



**SPECIFICATIONS FOR:
PORT CHESTER – RYE UNION FREE SCHOOL DISTRICT**

**JOHN F. KENNEDY ELEMENTARY SCHOOL
FLOOD REPAIRS AND RELATED WORK**



FULLER AND D'ANGELO PROJECT #: 21444.01

OWNER: **PORT CHESTER – RYE UNION FREE SCHOOL DISTRICT**
ADDRESS: 113 Bowman Avenue
CITY: Port Chester, NY 10573



ARCHITECTS:
FULLER AND D'ANGELO, P.C.
Architects and Planners
45 Knollwood Road Suite 401
Elmsford, NY 10523



M/E/P ENGINEER:
BARILE GALLAGHER & ASSOCIATES
39 Marble Avenue
Pleasantville, NY 10570

The undersigned certifies that to the best of his knowledge, information and belief, the plans and specifications are in accordance with applicable requirements of the New York State Uniform Fire Prevention and Building Code, The State Energy Conservation and Construction Code Standards of the Department of Education.

Date: October 18, 2021

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FULLER AND D'ANGELO, P.C.
ARCHITECTS AND PLANNERS

SECTION 00 0115
LIST OF DRAWING SHEETS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 DRAWING INDEX

- A. Drawings are listed on Drawing T-1 for all contracts.
- B. Drawings are the property of the Fuller and D'Angelo, Architects and Planners and shall not be used for any other purpose other than contemplated by the Drawings and Project Manual

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

SECTION 00 2113
INSTRUCTIONS TO BIDDERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 DOCUMENT INCLUDES

- A. Bid Documents and Contract Documents
 - 1. Definition
 - 2. Contract Documents Identification
 - 3. Availability
 - 4. Examination
 - 5. Inquiries/Addenda
 - 6. Product/Assembly/System Substitutions
- B. Site Assessment
 - 1. Prebid Conference
- C. Qualifications
 - 1. Qualifications
- D. Bid Submission
 - 1. Bid Depository
 - 2. Bid Ineligibility
- E. Bid Enclosures/Requirements
 - 1. Security Deposit
 - 2. Consent of Surety
 - 3. Performance Assurance
 - 4. Bid Form Requirements
 - 5. Bid Form Signature
 - 6. Additional Bid Information
- F. Offer Acceptance/Rejection
 - 1. Duration of Offer
 - 2. Acceptance of Offer

1.3 RELATED DOCUMENTS

- A. Section 01 1000 - Summary of Contracts
- B. Section 00 4100 - Bid Form Contract #1 General Construction.
- C. Section 00 4110 - Bid Form Contract #2 Plumbing
- D. Section 00 4120 - Bid Form Contract #3 HVAC
- E. Section 00 4130 - Bid Form Contract #4 Electrical.
- F. Section 00 4401 - Qualification of Bidders.
- G. Section 00 4460 - Certification of Compliance With the Iran Disinvestment Act **OR**:
- H. Section 00 4470 - Declaration of Bidder's Inability to Provide Certification of Compliance with the Iran Divestment Act.
- I. Section 00 4476 - Insurance Certification.
- J. Section 00 5200 - Form of Agreement.

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- K. Section 00 6000 - Bonds and Certificates.
- L. Section 00 7200 - General Conditions.
- M. Section 01 2100 - Allowances.
- N. Section 01 5000 - Temporary Facilities and Controls.
- O. Section 01 7000 - Execution.
- P. Section 01 7800 - Closeout Submittals

1.4 BID SUBMISSION

- A. Bids signed and under seal, executed, and dated will be received at the office of the PORT CHESTER-RYE UFSD, 113 Bowman Avenue, Port Chester New York 10573 before 3:30 PM local time on the 9th day of November, 2021.
- B. Offers submitted after the above time shall be returned to the bidder unopened.
- C. Offers will be opened publicly and read aloud electronically, via live stream immediately after the time for receipt of bids.

1.5 INTENT

- A. The intent of this Bid request is to obtain an offer to perform work to complete Flood Repairs and Related Work located at the JOHN F. KENNEDY ELEMENTARY SCHOOL for a Stipulated Sum, in accordance with the Contract Documents.

1.6 LUMP SUM BIDS

- A. Bids will be received for four (4) separate Prime Contracts as follows:
 - 1. Contract #1 General Construction ().
 - 2. Contract #2 Plumbing ().
 - 3. Contract #3 HVAC .
 - 4. Contract #4 Electrical .

1.7 WORK IDENTIFIED IN THE CONTRACT DOCUMENTS

- A. Work of this proposed Contract comprises Flood Repairs and Related Work including General Construction, Plumbing, HVAC, and Electrical Work.

1.8 CONTRACT TIME

- A. Perform the Work within the time stated in Section 01 1010 Milestone Schedule.
- B. All work for this project shall not commence prior to the issuance of Letter of Award by the Owner. The items of work shall be scheduled and completed as stated in Section 01 1010 Milestone Schedule. Failure to complete either date listed in Section 01 1010 Milestone Schedule, shall subject the Contractor(s) to be assessed liquidated damages list in Article 8 of the General Conditions and any additional costs incurred by the Owner, including but not limited to, Owner's Representative, Fuller and D'Angelo, P.C., Consultants, Owner's staff, overtime, and legal costs as required to complete the scheduled item.
- C. The attention of the bidders is specifically directed to the provisions of the General Conditions of the Contract Article 8 of the General Conditions that time is of the essence to the Contract and that on no account will the Contractor(s) be permitted to assert a claim for damages for delays.
- D. The bidder, in submitting an offer, accepts the Contract Time period stated for performing the Work. The completion date stated in the Agreement and Section 01 1010 Milestone Schedule.

1.9 BID DOCUMENTS AND CONTRACT DOCUMENTS

- A. Definitions: All definitions set forth in the General Conditions of the Contract and Section 01 4216 are applicable to these Instructions to Bidders.

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- B. Bid Documents: Contract Documents supplemented with Instructions to Bidders, Bid Form, Bid Securities, Allowance Breakdown, Hold Harmless Agreement, Certification of Compliance with Iran Divestment Act, Declaration of Bidders Inability to Provide Certification of Compliance, Contractor's Qualification Statement, Insurance certification, and Issued Addenda.
- C. Contract Documents: Defined in General Conditions. Refer to Section 00 7200 - General Conditions
- D. Bid, Offer, or Bidding: Act of submitting an offer under seal.
- E. Bid Amount: Monetary sum identified by the Bidder in the Bid Form.

1.10 CONTRACT DOCUMENTS IDENTIFICATION

- A. The Contract Documents are identified as Project Number 21444.01 as prepared by Fuller and D'Angelo P.C. 45 Knollwood Road, Elmsford, NY 10523, comprising drawings and with contents as identified in the Project Manual.

1.11 AVAILABILITY

- A. One set of Bid Documents, in PDF format, can be obtained by Bidders, Sub-Contractors and Suppliers free of charge, via e-mail, from the office of at the office of Port Chester-Rye UFSD, 113 Bowman Avenue, Port Chester New York 10573. Contact person: Sherry George - Purchasing Agent, Phone Number:(914) 934-8056, Fax Number: (914) 939-9240 If shipping is required bidder shall furnish the Owner, a Fed-Ex or UPS account number.

1.12 EXAMINATION

- A. Bid Documents may be viewed at the office of Fuller and D'Angelo P.C. 45 Knollwood Road, Elmsford, NY 10523.
- B. Immediately notify Architect upon finding discrepancies or omissions in the Bid Documents.
- C. Should any conflict occur in or between the Drawings and Specifications, the Contractor shall be deemed to have estimated on the more costly method of doing the work, unless he shall have asked for and obtained a decision in writing from the Architect before the submission of his bid, as to what shall govern.

1.13 INQUIRIES/ADDENDA

- A. Direct questions to Architect.
- B. Questions: Any and all questions about the interpretation or clarification of the Bid Documents, or about any other matter affecting the Work or pertaining to the bid must be directed in writing on the form in Section 00 2115 - RFI Form to the: Owner's Representative and Architect
Fuller and D'Angelo, P.C.
45 Knollwood Road .
Elmsford, NY 10523 .
Attention: Frank DiFato, RA .
Voice: 914-592-4444
E-mail: frankd@fullerdangelo.com
- C. Answers: The Architect will issue addenda, if necessary, to answer such questions. Bidders shall rely on answers contained in such addenda and **shall not** rely upon any oral answers given by any employee or agent of the Owner's Representative, Architect, and Architect's Consultants.
 - 1. RFI's not resulting in an addendum may be issued to all plan holder and the discretion of Architect.
- D. Addenda are written or graphic instruments issued prior to the Bid Date which modify or interpret the bidding documents, including Drawings and Specifications, by additions, deletions, clarifications or corrections. Addenda will become part of the Contract Documents when the Construction Contract is executed
- E. Addenda may be issued during the bidding period. All Addenda become part of the Contract Documents. Include resultant costs in the Bid Amount.

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- F. Verbal answers are not binding on any party.
- G. Clarifications requested by bidders must be in writing not less than 5 days before date set for receipt of bids. The reply will be in the form of an Addendum, if required, a copy of which will be forwarded to known recipients .

1.14 PRODUCT/ASSEMBLY/SYSTEM SUBSTITUTIONS

- A. General Requirements for Substitution Requests:
- B. Where the Bid Documents stipulate a particular product bidders shall comply with the specifications, performance and quality of the specification item. **The Architect will not review any substitutions during the bidding period.** The bidder assumes all responsibility to meet the requirements and the Architect shall be final authority as to a product is equal to the specification.
- C. Refer to Section 01 2500 - Substitution Procedures for substitution requirements.

1.15 SITE EXAMINATION

- A. The bidder shall examine the project site before submitting a bid.
- B. The bidder may inspect the site at the time of the pre-bid conference if one is scheduled, or at other times by advance agreement with the Owner's Representative .
 - 1. Contact Owner's Representative at the following address and phone number in order to arrange a date and time to visit the project site: Port Chester-Rye UFSD, 113 Bowman Avenue, Port Chester, NY. Ray Renda, Director of Facilities, (914) 939-9240.
 - 2. Bidders who do not inspect the site shall be nevertheless responsible for such information as might have been obtained from a reasonable site inspection

1.16 PREBID CONFERENCE

- A. A Bidders Conference has been scheduled for 3:30 PM on the 25th day of October, 2021, Bidders shall meet at the 25th of the JFK Elementary School, 40 Olivia Street, Port Chester New York 10573.
- B. Attendance is non mandatory. Bidder are strongly advised to attend.
- C. All bidders, subcontractors and suppliers are invited.
- D. Representatives of Owner's Representative, Architect, and Architect's Consultants will be in attendance.
- E. Summarized minutes of this meeting may be circulated to all known bidders. These minutes will not form part of the Contract Documents.
- F. Information relevant to the Bid Documents will be recorded in an Addendum, issued to all plan holders.

1.17 QUALIFICATIONS

- A. Evidence of qualifications:
 - 1. **Bidder shall submit with their bid proposal a properly executed Section 00 4401 Qualification of Bidders.**
- B. The Owner reserves the right to require additional information it deems appropriate concerning the history of the contractor's performance of each such contract.
- C. In accordance with the requirements of General Municipal Law §103-g, the bidder is required to include with its bid either (1) the "Certification of Compliance with the Iran Divestment Act" or, in the case where the bidder is unable to make such certification, (2) the form titled "Declaration of Bidder's Inability to Provide Certification of Compliance with the Iran Divestment Act". Refer to Section 00 4460 - Certification of Compliance With the Iran Disinvestment Act and 00 4470 - Declaration of Bidder's Inability to Provide Certification of Compliance with the Iran Divestment Act.

1.18 SUBCONTRACTORS/SUPPLIERS/OTHERS

- A. Owner's Representative, Architect, and Architect's Consultants reserves the right to reject a proposed subcontractor for reasonable cause.

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- B. Refer to General Conditions for additional requirements.

1.19 SUBMISSION PROCEDURE

- A. Bidders shall be solely responsible for the delivery of their bids in the manner and time prescribed.
- B. Submit two copies of the executed offer on the Bid Forms included in the project manual, signed and sealed with the required security in a closed opaque envelope, clearly identified with title of the project, trade, name, and address of the bidder and Port Chester-Rye UFSD's name clearly on the outside.
- C. Improperly completed information, irregularities in security deposit, may be cause not to open the Bid Form envelope and declare the bid invalid or informal.
- D. To submit a bid for a bid package, the bidder shall photo copy or remove the proposal form for each bid package from the Project Manual. Then the bidder shall complete, sign and submit the form as required therein. If a bidder is bidding on more than one bid package, there must be on fully completed and signed form for **each package being bid**. The bidder should not submit the entire Project Manual with the bid proposal.
- E. All bid prices shall be filled in, both in words and figures. Signatures shall be in ink and in longhand. Proposals which are incomplete, conditional or obscure may be rejected as informal.
 - 1. In case of a discrepancy between the words and figures, **the written word, not the figures**, will govern.
 - 2. Make no erasures, cross-outs, whiteouts, write-overs, obliteration's, or changes of any kind in the Bid Form phraseology, in the entry of unit prices, or anywhere on the Bid form. Fill in all blanks spaces legibly. An illegible entry may disqualify the bid in its entirety. If a mistake is made, use a new Bid Form. No post bid meetings will be afforded to any bidder to explain or clarify illegible or changed entries.
- F. Bidder's shall not rely on oral statements made by any employee or agent of the Owner, Owner's Representative, Architect, and Architect's Consultants. Before submitting a proposal, bidders shall fully inform themselves as to all existing conditions and limitations and shall include in the Proposal a sum to cover the cost of all items included in the Contract
- G. No oral or telephonic proposals or modifications of proposals will be considered.

1.20 BID INELIGIBILITY

- A. Bids that are unsigned, improperly signed or sealed, conditional, illegible, obscure, contain arithmetical errors, erasures, alterations, blanks, or irregularities of any kind, may at the discretion of the Port Chester-Rye UFSD, be declared unacceptable.
- B. Bid Forms, Appendices, and enclosures that are improperly prepared may, at the discretion of Port Chester-Rye UFSD, be declared unacceptable.
- C. Failure to provide security deposit, bonding or insurance requirements may, at the discretion of Port Chester-Rye UFSD, invalidate the bid.
- D. Failure to provide all costs, including Base Bid, Allowances, Alternate(s) and Total Base Bids may, at the discretion of Port Chester-Rye UFSD, invalidate the bid.

1.21 SECURITY DEPOSIT

- A. Bids shall be accompanied by a security deposit as follows:
 - 1. Bid Bond of a sum no less than 10 percent of the Bid Amount on AIA A310 Bid Bond Form, will be required for all Proposals.
 - 2. Refer to Section 00 6000 - Bonds and Certificates for additional requirements.
- B. Endorse the Bid Bond in the name of the Port Chester-Rye UFSD as obligee, signed and sealed by the principal (Contractor) and surety.
- C. Endorse the certified check in the name of the Port Chester-Rye UFSD.

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- D. The security deposit will be returned after delivery to the Port Chester-Rye UFSD of the required Performance and Payment Bond(s) by the accepted bidder.
- E. Include the cost of bid security in the Bid Amount.
- F. After a bid has been accepted, all securities will be returned to the respective bidders .
- G. If no contract is awarded, all security deposits will be returned.

1.22 CONSENT OF SURETY

- A. Submit with the Bid: The attorney in fact who executes the required bonds on behalf of the surety to affix thereto an original certified and current copy of his power of attorney indicating the monetary limit of such power.

1.23 PERFORMANCE ASSURANCE

- A. Accepted Bidder: Shall provide a Performance and Payment Bonds, as described in Section 00 6000 - Bonds and Certificates prior to the execution of the Contract, the bidder to furnish bonds covering the faithful performance of the Contract and the payment of all obligations arising thereunder in such form and amount as the Owner may prescribe and with such sureties secured through the bidder's usual sources as may be agreeable to the parties.
- B. Include the cost of Performance and Payment Bonds in the Bid Amount.
- C. The bidder shall require the attorney in fact who executes the required bonds on behalf of the surety to affix thereto an original certified and current copy of his power of attorney indicating the monetary limit of such power

1.24 INSURANCE

- A. Provide an executed Insurance Certification Section 00 4476 - Insurance Certification attached as a supplement to the proposal.
- B. There are special insurance requirements on this project. Refer to Article 11 (AIA 201) of the General Conditions for a summary description of the required coverages. The Owner reserves the right to refuse the award of a Contract to any apparent low bidder who fails to provide the specified insurance certificates at the required time.
 - 1. The Owner, Architect, and Consultants shall be listed as "Additionally Insured" on all applicable policies.
- C. All insurance purchased by Contractor shall constitute primary insurance and primary coverage for all risks insured and that any other liability insurance that Owner, Architect, and Consultants may procure or maintain is secondary and that there shall be no contribution by such insurance until insurance provided by the Contractor is exhausted.

1.25 BID FORM REQUIREMENTS

- A. Complete all requested information in the Bid Form and Appendices.

1.26 SALES AND USE TAXES

- A. The Owner is a tax exempt entity, so there shall be no charge for sales or use taxes. The Owner will document this status as requested.

1.27 FEES FOR CHANGES IN THE WORK

- A. Refer to the General Conditions.

1.28 BID FORM SIGNATURE

- A. The Bid Form shall be signed by the bidder, as follows:
 - 1. Sole Proprietorship: Signature of sole proprietor in the presence of a witness who will also sign. Insert the words "Sole Proprietor" under the signature. Affix seal.

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2. Partnership: Signature of all partners in the presence of a witness who will also sign. Insert the word "Partner" under each signature. Affix seal to each signature.
3. Corporation: Signature of a duly authorized signing officer(s) in their normal signatures. Insert the officer's capacity in which the signing officer acts, under each signature. Affix the corporate seal. If the bid is signed by officials other than the president and secretary of the company, or the president/secretary/treasurer of the company, a copy of the by-law resolution of their board of directors authorizing them to do so, must also be submitted with the Bid Form in the bid envelope.
4. Joint Venture: Each party of the joint venture shall execute the Bid Form under their respective seals in a manner appropriate to such party as described above, similar to the requirements of a Partnership.

1.29 EQUIVALENCY CLAUSE

- A. Where, in these specifications, certain kinds, types, brands, or manufacturers of material are named, they shall be regarded as the standard of quality. Where two or more are named the Contractor may select one of those items, subject to meeting the requirements of the specified product. If the contractor desires to use any kind, type, brand, or manufacture of material other than those named in the specification, he shall indicate in writing, and prior to award of the contract, what kind, type, brand, or manufacture is included in the base bid for the specified items. Submit information describing in specific detail, wherein it differs from the quality and performance required by the base specifications, and such other information as may be required by the Owner. Contractor shall refer to Form in Section 01 2500 Substitution Procedures.

1.30 NONDISCRIMINATION

- A. All Contractors and Subcontractors of all tiers and all vendors shall comply with all pertinent provisions of the State, Local and Federal law against discrimination in employment practices. Refer to Section 01 3306 - Non-Discrimination Clauses.

1.31 PREVAILING WAGES

- A. New York State law requires the payment of prevailing wages on the project, as listed in Section 01 3554 - Prevailing Wage Rates.

1.32 ADDITIONAL BID INFORMATION

- A. Submit the following Supplements concurrent with bid submission:
 1. Refer to the Bid Form
- B. Each bidder by making his bid represents that he has read and understands the bidding documents.
- C. Each bidder by making his bid represents that he has visited the site and familiarized himself with the local conditions under which the work is to be performed. Visits to the site shall be arranged through the Owner's Representative.

1.33 DURATION OF OFFER

- A. Bids shall remain open to acceptance and shall be irrevocable for a period of 45 days after the bid closing date, except as otherwise provided in General Municipal Law §103 (11).

1.34 ACCEPTANCE OF OFFER

- A. Port Chester-Rye UFSD reserves the right to accept or reject any or all offers.
- B. The bidder acknowledges the right of the Port Chester-Rye UFSD to reject any or all bids and to waive any informality or irregularity in any bid received. In addition, the bidder recognizes the right of the Owner, at its discretion to reject a bid if the bidder fails to furnish any required bid security, or to submit the information required by the bidding documents, including Section 00 4401 "Qualifications of Bidders", or if the bid is incomplete or irregular.

1.35 POST-BID PROCEDURE

- A. The bid proposal, alternates, allowances, the proposed subcontractors, and information received from owners of other projects will be considered to determine whether the contractor is the "lowest

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responsible bidder” in making the award. The Owner and Architect may make such investigation as the Owner deems necessary to determine the responsibility of any bidder or to determine the ability of any bidder to perform the Work. Such investigation shall begin with a review of Section 00 4401 - Qualification of Bidders and shall include such additional information as shall be required herein.

- B. When requested by the Owner's Representative and Architect, bidders shall furnish all information and data required by the Owner's Representative and Architect within the time and in the form and manner requested by the Owner. Upon notification from the Owner's Representative and Architect, the apparent low bidder shall furnish, within Two (2) working days after the bid opening, Two (2) copies of the following information in writing:
1. Evidence of the bidder's financial responsibility, including a certified financial statement prepared by a certified public accountant. The financial statement shall include, but not limited to the following:
 - a. Current assets (e.g., cash, joint venture accounts, accounts receivable, notes receivable, accrued income, deposits, materials inventory and prepaid expenses):
 - b. Net Fixed Assets:
 - c. Other Assets:
 - d. Current Liabilities (e.g., accounts payable, notes payable, accrued expenses, provision for income taxes, advances, accrued salaries and accrued payroll taxes):
 - e. Other Liabilities (e.g., Capital, capital stock, authorized and outstanding shares par values, earned surplus and retained earnings).
 - f. The names, addresses and phone numbers of the subcontractors and suppliers that the bidder proposes to use on the project.
 - g. A bar-chart showing the bidder's proposed plan and schedule to complete the bidder's work in accordance with Section 01 1010 Milestone Schedule.
 - h. The insurance certificates required by the Bid Documents.
 - i. Resumes for Contractor's proposed supervisory staff, including qualifications for specialized expertise or any certification(s) required to perform the Work.
 - j. Names of proposed major sub-contractors (more than 15% of the bid amount) and a listing of the related trade of work and value.
 - k. Any special coordination requirements with other trades.
 - l. Any special storage and staging requirements for construction materials.
 - m. Any other special requirements.
 - n. A proposed schedule of values for the bidder's work.
 - o. A proposed list of submittals and a proposed schedule for making them, all keyed to the bar-chart.
 2. After receipt of the above information, the Owner's Representative and Architect will designate a time and place for the meeting between the Owner's Representative and Architect and the apparent low bidder. The apparent low bidder's principal, project manager and site superintendent will attend that meeting, at which time the parties will discuss the bidder's responsiveness, responsibility and qualifications.
 3. The Owner reserves the right to disapprove the use of any proposed Subcontractor, and in such event, the bidder shall submit the name of another Subcontractor in like manner within the time Owner specified by the Owner, as set forth in the Agreement.
 4. To the fullest extent allowed by law, the Owner reserves the right to reject any bid if the evidence required by the Owner is not submitted or fails to satisfy the Owner that the bidder is responsible, able and qualified to carry out the obligations of the Owner Contract or to complete the Work as contemplated. The Owner will consider the information received in determining whether or not to accept a proposal.

PORT CHESTER-RYE UFSD
JOHN F. KENNEDY ELEMENTARY SCHOOL
FLOOD REPAIRS AND RELATED WORK
INSTRUCTIONS TO BIDDERS

5. Acceptance of a proposal will be a notice in writing signed by a duly authorized representative of the Owner.
6. Any bidder whose proposal is accepted will be required to sign the Owner/Contractor Agreement no later than ten (10) days after receipt of Contract, which is later.
7. In the event that the Owner should reject the proposal of the bidder, the Owner may elect to meet with the next lowest bidder and to consider the information as provided above. In the event that the proposal of the next lowest bidder is rejected, the Owner may elect to meet with the third lowest bidder and repeat the above process. At all times the Owner retains the right to reject all bids.

END OF SECTION

RFI FORM

CONTRACTOR'S REQUEST FOR INTERPRETATION NO. _____

F&D RFI NO: _____

(F&D USE)

NAME OF PROJECT: Flood Repairs and Related Work

NAME OF OWNER: Port Chester-Rye UFSD

FACILITY: JOHN F. KENNEDY ELEMENTARY SCHOOL

DATE: _____

A/E PROJECT NO: 21444.01

ARCHITECT: Fuller and D'Angelo P.C.

45 Knollwood Road, Elmsford, NY 10523

Tel: 914-592-4444; Fax: 914-592-1717

Frank DiFato, RA frankd@fullerdangelo.com

Refer to Section 00 2113 Par 1.13 for additional requirements.

FROM (CO. NAME): _____

CONTACT NAME: _____ **Tel:** _____

SUBJECT: _____

DISCIPLINE/TRADE: _____

DWG./SPEC. REFERENCE: _____

QUESTION: _____

___ **FIELD CONDITION** _____

___ **DRAWING/SPEC** _____

___ **DISCREPANCY** _____

___ **OWNER CHANGE** _____

___ **CLARIFICATION** _____

___ **CONTRACTOR'S SUGGESTION (IF APPLICABLE):** _____

ANSWER

ARCHITECT'S SIGNATURE: _____ **DATE:** _____

Note: review and any responses to this request for information by the architect/engineer is strictly for design intent only and does not constitute acknowledgement or acceptance of any cost or schedule implications unless specifically presented by the contractor. By submission of this request for information,

PORT CHESTER-RYE UFSD
JOHN F. KENNEDY ELEMENTARY SCHOOL
FLOOD REPAIRS AND RELATED WORK
RFI FORM

the contractor assumes all responsibility in the absence of an approved change order or work directive.

END OF SECTION

PORT CHESTER-RYE UFSD
JOHN F. KENNEDY ELEMENTARY SCHOOL
FLOOD REPAIRS AND RELATED WORK
BID FORM CONTRACT #1 GENERAL
CONSTRUCTION

SECTION 00 4100
BID FORM CONTRACT #1 GENERAL CONSTRUCTION

THE PROJECT AND THE PARTIES

TO:

PORT CHESTER-RYE UFSD
113 Bowman Avenue:
Port Chester New York 10573

FOR:

Flood Repairs and Related Work
JFK Elementary School, 40 Olivia Street
Port Chester, NY 10573

DATE: _____ (**Bidder to enter date**)

SUBMITTED BY: _____

Bidder's Full Name _____

Address _____

City, State, Zip _____

Contact Individual and Telephone No. _____

1.1 OFFER

- A. Having examined the Place of The Work and all matters referred to in the Bidding Requirements and the Contract Documents prepared by Fuller and D'Angelo P.C. for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform Contract No.1 General Construction Work for the Sum of:

1. **BASE BID**

- a. The Base Bid of this Proposal for all work required by the Contract Documents for Contract No.1 General Construction is as follows:

(\$ _____) DOLLARS

2. **TOTAL UNIT COST ALLOWANCES**

- a. The Total Unit Cost Allowance as indicated in Section 01 2100 - Allowances is as follows:

(\$ _____) DOLLARS

Note: Attach Section 01 2100 - Allowances itemized contingency list to bid proposal.

(\$ _____) DOLLARS

B. **TOTAL BASE BID**

1. The Total Base Bid of this Proposal for all work required by the Contract Documents for Contract No.1 General Construction and Related Work work is as follows:

\$ _____), DOLLARS

(The Total Base Bid is sum of 1.1.A.1.a and 1.1.A.2.a)

- C. The undersigned further understands and agrees that he is to furnish and provide all the necessary material, machinery, plant, implements, tools, labor, services, skill and other items of whatever nature required, and to do and perform all the work necessary under the Contract, to complete the work in accordance with the drawings and specifications and any addenda thereto, and to accept in full

PORT CHESTER-RYE UFSD
JOHN F. KENNEDY ELEMENTARY SCHOOL
FLOOD REPAIRS AND RELATED WORK
BID FORM CONTRACT #1 GENERAL CONSTRUCTION

compensation therefore the amount of the Total Base Bid stated, modified by such additive- or deductive alternatives, if any as are accepted by the Owner.

- D. We have included the required security Bid Bond as required by the Instruction to Bidders.
- E. We have included the required performance assurance bonds in the Bid Amount as required by the Instructions to Bidders.
- F. All applicable federal taxes and New York taxes are included in the Bid Sum.
- G. All Allowances described in Section - 01 2100 - Allowances are included in the Bid Sum.

1.2 ACCEPTANCE

- A. This offer shall be open to acceptance and is irrevocable for forty-five (45) days from the bid closing date.
- B. If this bid is accepted by Port Chester-Rye UFSD within the time period stated above, we will:
 - 1. Execute the Agreement within five (5) days of receipt of Notice of Award or five (5) days following receipt of Contract, whichever is later.
 - 2. Furnish the required bonds within with the executed Contract.
- C. If this bid is accepted within the time stated, and we fail to commence the Work or we fail to provide the required Bond(s), the security deposit shall be forfeited as damages to Port Chester-Rye UFSD by reason of our failure, limited in amount to the lesser of the face value of the security deposit or the difference between this bid and the bid upon which a Contract is signed.

1.3 REJECTION OF BIDS

- A. The undersigned agrees that the Owner shall have the right to accept or reject any or all bids.

1.4 CONTRACT TIME

- A. If this Bid is accepted, we will:
 - 1. Complete all the work covered by this Proposal with a commencement date of NO EARLIER THAN Notice of Award by Owner. Work shall be phased as indicated in 01 1010 Milestone Schedule. Failure to complete each phase of work by dates indicated will result in liquidated damages as stated in the AIA 201-2017 General Conditions of the Contract.

1.5 UNIT COST ALLOWANCES

- A. The Unit Cost Allowances for this Proposal required by the Contract Documents are listed in Section 01 2100 - Allowances and is attached to the bid proposal.

1.6 CHANGES TO THE WORK

- A. Refer to AIA 201-2017 General Conditions of the Contract Article 7.

1.7 ADDENDA

- A. The following Addenda have been received. The modifications to the Bid Documents noted below have been considered and all costs are included in the Bid Sum.
 - 1. Addendum # _____ Dated _____.
 - 2. Addendum # _____ Dated _____.

1.8 BID FORM SUPPLEMENTS

- A. The following information is included with Bid submission:
 - 1. Bid Security.
 - 2. Section 00 4401 - Qualification of Bidders.
 - 3. Section 00 4402 - Hold Harmless Agreement.
 - 4. Section 00 4460 - Certification of Compliance With the Iran Disinvestment Act OR
 - 5. Section 00 4470 - Declaration of Bidder's Inability to Provide Certification of Compliance with the Iran Divestment Act.
 - 6. Section 00 4476 - Insurance Certification.

PORT CHESTER-RYE UFSD
JOHN F. KENNEDY ELEMENTARY SCHOOL
FLOOD REPAIRS AND RELATED WORK
BID FORM CONTRACT #1 GENERAL
CONSTRUCTION

7. Section 01 2100 - Allowances:

1.9 NON-COLLUSIVE BIDDING CERTIFICATION

- A. By submission of this bid or proposal:
1. The undersigned bidder and the person or persons signing on behalf of the bidder, and should this bid be a joint bid, each party thereto, certifies as to its own organization, under penalty of perjury, that to the best of his/her knowledge and belief:
 - 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 with 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.

1.10 BIDDER'S FURTHER AFFIRMATION AND DECLARATION

- A. The above name bidder and should this bid be a joint bid each party thereto, further affirm and declares:
1. That said bidder is of lawful age and the only one interested in this bid; and that no other person, firm or corporation, except those herein above named, has any interest in this bid or in the contract proposed to be entered into.
 2. That this bid is made without any understanding, agreement or connection with any other person, firm, or corporation making a bid for the same work, and is in all respects fair and without collusion or fraud.
 3. That said bidder is not in arrears to the Port Chester-Rye UFSD upon debt or contract, and is not a defaulter, as surety or otherwise upon any obligation to the said Port Chester-Rye UFSD
 4. That no member of the Port Chester-Rye UFSD or any officer or employee of the Port Chester-Rye UFSD or person whose salary is payable in whole or in part from the Port Chester-Rye UFSD treasury, or the spouse of any foregoing is or shall be or become interested, directly or indirectly, as a contracting party, partner, stockholder, surety or otherwise, in this bid, or in the performance of the Contract, or in the supplies, materials or equipment and work or labor to which it relates, or in any portion of the profits thereof.
 5. That he/she has carefully examined the site of the work and that, from his/her own investigations, he/she has satisfied him/herself as to the nature and location of the work, and character, quality and quantity of materials, and all difficulties likely to be encountered, the kind and extent of equipment and other facilities needed for the performance of the work, the general and local conditions, and all other items which may, in any way, affect the work or its performance.
 6. That if a corporation, this bid or proposal containing the Non-Collusive Binding Certification and the foregoing Affirmation and Declaration has been authorized by the Board of Directors of such Corporation, which authorization includes the signing and submission of this bid or proposal and the inclusion therein of the said Certificate of Non-Collusion and Affirmation and Declaration as the Act and Deed of the Corporation.

1.11 BID FORM SIGNATURE(S)

The Corporate Seal of

(Bidder - print the full name of your firm)

was hereunto affixed in the presence of:

PORT CHESTER-RYE UFSD
JOHN F. KENNEDY ELEMENTARY SCHOOL
FLOOD REPAIRS AND RELATED WORK
BID FORM CONTRACT #1 GENERAL CONSTRUCTION

(Authorized signing officer, Title)

(Seal)

(Authorized signing officer, Title)

If the Bid is a joint venture or partnership, add additional forms of execution for each member of the joint venture in the appropriate form or forms as above.

Subscribed and sworn before me this day of ____ 20 ____

Notary Public: _____

My Commission Expire: _____

END OF BID FORM

SECTION 00 4110
BID FORM CONTRACT #2 PLUMBING

THE PROJECT AND THE PARTIES

TO:

PORT CHESTER-RYE UFSD
113 Bowman Avenue:
Port Chester New York 10573

FOR:

Flood Repairs and Related Work
JFK Elementary School, 40 Olivia Street
Port Chester, NY 10573

DATE: _____ (**Bidder to enter date**)

SUBMITTED BY: _____

Bidder's Full Name _____

Address _____

City, State, Zip _____

Contact Individual and Telephone No. _____

1.1 OFFER

- A. Having examined the Place of The Work and all matters referred to in the Bidding Requirements and the Contract Documents prepared by Fuller and D'Angelo P.C. for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform Contract No. 2 Plumbing Work for the Sum of:

1. **BASE BID**

- a. The Base Bid of this Proposal for all work required by the Contract Documents for Contract No. 2 Plumbing is as follows:

(\$ _____) DOLLARS

2. **TOTAL UNIT COST ALLOWANCES**

- a. The Total Unit Cost Allowance as indicated in Section 01 2100 - Allowances is as follows:

(\$ _____) DOLLARS

Note: Attach Section 01 2100 - Allowances itemized contingency list to bid proposal.

(\$ _____) DOLLARS

B. **TOTAL BASE BID**

1. The Total Base Bid of this Proposal for all work required by the Contract Documents for Contract No. 2 Plumbing and Related Work work is as follows:

\$ _____), DOLLARS

(The Total Base Bid is sum of 1.1.A.1.a and 1.1.A.2.a)

- C. The undersigned further understands and agrees that he is to furnish and provide all the necessary material, machinery, plant, implements, tools, labor, services, skill and other items of whatever nature required, and to do and perform all the work necessary under the Contract, to complete the work in accordance with the drawings and specifications and any addenda thereto, and to accept in full compensation therefore the amount of the Total Base Bid stated, modified by such additive- or deductive alternatives, if any as are accepted by the Owner.

PORT CHESTER-RYE UFSD
JOHN F. KENNEDY ELEMENTARY SCHOOL
FLOOD REPAIRS AND RELATED WORK
BID FORM CONTRACT #2 PLUMBING

- D. We have included the required security Bid Bond as required by the Instruction to Bidders.
- E. All applicable federal taxes and New York taxes are included in the Bid Sum.
- F. All Allowances described in Section - 01 2100 - Allowances are included in the Bid Sum.

1.2 ACCEPTANCE

- A. This offer shall be open to acceptance and is irrevocable for forty-five (45) days from the bid closing date.
- B. If this bid is accepted by Port Chester-Rye UFSD within the time period stated above, we will:
 - 1. Execute the Agreement within five (5) days of receipt of Notice of Award or five (5) days following receipt of Contract, whichever is later.
 - 2. Furnish the required bonds within with the executed Contract.
- C. If this bid is accepted within the time stated, and we fail to commence the Work or we fail to provide the required Bond(s), the security deposit shall be forfeited as damages to Port Chester-Rye UFSD by reason of our failure, limited in amount to the lesser of the face value of the security deposit or the difference between this bid and the bid upon which a Contract is signed.

1.3 REJECTION OF BIDS

- A. The undersigned agrees that the Owner shall have the right to accept or reject any or all bids.

1.4 CONTRACT TIME

- A. If this Bid is accepted, we will:
 - 1. Complete all the work covered by this Proposal with a commencement date of NO EARLIER THAN Notice of Award by Owner. Work shall be phased as indicated in 01 1010 Milestone Schedule. Failure to complete each phase of work by dates indicated will result in liquidated damages as stated in the AIA 201-2017 General Conditions of the Contract.

1.5 UNIT COST ALLOWANCES

- A. The Unit Cost Allowances for this Proposal required by the Contract Documents are listed in Section 01 2100 - Allowances and is attached to the bid proposal.

1.6 CHANGES TO THE WORK

- A. Refer to AIA 201-2017 General Conditions of the Contract Article 7.

1.7 ADDENDA

- A. The following Addenda have been received. The modifications to the Bid Documents noted below have been considered and all costs are included in the Bid Sum.
 - 1. Addendum # _____ Dated _____.
 - 2. Addendum # _____ Dated _____.

1.8 BID FORM SUPPLEMENTS

- A. The following information is included with Bid submission:
 - 1. Bid Security.
 - 2. Section 00 4401 - Qualification of Bidders.
 - 3. Section 00 4402 - Hold Harmless Agreement.
 - 4. Section 00 4460 - Certification of Compliance With the Iran Disinvestment Act OR
 - 5. Section 00 4470 - Declaration of Bidder's Inability to Provide Certification of Compliance with the Iran Divestment Act.
 - 6. Section 00 4476 - Insurance Certification.
 - 7. Section 01 2100 - Allowances.

1.9 NON-COLLUSIVE BIDDING CERTIFICATION

- A. By submission of this bid or proposal:

PORT CHESTER-RYE UFSD
JOHN F. KENNEDY ELEMENTARY SCHOOL
FLOOD REPAIRS AND RELATED WORK
BID FORM CONTRACT #2 PLUMBING

1. The undersigned bidder and the person or persons signing on behalf of the bidder, and should this bid be a joint bid, each party thereto, certifies as to its own organization, under penalty of perjury, that to the best of his/her knowledge and belief:
 - 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 with 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.

1.10 BIDDER'S FURTHER AFFIRMATION AND DECLARATION

- A. The above name bidder and should this bid be a joint bid each party thereto, further affirm and declares:
 1. That said bidder is of lawful age and the only one interested in this bid; and that no other person, firm or corporation, except those herein above named, has any interest in this bid or in the contract proposed to be entered into.
 2. That this bid is made without any understanding, agreement or connection with any other person, firm, or corporation making a bid for the same work, and is in all respects fair and without collusion or fraud.
 3. That said bidder is not in arrears to the Port Chester-Rye UFSD upon debt or contract, and is not a defaulter, as surety or otherwise upon any obligation to the said Port Chester-Rye UFSD
 4. That no member of the Port Chester-Rye UFSD or any officer or employee of the Port Chester-Rye UFSD or person whose salary is payable in whole or in part from the Port Chester-Rye UFSD treasury, or the spouse of any foregoing is or shall be or become interested, directly or indirectly, as a contracting party, partner, stockholder, surety or otherwise, in this bid, or in the performance of the Contract, or in the supplies, materials or equipment and work or labor to which it relates, or in any portion of the profits thereof.
 5. That he/she has carefully examined the site of the work and that, from his/her own investigations, he/she has satisfied him/herself as to the nature and location of the work, and character, quality and quantity of materials, and all difficulties likely to be encountered, the kind and extent of equipment and other facilities needed for the performance of the work, the general and local conditions, and all other items which may, in any way, affect the work or its performance.
 6. That if a corporation, this bid or proposal containing the Non-Collusive Binding Certification and the foregoing Affirmation and Declaration has been authorized by the Board of Directors of such Corporation, which authorization includes the signing and submission of this bid or proposal and the inclusion therein of the said Certificate of Non-Collusion and Affirmation and Declaration as the Act and Deed of the Corporation.

1.11 BID FORM SIGNATURE(S)

The Corporate Seal of

(Bidder - print the full name of your firm)

was hereunto affixed in the presence of:

(Authorized signing officer, Title)

(Seal)

PORT CHESTER-RYE UFSD
JOHN F. KENNEDY ELEMENTARY SCHOOL
FLOOD REPAIRS AND RELATED WORK
BID FORM CONTRACT #2 PLUMBING

(Authorized signing officer, Title)

If the Bid is a joint venture or partnership, add additional forms of execution for each member of the joint venture in the appropriate form or forms as above.

Subscribed and sworn before me this day of ____ 20 ____

Notary Public: _____

My Commission Expire: _____

END OF BID FORM

SECTION 00 4120
BID FORM CONTRACT #3 HVAC

THE PROJECT AND THE PARTIES

TO:

PORT CHESTER-RYE UFSD
113 Bowman Avenue:
Port Chester New York 10573

FOR:

Flood Repairs and Related Work
JFK Elementary School, 40 Olivia Street
Port Chester, NY 10573

DATE: _____ (**Bidder to enter date**)

SUBMITTED BY: _____

Bidder's Full Name _____

Address _____

City, State, Zip _____

Contact Individual and Telephone No. _____

1.1 OFFER

- A. Having examined the Place of The Work and all matters referred to in the Bidding Requirements and the Contract Documents prepared by Fuller and D'Angelo P.C. for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform Contract No. 3 HVAC Work for the Sum of:

1. **BASE BID**

- a. The Base Bid of this Proposal for all work required by the Contract Documents for Contract No. 3 HVAC is as follows:

_____, (\$ _____) DOLLARS

2. **TOTAL UNIT COST ALLOWANCES**

- a. The Total Unit Cost Allowance as indicated in Section 01 2100 - Allowances is as follows:
Fifteen Thousand _____ (\$15,000.00) DOLLARS

Note: Attach Section 01 2100 - Allowances itemized contingency list to bid proposal.

_____, (\$ _____) DOLLARS

B. **TOTAL BASE BID**

1. The Total Base Bid of this Proposal for all work required by the Contract Documents for Contract No. 3 Heating, Ventilation and Air Conditioning and Related Work work is as follows:

_____, \$ _____), DOLLARS

(The Total Base Bid is sum of 1.1.A.1.a and 1.1.A.2.a)

- C. The undersigned further understands and agrees that he is to furnish and provide all the necessary material, machinery, plant, implements, tools, labor, services, skill and other items of whatever nature required, and to do and perform all the work necessary under the Contract, to complete the work in accordance with the drawings and specifications and any addenda thereto, and to accept in full compensation therefore the amount of the Total Base Bid stated, modified by such additive- or deductive alternatives, if any as are accepted by the Owner.

- D. We have included the required security Bid Bond as required by the Instruction to Bidders.

PORT CHESTER-RYE UFSD
JOHN F. KENNEDY ELEMENTARY SCHOOL
FLOOD REPAIRS AND RELATED WORK
BID FORM CONTRACT #3 HVAC

- E. All applicable federal taxes and New York taxes are included in the Bid Sum.
- F. All Allowances described in Section - 01 2100 - Allowances are included in the Bid Sum.

1.2 ACCEPTANCE

- A. This offer shall be open to acceptance and is irrevocable for forty-five (45) days from the bid closing date.
- B. If this bid is accepted by Port Chester-Rye UFSD within the time period stated above, we will:
 - 1. Execute the Agreement within five (5) days of receipt of Notice of Award or five (5) days following receipt of Contract, whichever is later.
 - 2. Furnish the required bonds within with the executed Contract.
- C. If this bid is accepted within the time stated, and we fail to commence the Work or we fail to provide the required Bond(s), the security deposit shall be forfeited as damages to Port Chester-Rye UFSD by reason of our failure, limited in amount to the lesser of the face value of the security deposit or the difference between this bid and the bid upon which a Contract is signed.

1.3 REJECTION OF BIDS

- A. The undersigned agrees that the Owner shall have the right to accept or reject any or all bids.

1.4 CONTRACT TIME

- A. If this Bid is accepted, we will:
 - 1. Complete all the work covered by this Proposal with a commencement date of NO EARLIER THAN Notice of Award by Owner. Work shall be phased as indicated in 01 1010 Milestone Schedule. Failure to complete each phase of work by dates indicated will result in liquidated damages as stated in the AIA 201-2017 General Conditions of the Contract.

1.5 UNIT COST ALLOWANCES

- A. The Unit Cost Allowances for this Proposal required by the Contract Documents are listed in Section 01 2100 - Allowances and is attached to the bid proposal.

1.6 CHANGES TO THE WORK

- A. Refer to AIA 201-2017 General Conditions of the Contract Article 7.

1.7 ADDENDA

- A. The following Addenda have been received. The modifications to the Bid Documents noted below have been considered and all costs are included in the Bid Sum.
 - 1. Addendum # _____ Dated _____.
 - 2. Addendum # _____ Dated _____.

1.8 BID FORM SUPPLEMENTS

- A. The following information is included with Bid submission:
 - 1. Bid Security.
 - 2. Section 00 4401 - Qualification of Bidders.
 - 3. Section 00 4402 - Hold Harmless Agreement.
 - 4. Section 00 4460 - Certification of Compliance With the Iran Disinvestment Act OR
 - 5. Section 00 4470 - Declaration of Bidder's Inability to Provide Certification of Compliance with the Iran Divestment Act.
 - 6. Section 00 4476 - Insurance Certification.
 - 7. Section 01 2100 - Allowances:

1.9 NON-COLLUSIVE BIDDING CERTIFICATION

- A. By submission of this bid or proposal:

PORT CHESTER-RYE UFSD
JOHN F. KENNEDY ELEMENTARY SCHOOL
FLOOD REPAIRS AND RELATED WORK
BID FORM CONTRACT #3 HVAC

1. The undersigned bidder and the person or persons signing on behalf of the bidder, and should this bid be a joint bid, each party thereto, certifies as to its own organization, under penalty of perjury, that to the best of his/her knowledge and belief:
 - 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 with 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.

