold-Rolled Channel Bridging: Steel, 0.0538-inch minimum base-metal thickness, with minimum 1/2-inch-wide flanges.
 - 1. Depth: 1-1/2 inches.
 - 2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches, 0.068-inch-thick, galvanized steel.
- F. Hat-Shaped, Rigid Furring Channels: ASTM C 645.
 - 1. Minimum Base-Metal Thickness: 0.0329 inch.
 - 2. Depth: 7/8 inch.
- G. Resilient Furring Channels: 1/2-inch-deep, steel sheet members designed to reduce sound transmission.
 - 1. Configuration: Asymmetrical or hat shaped.

2.3 SUSPENSION SYSTEMS

- A. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch-diameter wire, or double strand of 0.048-inch-diameter wire.
- B. Hanger Attachments to Concrete:
 - 1. Power-Actuated Fasteners: Suitable for application indicated, fabricated from corrosion-resistant materials with clips or other devices for attaching hangers of type indicated, and capable of sustaining, without failure, a load equal to 10 times that imposed by construction as determined by testing according to ASTM E 1190 by an independent testing agency.
- C. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.16 inch in diameter.
- D. Flat Hangers: Steel sheet, 1 by 3/16 inch by length indicated.
- E. Grid Suspension System for Gypsum Board Ceilings: ASTM C 645, direct-hung system composed of main beams and cross-furring members that interlock.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Armstrong World Industries, Inc.; Drywall Grid System.
 - b. CertainTeed Corporation; 1-1/2-inch Drywall System.
 - c. USG Corporation; Drywall Suspension System.

2.4 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards.
 - 1. Fasteners for Steel Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

- B. Isolation Strip at Exterior Walls: Provide the following:
 - 1. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch thick, in width to suit steel stud size.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION, GENERAL

- A. Installation Standard: ASTM C 754.
 - 1. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.
- B. Install framing and accessories plumb, square, and true to line, with connections securely fastened.
- C. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- D. Install bracing at terminations in assemblies.
- E. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.3 INSTALLING FRAMED ASSEMBLIES

- A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
 - 1. Single-Layer Application: 16 inches o.c. unless otherwise indicated.
 - 2. Multilayer Application: 16 inches o.c. unless otherwise indicated.
 - 3. Tile Backing Panels: 16 inches o.c. unless otherwise indicated.
- B. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.
- C. Install studs so flanges within framing system point in same direction.

- D. Install tracks at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings. Continue framing around ducts that penetrate partitions above ceiling.
1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
 2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install track section (for cripple studs) at head and secure to jamb studs for opening widths less than 4 feet; install two tracks and stud head member for opening widths 4 feet and wider.
 - a. Install two studs at each jamb unless otherwise indicated.
 - b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch clearance from jamb stud to allow for installation of control joint in finished assembly.
 3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
 4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.
 5. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.
 6. Curved Partitions:
 - a. Bend track to uniform curve and locate straight lengths so they are tangent to arcs.
 - b. Begin and end each arc with a stud, and space intermediate studs equally along arcs. On straight lengths of no fewer than two studs at ends of arcs, place studs 6 inches o.c.
- E. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

3.4 INSTALLING CEILING SUSPENSION SYSTEMS

- A. Install suspension system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
- B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.
- C. Suspend hangers from building structure as follows:
 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.

- a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.
 - a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards.
3. Wire Hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.
4. Flat Hangers: Secure to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices and fasteners that are secure and appropriate for structure and hanger, and in a manner that will not cause hangers to deteriorate or otherwise fail.
5. Do not attach hangers to steel roof deck.
6. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
7. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.
8. Do not connect or suspend steel framing from ducts, pipes, or conduit.
- D. Grid Suspension Systems: Attach perimeter wall track or angle where grid suspension systems meet vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.
- E. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

3.5 PRE-ENCLOSURE REVIEW

- A. Notify Architect prior to installing enclosing construction to allow observation of non-structural metal framing installation, including supplementary framing and blocking.

END OF SECTION 09 22 16

SECTION 09 29 00 - GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Interior gypsum board.
 - 2. Tile backing panels.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Interior trim.
 - 2. Joint treatment materials.
 - 3. Sound-attenuation blankets.
- B. As-Specified Data: If the product to be incorporated into Project is a specified by manufacturer name and product designation in Part 2 of this Specification Section, submit “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below; otherwise submit full Product Data for the following:
 - 1. Gypsum board, Type X.
 - 2. Flexible gypsum board.
 - 3. Mold-resistant gypsum board.
 - 4. Cementitious backer units.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.6 FIELD CONDITIONS

- A. Environmental Limitations: Comply with ASTM C840 requirements or gypsum board manufacturer's written instructions, whichever are more stringent.
- B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.
- C. Do not install panels that are wet, moisture damaged, and mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E119 by an independent testing agency.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E90 and classified according to ASTM E413 by an independent testing agency.

2.2 GYPSUM BOARD, GENERAL

- A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD

- A. Gypsum Board, Type X: ASTM C1396/C1396M.
 - 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. CertainTeed Gypsum, Saint-Gobain; Type X Gypsum Board.
 - b. National Gypsum Company; Gold Bond Brand Fire-Shield Gypsum Board.
 - c. USG Corporation; Sheetrock Brand Firecode X Panels.
 - 2. Thickness: 5/8 inch.
 - 3. Long Edges: Tapered.

- B. Flexible Gypsum Board: ASTM C1396/C1396M. Manufactured to bend to fit radii and to be more flexible than standard regular-type gypsum board of same thickness.
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. CertainTeed Gypsum, Saint-Gobain; Flex Gypsum Board.
 - b. National Gypsum Company; Gold Bond Brand High Flex Gypsum Board.
 - c. USG Corporation; Sheetrock Brand Flexible Gypsum Panels.
 2. Thickness: 1/4 inch.
 3. Long Edges: Tapered.
- C. Mold-Resistant Gypsum Board: ASTM C1396/C1396M. With moisture- and mold-resistant core and paper surfaces.
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. CertainTeed Gypsum, Saint-Gobain; M2Tech Moisture and Mold Resistant Gypsum Board Type X.
 - b. National Gypsum Company; Gold Bond Brand XP Fire-Shield Gypsum Board.
 - c. USG Corporation; Sheetrock Brand Mold Tough Panels Firecode X.
 2. Core: 5/8 inch, Type X.
 3. Long Edges: Tapered.
 4. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

2.4 TILE BACKING PANELS

- A. Cementitious Backer Units: ANSI A118.9 and ASTM C1288 or ASTM C1325, with manufacturer's standard edges.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. National Gypsum Company; PermaBase Cement Board.
 - b. USG Corporation; Durock Brand Glass-Mat Tile Backerboard.
 2. Thickness: 1/2 inch.
 3. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

2.5 TRIM ACCESSORIES

- A. Interior Trim: ASTM C1047.
 - 1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.
 - 2. Shapes:
 - a. Cornerbead.
 - b. LC-Bead: J-shaped; exposed long flange receives joint compound.
 - c. L-Bead: L-shaped; exposed long flange receives joint compound.
 - d. Expansion (control) joint.

2.6 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C475/C475M.
- B. Joint Tape:
 - 1. Interior Gypsum Board: Paper.
 - 2. Tile Backing Panels: As recommended by panel manufacturer.
- C. Joint Compound for Interior Gypsum Board: For each coat, use formulation that is compatible with other compounds applied on previous or for successive coats.
 - 1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
 - 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.
 - 3. Fill Coat: For second coat, use drying-type, all-purpose compound.
 - 4. Finish Coat: For third coat, use drying-type, all-purpose compound.
- D. Joint Compound for Tile Backing Panels:
 - 1. Cementitious Backer Units: As recommended by backer unit manufacturer.

2.7 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.
- B. Steel Drill Screws: ASTM C1002 unless otherwise indicated.
 - 1. Use screws complying with ASTM C954 for fastening panels to steel members from 0.033 to 0.112 inch thick.
 - 2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.

- C. Sound-Attenuation Blankets: ASTM C665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
 - 1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.
- D. Acoustical Sealant: As specified in Division 07 Section "Joint Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates including welded hollow-metal frames and support framing, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PRE-ENCLOSURE REVIEW

- A. Notify Architect prior to applying panels to allow observation of framing installation, including supplementary framing and blocking.

3.3 APPLYING AND FINISHING PANELS, GENERAL

- A. Comply with ASTM C840.
- B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.
- D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
- E. Form control and expansion joints with space between edges of adjoining gypsum panels.

- F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
 - 1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
 - 2. Fit gypsum panels around ducts, pipes, and conduits.
 - 3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch-wide joints to install sealant.
- G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments. Provide 1/4- to 1/2-inch-wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- I. Stud Partition Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C919 and with manufacturer's written instructions for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.
- J. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.4 APPLYING INTERIOR GYPSUM BOARD

- A. Install interior gypsum board in the following locations:
 - 1. Type X: All surfaces unless otherwise indicated.
 - 2. Flexible Type: Apply in double layer at curved assemblies.
 - 3. Mold-Resistant Type: As indicated on Drawings.
- B. Single-Layer Application:
 - 1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
 - 2. On partitions/walls, apply gypsum panels vertically (parallel to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
 - a. Stagger abutting end joints not less than one framing member in alternate courses of panels.

- b. At stairwells and other high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.
- 3. Fastening Methods: Apply gypsum panels to supports with steel drill screws.
- C. Multilayer Application:
 - 1. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
 - 2. Fastening Methods: Fasten base layers and face layers separately to supports with screws.
- D. Curved Surfaces:
 - 1. Install panels horizontally (perpendicular to supports) and unbroken, to extent possible, across curved surface plus 12-inch-long straight sections at ends of curves and tangent to them.
 - 2. For double-layer construction, fasten base layer to studs with screws 16 inches o.c. Center gypsum board face layer over joints in base layer, and fasten to studs with screws spaced 12 inches o.c.

3.5 APPLYING TILE BACKING PANELS

- A. Cementitious Backer Units: ANSI A108.11, at locations indicated to receive tile.
- B. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

3.6 INSTALLING TRIM ACCESSORIES

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- B. Control Joints: Install control joints according to ASTM C840 and in specific locations approved by Architect for visual effect.
- C. Interior Trim: Install in the following locations:
 - 1. Cornerbead: Use at outside corners unless otherwise indicated.
 - 2. LC-Bead: Use at exposed panel edges.
 - 3. L-Bead: Use where indicated.

3.7 FINISHING GYPSUM BOARD

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- B. Prefill open joints and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
- D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C840:
 - 1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
 - 2. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.
- E. Cementitious Backer Units: Finish according to manufacturer's written instructions.

3.8 PROTECTION

- A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Restore surfaces stained, marred, or otherwise damaged during drywall application.
- B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- C. Remove and replace panels that are wet, moisture damaged, and mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 09 29 00

SECTION 09 30 13 – CERAMIC TILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Ceramic tile.
 - 2. Stone thresholds.
 - 3. Epoxy grouts.
 - 4. Waterproof membrane.
 - 5. Metal edge strips.

1.3 DEFINITIONS

- A. General: Definitions in the current ANSI A108 A118, series of tile installation standards and in the current ANSI A137.1 apply to Work of this Section unless otherwise specified.
- B. ISO 13007; Standards for Ceramic Tiles, Grouts and Adhesives.

1.4 PERFORMANCE REQUIREMENTS

- A. Coefficient of Friction: For tile installed on walkway surfaces, provide products with the following values as determined by testing identical products per the DCOF AcuTest in accordance with ANSI A137.1 – 2012 standard.
 - 1. Level Surfaces: Minimum 0.42 wet.

1.5 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Factory-mounted unglazed ceramic mosaic tile: CFT.
 - 2. Glazed wall tile: CWT.
 - 3. Marble thresholds.

4. Chlorinated polyethylene sheet.
 5. Latex-portland cement.
 6. Portland cement mortar (thickset) installation materials.
 7. Latex-portland cement mortar (thin set).
 8. Water-cleanable, tile-setting epoxy.
 9. Polymer-modified tile grout.
 10. Water-cleanable epoxy grout.
 11. Trowelable underlayments and patching compounds.
 12. Metal edge strips.
 13. Tile cleaner.
 14. Grout sealer.
- B. 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.
1. Show base details.
 2. Show locations of floor drains and sloped slabs.
 3. Show threshold locations and types.
 4. Show all divider strip locations control and expansion joints.
- C. Samples for Verification and Initial Color Selection:
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.

1.7 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
- B. Master Grade Certificates: For each shipment, type, and composition of tile, signed by tile manufacturer and Installer.
- C. Product Certificates: For each type of product, signed by product manufacturer.

1.8 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.

1.9 QUALITY ASSURANCE

- A. Source Limitations for Tile: Obtain tile of each type and color or finish from one 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 one manufacturer and each aggregate from one source or producer.
- C. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer for each product:
 - 1. Stone thresholds.
 - 2. Waterproof membrane.
 - 3. Metal edge strips.

1.10 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 current 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.
- E. Handle tile that has temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.11 PROJECT 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 PRODUCTS, GENERAL

- A. ANSI Ceramic Tile Standard: Provide tile that complies with most current ANSI A137.1 for types, compositions, and other characteristics indicated.
 - 1. Provide tile complying with Standard grade requirements unless otherwise indicated.

- B. ANSI Standards for Tile Installation Materials: Provide materials complying with most current 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. ISO 13007 Standards for Ceramic Tiles, Grouts and Adhesives: Provide materials complying with ISO 13007-1, 13007-2, 13007-3, 13007-4.
- D. 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.
- E. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.

2.2 TILE PRODUCTS

A. Tile Type CWT1: Glazed Wall Tile

- 1. Basis-of-Design Product: Subject to compliance with requirements, provide Daltile “Linear- color wheel collection Glazed ceramic tile”; Division of Dal-Tile International Inc.; Matte and Semi-Gloss or comparable product by one of the following:
 - a. American Olean Inc.
- 2. Module Size: 4 x 8 inches.
- 3. Thickness: 5/16 inch.
- 4. Face: Plain with cushion edges.
- 5. Finish: Matte Semi-gloss glaze.
- 6. Tile Color and Pattern: As selected by Architect, as follows:
 - a. Field Tile: Daltile Matte and Semi-Gloss, price groups 1 and 2.
 - b. Accent Tile: Daltile Matte and Semi-Gloss, all price groups including price group 4 made-to-order.
 - c. Provide accent tile equal to 30 percent of total tile area, with the remainder as field tile.
- 7. Grout Color: As selected by Architect from manufacturer's full range.
- 8. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes:
 - a. External Corners for Thin-Set Mortar Installations: Surface bullnose, same size as adjoining flat tile.
 - b. Internal Corners: Field-buttet square corners. For coved base and cap use angle pieces designed to fit with stretcher shapes.

B. Tile Type CWT2: Glazed Wall Tile - 12" x 24"

1. Basis-of-Design Product: Subject to compliance with requirements, provide "Mosa Murals – Changes Stonematt/Matt wall tile".
 - a. Or approved equal
2. Module Size: 12" x 24"
3. Thickness: 5/16 inch.
4. Face: Plain with cushion edges.
5. Finish: Stonematt/ Matte/ glaze.
6. Tile Color and Pattern: As selected by Architect, as follows:
7. Grout Color: As selected by Architect from manufacturer's full range.
8. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes:
9. Wall pattern – install tile as per pattern PM1370, horizontal, stacked.

C. Tile Type CFT1: Factory-Mounted Unglazed Ceramic Mosaic Tile

1. Basis-of-Design Product: Subject to compliance with requirements, provide Daltile; Division of Dal-Tile International Inc.; Keystones or comparable product by one of the following:
 - a. American Olean Inc.
2. Composition: ceramic mosaic porcelain.
3. Module Size: 1 inches, by 1 inches.
4. Thickness: 1/4 inch.
5. Face: Plain with cushion edges.
6. Tile Color and Pattern: As selected by Architect, as follows:
 - a. Field Tile: Daltile Keystones, price groups 1 and 2.
 - b. Accent Tile: Daltile Keystones, all price groups.
 - c. Provide accent tile equal to 30 percent of total tile area, with the remainder as field tile.
7. Grout Color: As selected by Architect from manufacturer's full range.

8. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes:
 - a. Base Cove: Cove, module size 1 by 1 inch.
 - b. External Corners for Portland Cement Mortar Installations: Bead (bullnose), module size 1 by 1 inch
 - c. External Corners for Thin-Set Mortar Installations: Surface bullnose, module size 1 by 1 inch
 - d. Internal Corners: Cove, module size 1 by 1 inch.
 - e. Internal Corners: Field-buttet square corners. For coved base and cap, use angle pieces designed to fit with stretcher shapes.

2.3 THRESHOLDS

- A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.
 1. Bevel edges at 1:2 slope, with lower edge of bevel aligned with or up to 1/16 inch above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to 1/2 inch or less above adjacent floor surface.
- B. Marble Thresholds: ASTM C 503, with a minimum abrasion resistance of 12 per ASTM C 1353 or ASTM C 241 and with honed finish.
 1. Description: As selected by Architect from manufacturer's full range.

2.4 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. Cement Based Waterproofing and Crack Isolation Membrane: Flexible mortar consisting of cement-based mix and latex additive.
 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. Laticrete Hydro Ban Cementous Waterproof Membrane.
 - b. MAPEI Corporation; Mapelastic 315.
 - c. TEC; a subsidiary of H. B. Fuller Company; Triple Flex Waterproofing, Crack Isolation Membrane & Mortar.
- C. Moisture Control: 2-part liquid coating.
 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. Laticrete Vapor Ban Primer ER.
- b. MAPEI Planiseal MSP.

2.5 SETTING MATERIALS

A. Portland Cement Mortar (Thickset) Installation Materials: ANSI A108.02.

- 1. Cleavage Membrane: Asphalt felt, ASTM D 226, Type I (No. 15); or polyethylene sheeting, ASTM D 4397, 4.0 mils thick.
- 2. Reinforcing Wire Fabric: Galvanized, welded wire fabric, 2 by 2 inches by 0.062-inch diameter; comply with ASTM A 185 and ASTM A 82 except for minimum wire size.
- 3. Expanded Metal Lath: Diamond-mesh lath complying with ASTM C 847.
 - a. Base Metal and Finish for Interior Applications: Uncoated or zinc-coated (galvanized) steel sheet, with uncoated steel sheet painted after fabrication into lath.
 - b. Configuration over Solid Surfaces: Self furring.
- 4. Latex Additive: Manufacturer's standard acrylic resin water emulsion, serving as replacement for part or all of gaging water, of type specifically recommended by latex-additive manufacturer for use with field-mixed portland cement and aggregate mortar bed.
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide Laticrete International; Laticrete 3701 Mortar Admix or comparable product by one of the following:
 - 1) MAPEI-Planicrete AC
 - 2) Laticrete 3701 Fortified Mortar Bed or 3701 Admix w/226 Thick Bed Mortar.
 - 3) TEC; a subsidiary of H. B. Fuller Company.
 - 4) Custom Building Products

B. Latex-Portland Cement Mortar (Thin Set): ISO 13007; C2ES2P2 and ANSI A118.4.

- 1. Basis-of-Design Product: Subject to compliance with requirements, provide Laticrete International; Laticrete 254 platinum or comparable product by one of the following:
 - a. MAPEI- Ultra Flex 3
 - b. TEC; a subsidiary of H. B. Fuller Company.
 - c. Custom Building Products
- 2. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.
- 3. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.4.

4. Basis-of-Design Product: Subject to compliance with requirements, provide Laticrete International; Latapoxy 300 or comparable product by one of the following:
 - a. MAPEI: Keraepoxy 410
 - b. TEC; a subsidiary of H. B. Fuller Company.
 - c. Custom Building Products

2.6 GROUT MATERIALS

- A. Water-Cleanable Epoxy Grout: ISO 13007; RG and ANSI A118.3.
 1. Basis-of-Design Product: Subject to compliance with requirements, provide Laticrete International; Spectralock Pro Premium Epoxy Grout or comparable product by one of the following:
 - a. MAPEI-Kerapoxy CQ
 - b. TEC; a subsidiary of H. B. Fuller Company.
 - c. Custom Building Products

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.
 1. Laticrete NXT Surface Prep Line.
- B. Metal Edge Strips: Angle or L-shape, height to match tile and setting-bed thickness, metallic or combination of metal and PVC or neoprene base, designed specifically for flooring applications; stainless-steel, ASTM A 666, 300 Series exposed-edge material.
 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products as shown but not limited to all associated required accessories, that may be incorporated into the Work include, but are not limited to, the following:
 - a. Schluter Systems L.P.
- 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.
 1. Laticrete Stonetech Stone and Tile Cleaner.
- D. Grout Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.
 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Laticrete International; Stonetech Heavy Duty Grout Sealer
 - b. MAPEI- Ultra Penetrating Plus Stone tile and Grout Sealer

- c. TEC; a subsidiary of H. B. Fuller Company; TA-256 Penetrating Silicone TA-257 Silicone Grout Sealer.

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 installed tile.
 - 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 current ANSI A108.01 for installations indicated.
 - 2. Verify that concrete substrates for tile floors installed with 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 Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Fill cracks, holes, and depressions in concrete substrates for tile installed with suitable products made to be trowelable with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.
- B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with current 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 TILE INSTALLATION

- A. Comply with current TCNA's "Handbook for Ceramic Tile Installation" for current TCNA installation methods specified in tile installation schedules. Comply with parts of the current ANSI A108 Series "Specifications for Installation of Ceramic Tile" that are referenced in current 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 current ANSI A108 Series of tile installation standards for providing 95 percent mortar coverage:
 - a. Tile floors in wet areas.
- 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. 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.

4. Grout coverage for tile mounted sheets must have a minimum of 2/3, verify in field prior to installation that tile tabs are no more than 1/3 of the tile height.
- F. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
1. Ceramic Mosaic Tile: 1/16 inch.
 2. Glazed Wall Tile: 1/16 inch.
- G. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.
- H. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated and as per all current TCNA, EJ171 standards. 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 and at same width and as per current TCNA EJ171.
- I. Stone Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.
1. At locations where mortar bed (thickset) would otherwise be exposed above adjacent floor finishes, set thresholds in latex-portland cement mortar (thin set).
 2. Do not extend cleavage membrane/ waterproofing under thresholds set in latex-portland cement mortar. Fill joints between such thresholds and adjoining tile set on cleavage membrane /waterproofing with elastomeric sealant.
- J. Metal Edge Strips: Install at locations indicated where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with or below top of tile and no threshold is indicated.
- K. Grout Sealer: Apply grout sealer to cementitious grout joints in tile floors 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 WATERPROOFING INSTALLATION

- A. Install ANSI A118.10 waterproofing to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness and bonded securely to substrate.
- B. Do not install tile or setting materials over waterproofing until waterproofing has cured and been tested to determine that it is watertight.

3.5 CLEANING AND PROTECTING

- A. 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. 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 and floors.
 - C. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.
 - D. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

3.6 INTERIOR TILE INSTALLATION SCHEDULE

- A. Interior Floor Installations, Concrete Subfloor:
 1. Tile Installation F121-11: Cement mortar bed (thickset) on waterproof/crack membrane; TCNA F121 and ANSI A108.1C.
 - a. Tile Type: CFT.
 - b. Thin-Set Mortar for Cured-Bed Method: Latex-portland cement mortar.
 - c. Grout: Epoxy grout.
 2. Tile Installation F122-11: Thin-set mortar on waterproof/crack membrane; TCNA F122, ANSI A108.5.
 - a. Tile Type: CFT.
 - b. Thin-Set Mortar: Latex-portland cement mortar.
 - c. Grout: Epoxy grout.
- B. Interior Wall Installations:
 1. Tile Installation W211-11: Cement mortar bed (thickset) bonded to substrate; TCNA W211 and ANSI A108.1C.
 - a. Tile Type: CWT.
 - b. Bond Coat Mortar for Wet-Set Method: Latex-portland cement mortar.
 - c. Thin-Set Mortar for Cured-Bed Method: Latex-portland cement mortar.
 - d. Grout: Water-cleanable epoxy grout.

2. Tile Installation W244-11: Thin-set mortar on cementitious backer units; TCNA W244.
 - a. Tile Type: CWT.
 - b. Thin-Set Mortar: Latex-portland cement mortar.
 - c. Grout: Water-cleanable epoxy grout.

END OF SECTION 09 30 13

SECTION 09 30 16 – QUARRY TILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Quarry tile.
 - 2. Stone thresholds.
 - 3. Waterproof membrane.
 - 4. Metal edge strips.

1.3 DEFINITIONS

- A. General: Definitions in the current ANSI A108 series of tile installation standards and in the current 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 A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in "American National Standard Specifications for Installation of Ceramic Tile."
- C. Face Size: Actual tile size, excluding spacer lugs.

1.4 PERFORMANCE REQUIREMENTS

- A. Coefficient of Friction: For tile installed on walkway surfaces, provide products with the following values as determined by testing identical products per the DCOF AcuTest in accordance with ANSI A137.1 – 2012 standard.
 - 1. Level Surfaces: Minimum- Minimum 0.42 wet.

1.5 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. 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.
 - 1. Show base details.
 - 2. Show locations of floor drains and sloped slabs.
 - 3. Show threshold locations and types.
- C. Samples for Verification and Initial Color Selection:
 - 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.

1.7 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
- B. Master Grade Certificates: For each shipment, type, and composition of tile, signed by tile manufacturer and Installer.
- C. Product Certificates: For each type of product, signed by product manufacturer.

1.8 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.

1.9 QUALITY ASSURANCE

- A. Source Limitations for Tile: Obtain tile of each type and color or finish from one 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 and grout component from one manufacturer and each aggregate from one source or producer.

- C. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer for each product:
 - 1. Stone thresholds.
 - 2. Waterproof membrane.
 - 3. Metal edge strips.

1.10 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 current 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.
- E. Handle tile that has temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.11 PROJECT 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 PRODUCTS, GENERAL

- A. ANSI Ceramic Tile Standard: Provide tile that complies with most current ANSI A137.1 for types, compositions, and other characteristics indicated.
 - 1. Provide tile complying with Standard grade requirements unless otherwise indicated.
- B. Current 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 TCA installation methods specified in tile installation schedules, and other requirements specified.
- C. FloorScore Compliance: Tile for floors shall comply with requirements of FloorScore Standard.

- D. Low-Emitting Materials: Tile flooring systems shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- E. 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.

2.2 TILE PRODUCTS

- A. Tile Type QT: Unglazed square-edged quarry tile.
 - 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. American Olean; Division of Dal-Tile International Inc.; Quarry Naturals.
 - b. Daltile; Division of Dal-Tile International Inc.; Quarry Textures.
 - 2. Face Size: 6 by 6 inches.
 - 3. Thickness: 1/2 inch.
 - 4. Tile Color and Pattern: As selected by Architect from manufacturer's full range.
 - 5. Grout Color: As selected by Architect from manufacturer's full range.
 - 6. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes:
 - a. Base: Coved with surface bullnose top edge, size 5 by 6 inches.

2.3 THRESHOLDS

- A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.
 - 1. Bevel edges at 1:2 slope, with lower edge of bevel aligned with or up to 1/16 inch above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to 1/2 inch or less above adjacent floor surface.
- B. Marble Thresholds: ASTM C 503, with a minimum abrasion resistance of 12 per ASTM C 1353 or ASTM C 241 and with honed finish.
 - 1. Description: As selected by Architect from manufacturer's full range.

2.4 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. Chlorinated Polyethylene Sheet: Nonplasticized, chlorinated polyethylene faced on both sides with nonwoven polyester fabric; 0.030-inch nominal thickness.
 - 1. Products: Subject to compliance with requirements, available product that may be incorporated into the Work includes, but is not limited to, the following:
 - a. Laticrete Hydro Ban Sheet Membrane
- C. Latex-Portland Cement: Flexible mortar consisting of cement-based mix and latex additive.
 - 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. Laticrete Hydro Ban Chemical Waterproof Membrane
 - b. MAPEI Corporation; Mapelastic (PRP 315).

2.5 SETTING MATERIALS

- A. Portland Cement Mortar (Thickset) Installation Materials: ANSI A108.02.
 - 1. Cleavage Membrane: Asphalt felt, ASTM D 226, Type I (No. 15); or polyethylene sheeting, ASTM D 4397, 4.0 mils thick.
 - 2. Reinforcing Wire Fabric: Galvanized, welded wire fabric, 2 by 2 inches by 0.062-inch diameter; comply with ASTM A 185 and ASTM A 82 except for minimum wire size.
 - 3. Expanded Metal Lath: Diamond-mesh lath complying with ASTM C 847.
 - a. Base Metal and Finish for Interior Applications: Uncoated or zinc-coated (galvanized) steel sheet, with uncoated steel sheet painted after fabrication into lath.
 - b. Configuration over Solid Surfaces: Self furring.
 - 4. Latex Additive: Manufacturer's standard acrylic resin water emulsion, serving as replacement for part or all of gaging water, of type specifically recommended by latex-additive manufacturer for use with field-mixed portland cement and aggregate mortar bed.
 - a. Laticrete 3701 Fortified Mortar Bed or 3701 Admix with 226 Thick Bed Mortar

B. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4.

1. Basis-of-Design Product: Subject to compliance with requirements, provide MAPEI Corporation; Kerabond/Keralastic System or comparable product by one of the following:
 - a. Laticrete 254 Platinum.
2. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.
3. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.4.

2.6 GROUT MATERIALS

A. Water-Cleanable Epoxy Grout: ANSI A118.3.

1. Basis-of-Design Product: Subject to compliance with requirements, provide MAPEI Corporation; Kerapoxy or comparable product by one of the following:
 - a. Laticrete Spectralock Pro Premium Grout.

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.

1. Laticrete NXT Surface Prep Line

B. Metal Edge Strips: Angle or L-shape, height to match tile and setting-bed thickness, metallic or combination of metal and PVC or neoprene base, designed specifically for flooring applications; stainless-steel, ASTM A 666, 300 Series exposed-edge material.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products as shown but not limited to all associated required accessories, that may be incorporated into the Work include, but are not limited to, the following:

- a. Schluter Systems L.P.

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.

1. Laticrete Stonetech Stone and Tile Cleaner

- D. Grout Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.
 - 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. Laticrete Stonetech Heavy Duty Grout Sealer
 - b. MAPEI Corporation; Keraseal Penetrating Sealer for Unglazed Grout and Tile].

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 installed tile.
 - 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 thick/thin-set 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 Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with suitable products made to be trowelable for leveling and patching compound specifically recommended by tile-setting material manufacturer.
- B. Where indicated, prepare substrates to receive waterproofing 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 TILE INSTALLATION

- A. Comply with current TCNA's "Handbook for Ceramic Tile Installation" for current TCNA's 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 most current ANSI A108 Series of tile installation standards for providing 95 percent mortar coverage:
 - a. Tile floors in wet areas.
 - b. Tile floors composed of tiles 8 by 8 inches or larger.
 - c. Tile floors composed of rib-backed tiles.
 - d. Tile installed on exterior surfaces
- 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. 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. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
 2. 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.
- F. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
1. Quarry Tile: per manufacturer recommendation.
- G. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.
- H. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated and as per all current TCNA, EJ171 standards. 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 at same width and as per current TCNA EJ171.
- I. Stone Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.
1. At locations where mortar bed (thickset) would otherwise be exposed above adjacent floor finishes, set thresholds in latex-portland cement mortar (thin set).
 2. Do not extend cleavage membrane/waterproofing under thresholds set in latex-portland cement mortar. Fill joints between such thresholds and adjoining tile set on cleavage membrane/[waterproofing with elastomeric sealant.
- J. Metal Edge Strips: Install where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with or below top of tile and no threshold is indicated.
- K. Grout Sealer: Apply grout sealer to cementitious grout joints in tile floors 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 WATERPROOFING INSTALLATION

- A. Install ANSI A118.10 waterproofing to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness and bonded securely to substrate.
- B. Do not install tile or setting materials over waterproofing until waterproofing has cured and been tested to determine that it is watertight.

3.5 CLEANING AND PROTECTING

- A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.

1. Remove epoxy 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.
- 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 and floors.
- C. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.
- D. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

3.6 INTERIOR QUARRY TILE INSTALLATION SCHEDULE

- A. Interior Floor Installations, Concrete Subfloor:
1. Tile Installation F114: Cement mortar bed (thickset) with cleavage/waterproof membrane; epoxy grout; TCA F114 and ANSI A108.1B.
 - a. Thin-Set Mortar for Cured-Bed Method: Latex-portland cement mortar.
 - b. Grout: Water-cleanable epoxy grout.

END OF SECTION 09 30 16

SECTION 09 30 19 – PORCELAIN TILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Porcelain tile- Bullnose Base.

1.3 DEFINITIONS

- A. General: Definitions in the current ANSI A108 series of tile installation standards and in current 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 A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in "American National Standard Specifications for Installation of Ceramic Tile."
- C. Module Size: Actual tile size plus joint width indicated.
- D. Face Size: Actual tile size, excluding spacer lugs.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. 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.
 - 1. Show base details.
 - 2. Show locations of floor drains and sloped slabs.
 - 3. Show threshold locations and types.
- C. Samples for Verification and Initial Color Selection:
 - 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.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
- B. Master Grade Certificates: For each shipment, type, and composition of tile, signed by tile manufacturer and Installer.
- C. Product Certificates: For each type of product, signed by product manufacturer.

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. Source Limitations for Tile: Obtain tile of each type and color or finish from one 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 one manufacturer and each aggregate from one source or producer.

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.
- E. Handle tile that has temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.9 PROJECT 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 PRODUCTS, GENERAL

- A. ANSI Ceramic Tile Standard: Provide tile that complies with most current ANSI A137.1 for types, compositions, and other characteristics indicated.
 - 1. Provide tile complying with Standard grade requirements unless otherwise indicated.
- B. ANSI Standards for Tile Installation Materials: Provide materials complying with most current ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCA 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.

2.2 TILE PRODUCTS

- A. Tile Type PT1porcelain tile- Base.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Daltile "Formula Color Body Porcelain tile or comparable product by one of the following:
 - a. Crossville, Inc.
 - 2. Composition: Porcelain.
 - 3. Face Size: 3 by 24 inches.
 - 4. Thickness: 3/8 inch.
 - 5. Face: Plain with bullnose edges.
 - 6. Tile Color and Pattern: As selected by Architect from manufacturer's full range.
 - 7. Grout Color: As selected by Architect from manufacturer's full range.
 - 8. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable. Provide shapes as follows, selected from manufacturer's standard shapes:
 - a. Base Bullnose for Thin-Set Mortar Installations: Surface bullnose.

2.3 GROUT MATERIALS

A. Water-Cleanable Epoxy Grout: ANSI A118.3

1. Basis-of-Design Product: Subject to compliance with requirements, provide MAPEI Corporation; Kerapoxy CQ or comparable product by one of the following:
 - a. Laticrete International, Inc.-Spectralock Pro premium Grout

B. Latex-Portland Cement: Flexible mortar consisting of cement-based mix and latex additive.

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. MAPEI Corporation; Mapelastic (PRP 315).

2.4 SETTING MATERIALS

A. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4.

1. Basis-of-Design Product: Subject to compliance with requirements, provide MAPEI Corporation; Kerabond/Keralastic System or comparable product by one of the following:
 - a. Laticrete 254 Platinum.
2. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.
3. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.4.

2.5 GROUT MATERIALS

A. Polymer-Modified Tile Grout: ANSI A118.7.

1. Basis-of-Design Product: Subject to compliance with requirements, provide MAPEI Corporation; Keracolor S or comparable product by one of the following:
 - a. Laticrete High Performance Permacolor.
2. Polymer Type: Ethylene vinyl acetate or acrylic additive, in dry, redispersible form, prepackaged with other dry ingredients.

2.6 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 installed tile.
 - 1. Verify that substrates for setting tile are firm, dry, clean, and 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 thin-set 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 Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with patching and leveling with suitable products made to be trowelable for leveling and patching compound specifically recommended by tile-setting material manufacturer.
- B. Where indicated, prepare substrates to receive waterproofing 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 TILE INSTALLATION

- A. Comply with current TCNA's "Handbook for Ceramic Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the current ANSI A108 Series "Specifications for Installation of Ceramic Tile" that are referenced in current 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. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.
- 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. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
 - 2. 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.
- F. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
 - 1. Porcelain Tile: as required by manufacturer.
- G. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.

3.4 WATERPROOFING INSTALLATION

- A. Install ANSI A118.10 waterproofing to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness and bonded securely to substrate.
- B. Do not install tile or setting materials over waterproofing until waterproofing has cured and been tested to determine that it is watertight.

3.5 CLEANING AND PROTECTING

- A. 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.
- 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 and floors.
- C. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.
- D. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

3.6 INTERIOR PORCELAIN TILE INSTALLATION SCHEDULE

- A. Interior Wall Installations: Base
 - 1. Tile Installation W202: Thin-set mortar; TCA W202.
 - a. Thin-Set Mortar: Latex-portland cement mortar.
 - b. Grout: Polymer-modified sanded grout.

END OF SECTION 09 30 19

SECTION 09 51 13 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes acoustical panels and exposed suspension systems for interior ceilings.

1.3 DEFINITIONS

- A. CAC: Ceiling Attenuation Class.
- B. LR: Light Reflectance.
- C. NRC: Noise Reduction Coefficient.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 SUBMITTALS, GENERAL

- A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Attachment devices.
 - 2. Wire hangers, braces and ties.
 - 3. Hanger rods.
 - 4. Flat hangers.
 - 5. Angle hangers.
 - 6. Hold-down clips.
 - 7. Roll-formed, sheet-metal edge moldings and trim.
- B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below; otherwise submit full Product Data for the following:

1. Acoustical panels for ceiling type A1.
 2. Acoustical panels for ceiling type A4.
 3. Metal suspension system for ceiling types A1, A4, and A5.
- C. Samples for Verification: If proposing products other than those specifically named in Part 2 of this Section, for each component indicated and for each exposed finish required, prepared on Samples of sizes indicated below:
1. Acoustical Panels: Set of 6-inch-square Samples of each type, color, pattern, and texture.
 2. Exposed Suspension-System Members, Moldings, and Trim: Set of 6-inch-long Samples of each type, finish, and color.

1.7 INFORMATIONAL SUBMITTALS

- A. 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. Items penetrating finished ceiling and ceiling-mounted items including, but not limited to, the following:
 - a. Lighting fixtures.
 - b. Diffusers.
 - c. Grilles.
 - d. Speakers.
 - e. Sprinklers.
 - f. Access panels.
 - g. Detectors.

1.8 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For finishes to include in maintenance manuals.

1.9 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. Acoustical Ceiling Units: Full-size panels equal to 2 percent of quantity installed of each acoustical panel type.
 2. Suspension-System Components: Quantity of each exposed component equal to 2 percent of quantity installed of each metal suspension system type.
 3. Hold-Down Clips: Equal to 2 percent of quantity installed.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical panels, 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 panels, permit them to reach room temperature and a stabilized moisture content.

1.11 FIELD CONDITIONS

- A. Environmental Limitations: Do not install acoustical panel 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.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Match each type of acoustical ceiling panel with a supporting suspension system of the same 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.

2.3 ACOUSTICAL PANELS, GENERAL

- A. Acoustical Panel Standard: Provide manufacturer's standard panels according to ASTM E1264 and designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.
- B. Color: White.
- C. 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 SPECIALTY ACOUSTICAL PANELS FOR WIDE-FACE SUSPENSION SYSTEMS

A. Acoustical Panels for Ceiling Type A1:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to:
 - a. Armstrong World Industries, Inc.; Optima Lay-In 3150.
 - b. CertainTeed Ceilings; Symphony f 1322-IOF-1.
 - c. USG Corporation; Halcyon Acoustical Panels 97221.
2. Type and Form: Type XII, glass-fiber base with membrane-faced overlay; Form 2, cloth. Binder shall not contain urea formaldehyde.
3. Pattern: As indicated by manufacturer's designation.
4. Modular Size: 24 by 24 inches.
5. Thickness: 3/4-inch.
6. Edge Detail: Square.
7. NRC: Not less than 0.90.
8. LR: Not less than 0.90.

B. Acoustical Panels for Ceiling Type A4:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to:
 - a. Armstrong World Industries, Inc.; Optima Health Zone 3114PB.
 - b. CertainTeed Ceilings; Symphony f Rx 1342-RXS-1.
 - c. USG Corporation; Halcyon Healthcare Acoustical Panels 98232.
2. Type and Form: Type XII, glass-fiber base with membrane-faced overlay; Form 2, cloth. Binder shall not contain urea formaldehyde.
3. Pattern: As indicated by manufacturer's designation.
4. Modular Size: 24 by 24 inches.
5. Thickness: 1 inch.
6. Edge Detail: Square.
7. NRC: Not less than 0.95.
8. LR: Not less than 0.85.

C. Acoustical Panels for Ceiling Type A5: Refer to Division 09 Section "Sound-Absorbing Ceiling Units" for sound-absorbing and sound-diffusing ceiling panels.

2.5 METAL SUSPENSION SYSTEMS, GENERAL

- A. Metal Suspension-System Standard: Provide manufacturer's standard, direct-hung, metal suspension system and accessories according to ASTM C635/C635M and designated by type, structural classification, and finish indicated.

2.6 WIDE-FACE METAL SUSPENSION SYSTEMS

- A. Wide-Face Suspension System for Ceiling Types A1, A4, and A5:
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Armstrong World Industries, Inc.; Prelude XL 15/16-inch Exposed Tee System.
 - b. CertainTeed Ceilings; 15/16-inch EZ Stab Classic System.
 - c. USG Corporation; Donn Brand DX Acoustical Suspension System.
 - 2. Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; hot-dip galvanized, G30 coating designation; with prefinished 15/16-inch-wide metal caps on flanges.
 - 3. Structural Classification: Heavy-duty system.
 - 4. End Condition of Cross Runners: Override (stepped) type.
 - 5. Face Design: Flat, flush.
 - 6. Cap Material: Cold-rolled steel.
 - 7. Cap Finish: Painted white.

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.
- B. Wire Hangers, Braces, and Ties: Provide wires as follows:
 - 1. Zinc-Coated, Carbon-Steel Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper.
 - 2. Size: Wire diameter sufficient for its stress at three times hanger design load (ASTM C635/C635M, Table 1, "Direct Hung") will be less than yield stress of wire, but not less than 0.135-inch- diameter wire.
- C. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.
- D. Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.

- E. Angle Hangers: Angles with legs not less than 7/8 inch wide; formed with 0.04-inch-thick, galvanized-steel sheet complying with ASTM A653/A653M, G90 coating designation; with bolted connections and 5/16-inch-diameter bolts.
- F. Hold-Down Clips: Manufacturer's standard hold-down.

2.8 METAL EDGE MOLDINGS AND TRIM

- A. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.
 - 1. Edge moldings shall fit acoustical panel edge details and suspension systems indicated and match width and configuration of exposed runners unless otherwise indicated.
 - 2. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.

2.9 ACOUSTICAL SEALANT

- A. Acoustical Sealant: As specified in Division 07 Section " Joint Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.
- B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders unless otherwise indicated, and comply with layout shown on reflected ceiling plans.
- B. Lay out openings for penetrations centered on the penetrating items.

3.3 INSTALLATION

- A. Install acoustical panel ceilings according to ASTM C636/C636M and manufacturer's written instructions.
- B. Suspend ceiling hangers from building's structural members and as follows:
 - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
 - 2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 - 3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
 - 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. Secure flat, angle, channel, and rod hangers to structure by attaching to inserts, eye screws, or other devices that are secure and appropriate for both the structure to which hangers are attached and the type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
 - 6. 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.
 - 7. 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.
 - 8. Do not attach hangers to steel deck tabs.
 - 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.
- C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.

- D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
 - 1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
 - 2. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends. Miter corners accurately and connect securely.
 - 3. 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 acoustical panels with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide precise fit.
 - 1. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension-system runners and moldings.
 - 2. Install hold-down clips in areas indicated; space according to panel manufacturer's written instructions unless otherwise indicated.
 - a. Hold-Down Clips: Space 24 inches o.c. on all cross runners.

3.4 CLEANING

- A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage.
- B. Remove and replace ceiling components that cannot be successfully cleaned and restored to permanently eliminate evidence of damage.

END OF SECTION 09 51 13

SECTION 09 51 33 - ACOUSTICAL METAL PAN AND PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Acoustical metal pans, panels and associated suspension system for interior ceilings.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 SUBMITTALS, GENERAL

- A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include procedure for cutting metal pans and panels.
 - 1. Attachment devices.
 - 2. Wire hangers, braces and ties.
 - 3. Hanger rods.
 - 4. Flat hangers.
 - 5. Angle hangers.
 - 6. Hold-down clips.
 - 7. Exposed metal edge moldings and trim.
- B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below; otherwise submit full Product Data for the following:
 - 1. Steel panels for acoustical metal panel ceiling type A2
 - 2. Aluminum pans for acoustical metal pan ceiling type A5.
 - 3. Metal suspension system for ceiling type A2.
 - 4. Metal suspension system for ceiling type A5.

- C. Samples for Initial Selection: For units with factory-applied finishes.
- D. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below:
 - 1. Metal Pans and Panels: Set of full-size Samples of each type, finish, color, pattern, and texture. Show pan edge profile.
 - 2. Exposed Suspension-System Members, Moldings, and Trim: Set of 6-inch-long Samples of each type, finish, and color.
 - 3. Sound Absorber: Sample of each type matching size of Sample metal pan.

1.6 INFORMATIONAL SUBMITTALS

- A. 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. Suspended ceiling components.
 - 2. Structural members to which suspension systems will be attached.
 - 3. Items penetrating finished ceiling including, but not limited to, the following:
 - a. Lighting fixtures.
 - b. Air outlets and inlets.
 - c. Speakers.
 - d. Sprinklers.
 - e. Access panels.
 - f. Detectors.
 - 4. Perimeter moldings.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For finishes to include in maintenance manuals.

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. Acoustical Metal Pans with Sound Absorber: Full-size units equal to 2 percent of quantity installed.
 - 2. Acoustical Metal Panels: Full-size units equal to 2 percent of quantity installed.
 - 3. Suspension-System Components: Quantity of each grid, exposed molding, and trim equal to 2 percent of quantity installed.
 - 4. Hold-Down Clips: Equal to 2 percent of quantity installed.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical metal pans and panels, suspension-system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they are protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.
- B. Handle acoustical metal pans and panels, suspension-system components, and accessories carefully to avoid damaging units and finishes in any way.

PART 2 - PRODUCTS

2.1 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: Comply with ASTM E1264 for Class A materials.
 - 2. Smoke-Developed Index: 50 or less.

2.2 ACOUSTICAL METAL PANS AND PANELS, GENERAL

- A. Source Limitations: Obtain each type of acoustical metal ceiling pan, panel and supporting suspension system from single source from single manufacturer.
- B. Acoustical Panel Standard: Provide manufacturer's standard pans of configuration indicated that comply with ASTM E1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances unless otherwise indicated.
 - 1. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches away from test surface according to ASTM E795.
- C. Sheet Metal Characteristics: For metal components exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, roughness, stains, or discolorations.
 - 1. Aluminum Sheet: Rolled aluminum sheet, complying with ASTM B209; alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.
 - 2. Steel Sheet: Commercial-quality, cold-rolled, carbon-steel sheet; stretcher leveled; with protective coating complying with ASTM C635/C635M.
 - a. Painted Finishes: Electrolytic zinc-coated steel complying with ASTM A879/A879M, 13Z coating, surface treatment as recommended by finish manufacturer for type of use and finish indicated.

- D. Sound-Absorbent Pads: Provide width and length to completely fill concealed surface of pan, with surface-burning characteristics for flame-spread index of 25 or less and smoke-developed index of 50 or less, as determined by testing according to ASTM E84, and to comply with the following requirements:
 - 1. Plastic Sheet-Wrapped, Mineral-Fiber Insulation: Pads consisting of nonrigid, PVC plastic sheet encapsulating unfaced mineral-fiber insulation complying with ASTM C553, Type I, Type II, or Type III.

2.3 STEEL PANELS FOR ACOUSTICAL METAL PANEL CEILING A2

- A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to:
 - 1. Armstrong World Industries, Inc.; Metalworks Mesh Square Lay-in.
 - 2. CertainTeed Ceilings, Hunter Douglas; Metalinx.
- B. Pattern: Welded wire or expanded metal pattern as selected by Architect from manufacturer's full range.
- C. Panel Fabrication: Manufacturer's standard units of size indicated, formed from metal indicated and finished to comply with requirements indicated.
 - 1. Lay-in Panels: Formed to set in exposed suspension grid.
- D. Panel Size: 24 by 24 inches.
- E. Panel Face Finish: Painted in color selected from manufacturer's full range.

2.4 ALUMINUM PANS FOR ACOUSTICAL METAL PAN CEILING A5

- A. Basis-of-Design Product: Subject to compliance with requirements, provide USG Corporation; Geometrix 3-Dimensional Metal Panels, or comparable product, including, but not limited to, products by:
 - 1. Armstrong World Industries, Inc.
 - 2. CertainTeed Ceilings, Hunter Douglas.
- B. Pattern: Multiple configuration and depth pans, as selected by Architect from manufacturer's full range, including perforated and unperforated pans.
- C. Pan Fabrication: Manufacturer's standard units of size, profile, and edge treatment indicated, formed from metal indicated and finished to comply with requirements indicated.
 - 1. Lay-in Pans: Formed to set in exposed suspension grid.
- D. Pan Edge Detail: Manufacturer's standard edge detail.
- E. Pan Size: 24 by 24 inches.

- F. Pan Face Finish: Painted in color selected from manufacturer's full range.
- G. NRC: Not less than 0.85.

2.5 METAL SUSPENSION SYSTEMS, GENERAL

- A. Metal Suspension System Standard: Provide manufacturer's standard metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable ASTM C635/C635M requirements.
- B. Suspension Systems: Provide systems complete with carriers, runners, splice sections, connector clips, alignment clips, leveling clips, hangers, molding, trim, retention clips, load-resisting struts, and other suspension components required to support ceiling units and other ceiling-supported construction.

2.6 WIDE-FACE METAL SUSPENSION SYSTEMS

- A. Wide-Face Suspension System for Ceiling Type A2:
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Armstrong World Industries, Inc.; Prelude XL 15/16-inch Exposed Tee System.
 - b. CertainTeed Ceilings; 15/16-inch EZ Stab Classic System.
 - 2. Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; hot-dip galvanized, G30 coating designation; with prefinished 15/16-inch-wide metal caps on flanges.
 - 3. Structural Classification: Heavy-duty system.
 - 4. End Condition of Cross Runners: Override (stepped) type.
 - 5. Face Design: Flat, flush.
 - 6. Cap Material: Cold-rolled steel.
 - 7. Cap Finish: As selected by Architect from manufacturer's full range.

2.7 NARROW-FACE METAL SUSPENSION SYSTEMS

- A. Narrow-Face Suspension System for Ceiling Type A5:
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Armstrong World Industries, Inc.; Suprafine XL 9/16-inch Exposed Tee System.
 - b. CertainTeed Ceilings; 9/16-inch EZ Stab Elite Narrow System.
 - c. USG Corporation; Donn Brand Centricitee DXT Acoustical Suspension System.

2. Narrow-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; hot-dip galvanized, G30 coating designation; with prefinished 9/16-inch-wide metal caps on flanges.
3. Structural Classification: Heavy-duty system.
4. End Condition of Cross Runners: Override (stepped) type.
5. Face Design: Flat, flush.
6. Cap Material: Cold-rolled steel.
7. Cap Finish: As selected by Architect from manufacturer's full range.

2.8 ACCESSORIES

- A. Attachment Devices: Size for 5 times the design load indicated in ASTM C635/C635M, Table 1, Direct Hung, unless otherwise indicated.
- B. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:
 1. Zinc-Coated, Carbon-Steel Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper.
 2. Size: Select wire diameter so its stress at 3 times the hanger design load indicated in ASTM C635/C635M, Table 1, Direct Hung, is less than yield stress of wire, but provide not less than 0.135-inch- diameter wire.
- C. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.
- D. Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.
- E. Angle Hangers: Angles with legs not less than 7/8 inch wide; formed with 0.04-inch-thick, galvanized-steel sheet complying with ASTM A653/A653M, G90 coating designation; with bolted connections and 5/16-inch-diameter bolts.
- F. Hold-Down Clips: Manufacturer's standard hold-down clips.
- G. Exposed Metal Edge Moldings and Trim: Provide exposed members as indicated, to conceal edges of and penetrations through ceiling, to conceal edges of pans, panels and runners, for fixture trim and adapters, for fasciae at changes in ceiling height, and for other conditions; of metal and finish matching suspension-system members unless otherwise indicated.
 1. For Circular Penetrations of Ceiling: Fabricate edge moldings to diameter required to fit penetration exactly.

2.9 ACOUSTICAL SEALANT

- A. Acoustical Sealant: As specified in Division 07 Section " Joint Sealants."

2.10 GENERAL FINISH REQUIREMENTS

- A. 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.

2.11 ALUMINUM FINISHES

- A. Color-Coated Finish: Manufacturer's standard baked paint complying with coating manufacturer's written instructions for surface preparation, pretreatment, application, baking, and minimum dry film thickness.

2.12 STEEL SHEET FINISHES

- A. Color-Coated Finish: Manufacturer's standard baked paint complying with coating manufacturer's written instructions for surface preparation, pretreatment, application, baking, and minimum dry film thickness.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, including structural framing to which acoustical metal pan and panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical metal pan and panel ceilings.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical metal pans and panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width pans and panels at borders, and comply with layout shown on reflected ceiling plans and coordination drawings.

3.3 INSTALLATION

- A. General: Install acoustical metal pan and panel ceiling assemblies to comply with ASTM C636/C636M and manufacturer's written instructions.

- B. Suspend ceiling hangers from building's structural members and as follows:
1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
 2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
 4. Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that do not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 5. Secure flat, angle, channel, and rod hangers to ceiling suspension members and to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both structure to which hangers are attached and the type of hanger involved. Install hangers in a manner that does not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
 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 attach hangers to steel roof deck. Attach hangers to structural members.
 9. 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.
 10. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
- C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.
- D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical metal pans and panels.
1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.

2. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet. Miter corners accurately and connect securely.
 3. 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. Cut acoustical metal pan and panel units for accurate fit at borders and at interruptions and penetrations by other work through ceilings. Stiffen edges of cut units as required to eliminate evidence of buckling or variations in flatness exceeding referenced standards for stretcher-leveled metal sheet. Cut and treat edges to comply with manufacturer's written instructions.
- G. Install acoustical metal pans and panels in coordination with suspension system and exposed moldings and trim. Comply with manufacturer's installation tolerances.
1. For lay-in, square-edge pans, install pans and panels with edges fully hidden from view by flanges of suspension-system runners and moldings.
 2. Align joints in adjacent courses to form uniform, straight joints parallel to room axis in both directions unless otherwise indicated.
 3. Fit adjoining units to form flush, tight joints.
 4. Install directionally patterned or textured metal pans in directions indicated.
 5. Install sound-absorbent pads in perforated metal pans.
- H. Install hold-down clips where indicated.

3.4 CLEANING

- A. Clean exposed surfaces of acoustical metal pan and panel ceilings, including trim and edge moldings, after removing strippable, temporary protective covering, if any. Comply with manufacturer's written instructions for stripping of temporary protective covering, cleaning, and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and corrected to permanently eliminate evidence of damage, including dented and bent units.

END OF SECTION 09 51 33

SECTION 09 54 23 - LINEAR METAL SLAT CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes linear metal slats and suspension systems for ceilings.

1.3 DEFINITIONS

- A. LR: Light Reflectance coefficient.
- B. NRC: Noise Reduction Coefficient.

1.4 COORDINATION

- A. Coordinate layout and installation of linear metal slats and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

1.5 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.6 SUBMITTALS, GENERAL

- A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.7 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Attachment devices.
 - 2. Wire hangers, braces and ties.
 - 3. Hanger rods.
 - 4. Flat hangers.
 - 5. Angle hangers.

- B. **As-Specified Data:** If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below; otherwise submit full Product Data for the following:
 - 1. Aluminum slat linear metal ceiling type A3.
 - 2. Metal suspension system for ceiling type A3.
- C. **Samples for Initial Selection:** For components with factory-applied color and other decorative finishes.
- D. **Samples for Verification:** For each component indicated and for each exposed finish required, prepared on Samples of size indicated below:
 - 1. Linear Metal Slat: Set of 12-inch-long Samples of each type and color and a 12-inch-long spliced section.
 - 2. Suspension System Members: 12-inch-long Sample of each type.
 - 3. End Cap: Full size.

1.8 INFORMATIONAL SUBMITTALS

- A. **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. Linear pattern.
 - 2. Joint pattern.
 - 3. Ceiling suspension members.
 - 4. Method of attaching hangers to building structure.
 - 5. Ceiling-mounted items including light fixtures, diffusers, grilles, speakers, sprinklers, and access panels.
 - 6. Ceiling perimeter and penetrations through ceiling.