1.10 BIDDER'S FURTHER AFFIRMATION AND DECLARATION

- A. The above name bidder and should this bid be a joint bid each party thereto, further affirm and declares:
 1. That said bidder is of lawful age and the only one interested in this bid; and that no other person, firm or corporation, except those herein above named, has any interest in this bid or in the contract proposed to be entered into.
 2. That this bid is made without any understanding, agreement or connection with any other person, firm, or corporation making a bid for the same work, and is in all respects fair and without collusion or fraud.
 3. That said bidder is not in arrears to the Port Chester-Rye UFSD upon debt or contract, and is not a defaulter, as surety or otherwise upon any obligation to the said Port Chester-Rye UFSD
 4. That no member of the Port Chester-Rye UFSD or any officer or employee of the Port Chester-Rye UFSD or person whose salary is payable in whole or in part from the Port Chester-Rye UFSD treasury, or the spouse of any foregoing is or shall be or become interested, directly or indirectly, as a contracting party, partner, stockholder, surety or otherwise, in this bid, or in the performance of the Contract, or in the supplies, materials or equipment and work or labor to which it relates, or in any portion of the profits thereof.
 5. That he/she has carefully examined the site of the work and that, from his/her own investigations, he/she has satisfied him/herself as to the nature and location of the work, and character, quality and quantity of materials, and all difficulties likely to be encountered, the kind and extent of equipment and other facilities needed for the performance of the work, the general and local conditions, and all other items which may, in any way, affect the work or its performance.
 6. That if a corporation, this bid or proposal containing the Non-Collusive Binding Certification and the foregoing Affirmation and Declaration has been authorized by the Board of Directors of such Corporation, which authorization includes the signing and submission of this bid or proposal and the inclusion therein of the said Certificate of Non-Collusion and Affirmation and Declaration as the Act and Deed of the Corporation.

1.11 BID FORM SIGNATURE(S)

The Corporate Seal of

(Bidder - print the full name of your firm)

was hereunto affixed in the presence of:

(Authorized signing officer, Title)

(Seal)

PORT CHESTER-RYE UFSD
JOHN F. KENNEDY ELEMENTARY SCHOOL
FLOOD REPAIRS AND RELATED WORK
BID FORM CONTRACT #3 HVAC

(Authorized signing officer, Title)

If the Bid is a joint venture or partnership, add additional forms of execution for each member of the joint venture in the appropriate form or forms as above.

Subscribed and sworn before me this day of ____ 20____

Notary Public: _____

My Commission Expire: _____

END OF BID FORM

SECTION 00 4130
BID FORM CONTRACT #4 ELECTRICAL

THE PROJECT AND THE PARTIES

TO:

PORT CHESTER-RYE UFSD
113 Bowman Avenue:
Port Chester New York 10573

FOR:

Flood Repairs and Related Work
JFK Elementary School, 40 Olivia Street
Port Chester, NY 10573

DATE: _____ **(Bidder to enter date)**

SUBMITTED BY: _____

Bidder's Full Name _____

Address _____

City, State, Zip _____

Contact Individual and Telephone No. _____

1.1 OFFER

- A. Having examined the Place of The Work and all matters referred to in the Bidding Requirements and the Contract Documents prepared by Fuller and D'Angelo P.C. for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform Contract No. 4 Electrical Work for the Sum of:

1. **BASE BID**

- a. The Base Bid of this Proposal for all work required by the Contract Documents for Contract No. 4 Electrical is as follows:

(\$ _____) DOLLARS

2. **TOTAL UNIT COST ALLOWANCES**

- a. The Total Unit Cost Allowance as indicated in Section 01 2100 - Allowances is as follows:
Fifteen Thousand _____ (\$15,000.00) DOLLARS

Note: Attach Section 01 2100 - Allowances itemized contingency list to bid proposal.

(\$ _____) DOLLARS

B. **TOTAL BASE BID**

1. The Total Base Bid of this Proposal for all work required by the Contract Documents for Contract No. 4 Electrical and Related Work work is as follows:

\$ _____), DOLLARS

(The Total Base Bid is sum of 1.1.A.1.a and 1.1.A.2.a)

- C. The undersigned further understands and agrees that he is to furnish and provide all the necessary material, machinery, plant, implements, tools, labor, services, skill and other items of whatever nature required, and to do and perform all the work necessary under the Contract, to complete the work in accordance with the drawings and specifications and any addenda thereto, and to accept in full compensation therefore the amount of the Total Base Bid stated, modified by such additive- or deductive alternatives, if any as are accepted by the Owner.

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- D. We have included the required security Bid Bond as required by the Instruction to Bidders.
- E. All applicable federal taxes and New York taxes are included in the Bid Sum.
- F. All Allowances described in Section - 01 2100 - Allowances are included in the Bid Sum.

1.2 ACCEPTANCE

- A. This offer shall be open to acceptance and is irrevocable for forty-five (45) days from the bid closing date.
- B. If this bid is accepted by Port Chester-Rye UFSD within the time period stated above, we will:
 - 1. Execute the Agreement within five (5) days of receipt of Notice of Award or five (5) days following receipt of Contract, whichever is later.
 - 2. Furnish the required bonds within with the executed Contract.
- C. If this bid is accepted within the time stated, and we fail to commence the Work or we fail to provide the required Bond(s), the security deposit shall be forfeited as damages to Port Chester-Rye UFSD by reason of our failure, limited in amount to the lesser of the face value of the security deposit or the difference between this bid and the bid upon which a Contract is signed.

1.3 REJECTION OF BIDS

- A. The undersigned agrees that the Owner shall have the right to accept or reject any or all bids.

1.4 CONTRACT TIME

- A. If this Bid is accepted, we will:
 - 1. Complete all the work covered by this Proposal with a commencement date of NO EARLIER THAN Notice of Award by Owner. Work shall be phased as indicated in 01 1010 Milestone Schedule. Failure to complete each phase of work by dates indicated will result in liquidated damages as stated in the AIA 201-2017 General Conditions of the Contract.

1.5 UNIT COST ALLOWANCES

- A. The Unit Cost Allowances for this Proposal required by the Contract Documents are listed in Section 01 2100 - Allowances and is attached to the bid proposal.

1.6 CHANGES TO THE WORK

- A. Refer to AIA 201-2017 General Conditions of the Contract Article 7.

1.7 ADDENDA

- A. The following Addenda have been received. The modifications to the Bid Documents noted below have been considered and all costs are included in the Bid Sum.
 - 1. Addendum # _____ Dated _____.
 - 2. Addendum # _____ Dated _____.

1.8 BID FORM SUPPLEMENTS

- A. The following information is included with Bid submission:
 - 1. Bid Security.
 - 2. Section 00 4401 - Qualification of Bidders.
 - 3. Section 00 4402 - Hold Harmless Agreement.
 - 4. Section 00 4460 - Certification of Compliance With the Iran Disinvestment Act OR
 - 5. Section 00 4470 - Declaration of Bidder's Inability to Provide Certification of Compliance with the Iran Divestment Act.
 - 6. Section 00 4476 - Insurance Certification.
 - 7. Section 01 2100 - Allowances:

1.9 NON-COLLUSIVE BIDDING CERTIFICATION

- A. By submission of this bid or proposal:

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1. The undersigned bidder and the person or persons signing on behalf of the bidder, and should this bid be a joint bid, each party thereto, certifies as to its own organization, under penalty of perjury, that to the best of his/her knowledge and belief:
 - 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 with 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.

1.10 BIDDER'S FURTHER AFFIRMATION AND DECLARATION

- A. The above name bidder and should this bid be a joint bid each party thereto, further affirm and declares:
 1. That said bidder is of lawful age and the only one interested in this bid; and that no other person, firm or corporation, except those herein above named, has any interest in this bid or in the contract proposed to be entered into.
 2. That this bid is made without any understanding, agreement or connection with any other person, firm, or corporation making a bid for the same work, and is in all respects fair and without collusion or fraud.
 3. That said bidder is not in arrears to the Port Chester-Rye UFSD upon debt or contract, and is not a defaulter, as surety or otherwise upon any obligation to the said Port Chester-Rye UFSD
 4. That no member of the Port Chester-Rye UFSD or any officer or employee of the Port Chester-Rye UFSD or person whose salary is payable in whole or in part from the Port Chester-Rye UFSD treasury, or the spouse of any foregoing is or shall be or become interested, directly or indirectly, as a contracting party, partner, stockholder, surety or otherwise, in this bid, or in the performance of the Contract, or in the supplies, materials or equipment and work or labor to which it relates, or in any portion of the profits thereof.
 5. That he/she has carefully examined the site of the work and that, from his/her own investigations, he/she has satisfied him/herself as to the nature and location of the work, and character, quality and quantity of materials, and all difficulties likely to be encountered, the kind and extent of equipment and other facilities needed for the performance of the work, the general and local conditions, and all other items which may, in any way, affect the work or its performance.
 6. That if a corporation, this bid or proposal containing the Non-Collusive Binding Certification and the foregoing Affirmation and Declaration has been authorized by the Board of Directors of such Corporation, which authorization includes the signing and submission of this bid or proposal and the inclusion therein of the said Certificate of Non-Collusion and Affirmation and Declaration as the Act and Deed of the Corporation.

1.11 BID FORM SIGNATURE(S)

The Corporate Seal of

(Bidder - print the full name of your firm)

was hereunto affixed in the presence of:

(Authorized signing officer, Title)

(Seal)

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(Authorized signing officer, Title)

If the Bid is a joint venture or partnership, add additional forms of execution for each member of the joint venture in the appropriate form or forms as above.

Subscribed and sworn before me this day of ____ 20____

Notary Public: _____

My Commission Expire: _____

END OF BID FORM

SECTION 00 4401
QUALIFICATION OF BIDDERS

1.1 REQUIREMENTS

- A. The Undersigned certifies under oath that the information provided herein is true and sufficiently complete so as not to be misleading.
- B. With the submittal of the Bid Proposal Form, **the bidder shall attach this Qualification of Bidders** and shall answer all the questions and provide all information requested herein. Failure to answer these questions or provide information requested in full may be cause for rejection of the bidder's proposal. If more space is needed, attach additional sheets with reference to subject paragraph.
- C. The Owner reserves the right to consider, but not limited to, the financial responsibility, experience and reputation in the construction industry, as well as the specific qualifications listed below and elsewhere in this document in considering bids and awarding the contract. PORT CHESTER-RYE UFSD reserves the right to waive any informalities if, at its discretion the interest of the PORT CHESTER-RYE UFSD will be better served.
- D. To demonstrate qualification for performing the Work of this Contract, bidders may be requested to submit written evidence of financial position and current commitments, license to perform work in the State NY .
- E. Each Company (Bidder) shall have been in existence under the same name for no less than five (5) years.
- F. Each Company (Bidder) shall have successfully completed three (3) projects within the last five (5) years substantially **similar in scope, size, complexity and dollar value** to the work of this project.
- G. Each Company (Bidder) shall furnish, on the attached form, the three (3) projects of it has performed during the most recent five (5) years including, but not limited to, the name and address of the project, the name of the awarding entity/owner, the name of the awarding entity's/owner's representative, construction manager and architect, current telephone numbers where each can be reached, the description of the project, general scope of the contractor's work, contract price, dates of performance, whether the contract was terminated for cause or convenience, whether the contract was completed on time and whether liquidated damages were assessed against the contractor, and if so, to any items above provide a written explanation.
 - 1. The Owner's Representative and Architect reserves the right to require additional information it deems appropriate concerning the history of the contractor's performance of each such contract.
- H. The final determination of whether the contractor possesses the requisite experience rests in the sole discretion of the Owner.
- I. To be considered qualified, in addition to the items listed in the Contractor's Qualification Statement, bidder must demonstrate to the Owner's satisfaction:
 - 1. The Corporation, partnership, sole proprietorship of the entity in whose name the bid is submitted has no less than the previous five (5) years performing or coordinating the Work which they are bidding on.
 - 2. The bidder is not currently involved in bankruptcy proceedings.
 - 3. The bidder is capable of and intends to perform the work with its own employees in accordance with the following:
 - a. Notwithstanding any other provisions of the Contract Documents, General Contractor shall perform at least twenty-five (25)% of the field work by its own employees.
 - b. Notwithstanding any other provisions of the Contract Documents of the field work by its own employees Contractors for HVAC, Plumbing, and Electrical shall perform at least seventy-five (75)% of the field work by its own employees.

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- c. For the purpose of the preceding paragraph, any part of the work performed by supervisory personnel (persons above level of foreman) or by the office personnel and such items as bonds, certificates, shop drawings and similar items shall not be considered part of the percentage of work required to be performed by the Contractor's employees.
- 4. Each subcontractor must have a minimum of five (5) years experience in the work and/or applicable trade.
- 5. The bidder will perform the work with sufficient personnel as required to comply with the schedule.
- 6. Field Superintendent must have at least five (5) years experience as a working field superintendent and must speak English or have a translator available at all times at no cost to the Owner.

1.2 QUESTIONNAIRE:

Submitted to: Port Chester-Rye UFSD
Address: 113 Bowman Avenue
City/Town: Port Chester New York 10573
Submitted By: _____
Corporation _____ Partnership _____ Individual _____
Address: _____
Principal Office: _____
Other: _____
Project: Flood Repairs and Related Work
Facility: JOHN F. KENNEDY ELEMENTARY SCHOOL
Type of Work: (file separate for each Classification of Work)
1. General Construction, HVAC, Plumbing, and Electrical and Related Work.

1.3 ORGANIZATION

- A. How many years has your organization been in business as a Contractor? _____
 - 1. How many years has your organization been in business under its present business name? _____
 - 2. Under what other or former names has your organization operated?

- B. What is the firm's bonding range?
Single: _____ Aggregate: _____
- C. If your organization is a corporation, answer the following:
 - 1. Date of Incorporation: _____
 - a. State of Incorporation: _____
 - b. President's Name: _____
 - c. Vice-president's name(s): _____
 - d. Secretary's name: _____
 - e. Treasurer's name: _____
- D. If your organization is a partnership, answer the following:
 - 1. Date of organization: _____
 - a. Type of partnership (if applicable): _____
 - b. Name(s) of general partner(s): _____

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- E. If your organization is individually owned, answer the following:
1. Date of organization: _____
 2. Name of owner: _____
- F. If the form of your organization is other than those listed above, describe it and name the principals:

1.4 OWNERSHIP, MANAGEMENT, AFFILIATION

- A. Identify each person who is or has been ,within the past five years, an owner of 5.0% or more of the firm's shares, one of the five largest shareholders, a director, an officer, a partner or the proprietor, or a managerial employee.

First Name: _____ MI _____ Last Name _____ DOB _____

% Owned: __ Director: Yes __ No __ Officer: Yes __ No __ Title _____ artner: Yes __ No __

First Name: _____ MI _____ Last Name _____ DOB _____

% Owned: __ Director: Yes __ No __ Officer: Yes __ No __ Title _____ Partner: Yes __ No __

First Name: _____ MI _____ Last Name _____ DOB _____

% Owned: __ Director: Yes __ No __ Officer: Yes __ No __ Title _____ Partner: Yes __ No __

- B. Has the firm or any firm listed in response to questions above defaulted or been terminated and its surety called upon to complete, any contract awarded within the past five years Yes __ No __ If yes, give date(s), agency (ies)/owner(s), project(s), contract numbers, and describe including the result:

- C. List below any projects performed by the bidder in the past five (5) years on which any of the following events occurred:
1. Were any extension of time were requested by the contractor, Yes __ No __ and were such requests granted? Yes __ No __
 2. Was litigation and/or arbitration commenced by either the Owner or the bidder as a result of the work of the project performed by the bidder? Yes __ No __
 3. Were any liens filed on the project by subcontractors or material suppliers of the bidder? Yes __ No __
 4. Did the bidder make any claims for extra work on the project, and did said claim result in a change order? Yes __ No __
 5. If Yes:

Project Name/Address _____

Type of Event _____

Name & Phone # of Owner: _____

Contact Person at Owner: _____

- D. For all contracts within the past five years: (a) List all liens or claims over \$25,000 filed against the firm and remaining undischarged or unsatisfied for more than 90 days; and (b) list and describe all liquidated damages assessed: _____

1.5 FINANCIAL INFORMATION

- A. Submit firm's most recent annual financial statement and Dun and Bradstreet Report..

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1.6 OTHER INFORMATION

- A. Within the past five years has the firm, any affiliate, any predecessor company or entity or any person identified in questions number 1.1 through 1.2 above been the subject of any of the following: (Respond to each question and describe in detail the circumstances of each affirmative answer: (Attach additional pages if necessary).
1. A judgment of conviction for any business-related conduct constituting a crime under state or federal law No__ Yes__
 2. A criminal investigation or indictment for any business-related conduct constituting a crime under state or federal law? No__ Yes__
 3. A grant of immunity for any business-related conduct constituting a crime under state and federal law? No__ Yes__
 4. A federal or state suspension or debarment? No__ Yes__
 5. A rejection of any bid for lack of qualifications, responsibility or because of the submission of an informal, non-responsive or incomplete bid? No__ Yes__
 6. A denial or revocation of prequalification? No__ Yes__
 7. A voluntary exclusion from bidding/contracting agreement? No__ Yes__
 8. Any administrative proceeding or civil action seeking specific performance or restitution in connection with any public works contract except any disputed work proceeding? No__ Yes__
 9. An OSHA Citation and Notification of Penalty containing a violation classified as serious? No__ Yes__
 10. An OSHA Citation or Notification of Penalty containing a violation classified as willful? No__ Yes__
 11. A prevailing wage or supplement payment violation? No__ Yes__
 12. A State Labor Law violation deemed willful? No__ Yes__
 13. Any other federal or state Citations, Notices, violation orders, pending administrative hearings or proceedings or determinations of a violation of any labor law or regulation? No__ Yes__
 14. Any criminal investigation, felony indictment or conviction concerning formation of or any business association with, an allegedly false or fraudulent women's, minority or disadvantaged business enterprise? No__ Yes__
 15. Any denial, desertification, revocation or forfeiture of Women's Business Enterprise, Minority Business Enterprise or Disadvantaged Business Enterprise status? No__ Yes__
 16. Rejection of a low bid on a State contract for failure to meet statutory affirmative action M/WBE requirements? No__ Yes__
 17. A consent order with the NYS Department of Environmental Conservation or a federal, state or local government enforcement determination involving a violation of federal or state environmental laws? No__ Yes__
 18. Any bankruptcy proceeding? No__ Yes__
 19. Any suspension or revocation of any business or professional license? No__ Yes__
 20. Any citations, notices, violation orders, pending administrative hearings or proceedings or determinations for violation of hearings or proceedings or determinations for violation of:
 - a. Federal, state or local health laws, rules or regulations? No__ Yes__
 - b. Federal, state or local environmental laws, rules and regulations? No__ Yes__
 - c. Unemployment insurance or workers compensation coverage or claim requirements. No__ Yes__
 - d. ERISA (Employee Retirement Income Security Act) No__ Yes__
 - e. Federal, state or local human rights laws. No__ Yes__
 - f. Federal, state or local labor laws. No__ Yes__
 - g. Federal or state security laws. No__ Yes__

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- h. Withdrawal or an agreement to withdraw a bid submitted to a public owner or a request by a public owner to withdraw a bid? No__ Yes__
- B. During the five year period preceding the submissions of this bid, has the bidder been named as a party in any lawsuit in an action involving a claim for personal injury or wrongful death arising from performance of work related to any project in which it has been engaged? If the answer to this question is yes, list all such lawsuits, the index number associated with said suit and the status of the lawsuit at the time of the submission of this bid. No__ Yes__
- C. During the five year period preceding the submission of this bid, has the bidder been the subject of proceedings before the Department of Labor for alleged violations of the Labor Law as it relates to the payment of prevailing wages and/or supplemental payment requirements? If the answer to this question is yes, please list each such instance of the commencement of a Department of Labor proceeding, for which project such proceeding was commenced, and the status of the proceeding at the time of the submission of this bid. No__ Yes__
- D. During the five year period preceding the bidder's submission of this bid, has the bidder been the subject of proceedings involving allegations that it violated the Worker's Compensation Law including but not limited to the failure to provide proof of worker's compensation or disability coverage and/or any lapses thereof. If the answer to this question is yes, list such instance of violation and the status of the claimed violation at the time of disposition of this bid. No__ Yes__
- E. Has the bidder, its officers, directors, owner and/or managerial employees been convicted of a crime or been the subject of a criminal indictment during the five years preceding the submission of this bid? If the answer to this question is yes, list the name of the individual convicted or indicted the charge against the individual and the date of submission of the charge. No__ Yes__
- F. During the five year period preceding the bidder's submission of this bid, has the bidder been charged with and/or found guilty of any violations of federal, state, or municipal environmental and/or health laws, codes, rules and/or regulations. If the answer to this question is yes, list the nature of the charge against the bidder, the date of the charge, and the status of the charge at the time of the submission of this bid. No__ Yes__
- G. Has the bidder ever defaulted or had its surety called upon to complete any contract awarded within the past five years. If the answer to this question is yes, list the projects, the dates and the nature of the termination (convenience, suspension, for cause). No__ Yes__
- H. Has any officer or partner of the bidder's organization ever defaulted or had its surety called upon to complete any contract awarded within the past five years or been an officer or partner of some other organization that has been terminated from a project by an owner? If yes, state: No__ Yes__
- I. Name of Individual(s) _____ Name of Organization(s) Reason(s)

1.7 LICENSING

- A. List jurisdictions and trade categories in which your organization is legally qualified to do business, and indicate registration of license numbers, if applicable.

- B. List jurisdictions in which your organization's partnership or trade name is filed:

- C. Has any director, officer, owner or managerial employee had any professional license suspended or revoked? If the answer is yes, list the name of the individual, the professional license he/she formally had, whether the license was revoked or suspended and the date of the revocation or suspension. No__ Yes__

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1.8 EXPERIENCE

- A. List the categories of work that your organization will perform with its own forces:
- _____
- B. Claims and Suits. (If the answer of any of the questions below is yes, please attach details.)
1. Have you or has any director, officer, owner or managerial employee ever failed to complete any work awarded to them? If yes, list the project(s) the date(s) and the reason(s) for the failure to complete. No___ Yes___
 2. Are there any judgments, claims, arbitration proceedings or suits pending or outstanding against your organization or its officers? No___ Yes___
 3. Has your organization filed any law suits or requested arbitration with regard to construction contracts within the last five years? No___ Yes___
 4. Within the last five years, has any officer or principal of your organization ever been an officer or principal of another organization when it failed to complete a construction contract? (If the answer is yes, please attach details.) No___ Yes___
- C. On a separate sheet, list all construction projects presently your organization has in progress or completed, giving the name of project, owner, architect, contract amount, percent complete and scheduled completion date.
- D. State total worth of work in progress and under contract:
- _____
- E. On a separate sheet, list all projects, not listed above, that your organization has completed or in progress in the past five years, giving the name of the project, owner, architect, contract amount, date of completion and percentage of the cost of the work performed with your own forces.
- F. State average annual amount of construction work performed during the past five years: _____
- _____
- G. On a separate sheet, list the construction experience and present commitment of the key individuals of your organization.

1.9 APPRENTICE PROGRAM

- A. Has the Firm have in place apprenticeship agreements appropriate for the type and scope of work to be performed, that have been registered with, and approved by, the Commissioner of the New York State Department of Labor pursuant to the requirements found in Article 23 of the Labor Law. No__ Yes__

1.10 REFERENCES

- A. Trade reference: _____
- B. Bank references: _____
- C. Surety: _____
1. Name of present bonding company: _____
 2. Name and address of agent: _____
 3. Name or previous bonding company: _____

1.11 CERTIFICATION

- A. The undersigned recognizes that this questionnaire is submitted for the purpose of the PORT CHESTER-RYE UFSD awarding a contract or approving a subcontract; acknowledges that the PORT CHESTER-RYE UFSD may in its discretion, by means which it may choose, determine the truth and accuracy of all statements made herein; acknowledge that intentional submission of false or misleading information may constitute a felony under Penal Law §210.40 or a misdemeanor under Penal Law §210.35 or §210.45, and may also be punishable by a fine of up to \$10,000.00 or imprisonment of up to

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five years under 18 U.S.C. §1001; and states that the information submitted in this questionnaire any attached pages is true, accurate and complete.

Dated at this day of _____

Name of Organization: _____

By: _____ Title _____

being duly sworn deposes and says that the information provided herein is true and sufficiently complete so as not to be misleading. Subscribed and sworn before me this day of: _____

Notary Public: _____ My Commission Expire: _____

1.12 See Previous Project Information Form attached.

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PROJECT NAME: _____

Company work was performed under: _____

Who was Co. Principal in charge: _____

Location: _____

COST OF CONTRACT: _____ **FINAL COST OF WORK:** _____

DESCRIPTION OF WORK:

OWNERS NAME:

OWNER CONTACT: NAME _____ **PHONE** _____ **E.MAIL** _____

CM NAME(IF APPLICABLE): _____

CM CONTACT: NAME _____ **PHONE** _____ **E.MAIL** _____

ARCHITECT FIRM: _____

ARCHITECT CONTACT: _____ **PHONE** _____ **E.MAIL** _____

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Location: _____

COST OF CONTRACT: _____ **FINAL COST OF WORK:** _____

DESCRIPTION OF WORK:

OWNERS NAME:

OWNER CONTACT: NAME _____ **PHONE** _____ **E.MAIL** _____

CM NAME(IF APPLICABLE): _____

CM CONTACT: NAME _____ **PHONE** _____ **E.MAIL** _____

ARCHITECT FIRM: _____

ARCHITECT CONTACT: _____ **PHONE** _____ **E.MAIL** _____

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PROJECT NAME: _____

Company work was performed under: _____

Who was Co. Principal in charge: _____

Location: _____

COST OF CONTRACT: _____ **FINAL COST OF WORK:** _____

DESCRIPTION OF WORK:

OWNERS NAME:

OWNER CONTACT: NAME _____ **PHONE** _____ **E.MAIL** _____

CM NAME(IF APPLICABLE): _____

CM CONTACT: NAME _____ **PHONE** _____ **E.MAIL** _____

ARCHITECT FIRM: _____

ARCHITECT CONTACT: _____ **PHONE** _____ **E.MAIL** _____

END OF SECTION

SECTION 00 4440
OWNER SUPPLIED CONTRACTOR INSTALLED

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements governing material and equipment that will be furnished by the owner and installed by the contractor.

1.3 OWNER-FURNISHED PRODUCTS

- A. Owner will furnish and Contractor shall install the following:
- B. Contract #1 General Construction
 - 1. Ceramic **Floor** Tile: Refer to Section 09 3000 - Tiling.
 - 2. Visual Display Boards: Refer to Section Section 10 1100 - Visual Display Boards
 - 3. Toilet Accessories: Refer to Section 10 2800 - Toilet And Bath Accessories.
- C. Contract #2 Plumbing
 - 1. Toilet Room Fixtures: Refer to Section 22 0300 Plumbing Fixtures And Equipment.
- D. Contract #3 HVAC
 - 1. HVAC Units: Refer to Section 23 0235 Energy Recovery Unit.
- E. The Work includes providing support systems to receive Owner's equipment and the installation.
 - 1. Owner will arrange for and deliver Shop Drawings, Product Data, and Samples to Contractor as applicable.
 - 2. Owner will arrange and pay for delivery of Owner-furnished items according to Contractor's Construction Schedule.
 - 3. Owner will arrange for manufacturer's field services and for delivery of manufacturer's warranties to Contractor.
 - 4. Contractor shall provide to the Owner the earliest possible delivery date required for Owner-furnished products. Contractor shall designate delivery dates of Owner-furnished items in Contractor's Construction Schedule.
 - 5. Contractor shall review Shop Drawings, Product Data, and Samples and return them to Architect noting discrepancies or anticipated problems in use of product.
 - 6. Contractor is responsible for receiving, unloading, and handling Owner-furnished items at Project site.
 - 7. Contractor is responsible for protecting Owner-furnished items from damage during storage and handling, including damage from exposure to the elements.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. After delivery, Owner will inspect delivered items for damage. Contractor shall be present for and assist in Owner's inspection.
- B. If Owner-furnished items are damaged, defective, or missing, Owner will arrange for replacement.
- C. If Owner-furnished items are damaged as a result of Contractor's operations, Contractor shall repair or replace them.

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JOHN F. KENNEDY ELEMENTARY SCHOOL
FLOOD REPAIRS AND RELATED WORK
OWNER SUPPLIED CONTRACTOR INSTALLED

3.2 INSTALLATION

- A. Coordinate materials and their installation with related materials and installations to ensure that each item is completely integrated and interfaced with related work.
- B. Installation shall conform to the requirements of each section.
- C. All preparation, fasteners, devices etc, required for a complete installation shall be provided by the contractor.

END OF SECTION

PORT CHESTER-RYE UFSD
JOHN F. KENNEDY ELEMENTARY SCHOOL
FLOOD REPAIRS AND RELATED WORK
CERTIFICATION OF COMPLIANCE WITH THE
IRAN DISINVESTMENT ACT

SECTION 00 4460
CERTIFICATION OF COMPLIANCE WITH THE IRAN DISINVESTMENT ACT

As a result of the Iran Divestment Act of 2012 (the "Act"), Chapter 1 of the 2012 Laws of New York, a new provision has been added to State Finance Law (SFL) § 165-a and New York General Municipal Law § 103-g, both effective April 12, 2012. Under the Act, the Commissioner of the Office of General Services (OGS) will be developing a list of "persons" who are engaged in "investment activities in Iran" (both are defined terms in the law) (the "Prohibited Entities List"). Pursuant to SFL § 165-a(3)(b), the initial list is expected to be issued no later than 120 days after the Act's effective date at which time it will be posted on the OGS website.

By submitting a bid in response to this solicitation or by assuming the responsibility of a Contract awarded hereunder, each Bidder/Contractor, any person signing on behalf of any Bidder/Contractor and any assignee or subcontractor and, in the case of a joint bid, each party thereto, certifies, under penalty of perjury, that once the Prohibited Entities List is posted on the OGS website, that to the best of its knowledge and belief, that each Bidder/Contractor and any subcontractor or assignee is not identified on the Prohibited Entities List created pursuant to SFL § 165-a(3)(b).

Additionally, Bidder/Contractor is advised that once the Prohibited Entities List is posted on the OGS Website, any Bidder/Contractor seeking to renew or extend a Contract or assume the responsibility of a Contract awarded in response to this solicitation must certify at the time the Contract is renewed, extended or assigned that it is not included on the Prohibited Entities List.

During the term of the Contract, should the School District receive information that a Bidder/Contractor is in violation of the above-referenced certification, the School District will offer the person or entity an opportunity to respond. If the person or entity fails to demonstrate that he/she/it has ceased engagement in the investment which is in violation of the Act within 90 days after the determination of such violation, then the School District shall take such action as may be appropriate including, but not limited to, imposing sanctions, seeking compliance, recovering damages or declaring the Bidder/Contractor in default. The School District reserves the right to reject any bid or request for assignment for a Bidder/Contractor that appears on the Prohibited Entities List prior to the award of a contract and to pursue a responsibility review with respect to any Bidder/Contractor that is awarded a contract and subsequently appears on the Prohibited Entities List.

I, _____, being duly sworn, deposes and says that he/she is the _____ of the _____ Corporation and that neither the Bidder/ Contractor nor any proposed subcontractor is identified on the Prohibited Entities List.

SIGNED

SWORN to before me this

_____ day of _____ 201____

Notary Public: _____

END OF SECTION

PORT CHESTER-RYE UFSD
JOHN F. KENNEDY ELEMENTARY SCHOOL
FLOOD REPAIRS AND RELATED WORK
DECLARATION OF BIDDER'S INABILITY TO
PROVIDE CERTIFICATION OF COMPLIANCE
WITH THE IRAN DIVESTMENT ACT.

SECTION 00 4470
DECLARATION OF BIDDER'S INABILITY TO PROVIDE CERTIFICATION OF COMPLIANCE WITH
THE IRAN DIVESTMENT ACT.
WITH THE IRAN DIVESTMENT ACT

Bidders shall complete this form if they cannot certify that the bidder /contractor or any proposed subcontractor is not identified on the Prohibited Entities List. The District reserves the right to undertake any investigation into the information provided herein or to request additional information from the bidder.

Name of the Bidder: _____

Address of Bidder: _____

Has bidder been involved in investment activities in Iran? _____

Describe the type of activities including but not limited to the amounts and the nature of the investments (e.g. banking, energy, real estate)

If so, when did the first investment activity occur? _____

Have the investment activities ended? _____

If so, what was the date of the last investment activity? _____

If not, have the investment activities increased or expanded since April 12, 2012? _____

Has the bidder adopted, publicized, or implemented a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran? _____

If so, provide the date of the adoption of the plan by the bidder and proof of the adopted resolution, if any and a copy of the formal plan. _____

In detail, state the reasons why the bidder cannot provide the Certification of Compliance with the Iran Divestment Act below (additional pages may be attached):

I, _____ being duly sworn, deposes and says that he/she is the
_____ of the _____ Corporation and the foregoing
is true and accurate.

SIGNED

SWORN to before me this

_____ day of _____

201__

Notary Public: _____

SECTION 00 4476
INSURANCE CERTIFICATION

BID OR PROJECT NO. #21444.01

NAME OF PROJECT: Flood Repairs and Related Work

Insurance Representative's Acknowledgement:

We have reviewed the insurance requirements set forth in the bid and are capable of providing such insurance to our insured in accordance with such requirements in the event the contract is awarded to our insured and provided our insured pays the appropriate premium.

INSURANCE REPRESENTATIVE: _____

ADDRESS: _____

Are you an agent for the companies providing the coverage?

Yes _____ No _____

DATE: _____

Insurance Representative (Name)

Bidder's Acknowledgement:

I acknowledge that I have received the insurance requirements of this bid and have considered the costs, if any, of procuring the required insurance and will be able to supply the insurance required in accordance with the bid, if it is awarded. I understand that a certificate of insurance must be submitted with my contract and if it is not, the Port Chester-Rye UFSD will reject my bid and award to the next lowest bidder.

FIRM NAME:

ADDRESS: _____

DATE: _____

Bidder's Signature

SECTION 00 5200
FORM OF AGREEMENT

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 FORM OF AGREEMENT

- A. The Agreement to be executed is attached following this page.
- B. AIA Document A101, Owner-Contractor Agreement Form - Stipulated Sum 2017 Edition, forms the basis of Contract between the Owner and Contractor A draft copy is attached.

1.3 RELATED REQUIREMENTS

- A. Section 00 7200 - General Conditions.
- B. Section 01 4216 - Definitions.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION



AIA® Document A101® – 2017

Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

AGREEMENT made as of the day of in the year

(Paragraph deleted)

BETWEEN the Owner:

Port Chester-Rye UFSD
113 Bowman Ave
Port Chester NY 10573

and the Contractor:

for the following Project:

Port Chester-Rye UFSD
John F. Kennedy Elementary School
Flood Repairs and Related Work

The Architect:

Fuller & D'Angelo, P.C.
Architects and Planners
45 Knollwood Road
Elmsford, NY 10523

The Owner and Contractor agree as follows.

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.

The parties should complete A101®–2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement. AIA Document A201®–2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

Init.

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User Notes:

(1868919602)

TABLE OF ARTICLES

1	THE CONTRACT DOCUMENTS
2	THE WORK OF THIS CONTRACT
3	DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
4	CONTRACT SUM
5	PAYMENTS
6	DISPUTE RESOLUTION
7	TERMINATION OR SUSPENSION
8	MISCELLANEOUS PROVISIONS
9	ENUMERATION OF CONTRACT DOCUMENTS

EXHIBIT A	LIST OF DRAWINGS
EXHIBIT B	LIST OF SPECIFICATIONS
EXHIBIT C	INSURANCE AND BONDS
EXHIBIT D	CONTRACTOR'S PROPOSAL

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:

(Paragraph deleted)

A date set forth in a

(Paragraphs deleted)

Letter of Award issued by the Owner.

§ 3.2 The Contract Time shall be measured from the date of commencement of stated in the Letter of Award.

§ 3.3 Substantial Completion

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:

[] As indicated in Section 01 1000-Summary of Contracts for various phases work and overall completion.

Init.

§ 3.3.2 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

(Table deleted)

(Paragraph deleted)

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be (\$), subject to additions and deductions as provided in the Contract Documents.

§ 4.2 Alternates

§ 4.2.1 Alternates, if any, included in the Contract Sum:

Item	Price

§ 4.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement.

(Paragraph deleted)

Item	Price	Conditions for Acceptance

§ 4.3 Allowances, if any, included in the Contract Sum:

(Paragraph deleted)

Item	Price

§ 4.4 Unit prices, if any:

(Paragraph deleted)

Item	Units and Limitations	Price per Unit (\$0.00)

§ 4.5 Liquidated damages, if any:

(Paragraph deleted)

§ 4.6 Other:

(Paragraph deleted)

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments (Refer to Section 01 2000 Price and Payment Procedures for Additional Requirements)

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the day of the following month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the

Init.

amount certified shall be made by the Owner not later than () days after the Architect receives the Application for Payment.

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor and approved by the Architect in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 In accordance with AIA Document A201™–2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed in accordance with Section 01 2000 Price and Payment Procedures.

(Paragraphs deleted)

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner will withhold five percent (5%), as retainage, from the payment otherwise due:

(Paragraphs deleted)

§ 5.1.7.2

(Paragraphs deleted)

The Contractor agrees that maximum **payment for each progress payment shall** be 95% of the total Contract Sum. The balance of Contract, (Final Payment) shall not be made until all Punch List Items are completed and Close-Out Documents are submitted and approved by the Architect.

(Paragraphs deleted)

§ 5.2 Final Payment

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

- .1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A201–2017, including all punch list items and submitted all Close-Out requirements and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 a final Certificate for Payment has been issued to the Owner by the Architect.

§ 5.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or as follows:

(Paragraphs deleted)

§ 5.3.1 Payments due and unpaid under the Contract shall not bear interest.

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.

(Paragraphs deleted)

§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows:

Init.

[X] Litigation in a court of competent jurisdiction in the County of ***** State of *****.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2017 as revised for this project

(Paragraphs deleted)

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner's representative:

(Paragraph deleted)

§ 8.3 The Contractor's representative:

(Paragraph deleted)

§ 8.4 Neither the Owner's nor the Contractor's representative shall be changed without ten days' prior notice to the other party.

§ 8.5 Insurance and Bonds

§ 8.5.1 The Contractor shall purchase and maintain insurance as set forth in in **Article 11 of AIA Document A201™ –2017, General Conditions** as revised for this project.

(Paragraph deleted)

§ 8.5.1 The Contractor shall provide bonds as set forth in Section 00 6000.

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:

(Paragraph deleted)

§ 8.7 Other provisions:

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

.1 AIA Document A101™-2017, Standard Form of Agreement Between Owner and Contractor
(Paragraphs deleted)

.5 Drawings

Number	Title	Date
Refer to Exhibit A		

.6 Specifications

Section	Title	Date	Pages
Refer to Exhibit B			

.7 Addenda, if any:

Number	Date	Pages

Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.

.8 Other Exhibits:
Exhibit C Insurance and Bonds

(Paragraphs deleted)

.9 Other documents, if any, listed below:

NAME	Date	Pages
(Row deleted)		
(Paragraphs deleted)		
Exhibit D Contractor's Proposal	*****	*****

This Agreement entered into as of the day and year first written above.

OWNER (Signature)

CONTRACTOR (Signature)

(Printed name and title)

(Printed name and title)

Init.

SECTION 00 6000
BONDS AND CERTIFICATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 BID BOND:

- A. A Bid Bond will be required for this project. Each individual bid shall be accompanied by a check upon a duly authorized State, National Bank or Trust Company, duly certified in the sum equal to TEN (10%) percent of the total amount of the bid, including alternates, or a Bid Bond in the amount of TEN (10%) of the bid, including alternates, payable to the Port Chester-Rye UFSD and shall be enclosed in an envelope containing the bid; as a guarantee that the Bidder will, after the award is made to him, enter into a bona fide contract with the Owner for the work, and furnish the bonds and liability policies as required under the specifications. The American Institute of Architects Document A310, February 2010 edition entitled "Bid Bond" shall be the contract bond form for this project. A draft copy is attached.
1. Each bid bond must also be accompanied by the written consent of the Surety Company authorized to do business in the State of New York and be A.M Best "Secured" rated or better.
 2. Attorney-in-fact who execute said bonds on behalf of a surety must affix thereto a certified and effectively dated copy of their Power of Appointment and Certification of an officer of the surety that the Power of Attorney continues in effect.
- B. If, for any reason, whatsoever, the Bidder fails to enter into a proper contract and to execute the proper bonds, as required by these specifications, the amount of said guarantee retained by the Owner shall be larger amount of (a) the Bid Bond or (b) the difference between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the Work
- C. All certified checks, except the check of the Bidder to whom a contract is awarded, will be returned to the respective Bidders, as soon as the Letter of Award has been issued by the Owner.
1. The check of the Bidder, to whom a contract has been awarded, shall be retained until the contract has been executed and all bonds together with an approved liability insurance policy are filed with the Owner.

1.3 PERFORMANCE AND PAYMENT BOND:

- A. A Performance and Payment Bond will be required for this project. The bond premiums will be paid for by the Contractor.
- B. The American Institute of Architects, AIA Document A312, 2010 edition, entitled "Performance Bond" and AIA Document A312, 2010 edition, entitled "Payment Bond" and shall be the contract bond form for this project. AIA Document A311 is not acceptable.
- C. Each bond shall be a sum equal to One Hundred (100%) of the Contract Sum and shall be in a form satisfactory to the Owner, and shall be underwritten by a surety company authorized to do business in the State of New York and be AM Best Secured Rating of "A" or better as to Policy Holder Ratings and "VII" or better as to Financial Size Category Rated or better.
1. Paragraph 6 shall be deleted and substituted with the following:
 - a. When the Claimant has satisfied the conditions of Paragraph 4, and has submitted all supporting documentation and any proof of claim requested by the Surety, the Surety shall, with reasonable promptness, notify the Claimant of the amounts that are undisputed and the basis for challenging any amounts that are disputed, including, but not limited to, the lack of substantiating documentation to support the claim as to entitlement or amount, and the Surety shall, with reasonable promptness, pay or make arrangements for payment of any undisputed amount; provided, however, that the failure of the Surety to timely discharge its obligations under this paragraph or to dispute or identify any specific defense to all or any

PORT CHESTER-RYE UFSD
JOHN F. KENNEDY ELEMENTARY SCHOOL
FLOOD REPAIRS AND RELATED WORK
BONDS AND CERTIFICATES

part of a claim shall not be deemed to be an admission of liability by the Surety as to such claim or otherwise constitute a waiver of the Contractor's or Surety's defenses to, or right to dispute, such claim. Rather, the Claimant shall have the immediate right, without further notice, to bring suit against the Surety to enforce any remedy available to it under this Bond."

- D. Every Bond under this paragraph must display the Surety's Bond Number.
- E. Each bond must be accompanied by an original Power of Attorney, giving the name of attorney's in fact and extent of bonding capacity.
- F. The Surety Company shall be obligated for the bonds for a two year period after substantial completion.
- G. A rider including the following provisions shall be attached to each Bond
 - 1. Surety hereby agrees that it consents to and waives notice of any addition, alteration, omission, change or other modification of the Contract Documents. Such addition, alteration, change, extension of time, or other modification of the Contract Documents, or a forbearance on the part of either the Owner or the Contractor to the other, shall not release the Surety of its obligations hereunder and notice to the Surety of such matters is hereby waived.
 - 2. Surety further agrees that in event of any default by the Owner in the performance of the Owner's obligations to the Contractor under the Contract, the Contractor or Surety shall cause written notice of such default (specifying said default in detail) to be given to the Owner and the Owner shall have thirty (30) days from the time after receipt of such notice within which to cure such default, or such additional reasonable period of time as may be required if the nature of such default is such that it cannot be cured within thirty (30) days. Such Notice of Default shall be sent by certified or registered U.S. Mail, return receipt requested, first-class postage prepaid to Owner.
 - 3. Surety agrees that it is obligated under the bonds to any successor, grantee or assignee of the Owner.
- H. The Contractor shall keep the surety informed of the progress of the Work, and, where necessary, obtain the surety's consent to, or waiver of: (1) request for reduction or release of retention; (2) request for final payment; and (3) any other material required by the surety. The Owner and Architect shall be notified by the Contractor, in writing, of all communications with the surety.
- I. The Owner may, in the Owner's sole discretion and without prior notice to the Contractor, inform the Contractor's surety of the progress of the Contractor's work and obtain consents as necessary to protect the Owner's rights, interest, privileges and benefits under and pursuant to any bond issued in connection with the Contractor's Work.
- J. If the surety on any bond furnished by the Contractor is declared a bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of this Article, the Contractor shall within ten (10) days thereafter substitute another Performance and Payment Bond and surety, both of which must be acceptable to the Owner.
- K. Performance and payment bonds may be required from any Subcontractor whose subcontract exceeds One Hundred Thousand Dollars (\$100,000.00). All such bonds shall be in the identical format of the Contractor's bonds.
- L. 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 and is deemed to authorize the Owner and Architect to furnish a copy of the bonds

END OF SECTION

 AIA® Document A310™ – 2010**Bid Bond****CONTRACTOR:****SURETY:****OWNER:**

Port Chester-Rye UFSD
113 Bowman Ave
Port Chester NY 10573

BOND AMOUNT: \$**PROJECT:**

Port Chester-Rye UFSD
(Paragraph deleted)
John F. Kennedy Elementary School
Flood Repairs and Related Work

ADDITIONS AND DELETIONS:

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

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

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so

furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

Signed and sealed this day of ,

	<i>(Contractor as Principal)</i>	<i>(Seal)</i>
<i>(Witness)</i>	<i>(Title)</i>	
	<i>(Surety)</i>	<i>(Seal)</i>
<i>(Witness)</i>	<i>(Title)</i>	

AIA[®] Document A312™ – 2010

Payment Bond

CONTRACTOR:

(Name, legal status and address)

SURETY:

Name, legal status and principal place
of business)

(Row deleted)

OWNER:

Port Chester-Rye UFSD
113 Bowman Ave
Port Chester NY 10573

CONSTRUCTION CONTRACT

Date:

Amount: \$ 0.00

(Row deleted)

Description:

Port Chester-Rye UFSD
John F. Kennedy Elementary School
Flood Repairs and Related Work

BOND

Date:

(Not earlier than Construction Contract Date)

Amount: \$

Modifications to this Bond: ☐ None ☐ See Section 18

CONTRACTOR AS PRINCIPAL

Company: (Corporate Seal)

SURETY

Company: (Corporate Seal)

Signature: _____

Name and

Title:

Signature: _____

Name and

Title:

(Any additional signatures appear on the last page of this Payment Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE:

(Architect, Engineer or other party:)

ADDITIONS AND DELETIONS:

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

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

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

§ 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

- .1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
- .2 have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§ 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§ 7.2 Pay or arrange for payment of any undisputed amounts.

§ 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

§ 9 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

§ 10 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.

§ 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

§ 14 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

§ 16 Definitions

§ 16.1 Claim. A written statement by the Claimant including at a minimum:

- .1 the name of the Claimant;
- .2 the name of the person for whom the labor was done, or materials or equipment furnished;
- .3 a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
- .4 a brief description of the labor, materials or equipment furnished;
- .5 the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
- .6 the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
- .7 the total amount of previous payments received by the Claimant; and
- .8 the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all documents..

§ 16.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to allow Contractor access to site to complete project in accordance with the contract schedule.

§ 16.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 18 Modifications to this bond are as follows:

.1 Surety further agrees that in event of any default by the Owner in the performance of the Owner's obligations to the Contractor under the Contract, the Contractor or Surety shall cause written notice of such default (specifying said default in detail) to be given to the Owner and the Owner shall have thirty (30) days from the time after receipt of such notice within which to cure such default, or such additional reasonable period of time as may be required if the nature of such default is such that it cannot be cured within thirty (30) days. Such Notice of Default shall be sent by certified or registered U.S. Mail, return receipt requested, first-class postage prepaid to Owner.

.2 Surety agrees that it is obligated under the bonds to any successor, grantee or assignee of the Owner

.3 Each material or equipment supplier or subcontractor shall provide a partial release of liens every 60 days or as otherwise agreed upon between Owner and Contractor.

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL

Company:

(Corporate Seal)

SURETY

Company:

(Corporate Seal)

Signature: _____

Name and Title: _____

Address: _____

Signature: _____

Name and Title: _____

Address: _____



AIA® Document A312™ – 2010

Performance Bond

CONTRACTOR:

(Name, legal status and address)

SURETY:

(Name, legal status and principal place of business)

(Row deleted)

OWNER:

Port Chester-Rye UFSD
113 Bowman Ave
Port Chester NY 10573

CONSTRUCTION CONTRACT

Date:

Amount: \$ 0.00

(Row deleted)

Description:

Port Chester-Rye UFSD
John F. Kennedy Elementary School
Flood Repairs and Related Work

ADDITIONS AND DELETIONS:

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

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

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

BOND

Date:

(Not earlier than Construction Contract Date)

Amount: \$

Modifications to this Bond: ☐ None ☐ See Section 16

CONTRACTOR AS PRINCIPAL

Company: (Corporate Seal)

SURETY

Company: (Corporate Seal)

Signature: _____

Name and

Title:

Signature: _____

Name and

Title:

(Any additional signatures appear on the last page of this Performance Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE:

(Architect, Engineer or other party:)

Init.

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after

- .1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;
- .2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
- .3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

§ 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

§ 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

- .1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
- .2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 When the Claimant has satisfied the conditions of Paragraph 4, and has submitted all supporting documentation and any proof of claim requested by the Surety, the Surety shall, with reasonable promptness, notify the Claimant of the amounts that are undisputed and the basis for challenging any amounts that are disputed, including, but not limited to, the lack of substantiating documentation to support the claim as to entitlement or amount, and the Surety shall, with reasonable promptness, pay or make arrangements for payment of any undisputed amount; provided, however, that the failure of the Surety to timely discharge its obligations under this paragraph or to dispute or identify any specific defense to all or any part of a claim shall not be deemed to be an admission of liability by the Surety as to such claim or otherwise constitute a waiver of the Contractor's or Surety's defenses to, or right to dispute, such claim. Rather, the

Claimant shall have the immediate right, without further notice, to bring suit against the Surety to enforce any remedy available to it under this Bond.

§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

- .1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
- .2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and
- .3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

§ 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

§ 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 14 Definitions

§ 14.1 **Balance of the Contract Price.** The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

§ 14.2 **Construction Contract.** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 **Contractor Default.** Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 **Owner Default.** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 **Contract Documents.** All the documents that comprise the agreement between the Owner and Contractor.

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this bond are as follows:

.1 Surety hereby agrees that it consents to and waives notice of any addition, alteration, omission, change or other modification of the Contract Documents. Such addition, alteration, change, extension of time, or other modification of the Contract Documents, or a forbearance on the part of either the Owner or the Contractor to the other, shall not release the Surety of its obligations hereunder and notice to the Surety of such matters is hereby waived.

.2 Surety further agrees that in event of any default by the Owner in the performance of the Owner's obligations to the Contractor under the Contract, the Contractor or Surety shall cause written notice of such default (specifying said default in detail) to be given to the Owner and the Owner shall have thirty (30) days from the time after receipt of such notice within which to cure such default, or such additional reasonable period of time as may be required if the nature of such default is such that it cannot be cured within thirty (30) days. Such Notice of Default shall be sent by certified or registered U.S. Mail, return receipt requested, first-class postage prepaid to Owner.

.3 Surety agrees that it is obligated under the bonds to any successor, grantee or assignee of the Owner

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL

Company:

(Corporate Seal)

SURETY

Company:

(Corporate Seal)

Signature: _____

Name and Title: _____

Address: _____

Signature: _____

Name and Title: _____

Address: _____

**SECTION 00 7200
GENERAL CONDITIONS**

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 FORM OF GENERAL CONDITIONS

- A. AIA Document A232 - General Conditions of the Contract for Construction - Construction Management Edition, 2009, attached, is the General Conditions between the Owner and Contractor has been revised and all deletions and additions have been incorporated, and is hereby made a part of the specifications. All references to the General Conditions within these specifications shall mean "General Conditions of the Contract for Construction" the American Institute of Architects, A.I.A., Document A232, 2009 Edition, as revised.

1.3 RELATED REQUIREMENTS

- A. Section 00 5200 - Form of Agreement.
- B. Section 01 4216 - Definitions01 4216.

END OF DOCUMENT

AIA® Document A201® – 2017

General Conditions of the Contract for Construction

for the following PROJECT:

Port Chester-Rye UFSD
John F. Kennedy Elementary School
Flood Repairs and Related Work

THE OWNER:

Port Chester UFSD
1113 Bowman Ave
Port Chester NY 10573

THE ARCHITECT:

Fuller and D'Angelo, P.C.
Architects and Planners
45 Knollwood Road
Elmsford, N.Y. 10523

TABLE OF ARTICLES

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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

(Paragraphs deleted)

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.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™, Guide for Supplementary Conditions.

Init.

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User Notes:

(1146058820)

16 NO DAMAGES FOR DELAY

(Paragraphs deleted)

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, Supplementary 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,

§ 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 a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties. Any discrepancy between these General Provisions and the various sections of the specifications the General Provisions shall prevail.

§ 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 the Owner and by Separate Contractors.

§ 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. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.2 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.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 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.

§ 1.2.4 In the event of conflict, ambiguity and/or unclear circumstances between any of the requirements of the Contract Documents, the requirement that is most inclusive of the highest quality and/or of the highest cost shall govern. The Contractor herewith agrees that no extra compensation shall be awarded to him, since he herewith received specific instructions to the procedure and values of the work.

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

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will establish the protocols for the development, use, transmission, and exchange of digital data. Neither the Owner, Architects or its agents are obligated to provide any available digital data or information to the contractor.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative. Refer to Section 01 4216 for additional definitions.

(Paragraphs deleted)

§ 2.2 Information and Services Required of the Owner

§ 2.2.1 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 **the building permit**, necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities. All other permits required from local agencies required for construction shall be paid for by the Contractor.

(Paragraphs deleted)

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number. Refer to Section 01 4216 for additional definitions.

§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 The Owner shall furnish surveys, if available, describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.5 The Owner shall provide information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also provide 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. The Contractor shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.6 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.

§ 2.4 Owner's Right to Stop the Work

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

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

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

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

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's 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 visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 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 2.3.4, 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 in 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.

§ 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 Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, including architect's, engineer's and attorney's fees, subject to Section 15.1.7, 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 unless the Contractor recognized such error, inconsistency, omission or difference and knowingly failed to report it to the Architect.

§ 3.2.5 Except as to any reported errors, inconsistencies or omissions, and to concealed or unknown conditions defined in Paragraph 3.2.4, by executing the Agreement, the Contractor represents the following:

§ 3.2.5.1 The Contract Documents are sufficiently complete and detailed for the Contractor to (1) perform the work required to produce the results intended by the Contract Documents and (2) comply with all the requirements of the Contract Documents, within the time permitted for the completion of the work.

§ 3.2.5.2 The Work required by the Contract Documents, including, without limitation, all construction details, construction means, methods, procedures and techniques necessary to perform the work, use of materials, selection of equipment and requirements of product manufacturers will be consistent with: (1) good and sound practices within the construction industry; (2) generally prevailing and accepted industry standards applicable to Work; (3) requirements of any warranties applicable to the work; and (4) all laws, ordinances, regulations, rules and orders which bear upon the Contractor's performance of the work.

§ 3.2.6 Building-In: Contractor(s) and sub-contractors shall note the parts and materials which must be built in as the work progresses, including but not limited to all templates, forms, sleeves, inserts, parts, blocks, anchors, etc. for all work throughout and shall furnish to or set for the Contractor for General Construction in time to prevent delay in the work. Contractors shall also comply with Section 01 7310 or Section 01 7000 Cutting and Patching.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

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

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

§ 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. Contractor is solely responsible for managing labor and labor relations, including labor disputes or concerted activity, direct or indirect, without any delays or interference with the work schedule and/or other contractors at the site. No delay in the performance of the Work shall be excused by reason of labor problems affecting the Contractor or any subcontractor. In the event of strikes or labor disputes by other separate prime contractors, or other contractors performing work for the Owner under other Contracts, each contractor shall continue with its work and provide all necessary manpower as required to maintain the schedule and completion dates of the project.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive. Any request by the Contractor to make modifications to the work or substitutions shall not in any way cause or result in the delay of the ordering of any materials or equipment or the scheduling of the Work. Any such request shall require a minimum of thirty days' notice to the Owner and Architect and shall include full documentation of all costs and the time necessary. The full cost of any request by the Contractor for a modification or substitution, including but not limited to the cost of fees for the review of such request by the Owner and Architect or legal counsel and any delay time, shall be borne by the Contractor. Refer to Section 01 2500 Substitution Procedures

§ 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. Should any disorderly, incompetent, or objectionable person be hired or employed by a Contractor, upon or about the premises of the Owner, for any purpose or in any capacity, he shall upon the request of the Architect, be discharged from the work, and not again be employed thereon without the written permission of the Architect.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner 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 to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements 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 Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. In the event of a conflict between provisions of the contract documents, provisions providing for the longest warranty period shall apply.

§ 3.5.2 The warranties set forth herein shall survive termination of this Contract.

§3.5.2.1 The Contractor agrees to assign to the Owner at the time of final completion of the Work, any and all manufacturer's warranties relating to materials and labor used in the work and further agrees to perform the work in such a manner so as to preserve any and all such manufacturer's warranties.

§3.5.2.2 All new installations, assemblies, systems, equipment, and labor and materials installed by this Contractor shall be guaranteed against all defects and failures for a minimum period of 2 years from the date of final completion.

§3.5.2.3 For the above stated time periods from the date of final completion, the Contractor shall, at his own expense, promptly repair and put into first class condition any workmanship and materials in which defects may develop, and shall, at his own expense, promptly replace all defective equipment, apparatus, fixtures and materials, to the full satisfaction of the Owner.

§3.5.2.4 The date of final completion of all work shall be stated in writing by the Engineer/Architect, and as acknowledged in writing by the Contractor.

§3.5.2.5 During the guarantee period, the Contractor shall be responsible for all costs, incurred in making the defective work good, both for labor and materials, and for all resulting injuries and damages to the building and to equipment.

§3.5.2.6 The guarantee provided by the Contractor is in addition to any warranty provided by equipment and material manufacturer. The Contractor's guarantee period shall not negate the longer guarantee period provided by equipment and material manufacturers.

§3.5.2.7 The Contractor warrants good title to all materials, supplies and equipment installed or incorporated in the work.

§3.5.2.8 The Contractor for itself and its successors and assigns, warranties to the Owner and their successors and assigns:

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- a. The Warranty shall remain in effect for a period of time specified by appropriate Divisions of Specifications.
- b. The Contractor will make good at its own cost and expense all defects and all damage caused to the Owner, in all Work and all trades required by the Contract Documents for Warranty Work. All corrections to defective Work shall be made at the convenience of the Owner.

§ 3.5.2.9 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with and issuance of the Certificate of Substantial Completion.

§ 3.5.3 Refer to Section 01 7800 Closeout Submittal for additional requirements.

§ 3.6 Taxes

§ 3.6.1 The Contractor shall pay sales, consumer, use and similar taxes for the Work 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.

§ 3.6.2 Contractor shall pay all applicable local, state, federal and other taxes and licenses.

§ 3.6.3. The Owner is exempt from sales and use taxes for materials fully incorporated into the Work of the Contract as accepted and approved by the Architect. The Owner will take title to materials used in the Project in order to permit tax exemption. The Contractor shall pay all other sales, consumer, use and similar taxes incurred in connection with the Work provided by the Contractor. The Owner's exemption from sales and use tax does not apply to machinery, equipment, tools and other items purchased, leased, rented or acquired for the Contractor's use in part or entirely in connection with the Work. Upon request of the Owner or the Architect, the Contractor shall provide a bill of sale or other instrument indicating the quantities and types of materials purchased directly by the Contractor or Subcontractor for incorporation into the Work. Upon delivery of the materials to the Project sites, the Contractor shall mark or otherwise identify the materials to be incorporated into the Work. The Owner's tax exemption shall apply only to materials so identified and accepted.

§ 3.6.3.1 Owner shall provide required exempt documentation when requested

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided Paragraph 2.2.1 in the Contract Documents, the Contractor shall secure and pay for all 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. The Contractor shall pay any costs or fees incurred to comply with such requirements, any fines or penalties imposed for failing to comply and any costs or fees incurred by Owner due to any failure to comply. If the Contractor fails to give such notices, the Contractor shall be liable for and shall indemnify and hold harmless the Owner including its Board of Education, the Architect and their respective consultants, employees, officials, officers and agents against any resulting fines, penalties, judgements or damages, including reasonable attorney's fees imposed on or incurred by the parties indemnified hereunder.

§ 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. The Contractor shall procure and obtain all bonds required of the Owner or by the municipality in which the project is located or by any other public or private body with jurisdiction over the Project. In connection with such bonds, the Contractor shall prepare all applications, supply all necessary back-up material and furnish the surety with any required personal undertakings. The Contractor shall also obtain and pay all charges for all approvals for street closings, parking meter removal and other similar matters as may be necessary or appropriate from time to time for the performance of the Work.

§ 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 to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect 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 and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner 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

(Paragraphs deleted)

Refer to Section 01 2100 Allowances for payments.

(Paragraph deleted)

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. The superintendent shall be at the site at all times when work is being performed and fluent in English, and be provided at all time with direct communications (cell phone) to all parties.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent including addresses and telephone numbers of the members of his organization who can be contacted in the event of an off-hours emergency at the building site. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed. The Superintendent shall be changed upon request of the Owner for reasonable cause.

§ 3.10 Contractor's Construction and Submittal Schedules Refer to Section 01 3216 or 01 3000 for additional

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for

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completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project. Revisions to schedule shall be approved by the Owner.

§ 3.10.1.1 All of the dates provided for in any of the schedules prepared by the Contractor and submitted to the Architect, including all milestone and submittal dates, shall be considered to be "time of the essence" and may not be changed or modified without the Owner and Architect's specific written approval.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.2.1 All of the dates provided for in any of the schedules prepared by the Contractor and submitted to the Construction Manager and Architect, including all milestone and submittal dates, shall be considered to be "time of the essence" and may not be changed or modified without the Owner or Construction Manager's specific written approval.

§ 3.10.3 The Contractor shall perform the Work in accordance with the most recent approved schedules submitted to the Owner and Architect.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and delivered to the Architect 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. All shop drawings are the product and property of the Contractor.

§ 3.12.1.2 Refer to Section 01 3000 for additional requirements.

§ 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 how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is 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 Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal

schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting fully confirmed Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner 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 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 the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 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 Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately 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 and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

(Paragraphs deleted)

§ 3.12.11 Comply with Submittal Procedures. Section 01 3000. § 3.13 Use of Site

§ 3.113.1 The Contractor(s) shall have limited access to the site on the inside and outside of the building. Comply with other sections regarding limited access. The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.13.2 The Contractor shall Owner's Representative before using any portion of the 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, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents. Refer to Section 01 01731 or Section 01 1700 for additional requirements.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its 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 and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.15.3 Prior to occupancy the Owner must perform custodial cleaning of the work area. If the Contractor has not removed construction debris, equipment, tool etc which will prevent the Owner to perform custodial cleaning the Contractor will be back charged for additional cleaning costs incurred by the Owner.

§ 3.16 Access to Work

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

§ 3.17 Royalties, Patents and Copyrights

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

§ 3.18 Indemnification

(Paragraph deleted)

§3.18.1 Indemnity Agreement - Compliance with the foregoing requirements as to insurance shall not relieve the contractor from liability under the indemnity agreement set forth in the general conditions as amended

§3.18.1.1 To the fullest extent permitted by law, contractor shall defend, indemnify, and hold harmless the owner, the owner's representative, the architect, the 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 disbursements, arising out of or resulting from performance of the work, including, but not limited to, such claims, damages, losses and expenses attributable to bodily injury, sickness, disease, or death, or to injury or to destruction of tangible property (other than the work itself) including loss of use resulting there from, but only to the extent caused in whole or in part by 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 which would otherwise exist as to a party or person described in the general conditions or supplementary general conditions.

§3.18.1.2 In the event that any party is requested but refuses to honor the indemnity obligations hereunder, then the party indemnifying shall in addition to other obligations, pay the cost to the party requesting indemnification or seeking enforcement and enforcing this indemnity requirement including, but not limited to attorney's fees.

§3.18.1.3 In addition, to the extent not covered above, the contractor or subcontractor shall defend, indemnify and hold harmless the Owner, Owner's Representative, Architect, Architect's Consultants, and agents and employees of any of them, from any and all claims, losses, damages, suits, obligations, fines, penalties, costs, charges and expenses, which may be imposed or incurred by or asserted against any of them by reason of any act or omission of such contractor, or any subcontractor, or any person or firm directly or indirectly employed by such contractor with respect to violations of OSHA requirements, rules and/or regulations

§ 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 3.18.1 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

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 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, Contractor, and Architect. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The 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 and to perform such inspections and observations as are necessary to allow the Architect to review and approve change orders, claims of any kind and interim and general requisitions for payment, all in accordance with the applicable provisions of 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. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 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 promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and

suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 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. Review of such submittals 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 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 Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component. Refer to Section 01 3000 for additional requirements.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.8.1 Neither the Owner, Owner's Representative nor Architect may issue instructions to the Contractor to change the amount of the contract, except by properly executed Change Order.

§4.2.8.2 Instructions are issued by the Owner through the Owner's Representative or Architect, to the Contractor. The instructions shall not be carried out by the Contractor prior to a written order in the form of a change order, signed by the Owner, Architect and Contractor, authorizing a change in the Contract amount or an adjustment to the Contract Sum.

§4.2.8.3 No amount shall be payable by the Owner to the Contractor for performance of work without an executed change order. Comply also Article 7.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

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

§ 4.2.12 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 rendered in good faith. Should the Architect's written interpretations, in the opinion of the Contractor, show additional work, or work of more expensive character than that shown or inferred by the Contract Drawings, it shall be the duty of the Contractor to so notify the Architect within five (5) days from receipt of same in order that proper adjustment may be made if found justifiable in the opinion of the Architect and the Owner. The Contractor shall assume full responsibility for all such work done without the approval of the Architect and the Owner

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

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests 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.

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 a Separate Contractor or the subcontractors of a Separate Contractor.

§ 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, the Contractor within 10 days after award of the Contract, shall notify the Owner and Architect in writing, of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Copies of all subcontractor contracts are to be provided to the Owner's Representative.

§ 5.2.2 Each Contractor shall not award any work to any subcontractor or supplier without prior written approval of the Architect and Owner's Representative. Approval will not be given until Contractor submits to the Architect a written statement concerning the proposed award to the sub-contractor. The statement shall contain such information as the Architect or Owner's Representative will require..

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner and Architect have no reasonable objections. No increase in the Contract Price shall be allowed where a subcontractor is rejected by the Architect or Owner who is deemed unqualified to perform the particular work subcontracted by the Contractor or having too many current projects handled by insufficient personnel.

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

(Paragraphs deleted)

§ 5.2.5 Notwithstanding any other provisions of the Contract Documents, General Construction Contractor shall perform at least Twenty-five (25) % of the field work by its own employees.

.1 Prime/Sub Contractors for HVAC, Plumbing and Electrical shall perform at least seventy-five (75) % of the field work by its own employees.

.2 Roofing Contractors shall perform at least sixty-five (65) % of the field work by its own employees, including wood blocking, insulation, roofing, flashings, roof accessories, skylights and sheet metal work.

§ 5.2.5.2 For the purpose of the preceding paragraph, any part of the work performed by supervisory personnel (persons above level of foreman) or by the office personnel and such items as bonds, certificates, shop drawings and similar items shall not be considered part of the percentage of work required to be performed by the Contractor's employees.

§ 5.3 Sub-Contractual Relations

§ 5.3.1 By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner 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. The agreement between the Contractor and Subcontractor shall not provide, nor shall the Contract Documents be deemed to provide, any rights, remedies or redress by the Subcontractor(s) against the Owner.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation. Should any Contractor sustain any damage or delay through any act or omission of any other Contractor having a contract with the Owner for the delivery and/or the installation of materials, supplies, equipment, plant, or appliances, or should the Contractor sustain any damage or delay through any act or omission of a subcontractor, the Contractor shall have no claim against the Owner or their Architects for such damage or delay, but shall have a right to recover or to claim such damage only from the other Contractor or subcontractor.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has 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 and Separate 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 or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor 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 a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.2.6 Claims and other disputes and matters in question between the Contractor and a separate contractor shall be subject to the provisions of Article 15

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate 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 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. Change Orders shall be submitted in total amounts for a particular change not in installments for each trade thereafter. All partial change order submissions will be rejected and returned to each Contractor for completion.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner 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. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect 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.
- .4 In cases where allowances are shown on the bid form and accepted by the Owner, they shall be used to determine the amount of addition to or deduction from the Contract Price. The unit prices or allowances when mutually agreed to be fair and equitable by Owner and Contractor will be made part of the Agreement.

§ 7.2.2 Final determination of all claims shall be by the Owner

Init.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner 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.

§ 7.3.1.1 If the Construction Change Directive involves an adjustment to the contract price, the adjustment will be computed by the Architect in form conforming to 7.3.3.5.

§ 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 Section 01 2100 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 All additions and deductions to the Contract Price not covered by unit prices resulting from changes in the Work shall be determined by the following outline:
- .5 **CONTRACT WORK**
 - a. Materials (Itemized Breakdown) _____
 - b. Rent of Equipment (Listed separately) _____
 - Sub-Total #1(items a & b)** _____
 - c. Sales Taxes (where applicable on Sub-Total #1) _____
 - d. Labor (Itemized Breakdown) _____
 - e. Insurance (Workmen's Compensation
Social security or as otherwise
required and/or specified) _____
 - Sub-Total #2 (items c, d & e)** _____
 - f. Overhead & Profit (% x Sub-Total #2)
As per Article 7.3. _____
 - g. Sub-contract Work
(If applicable, in identical breakdown,
as shown above Sub-Total #1 & 2) _____
 - h. Contractor's overhead & profit
on sub-contract changes (5%) _____
 - Sub-Total #3 (items f, g & h)** _____
 - i. **TOTAL QUOTATION (Sub totals 1, 2, 3)** _____

§ 7.3.3.1 Change Orders shall be submitted in total amounts for a particular change, not in installments for each trade thereafter. All partial change order submissions will be rejected and returned to the Contractor for completion.

- .1 Overhead and profit combined, included in the total cost to the Owner, shall be based on the following schedule:

For the Contractor, for any Work performed by the Contractor's own forces, ten percent (10%) of the cost.
For the Contractor, for Work performed by Contractor's sub-contractor, five percent (5%) of the amount due the sub-contractor.
For each sub-contractor or sub-contractor involved, ten percent (10%) of the cost
- .2 Cost to which overhead and profit is to be applied shall be limited to the following:

Labor.
Cost of Materials, including sales tax and cost of delivery.
Workers' or Workmen's Compensation Insurance.
Rental value of equipment and machinery.

Init.

§ 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.

(Paragraphs deleted) § 7.3.4.1 In order to facilitate checking of quotations for extras or credits, all proposals, shall be accompanied by a complete itemization of costs including labor, materials and sub-contracts. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are sub-contracts, they shall be itemized also. All change orders without such itemization will be returned to the Contractor for resubmission

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15. Failure to timely file any claim in accordance with the requirements set forth therein shall constitute a waiver of such claim.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the 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.

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

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the 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, not in dispute and completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's 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 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 Architect will 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

§7.4.1 The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. The work included in such order shall be performed by the Contractor at no additional cost to the Owner and shall not form the basis for a claim for an extension of the Contractor's time to complete its Work. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time. The Contractor shall perform the work included in such orders so as to cause no delay to its Work and/or the work of other contractors engaged by the Owner in connection with the Project

§7.4.2 Minor Changes in the work are not to be construed as Change Orders. A signed minor change is not an approved change order.

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. The date shall not be postponed by the failure to act of the Contractor or of persons or entities for whom the Contractor is responsible.

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

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

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

§ 8.1.5 Dates indicated in Section 01 1000 Summary of Work or Section 01 11010 Milestone Schedule are dates critical to the Owner's operations that establish when a part of the work is to commence or be complete. All Milestone Dates are of the essence and shall have the same meaning as Substantial Completion for the purpose of Liquidated Damages in this Article 8. Liquidated damages applied to Substantial Completion shall apply to Milestone Dates.

§ 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, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 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 (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control or (3) by other causes that the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine. No extension of time will be granted for changes in the work or labor disputes, or work stoppage due to asbestos removal. This paragraph shall control where a conflict appears among the contract documents.

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

§ 8.3.3 Notwithstanding anything to the contrary in the Contract Documents, an extension in the Contract Time, to the extent permitted under Paragraph 8.3.1, shall be the sole remedy of the Contractor for any (1) delay in the commencement, prosecution or completion of the Work, (2) hindrance or obstruction in the performance of the work, (3) loss of productivity, or (4) other similar claims (collectively referred to in this Paragraph 8.3.3 as delays) whether or not such delays are foreseeable, unless a delay is caused by acts of the Owner constituting active interference with the Contractor's performance of the work, and only to the extent such acts continue after the Contractor furnishes the Owner with notice of such interference. In no event shall the Contractor be entitled to any compensation or recovery of any damages, in connection with any delay, including, without limitation, consequential damages, lost opportunity costs, impact damages or other similar remuneration. The Owner's exercise of any of its rights or remedies under the Contract Documents (including, without limitation, ordering changes in the work, or directing suspension, rescheduling or correction of the work), regardless of the extent or frequency of the Owner's exercise of such rights or remedies, shall not be construed as active interference with the Contractor's performance of the work.

§8.4 LIQUIDATED DAMAGES

8.4.1 Contractor realizes that time is of the essence on this Contract and the date of Substantial Completion shall be no

later than the date set forth in Article 3.2 of the Contract. The Contractor understands that substantial disruption of the Owner's educational process will occur if the project is not completed by the date of substantial completion. In the event the Contractor fails to substantially complete the work under this contract by said scheduled date(s), the sum per calendar day, as follows:

General Construction Contract	****
Plumbing Contract	****
HVAC Contract	****
Electrical Contract	****
Other	****

and will, at the sole discretion of the Owner, be subtracted from the payment due the Contractor (or, if the amount due the Contractor as Payment is insufficient, any deficiency shall be paid by the Contractor to the Owner), except in cases where a delay is due to unforeseeable causes beyond the control and without the fault or negligence of the Contractor, including, but not restricted to, acts of God, or of the public enemy, acts of the Government, in either its sovereign or contractual capacity, fires, floods, epidemics, quarantine restrictions, freight embargoes, or delays of Subcontractors or Suppliers due to such causes. Delay in acquisition of materials other than by reason of or freight embargoes will not constitute a delay excusable under this provision unless approved by the Owner in writing.

§8.4.2 Within five calendar days from the occurrence of any such delay, the Contractor shall notify the Owner, in writing, of the cause of delay. The Owner will ascertain the facts and extent of the delay, and extend the time for completing the Work when, in his judgment, the findings of fact justify such an extension. Owners findings of fact will be final.

§8.4.3 In addition to Liquidated Damages, the Contractor shall be liable for all additional costs incurred by the Owner due to the failure of the Contractor to complete each Phase as required. The additional costs shall include but not be limited to the following:

§8.4.3.1 Staff, as required, to make the facility accessible to the contractor; for the Architect and Consultants to perform inspections after the completion date of each phase. Expenses and costs incurred by the Owner for additional services of the Owner's Representative, in addition to additional inspections.

§8.4.3.2 The cost of additional inspections by the Architect and their consultants will be at the rate of \$300.00 per hour.

§8.4.4 The said sum per calendar day and additional costs set out above, shall constitute the Liquidated Damages incurred by the Owner for each day of delay beyond the agreed upon dates of substantial completion. Such Liquidated Damages shall be in addition to any other damages (other than reason of delay) Owner may incur as a result of Contractor's breach of Contract, to include those which may be incurred pursuant to of the General Conditions.

§8.4.5 In addition to the liquidated damages described above, in the event the Contractor fails to complete all work under this Contract by said Scheduled Dates, the Contractor will, at the sole discretion of the Owner, not be permitted to perform any work during normal hours. Such work shall only be performed after hours, Saturdays, Sundays, holidays or periods when the facility is unoccupied, at no additional cost to the Owner. This paragraph in no way limits any other rights, or remedies of the Owner under this Contract.

§8.4.6 All costs will be subtracted from payment due the Contractor (or, if the amount due the Contractor for payment is insufficient, any deficiency shall be paid by the Contractor to the Owner.

§8.4.7 This section shall in no way prevent the Owner from enforcing any other remedies it may be entitled to pursuant to the Contract, including the right of termination, and in the cases of termination, any damages suffered by the Owner shall not be considered damages by reason of delay, regardless of the reason for termination.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum (Refer to Section 01 2000 Price and Payment Procedures for additional requirements)

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

§ 9.1.2 If Unit Cost Allowances prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted. Refer to Section 01 2100.

§ 9.1.3 Notwithstanding anything to the contrary contained in the Contract Documents, the Owner may withhold any payments to the Contractor if and for so long as the Contractor fails to perform any of its obligations or otherwise is in default under any of the Contract Documents; provided, however, that any such hold back shall be limited to an amount sufficient in the reasonable opinion of the Owner to cure any such default or failure of performance by the Contractor.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work.

§ 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect 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. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and installed. If approved in advance by the Owner, payment maybe made for materials and equipment suitably stored on the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such material and equipment or otherwise protect the Owner's interest, and shall include applicable insurance and storage 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.

§ 9.3.2.1 All materials and equipment, including materials and equipment stored on-site but not installed, or stored in secured warehouse) will require a bill of lading showing the exact value. 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 and approved into the Work, including maintaining insurance coverage on a replacement cost basis without voluntary deductible. Notwithstanding payment by the Owner, all warranties and/or guarantees required by the Contract Documents shall not begin to run until the Contractor has completed its Work.

§ 9.3.2.2 In no case will more than 90% be approved if the item is not installed. Insurance certificates will be provided specific to materials stored (for on-site or offsite items).

§ 9.3.2.3 When Fuller and D'Angelo, P.C. or Owner's Representative requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all

Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.3.4 Application for all Payments must be accompanied by certified payroll records and all releases of liens for previous applications **from Contractor and their subcontractors** and a sworn and notarized statement that all subcontractors have been paid to at least 95% of previously requisitioned sums. In the event a lien is filed on the Owner's property, by any entity, due to the actions of the Contractor, regardless of the relationship between the lien and the work performed on this project all payments will be held in abeyance until such lien is bonded or removed.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within ten business days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) , notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Section 9.5.1;

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations 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 Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor 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 Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from 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 suppliers for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;
- .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 to comply with scheduled milestone or submittal dates.
- .9 damages resulting from the Contractor's failure to notify the Architect of errors or inconsistencies between and among the Contract Documents;
- .10 failure of the Contractor and/or its Subcontractors to comply with the requirements for maintaining record drawings.

- .11 the Architect's discovery or observation of work which has been previously paid for by the Owner which is defective and/or incomplete.
- .12 such other acts and/or omissions by the Contractor in connection with the performance of its Work that do not comply with the Contract Documents; or
- .13 the amount requested exceeds the percent completion of work on the Project site(s).

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

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

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

§ 9.6.1 Refer to Section 01 2000 Price and Payment Procedures for additional requirements.

§ 9.6.1.1 Payment Period: Submit at intervals stipulated in the Agreement but not more than one per month.

§ 9.6.1.2 Form to be used: AIA G702 and AIA G703.

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

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided 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 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

(Paragraph deleted)

§ 9.7 Failure of Payment

§ 9.7.1 If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within ten business days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within thirty business days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon ten additional business days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received.

§ 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 that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.1.1 Contractor shall advise the Construction Manager and Architect of pending insurance changeover requirements.

§ 9.8.1.2 Contractor shall obtain and submit releases permitting Owner's Representative and Architect unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases

§ 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 prepare and submit to the Owner's Representative and Architect a comprehensive list of items to be completed, or corrected, the value of items on the list, and reasons why the Work is not complete prior to final payment. The Contractor shall proceed promptly to complete and correct the items on the list. 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 Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Owner's Representative and Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Owner's Representative and Architect to determine Substantial Completion. **If the Architect is required to inspect the Contractor's work more than twice, the Contractor shall be back charged for the cost of the Architect's services for the additional inspections.**

§ 9.8.3.1 Certificate of Substantial Completion will be issued only after completion of all punch list items or Owner's Representative and Architect will notify Contractor of items, either punch list or additional items identified by Architect, that must be completed or corrected before a certificate will be issued. After completion of all punch list items submit the following:

- .1 Application for Payment showing 100 percent completion for portion of the Work claimed as substantially completed.
- .2 Manufacturer's Warranties/guarantees.
- .3 Contractor's Warrantee **Two (2)** years minimum and extended warranties.
- .4 Maintenance agreements, if any.
- .5 Manifest for disposal of Hazardous Material.
- .6 Manifest for disposal of material.
- .7 Test/adjust/balance reports and records.
- .8 Maintenance Manuals and Instructions Manuals
- .9 Signed Receipt by Owner's Representative of spare parts and attic stock.
- .10 Meter readings
- .11 Start-up performance reports.
- .12 Changeover information related to Owner's occupancy, use, operation, and maintenance.
- .13 Advice on shifting insurance coverage.
- .14 Final progress photographs.
- .15 List of incomplete Work, recognized as exceptions to Architect's "punch list".
- .16 Removal of temporary facilities and services.

- .17 Removal of surplus materials, rubbish and similar elements.
- .18 As Built Drawings.
- .19 Project Record Documents.
- .20 DOL Final Completion Form. (PW 200).
- .21 This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

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

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents. The Contractor understands that no retainage will be paid until all work, including punch lists items are complete and submission of all closeout documents as listed in Section 01 7800 Closeout Submittals are approved.

§ 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 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 shall 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.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner's Representative, 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

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Owner's Representative and Architect will promptly make such inspection. When the Owner's Representative and Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Owner's Representative and Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final 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.

§ 9.10.1.1 If the Contractor's Work is not accepted by the Architect after final inspection and additional time is required to complete items identified during the final inspection, the date starting the warranty periods described in the Contract Documents shall be set by the Architect at his discretion, but no later than the date of the Final Certificate for Payment.

§ 9.10.1.2 If the Architect is required to perform more than one final inspection because the Contractor's Work fails to comply with the requirements of the Contract Documents, the amount of compensation paid to the Architect by the Owner for additional services shall be deducted from the final payment to the Contractor.

§ 9.10.2 Neither final payment nor any retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) completion of all "punch list" items, (6) submission of all closeout documents as listed in Section 01 7800 Closeout Submittals (7) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, (8) Architect's punch list certifying all punch list items have been completed with each item signed off by the Owner's Representative and Contractor. and (9) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.2.1 It is understood by the Contractor that the maximum payment due the contractor prior to final payment shall be Ninety (95%) of the Contract amount and the final Five (5%) will be due only after the above is satisfied.

§ 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 Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment may be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

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

- .1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents;
- .3 terms of special warranties required by the Contract Documents; or
- .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.
- .5 defective work or concealed conditions.

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

§ 9.11 APPLICATIONS FOR PAYMENT WHEN BEHIND SCHEDULE

§ 9.11.1 When the project falls behind schedule the contractor shall demonstrate the actions to be taken to put the project back on schedule.

§ 9.11.1.1 Payments will not be approved until satisfactory evidence is presented to put the project on schedule

§ 9.12 APPLICATION FOR PAYMENT AFTER SCHEDULED COMPLETION DATE

§ 9.12.1 In the event the work is not completed by the schedule date, listed in Section 01 1000 - Summary, and in addition to the other remedies described, the Architect will not review progress payment requisitions submitted after the construction completion date, and the Owner will not issue any progress payments after that date, until all work is completed.

§ 9.12.2 Only one requisition for work performed, after the construction completion date, may be submitted, and it may be submitted only when all work is complete and a Punch List inspection is conducted; said requisition may be submitted when the work at 100% complete, less 5% retainage.

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. Prior to beginning any work, the Contractor shall submit a copy of its safety plan to the Architect. The Contractor shall make the participation of its Subcontractors in its safety plan and program mandatory. The Contractor and its Subcontractors shall conduct their operations in accordance with the Safety Guides for Construction issued by New York State Education Department ("SED") and the Contractor's Safety Plan and Program.

§ 10.2 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, a Subcontractor, or a Sub-subcontractor; and
- .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 The work on the project of any other contractors or any property of any other contractors work on the project

§ 10.2.1.1 The Contractor shall maintain at the project site MSDS documentation for all material brought on site.

§ 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 including:

- .1 The work on the project of any other contractors or any property of any other contractors work on the project;
- .2 shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement during construction.

§ 10.2.2.1 Any and all fines or citations levied against the Owner, Architect, or Owner's Representative due to the failure of the Contractor to comply with statutes, ordinances, codes, rules, regulations, or lawful orders of any governing authority, shall be paid for by the Contractor. This shall include any interest or late charges which accrue due to the Contractor's failure to remit payment upon receipt of such levies.

§ 10.2.2.2 Any reference made to rules and regulations promulgated by various governmental agencies with the Specifications or Construction Drawings are for the Contractor's benefit. The issuance of compliance to said regulations by workers employed by the Contractor or by sub-contractors is the sole responsibility of the Contractor; and that, notwithstanding any reference to any rule or regulation, that the Architect, the Architect's construction observer (Clerk-of-the-Works) or any representative of the Owner is not assuming any duty to provide supervision of construction methods in processes.

- .1 Each Contractor shall assign one person from his staff to be on-site safety coordinator.
- .2 Each Contractor is solely responsible for overall job site safety, the safety of his employees and the conduct of his work and that of his sub-contractors.
- .3 Each Contractor affirms he is fully versed in all State, Federal and local regulations pertaining to safety including OSHA regulations, and pertaining to any and all construction operations
- .4 All site personnel have appropriate Department of Labor certification.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings

against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.3.1 The Contractor shall be responsible for all costs incurred by the Owner caused by false security alarms and false fire alarms set off by the Contractor, its Subcontractors, employees, suppliers, officers, directors or servants.

§ 10.2.3.2 All safety equipment including but not limited to hard hats and other personal protective materials and equipment (masks, face shields, gloves, etc.) required for the Contractor to perform its work are to be supplied by the Contractor and/or its Subcontractors.

§ 10.2.3.4 The Contractor acknowledges that the Labor Law of the **State of New York**, and regulations adopted thereunder, place upon both the Owner and Contractor certain duties and that liability for failure to comply therewith is imposed on both the Owner and Contractor regardless of their respective fault. The Contractor hereby agrees that, as between the Owner and the Contractor, and to the extent permitted by law, the Contractor is solely responsible for compliance with all such laws and regulations imposed for the protection of persons performing the Contract. For additional indemnity obligations see Section 3.18 of these General Conditions.

§ 10.2.3.5 When all or a portion of the Work is suspended for any reason, the Contractor shall securely fasten down all coverings and protect the Work, as necessary, from injury by any cause.

§ 10.2.4 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 hazardous materials or equipment or unusual construction methods are necessary to promulgate the Work, the Contractor shall give the Owner's Representative reasonable advance notice, and shall maintain on the site, a full set of safety instructions relating to all such materials.

§ 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 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, employees, agents, or representatives of any of the above or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either 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 and for on-site safety. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner 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, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials and Substances

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

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the 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 perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Owner shall only be responsible to pay for the services of the laboratory if the material or substance reported by the Contractor is found to be hazardous. When the material or substance has been identified the Contractor shall submit a proposal to abate the material. 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 Sum shall be increased by the amount of the Contractor's reasonable additional costs..

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, 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, 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), , but only to the extent caused in whole or in part by negligent acts or omissions of the Owner, anyone directly or indirectly employed by the Owner or anyone for whose acts the Owner may be liable. .

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

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the 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 "immediately" 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. The word "immediately", for the purposes of this paragraph shall mean a time period which is less than the time it would take to notify the Owner's Representative of the emergency.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§11.1.1 All insurance purchased by Contractor shall constitute primary insurance and primary coverage for all risks insured and that any other liability insurance that the Owner or Fuller and D'Angelo, P.C. may procure or maintain is secondary and that there shall be no contribution by such insurance until insurance provided by the Contractor is exhausted. All policies shall be provided by insurers licensed to conduct business in New York State. The Contractor's coverage shall be primary and non-contributory coverage for the Owner, Owner's Representative, the Architect (Fuller and D'Angelo, P.C.), and Owner's Board of Education as well as each of their respective officers, members, directors, employees, and volunteers.

§11.1.1.1 The following insurance coverages and requirements must be provided by the contractor and evidence of same must be certified to the Owner, Owner's Representative and Fuller & D'Angelo, P.C. prior to commencing any work under this contract, and original certificates of insurance, shall be furnished prior to the contract signing.

§ 11.1.1.2 The Contractor shall purchase from and maintain in a company or companies lawfully admitted to conduct 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.
- .2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees.
- .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.
- .7 Claims for bodily injury or property damage arising out of completed operations.
- .8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18.

(Paragraph deleted)

§11.1.2 Certificates of Insurance:

- .1 Each certificate shall include the following clause: It is agreed that prior to any cancellation of, or material change in the policies certified to on this Certificate, 30 days written notice, by certified mail, return receipt requested, shall be sent to the Owner, Owner's Representative and Architect prior to the effective date of such change or cancellation.
- .2 Shall specifically describe the work to be performed by the Contractor that are covered by the liability policies and the job site location.
- .3 Shall include to the fullest extent permitted by law, the Contractor shall, defend, indemnify and hold harmless the Owner, Architect, Owner's Representative, their respective Consultants and their respective members, directors, officers, agents, employees, successors, and assigns (collectively "Indemnitees") from and against any and all losses, claims, costs, damages, expenses, and attorneys' fees, arising out of or resulting from the performance of the Work, or by Contractor's breach of this Agreement, except to the extent caused by the sole negligence or willful misconduct of any Indemnitee hereunder.
- .4 The Contractor and each of its Subcontractors and to all Shared Services Contracts (Purchase Order Agreements) shall include the Owner, Architect, and their Consultants as Additional Insureds on their casualty and commercial liability insurance policies on a primary and non-contributory basis, including a waiver of subrogation, acceptable to Owner, and shall not include any exclusions that limit the scope of coverage beyond that provided to the named insured and the endorsement shall not require a written agreement with the Additional Insureds.
- .5 Additional Insured status shall be provided by ISO endorsement CG 20 38 04 13 for on-going operations (CG 20 38) and products and completed operations (CG 20 37). A completed copy of the endorsements must be attached to the Certificate of Insurance. The decision to accept an endorsement rests solely with the Owner.
- .6 A copy of the endorsement(s) providing additional insured sections must be attached to the Certificates.
- .7 A fully completed New York Construction Certificate of Liability Insurance Addendum (ACORD 855 2014/15) must be included with the certificates of insurance. Exclusions for Items G-L will not be accepted. For any "Yes" answers on Items G through L on this Form—additional details must be provided in writing.
- .8 Shall use the forms adopted and/or required by the New York State Workers' Compensation Board for proof of Workers' Compensation and NYS Disability Insurance, an ACORD certificate is not acceptable proof.
- .9 Renewal Certificates of Insurance: Renewal Certificates of Insurance must be filed with the Owner, Owner's Representative, Architect at least five (5) days prior to the expiration of any policy

(Paragraph deleted)

§11.1.3 The 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

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available to the Owner. The Contractor is to provide the Owner with a Certificate of Insurance, evidencing the requirements have been met, prior to the commencement of the work or use of the facilities.

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

§11.1.4 The Contractor agrees to carry as a minimum the following insurance in such form and with such insurers as are satisfactory to the Owner covering the work hereof:

- .1 Workmen's Compensation Insurance: Statutory Workmen's Compensation Insurance (C-105.2 or U-26.3)** and NYS Disability Insurance (DB-120.1) for all employees coverage as required by the State Law in which the project site is located, and in the state in which the Contractor is domicile, and licensed to do business, and for all of his employees to be engaged in work on the project under this contract, and in case such work is sublet, the Contractor shall require the subcontractor similarly to provide Workmen's Compensation Insurance for all of the employees to be engaged in such work. Provide Statuary Limits and Coverages. Proof of coverage must be on the approved specific form, as required by the New York State Workers' Compensation Board. ACORD certificates are not acceptable.
- .2 Employers Liability Insurance:** Not less than \$1,000,000 for all employees to be engaged in work on the Project.
- .3 Commercial General Liability Insurance** Including Premise/Operations, Independent Contractors, Products and Completed Operations, Broad Form Contractual, Broad Form Property Damage, Broad Form General Liability Endorsement and blanket coverage for underground hazards; X (explosion) C (collapse) U (underground).

Minimum Limits:

Each Occurrence:	\$1,000,000.00
General & Product Liability Aggregate:	\$2,000,000.00.
Products and Completed Operations	\$2,000,000
Personal and Advertising Injury:	\$1,000,000.00.
Fire Damage (Damage to Rented):	\$100,000.00.
Medical Expense	\$10,000.00
(General Aggregate to apply on a per project basis).	
Other Requirements: No Explosion, Underground, Collapse (XCU) exclusions.	

- .4 Bodily injury** including death arising from any occurrence for the period and time for this specific work contract, including any contractual agreement assuming liability of Owner by terms of contract agreement in an amount of not less than the amount as stated above.
 - a. Coverage and limits required in no way restrict or relieve the Contractor from the full and complete responsibility for all injuries and/or damages and it is suggested that the Contractor consult their agent or broker to be certain their coverage, in form and limits, is sufficient for their needs.
- .5 Automobile Insurance.** Business Automobile liability insurance coverage format shall be as required by the state law in which any and all vehicles are registered, and must include all owned, hired, borrowed and non-owned vehicles in the following amounts:
Minimum limits:

Bodily Injury -	\$1,000,000.00 each accident
Property Damage -	\$1,000,000.00 each accident
or a combined single limit of	\$1,000,000.00
- .6 Conditions of Coverage** Bodily Injury and Property Damage coverage under both General and Automobile Insurance shall include the "occurrence" basis wording. In the event of cancellation of insurance, the Owner shall be given advance notice of 30 days by the insurance carrier and such to stipulated in the insurance contract.
- .7 Umbrella/Excess Liability Insurance.** Limit: \$10,000,000.00 per occurrence and aggregate excess over Underlying Comprehensive General Liability, Automobile Liability, Employers Liability Policies.- Umbrella/Excess coverage shall be on a follow-form basis.
- .8 Self-Insured Retentions** and insurance policy deductibles shall not exceed \$10,000.00 per occurrence.
- .9 Owner Contractor Protective Liability Insurance (OCP):** The Contractor shall purchase and maintain an Owner's Protective Liability policy with the Owner as the named insured.

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Limits of Liability for project up to 1,000,000.:	\$1,000,000.00 each occurrence.
	\$2,000,000.00 aggregate

.10 Asbestos/Lead/Hazardous Materials Liability Insurance : Shall include coverage for the Contractor's operations, including, but not limited to removal, replacement enclosure, encapsulation and/or disposal of asbestos, or any other hazardous material, along with any related pollution events, including coverage for third-party liability claims for bodily injury, property damage and clean-up costs. Minimum limits:

§11.1.6 The Contractor shall maintain a separate record of each subcontractors' insurance certificates and said records shall be available for inspection by the Owner, Owner's Representative and Architect for a period of 2 years from the date of final acceptance.