1.9 CLOSEOUT SUBMITTALS

- A. **Maintenance Data:** For finishes to include in maintenance manuals.

1.10 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. **Linear Metal Ceiling Components:** Quantity of each slat, carrier, accessory, and exposed molding and trim equal to 2 percent of quantity installed.

1.11 DELIVERY, STORAGE, AND HANDLING

- A. Deliver linear metal slats, suspension system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they are protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.
- B. Handle linear metal slats, suspension system components, and accessories carefully to avoid damaging units and finishes in any way.

1.12 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install linear metal 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.

PART 2 - PRODUCTS

2.1 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: Comply with ASTM E1264 for Class A materials.
 - 2. Smoke-Developed Index: 50 or less.

2.2 LINEAR METAL CEILING SLATS, GENERAL

- A. Acoustical Metal Slat Standard: Provide manufacturer's standard linear metal slats of configuration indicated that comply with ASTM E1264 classifications as designated by types, unless otherwise indicated.
 - 1. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches away from test surface per ASTM E795.
- B. Sheet Metal Characteristics: For metal components exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, roughness, stains, or discolorations.
 - 1. Aluminum Sheet: Roll-formed aluminum sheet, complying with ASTM B209; alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.
- C. Slat Fabrication: Manufacturer's standard units of size, profile, and edge treatment indicated, formed from metal indicated to snap on and be securely retained on suspension system, and finished to comply with requirements indicated.

- D. End Caps: Metal matching pans; fabricated to fit and conceal exposed ends of slats.
- E. Alignment Devices: Metal matching pans; fabricated to uninterruptedly close voids between slats.

2.3 ALUMINUM SLAT LINEAR METAL CEILING TYPE A3

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Armstrong World Industries, Inc., Metalworks Blades-Classics, or comparable product, including, but not limited to, products by:
 - 1. CertainTeed Ceilings, Hunter Douglas.
- B. Slat Metal Thickness: Not less than 0.032-inch.
- C. Slat Size: 1 inch by 6 inches by lengths as required to produce pattern indicated on Drawings with minimum of joints.
- D. Slat Face, End and All Exposed Surface Finish: Simulated wood finish as selected by Architect from manufacturer's full range.

2.4 METAL SUSPENSION SYSTEMS

- A. Metal Suspension Systems Standard: Provide ceiling manufacturer's standard metal suspension systems of types and finishes indicated that comply with applicable ASTM C635/C635M requirements.
- B. Suspension Systems: Provide systems complete with attachment clips, carriers, splice sections, connector clips, alignment clips, leveling clips, hangers, molding, trim, retention clips, load-resisting struts, fixture adapters, and other suspension components required to support ceiling units and other ceiling-supported construction.

2.5 WIDE-FACE METAL SUSPENSION SYSTEMS

- A. Wide-Face Suspension System for Ceiling Type A3:
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Armstrong World Industries, Inc., Prelude XL 15/16-inch Exposed Tee System, or comparable product.
 - 2. Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; hot-dip galvanized, G30 coating designation; with prefinished 15/16-inch-wide metal caps on flanges.
 - 3. Structural Classification: Heavy-duty system.
 - 4. End Condition of Cross Runners: Override (stepped) type.
 - 5. Face Design: Flat, flush.

6. Cap Material: Cold-rolled steel.
7. Cap Finish: Painted black.

2.6 ACCESSORIES

- A. Attachment Devices: Size for five times the design load indicated in ASTM C635/C635M, Table 1, Direct Hung, unless otherwise indicated.
- B. Wire Hangers, Braces, and Ties: Provide wire complying with the following requirements:
 1. Zinc-Coated, Carbon-Steel Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper.
 2. Size: Select wire diameter so its stress at 3 times the hanger design load indicated in ASTM C635/C635M, Table 1, Direct Hung is less than yield stress of wire, but provide not less than 0.135-inch- diameter wire.
- C. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.
- D. Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.
- E. Angle Hangers: Angles with legs not less than 7/8 inch wide; formed from 0.04-inch-thick, galvanized-steel sheet complying with ASTM A653/A653M, G90 coating designation; with bolted connections and 5/16-inch-diameter bolts.

2.7 GENERAL FINISH REQUIREMENTS

- A. 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.

2.8 ALUMINUM FINISHES

- A. Color-Coated Simulated Wood Finish: Manufacturer's standard powder-coat baked paint finish complying with coating manufacturer's written instructions for surface preparation, pretreatment, application, baking, and minimum dry film thickness.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, including structural framing and substrates to which linear metal ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of linear metal ceilings.

- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Measure each ceiling area and establish layout of linear metal slats, and comply with layout shown on reflected ceiling plans and on Coordination Drawings.

3.3 INSTALLATION

- A. Comply with ASTM C636/C636M and seismic requirement indicated, per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."
- B. Suspend ceiling hangers from building's structural members and as follows:
 - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
 - 2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 - 3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
 - 4. Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate to which hangers are attached and for type of hanger involved.
 - 5. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both structure to which hangers are attached and type of hanger involved. Install hangers in a manner that does not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
 - 6. 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.
 - 7. 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.
 - 8. Do not attach hangers to steel deck tabs.
 - 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 and publications.
- C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers but without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with postinstalled anchors.
- D. Cut linear metal slats for accurate fit at borders and at interruptions and penetrations by other work through ceilings. Stiffen edges of cut units as required to eliminate evidence of buckling or variations in flatness exceeding referenced standards for stretcher-leveled metal sheet.
- E. Install linear metal slats in coordination with suspension system.
1. Align joints in adjacent courses to form uniform, straight joints as indicated.
 2. Fit adjoining units to form flush, tight joints. Scribe and cut units for accurate fit at borders and around construction penetrating ceiling.
 3. Install slats with butt joints using internal splices and in the following joint configuration:
 - a. Aligned.
 - b. As indicated.
 4. Where metal slat ends are visible, install end caps.

3.4 CLEANING

- A. Clean exposed surfaces of linear metal ceilings, including trim and edge moldings after removing strippable, temporary protective covering if any. Comply with manufacturer's written instructions for stripping of temporary protective covering, cleaning, and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and corrected to permanently eliminate evidence of damage, including dented and bent units.

END OF SECTION 09 54 23

SECTION 09 61 00 – FLOORING TREATMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes flooring treatment for the following:
 - 1. Sealer/hardener/polish for concrete floors.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Penetrating liquid floor treatments for polished concrete finish.
- B. Manufacturer/Applicator Warranty: Provide joint agreement between floor treatment manufacturer and floor treatment applicator for not less than 10 years for materials and 10 years for labor.

1.5 INFORMATIONAL SUBMITTALS

- A. Installer Certificates: Signed by manufacturer certifying that all installers comply with specified requirements for manufactures proper procedures and installation requirements.
- B. Material Certificates: For each of the following, signed by manufacturers:
 - 1. Floor and slab treatments.

1.6 CLOSEOUT SUBMITTALS

- A. Executed Warranty: For special warranty.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of flooring treatment for this Project.
- B. Mockups: Finish concrete slab to demonstrate floor treatments and standard of workmanship.
 - 1. Finish area approximately 200 sq. ft. for slab in the location indicated or, if not indicated, as directed by Architect.
 - 2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 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.

1.9 PROJECT CONDITIONS

- A. Environmental Limitations: Comply with flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring application.
- B. Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during flooring application.
- C. Close spaces to traffic during flooring application and for not less than 24 hours after application unless manufacturer recommends a longer period.

1.10 COORDINATION AND SCHEDULING

- A. Ensure concrete has cured for not less than 45 days unless otherwise recommended by floor treatment manufacturer.
- B. Schedule application of floor treatment not less than 10 days prior to installation of equipment to be installed in spaces with floor treatment application.
- C. Close areas receiving floor treatment to traffic during floor treatment application in accordance with floor treatment manufacturer's recommendations.

1.11 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components that fail(s) in materials or workmanship within specified warranty period.
 - 1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 LIQUID FLOOR TREATMENTS

- A. VOC Content: Liquid floor treatments shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- B. Penetrating Liquid Floor Sealer/Hardener/Polish Treatments for Polished Concrete Finish: Clear, waterborne solution of inorganic silicate or silicate materials and proprietary components; odorless; that penetrates, hardens, and is suitable for polished concrete surfaces.
 - 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. Advanced Floor Products; Retro-Plate 99.
 - b. L&M Construction Chemicals, Inc.; FGS Hardener Plus.
 - 2. Abrasion resistance (ASTM C779): Up to 300 percent increase in abrasion resistance.
 - 3. Impact strength (ASTM C805): 21 percent increase in impact strength.
 - 4. Ultra violet light and water spray (ASTM G23-81): No adverse effects to ultra violet and water spray.
 - 5. Co-efficient of friction (ASTM C1028): Levels 1 and 2, satin or semi gloss, exceed OSHA and ADA recommendations.
 - 6. Reflectivity: Minimum of 25 percent increase.
- C. Related Materials:
 - 1. Neutralizing Agent: Ammonia.
 - 2. Water: Potable.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Allow new concrete to receive floor treatment to cure not less than 45 days prior to floor treatment application unless longer period recommended by floor treatment manufacturer.
- B. Scrape or grind protrusion flush with surface. Patch voids, holes and cracks with cementitious patching compound recommended by floor treatment manufacturer and compatible with floor treatment materials.
- C. Remove curing, sealing and coating agents, oil, breaking compound residue, wax, and grease using mechanical or chemical methods acceptable to floor treatment manufacturer and compatible with floor treatment materials. Rinse and allow drying as recommended by floor treatment manufacturer.

- D. Remove dust and loose material by brushing, sweeping, vacuuming, and high-pressure air as recommended by floor treatment manufacturer.
- E. Remove paint residue with solvent/stripper without acidic pH and acceptable to floor treatment manufacturer.
- F. Treat oil spots with aggressive solvent or oil emulsifier acceptable to floor treatment manufacturer to remove oil that has penetrated below surface after absorbing excess oil on surface using oil absorber acceptable to floor treatment manufacturer.
- G. Treat tire marks or other residue in accordance with floor treatment manufacturer's recommendations, including application of treatment materials, scrubbing, and rinsing.

3.2 APPLICATION

- A. Apply floor treatment materials including acid stain, in accordance with manufacturer's instructions. Ensure technical representative of floor treatment manufacturer is present at start of floor finish application.
- B. Sealing, Hardening and Polishing of Concrete Surface
 - 1. Start application not less than 10 days prior to installation of equipment or other construction on floors receiving floor treatment.
 - 2. Apply sealer/hardener/polish materials in strict accordance with manufacturer's recommendations for applications shown on Drawings to achieve waterproofing, sealing, hardening, dustproofing, and abrasion resistance in addition to provide polished surface at sheen level of Level II.
- C. Apply components of flooring system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface.

3.3 LIQUID FLOOR TREATMENTS

- A. Polished Concrete Floor Treatment: Apply polished concrete finish system to cured and prepared slabs to match accepted mockup.
 - 1. Machine grind floor surfaces to receive polished finishes level and smooth.
 - 2. Apply penetrating liquid floor treatment for polished concrete in polishing sequence and according to manufacturer's written instructions, allowing recommended drying time between successive coats.
 - 3. Continue polishing with progressively finer grit diamond polishing pads to gloss level to match approved mockup.
 - 4. Control and dispose of waste products produced by grinding and polishing operations.
 - 5. Neutralize and clean polished floor surfaces.

3.4 PROTECTION OF LIQUID FLOOR TREATMENTS

- A. 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.

END OF SECTION 09 61 00

SECTION 09 65 13 - RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Resilient base.
 - 2. Resilient stair accessories.
 - 3. Resilient molding accessories.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Resilient base: rubber RB.
 - 2. Resilient one-piece stair tread and riser units.
 - 3. Edge guards.
 - 4. Adapters.
 - 5. Trowelable leveling and patching compounds.
 - 6. Concrete slab primer.
 - 7. Adhesives.
 - 8. Stair-tread-nose filler.
- B. Samples for Verification and Initial Color Selection:
 - 1. For each type of product indicated, in manufacturer's standard-size Samples but not less than 2-1/2 inches long, of each resilient product color, texture, and pattern required.

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. 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.

1.6 QUALITY ASSURANCE

- A. Source Limitations for Resilient Base and Accessories: Obtain each type of resilient base and accessories from a single source with resources to provide materials of consistent quality in appearance and physical properties.
- B. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
 - 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

1.7 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 55 deg F or more than 90 deg F.

1.8 PROJECT CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 90 deg F, in spaces to receive resilient products during the following time periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- B. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 90 deg F.
- C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 RESILIENT BASE: RUBBER RB

- A. Resilient Base:
 - 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. Mannington Commercial; Premium Rubber Edge.
 - b. Johnsonite; Rubber Wall Base.
 - c. Roppe Corporation, USA; Pinnacle Series Rubber Wall Base

- B. Resilient Base Standard: ASTM F 1861.
 - 1. Material Requirement: Type TP (rubber, thermoplastic).
 - 2. Manufacturing Method: Group I (solid, homogeneous).
 - 3. Style: Cove (base with toe).
- C. Minimum Thickness: 0.125 inch.
- D. Height: 4 inches.
- E. Lengths: Coils in manufacturer's standard length, not less than 100 feet.
- F. Outside Corners: Job formed.
- G. Inside Corners: Job formed.
- H. Colors and Patterns: As selected by Architect from full range of industry colors.

2.2 RESILIENT STAIR ACCESSORIES: RUBBER RS

- A. Resilient One-piece Stair Tread and Riser Units:
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Johnsonite; Hammered Surface Texture Rubber Stair Tread with Integrated Riser VIHTR or comparable product by one of the following :
 - a. Mannington Commercial.
 - b. Nora Rubber Flooring; Freudenberg Building Systems, Inc.
- B. Resilient Stair Treads Standard: ASTM F 2169.
 - 1. Material Requirement: Type TS (rubber, vulcanized thermoset).
 - 2. Surface Design:
 - a. Class 2, Pattern: Hammered, with abrasive strips, with contrasting color for the visually impaired.
- C. Nosing Style: Square.
- D. Nosing Height: 2 inches.
- E. Thickness: 0.210 inch and tapered to back edge of 0.113 inch.
- F. Size: Lengths and depths to fit each stair tread in one piece or, for treads exceeding maximum lengths manufactured, in equal-length units, with integral riser.
- G. Stringers: 0.080-inch thickness, height and length after cutting to fit risers and treads and to cover stair stringers; produced by same manufacturer as treads and recommended by manufacturer for installation with treads.

- H. Warranty: 10 year
- I. Colors and Patterns: As selected by Architect from full range of industry colors.

2.3 RESILIENT MOLDING ACCESSORY

A. Resilient Molding Accessory:

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. Edge Guards:
 - 1) Johnsonite; EG-XX Series Edge Guard.
 - 2) Roppe Corporation, USA; Carpet Edge 1/4-inch.
 - b. Adapters:
 - 1) Johnsonite; CTA-XX Series Adapter.
 - 2) Roppe Corporation, USA; Tile and Carpet Joiner.

B. Material: Vinyl or rubber.

C. Profile and Dimensions: As indicated.

D. Colors and Patterns: As selected by Architect from full range of industry colors.

2.4 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by manufacturer for applications indicated.

1. Basis-of-Design Products: Subject to compliance with requirements, provide the following Ardex product or a comparable product:
 - a. Portland Cement-Based Flash Patching and Skim Coating: SD-F Feather Finish.
 - b. Portland Cement-Based Patching: SD-P Insta Patch.
 - c. Portland Cement-Based Self-Leveling Underlayment: K-10/K-60 Self-Leveling Underlayment Concrete.

B. Concrete Slab Primer: Non-staining type recommended by resilient accessories manufacturer.

C. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.

1. Adhesives shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2. Adhesives shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- D. Stair-Tread-Nose Filler: Two-part epoxy compound recommended by resilient tread manufacturer to fill nosing substrates that do not conform to tread contours.

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.
- B. 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.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. Concrete Substrates for Resilient Stair Treads and Accessories: Prepare according to ASTM F 710.
 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
 2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
 3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer.
 4. Moisture Testing: Perform tests recommended by manufacturer and as follows. Proceed with installation only after substrates pass testing.
 - a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
 - b. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have maximum 75 percent relative humidity level measurement.

- C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.
- D. Do not install resilient products until they are same temperature as the space where they are to be installed.
 - 1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
- E. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation. Following cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust.

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 practicable 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. Job-Formed Corners- using manufactures approved methods and tools:
 - 1. Outside Corners: Use straight pieces of maximum lengths possible. Form without producing discoloration (whitening) at bends.
 - 2. Inside Corners: Use straight pieces of maximum lengths possible. Use scribing and cutting measures approved by base manufacturer. Inside corners that are not scribed to fit will be rejected.
 - 3. Use Crane #532 top-set gouger tool for all required for tight wrap and curved corners.

3.4 RESILIENT ACCESSORY INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient accessories.
- B. Resilient Stair Accessories:
 - 1. Use stair-tread-nose filler to fill nosing substrates that do not conform to tread contours.

2. Tightly adhere to substrates throughout length of each piece.
3. For treads installed as separate, equal-length units, install to produce a flush joint between units.

C. Abrasive Safety Strips:

1. Apply two abrasive safety strips full width to each stair tread as indicated, one inch from nosing edge, and one inch apart.
2. Apply abrasive safety strips full width to ramp as indicated, at every six inches on center.

D. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of carpet and resilient floor covering that would otherwise be exposed.

3.5 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protection of resilient products.
- B. Perform the following operations immediately after completing resilient product installation:
 1. Remove adhesive and other blemishes from exposed surfaces.
 2. Sweep and vacuum surfaces thoroughly.
 3. Damp-mop surfaces to remove marks and soil.
 4. Do not wash floor until after the period recommended by manufacturer.
- 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 until Substantial Completion.

END OF SECTION 09 65 13

SECTION 09 65 19 - RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. LVT floor tile.
 - 2. Vinyl composition floor tile.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. LVT Floor Tile.
 - 2. Vinyl composition floor tile VCT1.
 - 3. Trowelable leveling and patching compounds.
 - 4. Concrete slab primer.
 - 5. Adhesives.
 - 6. Floor polish.
- B. Shop Drawings: For each type of floor tile. Include floor tile layouts, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
 - 1. Show details of patterns.
 - 2. Show base details.
 - 3. Show locations of divider strips, control and expansion joints.
 - 4. Show locations of floor drains and sloped slabs.
 - 5. Show threshold locations and types.
- C. Samples for Verification and Initial Color Selection: Full-size units of each color and pattern of floor tile required.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of floor tile to include in maintenance manuals.

1.7 MATERIALS MAINTENANCE 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. Floor Tile: Furnish 1 box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs workers for this Project who are competent in techniques required by manufacturer for floor tile installation and seaming method indicated.
 - 1. Engage an installer who employs workers for this Project who are trained or certified by manufacturer for installation techniques required.
- B. Source Limitations for Resilient Tile: Obtain each type of resilient tile from a single source with resources to provide materials of consistent quality in appearance and physical properties.
- C. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
 - 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Store floor tile and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 55 deg F or more than 90 deg F. Store floor tiles on flat surfaces.

1.10 PROJECT CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 90 deg F, in spaces to receive floor tile during the following time periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.

- B. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 90 deg F.
- C. Close spaces to traffic during floor tile installation.
- D. Close spaces to traffic for 48 hours after floor tile installation.
- E. Install floor tile after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Low-Emitting Materials: Flooring system shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 HIGH PERFORMANCE LUXURY VINYL TILE -LVT

- 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. Interface: Level Set Collection, Natural Woodgrains.
- B. Tile Standard: ASTM F 1700.
 - 1. Class: Class III, printed film vinyl tile.
 - 2. Type: Type B, embossed surface.
- C. Thickness: 4.5mm.
- D. Size: 25cm x 1 m.
- E. Colors and Patterns: As selected by Architect from full range of industry colors, up to 4 colors per building.

2.3 VINYL COMPOSITION FLOOR TILE: VCT1

- 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. Field Tile:
 - a. Armstrong World Industries, Inc.; Standard Excelon Imperial Texture (including Imperial Texture Classics) and Standard Excelon MultiColor.
 - b. Johnsonite Flooring – the Azrock collection, (including standard, textile and solids collections).

2. Accent Tile 30%:
 - a. Armstrong World Industries, Inc.; Standard Excelon Imperial Texture (including Imperial Texture Classics), Standard Excelon MultiColor, and Standard Excelon Rave.
 - b. Johnsonite Flooring – the Azrock collection, (including standard, textile and solids collections).
- B. Tile Standard: ASTM F 1066, Class 2, through-pattern tile.
- C. Wearing Surface: Smooth.
- D. Thickness: 0.125 inch, 1/8inch.
- E. Size: 12 by 12 inches.
- F. Colors and Patterns: As selected by Architect from full range of industry colors.
 1. Provide accent tile equal to 30 percent of total vinyl composition floor tile area, with the remainder as field tile.

2.4 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by manufacturer for applications indicated.
 1. Basis-of-Design Products: Subject to compliance with requirements, provide the following Ardex product or a comparable product:
 - a. Portland Cement-Based Flash Patching and Skim Coating: SD-F Feather Finish.
 - b. Portland Cement-Based Self-Leveling Underlayment: K-10/K60 Self-Leveling Underlayment Concrete.
- B. Concrete Slab Primer: Non-staining type recommended by resilient tile flooring manufacturer.
- C. Adhesives: Water-resistant type recommended by manufacturer to suit floor tile and substrate conditions indicated.
 1. Adhesives shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - a. VCT Adhesives: Not more than 50 g/L.
 - b. Rubber Floor Adhesives: Not more than 60 g/L.
 2. Adhesives shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

- D. Floor Polish: Provide protective liquid floor polish products as recommended by manufacturer, containing not less than 16 to 25 percent solids.

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.
- B. 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 floor tile.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. Concrete Substrates: Prepare according to ASTM F 710.
 - 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
 - 2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
 - 3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
 - 4. Moisture Testing: Perform tests recommended by manufacturer and as follows. Proceed with installation only after substrates pass testing.
 - a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
 - 1) At a minimum, test concrete substrates in at least 3 locations in separate parts of the floor for applications of 2000 square feet or less; provide one additional test location for each additional 1000 square feet, or fraction thereof.
 - b. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have maximum 75 percent relative humidity level measurement.

- C. Wood Subfloors:
 - 1. Verify that underlayment over subfloor complies with requirements in Section 06 16 00, "Sheathing."
 - 2. Verify underlayment surface is free of surface irregularities and substances with potential to interfere with adhesive bond, show through surface, or stain tile.
- D. Existing Floors: Condition of existing subfloor is unknown prior to removal of existing flooring. If, after removal of existing flooring, subfloor requires leveling, patching, or filling, notify Architect in writing.
 - 1. Asbestos Abatement Areas: In areas where removal of existing flooring is included in asbestos abatement procedures, coordinate with entity responsible for abatement to ensure patching and repair is compatible with requirements for installation of resilient tile flooring.
- E. Comply with resilient tile manufacturer's written instructions to prepare substrates.
 - 1. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.
 - 2. Ensure patching and repair materials are compatible with resilient tile.
 - 3. Levelness Tolerances: Apply patching and repair materials to provide levelness of floor substrate within 1/4 inch in 10 feet, unless more stringent levelness is recommended or required by resilient tile manufacturer.
 - 4. Flash Patching and Skim Coating: Apply flash patching material to areas with 1/8 inch or less depression.
 - 5. Patching: Apply patching material to areas with 1/8 inch or greater depression.
 - 6. Self-Leveling Underlayment: Apply self-leveling material to areas where flash patching and patching described above cannot provide smooth, level surface acceptable to receive resilient tile flooring.
- F. Do not install floor tiles until they are same temperature as space where they are to be installed.
 - 1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
- G. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation. Following cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust.

3.3 FLOOR TILE INSTALLATION

- A. Comply with manufacturer's written instructions for installing floor tile.

- B. Lay out floor 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.
- C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
 - 1. Lay tiles as follows: 12" x 12"
 - a. Field Tile: With grain running in one direction in pattern of colors and sizes indicated.
 - b. Accent Tile: With grain running in one direction in pattern of colors and sizes indicated.
- D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.
- E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent, non-staining marking device.
- G. Install floor tiles on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in finished floor areas. Maintain overall continuity of color and pattern between pieces of tile installed on covers and adjoining tiles. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.
- H. Apply concrete slab primer, if recommended by resilient tile manufacturer, prior to applying adhesive. Apply according to manufacturer's written instructions.
- I. Adhere floor tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.4 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protection of floor tile.
- B. Perform the following operations immediately after completing floor tile installation:
 - 1. Remove adhesive and other blemishes from exposed surfaces.
 - 2. Sweep and vacuum surfaces thoroughly.
 - 3. Damp-mop surfaces to remove marks and soil.
 - 4. Do not wash floor until after the period recommended by resilient tile manufacturer.

- C. Protect floor tile products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Floor Polish: Remove soil, visible adhesive, and surface blemishes from floor tile surfaces before applying liquid floor polish.
- E. Cover floor tile until Substantial Completion.
- F. Perform the following operations in each area of Project upon completion of floor installation and as recommended by manufacturer.
 - 1. Vinyl Composition Floor Tile:
 - a. Scrub floor with a neutral detergent solution at 4 to 6 oz per gallon. Scrub floor using pads or brushes as recommended by vinyl composition floor tile manufacturer.
 - b. Use stripping solutions at badly soiled or scratched areas, as recommended by vinyl composition floor tile manufacturer.
 - c. Thoroughly rinse floor, wet vacuum and dry floor. Floor must be free from all dust, dirt and any particles that may become lodged in final polish application.
 - d. Apply five coats of commercial floor polish. Apply each coat as recommended by product manufacturer.

END OF SECTION 09 65 19

SECTION 09 66 23 - RESINOUS MATRIX TERRAZZO FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Thin-set, epoxy-resin matrix terrazzo flooring – poured epoxy
 - 2. Epoxy-resin matrix terrazzo base - Precast.

1.3 DEFINITIONS

- A. Aggregate: Marble, Glass and Granite chips.

1.4 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Thin-set, epoxy-resin matrix terrazzo flooring- poured epoxy.
 - 2. Epoxy- resin matrix terrazzo base- precast.
 - 3. Thin-set divider strips.
 - 4. Heavy-top divider strips.
 - 5. Control-joint strips.
 - 6. Accessory strips.
 - 7. Strip adhesive.
 - 8. Anchoring devices.
 - 9. Patching and fill material.
 - 10. Joint compound.
 - 11. Resinous matrix terrazzo cleaner.
 - 12. Sealer.

- B. Shop Drawings: Submit set of drawings showing complete floor patterns in all areas indicated on Drawings to receive terrazzo. Submit drawings for Architect review prior to starting installation. Shop drawings are to including but not limited to:

1. Floor plans showing all patterns, precast base locations and details.
 2. Layouts showing locations of divider strips, control and expansion joints.
 3. Terrazzo patterns.
- C. Samples for Verification and Initial Color Selection: For each type, material, color, and pattern of terrazzo and accessory required showing the full range of color, texture, and pattern variations expected. Label each terrazzo sample to identify manufacturer's matrix color and aggregate types, sizes, and proportions. Prepare Samples of same thickness and from same material to be used for the Work, in size indicated below:
1. Poured Terrazzo: 6-inch-square Samples.
 2. Precast Terrazzo: 6-inch-square Samples.
 3. Accessories: 6-inch-long Samples of each exposed strip item required.
 4. NTMA color plates showing the full range of colors and patterns available for each terrazzo type

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Material Certificates: For each type of terrazzo material or product, from manufacturer.
- C. Installer Certificates: Signed by manufacturers certifying that installers comply with requirements.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For terrazzo to include in maintenance manuals.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications:
 1. Engage an installer who is a contractor member of NTMA.
 2. Engage an installer who is certified in writing by terrazzo manufacturer as qualified to install manufacturer's products.
- B. Source Limitations: Obtain primary terrazzo materials from single source from single manufacturer. Provide secondary materials including patching and fill material, joint sealant, and repair materials of type and from source recommended by manufacturer of primary materials.
- C. Source Limitations for Aggregates: Obtain each color, grade, type, and variety of granular materials from single source with resources to provide materials of consistent quality in appearance and physical properties.
- D. 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 mockups for terrazzo including accessories.
 - a. Size: Minimum 100 sq. ft. of typical poured-in-place flooring condition for each color and pattern in locations directed by Architect.
 - b. Include base.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in supplier's original wrappings and containers, labeled with source's or manufacturer's name, material or product brand name, and lot number if any.
- B. Store materials in their original, undamaged packages and containers, inside a well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.

1.10 FIELD CONDITIONS

- A. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting terrazzo installation.
- B. Field Measurements: Verify actual dimensions of construction contiguous with precast terrazzo by field measurements before fabrication.
- C. Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during terrazzo installation.
- D. Close spaces to traffic during terrazzo application and for not less than 24 hours after application unless manufacturer recommends a longer period.
- E. Control and collect water and dust produced by grinding operations. Protect adjacent construction from detrimental effects of grinding operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. NTMA Standards: Comply with NTMA's "Terrazzo Specifications and Design Guide" and with written recommendations for terrazzo type indicated unless more stringent requirements are specified.

2.2 EPOXY-RESIN MATRIX TERRAZZO-POURED EPOXY

- A. Thin-set, Epoxy-Resin Matrix Terrazzo: Comply with NTMA's "Terrazzo Specifications and Design Guide" and manufacturer's written instructions for matrix and aggregate proportions and mixing.
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. General Polymers Corporation; Terrazzo 1100.
 - b. Key Resin Company; Key Epoxy Terrazzo.
 2. Thickness: 3/8 inch nominal.
 3. Formulated Mix Color and Pattern: To match existing.
 4. Custom Mix Color and Pattern: Match existing.
 5. Aggregate and Matrix colors to be selected by architect. Matrix color to be selected from entire line of Sherwin Williams colors.
- B. Materials:
1. Crack Isolation Membrane with Scrim: A two component, 100 percent solid flexible epoxy membrane applied at 40 square feet per gallon, yielding 40 mils in thickness. Provide Crack Isolation Membrane over 100% of surface to be covered with epoxy flooring- all floor levels. Provide scrim over all new and existing cracks as per manufactures recommendations. For all second and third floor applications, provide scrim over 100% of surface to be covered with epoxy flooring.
 - a. Similar to "Epoflex" by General Polymers, Cincinnati Ohio.
 2. Primer: Manufacturer's product recommended for substrate and use indicated.
 3. Thin-set Epoxy-Resin Matrix-Poured Epoxy: Manufacturer's standard recommended for use indicated and in color required for mix indicated.
 - a. Physical Properties without Aggregates:
 - 1) Hardness: 60 to 85 per ASTM D 2240, Shore D.
 - 2) Minimum Tensile Strength: 3000 psi per ASTM D 638 for a 2-inch specimen made using a "C" die per ASTM D 412.
 - 3) Minimum Compressive Strength: 10,000 psi per ASTM D 695, Specimen B cylinder.
 - 4) Chemical Resistance: No deleterious effects by contaminants listed below after seven-day immersion at room temperature per ASTM D 1308.
 - a) Distilled water.

- b) Mineral water.
 - c) Isopropanol.
 - d) Ethanol.
 - e) 0.025 percent detergent solution.
 - f) 1.0 percent soap solution.
 - g) 10 percent sodium hydroxide.
 - h) 10 percent hydrochloric acid.
 - i) 30 percent sulfuric acid.
 - j) 5 percent acetic acid.
- b. Physical Properties with Aggregates: For resin blended with Georgia white marble, ground, grouted, and cured per requirements in NTMA's "Terrazzo Specifications and Design Guide"; comply with the following:
- 1) Flammability: Self-extinguishing, maximum extent of burning 1/4 inch per ASTM D 635.
 - 2) Thermal Coefficient of Linear Expansion: 0.0025 inch/inch per deg F for temperature range of minus 12 to plus 140 deg F per ASTM D 696.
4. Aggregates: Comply with NTMA gradation standards for mix indicated and contain no deleterious or foreign matter.
- a. Abrasion and Impact Resistance: Less than 40 percent loss per ASTM C 131.
 - b. 24-Hour Absorption Rate: Less than 0.75 percent.
 - c. Dust Content: Less than 1.0 percent by weight.
5. Finishing Grout: Resin based.

2.3 EPOXY-RESIN MATRIX TERRAZZO BASE- PRECAST

- A. Epoxy Resin Matrix Terrazzo Base- Precast: Minimum 3/8-inch-thick, reinforced epoxy resin matrix terrazzo base- precast cast in maximum lengths possible, but not less than 36 inches. Comply with NTMA's written recommendations for fabricating precast terrazzo base units in sizes and profiles indicated.
- 1. Type: Refer to details.
 - 2. Top Edge: Radius edge with polished top surface.
 - 3. Outside Corner Units: With finished returned edges at outside corner.
 - 4. Aggregate and Matrix colors to be selected by architect. Matrix color to be selected from entire line of Sherwin Williams colors.

2.4 STRIP MATERIALS

- A. Thin-Set Divider Strips: L-type angle, 1/4 inch deep.
- 1. Material: To match existing.
 - 2. Top Width: To match existing.

- B. Heavy-Top Divider Strips: L-type angle in depth required for topping thickness indicated.
 - 1. Bottom-Section Material: Matching top-section material.
 - 2. Top-Section Material: To match existing.
 - 3. Top-Section Width: To match existing.
- C. Control-Joint Strips: Separate, double L-type angles, positioned back to back, that match material and color of divider strips and in depth required for topping thickness indicated.
- D. Accessory Strips: Match divider-strip width, material, and color unless otherwise indicated. Use the following types of accessory strips as required to provide a complete installation:
 - 1. Base-bead strips for exposed top edge of terrazzo base.
 - 2. Edge-bead strips for exposed edges of terrazzo.

2.5 MISCELLANEOUS ACCESSORIES

- A. Anchoring Devices:
 - 1. Strips: Provide mechanical anchoring devices or adhesives for strip materials as recommended by manufacturer and required for secure attachment to substrate.
 - 2. Precast Epoxy Resin Matrix Terrazzo: Provide mechanical anchoring devices as recommended by fabricator for proper anchorage and support of units for conditions of installation and support.
- B. Patching and Fill Material: Terrazzo manufacturer's resinous product approved and recommended by manufacturer for application indicated.
- C. Joint Compound: Terrazzo manufacturer's resinous product approved and recommended by manufacturer for application indicated.
- D. Resinous Matrix Terrazzo Cleaner: Chemically neutral cleaner with pH factor between 7 and 10 that is biodegradable, phosphate free, and recommended by sealer manufacturer for use on terrazzo type indicated.
- E. Sealer: Slip- and stain-resistant, penetrating-type sealer that is chemically neutral; does not affect terrazzo color or physical properties; is recommended by sealer manufacturer; and complies with NTMA's "Terrazzo Specifications and Design Guide" for terrazzo type indicated.
 - 1. Surface Friction: Not less than 0.6 according to ASTM D 2047.
 - 2. Acid-Base Properties: With pH factor between 7 and 10.
 - 3. Sealers shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and 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, including levelness tolerances, have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Clean substrates of substances, including oil, grease, and curing compounds, that might impair terrazzo bond. Provide clean, dry, and neutral substrate for terrazzo application.
- B. Concrete Slabs:
 - 1. Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with terrazzo.
 - 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. Repair damaged and deteriorated concrete according to terrazzo manufacturer's written recommendations.
 - c. Use patching and fill material to fill holes and depressions in substrates according to terrazzo manufacturer's written instructions.
- C. Verify that concrete substrates are dry and moisture-vapor emissions are within acceptable levels according to manufacturer's written instructions.
 - 1. Moisture Testing: Perform tests indicated below.
 - a. Calcium Chloride Test: Perform anhydrous calcium chloride test per ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
 - 1) Perform tests so that each test area does not exceed 200 sq. ft., and perform not less than two tests in each installation area and with test areas evenly spaced in installation areas.
 - b. In-Situ Probe Test: Perform relative-humidity test using in-situ probes per ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative-humidity-level measurement.
 - c. Proceed with installation only after substrates pass testing.

- D. Protect other work from water and dust generated by grinding operations. Control water and dust to comply with environmental protection regulations.
 - 1. Erect and maintain temporary enclosures and other suitable methods to limit water damage and dust migration and to ensure adequate ambient temperatures and ventilation conditions during installation.

3.3 EPOXY-RESIN MATRIX TERRAZZO INSTALLATION- POURED EPOXY

- A. Comply with NTMA's written recommendations for terrazzo and accessory installation.
- B. Place, rough grind, grout, cure grout, fine grind, and finish terrazzo according to manufacturer's written instructions and NTMA's "Terrazzo Specifications and Design Guide."
- C. Installation Tolerance: Limit variation in terrazzo surface from level to 1/4 inch in 10 feet; noncumulative.
- D. Ensure that matrix components and fluids from grinding operations do not stain terrazzo by reacting with divider and control-joint strips.
- E. Delay fine grinding until heavy trade work is complete and construction traffic through area is restricted.
- F. Flexible Reinforcing Membrane:
 - 1. Prepare and prefill substrate cracks with membrane material.
 - 2. Install membrane to produce full substrate coverage in areas to receive terrazzo.
 - 3. Reinforce membrane with fiberglass scrim at substrate cracks and at all slabs other than slabs-on-grade.
 - 4. Prepare membrane according to manufacturer's written instructions before applying substrate primer.
- G. Primer: Apply to terrazzo substrates according to manufacturer's written instructions.
- H. Strip Materials:
 - 1. Divider and Control-Joint Strips:
 - a. Locate divider strips in locations indicated.
 - b. Install control-joint strips back to back directly above concrete-slab control joints.
 - c. Install control-joint strips with 1/4-inch to match existing, gap between strips, and install sealant in gap.
 - d. Install strips in adhesive setting bed without voids below strips, or mechanically anchor strips as required to attach strips to substrate, as recommended by strip manufacturer.
 - 2. Accessory Strips: Install as required to provide a complete installation and in locations indicated.

3. Abrasive Strips: Install with surface of abrasive strip positioned 1/16 inch higher than terrazzo surface.

3.4 EPOXY RESIN MATRIX TERRAZZO INSTALLATION BASE-PRECAST

- A. Install epoxy resin matrix terrazzo base-precaster, using method recommended by NTMA and manufacturer unless otherwise indicated.
- B. Do not install base-precaster that are chipped, cracked, discolored, or not properly finished.
- C. Seal joints between base-precaster with joint compound matching precast terrazzo matrix.

3.5 REPAIR

- A. Cut out and replace terrazzo areas that evidence lack of bond with substrate. Cut out terrazzo areas in panels defined by strips and replace to match adjacent terrazzo, or repair panels according to NTMA's written recommendations, as approved by Architect.

3.6 CLEANING AND PROTECTION

- A. Cleaning:
 1. Remove grinding dust from installation and adjacent areas.
 2. Wash surfaces with cleaner according to NTMA's written recommendations and manufacturer's written instructions; rinse surfaces with water and allow them to dry thoroughly.
- B. Sealing:
 1. Seal surfaces according to NTMA's written recommendations.
 2. Apply sealer according to sealer manufacturer's written instructions.
- C. Protection: Provide final protection and maintain conditions, in a manner acceptable to Installer, that ensure that terrazzo is without damage or deterioration at time of Substantial Completion.

END OF SECTION 09 66 23

SECTION 09 67 23 - RESINOUS FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Decorative resinous flooring systems- Epoxy.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include manufacturer's technical data, application instructions, and recommendations for each resinous flooring component required.
- B. Samples for Verification and Initial Color Selection: For each resinous flooring system required, 6 inches square, applied to a rigid backing by Installer for this Project.
- C. Product Schedule: For resinous flooring.

1.5 INFORMATIONAL SUBMITTALS

- A. Installer Certificates: Signed by manufacturer certifying that installers comply with specified requirements.
- B. Material Certificates: For each resinous flooring component, from manufacturer.
- C. Material Test Reports: For each resinous flooring system.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For resinous flooring to include in maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of flooring systems required for this Project.
 - 1. Engage an installer who is certified in writing by resinous flooring manufacturer as qualified to apply resinous flooring systems indicated.

- B. Source Limitations: Obtain primary resinous flooring materials, including primers, resins, hardening agents, grouting coats, and topcoats, from single source from single manufacturer. Provide secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from source recommended by manufacturer of primary materials.

1.8 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.

1.9 PROJECT 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.
- 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.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Basis-of-Design Product: Subject to compliance with requirements, provide comparable product by one of the following:
 - 1. Sherwin-Williams Company; General Polymers.

2.2 MATERIALS

- A. VOC Content of Liquid-Applied Flooring Components: Not more than 100 g/L when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
- B. Low-Emitting Materials: Flooring system shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.3 DECORATIVE RESINOUS FLOORING – EPOXY

- A. Basis of design product: Subject to compliance with requirements, provide, “Ceramic Carpet #400 by Sherwin Williams Company, General Polymers” or by the following:
1. Or approved equal.
- B. Resinous Flooring: Abrasion-, impact- and chemical-resistant, decorative-aggregate-filled, epoxy-resin-based, monolithic floor surfacing designed to produce a seamless floor.
- C. System Characteristics:
1. Color and Pattern: As selected by Architect from manufacturer's full range.
 2. Wearing Surface: Orange-peel texture.
 3. Overall System Thickness: 1/8 inch.
- D. Body Coats:
1. Resin: Epoxy.
 2. Formulation Description: High solids.
 3. Application Method: Self-leveling slurry with broadcast aggregates.
 - a. Thickness of Coats: 1/16 inch.
 - b. Number of Coats: Two.
 4. Aggregates: Colored quartz ceramic-coated silica.
- E. Topcoat: Sealing or finish coats.
1. Resin: Epoxy.
 2. Formulation Description: High solids.
 3. Type: Clear.
 4. Finish: Gloss.
 5. Number of Coats: Two.
- F. System Physical Properties: Provide resinous flooring system with the following minimum physical property requirements when tested according to test methods indicated:
1. Compressive Strength: 12,000 psi per ASTM C 579.
 2. Tensile Strength: 2,500 psi min. per ASTM C 307.
 3. Flexural Strength: 4,500 psi min. per ASTM C 580.
 4. Water Absorption: 0.04% per ASTM D 570.
 5. Indentation: 0.025 percent maximum per MIL-D-3134.
 6. Impact Resistance: No chipping, cracking, or delamination and not more than 1/16-inch permanent indentation per MIL-D-3134.
 7. Resistance to Elevated Temperature: No slip or flow at required temperature per MIL-D-3134.
 8. Abrasion Resistance: 90 – 100 mg maximum weight loss per ASTM D 4060.
 9. Flammability: Self-extinguishing per ASTM D 635.

10. Flame Spread/NFPA 101: Class A greater per ASTM E-84.
 11. Hardness: 65-80, Shore D per ASTM D 2240.
 12. Bond Strength: 300 psi, 100 percent concrete failure per ACI 503R.
- G. System Chemical Resistance: Test specimens of cured resinous flooring system are unaffected when tested according to ASTM D 1308.

2.4 ACCESSORIES

- A. Primer: Type recommended by manufacturer for substrate and body coats indicated.
- B. Waterproofing Membrane: Type recommended by manufacturer for substrate and primer and body coats indicated.
- C. Reinforcing Membrane: Flexible resin formulation that is recommended by manufacturer for substrate and primer and body coats indicated and that prevents substrate cracks from reflecting through resinous flooring.
- D. Patching and Fill Material: Resinous product of or approved by resinous flooring manufacturer and recommended by manufacturer for application indicated.

PART 3 - EXECUTION

3.1 PREPARATION

- A. General: Prepare and clean substrates according to resinous flooring manufacturer's written instructions for substrate indicated. Provide clean, dry 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. Roughen concrete 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 instructions.
 3. Verify that concrete substrates are dry and moisture-vapor emissions are within acceptable levels according to manufacturer's written instructions.

- a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with application of resinous flooring only after substrates have maximum moisture-vapor-emission rate of 5 lb of water/1000 sq. ft. of slab area in 24 hours.
 - b. Perform plastic sheet test, ASTM D 4263. Proceed with application only after testing indicates absence of moisture in substrates.
 - c. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 85 percent relative humidity level measurement.
4. Alkalinity and Adhesion Testing: Verify that concrete substrates have pH within acceptable range. 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.
- E. Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written instructions.
- F. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 APPLICATION

- 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, comply with resinous flooring manufacturer's written instructions.
- B. Apply primer over prepared substrate at manufacturer's recommended spreading rate.
- C. Apply waterproofing membrane, where indicated, in manufacturer's recommended thickness.
- 1. Apply waterproofing membrane to integral cove base substrates.
- D. Apply reinforcing membrane to entire substrate surface.
- E. Apply self-leveling slurry body coats in thickness indicated for flooring system.
- 1. Broadcast aggregates at rate recommended by manufacturer and, after resin is cured, remove excess aggregates to provide surface texture indicated.

- F. Apply troweled or screeded body coats in thickness indicated for flooring system. Hand or power trowel and grout to fill voids. When cured, remove trowel marks and roughness using method recommended by manufacturer.
- G. Apply grout coat, of type recommended by resinous flooring manufacturer, to fill voids in surface of final body coat and to produce wearing surface indicated.
- H. Apply topcoats in number indicated for flooring system and at spreading rates recommended in writing by manufacturer.

3.3 FIELD QUALITY CONTROL

- A. Core Sampling: At the direction of Owner and at locations designated by Owner, take one core sample per 1000 sq. ft. of resinous flooring, or portion of, to verify thickness. For each sample that fails to comply with requirements, take two additional samples. Repair damage caused by coring and correct deficiencies.
- B. Material Sampling: Owner may at any time and any number of times during resinous flooring application require material samples for testing for compliance with requirements.
 - 1. Owner 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 agency 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.

3.4 PROTECTION

- A. Protect resinous flooring from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by resinous flooring manufacturer.

END OF SECTION 09 67 23

SECTION 09 68 13 - TILE CARPETING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Carpet tile.
- B. Entry way carpet tile system.

1.3 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.

1.4 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include manufacturer's written data on physical characteristics, durability, and fade resistance. Include installation recommendations for each type of substrate.
 - 1. Carpet tile.
 - 2. Entry way carpet tile
 - 3. Trowelable leveling and patching compounds.
 - 4. Adhesives.
 - 5. Metal edge/transition strip.

B. LEED Submittals:

1. Product Data for Credit EQ 4.3:

- a. For carpet tile, documentation indicating compliance with testing and product requirements of CRI's "Green Label Plus" program.
- b. For installation adhesive, documentation including printed statement of VOC content.

2. Laboratory Test Reports for Credit EQ 4: For carpet[**and installation adhesives**], documentation indicating that products comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. Shop Drawings: Show the following:

1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet.
2. Carpet type, color, and dye lot.
3. Seam locations, types, and methods.
4. Aisle seaming sample
5. Type of subfloor.
6. Type of installation.
7. Pattern type, repeat size, location, direction, and starting point.
8. Pile direction.
9. Type, color, and location of insets and borders.
10. Type, color, and location of edge, transition, and other accessory strips.
11. Transition details to other flooring materials.
12. Base details.

D. Samples for Verification and Initial Color Selection: 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.

E. Sample Warranty: For special warranty.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For carpet tile, for tests performed by a qualified testing agency.

1.7 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.
- B. Warranty: Executed special warranty.

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. Carpet Tile: Full-size units equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd.

1.9 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who is certified by the International Certified Floorcovering Installers Association at the Commercial II certification level.
- B. Fire-Test-Response Ratings: Where indicated, provide carpet tile identical to those of assemblies tested for fire response according to NFPA 253 by a qualified testing agency.
- C. Floor Radiant Panel Test: Flooring material meets the ASTM E -648 Radiant Panel Test, Class 1 requirements.
- D. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.
 - 1. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Comply with CRI 104.

1.11 FIELD CONDITIONS

- A. Comply with 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 occupancy levels during the remainder of the construction period.

- C. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.
- D. Where demountable partitions or other items are indicated for installation on top of carpet tiles, install carpet tiles before installing these items.

1.12 WARRANTY

- A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.
 - 1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
 - 2. Failures include, but are not limited to, more than 10 percent edge raveling, snags, runs, dimensional stability, loss of tuft bind strength, loss of face fiber, and delamination.
 - 3. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CARPET TILE C1

- A. Basis of design product: Subject to compliance with requirements, provide, “Visual Code Collection” by Interface Commercial” or by the following:
 - 1. Or approved equal.
- B. Pattern: Design Local Collection – “Hard Drive”
- C. Color: As selected by Architect from manufacturer's full range.
- D. Fiber Content: 100 percent RECYCLED type 6 nylon.
- E. Color System: 100 percent Solution dyed.
- F. Soil/Stain protection: Protekt
- G. Fiber Type: Aquafil
- H. Pile Characteristic: Tufted Pattern Loop
- I. Pile Thickness: 0.124 inches.
- J. Density: 6,968.
- K. Primary Backing/Backcoating: 100% Synthetic.

- L. Secondary Backing:
 - 1. GlasBac Tile.
- M. Size: 25cm x 1m.
- N. Applied Soil-Resistance Treatment: Intersept.
- O. Performance Characteristics: As follows:
 - 1. Appearance Retention Rating: Heavy traffic, 3.0 minimum according to ASTM D 7330.
 - 2. Critical Radiant Flux Classification: Not less than Class A-0.45 W/sq. cm.
 - 3. Electrostatic Propensity: Less than 3.0 kV according to AATCC 134.
 - 4. Emissions: Provide carpet tile that complies with testing and product requirements of CRI's "Green Label Plus #GLP0820" program.
 - 5. Emissions: Provide carpet tile that complies with the product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 CARPET TILE C2

- A. Basis of design product: Subject to compliance with requirements, provide, "Visual Code Collection" by Interface Commercial" or by the following:
 - 1. Or approved equal.
- B. Pattern: Design Local Collection – "Static Lines"
- C. Color: As selected by Architect from manufacturer's full range.
- D. Fiber Content: 100 percent RECYCLED type 6 nylon.
- E. Color System: 100 percent Solution dyed.
- F. Soil/Stain protection: Protekt
- G. Fiber Type: Aquafil
- H. Pile Characteristic: Tufted Pattern Loop
- I. Pile Thickness: 0.1 inches.
- J. Density: 9,000.
- K. Primary Backing/Backcoating: 100% Synthetic.

- L. Secondary Backing:
 - 1. GlasBac Tile.
- M. Size: 25cm x 1m.
- N. Applied Soil-Resistance Treatment: Intersept.
- O. Performance Characteristics: As follows:
 - 1. Appearance Retention Rating: Heavy traffic, 3.0 minimum according to ASTM D 7330.
 - 2. Critical Radiant Flux Classification: Not less than Class A-0.45 W/sq. cm.
 - 3. Electrostatic Propensity: Less than 3.0 kV according to AATCC 134.
 - 4. Emissions: Provide carpet tile that complies with testing and product requirements of CRI's "Green Label Plus #GLP0820" program.
 - 5. Emissions: Provide carpet tile that complies with the product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.3 ENTRY WAY CARPET TILE C3

- A. Basis of design product: Subject to compliance with requirements, provide, "Mannington Commercial Carpet." Collection: Liaison Collection Carpet Entry System" the following Pattern or comparable product by the following:
 - 1. Mannington Commercial; Liaison collection.
- B. Pattern: Recoarse II, Ruffian II, Take Back, Traverse, Trek,
- C. Color: As selected by Architect from manufacturer's full range.
- D. Fiber Content: 100 percent nylon 6, 6.
- E. Pile Characteristic: Tip Shear Tufted loop pile
- F. Pile Thickness: 0.155 for inches.
- G. Stitches: 9 per inch.
- H. Gage: 5/ 32.
- I. Face Weight: 26 oz/sq. yd.
- J. Primary Backing/Backcoating: 100% Synthetic.

- K. Secondary Backing:
 - 1. Mannington: Infinity RE Modular.
- L. Size: 24 by 24 inches.(50 x 50 cm)
- M. Applied Soil-Resistance Treatment: Manufacturer's standard material.
- N. Performance Characteristics: As follows:
 - 1. Appearance Retention Rating: Heavy traffic, 3.0 minimum according to ASTM D 7330.
 - 2. Electrostatic Propensity: Less than 3.0 kV according to AATCC 134.
 - 3. Emissions: Provide carpet tile that complies with testing and product requirements of CRI's "Green Label Plus" program.
 - 4. Emissions: Provide carpet tile that complies with the product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.4 INSTALLATION ACCESSORIES

- A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.
 - 1. Basis-of-Design Products: Subject to compliance with requirements, provide the following Ardex product or a comparable product:
 - a. Portland Cement-Based Flash Patching and Skim Coating: Feather Finish.
 - b. Portland Cement-Based Patching: SD-P.
 - c. Portland Cement-Based Self-Leveling Underlayment: K-10/K-60 Self-Leveling Underlayment Concrete.
- B. Adhesives: Water-resistant, mildew-resistant, non-staining, pressure-sensitive type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet tile and is recommended by carpet tile manufacturer for releasable installation.
 - 1. Adhesives shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 2. Adhesives shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- C. Metal Edge/Transition Strips: Extruded aluminum with finish selected by Architect, 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. Examine carpet tile for type, color, pattern, and potential defects.
- B. Concrete Subfloors: Verify that concrete slabs comply with ASTM F 710 and the following:
 - 1. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by carpet tile manufacturer.
 - 2. Subfloor finishes comply with requirements specified in Section 03 30 00 "Cast-in-Place Concrete" for slabs receiving carpet tile.
 - 3. Subfloors are free of cracks, ridges, depressions, scale, and foreign deposits.
 - 4. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
 - 5. Moisture Testing: Perform tests recommended by manufacturer and as follows. Proceed with installation only after substrates pass testing.
 - a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
 - 1) At a minimum, test concrete substrates in at least 3 locations in separate parts of the floor for applications of 2000 square feet or less; provide one additional test location for each additional 1000 square feet, or fraction thereof.
 - b. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have maximum 75 percent relative humidity level measurement.
- C. For wood subfloors, verify the following:
 - 1. Underlayment over subfloor complies with requirements specified in Section 06 10 00 "Rough Carpentry."
 - 2. Underlayment surface is free of irregularities and substances that may interfere with adhesive bond or show through surface.
- D. Existing Floors: Condition of existing subfloor is unknown prior to removal of existing flooring. If, after removal of existing flooring, subfloor requires leveling, patching, or filling, notify Architect in writing.

1. Asbestos Abatement Areas: In areas where removal of existing flooring is included in asbestos abatement procedures, coordinate with entity responsible for abatement to ensure patching and repair is compatible with requirements for installation of carpet.
- E. Entry way carpet tile system.
 1. Install over existing Terrazzo, Marble or glossy flooring- level all grout lines with manufactures recommended leveler, remove glossy finish by sanding.
- F. Proceed with installation only after unsatisfactory conditions have been corrected.
- G. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. General: Comply with CRI 104, Section 6.2, "Site Conditions; Floor Preparation," and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile installation.
- B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch wide or wider and protrusions more than 1/32 inch unless more stringent requirements are required by manufacturer's written instructions.
 1. Ensure patching and repair materials are compatible with carpet tile.
 2. Levelness Tolerances: Apply patching and repair materials to provide levelness of floor substrate within 1/4 inch in 10 feet, unless more stringent levelness is recommended or required by carpet tile manufacturer.
 3. Flash Patching and Skim Coating: Apply flash patching material to areas with 1/8 inch or less depression.
 4. Patching: Apply patching material to areas with 1/8 inch or greater depression.
 5. Self-Leveling Underlayment: Apply self-leveling material to areas where flash patching and patching described above cannot provide smooth, level surface acceptable to receive carpet tile.
- C. Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by carpet tile manufacturer.
- D. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

3.3 INSTALLATION

- A. Comply with CRI 104, Section 14, "Carpet Modules," 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. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.
- E. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on finish flooring as marked on subfloor. Use nonpermanent, nonstaining marking device.
- G. Install pattern parallel to walls and borders.
- H. Stagger joints of carpet tiles so carpet tile grid is offset from access flooring panel grid. Do not fill seams of access flooring panels with carpet adhesive; keep seams free of adhesive.

3.4 CLEANING AND PROTECTION

- A. Perform the following operations immediately after installing carpet tile:
 - 1. Remove excess adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet tile manufacturer.
 - 2. Remove yarns that protrude from carpet tile surface.
 - 3. Vacuum carpet tile using commercial machine with face-beater element.
- B. Protect installed carpet tile to comply with CRI 104, Section 16, "Protecting Indoor Installations."
- 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 09 68 13

SECTION 09 72 00 - WALL COVERINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Projection/Marker Board Wall Covering.
 - 2. Projection/Marker Board Wall Covering with music staff lines.
 - 3. Tackable wall covering

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include data on physical characteristics, durability, fade resistance, and flame-resistance characteristics.
- B. Shop Drawings: Show location and extent of each wall-covering type. Indicate seams and termination points.
- C. Samples for Verification and Initial Color Selection: Full width by 36-inch-long section of wall covering and molding samples not less than 12 inches long.
 - 1. Sample from same print run or dye lot to be used for the Work, with specified treatments applied. Show complete pattern repeat. Mark top and face of fabric.
 - 2. Sample from same flitch to be used for the Work, with specified finish applied.

1.5 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for wall covering.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For wall coverings to include in maintenance manuals.

1.7 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. Wall-Covering Materials: For each type, full-size units equal to 10 percent of amount installed, but not less than one full roll.

1.8 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: As determined by testing identical wall coverings applied with identical adhesives to substrates according to test method indicated below by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Surface-Burning Characteristics: As follows, per ASTM E 84:
 - a. Flame-Spread Index: 25 or less.
 - b. Smoke-Developed Index: 450 or less.
 - 2. Fire-Growth Contribution: Textile wall coverings tested according to NFPA 265- non sprinklered area, on partitions of 8 feet or above, NFPA 286 non sprinklered area on partitions less than 8 feet and complying with test protocol and criteria in the 2003 IBC.

1.9 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install wall coverings until spaces are enclosed and weather tight, wet work in spaces is complete and dry, work above ceilings is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.
 - 1. Maintain a consistent temperature of not less than 60 deg F in installation areas for at least 10 days before and 10 days after installation, unless otherwise recommended by wall covering manufacturer.
 - 2. Wood-Veneer Wall Coverings: Condition spaces for not less than 48 hours before installation.
- B. Lighting: Do not install wall covering until a permanent level of lighting is provided on the surfaces to receive wall covering.
- C. Ventilation: Provide continuous ventilation during installation and for not less than the time recommended by wall-covering manufacturer for full drying or curing.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Low-Emitting Materials: Wall covering system shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 WALL COVERINGS

- A. General: Provide rolls of each type of wall covering from same print run or dye lot.

2.3 PROJECTION/MARKER BOARD WALL COVERING

- A. Vinyl, gloss, smooth wall-covering for projection and dry erase markers:
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Wall talker "Just-rite"; or comparable product.
- B. Pattern: Visual textured- smooth, high gloss
- C. Total thickness: 17 mils.
- D. Width: 60" inches.
- E. Backing: Non-woven on gyp board.
- F. Adhesive: heavy duty clear or clay based premixed vinyl adhesive as recommended by manufacture.
- G. Substrate primer: White pigmented acrylic base primer/sealer specifically formulated to use with vinyl wallcovering.
- H. Substrate surface: Minimum Level 4 finish, per GA-214-M-97.
- I. Colors, Textures, and Patterns: As selected by Architect from manufacturer's full range.

2.4 TACKABLE WALLCOVERING

- A. Linoleum resilient homogeneous, self-healing tackable wall surface:
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Wall talker "Tac-wall"; or comparable product.
- B. Pattern: C250
- C. Total thickness: ¼ inch.

- D. Width: 47”/48”.
- E. Backing: Burlap.
- F. Adhesive: Solvent-free, SBR type linoleum adhesive (L-910) as recommended by manufacture.
- G. Substrate primer: White pigmented acrylic base primer/sealer specifically formulated to use with vinyl wallcovering.
- H. Substrate surface: Minimum Level 4 finish, per GA-214-M-97.
- I. Colors, Textures, and Patterns: As selected by Architect from manufacturer's full range, of min. 12 colors

2.5 ACCESSORIES

- A. Adhesive: Mildew-resistant, non-staining, strippable adhesive, for use with specific wall covering and substrate application; as recommended in writing by wall-covering manufacturer.
 - 1. Adhesive shall have VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 2. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- B. Primer/Sealer: Mildew resistant, complying with requirements in Section 09 90 00 "Painting" and recommended in writing by wall-covering manufacturer for intended substrate.
- C. Wall Liner: Nonwoven, synthetic underlayment and adhesive as recommended by wall-covering manufacturer.
- D. Seam Tape: As recommended in writing by wall-covering manufacturer.
- E. Metal Primer: Interior ferrous metal primer complying with Section 09 90 00 "Painting."
- F. Marker/Eraser Dispenser- Provide Plastic marker/eraser dispenser for each board unit, min. one per room.
- G. Trim:
 - 1. Wall-covering for projection and dry erase markers: J-cap, 1/16” aluminum trim, miter at all corners. Secure with mechanical fasteners with self-tapping drywall screws.
 - 2. Wall-covering for tackable surface: J-trim, 5/16 aluminum trim, miter at all corners. Secure with mechanical fasteners with self-tapping drywall screws.
 - 3. Wall covering for tackable surface: H-trim, 5/16 aluminum trim, for material seams. Secure with mechanical fasteners with self-tapping drywall screws.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for levelness, wall plumpness, maximum moisture content, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

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, mildew, and incompatible primers.
- 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 plaster, concrete, and concrete masonry units when tested with an electronic moisture meter.
 - 2. Plaster: Allow new plaster to cure. Neutralize areas of high alkalinity. Prime with primer as recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.
 - 3. Metals: If not factory primed, clean and apply metal as recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.
 - 4. Gypsum Board: Prime with primer as recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.
 - 5. Painted Surfaces: Treat areas susceptible to pigment bleeding.
- D. Check painted surfaces for pigment bleeding. Sand gloss, semigloss, and eggshell finish with fine sandpaper.
- E. Remove hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.
- F. Acclimatize wall-covering materials by removing them from packaging in the installation areas not less than 24 hours before installation.
- G. Install wall liner, with no gaps or overlaps, where required by wall-covering manufacturer. Form smooth wrinkle-free surface for finished installation. Do not begin wall-covering installation until wall liner has dried.

3.3 INSTALLATION

- A. General: Comply with wall-covering manufacturers' written installation instructions applicable to products and applications indicated except where more stringent requirements apply.
- B. Cut wall-covering strips in roll number sequence. Change roll numbers at partition breaks and corners.
- C. Install strips in same order as cut from roll.
- D. Install reversing every other strip.
- E. Install wall covering with no gaps or overlaps, no lifted or curling edges, and no visible shrinkage.
- F. Match pattern 72 inches above the finish floor.
- G. 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. No horizontal seams are permitted.
- H. Fully bond wall covering to substrate. Remove air bubbles, wrinkles, blisters, and other defects.
- I. Trim edges and seams for color uniformity, pattern match, and tight closure. Butt seams without any overlay or spacing between strips.

3.4 CLEANING

- A. Remove excess adhesive at finished seams, perimeter edges, and adjacent surfaces.
- B. Use cleaning methods recommended in writing by wall-covering manufacturer.
- C. Replace strips that cannot be cleaned.
- D. Reinstall hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.

END OF SECTION 09 72 00

SECTION 09 84 36 - SOUND-ABSORBING CEILING UNITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General 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, for mounting in exposed suspension ceiling systems, including the following:
 - 1. Sound-absorbing ceiling panels.
 - 2. Sound-diffusing ceiling panels.

1.3 DEFINITIONS

- A. NRC: Noise Reduction Coefficient.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 SUBMITTALS, GENERAL

- A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Sound-absorbing ceiling panels.
 - 2. Sound-diffusing ceiling panels.
- B. Shop Drawings: For unit assembly and installation.
 - 1. Include reflected ceiling plans, elevations, sections, and mounting devices and details.
- C. Samples: For each type of fabric.

1.7 INFORMATIONAL SUBMITTALS

- A. 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. Items penetrating or covered by units including the following:
 - a. Lighting fixtures.
 - b. Diffusers.
 - c. Grilles.
 - d. Speakers.
 - e. Sprinklers.
 - f. Detectors.

1.8 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.

1.9 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. Ceiling Units: Full-size panels equal to 2 percent of quantity installed of each acoustical panel type, but no fewer than 2 of each type and color.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Comply with 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.

1.11 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. Air-Quality Limitations: Protect units from exposure to airborne odors, and install units under conditions free from odor contamination of ambient air.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: Units shall comply with "Surface-Burning Characteristics" Subparagraph below, 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.

2.2 SOUND-ABSORBING CEILING UNITS

- A. Sound-Absorbing Ceiling Panel for Ceiling Type A5: Manufacturer's standard panel construction.
1. Basis-of-Design Product: Subject to compliance with requirements, provide Focal Point LLC; Ori Acoustic Tiles, or comparable product.
 2. Panel Shapes: Varies, as indicated on Drawings.
 3. Panel Size: 24 by 24 inches.
 4. Mounting: Lay-in panels formed to set in exposed suspension grid.
 5. Construction: Manufacturer's standard, prepared for required acoustical performance.
 6. Material: Manufacturer's 9 mm thick 100 percent polyester fabric.
 7. Acoustical Performance: Sound absorption NRC average 1.10 according to ASTM C423 when tested from 200 Hz to 2500 Hz.
 8. Colors: As selected by Architect from manufacturer's full range of standard, premium, and extended colors. Multiple colors may be selected.

2.3 SOUND-DIFFUSING CEILING UNITS

- A. Sound-Diffusing Ceiling Panel for Ceiling Type A5: Manufacturer's standard panel construction consisting of facing material laminated to core.
1. Basis-of-Design Product: Subject to compliance with requirements, provide Kinetics Noise Control, Inc.; Geometric Diffuser Sound-Diffusing Panel, or comparable product.
 2. Panel Shape: Offset pyramidal.
 3. Panel Size: 24 by 24 inches.
 4. Mounting: Lay-in panels formed to set in exposed suspension grid.
 5. Construction: Manufacturer's standard, prepared for required acoustical performance.
 6. Facing Material: Manufacturer's 100 percent polyester woven fabric, FR701 Style 2100 by Guilford of Maine.
 7. Acoustical Performance: Sound absorption NRC of not more than 0.10 according to ASTM C423 for E400 mounting.
 8. Colors: As selected by Architect from manufacturer's full range. Multiple colors may be selected.

2.4 FABRICATION

- A. Standard Construction: Use manufacturer's standard construction unless otherwise indicated.

2.5 METAL SUSPENSION SYSTEMS, GENERAL

- A. Metal Suspension System for Ceiling Type A5: Refer to Division 09 Section "Acoustical Panel Ceilings" for wide-face metal suspension system.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine 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.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

- A. Install units in locations indicated.
- B. Comply with manufacturer's written instructions for installation of units in suspension system indicated.

3.3 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. Remove and replace ceiling components that cannot be successfully cleaned and restored to permanently eliminate evidence of damage.

END OF SECTION 09 84 36

SECTION 28 31 11 - DIGITAL, ADDRESSABLE FIRE-ALARM AND VOICE NOTIFICATION SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Scope:
 - 1. Mahopac High School
 - a. Addition of visual and voice notification devices.
- B. Section Includes:
 - 1. Notification appliances.

1.3 REFERENCES

- A. Comply with New York State Uniform Fire Prevention & Building Code.
- B. Comply with U.S. Department of Justice – American Disabilities Act.
- C. Acoustical Society of America (ASA)
 - 1. ASA S3.2 Method for Measuring the Intelligibility of Speech Over Communications Systems.
- D. National Fire Protection Association Standards:
 - 1. NFPA 70 - National Electrical Code.
 - 2. NFPA 72 - National Fire Alarm Code.
 - 3. NFPA 90A - Installation of Air Conditioning and Ventilating Systems.
- E. Provide system and components listed by Underwriters Laboratories Inc. (UL) for use in fire protective signaling system under following standards as applicable:
 - 1. UL 864 - UOJZ, APOU Control Units for Fire Protective Signaling Systems.
 - 2. UL 268 - Smoke Detectors for Fire Protective Signaling Systems.
 - 3. UL 268A - Smoke Detectors for Duct Applications.
 - 4. UL 464 - Audible Signaling Appliances.
 - 5. UL 1971 - Visual Signaling Appliances.
 - 6. UL 1481 - Power Supplies for Fire Protective Signaling Systems.

1.4 DEFINITIONS

- A. LED: Light-emitting diode.
- B. NICET: National Institute for Certification in Engineering Technologies.
- C. LOC: Local Operating Console.
- D. VNS: Voice Notification System.

1.5 SYSTEM DESCRIPTION

- A. Non-coded, UL-certified addressable system, with automatic sensitivity control of certain smoke detectors and multiplexed signal transmission, dedicated to fire-alarm service only. Include in the system wiring, raceways, pull boxes, terminal cabinets, outlet and mounting boxes, control equipment, alarm, and supervisory signal initiating devices, alarm notification appliances, supervising station fire alarm system transmitter, and other accessories and miscellaneous items required for a complete operating system even though each item is not specifically mentioned or described. Provide systems complete and ready for operation.
- B. Provide equipment, materials, installation, workmanship, inspection, and testing in strict accordance with the required and advisory provisions of NFPA 70, NFPA 72, except as modified herein. The system layout on the drawings show the intent of coverage and are shown in suggested locations. Submit plan view drawing showing device locations, terminal cabinet locations, junction boxes, other related equipment, conduit routing, wire counts, circuit identification in each conduit, and circuit layouts for all floors. Drawings shall comply with the requirements of NFPA 70. Final quantity, system layout, and coordination are the responsibility of the Contractor.
- C. Provide Common Intelligibility Scale (CIS) and sound pressure level calculations with the shop drawing submittal to confirm that intelligibility requirements will be met. CIS calculations shall be done with computer software intended for that purpose.

1.6 SUBMITTALS

- A. General Submittal Requirements:
 - 1. Shop Drawings shall be prepared by persons with the following qualifications:
 - a. Trained and certified by manufacturer in fire-alarm system design.
 - b. NICET-certified fire-alarm technician, Level IV minimum.
- B. Product Data: Submit manufacturer's documentation for all components of proposed fire alarm system required to demonstrate compliance with specified requirements, including (but not limited to) type, size rating, style, catalog number, manufacturer name, photograph, and catalog data sheet for each component.
- C. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
 - 1. Comply with recommendations in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter in NFPA 72.

2. Include voltage drop calculations for notification appliance circuits with the system operating on battery power, with battery voltage to the system at 20 volts.
3. Include battery-size calculations.
4. Include performance parameters and installation details for each detector, verifying that each detector is listed for complete range of air velocity, temperature, and humidity possible when air-handling system is operating.
5. Include plans, sections, and elevations of heating, ventilating, and air-conditioning ducts, drawn to scale and coordinating installation of duct smoke detectors and access to them. Show critical dimensions that relate to placement and support of sampling tubes, detector housing, and remote status and alarm indicators. Locate detectors according to manufacturer's written recommendations.
6. Include complete one-line riser diagrams showing all equipment locations and sizes, and point-by-point wiring diagram with type and number of all conductors.
7. Submit detailed drawing of FAVN Panel(s) including all module/component locations and panel point-to-point wiring diagrams including all field circuit termination points.
8. Submit floor plan layout of Graphic Display Panel indicating building zones, room numbers, and "You Are Here" location. Orient building floor plan on graphic to the location of person viewing the installed Graphic Display Panel, i.e. the direction the viewer is facing shall be toward the top of the graphic display.

D. Qualification Data:

1. Supervisor
 - a. NICET Fire Alarm Technicians to perform the installation of the system. A NICET Level 4 Fire Alarm Technician shall supervise the installation of the fire alarm system/voice notification system. The Fire Alarm technicians supervising the installation of equipment shall be factory trained in the installation, adjustment, testing, and operation of the equipment specified herein and on the drawings.
2. Technician
 - a. NICET Level III Fire Alarm Technicians with a minimum of four years of experience utilized to install and terminate fire alarm/voice notification devices, cabinets and panels. The Fire Alarm technicians installing the equipment shall be factory trained in the installation, adjustment, testing, and operation of the equipment specified herein and on the drawings.

3. Installer

- a. Fire Alarm installer with a minimum of two years of experience utilized to assist in the installation of fire alarm/voice notification devices, cabinets and panels. An electrician shall be allowed to install wire, cable, conduit and backboxes for the fire alarm system/voice notification system. The Fire Alarm installer shall be factory trained in the installation, adjustment, testing, and operation of the equipment specified herein and on the drawings.

4. Test Personnel

- a. Fire Alarm Technicians with a minimum of eight years of experience (NICET Level IV) utilized to test and certify the installation of the fire alarm/voice notification devices, cabinets and panels. The Fire Alarm technicians testing the equipment shall be factory trained in the installation, adjustment, testing, and operation of the equipment specified herein and on the drawings.

5. Manufacturer's Representative

- a. The fire alarm and voice notification equipment manufacturer's representative shall be present for the connection of wiring to the control panel. The Manufacturer's Representative shall be an employee of the manufacturer with necessary technical training (NICET Level IV] on the system being installed.

6. Manufacturer

- a. Components shall be of current design and shall be in regular and recurrent production at the time of installation. Provide design, materials, and devices for a protected premises fire alarm system, complete, conforming to NFPA 72, except as otherwise or additionally specified herein.

E. Regulatory Requirements

1. Requirements for Fire Protection Service

- a. Equipment and material shall have been tested by UL and listed in UL Fire Prot Dir or approved by FM and listed in FM APP GUIDE. Where the terms "listed" or "approved" appear in this specification, they shall mean listed in UL Fire Prot Dir or FM APP GUIDE. The omission of these terms under the description of any item of equipment described shall not be construed as waiving this requirement. All listings or approval by testing laboratories shall be from an existing ANSI or UL published standard.

2. Fire Alarm/Voice Notification System
 - a. Furnish equipment that is compatible and is UL listed, FM approved, or listed by a nationally recognized testing laboratory for the intended use. All listings by testing laboratories shall be from an existing ANSI or UL published standard. Submit a unique identifier for each device, including the control panel and initiating and indicating devices, with an indication of test results, and signature of the factory-trained technician of the control panel manufacturer and equipment installer. With reports on preliminary tests, include printer information. Include the NFPA 72 Record of Completion and NFPA 72 Inspection and Testing Form, with the appropriate test reports.
 3. Fire alarm Testing Services or Laboratories
 - a. Construct fire alarm and fire detection equipment in accordance with UL Fire Protection Dir, UL Electrical Construction, or FM APP GUIDE.
 4. Contractor performing fire alarm system work shall be a licensed fire alarm contractor. Contractor shall provide Fire Alarm Installation Certification with fire alarm system submittal.
- F. Field quality-control reports.
- G. Operation and Maintenance Data: For fire-alarm systems and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
1. Comply with the "Records" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.
 2. Provide "Record of Completion Documents" according to NFPA 72 article "Permanent Records" in the "Records" Section of the "Inspection, Testing and Maintenance" Chapter.
 3. Record copy of site-specific software.
 4. Provide "Maintenance, Inspection and Testing Records" according to NFPA 72 article of the same name and include the following:
 - a. Frequency of testing of installed components.
 - b. Frequency of inspection of installed components.
 - c. Requirements and recommendations related to results of maintenance.
 - d. Manufacturer's user training manuals.
 5. Manufacturer's required maintenance related to system warranty requirements.
 6. Abbreviated operating instructions for mounting at fire-alarm control panel.
 7. Copy of NFPA 25.

1.7 QUALITY ASSURANCE

- A. Source Limitations for Fire-Alarm/Voice Notification System and Components: Obtain fire-alarm/Voice Notification system from single source from single manufacturer.
- 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.
- C. NFPA Certification: Obtain certification according to NFPA 72 by a Nationally Recognized Testing Laboratory (NRTL).

1.8 PROJECT CONDITIONS

- A. Interruption of Existing Fire-Alarm Service: Do not interrupt fire-alarm service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary guard service according to requirements indicated:
 - 1. Coordinate and comply with the requirements of the local Fire Marshall, or Authority Having Jurisdiction, concerning the fire alarm system shutdown plans, procedures, and fire watch plans that will be implemented for system interruptions during construction. All existing fire alarm devices shall remain active until new cabling and devices are installed. Temporary interruptions are allowed while work is being done on the system. Work shall be coordinated so that system is fully functional at the end of the workday. If system is not fully functional at end of workday, Contractor shall provide personnel for fire watch as required by local Fire Marshall and shall be responsible for all associated costs.
 - 2. Notify Construction Manager and Owner no fewer than two days in advance of proposed interruption of fire-alarm service.
 - 3. Do not proceed with interruption of fire-alarm service without Construction Manager and Owner's written permission.

1.9 SEQUENCING AND SCHEDULING

- A. Existing Fire-Alarm Equipment: Maintain existing equipment fully operational until new equipment has been tested and accepted. As new equipment is installed, label it "NOT IN SERVICE" until it is accepted. Remove labels from new equipment when put into service and label existing fire-alarm equipment "NOT IN SERVICE" until removed from the building. Coordinate and comply with the requirements of the local Fire Marshall, or Authority Having Jurisdiction, concerning the fire alarm system shutdown plans, procedures, and fire watch plans that will be implemented for system interruptions during construction.
- B. Equipment Removal: After acceptance of new fire-alarm system, remove existing disconnected fire-alarm equipment and wiring.

1.10 SOFTWARE SERVICE AGREEMENT

- A. Comply with UL 864.

- B. Technical Support: Beginning with Substantial Completion, provide software support for two years.
- C. Upgrade Service: Update software to latest version at Project completion. Install and program software upgrades that become available within two years from date of Substantial Completion. Upgrading software shall include operating system. Upgrade shall include new or revised licenses for use of software.
 - 1. Provide 30 days' notice to Owner to allow scheduling and access to system and to allow Owner to upgrade computer equipment if necessary.

1.11 EXTRA MATERIALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Strobe Units: Quantity equal to 5 percent of amount installed, but no fewer than 2 units.
 - 2. Keys and Tools: One extra set for access to locked and tamper proofed components.
 - 3. Audible and Visual Notification Appliances: Quantity equal to 5 percent of amount installed, but no fewer than 2 units.
 - 4. Fuses: Five of each type installed in the system.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. The existing manufacturer for the fire alarm system is Notifier and Edwards at the Mahopac High School.

2.2 SYSTEMS OPERATIONAL DESCRIPTION

- A. Fire-alarm signal initiation shall be by one or more of the following devices systems:
 - 1. Manual stations.
 - 2. Heat detectors.
 - 3. Smoke detectors.
 - 4. Duct smoke detectors.
 - 5. Verified automatic alarm operation of smoke detectors
 - 6. Automatic sprinkler system water flow.
 - 7. Fire-extinguishing system operation.
 - 8. Fire standpipe system.

- B. Fire-alarm signal shall initiate the following actions:
 - 1. Continuously operate alarm/voice notification appliances.
 - 2. Identify alarm at fire-alarm control panel and remote annunciators.
 - 3. Transmit an alarm signal to the remote alarm receiving station.
 - 4. Release fire and smoke doors held open by magnetic door holders.
 - 5. Shut down heating, ventilating, and air-conditioning equipment.
 - 6. Close smoke dampers in air ducts of designated air-conditioning duct systems.
 - 7. Recall elevators to primary or alternate recall floors.
 - 8. Activate emergency shutoffs for gas and fuel supplies.
 - 9. Record events in the system memory.

- C. Supervisory signal initiation shall be by one or more of the following devices and actions:
 - 1. Valve supervisory switch.
 - 2. Elevator shunt-trip supervision.

- D. System trouble signal initiation shall be by one or more of the following devices and actions:
 - 1. Open circuits, shorts, and grounds in designated circuits.
 - 2. Opening, tampering with, or removing alarm-initiating and supervisory signal-initiating devices.
 - 3. Loss of primary power at fire-alarm/voice notification control panel.
 - 4. Ground or a single break in fire-alarm control panel internal circuits.
 - 5. Abnormal ac voltage at fire-alarm control panel.
 - 6. Break in standby battery circuitry.
 - 7. Failure of battery charging.
 - 8. Abnormal position of any switch at fire-alarm/voice notification control panel or annunciator.

- E. System Trouble and Supervisory Signal Actions: Annunciate at fire-alarm/voice notification control panel and remote annunciators.

2.3 ADDRESSABLE INTERFACE DEVICES

- A. Microelectronic monitor module, NRTL listed for use in providing a system address for alarm-initiating devices for wired applications with normally open contacts.

- B. Microelectronic relay module: Relay shall have form C dry contacts. NRTL listed for use in providing a system address for providing a signal to:
 - 1. Air handling units to initiate fan shutdown.

2.4 NOTIFICATION APPLIANCES

A. Fire Alarm/Voice Notification Speakers

1. Audible appliances shall conform to the applicable requirements of UL 464. Appliances shall be connected into notification appliance circuits. Surface mounted audible appliances shall be factory painted red. Speakers shall conform to the applicable requirements of UL 1480. Speakers shall have six different sound output levels and operate with audio line input levels of 70.7 VRMs and 25 VRMs, by means of selectable tap settings. Tap settings shall include taps of 1/8, 1/4, 1/2, 1, and 2 watt. Speakers shall incorporate a high efficiency speaker for maximum output at minimum power across a frequency range of 150 Hz to 10,000 Hz, and shall have a sealed back construction. Sleeping room speakers must produce a 520 Hz signal temporal three (T3) signal in accordance with NFPA 72. Speakers shall be capable of installation on standard 100 mm square electrical boxes. Where speakers and strobes are provided in the same location, they may be combined into a single wall mounted unit. All inputs shall be polarized for compatibility with standard reverse polarity supervision of circuit wiring via the FAVN panel.
 - a. Provide speaker mounting plates constructed of cold rolled steel having a minimum thickness of 1.519 mm (16 gauge) or molded high impact plastic and equipped with mounting holes and other openings as needed for a complete installation. Fabrication marks and holes shall be ground and finished to provide a smooth and neat appearance for each plate. Each plate shall be primed and painted.
 - b. Speakers shall utilize screw terminals for termination of all field wiring.

B. Visual Notification Appliances

1. Visual notification appliances shall conform to the applicable requirements of UL 1971 and conform to the Architectural Barriers Act (ABA). The lens of the fire alarm strobe, voice notification strobe, or both (if in the same appliance) shall be located such that the entire lens is located not less than 2032 mm and not more than 2438 mm above the finished floor. The manufacturer shall have the color lens tested to the full UL 1971 polar plotting criteria, voltage drop, and temperature rise as stated in 1971. Fire Alarm Notification Appliances shall have clear high intensity optic lens, xenon flash tubes, and be marked "Fire" in red letters. Voice Notification appliances, Fire Alarm/Voice Notification Appliances shall have clear high intensity optic lens, xenon flash tubes, and output white light and be marked "FIRE" in red letters. Fire Alarm and Voice Notification strobes may be combined into a single device with single strobe. The light pattern shall be disbursed so that it is visible above and below the strobe and from a 90 degree angle on both sides of the strobe. Strobe flash rate shall be 1 flash per second and a minimum of 15 candela, (actual output after derating for tinted lens) based on the UL 1971 test. Strobe shall be surface mounted to existing walls and semi-flush mounted to new walls. Where more than one appliance is located in the same room or corridor or field of view, provide synchronized operation. Devices shall use screw terminals for all field wiring.

2.5 SMOKE DETECTOR REMOTE STATUS AND ALARM INDICATORS

- A. Remote power/alarm indicator and key switch. Contains green and red LED power/alarm indicators and keyed test/reset switch mounted on a stainless steel plate.

2.6 DEVICE GUARDS

- A. Description: Welded wire mesh of size and shape for the manual station, smoke detector, gong, or other device requiring protection.
 - 1. Factory fabricated and furnished by manufacturer of device.
 - 2. Finish: Paint of color to match the protected device.
 - 3. Locations where require for additional equipment: Gymnasiums and Adaptive Play Rooms.

2.7 ADDITIONAL FIRE ALARM DEVICES

- A. Additional fire alarm devices not indicated on drawings, the devices below can be added at any time during construction up to and including project final inspections, base bid price to include device, wiring and programming.
 - 1. Include in bid price material and labor to install (4) new fire alarm speaker/strobe lights in existing spaces and wire said speaker/strobe lights, assuming wiring lengths of 50' from speaker/strobe to nearest Notification Appliance Circuit. Wiring is to be on a per device basis.

2.8 FIRE ALARM WIRE AND CABLE

- 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. Comtran Corporation.
 - 2. Draka Cableteq USA.
 - 3. Genesis Cable Products; Honeywell International, Inc.
 - 4. Rockbestos-Suprenant Cable Corp.
 - 5. West Penn Wire; a brand of Belden Inc.
- B. General Wire and Cable Requirements: Install Type FPLP plenum rated fire alarm cable for all initiating circuit wiring and notification circuit wiring, sized in accordance with manufacturer's recommendations. NRTL listed and labeled as complying with NFPA 70, Article 760.
- C. Signaling Line Circuits: Twisted, shielded pair, or twisted, unshielded pair, not less than No. 16 AWG. Refer to fire alarm system manufacturer for recommended sizes and shielding requirements.
- D. Non-Power-Limited Circuits: Solid-copper conductors with 600-V rated, 75 deg C, color-coded insulation.
 - 1. Low-Voltage Circuits: No. 16 AWG, minimum.
 - 2. Line-Voltage Circuits: No. 12 AWG, minimum.

PART 3 - EXECUTION

3.1 VERIFICATION OF EXISTING CONDITIONS (BY INSTALLER)

- A. Verification of Existing Conditions (by Installer): Examine conditions under which fire alarm system is to be installed in coordination with Installer of materials and components specified in this Section and notify affected Contractors and Architect in writing of any conditions detrimental to proper and timely installation. Do not proceed with installation until unsatisfactory conditions have been corrected in a manner acceptable to Installer.
 - 1. When Installer confirms conditions as acceptable to ensure proper and timely installation and to ensure requirements for applicable warranty or guarantee can be satisfied, submit to Architect written confirmation from applicable Installer. Failure to submit written confirmation and subsequent installation will be assumed to indicate conditions are acceptable to Installer.

3.2 PROTECTION

- A. Protection: Provide dust covers on all existing detectors in renovation areas during construction.

3.3 EQUIPMENT INSTALLATION

- A. Install fire alarm system in accordance with applicable provisions of NEC, NFPA-70, Article 760 - Fire Protective Signaling Systems.
 - 1. Contractor performing fire alarm system work shall be a licensed fire alarm contractor. Contractor shall provide Fire Alarm Installation Certification with fire alarm system submittal.
 - 2. Since existing fire alarm system is being replaced, Contractor performing fire alarm system work shall comply with the requirements of the local Fire Marshall concerning the fire alarm system shutdown plans, procedures, and fire watch plans that will be implemented for system interruptions during construction. All existing fire alarm devices shall remain active until new cabling and devices are installed. Temporary interruptions are allowed while work is being done on the system. Work shall be coordinated so that system is fully functional at the end of the workday. If system is not fully functional at end of workday, Contractor shall provide personnel for fire watch as required by local Fire Marshall and shall be responsible for all associated costs.
 - 3. Provide all labor, materials, equipment and services to perform all operations required for complete installation of fire alarm system and related construction as shown on Drawings and specified in this Section.
 - 4. Completely check, program and adjust all new and existing equipment on each system.

5. Label each addressable device with label indicating device's unique address. Label shall comply with Specification Section 26 05 53 Identification for Electrical Systems. Labels shall be installed so that they are visible without removing device from mounting base.
- B. Connecting to Existing Equipment: Verify that existing fire-alarm system is operational before making changes or connections by testing 100% of system and submitting complete test reports.
 1. Connect new equipment to replacement control panel in existing part of the building.
 2. Connect new FAVN to existing monitoring equipment at the supervising station.
 3. Expand, modify, and supplement existing equipment as necessary to extend existing functions to the new points. New components shall be capable of merging with existing configuration without degrading the performance of either system.
 - C. Do not install smoke detector in duct smoke-detector housing during construction. Install detector only during system testing and prior to system turnover.
 - D. In areas where detection and notification devices may be subject to physical damage, devices shall have protective wire guards as manufactured by Safety Technology International (www.sti-usa.com). All guards shall be listed for the fire alarm system devices and appliances protected.
 - E. In new construction, install all devices flush or semi-flush mounted, unless otherwise authorized by Owner.
 - F. In existing construction, install all interior surface mounted devices on surface mounted back boxes supplied by device manufacturer.
 - G. In locations where new device is replacing existing, contractor shall coordinate removal/replacement to allow re-use of existing backbox/conduits if possible.
 - H. In locations where building construction prohibits flush-mounted installations, provide surface raceway. At such locations obtain written authorization from Owner's representative or Architect prior to providing surface raceway device.
 - I. Demolition of existing system:
 1. Disconnect and remove existing fire alarm system as indicated on floor plans. Existing wiring may be reused if fire alarm system manufacturer confirms same in writing.
 2. Repair all damaged surfaces upon removal of existing devices and raceway. Repair, patch and paint existing construction to match existing finishes.
 - J. Duct Smoke Detectors: Comply with NFPA 72 and NFPA 90A. Install sampling tubes so they extend the full width of duct.
 - K. Remote Status and Alarm Indicators: Install near each duct detector, smoke detector and each sprinkler water-flow switch and valve-tamper switch that is not readily visible from normal viewing position.

- L. Wire the Notification Appliance Circuits such that the audible alarm indicating devices can be turned off while the visual alarm notifications remain operational.
- M. Locate audible/visible signaling devices in strict accordance with requirements of Americans with Disabilities Act (ADA).
- N. Audible Alarm-Indicating Devices: Install not less than 6 inches (150 mm) below the ceiling. Install speakers on flush-mounted back boxes with the device-operating mechanism concealed behind a grille.
- O. Visible Alarm-Indicating Devices: Install adjacent to each alarm speaker and place strobe light lens 80 inches minimum and 96 inches maximum above floor level. In locations where ceiling height is less than 90 inches AFF, place strobe light lens 6 inches below ceiling.
- P. Where combination audible/visible units used, place strobe light lens 80 inches minimum and 96 inches maximum above floor level. In locations where ceiling height is less than 90 inches AFF, place strobe light lens 6 inches below ceiling.
- Q. Device Location-Indicating Lights: Locate in public space near the device they monitor.
- R. Fire-Alarm/Voice Notification Control Panel: Surface mounted, with tops of cabinets not more than 72 inches (1830 mm) above the finished floor.

3.4 WIRING

- A. Install Type FPLP plenum rated fire alarm cable for all initiating circuit wiring and notification circuit wiring, sized in accordance with manufacturer's recommendations.
- B. Signaling Line Circuits: Power-limited fire alarm cables shall not be installed in the same cable or raceway as signaling line circuits.
- C. Wiring within Enclosures: Separate power-limited and non-power-limited conductors as recommended by manufacturer. Install conductors parallel with or at right angles to sides and back of the enclosure. Bundle, lace, and train conductors to terminal points with no excess. Connect conductors that are terminated, spliced, or interrupted in any enclosure associated with the fire alarm system to terminal blocks. Mark each terminal according to the system's wiring diagrams. Make all connections with approved crimp-on terminal spade lugs, pressure-type terminal blocks, or plug connectors.
- D. Cable Taps: Use numbered terminal strips in junction, pull, and outlet boxes, cabinets, or equipment enclosures where circuit connections are made.
- E. Color-Coding: Color-code fire alarm conductors differently from the normal building power wiring. Use one color-code for alarm circuit wiring and another for supervisory circuits. Color-code audible alarm-indicating circuits differently from alarm-initiating circuits. Use different colors for visible alarm-indicating devices. Paint fire alarm system junction boxes and covers red.
- F. Install all plenum cable above corridor ceilings bundled and tie-wrapped at 5 foot intervals and hung in saddle rings or J-hooks, supported to structure at 5 foot intervals.

- G. Cable shall not be considered properly supported by lying over top of conduits, piping, or building supports or bracing. Approved saddle rings or J-hooks must be used.
- H. For wall mounted devices in existing construction where wiring cannot be concealed, all wiring shall be installed in surface metallic raceway from device location to accessible ceiling space. Paint raceway to match existing surface in occupied spaces.
- I. Install all wiring in approved surface metallic raceway or EMT conduit in the following locations:
 - 1. Unfinished areas (EMT conduit).
 - 2. Exposed areas (Surface metallic raceway).
 - 3. Where subject to damage.
 - 4. Coordinate paragraph below with Drawings. Wind speed is usually a requirement of the applicable building code.

3.5 IDENTIFICATION

- A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."
- B. Install framed instructions in a location visible from fire-alarm control panel.

3.6 ADJUSTING / CLEANING

- A. Completely clean all smoke detectors, as instructed by authorized factory representative, when system is substantially complete and when authorized by Owner.

3.7 FIELD QUALITY CONTROL

- A. Field tests shall be witnessed by Owners Representative and authorities having jurisdiction.
- B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections, and to assist in testing.
- C. Tests and Inspections:
 - 1. Visual Inspection: Conduct visual inspection prior to testing.
 - a. Inspection shall be based on completed Record Drawings and system documentation that is required by NFPA 72 in its "Completion Documents, Preparation" Table in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter.
 - b. Comply with "Visual Inspection Frequencies" Table in the "Inspection" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72; retain the "Initial/Reacceptance" column and list only the installed components.

2. Perform 100 percent inspection and testing of all system devices.
 - a. Provide complete panel real-time printout as documentation of device, date and time. Any acceptance test not accompanied by real-time printout requires retesting of entire system by Contractor, including both alarm activation tests and tests of supervisory circuit at each device.
 - b. Provide inspection complying with requirements of applicable NFPA standards.
 - c. Provide to Owner and Fire Sub Code Official complete typed list of every initiation, signaling, control, supervisory and auxiliary device with specific information regarding system address of device, location of device, date tested, manufacturer's model number, and serial number of all analog components, status of device and zone or point as related to system. Obtain from Owner, the Owner's room names/numbers that are to be assigned to each device.
3. Provide complete set of battery test results for panels including:
 - a. Charger output voltage under normal conditions.
 - b. Charger output current under normal conditions.
 - c. Open battery voltage.
 - d. Supply voltage and current under primary power failure.
 - e. Supply voltage and current under primary power failure and system alarm that has activated all of panel's audible, visual and control circuits.
 - f. Calculations using battery test data obtained to determine minimum battery capacity of 24 hours under normal conditions and 5-minute alarm condition.
 - g. Take voltage readings at end of line of each alarm signal circuit to insure minimum operational levels.
 - h. If voltage drop exceeds the minimum rating of the last device in the circuit, while under full circuit load, rewire circuits with appropriately heavier gage wire as required to comply with specified requirements.
4. Test audible appliances for the public operating mode according to manufacturer's written instructions. Perform the test using a portable sound-level meter complying with Type 2 requirements in ANSI S1.4.
5. Test visible appliances for the public operating mode according to manufacturer's written instructions.
6. Factory-authorized service representative shall prepare the "Fire Alarm System Record of Completion" in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter in NFPA 72 and the "Inspection and Testing Form" in the "Records" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.

D. Intelligibility Tests

1. Intelligibility testing of the System shall be accomplished in accordance with NFPA 72 for Voice Evacuation Systems, IEC 60268-16, and ASA S3.2. Following are the specific requirements for intelligibility tests:
 - a. Intelligibility Requirements: Verify intelligibility by measurement after installation.
2. Ensure that a CIS value greater than the required minimum value is provided in each area where building occupants typically could be found. The minimum required value for CIS is .7
3. The contractor must submit a waiver letter for areas of the building they believe will not meet the minimum CIS value at the beginning of the shop drawing phase. Areas of the building provided with hard wall and ceiling surfaces (such as metal or concrete) that are found to cause excessive sound reflections may be permitted to have a CIS score less than the minimum required value if approved by the Architect, and if it can be determined that building occupants in these areas can determine that a voice signal is being broadcast and they can walk no more than 30 feet m to find a location with at least the minimum required CIS value within the same area.
4. Areas of the building where occupants are not expected to be normally present are permitted to have a CIS score less than the minimum required value if personnel can determine that a voice signal is being broadcast and they must walk no more than 50 feet to a location with at least the minimum required CIS value within the same area.
5. Take measurements near the head level applicable for most personnel in the space under normal conditions (e.g., standing, sitting, as appropriate).
6. The distance the occupant must walk to the location meeting the minimum required CIS value shall be measured on the floor or other walking surface as follows:
 - a. Along the centerline of the natural path of travel, starting from any point subject to occupancy with less than the minimum required CIS value.
 - b. Curving around any corners or obstructions, with a 12 inch clearance there from.
 - c. Terminating directly below the location where the minimum required CIS value has been obtained.
7. Use commercially available test instrumentation to measure intelligibility as specified by ISO 7240-19 and ISO 7240-16 as applicable. Use the mean value of at least three readings to compute the intelligibility score at each test location.

E. Reacceptance Testing: Perform reacceptance testing to verify the proper operation of added or replaced devices and appliances.

F. Fire-alarm system will be considered defective if it does not pass tests and inspections.

G. Prepare test and inspection reports.

- H. Annual Test and Inspection: One year after date of Substantial Completion, test fire-alarm system complying with visual and testing inspection requirements in NFPA 72. Use forms developed for initial tests and inspections.

3.8 MAINTENANCE SERVICE

- A. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by skilled employees of manufacturer's designated service organization. Include preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper operation. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.
 - 1. Include visual inspections according to the "Visual Inspection Frequencies" table in the "Testing" paragraph of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
 - 2. Perform tests in the "Test Methods" table in the "Testing" paragraph of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
 - 3. Perform tests per the "Testing Frequencies" table in the "Testing" paragraph of the "Inspection, Testing and Maintenance" chapter in NFPA 72.

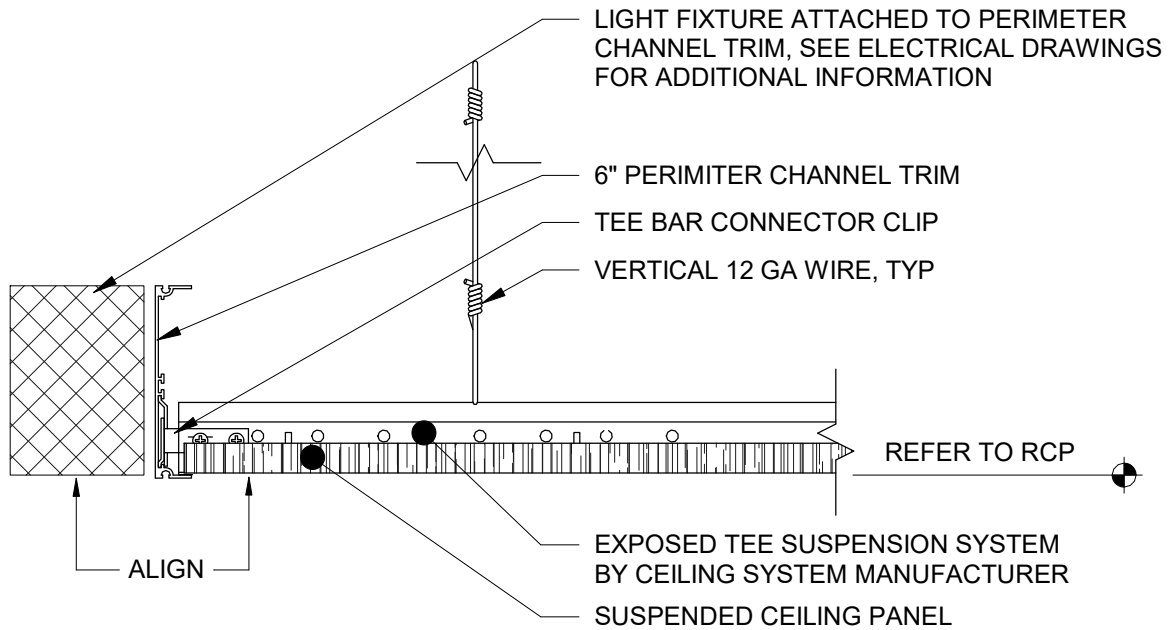
3.9 SOFTWARE SERVICE AGREEMENT

- A. Comply with UL 864.
- B. Technical Support: Beginning at Substantial Completion, service agreement shall include software support for two years.
- C. Upgrade Service: At Substantial Completion, update software to latest version. Install and program software upgrades that become available within two years from date of Substantial Completion. Upgrading software shall include operating system and new or revised licenses for using software.
 - 1. Upgrade Notice: At least 30 days to allow Owner to schedule access to system and to upgrade computer equipment if necessary.

3.10 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain fire-alarm system. Training shall consist of a total of 8 hours delivered in 2 hour blocks.
- B. Provide copy of sign-in sheet of District staff receiving training in O&M Manuals.

END OF SECTION 28 31 11



1 Ceiling Detail - Floating Panel
 3" = 1'-0"

THIS DETAIL SUPERCEDES DETAIL 17/AA750



TETRA TECH
 ARCHITECTS & ENGINEERS

Tetra Tech Engineers, Architects & Landscape Architects, P.C.

		Proj. No.: 121111-19002
		Date: 02/12/21
Rev.:	Date:	Drawn By: TS

Mahopac Central School District

Mahopac High School

Ceiling Detail - Floating Panel

Drawing No.:

AA01B

SECTION 09 84 33 - SOUND-ABSORBING WALL UNITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes shop-fabricated, fabric-wrapped panel units tested for acoustical performance, including:
 - 1. Sound-absorbing wall panels.
 - 2. Sound-diffusing wall panels.

1.3 DEFINITIONS

- A. NRC: Noise Reduction Coefficient.

1.4 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of fabric facing, panel edge, core material, and mounting indicated.
 - 1. Sound-absorbing wall panel.
 - 2. Sound-diffusing wall panel.
 - 3. Core materials.
 - 4. Facing material.
 - 5. Mounting devices.
- B. Shop Drawings: For sound-absorbing wall units. Include mounting devices and details; details at panel head, base, joints, and corners; and details at ceiling, floor base, and wall intersections. Indicate panel edge and core materials.
 - 1. Include elevations showing panel sizes and direction of fabric weave and pattern matching.

- C. Samples for Verification and Initial Color Selection: For the following products, prepared on samples of size indicated below:
 - 1. Fabric: Full-width by approximately 36-inch-long Sample, but not smaller than required to show complete pattern repeat, from dye lot to be used for the Work, and with specified treatments applied. Mark top and face of fabric.
 - 2. Panel Edge: 12-inch-long Sample(s) showing each edge profile, corner, and finish.
 - 3. Core Material: 12-inch-square Sample at corner.
 - 4. Mounting Devices: Full-size Samples.
- D. Warranty: Sample of special warranty.

1.6 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Elevations 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, switches, and thermostats.
 - 2. Items penetrating or covered by sound-absorbing wall units including the following:
 - a. Lighting fixtures.
 - b. Air outlets and inlets.
 - c. Speakers.
 - d. Alarms.
 - e. Access panels.
 - 3. Show operation of hinged and sliding components covered by or adjacent to sound-absorbing wall units.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For sound-absorbing wall units to include in maintenance manuals. Include fabric manufacturers' written cleaning and stain-removal recommendations.
- B. Warranty: Executed special warranty.

1.8 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials from same production run that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Fabric: For each fabric, color, and pattern installed, provide length equal to 10 percent of amount installed, but no fewer than 10 yards.

2. Mounting Devices: Full-size units equal to 5 percent of amount installed, but no fewer than five devices, including unopened adhesives.

1.9 QUALITY ASSURANCE

- A. Source Limitations: Obtain sound-absorbing wall units from single source from single manufacturer.
- B. Fire-Test-Response Characteristics: Provide sound-absorbing wall units meeting the following as determined by testing identical products by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:
 1. Surface-Burning Characteristics: As determined by testing per ASTM E 84.
 - a. Flame-Spread Index: 25 or less.
 - b. Smoke-Developed Index: 450 or less.
 2. Fire Growth Contribution: Meeting acceptance criteria of local code and authorities having jurisdiction when tested according to NFPA 265 and NFPA 286.
 3. Fabric faced units must comply with NFPA 701 and/or California Technical Bulletin(s) for resistance to ignition due to flames.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Comply with fabric and sound-absorbing wall 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.

1.11 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install sound-absorbing wall 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. Air-Quality Limitations: Protect sound-absorbing wall units from exposure to airborne odors, such as tobacco smoke, and install units under conditions free from odor contamination of ambient air.
- C. Field Measurements: Verify locations of sound-absorbing wall units and actual dimensions of openings and penetrations by field measurements before fabrication.

1.12 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of sound-absorbing wall units 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 SOUND-ABSORBING WALL UNITS

- 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. Conwed Designscape; an Owens Corning company.
 2. Kinetics Noise Control, Inc.
 3. Unika Vaev.
- B. General Requirements for Sound-Absorbing Wall Units: Units shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers." AWP1
- C. Sound-Absorbing Wall Panel ~~AWP1~~. Manufacturer's standard panel construction consisting of facing material stretched over front face of edge-framed core and bonded or attached to edges and back of frame.
1. Basis-of-Design Product: Kenetics Noise Control, High Impact Hardside Acoustical Wall Panels, or approved equal.
 2. Mounting: Back mounted with manufacturer's standard metal clips or bar hangers, secured to substrate.
 3. Core: glass-fiber board, 6-7 PCF.
 - a. Core-Face Layer: Manufacturer's standard tackable, impact-resistant, high-density board.
 4. Edge Construction: Manufacturer's standard chemically hardened core with no frame.
 5. Edge Profile: Square.
 6. Corner Detail in Elevation: Square with continuous edge profile indicated.

7. Reveals between Panels: Recessed reveals.
 8. Acoustical Performance: Sound absorption NRC of not less than 0.65 according to ASTM C 423 for Type A mounting according to ASTM E 795.
 9. Nominal Overall Panel Thickness: 2-1/8 inches.
 - a. 1/8" high impact skin over 2" core
 10. Panel Width: As indicated on Drawings.
 11. Panel Height: As indicated on Drawings.
- D. Sound-Absorbing Wall Panel WP2: Manufacturer's standard panel construction consisting of facing material stretched over front face of edge-framed core and bonded or attached to edges and back of frame.
1. Basis-of-Design Product: Kenetics Noise Control, Kinetics TAD, or approved equal.
 2. Mounting: Back mounted with manufacturer's standard metal clips or bar hangers, secured to substrate.
 3. Core: glass-fiber board, 6-7 PCF.
 - a. Core-Face Layer: Manufacturer's standard perforated face with randomized 1/2" diameter holes.
 4. Edge Construction: Manufacturer's standard chemically hardened core with no frame.
 5. Edge Profile: Square.
 6. Corner Detail in Elevation: Square with continuous edge profile indicated.
 7. Reveals between Panels: Recessed reveals.
 8. Acoustical Performance: Sound absorption NRC of not less than 0.65 according to ASTM C 423 for Type A mounting according to ASTM E 795.
 9. Nominal Overall Panel Thickness: 2 inches.
 10. Panel Width: As indicated on Drawings.
 11. Panel Height: As indicated on Drawings.
- E. Facing Material: Facing Material: Fabric from same dye lot; color and pattern as selected by Architect from manufacturer's full range.
1. Manufacturer: Guilford of Maine.
 2. Product Line/Pattern: Anchorage 2335.
 3. Pattern Repeat: None.
 4. Color: to be selected by architect from manufactures full range of colors.

5. Fiber Content: 100 percent woven polyester.
 6. Width: 66 inches.
- F. Facing Material: Facing Material: Fabric from same dye lot; color and pattern as selected by Architect from manufacturer's full range.
1. Manufacturer: Guilford of Maine.
 2. Product Line/Pattern: Anchorage 2335.
 3. Pattern Repeat: None.
 4. Color: to be selected by architect from manufacturer's full range of colors.
 5. Fiber Content: 100 percent woven polyester.
 6. Width: 66 inches.

2.2 MATERIALS

A. Core Materials:

1. Glass-Fiber Board: ASTM C 612, 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. Tackable, Impact-Resistant, High-Density Board for Face Layer: 1/8-inch- thick layer of compressed molded glass-fiber board with a nominal density of 16 to 18 lb/cu. ft. laminated to face of core.

B. Mounting Devices: Concealed on back of unit, recommended by manufacturer to support weight of unit, and as follows:

1. Metal Clips or Bar Hangers: Manufacturer's standard two-part metal "Z" clips, with one part of each clip mechanically attached to back of unit and the other part to substrate, designed to permit unit removal.

2.3 FABRICATION

A. General: Use manufacturer's standard construction except as 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.

1. Glass-Fiber Board Cores: Chemically harden core edges and areas of core where mounting devices are attached.

B. Core-Face Layer: Evenly stretched over core face and edges and securely attached to core; free from puckers, ripples, wrinkles, or sags.

C. Facing Material: Apply fabric facing fully covering visible surfaces of unit; with material stretched straight, on the grain, tight, square, and free from puckers, ripples, wrinkles, sags, blisters, seams, adhesive, or other visible distortions or foreign matter.

1. Square Corners: Tailor corners.

2. Fabrics with Directional or Repeating Patterns or Directional Weave: Mark fabric top and attach fabric in same direction so pattern or weave matches in adjacent units.
- 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.
 5. Chords, radii, and diameters.

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 performance of sound-absorbing wall units.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

- A. Install sound-absorbing wall units in locations indicated with vertical surfaces and edges plumb, top edges level and in alignment with other units, faces flush, and scribed to fit adjoining work accurately at borders and at penetrations.
- B. Comply with sound-absorbing wall unit manufacturer's written instructions for installation of units using type of mounting devices indicated. Mount units securely to supporting substrate.
- C. Align and level fabric pattern and grain among adjacent units.

3.3 INSTALLATION TOLERANCES

- A. Variation from Plumb and Level: Plus, or minus 1/16 inch.
- B. Variation of Panel Joints from Hairline: Not more than 1/16 inch wide.

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.

END OF SECTION 09 84 33

SECTION 09 91 00 – PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes surface preparation and application of paint systems, for the following:
 - 1. Interior applications.
 - a. Painting systems indicated on Drawings and in Schedules applied to new and existing exterior and interior surfaces and related components including but not limited to items such as hollow metal doors frames, doors, access doors, trim pieces, window sash, trim and previously painted cabinet heater/fin tube enclosures, etc., unless otherwise indicated, including appropriate surface preparation for all new or existing surfaces to be painted including previously painted surfaces and surfaces with existing wall coverings

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product for substrates indicated. Include preparation requirements and application instructions. Include all paint products under one cover sheet.
 - 1. Interior concrete, vertical surfaces.
 - 2. Interior concrete, vertical surfaces (deep tone accent colors).
 - 3. Interior CMU.
 - 4. Interior CMU (deep tone accent colors).
 - 5. Interior steel.
 - 6. Interior steel (deep tone accent colors).
 - 7. Interior previously painted cabinet heater/fin tube enclosures.
 - 8. Interior steel piping, piping supports and hangers.
 - 9. Interior galvanized-metal.
 - 10. Interior galvanized-metal (metal deck).
 - 11. Interior galvanized metal (metal deck, deep tone accent colors).
 - 12. Interior aluminum (where indicated).
 - 13. Interior wood.

14. Interior wood (deep tone accent colors).
15. Interior hardboard (stage floor).
16. Interior fiberglass reinforced polyester (FRP).
17. Interior plaster.
18. Interior plaster (deep tone accent colors).
19. Interior gypsum board.
20. Interior gypsum board (deep tone accent colors).
21. Interior insulation-covering.
22. Interior insulation-covering (deep tone accent colors).

B. Samples for Verification and Initial Color Selection: For each type of finish system and in each color and gloss of finish indicated.

1. Submit Samples on rigid backing, 8 inches square.
 - a. For wood finishes, submit Samples on representative samples of actual wood substrates, 8 inches square.
2. Step coats on Samples to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

C. Product List: For each product indicated, include the following:

1. Cross-reference to finish system and locations of application areas. Use same designations indicated on Drawings and in schedules.
2. VOC content. Tints and /or colorant shall add no additional VOC to final product. Provide 3rd party certification of VOC content.

D. Coatings Maintenance Manual:

1. Upon conclusion of the project, the contractor or paint manufacture/supplier shall furnish a coatings maintenance manual such as Sherwin Williams "Custodian Project Color and Product Information" report. Manual shall include an Area Summary with finish schedule, Area Detail designating where each product/color/finish was used, product data pages, Material Safety Data Sheets, care and cleaning instructions. Touch up procedures and color samples of each color and finish used. All information contained in a self-bound 3 ring hole punched catalog.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For applicator.

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. Paint: 10 percent, but not less than 1 gal. of each material and color applied.
2. Stains and Transparent Finishes: 10 percent, but not less than 1 gal. of each material and color applied.

1.7 QUALITY ASSURANCE

- A. Applicator Qualifications: A firm or individual, experienced in applying finishes specified in this Section, who has successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; familiar with special requirements indicated; and with sufficient trained staff to apply manufacturer's products according to specified requirements.
- B. Mockups: Apply mockups of each finish system indicated to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 1. Architect will select one surface to represent surfaces and conditions for application of each finish system specified in Part 3.
 - a. Wall and Ceiling Surfaces: Provide samples of at least 100 sq. ft.
 - b. Other Items: Architect will designate items or areas required.
 2. 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 Architect at no added cost to Owner.
 3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect 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.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
 1. Maintain containers in clean condition, free of foreign materials and residue.
 2. Remove rags and waste from storage areas daily.