§11.1.7 The Contractor shall not permit any subcontractors on the site until acceptable certificates of insurance have been filed and approved.

§11.1.8 Waiver of Subrogation: All property insurance policies carried by the Contractor and his subcontractors shall contain a "Waiver of Subrogation" clause (including equipment floaters) to the effect that the Contractor agrees to waive all rights of subrogation against the Owner, Owner's Representative and Architect.

§11.1.9 The signing of this contract acknowledges that the Contractors have notified their insurance carriers of the insurance requirements contained in this Article 11.

§11.1.10 Renewal Certificates of Insurance: Renewal Certificates of Insurance must be filed with the Owner, Owner's Representative and Architect at least 5 days prior to the expiration of any policy

§11.1.11 Job Safety: The Contractor shall assign one person from his staff to be on the job site safety coordinator. The Contractor is solely responsible for overall job site safety, the safety of his employees and the conduct of his work and that of his subcontractors.

§11.1.11.1 The Contractor agrees to cooperate and comply in full with the insurance representatives of the Owner, Owner's Representative and Architect with respect to any safety recommendations or requirements.

§11.1.11.2 The Contractor affirms he is fully versed in all State, Federal and local regulations pertaining to safety including OSHA and Department of Labor regulations, pertaining to his trade and construction operations.

§11.1.12 Products, Completed Operations: The Contractor is required to, and agrees to carry Products and Completed Operations coverage.

§11.1.13 Certificates of Insurance shall be filed annually with the Owner, Owner's Representative, Architect and the Contractor shall obtain and record like certificates from his subcontractors. If the Contractor fails to obtain the required certificates of insurance from a subcontractor and a claim is made or suffered, the Contractor shall indemnify, defend and hold harmless the Owner, its Board of Education, employees and volunteers from any and all claims for which the required insurance would have provided coverage. This indemnity obligation is in addition to any other indemnity obligation provided in the Contract Documents and shall survive the termination of the Contract.

§11.1.14 Insurance Carriers: All insurance carriers providing coverage on the project must be **licensed** to conduct business and issue the type of insurance the carrier is providing to the Contractor in the State in which the project is located, and in the State in which the Contractor is domicile. The companies must be **A. M. Best A-** rated or better insurer. This requirement applies to all subcontractors as well.

§11.1.15 If at any time, any policy required herein shall be or become unsatisfactory to the Owner, as to form or substance, or if the issuing company shall be or become unsatisfactory, the Contractor, upon written notice from the Owner, shall promptly replace said unsatisfactory insurance.

§11.1.16 If the Contractor fails to provide, maintain or deliver satisfactory insurance during this project, at the election of the Owner, the contract may be declared suspended, discontinued, or terminated.

§11.1.17 Failure to provide and maintain proper insurance under this contract shall not relieve, nor be construed to conflict with or otherwise limit the contractual obligations of the Contractor

§11.1.18 In the event that any claims, or claims aggregate be in excess of the insured amounts, filed by reasons of any operations under this contract, the Owner, at its sole opinion, may withhold from payments due or to become due the Contractor amounts equal to the excess of such claims, until the Contractor has provided evidence of additional financial security covering such claims, in a form satisfactory to the Owner.

§11.1.19 All the policies of insurance referred to in this Article 11 shall be issued in the names of the Owners, the Architect, the General Contractor, and his subcontractors. Said policy shall be endorsed to indicate that the term

"Insured" shall include the Owner, Construction Manager, Architect and be deemed to include their authorities, boards, bureaus, departments and officers thereof in their official capacities. In all cases regarding insurance referred to in these specifications, certificates shall be provided to the Owners, Owner's Representative and Architect.

§11.1.19.1 In the event that any of the insurance coverage to be provided by the Contractor to the Owner and Architect contains a deductible or a self-insured retention, or the insurance provided by the Owner and Architect contains a deductible or a self-insured retention, the Contractor shall indemnify and hold the Owner and the Architect harmless from the payment of such deductible or self-insured retention, for all claims arising from any acts or omissions of Contractor or Contractor's officers, directors, employees, Subcontractors, suppliers or any others engaged by Contractor directly or indirectly to perform Contractor's Work on the Project, which deductible or self-insured retention shall in all circumstances remain the sole obligation and expense of the Contractor

§ 11.1.20 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located. Refer to Section 00 6000 Bonds and Certificates.

11.1.21 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.

§ 11.1.22 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide written notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner or Owner's Representative shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

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

(Paragraphs deleted)

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, 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 those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

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The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss.

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Owner's Representative, Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

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

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Owner's Representative and Architect's services and expenses made necessary thereby, shall be at the Contractor's expense. If prior to the date of Substantial Completion, the Contractor, a subcontractor or anyone for whom either is responsible uses or damages any portion of the Work, including, without limitation, mechanical, electrical, plumbing and other building systems, machinery, equipment or other mechanical device, the Contractor shall cause such item to be restored to "like new" condition at no expense to the Owner

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within two years after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. 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 2.5.

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

§ 12.2.2.3 The two-year period for correction of Work shall be extended by corrective Work performed by the Contractor pursuant to this Section 12.2 except as to the corrective work performed and subject to the continued existence of any manufacturer's warranty, if applicable.

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

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, 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

§ 12.3.1 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 affected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

§ 13.1.1 This Contract shall be governed by and interpreted in accordance with the substantive laws of the State where the Project is located without recourse to principles of choice of law. The venue of any dispute resolution proceedings or actions shall be in the county in which the Project is located.

§ 13.1.1.2 The Contractor shall at all times observe and comply with all Federal, State and Local Laws, rules and regulations and all policies, rules, regulations and protocols of the Owner, in any manner affecting the Work and all such orders as exist at present and those which may be enacted in the future, by bodies or tribunals having jurisdiction or authority over the Work and the Contractor shall indemnify and save harmless the Owner and its Board of Education, Owner's Representative, Architect employees, officers, agents, or servants against any claim or liability arising from, or based on, a violation of any such law, ordinances, regulation, order or decree by the Contractor or the Contractor's officers, directors, employees, Subcontractors and suppliers.

§ 13.1.1.3. Historical lack of enforcement of any law, local or otherwise, shall not constitute a waiver of Contractor's responsibility for compliance with such law in a manner consistent with the Contract Documents unless and until the Contractor has received written consent for the waiver of such compliance from the Owner.

§ 13.1.2 The Contractor specifically agrees, as required by New York Labor Law, Sections 220, and 220-d, as amended, that:

- .1 No laborer, workman or mechanic in the employ of the Contractor, Subcontractor or other person doing or contracting to do the whole or any part of the Work contemplated by the Contract, shall be permitted or required to work more than eight hours in any one calendar day or more than five days in any one week, except in the emergencies set forth in the Labor Law.
- .2 The wages paid for a legal day's work shall not be less than the prevailing rate of wages as defined by law.
- .3 The minimum hourly rate of wages to be paid shall not be less than that stated in the Specifications, and any redetermination of the prevailing rate of wages after the Contract is approved shall be

deemed to be incorporated therein by reference as of the effective date of redetermination and shall form a part of this Contract. The Labor Law provides that the Contract may be forfeited, and no sum paid for any work done thereunder on a second conviction for willfully paying less than:

- (a) The stipulated wage scale as provided in Labor Law, Section 220, Subdivision 3, as amended; or
- (b) The stipulated minimum hourly wage scale as provided in Labor Law, Section 220-d, as amended

§ 13.1.3 The Contractor specifically agrees, as required by the provisions of New York Labor Law Section 220-e, as amended, with respect to operations performed within the territorial limits of New York State, that:

- .1 In hiring of employees for the performance of work under this Contract or any subcontract hereunder, or for the manufacture, sale or distribution of materials, equipment or supplies hereunder, no Contractor, Subcontractor nor any person acting on behalf of such Contractor or Subcontractor, shall by reason of race, creed, color, disability, sex or national origin discriminate against any citizen of the State of New York who is qualified and available to perform the work to which the employment relates.
- .2 No Contractor, Subcontractor, nor any person on his behalf shall, in any manner, discriminate against or intimidate any employee hired for the performance of work under this Contract on account of race, creed, color, disability, sex or national origin.
- .3 There may be deducted from the amount payable to the Contractor by the Owner under this Contract a penalty of fifty (\$50.00) dollars for each person for each calendar day during which such person was discriminated against or intimidated in violation of this Section 13.1.3.
- .4 The Contract may be cancelled or terminated and all monies due under the Contract forfeited for a second or any subsequent violation of the terms and conditions set forth in this Section 13.1.3.

§ 13.1.4 The Contractor shall comply with all the provisions of the Immigration Reform and Control Act of 1986 and regulations promulgated pursuant thereto and shall require its Subcontractors to comply with same. The Contractor shall and does hereby agree to fully indemnify, protect, defend, and hold harmless the Owner, Owner's Board of Education, Owner's Representative,, Architect, agents and employees from and against any penalties, fees, costs, liabilities, suits, claims, or expenses of any kind or nature, including reasonable attorney's fees, arising out of or resulting from any violation or alleged violation of the provisions of said laws by Contractor or its Subcontractor(s) in connection with the Work of the Contract Documents.

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

- .1 The Contractor and the Contractor's Subcontractors shall not discriminate against any employee or applicant for employment because of age, creed, race, religion, color, sex, national origin, sexual orientation, gender identify or expression, military status, disability, predisposing genetic characteristics, familial status, marital status or status as a victim of domestic violence. The Contractor shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their age, race, creed, religion color, sex, national origin, sexual orientation, gender identify or expression, military status, disability, predisposing genetic characteristics, familial status, marital status or status as a victim of domestic violence. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the policies of non-discrimination.
- .2 The Contractor and the Contractor's Subcontractors shall, in all solicitations or advertisements for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to age, creed, race, religion, color, sex, national origin, sexual orientation, gender identify or expression, military status, disability, predisposing genetic characteristics, familial status, marital status or status as a victim of domestic violence.

§ 13.1.6 Dust Hazards - The Contract shall be void if the Contractor fails to install, maintain, and effectively operate appliances and methods for the elimination of harmful dust when a harmful dust shall have been identified in accordance with Section 222-a of the Labor Law of the State of New York.

§ 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. If either party attempts to make 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 the assignment.

§ 13.3 Rights and Remedies

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

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

§ 13.3.3 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 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. 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 Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures.. Refer to Section 01 4000 Quality Requirements for additional requirements.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the 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 Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

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

§ 13.4.5 If the Owner's Representative or the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

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

§ 13.5 Interest Payments due and unpaid under the Contract Documents shall not bear interest.

§ 13.6 TIME LIMITS ON CLAIMS

§ 13.6.1 The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time period specified by applicable law,

§ 13.7 LIENS

§ 13.7.1 If the Contractor or any of its subcontractors or suppliers should cause a Mechanic's Lien to be placed upon the property, then the Contractor shall be liable for any and all legal or bonding or insurance fees related to the removal of the Mechanic's Lien or the defense of any Mechanic's Lien enforcement or foreclosure proceeding. Such legal or bonding or insurance fees shall also be a deduction by the Owner from any moneys due or to become due to the Contractor.

§ 13.8 SEXUAL HARASSMENT PROHIBITED

§ 13.8.1 Federal and state laws and the policies of the Owner prohibit sexual harassment of employees. Sexual harassment includes any unwelcome sexual advances, requests for sexual favors or other verbal or physical conduct of a sexual nature that create a hostile or offensive working environment for students, employees and volunteers of the Owner and employees, agents, consultants, suppliers, subcontractors and others engaged directly or indirectly by Contractor to perform work on the Projects. The Contractor shall exercise control over its employees, agents, consultants, subcontractors, and suppliers so as to prohibit acts of sexual harassment of students, employees and volunteers of the Owner. In the event the Owner, in its reasonable judgment, determines that the Contractor or its employees, agents, consultants, subcontractors and/or suppliers have committed an act of sexual harassment, upon notice from the Owner, the Contractor shall cause such person to be removed and shall take such other action as may be reasonably necessary to cause such sexual harassment to cease. In the event the Contractor or its employees, agents, Subcontractors or suppliers believes it has been the subject of sexual harassment by the Owner, its elected and appointed officials, students, volunteers, vendors, employees or agents, it shall give notice to the Owner; so, the Owner can take such action as may be reasonably necessary to cause any sexual harassment to cease.

§ 13.9 GENERAL PROVISIONS

§ 13.9.1 Contractor hereto agrees to do all acts and things and to make, execute and deliver such written instruments, as shall from time be reasonably required to carry out the terms and provisions of the Contract Documents.

§ 13.9.2 Contractor is obligated, by virtue of entering into a contract with the Owner, to ensure that absolutely no asbestos containing material is used in conjunction with the Work. It is the Contractor's sole responsibility to provide assurance that no asbestos containing material is built into the construction, nor does any equipment used in the construction contain any asbestos containing material. If asbestos containing material is found, at any time during or after the construction is completed, it shall be the responsibility of the Contractor who installed said material to remove it and replace it with new non-asbestos containing material, as per federal, state and local mandates, and to indemnify all their employees, agents, or servants or any third parties including but not limited to the Owner and the Architect, and their respective servants or employees for any costs or damages incurred on account of personal injury or death or property damage caused by, arising out of, or in any way incidental to, or in connection with the performance of the Work hereunder. This provision will be limited only to the extent required by law and shall survive the termination or expiration of the Contract. Refer to Section 01 7800 Closeout Submittals for additional requirements.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

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

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;

- .3 Because 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 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or

(Paragraphs deleted)

§ 14.1.2 If one of the reasons described in Section 14.1.1 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

(Paragraphs deleted)

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- .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.
- .5 If the Contractor fails to satisfy or bond any filed liens against the Owner in the Performance of his contract.
- .6 disregards the instructions of the Architect or the Owner (when such instructions are based on the requirements of the Contract Documents);
- .7 breaches any warranty made by the Contractor under or pursuant to the Contract Documents.
- .8 fails to furnish the Owner with assurances satisfactory to the Owner evidencing the Contractor's ability to complete the Work in compliance with all the requirements of the Contract Documents.
- .9 fails after commencement of the Work to proceed continuously with the construction and completion of the Work for more than ten (10) days, except as permitted under the Contract Documents.
- .10 fails or neglects to prosecute the Work in such a manner to reasonably assure completion within the contract time;
- .11 fails to keep the Project free from strikes, work stoppages, slowdowns, lockouts or other disruptive activity;

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, 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, three days' 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.

§ 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 and the Contractor will be back charged for all costs incurred by the Owner.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the 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 be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.2.5 The Owner may take over the work for one of the reasons stated in sub-paragraph 14.2.1 after giving the Contractor and the Contractor's Surety, if any, three days' written notice. The Contractor will be backcharged for costs incurred by the Owner.

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§ 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 Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. 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 the Contract

Termination by the Owner for Convenience

(Paragraph deleted)

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of 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.
- .4 proceed to complete the performance of the remaining Work on the Contract which has not been so terminated

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, and any deposits or down payments which the Contractor has made pursuant to the Agreement which cannot, in the exercise of good faith and due diligence by the Contractor, be refunded or applied as a credit in the Contractor's favor to other charges, provided, however, that if such deposits or down payments are not refundable, Contractor shall assign the applicable contract, agreement, purchase order, etc. to the Owner who, at its election, may require performance of same. The Contractor hereby waives and forfeits all other Claims for payment and damages, including, without limitation, overhead and profit related to Work terminated by the Owner pursuant to this Section 14.4.

§ 14.4.4 In case of a termination pursuant to this Section 14.4, the Owner will issue a Construction Change Directive or authorize a Change Order, making any required adjustment to the Date of Substantial Completion and/or the sum of Contract monies remaining to be paid to the Contractor. The Owner shall be credited for (1) payments previously made to the Contractor for the terminated portion of the Work, (2) Claims which the Owner has against the Contractor under the Contract, and (3) the value of the materials, supplies, equipment or other items that are to be disposed of by the Contractor that are part of the Contract Sum; multiplied by 15% representing the Contractor's overhead and profit.

§ 14.4.5 For the remaining portions of the Contractor's Work which have not been terminated pursuant to this Section 14.4, the terms and conditions of the Contract with the Owner shall remain in full force and effect. The Contractor shall continue to prosecute that portion of its Work that was not terminated pursuant to this Section 14.4.

§ 14.5 Limitation of Owner's Liability

§ 14.5.1 The Owner shall not be responsible for damages or for loss of anticipated profits on Work not performed on account of any termination of the Contractor by it.

§ 14.5.2 The Owner shall not be liable to the Contractor for punitive damages on account of any termination of the Contractor and the Contractor hereby expressly waives its right to claim such damages against the Owner.

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, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents. As is set forth in other provisions of this Contract, delay in the Contractor's ability to complete the work may, in appropriate circumstances, give rise to a claim for additional time, but will under no circumstances be the basis of a claim for damages.

(Paragraphs deleted)

§ 15.1.2 **Time Limits on Claims.** The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within ten days after occurrence of the event giving rise to such Claim or within 10 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

(Paragraphs deleted)

§ 15.1.5 **Claims for Additional Cost.** If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall 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.

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

(Paragraphs deleted)

Init.

§ 15.1.7 Waiver of Claims for Consequential Damages. The timelines provided herein for the making of claims shall be a condition precedent to any payment for such claims or the granting of any extension of time. Failure of the Contractor to comply with the time and notice provisions of this Article shall be an absolute bar to making any payment to or extending the time of the Contractor for such claim. All claims of any type seeking any monies, or an extension of time shall be accompanied by full documentation. A claim submittal without full documentation shall be rejected by the Architect and, if not timely resubmitted within the original claim period, as set forth above, shall be waived. 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.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, 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. A decision by the Architect shall be required as a condition precedent to **the Owner making any payment or granting any extension of time on any claims between the Contractor and Owner** arising prior to the date final payment is due. 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 the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render a 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, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties..

§ 15.2.6 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.

(Paragraph deleted)

§ 15.2.7 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.

(Paragraph deleted)

§ 15.3 Mediation

(Paragraph deleted)

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract shall be subject to non-binding mediation.

§ 15.3.2 The parties agree that claims, disputes or other matters in question between the parties to this Agreement, arising out of or relating to this Agreement or the breach thereof shall, before the commencement of litigation or a party availing itself of self-help remedies, be submitted to a third party neutral Mediator agreed to by both parties or, if the parties cannot agree, appointed by the American Arbitration Association, at a non-binding Mediation that shall not exceed one calendar day. The parties may be represented by counsel at the Mediation, but no party may engage the Mediator as its representative after the Mediation. Statements made and documents provided or exchanged as part of the Mediation shall be for settlement purposes only and subject the applicable rules or regulations that govern such matters. All mediation shall take place within 30 days of any demand for same of and cost shall be shared by both parties.

(Paragraphs deleted)

§ 15.4 Arbitration

§ 15.4.1 The Contractor and the Owner shall not be obligated to resolve any claim or dispute related to the contract by arbitration; any reference arbitration in the Contract Documents is deemed void. If a discrepancy is found in the Contract Documents, this paragraph shall be considered the final say.

(Paragraphs deleted)

ARTICLE 16 - NO DAMAGES FOR DELAY

§16.1 Notwithstanding any other terms or conditions set forth in the contract documents, general or supplementary conditions, the Contractor agrees to make no claim for damages for delay in the performance of the work occasioned by any act or omission of the owner or any of its representatives, and agrees that any such claim shall be fully compensated for by an extension of time to complete the work, unless a delay is caused by acts of the Owner constituting active interference with the Contractor's performance of the work, and only to the extent such acts continue after the Contractor furnishes the Owner with notice of such interference. The Contractor hereby expressly assumes the risk of all such delays to the Work, unless the Contract Schedule is extended for excusable delays.

§16.2 Contractor agrees and acknowledges that payment for the work may have been obtained through obligations or bonds which have been sold after public referendum. In the event the work is suspended or canceled as a result of the order of any court, agency, department entity or individual having jurisdiction, or in the event the work is suspended or canceled due to the fact that a court, agency, department, entity or individual having jurisdiction has issued an order, the result of which is that the afore said obligations or bonds are no longer available for payment for the work, contractor expressly agrees that it shall be solely entitled to payment for work accomplished until a notice of suspension or cancellation is served upon the Contractor. Contractor expressly waives any and all rights to institute an action, claim, cause of action or similar for any damages it may suffer as a result of the suspension or cancellation of the work and/or its contract pursuant to this section.

SECTION 01 1000
SUMMARY OF CONTRACTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to all Sections of the specifications.

1.2 PROJECT

- A. Project Name: Flood Repairs and Related Work
- B. Owner's Name: Port Chester-Rye UFSD.
- C. Architect's Name: Fuller and D'Angelo P.C..
- D. The Project consists of the Flood Repairs and Related Work, at the John F. Kennedy Elementary School, 40 Olivia Street, Port Chester New York 10573.

1.3 DEFINITIONS

- A. Refer to General Conditions and Section 01 4216 for Definitions.

1.4 CONTRACT DESCRIPTION

- A. Contract Type: Multiple contracts are separate contracts, representing significant construction activities, between Owner and separate contractors. Each contract is performed concurrently and coordinated closely with construction activities performed on Project under other contracts. Contracts for this Project include the following
 - 1. Contract #1 General Construction
 - 2. Contract #2 Plumbing
 - 3. Contract #3 HVAC
 - 4. Contract #4 Electrical
- B. The work of each Contractor is identified in this Project Manual and on the Drawings.
- C. 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 contractor(s) shall promptly negotiate a reasonable settlement to avoid or minimize the pending interruption and delays.
- D. If it becomes necessary to refer to the contract documents to determine which prime Contract includes a specific element of required work, begin by referring to the prime Contracts, themselves; then, if a determination cannot be made from the prime Contracts, refer, in the following order, to the Supplementary Conditions, if any, this section of the Specifications, followed by the other Division-1 sections and finally with the Drawings and other Sections of the Specifications.
- E. If, after referring to the contract documents, it cannot be clearly determined which prime Contractor will perform a specific item of required work, then, that item of work will be brought to the Owner's Representative or Architect's attention in writing for determination.
- F. Summary by References: Work of the contract can be summarized by reference to the Prime Contract(s), Contract, General Conditions, Instructions to Bidders, Specification Sections, Drawings, or Addenda to Contract Documents issued subsequent to the initial printing of this Project Manual, and including but not necessarily limited to printed material referenced by any of these. It is recognized that the work of the Contract is unavoidably affected or influenced by governing regulations, natural phenomenon, including weather conditions, and other forces outside the contract documents.

1.5 RELATED REQUIREMENTS

- A. Section 00 5200 - Agreement Form: Contract Sum, retainages, payment period, monetary values of unit prices.

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JOHN F. KENNEDY ELEMENTARY SCHOOL
FLOOD REPAIRS AND RELATED WORK
SUMMARY OF CONTRACTS

- B. Section 00 7200 - General Conditions : Additional requirements for progress payments, final payment, and Changes in the Work.
- C. Section 01 1000 - Summary of Contracts
- D. Section 01 1010 - Milestone Schedule.
- E. Section 01 2000 - Price and Payment Procedures.
- F. Section 01 2100 - Allowances, if any.
- G. Section 01 2200 - Unit Prices: Monetary values of unit prices, payment and modification procedures relating to unit prices.
- H. Section 01 2300 - Alternates: Payment procedures relating to alternates, if any.
- I. Section 01 3553 - Site Safety and Security Procedures.
- J. Section 01 5000 - Temporary Facilities and Controls.
- K. Section 01 5510 - Traffic and Pedestrian Access & Control.
- L. Section 01 5500 - Vehicular Access and Parking.
- M. Section 01 5713 - Temporary Erosion and Sediment Control
- N. Section 01 7000 - Execution.
- O. Section 01 7900 - Demonstration and Training
- P. Section 01 9113 - General Commissioning Requirements

1.6 JURISDICTIONAL DISPUTES

- A. It is not the intention of these specifications to transgress the jurisdictional arrangements regarding the division of work between the several trades. Should it appear, however, that these specifications imply that other trades are to perform work which is claimed by any other trades, each Contractor shall notify the Owner's Representative and Architect of such fact when submitting his proposal, indicating the additional amount required to include the work in question in the Base Bid. In the event that no such notification is received prior to an acceptance of the Contractor's Proposal, it will be construed that the specifications imply nothing which is unacceptable to the various trades and no extra payments on this account will be granted to any Contractor during the progress of the job.
- B. Each Contractor shall only employ labor on the project or in connection with its work capable of working harmoniously with all trades, crafts and any other individuals associated with the capital improvement work to be performed. There shall be no strikes, picketing, work stoppages, slowdowns or other disruptive activity at the project for any reason by anyone employed or engaged by the Contractor to perform its portion of the work. There shall be no lockout at the project by the Contractor. The Contractor shall be responsible for providing the manpower required to proceed with the work under any circumstance. Should it become necessary to create a separate entrance for a contractor involved in a labor dispute, all costs associated with creating that entrance shall be borne by the contractor involved in the dispute. Such costs shall include, but not be limited to, signage, fencing, temporary roads and security personnel as deemed necessary by the Owner for the safety of the occupants of the site.
- C. If the Contractor has engaged the services of workers and/or subcontractor who are members of trade unions, the Contractor shall make all necessary arrangements to reconcile, without delay, damage or cost to the Owner and without recourse to the Owner, Owner's Representative, and Architect, any conflict between its agreement with the Owner and any agreements or regulations of any kind at any time in force among members or councils which regulate or distinguish what activities shall not be included in the work of any particular trade.
- D. The Contractor shall ensure that its work continues uninterrupted during the labor dispute and will be liable to the Owner for all damages suffered by the Owner occurring as a result of work stoppages, slowdowns, disputes or strikes

1.7 SUBCONTRACTORS/SUPPLIERS

- A. Submittal of Primary Sub Contractors and Suppliers include but not limited to the following:
 - 1. Construction Contractor:
 - a. Hollow Metal Steel Doors.
 - b. Hollow Metal Door Frames
 - c. Hardware Supplier and Installer.
 - d. Gypsum Wallboard Assemblies
 - e. Acoustical Tile.
 - f. Resilient Flooring
 - g. Ceramic Tile.
 - h. Painting
 - i. Plastic Laminate Casework
- B. Plumbing Contractor:
 - 1. Plumbing equipment/Suppliers.
 - 2. Piping.
 - 3. Insulation
- C. HVAC Contractor:
 - 1. HVAC Equipment/Suppliers.
 - 2. Ductwork.
 - 3. Piping.
 - 4. Insulation
 - 5. ATC.
- D. Electrical Contractor:
 - 1. Conduit and devices.

1.8 DESCRIPTION OF ALTERATIONS WORK

- A. Scope of alterations work is indicated on drawings.
- B. Plumbing: As indicated in Division 22.
- C. HVAC: As indicated in Division 23.
- D. Electrical Power and Lighting: As indicated in Division 26.
- E. Fire Alarm, PA, Smoke Detectors: Testing existing devices.

1.9 OWNER OCCUPANCY

- A. Port Chester-Rye UFSD intends to continue to occupy adjacent portions of the existing building during the entire construction period.
- B. Port Chester-Rye UFSD intends to occupy the Project upon Substantial Completion.
- C. Cooperate with Owner's Representative and Architect to minimize conflict and to facilitate Port Chester-Rye UFSD's operations.

1.10 CONTRACTORS USE OF SITE AND PREMISES

- A. Construction Operations: Limited to areas noted on Drawings.
- B. Arrange use of site and premises to allow:
 - 1. Port Chester-Rye UFSD occupancy.
 - 2. Work by Others.
 - 3. Work by Port Chester-Rye UFSD.
 - 4. Use of site and premises by the public.

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- C. Provide access to and from site as required by law and by Port Chester-Rye UFSD:
 - 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
 - 2. Do not obstruct roadways, sidewalks, or other public ways without permit.
- D. Existing building spaces may not be used for storage unless approved by the Owner's Representative.
- E. Time Restrictions:
- F. Contractors shall comply with Local Noise Ordinance. Work disrupting the community must be performed with the following hours:
 - 1. Monday thru Friday: 8 AM to 8 PM.
 - 2. Weekends/ Holidays: 9 AM to 6 PM.
- G. Construction deliveries shall not occur during the hours of 7:30 AM and 9:00 AM and 2:00 PM and 3:00 PM, when school buses are arriving or leaving the school grounds.
- H. During the entire construction period the Prime Contractors shall have the use of the premises for construction operations, including use of the site as indicated in milestone schedule and work time included in this section.
 - 1. General: Limitations on site usage as well as specific requirements that impact utilization are indicated on the drawings and/or by other contract documents. In addition to these limitations and requirements, the Prime Contractors shall administer allocation of available space equitably among the separate prime or sub and other entities needing access and space, so as to produce the best overall efficiency in performance of the total work of the project. Each Prime Contractor shall schedule deliveries so as to minimize space and time requirements for storage of materials and equipment on site.
 - 2. The Prime Contractors shall limit their use of the premises to the work indicated, so as to allow for Owner occupancy and use by the public during the period when the Owner occupies the building.
 - 3. Prime Contractors shall to maintain clear and unobstructed paths of exit discharge from all existing exits.
 - 4. Driveways and Entrances: Keep driveways and entrances serving the premises clear and available to the Owner, Owner's Representative, Owner's employees, emergency vehicles, and public at all time. Do not use these areas for parking or storage of materials.
 - 5. Lock automotive type vehicles such as passenger cars and trucks and other types of mechanized and motorized construction equipment, when parked and unattended, to prevent unauthorized use. Do not leave such vehicles or equipment unattended with the motor running or the ignition key in place.
- I. Only materials and equipment, which are to be used directly in the work, shall be brought to and stored on the project site by the Contractor. After equipment is no longer required for the work, it shall be promptly removed from the project site. Protection of construction materials and equipment stored at the project site from weather, theft, damage and all other adversity is solely the responsibility of the Contractors.
- J. Do not unreasonably encumber the site with materials or equipment. Confine stockpiling of materials and location of storage sheds to the areas designated by Owner's Representative. If additional storage is necessary obtain and pay for such storage off-site.
- K. The Contractor(s) and any entity for which the Contractor is responsible shall not erect any sign on the Project site without the prior written consent of the Owner's Representative which may be withheld in the sole discretion of the Owner's Representative.
- L. Contractor shall ensure that the work, at all times, is performed in a manner that affords reasonable access, both vehicular and pedestrian, to the site of the work and all adjacent areas. The work shall be performed, to the fullest extent reasonably possible, in such a manner that public areas adjacent to the site of the work

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shall be free from all debris, building materials and equipment likely to cause hazardous conditions. Without limitation of any other provision of the Contract Documents, each contractor shall use its best efforts to minimize any interference with the occupancy or beneficial use of:

1. Any areas and buildings adjacent to the site of the work or;
 2. The Building in the event of partial occupancy as more..
- M. Without prior approval of the Owner's Representative, each Contractor shall not permit any workers to use any existing facilities at the Project site, including, without limitations, lavatories, toilets, entrances and parking areas other than those designated by the Owner's Representative. Without limitation of any other provision of the Contract Documents, the Contractor shall use its best efforts to comply with the rules and regulations promulgated by the Owner's Representative in connection with the use and occupancy of the Project Site, and the Building, as amended from time to time. The Contractor shall immediately notify the Owner's Representative in writing if during the performance of the Work, the Contractor finds compliance with any portion of such rules and regulations to be impracticable, setting forth the problems of such compliance and suggesting alternatives through which the same results intended by such portions of the rules and regulations can be achieved. The Owner's Representative may, in the Owner's Representative's sole discretion, adopt such suggestions, develop new alternatives or require compliance with the existing requirements of the rules and regulations. The Contractor shall also comply with all insurance requirements, applicable to use, and occupancy of the Project Site and the Building.
- N. Maintain the existing building in a safe and weathertight condition throughout the construction period. Repair damage caused by construction operations. Take all precautions necessary to protect the building and its occupants during the construction period. When work is scheduled after hours clean and remove all temporary barriers and protection so that the building can be occupied the following day when normal building occupancy will occur.
- O. Keep public areas such as hallways, stairs, elevator lobbies, and toilet rooms free from accumulation of waste material, rubbish or construction debris.
- P. Smoking, drinking of alcoholic beverages or open fires will not be permitted on the project site.
- Q. Utility Outages and Shutdown:
1. Limit disruptions, shut downs, switch overs, etc. of utility services to hours the building is unoccupied, Saturdays, Sunday and/or holidays.
 2. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers, fire alarm system, electrical, data, and heating system, without 7 days notice to Owner's Representative and Construction Manager and authorities having jurisdiction.
 3. Prevent accidental disruption of utility services to other facilities.

1.11 AVAILABILITY OF EXISTING BUILDING

- A. The existing building work areas will be available to the Contractor(s) as follows:
1. Award of Contract thru Start of Construction:
 - a. 7:00 AM thru 4:30 PM Monday thru Friday .
 2. Start of Construction thru Substantial Completion:
 - a. 7:00 PM **thru 10:30 0 Monday thru Friday** only when programs and school occupancy are not disrupted and with the approval of the Owner's Representative .
- B. Upon request by the Contractor, the building may be made available, at the discretion of the Owner's Representative and at the Cost to the Contractor, during such times as are allowed by local noise ordinance, in addition to the above listed hours. A request for use during these off-regular hours must be made at least two (2) days before the use. Such off-hours may include Saturdays, and Holidays.
1. If the Contractor requests the use of the facility for off-hours to maintain the scheduled completion date, the Contractor shall pay all additional costs in connection with opening, providing security and project management expenses incurred with no costs to the Owner and Owner's

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Representative. All expenses shall be deducted from the Contractors contract price. Comply with other portions of this Section.

2. Weekend, Holiday and Night Work:
 - a. The contractor shall make no claim for delay for the inability of the Owner to make the site available for off-hours work. Should the Owner make the site available during these hours at the contractor's request, the cost will be borne by the Contractor.
- C. ALL CONTRACTORS SHALL BE REQUIRED TO PERFORM SCHEDULED WORK WITHIN THE EXISTING BUILDING ONLY DURING THE TIME PERIODS INDICATED AND SHALL INCLUDE IN THE BID ALL COSTS FOR LABOR, MATERIAL, ETC. INCLUDING PREMIUM TIME TO PERFORM THE WORK, PER PHASE PER TIME PERIOD.

1.12 WORK SEQUENCE

- A. Refer to Section 01 1010 - Milestone Schedule.
- B. COVIS-19
 1. Due to the ongoing COVIS-19 pandemic and the resulting uncertainty with regard to (a) when the Owner's schools will be in session during 2020, (b) what restrictions, if any, will be applicable to construction activities on the Owner's property due to State, Federal or Local orders, laws, regulations or rules related to the COVIS-19 pandemic (including but not limited to social distancing, cleaning and disinfection requirements) and (c) the duration of any restrictions imposed on construction activities, the Owner may modify the construction schedule set forth in the Contract Documents and the Contractor acknowledges and agrees that there shall be no additional compensation paid by the Owner for schedule modifications caused directly or indirectly by the COVIS-19 pandemic. The Contractor further acknowledges and agrees that the sole remedy for any schedule modifications caused directly or indirectly by the COVIS-19 pandemic shall be an extension of time, if warranted.
 2. In the event that due to the ongoing COVID-19 and school continuing to be **not** in session, the facilities will be made available to the Contactor earlier than the proposed schedule; subject to any restrictions imposed by Federal, State or Local laws, regulations and rules. The completion dates will remain unchanged.

1.13 SPECIFICATION SECTIONS APPLICABLE TO ALL CONTRACTS

- A. Unless otherwise noted, **ALL Provisions of Division 00 and 01 listed below apply to all contracts.** Specific items of work listed under individual contract descriptions constitute exceptions.
- B. **DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS**
 - 00 0115 LIST OF DRAWING SHEETS
 - 00 2113 INSTRUCTIONS TO BIDDERS
 - 00 2115 RFI FORM
 - 00 4100 BID FORM – CONTRACT #1 GENERAL CONSTRUCTION CONTRACTOR
 - 00 4110 BID FORM – CONTRACT #2 PLUMBING CONTRACTOR
 - 00 4120 BID FORM – CONTRACT #3 HVAC
 - 00 4130 BID FORM – CONTRACT #4 ELECTRICAL CONTRACTOR
 - 00 4401 QUALIFICATIONS OF BIDDERS
 - 00 4460 CERTIFICATION OF COMPLIANCE WITH THE IRAN DISINVESTMENT ACT
 - 00 4470 DECLARATION OF BIDDER'S INABILITY TO PROVIDE CERTIFICATION OF COMPLIANCE WITH THE IRAN DIVESTMENT ACT.
 - 00 4476 INSURANCE CERTIFICATION
 - 00 5200 FORM OF AGREEMENT
 - 00 6000 BONDS AND CERTIFICATES
 - 00 7200 GENERAL CONDITIONS

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C. DIVISION 01 - GENERAL REQUIREMENTS

- 01 1000 SUMMARY OF CONTRACTS
- 01 1010 MILESTONE SCHEDULE
- 01 2000 PRICE AND PAYMENT PROCEDURES
- 01 2005 PARTIAL RELEASE OF LIEN
- 01 2100 ALLOWANCES
- 01 2500 SUBSTITUTION PROCEDURES
- 01 3000 ADMINISTRATIVE REQUIREMENTS
- 01 3306 NON-DISCRIMINATION CLAUSES
- 01 3307 SED SPECIAL REQUIREMENTS
- 01 3553 SITE SAFETY AND SECURITY PROCEDURES
- 01 3554 PREVAILING WAGE RATES
- 01 4000 QUALITY REQUIREMENTS
- 01 4100 REGULATORY REQUIREMENTS
- 01 4216 DEFINITIONS
- 01 4219 REFERENCE STANDARDS
- 01 4533 SPECIAL INSPECTIONS AND STRUCTURAL TESTING
- 01 5000 TEMPORARY FACILITIES AND CONTROLS
- 01 5213 FIELD OFFICES AND SHEDS
- 01 5500 VEHICULAR ACCESS AND PARKING
- 01 6000 PRODUCT REQUIREMENTS
- 01 6116 VOLATILE ORGANIC COMPOUND (VOC) CONTENT RESTRICTIONS
- 01 7000 EXECUTION
- 01 7419 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL
- 01 7600 PROCEDURES AND SPECIAL CONDITIONS FOR SEPARATE PRIME CONTRACTS
- 01 7800 CLOSEOUT SUBMITTALS
- 01 7900 DEMONSTRATION AND TRAINING

D. APPENDIX

- 1. 155.5 UNIFORM SAFETY STANDARDS FOR SCHOOL CONSTRUCTION AND MAINTENANCE

1.14 CONTRACT #1 - GENERAL CONSTRUCTION

- A. The work of the General Construction Contract includes but not limited to the following:

DIVISION 03 CONCRETE

- 03 5400 CAST UNDERLAYMENT

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

- 06 1000 ROUGH CARPENTRY

DIVISION 07 – THERMAL AND MOISTURE PROTECTION

- 07 8400 FIRESTOPPING
- 07 9200 JOINT SEALANTS

DIVISION 08 OPENINGS

- 08 1113 HOLLOW METAL DOORS AND FRAMES
- 08 3100 ACCESS DOORS AND PANELS
- 08 7100 FINISH HARDWARE

DIVISION 09 FINISHES

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09 2116 GYPSUM BOARD ASSEMBLIES
09 3000 TILING
09 5100 ACOUSTICAL CEILINGS
09 6500 RESILIENT FLOORING
09 9123 INTERIOR PAINTING

DIVISION 10 – SPECIALTIES

10 1100 VISUAL DISPLAY BOARDS
10 1400 SIGNAGE
10 2113 PLASTIC TOILET COMPARTMENTS
10 2800 TOILET AND BATH ACCESSORIES
10 4400 FIRE PROTECTION SPECIALTIES

DIVISION 12 FURNISHINGS

12 2940 ROLLER SHADES
12 3200 PLASTIC LAMINATED CASEWORK
12 3600 SOLID SURFACING COUNTERTOPS

B. Special Notes: Contract #1 - GENERAL CONSTRUCTION

1. Access doors furnished by trade requiring access; installation by General Contractor in new walls, floor, ceiling, etc., Access door required in existing walls, floors, ceilings, etc., shall be furnished and installed by the General Contractor.
2. All existing ceiling removal /replacements necessary to install General Contractor work will be by General Contractor including temporary support for all lighting fixtures, smoke detectors, etc.
3. General Contractor and subcontractors will not be allowed to use existing or new plumbing fixtures to wash out mortar pans, grout, adhesives, etc.
4. All staging area work as indicated on drawings is by General Contractor, except temporary power.
5. General Contractor is responsible to provide negative air machines to ventilate all work areas during tasks involving odors, dust, fumes (epoxy floor, painting, etc.)
6. Temporary partitions and doors shall be removed by the General Contractor at the completion of the work.

1.15 CONTRACT #2 - PLUMBING

A. Work in the Plumbing Contractor Contract #2 includes, but is not limited to, the following:

1. DIVISION 03 - CONCRETE
 - a. 03 5400 CAST UNDERLAYMENT
2. DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES
 - a. 06 1000 ROUGH CARPENTRY
3. DIVISION 07 - THERMAL AND MOISTURE PROTECTION
 - a. 07 8400 FIRESTOPPING
 - b. 07 9200 JOINT SEALANTS
4. DIVISION 22 – PLUMBING
 - a. 22 0100 GENERAL CONDITIONS
 - b. 22 0125 SCOPE OF WORK
 - c. 22 0130 WATER SUPPLY SYSTEM
 - d. 22 0160 SANITARY DRAINAGE SYSTEMS
 - e. 22 0300 PLUMBING FIXTURES AND EQUIPMENT
 - f. 22 0420 SUPPORTS, SLEEVES AND PLATES
 - g. 22 0430 INSULATION
 - h. 22 0470 TESTS AND ADJUSTMENTS

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- i. 22 0480 TAGS, CHARTS AND IDENTIFICATION
- j. 22 0490 GUARANTEE

B. Special Notes: Contract #2 for - PLUMBING CONTRACTOR

1. Any wood blocking for Plumbing Contract, items by Plumbing Contractor.
2. All existing ceiling removal / replacements necessary to install new PC work will be by PC Contractor unless otherwise noted, Includes temporary supports for light fixtures, smoke detectors, etc.
3. Access doors furnished by trade requiring access; installation by General Contractor. in new walls, floor, ceiling, etc.
4. Plumbing Contractor shall install an inflatable ball in all new plumbing fixtures to prevent construction debris or grout from entering sub-slab piping. Ball will be deflated / removed at the conclusion of the project as directed by the Owner' Representative.
5. PC will install sealant around perimeter of all toilet / plumbing fixtures.

1.16 CONTRACT #3 - HVAC

A. Work in the HVAC Contract #3 includes, but is not limited to, the following:

1. DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES
 - a. 06 1000 ROUGH CARPENTRY
2. DIVISION 07 - THERMAL AND MOISTURE PROTECTION
 - a. 07 8400 FIRESTOPPING
 - b. 07 9200 JOINT SEALANTS
3. DIVISION 23 - HVAC
 - a. 23 0100 GENERAL CONDITIONS
 - b. 23 0110 SCOPE OF WORK
 - c. 23 0200 HYDRONIC SPECIALTIES
 - d. 23 0235 ENERGY RECOVERY VENTILATORS
 - e. 23 0240 CONDENSING UNITS
 - f. 23 0310 HOT WATER CABINET HEATERS
 - g. 23 0330 CONVECTORS
 - h. 23 0340 FIN TUBE RADIATION
 - i. 23 0400 SHEETMETAL WORK AND RELATED ACCESSORIES
 - j. 23 0410 PIPING, FITTINGS, VALVES AND NOTES (HOT WATER)
 - k. 23 0420 SUPPORTS, SLEEVES AND PLATES
 - l. 23 0430 INSULATION AND COVERINGS
 - m. 23 0440 DAMPERS AND MISCELLANEOUS
 - n. 23 0460 AUTOMATIC TEMPERATURE CONTROLS
 - o. 23 0470 TESTING, START-UP AND ADJUSTMENTS
 - p. 23 0480 GENERAL LABELING, VALVE CHARTS AND PIPING IDENTIFICATION
 - q. 23 0490 GUARANTEE

B. Special Notes: Contract #3 - HVAC CONTRACTOR

1. Any wood blocking for HVAC Contract items by HVAC Contractor.
2. All existing ceiling removal / replacements necessary to install new HVAC Contract work will be by HVAC Contractor unless otherwise noted. Temporary supports for items to remain shall be by the HVAC Contractor.
3. Access doors furnished by trade requiring access; installation by General Contractor in new walls, floor, ceiling, etc.

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4. Disconnects, Motor starters, etc. supplied by HVAC Contractor shall be installed by Electrical Contractor, unless noted otherwise.
5. If new mechanical units are too large to fit through existing doorways the mechanical contractor will either disassemble equipment into sections, or remove masonry to enlarge opening and reconstruct to match (at no additional costs to Owner). HVAC Contractor shall notify Owner's representative of proposed removals prior to removal. Owner's representative and Architect shall review for structural and other concerns. Removals shall not proceed without Owner's representative and Architect prior review and written approval. HVAC Contractor shall be responsible for all additional costs incurred by the Architect review including structural analysis.
6. Any interior and exterior grilles or wall louvers for mechanical items are by HVAC Contractor including opening, lintels, caulking, etc.

1.17 CONTRACT #4 - ELECTRICAL CONTRACTOR

A. Work in the Electrical Contract #4 includes, but is not limited to, the following:

1. DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES
 - a. 06 1000 ROUGH CARPENTRY
2. DIVISION 07 - THERMAL AND MOISTURE PROTECTION
 - a. 07 8400 FIRESTOPPING
 - b. 07 9200 JOINT SEALANTS
3. DIVISION 26 - ELECTRICAL
 - a. 26 0100 GENERAL CONDITIONS
 - b. 26 0125 SCOPE OF WORK
 - c. 26 0150 APPROVED MANUFACTURERS
 - d. 26 0200 CONDUIT
 - e. 26 0300 WIRE AND CABLE
 - f. 26 0320 OVERCURRENT PROTECTIVE DEVICES
 - g. 26 0350 BOXES
 - h. 26 0400 WIRING DEVICES
 - i. 26 0450 CABINETS AND ENCLOSURES
 - j. 26 0500 SUPPORTING DEVICES
 - k. 26 0550 GENERAL LABELING AND IDENTIFICATION
 - l. 26 0600 DISCONNECT SWITCHES
 - m. 26 0650 GROUNDING
 - n. 26 0800 ADDRESSABLE FIRE PROTECTIVE SIGNALING SYSTEM
 - o. 26 0900 GUARANTEE

B. Special notes: Contract #4 - ELECTRICAL CONTRACT

1. VFD's, disconnects, motor starters which are supplied by Mechanical Contractor will be installed by Electrical Contractor unless noted otherwise.
2. All existing ceiling removal / replacement necessary to install new electrical work to be by the Electrical unless otherwise noted. Temporary supports for light fixtures, smoke detectors, etc. to remain shall be by the Electrical Contractor.
3. Access doors furnished by trade requiring access; installation by for General Contractor. in new walls, floor, ceiling, etc..
4. If the electrical switchgear, panels are too large to fit through existing openings, Electrical Contractor will remove masonry to enlarge the opening and reconstruction to match (at no additional cost to Owner). EC shall notify Owner's representative of proposed removals prior to removal. Owner, Owner's representative, and Architect shall review for structural and other concerns. Removals shall not proceed without Owner's representative prior review and written

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approval. EC shall be responsible for all additional costs incurred by the Owner's representative and Architect review including structural analysis.