1.9 FIELD CONDITIONS

- A. Apply finishes only when temperature of surfaces to be coated and surrounding air temperatures are between 50 and 95 deg F.
- B. Do not apply finishes when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

- C. Do not apply exterior finishes in snow, rain, fog, or mist.
- D. Lighting: Do not install finishes until a lighting level of not less than 80 fc is provided on the surfaces to receive finishing.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following:
 - 1. Benjamin Moore & Co.
 - 2. PPG Architectural Finishes, Inc.
 - 3. Sherwin-Williams Company (The).
- B. Submittals containing manufactures other than stated above, will require a product by product comparison for each type of paint. All Comparable equals are to be matched with corresponding Sherwin Williams specified products.
- C. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to products listed in Part 3 articles for the application indicated.

2.2 MATERIALS, GENERAL

- A. Material Compatibility:
 - 1. Provide materials for use within each finish 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 finish system, provide products recommended in writing by manufacturers of topcoat for use in finish system and on substrate indicated.
 - 3. Provide products of same manufacturer for each coat in a finish system.
- B. VOC Compliance: All paint products shall meet New York requirements for Volatile Organic Compound (VOC) and Ozone Transport Commission (OTC) regulations, January 2005.
- C. Colors: As selected by Architect from manufacturer's full range.
 - 1. 25 percent of surface area will be painted with deep tones.

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.
 - 1. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - a. Concrete: 12 percent.
 - b. Masonry (Clay and CMU): 12 percent.
 - c. Wood: 15 percent.
 - d. Gypsum Board: 12 percent.
 - e. Plaster: 8 percent.
- B. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
- C. Plaster Substrates: Verify that plaster is fully cured.
- D. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- E. Proceed with coating application only after unsatisfactory conditions have been corrected.
 - 1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be finished. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and finishing.
 - 1. After completing finishing operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.
- B. Clean substrates of substances that could impair bond of finishes, 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 finish systems indicated.
- C. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
- D. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions.

- E. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:
 - 1. SSPC-SP 3, "Power Tool Cleaning."
 - 2. SSPC-SP 11, "Power Tool Cleaning to Bare Metal."
- F. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- G. 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.
- H. Galvanized Metal/Galvanized Deck, Factory Primed Surface-Coordinate with approved paint manufacture on compatibility of paint finish coats to factory prime surface.
- I. Aluminum Substrates: Remove loose surface oxidation.
- J. Wood Substrates:
 - 1. Scrape and clean knots. Before applying primer apply coat of knot sealer recommended in writing by topcoat manufacturer for coating system indicated.
 - 2. Apply wood filler paste to open-grain woods to produce smooth, glasslike finish.
 - 3. Sand surfaces that will be exposed to view and dust off.
 - 4. Prime edges, ends, faces, undersides, and back sides of wood.
 - 5. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.
- K. Cotton or Canvas Insulation Covering Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.
- L. Alteration Work: Comply with applicable surface preparation requirements specified and as recommended by finish materials manufacturer for existing surfaces to receive paint or other finishes, including cleaning, sanding, and roughening as required for proper adherence of new finish material.
 - 1. Existing Woodwork: Strip existing wood finish to bare wood using commercially available solvents compatible with finish. Use in strict accordance with manufacturer's printed instructions. After stripping operation is complete and surface is dry, sand surface with sandpaper, using random orbital sanding machine.

3.3 APPLICATION

- A. Apply finishes according to manufacturer's written instructions.
 - 1. Use applicators and techniques suited for finish 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 back sides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
 4. Do not apply paints over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of the same material are to be applied. Tint undercoats to match color of finish coat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Produce sharp glass lines and color breaks.
- E. Alterations: Finish new surfaces adjacent to unaltered existing surfaces with finish of same type and surface texture as corresponding adjacent surfaces, unless otherwise indicated. Finish patched, damaged, or extended surfaces to match existing surfaces.
- F. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
1. Paint the following work where exposed in equipment rooms:
 - 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.
 - g. Tanks that do not have factory-applied final finishes.
 - h. Duct, equipment, pipe and insulation having cotton or canvas insulation covering or another paintable jacket material.
 2. 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 another paintable jacket material.
 - h. Other items as directed by Architect.

3. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

3.4 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner will 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 coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from finish operation. Correct damage by cleaning, repairing, replacing, and recoating, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced finished surfaces.

3.6 INTERIOR PAINTING SCHEDULE

- A. Concrete Substrates, Vertical Surfaces:
 1. First Coat:
 - a. Benjamin Moore & Co.; Moore's Acrylic Masonry Primer 066.
 - b. PPG Paints: Perma-Crete Alkali-Resistant Primer 4-603.
 - c. Sherwin-Williams Company (The); Loxon Concrete & Masonry Primer (LX02W0050.)
 2. Second and Third Coats (Semi-Gloss):
 - a. Benjamin Moore & Co.; N539 Ultra Spec 500 Interior Semi-Gloss.
 - b. PPG Paints: Speedhide Interior Semi-Gloss Latex 6-500.
 - c. Sherwin-Williams Company (The); Pro Mar 200 Zero VOC Interior Latex S/G B31 Series.

B. Concrete Substrates, Vertical Surfaces (Deep Tone Accent Colors):

1. First Coat: Use tinted primer.
 - a. Benjamin Moore & Co.; Moore's Acrylic Masonry Primer 066.
 - b. PPG Paints: Perma-Crete Alkali-Resistant Primer 4-603.
 - c. Sherwin-Williams Company (The); Loxon Concrete & Masonry Primer (LX02W0050.)
2. Second and Third Coats (Semi-Gloss): Additional coats may be required.
 - a. Benjamin Moore & Co.; Ultra Spec 500 Interior Semi-Gloss N539.
 - b. PPG Paints: Speedhide Interior Semi-Gloss Latex 6-500.
 - c. Sherwin-Williams Company (The); ProMar 200 Zero VOC S/G B31-2600.

C. CMU Substrates:

1. First Coat:
 - a. Benjamin Moore & Co.; Super Spec Masonry Int-Ext Hi-Build Block Filler 571.
 - b. PPG Paints: Speedhide Interior/Exterior Latex Block Filler 6-7.
 - c. Sherwin-Williams Company (The); PrepRite Block Filler B25W25
2. Second and Third Coats (Semi-Gloss):
 - a. Benjamin Moore & Co.; N539 Ultra Spec 500 Interior Semi-Gloss.
 - b. PPG Paints: Speedhide Interior Semi-Gloss Latex 6-500.
 - c. Sherwin-Williams Company (The); Pro Mar 200 Zero VOC Interior Latex S/G B31 Series.

D. CMU Substrates (Deep Tone Accent Colors):

1. First Coat: Use tinted primer.
 - a. Benjamin Moore & Co.; Super Spec Masonry Int-Ext Hi-Build Block Filler 571.
 - b. PPG Paints: Speedhide Interior/Exterior Latex Block Filler 6-7.
 - c. Sherwin-Williams Company (The); PrepRite Block Filler B25W25.
2. Second and Third Coats (Semi-Gloss): Additional coats may be required.
 - a. Benjamin Moore & Co.; Ultra Spec 500 Interior Semi-Gloss N539.
 - b. PPG Paints: Speedhide Interior Semi-Gloss Latex 6-500.
 - c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Coating S/G (B66-20 DTM Acrylic Coating S/G (B66-W01151 Series) or Gloss (B66-W01051 Series).

E. Steel Substrates:

1. First Coat:

- a. Benjamin Moore & Co.; Super Spec HP Acrylic Metal Primer P04.
- b. PPG Paints: Pitt-Tech Interior/Exterior Industrial DTM Primer/Finish Enamel 90-712.
- c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Primer Finish B66W1.

2. Second and Third Coats (Semi-Gloss):

- a. Benjamin Moore & Co.; Ultra Spec HP DTM Acrylic Semi-Gloss HP29, or Gloss HP28.
- b. PPG Paints: Pitt-Tech Industrial DTM Acrylic Satin 90-474.
- c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Coating S/G (B66-W01151 Series) or Gloss (B66-W01051 Series.)

F. Steel Substrates (Deep Tone Accent Colors):

1. First Coat: Use tinted primer.

- a. Benjamin Moore & Co.; Super Spec HP Acrylic Metal Primer P04.
- b. PPG Paints: Pitt-Tech Interior/Exterior Industrial DTM Primer/Finish Enamel 90-712.
- c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Primer Finish B66W1.

2. Second and Third Coats (Semi-Gloss): Additional coats may be required.

- a. Benjamin Moore & Co.; Ultra Spec HP DTM Acrylic Semi-Gloss HP29 or Gloss HP28.
- b. PPG Paints: Pitt-Tech Industrial DTM Acrylic Satin 90-474.
- c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Coating S/G (B66-W01151 Series) or Gloss (B66-W01051 Series.)

G. Previously Painted Steel Cabinet Heaters/ Fin tube Enclosures- up to 250 degrees:

1. First Coat:

- a. Benjamin Moore & Co.; Super Spec HP Acrylic Metal Primer P06.
- b. PPG Paints; PPG Paints: Pitt Tech DTM Acrylic Metal Primer 90-712
- c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Primer Finish B66A50.

2. Second and Third Coats (Semi-Gloss):

- a. Benjamin Moore & Co.; Super Spec HP Urethane Alkyd Gloss.
- b. PPG Paints; PPG Paints Pitt Tech Plus DTM Acrylic Semi-Gloss 4216
- c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Coating S/G (B66-W01151/B66-W01051).

H. Steel Piping, Piping Supports and Hangers:

1. First Coat:

- a. Benjamin Moore & Co.; Super Spec HP Acrylic Metal Primer P04.
- b. PPG Paints: Pitt-Tech Interior/Exterior Industrial DTM Primer/Finish Enamel 90-712.
- c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Primer Finish B66W1.

2. Second and Third Coats (Semi-Gloss):

- a. Benjamin Moore & Co.; N539 Ultra Spec Interior Semi-Gloss.
- b. PPG Paints: Speedhide Interior Latex Semi-Gloss 6-500.
- c. Sherwin-Williams Company (The); Pro Industrial DTM B66 Series.

I. Galvanized-Metal Substrates:

1. First Coat:

- a. Benjamin Moore & Co.; Super Spec HP Acrylic Metal Primer P04.
- b. PPG Paints: Pitt-Tech Interior/Exterior Industrial DTM Primer/Finish Enamel 90-712.
- c. Sherwin-Williams Company (The); Sherwin Williams Pro Industrial Pro Cryl Universal Primer B66-1310

2. Second and Third Coats:

- a. Benjamin Moore & Co.; Ultra Spec HP DTM Acrylic Semi-Gloss HP29.
- b. PPG Paints: Pitt-Tech Industrial DTM Acrylic Satin 90-474.
- c. Sherwin-Williams Company (The); Pro Industrial DTM B66 Series.

J. Galvanized-Metal Substrates (Metal Deck):

1. First Coat:

- a. Benjamin Moore & Co.; Coronado Super Kote 5000 Dry Fall Latex Flat 105 or Semi-Gloss 112.
- b. PPG Paints: Speed Super Tech Latex Dry Fog Spray Paint 6-724XI.
- c. Sherwin-Williams Company (The); Pro Industrial Waterborne Acrylic Dry Fall Eggshell B42W200082.

2. Second and Third Coats:

- a. Benjamin Moore & Co.; Coronado Super Kote 5000 Dry Latex Semi-Gloss 112.
- b. PPG Paints: Speed Super Tech Latex Dry Fog Spray Paint 6-724XI.
- c. Sherwin-Williams Company (The); Pro Industrial Waterborne Acrylic Dry Fall Eggshell B42W0082.

K. Galvanized-Metal Substrates (Metal Deck, Deep Tone Accent Colors):

1. First Coat: Use tinted primer.
 - a. Benjamin Moore & Co.; Super Spec HP Acrylic Metal Primer P04.
 - b. PPG Paints: Pitt-Tech Interior/Exterior Industrial DTM Primer/Finish Enamel 90-712.
 - c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Primer Finish B66 Series.
2. Second and Third Coats (Semi-Gloss):
 - a. Benjamin Moore & Co.; Ultra Spec HP DTM Acrylic Semi-Gloss HP29 or Gloss HP28.
 - b. PPG Paints: Pitt-Tech Interior /Exterior Satin DTM Industrial Enamel 90-474.
 - c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Coating S/G or Gloss B66 Series.

L. Aluminum Substrates (Where Indicated):

1. First Coat:
 - a. Benjamin Moore & Co.; Super Spec HP Acrylic Metal Primer P04.
 - b. PPG Paints: Pitt-Tech Interior/Exterior Industrial DTM Primer/Finish Enamel 90-712.
 - c. Sherwin-Williams Company (The); DTM Acrylic Primer Finish B66W1.
2. Second and Third Coats (Eggshell):
 - a. Benjamin Moore & Co.; Ultra Spec 500 Interior Eggshell N538.
 - b. PPG Paints: Speedhide Interior Latex Eggshell 6-411.
 - c. Sherwin-Williams Company (The); Pro Industrial DTM B66 Series.

M. Wood Substrates:

1. First Coat:
 - a. Benjamin Moore & Co.; Fresh Start Multi-Purpose Latex Primer N023.
 - b. PPG Paints: Seal Grip Latex Primer/Finish 17-951.
 - c. Sherwin-Williams Company (The); Premium Interior Wall and Wood Primer B28W8111.
2. Second and Third Coats (Semi-Gloss):
 - a. Benjamin Moore & Co.; N539 Ultra Spec 500 Interior Semi-Gloss.
 - b. PPG Paints: Speedhide Interior Semi-Gloss Latex 6-500.
 - c. Sherwin-Williams Company (The); Pro Mar 200 Zero VOC Interior Latex S/G B31 Series.

N. Wood Substrates (Deep Tone Accent Colors):

1. First Coat: Use tinted primer.
 - a. Benjamin Moore & Co.; Fresh Start Multi-Purpose Latex Primer N023.
 - b. PPG Paints: Seal Grip Latex Primer/Finish 17-951.
 - c. Sherwin-Williams Company (The); Premium Interior Wall and Wood Primer B28W8111.
2. Second and Third Coats (Semi-Gloss): Additional coats may be required.
 - a. Benjamin Moore & Co.; Ultra Spec 500 Interior Semi-Gloss N539.
 - b. PPG Paints: Speedhide Interior Semi-Gloss Latex 6-500.
 - c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Coating S/G or Gloss B66 Series.

O. Plaster Substrates:

1. First Coat:
 - a. Benjamin Moore & Co.; Super Spec Int/Ext 100% Acrylic Masonry Sealer N066.
 - b. PPG Paints: Perma-Crete Alkali-Resistant Primer 4-603.
 - c. Sherwin-Williams Company (The); Loxon Concrete & Masonry Primer LX02W0050.
2. Second and Third Coats (Eggshell):
 - a. Benjamin Moore & Co.; N538 Ultra Spec 500 Interior Eggshell.
 - b. PPG Paints: Speedhide Zero Interior Latex Eggshell 6-4310.
 - c. Sherwin-Williams Company (The); Pro Mar 200 0 VOC Interior Latex Egg Shell (B20-2600 Series.)

P. Plaster Substrates (Deep Tone Accent Colors):

1. First Coat: Use tinted primer.
 - a. Benjamin Moore & Co.; Fresh Start Primer 023.
 - b. PPG Paints: Perma-Crete Alkali-Resistant Primer 4-603.
 - c. Sherwin-Williams Company (The); Loxon Concrete & Masonry Primer LX02W0050.
2. Second and Third Coats (Eggshell): Additional coats may be required.
 - a. Benjamin Moore & Co.; N538 Ultra Spec 500 Interior Eggshell.
 - b. PPG Paints: Speedhide Zero Interior Latex Eggshell 6-4310.
 - c. Sherwin-Williams Company (The); Pro Mar 200 0 VOC Interior Latex Egg Shell (B20-2600 Series.)

Q. Gypsum Board Substrates:

1. First Coat:

- a. Benjamin Moore & Co.; Fresh Start Multi-Purpose Latex N023.
- b. PPG Paints: Speedhide Interior Latex Primer/Sealer 6-2
- c. Sherwin-Williams Company (The); Pro Mar 200 Wall Primer (B28W02600.)

2. Second and Third Coats (Eggshell):

- a. Benjamin Moore & Co.; N538 Ultra Spec 500 Interior Eggshell.
- b. PPG Paints: Speedhide Interior Latex Eggshell 6-411.
- c. Sherwin-Williams Company (The); Pro Mar 200 Zero VOC Interior Latex Low Sheen (B20-Series.)

R. Gypsum Board Substrates (Deep Tone Accent Colors):

1. First Coat: Use tinted primer.

- a. Benjamin Moore & Co.; Fresh Start Multi-Purpose Latex N023.
- b. PPG Paints: Speedhide Interior Latex Primer/Sealer 6-2.
- c. Sherwin-Williams Company (The); Pro Mar 200 Wall Primer (B28W8200).

2. Second and Third Coats (Eggshell): Additional coats may be required.

- a. Benjamin Moore & Co.; N538 Ultra Spec 500 Interior Eggshell.
- b. PPG Paints: Speedhide Interior Latex Eggshell 6-411.
- c. Sherwin-Williams Company (The); Pro Mar 200 0 VOC Interior Latex Low Sheen (B24-2600 Series).

S. Insulation-Covering Substrates:

1. First Coat:

- a. Benjamin Moore & Co.; Fresh Start Multi-Purpose Latex N023.
- b. PPG Paints: Speedhide Interior Latex Primer/Sealer 6-2.
- c. Sherwin-Williams Company (The); Prep Rite 200 Interior Latex Primer B28W200.

2. Second and Third Coats (Semi-Gloss):

- a. Benjamin Moore & Co.; N539 Ultra Spec 500 Interior Semi-Gloss.
- b. PPG Paints: Speedhide Zero Interior Semi-Gloss Latex 6-4510.
- c. Sherwin-Williams Company (The); Pro Mar 200 Zero VOC Semi-Gloss B31-2600.

T. Insulation-Covering Substrates (Deep Tone Accent Colors):

1. First Coat: Use tinted primer.
 - a. Benjamin Moore & Co.; Fresh Start Multi-Purpose Latex N023.
 - b. PPG Paints: Speedhide Interior Latex Primer/Sealer 6-2.
 - c. Sherwin-Williams Company (The); Pro Mar 200 Zero VOC Semi-Gloss Primer (B28-2600).

2. Second and Third Coats (Semi-Gloss): Additional coats may be required.
 - a. Benjamin Moore & Co.; N539 Ultra Spec 500 Interior Semi-Gloss.
 - b. PPG Paints: Speedhide Zero Interior Semi-Gloss Latex 6-4510.
 - c. Sherwin-Williams Company (The); Pro Mar 200 Zero VOC Interior Latex S/G (B31-2600 Series.)

END OF SECTION 09 91 00

SECTION 09 96 00 – HIGH-PERFORMANCE COATINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes surface preparation and application of high-performance coating systems, for the following:
 - 1. Exterior applications.
 - 2. General use interior applications.
 - 3. General use interior pool/bus wash applications.
 - a. Painting systems indicated on Drawings and in Schedules applied to new and existing exterior and interior surfaces and related components including but not limited to items such as hollow metal doors frames, doors, access doors, trim pieces, window sash, trim and previously painted cabinet heater/fin tube enclosures, etc., unless otherwise indicated, including appropriate surface preparation for all new or existing surfaces to be painted including previously painted surfaces and surfaces with existing wall coverings

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product for substrates indicated. Include preparation requirements and application instructions. Include all paint products under one cover sheet.
 - 1. Exterior steel.
 - 2. Exterior galvanized-metal.
 - 3. Exterior wood.
 - 4. Exterior aluminum.
 - 5. Exterior urethane.
 - 6. Exterior CMU.
 - 7. Interior concrete, vertical surfaces.
 - 8. Interior concrete floors in janitor closets.
 - 9. Interior concrete floors in mechanical rooms.

10. Interior CMU, smooth finish.
11. Interior CMU, rough industrial finish.
12. Interior steel, galvanized-metal, and non-ferrous metal.
13. Interior wood with previously applied coatings.
14. Interior gypsum board and plaster (non-wet environments).
15. Interior concrete, vertical surfaces: pool/bus garage environments.
16. Interior CMU, smooth finish (new unpainted): pool/bus garage environments.
17. Interior CMU, rough industrial finish: pool/bus garage environments.
18. Interior steel, galvanized-metal, and non-ferrous metal: pool/bus garage environments.
19. Interior steel piping: pool/bus garage environments.
20. Interior cast iron: pool/bus garage environments.
21. Interior galvanized-metal: pool/bus garage environments.
22. Interior aluminum ductwork (not anodized or otherwise coated), basic alloy type 3003: pool/bus garage environments.
23. Interior aluminum ductwork, grilles, registers and diffusers (not anodized or otherwise coated) type 316 or greater: pool/bus garage environments.
24. Interior copper piping: pool/bus garage environments.
25. Interior gypsum board and plaster (wet environments): pool/bus garage environments.
26. Interior moisture-resistant gypsum board (wet environments): pool/bus garage environments.
27. Interior fiberglass ductwork: pool/bus garage environments.
28. Interior PVC coated ductwork: pool/bus garage environments.
29. Interior pipe insulation (kraft paper bonded to aluminum): pool/bus garage environments.
30. Safety Paint.

B. Samples for Verification and Initial Selection: For each type of coating system and in each color and gloss of topcoat indicated.

1. Submit Samples on rigid backing, 8 inches square.
2. Step coats on Samples to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

C. Product List: For each product indicated, include the following:

1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
2. VOC content.

D. Coatings Maintenance Manual:

1. Upon conclusion of the project, the contractor or paint manufacture/supplier shall furnish a coatings maintenance manual such as Sherwin Williams "Custodian Project Color and Product Information" report. Manual shall include an Area Summary with finish schedule, Area Detail designating where each product/color/finish was used, product data pages, Material Safety Data Sheets, care and cleaning instructions. Touch up procedures and color samples of each color and finish used. All information contained in a self-bound 3 ring hole punched catalog.

1.5 QUALITY ASSURANCE

- A. Qualification Data: For applicator.

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. Coatings: 10 percent, but not less than 1 gal. of each material and color applied.

1.7 QUALITY ASSURANCE

- A. Applicator Qualifications: A firm or individual, experienced in applying high performance coatings specified in this Section, who has successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; familiar with special requirements indicated; and with sufficient trained staff to apply manufacturer's products according to specified requirements.
- B. Mockups: Apply mockups of each coating system indicated to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Architect will select one surface to represent surfaces and conditions for application of each coating system specified in Part 3.
 - a. Wall and Ceiling Surfaces: Provide samples of at least 100 sq. ft.
 - b. Other Items: Architect will designate items or areas required.
 - 2. 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 Architect at no added cost to Owner.
 - 3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect 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.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store materials 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.

1.9 FIELD CONDITIONS

- A. Apply coatings only when temperature of surfaces to be coated and surrounding air temperatures are between 50 and 95 deg F.
- B. Do not apply coatings when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.
- C. Do not apply exterior coatings in snow, rain, fog, or mist.
- D. Lighting: Do not install high-performance coatings until a lighting level of not less than 80 fc is provided on the surfaces to receive coating.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following:
 - 1. Benjamin Moore & Co.
 - 2. Sherwin-Williams Company (The).
 - 3. Tnemec Inc.
- B. Submittals containing manufactures other than stated above, will require a product by product comparison for each type of paint. All Comparable equals are to be matched with corresponding Sherwin Williams's specified products.
- C. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include but are not limited to products listed in Part 3 articles for the application indicated.

2.2 HIGH PERFORMANCE COATINGS, GENERAL

- A. Material Compatibility:
 - 1. Provide materials for use within each coating 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 coating system, provide products recommended in writing by manufacturers of topcoat for use in coating system and on substrate indicated.
 - 3. Provide products of same manufacturer for each coat in a coating system.
- B. VOC Compliance: Provide exterior coating products complying with New York requirements for Volatile Organic Compound (VOC) and Ozone Transport Commission (OTC) regulations, January 2005.
- C. Colors: As selected by Architect from manufacturer's full range.

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.
 - 1. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - a. Concrete: 12 percent.
 - b. Masonry (Clay and CMU): 12 percent.
 - c. Wood: 15 percent.
 - d. Gypsum Board: 12 percent.
 - e. Plaster: 8 percent.
- B. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
- C. Plaster Substrates: Verify that plaster is fully cured.
- D. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- E. Proceed with coating application only after unsatisfactory conditions have been corrected.
 - 1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. 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.
- B. Clean substrates of substances that could impair bond of coatings, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and re-prime substrate with compatible primers or apply tie coat as required to produce coating systems indicated.
- C. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
- D. Concrete Floors: Prepare by diamond grinding, whip blasting, or mechanical shot blasting, as recommended by coating manufacturer.

- E. Masonry Substrates: Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed 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 but not less than the following:
 - 1. SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
 - 2. SSPC-SP 10/NACE No. 2, "Near-White Blast Cleaning."
- G. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and 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 using bio-degradable detergent. Then abrasive blast with fine abrasive to produce clean, lightly etched surfaces that promote adhesion of subsequently applied coatings.
- I. Aluminum Substrates: Remove loose surface oxidation by scarification.
- J. Wood Substrates:
 - 1. Scrape and clean knots. Before applying primer apply coat of knot sealer recommended in writing by topcoat manufacturer for coating system indicated.
 - 2. Sand surfaces that will be exposed to view and dust off.
 - 3. Prime edges, ends, faces, undersides, and back sides of wood.
 - 4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.
- K. Galvanized Metal/Galvanized Deck- Factory Primed Surface: Coordinate with approved paint manufacturer on compatibility of paint finish coats to factory prime surface.
- L. After removing all surface contamination, the surface should be scuff sanded or scrubbed with an abrasive cleaner to dull the surface for best adhesion.

3.3 APPLICATION

- A. Apply high-performance coatings according to manufacturer's written instructions.
 - 1. Use applicators and techniques suited for coating and substrate indicated.
 - 2. Coat surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, coat surfaces behind permanently fixed equipment or furniture with prime coat only.
 - 3. Coat back sides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
 - 4. Do not apply coatings over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of the same material are to be applied. Tint undercoats to match color of finish coat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance.
- D. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Produce sharp glass lines and color breaks.

3.4 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner will engage the services of a qualified testing and inspecting agency to inspect and test coatings for dry film thickness.
 - 1. Contractor shall touch up and restore coated surfaces damaged by testing.
 - 2. If test results show that dry film thickness of applied coating does not comply with coating manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with coating 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 coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from coating operation. Correct damage by cleaning, repairing, replacing, and recoating, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced coated surfaces.

3.6 EXTERIOR HIGH-PERFORMANCE COATING SCHEDULE

- A. Steel Substrates:
 - 1. First Coat:
 - a. Benjamin Moore & Co. (No Zinc primers) suggest Corotech V160 Epoxy Mastic Coating @4.6-7.2 DFT.
 - b. Sherwin-Williams Company (The); Corothane 1 Gal-Va-Pac Zinc Primer B65G00010 at 3.0-4.0 mils DFT.
 - c. Tnemec Inc.; Series 90-97 Tneme-Zinc at 2.5 to 3.5 mils DFT.

2. Second Coat:
 - a. Benjamin Moore & Co. Corotech V160 Epoxy Mastic Coating @4.6-7.2 DFT
 - b. Sherwin-Williams Company (The); Macropoxy 646 B58 series 7.0-5.0 mils DFT
 - c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline at 3.0 to 5.0 mils DFT.
3. Third Coat:
 - a. Benjamin Moore & Co. Corotech V500 Acrylic Aliphatic Urethane Coating Gloss or V510 Acrylic Aliphatic Urethane Coating Semi-Gloss at 3.2-4.6 mils DFT
 - b. Sherwin-Williams Company (The); Hi Solids Polyurethane B65 series 4.5-3.0 mils DFT
 - c. Tnemec Inc.; Series 1074 or 1095 Endura-Shield II at 2.0 to 5.0 mils DFT.

B. Galvanized-Metal Substrates:

1. First Coat:
 - a. Benjamin Moore & Co. Corotech V160 Epoxy Mastic Coating @4.6-7.2 DFT
 - b. Sherwin-Williams Company (The); Macropoxy 646 B58 series 7.0-5.0 mils DFT
 - c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline at 3.0 to 5.0 mils DFT.
2. Second Coat:
 - a. Benjamin Moore & Co. Corotech V500 Acrylic Aliphatic Urethane Coating Gloss or V510 Acrylic Aliphatic Urethane Coating Semi-Gloss at 3.2-4.6 DFT
 - b. Sherwin-Williams Company (The); Hi Solids Polyurethane B65 series 4.5-3.0 mils DFT
 - c. Tnemec Inc.; Series 1074 or 1095 Endura-Shield II at 2.0 to 5.0 mils DFT.

C. Wood Substrates:

1. First Coat:
 - a. Benjamin Moore & Co. Insul-X Aqua Lock Plus Primer
 - b. Sherwin-Williams Company (The); Exterior Oil-Based Wood Primer Y24W8020 at 2.3 mils DFT
 - c. Tnemec Inc.; Series V10-99W Primer
2. Second and Third Coat:
 - a. Benjamin Moore & Co. Corotech V331 Acrylic DTM Enamel Semi-Gloss at 2-2.2 DFT (third coat of same)
 - b. Sherwin-Williams Company (The); Sher-Cryl HPA High Performance Acrylic Semi-Gloss B66W350 at 2.5-4.0 mils DFT.
 - c. Tnemec Inc.; Series 1029 Enduratone

D. Aluminum Substrates:

1. First Coat:

- a. Benjamin Moore & Co. Corotech V160 Epoxy Mastic Coating @4.6-7.2 DFT
- b. Sherwin-Williams Company (The); Macropoxy 646 Fast Cure Epoxy B58W610 at 5.0-10.0 mils DFT
- c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline at 4.0-6.0 mils DFT

2. Second Coat:

- a. Benjamin Moore & Co. Corotech V500 Acrylic Aliphatic Urethane Coating Gloss or V510 Acrylic Aliphatic Urethane Coating Semi-Gloss at 3.2-4.6 DFT
- b. Sherwin-Williams Company (The); Hi Solids Polyurethane B65 series 4.5-3.0 mils DFT
- c. Tnemec Inc.; Series 1074 or 1095 Endura-Shield II at 2.0-5.0 mils DFT

E. Urethane Substrates:

1. First Coat:

- a. Benjamin Moore & Co. Insl-X Stix XSA 110 Bonding Primer
- b. Sherwin-Williams Company (The); Multi-Purpose Interior/Exterior Latex Primer/Sealer B51-450 Series at 1.4 mils DFT.
- c. Tnemec Inc.; Series 151-1051 Elasto-Grip F.C. at 1.0 to 2.0 mils DFT.

2. Second and Third Coat:

- a. Benjamin Moore & Co. Corotech V331 Acrylic DTM Enamel Semi-Gloss at 2-2.2 DFT (third coat of same)
- b. Sherwin-Williams Company (The); Sher-Cryl HPA High Performance Acrylic Semi-Gloss B66W350 at 2.5-4.0 mils DFT.
- c. Tnemec Inc.; Series 1029 Enduratone.

F. CMU:

1. First Coat:

- a. Benjamin Moore & Co. Ultra-Spec Masonry 100% Acrylic Masonry 608 Flat @9. DFT
- b. Sherwin-Williams Company (The) Con-Flex XL High Build Coating A05W451 at 6.0-7.5 mils DFT.
- c. Tnemec Inc.; Series 156 Color Enviro-Crete @4.0-8.0 mils DFT (use Tnemec-Tape for cracks larger than 1/64" wide)

2. Second Coat:

- a. Benjamin Moore & Co. Super Spec Masonry 100% Acrylic Elastomeric 360.
- b. Sherwin-Williams Company (The); Con-Flex XL High Build Coating A05W451 at 6.0-7.5 mils DFT.
- c. Tnemec Inc.; Series 156 Color Enviro-Crete @4.0-8.0 mils DFT

3.7 INTERIOR HIGH-PERFORMANCE COATING SCHEDULE: GENERAL USE

A. Concrete Substrates, Vertical Surfaces:

1. First Coat:

- a. Benjamin Moore & Co. Ultra-Spec Masonry Interior/Exterior Acrylic High Build Primer, 609 1.0 DFT.
- b. Sherwin-Williams Company (The); Loxon Concrete and Masonry Primer A24W8300 at 3.2-2.1 mils DFT.
- c. Tnemec Inc.; Series 1029 Enduratone at 2.5 to 3.0 mils DFT.

2. Second and Third Coats:

- a. Benjamin Moore & Co. Corotech V331 Acrylic DTM Enamel Semi-Gloss at 2-2.2 DFT (third coat of same)
- b. Sherwin-Williams Company (The); Sher-Cryl HPA High Performance Acrylic Semi-Gloss B66W350 at 2.5-5.0 mils DFT.
- c. Tnemec Inc.; Series 1029 Enduratone at 2.5 to 3.0 mils DFT each.

B. Concrete Floors in Janitor Closets:

1. First Coat:

- a. Benjamin Moore & Co. Corotech V155 100% Solid Epoxy Primer @1.0-1.5 DFT
- b. Sherwin-Williams Company (The); Macropoxy 646-100 Fast Cure Epoxy B58-620 Series at 5.0-10.0 mils DFT.
- c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline at 3.0 to 5.0 mils DFT.

2. Second Coat:

- a. Benjamin Moore & Co. Corotech V400 fast Dry Polyamide Epoxy @3.6-4.0 DFT
- b. Sherwin-Williams Company (The); Macropoxy 646-100 Fast Cure Epoxy B58-620 Series at 5.0-10.0 mils DFT.
- c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline at 3.0 to 5.0 mils DFT.

C. Concrete Floors in Mechanical Rooms:

1. First Coat:

- a. Benjamin Moore & Co. Corotech V155 100% Solid Epoxy Primer @1.0-1.5 DFT
- b. Sherwin-Williams Company (The); Macropoxy 646-100 Fast Cure Epoxy B58-620 Series at 5.0-10.0 mils DFT.
- c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline at 3.0 to 5.0 mils DFT.

2. Second Coat:

- a. Benjamin Moore & Co. Corotech V400 Fast Dry Polyamide Epoxy @3.0-4.0 DFT
- b. Sherwin-Williams Company (The); Macropoxy 646-100 Fast Cure Epoxy B58-620 Series at 5.0-10.0 mils DFT.
- c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline at 3.0 to 5.0 mils DFT.

3. Third Coat:
 - a. Benjamin Moore & Co. Corotech V400 Fast Dry Polyamide Epoxy @3.0-4.0 DFT
 - b. Sherwin-Williams Company (The); Macropoxy 646-100 Fast Cure Epoxy B58-620 Series at 5.0-10.0 mils DFT.
 - c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline at 3.0 to 5.0 mils DFT.

D. CMU Substrates, Smooth Finish:

1. First Coat: Apply at 60 to 80 sq. ft. per gallon.
 - a. Benjamin Moore & Co. Corotech V114 Block Filler at 8-16 DFT
 - b. Sherwin-Williams Company (The); Cement-Plex 875 Acrylic Block Filler B42W00200/B42V201 at 13-25 mils DFT.
 - c. Tnemec Inc.; Series 130-6602 Envirofill.
2. Second Coat:
 - a. Benjamin Moore & Co. Corotech V330 Acrylic DTM Enamel Gloss
 - b. Sherwin-Williams Company (The); Pro Industrial Multi-Surface Acrylic Gloss B66W501 at 1.5-2.0 mils DFT
 - c. Tnemec Inc.; Series 1028 Enduratone at 2.5 to 3.0 mils DFT.
3. Third Coat:
 - a. Benjamin Moore & Co. Corotech V330 Acrylic DTM Enamel Gloss
 - b. Sherwin-Williams Company (The); Pro Industrial Multi-Surface Acrylic Gloss B66W501 at 1.5-2.0 mils DFT
 - c. Tnemec Inc.; Series 1028 Enduratone at 2.5 to 3.0 mils DFT.

E. CMU Substrates, Rough Industrial Finish:

1. First Coat: Apply at 60 to 80 sq. ft. per gallon.
 - a. Benjamin Moore & Co. Corotech V114 Block Filler at 8-16 DFT
 - b. Sherwin-Williams Company (The); Heavy Duty Block Filler B42W46 at 10.0-18.0 mils DFT
 - c. Tnemec Inc.; Series 130-6602 Envirofill.
2. Second Coat:
 - a. Benjamin Moore & Co. Corotech V331 Acrylic DTM Enamel at 1.9-2.1 DFT
 - b. Sherwin-Williams Company (The); Sher-Cryl HPA High Performance Acrylic Semi-Gloss B66-W350 at 2.5-5.0 mils DFT.
 - c. Tnemec Inc.; Series 1029 Enduratone at 2.5 to 3.0 mils DFT.
3. Third Coat:
 - a. Benjamin Moore & Co. Corotech V331 Acrylic DTM Enamel at 1.9-2.1 DFT

- b. Sherwin-Williams Company (The); Sher-Cryl HPA High Performance Acrylic Semi-Gloss B66-W350 at 2.5-5.0 mils DFT.
- c. Tnemec Inc.; Series 1029 Enduratone at 2.5 to 3.0 mils DFT.

F. Galvanized-Metal, and Non-Ferrous Metal Substrates:

- 1. First Coat: 2.0 to 3.0 mils DFT.
 - a. Benjamin Moore & Co. Corotech V160-1 Epoxy Mastic Coating @4.6-7.2 DFT
 - b. Sherwin-Williams Company (The); Macropoxy 646 B58 series 7.0-5.0 mils DFT
 - c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline.
- 2. Second and Third Coats: 2.0 to 3.0 mils DFT each.
 - a. Benjamin Moore & Co. Corotech V500 Acrylic Aliphatic Urethane Coating Gloss
 - b. Sherwin-Williams Company (The); Macropoxy 646 B58 series 7.0-5.0 mils DFT
 - c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline.
- 3. Third Coats: 2.0 to 3.0 mils DFT each.
 - a. Benjamin Moore & Co. Corotech V500 Acrylic Aliphatic Urethane Coating Gloss
 - b. Sherwin-Williams Company (The); Not Required.
 - c. Tnemec Inc.; Series 1081 Endura-Shield.

G. Steel, Structural Steel:

- 1. First Coat: 2.0 to 3.0 mils DFT.
 - a. Benjamin Moore & Co. Corotech V160-1 Epoxy Mastic Coating @4.6-7.2 DFT
 - b. Sherwin-Williams Company (The); High Solids Alkyd Metal Primer B50WZ0003 series 3.0-5.0 mils DFT
 - c. Tnemec Inc.; Series V10.
- 2. Second and Third Coats: 2.0 to 3.0 mils DFT each.
 - a. Benjamin Moore & Co. Corotech V500 Acrylic Aliphatic Urethane Coating Gloss
 - b. Sherwin-Williams Company (The); Pro Industrial Acrolon 100 B65 Series, 4.0-1.8 mils DFT
 - c. Tnemec Inc.; Series V10.
- 3. Third Coats: 2.0 to 3.0 mils DFT each.
 - a. Benjamin Moore & Co. Corotech V500 Acrylic Aliphatic Urethane Coating Gloss
 - b. Sherwin-Williams Company (The); Pro Industrial Acrolon 100 B65 Series, 4.0-1.8 mils DFT
 - c. Tnemec Inc.; Series 1081 Endura-Shield.

H. Wood Substrates with Previously Applied Coatings:

- 1. First Coat:
 - a. Benjamin Moore & Co. Ultra Spec 500 Latex Primer Sealer, N534 @1.8 DFT

- b. Sherwin-Williams Company (The); Sher-Cryl HPA High Performance Acrylic Semi-Gloss B66W350 at 2.5-5.0 mils DFT.
 - c. Tnemec Inc.; Series 1029 Enduratone at 300 sq. ft. per gallon.
2. Second Coat:
- a. Benjamin Moore & Co. Corotech V331 Acrylic DTM Enamel at 1.9-2.1 DFT
 - b. Sherwin-Williams Company (The); Sher-Cryl HPA High Performance Acrylic Semi-Gloss B66W350 at 2.5-5.0 mils DFT.
 - c. Tnemec Inc.; Series 1029 Enduratone at 300 sq. ft. per gallon.
- I. Gypsum Board and Plaster Substrates (Non-Wet Environments):
1. First Coat: 1.0 to 2.0 mils DFT.
- a. Benjamin Moore & Co. Coronado Superkote 5000 Latex Primer Sealer
 - b. Sherwin-Williams Company (The); ProMar 200 Zero VOC Interior Latex Primer B28W2600 at 1.0 mils DFT.
 - c. Tnemec Inc.; Series 51 PVA Sealer
2. Second and Third Coat:
- a. Benjamin Moore & Co. Corotech V331 Acrylic DTM Enamel at 1.9-2.1DFT
 - b. Sherwin-Williams Company (The); Sher-Cryl HPA High Performance Acrylic Semi-Gloss B66W350 at 2.5-5.0 mils DFT.
 - c. Tnemec Inc.; Series 1029 Enduratone at 2.5 to 3.0 mils DFT.

3.8 INTERIOR HIGH-PERFORMANCE COATING SCHEDULE: POOL/BUS WASH ENVIRONMENTS

A. Concrete Substrates, Vertical Surfaces:

1. First Coat:
- a. Benjamin Moore & Co. Corotech Acrylic Block Filler @8-16 DFT
 - b. Sherwin-Williams Company (The); Pro Industrial Waterbased Catalyzed Epoxy B73 series 5.0-2.0 mils DFT
 - c. Tnemec Inc.; Series 27WB Typoxy, 3.0-5.0 mils DFT
2. Second Coat:
- a. Benjamin Moore & Co. Corotech V341 Pre-Catalyze Waterborne Epoxy Semi-Gloss @1.2-2.0 DFT
 - b. Sherwin-Williams Company (The); Pro Industrial Waterbased Catalyzed Epoxy B73 series 5.0-2.0 mils DFT
 - c. Tnemec Inc.; Series 27WB Typoxy, 3.0-5.0 mils DFT

B. CMU Substrates, Smooth Finish (New Unpainted):

1. First Coat: Apply at 60 to 80 sq. ft. per gallon.
 - a. Benjamin Moore & Co. Corotech V114 Block Filler at 8-16 DFT
 - b. Sherwin-Williams Company (The); Cement-Plex 875 Acrylic Block Filler B42W00200/B42V201 at 13.0-25 mils DFT
 - c. Tnemec Inc.; Series 130-6602 Envirofill.
2. Second Coat:
 - a. Benjamin Moore & Co. Corotech 341 Pre-Catalyzed Epoxy @1.7-2.0 DFT
 - b. Sherwin-Williams Company (The); Pro Industrial Waterbased Catalyzed Epoxy B73 series 5.0-2.0 mils DFT
 - c. Tnemec Inc.; Series 27WB Typoxy at 3.0 to 5.0 mils DFT.
3. Third Coat:
 - a. Benjamin Moore & Co. Corotech 341 Pre-Catalyzed Epoxy @1.7-2.0 DFT
 - b. Sherwin-Williams Company (The); Pro Industrial Waterbased Catalyzed Epoxy B73 series 5.0-2.0 mils DFT
 - c. Tnemec Inc.; Series 1081 Endura-shield WB at 2.0 to 3.0 mils DFT.
4. Provide pinhole-free surface.

C. CMU Substrates, Rough Industrial Finish:

1. First Coat: Apply at 60 to 80 sq. ft. per gallon.
 - a. Benjamin Moore & Co. Corotech V114 Block Filler at 8-16 DFT
 - b. Sherwin-Williams Company (The); Heavy Duty Block Filler B42W46 at 10.0-18-0 mils DFT
 - c. Tnemec Inc.; Series 130-6602 Envirofill.
2. Second Coats:
 - a. Benjamin Moore & Co. Corotech 341 Pre-Catalyzed Epoxy @1.7-2.0 DFT
 - b. Sherwin-Williams Company (The); Pro Industrial Waterbased Catalyzed Epoxy B73 series 5.0-2.0 mils DFT
 - c. Tnemec Inc.; Series 27WB Typoxy at 3.0 to 5.0 mils DFT each.
3. Third Coats:
 - a. Benjamin Moore & Co. Corotech 341 Pre-Catalyzed Epoxy @1.7-2.0 DFT
 - b. Sherwin-Williams Company (The); Pro Industrial Waterbased Catalyzed Epoxy B73 series 5.0-2.0 mils DFT
 - c. Tnemec Inc.; Series 1081 Endura-shield at 2.0 to 3.0 mils DFT.

D. Ground Face CMU, Smooth Finish (Clear Seal):

1. First and Second Coats:

- a. Benjamin Moore & Co. Corotech V540 Waterborne Aliphatic Urethane Coating at 2.1-2.8 DFT
- b. Sherwin-Williams Company (The); H & C Concrete Sealer Wet Look Waterbased 111.92 at 100-200 sq. ft. per gallon coat.
- c. Tnemec Inc.; Chemprobe/Phylon WB at 100 to 125 sq. ft. per gallon each coat.

E. Steel, Galvanized-Metal, and Non-Ferrous Metal Substrates:

1. First Coat: 2.0 to 3.0 mils DFT.

- a. Benjamin Moore & Co. Corotech V110 Acrylic Metal Primer
- b. Sherwin-Williams Company (The); Macropoxy 646 B58 series 7.0-5.0 mils DFT
- c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline.

2. Second Coats: 3.0 mils DFT each.

- a. Benjamin Moore & Co. Corotech V510 Aliphatic Acrylic Urethane Semi-Gloss @2.2-3.1 DFT
- b. Sherwin-Williams Company (The); Macropoxy 646 B58 series 7.0-5.0 mils DFT
- c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline.

3. Third Coats: 3.0 mils DFT each.

- a. Benjamin Moore & Co. Corotech V510 Aliphatic Acrylic Urethane Semi-Gloss @2.2-3.1 DFT
- b. Sherwin-Williams Company (The); Waterbased Acrolon 100 high Gloss Urethane B65W721 at 2.0-4.0 DFT.
- c. Tnemec Inc.; Series 1081 Endura-shield WB at 2.0 to 3.0 mils DFT.

F. Steel Piping:

1. First Coat: 2.0 to 3.0 mils DFT.

- a. Benjamin Moore & Co. Corotech V160-1 Epoxy Mastic Coating @4.6-7.2 DFT
- b. Sherwin-Williams Company (The); Macropoxy 646 B58 series 7.0-5.0 mils DFT
- c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline.

2. Second Coat: 2.0 to 3.0 mils DFT.

- a. Benjamin Moore & Co. Corotech V510 Aliphatic Acrylic Urethane Semi-Gloss @2.2-3.1 DFT
- b. Sherwin-Williams Company (The); Macropoxy 646 B58 series 7.0-5.0 mils DFT
- c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline.

G. Cast Iron:

1. First Coat:

- a. Benjamin Moore & Co. Corotech V160-1 Epoxy Mastic Coating @4.6-7.2 DFT
- b. Sherwin-Williams Company (The); Macropoxy 646 B58 series 7.0-5.0 mils DFT
- c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline at 3.0 to 5.0 mils DFT.

2. Second Coat:

- a. Benjamin Moore & Co. Corotech V510 Aliphatic Acrylic Urethane Semi-Gloss @2.2-3.1 DFT
- b. Sherwin-Williams Company (The); Macropoxy 646 B58 series 7.0-5.0 mils DFT
- c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline at 3.0 to 5.0 mils DFT.

H. Galvanized-Metal Substrates:

1. First Coat: 2.0 to 3.0 mils DFT.

- a. Benjamin Moore & Co. Corotech V110 Acrylic Metal Primer
- b. Sherwin-Williams Company (The); Macropoxy 646 B58 series 7.0-5.0 mils DFT
- c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline.

2. Second: 3.0 mils DFT each.

- a. Benjamin Moore & Co. Corotech V510 Aliphatic Acrylic Urethane Semi-Gloss @2.2-3.1 DFT
- b. Sherwin-Williams Company (The); Macropoxy 646 B58 series 7.0-5.0 mils DFT
- c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline.

3. Third Coats: 3.0 mils DFT each.

- a. Benjamin Moore & Co. Corotech V510 Aliphatic Acrylic Urethane Semi-Gloss @2.2-3.1 DFT
- b. Sherwin-Williams Company (The); Waterbased Acrolon 100 high Gloss Urethane B65W721 at 2.0-4.0 mils DFT.
- c. Tnemec Inc.; Series 1081 Endura-shield WB at 2.0 to 3.0 mils DFT.

I. Aluminum Ductwork (Not Anodized or Otherwise Coated) Substrates, Basic Alloy Type 3003:

1. First Coat:

- a. Benjamin Moore & Co. Corotech V110 Acrylic Metal Primer
- b. Sherwin-Williams Company (The); Macropoxy 646 Fast Cure Epoxy B58-600 Series at 5.0-10.0 mils DFT.
- c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline.

2. Second Coat:
 - a. Benjamin Moore & Co. Corotech V400 Fast Dry Polyamide Epoxy @3.0-4.0 DFT
 - b. Sherwin-Williams Company (The); Macropoxy 646 Fast Cure Epoxy B58-600 Series at 5.0-10.0 mils DFT.
 - c. Tnemec Inc.; Series 1081 Endura-shield WB at 2.0 to 3.0 mils DFT.
- J. Aluminum Ductwork, Grilles, Registers and Diffusers (Not Anodized or Otherwise Coated) Substrates, Type 316 or Greater:
1. First Coat:
 - a. Benjamin Moore & Co. Corotech V110 Acrylic Metal Primer
 - b. Sherwin-Williams Company (The); Macropoxy 646 Fast Cure Epoxy B58-600 Series at 5.0-10.0 mils DFT.
 - c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline at 2.0 to 3.0 mils DFT.
 2. Second Coat:
 - a. Benjamin Moore & Co. Corotech V400 fast Dry Polyamide Epoxy @3.0-4.0 DFT
 - b. Sherwin-Williams Company (The); Macropoxy 646 Fast Cure Epoxy B58-600 Series at 5.0-10.0 mils DFT.
 - c. Tnemec Inc.; Series 1081 Endura-shield WB at 2.0 to 3.0 mils DFT.
- K. Copper Piping:
1. First Coat:
 - a. Benjamin Moore & Co. Corotech V175 Waterborne Bonding Primer
 - b. Sherwin-Williams Company (The); Macropoxy 646 Fast Cure Epoxy B58-600 Series at 5.0-10.0 mils DFT.
 - c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline at 2.0 to 3.0 mils DFT.
 2. Second Coat: 2.0 to 3.0 mils DFT.
 - a. Benjamin Moore & Co. Corotech V400 Fast Dry Polyamide Epoxy @3.0-4.0 DFT
 - b. Sherwin-Williams Company (The); Macropoxy 646 Fast Cure Epoxy B58-600 Series at 5.0-10.0 mils DFT.
 - c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline.
- L. Gypsum Board and Plaster Substrates (Wet Environments):
1. First Coat: 1.0 to 2.0 mils DFT.
 - a. Benjamin Moore & Co. Ultra-Spec 500 Latex Primer Sealer N534 @1.8 DFT
 - b. Sherwin-Williams Company (The); Premium Wall and Wood Interior Latex Primer B28W8111 at 1.8 mils DFT.
 - c. Tnemec Inc.; Series 151-1051 Elasto-Grip F.C. at 0.7 to 1.5 mils DFT.

2. Second Coat:
 - a. Benjamin Moore & Co. Corotech V341 Pre-Catalyzed Waterborne Epoxy Semi-Gloss @1.7-2.0 DFT
 - b. Sherwin-Williams Company (The); Pro Industrial Waterbased Catalyzed Epoxy B73 series 5.0-2.0 mils DFT
 - c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline at 3.0 to 5.0 mils DFT.
3. Third Coat:
 - a. Benjamin Moore & Co. Corotech V341 Pre-Catalyzed Waterborne Epoxy Semi-Gloss @1.7-2.0 DFT
 - b. Sherwin-Williams Company (The); Pro Industrial Waterbased Catalyzed Epoxy B73 series 5.0-2.0 mils DFT
 - c. Tnemec Inc.; Series 1081 Endura-shield WB at 2.0 to 3.0 mils DFT.

M. Moisture-Resistant Gypsum Board Substrates (Wet Environments):

1. First Coat:
 - a. Benjamin Moore & Co. Ultra Spec 500 Latex Primer Sealer N534 @ 1.8 DFT
 - b. Sherwin-Williams Company (The); Premium Wall and Wood Interior Latex Primer B28W8111 at 1.8 mils DFT.
 - c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline at 2.0 to 3.0 mils DFT.
2. Second Coat:
 - a. Benjamin Moore & Co. Corotech V341 Pre-Catalyzed Waterborne Epoxy Semi-Gloss @1.7-2.0 DFT
 - b. Sherwin-Williams Company (The); Pro Industrial Waterbased Catalyzed Epoxy B73 series 5.0-2.0 mils DFT
 - c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline at 2.0 to 3.0 mils DFT.
3. Third Coat:
 - a. Benjamin Moore & Co. Corotech V341 Pre-Catalyzed Waterborne Epoxy Semi-Gloss @1.7-2.0 DFT
 - b. Sherwin-Williams Company (The); Pro Industrial Waterbased Catalyzed Epoxy B73 series 5.0-2.0 mils DFT
 - c. Tnemec Inc.; Series 1081 Endura-shield WB at 2.0 to 3.0 mils DFT.

N. Fiberglass Ductwork:

1. First Coat: 2.0 to 3.0 mils DFT.
 - a. Benjamin Moore & Co. Insl-X STIX SSXA-110
 - b. Sherwin-Williams Company (The); Multi-Purpose Interior/Exterior Latex Primer/sealer B51-450 Series at 1.4 mils DFT.
 - c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline.

2. Second Coat and Third Coats: 2.0 to 3.0 mils DFT.
 - a. Benjamin Moore & Co. Corotech V341 Pre-Catalyzed Waterborne Epoxy Semi-Gloss @1.7-2.0 DFT
 - b. Sherwin-Williams Company (The); Pro Industrial Waterbased Catalyzed Epoxy B73 series 5.0-2.0 mils DFT
 - c. Tnemec Inc.; Series 1081 Endura-shield WB at 2.0 to 3.0 mils DFT.

O. PVC Coated Ductwork:

1. First Coat: 2.0 to 3.0 mils DFT.
 - a. Benjamin Moore & Co. Insul-X STIX SSXA-110
 - b. Sherwin-Williams Company (The); Extreme Bond Primer B51 Series at 3.1 mils wet, 9 dry DFT.
 - c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline.
2. Second and Third Coat: 2.0 to 3.0 mils DFT.
 - a. Benjamin Moore & Co. Corotech V341 Pre-Catalyzed Waterborne Epoxy Semi-Gloss @1.7-2.0 DFT
 - b. Sherwin-Williams Company (The); Pro Industrial Waterbased Catalyzed Epoxy B73 series 5.0-2.0 mils DFT
 - c. Tnemec Inc.; Series 1081 Endura-shield WB at 2.0 to 3.0 mils DFT.

P. Pipe Insulation (Kraft Paper Bonded to Aluminum):

1. First Coat:
 - a. Benjamin Moore & Co. Corotech V331 Acrylic DTM Enamel at 2.-2.2 DFT
 - b. Sherwin-Williams Company (The); Sher-Cryl HPA High Performance Acrylic Semi-Gloss B66W350 at 2.5-5.0 mils DFT.
 - c. Tnemec Inc.; Series 1029 Enduratone at 2.0 to 3.0 mils DFT.
2. Second Coat:
 - a. Benjamin Moore & Co. Corotech V331 Acrylic DTM Enamel at 2.-2.2 DFT
 - b. Sherwin-Williams Company (The); Sher-Cryl HPA High Performance Acrylic Semi-Gloss B66W350 at 2.5-5.0 mils DFT.
 - c. Tnemec Inc.; Series 1029 Enduratone at 2.0 to 3.0 mils DFT.

3.9 INTERIOR AND EXTERIOR HIGH-PERFORMANCE COATING SCHEDULE:

A. Interiors/Exterior Gas Piping: color to be "Safety yellow"

1. First Coat:
 - a. Benjamin Moore & Co.; Corotech Acrylic Enamel -Gloss
 - b. Sherwin-Williams Company (The); Kem Bond Alkyd HS Primer.
 - c. Tnemec Inc.; Tnemic-Liner series 61 at 8-12 mils DFT.

2. Second Coat:

- a. Benjamin Moore & Co.; Corotech Acrylic Enamel -Gloss
- b. Sherwin-Williams Company (The); Pro Urethane Alkyd Enamel at 6-8.0 mils total DFT.
- c. Tnemec Inc.; Tnemic-Liner series 61 at 8-12 mils DFT.

END OF SECTION 09 96 00

SECTION 10 11 00 - VISUAL DISPLAY SURFACES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Glass Markerboards- magnetic.

1.3 DEFINITIONS

- A. Visual Display Board Assembly: Visual display surface that is factory fabricated into composite panel form, either with or without a perimeter frame.
- B. Visual Display Surface: Surfaces that are used to convey information visually, including surfaces of markerboards and surfacing materials that are not fabricated into composite panel form but are applied directly to walls.

1.4 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for visual display surfaces. Include rated capacities, operating characteristics and individual panel weights for sliding visual display units.
 - 1. Glass markerboards- magnetic.
- B. Shop Drawings: For visual display surfaces. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Show locations of glass markerboards.
 - 2. Include mounting accessories

- C. Samples for Verification and Initial Color Selection: For each type of visual display surface indicated, for units with factory-applied color finishes, and as follows:
 - 1. Include accessory Samples to verify color selected.
 - 2. Accessories: Full-size Sample of each type of accessory.
- D. Warranties: Sample of special warranties.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
- B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for surface-burning characteristics of fabrics.

1.7 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For visual display surfaces to include in maintenance manuals.
- B. Warranties: Executed special warranties.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of motor-operated, sliding visual display units required for this Project.
- B. Source Limitations: Obtain visual display surfaces from single source from single manufacturer.
- C. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: 25 or less.
 - 2. Smoke-Developed Index: 450 or less.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver factory-built visual display surfaces, including factory-applied trim where indicated, completely assembled in one piece without joints, where possible. If dimensions exceed maximum manufactured panel size, provide two or more pieces of equal length as acceptable to Architect. When overall dimensions require delivery in separate units, prefit components at the factory, disassemble for delivery, and make final joints at the site.
- B. Store visual display surfaces vertically with packing materials between each unit.

1.10 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install visual display surfaces until spaces are enclosed and weather tight, wet work in spaces is complete and dry, work above ceilings is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.
- B. Field Measurements: Verify actual dimensions of construction contiguous with visual display surfaces by field measurements before fabrication.
 - 1. Allow for trimming and fitting where taking field measurements before fabrication might delay the Work.

1.11 WARRANTY

- A. Special Warranty for Glass Sheets: Manufacturer's standard form in which manufacturer agrees to repair or replace sheets that fail in materials or workmanship within specified warranty period.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Glass Sheet Marker Boards: Manufacturer's Glass sheet marker boards with stainless steel standoff mounting hardware.
 - 1. Manufacturers: For convenience specifications and details are based on Clarus Depth Glass Board Units, by Clarus, Fort Worth TX. available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Or Approved Equal.
 - 2. ¼” tempered safety writing glass, PPG Starphire low-iron glass.
 - 3. Non-staining writing surface.
 - 4. Compatible with any marker.
 - 5. “Opti-Clear polished and eased corners.
 - 6. Minimum 150 standard colors – colors to be selected by architect.
 - 7. Sizes- as shown on drawings.
 - 8. Magnetic finish, 26-gauge galvanized steel bonded to glass.
 - 9. Stainless steel standoff hardware and anchors.
 - 10. Box tray marker/eraser – magnetic, 11 colors.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, surface conditions of wall, and other conditions affecting performance of the Work.
- B. Examine walls and partitions for proper preparation and backing for visual display surfaces.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions for surface preparation.
- B. Clean substrates of substances that could impair the performance of and affect the smooth, finished surfaces of visual display boards, including dirt, mold, and mildew.
- C. Prepare surfaces to achieve a smooth, dry, clean surface free of flaking, unsound coatings, cracks, defects, projections, depressions, and substances that will impair bond between visual display surfaces and wall surfaces.
 - 1. Prime wall surfaces indicated to receive direct-applied, visual display tack wall panels and as recommended in writing by primer/sealer manufacturer and wall covering manufacturer.
- D. Prepare recesses for sliding visual display units as required by type and size of unit.

3.3 INSTALLATION, GENERAL

- A. General: Install visual display surfaces in locations and at mounting heights indicated on Drawings. Keep perimeter lines straight, level, and plumb. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for complete installation.

3.4 INSTALLATION OF FACTORY-FABRICATED VISUAL DISPLAY BOARDS AND ASSEMBLIES

- A. Visual Display Boards: Attach mounting standoffs to wall surfaces and to visual display boards.

3.5 CLEANING AND PROTECTION

- A. Clean visual display surfaces according to manufacturer's written instructions. Attach one cleaning label to visual display surface in each room.
- B. Cover and protect visual display surfaces after installation and cleaning.

END OF SECTION 10 11 00

SECTION 10 14 00 - SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Room identification sign system.
 - 2. Identification of buildings utilizing Truss Type Construction.
 - 3. Signage accessories.
 - 4. Signage Schedule.

1.3 DEFINITIONS

- A. Accessible: In accordance with the accessibility standard.

1.4 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Product Data: Submit manufacturer's technical data and installation instructions for each type of sign required, including construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of sign.
- C. Shop Drawings: Submit shop drawings for fabrication and erection of interior signs, including plans, elevations, and large-scale sections of typical members and other components. Show mounting methods, mounting heights, layout, spacing, reinforcement, accessories, and installation details. Shop drawings are to include but not limited to:
 - 1. Message list for each sign.
 - 2. Large-scale details of wording, lettering artwork and Braille layout.
 - 3. Complete color list – both standard and custom colors.
 - 4. Photocopies of Tetra Tech documentation not acceptable.
 - 5. Fasteners and anchors.
 - 6. Signage Schedule.

7. Adhesives.
8. Two-face tape.

D. Samples for Verification and Initial Color Selection: For each type of sign assembly, exposed component, and exposed finish.

1. Include representative Samples of available typestyles and graphic symbols.
2. Panel Signs: Full-size Sample.
3. Field-Applied, Vinyl-Character Signs: Full-size Sample of characters on glass.

E. Sign Schedule: Use same designations specified or indicated on Drawings or in a sign schedule.

F. Sample Warranty: For special warranty.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For signs to include in maintenance manuals.

B. Warranty: Executed special warranty.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1. Qualifications

- a. Manufacturer: Obtain each sign type and all associated accessories through one source from single manufacturer.
- b. Installer: Workers to be approved by signage manufacturer and supply list of recently completed installations.

2. Regulatory Requirements

- a. ADA Compliance: Comply with the Americans with Disabilities Act (ADA), and with code provisions as adopted by authorities having jurisdiction.

1.9 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 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 U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities, ICC A117.1, and building code in effect for Project, for signs.
- B. Fire Rating: Provide sign material with Class C fire rating.

2.2 SIGNS

- A. Basis-of-Design Product: For convenience detail and specifications have been based on "Embossed" by ASI Signage Systems, Grand Island, New York. Other manufactures offering comparable product by one of the following:
 - 1. Best Sign Systems Inc.

PART 3 - SIGN SYSTEM

3.1 ROOM IDENTIFICATION SIGN SYSTEM

- A. Materials: Metal – Embossed aluminum.
 - 1. Sign Face: Encapsulated poly-carbonate layer chemically bonded to 1/16" one piece aluminum substrate with painted edges.
 - 2. Tactile Graphics and Text: Integral to face.
 - 3. Finish: Selected by Architect from manufacturer's full range of standard and custom non-glare finishes.
 - 4. Contrast: Selected by Architect from dark characters on light background or light characters on dark background.
 - 5. Similar to "Emboss" by ASI Sign Systems
- B. Interior Signage Types: New York: Not all types may be applicable for project. Refer to Signage Schedule for specific text and quantities:
 - 1. Type 5: Room Name/Number Sign: 6"x6" sign.
 - a. Text: All room numbers printed in minimum 1" high sans serif lettering and two lines, where needed. All room names printed in minimum 5/8" high lettering.

2. Type 11: Identification of Buildings Utilizing Truss Type Construction Sign: 6"x6" sign.
 - a. Graphics: 6 inch outside diameter 1/4-inch-thick reflective red circle.
 - b. Text: Located inside circle with reflective white background, 2-inch minimum height and 1/2-inch stroke. Reflective red Roman Alphanumeric designation of construction type located above structural components of truss construction designations located below: Refer to code compliance drawings for construction type.
3. Type 11a: Identification of Buildings Utilizing Truss Type Construction Decal: 6"x6".
 - a. Graphics: as Type 11 above.
 - b. Text: as Type 11 above.
 - c. Decal to be adhesive on side as required for installation.

3.2 ACCESSORIES

- A. Adhesives: As recommended by sign manufacturer and with a VOC content 4 g/L or less for adhesives used inside the weatherproofing system and applied on-site when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- B. Two-Face Tape: Manufacturer's standard high-bond, foam-core tape, 0.045 inch thick, with adhesive on both sides.

3.3 FABRICATION

- A. Fabrication: Comply with requirements of The Americans Disabilities Act (ADA) of 1990 and dimensions and characteristic given below and in 'Interior Signage Types'.
 1. Braille Characters: Grade 2 Braille (literary Braille) consisting of 189 part words or whole word contractions, in addition to 63 Grade 1 Braille characters.
 2. Character Height (based on upper case): 5/8-inch minimum; 3 inches maximum.
 3. Tactile Characters: Raised 1/32-inch minimum thickness.
 4. Type Style: All upper case letters, without serifs or with simple serifs.
 5. Symbols: Provide border around symbol (not required to be raised) with verbal description placed directly below symbol in 1/32 inch raised and Braille characters.
 6. Color: Up to 5 colors throughout school, as selected by Architect from manufacturer's full color range.
- B. General: Provide manufacturer's standard sign assemblies according to requirements indicated.

3.4 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 4 - EXECUTION

4.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of signage work.
- 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.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

4.2 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. Install signs so they do not protrude or obstruct according to the accessibility standard.
 - 3. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
- B. Mounting Locations: Walls adjacent to latch side of door 60 inches from center of sign to finished floor, and 2 inches from edge of doorframe. Where wall space adjacent to latch side of door is not available, and at double leaf doors, place sign on nearest adjacent wall.
- 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.
 - a. Vinyl-Tape Mounting (Semi-Permanent Installations): Double sided tape to mount signs to smooth, non-porous surfaces. Not suitable for rough, or vinyl covered surfaces.
 - b. Silicone Adhesive: To be used with Vinyl Tape. Suitable for most wall surfaces, including vinyl. Provide adhesive as recommended by sign manufacturer.

- D. Field-Applied, Vinyl-Character Signs: Clean and dry substrate. Align sign characters in final position before removing release liner. Remove release liner in stages, and apply and firmly press characters into final position. Press from the middle outward to obtain good bond without blisters or fishmouths. Remove carrier film without disturbing applied vinyl film.
- E. Signs Mounted on Glass: Provide opaque sheet matching sign material and finish onto opposite side of glass to conceal back of sign.

4.3 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 Owner.

PART 5 - SIGN SCHEDULES

5.1 SIGN SCHEDULES

- A. All permanent rooms to receive room identification system containing both text and room numbers.
- B. Provide barrier-free and tactile signage at all locations required by code and as shown on the architectural drawings.
- C. Coordinate mounting heights as per CABO/ANSI A117.1 and as per manufacturer's recommendations.
- D. **All room names and numbers are subject to change, Supplier to verify with school district during construction phase, prior to submittal phase, for final room names and numbers.**
- E. All colors to be issued during construction- colors are to be selected by district/client.
- F. Provide signs as per signage schedule below, as require by code and signage drawing.

COLOR	ROOM NO.	SIGNAGE TYPE	SIGNAGE TEXT	REMARKS
			HIGH SCHOOL	
	111	5	Name by district	TYPE AT ALL DOORS
	113	5	Name by district	TYPE AT ALL DOORS
	113A	5	Name by district	
	115	5	Name by district	TYPE AT ALL DOORS
	1-C2	5	Name by district	
	143	5	Name by district	TYPE AT ALL DOORS
	142	5	Name by district	TYPE AT ALL DOORS
	143A	5	Name by district	TYPE AT ALL DOORS
	105	5	Name by district	
	106	5	Name by district	
	104	5	Name by district	
	104B	5	Name by district	
	S101	5	Name by district	
	247	5	Name by district	TYPE AT ALL DOORS
	243	5	Name by district	
	243A	5	Name by district	
	244	5	Name by district	
	244A	5	Name by district	
	242	5	Name by district	
	242A	5	Name by district	
	2-C7	5	Name by district	TYPE AT ALL DOORS
	223S1	5	Name by district	
	223S2	5	Name by district	
	223S3	5	Name by district	
	223S4	5	Name by district	
	223S5	5	Name by district	
	223S6	5	Name by district	
	223	5	Name by district	TYPE AT ALL DOORS
	223-2	5	Name by district	
	223-4	5	Name by district	
	223-3	5	Name by district	
	218	5	Name by district	
	238	5	Name by district	
	236	5	Name by district	
	234	5	Name by district	
	235	5	Name by district	
	235S	5	Name by district	
	239	5	Name by district	

MIDDLE SCHOOL			
	P-1	5	

END OF SECTION 10 14 00

SECTION 10 14 53 - TRAFFIC SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Traffic signs. Related Sections:
 - 1. Section 03 30 00 "Cast-In-Place Concrete"

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Traffic signs.
 - 2. Traffic sign posts.
- B. Shop Drawings: For traffic signage.
 - 1. Include fabrication and installation details and attachments to other work.
 - 2. Show sign mounting heights and accessories.
 - 3. Show message list, timesteps, graphic elements, and layout for each sign at least half size.
- C. Samples for Initial Selection: For each type of sign assembly, exposed component, and exposed finish.
 - 1. Include representative Samples of available timesteps and graphic symbols.
 - 2. Include color samples.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For signs to include in maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Comply with all applicable state and local requirements for traffic signs, including (but not limited to) reflectivity, foundation construction, and wind resistance.
 - 1. Comply with U.S. Department of Transportation's Manual on Uniform Traffic Control Devices (MUTCD), AASHTO M268 and NYSDOT standard specifications and regulations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Accessibility Standard:
 - 1. Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities, ICC A117.1, and building code in effect for Project for signs.
 - 2. Comply with applicable provisions in the New York State Department of State Division of Administrative Rules, Part 300 Universal Symbol of Access, Part 300.4 Accessible Wording, Part 300.5 Accessible Symbol, Part 300.6 Accessibility Graphic and Components, and building code in effect for Project for signs.

2.2 TRAFFIC SIGNS

- A. Traffic Sign: Sign of single-panel configuration; with smooth, uniform surfaces and support assembly; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:
- B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated or comparable product.
 - 1. Allstate Sign & Plaque Corporation; Aluminum Traffic & Parking Signs.
- C. Materials:
 - 1. Solid-Sheet Sign Panels: Aluminum sheet and as follows:
 - a. Thickness: 0.080 inch.
 - b. Surface-Applied Graphics: Applied vinyl film.
 - 2. Posts: Steel.
 - a. Description:
 - 1) In Pavement: Hot-dipped galvanized round steel post with vandal-proof cap.
 - 2) In Lawn: U-channel with baked enamel or powder coated.

- b. Installation Method: Direct burial in concrete.
- 3. Text and Typeface: Typeface as selected by Architect from manufacturer's full range and content as scheduled.
- 4. Reflectivity:
 - a. Traffic control, directional and guide signage: Provide high intensity prismatic reflective sheeting (Federal DOT Type III and IV Reflective).
 - b. Parking and informational signage: Provide engineer grade prismatic reflective sheeting (Federal DOT Type 1 Reflective).

2.3 MATERIALS

- A. Aluminum Sheet and Plate: ASTM B 209, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.
- B. Aluminum Extrusions: ASTM B 221, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.
- C. Steel Materials:
 - 1. U-Channel posts: Powdercoated U-channel steel.
 - a. Strength: 3 lbs. per foot
 - b. Length: 8-ft minimum
 - 2. Galvanized Steel Pipe: Group IC, SS40, round steel electric-resistance-welded pipe.
 - a. Diameter: 3.000-inches
 - b. Steel Cap for Round Post: Galvanized steel with vandal-resistant secure fit to pipe.
 - c. Length: 8-ft minimum
 - 3. Steel Tubing: ASTM A 500, Grade B.
 - 4. Bolts for Steel Framing: ASTM A 307 or ASTM A 325 as necessary for design loads and connection details.
 - 5. For steel exposed to view on completion, provide materials having flat, smooth surfaces without blemishes. Do not use materials whose surfaces exhibit pitting, seam marks, roller marks, rolled trade names, or roughness.
- D. Concrete: Comply with requirements in Section 03 30 00 "Cast-in-Place Concrete for normal-weight, air-entrained, concrete with a minimum 28-day compressive strength of 3,000 psi.

2.4 ACCESSORIES

- A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signage, noncorrosive and compatible with each material joined, and complying with the following:
 - 1. Furnish nonferrous-metal, stainless-steel, or hot-dip galvanized devices unless otherwise indicated.

2.5 FABRICATION

- A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.
- B. Sign Message Panels: Construct sign-panel surfaces to be smooth and to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch measured diagonally from corner to corner.
 - 1. Increase panel thickness or reinforce with backing materials as needed to produce surfaces without distortion, buckles, warp, or other surface deformations.
- C. Post Fabrication: Fabricate posts designed to withstand wind pressure indicated for Project location and of lengths required for installation method indicated for each sign.
 - 1. Steel Posts: Fabricate from steel tubing unless otherwise indicated. Include post caps, reinforcement where required for loading conditions, and related accessories required for complete installation.
 - 2. Direct Burial: Fabricate posts 36 inches longer than height of sign to permit direct burial or embedment in concrete-filled postholes.

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.

2.7 METALLIC-COATED STEEL FINISHES

- A. Baked-Enamel or Powder-Coat Finish: Provide factory-applied manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat to a minimum dry film thickness of 2 mils.
- B. Galvanized Finish: Type B, zinc with organic overcoat, consisting of a minimum of 0.9 oz./sq. ft. of zinc after welding, a chromate conversion coating, and a clear, verifiable polymer film.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of signage work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

- A. General: Install signs using installation methods indicated and according to manufacturer's written instructions.
 - 1. Install signs level, plumb, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
 - 2. Install signs so they do not protrude or obstruct according to accessibility standard.
 - 3. Before installation, verify that sign components are clean and free of materials or debris that would impair installation.

3.3 INSTALLING POSTS

- A. Vertical Tolerance: Set posts plumb within a tolerance of 1/16 inch in 3 feet.
- B. Direct-Burial Method:
 - 1. Excavation: Excavate posthole to dimensions indicated. Reconstruct subgrade that is not firm, undisturbed, or compacted soil, or that is damaged by freezing temperatures, frost, rain, accumulated water, or construction activities by excavating an additional 12 inches, backfilling with satisfactory soil or well-graded aggregate, and compacting to original subgrade elevation.
 - 2. Setting in Cast-in-Place Concrete: Set post in position, support to prevent movement, and place concrete in posthole as indicated.

3.4 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 Owner.

END OF SECTION 10 14 53

SECTION 10 21 23 - CUBICLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Curtain tracks and carriers.
 - 2. Cubicle curtains.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include durability, laundry temperature limits, fade resistance, applied curtain treatment, and fire-test-response characteristics for each type of curtain fabric indicated. Include data for each type of track.
 - 1. Extruded-aluminum curtain track.
 - 2. Curtain track accessories.
 - 3. Curtain carriers.
 - 4. Curtain.
- B. Shop Drawings:
 - 1. Show layout and types of cubicles, sizes of curtains, number of carriers, anchorage details, and conditions requiring accessories. Indicate dimensions taken from field measurements.
 - 2. Include details of blocking for track support.
- C. Samples: For each type of product required, prepared on Samples of size indicated below:
 - 1. Curtain Fabric: 10-inch-square swatch or larger as required to show complete pattern repeat, from dye lot used for the Work, with specified treatments applied. Mark top and face of material.
 - 2. Mesh Top: Not less than 10 inches square.

3. Curtain Track: Not less than 10 inches long.
4. Curtain Carrier: Full-size unit.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For curtains, track, and hardware to include in operation and maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials described below, before installation begins, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 1. Curtain Carriers and Track End Caps: Full-size units equal to 5 percent of amount installed for each size indicated, but no fewer than 15 units.
 2. Curtains: One full-size unit for each size indicated.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Curtains: Provide curtain fabrics with the following characteristics:
 1. Flame resistant and identical to those that have passed NFPA 701 when tested by a testing and inspecting agency acceptable to authorities having jurisdiction.
 - a. Identify fabrics with appropriate markings of a qualified testing agency.

2.2 CURTAIN SUPPORT SYSTEMS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide C/S General Cubicle; Surface Mount Track or comparable product by one of the following:
 1. Cubicle Curtain Factory, Inc.
 2. InPro Corporation.
- B. Extruded-Aluminum Curtain Track: Not less than 1-3/8 inches wide by 3/4 inch high; with 0.062-inch minimum wall thickness.
 1. Curved Track: Factory-fabricated, 12-inch-radius bends.
 2. Finish: Baked enamel, acrylic, or epoxy.
- C. Curtain Track Accessories: Fabricate splices, end caps, connectors, end stops, coupling and joining sleeves, wall flanges, brackets, ceiling clips, and other accessories from same material and with same finish as track.
 1. End Stop: Removable with carrier hook.

- D. Curtain Carriers: Two nylon rollers and nylon axle with aluminum hook.
 - 1. Chain Carrier: Virgin nylon axle and wheel combination with nickel plated brass bead chain and polished aluminum hook. Axle and wheel assembly designed for fast, free movement in track system.
 - 2. Hook Carrier: All nylon, non-metallic component using same nylon axle/wheel assembly used with Chain Carrier specified above with nylon hook.
- E. Exposed Fasteners: Stainless steel.
- F. Concealed Fasteners: Stainless steel.

2.3 CURTAINS

- A. Cubicle Curtain Fabric: Curtain manufacturer's standard, 100 percent polyester; inherently and permanently flame resistant, stain resistant, and antimicrobial.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Maharam of the following pattern or a comparable product by one of the following:
 - a. DesignTex.
 - b. ArtCom.
 - 2. Pattern: Progression 2 511477, Row 511484, Hem 511483, Posy 2 511476, Sentiment 2 511474.
 - 3. Color: As selected by Architect from manufacturer's full range.
 - 4. All fabrics must be certified by GREENGUARD Indoor Air Quality for Children and School program.
- B. Curtain Grommets: Two-piece, rolled-edge, rustproof, nickel-plated brass; spaced not more than 6 inches o.c.; machined into top hem.
- C. Mesh Top: Not less than 20-inch high mesh top of nylon mesh, ½" (13mm) holes. Sides of nylon mesh completely bound with same fabric as body of curtain. Integral webbing provided inside framing along top hem to ensure gripping strength of grommets.
- D. Beaded-Chain Curtain Drop: 6 inches long; nickel-plated steel with aluminum hook.
- E. Curtain Tieback: Nickel-plated brass chain; one at each curtain termination.

2.4 CURTAIN FABRICATION

- A. Fabricate curtains as follows:
 - 1. Width: Equal to track length from which curtain is hung plus 10 percent added fullness, but not less than 15 inches added fullness.

2. Length: Equal to floor-to-ceiling height, minus depth of track and carrier at top, and minus clearance above the finished floor as follows:
 - a. Cubicle Curtains: 12 inches.
3. Top Hem: Not less than 1 inch and not more than 1-1/2 inches wide, triple thickness, reinforced with integral web, and double lockstitched.
4. Mesh Top: Top hem of mesh not less than 1 inch and not more than 1-1/2 inches wide, triple thickness, reinforced with integral web, and double lockstitched. Double lockstitch bottom of mesh directly to 1/2-inch triple thickness, top hem of curtain fabric.
5. Bottom Hem: Not less than 1 inch and not more than 1-1/2 inches wide, double thickness and double lockstitched.
6. Side Hems: Not less than 1/2 inch and not more than 1-1/4 inches wide, with double turned edges, and single lockstitched.
7. Vertical Seams: Not less than 1/2 inch wide, double turned and double stitched.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

- A. General: Install tracks level and plumb, according to manufacturer's written instructions.
- B. For tracks up to 20 feet in length, provide track fabricated from single, continuous length.
 1. Curtain Track Mounting: Surface.
- C. Surface-Track Mounting: Fasten tracks to ceilings at intervals recommended by manufacturer. Fasten tracks to structure at each splice and tangent point of each corner. Center fasteners in track to ensure unencumbered carrier operation. Attach track to ceiling as follows:
 1. Mechanically fasten directly to finish ceiling with toggle bolts.
 2. Mechanically fasten to furring through suspended ceiling with screw and tube spacer.
- D. Track Accessories: Install splices, end caps, connectors, end stops, coupling and joining sleeves, and other accessories as required for a secure and operational installation.

- E. Curtain Carriers: Provide curtain carriers adequate for 6-inch spacing along full length of curtain plus an additional carrier.
- F. Curtains: Hang curtains on each curtain track. Secure with curtain tieback.

END OF SECTION 10 21 23

SECTION 10 28 00 - TOILET AND SHOWER ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Shower 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, GENERAL

- A. General: Submit all action submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

- A. 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.
- B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below, otherwise submit full Product Data for the following:
 - 1. Grab bar.
 - 2. Shower curtain rod.
 - 3. Shower curtain (and hooks).
 - 4. Shower seat, folding.

5. Soap shelf.
 6. Robe hook.
- C. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.
1. Identify locations using room designations indicated.
 2. Identify accessories using designations indicated.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For accessories to include in maintenance manuals.

PART 2 - PRODUCTS

2.1 SHOWER ACCESSORIES

- A. Source Limitations: Obtain shower room from single source from single manufacturer unless manufacturer does not offer product listed.
- B. Grab Bar GB:
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. American Specialties, Inc.; 3800-P Series.
 - b. Bobrick Washroom Equipment, Inc.; B-6806.99 Series.
 - c. Bradley Corporation; 812-2 Series.
 2. Mounting: Flanges with concealed fasteners.
 3. Material: Stainless steel, 0.05 inch thick.
 - a. Finish: Smooth, ASTM A480/A480M No. 4 finish (satin) on ends and slip-resistant texture in grip area.
 4. Outside Diameter: 1-1/2 inches.
 5. Configuration and Length: As indicated on Drawings.
- C. Shower Curtain Rod SCR:
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. American Specialties, Inc.; 1204.
 - b. Bobrick Washroom Equipment, Inc.; B-6047.
 - c. Bradley Corporation; 9531.

2. Description: 1-1/4-inch OD; fabricated from nominal 0.05-inch-thick stainless steel.
3. Mounting Flanges: Stainless-steel flanges designed for exposed fasteners.
4. Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin).

D. Shower Curtain (and Hooks) SC:

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. American Specialties, Inc.; 1200-V42 curtain and 1200-SHU hooks.
 - b. Bobrick Washroom Equipment, Inc.; B-204-2 curtain and B-204-1 hooks.
 - c. Bradley Corporation; 9537-42 curtain and 9536 hooks.
2. Size: Minimum 6 inches wider than opening by 72 inches high.
3. Material: Nylon-reinforced vinyl, minimum 9 oz. or 0.008-inch-thick vinyl, with integral antibacterial agent.
4. Color: White.
5. Grommets: Corrosion resistant at minimum 6 inches o.c. through top hem.
6. 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.

E. Shower Seat, Folding SSF:

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. American Specialties, Inc.; 8206.
 - b. Bobrick Washroom Equipment, Inc.; B-5181.
 - c. Bradley Corporation; 9569.
2. Configuration: L-shaped seat, designed for wheelchair access.
3. Seat: Phenolic of one-piece construction.
4. Mounting Mechanism: Stainless steel, ASTM A480/A480M No. 4 finish (satin).

F. Soap Shelf SSH:

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. American Specialties, Inc.; 147.
 - b. Bradley Corporation; 900.

2. Mounting: Surface mounted.
3. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin).

G. Robe Hook RH:

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. American Specialties, Inc.; 7345-S.
 - b. Bobrick Washroom Equipment, Inc.; B-76727.
 - c. Bradley Corporation; 9124.
2. Description: Double-prong unit.
3. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin).

2.2 MATERIALS

- A. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of accessories.
 1. Proceed with installation only after unsatisfactory conditions have been corrected.
- B. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
- B. Grab Bars: Install to withstand a downward load of at least 250 lbf, when tested according to ASTM F 446.

3.3 ADJUSTING AND CLEANING

- A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.
- B. Remove temporary labels and protective coatings.
- C. Clean and polish exposed surfaces according to manufacturer's written instructions.

END OF SECTION 10 28 00

SECTION 10 44 13 - FIRE PROTECTION CABINETS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General 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.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section and by Division 10 Section "Fire Extinguishers" concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Show door hardware, cabinet type, trim style, and panel style. Include roughing-in dimensions and details showing mounting method and relationships of box and trim to surrounding construction. Include accessories.
 - 1. Non-rated fire protection cabinets.
 - 2. Rated fire protection cabinets.
- B. Product Schedule: For fire-protection cabinets. Indicate whether recessed or semirecessed. Coordinate final fire-protection cabinet schedule with fire-extinguisher schedule to ensure proper fit and function.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For fire-protection cabinets to include in maintenance manuals.

1.6 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 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.

2.3 NON-RATED FIRE-PROTECTION CABINET

- A. Cabinet Type: Suitable for fire extinguisher.
- B. Cabinet Construction: Nonrated.
- C. Cabinet Tub Material: Cold-rolled steel sheet.
- 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).
 - 2. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:
 - a. Croker, a division of Fire-End & Croker Corporation; 1620-SS.
 - b. JL Industries, Inc., a division of the Activar Construction Products Group, Inc.; Cosmopolitan 2035.
 - c. Larsen's Manufacturing Company; Architectural Series SS2712-R.
- E. Semirecessed Cabinet: One-piece combination trim and perimeter door frame overlapping surrounding wall surface, with exposed trim face and wall return at outer edge (backbend).
 - 1. Rolled-Edge Trim: 2-1/2-inch backbend depth.
 - 2. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:
 - a. Croker, a division of Fire-End & Croker Corporation; 1622-SS.
 - b. JL Industries, Inc., a division of the Activar Construction Products Group, Inc.; Cosmopolitan 2037.
 - c. Larsen's Manufacturing Company; Architectural Series SS2712-RL.
- F. Door and Frame Material: Stainless steel sheet.

- G. Door Style: Fully glazed panel with frame.
- H. Door Glazing: Tempered float glass (clear).
- 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 projecting door pull and friction latch.
 - 2. Provide continuous hinge, of same material and finish as trim, permitting door to open 180 degrees.
- J. Accessories:
 - 1. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as directed by Architect.
 - a. Identify fire extinguisher in fire-protection cabinet with the words "FIRE EXTINGUISHER." Lettering color and orientation as directed by Architect.
 - 2. Alarm: Alarm that actuates when fire extinguisher is removed from cabinet and that is powered by batteries.
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide Safety Technology International, Inc.; Mini Theft Stopper, Model STI-6255, or comparable product.
- K. Materials:
 - 1. Cold-Rolled Steel: ASTM A1008/A1008M, Commercial Steel (CS), Type B.
 - a. Finish: Baked enamel, TGIC polyester powder coat, HAA polyester powder coat, epoxy powder coat, or polyester/epoxy hybrid 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:
 - 1) Interior: White.
 - 2. Stainless Steel: ASTM A240/A240M or ASTM A666, Type 304.
 - a. Finish: ASTM A480/A480M No. 4 directional satin finish.
 - 3. Tempered Float Glass: ASTM C1048, Kind FT, Condition A, Type I, Quality q3, 3 mm thick, Class 1 (clear).
- L. Placement: Provide where indicated.

2.4 RATED FIRE-PROTECTION CABINET

- A. Cabinet Type: Suitable for fire extinguisher.
- B. Cabinet Construction: For one and two-hour rated walls.
- C. Cabinet Tub Material: Cold-rolled steel sheet.
- 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).
 - 2. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:
 - a. Croker, a division of Fire-End & Croker Corporation; FR-1620-SS.
 - b. JL Industries, Inc., a division of the Activar Construction Products Group, Inc.; Cosmopolitan 2035 Fire-FX2.
 - c. Larsen's Manufacturing Company; Architectural Series Flame-Shield FS SS2712-R.
- E. Semirecessed Cabinet: One-piece combination trim and perimeter door frame overlapping surrounding wall surface, with exposed trim face and wall return at outer edge (backbend).
 - 1. Rolled-Edge Trim: 2-1/2-inch backbend depth.
 - 2. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:
 - a. Croker, a division of Fire-End & Croker Corporation; FR-1622-SS.
 - b. JL Industries, Inc., a division of the Activar Construction Products Group, Inc.; Cosmopolitan 2037 Fire-FX2.
 - c. Larsen's Manufacturing Company; Architectural Series Flame-Shield FS SS2712-RL
- F. Door and Frame Material: Stainless steel sheet.
- G. Door Style: Fully glazed panel with frame.
- H. Door Glazing: Tempered float glass (clear).
- 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 projecting door pull and friction latch.
 - 2. Provide continuous hinge, of same material and finish as trim, permitting door to open 180 degrees.

J. Accessories:

1. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as directed by Architect.
 - a. Identify fire extinguisher in fire-protection cabinet with the words "FIRE EXTINGUISHER." Lettering color and orientation as directed by Architect.
2. Alarm: Alarm that actuates when fire extinguisher is removed from cabinet and that is powered by batteries.
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide Safety Technology International, Inc.; Mini Theft Stopper, Model STI-6255, or comparable product.

K. Materials:

1. Cold-Rolled Steel: ASTM A1008/A1008M, Commercial Steel (CS), Type B.
 - a. Finish: Baked enamel, TGIC polyester powder coat, HAA polyester powder coat, epoxy powder coat, or polyester/epoxy hybrid 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:
 - 1) Interior: White.
2. Stainless Steel: ASTM A240/A240M or ASTM A666, Type 304.
 - a. Finish: ASTM A480/A480M No. 4 directional satin finish.
3. Tempered Float Glass: ASTM C1048, Kind FT, Condition A, Type I, Quality q3, 3 mm thick, Class 1 (clear).

L. Placement: Provide where indicated.

2.5 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.

- 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. 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.

2.6 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.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine walls and partitions for suitable framing depth and blocking where recessed and semirecessed cabinets will be installed.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Prepare recesses for recessed and semirecessed 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: 40 inches above finished floor to top of cabinet rough opening aligned with masonry coursing.
- B. Fire-Protection Cabinets: Fasten cabinets to structure, square and plumb.
 - 1. Fasten alarm to inside back surface of fire protection cabinets, located to allow fire extinguisher to rest securely on bottom of cabinet.

2. Unless otherwise indicated, provide recessed fire-protection cabinets. If wall thickness is inadequate for recessed cabinets, provide semirecessed fire-protection cabinets.

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.
- 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 10 44 13

SECTION 10 44 16 - FIRE EXTINGUISHERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes portable, hand-carried fire extinguishers and mounting brackets for fire extinguishers.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section and by Division 10 Section "Fire Protection Cabinets" concurrently.

1.4 ACTION SUBMITTALS

- A. 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.
 - 1. Mounting brackets.
- B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the "**As-Specified Verification Form**" (attached to Division 01 Section "Submittal Procedures") for each item listed below, otherwise submit full Product Data for the following:
 - 1. Multipurpose dry-chemical type in steel container (ABC).
 - 2. Identification.
- C. Product Schedule: For fire extinguishers. Coordinate final fire-extinguisher schedule with fire-protection cabinet schedule to ensure proper fit and function.
- D. Warranty: Sample of special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For fire extinguishers to include in maintenance manuals.
- B. Warranty: Executed special warranty.

1.6 COORDINATION

- A. Coordinate type and capacity of fire extinguishers with fire-protection cabinets to ensure fit and function.

1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Faulty operation of valves or release levers.
 - 2. Warranty Period: Minimum of five years from date of Substantial Completion.

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, and capacity for each fire-protection cabinet and mounting bracket indicated.
 - 1. Source Limitations: Obtain fire extinguishers and fire-protection cabinets from single source from single manufacturer.
 - 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.
- B. Multipurpose Dry-Chemical Type in Steel Container (ABC): UL-rated 4-A:80-B:C, 10-lb nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:
 - a. Croker, a division of Fire-End & Croker Corporation; 4010.
 - b. JL Industries, Inc., a division of the Activar Construction Products Group, Inc.; Cosmic 10E.
 - c. Larsen's Manufacturing Company; MP10.

2. Placement: In fire extinguisher cabinet or on mounting bracket, as indicated on Drawings.
 - a. Provide in locations indicated and in compliance with requirements of authorities having jurisdiction.

2.3 MOUNTING BRACKETS

- A. Mounting Brackets: Manufacturer's standard steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.

2.4 IDENTIFICATION

- A. Identification: Projecting sign complying with authorities having jurisdiction for size and location. Locate as indicated by Architect.
 1. Identify fire extinguishers and fire extinguisher cabinets with graphic fire extinguisher image applied to projecting mounting surface.
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide Compliance Signs, Inc.; Red 3D Triangle-Mount (Graphic Only) Fire Extinguisher Sign NHE-13844Tri, or comparable product.

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.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

- A. General: Install fire extinguishers and mounting brackets in locations indicated and in compliance with requirements of authorities having jurisdiction.
 1. Mounting Brackets: Top of fire extinguisher to be at 40 inches above finished floor.
- B. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

- C. Identification: Fasten projecting signs on wall centered above each fire extinguisher and fire extinguisher cabinet, aligning top of sign with top of adjacent door frame, unless otherwise indicated.

END OF SECTION 10 44 16

SECTION 10 51 13 - METAL LOCKERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Welded athletic lockers.
 - 2. Locker benches.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 - 1. Locker benches.
- B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below, otherwise submit full Product Data for the following:
 - 1. Welded athletic lockers.
- C. Shop Drawings: For metal lockers.
 - 1. Include plans, elevations, sections, and attachment details.
 - 2. Show locker trim and accessories.
 - 3. Include locker identification system and numbering sequence.
- D. Samples: Manufacturer's color charts showing the full range of colors available.
- E. Product Schedule: For lockers. Use same designations indicated on Drawings.
- F. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For adjusting, correcting, and replacing locker doors and latching mechanisms to include in maintenance manuals.
- B. Executed Warranty: For special warranty.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver metal lockers until spaces to receive them are clean, dry, and ready for their installation.

1.7 COORDINATION

- A. Coordinate sizes and locations of bases for metal lockers.
- B. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of work specified in other Sections to ensure that metal lockers can be supported and installed as indicated.

1.8 WARRANTY

- A. Special Warranty: Manufacturer agrees to correct or replace components of metal lockers that fail in materials or workmanship, excluding finish, within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures.
 - b. Faulty operation of latches and other door hardware.
 - 2. Damage from deliberate destruction and vandalism is excluded.
 - 3. Warranty Period for Welded Metal Lockers: Lifetime.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain metal lockers and accessories from single source from single locker manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Accessibility Standard: For lockers indicated to be accessible, comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design", ICC A117.1, and building Code in effect for Project.

2.3 WELDED ATHLETIC LOCKERS

- 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. Multipoint Latching Type:
 - a. DeBourgh Manufacturing Company; Core Athletic Lockers.
 - b. Penco Products, Inc.; Welded Gen2.
- B. Locker Configurations and Sizes:
1. Tiers: Single.
 2. Wardrobe Lockers:
 - a. Height: 72 inches.
 - b. Width: 15 and 18 inches, as indicated on Drawings.
 - c. Depth: 15 inches.
- C. Perforated Doors: One piece; fabricated from 0.075-inch (14 gage) nominal-thickness steel sheet with manufacturer's standard diamond perforations; formed into channel shape with double bend at vertical edges and with right-angle single bend at horizontal edges.
1. Reinforcement: Manufacturer's standard reinforcing angles, channels, or stiffeners; welded to inner face of doors.
- D. Body: Assembled by welding body components together. Fabricate from unperforated steel sheet with thicknesses as follows:
1. Tops and Bottoms: 0.060-inch (16 gage) nominal thickness, with single bend at edges.
 2. Backs: Manufacturer's standard thickness, but not less than 0.048-inch (18 gage) nominal thickness.
 3. Shelves: 0.060-inch (16 gage) nominal thickness, with double bend at front and single bend at sides and back.
- E. Perforated Sides: Fabricated from 0.060-inch (16 gage) nominal-thickness steel sheet with manufacturer's standard diamond perforations.
- F. Frames: Channel formed; fabricated from 0.060-inch (16 gage) nominal-thickness steel sheet; lapped and factory welded at corners; with top and bottom main frames factory welded into vertical main frames. Form continuous, integral, full-height door strikes on vertical main frames.
- G. Hinges: Welded to door and attached to door frame with rivets spaced every 6 inches, or closer, that are completely concealed and tamper resistant when door is closed; fabricated to swing 180 degrees.
1. Continuous Hinges: Manufacturer's standard, steel; side or top mounted as required by locker configuration.

- H. Recessed Door Handle and Latch: Stainless-steel cup with integral door pull, recessed so locking device does not protrude beyond door face; pry and vandal resistant.
 - 1. Multipoint Latching: Finger-lift latch control designed for use with built-in combination locks, built-in cylinder locks, or padlocks; positive automatic latching and prelocking.
 - a. Latch Hooks: Equip doors 48 inches and higher with three latch hooks; fabricated from manufacturer's standard thickness, but not less than 0.120-inch (11 gage) nominal-thickness steel sheet; welded to full-height door strikes; with resilient silencer on each latch hook.
 - b. Latching Mechanism: Manufacturer's standard, rattle-free latching mechanism and moving components isolated to prevent metal-to-metal contact, and incorporating a prelocking device that allows locker door to be locked while door is open and then closed without unlocking or damaging lock or latching mechanism.
- I. Locks: Combination padlocks.
- J. Identification Plates: Manufacturer's standard, etched, embossed, or stamped aluminum plates, with numbers and letters at least 3/8 inch high.
- K. Accessible Locker Identification: Manufacturer's standard accessibility logo decal.
- L. Hooks: Manufacturer's standard ball-pointed, aluminum or steel; zinc plated.
- M. Filler Panels: Fabricated from manufacturer's standard thickness, but not less than 0.048-inch (18 gage) nominal-thickness steel sheet.
- N. Materials:
 - 1. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B, suitable for exposed applications.
- O. Finish: Powder coat.
 - 1. Color: As selected by Architect from manufacturer's full range.

2.4 LOCKS

- A. Combination Padlock: Provided by Owner.

2.5 LOCKER BENCHES

- A. Provide bench units with overall assembly height of 17-1/2 inches.
- B. Bench Tops and Backs: Manufacturer's standard one-piece units, with rounded corners and edges.

1. Size: Minimum 9-1/2 inches wide by 1-1/4 inches thick except provide 20- to 24-inch-wide tops where accessible benches are indicated. When not positioned against a wall, provide bench backs.
 2. Laminated clear hardwood with one coat of clear sealer on all surfaces and one coat of clear lacquer.
- C. Fixed-Bench Pedestals: Manufacturer's standard supports, with predrilled fastener holes for attaching bench top and anchoring to floor, complete with fasteners and anchors.
1. Basis-of-Design Product: Subject to compliance with requirements, provide List Industries Inc.; 4810 Extra Heavy-Duty Cast Iron Pedestals, or comparable product.
- D. Bench Back Supports: Manufacturer's standard supports, with predrilled fastener holes for attaching bench back and anchoring to supporting structure, complete with fasteners and anchors.

2.6 FABRICATION

- A. Fabricate metal lockers square, rigid, without warp, and with metal faces flat and free of dents or distortion. Make exposed metal edges safe to touch and free of sharp edges and burrs.
1. Form body panels, doors, shelves, and accessories from one-piece steel sheet unless otherwise indicated.
 2. Provide fasteners, filler plates, supports, clips, and closures as required for complete installation.
- B. Fabricate each metal locker with an individual door and frame; individual top, bottom, and back; and common intermediate uprights separating compartments.
- C. Equipment: Provide each locker with an identification plate and the following equipment:
1. Single-Tier Units: Shelf, one double-prong ceiling hook, and two single-prong wall hooks.
- D. Welded Construction: Factory preassemble metal lockers by welding all joints, seams, and connections; with no bolts, nuts, screws, or rivets used in assembly of main locker groups. Factory weld main locker groups into one-piece structures. Grind exposed welds smooth and flush.
- E. Accessible Lockers: Fabricate as follows:
1. Locate bottom shelf no lower than 15 inches above the floor.
 2. Where hooks, coat rods, or additional shelves are provided, locate no higher than 48 inches above the floor.
- F. Filler Panels: Fabricated in an unequal leg angle shape; finished to match lockers. Provide slip-joint filler angle formed to receive filler panel.

2.7 ACCESSORIES

- A. Fasteners: Zinc- or nickel-plated steel, slotless-type, exposed bolt heads; with self-locking nuts or lock washers for nuts on moving parts.
- B. Anchors: Material, type, and size required for secure anchorage to each substrate.
 - 1. Provide nonferrous-metal or hot-dip galvanized anchors and inserts for corrosion resistance.
 - 2. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.

2.8 STEEL FINISHES

- A. Factory finish steel surfaces and accessories except stainless-steel and chrome-plated surfaces.
- B. Powder-Coat Finish: Immediately after cleaning and pretreating, electrostatically apply manufacturer's baked-polymer, thermosetting powder finish. Comply with resin manufacturer's written instructions for application and baking.
 - 1. Minimum Dry-Film Thickness: As recommended by manufacturer but not less than 2 mils.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine walls and floors or support bases, 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.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

- A. Install lockers level, plumb, and true; shim as required, using concealed shims.
 - 1. Anchor locker runs at ends and at intervals recommended by manufacturer, but not more than 36 inches o.c. Using concealed fasteners, install anchors through backup reinforcing plates, channels, or blocking as required to prevent metal distortion.
 - 2. Anchor single rows of metal lockers to walls near top of lockers and to floor.
 - 3. Anchor back-to-back metal lockers to floor.
- B. Welded Lockers: Connect groups together with manufacturer's standard fasteners, with no exposed fasteners on face frames.

C. Equipment:

1. Attach hooks with at least two fasteners.
2. Identification Plates: Identify metal lockers with identification indicated on Drawings.
 - a. Attach plates to each locker door, near top, centered, with at least two aluminum rivets.
3. Accessible Locker Identification: Apply accessibility logo decals where indicated on Drawings.

D. Trim: Fit exposed connections of trim, fillers, and closures accurately together to form tight, hairline joints, with concealed fasteners and splice plates.

1. Attach filler panels with concealed fasteners. Locate filler panels where indicated on Drawings.

3.3 ADJUSTING

- A. Clean, lubricate, and adjust hardware. Adjust doors and latches to operate easily without binding.

3.4 PROTECTION

- A. Protect metal lockers from damage, abuse, dust, dirt, stain, or paint. Do not permit use during construction.
- B. Touch up marred finishes, or replace metal lockers that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by locker manufacturer.

END OF SECTION 10 51 13

SECTION 10 56 13 - METAL STORAGE SHELVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Open, four-post metal hanging music file storage shelving.

1.3 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design metal storage shelving, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Structural Performance for Four-Post Metal Storage Shelving: Capable of withstanding the loads indicated according to MH 28.1.

1.4 SUBMITTALS, GENERAL

- A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include rated capacities, construction details, material descriptions, dimensions of individual components and profiles, and finishes for metal storage shelving.
- B. Shop Drawings: For customized metal storage shelving. Include plans, elevations, sections, details, and attachments to other work. Include installation details of connectors, lateral bracing, and special bracing.
- C. Samples for Initial Selection: For units with factory-applied color finishes. Include similar Samples of accessories involving color selection.
- D. Delegated-Design Submittal: For metal storage shelving indicated to comply with performance requirements, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
 - 1. Design Calculations: Calculate requirements for seismic restraints.

1.6 INFORMATIONAL SUBMITTALS

- A. Seismic Qualification Certificates: For metal storage shelving, accessories, and components, from manufacturer.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For metal storage shelving to include in maintenance manuals.

1.8 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials from same production run that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Shelves: Full-size units equal to 5 percent of amount installed for each type indicated, but no fewer than five shelves.
 - 2. Shelf-to-Post Connectors: Full-size units equal to 5 percent of amount installed for each type indicated, but no fewer than 10 connectors.
 - 3. Shelf-Label Holders: Full-size units equal to 5 percent of amount installed for each type indicated, but no fewer than 10 holders.

1.9 QUALITY ASSURANCE

- A. Source Limitations: Obtain metal storage shelving from single source from single manufacturer.

1.10 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install metal storage shelving until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

1.11 COORDINATION

- A. Coordinate sizes and locations of blocking and backing required for installation of metal storage shelving attached to wall and ceiling assemblies.
- B. Coordinate locations and installation of metal storage shelving that may interfere with ceiling systems including lighting, HVAC, speakers, sprinklers, access panels, electrical switches or outlets, and floor drains.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- B. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B.
- C. Steel Tubing: ASTM A 513, Type 2.
- D. Floor Anchors: Galvanized-steel, post-installed expansion anchors, power-actuated fasteners, or threaded concrete screws. Provide number per unit recommended by manufacturer unless additional anchors are indicated in calculations.
- E. Wall Anchors: Manufacturer's standard, galvanized-steel anchors designed to secure metal storage shelving to adjacent wall. Provide one per shelving unit for each shelving unit adjacent to a wall unless additional anchors are indicated in calculations.

2.2 FOUR-POST METAL STORAGE SHELVING

- A. Open Four-Post Metal Storage Shelving: Factory-formed, field-assembled, freestanding system, designed for shelves to span between and be supported by corner posts, with shelves adjustable over the height of shelving unit. Fabricate initial shelving unit with a post at each corner. Fabricate additional shelving units as add-on units, designed to share two corner posts with initial shelving unit. Provide fixed top and bottom shelves, adjustable intermediate shelves, and accessories indicated.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide sheet music file system, by Music File Solutions Shelving or comparable product by one of the following:
 - a. Or Approved Equal.
 - 2. Load-Carrying Capacity per Shelf: Not less than 40 lb. per lin. foot.
 - 3. Posts: Fabricated from hot-rolled steel; in manufacturer's standard shapes; with perforations at 1-inch o.c. to receive shelf-to-post connectors.
 - a. Steel Thickness, Nominal: As required for load-carrying capacity per shelf and number of shelves.
 - b. Add-On Shelf Posts: Fabricated from hot-rolled steel, manufacturer's standard shape; perforated to match main posts and of same thickness.
 - c. Post Base: Adjustable steel floor plate, drilled for floor anchors.
 - 4. Bracing: Manufacturer's standard, double diagonal cross bracing at back and ends; as required for stability, load-carrying capacity of shelves, and number of shelves.

5. Solid-Type Shelves: Fabricated from steel sheet as follows:
 - a. Steel-Sheet Thickness, Nominal: As required for load-carrying capacity per shelf.
 - b. Fabricate fronts and backs of shelves with box-formed edges, with corners lapped and welded.
6. Shelf Quantity: Six shelves per shelving unit in addition to top and bottom shelf.
7. Shelf-to-Post Connectors: Compression clips.
8. Base: Open, with exposed post legs.
9. Overall Unit Width: 36 inches (914 mm).
10. Overall Unit Depth: 12 inches (305 mm).
11. Overall Unit Height: Not less than 84 inches (2134 mm).
12. Accessories:
 - a. Shelf-Label Holders: Clear plastic, designed to clip onto front edge of shelf.
 - b. File Folders – suspended file folders are of heavy duty ph neutral kraft paper and hang on the four-post profile shelf supports- provide 25 hanging folders per 36” shelf.
 - c. File dividers
 - d. Back stops
 - e. Center stops
 - f. File dividers
 - g. Wall ties
 - h. Leveling feet
 - i. Touch-up paint
13. Finish: Baked enamel or powder coat.
 - a. Color and Gloss: As selected by Architect from manufacturer's full range.

2.3 FABRICATION

- A. Shop Fabrication: Prefabricate shelving components in shop to greatest extent possible to minimize field fabrication; temporarily preassemble shelving components where necessary to ensure that field-assembled components fit together properly. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

- B. Fabricate metal storage shelving square and rigid, with posts plumb and true and shelves flat and free of dents or distortion. Fabricate connections to form a rigid structure, free of buckling and warping.
 - 1. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges.
 - 2. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Locate joints where least conspicuous.
 - 3. Build in straps, plates, brackets, and other reinforcements as needed to support shelf loading.
 - 4. Cut, reinforce, drill, and tap metal fabrications to receive hardware, fasteners, and similar items.
- C. Form metal in maximum lengths to minimize joints. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing the Work.
- D. Form edges and corners free of sharp edges or rough areas. Fold back and crimp exposed edges of unsupported sheet metal to form a 1/2-inch- (13-mm-) wide hem on the concealed side; ease edges of metal plate to radius of approximately 1/32 inch (0.8 mm). Shear and punch metals cleanly and accurately. Remove burrs.
- E. Weld corners and seams continuously to develop strength, minimize distortion, and maintain the corrosion resistance of base metals. At exposed locations, finish welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface. Weld before finishing components to greatest extent possible. Remove weld spatter and welding oxides from exposed surfaces before finishing.

2.4 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.

2.5 STEEL FINISHES

- A. Surface Preparation: Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning" or SSPC-SP 8, "Pickling."
- 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 thickness.

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. Examine floors for suitable conditions where metal storage shelving will be installed.
- C. Examine walls to which metal storage shelving will be attached for properly located blocking, grounds, or other solid backing for attachment of support fasteners.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.
- E. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Vacuum finished floor and wet mop flooring over which metal storage shelving is to be installed.

3.3 INSTALLATION

- A. Install metal storage shelving level, plumb, square, rigid, true, and with shelves flat and free of dents or distortion. Make connections to form a rigid structure, free of buckling and warping.
 - 1. Install exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible.
 - 2. Install braces, straps, plates, brackets, and other reinforcements as needed to support shelf loading and as required for stability.
 - 3. Anchor shelving units to floor with floor anchors through floor plate. Shim floor plate to achieve level and plumb installation.
 - 4. Install seismic restraints.
 - 5. Connect side-to-side and back-to-back shelving units together.
 - 6. Install shelves in each shelving unit at spacing indicated on Drawings or, if not indicated, at equal spacing.
 - a. Four-Post Metal Storage Shelving: Install four clips, one at each post, for support of each shelf; with clips fully engaged in post perforations.
- B. Accessories:
 - 1. Install all accessories listed above per manufacturer's instructions.

3.4 ERECTION TOLERANCES

- A. Erect four-post metal storage shelving to a maximum tolerance from vertical of 1/2 inch (13 mm) in up to 10 feet (3 m) of height.

3.5 ADJUSTING

- A. Adjust metal storage shelving so that connectors and other components engage accurately and securely.
- B. Touch up marred finishes or replace metal storage shelving that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by metal storage shelving manufacturer.
- C. Replace metal storage shelving that has been damaged or has deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 10 56 13

SECTION 114000 - FOOD SERVICE EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All drawings and general provisions of the contract, including general and supplementary conditions, apply to the work of this section.

1.2 DESCRIPTION

- A. Work Included:
 - 1. The work of this section includes furnishing all labor, materials, transportation, appliances, and services necessary to complete all kitchen equipment and related work required by the drawings and/or herein specified, including, but not limited to, the following:
 - a. Furnishing, delivering, and setting in place of all food service equipment in spaces as shown and/or as hereinafter itemized.
 - b. All items of work reasonably inferred as necessary to complete the work of this section. Supply all necessary bolts, hangers, and brackets. Provide cut outs in equipment as necessary for electric, plumbing, or other utility lines required for hook up of the item.
 - c. Removal of all existing equipment to be reused from present locations to storage and installation of existing equipment in new locations after areas are ready.
 - d. Relocation of all equipment noted on drawings or in specifications. This is to be a phased project, and full cooperation and coordination must be maintained with the owner and other trades.
 - e. All existing equipment not to be reused (Including exhaust hood) shall be removed, and any items the owner does not wish to retain shall become the property of this contractor. Should the owner wish to

retain an item, then this contractor shall move the item to a storage area as designated by the owner.

B. Related Work Described Elsewhere Performed by Others:

1. Supplying and installing all necessary drain traps, steam traps, vents, shut-offs, valves, pipe fittings, and/or other materials to complete final plumbing and electrical or steam connections between the rough-in and the connection or connections on each piece of equipment.
2. Ductwork and ductwork connections from hoods unless otherwise indicated.
3. Installing all drain fittings, tailpieces, faucets, operating switches, and/or starters.

1.3 QUALITY ASSURANCE

A. Manufacturer's Qualifications:

1. Firms regularly engaged in the manufacture of food service equipment of types, capacities, and sizes required, whose products have been in satisfactory use in similar service for not less than five (5) years.

B. Installer's Qualifications:

1. Firm with at least three (3) years of successful installation experience on projects with food service equipment similar to that required for project.

C. Fabricator's Qualifications:

1. Where units require custom fabrication, provide units fabricated by a shop that is skilled with a minimum of five (5) years of experience in similar work. Fabricate all custom equipment items at same shop. Where units cannot be fully shop-fabricated, complete fabrication work at project site. Fabricator shall be subject to the approval of the food service equipment consultant.

D. Codes and Standards:

1. All food service equipment shall be provided, fabricated, and installed in compliance with the following, where such

standards have been set: NSF, AGA, UL, ASME, NEMA, NFPA, State Department of Health regulations, and other applicable State, County, and Local governing laws and ordinances.

2. Nothing in the contract documents shall be construed to conflict with any local or state laws or regulations governing the installation of any part of the work to be performed under this contract, and all requirements shall be in accordance therewith, without additional cost to the owner. Installation of equipment must comply with applicable regulations of the local health department.