5. Any wood blocking or panel backboards for electrical items by Electrical Contractor.
6. Electric Contractor will tie up and secure with zip ties or J hooks, 5' oc, any existing cabling or wiring which sags below ceiling after any ceiling removals.
7. Temporary power if required. Refer to Section 01 5000 - Temporary Facilities and Controls.
8. Electrical Contractor shall firestop electrical back boxes, where required, in fire rate partitions as per detail.

END OF SECTION

**SECTION 01 1010
MILESTONE SCHEDULE**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Milestone Construction schedule for project durations and phases, all contracts.
- B. Related Sections include the following:
 - 1. Section 01 1000 - Summary of Contracts for work related to each Prime Contract.
 - 2. Section 01 3000 - Administrative Requirements for administrative requirements governing preparation and submittal of Prime Contractors' Construction Schedule.
 - 3. Section 01 7800 - Closeout Submittals.

1.3 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
- B. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.
- C. Predecessor activity is an activity that must be completed before a given activity can be started.
- D. Critical Path: The longest continuous chain of activities through the network schedule that establishes the minimum overall Project duration.
- E. Event: The starting or ending point of an activity.
- F. Milestone: A key or critical point in time for reference or measurement.

1.4 REGULATORY REQUIREMENTS

- A. Refer to Section 01 3553 - Site Safety and Security Procedures for additional requirements..
- B. All contractors and their subcontractor's project superintendent, employees, directly or indirectly employed by the contractor to work on the project must at all times, whenever on the school property, wear an ID, safety vest, hard hat, etc. and all other required personal protective equipment as required by OSHA and Section .
- C. Failure to abide by the aforementioned rules in paragraph (B) not limited to the Owner's requirements, and OSHA' safety rules and regulations, and without prior notice shall result in the removal of said individual from the site

1.5 MILESTONE SCHEDULE PREPARATION

- A. A Master Schedule will be developed as indicated in Section 01 3000 Administrative Requirements within 10 days of Letter of Intent or Award of the Contracts. Each Prime Contractor will coordinate activities, forward submittals, deliver materials and provide necessary manpower to meet the milestones listed in the Schedule attached to this section..

1.6 REQUIREMENTS

- A. By submitting his/her bid the each Prime Contractor acknowledges and certify that the project will be completed by the Substantial Completion date.

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PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

3.1 MILESTONE SCHEDULE

- A. Building Hours: Refer to Section 01 1000 - Summary of Contracts.

3.2 MILESTONE SCHEDULE

- A. Refer to 01 1010 - Milestone Schedule attached to this section
- B. All work required by the Owner's Representative and Fuller and D'Angelo, P.C. etc, to execute final close-out of the contract after 30 days beyond Milestone dates, if determined to be caused by Contractor, shall result in additional payment(s) to the Fuller and D'Angelo, P.C., Consultant, and Attorneys etc. in the form of a change order deduct to the base contract.

3.3 PART 3 EXECUTION (NOT USED)

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MILESTONE SCHEDULE – PORT CHESTER FLOOD REPAIR AND RELATED WORK

TASK	DURATION	FINISH DATE
OWNER AWARD		11/15/2021
PREPARATION OF CONTRACT	5 DAYS	11/22/2021
CONTRACTOR PREP. OF CONTRACT	10 DAYS	12/06/2021
TEMPORARY FACILITIES	5 DAYS	12/10/2021
START OF CONSTRUCTION GC, P, HVAC & E		12/13/2021
SUBMITTAL LOG AND SCHEDULE	5 DAYS	12/10/2021
SHOP DRAWING SUBMISSIONS:		
Critical long lead Items	10 DAYS	12/20/2021
Non-Critical Shop drawings	20 DAYS	1/3/2022
Critical fabrication & Delivery Dated	TBD	TBD
SUBSTANTIAL COMPLETION		
GC	1	3/21/2022
P	1	3/21/2022
H	1	3/21/2022
E	1	3/21/2022
PUNCH LIST BY ARCHITECT & CONSULT.	2	3/24/2022
PUNCH LIST COMPLETION :		
GC	4	3/25/2022
P	4	3/25/2022
H	4	3/25/2022
E	4	3/25/2022
OWNER OCCUPANCY	0	3/28/2022
CLOSEOUT:		

END OF SECTION

SECTION 01 2000
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Procedures for preparation and submittal of applications for progress payments.
- B. Change procedures.
- C. Procedures for preparation and submittal of application for payments.

1.3 RELATED REQUIREMENTS

- A. Section 00 5200 - Form of Agreement: Contract Sum, retainages, payment period.
- B. Section 00 6000 - Bonds and Certificates.
- C. Section 00 7200 - General Conditions: Requirements for progress payments, final payment, changes in the Work.
- D. Section 01 7800 - Closeout Submittals for additional requirements for Final Payment.
- E. Section 01 2100 - Allowances: Payment procedures relating to allowances.
- F. Section 01 7800 - Closeout Submittals: Closeout requirements, final payment and project record documents.

1.4 SCHEDULE OF VALUES

- A. Use Schedule of Values Form: AIA G703, edition stipulated in the Agreement.
- B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Fuller and D'Angelo P.C. for approval.
- C. Forms filled out by hand will not be accepted.
- D. Submit Schedule of Values in PDF Format within 10 days after date Letter of Award.
- E. Format: Utilize the Table of Contents of the Project Manual. Identify each line item with number and title of the specification Section.
 - 1. Include in each line item, the amount of each of the following:
 - a. Provide a separate line item for the following: (where applicable)
 - a) Payment and Performance Bond, OCP Insurance, Unit Cost Allowance for each allowance, Alternates, Change Orders, and Sub-Contractors
 - b) Labor and materials, when payment is anticipated for material not installed
 - c) Submittals. 1% Minimum of contract amount
 - d) Meeting attendance. (2% Minimum of contract amount)
 - e) As-built Drawings (2% Minimum of contract amount)
 - f) Testing, HVAC balancing reports. Minimum 1.0% of contract amount.
 - g) Punch List (1% Minimum of contract amount).
 - h) Final Cleaning
 - i) Closeout Documents (5% Minimum of contract amount)
- F. Revise schedule to list approved Change Orders, with each Application For Payment.
- G. Sub-schedules: Where the Work is separated into phases, buildings, existing building, floors, or areas provide separate payment applications, or provide sub-schedules showing values correlated with each phase, existing building, floor, area, or school.

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1. For public school projects identify each application with the SED Project number and Fuller and D'Angelo's project number for **each building**.

1.5 APPLICATIONS FOR PROGRESS PAYMENTS

- A. Refer to
- B. For each item, provide a column for listing each of the following:
 1. Item Number.
 2. Description of work.
 3. Scheduled Value.
 4. Previous Applications.
 5. Work in Place and Stored Materials under this Application.
 6. Authorized Change Orders.
 7. Total Completed and Stored to Date of Application.
 8. Percentage of Completion.
 9. Balance to Finish.
 10. Retainage.
- C. Execute certification by signature of authorized officer.
- D. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.
- E. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of work.
- F. Submit one (1) electronic "pencil copy", in PDF format, of each Application for Payment to Fuller and D'Angelo, P.C. for approval.
- G. After Architect's approval of the "pencil copy" submit three hard copies of approved Application for Payment to Fuller and D'Angelo, P.C..
- H. Include the following with each application:
 1. Transmittal letter as specified for submittals in Section 01 3000.
 2. **Construction progress schedule, revised and current as specified in Section 01 3000.**
 3. Partial Waivers of Mechanic's Lien: With each Application for Payment, submit partial waivers of mechanic's liens from contractor, subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.
 - a. Waiver Forms: Submit waivers of lien on forms, provided by the Architect in Section 01 2005.
 4. When an application shows completion of an item, submit final or full waivers.
 5. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 6. Submit Final Application for Payment with or preceded by final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
 7. Certified Payrolls: All Applications for Payment must be accompanied with certified payrolls for all Contract Work performed. **Each contractor and sub-contractor shall submit to the Owner within thirty days after issuance of its first payroll, and every thirty days thereafter**, a transcript of the original payroll record subscribed and affirmed as true under penalties of perjury. The Owners shall be required to receive and maintain such payroll records. The original payrolls or transcripts shall be preserved for three years from the completion of the work on the awarded project.

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- a. Submit certification that all personnel listed on certified payrolls have successfully completed an OSHA construction safety and health course of at least 10 hours prior to performing any work on the project. Certification shall be within the last five (5) years.
- I. Liens: No Payment will be made when a lien is filed against Owner by contractor or any subcontractor, or supplier or other entities until such lien is removed, bonded or similar action acceptable to the Owner
- J. Project record documents as specified in Section 01 7800 - Closeout Submittals, shall be available for review by Fuller and D'Angelo, P.C., Construction Manager, and Owner's Representative as a prerequisite for approval of payment.
- K. Payment for stored materials (whether on-site but not installed, or stored in secured warehouse) will require a bill of lading showing the exact value. In no case will more than 90% be approved if the item is not installed. Insurance certificates will be provided specific to materials stored (for on-site or offsite items).
- L. When Owner's Representative and Fuller and D'Angelo, P.C. requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.
- M. The Owner shall retain Five (5) percent of the amount of each payment.

1.6 INITIAL APPLICATION FOR PAYMENT:

- A. Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
 - 1. Executed contract.
 - 2. Approved bonds.
 - 3. Approved insurance certificates.
 - 4. Names of full time project manager, on site superintendent, and foreman.
 - 5. List of suppliers and fabricators: .
 - 6. List of subcontractors: .
 - 7. Approved Schedule of Values.
 - 8. Contractor's Construction Schedule (preliminary if not final).
 - 9. Contractor's Submittal Schedule.
 - 10. Products list.

1.7 APPLICATION FOR PAYMENT AT SUBSTANTIAL COMPLETION

- A. Comply with Requirements of Section 01 7800 - Closeout Submittals.

1.8 MODIFICATION PROCEDURES

- A. Refer to AIA 201 Article 7 of the General Conditions for additional requirements
- B. Submit name of the individual authorized to receive change documents and who will be responsible for informing others in Contractor's employ, subcontractors and other Prime Contractors whose work is affected by any modifications or changes to the Contract Documents
- C. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Owner's Representative will issue instructions directly to the contractor.
- D. For other required changes, Fuller and D'Angelo. will issue a document signed by Owner's Representative and Fuller and D'Angelo instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
 - 1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
 - 2. Promptly execute the change.
 - 3. Refer to the General Conditions AIA 201 Article 7.3 for additional information.

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- E. Owner's Representative and Fuller and D'Angelo may issue a document which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change . The Contractor shall prepare and submit a fixed price quotation within five (5) days.
- F. Contractor may propose a change by submitting a request for change to Owner's Representative and Fuller and D'Angelo, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors.
- G. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
 - 1. Refer to AIA 201 Article 7.
 - 2. For change requested by Owner's Representative and Fuller and D'Angelo for work falling under a fixed price contract, the amount will be based on Contractors 's price quotation.
 - 3. For change requested by the contractor, the amount will be based on the Contractor 's request for a Change Order as approved by Owner's Representative and Fuller and D'Angelo.
 - 4. For pre-determined unit prices, unit costs, allowance and quantities, the amount will based on the fixed unit costs or allowance.
 - 5. For change ordered by Owner's Representative and Fuller and D'Angelo without a quotation from, the amount will be determined by Owner's Representative and Construction Manager based on the Contractor's substantiation of costs as specified for Time and Material work.
- H. Substantiation of Costs: Provide full information required for evaluation.
 - 1. On request, provide the following data:
 - a. Quantities of products, labor, and equipment.
 - b. Taxes, insurance, and bonds.
 - c. Overhead and profit.
 - d. Justification for any change in Contract Time.
 - e. Credit for deletions from Contract, similarly documented.
 - 2. Support each claim for additional costs with additional information:
 - a. Origin and date of claim.
 - b. Dates and times work was performed, and by whom.
 - c. Time records and wage rates paid.
 - d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
 - 3. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.
 - a. If the contractor is directed to perform work on a "Time and Material" basis he will notify the Owner's Representative prior to starting and will present an itemized T&M sheet daily for Owner's Representative signature at the end of the shift. No payments will be made for any T&M work without daily signed worksheets.
- I. Execution of Change Orders: Fuller and D'Angelo will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
- J. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.
- K. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
- L. Promptly enter changes in Project Record Documents.

1.9 APPLICATIONS FOR PAYMENT WHEN BEHIND SCHEDULE

- A. When the project falls behind schedule the contractor shall demonstrate the actions to be taken to put the project back on schedule.
 - 1. Payments will not be approved until satisfactory evidence is presented to put the project on schedule.

1.10 APPLICATION FOR PAYMENT AFTER SCHEDULED COMPLETION DATE

- A. In the event the work is not completed by the schedule date, listed in Section 01 1010 Milestone Schedules and in addition to the other remedies described, the Architect will not review progress payment requisitions submitted after the construction completion date, and the District will not issue any progress payments after that date, until all work is completed.
 - 1. Only one requisition for work performed, after the construction completion date, may be submitted, and it may be submitted only when all work is complete and a Punch List inspection is conducted; said requisition may be submitted when the work is 100% complete, less 5% retainage.

1.11 APPLICATION FOR FINAL PAYMENT

- A. Comply with Section 01 7800 - Closeout Submittals.
- B. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- C. Application for Final Payment will not be considered until the following have been accomplished:
 - 1. All closeout procedures specified in Section 01 7800 - Closeout Submittals are submitted and approved.
 - 2. All "punch list" items have been completed.
- D. It is understood by the Contractor that the maximum payment due the contractor prior to final payment shall be Ninety (95%) of the Contract amount and the final Five (5%) will be due only after the above is satisfied.

END OF SECTION

**SECTION 01 2005
PARTIAL RELEASE OF LIEN**

CONTRACTOR/SUBCONTRACTOR/VENDOR'S LETTERHEAD

Name of Facility: Flood Repairs and Related Work

Name of Owner: Port Chester-Rye UFSD

Address: Port Chester, NY 10573

Name of the Contractor/Subcontractor/Vendor: _____

Address: _____

Trade/Vendor: _____

Application # _____ Dated _____.

We certify that we have completed _____ % of our Contract.

Prior to this requisition we have received payment equal to _____ % of our contract amount.

The undersigned, upon receipt of the above requisition payment hereby releases and discharges the Owner of and from any liability or obligation in any way related to or arising out of this project up to and including the date of this document.

The undersigned further covenants and agrees that it shall not in any way claim or file a mechanic's or other lien against the premises of the above designated project, or any part thereof, or against any fund applicable thereto for any of the work, labor, materials heretofore furnished by it in connection with the improvement of said premises.

The undersigned further warrants that, in order to induce the Owner to release this partial payment, they have paid all claims for labor, material, insurance, taxes, equipment, etc., employed in the prosecution of the work above, to date of this requisition.

The undersigned hereby releases and agrees to hold the Owner harmless from any and all claims in connection with the furnishing of such labor and materials, etc., for the construction of the aforementioned project.

The undersigned further guarantees that all portions of the work furnished and/or provided by them are in accordance with the contract and that the terms of the contract with respect to these guarantees will hold for the period specified in said contract.

IN WITNESS WHEREOF, we have executed under seal this release on the above date and to be legally bound hereby:

WITNESS: _____ FIRM: _____

BY: _____

State of New York, County of _____ subscribed and sworn to before me this ____ day of
____ 202 ____

Notary public

My commission expires _____

END OF SECTION

**SECTION 01 2100
ALLOWANCES**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. This Section includes administrative and procedural requirements governing allowances.
- B. Selected materials and equipment are specified in the Contract Documents by allowances. The allowances may include removals and/or installation.
- C. Total allowances shall be included in the base bid proposal. The final contract sum will be adjusted by Change Order. The following allowances may include:
 - 1. Cash allowances.
 - 2. Unit Cost Allowance.
 - 3. Special Commissioning Allowance
 - 4. Payment and modification procedures relating to allowances.

1.3 RELATED REQUIREMENTS

- A. Section 01 2000 - Price and Payment Procedures: Additional payment and modification procedures.

1.4 PAYMENTS FOR ALLOWANCES

- A. Allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts.
 - 1. **Bond, Overhead and Profit will be included in Base Bid for all Allowances.**
- B. Cash Allowance: Contractor's costs for products, delivery, installation, labor, insurance, payroll, taxes, equipment rental, will be included in Change Orders authorizing expenditure of funds from the Cash Allowance and **shall be determined in accordance with Article 7 of the General Conditions.**
 - 1. Cost of product to Contractor or subcontractor, less applicable trade discounts, less applicable taxes.
- C. Unit Cost Allowance: The Total amount for each unit cost allowance listed in this Section 01 2100.
 - 1. The Total Unit Cost Allowance is to be included in the Bid Proposal. The allowance tabulation sheet in this section shall be submitted with the bid proposal.
 - 2. Unit Cost Allowance: Includes Contractor's costs for measurement for materials and services, material, unloading, handling, installation, and other expenses contemplated for the stated unit cost allowance, shall be included in each Unit Cost Allowance.
 - a. Quantities indicated are for bidding and contract purposes only. Quantities and measurements of actual Work will determine the payment amount and adjusted by appropriate Change Order.
 - b. Measurement methods delineated in the individual specification sections complement the criteria of this section. In the event of conflict, the requirements of the individual specification section govern.
 - a) Contractor shall assist by providing necessary equipment, workers, and survey personnel as required.
 - c. Payment for Work governed by Unit Cost Allowances will be made on the basis of the actual measurements and quantities of Work which is incorporated in or made necessary by the Work and accepted by the Owner's Representative multiplied by the unit sum/price.
 - d. The Unit Cost Allowance shall be applicable to quantities not to exceed twenty (20%) percent of the quantities listed. Quantities above those listed shall be determined in accordance with Article 7 of the General Conditions.

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- e. Payment will not be made for any of the following:
 - a) Work performed prior to measurement and establishing quantities approved by Owner or Architect.
 - b) Products wasted or disposed of in a manner that is not acceptable.
 - c) Products determined as unacceptable before or after placement.
 - d) Products not completely unloaded from the transporting vehicle.
 - e) Products placed beyond the lines and levels of the required Work.
 - f) Loading, hauling, and disposing of rejected products.
 - f. At closeout of Contract, funds remaining in Unit Cost Allowance will be credited to Owner by Change Order.
- D. Inspection, Testing, Environmental Monitoring and Commissioning Allowances: Contractor's costs for their work described in Section 01 9113 General Commissioning Requirements and Section 01 1400 Quality Requirements. **Bonds, overhead and profit shall be included in the Base Bid and not in the Allowances.**
- E. The Contract Sum for all allowances shall be adjusted accordingly by Change Order.
- F. Payment will not be made for any of the following: (If applicable)
- 1. **Work performed prior to measurement and establishing quantities.**
 - 2. Products waste not used or disposed of off site.
 - 3. Products determined as unacceptable before or after placement.
 - 4. Products not completely unloaded from the transporting vehicle.
 - 5. Products performed or placed beyond the lines and levels of the required Work.
 - 6. Products remaining on hand after completion of the Work.
 - 7. Loading, hauling, and disposing of rejected Products.
- G. At closeout of Contract, funds remaining in Cash Allowance will be credited to Owner by Change Order.

1.5 ALLOWANCE RESPONSIBILITY

- A. Cash Allowances:
- 1. Costs Included in Cash Allowances: Cost of product to Contractor or subcontractor, less applicable trade discounts, less applicable taxes.
 - 2. Owner's Representative and Architect Responsibilities:
 - a. Consult with Owner's Representative and Architect, for consideration and selection of products, suppliers, and installers.
 - b. Select products in consultation with Port Chester-Rye UFSD and transmit decision to Contractor.
 - c. Prepare Change Order.
 - 3. Contractor Responsibilities: (To be included in the Contract Sum but not in the allowances.)
 - a. Assist Owner's Representative and Architect in selection of products, suppliers, and installers.
 - b. Obtain proposals from suppliers and installers and offer recommendations.
 - c. On notification of which products have been selected, execute purchase agreement with designated supplier and installer.
 - d. Arrange for and process shop drawings, product data, and samples. Arrange for delivery.
 - e. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for transportation damage.
 - 4. Differences in costs will be adjusted by Change Order.

1.6 ALLOWANCES SCHEDULE

- A. **CONTRACT #1 - GENERAL CONSTRUCTION CONTRACTOR**

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1. ALLOWANCES

- a. Cash Allowance CAGC-1 : Include a Cash Allowance for use according to the Owner's instructions.
Twenty Five _____ (\$25,000.00) DOLLARS
- b. Unit Cost Allowance ALLOW-GC-1
a) Description: Replacement of existing
b) Unit of Measurement: Linear feet
c) Quantity: 25 Linear feet .
25 LF @ _____ per LF
_____ (\$ _____) DOLLARS
- c. Unit Cost Allowance ALLOW-GC-2
a) Description: Metal Furring 1-1/2" studs @ 16" o.c.
b) Unit of Measurement: Linear feet
c) Quantity: 50 Linear Feet .
50 Linear Feet @ _____ per LF
_____ (\$ _____) DOLLARS
- d. Unit Cost Allowance ALLOW-GC-3
a) Description: Metal Stud Framing 3 5/8" studs at 16" o.c.
b) Unit of Measure: Linear Feet
c) Quantity: 100 Linear Feet .
200 Linear Feet @ _____ per LF
_____ (\$ _____) DOLLARS

TOTAL ALLOWANCES CONTRACT #1 GENERAL CONSTRUCTION

_____ (\$ _____) DOLLARS

(Sum of 1.9.A.1.a, 1.9.A.1.b, 1.9.A.1.c, and 1.9.A.1.d to be inserted on bid form). Section 01 2100
- Allowances to be submitted with bid.

B. CONTRACT #2 - PLUMBING CONTRACTOR

1. ALLOWANCES

- a. Cash Allowance CA-P-1: Include an allowance for use according to the Owner's instructions.
Five Thousand _____ (\$5,000.00) DOLLARS
- b. Unit Cost Allowance ALLOW-P-1
a) Description: Pipe Insulation for 1/2" up to 1" pipe
b) Unit of Measurement: Linear Feet
c) Quantity: 25 Linear Feet .
25 Linear Feet @ _____ per section
_____ (\$ _____) DOLLARS
- c. Unit Cost Allowance ALLOW-P-2
a) Description: Pipe Insulation for 1-1/4 up to 2" pipe
b) Unit of Measurement: Linear Feet
c) Quantity: 25 linear Feet .
_____ @ _____ per section
_____ (\$ _____) DOLLARS

TOTAL ALLOWANCES CONTRACT #2 - PLUMBING CONTRACTOR

_____ (\$ _____) DOLLARS

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(Sum of 1.9.B.1.a. to be included on bid form) Section 01 2100 - Allowances.

C. CONTRACT #3 - HVAC CONTRACTOR

1. ALLOWANCES

- a. Cash Allowance CA-H-1: Include an allowance for use according to the Owner's instructions.

Fifteen Thousand _____ (\$15,000.00) DOLLARS

TOTAL ALLOWANCES CONTRACT #3 - HVAC CONTRACTOR

Fifteen Thousand _____ (\$15,000.00) DOLLARS

(Sum of 1.9.C.1.a. to be included on bid form) Section 01 2100 - Allowances.

D. CONTRACT #4 - - ELECTRICAL CONTRACTOR

1. ALLOWANCES

- a. Cash Allowance CA-E-1: Include an allowance for use according to the Owner's instructions.

Fifteen Thousand _____ (\$15,000.00) DOLLARS

TOTAL ALLOWANCE CONTRACT #4 ELECTRICAL

Fifteen Thousand _____ (\$15,000.00) DOLLARS

(Sum of 1.9.D.1.a. to be inserted on bid form). Section 01 2100 - Allowances to be submitted with bid.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 2500
SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Procedural requirements for proposed substitutions.

1.3 RELATED REQUIREMENTS

- A. Section 00 2113 - Instructions to Bidders: Restrictions on timing of substitution requests.
- B. Section 01 2100 - Allowances, for cash allowances affecting this section.
- C. Section 01 2300 - Alternates, for product alternatives affecting this section.
- D. Section 01 3000 - Administrative Requirements: Submittal procedures, coordination.
- E. Section 01 6000 - Product Requirements: Fundamental product requirements, product options, delivery, storage, and handling and restrictions on timing of substitution requests.
- F. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions: Restrictions on emissions of indoor substitute products.

1.4 DEFINITIONS

- A. Substitutions: Changes from Contract Documents requirements proposed by Contractor to materials, products, assemblies, and equipment.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

- A. A Substitution Request for products, assemblies, materials, and equipment constitutes a representation that the submitter:
 - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product, equipment, assembly, or system.
 - 2. Agrees to provide the same warranty for the substitution as for the specified product.
 - 3. Agrees to provide same or equivalent maintenance service and source of replacement parts, as applicable.
 - 4. Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to Port Chester-Rye UFSD.
 - 5. Waives claims for additional costs or time extension that may subsequently become apparent.
 - 6. Agrees to reimburse Architect and Construction Manager for review or redesign services associated with re-approval by authorities.
 - 7. Statement indicating why specified material or product cannot be provided.
 - 8. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
 - 9. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - 10. Samples, where applicable or requested.
 - 11. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.

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12. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 13. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
 14. 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 lack of availability or delays in delivery.
 15. Cost information, including a proposal of change, if any, in the Contract Sum.
 16. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
 17. 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.
- B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.
1. Note explicitly any non-compliant characteristics.
- C. Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.
1. Contractor's Substitution Request documentation must include the following:
 - a. Project Information:
 - a) Official project name and number, and any additional required identifiers established in Contract Documents.
 - b. Substitution Request Information:
 - a) Discrete and consecutive Substitution Request number, and descriptive subject/title.
 - b) Indication of whether the substitution is for cause or convenience.
 - c) Issue date.
 - d) Reference to particular Contract Document(s) specification section number, title, and article/paragraph(s).
 - e) Description of Substitution.
 - f) Reason why the specified item cannot be provided.
 - g) Differences between proposed substitution and specified item.
 - h) Description of how proposed substitution affects other parts of work.
 - c. Attached Comparative Data: Provide point-by-point, side-by-side comparison addressing essential attributes specified, as appropriate and relevant for the item:
 - a) Physical characteristics.
 - b) In-service performance.
 - c) Expected durability.
 - d) Visual effect.
 - e) Sustainable design features.
 - f) Warranties.
 - g) Other salient features and requirements.
 - h) Include, as appropriate or requested, the following types of documentation:
 - (a) Product Data:
 - (b) Samples: Provide full size actual sample of item proposed for substitution. Sample shall be provided, without exception, even if the originally specified item did not require a sample.
 - (c) Certificates, test, reports or similar qualification data.

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- (d) Drawings, when required to show impact on adjacent construction elements.
- d. Impact of Substitution:
 - a) Savings to Port Chester-Rye UFSD for accepting substitution.
 - b) Change to Contract Time due to accepting substitution.
- D. Limit each request to a single proposed substitution item.
 - 1. Submit an electronic document, combining the request form with supporting data into single document.
 - 2. Deliver sample to Architect.

3.2 SUBSTITUTION PROCEDURES AFTER AWARD OF CONTRACT

- A. Submittal Form:
 - 1. Submit substitution requests by completing the form attached to this section. See this section for additional information and instructions. Use only this form; other forms of submission are unacceptable.
- B. Architect will consider requests for substitutions only within 5 days after date of Agreement.
- C. Substitutions will not be considered under one or more of the following circumstances:
 - 1. When they are indicated or implied on shop drawing or product data submittals, without having received prior approval.
 - 2. Without a separate written request.
 - 3. When acceptance will require revisions to Contract Documents.

3.3 RESOLUTION

- A. Architect may request additional information and documentation prior to rendering a decision. Provide this data in an expeditious manner.
- B. Architect will notify Contractor in writing of decision to accept or reject request.

3.4 ACCEPTANCE

- A. Accepted substitutions change the work of the Project. They will be documented and incorporated into work of the project by Change Order, Construction Change Directive, Architectural Supplementary Instructions, or similar instruments provided for in the Conditions of the Contract.

3.5 CLOSEOUT ACTIVITIES

- A. See Section 01 7800 - Closeout Submittals, for closeout submittals.
- B. Include completed Substitution Request Forms as part of the Project record. Include both approved and rejected Requests.

3.6 ATTACHMENTS

- A. A facsimile of the Substitution Request Form (During Construction) required to be used on the Project is included after this section.

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SUBSTITUTION REQUEST FORM

SUBSTITUTION REQUEST No. _____

(After the Bidding Phase)

Project: Flood Repairs and Related Work

Substitution Request Number: _____

From: _____

Date: _____

A/E Project Number: 21444.01

Contract For: _____

Specification Title: _____ Description: _____

Section: _____ Page: _____ Article/Paragraph: _____

Proposed Substitution:

Manufacturer: _____ Address: _____ Phone: _____

model no.: _____

Installer: _____ Address: _____ Phone: _____

History: _____ New product _____ 2-5 years old _____ 5-10 yrs old _____ More than 10 years old

Differences between proposed substitution and specified product:

Point-by-point comparative data attached - REQUIRED

Reason for not providing specified item: _____

Similar Installation:

Project: _____ Architect: _____

Address: _____ Owner: _____

Date Installed: _____

Proposed substitution affects other parts of Work: ____ No ____ Yes; explain

Savings to Owner for accepting substitution: _____ (\$ _____)

Proposed substitution changes Contract Time: ____ No ____ Yes Add _____ Deduct _____ days.

Supporting Data Attached: ____ Drawings ____ Product Data ____ Samples ____ Tests Reports

The Undersigned certifies:

Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.

Same warranty will be furnished for proposed substitution as for specified product.

Same maintenance service and source of replacement parts, as applicable, is available.

Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.

Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.

Proposed substitution does not affect dimensions and functional clearances.

Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

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Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by: _____

Signed by: _____

Firm: _____

Address: _____

Telephone: _____

Attachments:

A/E's REVIEW AND ACTION

____ Substitution approved - Make submittals in accordance with Specification Section 01330

____ Substitution approved as noted - Make submittals in accordance with Specification Section 01330.

____ Substitution rejected - Use specified materials.

____ Substitution Request received too late - Use specified materials.

: _____ Date: _____

Additional Comments: __ Contractor __ Subcontractor __ Supplier __ Manufacturer __ A/E

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FLOOD REPAIRS AND RELATED WORK
SUBSTITUTION PROCEDURES

END OF SECTION

SECTION 01 3000
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. General administrative requirements.
- B. Preconstruction meeting.
- C. Progress meetings.
- D. Construction progress schedule.
- E. Contractor's daily reports.
- F. Submittals for review and information.
- G. Number of copies of submittals.
- H. Requests for Interpretation (RFI) procedures.
- I. Submittal procedures.

1.3 RELATED REQUIREMENTS

- A. Section 00 7200 - General Conditions: Dates for applications for payment.
- B. Section 01 1000 - Summary of Contracts: , Work covered by each contract occupancy, .
- C. Section 01 1010 - Milestone Schedule.
- D. Section 01 6000 - Product Requirements: General product requirements.
- E. Section 01 3553 - Site Safety and Security Procedures.
- F. Section 01 5000 - Temporary Facilities and Controls.
- G. Section 01 7000 - Execution: Additional coordination requirements.
- H. Section 01 7800 - Closeout Submittals.

1.4 REFERENCE STANDARDS

- A. See Section 01 4219 - Reference Standards.

1.5 GENERAL ADMINISTRATIVE REQUIREMENTS

- A. Comply with requirements of Section 01 7000 - Execution for coordination of execution of administrative tasks with timing of construction activities.
- B. Make the following types of submittals to Architect:
 - 1. Requests for Interpretation (RFI).
 - 2. Requests for substitution.
 - 3. Shop drawings, product data, and samples.
 - 4. Test and inspection reports.
 - 5. Manufacturer's instructions and field reports.
 - 6. Applications for payment and change order requests.
 - 7. Progress schedules.
 - 8. Correction Punch List and Final Correction Punch List for Substantial Completion.
 - 9. Closeout submittals.

1.6 PROJECT COORDINATION

- A. Owner's Representative: Owner's Representative: Ray Renda, Director of Facilities.

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1. Where necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings. Prepare similar memoranda for the Architect and separate contractors where coordination of their work is required.
- B. Each Contractor shall:
 1. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and assure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - a. Preparation of schedules.
 - b. Installation and removal of temporary facilities.
 - c. Processing of submittals and photocopying/delivery to affected contractors.
 - d. Progress meetings.
 - e. Project closeout activities.
 2. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner. Coordinate temporary enclosures with required inspections and tests to minimize the necessity of uncovering completed construction for that purpose.
 3. Coordination: Each Contractor shall coordinate its construction operations with those of other Contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its operations with operations, included in different Sections that depend on each other for proper installation, connection, and operation.
 - a. Coordinate installation of different components with other contractors and/or subcontractors to ensure maximum accessibility for required maintenance, service, and repair
 4. Each Contractor shall cooperate with the Owner's Representative in allocation of mobilization areas of site, access, traffic, parking facilities, field offices, and sheds.
 5. Comply with Owner's Representative procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.
 6. Comply with instructions of the Owner's Representative for use of temporary utilities and construction facilities. Responsibility for providing temporary utilities and construction facilities is identified in Section 01 1000 - Summary of Contracts.
 7. Coordinate field engineering and layout work under instructions of the Owner's Representative

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 PRE-CONSTRUCTION MEETING

- A. Architect will schedule a meeting after Notice of Award.
- B. Attendance Required:
 1. Port Chester-Rye UFSD.
 2. Fuller and D'Angelo P.C.
 3. Consultants.
 4. Construction Manager
 5. All Prime Contractors.
 6. Prime Contractor's Field Superintendent.
- C. Agenda:
 1. Execution of Port Chester-Rye UFSD-Contractor Agreement.

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2. Submission of executed Bonds and Insurance certificates..
 3. Distribution of Contract Documents.
 4. Submission of schedule of values, progress schedule list of products, and list of subcontractors
 5. Designation of personnel representing the parties to Contract.
 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 7. Review construction scheduling.
 8. Use of premises by Owner's representative
 9. Port Chester-Rye UFSD's requirements and occupancy prior to completion.
 10. Construction facilities and controls provided by Port Chester-Rye UFSD.
 11. Temporary utilities provided by Port Chester-Rye UFSD.
 12. Survey existing facilities prior to starting construction.
 13. Security and housekeeping procedures.
 14. Procedures for testing.
 15. Procedures for maintaining record documents.
 16. Requirements for start-up of equipment.
- D. Architect will record minutes and distribute copies within five days after meeting to all participants. Contactor shall distribute to all entities of the Contractor affected by decisions made.

3.2 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the work at minimum of two week intervals.
- B. Architect will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- C. Attendance Required:
1. Contractor.
 2. Port Chester-Rye UFSD.
 3. Fuller and D'Angelo P.C.
 4. Consultants.
 5. Contractor's superintendent.
 6. Major Subcontractors.
 7. Suppliers as appropriate to agenda topics for each meeting.
- D. Attendees: In addition to representatives of the Owner's Representative and Architect, each Prime Contractor shall be represented at these meetings.
1. Attendance is mandatory at each meeting and a penalty sum of \$500.00 per missed meeting will be assessed to the Prime Contractor not attending without prior written authorization from the Construction Manager. Subcontractors, suppliers, or other entities will be invited at the discretion of the Architect. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the work
 2. Subcontractors, suppliers, or other entities will be invited at the discretion of the Architect.
 3. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work
- E. Agenda:
1. Review minutes of previous meetings.
 2. Review of work progress.
 3. Field observations, problems, and decisions.
 4. Identification of problems that impede, or will impede, planned progress.
 5. Review of submittals schedule and status of submittals.
 6. Review of RFIs log and status of responses.

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7. Review of off-site fabrication and delivery schedules.
 8. Review construction safety programs.
 9. Review exiting and separation of construction
 10. Maintenance of progress schedule.
 11. Corrective measures to regain projected schedules.
 12. Planned progress during succeeding work period.
 13. Coordination of projected progress.
 14. Maintenance of quality and work standards.
 15. Effect of proposed changes on progress schedule and coordination.
 16. Other business relating to work.
- F. Architect will record minutes and distribute copies within five days after meeting to all participants. Contactor shall distribute to all entities of the Contractor affected by decisions made.

3.3 WEEKLY COORDINATION MEETINGS

- A. Each Contractor shall schedule and hold weekly general project coordination meetings with the Owner's Representative, to review the work schedule for the week in order to insure the planned work does not conflict with facility operations.

3.4 CONSTRUCTION PROGRESS SCHEDULE

- A. Within 10 days after date of the Letter of Award, submit preliminary schedule.
- B. Responsibility:
1. Each Contractor shall be responsible for preparing and updating the contract progress schedule.
- C. Contractors shall coordinate their work with work of the other prime contracts.
- D. If preliminary schedule requires revision after review, submit revised schedule within 5 days.
- E. Within 5 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
1. Include written certification that major contractors have reviewed and accepted proposed schedule.
- F. Within 5 days after joint review, submit final schedule.
- G. Submit updated schedule with each Application for Payment.
- H. General Content
1. Responsibility:
 - a. Each Prime Contractor shall prepare a schedule for their work to be incorporated into the master schedule.
 - a) Contract #1 General Construction Contractor shall be responsible for preparing the master schedule.
 - b. Each Prime Contractor shall coordinate their work with work of the other prime contracts.
 2. Milestones: Include milestones indicated in Section 01 1010 Milestone Schedule including, but not limited to, Notice of Award, Submittals, Verification of existing conditions, Asbestos/Lead Abatement, Removals, Installation, Substantial Completion, Completion of Punch List, Final Completion, and Closeout .
 3. Show complete sequence of construction by activity, by room with dates for beginning and completion of each element of construction.
 4. Identify each item by specification section number.
 5. Provide sub-schedules to define critical portions of the entire schedule.
 6. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.
 7. Provide legend for symbols and abbreviations used.

- I. Bar Chart Schedule
 - 1. Include a separate bar for each major portion of Work or operation.
 - 2. Identify the first work day of each week.

3.5 DAILY CONSTRUCTION REPORTS

- A. Include only factual information. Do not include personal remarks or opinions regarding operations and/or personnel.
- B. Transmit reports electronically Owner's Representative at weekly intervals.
- C. Each Prime Contractor shall prepare a daily construction report recording the following information concerning events at Project site and project progress:
 - 1. Date.
 - 2. High and low temperatures, and general weather conditions.
 - 3. List of subcontractors at Project site.
 - 4. List of separate prime contractors at Project site.
 - 5. Major equipment at Project site.
 - 6. Material deliveries.
 - 7. Safety, environmental, or industrial relations incidents.
 - 8. Meetings and significant decisions.
 - 9. Stoppages, delays, shortages, and losses. Include comparison between scheduled work activities (in Contractor's most recently updated and published schedule) and actual activities. Explain differences, if any. Note days or periods when no work was in progress and explain the reasons why.
 - 10. Testing and/or inspections performed.
 - 11. List of verbal instruction given by Owner and Architect.
 - 12. Signature of Contractor's authorized representative.

3.6 COORDINATION AND COORDINATION DRAWINGS

- A. Coordination: Each Prime Contractor shall coordinate its construction operations with those of other Prime Contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its operations with operations, included in different Sections that depend on each other for proper installation, connection, and operation.
- B. All primes shall provide information required by other primes for preparation of coordination drawings required by a prime contractor.

3.7 REQUESTS FOR INTERPRETATION (RFI)

- A. Use RFI Section 00 2115 - RFI Form.
- B. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
 - 1. Prepare a separate RFI for each specific item.
- C. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
 - 1. Unacceptable Uses for RFIs: Do not use RFIs to request the following::
 - a. Approval of submittals (use procedures specified elsewhere in this section).
 - b. Approval of substitutions (see Section - 01 6000 - Product Requirements)
 - c. Changes that entail change in Contract Time and Contract Sum (comply with provisions of the Conditions of the Contract).

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- D. Review Time: Fuller and D'Angelo P.C. will respond and return RFIs to Contractor within seven calendar days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 12:00 noon will be considered as having been received on the following regular working day.

3.8 SUBMITTAL SCHEDULE

- A. Submit to Architect for review a schedule for submittals in tabular format.
1. Submit at the same time as the preliminary schedule.
 2. Coordinate with Contractor's construction schedule and schedule of values.
 3. Format schedule to allow tracking of status of submittals throughout duration of construction.

3.9 SUBMITTALS FOR REVIEW

- A. Submittal Cover Sheet: Attached at the end of this section.
- B. All submittals are the product and the property of the Contractor. The Owner, Owner's Representative, Architect, Construction Manager, or Consultants shall not be responsible for the contractor's construction means, methods or techniques: safety precautions or programs; Acts or admissions; or failure to carry out the work in accordance to the contract documents
- C. Shop Drawing Submittal Log no later than five (5) days after award of contract indicating which items are long lead.
- D. All shop drawings that are indicated as bid lead - 15 days.
- E. All Shop Drawing Submittals shall be submitted no later than twenty five (25) days after Letter of Award of Contract. No further payments will be made to the contractor after twenty five (25) until all submittals are made.
- F. When the following are specified in individual sections, including but not limited to the following, submit them for review:
1. Product data.
 2. Shop drawings.
 3. Samples for selection.
 4. Samples for verification.
 5. Templates.
 6. Standard wiring diagrams.
- G. Submit to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
1. Submittals for HVAC, plumbing, or electrical submit directly to consultant with copy to Architect.
- H. Samples will be reviewed only for aesthetic, color, or finish selection and for record documents purposes described in Section 01 7800 - Closeout Submittals.
- I. After review, provide copies and distribute in accordance with Submittal Procedures article below.
- J. The Architect shall review and approve or take other appropriate action on the Contractor submittals, such as shop drawings, product data, samples and other data, which the Contractor is required to submit, but only for the limited purpose of checking for conformance with the design concept and the information shown in the Construction Documents. This review shall not include review of the accuracy or completeness of details, such as quantities, dimensions, weights or gauges, fabrication processes, construction means or methods, coordination of the work with other trades or construction safety precautions, all of which are the sole responsibility of the Contractor. The Architect's review shall be conducted with reasonable promptness while allowing sufficient time in the Architect's judgment to permit adequate review. Review of a specific item shall not indicate that the Architect has reviewed the entire assembly of which the item is a component. **The Architect shall not be responsible for any deviations from the Construction Documents not brought to the attention of the Architect, in writing, by the**

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Contractor. The Architect shall not be required to review partial submissions or those for which submissions of correlated items have not been received.

- K. Marking or comments on shop drawings shall not be construed as relieving the Contractor from compliance with the contract project plans and specifications, nor departure therefrom. The contractor remains responsible for details and accuracy for conforming and correlating all quantities, verifying all dimensions, for selecting fabrication processes, for techniques of assembly and for performing their work satisfactorily and in a safe manner.
- L. **Architect will review the original submittal and one (1) re-submittal. Additional reviews will be additional services provided to the Owner and charged accordingly. The Owner will back charge the contractor accordingly.**
- M. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.
- N. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals.

3.10 SUBMITTALS FOR INFORMATION

- A. When the following are specified in individual sections, submit them for information:
 - 1. Design data.
 - 2. Certificates.
 - 3. Inspection reports.
 - 4. Manufacturer's instructions.
 - 5. Manufacturer's field reports.
 - 6. Other types indicated.
- B. Submit for Owner's Representative and Architect's knowledge as contract administrator. No action will be taken.

3.11 SUBMITTALS FOR PROJECT CLOSEOUT

- A. Refer to Section 01 7800 - Closeout Submittals..

3.12 NUMBER OF COPIES OF SUBMITTALS

- A. Documents: Submit one electronic copy **in PDF format**; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected. All submittals shall be in electronic format and conforming to the following:
 - 1. Each item shall be in a separate file.
 - 2. Each file name shall start with the specification section number and contain an abbreviated explanation of what it contains; for example:
 - a. 08 5113 Aluminum Windows; 08 1613 Fiberglass Doors and Aluminum Frames; 08 8000 Glazing.
 - 3. Add Revision number (Rev2 Rev3, etc) to the file name when resubmitting items, for example:
 - a. 07 5323 EPDM Rev1.pdf 07 5323 Bond AdhRev1.pdf
 - 4. Provide a Cover Sheet with each item - in the same file as the technical submittal.
 - 5. Do not zip the files, and do not put the files in Folders.
 - 6. Do not send MSDS with the technical submittals; collate all of the MSDS needed for the entire project in three ring binders, organized by specification section, and submit the binders to the Owner's Representative, with copy of Transmittal to the Architect, and maintain one copy at the project site.
- B. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
 - 1. **Submit with each sample, in electronic PDF format, data, cuts, photos, color, charts, etc.**
 - 2. Approved sample will be retained at the project site.

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3. Retained samples will not be returned to Contractor unless specifically so stated.

3.13 SUBMITTAL PROCEDURES

A. General Requirements:

1. Submit separate packages of submittals for review and submittals for information, when included in the same specification section.
2. Transmit using approved form attached to this section.
3. Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
4. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
5. Apply Contractor's stamp, on the attached form, certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
 - a. Submittals from sources other than the Contractor, or without Contractor's stamp will not be acknowledged, reviewed, or returned.
 - b. **All submitted shop drawings shall be stamped and signed by the Contractor with the following note:**
 - a) **We the undersigned certify that we have reviewed and coordinated this shop drawings with job conditions and Contract requirements and they are in conformance to the plans, specifications and other provisions of the Contract Documents.**
6. Deliver each submittal on date noted in submittal schedule, unless an earlier date has been agreed to by all affected parties, and is of the benefit to the project.
 - a. Send submittals in electronic format via email to Architect and Construction Manager.
7. Schedule submittals to expedite the Project, and coordinate submission of related items.
 - a. For each submittal for review, allow 10 working days excluding delivery time to and from the Contractor.
 - b. For sequential reviews involving Architect and Construction Manager or another affected party, allow an additional 7 days.
8. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
9. Provide space for Contractor and Architect and Construction Manager review stamps.
10. When revised for resubmission, identify all changes made since previous submission.
11. Distribute reviewed submittals. Instruct parties to promptly report inability to comply with requirements.
12. Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.
13. Submittals not requested will be recognized, and will be returned "Not Reviewed".

B. Product Data Procedures:

1. Submit only information required by individual specification sections.
2. Collect required information into a single submittal.
3. Do not submit (Material) Safety Data Sheets for materials or products.

C. Shop Drawing Procedures:

1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting Contract Documents and coordinating related work.
2. Do not reproduce Contract Documents to create shop drawings.

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3. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.
- D. Samples Procedures:
 1. Transmit related items together as single package.
 2. Identify each item to allow review for applicability in relation to shop drawings showing installation locations.