1.4 SUBSTITUTIONS

- A. The materials, products, and equipment items or types shown on the Contract Drawings or listed in this Specification establish the standard of performance, quality, function, dimension, and appearance required. Products, materials, and equipment items not listed herein or on the Contract Drawings but which achieve identical or superior performance to those specified in all aspects but particularly with respect to gender, configuration, and finish are not excluded provided the established criteria described and required is met and such components are shown to be true equals to the satisfaction of the Owner, Architect, Engineer, and Food Facilities Consultant.
- B. The bidder may base his bid or proposal on the use of one or more of these items or an equivalent substitution. If substitutions are proposed, the bid must contain a list of all proposed substitutions. Also, each bidder shall list by Specification Sections, all materials, products, or equipment he proposes to offer as possible substitutions for specified items, together with all information on the product required for a complete review.
- C. No additional substitutions will be considered unless substitution is required due to a specified material, product, or equipment being removed from or made unavailable in the market place. Upon such circumstances, additional substitutions will be considered by the Architect, but only at no charge to or at a credit to the Contract amount, and at no change in completion time.
- D. A request for substitution constitutes a representation that the submitter:

1. Will coordinate installation and make changes to other work, which may be required for the work to be complete with no additional cost to the Owner or to other Contractors.
2. Waives claims for additional costs or time extension, which may subsequently become apparent.
3. Will reimburse the Owner, Architect/Engineer, and Food Facilities Consultant for review or redesign services associated with reapproval by authorities.

1.5 SUBMITTALS

A. Shop Drawings:

1. Within 45 days after award of contract, and before any kitchen equipment is delivered to the job site, submit complete shop drawings to the architect for approval. Show all conditions where equipment will interface with the work of other trades.

B. Details:

1. Rough-in drawings, showing detailed dimensions of all utility lines for all equipment, shall be furnished and drawn to a scale of not less than $\frac{1}{4}$ " to 1'-0". Rough-in drawings shall contain the following *individual* drawings:
 - a. A layout drawing showing all food service and related equipment with all items properly marked as to item number.
 - b. An individual mechanical layout drawing for each of the mechanical trades; i.e.: Electrical, Plumbing and Heating/Ventilating.
 - c. A drawing showing any required recesses in the floor for walk-ins etc.
2. Furnish shop drawings with details showing all dimensions and details of construction, installation, and related work. Shop drawings of fabricated equipment shall be drawn to a scale of not less than $\frac{3}{4}$ " to 1'-0".
3. Manufacturer's names, cuts, descriptive data, rated capacities, and other information necessary for approval of

standard manufactured articles and equipment shall be submitted to architect for written approval before ordering or fabricating. Catalog cuts shall be submitted in bound booklet form with ***each*** item (including existing and spare numbers) having its own title sheet before the catalog cut. The title sheet shall contain the item number, quantity, make, model and any and all accessories provided.

4. Submit eight (8) copies of all drawings and catalog cuts (in booklet form) to the architect's office for approval and distribution. The review of any and all drawings and catalog cuts will not relieve the contractor of any responsibility for providing the items, etc. as called for in the specifications.

C. Samples:

1. Samples shall be provided as requested by the architect.

1.6 PRODUCT DELIVERY, HANDLING, AND STORAGE

- A. Equipment shall be delivered when required and shall be safely stored on the premises and protected against damage.
- B. Deliver all equipment to the job promptly and in such time as not to delay the work of other trades. Cooperate with all other trades in the proper installation of this equipment. Set level, plumb, and true and anchor to floor, walls, or ceiling as required. Leave all equipment ready to receive final plumbing, electric, and ventilation connections, which shall be provided under respective sections.
- C. No deliveries shall be made unless this contractor's representative is on the job site to receive same and see that it is properly stored and protected. Neither the owner, construction personnel or architect will receive any equipment or be in any way responsible for same.
- D. All responsibilities shall lie with the contractor for damage incurred, loss of materials, and loss of items while in the building or during transportation. Any articles found damaged shall be immediately replaced or repaired at this contractor's expense to the satisfaction of the architect.

1.7 JOB CONDITIONS

- A. Inspect surfaces to receive work of this section. Report any unsatisfactory conditions to the architect. Proceeding with the work shall be evidence of acceptance of job conditions.
- B. Take field measurements to assure accurate fit of all food service equipment.
- C. Check electrical characteristics and water, steam, and gas pressures. Provide pressure regulating valves where required for proper operation of equipment.

1.8 GUARANTEES

- A. This contractor shall fully guarantee all work and materials for a period of one year from date of acceptance. Should any defect in work or materials, not due to ordinary use, appear in the above-mentioned time, this contractor agrees to repair or replace the same without cost to the owner, as directed, immediately upon written notice of such defect from the owner or owner's previously-identified agent. All refrigerated items shall have an additional four (4) year warranty on all compressors.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Unless otherwise called for under the individual items of equipment set forth hereinafter or shown on the details, the general construction called for under each specific material and all detail drawings shall apply to all fabricated equipment.

2.2 METALS

- A. Stainless steel shall be AISI type 304, with not less than a #4 mill finish on all exposed surfaces. All welding wire used shall be type 308L. All sheets shall be free of buckles, warps, and surface imperfections.
- B. Galvanized iron shall be 1½" x 1½" x 1/8". Where galvanized iron has been welded, all seams shall be cleaned and scale removed and finished with a prime coat of aluminum paint. All galvanize shall be 8% copper bearing alloy with an approved hot dip pure zinc galvanizing.

- C. A white metal (commercially known as nickel silver) casting is intended. Such metal to be of corrosion resistant quality and shall contain not less than 30% nickel. All castings shall be rough ground, polished, and buffed to a bright luster, free from pits, cold runs, checks, burrs, or other surface imperfections.
- D. Stainless steel pipe and tubing shall be seamless of gauge specified and of true roundness. All tubing, where exposed to view, shall be given a final grind of not less than 180 grit emery.
- E. All angles, bands, channels, or other structural shapes used for framing shall be of domestic manufacture, uniform and ductile in quality. Where such sections are specified as galvanized, they shall be galvanized by the hot dip process with all excess spelter removed, and be smooth and free from cold runs, blisters, and uncoated or scaly patches.

2.3 HARDWARE

- A. Where equipment is provided with handles, knobs, hinges, brackets, or other miscellaneous hardware, all shall be of either white metal or stainless steel of metallurgical composition previously specified.

2.4 FABRICATION

- A. Welding:
 - 1. All welding of stainless steel shall be done by the electric heliarc process. Carbon arc will not be permitted. All welding of galvanized iron shall be done by the electric fusion-metal-arc method. All welding shall be done in a thorough manner with welding rod as specified hereinbefore of stainless steel or of same composition as sheets or parts welded. Welds shall be complete welds, strong and ductile with excess metal ground off and joints finished smooth to match adjoining surfaces. Welds are to be free of mechanical imperfections such as gas holes, pits, runs, cracks, etc., and shall have same color as adjoining sheet surfaces. All joints in tops of fixtures, tables, drainboards, exposed shelving, sinks, fronts and ends of cabinets exposed to view, etc., shall be completely welded. Butt welds made with solder and finished by grinding will not be acceptable.

2. All welded joints shall be homogeneous with the sheet metal itself. Where sheet sizes necessitate a joint, such joints shall be welded. Tops of fixtures shall be fabricated in the factory with welded joints to reduce field joints to a minimum. Wherever welds occur on surfaces not finished by grinding and polishing, such welds, and the accompanying discoloration, shall be suitably coated in the factory by means of metallic base paint to prevent the possibility of progressive corrosion at such points. All field joints shall be welded, ground smooth, and polished.

B. Soldering:

1. Soldering, where required and/or permitted, shall be done with a solder consisting of no more lead than is allowable by code. Stainless steel requiring soldering shall be first thoroughly cleaned of surface oxides and shall then have applied a suitable stainless steel soldering flux. After the soldering has been completed, excess of remaining flux shall be removed and the entire soldered joint cleaned with liquid alkaline to prevent any attack of the stainless steel by soldering flux.

C. Grinding, Polishing, and Finishing:

1. All exposed welded joints shall be suitably ground flush with the adjoining material and neatly finished to harmonize therewith. Wherever material has been sunken or depressed by a welding operation, such depressions shall be suitably hammered and peened flush with the adjoining surfaces, and, if necessary, ground to eliminate low spots. All ground surfaces consistent with good workmanship. Care shall be exercised in all grinding operations to avoid excessive heating of the metal and metal discoloration. In all cases, the grain of rough grinding shall be removed by a successive finer polishing operation. The texture of the final polishing operations shall be uniform and smooth, consistent with reasonable care and good workmanship. The finish of all equipment shall be of a high grade.
2. Butt joints and contact joints, wherever they occur, shall be close fitting. Wherever brake bends occur, they shall be free of undue extrudence and shall not be flaky, scaly, or cracked in appearance, and where such brake work does mar the uniform appearance of the surface of the material, all such marks shall be removed by suitable grinding, polishing, and

finishing. Wherever sheared edges occur, they shall be free from burrs, fins, or irregular projections and shall be finished to obviate all danger of cutting or laceration when the hand is drawn over such sheared edges. Where miters or bullnosed corners occur, they shall be neatly finished with the under edge of material neatly ground to a uniform condition, and in no case are overlapping materials to be acceptable.

3. All exposed surfaces shall have a #4 ground finish, except trim, which is to be of a more highly polished satin finish. Where specified, all cabinets, doors, and shelves, whether inside or outside of cabinets, and wherever exposed are to be #4 finish. This applies to inside finish of any cabinet having doors or otherwise. An exposed surface shall be interpreted as meaning an inside surface exposed to view when a sliding or swinging door is opened. The underside of shelf need not be #4 finish but such finish shall be at least equal to #80 ground finish. The tops of tables, sinks, dishtables, where manufacturing operations and welding disturb the original #4 finish, shall be finished in a satin finish.
4. Deliver all stainless steel equipment to the job covered with a protective paper coating. Remove this coating when directed by the architect and restore any surfaces that are scratched or marred to their original finish, and to the approval of the architect.

D. Stainless Steel Tops:

1. Where specified, all tops shall be constructed of not less than 14 gauge stainless steel, with all edges rounded without burrs or excess metal. All edges shall be rolled on 180° roll 1½" in diameter on all exposed sides. Where tabletops are placed against wall, refrigerators, cabinets, etc., they shall be turned up on the back and/or sides approximately 6" and returned 2" on a 45° break, with all exposed ends closed, welded, ground, and polished. All corners shall be reinforced on the underside with 1" x 4" x 1" stainless steel channels of not less than 14 gauge stainless steel. These channels shall be spaced not more than 30" apart in any direction and shall give full perimeter as well as interior support.

E. Stainless Steel Legs:

1. All legs shall be constructed of not less than 1-5/8" OD stainless steel seamless tubing, having a wall thickness of not less than 16 gauge. Stainless steel shall be of type as hereinbefore specified. Legs shall be spaced no more than 6'-0" on center. All legs shall be polished to a uniform finish.
2. Leg mounting shall be inserted into 16 gauge stainless steel conical gussets type 483-58 as manufactured by Standard Keil. Gussets shall be welded around entire circumference continuous, sealing gusset against underbracing channel.
3. All legs shall be provided with stainless steel adjustable feet type A10-0851 as manufactured by Component Hardware, complete with A10-0010 lock ring. Legs supporting sink units shall be fitted with stainless steel flanged feet type A10-0854 with A10-0010 lock ring as manufactured by Component Hardware.
4. Leg crossbracing, where required, shall be constructed of not less than 1" OD stainless steel seamless tubing as previously specified. All crossbracing shall run horizontal and level between legs and forming a box type framing between all legs, approximately 12" above the floor. Crossbracing shall be formed to and fully welded to the legs, with all welds ground and polished. Where one side of the boxed unit bracing is omitted to provide space for carts, bins, etc., the adjacent leg shall be fully braced in the prescribed manner.

F. Undershelving:

1. Undershelving shall be constructed of not less than 16 gauge stainless steel. Each undershelf shall be the full depth of the individual unit. Front edges shall be turned down 1½" and returned ½", sides and rear to be turned up 2". Corners shall be notched at legs and welded, ground, and polished to same. Undershelves, where required, shall be provided with pipe slots of suitable size to accommodate necessary service lines. Slots shall be turned up on all sides to eliminate cutting or defacing of equipment on the job.

G. Drawers:

1. Unless otherwise noted, drawers shall be 20" x 20" x 5" die-stamped 20 gauge stainless steel having all inside

corners coved. Drawer body shall be lift-out type. Front of drawers shall be double pan 16 gauge stainless steel exterior and 20 gauge stainless steel interior. Drawer shall be suspended by ball bearing heavy-duty extension slides, Model #9190 as manufactured by Standard Keil Hardware. The drawer slides shall be attached to channel bracing under the tabletop. Drawer pulls shall be Standard Keil #SS-12100.

H. Plumbing Fixtures:

1. Faucets:

- a. Furnish faucets on sinks, steamtables, bain maries, water stations and other equipment as shown on plans, details and specifications. Furnish water saving devices where required by local codes. All faucets intended to dispense water for human consumption shall be manufactured of materials that contain no lead intentionally added to the product. Finish shall be polished stainless steel. All faucets specified to have standard lever type handle with internationally coded handle identification buttons (hot and cold) and ADA easy turn stems. All faucets shall have internal stainless steel seats and two part swivel stems. All plumbing fixtures shall be ANSI/NSF 61 sec. 9 certified, CSA Certified, California AB 1953 Compliant, Vermont S152 Compliant, and EPA Act 2005 compliant.

2. Pre Rinse Units:

- a. Shall have integral spring loaded check stems to prevent cross flow, stainless steel seats in control valve, hose equipped with three ply hydraulic type hose liner, spray valves shall be 1.15 GPM for water conservation, be fitted with backflow prevention device (where required), and furnished complete with nipples, lock nuts, washers for secure and proper installation.

3. Waste Valves:

- a. Each sink compartment shall be provided with one ball valve type waste valve. Waste valve shall have a stainless steel rotating ball, two Teflon seals, 1½" and

2" outlet treads. Unless otherwise specified all waste valves shall have overflow tubes and fittings.

4. All faucets, pre rinse units and fixture brand shall be consistent throughout project (except where specified otherwise) and shall be as manufactured by Fisher Manufacturing Company, or **equal** by T&S Brass and Bronze or Dormont.

I. Sinks:

1. Where specified, there shall be single or multiple compartment sinks of size specified or shown on drawings. All sinks to be made entirely of 14 gauge stainless steel; all lengths, widths, and depths as hereinafter specified or as shown on drawings. Backsplash shall be drilled as required to accommodate faucets as specified and shown on drawings. Sink shall be of welded, seamless construction with all joints, crevices, etc., eliminated and all traces of welding removed. Corners, both horizontal and vertical, shall be rounded to 1" radius with intersections meeting in spherical coves. All edges shall be integrally rolled on 1½" diameter to a 180° closure with front corners fully rounded on outside of roll. Both rear corners to be curved and welded into the upturned splash. Bottoms shall be scored towards outlets to permit complete drainage. Die-stamped recess shall be formed in bottom of each compartment to accommodate waste outlet. In multiple compartment sinks, partitions shall be of coved corner construction consisting of two thicknesses of 14 gauge stainless steel formed from one sheet. Top edge of partition to be rounded on ½" radius, and all corners, where partitions meet the sides, shall be coved. Where partitions occur, there shall be no beads or straps on the outside of sink. Front, bottom, and back of sink shall be constructed of one sheet of metal in order to eliminate crevices between each compartment.

J. Drainboards:

1. Where called for, drainboards shall be of same gauge and material as sink and shall be full width of sink with exposed ends bullnosed. Backs shall be provided with high backsplashes to match backsplashes of sink. The front and ends shall be turned up 3", rolled and made continuous with roll of sink. The drainboards shall be pitched to drain to sink, welded, ground, and polished smooth to make entire unit

into one piece. All welding shall be integral, and tack welding or bolted construction will not be acceptable. Support drainboards up to 36" in length by 1" diameter stainless steel tube welded to underside of drainboard and leg gusset. Support drainboards 36" and longer with legs. Cove horizontal and vertical corners with not less than $\frac{3}{4}$ " radius.

K. Dishtables:

1. Fabricate dishtables of 14 gauge stainless steel, with exposed edges formed into $1\frac{1}{2}$ " x 190° rolled rim approximately 3" high. Provide built-in pitch of $\frac{1}{4}$ " minimum. Provide 10" high rim of type as indicated in the specifications. Cove horizontal and vertical corners with not less than $\frac{3}{4}$ " radius.

L. Framing:

1. Mount tops on $1\frac{1}{2}$ " x $1\frac{1}{2}$ " x $\frac{1}{8}$ " galvanized angle iron or 4" wide x 12 gauge galvanized channels. Mount dishtables and drainboards on 4" wide x 14 gauge stainless steel channels.
2. Run framework around entire perimeter of unit, and crossbrace on 30" centers. For dishtables and drainboards, run framing from front to back at each leg location, and run additional channel lengthwise, located at center of table width and welded to leg channels. Fasten framing to underside of top surfaces with $\frac{1}{4}$ " studs welded at approximately 12" centers. Provide each stud with suitable chrome-plated lockwashers and capnuts and make stud lengths such that capnuts can be made up tight bringing top down snugly to framing.

M. Enclosed Cabinets:

1. Enclosed cabinets shall be constructed of angle iron frame as hereinbefore specified. Exposed angle shall be $1\frac{1}{2}$ " x $1\frac{1}{2}$ " x $\frac{1}{8}$ " stainless steel and concealed angle of galvanized iron. Frame construction shall provide a complete box-like welded frame with tops and fronts reinforced with angle iron on approximately 30" centers. Exterior of cabinets shall be 18 gauge stainless steel with openings, door frames, drawer openings, etc., having butt welded flush joints. Compressor compartments, refrigerated compartments, and open shelving areas shall have double pan bulkheads with full

insulation where required. Where cold pans and other inserts are installed in a cabinet base, an apron shall be provided the full depth of the insert and shall be of the same material as the body. Openings shall be formed in on all sides and reinforced where necessary.

N. Doors:

1. Sliding doors shall be constructed of 18 gauge stainless steel exterior and 20 gauge stainless steel interior, all double pan construction with all corners welded, ground, and polished. Door shall be suspended on overhead track Model #550 as manufactured by Standard Keil. Doors shall be retained at the bottom with a depressing pin Model #1906 as manufactured by Standard Keil. All doors shall be removable and fitted with recessed stainless steel pulls.
2. Hinged doors shall be of same construction as for sliding doors except they shall be mounted on full-length stainless steel continuous type hinges. Doors shall be fitted with recessed stainless steel pulls, permanent magnetic catches, and door locks where indicated. Door face shall be flush with cabinet body.

O. Shelves:

1. Cabinet shelves shall be of 16 gauge stainless steel all welded construction turned up 2" on back and ends and down on front. Bottom shelf shall be extended forward and be turned down at front flush with cabinet body. Fixed intermediate shelves shall be welded to 14 gauge stainless steel brackets, which in turn shall be welded cabinet interior in such a manner as to provide a 1" space between shelf and cabinet at back and ends. Removable shelves shall be set on full perimeter 14 gauge stainless steel channeling.

P. Sinks in Worktops:

1. Sinks incorporated into work surfaces shall be as hereinbefore specified, except rolls, inversions, and backsplashes shall be omitted and the bowl shall be completely welded integrally and flush with the work surface. Each sink shall be provided with drain and waste fitting as hereinbefore specified.

Q. Cold Pans:

1. Fabricate cold pans from 14 gauge stainless steel lining and 20 gauge stainless steel casing. Cove interior horizontal and vertical corners. Insulate sides, ends, and bottom with material thermally equal to 2" thickness of fiberglass. Sweat 1/2" diameter copper cooling coils to underside of cold pan, and seal in thermostatic material. Turn down top of counter 1" into pan. Install completely concealed 1" wide plastic breaker strip. Install 1" chrome plated drain with plug. Provide 1/2" high false bottom of 14 gauge perforated stainless steel in removable sections.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

- A. Prior to installation, verify that kitchen equipment may be installed in accordance with the manufacturer's recommendations; notify the architect in the event of a discrepancy. Do not proceed until all such discrepancies have been fully resolved unless directed to do so.

3.2 INSTALLATION

A. Procedure:

1. Move equipment into location specified and properly install all equipment per approved shop drawings and in strict accordance with the manufacturer's correct recommendations.
2. Coordinate with electrical and mechanical contractors for their final connection to services required. All final plumbing and electrical connections shall be by electrical and mechanical contractors.
3. Inspect all equipment for compliance and test by cycling equipment through various stages to verify proper operation.

3.3 TESTING AND OPERATING INSTRUCTION

- A. After completion of installation, the manufacturer's representative shall test all equipment and instruct kitchen personnel in the use

and care of all items of equipment. A representative from this contractor shall be present at time of demonstration(s).

- B. Provide two (2) sets of repair and maintenance manuals for each item of mechanically-operated equipment. All brochures shall be bound in booklet form. Also include a list of all service agencies with address and telephone numbers.

3.4 ADJUSTMENT AND CLEANING

- A. Upon completion of installation and hook-up of equipment, put each item through a complete operating cycle and verify that all equipment is properly installed and properly operating; verify that all trim is in place; adjust all components as necessary to ensure continued proper operation; remove all labels and protective paper from equipment and remove all packing materials from the job site. Thoroughly clean all equipment.

3.5 PUNCH LIST

- A. A representative of this contractor shall be present at time of final inspection(s).

PART 4 - LIST OF EQUIPMENT

4.1 ITEM 1 - HAND SINK - ONE (1) REQUIRED

- A. Hand sink shall be as manufactured by Eagle, Model #HSA-10-MG.
- B. Hand sink shall be provided with all standard equipment, plus the following:
 - 1. Single Hole Punch
 - 2. Splash Mount Gooseneck Faucet
 - 3. P-Trap
 - 4. Tail Piece
 - 5. Basket Drain
 - 6. T&S #B-504 Wall-Mounted Foot Pedal

4.2 ITEM 2 - REACH-IN REFRIGERATORS - TWO (2) REQUIRED

- A. Reach-in refrigerators shall be as manufactured by Continental Refrigerator, Model #D2RNSS.

- B. Reach-in refrigerators shall be provided with all standard equipment, plus one (1) extra shelf per section.

4.3 ITEM 3 - HEATED CABINETS - TWO (2) REQUIRED

- A. Heated cabinets shall be as manufactured by F.W.E., Model #UHS-5-5.
- B. Heated cabinets shall be provided with all standard equipment.

4.4 ITEM 4 - WORKTABLE - ONE (1) REQUIRED

- A. Worktable shall be custom built, approximately 4'-0" x 30" x 34" high to working surface.
- B. Worktable shall be provided with the following:
 - 1. 6" Backsplash
 - 2. Undershelf
 - 3. One (1) Drawer with Lock

4.5 ITEM 5 - UTILITY SINKS - TWO (2) REQUIRED

- A. Utility sinks shall be as manufactured by Eagle, Model #314-16-1.
- B. Utility sinks shall be provided with all standard equipment, plus the following:
 - 1. Flange Feet on Front
 - 2. Overflow Hole
 - 3. One (1) Fisher #60844 Faucet with Aerator
 - 4. One (1) Fisher #22314 Leverwaste with Overflow

4.6 ITEM 6 - PIZZA PREP UNIT - ONE (1) REQUIRED

- A. Pizza prep unit shall be as manufactured by Continental Refrigerator, Model #PA43N.
- B. Pizza prep unit shall be provided with all standard equipment, plus the following:
 - 1. Cylinder Locks
 - 2. Front Breathing Ventilation Fan
 - 3. Double Overshelf

4.7 ITEM 7 - PIZZA OVEN - ONE (1) REQUIRED

- A. Pizza oven shall be as manufactured by Turbo Chef, Model #HHC2020VNTLSS.
- B. Pizza oven shall be provided with all standard equipment, plus the following:
 - 1. One (1) #103180 CS Cleaner
 - 2. One (1) #103181 CS Guard
 - 3. #HCT-3004-1 Cart

4.8 ITEM 8 - SPARE NUMBER

4.9 ITEM 9 - SPARE NUMBER

4.10 ITEM 10 - TRAY DISPENSERS - THREE (3) REQUIRED

- A. Tray dispensers shall be as manufactured by Piper, Model #ATCA-ST.
- B. Tray dispensers shall be provided with all standard equipment, plus the following:
 - 1. Perimeter Bumper
 - 2. Casters with Brakes
- C. It shall be the responsibility of this contractor to verify tray size with Owner.

4.11 ITEM 11 - PIZZA COUNTER - ONE (1) REQUIRED

- A. Pizza counter shall be as manufactured by Piper, Model #R5-HT.
- B. Pizza counter shall be provided with all standard equipment, plus the following:
 - 1. #RSRTS Tray Slide
 - 2. #RSCB 8" Stainless Steel Fold-Down Shelf
 - 3. Open Understorage with Shelf
 - 4. Protector Guard
- C. Color to be as selected by Architect.

4.12 ITEM 12 - SPECIALS COUNTER - ONE (1) REQUIRED

- A. Specials counter shall be as manufactured by Piper, Model #R3-ST.
- B. Specials counter shall be provided with all standard equipment, plus the following:
 - 1. #RSRTS Tray Slide
 - 2. Open Understorage with Shelf
- C. Color to be as selected by Architect.

4.13 ITEM 13 - SALAD COUNTER - ONE (1) REQUIRED

- A. Salad counter shall be as manufactured by Piper, Model #R3-CM.
- B. Salad counter shall be provided with all standard equipment, plus the following:
 - 1. #RSRTS Tray Slide
 - 2. Open Understorage with Shelf
 - 3. Two-Tier Display Case
- C. Color to be as selected by Architect.

4.14 ITEM 14 - FLAT TOP COUNTER - ONE (1) REQUIRED

- A. Flat top counter shall be as manufactured by Piper, Model #R3-ST.
- B. Flat top counter shall be provided with all standard equipment, plus the following:
 - 1. #RSRTS Tray Slide
 - 2. Open Understorage with Shelf
- C. Color to be as selected by Architect.

4.15 ITEM 15 - COLD FOOD COUNTER - ONE (1) REQUIRED

- A. Cold food counter shall be as manufactured by Piper, Model #R3-CM.
- B. Cold food counter shall be provided with all standard equipment, plus the following:

1. #RSRTS Tray Slide
2. Open Understorage with Shelf
3. Two-Tier Display Case

C. Color to be as selected by Architect.

4.16 ITEM 16 - HOT FOOD COUNTER - ONE (1) REQUIRED

A. Hot food counter shall be as manufactured by Piper, Model #R5-HF.

B. Hot food counter shall be provided with all standard equipment, plus the following:

1. #RSRTS Tray Slide
2. #RSCB 8" Stainless Steel Fold-Down Shelf
3. Open Understorage with Shelf
4. Protector Guard

C. Color to be as selected by Architect.

4.17 ITEM 17 - SNACK RACKS - TWO (2) REQUIRED

A. Snack racks shall be as manufactured by SPG-Amco, Model #SBD2024CP.

B. Snack racks shall be provided with all standard equipment, plus four (4) extra #ASB2024GR baskets per unit.

4.18 ITEM 18 - GRAB-N-GO REFRIGERATORS - TWO (2) REQUIRED

A. Grab-n-go refrigerators shall be as manufactured by Beverage Air, Model #VMHC18-1-B.

B. Grab-n-go refrigerators shall be provided with all standard equipment, plus casters with brakes.

4.19 ITEM 19 - SPARE NUMBER

4.20 ITEM 20 - ICE CREAM FREEZER - ONE (1) REQUIRED

A. Ice cream freezer shall be as manufactured by Beverage Air, Model #NC43-1-W.

B. Ice cream freezer shall be provided with all standard equipment.

4.21 ITEM 21 - COFFEE COUNTER - ONE (1) REQUIRED

- A. Coffee counter shall be as manufactured by Piper, custom built, size and shape as shown on drawing. Height to match remaining counter pieces.
- B. Coffee counter shall be provided with the following:
 - 1. Stainless Steel Top
 - 2. 6" Backsplash Along Wall Areas
 - 3. Bottom and Intermediate Shelves
 - 4. Hinged, Locking Doors on Front
 - 5. Plastic Laminate Finish
- C. Color to be as selected by Architect.

4.22 ITEM 22 - CASHIER STANDS - TWO (2) REQUIRED

- A. Cashier stands shall be as manufactured by Piper, Model #R1-CS.
- B. Cashier stands shall be provided with all standard equipment, plus #RSRTS tray slide.
- C. Color to be as selected by Architect.

4.23 ITEM 23 - CASH REGISTERS - THREE (3) - NIC/BY OWNER

4.24 ITEM 24 - OPEN AIR MILK COOLERS - TWO (2) REQUIRED

- A. Open air milk coolers shall be as manufactured by Beverage Air, Model #BZ13-1B.
- B. Open air milk coolers shall be provided with all standard equipment.

4.25 ITEM 25 - WORKTOP REFRIGERATOR - ONE (1) REQUIRED

- A. Worktop refrigerator shall be as manufactured by Continental Refrigerator, Model #RA60NBS.
- B. Worktop refrigerator shall be provided with all standard equipment, plus the following:
 - 1. Cylinder Locks
 - 2. Stainless Steel Interior
 - 3. Front Breathing Ventilation Fan

4.26 ITEM 26 - BACK COUNTER WITH SINK - ONE (1) REQUIRED

- A. Back counter shall be custom built, approximately 8'-6" x 30" x 34" high to working surface.
- B. Top shall be constructed of 14 gauge stainless steel with front and left end rolled and corner bullnosed. Rear of top and right end shall be turned up in a " high backsplash.
- C. The worktable shall be supported on 1-5/8" OD stainless steel legs with 1-1/4" OD stainless steel crossbracing (Detail #3.2) at sink and undershelf (Detail #3.1) for remainder. Front legs shall have stainless steel adjustable flanged feet, secured to the floor using stainless steel fasteners.
- D. Where shown, provide an integral 20" x 20" x 10" deep all covered corner sink compartment. Sink shall be complete with Fisher #22314 leverwaste, overflow, and Fisher #60844 faucet with aerator.

4.27 ITEM 27 - PANINI GRILLS - TWO (2) REQUIRED

- A. Panini grills shall be as manufactured by Waring, Model #WPG250.
- B. Panini grills shall be provided with all standard equipment.

4.28 ITEM 28 - VENTILATION UNITS - TWO (2) REQUIRED

- A. Ventilation units shall be as manufactured by Equipex, Model #SAV-G-PALI.
- B. Ventilation units shall be provided with all standard equipment, plus the following:
 - 1. One (1) Extra Grease Filter
 - 2. One (1) Extra Particulate Filter
 - 3. One (1) Extra Carbon Filter

4.29 ITEM 29 - HAND SINK - ONE (1) REQUIRED

- A. Hand sink shall be as manufactured by Eagle, Model #HSAN-10-MG.
- B. Hand sink shall be provided with all standard equipment, plus the following:

1. Single Hole Punch
2. Splash Mount Gooseneck Faucet
3. P-Trap
4. Tail Piece
5. Basket Drain
6. T&S #B-504 Wall-Mounted Foot Pedal

4.30 ITEM 30 - SANDWICH UNITS - TWO (2) REQUIRED

- A. Sandwich units shall be as manufactured by Continental Refrigerator, Model #SW48N18M-HGL.
- B. Sandwich units shall be provided with all standard equipment, plus the following:
 1. Cylinder Locks
 2. Stainless Steel Interior
 3. Crumb Catcher
 4. Single Overshelf
 5. Mount Tray Slides to Rear
 6. Plastic Laminate Panels on Rear to Match Counters
- C. Continental Refrigerator to ship units to Piper. Piper shall attach tray slides to rear of unit so that they match up to tray slide of cashier stand (Item #31).

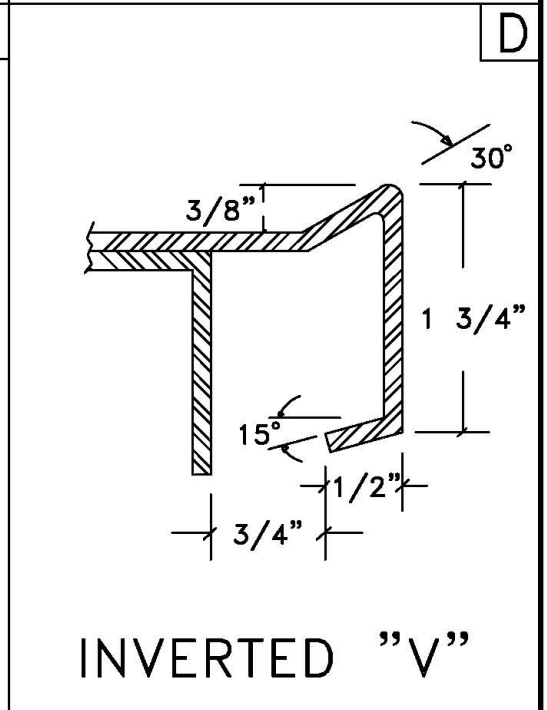
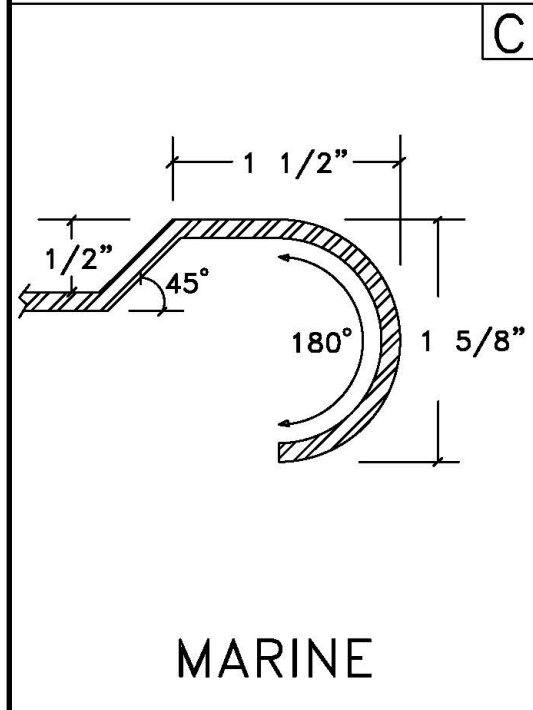
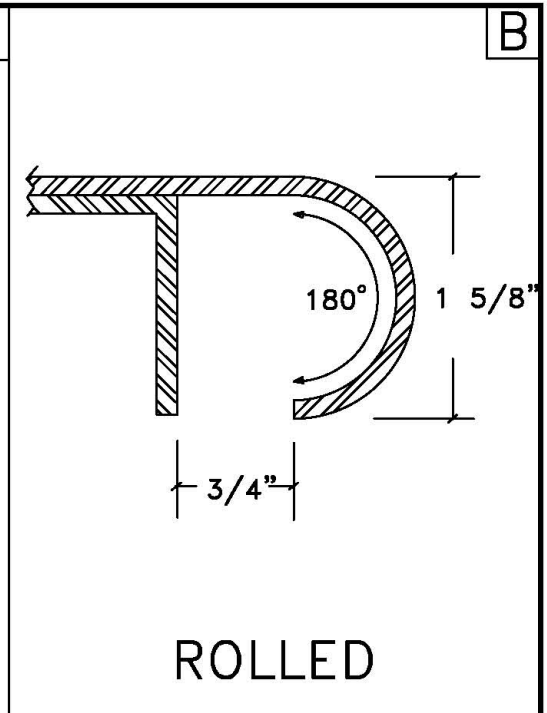
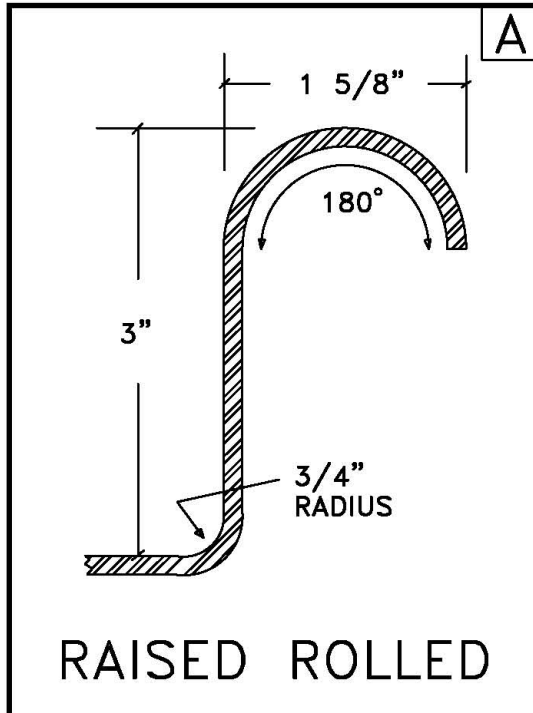
4.31 ITEM 31 - CASHIER STAND - ONE (1) REQUIRED

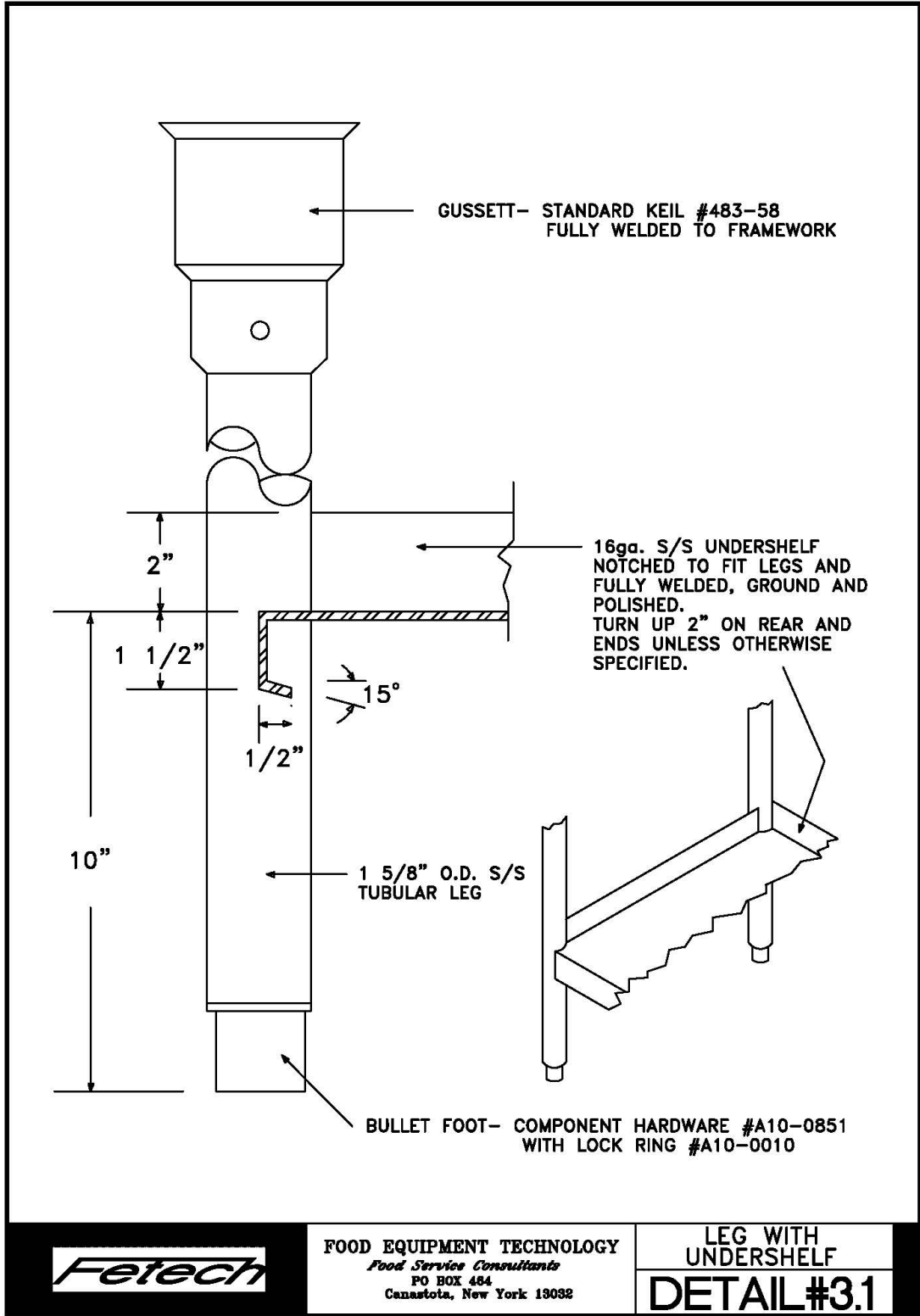
- A. Cashier stand shall be as manufactured by Piper, Model #1-CD.
- B. Cashier stand shall be provided with all standard equipment, plus #SRTS tray slide.
- C. Color to be as selected by Architect.

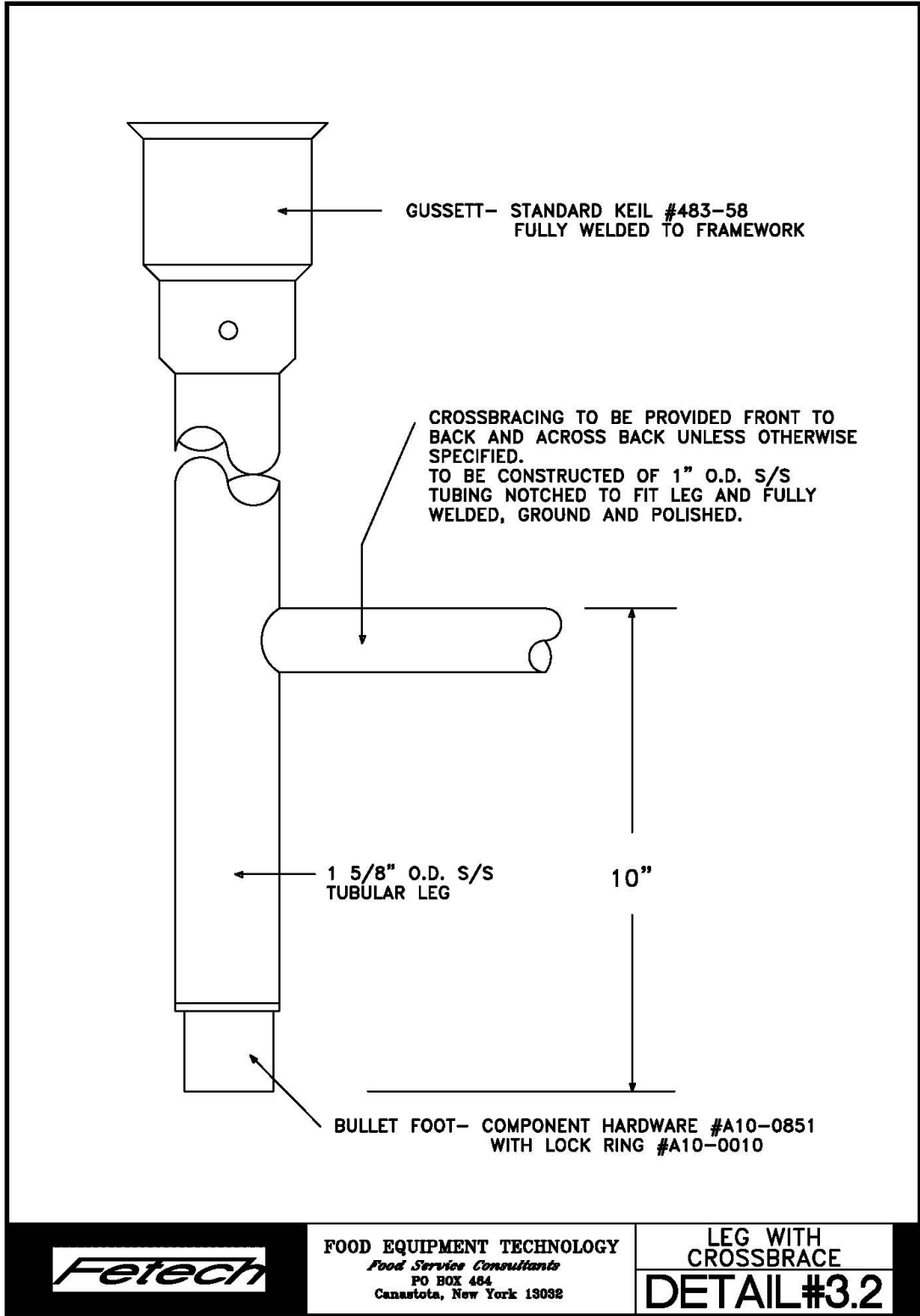
PART 5 - DETAILS OF CONSTRUCTION

5.1 DETAIL DRAWINGS

- A. The following details are a part of these specifications and shall be referred to for design requirements:
 1. 1.0 - Edge Configurations
 2. 3.1 - Leg with Undershelf
 3. 3.2 - Leg with Crossbrace







END OF SECTION 114000

SECTION 11 53 63 - LABORATORY EQUIPMENT AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Fire Blanket
 - 2. First Aid Kit
 - 3. Peg Boards

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Initial Selection: For factory-applied finishes and other materials requiring color selection.

1.5 QUALITY ASSURANCE

- A. Flammable Liquid Storage: Where cabinets are indicated for solvent or flammable liquid storage, provide units that are listed and labeled as complying with requirements in NFPA 30 by a testing and inspecting agency acceptable to authorities having jurisdiction.
- 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.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect finished surfaces during handling and installation with protective covering of polyethylene film or other suitable material.

1.7 COORDINATION

- A. Coordinate installation of laboratory equipment and accessories with installation of other laboratory equipment.

PART 2 - PRODUCTS

2.1 LABORATORY EQUIPMENT

- A. Fire Blankets: Painted steel cabinet with drop hinge door, for wall mounting, containing 100 percent wool, and naturally fire retardant, Metal Cabinet is 16”H x 18”W x 5 1/4”D , fire blanket 62 inches by 80 inches in size.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Flinn Scientific. “SE3006 Series” Metal Case or comparable product.
- B. First Aid Kits: Steel cabinet, for wall mounting, containing first aid supplies and instructions. Included in kit: adhesive bandages, adhesive bandages with non-adherent pads, bandage compress, gauze pads, triangle bandages, burn cream, two sizes of stretch bandages, adhesive tape, non-adherent pads, eye flush with eye pads, eye cup and tape, antiseptic towelettes, cold pack, latex gloves, forceps, and scissors.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Flinn Scientific., “SE1083 50 person, 9 1/2”H x 9”W x 2 1/2”D First Aid Kit” or comparable product.
- C. Pegboards: Stainless-steel pegboards with removable polypropylene pegs and stainless-steel drip troughs with drain outlet. 20gauge, type 304 stainless steel with a no. 4 finish, integral 20-gauge, full length drip trough with drain tube, sizes as per drawing.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Total Lab Solutions, “TLS-V Series Stainless Steel” Pegboard or comparable product.

2.2 ELECTRICAL SERVICE FITTINGS

- A. Service Fittings, General: Provide units complete with metal housings, receptacles, terminals, switches, pilot lights, device plates, accessories, and gaskets required for mounting.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas, with Installer present, for compliance with requirements for installation tolerances, location of reinforcements, and other conditions affecting performance of laboratory equipment and accessories.

- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION OF LABORATORY EQUIPMENT AND ACCESSORIES

- A. Install accessories according to Shop Drawings, installation requirements in SEFA 2.3, and manufacturer's written instructions.
- B. Securely fasten units to partition framing or reinforcements in partitions.

3.3 CLEANING AND PROTECTING

- A. Clean finished surfaces touch up as required and remove or refinish damaged or soiled areas to match original factory finish, as approved by Architect.

END OF SECTION 11 53 63

SECTION 11 68 33 - ATHLETIC FIELD EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Soccer equipment.
2. Football equipment.
3. Combination soccer/football equipment.
4. Lacrosse equipment
5. Field Hockey equipment.
6. Discus Throwing Form System
7. Discus Throwing Cage
8. Ball stopper system.
9. Football Safety Netting System
10. Team benches.
11. Cast-in-Place Concrete
12. Portable bleachers

B. Related Sections:

1. Section 03 30 00 "Cast-in-Place Concrete"
2. Section 31 20 00 "Earth Moving"
3. Section 32 18 13.10 "Synthetic Grass Infrastructure"
4. Section 32 31 13 "Chain Link Fences and Gates"
5. Section 32 92 00 "Turfs and Grasses"

1.3 REFERENCES

- A. Comply with applicable requirements of the following standards. Where these standards conflict with the other specified requirements, the most restrictive requirements shall govern.

1. National Federation of State High School Associations (NFHS).
2. American Sports Builders Association (ASBA)
3. International Association of Athletics Federation (IAAF)
4. Manufacture's Data and Recommended Installation Requirements.
5. New York State Public High School Athletic Association Inc. (NYSPHSAA)

1.4 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design football goal post concrete anchoring foundations, football safety netting system concrete anchoring foundations, and ball-stopper netting safety systems (over 12' in height from grade) concrete anchoring foundations based on local soil conditions and building code. Include all factors affecting the system post concrete anchoring foundation design.

1.5 SUBMITTALS

- A. General: Submit all action submittals and informational submittals required by this Section concurrently.
- B. Action Submittals: Product Data for equipment, accessories and hardware:
 - 1. Soccer goals.
 - 2. Soccer ground clamping system.
 - 3. Soccer corner flags.
 - 4. Football goal posts. *(For Reference Only – Not Part of Contract)*
 - 5. Football installation accessories.
 - 6. Lacrosse Goals
 - 7. Field Hockey Goals.
 - 8. Ball stopper system.
 - 9. Team benches.
 - 10. Portable bleachers
 - 11. Delegated Design Submittal:
 - a. For football goal post ground sleeve and ball stopper netting system foundations, indicating design in compliance with performance requirements and design criteria, including analysis data signed and sealed by a qualified professional engineer responsible for their preparation.
 - 1) Engineering calculations: Signed, sealed, dated, and prepared in accordance with the specifications.
 - b. For portable bleachers, indicating design meeting performance requirements and design criteria, including analysis data signed and sealed by a qualified professional engineer responsible for their preparation.
 - 1) Engineering calculations: Signed, sealed, dated, and prepared in accordance with the specifications.

12. Shop Drawings: For athletic field equipment. Include plans, elevations, sections, details, and attachments to other work.
13. Samples for Initial Selection: For each type of athletic equipment indicated.
 - a. Manufacturer's color charts.
 - b. Netting for ball stopper system
 - c. Netting for football safety netting system

C. Informational Submittals:

1. Qualification Data: For qualified Installer.

D. Closeout Submittals:

1. Maintenance Data: For athletic field equipment and finishes to include in maintenance manuals.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers approved by manufacturer.

1. Football Goal Post ground sleeve and ball stopper netting system, installation contractor qualifications: Installer shall have a minimum of five (5) football goal post, ball stopper netting systems, and football safety netting system installations, or similar experience in the previous three (3) years.

B. All site amenities shall be produced in a plant of recognized reputation that is regularly engaged in the production of the type of site amenity conforming to the specified standards. Site amenities of the same type shall be the product of a single manufacture.

C. Only products proven non-toxic are acceptable. Products used may not contain any recycled wood products or any wood containing paint, chemicals (including but not limited to Chromated copper arsenate (CCA)) or additives.

D. Manufacturers warranties shall pass to the Owner and certification made that the product materials meet all applicable grade trademarks or conform to the industry standards and inspection requirements.

1.7 PRODUCT DELIVERY AND STORAGE

A. Materials delivered to the site shall be examined for damage or defects in shipping. Any defects shall be noted and reported to the Owner's representative.

B. Sound materials shall be stored off the ground and under protective cover or indoors in a manner that will not allow distortion or other damage to occur.

- C. Handle materials according to manufacturer's written instructions.
 - 1. Materials shall be moved, loaded, and unloaded such that they will not be subject to excess stress. Permanent distortion or other damage attributable to Contractor's operation shall be cause for rejection.

PART 2 - PRODUCTS

2.1 SOCCER EQUIPMENT

- A. Soccer Goals (Round-Faced Frame): Aluminum frame, round post soccer goals with nets and accessories.
 - 1. Basis-of Design Product: Subject to compliance with requirements, provide Sportsfield Specialties Inc., SG824R (SG4950) Round Post Soccer Goal; or comparable product.
 - a. Quantity: One (1) set of two (2) soccer goals with associated accessories, per field.
 - b. Frame Components:
 - c. Top Cross Bar: Extruded aluminum tube, 4.375 x 4.688 inches x 24 feet long, round face with radiused backside corners; 7 gage steel crossbar attachment brackets; white powder coated finish.
 - d. End Frame: Extruded aluminum tube; white powder coated finish; and as follows:
 - 1) Corner Upright Posts: 4.375 x 4.688 inches, round face with radiused backside corners.
 - 2) Rolled Side Frames: 2 x 3 x 0.125-inches thick, welded to corner upright posts.
 - e. Bottom Ground Bar: Extruded aluminum tube, 2 x 2 x 0.250-inches thick; white powder coated finish.
 - 2. Net: Polypropylene soccer net.
 - a. Color: White
 - 3. Soccer Goal Mobility Kit: Integrated, on-board mobility kit; wheel insert of welded stainless-steel frame, UHMW wheel; handle; all stainless-steel hardware.
 - a. Basis-of Design Product: Subject to compliance with requirements, provide Sportsfield Specialties Inc., SGMKR (SG4955) SGMobile - Soccer Goal Portable Wheel Mobility Kit; or comparable product.
 - b. Quantity: One (1) set of two (2) soccer goals mobility kits with associated accessories, per field.

4. Accessories:
 - a. Net Clips: Welded aluminum.
5. Soccer Goal Clamping System (Ground Box Type): Below-grade combination soccer goal mounting system.
 - a. Basis-of Design Product: Subject to compliance with requirements, provide Sportsfield Specialties Inc., SG2SGP Original GoalPak Soccer Safety System for synthetic turf; or comparable product.
 - b. Safety Clamp: Aluminum and stainless steel, with stainless steel hardware; white powder coated finish.
 - c. Access Frame Kit: Aluminum, 0.125-inch thick, 14 x 14 x 9 inches; cover plugs of 1/2-inch thick pressure treated plywood and 0.1875-inch thick aluminum; stainless-steel anchoring and assembly hardware.
 - d. Quantity: One (1) set of two (2) soccer goal clamping system with associated accessories, per field.

B. Soccer Corner Flags: Official Soccer Corner Flags

1. Basis-of Design Product: Basis-of Design Product: Subject to compliance with requirements, provide Sportsfield Specialties Inc., SG6B1404 KwikGoal Premier Soccer Corner Flags for synthetic turf fields; or comparable product.
 - a. Bases For Synthetic Turf: 12 inch Diameter, Stackable, UV Resistant Black Weighted Rubber Base.
 - b. Poles: 1 inch diameter, 63 inch high, white PVC Upright.
 - c. Flags: 2 ft High by 1 ft Wide red nylon flag with White Cloth edge.
 - d. Quantity: One (1) set of four (4) corner flags, per field

2.2 FOOTBALL EQUIPMENT

A. Football Goals (8-Foot Offset): Aluminum frame, ground sleeve mounted football goals; with accessories, with soccer goal clamping system. *(Note: Goal post information provided for ground sleeve and foundation sizing and calculations. Actual goal posts not in contract)*

1. Basis-of Design Product: Subject to compliance with requirements, provide ground sleeves and foundation to support Sportsfield Specialties Inc., GP820HS (GP4380) High School 8' Offset, 20' Uprights, AdjustRight Aluminum Football Goal Post.
 - a. Quantity: Assumes two football goal post ground sleeves and foundations per field.
2. Frame Components: *(For reference only, see note in 2.2A.)*
 - a. Gooseneck Support: 6-inch Schedule 40 aluminum pipe (6.625-inch OD), 5-foot radius, 8-foot offset;

- b. Crossbar: 6-inch Schedule 40 aluminum pipe (6.625-inch OD), 23 feet 4 inches inside dimension; internal rotating sleeve for upright adjustment; capped ends;
 - c. Uprights: 4-inch OD (1/8-inch thick) extruded aluminum tube, 20 feet long; rigid wire loop at upper end;
3. Installation Package:
- a. Ground Sleeve: 8-inch ID x 60" H Schedule 40 steel ground sleeve pipe.
 - b. Access Frame Kit: Aluminum, 0.125-inch thick, 22.375 x 22.375 x 8 inches; cover plugs of 1/2-inch thick pressure treated plywood and 0.1875-inch thick aluminum; stainless-steel anchoring and assembly hardware.
 - c. Soccer Goal Safety Clamp: Aluminum and stainless steel, with stainless steel hardware; white powder coated finish.
4. Product to meet the following load conditions: (Per ASCE 7-10)
- a. Wind: 105 mph, Exp. "C", $I = 0.77$
 - b. Seismic: N/A

2.3 LACROSSE GOAL

A. Lacrosse Goal Equipment and Accessories

1. Design Requirements:
- a. Top Bar and Upright Frame are fabricated of 1.5" Schedule 40 Steel Pipe (1.9" O.D.)
 - b. Ground Bars are Fabricated of 3/8" x 4" Steel Flat Bar with Welded Steel Upright Posts
 - c. Powder Coated Orange Finish
 - d. 6'H x 6'W x 7'D 4mm Braided, Knotless White Nylon Net with #48 Braided White Nylon Twine for Net Attachment Purposes
 - e. Stainless Steel Assembly Hardware
 - f. Model Specific Hardware Kit and Installation Instructions
2. Quantity: One (1) set of two (2) Lacrosse Goals with associated accessories, per field
3. Basis-of Design Product: Sportsfield Specialties, Inc., www.sportsfieldspecialties.com; LCG - Lacrosse Goal Equipment and Accessories.

2.4 FIELD HOCKEY EQUIPMENT

A. Field Hockey Goals: Square aluminum frame, field hockey goals with nets and accessories.

1. Basis-of Design Product: Subject to compliance with requirements, provide Sportsfield Specialties Inc., FHG Field Hockey Goals; or comparable product.

2. Frame Components:
 - a. Frame: One-piece side frame aluminum tube, 2 x 2 inch x 0.090 inch thick wall square aluminum tubing, TIG Welded;
 - b. Color: White
 - c. Finish: Powder coated finish with enhanced resistance to UV and fade.
3. Bottom Boards: Replaceable 0.5-inch black polyethylene bottom boards secured by top and bottom aluminum channels.
4. Net: 7 ft x 12 ft x 4 ft 2.5 mm Twisted polypropylene field hockey net, 1.5 in square mesh.
 - a. Color: Black.
5. Assembly Hardware: Stainless steel.
6. Field Hockey Goal Mobility Kit: External wheel kit, provide Sportsfield Specialties Inc., FHGWK Field Hockey Goals External Wheel Kit; or comparable product.
7. Accessories:
 - a. Net Clips: Welded aluminum.
8. Quantity: One (1) set of two (2) Field Hockey Goals with associated accessories, per field.

2.5 DISCUS

- A. Discus Throwing Form System: Welded aluminum form system with grid used for forming concrete throwing circle.
 1. Basis-of Design Product: Subject to compliance with requirements, provide Sportsfield Specialties Inc., TFD (TFDCTF009) Discus ThrowForm System.
 - a. Aluminum Athletic Equipment Co. (AAE), Discus Throw Form Model DFS.
 2. Form Dimensions: 10-ft by 10-ft by 6-in.
 3. Include the following:
 - a. Throw Ring Fabricated of 4-in x 0.25-in Thick Rolled Aluminum Flat Bar Welded to Forming Assembly
 - b. 0.19-in 5052 Welded Aluminum Cross Bracing and Stacking Gussets.
 - c. 98.5-in Inside Diameter – Discus
 - d. 0.75-in Recessed concrete screed line
 - e. Stainless Steel Assembly Hardware Kit

B. Discus Throwing Cage for High School Use:

1. Basis-of Design Product:

- a. Subject to compliance with requirements, provide Sportsfield Specialties Inc., DCHST (TFDCHS-TALL) High School Tall Discus Throwing Cage with Backup Net system DCHSBNS, or comparable product, including,
 - 1) Aluminum Athletic Equipment Co. (AAE), High School with Backup Net Model HSDC, BN-HSDC.

2. Main Upright Poles – High School.

- a. Quantity: Six (6)
- b. 4-in O.D. x 0.125-in Thick Wall 6061 Aluminum Tube
- c. Post Height: 18-ft 1-3/8-in Above Finished Grade
- d. Arced Rolled Offset: 3-ft
- e. Finish: Standard Aluminum Mill Finish
- f. Color: Black Powder Coated Finish

3. Ground Sleeves:

- a. Quantity: Six (6)
- b. 4.30-in O.D., 4.10-in I.D.,
- c. Ground Sleeve Height: 30-in Length
- d. Model: GS-04-30.
- e. Aluminum pipe welded base plate
- f. Six (6) black friction fit caps.

4. Main Safety Net System:

- a. 16-ft 10-in x 54-ft, #36 Black Nylon Net, 1-3/4-in Square Mesh Net with Sewn Rope Bound on Perimeter Edges.
- b. Pulley system for raising and lowering net.
- c. Include 7-ft x 61-ft backup net.

5. Backup Safety Net System:

- a. 7-ft x 63-ft, #36 Black Nylon, 1-3/4-in Square Mesh Net with Sewn Rope Bound on Perimeter Edges.
- b. Backup Safety Net Hardware.
- c. Model: DCHSBNS

6. Quantity: One (1)

2.6 BALL STOPPER SYSTEM

A. Ground Sleeved Ballstopper System:

1. Height of System:
 - a. 20' Height, nominal – 6' Height Fence Locations
 - b. 15' Height, nominal – 4' Height Fence Locations
2. Posts: Straight 4.0 inch OD x .125 inch wall 6061 aluminum tube and 3 ½ inch Schedule 40 aluminum pipe with cap, sized for height of system. Height above ground equal to system height plus 1 foot for hardware.
 - a. Finish: Black Powder Coated.
 - b. Spacing: 20 feet on center.
3. System for attachment of net: Block pulley and tether system with shear pin device to release net in the event of extreme weather.
4. Ground Sleeves: 4.30 inch O.D. aluminum, 48-inch length, with aluminum mill finish with ground sleeve cap.
5. Net / Cable: sized for height of system; #36 Black Nylon 1-3/4" mesh with tethers.
 - a. On 20'-nominal height system, provide netting from top of 6'-ht. chain link fence to standard connection at top of ballstopper posts. Provide required hardware and netting openings, with ability to raise / lower system to minimum 8'-height, at chain link fence gate / double gate locations.
 - b. On 15'-nominal height system, provide netting from top of 4'-ht. chain link fence to standard connection at top of ballstopper posts. Provide required hardware and netting openings, with ability to raise / lower system to minimum 8'-height, at chain link fence gate / double gate locations.
6. Hardware: Stainless steel assembly hardware; shell block pulley system; 6-inch net guide rings; black vinyl coated wire rope.
7. Basis-of Design Product:
 - a. 20'-NOMINAL SYSTEM (with custom netting height tailored to installation above 6'-ht chainlink fence / gates): Subject to compliance with requirements, provide Sportsfield Specialties, 20' Height 4" Ball Safety Netting System with StormGuard feature, Model No. BSS420 (Black Powder coated).
 - b. 15'-NOMINAL SYSTEM (with custom netting height tailored to installation above 4-ht chainlink fence / gates): Subject to compliance with requirements, provide Sportsfield Specialties, 15' Height 4" Ball Safety Netting System with StormGuard feature, Model No. BSS415 (Black Powder coated).

B. Ball Stopper System Net Storage Cart

1. 48" wide 4" square x 0.125 inch wall welded aluminum frame with retractable galvanized steel hitch attachment with 2" ball coupler and 12" pneumatic fixed wheel casters.
2. Provide six (8) 36" removable reels with 5,000 square foot capacity.
3. Basis-of Design Product: Subject to compliance with requirements, provide AAE Aluminum Athletic Equipment NSC-Net Storage Cart with NSC-REEL.

2.7 TEAM BENCHES

A. Aluminum Backless Team Bench: 15-ft long aluminum team bench with 2"x12" extruded aluminum contoured seat plank. Aluminum to be 6063-T6 extruded aluminum alloy with clear anodized finish. Base to be galvanized rectangular Grade B steel tube, mounted with flanges anchored to concrete. All ends to be capped with aluminum 319 alloy caps.

1. Basis-of Design Product: Subject to compliance with requirements, provide 15' length Aluminum Backless Maverick Team Bench, Model M15, a product of Southern Bleacher Company; or comparable product.
2. Quantity: Provide six (6) benches per field unless otherwise noted.

2.8 CAST-IN-PLACE CONCRETE

A. Concrete Materials and Properties: Comply with requirements in Section 03 30 00 "Cast-in-Place Concrete" to produce normal-weight, air-entrained concrete with a minimum 28-day compressive strength of 4,000 psi, 3-inch slump, and 1-inch-maximum-size aggregate.

2.9 PORTABLE BLEACHERS

A. Portable Bleachers: Portable aluminum bleachers, constructed as follows:

1. Design Requirements:
 - a. Live Load: 100 psf of gross horizontal projection.
 - b. Wind Load: Meet all applicable standards.
 - c. Horizontal Sway Force: 24 plf parallel to seat length; 10 plf perpendicular to seat length.
 - d. Seat and Footboard Live Load: 120 plf.
 - e. Guardrails: 100 plf vertical load; 50 plf horizontal thrust.
 - f. No openings large enough to pass a 4-inch-diameter sphere.
2. **Basis-of Design Product:** Subject to compliance with requirements, provide E&D Specialty Stands, Inc., Portable Bleachers Full Plank Deck Series; or comparable product by the following:
 - a. GT Grandstands
 - b. Southern Bleacher, Inc.
 - c. Dant Clayton

3. Row Spacing: 24 inches.
4. Row Rise: 8-inches.
5. Components:
 - a. Benches: Aluminum, 2 x 10-inch, clear anodized finish, 17-inch height, 10-inch depth.
 - b. Risers: Aluminum, 1 x 6-inch, clear anodized finish. *(8-row & 10-row bleacher)*
 - c. Deck: Aluminum plank, 2 x 10 inch, mill finish. two (2) 2 x 10-inch, mill finish. *(2 plank deck for 8-row & 10-row bleacher, 1 plank deck for 4-row bleacher)*
 - d. Understructure: Aluminum angle.
 - e. Material: 6061-T6 Aluminum
 - f. Skids: Marine-Grade, Pressure-treated Wood, 2 x 4.
 - g. Guardrails: 1-5/8-inch OD aluminum pipe, clear anodized finish; with 2-inch x 9-gauge, galvanized chain link fencing infill.
6. Accessories:
 - a. Mobile transport / towing kit
 - b. End closures.
7. Configuration:
 - a. Four-Row Portable Bleacher: *(Provide two (2) for Middle School Field)*
 - 1) Unit Size: Four rows; 15-feet long.
 - 2) Seating Capacity: 40 each bleacher
 - 3) Basis-of-design: E&D Specialty Stands Model P424-15, or equal.
 - b. Ten-Row Portable Bleacher: *(Provide two (2) for High School Field Home Side)*
 - 1) Unit Size: Ten rows; 27-feet long.
 - 2) Seating Capacity: 180 each bleacher
 - 3) Basis-of-design: E&D Specialty Stands Model P1024-27-RB, or equal.
 - c. Eight-Row Portable Bleacher: *(Provide two (2) for High School Field Visitor Side)*
 - 1) Unit Size: Eight rows; 21 feet long.
 - 2) Seating Capacity: 112 each bleacher
 - 3) Basis-of-design: E&D Specialty Stands Model P824-21-RB, or equal.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, site surface and subgrade drainage, and other conditions affecting performance of the Work.

- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Verify that athletic field layout and equipment locations comply with requirements for each type and component of equipment.

3.3 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions unless more stringent requirements are indicated. Anchor equipment securely, positioned at locations and elevations indicated.
- B. Post and Footing Excavation: Excavate holes for footings as indicated in firm, undisturbed or compacted subgrade soil.
- C. Post Set on Subgrade: Level bearing surfaces with drainage fill to required elevation.
- D. Post Set with Concrete Footing: Comply with ACI 301 for measuring, batching, mixing, transporting, forming, and placing concrete
- E. Unit Set on Grade: Level bearing surfaces to required elevation.
- F. Set with Concrete Footing: Comply with ACI 301 for measuring, batching, mixing, transporting, forming, and placing concrete.
 - 1. Embedded Items: Use setting drawings and manufacturer's written instructions to ensure correct installation of anchorages for equipment.
 - 2. Set equipment posts in or on concrete footing per manufacturer's installation instructions. Protect portion of posts above footing from concrete splatter. Verify that posts are set plumb or at the correct angle, alignment, height, and spacing.
 - a. For posts set in concrete footing, place concrete around posts and vibrate or tamp for consolidation. Hold posts in position during placement and finishing operations until concrete is sufficiently cured. Embedded Items: Use setting drawings and manufacturer's written instructions to ensure correct installation of anchorages for equipment.
 - 1) Concrete Footings: Smooth top, and shape to shed water.
- G. Permanently Placed Equipment and Components: Rigid, level, plumb, square, and true; anchored securely to supporting structure; positioned at locations and elevations indicated on Shop Drawings; in proper relation to adjacent construction; and aligned with field layout.
 - 1. Football goal post ground sleeve and foundation for 8-Foot offset goal post: Anchor gooseneck support with leveling plate to concrete footing by means of threaded rods installed in concrete; top of concrete footing minimum 8 inches below grade.

- H. Semi-Permanently Placed Equipment and Components: Rigid, level, plumb, square, and true; anchored securely to supporting structure, with appropriate removable components; positioned at locations and elevations indicated on Shop Drawings; in proper relation to adjacent construction; and aligned with field layout.
 - 1. Soccer Goals (Round-Faced Frame): Anchor access frame kit to concrete footing.
 - 2. Football Goals (8-Foot Offset): Anchor access frame kit to concrete footing.
 - 3. Ball stopper system. Anchor ground sleeves set in concrete foundation / curb.

- I. Removable Equipment and Components: Set in place to verify that equipment and components are complete and in proper working order. Instruct Owner's designated personnel in properly handling, assembling, adjusting, disassembling, transporting, storing, and maintaining units. Remove athletic equipment after assembled configuration has been approved by Architect, and store units in location indicated by Owner.
 - 1. Removable equipment includes the following:
 - a. Soccer Goals
 - b. Soccer corner flags.
 - c. Lacrosse goals.
 - d. Field hockey goals
 - e. Team benches
 - f. System nettings
 - g. Portable bleachers

3.4 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
 - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections. Inform Architect 48 hours in advance when inspections are to take place.
 - 2. Prepare test and inspection reports.

3.5 ADJUSTING AND CLEANING

- A. Touchup Painting: Immediately after erection, clean bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop painting to comply with the requirements for touching up shop-painted surfaces.

3.6 PROTECTION

- A. Protect finishes of athletic field equipment from damage during construction period with temporary protective coverings approved by manufacturer. Remove protective coverings at time of Substantial Completion.

END OF SECTION 11 68 33

SECTION 12 24 13 - ROLLER WINDOW SHADES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Manually operated roller shades with single rollers.
 - 2. Roller shade fabrics.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include styles, material descriptions, construction details, dimensions of individual components and profiles, features, finishes, and operating instructions for roller shades.
- B. Shop Drawings: Show fabrication and installation details for roller shades, including shadeband materials, their orientation to rollers, and their seam and batten locations, all dimensions and clearances for each shade installation.
 - 1. Include typical elevation layout showing separation between shade units and meeting edges at corners with sections and details at head and sill between blind units and corners.
 - 2. Provide verified in field details showing all types of shade installation conditions.
 - 3. Components and conditions not fully dimensioned or detailed in manufacturers product data indicating relationship to adjoining construction.
 - 4. Manufactures specification instructions and details specific to components and conditions not fully dimensioned or detailed in manufactures product data.
 - 5. Provide data for all components required for installation.
- C. Samples for Verification and Initial Color Selection: For each type and color of shadeband material.
 - 1. Include Samples of accessories involving color selection.
 - 2. Actual color samples of manufactures full range – no color copies will be accepted.

3. Shadeband Material: Not less than 10 inches square. Mark inside face of material if applicable.
4. Roller Shade: Full-size operating unit, not less than 16 inches wide by 36 inches long for each type of roller shade indicated.
5. Installation Accessories: Full-size unit, not less than 10 inches long.

1.5 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of shadeband material, signed by product manufacturer.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For roller shades to include in maintenance manuals.

1.7 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.

1.8 WARRANTY

- A. Manufacturer's Warranty - Provide manufacturer's warranty including coverage of at least following components:
 1. Corrosion of all metal parts.
 2. Sagging, creasing, or breaking of slats.
 3. Sagging, creasing or ripping of shadeband material.
 4. Smoothly performing mechanism without slippage or jams.
 5. Finish of all components matching in color, uniform, and against fading or discoloration.
 6. Defects in materials and installation workmanship.

1.9 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 Architect of installation conditions that vary from Drawings. Coordinate fabrication schedule with construction progress.

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. Basis-of-Design Product: Subject to compliance with requirements, provide Draper Inc.; Manual FlexShade Systems or comparable product by one of the following:
 - 1. Hunter Douglas Contract.
 - 2. MechoShade Systems, Inc.
- 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; with chain retainer.
 - 1. Bead Chains: Manufacturer's standard.
 - a. Limit Stops: Provide upper and lower ball stops.
- 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 or left side as require per shade layout.
 - 2. Direction of Shadeband Roll: Regular, from back of roller and or back to front to clear window handles, extrusions etc.
 - 3. Shadeband-to-Roller Attachment: Manufacturer's standard method- no double-side tape will be accepted. Provide adequate brackets on multiple sash windows to hold roller pin ends no more than 1/8 inch apart over centerline of mullion.
- D. Shadebands:
 - 1. Shadeband Material: Light-blocking fabric similar to "Sun-Bloc Series" fabric by Draper Inc.
- E. Shadeband Bottom (Hem) Bar: Steel or extruded aluminum.
 - 1. Type: Enclosed in sealed pocket of shadeband material.
- F. Fabrication:
 - 1. Cut shades perfectly square and true and mount on rollers using suitable fasteners. Provide all material used in shade manufacture new, commercially perfect and of first quality. Provide material in one piece.

2. Provide one finished length of each single hung shade after hemming 14 inches longer than portion of sash covered by shade. Provide finished shade width to cover adequately, but not more than 1/4 inch of barrel exposed at each end of roller.
 - a. Where necessary, increase diameter of roller from 1-1/4 inches to correspond with size of shade.
 - b. Provide hems of proper width for slat, double turn hems, and sew with straight stitch. Neatly backstitch all hems at the ends.
 - c. Hem at top and bottom of shade.
3. Fabrication Tolerances:
 - a. Size shades to fit openings head – including but not limited to wall, door, window head etc., to sill including but not limited to windowsill, floor sill etc. (allowing for 6 to 10 inches in additional length) and between mullions, unless otherwise indicated on Drawings.
 - b. Provide single sets of shades no greater in width than distance between 2 mullions at openings up to 15 ft. wide.
 - c. Provide minimum clearances for appropriate operation of shades.

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 when shade is fully open.
 - c. Provide full range of manufactures colors.
2. Exposed Headbox: Rectangular, extruded-aluminum enclosure including front fascia, top and back covers, endcaps, and removable bottom closure.
 - a. Height: Manufacturer's standard height required to enclose roller and shadeband when shade is fully open.
 - b. Provide full range of manufactures colors.
3. Endcap Covers: To cover exposed endcaps.
4. Installation Accessories Color and Finish: As selected from manufacturer's full range.

2.3 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-Blocking Fabric: Opaque fabric, stain and fade resistant.
 1. Source: Roller-shade manufacturer.

2. Type: Fiberglass textile with PVC film bonded to both sides.
 3. Thickness: 0.015 inches.
 4. Weight: 12 oz./sq. yd.
 5. Features: Washable.
 6. Color: As selected by Architect from manufacturer's full range.
 7. Basis-of-Design Product: Subject to compliance with requirements, provide Draper Inc.; SunBloc Series SB9000 or comparable product.
- C. Rescue Window Labels: Provide and install on window shade in every space of pupil occupancy opaque label with words "RESCUE WINDOW" Install labels on shades associated with rescue window coordinate with Architect for location.
1. Color: Opaque, bright yellow background with black letters.
 2. Size: 2 inches by 1 inch, 3/8" wide lines to form letters.
 3. Text: "RESCUE WINDOW", readable from room side of window.

2.4 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 dimension of opening in which shade is installed less 1/4 inch, plus or minus 1/8 inch.
 2. Outside of Jamb Installation: Width and length as indicated, with terminations between shades of end-to-end installations at centerlines of mullion or other defined vertical separations between openings.
- C. Shadeband Fabrication: Fabricate shadebands without battens or seams to extent possible.
- D. Rescue Window Labels: Provide and install on window shade in every space of pupil occupancy opaque label with words "RESCUE WINDOW" Install labels on shades associated with rescue window coordinate with Architect for location.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, accurate locations of connections to building electrical system, and other conditions affecting performance of the Work.

- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 ROLLER-SHADE INSTALLATION

- A. Install roller shades level, plumb, and aligned with adjacent units according to manufacturer's written instructions.
 - 1. Opaque Shadebands: Located so shadeband is not closer than 2 inches to interior face of glass. Allow clearances for window operation hardware.
 - 2. Hang shades at window to fit opening properly and operate smoothly and efficiently. Hang each shade perfectly level and with spring tension of roller properly adjusted. Locate tips of adjoining shades no further than 3/8 inch apart when two or more are mounted back to back.
 - 3. Install each shade on brackets securely fastened to ceiling or wall as shown on Drawings. Furnish and install new brackets and other hardware required for proper installation of shades.
- B. Prior to installation of roller-shade units, coordinate installation locations and method of installation with window manufacturer, do not secure roller-shade units to window frame.
 - 1. Installation of new shades is to match those existing shades in adjacent rooms – shades are to be larger than the windows and are to extend past the glass area.

3.3 ADJUSTING

- A. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

3.4 CLEANING AND PROTECTION

- A. Clean roller-shade surfaces after installation, according to manufacturer's written instructions.
- B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that roller shades are without damage or deterioration at time of Substantial Completion.
- C. Replace damaged roller shades that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

3.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain motor-operated roller shades.

END OF SECTION 12 24 13

SECTION 12 32 13 - MANUFACTURED WOOD-VENEER-FACED CASEWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes manufactured wood-veneer-faced cabinets of stock design.
- B. Section Includes
 - 1. Wood-veneer faced casework - overlay door design, including (but not limited to):
 - a. Wall, base and tall cabinets
 - b. Tops for all base units
 - c. Countertop assemblies
 - d. Solid Surface windowsills/caps
 - e. Safety station units
 - f. Fume Hood
 - g. Laboratory Accessories
 - 2. Accessory items, including:
 - a. All filler panels, frame units, scribe strips, strips at walls, and similar items.
 - b. Cutouts for sinks, faucets, fittings, and other plumbing and electrical fixtures, electrical and mechanical runs and connections and similar items.
 - c. Epoxy resin countertops and sinks, drains and tail pieces
 - d. Materials and devices necessary to make solid connections to existing structure
- C. Products Furnished but not Installed Under this Section
 - 1. Mechanical components, electrical components, plumbing components and similar items included with specified casework items; refer to "Sequencing and Scheduling".

1.3 DEFINITIONS

- A. Definitions in the AWI's, AWMAC's, and WI's "Architectural Woodwork Standards" apply to the work of this Section.
- B. MDF: Medium-density fiberboard.

- C. Hardwood Plywood: A panel product composed of layers or plies of veneer, or of veneers in combination with lumber core, hardboard core, MDF core, or particleboard core, joined with adhesive and faced both front and back with hardwood veneers.

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 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1. Casework.
2. Hinges.
3. Pulls.
4. Door catches.
5. Drawer slides.
6. Label holders.
7. Drawer and hinged door locks.
8. Sliding-door hardware sets.
9. Adjustable shelf supports.
10. Grilles.
11. Fume Hood units
12. Emergency Eyewash units
13. Laboratory Accessories

- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work. Show fabrication details, including types and locations of hardware. Show installation details, including field joints and filler panels. Indicate manufacturer's catalog numbers for casework.

1. Roughing Drawings: Submit roughing drawings, showing complete roughing dimensions for plumbing, ventilating and electric services and components to be installed in casework, including location of existing roughing and dimensions, where applicable.
2. Groups/Assemblies: Submit shop drawings of groups or assemblies, including descriptions identifying units, parts, and accessories of each item and showing materials, dimensions, cabinet-cut details, and sink locations (where applicable).
3. Field Measurements: Prior to fabrication or ordering of any specified casework items, verify measurement at Site of actual space reserved for casework items; DO NOT take measurements from Contract Drawings. Give due consideration to architectural, structural, or mechanical discrepancies occurring during building construction. Make such discrepancies immediately known to Architect and obtain clarification of discrepancy in writing before proceeding with installation of affected casework items.

4. Color/Finishes: Shop drawings are not to include colors, wood finishes, stains, etc. All colors are to be selected by the Architect and issued to the contractor by an ASI during the construction phase.

C. Samples:

1. Casework Units: Without cost to Owner, submit samples, as requested, to demonstrate Contractor's ability to furnish required casework.
2. Color Selection: Submit actual samples of finishes, colors, and materials as required for color selection. Submit full range of manufacture colors, texture and wood tones.

D. Mock-Ups: Submit following units for comparison with items installed as part of casework installation. Mock-up units must be submitted prior to or with casework submittal. Casework submittals and shop drawings will not be approved without mock-up units.

1. One full-size base cabinet unit complete with hardware, doors, and drawers; without finish top.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Quality Standard Compliance Certificates: AWI Quality Certification Program certificates.

1. Joint Tolerances 400C-T-1.
2. Finishness Test 400C-T-2.

C. Sample Warranty: For special warranty.

D. Installer Experience Listing: Submit list of completed projects using products proposed for this Project, including owner's contact and telephone number for each project, demonstrating compliance with applicable "Qualifications" requirements specified below in "Quality Assurance" article.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish complete touchup kit for each type and finish of casework provided. Include scratch fillers, stains, finishes, and other materials necessary to perform permanent repairs to damaged casework finish.

1.8 QUALITY ASSURANCE

A. Manufacturer: Minimum 5-years' experience in manufacture of casework and other items similar to those specified and minimum 5 completed casework installations of similar size and requirements to that specified.

B. Installer: Minimum 5 completed casework installations of similar size and requirements to that specified.

- C. Installer Qualifications: An authorized representative who is trained and approved by manufacturer for installation of units required for this Project and a certified participant in AWI's Quality Certification Program

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver casework only after painting, utility roughing-in, and similar operations that could damage, soil, or deteriorate casework have been completed in installation areas. If casework must be stored in other than installation areas, store only in areas where environmental conditions meet requirements specified in "Project Conditions" Article.
- B. Keep finished surfaces covered with polyethylene film or other protective covering during handling and installation.

1.10 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 occupancy levels during the remainder of the construction period. Maintain temperature and relative humidity during the remainder of the construction period in range recommended for Project location by the AWI's, "Architectural Woodwork Standards."
- B. Field Measurements: Prior to fabrication or ordering of any specified casework items, verify measurement at Site of actual space reserved for casework items; DO NOT take measurements from Contract Drawings. Give due consideration to architectural, structural, or mechanical discrepancies occurring during building construction. Make such discrepancies immediately known to Architect and obtain clarification of discrepancy in writing before proceeding with installation of affected casework items.
- C. Locate concealed framing, blocking, and reinforcements that support casework by field measurements before being enclosed, and indicate measurements on Shop Drawings.

1.11 SEQUENCING AND SCHEDULING

- A. Coordinate the layout and installation of casework with all Prime Contractors. See Section 01 12 00 for each Contractor's coordination responsibilities.
- B. Refer to the casework model numbers for the plumbing and electrical fittings and fixtures that are shown to be part of the casework. Deliver these fittings and fixtures to the contractor assigned to their installation in Section 01 12 00. Obtain a signed receipt for their delivery.
- C. Provide all holes / cut outs in the casework for all Prime Contractors on the Project. Coordinate with the work on the E, P, & HVAC drawings and division 22, 23, 26, 27, and 28.

1.12 MAINTENANCE

- A. Extra Materials: Furnish complete touchup kit for each type and color of wood laboratory casework provided. Include scratch fillers, stains, finishes, and other materials necessary to perform permanent repairs to damaged laboratory casework finish.

1.13 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.
 - d. Deterioration of finishes.
 - 2. Contractor's Guarantee: Upon completion of installation of casework and after acceptance by Owner, furnish to Owner written statement accepting full responsibility for installation and guaranteeing adequacy and safety of attachment of all casework.
 - 3. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Basis-of-Design Product: Subject to compliance with requirements, provide "Wood Laboratory Casework Contemporary Style" by Wood-Metal Industries (Division of Wood-Mode, Inc.) Selinsgrove, PA or comparable product by one of the following:
 - 1. Kewaunee Scientific Corporation.
 - 2. Sheldon Laboratory Systems.
- C. Source Limitations: Obtain wood-veneer-faced casework with tops, sinks, special equipment, and service fixtures from same casework supplier to establish single responsibility for all casework components.

2.2 CASEWORK, GENERAL

- A. Quality Standard: Unless otherwise indicated, comply with the AWI's, AWMAC's, and WI's "Architectural Woodwork Standards" for grades of casework indicated for construction, finishes, installation, and other requirements.

1. Grade: Premium
 2. Provide labels and certificates from AWI certification program indicating that casework, including installation, complies with requirements of grades specified.
- B. Product Designations: Drawings indicate sizes, configurations, and finish materials of manufactured wood-veneer-faced casework by referencing designated manufacturer's catalog numbers. Other manufacturers' casework of similar sizes and door and drawer configurations, of same finish materials, and complying with the Specifications may be considered. See Section 01 60 00 "Product Requirements."
- C. Product Designations: Drawings indicate configurations of manufactured wood-veneer-faced casework by referencing designations of Casework Design Series numbering system in Appendix A of the AWI's, AWMAC's, and WI's "Architectural Woodwork Standards."

2.3 WOOD-VENEER-FACED CABINETS

- A. Design:
1. Lipped overlay with radiused wood edges.
- B. Wood Species: White Maple.
- C. Face Veneer Cut: Grade AA Plain sliced.
- D. Veneer Matching:
1. Provide veneers for each cabinet from a single flitch, book and running.
 - a. Provide continuous matching of adjacent drawer fronts within each cabinet.
- E. Grain Direction:
1. Vertical on doors, horizontal on drawer fronts.
 2. Lengthwise on face frame members.
 3. Vertical on end panels.
 4. Side to side on bottoms and tops of units.
 5. Vertical on knee-space panels.
 6. Horizontal on aprons.
- F. Exposed Materials:
1. Plywood:
 - a. Oak Plywood: Red oak, Grade AA, rotary cut, book matched, cross-banded, with solid hardwood core.
 - 1) 1/4 inch: Minimum 3-ply.
 - 2) 3/4 inch: Minimum 7-ply.

- b. Other Hardwood Plywood: Sound grade; cross-banded, with solid hardwood core.
 - 1) 1/4 inch: Minimum 3-ply.
 - 2) 3/4 inch: Minimum 7-ply.
 - 2. Solid Wood: Clear hardwood lumber of species indicated and selected for grain and color compatible with exposed plywood.
- G. Semi-exposed Materials:
 - 1. Solid Wood: Sound hardwood lumber, selected to eliminate appearance defects, of same species as exposed wood.
 - 2. Plywood: Hardwood plywood of same species as exposed wood. Provide backs of same species as faces.
 - 3. Provide solid wood or hardwood plywood for semi-exposed surfaces unless otherwise indicated.
 - 4. Hardboard: Use only for cabinet backs where exterior side of back is not exposed.
- H. Hardboard: Full tempered 2 sides, consisting of steam-exploded wood fibers, highly compressed into hard, dense 1/4-inch thick homogeneous sheet using natural resins and other added binders; providing following physical properties:
 - 1. Modulus of Rupture:5,000 PSI
 - 2. Density:.....56 PCF
 - 3. Internal Bond: 100.0 PSI
- I. Particleboard: Industrial grade meeting or exceeding CS 236-66 and ASTM D1037 with following physical properties:
 - 1. Density:.....47 PCF (+10 percent)
 - 2. Interior Bond:..... 60 PSI
 - 3. Modulus of Elasticity:..... 400,000 PSI
 - 4. Modulus of Rupture:.....2,400 PSI
 - 5. Screw Holding Power - Face:225 lbs.
 - 6. Screw Holding Power - Edge:.....200 lbs

2.4 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. Marine Grade Hardwood Plywood: typical for all countertop applications.
- D. Softwood Plywood: U.S. Department of Commerce (DOC) PS 1.
- E. Particleboard: ANSI A208.1, Grade M-2.
- F. MDF: ANSI A208.2, Grade 130.

- G. Hardboard: ANSI A135.4, Class 1 Tempered.
- H. Edge banding: Minimum 1/8-inch- thick, solid wood of same species as face veneer
 - 1. Select wood edge banding for grain and color compatible with face veneers.
 - 2. Colors: As selected by Architect from manufacturer's full range.
- I. Glass for Glazed Doors: Clear tempered glass complying with ASTM C 1048, Kind FT, Condition A, Type I, Class 1, Quality-Q3; not less than 5.0 mm thick.
- J. Countertop Solid surface material: Provide countertops with the following front and backsplash style: 1/2-inch thick, solid surface material Splashes 1/2" inch thick, solid surface material. Fabrication: Fabricate tops in one piece on marine grade plywood with shop-applied edges unless otherwise indicated. Comply with solid-surface-material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing. Solid Surface Material: Homogeneous solid sheets of filled plastic resin complying with ANSI SS1, Class A.
 - 1. Fabricate with loose splashes for field assembly.
 - 2. Adhesives: Adhesives shall not contain urea formaldehyde.
 - 3. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Hanex Solid Surfaces.
 - b. Corian
 - c. Formica Corporation.
 - d. Wilsonart International.
 - 4. Colors and Patterns: As selected by Architect from manufacturer's full range.
- K. Epoxy Resin Countertop/sills: Factory-molded modified epoxy-resin formulation with smooth, non-specular finish, edge as per details.
 - 1. Physical Properties:
 - a. Flexural Strength:Not less than 10,000 psi.
 - b. Modulus of Elasticity:Not less than 2,000,000 psi.
 - c. Hardness (Rockwell M):Not less than 100.
 - d. Water Absorption (24 Hours):Not more than 0.02 percent.
 - e. Heat Distortion Point:Not less than 260 deg F.
 - 2. Chemical Resistance: Epoxy-resin material has the following ratings when tested with indicated reagents according to NEMA LD 3, Test Procedure 3.4.5:
 - a. No Effect: Acetic acid (98 percent), acetone, ammonium hydroxide (28 percent), benzene, carbon tetrachloride, dimethyl formamide, ethyl acetate, ethyl alcohol, ethyl ether, methyl alcohol, nitric acid (70 percent), phenol, sulfuric acid (60 percent), and toluene.

- b. Slight Effect: Chromic acid (60 percent) and sodium hydroxide (50 percent).
 - 3. Countertop Fabrication: Fabricate with factory cutouts for sinks and with butt joints assembled with epoxy adhesive and pre-fitted, concealed metal splines.
 - a. Countertop Configuration: Molded into solid, flat, min.1 inch thick,
 - 1) Drip groove
 - 2) Back splash
 - 3) Marine edge
 - 4) Rounded edges and corners- refer to details
 - b. Countertop Configuration: As indicated.
 - c. Countertop Construction: Uniform throughout full thickness.
 - 4. Color: Black, Gray or Beige As selected by Architect from manufacturer's full range.
- L. Solid Surface windowsills/aprons/caps:
 - 1. Solid-Surfacing Material Thickness: 1/2-inch.
 - 2. Fabrication: Fabricate stools and aprons in one piece, unless otherwise indicated. Comply with solid-surface-material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing
 - 3. Adhesives: Adhesives shall not contain urea formaldehyde.
 - 4. 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. Hanex Solid Surfaces
 - b. Corian
 - c. Formica Corporation.
 - d. Wilsonart International.
 - 5. Colors and Patterns: As selected by Architect from manufacturer's full range.

2.5 FABRICATION

A. Base Cabinet Construction:

- 1. Tops: Horizontal frame with pinned mortise and tenon joints; joined to cabinet side with 8-mm hardwood dowels on 32-mm centers. Includes 1-1/8-inch thick x 1-3/4-inch deep front rail with 3/4-inch thick x 1-1/4-inch deep side rails and 3/4-inch thick x 1-3/4-inch deep back rail.

2. Divider Under Drawers: 3/4-inch thick x 2-1/4-inch deep front cross rail, secured to cabinet sides with 8-mm hardwood dowels on 32-mm centers. On all-drawer cabinets where locks are indicated, hardboard panel fitted in intermediate horizontal frame and placed between drawers to prevent access to other drawers.
3. Bottoms: 3/4-inch thick 7-ply hardwood plywood, let into 1-1/8-inch thick x 1-3/4-inch deep bottom rail and jointed to cabinet sides with 8-mm hardwood dowels on 32-mm centers.
4. Sub-Base: Separate and continuous (no cabinet body sides-to-floor), water resistant exterior grade plywood with concealed fastening to cabinet bottom. Ladder-type construction of front, back and intermediates to form a secure and level platform to which cabinets attach. Provide on surface of subbase, at exposed sides and ends, material to match cabinet material to ensure continuity where rubber base height may not cover due to floor shim. Typical
5. Tops, Dividers Under Drawers, and Bottoms: Securely glued and screwed under pressure to sides at assembly to ensure joint integrity and squareness.
6. Sides: 3/4-inch thick 7-ply hardwood plywood, faced with selected hardwood veneer for exposed surfaces and unselected but sound veneers for unexposed surfaces. Includes 3/8-inch thick hardwood nosing applied to exposed front edge of cabinet side. Where adjustable shelves required by specified manufacturer's catalog numbers, sides bored with 5 mm holes.
7. Backs: 1/4-inch thick tempered hardboard secured to cabinet top and bottom and dadoed into cabinet sides. Backs recessed 5/16-inch to permit accurate scribing to wall.
8. Removable Backs: Where indicated by specified manufacturer's catalog numbers, backs retained in vertical cleats secured to cabinet sides to provide tight joints and convenient access to plumbing.
9. Shelves: 1-inch thick 9-ply hardwood plywood with 3/8-inch solid lumber edge band front edges. Additional support provided at rear of cabinets 36 inches and wider.
10. Toe Space: 4-inches high x 3-1/4-inches deep with 3/4-inch thick x 4-inch high toe board, jointed between cabinet sides with 8 mm hardwood dowels.
11. Drawers - Semi-Flush Radius Lipped- Oak:
 - a. Drawer Face: 3/4-inch thick solid lumber core, faced with selected hardwood veneer.
 - b. Sides and Back: 1/2-inch thick solid hardwood; dovetailed at front and rear.
 - c. Bottoms: 1/4-inch thick tempered hardboard fitted and secured into grooves in drawer face, sides and back.
 - d. Interior Finish: Sealed and varnished to resist absorption.

- e. Slides: Side mount, epoxy-coated drawer slides, providing at least 100 lbs load capacity and incorporating positive stops. Provide progressive type slide with minimum 100 lbs load capacity for file drawers.

B. Wall Cabinet Construction:

1. Tops and Bottoms: 3/4-inch thick 7-ply hardwood plywood, let into 1-1/8-inch thick x 1-3/4-inch deep top and bottom rail and joined to cabinet sides with 8 mm hardwood dowels on 32 mm centers. Securely glued and screwed under pressure at sides to assembly to ensure joint integrity and unit squareness.
2. Sides: 3/4-inch thick 7-ply hardwood plywood, faced with selected hardwood veneer on exposed surfaces and unselected but sound veneer on unexposed surfaces. 3/8-inch thick hardwood nosing applied to exposed front edge of cabinet side. Where adjustable shelves required, 5 mm holes bored in sides on 32 mm centers.
3. Backs: 1/4-inch thick tempered hardboard secured to cabinet top and bottom, dadoed into cabinet sides, and recessed 5/16-inch to permit accurate scribing to wall.
4. Shelves: 1-inch thick 9-ply hardwood with 3/8-inch thick hardwood nosing on front edge. Shelves in 36-inch and wider cabinets include additional support at rear.

C. Cases:

1. Tops and Bottoms: 3/4-inch thick 7-ply hardwood plywood let into 1-1/8-inch thick x 1-3/4-inch deep top and bottom rail and joined to cabinet sides with 8 mm hardwood dowels on 32 mm centers. Tops and bottoms securely glued and screwed under pressure to sides at assembly to ensure joint integrity and unit squareness.
2. Sides: 3/4-inch thick 7-ply hardwood plywood, faced with selected hardwood veneer on exposed surfaces and unselected but sound veneers on unexposed surfaces. 3/8-inch thick hardwood nosing applied to front edge of cabinet side. When adjustable shelves required, 5 mm holes bored in sides.
3. Backs: 1/4-inch tempered hardboard secured to cabinet top and bottom, dadoed into cabinet sides, and recessed 5/16-inch to permit accurate scribing to wall.
4. Shelves: 3/4-inch thick 7-ply hardwood with 3/8-inch thick hardwood nosing on front edge. Shelves in 36-inch and wider cabinets include additional support at rear.
5. Toe Space: 4-inches high x 3-1/4-inches deep with 3/4-inch thick x 4-inch high toe board, joined between cabinet sides with 8 mm hardwood dowels.

D. Doors

1. Semi-Flush Radius Lipped – Oak:
 - a. Base and Wall Cabinets: 3/4-inch thick solid core, banded on all edges and faced with selected hardwood veneer.
 - b. Tall Cases: 1-1/8-inch thick solid lumber core, banded on all edges and faced with selected hardwood veneer.

2. Hinged Glazed Doors: 1-1/8-inch thick x 2-3/4-inch wide heavy selected hardwood frame fitted with 1/4-inch tempered glass and equipped with same carriers specified for solid case doors above.
 - a. Wall and Base Cabinets: 3/4-inch thick x 2-3/4-inch wide selected hardwood frame fitted and equipped as specified for “Hinged Glazed Doors” above.
- E. Filler Strips: Provide as needed to close spaces between cabinets and walls, ceilings, and indicated equipment. Fabricate from same material and with same finish as cabinets.

2.6 FINISH

- A. Wood Finishes: Varnish providing tough, hard properties to withstand most severe conditions and staining agents imparting clean, translucent appearance to wood substrate and enhance and improve natural graining in face without suggestion of masking or hiding. Finished film provides mellow, smooth texture.
 1. Surface Preparation: All surfaces thoroughly sanded with fine abrasive not coarser than 3/0 Garnet finishing paper, achieving absolute cleanliness before finishing coat application. All wood flour and abrasive particles removed with dry compressed air and all areas wiped with tack rag.
 2. Sealing: Synthetic resin-based sealer applied to all surfaces of drawer, cabinet doors, exposed surface and other small sections where complete sealing of edges necessary to prevent moisture absorption. Remainder of cabinet sprayed with sealer after application to specific surfaces. Sealer air-dried within 20 minutes to permit light scuff sanding with 5/0 Garnet finishing paper and subsequently thoroughly dusted.
 3. Stain: Pigmented stain consisting of non-fading and non-bleeding colors, ground in suitable vehicle, permitting blending in proportions required to produce color selected by Architect from manufacturer’s full range of standard and custom colors.
 4. Topcoat: Varnish consisting of moisture of chlorinated polymers and co-polymers suitably compounded with oil modified alkyd resin and other resinous plasticizers in solution of aromatic and oxygenated solvents. Produces cured film gloss with range of 40-50 measured by 60-degree gloss meter. Rubbed effect accomplished by inorganic flattening agent and acid catalyst added prior to spraying to convert film to cured state. Thorough sanding of previous coating provided to promote inter-coat adhesion with careful dusting to remove all powdered finish and abrasive prior to final coating.
 5. Chemical Resistance Properties –Oak Wood Veneer Casework
 - a. Spot Test to Evaporation
 - 1) Boiling Water.....No effect
 - 2) Ethyl Alcohol.....No effect
 - 3) Isopropyl AlcoholNo effect
 - 4) Methyl AlcoholNo Effect
 - 5) XylolNo effect
 - 6) Toluol.....No effect

- 7) Naptha.....No effect
- 8) GasolineNo effect
- 9) Methyl Ethyl Ketone.....No effect
- 10) AcetoneNo effect
- 11) Chloroform.....No effect
- 12) FormaldehydeNo effect
- 13) InkNo effect

b. Spot Test for One Hour

- 1) 25 percent Sulfuric Acid.....No effect
- 2) 70 percent Sulfuric Acid.....Film destroyed
- 3) 20 percent Hydrochloric Acid (5 min.).....No effect
- 4) 37 percent Hydrochloric Acid.....Very slight ring & stain
- 5) 50 percent Nitric Acid.....Film destroyed
- 6) 10 percent Sodium HydroxideNo effect
- 7) 29 percent Ammonia.....No effect
- 8) IodineSlight stain
- 9) LipstickNo effect
- 10) Crayon.....No effect
- 11) CatsupNo effect
- 12) Butter.....No effect
- 13) Oleo.....No effect
- 14) MustardNo effect
- 15) Grape Juice.....No effect
- 16) Coke or Pepsi Cola.....No effect
- 17) Vinegar.....No effect
- 18) Milk.....No effect

c. Adhesion and Toughness: Attempts to separate various finish layers from each other and from wood with razor blade or sharp knife are extremely difficult or results in no separation of various layers.

2.7 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: Wrap-around type, 5-knuckle pin, heavy-duty institutional type with rounded ends, finished in either brushed chrome or black as directed by Architect and concealing hinge screws when door closed.

- 1. Lipped Construction: 2-1/2-inches high x 0.072-inch thick.
- 2. Offset kitchen cabinet type, plain butt hinges or hinges with removable pins not acceptable.
- 3. 2 hinges provided on doors less than 44 inches high; 3 hinges provided on doors 44 inches high and higher.

- C. Pulls: Solid aluminum stainless-steel or chrome-plated brass wire pulls, fastened from back with two screws. Provide two pulls for drawers more than 24 inches wide.
- D. Door Catches: Zinc-plated Powder-coated, nylon-roller spring catch or dual, self-aligning, permanent magnet catch. Provide two catches on doors more than 48 inches high.
- E. Drawer Slides: BHMA A156.9, Type B05091.
 - 1. Standard Duty (Grade 1, Grade 2, and Grade 3): Side mounted and extending under the bottom edge of drawer; full partial-extension type; epoxy-coated steel with polymer rollers.
 - 2. Heavy Duty (Grade 1HD-100 and Grade 1HD-200): Side mounted; full, full-overtravel-extension type; zinc-plated, steel ball-bearing slides.
 - 3. Box Drawer Slides: Grade 1HD-100, for drawers not more than 6 inches high and 24 inches wide.
 - 4. File Drawer Slides: Grade 1HD-200, for drawers more than 6 inches high or 24 inches wide.
 - 5. Keyboard Slides: Grade 1HD-100, for computer keyboard shelves.
- F. Label Holders: Stainless steel or chrome plated, sized to receive standard label cards approximately 1 by 2 inches, and attached with screws or brads.
 - 1. Provide label holders on all mailbox units and as indicated on all drawers.
- G. Drawer and Hinged Door Locks: Cylindrical (cam) type, five-pin tumbler, brass with chrome-plated finish, and complying with BHMA A156.11, Grade 1.
 - 1. Provide a minimum of two keys per lock and six master keys.
 - 2. Provide locks on all doors and drawers.
- H. Adjustable Shelf Supports: Two-pin-locking plastic shelf rests complying with BHMA A156.9, Type B04013.
- I. Adjustable Wall Shelf Supports: Surface-type steel standards and steel shelf brackets, with epoxy powder-coated finish, complying with BHMA A156.9, Types B04102 and B04112.
- J. Countertop Support: type and style as called out on drawings.
- K. Grilles: Continuous satin aluminum finished countertop grille and toe-kick grille for air filtration at fin tube locations and as shown on Drawings similar to “Model #CT-PP-3 (c’top)/ #CT-PP-0 (toe)Linear Diffuser” by Titus.
- L. ADA Safety Station WM-D1001: in addition items noted below:
 - 1. Provide with ADA base unit.
 - 2. Emergency eyewash, 4 spray heads, lever handle.
 - 3. 1 Emergency Shower, 11” shower head
 - 4. 1 stainless steel sink, 11”

5. Pull rod
 6. Epoxy resin countertop.
 7. Provide 1 Drench Shower tester sim. to Bradley S19-330ST
- M. Fume Hood Unit Airfoil Bypass BMC laboratory #600 series– size as noted on drawings: in addition, items noted below:
1. Provide with ADA base unit.
 2. Fluorescent light fixture with bulbs, accessed from outside of air chamber.
 3. Stainless steel bottom sill
 4. Stainless steel sash interior
 5. Louvered front panel.
 6. Dished, epoxy resin countertop.
 7. 2 gas, 2, air, 2 vacuum services- provide cover plates for services not requires.
 8. 1 cold water gooseneck
 9. 1 cold water spigot, serrated tip
 10. 2 duplex, AC receptacles
 11. 1-3” x 6” oval cupsink, epoxy resin
 12. 1 switch only for blower unit
 13. Ceiling Enclosure, BMC Laboratory B-1700-AA Series, size as shown on drawings.

2.8 LABORATORY ACCESSORIES

- A. Burette Rods: Aluminum or stainless-steel rods, 1/2 inch in diameter and 18 inches long, threaded on 1 end to fit tapered plug adapter for flush socket receptacle. Provide with tapered plug adapter and receptacle.
- B. Upright Rod Assembly and Metal Crossbar: Alumim or stainless steel. Two vertical rods and 1 horizontal crossbar, 3/4 inch in diameter and 36 inches long, unless otherwise indicated; 2 flush socket receptacles and 2 crossbar clamps. Ends of vertical rods are tapered to fit receptacles; all other rod ends are rounded.
- C. Lattice Assembly: Aluminum or stainless-steel, vertical and horizontal rod lattice assembly with 3/4-inch- diameter rods at approximately 12 inches o.c. with 2 flush socket receptacles for mounting.
 1. Size: 48 inches wide by 36 inches high.

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.
- C. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 CASEWORK INSTALLATION

- A. Grade: Install cabinets to comply with same grade as item to be installed.
- B. Install casework level, plumb, and true; 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. Utility-Space Framing: Secure to floor with two fasteners at each frame. Fasten to partition framing, wood blocking, or metal reinforcements in partitions and to base cabinets.
- D. Base Cabinets: Adjust top rails and subtops within 1/16 inch of a single plane. Fasten cabinets to utility-space framing, partition framing, wood blocking, or reinforcements in partitions with fasteners spaced not more than 24 inches o.c. Fasten adjacent cabinets together with joints flush, tight, and uniform. Align similar adjoining doors and drawers to a tolerance of 1/16 inch.
 - 1. Where base cabinets are installed away from walls, fasten to floor at toe space at not more than 24 inches o.c. and at sides of cabinets with not less than 2 fasteners per side.
- E. Wall Cabinets: Adjust fronts and bottoms within 1/16 inch of a single plane. Fasten to hanging strips, masonry, partition framing, blocking, or reinforcements in partitions. Fasten each cabinet through back, near top, at not less than 24 inches o.c. Align similar adjoining doors to a tolerance of 1/16 inch.
- F. Fasten cabinets to adjacent cabinets and to masonry, framing, wood blocking, or reinforcements in walls and partitions to comply with the AWI's, AWMAC's, and WI's "Architectural Woodwork Standards."
- G. 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.
- H. Adjust casework and hardware so doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

3.3 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 Architect.
- C. Protect countertop surfaces during construction with 6-mil plastic or other suitable water-resistant covering. Tape to underside of countertop at minimum of 48 inches o.c.

END OF SECTION 12 32 13

SECTION 12 32 17- INSTRUMENTAL STORAGE CASEWORK AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Musical instrument cabinet system
 - 2. Accessory items, including:
 - a. All filler panels, frame units, scribe strips, strips at walls, and similar items.
 - b. Materials and devices necessary to make solid connections to existing structure.
- B. Products Furnished but not Installed Under this Section
 - 1. Mechanical components, electrical components, plumbing components and similar items included with specified casework items; refer to "Sequencing and Scheduling" below.

1.3 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.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Casework.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work. Show fabrication details, including types and locations of hardware. Show installation details, including field joints and filler panels. Indicate manufacturer's catalog numbers for casework.
 - 1. Roughing Drawings: Submit roughing drawings, showing complete roughing dimensions for plumbing, ventilating and electric services and components to be installed in casework, including location of existing roughing and dimensions, where applicable.

2. Groups/Assemblies: Submit shop drawings of groups or assemblies, including descriptions identifying units, parts, and accessories of each item and showing materials, dimensions, cabinet-cut details, and sink locations (where applicable).
3. Field Measurements: Prior to fabrication or ordering of any specified casework items, verify measurement at Site of actual space reserved for casework items; DO NOT take measurements from Contract Drawings. Give due consideration to architectural, structural, or mechanical discrepancies occurring during building construction. Make such discrepancies immediately known to Architect and obtain clarification of discrepancy in writing before proceeding with installation of affected casework items.
4. Color/Finishes: Shop drawings are not to include colors, wood finishes, stains, etc. All colors are to be selected by the Architect and issued to the contractor by an ASI during the construction phase.

C. Samples:

1. Casework Units: Without cost to Owner, submit samples, as requested, to demonstrate Contractor's ability to furnish required casework.
2. Color Selection: Submit actual samples of finishes, colors, and materials as required for color selection. Submit full range of manufacture colors, texture and wood tones.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Quality Standard Compliance Certificates: AWI Quality Certification Program certificates showing compliance with:
 1. Joint Tolerances 400C-T-1.
 2. Finishness Test 400C-T-2.
- C. Sample Warranty: For special warranty.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum 5-year's experience in manufacture of casework and other items similar to those specified and minimum 5 completed casework installations of similar size and requirements to that specified.
- B. Installer Qualifications: An authorized representative who is trained and approved by manufacturer for installation of units required for this Project and a certified participant in AWI's Quality Certification Program.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver casework only after painting, utility roughing-in, and similar operations that could damage, soil, or deteriorate casework have been completed in installation areas. If casework must be stored in other than installation areas, store only in areas where environmental conditions meet requirements specified in "Project Conditions" Article.
- B. Keep finished surfaces covered with polyethylene film or other protective covering during handling and installation.

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 occupancy levels during the remainder of the construction period. Maintain temperature and relative humidity during the remainder of the construction period in range recommended for Project location by the AWI's, AWMAC's, and WI's "Architectural Woodwork Standards."
- B. Established Dimensions: Where casework 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.
- C. Locate concealed framing, blocking, and reinforcements that support casework by field measurements before being enclosed, 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. Contractor's Guarantee: Upon completion of installation of casework and after acceptance by Owner, furnish to Owner written statement accepting full responsibility for installation and guaranteeing adequacy and safety of attachment of all casework.
 - 3. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Basis-of-Design Product: Subject to compliance with requirements, provided by “Wenger Corporation, Owatonna, Minnesota.
- C. Source Limitations: Obtain all casework items including tops, sinks, special equipment, and service fixtures, from same casework supply company to establish single responsibility for casework items.

2.2 CASEWORK, GENERAL

- A. Quality Standard: Unless otherwise indicated, comply with the AWI's, AWMAC's, and WI's "Architectural Woodwork Standards" for grades of casework indicated for construction, finishes, installation, and other requirements.
 - 1. Grade: Premium.
 - 2. Provide certificates from AWI certification program indicating that casework, including installation, complies with requirements of grades specified.
- B. Product Designations: Drawings indicate sizes, configurations, and finish materials of manufactured plastic-laminate-faced cabinets by referencing designated manufacturer's catalog numbers. Other manufacturers' casework of similar sizes and door and drawer configurations, of same finish materials, and complying with the Specifications may be considered. See Section 016000 "Product Requirements."
- C. Product Designations: Drawings indicate configurations of manufactured plastic-laminate-faced cabinets by referencing designations of Casework Design Series numbering system in Appendix A of the AWI's "Architectural Woodwork Standards."
- D. Minimum Component Flammability Requirements: Provide casework with components meet following requirements to achieve minimum of “Class C” rating per ASTM E84.

	<u>Flame Spread</u>	<u>Smoke Developed</u>
1. Exterior High-Pressure Laminate.....	30	30
2. High Pressure Laminate Exterior Bonded to High Performance Particleboard Core Material: .	165	135

2.3 CASEWORK

- A. Design:
 - 1. Lipped overlay with radiused 3mm edges.

B. Exposed Materials:

1. Plastic Laminate: Grade HGS.
 - a. Colors and Patterns: As selected by Architect from manufacturer's full range
 - b. For exterior cabinet surfaces, and interior of open cabinets.
2. Unless otherwise indicated, provide specified edge banding on all exposed edges.

C. Semi exposed Materials:

1. Plastic Laminate: Grade VGS unless otherwise indicated. Provide plastic laminate for semi exposed surfaces unless otherwise indicated.
 - a. 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. Thermoset Decorative Panels: Provide thermoset decorative panels for semiexposed surfaces unless otherwise indicated.
 - a. 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.
4. Unless otherwise indicated, provide specified edge banding on all semi exposed edges.

D. Concealed Materials:

1. Solid Wood: Any hardwood or softwood species, with no defects affecting strength or utility.
2. Plywood: Hardwood plywood.
3. Plastic Laminate: Grade BKL.
4. Particleboard.
5. MDF.
6. Hardboard.