3.14 SUBMITTAL REVIEW

- A. Submittals for Review: Architect will review each submittal, and approve, or take other appropriate action.
- B. Submittals for Information: Architect will acknowledge receipt, but will take no other action.
- C. Architect's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
- D. Contractor's Delegated Design:
 1. Architect's review and approval of delegated design submittals is limited to performance and design criteria and review of general design concepts in accordance with the General Conditions and Specifications.
- E. Substitution:
 1. The Contractor shall carry out the Work in accordance with the Contract Plans and Specifications without change in Contract Sum or Contract Time.
 - a. Proceeding with the Work, the Contractor acknowledges that they are responsible for:
 - a) coordinating this substitution with subcontractor(s) or other Prime Contractor(s)
 - b) and any additional costs from subcontractor(s) or other Prime Contractor(s) resulting from this substitution.
- F. Architect's and his consultants' actions on items submitted for review:
 1. **Authorizing purchasing, fabrication, delivery, and installation:**
 - a. "No Exceptions Taken", or language with same legal meaning.
 - b. "Make Corrections Noted", or language with same legal meaning.
 2. **Sample:**
 - a. Samples will be reviewed only for aesthetic, color, or finish.
 3. **Not Authorizing fabrication, delivery, and installation:**
 - a. "Revise and Resubmit".
 - a) Resubmit revised item, with review notations acknowledged and incorporated.
 - b. "Rejected".
 - a) Submit item complying with requirements of Contract Documents.
- G. **Architect's and his consultants' actions on items submitted for information:**
 1. Items for which no action was taken:
 - a. "Received" - to notify the Contractor that the submittal has been received for record only.
 2. Items for which action was taken:
 - a. "Reviewed" - no further action is required from Contractor.

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SUBMITTAL COVERSHEET

Port Chester-Rye UFSD

Flood Repairs and Related Work

JOHN F. KENNEDY ELEMENTARY SCHOOL

ARCHITECT:

Fuller and D'Angelo P.C.

45 Knollwood Rd.

Elmsford, NY10523

OWNER:

Port Chester-Rye UFSD

113 Bowman Avenue

Port Chester New York 10573

CONTRACTOR: _____ **CONTRACT:** _____

ADDRESS: _____

TELEPHONE: _____ **FAX:** _____ **EMAIL:** _____

Facility Name: JOHN F. KENNEDY ELEMENTARY SCHOOL

Type of Submittal: Re-submittal: ☐ No ☐ Yes

☐ Shop Drawings ☐ Product Data ☐ Schedule ☐ Sample

☐ Test Report ☐ Certificate ☐ Color Sample ☐ Warranty

SUBMITTAL DESCRIPTION: _____

PRODUCT NAME: _____

MANUFACTURER: _____

SUBCONTRACTOR/ _____

SUPPLIER: _____

SPEC. SECTION NO.: _____ **DRAWING NO(S):** _____

PARAGRAPH: _____ **RM. OR DETAIL NO(S):** _____

NAME: _____ **DATE:** _____

STAMP SHEET

Contractor Remarks And Stamp:

We the undersigned certify that we have reviewed and coordinated this shop drawings with job conditions and Contract requirements and they are in conformance to the plans, specifications and other provisions of the Contract Documents. Any deviations from the contract documents have been identified in writing.

Architect's Comments and Stamp:

Consultant's Comments and Stamp

NAME: _____ **DATE:** _____

END OF SECTION

SECTION 01 3216
CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Preliminary schedule.
- B. Construction progress schedule, bar chart type.
- C. Master Schedule.

1.3 RELATED SECTIONS

- A. Section 01 1000 - Summary of Contracts: Work sequence.
- B. Section 01 1010 - Milestone Schedule.
- C. Section 01 3000 - Administrative Requirements.

1.4 REFERENCE STANDARDS

- A. AGC (CPSM) - Construction Planning and Scheduling Manual; 2004.

1.5 RESPONSIBILITY

- A. The General Construction Contractor Contract #1 shall, within 15 days after contract award, be responsible for preparing and updating a **master progress schedule for all contracts**.
 - 1. Each Contractor shall develop a full schedule, in sufficient detail and clarity of form and technique so that the General Construction Contractor can plan and control his work properly and the Construction Manager can readily monitor and follow the progress for all portions of the work. Each Contractor shall complete the detailed schedule within 15 days after Letter of Award.
 - a. Identify all long lead items and dates required on site.
 - b. In the event of conflict Construction Manager shall resolve and provide direction which is in the best interest on the District.
 - 2. Each Contractor shall coordinate their work with work of all prime contractors.
 - 3. The General Construction Contractor shall prepare a **draft master schedule** within 10 days after receiving schedules from each prime contractor and distribute to all prime contractor, Architect and Construction Manager
 - 4. Within 5 days after receiving draft master schedule all prime contractors shall meet to revise, (if required) and sign off on the master schedule.
 - a. In the event of conflicts the Construction Manager shall resolve and provide direction which is in the best interest on the District.
 - 5. The General Construction Contractor Contract #1 shall be responsible for incorporating all final revision, schedules, of all prime contractors, and prepare a **full final master schedule**, and updates, as required or directed by the Construction Manager.
- B. General Construction Contractor Contract #1 shall coordinate their work with work of all prime contracts.
- C. The activities identified in the schedule shall be analyzed in detail to determine activity time durations in units of whole working days. All duration's shall be the result of definitive manpower and resource planning by the Contractor.
- D. The activity data shall include activity codes to facilitate selection, sorting and preparation of summary reports and graphics. Activity codes shall be developed for:
 - 1. Area: Subdivision of the building(s) and/or site(s) into logical modules or blocks and levels. Pods A, B, C and D, etc.

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2. Contractor or subcontractor responsible for the work.
3. Specifications: 16 Division CSI format.
4. System: Division of the work into building systems for summary purposes.
5. Milestone: Work associated with completion of interim completion dates or milestones
6. Pay Item: Work identified with a pay item on the Schedule of Values.

1.6 SUBMITTALS

- A. Within 5 days after date Letter of Award, each prime Contractor shall submit preliminary schedule to the General Construction Contractor with copies to the Construction Manager.
- B. Within five (5) days after receipt of each preliminary schedule, the General Construction Contractor shall develop the Master Schedule and distribute to each prime contractor.
- C. Within 5 days after review of Master Schedule, submit final of the complete schedule for approval.
 1. Include written certification that all prime Contractors have reviewed and accepted proposed schedule.
- D. Submit updated master schedule with each Application for Payment.
- E. When requested by the Construction Manager submit when project fall behind schedule.
- F. Submit under transmittal letter form specified in Section 01 3000 - Administrative Requirements.
- G. The Contractor(s) are hereby notified that payment requisitions will not be processed by the Architect and Construction Manager, nor paid by the Owner, until all schedules are reviewed, updated and approved by each prime contractor Architect and Construction Manager and Master Schedule revised.

1.7 QUALITY ASSURANCE

- A. Scheduler: Contractor's personnel or specialist Consultant specializing in construction scheduling with one years minimum experience in scheduling construction work of a complexity comparable to this Project, and having use of computer facilities capable of delivering a detailed graphic printout within 48 hours of request.
- B. Contractor's Administrative Personnel: 3 years minimum experience in using and monitoring Bar Chart schedules on comparable projects.

1.8 SCHEDULE FORMAT

- A. Listings: In chronological order according to the start date for each building and each activity. Identify each activity with the applicable specification section number.
- B. Submit schedule in electronic PDF format.
- C. Scale and Spacing: To allow for notations and revisions.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 PRELIMINARY SCHEDULE

- A. Prepare preliminary schedule in the form of a preliminary network diagram.
- B. Based on the preliminary development of the progress schedule and on feedback from Architect and Construction Manager or whatever updating may have occurred during the project start-up, the General Construction Contractor shall, for the entire work of of all the prime contracts, , prepare the (Master Schedule), secure critical time commitments for performing major elements of all the work.

3.2 GENERAL CONTENT.

- A. Milestones: Include milestones in schedule, including, but not limited to, Notice of Award, Submittals, Verification of existing conditions, Asbestos/Lead Abatement, Removals, Delivery of Major Equipment, such as HVAC Units, Fans, Motors, Installation, Substantial Completion, Completion of Punch List, Final Completion, and Closeout

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CONSTRUCTION PROGRESS SCHEDULE

- B. Show complete sequence of construction by activity, by room with dates for beginning and completion of each element of construction.
- C. Identify each item by specification section number.
- D. Provide sub-schedules for each stage of Work identified in Section 01 1000 - Summary of Contracts.
- E. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.
- F. Provide separate schedule of submittal dates for shop drawings, product data, and samples, owner-furnished products, and dates reviewed submittals will be required from Architect and Construction Manager. Indicate decision dates for selection of finishes.
- G. Indicate delivery dates for owner-furnished products, products identified under Allowances, and products identified under Alternates.
- H. Provide legend for symbols and abbreviations used.

3.3 BAR CHARTS

- A. Include a separate bar for phases and portions each major portion of Work or operation.
- B. Identify the first work day of each week.

3.4 NETWORK ANALYSIS

- A. Prepare network analysis diagrams and supporting mathematical analyses using the Critical Path Method.
- B. Illustrate order and interdependence of activities and sequence of work; how start of a given activity depends on completion of preceding activities, and how completion of the activity may restrain start of subsequent activities.
- C. Mathematical Analysis: Tabulate each activity of detailed network diagrams, using calendar dates, and identify for each activity:
 - 1. Preceding and following event numbers.
 - 2. Activity description.
 - 3. Estimated duration of activity, in maximum 15 day intervals.
 - 4. Earliest start date.
 - 5. Earliest finish date.
 - 6. Actual start date.
 - 7. Actual finish date.
 - 8. Latest start date.
 - 9. Latest finish date.
 - 10. Total and free float; float time shall accrue to Port Chester-Rye UFSD and to Port Chester-Rye UFSD's benefit.
 - 11. Monetary value of activity, keyed to Schedule of Values.
 - 12. Percentage of activity completed.
 - 13. Responsibility.
- D. Analysis Program: Capable of compiling monetary value of completed and partially completed activities, accepting revised completion dates, and recomputation of all dates and float.
- E. Required Reports: List activities in sorts or groups:
 - 1. By preceding work item or event number from lowest to highest.
 - 2. By amount of float, then in order of early start.

3.5 REVIEW AND EVALUATION OF SCHEDULE

- A. Participate in joint review and evaluation of schedule with Construction Manager at each submittal.
- B. Evaluate project status to determine work behind schedule and work ahead of schedule.

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- C. After review, revise as necessary as result of review, the Master Schedule and resubmit within 5 days.
 - 1. When project work is behind schedule indicate revisions required to put the project on schedule.
 - 2. Payments will not be approved until satisfactory evidence is presented, by the Contractor(s) behind schedule, to put the project on schedule.

3.6 UPDATING SCHEDULE

- A. Maintain schedules to record actual start and finish dates of completed activities.
- B. Indicate progress of each activity to date of revision, with projected completion date of each activity.
- C. Update diagrams to graphically depict current status of Work.
- D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.
- E. Indicate changes required to maintain Date of Substantial Completion.
- F. Submit reports required to support recommended changes.

3.7 DISTRIBUTION OF SCHEDULE

- A. Distribute copies of updated schedules to Fuller and D'Angelo, P.C., Construction Manager, other prime contractors, Contractor's site files, subcontractors, and major suppliers Fuller and D'Angelo, P.C., Construction Manager, other prime contractors, Contractor's site files, subcontractors, and major suppliers and other concerned parties.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

3.8 CHANGES, DELAYS AND EXTENSIONS OF TIME

- A. When changes or delays are experienced, each Contractor(s) shall submit to the Construction Manager a Time Impact Analysis illustrating the influence of each change or delay on the current Contract scheduled completion date. Each time analysis shall include a Fragment (network analysis) demonstrating how the Contractor proposed to incorporate the change or delay into the Detailed Schedule.
 - 1. Each time analysis shall include a Fragment (network analysis) demonstrating how the Contractor proposed to incorporate the change or delay into the Detailed Schedule.
 - 2. The analysis shall demonstrate the time impact based on the date the change was given to the Contractor, the status of construction at that point in time, and the activity duration of all effected activities.
 - 3. The activity duration used in this analysis shall be those included in the latest update of the Detailed Schedule, closest to the time of delay or as adjusted by mutual agreement.
- B. Each Time Impact Analysis shall be submitted within ten (10) calendar days after a delay occurs or a notice of change order is given to the Contractor. In cases where the Contractor does not submit a Time Impact Analysis for a specific change or delay with a specified period of time, it shall be mutually agreed that no time extension is required. Final evaluation of each Time Impact Analysis by the Construction Manager shall be made within fourteen (14) calendar days after receipt unless subsequent meetings and negotiations are necessary. Adjustments in the Contract time for performance shall be made only by written change order approved by the Owner. Upon approval of the Owner, Fragments illustrating the influence of changes and delays shall be incorporated into the Detailed Schedule by the contractor during the first update after agreement is reached.

END OF SECTION

SECTION 01 3306
NON-DISCRIMINATION CLAUSES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.
- B. During the performance of this contract, the contractor agrees as follows:
 - 1. The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color or national origin, and will take affirmative action to insure that they are afforded equal employment opportunities without discrimination because of race, creed, color or national origin. Such action shall be taken with reference, but not be limited, to: recruitment, employment, job assignment, promotion, upgrading, demotion, transfer, layoff or termination, rates of pay or other forms of compensation, and selection for training or retraining, including apprenticeship and on-the-job training.
 - 2. The contractor will send to each labor union or representative of workers with which he has or is bound by a collective bargaining or other agreement or understanding, a notice, to be provided by the State Commission for Human Rights, advising such labor union or representative of the contractor's agreement under these clauses hereinafter called "non-discrimination clauses" and requesting such labor union or representative to agree in writing, standing or otherwise, that such labor union or representative will not discriminate against any member or applicant for membership because of race, creed, color or natural origin. Such action shall be taken with reference, but not limited, to: recruitment, employment job assignment, promotion, upgrading, demotion, transfer, layoff, or termination, rates of pay or other forms of compensation, and selection for training or retraining, including apprenticeship and on-the-job training. Such notice shall be given by the Contractor, and such written agreement shall be made by such labor union or representative, prior to the commencement of performance of this contract. If such labor union or representative fails or refuses so to agree in writing the Contractor shall promptly notify the State Commission of Human Rights of such failure or refusal.
 - 3. The Contractor will post and keep posted in conspicuous places, available to employees and applicants for employment, notices to be provided by the State Commission for Human Rights setting forth the substance of the provisions of clauses and such provisions of the State's laws against discrimination as the State Commission for Human Rights shall determine.
 - 4. The Contractor will state, in all solicitation or advertisements for employees placed by or on behalf of the contractor, that all qualified applicants will be afforded equal employment opportunities without discrimination because of race, creed, color or national origin.
 - 5. The Contractor will comply with the provisions of Section 291-299 of the Executive Law and the Civil Rights Law, will furnish all information and reports deemed necessary by the State Commission for Human Rights under these non-discrimination clauses and such sections of the Executive Law, and will permit access to his books, records and accounts by the State Commission for Human Rights, the Attorney General and the Industrial Commissioner for purposes of investigation to ascertain compliance with these non-discrimination clauses and such sections of the Executive Law and Civil Rights Law.
 - 6. This contract may be forthwith canceled, terminated or suspended, in whole or in part by the Owner upon the basis of a finding made by the State Commission for Human Rights that the contractor has not complied with these nondiscrimination clauses, and the Contractor may be declared ineligible for future contracts made by or on behalf of the Owner or agency of the Owner, until he or it satisfies the State Commission for Human Rights that he or it has established and is carrying out a program in conformity with the provisions of these non-discrimination clauses. Such findings shall be made by the State Commission for Human Rights after conciliation efforts by the Commission have failed to achieve compliance with these nondiscrimination clauses and after a verified complaint has been filed with the Commission, notice thereof has been given to the

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Contractor and an opportunity has been afforded him to be heard publicly before three members of the Commission. Such sanctions may be imposed and remedies invoked independently of or in addition to sanctions or remedies otherwise provided by law.

7. If this Contract is canceled or terminated under the above clause, in addition to other rights of the Owner, provided in this contract upon its breach by the Contractor, the Contractor will hold the Owner harmless against any additional expenses or costs incurred by the Owner in completing the work or in purchasing the services, materials, equipment or supplies contemplated by this contract, and the Owner may withhold payments from the contractors in an amount sufficient for this purpose and recourse may be had against the surety on the performance bond if necessary.
8. The Contractor will include the provisions of these clauses in every sub-contract or purchase order in such a manner that such provisions will be binding upon each sub-contractor or vendor as to operations to be performed within the State of New York. The Contractor will take such action in enforcing such provisions of such Sub-Contract or purchase order as the contracting agency may direct, including sanctions or remedies for non-compliance. If the contractor becomes involved in or is threatened with litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the Contractor shall promptly so notify the Attorney General, requesting him to intervene and protect the interests of the Owner.

END OF SECTION

SECTION 01 3307
SED SPECIAL REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies special requirements of State Education Department, including Commissioner's Regulation Part 155.5, 155.7
 - 1. Copies of Commissioner's Regulation Part 155.5, 155.7 are available on the State Education Department's web site. www.p12nysed.gov

1.3 CERTIFICATE OF OCCUPANCY

- A. The occupied portion of any school building shall always comply with the minimum requirements necessary to maintain a Certificate of Occupancy.

1.4 GENERAL SAFETY AND SECURITY DURING CONSTRUCTION

- A. All construction materials shall be stored in a safe and secure manner.
 - 1. Fences around construction supplies or debris shall be maintained.
 - 2. Gates shall always be locked unless a worker is in attendance, to prevent unauthorized entry.
 - 3. 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.
 - 4. Workers shall be required to wear photo-identification badges at all times for identification and security purposes while working at occupied sites.

1.5 SEPARATION OF CONSTRUCTION

- A. Separation of construction areas from occupied spaces. Construction areas that 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. Metal stud and gypsum board (Type X) must be used in exit ways or other areas that require fire rated separation. Heavy duty plastic sheeting may be used only for a vapor, fine dust or air infiltration barrier, and shall not be used to separate occupied spaces from construction areas.
 - 1. A specific stairwell and/or elevator may be assigned for construction worker use during work hours, when approved by the Owner. Workers may not use corridors, stairs or elevators designated for students or school staff.
 - a. 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.
 - b. All occupied parts of the building affected by renovation activity shall be cleaned at the close of each work day. School buildings occupied during a construction project shall maintain required health, safety and educational capabilities at all times that classes are in session.

1.6 FIRE PREVENTION

- A. There is no smoking on school property for fire prevention and New York State Law.
- B. Any holes in floors or walls shall be sealed with a fire resistant material.
- C. Owner shall maintain existing fire extinguishers.
- D. Fire alarm and smoke detection systems shall remain in operation at all times.

1.7 CONSTRUCTION DIRECTIVES

- A. Construction Noise. 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.
 - 1. Construction Fume Control: Each Contractor shall be responsible for the control of chemical fumes, gases, and other contaminants produced by welding, gasoline or diesel engines, roofing, paving, painting, etc. to ensure they do not enter occupied portions of the building or air intakes.
 - 2. Off-Gassing Control. Each Contractor shall be responsible to ensure that activities and materials which result in "off-gassing" of volatile organic compounds such as glues, paints, furniture, carpeting, wall covering, drapery, etc., are scheduled, cured or ventilated in accordance with manufacturer's recommendations before a space can be occupied.

1.8 ASBESTOS/LEAD PAINT/HAZARDOUS MATERIAL

- A. Asbestos/Lead Test Asbestos Letter. Indication that all school areas to be disturbed during renovation or demolition have been or will be tested for lead and asbestos.
- B. Asbestos Code Rule 56. Large and small asbestos abatement projects as defined by 8 NYCRR 155.5(k) shall not be performed while the building is occupied. Note: It is SED's interpretation that the term "building" as referenced in this section, 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 portions (the occupied portion and the portion under construction) of the building must contain separate code compliant exits. The ventilation systems must be physically separated and sealed at the isolation barrier(s).
 - 1. Asbestos TEM. The asbestos abatement area shall be completely sealed off from the rest of the building and completely cleaned and tested by TEM prior to re-entry by the public.
- C. Lead Abatement Projects. A project that contains materials identified to be disturbed which tests positive for lead shall include that information in the Construction Documents. The Construction Documents must address the availability of lead testing data for the building and include a statement that the OSHA regulations be followed and that cleanup and testing be done by HUD protocol.
- D. Hazardous Material: A project that disturbs or may disturb PCB containing material will have all work done in accordance with all applicable regulations.

1.9 VENTILATION

- A. The work, as scheduled in the existing building, is to be performed when the facility is unoccupied. In the event that work is required to be performed during times when the building is occupied, all existing ventilation system between areas of work and areas of occupancy shall be disconnected, separated and code complying ventilation requirements be provided the occupied area. Prior to such work commencing the contractor shall submit a plan, for review indicating procedure to be taken. Also see paragraph 1.5 above for additional requirements."

1.10 ELECTRICAL CERTIFICATION:

- A. The electrical Contractor shall obtain UL Certification or Inspection from a Certified Electrical Organization for electrical installation.

1.11 EXITING

- A. Exiting: For work to be performed when school is in session all exiting will be clear and usable at all times. For work to be performed when school is not in session or after hours maintain legal exiting.
- B. Exits required shall be clear and usable at all times.
- C. All modifications or changes to the exiting plan shall be approved by Fuller and D'Angelo, Architects and Planners.

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1.12 CONSTRUCTION WORKER IN OCCUPIED AREAS

- A. No worker shall be permitted in areas occupied by students. If access is required by the contractor's personnel they will be supervised by District personnel. Contractor shall provide 24 hour notice to the Owner when such access will be required.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 3553
SITE SAFETY AND SECURITY PROCEDURES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. The safety requirements, which must be followed by each Contractor during the execution of this contract.
- B. Each Contractor agrees that the work will be completed with the greatest degree of safety and:
 - 1. To conform to the requirements of the Occupational Safety and Health Act (OSHA) and the Construction Safety Act including all standards and regulations that have been or shall be promulgated by the governmental authorities which administer such acts, and shall hold the Owner, Owner's Representative, and Architect and all their employees, consultants and representatives harmless from and against and shall indemnify each and everyone of them for any and all claims, actions, liabilities, costs and expenses, including attorneys fees, which any of them may incur as a result of non-compliance.
- C. Security measures including entry control, personnel identification, and miscellaneous restrictions.

1.3 REFERENCES:

- A. Code of Federal Regulations OSHA Safety and Health.

1.4 RELATED REQUIREMENTS

- A. Section 01 1000 - Summary of Contracts: Use of premises and occupancy .
- B. Section 01 5000 - Temporary Facilities and Controls01 5000: Temporary lighting and barriers and enclosures.
- C. Section 01 5500 - Vehicular Access and Parking.

1.5 DEFINITIONS

- A. Public shall mean anyone not involved with or employed by the contractor to perform the duties of this contract.
- B. Site shall mean the limits of the work area.
- C. Contractor shall mean the contractor, his/her subcontractors and any other person related to the contract execution.

1.6 SECURITY PROGRAM

- A. Security and Protection Facilities and Services shall be the responsibility of the each Contractor and all costs shall be included in their bid.
- B. Protect Work, existing premises and Port Chester-Rye UFSD's operations from theft, vandalism, and unauthorized entry.
- C. Initiate program in coordination with Port Chester-Rye UFSD's existing security system thru the Owner's Representative at project mobilization.
- D. Maintain program throughout construction period until directed by Owner's Representative.

1.7 ENTRY CONTROL

- A. The existing building contains a security alarm system maintained and operated by the Owner. Access into the existing building shall not be permitted unless the Owner's Representative is notified and arrangements made to deactivate the system
- B. Restrict entrance of persons and vehicles into Project site and existing facilities. Coordinat with Owner's Representative

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- C. Allow entrance only to authorized persons with proper identification.
- D. Maintain log of workers and visitors, make available to Owner's Representative on request.
- E. Port Chester-Rye UFSD will control entrance of persons and vehicles related to Port Chester-Rye UFSD's operations.
- F. Coordinate access of Port Chester-Rye UFSD's personnel to site in coordination with Owner's Representative and PORT CHESTER-RYE UFSD and security forces thru the Owner's Representative.
- G. Install substantial and durable general temporary enclosure of partially completed areas of construction. Provide locking entrances adequate to prevent unauthorized entrance, vandalism, theft and similar violations of project security.
- H. Traffic Control
 - 1. Each Contractor shall maintain access for emergency vehicles and pedestrians and protect from damage all persons and property within the limits of and for the duration of the contract; as required by the contract documents.
 - 2. Conduct construction operations so that the traveling public and pedestrian safety is subjected to a minimum of hazard and delay.
 - 3. Each Contractor shall perform the following minimum requirements and as directed by Owner's Representative.
 - a. Keep the surface of the traveled way free from mounds, depressions, and obstructions of any type which could present hazards or annoyance to traffic.
 - b. Keep the surface of all pavements used by the public free and clean of all dirt and debris or other obstructions to provide safe traveled ways.
 - c. Control dust and keep the traveled way free from materials spilled from hauling and construction equipment.
 - d. Provide all cones, barricades, signs and warning devices as may be required and/or as ordered by Owner's Representative to safely carry out the foregoing. All such signs and devices shall be fabricated and placed in accordance with the latest "Federal Manual on Uniform Control Devices". Use of Open Flares Is Prohibited.
 - 4. Ingress and Egress
 - a. Each Contractor shall provide and maintain at all times safe and adequate ingress and egress to and from site at existing or at new access points consistent with work, unless otherwise authorized by the Owner's Representative.
 - 5. If, upon notification by Owner's Representative, and the Contractor(s) fails to correct any unsatisfactory condition within 24 hours of being so directed, Owner's Representative will immediately proceed with adequate forces to properly maintain the project and the entire cost of such maintenance shall be deducted (back charged) from any moneys due the contractor.
 - 6. All traffic control costs shall be included in the base bid for furnishing all labor, material and equipment including the cost of any and all incidental required by job conditions as ordered by Owner's Representative .
 - 7. Withholding of Payment
 - a. No payment will be made under Maintenance and Protection of Traffic for each calendar day during which there are substantial deficiencies in compliance with the specification requirements of any subsection of this section, as determined by the Architect/Engineer.
 - b. If Each Contractor fails to maintain and protect traffic adequately and safely for a period of 24 hours, the Owner's Representative shall correct the adverse conditions by any means he deems appropriate, and shall deduct the cost of the corrective work from any Monies due the Contractor(s). The cost of this work shall be in addition to the liquidated damages and nonpayment for Traffic Control listed above.

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- c. However, where major nonconformance with the requirements of this specification is noted by the Owner's Representative and prompt contractor compliance is deemed not to be obtainable, all contract work may be stopped by direct order of the Owner's Representative regardless of whether corrections are made by the Owner's Representative as stated in the paragraph above

1.8 FIRE PREVENTION AND CONTROL

- A. Each Contractor shall provide Fire Extinguishers as follows: Provide type "A" fire extinguishers for temporary offices and similar spaces where there is minimal danger of electrical fires or grease-oil-flammable liquid fires. In other locations provide either type "ABC" dry chemical extinguishers, or a combination of several extinguishers of NFPA recommended types for the exposures in each case.
- B. All required exits, fire alarm, and security and similar systems shall be maintained and operable throughout the entire construction contract.
 - 1. Contractor(s) will be back-charged for all fines imposed for false alarms or service calls.
- C. Free access to fire hydrants and standpipe connections shall be maintained at all times during construction operations. Portable fire extinguishers shall be provided by each Contractor and made conveniently available throughout the construction site. Contractor(s) shall notify their employees of the location of the nearest fire alarm pull stations at all locations where work is in progress.
- D. Each Contractor shall take all possible precautions for the prevention of fires. Where flame cutting torches, blow torches, or welding tools are required to be used within the building, their use shall be as approved by the Owner's Representative at the site. When welding tools or torches of any type are in use, have available in the immediate vicinity of the work a fire extinguisher of the dry chemical 20 lbs. Type. The fire extinguisher(s) shall be provided and maintained by the Contractor doing such work.
- E. Fuel for cutting and heating torches shall be gas only and shall be contained in Underwriters laboratory approved containers.
- F. Storage of gas shall be in locations as approved by the Owner's Representative and subject to Fire Department regulations and requirements.
- G. No volatile liquids shall be used for cleaning agents or as fuels for motorized equipment or tools within a building except with the express approval of the Owner and/or Architect and in accordance with local codes. On-site bulk storage of volatile liquids shall be outside the buildings at locations directed by the Owner, who shall determine the extent of volatile liquid allowed within the building at any given time.
- H. Each Contractor shall comply with the following requirements relating to compressed gas:
 - 1. Where compressed gas of any type is used for any purpose at the site, it shall be contained in cylinders complying with ICC regulations. Gases of different types shall not be stored together except when in use and when such proximity is required.
 - 2. All gas cylinders shall be stored in sheds constructed of noncombustible materials. Sheds shall be well ventilated and without electric lights or fixtures and shall be located as far from other buildings as is practicable. All gas cylinders not in actual use, or in proposed immediate use, shall be removed from the building under construction or reconstruction. Empty gas cylinders shall be removed prior to bringing in a replacement cylinder. Cylinders shall at all times be supported and braced in an upright position. When not in use, the protective cap shall be screwed over the valve.
 - 3. All persons required to handle gas cylinders or to act as temporary firemen (Fire Watchers) shall be able to read, write and understand the English language; they shall also be required by the Contractor to read Part 3 of Pamphlet P-1 "Safe Handling of Compressed Gases" published by the Compressed Gas Association, 500 Fifth Avenue, New York, NY 10036.
 - 4. Where local ordinances are in effect regarding gas cylinders, (their use, appurtenances and handling), such ordinances shall supplement the requirements of this paragraph. All personnel engaged in fire watch shall be certified by the Local Fire Department having jurisdiction.
 - 5. LP-Gas Heating will not be permitted in enclosed areas below grade.

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6. Any cylinder not having the proper ICC markings or reinspection marking, or any cylinder with a leak shall be isolated immediately away from any building and the supplier shall be immediately notified; such other precautions as may be required to prevent damage or injury shall also be taken by the Contractor.

1.9 PERSONNEL IDENTIFICATION

- A. Provide identification badge or other approved identification to each person authorized to enter premises.
 1. Identification To Include: Personal photograph, name and employer.
- B. Maintain a list of accredited persons, submit copy to Port Chester-Rye UFSD on request.
- C. Fingerprinting: The Contractor acknowledges and agrees that he/she or its employees may be subject to fingerprinting and a criminal history record check as may be required by the Educational Law of the State of State of New York. In such an event, Contractor agrees to cooperate with Port Chester-Rye UFSD and to complete any and all forms or procedures, all at no cost or expense to the Port Chester-Rye UFSD.

1.10 RESTRICTIONS

- A. Do not allow cameras on site or photographs taken except by written approval of Owner's Representative.

PART 2 PRODUCTS -

2.1 MATERIALS

- A. Refer to Section 01 5000 - Temporary Facilities and Controls for additional barrier requirements.
- B. Barriers shall be constructed of sturdy lumber having a minimum size of 2 x 4.
- C. Signs shall be made of sturdy plywood of 1/2" minimum thickness and shall be made to legible at a distance of 50 feet.

PART 3 EXECUTION

3.1 GENERAL

- A. In the performance of its contract, each Contractor shall exercise every precaution to prevent injury to workers and the public or damage to property.
 1. Each Contractor shall, at their own expense, provide temporary structures, place watchmen, design and erect barricades, fences and railings, give warnings, display such lights, signals and signs, exercise such precautions against fire, adopt and enforce such rules and regulations, and take such other precautions as may be necessary, desirable or proper or as may be directed.
 2. Each Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the work to be done under this contract. Each Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss including but not limited to:
 - a. All employees working in connection with this contract, and other persons who may be affected thereby.
 - b. All the work materials and equipment to be incorporated therein whether in storage on or off site; and including trees, shrubs, lawns, walks, pavements, facilities not designated for removal, relocation or replacement in the course of construction.
- B. Each Contractor's duties and responsibilities for the safety and protection of the work: shall continue until such time as all the work is completed and contractor has removed all workers, material and equipment from the site, or the issuance of the certificate of final completion, whichever shall occur last.
- C. Each Contractor shall use only machinery and equipment adapted to operate with the least possible noise, and shall so conduct his operations that annoyance to occupants of the site and nearby homes and facilities shall be reduced to a minimum

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- D. It shall be the responsibility of each Contractor to insure that all employees of the contractor and all subcontractors, and any other persons associated with the performance of their contract shall comply with the provisions of this specification.
- E. Each Contractor shall follow all rules and regulations put forth in the Code of Federal Regulations (OSHA Safety and Health Standards).

END OF SECTION

**SECTION 01 3554
PREVAILING WAGE RATES**

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 PROVISIONS OF LAW DEEMED INSERTED

- A. Each and every provision of law and clauses required by law to be inserted in the Contract shall be deemed to be inserted herein and the contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party the Contract shall forthwith be physically amended to make such insertion.
- B. The Contractor and subcontractors shall comply with applicable provisions of the Labor Law and all other state laws and Federal and Local statutes ordinances, codes, rules and regulations and orders which are applicable to the performance of this contract. The Contractor shall likewise require all sub-contractors to comply therewith. The attention of the Contractor is particularly, but not exclusively, directed to Sections 220 through 223 of the New York State Labor Law and Sections 109 of the New York State Municipal Corporations Law and the following:
 - 1. The Contractor shall post the prevailing wages in a conspicuous place on the job site.
 - 2. Posters shall list the Department of Labor's Public work field offices with telephone numbers.
- C. All contractors and subcontractors shall furnish each of its workers with written notification of the applicable prevailing wage rates and supplements at the commencement of and at periodic intervals during the performance of the Work as required by the New York Labor Law
- D. The Contractor shall provide and keep certified payroll records at the job site.
- E. Prevailing Wages Schedule for this project can be obtained by the bidders on the DOL web site as follows:
 - 1. <http://www.labor.ny.gov/workerprotection/publicwork/PWContents.shtm>.
 - 2. Click on: "Request for Wage and Supplement Information" (PW39).
 - 3. View "Previously Requested Prevailing Wage Schedule" using PRC# 2021010446
- F. NOTE THESE WAGE RATES ARE EFFECTIVE UNTIL JUNE 30, of each year. Updated schedules will be available on the Department of Labor web site: www.labor.state.ny.us

END OF SECTION

SECTION 01 4000
QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Submittals.
- B. Quality assurance.
- C. Testing and inspection agencies and services.
- D. Control of installation.
- E. Mock-ups.
- F. Tolerances.
- G. Manufacturers' field services.
- H. Defect Assessment.

1.3 RELATED REQUIREMENTS

- A. Section 00 7200 - General Conditions: Inspections and approvals required by public authorities.
- B. Section 01 3000 - Administrative Requirements: Submittal procedures.
- C. Section 01 4216 - Definitions.
- D. Section 01 4219 - Reference Standards.
- E. Section 01 6000 - Product Requirements: Requirements for material and product quality.

1.4 REFERENCE STANDARDS

- A. ASTM C1021 - Standard Practice for Laboratories Engaged in Testing of Building Sealants; 2008 (Reapproved 2014).
- B. ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation; 2017.
- C. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry; 2015a, with Editorial Revision (2016).
- D. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction; 2012a.
- E. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2018.
- F. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing; 2015.
- G. IAS AC89 - Accreditation Criteria for Testing Laboratories; 2017.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Testing Agency Qualifications:
 - 1. Prior to start of Work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
 - 2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.

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- C. Design Data: Submit for Owner's Representative's knowledge as contract administrator for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents, or for Port Chester-Rye UFSD's information.
- D. Test Reports: After each test/inspection, promptly submit two copies of report to Owner's Representative and Architect :
 - 1. Include:
 - a. Date issued.
 - b. Project title and number.
 - c. Name of inspector.
 - d. Date and time of sampling or inspection.
 - e. Identification of product and specifications section.
 - f. Location in the Project.
 - g. Type of test/inspection.
 - h. Date of test/inspection.
 - i. Results of test/inspection.
 - j. Compliance with Contract Documents.
 - k. When requested by Architect , provide interpretation of results.
 - 2. Test report submittals are for Owner's Representative and Architect 's knowledge as contract administrator for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
- E. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect , in quantities specified for Product Data.
 - 1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
 - 2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect .
- F. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's Representative and Architect 's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- G. Manufacturer's Field Reports: Submit reports for Owner's Representative and Architect's benefit as contract administrator.
 - 1. Submit report in PDF format within 5 days of observation to Architect and Contractor for information.
 - 2. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.

1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications:
 - 1. Prior to start of work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
 - 2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.
 - 3. Qualification Statement: Provide documentation showing testing laboratory is accredited under IAS AC89.

1.7 REFERENCES AND STANDARDS - See Section 01 4219

1.8 TESTING AND INSPECTION AGENCIES AND SERVICES

- A. Port Chester-Rye UFSD will employ and pay for services of an independent testing agency to perform specified testing which is the responsibility of the Owner.
- B. As indicated in individual specification sections, Contractor shall employ and pay for services of an independent testing agency to perform specified testing which is the responsibility of the Contractor.
- C. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- D. Contractor Employed Agency:
 - 1. Inspection agency: Comply with requirements of ASTM D3740 and ASTM E329.
 - 2. Laboratory: Authorized to operate in New York.
 - 3. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.
 - 4. Testing Equipment: Calibrated at reasonable intervals either by NIST or using an NIST established Measurement Assurance Program, under a laboratory measurement quality assurance program.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Owner's Representative before proceeding.
- D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Have work performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.2 MOCK-UPS

- A. Before installing portions of the Work where mock-ups are required, for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work. The purpose of mock-up is to demonstrate the proposed range of aesthetic effects and workmanship.
- B. Accepted mock-ups establish the standard of quality for Owner's Representative and Architect will use to judge the Work.
- C. Notify Owner's Representative and Architect five (5) working days in advance of dates and times when mock-ups will be constructed.
- D. Provide supervisory personnel who will oversee mock-up construction. Provide workers that will be employed during the construction at Project.
- E. Tests shall be performed under provisions identified in this section and identified in the respective product specification sections.
- F. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.

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- G. Obtain Owner's Representative and Architect's approval of mock-ups before starting work, fabrication, or construction.
 - 1. Owner's Representative will issue written comments within five (5) working days of initial review and each subsequent follow up review of each mock-up.
 - 2. Make corrections as necessary until Owner's Representative and Architect's approval is issued.
- H. Owner's Representative and Architect will use accepted mock-ups as a comparison standard for the remaining Work.

3.3 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Owner's Representative and Architect before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

3.4 TESTING AND INSPECTION

- A. See individual specification sections for testing and inspection required.
- B. Testing Agency Duties:
 - 1. Test samples of mixes submitted by Contractor.
 - 2. Provide qualified personnel at site. Cooperate with Owner's Representative and Contractor in performance of services.
 - 3. Perform specified sampling and testing of products in accordance with specified standards.
 - 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 5. Promptly notify Owner's Representative, Architect, and Contractor of observed irregularities or non-conformance of Work or products.
 - 6. Perform additional tests and inspections required by Owner's Representative and Architect.
 - 7. Submit reports of all tests/inspections specified.
- C. Limits on Testing/Inspection Agency Authority:
 - 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Agency may not approve or accept any portion of the Work.
 - 3. Agency may not assume any duties of the Contractor.
 - 4. Agency has no authority to stop the Work.
- D. Contractor Responsibilities:
 - 1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
 - 2. Cooperate with laboratory personnel, and provide access to the Work.
 - 3. Provide incidental labor and facilities:
 - a. To provide access to Work to be tested/inspected.
 - b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
 - c. To facilitate tests/inspections.
 - d. To provide storage and curing of test samples.
 - 4. Notify Owner's Representative and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
- E. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Owner's Representative and Architect.
- F. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Owner's Representative paid for by Contractor.

3.5 OWNER'S TESTING AND INSPECTIONS

- A. Coordinate with Owner's Representative.
- B. Owner will engage a qualified testing agency or special inspector to conduct tests and inspections are the responsibility of Owner and paid for by Owner.
 - 1. Placement of concealed flashing.
 - 2. Ceramic tile.
 - 3. Steel studs.
 - 4. Placement of cement board and wall finishing.
 - 5. Commissioning. (Allowance)
- C. Contractor shall perform the work in an efficient manner consistent with industry standards. Excessive testing resulting from the contractor's inability to perform efficiently will result in back charges to the contractor.
- D. All re-inspections required for work not properly installed shall be paid for by the contractor.
- E. The Owner will not be liable for any costs or delay claims due to the testing agency or special inspector failure to provide inspection without proper and sufficient notification.
- F. All requests by the contractor for inspection that are cancelled and result in charges to the Owner will be back charged to the contractor.

3.6 CONTRACTOR'S TESTING AND INSPECTION

- A. Testing and Inspections shall be conducted by a qualified testing agency or special inspector, approved by the Owner's Representative as required by authorities having jurisdiction and as indicated in individual Specification Sections as the contractor's responsibility including but not limited to:
 - 1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
 - 2. Notifying Owner's Representative promptly of irregularities and deficiencies observed in the work during performance of its services.
 - 3. Submitting a certified written report of each test, inspection, and similar quality-control service to Owner's Representative and Architect with copy to Contractor and to authorities having jurisdiction.
 - 4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
 - 5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 - 6. Retesting and re-inspecting corrected work.
 - 7. All design mixes.
 - 8. Testing and balancing of all mechanical and plumbing.
 - 9. Testing Fire Alarm, smoke detection systems, and emergency light
 - 10. Testing technology data and communications systems.
 - 11. Testing public address system.
 - 12. Electrical systems.
 - 13. Electrical Certification: The Electrical Contractor shall obtain UL Certification or Inspection from a Certified Electrical Organization for electrical installation.
 - 14. Testing as required by individual specification sections.

3.7 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start up of equipment, testing, and adjusting testing as applicable, and to initiate instructions when necessary.

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- B. Submit qualifications of observer to Owner's Representative 15 days in advance of required observations.
 - 1. Observer subject to approval of Owner's Representative and Architect .
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.8 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not complying with specified requirements.
- B. If, in the opinion of Owner's Representative and Architect, it is not practical to remove and replace the Work, Owner's Representative will direct an appropriate remedy or adjust payment.

END OF SECTION

**SECTION 01 4100
REGULATORY REQUIREMENTS**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY of REFERENCE STANDARDS

- A. The Owner shall file and obtain the Building Permit.
- B. Regulatory requirements applicable to this project are the following:
- C. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.
- D. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- E. 29 CFR 1910 - Occupational Safety and Health Standards; current edition.
- F. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.
- G. NFPA 1 - Fire Code; 2018.
- H. NFPA 101 - Life Safety Code; 2017.
- I. NFPA 72 - National Fire Alarm Code
- J. New York State Uniform Fire and Building Codes known as the "Building Codes of the State of New York" and consist of the following:
 - 1. State Education Department Planning Standards, including Commissioner's Regulation Part 155.5, 155.7
 - 2. Energy Conservation Construction Code of New York State
 - 3. Fire Code of New York State
 - 4. Fuel Gas Code of New York State
 - 5. Mechanical Code of New York State
 - 6. Plumbing Code of New York State
 - 7. Utility Company Regulations and Requirements.
 - 8. Classification of Construction: Type IIB.
 - 9. Occupancy Classification: Education E
 - 10. State Education Department: Planning Standards is applicable to the work. Any conflicts between the Building Codes of New York and the State Education Department Planning Standards, the most restrictive shall apply. Copies of the Planning standards are available at the SED web site.
- K. Electrical Certification: The Electrical Contractor shall obtain UL Certification or Inspection from a Certified Electrical Organization for certification of electrical installations.
- L. Each Contractor shall furnish and pay for all other permits, fees and other installation costs required for the various installations by governing authorities and utility companies; prepare and file drawings and diagrams required; arrange for inspections of any and all parts of the work required by the authorities and furnish all certificates necessary to the Owner's Representative and Architect as evidence that the work installed under this Section of the Specifications conforms with all applicable requirements of the State Codes, National Board of Fire Underwriters, and National Electric Code.
- M. Any items of work specified herein and shown on the drawings which conflict with aforementioned rules, regulations and requirements, shall be referred to the Architect and Owner for decision, which decision shall be final and binding.
- N. The work shall not be deemed to have reached a state of completion until the certificates have been delivered

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- O. EPA - Environmental Protection Agency
- P. IEEE - Institute of Electrical And Electronic Engineers
- Q. NEMA - National Electrical Manufacturers Association
- R. UL - Underwriters Laboratories
- S. OSHA Part 1926 Safety and Health Regulations for Construction.

1.3 MANDATORY OSHA CONSTRUCTION SAFETY AND HEALTH TRAINING

- A. Pursuant to NYS Labor Law §220-h - All laborers, workers and mechanics working on the site are required to be certified as having successfully completed an OSHA construction safety and health course of at least 10 hours prior to performing any work on the project.
- B. All contractors and their subcontractor's project superintendent, employees, directly or indirectly employed by the contractor to work on the project must at all times, whenever on the Owner's property, wear an ID badge or other identification, safety vest, hard hat, etc. and all other required personal protective equipment as required by OSHA

1.4 RELATED REQUIREMENTS

- A. Section 01 4000 - Quality Requirements.
- B. Section 01 4219 - Reference Standards
- C. Division 2 thru 14.
- D. Division 22 - Plumbing.
- E. Division 23 - Heating, Ventilation and Air Conditioning.
- F. Division 26 - Electrical.

1.5 QUALITY ASSURANCE

- A. Designer Qualifications: Where delegated engineering design is to be performed under the construction contract provide the direct supervision of a Professional Engineer experienced in design of this type of work and licensed in New York .

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 4216
DEFINITIONS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This section supplements the definitions contained in the General Conditions.
- B. Other definitions are included in individual specification sections.

1.3 DEFINITIONS

- A. Owner: The term "Owner shall mean Port Chester-Rye UFSD and their duly authorized representative.
 - 1. The word "Owner" and the words "School Board", "City School District", "Board of Education", "Union Free School District", and "Central School District" etc., shall have the same meaning.
- B. Architect: The term "Architect" or "Engineer" or the words "Architect/Engineer" shall mean the Professional Architect responsible for the contract documents Fuller and D'angelo Architects and Planners.
- C. Owner's Representative: The term Owner's Representative shall mean Ray Renda, Director of Facilities
- D. MEP Consultant shall mean Barile Gallagher Associates, 35 Marble Avenue, Pleasantville, New York 10570
- E. Environmental Consultant shall mean Total Quality Environmental Inc., 116 Bay 19th Street Brooklyn, NY 11214
- F. Contractor for Construction: The term "Contractor", "Contractor for Construction", "General Contractor", "Contractor for General Work", "Construction Contractor", and "Roofing Contractor" shall have the same meaning.
- G. Contractor for Plumbing: The term "Plumbing Contract", "Plumbing Contractor" "Contractor for Plumbing" shall have the same meaning.
- H. Contractor for HVAC: The term "HVAC Contract", "HVAC Contractor" "Contractor for HVAC", "Mechanical Contractor" "Ventilation Contractor" shall have the same meaning.
- I. Contractor for Electrical: The term "Electrical Contract", Electrical Contractor" "Contractor for Electric" shall have the same meaning.
- J. Contractor(s): Shall include all separate contractor(s) having contracts with the Owner for the same project and may include but not limited to: General Construction, Plumbing, HV, HVAC, Electrical, Site and others
- K. "Approved": The term "approved," when used in conjunction with Architect's action on Contractor's submittals, applications, and requests, is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract and Section 01 3000 - Administrative Requirements.
- L. "Directed": Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by Owner's Representative and Architect, requested by Owner's Representative and Architect, and similar phrases.
- M. "Indicated": The term "indicated" refers to graphic representations, notes, or schedules on Drawings; or to other paragraphs or schedules in Specifications and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the user locate the reference.
- N. "Regulations": The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

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- O. "Installer": An installer is Contractor or another entity engaged by Contractor, as an employee, subcontractor, or contractor of lower tier, to perform a particular construction operation, including installation, erection, application, and similar operations.
- P. The term "experienced," when used with the term "installer," means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with the special requirements indicated; and having complied with requirements of authorities having jurisdiction.
- Q. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to trades people of the corresponding generic name.
- R. "Project site" is the space available for performing construction activities, either exclusively or in conjunction with others performing other work as part of Project. The extent of Project site is shown on the Drawings and may or may not be identical with the description of the land on which Project is to be built.
- S. The term "Building Code" shall mean the Building Code of the State of New York including all amendments and reference standards to date.
- T. "Work" - Labor, materials, equipment, apparatus, controls, accessories, and all other items customarily furnished and/or required for proper and complete disconnection and reconnection, installation of new work.
- U. "Wiring" - Conduit, fittings, wire, junction and outlet boxes, switches, cutouts, and receptacles and all items necessary or required in connection with or relating to such wiring.
- V. "Concealed" - Embedded in masonry or other construction, installed behind wall furring, within double partitions, or hung ceilings, in trenches, or in crawl spaces.
- W. "Exposed" - Not installed underground or "Concealed" as defined above.
- X. Furnish: The term "furnish" means to supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations..
- Y. Install: The term "install" describes operations at Project site including unloading, temporary storage, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- Z. 'Noted' - as indicated on the drawings and/or specifications.
- AA. Product: Material, machinery, components, equipment, fixtures, and systems forming the work result. Not materials or equipment used for preparation, fabrication, conveying, or erection and not incorporated into the work result. Products may be new, never before used, or re-used materials or equipment.
- AB. Provide: To furnish and install complete and ready for the intended use.
- AC. Supply: Same as Furnish.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 4219
REFERENCE STANDARDS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Requirements relating to referenced standards.