2.4 MATERIALS

- A. Minimum Component Flammability Requirements: Provide casework with components meet following requirements to achieve minimum of "Class C" rating per ASTM E84.
- B. Cabinet Wall Panels: 3/4" thick industrial (cabinet) grade particle board, minimum 45-49 lb. density with thermoset polyester (melamine not acceptable) laminate on both sides for totally-finished construction. No backer sheets or unfinished surface may be used on unexposed sides.

C. Cabinet Shelving:

1. Cabinets up to 48 inches wide: One-piece high-density blow-molded polyethylene with 1-3/8" radius front edge (patented). Cabinets up to 27" wide mount to cabinet walls with one-piece molded rigid ST nylon clip, depending on cabinet model. 48" shelves are supported by two or three structural tubular members 1-1/2"x 1" x 16-gauge wall thickness with 14-gauge welded end plates. Shelf is replaceable with out damage to adjacent surfaces. Doweled shelves and shelves with exposed metal trim shall not be permitted. Molded plastic instrument storage shelf shall have a static load capacity of over 1,000 lbs.
2. 60-inch-wide cabinets: One-piece high density formed polyethylene with radius front edge and 3/16" wall thickness. Ribbed for structural integrity. Supported by three structural tubular members 1-1/2" x 1" x 16ga. wall thickness with 14 gauge welded end plates. Molded plastic instrument storage shelf shall have a static load capacity of over 1,000 lbs.
3. Corner cabinet revolving shelving: Shelf is constructed of : 16-gauge steel and is bolted to revolving 12-gauge steel center post with 10-gauge steel brackets. Shelf and center post in oyster powder-coat finish. Revolving shelf shall have a load capacity of 50 lbs. On each side of shelf ; 100 lbs. Per 360 degree shelf.
4. Garment-hanger Rods: Garment-hanger rods support a minimum vertical load of 200 lbs. applied anywhere along the width of the unit.

D. Edging: Heat bonded 3mm beveled PVC edge-banding machine applied using hot-melt adhesives; edges and corners machine profiled for safety, color as selected by Architect from manufacturer's standard colors.

E. Finish Hardware:

1. Joinery Hardware: 2" 1/4-20 panel connectors with 15 mm head diameter. Steel thread inserts shall be utilized to join desired cabinets side-by-side; use factory-jigged and drilled joinery holes. Finish: Powder paint coating, color as selected by Architect from manufacturer's standard colors.
2. Cabinet levelers: Structural leveling glides for each cabinet accessible from within the unit when desired, concealed in complete installation. Glides shall have minimum 3/8" diameter threaded rod in steel corner brackets, minimum of 4 glides per cabinet; 6 for cabinets with divider panels. Use of wood shims is not acceptable.

F. Cabinet Back Panel:

1. Standard cabinet back; 1/4" thick prefinished hardboard, color to match interior of side and top panels.
2. Corner cabinet revolving shelf model includes 1/4" thick pre-finished hardboard curved deflector panel.

2.5 FABRICATION

- A. Fabricated and package all components in factory and ship fully assembled or ready to assemble.

2.6 CASEWORK HARDWARE AND ACCESSORIES

- A. Vertical Closure Kit: Provide visual closure between wall and cabinet. Constructed of 3/4" thick thermoset polyester composite wood to match cabinet side panels. Colors: oyster. Will fit 3/4"- to 30"-wide opening.
- B. Horizontal Closure Kit: Provide visual closure between top of cabinet and soffit. Constructed of 3/4" thick thermoset polyester composite wood to match cabinet side panels. Color: oyster. Will fit 3/4"- to 30"-high opening.
- C. Top Back Filler Kit: Provide visual closure between back wall and top panel of cabinet. Constructed of 3/4" thick thermoset polyester composite wood to match cabinet top panels. Color: oyster. Will fit 10"- and 20"- deep openings.
- D. Finished Back Panel: Provide panel to attach to cabinet back that is exposed. Constructed of 1/2" thick thermoset polyester composite wood to match cabinet. Color: oyster.
- E. Label Holders: chrome plated, sized to receive standard label cards, attached with screws or brads.
 - 1. Provide label holders as shown on drawers.
- F. Drawer and Hinged Door Locks: Cylindrical (cam) type, five-pin tumbler, brass with chrome-plated finish, and complying with BHMA A156.11, Grade 1.
 - 1. Provide a minimum of two keys per lock and six master keys.
 - 2. Provide locks on all doors and drawers.
- G. Adjustable Shelf Supports: Two-pin locking plastic shelf rests complying with BHMA A156.9, Type B04013. Load rating of a minimum of 300 lbs each support.

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.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 CASEWORK INSTALLATION

- A. Grade: Install cabinets to comply with same grade as item to be installed.
- B. Install casework level, plumb, and true; 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 (1.5 mm) of a single plane. Align similar adjoining doors and drawers to a tolerance of 1/16 inch (1.5 mm). 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 (1.5 mm) of a single plane. Fasten to hanging strips, masonry, framing, wood blocking, or reinforcements in walls and partitions. Align similar adjoining doors to a tolerance of 1/16 inch (1.5 mm).
- E. Fasten cabinets to adjacent cabinets and to masonry, framing, wood blocking, or reinforcements in walls and partitions to comply with the AWI'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 casework and hardware so doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

3.3 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 Architect.

END OF SECTION 12 32 17

SECTION 12 56 51 - LIBRARY FURNITURE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Wood-case library shelving.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for library furniture and accessories.
 - 1. Wood-case shelving.
- B. Shop Drawings:
 - 1. Include plans, elevations, sections, and details.
 - 2. Show clear-aisle widths from face of units.
 - 3. Detail fabrication and installation of library shelving systems including methods of anchoring to building structure at locations recommended by manufacturer.
- C. Samples for Initial Selection: For units with factory-applied finishes, 6 inches in size.
- D. Samples for Verification: For the following products:
 - 1. One full-size finished section of wood-faced circulation desk assembly complete with hardware, doors, and drawers; including countertop.

1.5 INFORMATIONAL SUBMITTALS

- A. Seismic Design Calculations: For seismic design of library shelving systems including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- B. Qualification Data: For Installer.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For library stack systems to include in maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
- B. Source Limitations: Obtain library furniture through one source from a single manufacturer, unless noted otherwise.
- C. Fire-Test-Response Characteristics of Upholstered Chairs:
 - 1. Fabric: Class 1 according to U.S. Department of Commerce (DOC) CS 191 and 16 CFR 1610.61, tested according to California Technical Bulletin 117.
 - 2. Padding: Comply with California Technical Bulletin 117.
 - 3. Full-Scale Fire Test: Comply with California Technical Bulletin 133.
- D. Product Options: Drawings indicate size, profiles, and dimensional requirements of library furniture and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements."
 - 1. Do not modify requirements, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver library furniture only after painting, utility roughing-in, and similar operations that could damage, soil, or deteriorate library furniture have been completed in installation areas. If library furniture must be stored in other than installation areas, store only in areas where environmental conditions meet requirements specified in "Project Conditions" Article.
- B. Keep finished surfaces covered with polyethylene film or other protective covering during handling and installation.

1.9 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install library furniture 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 occupancy levels during the remainder of the construction period.
- B. Field Measurements: Verify actual dimensions of construction contiguous with library furniture by field measurements before fabrication. Indicate measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Library shelving systems shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

2.2 WOOD-CASE SHELVING

- A. Wood-Case Library Shelving: Shelving designed for library use and consisting of base frame and full end, top, and back panels, with end panels made to receive pins to support adjustable shelves.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Worden Company; Pin-Fast Shelving or comparable product.
- B. Wood Case Library Shelving: Shelving designed for library use and consisting of full end, top, and back panels, with end panels made to receive pins to support adjustable shelves.
 - 1. Configuration: Starter/adder units.
- C. Vertical Panels: Panels consisting of lumber-core veneer panels, 1-inch-thick, with solid-wood banding. Provide two rows of 8 mm holes at 32 mm intervals for shelf support pins on one side of end panels and both sides of intermediate panels.
- D. Base Frames: Lumber-core veneer panel external toe kick; particleboard with thermally fused melamine internal and back toe kicks; 4 inches high; designed to support bottom shelf and fabricated to attach and tie together vertical panels.
- E. Wood Shelves: Panels consisting of solid hardwood boards glued together, 3/4-inch-thick, with 2-inch solid-wood nosing strip, and grooved on underside to rest securely on supporting pins.
- F. Cornice Tops: 3/4-inch-thick, particleboard-core veneer panel banded with solid hardwood fasciae on one side for single-faced units and on two sides for double-faced units, fabricated to attach and tie together vertical panels.
- G. Back panels: Veneer-core, veneer-faced panels, 1/4-inch-thick.
- H. Bookstack Units:
 - 1. Type: Single faced units.
 - 2. Width: 36 inches-or as shown modified.
 - 3. Height and Number of Shelves:
 - a. 30 inches; two adjustable shelves; one base shelf.
 - b. 42 inches; three adjustable shelves; one base shelf.
 - c. 63 inches: five adjustable shelves; one base shelf.

4. Shelf Depth: 12 inches nominal.
5. Shelf Style:
 - a. Flat, unless noted otherwise.
 - b. Adjustable divider; where indicated.
 - 1) Notch shelf bottom for dividers.
 - c. Pivot type periodical; for use in 12-inch-deep units, where indicated.
 - 1) Provide retaining rail, and adjustable pins for access to stored back issues.
 - d. Hinged periodical; for use in 16-inch-deep units, where indicated.
 - 1) Provide retaining rail and allow for shelves to be self-storing in open position.

I. Bookstack Units:

1. Type: Double faced units- 24” deep, movable.
2. Width: 36 inches.
3. Height and Number of Shelves:
 - a. 42 inches; three adjustable shelves; one base shelf.
4. Shelf Depth: 12 inches nominal.
5. Shelf Style:
 - a. Flat, unless noted otherwise.

J. Accessories:

1. Adjustable Shelf Dividers: One-piece shelf partitions, with hooks or tabs to fit in slots in divider shelves.
 - a. Provide three per adjustable divider shelf.

2.3 STRUCTURAL SUPPORT

- A. Wall Anchorage: Manufacturer's standard, galvanized steel anchor designed to secure shelving to adjacent wall. Provide one per shelving unit for each shelving unit adjacent to a wall.

2.4 GENERAL FINISH REQUIREMENTS

- A. 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.

2.5 WOOD FINISHES

- A. Preparation: Sand wood units after assembling for uniform smoothness at least equivalent to that produced by 220-grit sanding and without machine marks, cross sanding, or other surface blemishes.
- B. Staining: Remove fibers and dust and apply wash-coat sealer and stain to exposed and semi exposed surfaces as required to provide uniform color and to match approved samples.
- C. Finishing: Apply manufacturer's standard, baked, clear finish consisting of a sealer and a conversion varnish or nitro cellulos lacquer topcoat. Sand and wipe clean between applications of sealer and topcoat.

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 library stack systems.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Vacuum finished floor and wet mop resilient flooring over which shelving is to be installed.
- B. Before installing wood-case shelving], condition materials to average prevailing humidity in installation areas for a minimum of 48 hours unless longer conditioning is recommended by manufacturer.

3.3 INSTALLATION, WOOD CASE LIBRARY SHELVING

- A. Install library shelving systems at locations indicated on Drawings and according to manufacturer's written instructions.
- B. Level units with integral adjustable leveling devices to a tolerance of 1/8 inch in 96 inches for level and plumb.

- C. Install using anchorage or bracing as recommended by manufacturer and as required for stability.
- D. Install the following with concealed fasteners:
 - 1. End panels.
 - 2. Canopy tops- solid surface.
- E. Install shelves at equal spacing in each unit.

3.4 CLEANING AND PROTECTING

- 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 Architect.
- C. Protect installed products from damage during remainder of the construction period.

END OF SECTION 12 56 51

SECTION 13 34 19 - METAL BUILDING SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Structural-steel framing.
 - 2. Foamed-insulation-core metal roof panels.
 - 3. Foamed-insulation-core metal wall panels.
 - 4. Metal soffit panels.
 - 5. Thermal insulation.
 - 6. Accessories.

1.3 DEFINITIONS

- A. Terminology Standard: See MBMA's "Metal Building Systems Manual" for definitions of terms for metal building system construction not otherwise defined in this Section or in referenced standards.
- B. Moist Environment: Areas indicated as "Moist Environment" on Drawings. Moist environment areas require special finishing.

1.4 SUBMITTALS, GENERAL

- A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of metal building system component. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:
 - 1. Structural-steel-framing system.
 - 2. Foamed-insulation-core metal roof panels.
 - 3. Foamed-insulation-core metal wall panels.
 - 4. Metal soffit panels.
 - 5. Thermal insulation and vapor retarder facings.
 - 6. Flashing and trim.
 - 7. Accessories.

- B. Shop Drawings: For the following metal building system components. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Anchor-Bolt Plans: Submit anchor-bolt plans and templates before foundation work begins. Include location, diameter, and projection of anchor bolts required to attach metal building to foundation.
 - 2. Structural-Framing Drawings: Show complete fabrication of primary and secondary framing; include provisions for openings. Indicate welds and bolted connections, distinguishing between shop and field applications. Include transverse cross-sections.
 - 3. Metal Roof and Wall Panel Layout Drawings: Show layouts of metal panels including methods of support. Include details of edge conditions, joints, panel profiles, corners, anchorages, trim, flashings, closures, penetrations and special details. Distinguish between factory- and field-assembled work; show locations of exposed fasteners.
 - a. Show roof-mounted items.
 - b. Show wall-mounted items.
- C. Samples: For units with factory-applied color finish.
- D. Warranties: Sample of special warranties.
- E. Delegated-Design Submittal: For metal building systems indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
 - 1. Column Reactions: Submit all reactions required for final design of foundations for metal building systems not fewer than 14 days prior to beginning of construction of foundation components.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified erector, manufacturer, and professional engineer.
- B. Manufacturer Accreditation: Statement that metal building system and components were designed and produced by a manufacturer accredited according to the International Accreditation Service's AC472.
- C. Welding certificates.
- D. Metal Building System Certificates: For each type of metal building system, from manufacturer.
 - 1. Letter of Design Certification: Signed and sealed by a qualified professional engineer. Include the following:
 - a. Name and location of Project.
 - b. Order number.

- c. Name of manufacturer.
 - d. Name of Contractor.
 - e. Building dimensions including width, length, height, and roof slope.
 - f. Indicate compliance with AISC standards for hot-rolled steel and AISI standards for cold-rolled steel, including edition dates of each standard.
 - g. Governing building code and year of edition.
 - h. Design Loads: Include dead load, roof live load, collateral loads, roof snow load, deflection, wind loads/speeds and exposure, seismic design category or effective peak velocity-related acceleration/peak acceleration, and auxiliary loads (cranes).
 - i. Load Combinations: Indicate that loads were applied acting simultaneously with concentrated loads, according to governing building code.
 - j. Building-Use Category: Indicate category of building use and its effect on load importance factors.
- E. Erector Certificates: For each product, from manufacturer.
- F. Manufacturer Certificates: For each product, from manufacturer.
- G. Material Test Reports: For each of the following products:
- 1. Structural steel including chemical and physical properties.
 - 2. Bolts, nuts, and washers including mechanical properties and chemical analysis.
 - 3. Tension-control, high-strength, bolt-nut-washer assemblies.
 - 4. Shop primers.
 - 5. Nonshrink grout.
- H. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for insulation and vapor-retarder facings. Include reports for thermal resistance, fire-test-response characteristics, water-vapor transmission, and water absorption.

1.7 CLOSEOUT SUBMITTALS

- A. Field quality-control reports.
- B. Maintenance Data: For metal panel finishes to include in maintenance manuals.
- C. Warranties: Executed special warranties.

1.8 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer and member of MBMA.
 - 1. Accreditation: According to the International Accreditation Service's AC472.

2. Engineering Responsibility: Preparation of comprehensive engineering analysis and Shop Drawings by a professional engineer who is legally qualified to practice in jurisdiction where Project is located.
- B. Erector Qualifications: An experienced erector who specializes in erecting and installing work similar in material, design, and extent to that indicated for this Project and who is acceptable to manufacturer.
- C. Welding Qualifications: Qualify procedures and personnel according to the following:
1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
 2. AWS D1.3, "Structural Welding Code - Sheet Steel."
- D. Structural Steel: Comply with AISC 360, "Specification for Structural Steel Buildings," for design requirements and allowable stresses.
- E. Cold-Formed Steel: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" for design requirements and allowable stresses.
- F. Fire-Resistance Ratings: Where indicated, provide metal panel assemblies identical to those of assemblies tested for fire resistance per ASTM E119 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.
 2. Combustion Characteristics: ASTM E136.
- G. Preinstallation Conference: Conduct conference at Project site.
1. Review methods and procedures related to metal building systems including, but not limited to, the following:
 - a. Condition of foundations and other preparatory work performed by other trades.
 - b. Structural load limitations.
 - c. Construction schedule. Verify availability of materials and erector's personnel, equipment, and facilities needed to make progress.
 - d. Required tests, inspections, and certifications.
 - e. Unfavorable weather and forecasted weather conditions.
 2. Review methods and procedures related to metal roof panel assemblies including, but not limited to, the following:
 - a. Compliance with requirements for purlin and rafter conditions, including flatness and attachment to structural members.
 - b. Structural limitations of purlins and rafters during and after roofing.
 - c. Flashings, special roof details, roof drainage, roof penetrations, and condition of other construction that will affect metal roof panels.
 - d. Temporary protection requirements for metal roof panel assembly during and after installation.
 - e. Roof observation and correction after metal roof panel installation.

3. Review methods and procedures related to metal wall panel assemblies including, but not limited to, the following:
 - a. Compliance with requirements for support conditions, including alignment between and attachment to structural members.
 - b. Structural limitations of girts and columns during and after wall panel installation.
 - c. Flashings, special siding details, wall penetrations, openings, and condition of other construction that will affect metal wall panels.
 - d. Temporary protection requirements for metal wall panel assembly during and after installation.
 - e. Wall observation and correction after metal wall panel installation.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components, sheets, 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.

1.10 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when weather conditions permit metal panels to be installed according to manufacturers' written instructions and warranty requirements.
- B. Field Measurements:
 1. Established Dimensions for Foundations: Comply with established dimensions on approved anchor-bolt plans, establishing foundation dimensions and proceeding with fabricating structural framing without field measurements. Coordinate anchor-bolt installation to ensure that actual anchorage dimensions correspond to established dimensions.
 2. Established Dimensions for Metal Panels: Where field measurements cannot be made without delaying the Work, either establish framing and opening dimensions and proceed with fabricating metal panels without field measurements, or allow for field trimming metal panels. Coordinate construction to ensure that actual building dimensions, locations of structural members, and openings correspond to established dimensions.

1.11 COORDINATION

- A. Coordinate sizes and locations of concrete foundations and casting of anchor-bolt inserts into foundation walls and footings. Concrete, reinforcement, and formwork requirements are specified in Division 03 Section "Cast-in-Place Concrete."
- B. Coordinate metal panel assemblies with rain drainage work, flashing, trim, and construction of supports and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.12 WARRANTY

- A. **Special Warranty on Metal Panel Finishes:** Manufacturer's standard form in which manufacturer agrees to correct 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.
- B. **Special Weathertightness Warranty for Standing-Seam Insulated Metal Roof Panels:** Manufacturer's standard form in which manufacturer agrees to correct or replace standing-seam metal roof panel assemblies that leak or otherwise fail to remain weathertight within specified warranty period.
 - 1. **Warranty Period:** 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. **Manufacturers:** Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Behlen Building Systems.
 - 2. Butler Manufacturing Company; a division of BlueScope Buildings North America, Inc.
 - 3. Ceco Building Systems; subsidiary of NCI Building Systems, Inc.
 - 4. Metallic Building Company; subsidiary of NCI Building Systems, Inc.
 - 5. Star Building Systems; subsidiary of NCI Building Systems, Inc.
 - 6. Varco Pruden; a division of BlueScope Buildings North America, Inc.

2.2 METAL BUILDING SYSTEMS

- A. Description: Provide a complete, integrated set of mutually dependent components and assemblies that form a metal building system capable of withstanding structural and other loads, thermally induced movement, and exposure to weather without failure or infiltration of water into building interior.
 - 1. Provide metal building system of size and with bay spacings, roof slopes, and spans indicated.
- B. Primary-Frame Type:
 - 1. Rigid Clear Span: Solid-member, structural-framing system without interior columns.
- C. End-Wall Framing: Manufacturer's standard, for buildings not required to be expandable, consisting of primary frame, capable of supporting one-half of a bay design load, and end-wall columns.
- D. Secondary-Frame Type: Manufacturer's standard purlins and joists and exterior-framed (bypass) girts.
- E. Roof System: Manufacturer's standard vertical-rib, foamed insulation-core standing-seam metal roof panels with field-installed insulation.
- F. Exterior Wall System: Manufacturer's standard foamed-insulation-core metal wall panels .

2.3 METAL BUILDING SYSTEM PERFORMANCE

- A. Delegated Design: Design metal building system, including comprehensive engineering analysis by a qualified professional engineer licensed in New York, using performance requirements and design criteria indicated.
- B. Structural Performance: Metal building systems shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to procedures in MBMA's "Metal Building Systems Manual."
 - 1. Design Loads: As indicated on Drawings and in accordance with the Building Code of New York State and as required by ASCE/SEI 7.
 - 2. Load Combinations: As required by governing building code. Design to worst-case combination.
 - 3. Deflection Limits: Design metal building system assemblies to withstand design loads with deflections no greater than the following:
 - a. Purlins and Rafters: Vertical deflection of 1/240 of the span for total load; 1/360 of the span for live load.
 - b. Girts: Horizontal deflection of 1/240 of the span.

- c. Metal Roof Panels: Vertical deflection of 1/240 of the span for total load; 1/360 of the span for live load.
 - d. Metal Wall Panels: Horizontal deflection of 1/240 of the span.
 - e. Design secondary-framing system to accommodate deflection of primary framing and construction tolerances, and to maintain clearances at openings.
- 4. Drift Limits: Engineer building structure to withstand design loads with drift limits no greater than the following:
 - a. Lateral Drift: Maximum of 1/400 of the building height.
- 5. Metal panel assemblies shall withstand the effects of gravity loads and loads and stresses within limits and under conditions indicated according to ASTM E1592.
- C. Thermal Movements: 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 calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.
- D. Air Infiltration for Metal Roof Panels: Air leakage through assembly of not more than 0.06 cfm/sq. ft. of roof area when tested according to ASTM E 1680 at negative test-pressure difference of 1.57 lbf/sq. ft..
- E. Air Infiltration for Metal Wall Panels: Air leakage through assembly of not more than 0.06 cfm/sq. ft. of wall area when tested according to ASTM E 283 at static-air-pressure difference of 1.57 lbf/sq. ft..
- F. Water Penetration for Metal Roof Panels: No water penetration when tested according to ASTM E 1646 at test-pressure difference of 2.86 lbf/sq. ft..
- G. Water Penetration for Metal Wall Panels: No water penetration when tested according to ASTM E 331 at a wind-load design pressure of not less than 2.86 lbf/sq. ft..
- H. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for Class 90.
- I. Thermal Performance: Provide insulated metal panel assemblies with the following maximum U-factors and minimum R-values for opaque elements when tested according to ASTM C 1363 or ASTM C 518:
 - 1. Metal Roof Panel Assemblies:
 - a. U-Factor: 0.034.
 - b. R-Value: 29.
 - 2. Metal Wall Panel Assemblies:
 - a. R-Value: 20.

2.4 STRUCTURAL-STEEL FRAMING

- A. Primary Framing: Manufacturer's standard primary-framing system, designed to withstand required loads and specified requirements. Primary framing includes transverse and lean-to frames; rafter, rake, and canopy beams; sidewall, intermediate, end-wall, and corner columns; and wind bracing.
1. General: Provide frames with attachment plates, bearing plates, and splice members. Factory drill for field-bolted assembly. Provide frame span and spacing indicated.
 - a. Slight variations in span and spacing may be acceptable if necessary to comply with manufacturer's standard, as approved by Architect.
 2. Rigid Clear-Span Frames: I-shaped frame sections fabricated from shop-welded, built-up steel plates or structural-steel shapes. Interior columns are not permitted.
 3. Exterior Column Type: Uniform depth.
 4. Rafter Type: Uniform depth.
- B. End-Wall Framing: Manufacturer's standard primary end-wall framing fabricated for field-bolted assembly to comply with the following:
1. End-Wall and Corner Columns: I-shaped sections fabricated from structural-steel shapes; shop-welded, built-up steel plates; or C-shaped, cold-formed, structural-steel sheet.
 2. End-Wall Rafters: C-shaped, cold-formed, structural-steel sheet; or I-shaped sections fabricated from shop-welded, built-up steel plates or structural-steel shapes.
- C. Secondary Framing: Manufacturer's standard secondary framing, including purlins, girts, eave struts, flange bracing, base members, gable angles, clips, headers, jambs, and other miscellaneous structural members. Unless otherwise indicated, fabricate framing from either cold-formed, structural-steel sheet or roll-formed, metallic-coated steel sheet, prepainted with coil coating, to comply with the following:
1. Purlins: C- or Z-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes; minimum 2-1/2-inch-wide flanges.
 - a. Depth: As needed to comply with system performance requirements.
 2. Purlins: Steel joists of depths indicated.
 3. Girts: C- or Z-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes. Form ends of Z-sections with stiffening lips angled 40 to 50 degrees from flange, with minimum 2-1/2-inch-wide flanges.
 - a. Depth: As required to comply with system performance requirements.
 4. Eave Struts: Unequal-flange, C-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes; to provide adequate backup for metal panels.
 5. Flange Bracing: Minimum 2-by-2-by-1/8-inch structural-steel angles or 1-inch-diameter, cold-formed structural tubing to stiffen primary-frame flanges.

6. Sag Bracing: Minimum 1-by-1-by-1/8-inch structural-steel angles.
 7. Base or Sill Angles: Minimum 3-by-2-inch zinc-coated (galvanized) steel sheet.
 8. Purlin and Girt Clips: Manufacturer's standard clips fabricated from steel sheet. Provide galvanized clips where clips are connected to galvanized framing members.
 9. Secondary End-Wall Framing: Manufacturer's standard sections fabricated from zinc-coated (galvanized) steel sheet.
 10. Framing for Openings: Channel shapes; fabricated from cold-formed, structural-steel sheet or structural-steel shapes. Frame head and jamb of door openings and head, jamb, and sill of other openings.
 11. Miscellaneous Structural Members: Manufacturer's standard sections fabricated from cold-formed, structural-steel sheet; built-up steel plates; or zinc-coated (galvanized) steel sheet; designed to withstand required loads.
- D. Bracing: Provide adjustable wind bracing as follows:
1. Rods: ASTM A 36/A 36M; ASTM A 572/A 572M, Grade 50; or ASTM A 529/A 529M, Grade 50; minimum 1/2-inch-diameter steel; threaded full length or threaded a minimum of 6 inches at each end.
 2. Cable: ASTM A 475, 1/4-inch-diameter, extra-high-strength grade, Class B, zinc-coated, seven-strand steel; with threaded end anchors.
 3. Angles: Fabricated from structural-steel shapes to match primary framing, of size required to withstand design loads.
 4. Rigid Portal Frames: Fabricated from shop-welded, built-up steel plates or structural-steel shapes to match primary framing; of size required to withstand design loads.
 5. Fixed-Base Columns: Fabricated from shop-welded, built-up steel plates or structural-steel shapes to match primary framing; of size required to withstand design loads.
 6. Diaphragm Action of Metal Panels: Design metal building to resist wind forces through diaphragm action of metal panels.
 7. Bracing: Provide wind bracing using any method specified above, at manufacturer's option.
- E. Bolts: Provide plain-finish bolts for structural-framing components that are primed or finish painted. Provide hot-dip galvanized bolts for structural-framing components that are galvanized.
- F. Materials:
1. W-Shapes: ASTM A 992/A 992M; ASTM A 572/A 572M, Grade 50 or 55; or ASTM A 529/A 529M, Grade 50 or 55.

2. Channels, Angles, M-Shapes, and S-Shapes: ASTM A 36/A 36M; ASTM A 572/A 572M, Grade 50 or 55; or ASTM A 529/A 529M, Grade 50 or 55.
3. Plate and Bar: ASTM A 36/A 36M; ASTM A 572/A 572M, Grade 50 or 55; or ASTM A 529/A 529M, Grade 50 or 55.
4. Steel Pipe: ASTM A 53/A 53M, Type E or S, Grade B.
5. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B or C, structural tubing.
6. Structural-Steel Sheet: Hot-rolled, ASTM A 1011/A 1011M, Structural Steel (SS), Grades 30 through 55, or High-Strength Low-Alloy Steel (HSLAS), Grades 45 through 70; or cold-rolled, ASTM A 1008/A 1008M, Structural Steel (SS), Grades 25 through 80, or High-Strength Low-Alloy Steel (HSLAS), Grades 45 through 70.
7. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grades 33 through 80, or High-Strength Low-Alloy Steel (HSLAS), Grades 50 through 80; with G90 at moist environments coating designation; mill phosphatized.
8. Metallic-Coated Steel Sheet Prepainted with Coil Coating: Steel sheet, metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A 755/A 755M.
 - a. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grades 33 through 80 or High-Strength Low-Alloy Steel (HSLAS), Grades 50 through 80; with G90 coating designation.
 - b. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, Structural Steel (SS), Grade 50 or 80; with Class AZ50 coating.
9. Non-High-Strength Bolts, Nuts, and Washers: ASTM A 307, Grade A, carbon-steel, hex-head bolts; ASTM A 563 carbon-steel hex nuts; and ASTM F 844 plain (flat) steel washers.
 - a. Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C in moist environments.
10. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy-hex steel structural bolts; ASTM A 563 heavy-hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers.
 - a. Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C in moist environments.
11. High-Strength Bolts, Nuts, and Washers: ASTM A 490, Type 1, heavy-hex steel structural bolts; ASTM A 563 heavy-hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers, plain.
 - a. Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C in moist environments.

12. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F 1852, Type 1, heavy-hex-head steel structural bolts with spline ends.
 - a. Finish: Mechanically deposited zinc coating, ASTM B 695, Class 50 in moist environments.
 13. Unheaded Anchor Rods: ASTM F 1554, Grade 36.
 - a. Configuration: Straight.
 - b. Nuts: ASTM A 563 heavy-hex carbon steel.
 - c. Plate Washers: ASTM A 36/A 36M carbon steel.
 - d. Washers: ASTM F 436 hardened carbon steel.
 - e. Finish: Plain.
 14. Headed Anchor Rods: ASTM F 1554, Grade 36.
 - a. Configuration: Straight.
 - b. Nuts: ASTM A 563 heavy-hex carbon steel.
 - c. Plate Washers: ASTM A 36/A 36M carbon steel.
 - d. Washers: ASTM F 436 hardened carbon steel.
 - e. Finish: Plain.
 15. Threaded Rods: ASTM A 36/A 36M.
 - a. Nuts: ASTM A 563 heavy-hex carbon steel.
 - b. Washers: ASTM F 436 hardened carbon steel.
 - c. Finish: Plain.
- G. Finish: Factory primed. Apply specified primer immediately after cleaning and pretreating.
1. Apply primer to primary and secondary framing to a minimum dry film thickness of 1 mil and 2.5 mils for framing in moist environments.
 - a. Prime secondary framing formed from uncoated steel sheet to a minimum dry film thickness of 0.5 mil on each side.
 2. Prime galvanized members with specified primer after phosphoric acid pretreatment.
 3. Primer: SSPC-Paint 15, Type I, red oxide.
 4. Zinc-Rich Primer: Zinc-rich, aromatic urethane primer compatible with topcoat. For use in moist environments.
 - 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) Tnemec Company, Inc.; Theme-Zinc 90-97.

2.5 FOAMED-INSULATION-CORE METAL ROOF PANELS

- A. Concealed-Fastener, Foamed-Insulation-Core Metal Roof 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. Panel Thermal-Resistance Value (R-Value): **29**.
 2. Facing Material: Fabricate panel with exterior and interior facings of same material and thickness. Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.030-inch (22 gage) nominal uncoated steel thickness. Prepainted by the coil-coating process to comply with ASTM A755/A755M.
 - a. Exterior Surface: Smooth, flat.
 - b. Exterior Finish: Two-coat fluoropolymer.
 - c. Color: As selected by Architect from manufacturer's full range.
 3. Panel Coverage: 36 inches nominal.
 4. Panel Thickness: 4 inches.
 5. Insulation Core: Modified polyisocyanurate or polyurethane foam using a non-CFC blowing agent, foamed-in-place or board type, 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/C273M.
 6. Fire-Test-Response Characteristics: Class A according to ASTM E108.
 7. Surface-Burning Characteristics: Flame-spread index of 25 or less and a smoke-developed index of 450 or less, per ASTM E84.
- B. Finishes:
1. Exposed Coil-Coated Finish:
 - a. Two-Coat Fluoropolymer: AAMA 621. 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.
 2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

2.6 FOAMED-INSULATION-CORE METAL WALL PANELS

- A. 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. Panel Thermal-Resistance Value (R-Value): 20.
 2. Facing Material: Fabricate panel with exterior and interior facings of same material and thickness. Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.030-inch (22 gage) nominal uncoated steel thickness. Prepainted by the coil-coating process to comply with ASTM A755/A755M.
 - a. Exterior Surface: Smooth, flat.
 - b. Exterior Finish: Two-coat fluoropolymer.
 - c. Color: As selected by Architect from manufacturer's full range.
 3. Panel Coverage: 36 inches nominal.
 4. Panel Thickness: 2.5 inches.
 5. Insulation Core: Modified polyisocyanurate or polyurethane foam using a non-CFC blowing agent, foamed-in-place or board type, 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/C273M.
 6. Fire-Test-Response Characteristics: Class A according to ASTM E108.
 7. Surface-Burning Characteristics: Flame-spread index of 25 or less and a smoke-developed index of 450 or less, per ASTM E84.
- B. Finishes:
1. Exposed Coil-Coated Finish:
 - a. Two-Coat Fluoropolymer: AAMA 621. 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.
 2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

2.7 METAL SOFFIT PANELS

- A. General: Provide factory-formed metal soffit panels designed to be installed by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners and factory-applied sealant in side laps. Include accessories required for weathertight installation.
- B. Metal Soffit Panels:
 - 1. Finish: Match finish and color of metal roof panels.

2.8 ACCESSORIES

- A. General: Provide accessories as standard with metal building system manufacturer and as specified. Fabricate and finish accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes. Comply with indicated profiles and with dimensional and structural requirements.
 - 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.
- B. Roof Panel Accessories: Provide components required for a complete metal roof panel assembly including copings, fasciae, corner units, ridge closures, clips, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal roof panels unless otherwise indicated.
 - 1. Closures: Provide closures at eaves and ridges, fabricated of same material as metal roof panels.
 - 2. Clips: Manufacturer's standard, formed from steel sheet, designed to withstand negative-load requirements.
 - 3. Cleats: Manufacturer's standard, mechanically seamed cleats formed from steel sheet.
 - 4. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
 - 5. 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 roof panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
 - 6. Thermal Spacer Blocks: Where metal panels attach directly to purlins, provide thermal spacer blocks of thickness required to provide 1-inch standoff; fabricated from extruded polystyrene.

- C. **Wall Panel Accessories:** Provide components required for a complete metal wall panel assembly including copings, fasciae, mullions, sills, corner units, clips, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal wall panels unless otherwise indicated.
1. **Closures:** Provide closures at eaves and rakes, fabricated of same material as metal wall 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 wall panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
- D. **Flashing and Trim:** Formed from 0.022-inch nominal-thickness, metallic-coated steel sheet or aluminum-zinc alloy-coated steel sheet prepainted with coil coating; finished to match adjacent metal panels.
1. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers.
 2. **Opening Trim:** Formed from 0.034-inch nominal-thickness, metallic-coated steel sheet or aluminum-zinc alloy-coated steel sheet prepainted with coil coating. Trim head and jamb of door openings, and head, jamb, and sill of other openings.
- E. **Gutters:** Formed from 0.022-inch nominal-thickness, metallic-coated steel sheet or aluminum-zinc alloy-coated steel sheet prepainted with coil coating; finished to match roof fascia and rake trim. Match profile of gable trim, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 96-inch-long sections, sized according to SMACNA's "Architectural Sheet Metal Manual."
1. **Gutter Supports:** Fabricated from same material and finish as gutters.
- F. **Downspouts:** Formed from 0.022-inch nominal-thickness, zinc-coated (galvanized) steel sheet or aluminum-zinc alloy-coated steel sheet prepainted with coil coating; finished to match metal wall panels. Fabricate in minimum 10-foot-long sections, complete with formed elbows and offsets.
1. **Mounting Straps:** Fabricated from same material and finish as gutters.
- G. **Pipe Flashing:** Premolded, EPDM pipe collar with flexible aluminum ring bonded to base.

H. Materials:

1. Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Provide fasteners with heads matching color of materials being fastened by means of plastic caps or factory-applied coating.
 - a. Fasteners for Metal Roof Panels: Self-drilling or self-tapping, zinc-plated, hex-head carbon-steel screws, with a stainless-steel cap or zinc-aluminum-alloy head and EPDM sealing washer.
 - b. Fasteners for Metal Roof Panels: Self-drilling, Type 410 stainless-steel or self-tapping, Type 304 stainless-steel or zinc-alloy-steel hex washer head, with EPDM washer under heads of fasteners bearing on weather side of metal panels.
 - c. Fasteners for Metal Wall Panels: Self-drilling or self-tapping, zinc-plated, hex-head carbon-steel screws, with EPDM sealing washers bearing on weather side of metal panels.
 - d. Fasteners for Metal Wall Panels: Self-drilling, Type 410 stainless-steel or self-tapping, Type 304 stainless-steel or zinc-alloy-steel hex washer head, with EPDM sealing washers bearing on weather side of metal panels.
 - e. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws with hex washer head.
 - f. Blind Fasteners: High-strength aluminum or stainless-steel rivets.
2. Corrosion-Resistant Coating: Cold-applied asphalt mastic, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.
3. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.
4. Metal Panel Sealants:
 - a. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene-compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape of manufacturer's standard size.
 - b. Joint Sealant: ASTM C 920; one-part elastomeric polyurethane or polysulfide; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended by metal building system manufacturer.

2.9 FABRICATION

- A. General: Design components and field connections required for erection to permit easy assembly.
 - 1. Mark each piece and part of the assembly to correspond with previously prepared erection drawings, diagrams, and instruction manuals.
 - 2. Fabricate structural framing to produce clean, smooth cuts and bends. Punch holes of proper size, shape, and location. Members shall be free of cracks, tears, and ruptures.
- B. Tolerances: Comply with MBMA's "Metal Building Systems Manual" for fabrication and erection tolerances.
- C. Primary Framing: Shop fabricate framing components to indicated size and section, with baseplates, bearing plates, stiffeners, and other items required for erection welded into place. Cut, form, punch, drill, and weld framing for bolted field assembly.
 - 1. Make shop connections by welding or by using high-strength bolts.
 - 2. Join flanges to webs of built-up members by a continuous, submerged arc-welding process.
 - 3. Brace compression flange of primary framing with steel angles or cold-formed structural tubing between frame web and purlin web or girt web, so flange compressive strength is within allowable limits for any combination of loadings.
 - 4. Weld clips to frames for attaching secondary framing.
 - 5. Shop Priming: Shop prime primary framing with specified primer after fabrication. Prepare surfaces for shop priming according to SSPC-SP 2 unless note otherwise below.
 - a. SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning," for moist environments.
- D. Secondary Framing: Shop fabricate framing components to indicated size and section by roll-forming or break-forming, with baseplates, bearing plates, stiffeners, and other plates required for erection welded into place. Cut, form, punch, drill, and weld secondary framing for bolted field connections to primary framing.
 - 1. Make shop connections by welding or by using non-high-strength bolts.
 - 2. Shop Priming: Prepare uncoated surfaces for shop priming according to SSPC-SP 2. Shop prime uncoated secondary framing with specified primer after fabrication.
- E. Metal Panels: Fabricate and finish metal panels at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional and structural requirements.
 - 1. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of metal panel.

F. Galvanizing

1. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to all primary and end wall framing and all ASTM A 992, ASTM A 572 and ASTM A 36 steel according to ASTM A 123/A 123M.
 - a. Fill vent and drain holes that will be exposed in the finished Work unless they will function as weep holes, by plugging with zinc solder and filing off smooth.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with erector present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Before erection proceeds, survey elevations and locations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments to receive structural framing, with erector present, for compliance with requirements and metal building system manufacturer's tolerances.
- C. Proceed with erection only after unsatisfactory conditions have been corrected.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition.
- B. Provide temporary shores, guys, braces, and other supports during erection to keep structural framing secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural framing, connections, and bracing are in place unless otherwise indicated.

3.3 ERECTION OF STRUCTURAL FRAMING

- A. Erect metal building system according to manufacturer's written erection instructions and erection drawings.
- B. Do not field cut, drill, or alter structural members without written approval from metal building system manufacturer's professional engineer.
- C. Set structural framing accurately in locations and to elevations indicated, according to AISC specifications referenced in this Section. Maintain structural stability of frame during erection.

- D. Base and Bearing 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. 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.
 3. Promptly pack 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 shrinkage-resistant grouts.
- E. Align and adjust structural framing before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with framing. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
1. Level and plumb individual members of structure.
 2. Make allowances for difference between temperature at time of erection and mean temperature when structure will be completed and in service.
- F. Primary Framing and End Walls: Erect framing level, plumb, rigid, secure, and true to line. Level baseplates to a true even plane with full bearing to supporting structures, set with double-nutted anchor bolts. Use grout to obtain uniform bearing and to maintain a level base-line elevation. Moist-cure grout for not less than seven days after placement.
1. Make field connections using high-strength bolts installed according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for bolt type and joint type specified.
 - a. Joint Type: Snug tightened or pretensioned.
- G. Secondary Framing: Erect framing level, plumb, rigid, secure, and true to line. Field bolt secondary framing to clips attached to primary framing.
1. Provide rake or gable purlins with tight-fitting closure channels and fasciae.
 2. Locate and space wall girts to suit openings such as doors and windows.
 3. Locate canopy framing as indicated.
 4. Provide supplemental framing at entire perimeter of openings, including doors, windows, louvers, ventilators, and other penetrations of roof and walls.
- H. Bracing: Install bracing in roof and sidewalls where indicated on erection drawings.
1. Tighten rod and cable bracing to avoid sag.
 2. Locate interior end-bay bracing only where indicated.
- I. Framing for Openings: Provide shapes of proper design and size to reinforce openings and to carry loads and vibrations imposed, including equipment furnished under mechanical and electrical work. Securely attach to structural framing.
- J. Erection Tolerances: Maintain erection tolerances of structural framing within AISC 303.

3.4 METAL PANEL INSTALLATION, GENERAL

- A. Examination: Examine primary and secondary framing to verify that structural-panel support members and anchorages have been installed within alignment tolerances required by manufacturer.
 - 1. Examine roughing-in for components and systems penetrating metal panels, to verify actual locations of penetrations relative to seams before metal panel installation.
- B. General: Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
 - 1. Field cut metal panels as required for doors, windows, and other openings. Cut openings as small as possible, neatly to size required, and without damage to adjacent metal panel finishes.
 - a. Field cutting of metal panels by torch is not permitted unless approved in writing by manufacturer.
 - 2. Install metal panels perpendicular to structural supports unless otherwise indicated.
 - 3. Flash and seal metal panels with weather closures at perimeter of openings and similar elements. Fasten with self-tapping screws.
 - 4. Locate and space fastenings in uniform vertical and horizontal alignment.
 - 5. Locate metal panel splices over, but not attached to, structural supports with end laps in alignment.
 - 6. Lap metal flashing over metal panels to allow moisture to run over and off the material.
- C. Lap-Seam Metal Panels: Install screw fasteners using power tools with controlled torque adjusted to compress EPDM washers tightly without damage to washers, screw threads, or metal panels. Install screws in predrilled holes.
 - 1. Arrange and nest side-lap joints so prevailing winds blow over, not into, lapped joints. Lap ribbed or fluted sheets one full rib corrugation. Apply metal panels and associated items for neat and weathertight enclosure. Avoid "panel creep" or application not true to line.
- D. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal roof panel manufacturer.
- E. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of metal panel assemblies. Provide types of gaskets, fillers, and sealants indicated; or, if not indicated, provide types recommended by metal panel manufacturer.

1. Seal metal panel end laps with double beads of tape or sealant the full width of panel. Seal side joints where recommended by metal panel manufacturer.
2. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."

3.5 METAL ROOF PANEL INSTALLATION

- A. General: Provide metal roof panels of full length from eave to ridge unless otherwise indicated or restricted by shipping limitations.
1. Install ridge caps as metal roof panel work proceeds.
 2. Flash and seal metal roof panels with weather closures at eaves and rakes. Fasten with self-tapping screws.
- B. Standing-Seam Metal Roof Panels: Fasten metal roof panels to supports with concealed clips at each standing-seam joint, at location and spacing and with fasteners recommended by manufacturer.
1. Install clips to supports with self-drilling or self-tapping fasteners.
 2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
 3. Snap Joint: Nest standing seams and fasten together by interlocking and completely engaging factory-applied sealant.
 4. Seamed Joint: Crimp standing seams with manufacturer-approved motorized seamer tool so that clip, metal roof panel, and factory-applied sealant are completely engaged.
 5. Rigidly fasten eave end of metal roof panels and allow ridge end free movement due to thermal expansion and contraction. Pre-drill panels for fasteners.
 6. Provide metal closures at peaks rake edges rake walls and each side of ridge caps.
- C. Lap-Seam Metal Roof Panels: Fasten metal roof panels to supports with exposed fasteners at each lapped joint, at location and spacing recommended by manufacturer.
1. Provide metal-backed sealing washers under heads of exposed fasteners bearing on weather side of metal roof panels.
 2. Provide sealant tape at lapped joints of metal roof panels and between panels and protruding equipment, vents, and accessories.
 3. Apply a continuous ribbon of sealant tape to weather-side surface of fastenings on end laps and on side laps of nesting-type metal panels, on side laps of ribbed or fluted metal panels, and elsewhere as needed to make metal panels weatherproof to driving rains.
 4. At metal panel splices, nest panels with minimum 6-inch end lap, sealed with butyl-rubber sealant and fastened together by interlocking clamping plates.
- D. Metal Fascia Panels: Align bottom of metal panels and fasten with blind rivets, bolts, or self-drilling or self-tapping screws. Flash and seal metal panels with weather closures where fasciae meet soffits, along lower panel edges, and at perimeter of all openings.

- E. Metal Roof Panel Installation Tolerances: Shim and align metal roof panels within installed tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.6 METAL WALL PANEL INSTALLATION

- A. General: Install metal wall panels in orientation, sizes, and locations indicated on Drawings. Install panels perpendicular to girts, extending full height of building, unless otherwise indicated. Anchor metal wall panels and other components of the Work securely in place, with provisions for thermal and structural movement.
 - 1. Unless otherwise indicated, begin metal panel installation at corners with center of rib lined up with line of framing.
 - 2. Shim or otherwise plumb substrates receiving metal wall panels.
 - 3. When two rows of metal panels are required, lap panels 4 inches minimum.
 - 4. When building height requires two rows of metal panels at gable ends, align lap of gable panels over metal wall panels at eave height.
 - 5. Rigidly fasten base end of metal wall panels and allow eave end free movement due to thermal expansion and contraction. Pre-drill panels.
 - 6. Flash and seal metal wall panels with weather closures at eaves, rakes, and at perimeter of all openings. Fasten with self-tapping screws.
 - 7. Install screw fasteners in predrilled holes.
 - 8. Install flashing and trim as metal wall panel work proceeds.
 - 9. Apply elastomeric sealant continuously between metal base channel (sill angle) and concrete, and elsewhere as indicated; or, if not indicated, as necessary for waterproofing.
 - 10. Align bottom of metal wall panels and fasten with blind rivets, bolts, or self-drilling or self-tapping screws.
 - 11. Provide weatherproof escutcheons for pipe and conduit penetrating exterior walls.
- B. Metal Wall Panels: Install metal wall panels on exterior side of girts. Attach metal wall panels to supports with fasteners as recommended by manufacturer.
- C. Installation Tolerances: Shim and align metal wall panels within installed tolerance of 1/4 inch in 20 feet, nonaccumulative, on level, plumb, and on location lines as indicated, and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.7 METAL SOFFIT PANEL INSTALLATION

- A. Provide metal soffit panels the full width of soffits. Install panels perpendicular to support framing.
- B. Flash and seal metal soffit panels with weather closures where panels meet walls and at perimeter of all openings.

3.8 ACCESSORY INSTALLATION

- A. General: 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 roof panel assembly, including trim, copings, ridge closures, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
 2. Install components for a complete metal wall panel assembly, including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
 3. Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by manufacturer.
- B. 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 as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
1. Install exposed flashing and trim that is without excessive oil-canning, 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 result in waterproof and weather-resistant 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 or bayonet-type expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).
- C. Gutters: Join sections with riveted-and-soldered or lapped-and-sealed joints. Attach gutters to eave with gutter hangers spaced as required for gutter size, but not more than 36 inches o.c. using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion.
- D. Downspouts: Join sections with 1-1/2-inch telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch away from walls; locate fasteners at top and bottom and at approximately 60 inches o.c. in between.
1. Tie downspouts to underground drainage system indicated.
- E. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to panel as recommended by manufacturer.

3.9 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
1. Steel construction.
- B. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

C. Tests and Inspections:

1. High-Strength, Field-Bolted Connections: Connections shall be tested and inspected during installation according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
2. Welded Connections: In addition to visual inspection, field-welded connections shall be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at inspector's option:
 - a. Liquid Penetrant Inspection: ASTM E 165.
 - b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
 - c. Ultrasonic Inspection: ASTM E 164.
 - d. Radiographic Inspection: ASTM E 94.

D. Record position and alignment of erected steel. Compare with required tolerances.

E. Product will be considered defective if it does not pass tests and inspections.

F. Prepare test and inspection reports.

3.10 CLEANING AND PROTECTION

A. Touch up damaged galvanized coatings on galvanized items with galvanized touch up paint according to ASTM A 780 and manufacturer's written instructions.

B. Touchup Painting: After erection, promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted structural framing, bearing plates, and accessories.

1. Clean and prepare surfaces by SSPC-SP 2, "Hand Tool Cleaning," or by SSPC-SP 3, "Power Tool Cleaning."
2. SSPC-SP 11, "Power Tool Cleaning to Bare Metal," for structural steel in moist environments.
3. Apply a compatible primer of same type as shop primer used on adjacent surfaces.

C. Metal Panels: Remove temporary protective coverings and strippable films, if any, as metal panels are installed. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

1. Replace metal panels that have been damaged or have deteriorated beyond successful correction by finish touchup or similar minor corrective procedures.

END OF SECTION 13 34 19

SECTION 14 42 00 - WHEELCHAIR LIFTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Vertical platform lifts.

1.3 DEFINITIONS

- A. Definitions in ASME A18.1 apply to Work of this Section.

1.4 SUBMITTALS, GENERAL

- A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include construction details, material descriptions, dimensions of individual components, and finishes for lifts. Include rated capacities, operating characteristics, electrical characteristics, safety features, controls, finishes, and accessories.
 - 1. Vertical platform lift.
- B. Shop Drawings: For each lift.
 - 1. Include plans, elevations, sections, details, attachments to other work, and required clearances.
 - 2. Indicate dimensions, weights, loads, and points of load to building structure.
 - 3. Include details of equipment assemblies, method of field assembly, components, and location and size of each field connection.
 - 4. Include diagrams for power, signal, and control wiring.
- C. Samples: For surfaces and components with factory-applied color finishes.
 - 1. Include Samples of integrally colored materials and accessories involving color selection.
- D. Sample Warranty: For special warranty.

1.6 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each lift.
 - 1. Include statement that dimensions as shown on Drawings, and electrical service as shown and specified are adequate for lift being provided.

1.7 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For each type of lift to include in operation and maintenance manuals.
 - 1. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
 - a. Parts list with sources indicated.
 - b. Recommended parts inventory list.
- B. Inspection and Acceptance Certificates and Operating Permits: As required by authorities having jurisdiction for normal, unrestricted use of lifts.
- C. Warranty: Executed special warranty.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

1.9 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of lifts that fail in materials or workmanship within specified warranty period, at no cost to Owner.
 - 1. Warranty Period: Not less than four years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Accessibility Requirements: Comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design", ICC A117.1, and building code in effect for Project.
- B. Regulatory Requirements: Comply with ASME A18.1, "Safety Standard for Platform Lifts and Stairway Chairlifts."

2.2 VERTICAL PLATFORM LIFT

- A. Vertical Platform Lift, General: Preengineered lift system.
 - 1. **Basis-of-Design Product:** Subject to compliance with requirements, provide Ascension, Division of AGM Container Controls, Inc.; Virtuoso 5460F Model Series or comparable product.
- B. Platform Size: 36 by 54 inches.
- C. Door Operation and Clear Opening Width: Low-energy, power-operated doors that remain open for 20 seconds minimum; end door with minimum 32-inch clear opening width, upper landing gate.
- D. Rated Speed: 7 fpm.
- E. Power Supply:
 - 1. Electrical Characteristics:
 - a. Horsepower: 1/2.
 - b. Voltage: 115-V ac, single phase, 60 Hz.
- F. Emergency Operation: Provide manual operation and battery power system to raise or lower unit in case of malfunction or power loss.
- G. Self-Supporting Unit: Support vertical loads of unit only at base, with lateral support only at landing levels.
- H. Safety Skirt System: Rigid plastic to protect area under the platform.
- I. Platform: Steel sheet or galvanized-steel sheet with manufacturer's standard black rubber flooring.
- J. Platform Enclosure and Door: Rectangular steel-tube frame with glazed panels.

2.3 MATERIALS

- A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- B. Steel Tubing: ASTM A 500/A 500M.
- C. Steel Pipe: ASTM A 53/A 53M; standard weight (Schedule 40) unless otherwise indicated or required by loads.
- D. Steel Sheet: ASTM A 1008/A 1008M, cold-rolled commercial steel (CS) or ASTM A 1011/A 1011M hot-rolled, commercial steel (CS); as required for each use.
- E. Galvanized-Steel Sheet: ASTM A 653/A 653M, G90 zinc coating,

- F. Galvanizing: Hot-dip galvanize items complying with the following:
 - 1. ASTM A 123/A 123M, for galvanizing steel and iron products.
 - 2. ASTM A 153/A 153M, for galvanizing steel and iron hardware.
- G. Expansion Anchors: Anchor-bolt-and-sleeve assembly of material indicated below with capability to sustain a load equal to 10 times the load imposed as determined by testing according to ASTM E 488 conducted by a qualified independent testing agency.
 - 1. Material: Group 1, Alloy 304 or Alloy 316, stainless-steel bolts and nuts complying with ASTM F 593 and ASTM F 594.
- H. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M.

2.4 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.

2.5 FINISHES

- A. Steel and Galvanized-Steel Factory Finish:
 - 1. Powder-Coat Finish: After cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat to a minimum dry film thickness of 2 mils.
 - 2. Color and Gloss: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, critical dimensions, and other conditions affecting performance of the Work.
- B. Minimum Headroom Clearance: Verify that installed lift will have a minimum headroom of 80 inches above any point on platform floor at any point of travel.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

- A. General: Comply with ASME A18.1 and manufacturer's written instructions for installation of lifts unless otherwise indicated.
- B. Wiring Method: Conceal conductors and cables within housings of units or building construction. Do not install conduit exposed to view in finished spaces. Bundle, lace, and train conductors to terminal points with no excess and without exceeding manufacturer's limitations on bending radii.
- C. Coordinate runway doors with platform travel and positioning, for accurate alignment and minimum clearance between platforms, runway doors, sills, and door frames.
- D. Coordinate platform doors with platform travel and positioning.
- E. Adjust stops for accurate stopping and leveling at each landing, within required tolerances.
 - 1. Leveling Tolerance: 1/4 inch up or down, regardless of load and direction of travel.
- F. Lubricate operating parts of lift, including drive mechanism, guide rails, hinges, safety devices, and hardware.
- G. Test safety devices and verify smoothness of required protective enclosures and other surfaces.

3.3 FIELD QUALITY CONTROL

- A. Acceptance Testing: On completion of lift installation and before permitting use of lifts, perform acceptance tests as required and recommended by ASME A18.1 and authorities having jurisdiction.
- B. Operating Test: In addition to acceptance testing, load lifts to rated capacity and operate continuously for 30 minutes between lowest and highest landings served. Readjust stops, signal equipment, and other devices for accurate stopping and operation of system.
- C. Advise Owner, Architect, and authorities having jurisdiction in advance of dates and times tests are to be performed on lifts.

3.4 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain lifts. Include a review of emergency systems and emergency procedures to be followed at time of operational failure and other building emergencies.
- B. Check operation of lifts with Owner's personnel present and before date of Substantial Completion. Determine that operating systems and devices are functioning properly.

END OF SECTION 14 42 00