1.3 RELATED REQUIREMENTS

- A. Document 00 7200 - General Conditions: Reference standards.

1.4 QUALITY ASSURANCE

- A. For products or workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Comply with the reference standard of date of issue specified in this section, except where a specific date is established by applicable code.
- C. Obtain copies of standards when required by Contract Documents.
- D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Date of Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from the Fuller and D'Angelo P.C. before proceeding.
- F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of the Fuller and D'Angelo P.C. shall be altered by Contract Documents by mention or inference otherwise in any reference document.

1.5 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract and Section 01422 Definitions

1.6 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents, including reference standards in codes having jurisdiction, 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. 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 the requirements. Refer uncertainties to Architect for a decision before proceeding.
- C. Copies of Standards: Each entity engaged in construction on Project must be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
- D. Where copies of standards are needed to perform a required construction activity, obtain copies directly from the publication source and make them available on request.

PART 2 CONSTRUCTION INDUSTRY ORGANIZATION DOCUMENTS

2.1 Abbreviations and Names:

- A. Abbreviations and acronyms are frequently used in the Specifications and other Contract Documents to represent the name of a trade association, standards-developing organization, authorities having jurisdiction, or other entity in the context of referencing a standard or publication. Where abbreviations and acronyms are used in the Specifications or other Contract Documents, they mean the recognized name of these entities. Refer to Gale Research's "Encyclopedia of Associations" or Columbia Books' "National Trade & Professional Associations of the U.S.," which are available in most libraries or the internet.

END OF SECTION

SECTION 01 4533
CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Code-required special inspections.
- B. Testing services incidental to special inspections.
- C. Submittals.
- D. Manufacturers' field services.
- E. Fabricators' field services.

1.3 RESPONSIBILITY

- A. All Code required testing will be performed and paid for by the Owner.

1.4 RELATED REQUIREMENTS

- A. Section 01 4000 - Quality Requirements for testing agency requirements.
- B. Section 00 7200 - General Conditions: Inspections and approvals required by public authorities.
- C. Section 01 3000 - Administrative Requirements: Submittal procedures.
- D. Section 01 4000 - Quality Requirements.
- E. Section 01 4219 - Reference Standards.
- F. Section 01 6000 - Product Requirements: Requirements for material and product quality.

1.5 GENERAL REQUIREMENTS

- A. Special Inspections and Structural Testing shall be in accordance with Chapter 17 of the Building Code of New York State (BCNYS).
- B. Construction Manager will schedule a Special Inspections preconstruction meeting at least 7 days prior to initial planned date for start of construction.
 - 1. Discussions shall include the following:
 - a. Review of specifications and Schedule of Special Inspections for work requiring Special Inspections.
 - b. Responsibilities of the Prime Contractors, Owner, Testing Agency, Special Inspector, and Registered Design Professional.
 - c. Notification and reporting procedures.
 - 2. Attendees shall include Construction Manager, Contractor, and Testing Agency

1.6 DEFINITIONS

- A. Code or Building Code: ICC (IBC)-2015, Edition of the International Building Code and specifically, Chapter 17 - Special Inspections and Tests.
- B. Authority Having Jurisdiction (AHJ): Agency or individual officially empowered to enforce the building, fire and life safety code requirements of the permitting jurisdiction in which the Project is located.
 - 1. Including New York State Department of Education (SED).
- C. International Accreditation Service, Inc. (IAS).
- D. National Institute of Standards and Technology (NIST).

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- E. Registered Design Professional(RDP): Licensed Professional Engineer or Registered Architect whose seal appears in the Construction Drawings. Unless noted otherwise, references to the Registered Design Professional (RDP) in this section refer to Fuller and D'Angelo, P.C. for building design.
- F. (RDP) for Geotechnical Engineering: Licensed Professional Engineer whose seal appears on the Geotechnical Investigation. The Geotechnical Engineering shall perform and oversee Agent 2 services as indicated in the Schedule of Special Inspections. If a Geotechnical Investigation was not performed or if the Geotechnical Engineering is not retained to perform Agent 2 services, a licensed Geotechnical Engineer shall be retained to perform these duties.
- G. Owner's Representative: The term Owner's Representative shall mean Ray Renda, Director of Facilities.
- H. Special Inspection:
 - 1. Special inspections are inspections and testing of materials, installation, fabrication, erection or placement of components and connections mandated by the Construction Manager and AHJ that also require special expertise to ensure compliance with the approved contract documents and the referenced standards.
 - 2. Special inspections are separate from and independent of tests and inspections conducted by Testing Agency and Special Inspector for the purposes of quality assurance and contract administration.
- I. Special Inspector: A Professional Engineer registered in the State of New York that has a minimum of four years of structural design experience with buildings and qualified to perform inspections assigned including structural, geotechnical, and HVAC.
- J. Testing/Inspecting Agency: Agent retained by Owner and coordinated by Construction Manager to perform some inspection services on behalf of Owner.
- K. Statement of Special Inspections: Documents prepared by the Registered Design Professional and filed with and approved by the Architect and Construction Manager, listing materials and work requiring Special Inspections. These documents include this specification and the Schedule of Special Inspections.
- L. Schedule of Special Inspections: An itemized list of inspections, verifications, and tests (including frequency) required for the project and individuals, agencies, or firms who will be retained to perform these services. The Schedule of Special Inspections is located in this section
- M. Seismic/Wind-Force-Resisting System: Components of the structural system that provide resistance to seismic/wind forces. These components are identified in the Schedule of Special Inspections.
- N. Continuous Special Inspection: Testing Agency and Special Inspector to perform full-time observation of work while the work is being performed.
- O. Periodic Special Inspections: Part-time or intermittent observation of work by the Special Inspector or Testing Agency for work that has been or is being performed and at completion of work.

1.7 REFERENCE STANDARDS

- A. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2014 (Errata 2017).
- B. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2016.
- C. AISC 341 - Seismic Provisions for Structural Steel Buildings; 2016.
- D. AISC 360 - Specification for Structural Steel Buildings; 2016.
- E. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; 2016.
- F. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2016.
- G. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field; 2017.
- H. ASTM C172/C172M - Standard Practice for Sampling Freshly Mixed Concrete; 2014a.

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- I. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction; 2012a.
- J. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2018.
- K. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing; 2015.
- L. ASTM E605/E605M - Standard Test Methods for Thickness and Density of Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members; 1993, with Editorial Revision (2015).
- M. ASTM E736/E736M - Standard Test Method for Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members; 2017.
- N. ASTM E2174 - Standard Practice for On-Site Inspection of Installed Firestops; 2014b.
- O. ASTM E2393 - Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers; 2010a (Reapproved 2015).
- P. ASTM E2570/E2570M - Standard Test Methods for Evaluating Water-Resistive Barrier (WRB) Coatings Used under Exterior Insulation and Finish Systems (EIFS) or EIFS with Drainage; 2007, with Editorial Revision (2014).
- Q. AWCI 117 - Technical Manual 12-B; Standard Practice for the Testing and Inspection of Field Applied Thin Film Intumescent Fire-Resistive Materials; an Annotated Guide; 2014.
- R. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015, with Errata (2016).
- S. AWS D1.3/D1.3M - Structural Welding Code - Sheet Steel; 2018.
- T. AWS D1.4/D1.4M - Structural Welding Code - Reinforcing Steel; 2011.
- U. IAS AC89 - Accreditation Criteria for Testing Laboratories; 2017.
- V. IAS AC291 - Accreditation Criteria for Special Inspection Agencies; 2017.
- W. ICC (IBC) - International Building Code; 2018.
- X. ICC (IBC)-2015 - International Building Code; 2015.

1.8 QUALIFICATIONS

- A. Testing Agency shall be accepted by the Architect and Construction Manager.
- B. Special Inspections shall be performed by agents who have relevant experience for each category of inspections indicated in the drawings.

1.9 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Special Inspection Agency Qualifications: Prior to the start of work, the Testing Agency and Special Inspector shall:
 - 1. Submit agency name, address, and telephone number, names of full time registered Engineer and responsible officer.
 - 2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.
 - 3. Submit certification that Special Inspection Agency is acceptable to AHJ.
 - 4. Submit documentation that Special Inspection Agency is accredited by IAS according to IAS AC291.
- C. Manufacturer's Qualification Statement: Manufacturer shall submit documentation of manufacturing capability and quality control procedures.

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- D. Fabricator's Qualification Statement: Fabricator shall submit documentation of fabrication facilities and methods as well as quality control procedures.
- E. Special Inspection Reports: After each special inspection, Special Inspector shall promptly submit one electronic copy of report, in PDF format, to Architect and Construction Manager .
 - 1. Include:
 - a. Date issued.
 - b. Project title and number.
 - c. Name of Special Inspector.
 - d. Date and time of special inspection.
 - e. Identification of product and specifications section.
 - f. Location in the Project.
 - g. Type of special inspection.
 - h. Date of special inspection.
 - i. Results of special inspection.
 - j. Compliance with Contract Documents.
 - 2. Final Special Inspection Report: Document special inspections and correction of discrepancies prior to the start of the work.
- F. Fabricator Special Inspection Reports: After each special inspection of fabricated items at the Fabricator's facility, Special Inspector shall promptly submit one electronic copy of report, in PDF format to Architect and Construction Manager.
 - 1. Include:
 - a. Date issued.
 - b. Name of Special Inspector.
 - c. Date and time of special inspection.
 - d. Identification of fabricated item and specification section.
 - e. Location in the Project.
 - f. Results of special inspection.
 - g. Verification of fabrication and quality control procedures.
 - h. Compliance with Contract Documents.
 - i. Compliance with referenced standard(s).
- G. Test Reports: After each test or inspection, promptly submit one electronic copy, in PDF format, to Architect and Construction Manager .
 - 1. Include:
 - a. Date issued.
 - b. Project title and number.
 - c. Name of inspector.
 - d. Date and time of sampling or inspection.
 - e. Identification of product and specifications section.
 - f. Location in the Project.
 - g. Type of test or inspection.
 - h. Date of test or inspection.
 - i. Results of test or inspection.
 - j. Compliance with Contract Documents.
- H. Certificates: When specified in individual special inspection requirements, Special Inspector shall submit certification by the manufacturer, fabricator, and installation subcontractor to Architect and Construction Manager, in quantities specified for Product Data.

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1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
 2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect and Construction Manager.
- I. Manufacturer's Field Reports: Submit reports to Architect and Construction Manager.
1. Submit report in, electronic copy, in PDF format, within 30 days of observation to Architect and Construction Manager for information.
 2. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in Contract Documents.
- J. Fabricator's Field Reports: Submit reports to Owner, Architect, and Construction Manager.
1. Submit report, in PDF format, within 30 days of observation to Fuller and D'Angelo P.C. for information.
 2. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in Contract Documents.

1.10 SPECIAL INSPECTION AGENCY

- A. Owner will employ and pay for services of a Special Inspection Agency to perform inspections and associated testing and sampling in accordance with ASTM E329 and required by the building code.
- B. The Special Inspection Agency may employ and pay for services of an independent testing agency to perform testing and sampling associated with special inspections and required by the building code.
- C. Employment of agency in no way relieves Contractor of obligation to perform work in accordance with requirements of Contract Documents.

1.11 TESTING AND INSPECTION AGENCIES

- A. Owner may employ services of an independent testing agency to perform additional testing and sampling associated with special inspections but not required by the building code or specification.
- B. Employment of agency in no way relieves Contractor of obligation to perform work in accordance with requirements of Contract Documents.

1.12 QUALITY ASSURANCE

- A. Special Inspection Agency Qualifications:
 1. Independent firm specializing in performing testing and inspections of the type specified in this section.
 2. Accredited by IAS according to IAS AC291.
- B. Testing Agency Qualifications:
 1. Independent firm specializing in performing testing and inspections of the type specified in this section.
 2. Accredited by IAS according to IAS AC89.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 SCHEDULE OF SPECIAL INSPECTIONS, GENERAL

- A. Frequency of Special Inspections: Special Inspections are indicated as continuous or periodic.
 1. Continuous Special Inspection: Special Inspection Agency is required to be present in the area where the work is being performed and observe the work at all times the work is in progress.

3.2 SPECIAL INSPECTIONS FOR STEEL CONSTRUCTION (INCLUDING METAL DECK)

- A. Structural Steel: Comply with quality assurance inspection requirements of ICC (IBC).
- B. Testing Agency shall perform the following:

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1. Verify Fabricator maintains detailed fabrication and Quality Control procedures:
 - a. Review procedures for completeness and adequacy relative to code requirements.
 - b. If Fabricator is designated as AISC-Certified Fabricator, Special Inspection for shop-fabricated members and assemblies is not required.
 - c. If Fabricator is not designated as AISC-Certified Fabricator, Contractor shall reimburse Owner via execution of credit change order for cost of Special Inspections and testing in Fabricator's shop.
 2. Review manufacturer's Certificates of Compliance for high-strength bolts and weld filler material.
 3. Review certified mill test reports.
 4. Inspect steel frame joint details for compliance with approved Construction Documents.
- C. High-Strength Bolt, Nut and Washer Material:
1. Verify identification markings comply with ASTM standards specified in the approved contract and to AISC 360, Section A3.3; periodic.
 2. Submit manufacturer's certificates of compliance; periodic.
- D. High-Strength Bolting Installation: Verify items listed below comply with AISC 360, Section M2.5.
1. Snug tight joints; periodic.
 2. Pretensioned and slip-critical joints without matchmarking or calibrated wrench method of installation; continuous.
- E. Structural Steel and Cold Formed Steel Deck Material:
1. Structural Steel: Verify identification markings comply with AISC 360, Section M3.5; periodic.
 2. Other Steel: Verify identification markings comply with ASTM standards specified in the approved Contract Documents; periodic.
 3. Submit manufacturer's certificates of compliance and test reports; periodic.
- F. Weld Filler Material:
1. Verify identification markings comply with AWS standards specified in the approved Contract Documents and to AISC 360, Section A3.5; periodic.
 2. Submit manufacturer's certificates of compliance; periodic.
- G. Welding:
1. Structural Steel and Cold Formed Steel Deck:
 - a. Complete and Partial Joint Penetration Groove Welds: Verify compliance with AWS D1.1/D1.1M; continuous.
 - b. Multipass Fillet Welds: Verify compliance with AWS D1.1/D1.1M; continuous.
 - c. Single Pass Fillet Welds Less than 5/16 inch (7.94 mm) Wide: Verify compliance with AWS D1.1/D1.1M; periodic.
 - d. Plug and Slot Welds: Verify compliance with AWS D1.1/D1.1M; continuous.
 - e. Single Pass Fillet Welds 5/16 inch (7.94 mm) or Greater: Verify compliance with AWS D1.1/D1.1M; continuous.
 - f. Floor and Roof Deck Welds: Verify compliance with AWS D1.3/D1.3M; continuous.
 2. Reinforcing Steel: Verify items listed below comply with AWS D1.4/D1.4M and ACI 318, Section 3.5.2.
 - a. Verification of weldability; periodic.
 - b. Reinforcing steel resisting flexural and axial forces in intermediate and special moment frames as well as boundary elements of special structural walls of concrete and shear reinforcement; continuous.
 - c. Shear reinforcement; continuous.
 - d. Other reinforcing steel; periodic.

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- H. Steel Frame Joint Details: Verify compliance with approved Contract Documents.
 - 1. Details, bracing and stiffening; periodic.
 - 2. Member locations; periodic.
 - 3. Application of joint details at each connection; periodic.
- I. Cold-formed steel trusses spanning 60 feet or more; periodic.

3.3 COLD FORMED STEEL LIGHT FRAME CONSTRUCTION:

- A. Stud spacing.
- B. Field welding;
- C. Screw attachment, bolting, anchoring and other fastening of components.
- D. Screw attachment of sheathing,

3.4 SPECIAL INSPECTIONS FOR CONCRETE CONSTRUCTION

- A. Reinforcing Steel, Including Placement: Verify compliance with approved contract documents and ACI 318, Sections 3.5 and 7.1 through 7.7; periodic.
- B. Bolts Installed in Concrete: Where allowable loads have been increased or where strength design is used, verify compliance with approved Contract Documents and ACI 318, Sections 8.1.3 and 21.2.8 prior to and during placement of concrete; continuous.
- C. Anchors Installed in Hardened Concrete: Verify compliance with ACI 318, Sections 3.8.6, 8.1.3, and 21.2.8; periodic.
- D. Concrete Sampling Concurrent with Strength Test Sampling: Each time fresh concrete is sampled for strength tests, verify compliance with ASTM C172/C172M, ASTM C31/C31M and ACI 318, Sections 5.6 and 5.8 and record the following, continuous:
 - 1. Slump.
 - 2. Air content.
 - 3. Temperature of concrete.
 - 4. Verify use of required design mix.
 - 5. Sample and test concrete during placement as follows. Test shall be taken at point of discharge into structure:
 - a. Record specific locations where concrete was placed. Refer to column lines where possible.
 - b. For each truck, record time concrete is batched as shown in truck ticket, time placement begins/sample time, and time truck is emptied.
 - c. For each truck, sample fresh concrete in accordance with ASTM C 172, except modified for slump to comply with ASTM C 94.
 - d. For each truck, perform slump test in accordance with ASTM C 143. Perform two slump tests for pumped concrete; one at truck and one at point of discharge.
 - e. For each truck for self-consolidating concrete, measure slump flow and record visibility stability index in accordance with ASTM C 1611/C 1611M. Slump cone may be in the upright or inverted position. Use same cone position for the entire project for consistency.
 - f. For normal-weight concrete, measure air content in accordance with ASTM C 231, pressure method. For lightweight concrete, measure air content in accordance with ASTM C 173, volumetric method. Perform one test for each truck for air-entrained and non-air-entrained concrete.
 - g. Record temperature of concrete for each truck. Test in-place concrete temperature hourly when ambient temperature is 40 degrees F and below and when 80 degrees F and above.
 - h. Record air temperature and general weather conditions (cloudy, windy, sunny, etc.).

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- i. Record unit weight of fresh normal-weight concrete in accordance with ASTM C 138. Record unit weight of lightweight concrete in accordance with ASTM C 567. Perform one test for each 50 cubic yard of concrete.
- j. Perform concrete compressive tests as follows:
 - a) Prepare compressive test specimens in accordance with ASTM C 31. Take a set of four - 6" x 12" cylinders for each 50 cubic yards of concrete or each 5,000 square feet of slab area for each type of concrete. Store undisturbed in insulated box during cold weather. Deliver to laboratory between 16 and 32 hours after making. Perform compressive tests in accordance with ASTM C 39: one 6 x 12 specimens tested at 7 days, two 6 x 12 specimens tested at 28 days, and one 6 x 12 specimens retained for later testing if required.
 - b) In cold weather or whenever steel erection is scheduled to commence less than 14 days after placement of supporting foundation concrete, cast additional set of four - 6" x 12" cylinders for each 50 cubic yard or fraction thereof of supporting foundation concrete. Field-cure cylinders, and test two 6 x 12 specimens at 7 days, retaining two 6 x 12 specimens for later testing if required. Steel erection may not begin until supporting concrete obtains 75 percent of its design strength. Contractor, at their cost, may perform additional tests to determine concrete strength.
- k. If concrete will be placed in separate buildings on a given project, make individual compressive strength test cylinders for each building.
- l. Perform additional testing as follows if required:
 - a) If total time period between batching and completing placement has exceeded ACI-recommended, 90-minute-maximum time limit the batch shall be rejected..
- 6. Inspect concrete placement for proper application techniques.
- 7. Inspect for maintenance of specified curing temperature and techniques.
- 8. Perform moisture vapor emission and alkalinity testing in accordance with ASTM F 1869 and ASTM F 710, respectively, as follows:
 - a. Perform testing after building is enclosed, prior to installation of adhered floor finishes, and once HVAC systems are operational.
 - b. Test results must be reviewed and accepted by floor finish installer.
- E. Concrete: Verify application techniques comply with approved contract documents and ACI 318, Sections 5.9 and 5.10; continuous.
- F. Specified Curing Temperature and Techniques: Verify compliance with approved Contract Documents and ACI 318, Sections 5.11 through 5.13; periodic.
- G. Formwork Shape, Location and Dimensions: Verify compliance with approved Contract Documents and ACI 318, Section 6.1.1; periodic.
- H. Materials: If the Contractor cannot provide sufficient data or documentary evidence that concrete materials comply with the quality standards of ACI 318, the AHJ will require that the Special Inspector verify compliance with the appropriate standards and criteria in ACI 318, Chapter 3.

3.5 SPECIAL INSPECTIONS FOR MASONRY CONSTRUCTION

- A. Masonry Structures Subject to Special Inspection:
 - 1. Empirically designed masonry, glass unit masonry and masonry veneer in structures designated as "essential facilities".
- B. Verify each item below complies with approved Contract Documents and the applicable articles of TMS 402/602.
 - 1. Inspections and Approvals:
 - a. Verify compliance with the required inspection provisions of the approved Contract Documents; periodic.

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- b. Verify approval of submittals required by Contract Documents; periodic.
- c. Verify Proportions of site-prepared mortar.
- d. Verify Proportions of site-prepared grout.
- e. Observe preparation of required mortar specimens, grout specimens, or prisms in accordance with ASTM C 780, ASTM C 1019, and ASTM C 1314 Rev B.
- f. Field Quality Control Testing: Perform tests and evaluations listed below during construction for each 5,000 square feet of wall area or portion thereof.
 - a) Sample and evaluate mortar composition and properties in accordance with ASTM C 780.
 - b) Sample and test grout compressive strength in accordance with ASTM C 1019.
- 2. Compressive Strength of Masonry: Verify compressive strength of masonry units prior to start of construction unless specifically exempted by code; periodic.
- 3. Slump Flow and Visual Stability Index (VSI): Verify compliance as self consolidating grout arrives on site; continuous.
- 4. Joints and Accessories: When masonry construction begins, verify:
 - a. Proportions of site prepared mortar; periodic.
 - b. Construction of mortar joints; periodic.
 - c. Location of reinforcement, connectors, and anchorages, etc; periodic.
- 5. Structural Elements, Joints, Anchors, Protection: During masonry construction, verify:
 - a. Size and location of structural elements; periodic.
 - b. Type, size and location of anchors, including anchorage of masonry to structural members, frames or other construction; periodic.
 - c. Size, grade and type of reinforcement, anchorages, and anchor bolts; periodic.
 - d. Welding of reinforcing bars; continuous.
 - e. Preparation, construction and protection of masonry against hot weather above 90 degrees F (50 degrees C) and cold weather below 40 degrees F (22 degrees C); periodic.
- 6. Grouting Preparation: Prior to grouting, verify:
 - a. Grout space is clean; periodic.
 - b. Correct placement of reinforcing, connectors, prestressing tendons and anchorages; periodic.
 - c. Correctly proportioned site prepared grouts; periodic.
 - d. Correctly constructed mortar joints; periodic.
- 7. Preparation of Grout Specimens, Mortar Specimens and Prisms: Observe preparation of specimens; periodic.

3.6 SPECIAL INSPECTIONS FOR SOILS

- A. Materials and Placement: Verify each item below complies with approved construction documents and approved geotechnical report.
 - 1. Design bearing capacity of material below shallow foundations; periodic.
 - 2. Identify soils requiring undercutting and replacing while observing proof rolling and when subgrade is exposed.
 - 3. Verify footing bearing strata.
 - 4. Review and accept materials proposed by Contractor for use as compacted fill based on test data and information submitted by Testing Agency. Material approval shall be based on requirements and recommendations stated in Project Geotechnical and Subsurface Investigation.
 - 5. Design depth of suitability of material at bottom of footings; continuous.
 - 6. Design depth of excavations and suitability of material at bottom of excavations; periodic.
 - 7. Materials, densities, lift thicknesses; placement and compaction of backfill: Continuous.

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8. Subgrade, prior to placement of compacted fill verify proper preparation; periodic.
9. Observe and accept preparation of slab-on-grade subgrade and subbase.
- B. Testing Agency shall perform field density tests for building subgrades and for fill materials including slab subbase within building area in accordance with ASTM D 6938 as follows:
 1. Testing: Classify and test excavated material; periodic.
 2. Footing subgrade and each stratum of soil on which footings will be placed.
 3. Building subgrade including slab subbase and each lift of compacted material.
 4. Inspect each subgrade and fill layer before further backfill or construction work is performed. Approval shall be based on satisfactory achievement of compaction criteria.
 5. Verify use of fill material and lift thicknesses in field.
 6. Perform moisture content testing of slab subbase in accordance with ASTM D 6938.

3.7 SPECIAL INSPECTIONS FOR SPRAYED FIRE RESISTANT MATERIALS

- A. Sprayed Fire Resistant Materials, General:
 1. Verify compliance of sprayed-fire resistant materials with specific fire-rated assemblies indicated in approved Contract Documents, and with applicable requirements of the building code.
 2. Perform special inspections after rough installation of electrical, mechanical, plumbing, automatic fire sprinkler and suspension systems for ceilings.
- B. Physical and visual tests: Verify compliance with fire resistance rating.
 1. Condition of substrates; periodic.
 2. Thickness of sprayed fire resistant material; periodic.
 3. Density of sprayed fire resistant material in pounds per cubic foot (kg per sq m); periodic.
 4. Bond strength (adhesion and cohesion); periodic.
 5. Condition of finished application; periodic.
- C. Structural member surface conditions:
 1. Inspect structural member surfaces before application of sprayed fire resistant materials; periodic.
 2. Verify preparation of structural member surfaces complies with approved Contract Documents and manufacturer's written instructions; periodic.
- D. Application:
 1. Ensure minimum ambient temperature before and after application complies with the manufacturer's written instructions; periodic.
 2. Verify area where sprayed fire resistant material is applied is ventilated as required by the manufacturer's written instructions during and after application; periodic.
- E. Thickness: Verify that no more than 10 percent of thickness measurements taken from sprayed fire resistant material are less than thickness required by fire resistance design in approved Contract Documents. In no case shall the thickness of the sprayed fire resistant material be less than the minimum below.
 1. Minimum Allowable Thickness: Tested according to ASTM E605/E605M, periodic.
 - a. Design thickness 1 inch (25 mm) or greater: Design thickness minus 1/4 inch (6.4 mm).
 - b. Design thickness greater than 1 inch (25 mm): Design thickness minus 25 percent.
- F. Density: Verify density of sprayed fire resistant material is no less than density required by the fire resistance design in the approved Contract Documents.
- G. Bond Strength: Verify adhesive and cohesive bond strength of sprayed fire resistant materials is no less than 150 pounds per square foot (7.18 kPa) when in-place samples of the cured material are tested according to ASTM E736/E736M and as described below.

3.8 SPECIAL INSPECTIONS FOR FIRE RESISTANT PENETRATIONS AND JOINTS

- A. Verify penetration firestops in accordance with ASTM E2174.
- B. Verify fire resistant joints in accordance with ASTM E2393.

3.9 SPECIAL INSPECTIONS FOR SMOKE CONTROL

- A. Test smoke control systems as follows:
 - 1. Record device locations and test system for leakage after erection of ductwork but before starting construction that conceals or blocks access to system.
 - 2. Test and record pressure difference, flow measurements, detection function and controls after system is complete and before structure is occupied.

3.10 SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE

- A. Structural Steel: Comply with the quality assurance plan requirements of AISC 341.
- B. Architectural Components: Erection and fastening of components below; periodic.
 - 1. Exterior cladding.
 - 2. Interior and exterior veneer.
 - 3. Interior and exterior non-loadbearing walls and partitions.
- C. Mechanical and Electrical Components:
 - 1. Anchorage of electric equipment required for emergency or standby power systems; periodic.
 - 2. Installation and anchorage of other electrical equipment; periodic.
 - 3. Installation of piping systems for flammable, combustible or highly-toxic contents and associated mechanical units; periodic.
 - 4. Vibration isolation systems where the approved Contract Documents require a nominal clearance of 1/4 inch (6.35 mm) or less between support frame and seismic restraint; periodic.
- D. Designated Seismic System Verification: Verify label, anchorage or mounting complies with certificate of compliance provided by manufacturer or fabricator.
- E. Structural Testing for Seismic Resistance:
 - 1. Concrete reinforcement: Comply with ACI 318, Section 21.1.5.2.
 - a. Materials: Obtain mill certificates demonstrating compliance with ASTM A615/A615M; periodic.
 - b. Welding: Perform chemical tests complying with ACI 318, Section 3.5.2 to determine weldability; periodic.
 - 2. Structural Steel: Comply with the quality assurance requirements of AISC 341.
 - 3. Non-Structural Components:
 - a. General Design Requirements: Obtain manufacturer certification of compliance with requirements of ASCE 7, Section 13.2.1; periodic.
 - b. Designated Seismic Force-Resisting Non-Structural System Components: Obtain manufacturer certification of compliance with ASCE 7, Section 13.2.2; periodic.
- F. Structural Observations for Seismic Resistance: Visually observe structural system for general compliance with the approved Contract Documents; periodic.

3.11 OTHER SPECIAL INSPECTIONS

- A. Provide for special inspection of work that, in the opinion of the AHJ, is unusual in nature.
- B. For the purposes of this section, work unusual in nature includes, but is not limited to:

3.12 SPECIAL INSPECTION AGENCY DUTIES AND RESPONSIBILITIES

- A. Special Inspector shall:

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1. Provide qualified personnel at site. Cooperate with Construction Manager and Testing Agency and Contractor in performance of services.
 2. Perform specified sampling and testing of products in accordance with specified reference standards.
 3. Ascertain compliance of materials and products with requirements of Contract Documents.
 4. Promptly notify Architect and Contractor and Contractor of observed irregularities or non-conformance of work or products.Owner
 5. Perform additional tests and inspections required by Architect and Construction Manager.
 6. Submit reports of all tests or inspections specified.
- B. Limits on Special Inspection Agency Authority:
1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 2. Agency may not approve or accept any portion of the work.
 3. Agency may not assume any duties of Contractor.
 4. Agency has no authority to stop the work.
- C. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Architect and Construction Manager.
- D. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

3.13 TESTING AGENCY DUTIES AND RESPONSIBILITIES

- A. Testing Agency Duties:
1. Provide qualified personnel at site. Cooperate with Architect, Construction Manager, and Contractor in performance of services.
 2. Perform specified sampling and testing of products in accordance with specified standards.
 3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 4. Promptly notify Owner, Architect, Construction Manager, and Contractor of observed irregularities or non-conformance of work or products.
 5. Perform additional tests and inspections required by Architect and Construction Manager.
 6. Attend preconstruction meetings and progress meetings.
 7. Submit reports of all tests or inspections specified within maximum of one (1) week.
- B. Limits on Testing or Inspection Agency Authority:
1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 2. Agency may not approve or accept any portion of the work.
 3. Agency may not assume any duties of Contractor.
 4. Agency has no authority to stop the work.
- C. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Architect and Construction Manager.
- D. Contractor will pay for re-testing required because of non-compliance with specified requirements.

3.14 CONTRACTOR DUTIES AND RESPONSIBILITIES

- A. Contractor Responsibilities, General:
1. Deliver to agency at designated location, adequate samples of materials for special inspections that require material verification.
 2. Cooperate with agency and laboratory personnel; provide access to approved documents at project site, to the work, to manufacturers' facilities, and to fabricators' facilities.
 3. Provide incidental labor and facilities:
 - a. To provide access to work to be tested or inspected.

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- b. To obtain and handle samples at the site or at source of Products to be tested or inspected.
 - c. To facilitate tests or inspections.
 - d. To provide storage and curing of test samples.
- 4. Notify Construction Manager and laboratory 24 hours prior to expected time for operations requiring testing or inspection services.
- 5. Arrange with Construction Manager pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- B. Contractor Responsibilities, Seismic Force-Resisting Systems: Submit written statement of responsibility for each item listed to Construction Manager prior to starting work. Statement of responsibility shall acknowledge awareness of special construction requirements and other requirements listed.
- C. Contractor Responsibilities, Wind Force-Resisting Systems: Submit written statement of responsibility for each item listed to Architect and Construction Manager prior to starting work. Statement of responsibility shall acknowledge awareness of special construction requirements and other requirements listed.

3.15 MANUFACTURERS' AND FABRICATORS' FIELD SERVICES

- A. When specified in individual specification sections, require material suppliers, assembly fabricators, or product manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, to test, adjust, and balance equipment as applicable, and to initiate instructions when necessary.
- B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

END OF SECTION

SECTION 01 5000
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Temporary water.
- B. Temporary electric power and light.
- C. Temporary heat.
- D. Ventilation.
- E. Temporary telephone service.
- F. Temporary sanitary facilities.
- G. Temporary Controls: Barriers, enclosures, and fencing.
- H. Dust control.
- I. Temporary scaffold.
- J. Storage shed
- K. Hoists and temporary elevator use
- L. Waste removal facilities and services.
- M. Project signage.
- N. Field offices.
- O. Construction aids and miscellaneous services and facilities.
- P. Temporary fire protection

1.3 RELATED REQUIREMENTS

- A. Section 01 3553 - Site Safety and Security Procedures
- B. Section 01 3000 - Administrative Requirements for submittals.
- C. Section 01 7000 - Execution progress cleaning.

1.4 REPORTS AND PERMITS:

- A. Refer to 01 3000 - Administrative Requirements and 01 4100 - Regulatory Requirements.

1.5 QUALITY ASSURANCE

- A. Refer to Section 01 4000 - Quality Requirements.
- B. Regulations: Refer to 01 4100 - Regulatory Requirements.
- C. Standards: Refer to 01 4100 - Regulatory Requirements.

1.6 PROJECT CONDITIONS

- A. General: Each Contractor shall provide each temporary service and facility ready for use at each location, when first needed to avoid delays in performance of work. Maintain, expand as required, and modify as needed throughout the progress of the work. Do not remove until services or facilities are no longer needed, or are replaced by the authorized use of completed permanent facilities.
- B. Temporary Use of Permanent Facilities: Regardless of previously assigned responsibilities for temporary services and facilities, the Installer of each permanent service or facility shall assume responsibility for its operation, maintenance and protection during use as a construction service or facility prior to the Owner's Representative's acceptance and operation of the facility.

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- C. Conditions of Use: Operate temporary services and facilities in a safe and efficient manner. Do not overload, and do not permit temporary services and facilities to interfere with the progress of work, or occupancy of existing facility. Do not allow unsanitary conditions, public nuisances or hazardous conditions to develop or persist on the site.
- D. Temporary Utilities: Do not permit freezing of pipes, flooding or the contamination of water sources.
- E. Temporary Construction and Support Facilities: Maintain temporary facilities in a manner to prevent discomfort to users. Take necessary fire prevention measures. Maintain temporary facilities in a sanitary manner so as to avoid health problems.
- F. Security and Protection: Maintain site security and protection facilities in a safe, lawful, publicly acceptable manner. Take measures necessary to prevent site erosion.

1.7 TEMPORARY UTILITIES

- A. Port Chester-Rye UFSD will provide the following:
 - 1. Electrical power consisting of connections to existing facilities.
 - 2. Water supply, consisting of connections to existing facilities.
- B. Provide for all electrical power, lighting, and water required for construction purposes.
- C. Existing facilities may be used.
- D. Use trigger-operated nozzles, with back flow devices, for water hoses, to avoid waste of water.

1.8 DIVISION OF RESPONSIBILITIES

- A. Each Contractor is responsible for the following:
 - 1. Installation, operation, maintenance, and removal of each temporary facility usually considered as its own normal construction activity, as well as the costs and use charges associated with each facility.
 - 2. Plug-in electric power cords and extension cords.
 - 3. Supplementary plug-in task lighting, and special lighting necessary exclusively for its own activities.
 - 4. Special power requirements for installation of its own work such as welding.
 - 5. Its own field office complete with necessary furniture, utilities, and telephone service.
 - 6. Its own storage and fabrication sheds.
 - 7. Temporary telephone service.
 - 8. All hoisting for its own work.
 - 9. Collection and disposal of major equipment removed such as unit ventilators and HV equipment.
 - 10. Collection of general waste and debris and disposing into containers provided by the Contractor.
 - 11. Secure lockup of its own tools, materials and equipment.
 - 12. Construction aids and miscellaneous services and facilities necessary exclusively for its own construction activities.
- B. The Contract #1 General Construction Contractor is responsible and pays all costs for all prime contractors the following:
 - 1. Temporary toilets, including disposable supplies.
 - 2. Temporary wash facilities, including disposable supplies.
 - 3. Containerized bottled-water drinking-water units.
 - 4. First Aid Station and Supplies.
 - 5. Containers for non-hazardous waste and debris.
 - 6. Project temporary signs.
 - 7. Disposal of wastes containers.
 - 8. Barriers.

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9. Temporary heat.
 10. Temporary ventilation.
 11. Security enclosure and lockup.
 12. Temporary Protection for existing flooring, within and from altered areas to exits.
 13. Construction aids and miscellaneous services and facilities.
 14. Temporary dust control.
 15. Snow Removal for staging area.
- C. Water Service: The Contract #2 Plumbing Contractor shall provide and pay all costs to install distribution piping of sizes and pressures adequate for construction .
1. Provide backflow devices to prevent water from re-entering the potable system.
 2. Maintain hose connections and outlet valves in leak-proof condition. Where finish work below an outlet might be damaged by spillage or leakage, provide a drip pan of suitable size to minimize the possibility of water damage. Drain water promptly from drip pans as it accumulates.
 3. Pumping: Where temporary water pressure is inadequate to provide at least 20 psig pressure at the highest point of use, provide temporary water pumps as necessary to supply the required flow of water and to provide a minimum of 30 psig static pressure at the highest point of use. Equip pumps with adequate surge and storage tanks and automatic controls to supply water uniformly, at reasonable pressures.
- D. The Contract #3 HVAC Contractor is responsible and pays all costs for the following:
1. Maintaining existing heating system in service during the period between September 15 and June 15. Contractor shall provide all piping, valves, controls, etc., and labor and materials required to maintain operation of existing heating system where affected by the work.
- E. Temporary Electric Power Service: Contract #4 Electrical Contractor shall provide and pay all costs to provide a weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics to accommodate performance of work during the construction period .
1. Applicability: This section applies to all renovation work areas for this Project.
 2. Connect temporary service to Owner's existing main in the manner directed by Owner's Representative.
 3. Contract #4 Electrical Contractor shall maintain all parts of the electrical system temporary and permanent active and in-service at all times throughout the contract duration. All temporary lighting and power to be controlled by standard switches per code (outside of power panels) at no additional charge.
 4. Temporary Service: Install service and grounding in compliance with the National Electric Code (NFPA 70). Include necessary meters, transformers, overload protected disconnect and main distribution switch gear. Comply with all NECA, NEMA and UL Standards.
 5. Provide temporary service with an automatic ground-fault interrupter feature, activated from the circuits of the system.
 6. Power Distribution System: Provide circuits of adequate size and proper characteristics for each use. In general run wiring overhead. Rise vertically where wiring will be least exposed to damage from construction operations.
 7. For power hand tools and task lighting, provide temporary 4-gang outlets at each floor level, spaced so that a 100 foot extension cord can reach each work area. Provide separate 110-120 Volt, 20 Amp circuit for each 4-gang outlet (4 outlets per circuit). GFCI protected.
- F. Temporary Lighting: Contract #4 Electrical Contractor shall provide and pay all costs to provide local switching of temporary lighting, spaced to allow lighting to be turned off in patterns to conserve energy, retain light suitable for work-in-progress, access traffic, security check and project lock-up .

1.9 USE CHARGES

- A. General: Cost for temporary facilities are not chargeable to the Owner or the Architect, Engineer or the Owner's Representative. The Owner, Owner's Representative, and Architect will not accept a contractor's

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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.

1. Water Service Use Charges: Water from the Owner's existing water system may be used without metering, and without payment for use charges.
2. Electric Power and Lighting Service Use Charges: Electric power from the Owner's existing system may be used without payment of use charges. Contractor and Sub-Contractors shall exercise measures to conserve energy usage.

1.10 TELECOMMUNICATIONS SERVICES

- A. Each contractor shall provide and pay for its own telephone service. Provide mobile phone service for all field superintendents and foreman.
- B. At telephone location post a list of important telephone numbers, including the following:
 1. Local police and fire department.
 2. Doctor.
 3. Ambulance service.
 4. Contractor's temporary and home office.
 5. Owner's Representative temporary and home office
 6. Architect's home office.
 7. Engineer's home office.
 8. Owner's home office.
 9. Principal subcontractors temporary and home office

1.11 TEMPORARY SANITARY FACILITIES

- A. Responsibilities: The Contract #1 General Construction is responsible for temporary sanitary facilities and their maintenance, including supplies for all contractors .
- B. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
- C. Use of existing facilities is not permitted.
- D. Maintain daily in clean and sanitary condition.
- E. Sanitary Facilities: Sanitary facilities include temporary toilets, wash facilities and drinking water fixtures. Comply with governing regulations including safety and health codes for the type, number, location, operation and maintenance of fixtures and facilities; provide not less than specified requirements. Install in locations which will best serve the project's needs.
 1. Install self-contained toilets to the extent permitted by governing regulations.
 2. Supply and maintain toilet tissue, paper towels, paper cups and other disposable materials as appropriate for each facility for full contract duration. Provide covered waste containers for used material.
 3. Provide separate toilet facilities for male and female construction personnel where required by law.

1.12 BARRIERS

- A. Responsibility: Contract #1 General Construction Contractor shall be responsible for construction barriers required for the project.
- B. Barricades, Warning Signs and Lights: Comply with recognized standards and code requirements for erection of substantial, structurally adequate barricades where needed to prevent accidents and losses. Paint with appropriate colors, graphics and warning signs to inform personnel at the site and the public, of the hazard being protected against. Provide lighting where appropriate and needed for recognition of the facility, including flashing red lights where appropriate
 1. Sign Materials: For signs and directory boards, provide exterior type, Grade B-B High Density Concrete Form Overlay Plywood conforming to PS-1, of sizes and thickness indicated. Provide exterior grade acrylic-latex-base enamel for painting sign panels and applying graphics.

- C. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and removals .

1.13 SIDEWALK BRIDGES

- A. Sidewalk Bridge: General: Erect a substantial structurally adequate protective bridge for passage of persons along exits from existing building when overhead work is being performed. Coordinate with project entrance gates and other facilities and obstructions. Comply with governing regulations and requests of governing authorities.
 - 1. Responsibility: Sidewalk bridge required for the project shall be the responsibility of each Contractor
 - 2. Shop drawings for sidewalk bridges showing the locations, dimensions, and details for all components and assemblies of the safety fence and sidewalk bridges.
 - 3. Shall be designed for live load of 100 lbs/sf. and meet the following minimum requirements:

1.14 FENCING

- A. Contract #1 General Construction Contractor shall be responsible for its own fencing.
- B. Construction: Commercial grade chain link fence.
- C. Provide 6 foot (1.8 m) high fence around construction site; equip with vehicular and pedestrian gates with locks.

1.15 SITE SAFETY AND SECURITY PROCEDURES

- A. See Section 01 3553 See Section 01 3553

1.16 VEHICULAR ACCESS AND PARKING

- A. See Section 01 5500.
- B. Existing on-site roads may be used for construction traffic.

1.17 WASTE REMOVAL

- A. See Section 01 7419 - Construction Waste Management and Disposal, for additional requirements.
- B. Contract #1 General Construction Contractor shall provide containers, at grade, sufficient for the depositing of non-hazardous/non-toxic waste materials, and shall remove such waste materials from project site as required or directed by the Owner's Representative.
 - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 - 2. Contractors shall not utilize the Owner's bins or dumpsters.
- C. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- D. Provide containers with lids. Remove trash from site periodically.
- E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.
- F. Burying or burning of waste materials on the site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.
- G. Provide rodent proof containers located on each floor level to encourage depositing of garbage and similar wastes by construction personnel.
- H. Site: Each Contractor shall maintain Project site free of waste materials and debris.
- I. Installed Work: Keep installed work clean. Each Contractor shall 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.

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- J. Concealed Spaces: Each contractor shall remove debris from concealed spaces before enclosing the space.
- K. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

1.18 TEMPORARY HEAT

- A. Temporary Heat: General: Provide temporary heat as required for proper performance of the Work, curing or drying of recently installed work or protection of work in place from adverse effects of low temperatures or high humidity. Select facilities known to be safe and without deleterious effect upon work in place or being installed. Coordinate with ventilation requirements to produce indicated ambient condition required and to minimize consumption of fuel or energy.
 - 1. All temporary heat required within the perimeter of the building being erected, or within the completed or uncompleted walls of the building being erected, shall be the responsibility of Contract #1 General Construction Contractor and complete costs therefore shall be borne by them and included in the amount quoted in his proposal for all temporary heating described in this section.
 - 2. Contract #1 General Construction Contractor shall enclosed the area within the perimeter of the building, or the required portion of that area, with temporary, legal and fire-resistant construction which will retain temporary heat within that area, if the exterior walls are not erected. They shall do so when directed by the Owner's Representative in order to comply with the progress schedule, and to protect work or materials previously placed, being placed, or about to be placed from damage that could result from cold weather.
 - 3. All other contractors shall be responsible for temporary heat required to comply with the progress schedule and protect their work and materials on the site, but beyond the perimeter or beyond the completed or uncompleted walls of the building or buildings in this project.
 - 4. Maintain a minimum temperature of 55 degF in permanently enclosed portions of the building and areas where finished work has been installed. Refer to individual sections for more stringent requirements.
 - 5. Heating Facilities: Except where conditions make it necessary to use another system, provide properly vented self-contained LP gas heaters with individual space thermostatic control for temporary heat.
 - a. Gasoline burning space heaters will not be permitted.
 - b. Electric space heaters will not be permitted.
 - c. Do not use open burning, electric or salamander type temporary heating units

1.19 HOISTS AND TEMPORARY ELEVATOR USE

- A. Each Contractor shall provide facilities for hoisting materials and employees. Do not permit employees to ride hoists which comply only with requirements for hoisting materials. Selection of type, size and number of facilities is the Contractor's option. Truck cranes and similar devices used for hoisting are considered tools and equipment and not temporary facilities
- B. Elevator Use: Owner's existing elevator may not be used by the Contractor.

1.20 MISCELLANEOUS PROVISIONS

- A. Temporary Floor Protection: Contract #1 General Construction shall provide protective floor covering from and within construction work areas to all floors leading to all exits.
 - 1. Heavy-duty, temporary floor protection "Ram Board" reusable and recyclable.
 - 2. Handling and storage in accordance with manufacturer's recommendations.
 - 3. Tape all joints

1.21 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.
- B. Clean and repair damage caused by installation or use of temporary work.
- C. Restore existing facilities used during construction to original condition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION -

3.1 STAGING

- A. All staging and appurtenances thereto shall comply in total to the requirements of Safety and Health Regulations for Construction Chapter XVII of OSHA, Part 1926 and all related amendments.

3.2 ROOF PROTECTION

- A. Each Contractors shall provide temporary protection on any existing roof surface when it is necessary for work to take place on completed sections.
- B. Upon such notification as required in subparagraph A, each Contractor shall assume responsibility for damages, if any, to the roofing system caused by the work of other trades, except that financial liability for any and all damages rests with the offending trade.

3.3 FIRE PREVENTION AND CONTROL

- A. Refer to Section 01 3553 - Site Safety and Security Procedures.
- B. Each Contractors shall comply with the safety provisions of the National Fire Protection Association's "National Fire Codes" pertaining to the work and, particularly, in connection with any cutting or welding performed as part of the work

3.4 DISCONTINUE, CHANGES AND REMOVAL

- A. Each Contractors shall:
 - 1. Discontinue all temporary services required by the Contract when so directed by the Owner's Representative.
 - 2. The discontinuance of any such temporary service prior to the completion of the work shall not render the Owner liable for any additional cost entailed thereby and the Contractor shall thereafter furnish, at no additional cost to the Owner, any and all temporary service required by such Contractor(s) work.
 - 3. Remove and relocate such temporary facilities as directed by the Architect. and Owner's Representative without additional cost to the Owner, and shall restore the site and the work to a condition satisfactory to the Owner.

3.5 VENTILATION AND HUMIDITY CONTROL FOR CONSTRUCTION

- A. Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment from that specified that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
- B. Contract #1 General Construction Contractor shall be responsible for temporary ventilation required by all construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity.
- C. Ventilate enclosed area to dissipate humidity, and to prevent accumulation of dust, fumes, vapors or gases.
- D. Provide equipment as necessary for air and fresh exchange for the work area per OSHA standards.
- E. Remove temporary ventilation equipment prior to the completion of construction.

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- F. Contract #1 General Construction Contractor will provide negative air machines of sufficient size / qty for square footage of work areas to exhaust any dust / fumes through flexible duct hose to exterior to eliminate any odors/smoke etc. There can be no odors in school the following day.

3.6 TEMPORARY SITE SAFETY AND DIRECTIONAL SIGNS:

- A. Contract #1 General Construction Contractor shall furnish and install construction signage as required at each project site.
1. For construction traffic control/flow at entrances/exits, as designated by the Owner's Representative 4 required
 2. For construction parking 2 required
 3. To direct deliveries 2 required
 4. For "No Smoking" safe work site at multiple locations (6 required)
- B. Metal DOT / MUTCO compliant signage is acceptable where applicable.

3.7 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 in 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.

END OF SECTION

SECTION 01 5500
VEHICULAR ACCESS AND PARKING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Construction parking controls.
- B. Traffic signs and signals.
- C. Maintenance.
- D. Removal, repair.

1.3 RELATED REQUIREMENTS

- A. Section 01 1000 - Summary of Contracts: For occupancy.
- B. Section 01 1010 - Milestone Schedule.
- C. Section 01 5000 - Temporary Facilities and Controls.

PART 2 PRODUCTS

2.1 RESPONSIBILITY

- A. []is responsibility for the requirements of this section for all contracts.

2.2 SIGNS, SIGNALS, AND DEVICES

- A. Post Mounted and Wall Mounted Traffic Control and Informational Signs.

PART 3 EXECUTION

3.1 ACCESS ROADS

- A. Use of designated existing on-site streets and driveways for construction traffic is permitted as approved Owner's Representative.
- B. Tracked vehicles not allowed on paved areas.

3.2 PARKING

- A. Use of designated areas of existing parking facilities by construction personnel is permitted if approved by the Owner's Representative.
- B. Locate as approved by Owner's Representative.

3.3 CONSTRUCTION PARKING CONTROL

- A. Control vehicular parking to prevent interference with public traffic and parking, access by emergency vehicles, and Port Chester-Rye UFSD's operations.
- B. Monitor parking of construction personnel's vehicles in existing facilities. Maintain vehicular access to and through parking areas.
- C. Prevent parking on or adjacent to access roads or in non-designated areas.
- D. Traffic Regulations:
 - 1. Access through Owner's entrances shall be limited.
 - 2. Utilize only entrances/temporary roads as designated.
 - 3. Maintain all District traffic regulations.
 - 4. Construction parking will not be allowed adjacent to District buildings, additions or monuments.

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3.4 MAINTENANCE

- A. Maintain existing paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original, or specified, condition.

3.5 REMOVAL, REPAIR

- A. Repair existing facilities damaged by use, to original condition.
- B. Repair damage caused by installation.

3.6 MUD FROM SITE VEHICLES

- A. Provide means of removing mud from vehicle wheels before entering streets. See drawings for details.

END OF SECTION

**SECTION 01 6000
PRODUCT REQUIREMENTS**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. General product requirements.
- B. Re-use of existing products.
- C. Transportation, handling, storage and protection.
- D. Product option requirements.
- E. Substitution limitations.
- F. Maintenance materials, extra materials.

1.3 RELATED REQUIREMENTS

- A. Section 00 4440 - Owner Supplied Contractor Installed
- B. Section 01 1000 - Summary of Contracts.
- C. Section 01 2500 - Substitution Procedures: Substitutions made after the Bidding/Negotiation Phase.
- D. Section 01 4000 - Quality Requirements: Product quality monitoring.
- E. Section 00 4401 - Qualification of Bidders.
- F. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions: Requirements for VOC-restricted product categories.
- G. Section 01 7419 - Construction Waste Management and Disposal: Waste disposal requirements potentially affecting product selection, packaging and substitutions.

1.4 REFERENCE STANDARDS

- A. ISO 21930 - Sustainability in buildings and civil engineering works -- Core rules for environmental product declarations of construction products and services; 2017.
- B. NEMA MG 1 - Motors and Generators; 2017.
- C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.5 SUBMITTALS

- A. Refer to Section 01 3000 - Administrative Requirements for requirements

1.6 ASBESTOS

- A. Asbestos: All products, materials, etc., used in conjunction with this Project shall be Asbestos-Free.
 - 1. All Contractor shall provide a certified letter to the Owner stating that no asbestos containing material has been used in this project. Refer to Section 01 7800 - Closeout Submittals.

PART 2 PRODUCTS

2.1 EXISTING PRODUCTS

- A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by Contract Documents.
- B. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Port Chester-Rye UFSD, or otherwise indicated as to remain the property of the Port Chester-Rye UFSD, become the property of the Contractor(s); remove from site.

2.2 NEW PRODUCTS

- A. Provide new products for all unless otherwise specifically required or permitted by the Contract Documents.
- B. Use of products having any of the following characteristics is not permitted:
 - 1. Made outside the United States, its territories, Canada, or Mexico.
 - 2. Made using or containing CFC's or HCFC's.
 - 3. Made of wood from newly cut old growth timber.
 - 4. Containing lead, cadmium, or asbestos.

2.3 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named. Submit on form attached.
- C. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 1 Section "Administrative Requirements". All products, other than "Basis of Design", shall be submitted as a substitution. Show compliance with requirements. Submit on form attached.
- D. Refer to Section 01 2500 - Substitution Procedures for substitutions

2.4 MAINTENANCE MATERIALS

- A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
 - 1. Deliver to Owner's Representative; obtain receipt prior to final payment.

PART 3 EXECUTION

3.1 SUBSTITUTION SUBMITTAL PROCEDURE AFTER BIDDING PHASE

- A. Refer to Section 01 2500 - Substitution Procedures.

3.2 OWNER-SUPPLIED CONTRACTOR INSTALLED PRODUCTS

- A. Refer to Section 00 4440 - Owner Supplied Contractor Installed
- B. Owner will furnish the following:

3.3 OWNER SUPPLIED OWNER INSTALLED PRODUCTS

- A. Refer to Section 00 4450 - Owner Supplied Owner Installed

3.4 TRANSPORTATION AND HANDLING

- A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.
- B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.
- C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- D. Transport and handle products in accordance with manufacturer's instructions.
- E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.

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- H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.5 STORAGE AND PROTECTION

- A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. See Section 01 7419.
- B. Store and protect products in accordance with manufacturers' instructions.
- C. Store with seals and labels intact and legible.
- D. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.
- E. For exterior storage of fabricated products, place on sloped supports above ground.
- F. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.
- G. Comply with manufacturer's warranty conditions, if any.
- H. Do not store products directly on the ground.
- I. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- J. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- K. Prevent contact with material that may cause corrosion, discoloration, or staining.
- L. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- M. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

SECTION 01 6116
VOLATILE ORGANIC COMPOUND (VOC) CONTENT RESTRICTIONS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Requirements for Indoor-Emissions-Restricted products.
- B. Requirements for VOC-Content-Restricted products.
- C. VOC restrictions for product categories listed below under "DEFINITIONS."
- D. All products of each category that are installed in the project must comply; Port Chester-Rye UFSD's project goals do not allow for partial compliance.

1.3 RELATED REQUIREMENTS

- A. Section 01 3000 - Administrative Requirements: Submittal procedures.
- B. Section 01 4000 - Quality Requirements: Procedures for testing and certifications.
- C. Section 01 5721 - Indoor Air Quality Controls: Procedures and testing.
- D. Section 01 6000 - Product Requirements: Fundamental product requirements, substitutions and product options, delivery, storage, and handling.
- E. Section 07 9200 - Joint Sealants: Emissions-compliant sealants.
- F. Section 09 5100 - Acoustical Ceilings.
- G. Section 09 9113 - Exterior Painting
- H. Section 09 9123 - Interior Painting.
- I. Section 09 9300 - Staining and Transparent Finishing.
- J. Section 09 5100 - Acoustical Ceilings.
- K. Section 09 6500 - Resilient Flooring.
- L. Section 09 6813 - Tile Carpeting

1.4 DEFINITIONS

- A. Indoor-Emissions-Restricted Products: All products in the following product categories, whether specified or not:
 - 1. Interior paints and coatings applied on site.
 - 2. Interior adhesives and sealants applied on site, including flooring adhesives.
 - 3. Flooring.
 - 4. Products making up wall and ceiling assemblies.
 - 5. Thermal and acoustical insulation.
 - 6. Free-standing furniture.
- B. VOC-Content-Restricted Products: All products in the following product categories, whether specified or not:
 - 1. Exterior and interior paints and coatings applied on site.
 - 2. Exterior and interior adhesives and sealants applied on site, including flooring adhesives.
 - 3. Wet-applied roofing and waterproofing.
- C. VOC-Restricted Products: All products of each of the following categories when installed or applied on-site in the building interior:

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1. Interior of Building: Anywhere inside the exterior weather barrier.
 2. Adhesives: All gunnable, trowelable, liquid-applied, and aerosol adhesives, whether specified or not; including flooring adhesives, resilient base adhesives, and pipe jointing adhesives.
 3. Sealants: All gunnable, trowelable, and liquid-applied joint sealants and sealant primers, whether specified or not; including firestopping sealants and duct joint sealers.
- D. Inherently Non-Emitting Materials: Products composed wholly of minerals or metals, unless they include organic-based surface coatings, binders, or sealants; and specifically the following:
1. Concrete.
 2. Clay brick.
 3. Metals that are plated, anodized, or powder-coated.
 4. Glass.
 5. Ceramics.
 6. Solid wood flooring that is unfinished and untreated.

1.5 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. ASTM D3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings; 2005 (Reapproved 2013).
- C. BIFMA e3 - Furniture Sustainability Standard; Business and Institutional Furniture Manufacturers Association; 2014.
- D. BIFMA M7.1 - Standard Test Method for Determining VOC Emissions from Office Furniture Systems, Components, and Seating; 2011 (Reapproved 2016).
- E. CAL (CDPH SM) - Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions From Indoor Sources Using Environmental Chambers; 2017, v1.2.
- F. CARB (SCM) - Suggested Control Measure for Architectural Coatings; California Air Resources Board; 2007.
- G. CHPS (HPPD) - High Performance Products Database; Current Edition at www.chps.net/.
- H. CRI (GLP) - Green Label Plus Testing Program - Certified Products; Current Edition.
- I. GreenSeal GS-36 - Adhesives for Commercial Use; 2013.
- J. SCAQMD 1113 - Architectural Coatings; 1977 (Amended 2016).
- K. SCAQMD 1168 - Adhesive and Sealant Applications; 1989 (Amended 2017).
- L. SCS (CPD) - SCS Certified Products; Current Edition.
- M. UL (GGG) - GREENGUARD Gold Certified Products; Current Edition.

1.6 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Evidence of Compliance: Submit for each different product in each applicable category.
- C. Product Data: For each VOC-restricted product used in the project, submit evidence of compliance.

1.7 QUALITY ASSURANCE

- A. Indoor Emissions Standard and Test Method: CAL (CDPH SM), using Standard Private Office exposure scenario and the allowable concentrations specified in the method, and range of total VOC's after 14 days.
 1. Wet-Applied Products: State amount applied in mass per surface area.
 2. Paints and Coatings: Test tinted products, not just tinting bases.
 3. Evidence of Compliance: Acceptable types of evidence are the following;

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- a. Current UL (GGG) certification.
 - b. Current SCS (CPD) Floorscore certification.
 - c. Current SCS (CPD) Indoor Advantage Gold certification.
 - d. Current listing in CHPS (HPPD) as a low-emitting product.
 - e. Current CRI (GLP) certification.
 - f. Test report showing compliance and stating exposure scenario used.
- 4. Product data submittal showing VOC content is NOT acceptable evidence.
- 5. Manufacturer's certification without test report by independent agency is NOT acceptable evidence.
- B. VOC Content Test Method: 40 CFR 59, Subpart D (EPA Method 24), or ASTM D3960, unless otherwise indicated.
 - 1. Evidence of Compliance: Acceptable types of evidence are:
 - a. Report of laboratory testing performed in accordance with requirements.
- C. Furnishings Emissions Standard and Test Method: BIFMA e3 Sections 7.6.1 and 7.6.2, tested in accordance with BIFMA M7.1.
 - 1. Evidence of Compliance:
 - a. Test report showing compliance and stating exposure scenario used.
- D. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

PART 2 PRODUCTS

2.1 MATERIALS

- A. All Products: Comply with the most stringent of federal, State, and local requirements, or these specifications.
- B. VOC-Content-Restricted Products: VOC content not greater than required by the following:
 - 1. Adhesives, Including Flooring Adhesives: SCAQMD 1168 Rule.
 - 2. Aerosol Adhesives: GreenSeal GS-36.
 - 3. Joint Sealants: SCAQMD 1168 Rule.
 - 4. Paints and Coatings: Each color; most stringent of the following:
 - a. 40 CFR 59, Subpart D.
 - b. SCAQMD 1113 Rule.
 - c. CARB (SCM).
 - 5. Wet-Applied Roofing and Waterproofing: Comply with requirements for paints and coatings.
- C. Carpet and Adhesive: Provide products having VOC content not greater than that required for CRI Green Label Plus certification.

PART 3 EXECUTION

3.1 FIELD QUALITY CONTROL

- A. Port Chester-Rye UFSD reserves the right to reject non-compliant products, whether installed or not, and require their removal and replacement with compliant products at no extra cost to Port Chester-Rye UFSD.
- B. Additional costs to restore indoor air quality due to installation of non-compliant products will be borne by Contractor.

END OF SECTION

**SECTION 01 7000
EXECUTION**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Inspections prior to start of work.
- B. Examination, preparation, and general installation procedures.
- C. Requirements for alterations work, including selective removals.
- D. General installation of products.
- E. Protection of installed construction.
- F. Correction of the Work.
- G. Pre-installation meetings.
- H. Dust control
- I. Cutting and patching.
- J. Progress cleaning.
- K. Protection of installed construction.
- L. Starting of systems and equipment.
- M. Demonstration and instruction of Port Chester-Rye UFSD personnel.
- N. Final Cleaning.

1.3 RELATED REQUIREMENTS

- A. Section 01 1000 - Summary of Contracts: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.
- B. Section 01 3000 - Administrative Requirements: Submittals procedures.
- C. Section 01 4000 - Quality Requirements: Testing and inspection procedures.
- D. Section 01 5000 - Temporary Facilities and Controls.
- E. Section 01 3553 - Site Safety and Security Procedures
- F. Section 01 7800 - Closeout Submittals: Project record documents, operation and maintenance data, warranties.
- G. Section 01 7900 - Demonstration and Training: Demonstration of products and systems to be commissioned and where indicated in specific specification sections
- H. Section 01 2100 - Allowances.
- I. Section 07 8400 - Firestopping.
- J. Individual Product Specification Sections:
 - 1. Advance notification to other sections of openings required in work of those sections.
 - 2. Limitations on cutting structural members.

1.4 REFERENCE STANDARDS

- A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2013.
- B. FGDC-STD-007.4 - Geospatial Positioning Accuracy Standards - Part 4: Architecture, Engineering, Construction, and Facilities Measurement; 2002.

- C. SMACNA (SRM) Seismic Restraint Manual Guidelines for Mechanical Systems; 2008.
- D. State Plan Coordinate System for New York.

1.5 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers and Owner's Representative.

1.6 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept nonhazardous materials and hazardous waste disposal.
- C. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
 - 1. Structural integrity of any element of Project.
 - 2. Efficiency, maintenance, or safety of any operational element.
 - 3. Visual qualities of sight exposed elements.
- D. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.7 QUALIFICATIONS

- A. Refer to Section 01 4401 Qualifications of Bidders and individual specification sections.

1.8 PROJECT CONDITIONS

- A. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- B. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
 - 1. Provide dust-proof enclosures to prevent entry of dust generated outdoors.
 - 2. Contract #1 General Construction Contractor shall provide dust-proof barriers between construction areas and non construction areas inside or outside the construction areas
- C. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.

1.9 COORDINATION

- A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements.
- B. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- C. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- D. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction coordinate locations of fixtures and outlets with finish elements.
- E. After Port Chester-Rye UFSD occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Port Chester-Rye UFSD's activities.
- F. General: Each Contractor includes general coordination of the entire work of the project, including preparation of general coordination drawings, diagrams and schedules and control of site utilization from the beginning of construction activity through project closeout and warranty periods.

1.10 CODES, PERMITS, FEES, ETC.

- A. Refer to Section 01 4100 Regulatory Requirements

1.11 MANDATORY OSHA CONSTRUCTION SAFETY AND HEALTH TRAINING

- A. Pursuant to NYS Labor Law §220-h - On all public work projects all laborers, workers and mechanics working on the site are required to be certified as having successfully completed an OSHA construction safety and health course of at least 10 hours prior to performing any work on the project.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 2500 - Substitution Procedures.
- B. Barriers shall be constructed of sturdy lumber having a minimum size of 2 x 4.
 - 1. Signs shall be made of sturdy plywood of 1/2" minimum thickness and shall be made to legible at a distance of 50 feet.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. Notify Owner's Representative of any discrepancies immediately in writing before proceeding to lay out the work. Locate and protect existing benchmarks and base line. Preserve permanent reference points during construction.
- B. Prior to start of construction take photographs, video's or similar documentation as evidence of existing project conditions as follows:
 - 1. Interior views: Each room and areas of outside work area which could be construed as caused by the contractor.
 - 2. Exterior views: Each area of work and areas of outside work area which could be construed as caused by the contractor.
- C. Verify that existing substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- D. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- E. Examine and verify specific conditions described in individual specification sections.
- F. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- G. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- H. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.3 PREINSTALLATION MEETINGS

- A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.

- B. Require attendance of parties directly affecting, or affected by, work of the specific section.
- C. Notify Owner's Representative five (5) working days in advance of meeting date.
- D. Record minutes and distribute copies within two days after meeting to participants, with one copies to Owner's Representative and Architect, participants and those affected by decisions made.

3.4 REMOVAL AND DUST CONTROL

- A. The following procedures shall be followed when removals are performed:
 - 1. Interior:
 - a. Floor surfaces from construction work areas to all exits shall be provided with "Ram Board" as specified in Section 01 5000 - Temporary Facilities and Controls.
 - b. All air vents in the room shall be closed, shut off and sealed.
 - c. Access to all rooms undergoing removals shall be restricted to prevent unauthorized entry.
 - 2. All debris shall be disposed of properly in accordance with Federal, State and Local Regulations. Refer to Section 01 5000 - Temporary Facilities and Controls and asbestos and lead abatement sections for containers required.
 - 3. Do not leave any openings unprotected at end of work day or during periods of excessive cold weather or precipitation.
 - 4. At completion of each work area HEPA vacuumed and wet wiped.

3.5 GENERAL INSTALLATION REQUIREMENTS

- A. In addition to compliance with regulatory requirements, conduct construction operations in compliance with NFPA 241, including applicable recommendations in Appendix A.
- B. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- C. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- D. Make neat transitions between different surfaces, maintaining texture and appearance.

3.6 ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation only.
 - 1. Verify that construction and utility arrangements are as indicated.
 - 2. Report discrepancies to Owner's Representative before disturbing existing installation.
 - 3. Beginning of alterations work constitutes acceptance of existing conditions.
- B. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove items indicated on drawings.
 - 2. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
 - 3. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.
- C. Services (Including but not limited to HVAC, Plumbing, and Electrical): Remove, relocate, and extend existing systems to accommodate new construction.
 - 1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
 - 2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
 - 3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.

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- a. Identify new equipment installed, but not in service, with appropriate signage or other forms of identification. indicating "Not in Service".
 - b. Disable existing systems only to make switchovers and connections; minimize duration of outages.
 - c. Provide temporary connections as required to maintain existing systems in service.
 - d. Perform all switchovers, shutdowns, etc after hours, weekends, holidays or times when the building is not occupied. All switchover scheduling shall be approved by the Owner.
- 4. Verify that abandoned services serve only abandoned facilities.
- D. Protect existing work to remain.
 - 1. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 - 2. Patch as specified for patching new work.
- E. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
- F. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.
- G. Comply with all other applicable requirements of this section.

3.7 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. This Section includes procedural requirements for cutting and patching.
 - 1. Refer to various sections and divisions for other requirements and limitations applicable to cutting and patching.
 - 2. Each Contractor shall do all cutting, patching, repairing as necessary for their work. In all cases, the cutting, patching, repairing and finishing shall be performed mechanics skilled in the particular trade required at no additional cost to the Owner's Representative.
- C. Perform whatever cutting and patching is necessary to:
 - 1. Complete the work.
 - 2. Fit products together to integrate with other work.
 - 3. Provide openings for penetration of mechanical, electrical, and other services.
 - 4. Match work that has been cut to adjacent work.
 - 5. Repair areas adjacent to cuts to required condition.
 - 6. Repair new work damaged by subsequent work.
 - 7. Remove and replace defective and non-complying work.
- D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing.
- E. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- F. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- G. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 8400, to full thickness of the penetrated element.
- H. Patching:
 - 1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
 - 2. Match color, texture, and appearance.
 - 3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.8 FIRE PREVENTION AND CONTROL

- A. Refer to Section 01 3553.

3.9 WATCHMAN

- A. The Owner will not provide watchman. Each Contractor will be held responsible for loss or injury to persons or property or work where his work is involved and shall provide such watchman and take such precautionary measures as he may deem necessary to protect his own interests.

3.10 VERIFICATION OF CONDITIONS

- A. All openings, measurements, door frames, existing conditions and other similar items or conditions shall be field measured prior to submission of any shop drawings or manufacturers literature for approval.
 - 1. Each Contractor shall investigate each space into and through which equipment must be moved. Equipment shall be shipped from manufacturer in sections, of size suitable for moving through restricted spaces. Where sectional fabrication and or delivery cannot be achieved, openings, enlargements etc shall be provided by Each contractor whose equipment requires access, at no additional cost to the Owner.

3.11 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.
- E. Contract #1 General Construction Contractor is responsible for daily debris removal into containers provided by the General Construction Contractor. Working areas are to be broom swept on a daily basis by the General Construction Contractor.

3.12 PROTECTION OF INSTALLED WORK

- A. Each Contractor is responsible to provide protection for their work.
- B. Protect installed work from damage by construction operations.
- C. Provide special protection where specified in individual specification sections.
- D. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Protect work from spilled liquids. If work is exposed to spilled liquids, immediately remove protective coverings, dry out work, and replace protective coverings.
 - 1. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- G. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.13 DEMONSTRATION AND INSTRUCTION

- A. See Section 01 7900 - Demonstration and Training.

3.14 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.
- B. Testing, balancing and Adjusting HVAC. See Division 23.

3.15 FINAL CLEANING

- A. Final cleaning shall be the responsibility of the Contract #1 General Construction Contractor and all costs for final cleaning shall be included in the Base Bid. Final cleaning responsibility shall be limited to all areas where renovations occur.
- B. Execute final cleaning prior to Substantial Completion.
- C. Use cleaning materials that are nonhazardous.
- D. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces
- E. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- F. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- G. Each Contractor shall remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.
- H. 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.
- I. Cleaning Agents: Use cleaning materials and agents recommended by the 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.
- J. Remove tools, construction equipment, machinery, and surplus material from Project site.
- K. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
- L. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
- M. Touch up and otherwise repair and restore marred, exposed finishes and surfaces evidence of repair or restoration. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show
- N. Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
- O. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
- P. Leave Project clean and ready for occupancy.
- Q. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

3.16 CLOSEOUT PROCEDURES

- A. Refer to Section 01 7800

END OF SECTION

SECTION 01 7419
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 WASTE MANAGEMENT REQUIREMENTS

- A. Port Chester-Rye UFSD requires that this project generate the least amount of trash and waste possible.
- B. Each shall be responsible for Construction Waste Management
- C. Each Contractor shall collect and dispose of waste material into containers provided by Contract #1 General Construction Contractor
- D. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.
- E. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.
- F. Required Recycling, Salvage, and Reuse: The following may not be disposed of in landfills or by incineration:
 - 1. Aluminum and plastic beverage containers.
 - 2. Corrugated cardboard.
 - 3. Wood pallets.
 - 4. Clean dimensional wood.
 - 5. Land clearing debris, including brush, branches, logs, and stumps; see Section 31 1000 - Site Preparation and Clearing for use options.
 - 6. Metals, including packaging banding, metal studs, sheet metal, structural steel, piping, reinforcing bars, door frames, and other items made of steel, iron, galvanized steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.
 - 7. Gypsum drywall and plaster.
 - 8. Plastic buckets.
 - 9. Paint.
 - 10. Mechanical and electrical equipment.
 - 11. Fluorescent lamps (light bulbs).
 - 12. Acoustical ceiling tile and panels.
- G. Contract #1 General Construction Contractor shall submit periodic Waste Disposal Reports to Owner's Representative; all landfill disposal, recycling, salvage, and reuse must be reported regardless of to whom the cost or savings accrues; use the same units of measure on all reports.
- H. Methods of trash/waste disposal that are not acceptable are:
 - 1. Burning on the project site.
 - 2. Burying on the project site.
 - 3. Dumping or burying on other property, public or private.
 - 4. Other illegal dumping or burying.
- I. Regulatory Requirements: Each Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

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1.3 RELATED REQUIREMENTS

- A. Section 01 3000 - Administrative Requirements: Additional requirements for project meetings, reports, submittal procedures, and project documentation.
- B. Section 01 5000 - Temporary Facilities and Controls: Additional requirements related to trash/waste collection and removal facilities and services.
- C. Section 01 6000 - Product Requirements: Waste prevention requirements related to delivery, storage, and handling.
- D. Section 01 7000 - Execution: Trash/waste prevention procedures related to cutting and patching, installation, protection, and cleaning.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Waste Disposal Reports: Submit at specified intervals, with details of quantities of trash and waste, means of disposal or reuse, and costs; show both totals to date and since last report.
 - 1. Submit updated Report with each Application for Progress Payment; failure to submit Report will delay payment.
 - 2. Submit Report on a form acceptable to Owner's Representative.
 - 3. Landfill Disposal: Include the following information:
 - a. Identification of material.
 - b. Amount, in tons or cubic yards (cubic meters), of trash/waste material from the project disposed of in landfills.
 - c. State the identity of landfills, total amount of tipping fees paid to landfill, and total disposal cost.
 - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
 - 4. Incinerator Disposal: Include the following information:
 - a. Identification of material.
 - b. Amount, in tons or cubic yards (cubic meters), of trash/waste material from the project delivered to incinerators.
 - c. State the identity of incinerators, total amount of fees paid to incinerator, and total disposal cost.
 - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
 - 5. Recycled and Salvaged Materials: Include the following information for each:
 - a. Identification of material, including those retrieved by installer for use on other projects.
 - b. Amount, in tons or cubic yards (cubic meters), date removed from the project site, and receiving party.
 - c. Transportation cost, amount paid or received for the material, and the net total cost or savings of salvage or recycling each material.
 - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
 - e. Certification by receiving party that materials will not be disposed of in landfills or by incineration.
 - 6. Material Reused on Project: Include the following information for each:
 - a. Identification of material and how it was used in the project.
 - b. Amount, in tons or cubic yards (cubic meters).
 - c. Include weight tickets as evidence of quantity.
 - 7. Other Disposal Methods: Include information similar to that described above, as appropriate to disposal method.

PART 2 PRODUCTS NOT USED

PART 3 EXECUTION

3.1 WASTE MANAGEMENT PLAN IMPLEMENTATION

- A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.
- B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each Prime Contractor, sub-contractor, Owner's Representative, or Architect.
- C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.
- D. Meetings: Discuss trash/waste management goals and issues at project meetings.
 - 1. Prebid meeting.
 - 2. Preconstruction meeting.
 - 3. Regular job-site meetings.
- E. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.
 - 1. Provide containers as required.
 - 2. Provide adequate space for pick-up and delivery and convenience to subcontractors.
 - 3. Keep recycling and trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.
- F. Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.
- G. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.
- H. Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.
- I. Salvage: Set aside, sort, and protect products to be salvaged for reuse off-site.

END OF SECTION

SECTION 01 7600
PROCEDURES AND SPECIAL CONDITIONS FOR SEPARATE PRIME CONTRACTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 DESCRIPTION OF WORK

- A. The types of minimum requirements for procedures and performance or control work of a general nature, to be fulfilled collectively by prime contractors, and must be participated in by each prime contractor (where applicable) even though certain lots of work may be assigned to a specific prime contractor.

1.3 USE OF PREMISES

- A. Refer to Section 01 1000 Summary of Contract(s).

1.4 MISCELLANEOUS PROVISIONS:

- A. Except as otherwise indicated comply with applicable requirements of Division-22, 23, and 26 sections for mechanical provisions within units of general (Divisions 2-14) work. Except as otherwise indicated, comply with applicable requirements of Division-26 section for electrical provisions within units of general (Divisions 2-14) work.
- B. Service Connections: Refer to Division-22, Division-23 and Division-26 sections for the characteristics of the mechanical and electrical services to be connected to units of general work. Provide units manufactured or fabricated for proper connection to and utilization of available services, as indicated. Except as otherwise indicated, final connection of mechanical services to general work is defined as being mechanical work, and final connection of electrical services to general work is defined as electrical work.

1.5 DISSIMILAR METAL

- A. Wherever dissimilar metals would otherwise come in contact with each other, they must be isolated by use of an approved, permanent non-staining material. Where one of the metals is aluminum, a coat of zinc-chromate primer followed by a coat of alkali-resistant bituminous paint shall be applied.

1.6 MODIFICATION OF WORK

- A. Where necessary, because of job or space conditions, the Contractor shall modify his work to suit these conditions, within accepted standards and limitations. No allowance will be made for this modification.
 - 1. If work is executed without regard for other trades as cited above, the Architect may direct its removal and modification. No allowance will be made for this work.

1.7 ACCESSIBILITY, SIZE AND LOCATION OF EQUIPMENT AND WORK

- A. Each Contractor shall investigate each space into and through which equipment must be moved. Equipment shall be shipped from manufacturer in sections, of size(s) suitable for moving through restricted spaces.
- B. Each Contractor shall be responsible for the sufficiency of the size of shafts and chases, the adequate thickness of partitions, and sizes of duct enclosures, for the proper installation of his work. They shall cooperate with the all other contractors whose work is in the same spaces and shall advise the Contract #1 General Construction Contractor of their requirements. Such spaces and clearances shall, however, be kept to the minimum size required.
- C. Each Contractor shall locate all equipment, which must be serviced, operated or maintained in fully accessible positions. Equipment shall include, but not be limited to: valves, traps, cleanouts, motors, controllers, switch-gear, and drain point etc. Minor deviations from drawings may be made to allow for better accessibility, but changes of magnitude or which involves extra cost shall not be made without approval.

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1.8 ACCESS DOORS

- A. Provide all access doors for all dampers, valves, cleanest, junction boxes, pull boxes or similar items located above finished ceilings or ceiling breaks or extensions, behind finished walls or below finished floors. The access doors shall be steel, hinged types as required for type of construction.
 - 1. Where feasible locate all dampers, valves, cleanest, junction boxes, pull boxes or similar items above acoustical tile ceiling.

1.9 MACHINERY GUARDS

- A. Moving parts of machinery exposed to contact by personnel shall be guarded by a barrier of a type approved by the Architect.
 - 1. Exposed moving parts such as belts and couplings shall have 3/4" No 16 gauge galvanized expanded metal mesh guards, with all edges rounded. Guards shall be 1-1/2" x 1-1/2" x 1/8" angle iron framed properly supported.
 - 2. All machinery guards covering the ends of motor or equipment shafts shall have openings for the insertion of a tachometer.

1.10 DRIP PANS

- A. The respective mechanical contractor shall provide 20 oz. copper all soldered reinforced pans with 2" high lips under all heating, domestic water piping, soil and waste piping which runs over electric switchboards, mounting boards, motors or electric motor starters. Each drip pan shall have a copper drain piped to discharge where shown on the drawings, or if not shown, to discharge to the nearest available open drain or floor where directed by the Owner's Representative. All piping shall be copper 1-1/2" minimum in diameter.

1.11 CONCEALMENT OF UNSIGHTLY INSTALLATIONS

- A. Piping and conduit work is to be run concealed in all occupied areas, in partitions, construction and pipe spaces. Obtain exact dimensions locations of partitions, use special care to see that no joints, fittings, piping or conduit will be exposed except as shown or specified. In the event of any unsightly exposed piping or conduit work or unsightly partitions resulting, the Contractor shall rebuild, and re-run lines at his own expense. When approved by the Owner's Representative all exposed conduit shall be installed in wiremold.

1.12 SUPPORTS FROM OVERHEAD CONSTRUCTION

- A. Where overhead equipment does not permit fastening of supports for equipment, furnish at no additional cost to the Owner, additional framing, supplementary steel, etc., as required, subject to approval by the Owner's Representative. Specific types of hangers and supports which are required in certain areas are to be installed as indicated on the drawings.

1.13 ESCUTCHEONS

- A. Where exposed un-insulated mechanical piping or conduits pass through floors, ceilings or walls of finished rooms, apply, approved hinged escutcheon of sufficient outside diameter to cover the pipe sleeve.
 - 1. Where exposed insulated pipes pass through walls, floors, or ceilings of finished rooms, provide escutcheons fastened to the sleeves.
 - 2. Finish shall be stainless steel in toilets, janitor's closet and similar "wet areas". Submit samples.

1.14 MATERIALS AND WORKMANSHIP

- A. All material, apparatus and accessories shall be new and of the best quality of their respective kind.
 - 1. All labor shall be performed in a first-class workmanlike manner, and adequate supervision must be provided to insure against neglect or faulty installations of any part of the systems during the progress of the work.

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2. Any inferior material and/or workmanship shall be removed at once, when directed by the Owner's Representative and replaced with material and workmanship in accordance with the true intent and meaning of the drawings and specifications, at no additional cost to the Owner.
3. If material or equipment is installed before it is approved, as to manufacture and shop drawings, the Contractor shall be liable for the removal and replacement at no extra charge, if in the opinion of the Owner's Representative the material or equipment does not meet the intent of the drawings and specifications.
4. If after installation (with or without prior approval) operation of any equipment proves to be unsatisfactory by reasons of defects, workmanship, error or omissions, the Owner's Representative reserves the right to operate equipment until it can be removed from service for correction or replacement by the Contractor. The Contractor shall pay for the repair of all damage to work of other prime contractors caused by this defective equipment and its correction or replacement.
5. No advertising matter exclusive of nameplates containing required data shall appear on any equipment without the written consent of the Owner's Representative. The equipment furnished under this specification shall be essentially the standard product of a manufacturer regularly engaged in the manufacture of such equipment. Where two or more units of the same class of equipment are required, the units shall be products of a single manufacturer; however, the component parts of the equipment need not be products of the same manufacturer.

1.15 ELIMINATION OF NOISE AND VIBRATION

- A. All equipment and accessories shall operate without objectionable noise or vibration.
 1. Should operation of any one or more of the systems produce noise or vibration which is, in the opinion of the Owner's Representative, objectionable, the Contractor shall, at his own expense, make changes in equipment and do all work necessary to eliminate the objectionable noise or vibration.
 2. All work shall operate under all conditions of load without any sound or vibration which, in the opinion of the Owner's Representative, is objectionable. In the case of moving machinery, sound or vibration noticeable outside the room in which it is installed, or annoyingly noticeable inside its own room, will be considered objectionable. Sound or vibration conditions considered objectionable by the Owner's Representative shall be corrected in an approved manner by the Contractor at his expense.
 - a. Provide vibration isolators on all moving machinery.

1.16 GENERAL LABELING

- A. All mechanical and electrical equipment such as unit ventilators, heating and ventilating units, exhaust fans, etc., shall have appropriate descriptive labels, identification tags and nameplates, furnished and installed under the respective control under which the corresponding item is provided, and shall be properly placed and permanently secured to (or adjacent to) the item being installed.
 1. Submit complete schedules, listings, and descriptive data, together with samples for checking and approval before purchasing.
 2. Refer to respective M/E specifications for additional requirements.

1.17 IDENTIFICATION OF PIPING

- A. The respective Mechanical Contractor shall provide on all new exposed, insulated and uninsulated piping, semi-rigid, wrap-around plastic identification markers.
 1. Each marker background is to be appropriately color-coded with a clearly printed legend to identify the contents of the pipe conformance with the Scheme for the Identification of Piping Systems (ASA A13.1-1956). Direction of flow arrows is to be included on each marker.
 2. Exposed locations for the pipe markers to be as follows:
 - a. Adjacent to each valve.
 - a) At each branch and riser take-off.

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- b) At each pipe passage through wall, floor and ceiling construction.
 - c) On all horizontal pipe runs - marked every 15 feet.
 - d) At each inlet and outlet of coils, pumps, etc.
3. Refer to respective M/E specifications for additional requirements.

1.18 PAINTING

- A. All apparatus, cabinets, etc., furnished under the Mechanical and Electrical Sections of the specifications, shall be provided with a priming coat, and enamel finish. All patched surfaces and surfaces where removals have occurred (by each Contractor) shall receive a prime coat and a finish coat to match adjacent surfaces acceptable to the Owner's Representative unless noted otherwise.
- 1. All finish painting of new insulated and uninsulated piping, new duct work, apparatus, and appurtenances, will be performed by each contractor, unless noted otherwise.
 - 2. All concealed supports and ironwork not otherwise protected against corrosion shall be given two (2) coats of bituminous base paint.

1.19 TEMPLATES:

- A. Each contractor shall prepare templates showing all dimensions and shall furnish all anchor bolts and sleeves required for all equipment,, boilers, and transformers, etc., and submit to Contractor who requires this information.

1.20 EQUIPMENT BASES

- A. Each contractor shall submit for approval of the Fuller and D'Angelo, P.C., detail drawings of all equipment foundations and shall furnish all templates for his foundation.
- 1. Unless otherwise indicated Construction Contractor will furnish and install their equipment bases. It is the responsibility of each Contractor to place any templates and anchor bolts and to supervise the construction of the equipment bases regardless of who installs the bases.
 - a. Concrete equipment bases for shall be minimum 3,000 psi test strength at 28 days . Provide minimum 6/6 x 10/10 welded wire mesh.

1.21 MOTORS

- A. Each contractor shall furnish and install the electric motors required for the motor-driven equipment supplied under his contract. The motors shall be of sufficient size for the duty to be performed, and shall not exceed their full rated load when the driven equipment is operating at required capacity under the most severe conditions likely to be encountered. The speed and horsepower for each motor are given in the schedule on the drawings, or are specified.
- 1. All motors shall be suitable for operating on alternating current, sixty (60) cycle frequency. Motors 1/2 horsepower and smaller shall be wound for single-phase, 60 cycle, 120 volt current. Motors exceeding 1/2 horsepower shall be designed for operation on three phase, 60 cycle, 208 volt current.
 - a. Fractional horsepower motors shall be of the sealed prelubricated ball bearing type.
 - a) All motors shall be approved by the Underwriters Laboratories, Inc., for the service and location intended.
 - b) All motors shall be equipped with ball bearings unless specified otherwise in other sections of these specifications.
 - c) Motors for single-phase operation shall be of the capacitor type.

1.22 WIRING

- A. The wiring of prewired equipment or apparatus is specified under the corresponding sections of the Specifications. The Electrical volt systems design as indicated on the Electrical Drawings and Specifications.

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- B. The Electrical Contractor will perform all Power wiring; however, each Contractor shall furnish all magnetic starters and automatic controls, suitable for the equipment furnished by the Contractor. Motor starters shall be installed by the Electrical Contractor.
- C. Each Contractor shall prepare wiring diagrams and submit same for approval Submit in electronic PDF format. Approved copies with any additional instructions are to be given to the Electrical Contractor.
 - 1. All prewired and job wired control panels for motors shall be provided with approved high interrupting capacity circuit breakers.
 - 2. All electrical wiring for equipment where exposed to the weather (factory or field installed) shall be installed in weathertight conduits and shall be U.L. approved.

1.23 CONTROL WIRING

- A. Control wiring is required wiring, conduit, relays, contractors, electro-mechanical, hydraulic activators and solid state regulating devices either low or line voltage, to the controlled device that is regulated by the controller and necessary for the operation, controlling, sequencing etc. of the equipment or system. Control wiring shall be furnished and installed by each contractor furnishing and installing such equipment or systems.
 - 1. Power wiring to equipment, including wiring and installation of magnetic starters and disconnect switches, where required, shall be the responsibility of the Electrical Contractor. The Electrical Contractor shall furnish and install all disconnect switches, where required, and install all magnetic starters. All magnetic starters shall be furnished by each contractor furnishing the equipment or systems.
 - 2. Each Contractor shall supervise the wiring of all equipment included under his Contract.

1.24 MOTOR STARTERS

- A. Except where specified to be motor or pedestal mounted as part of a prewired control panel furnished with the equipment they serve, all magnetic starters shall be provided by each Contractor. Magnetic starters, with thermal and under voltage protection, suitable for the voltages indicated, shall have a heater in each phase and reset button on the cover.
 - 1. Motors 1/2 HP and larger shall have Allen Bradley, Emerson Phase Guard or approved substitute phase failure relays suitable for the voltages indicated, included in the starter enclosure. Refer to specific section of specifications for special starters.
- B. Motors over 1 HP shall be provided with variable frequency drive. (VFD), unless shown otherwise
- C. Where the installation of phase failure non-reversing relays are required, these shall, wherever possible, be wired and installed at the equipment manufacturer's factory panel mounted equipment in connection with refrigeration equipment and temperature controls. Starters shall be Allen Bradley, Square D or approved equal.

1.25 UNDERWRITERS' LABORATORIES CERTIFICATION

- A. All mechanical and electrical equipment shall bear the UL label of approval where such inspection service is furnished for the particular type of equipment.

1.26 LOCATIONS AND MEASUREMENTS

- A. The locations of fixtures, appliances, conduits, etc., are specified and shown on the plans as accurately as possible, but in all cases, they are to be adjusted to the surrounding conditions. Contractor must take all measurements at the building, and should the space allotted for any appliance be inadequate, it shall be the Contractor's responsibility to immediately notify in writing, and shall he fail to do so, he must bear the expense necessary to correct the conditions. All work shall be coordinated with the work of other trades.

1.27 GROUNDING

- A. Standards set forth by the latest edition of the National Electric Code, relative to the grounding of system and equipment, shall be followed together with the rules and regulations of the Utility Company. All

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non-current carrying metal parts shall be solidly grounded. All motor frames that are not clamped to supply conduits shall be grounded by suitable wire and ground clamp.

1. The identified neutral wire or white wire of the interior wiring system shall be permanently grounded to the water services. The grounded wire shall be connected to the supply side of the main service switch and mechanically connected to an approved ground clamp and securely bonded to the water service at the point of entry. The ground connection shall be made on the supply side of the first main control valve. The conductors shall be protected from mechanical injury by rigid steel conduit to which the conductors shall be securely bonded in each length of connection. Conduit system shall be securely grounded to the above described ground of wiring system.
2. Ground connections to water mains shall be made to non-current carrying metal parts of distribution panels, instrument cases, and instrument transformer cases.

1.28 FIRESTOPPING:

- A. All openings thru walls, floors, shafts, etc. shall be fire stopped with approved material to maintain rating. See Section 07 8400 - Firestopping.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01 7800
CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Substantial Completion.
- B. Final Completion.
- C. Project record documents.
- D. Operation and maintenance data.
- E. Warranties and bonds.

1.3 RELATED REQUIREMENTS

- A. Section 00 7200 - General Conditions: Warranty and Correction of work.
- B. Section 01 3000 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
- C. Section 01 7000 - Execution: Progress and Final cleaning.
- D. Section 01 7900 - Demonstration and Training.
- E. Individual Product Sections: Warranties required for specific products or Work.

1.4 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion:
 - 1. Prepare a list of items to be completed and corrected, the value of items on the list, and reasons why the Work is not complete.
 - 2. Advise Owner's Representative and Architect of pending insurance changeover requirements.
 - 3. Obtain and submit releases permitting Owner's Representative and Architect unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
- B. Prior to issuance of the Certificate of Substantial Completion, submit, in writing, a request to the Owner's Representative and Architect to perform site inspection for the purpose of preparing a "punch list".
- C. On receipt of request the Owner's Representative and Architect will schedule and prepare a punch list.
- D. Certificate of Substantial Completion will be issued **only after completion of all punch list items** or Owner's Representative and Architect will notify Contractor of items, either punch list or additional items identified by Architect, **that must be completed or corrected before a certificate will be issued.** After completion of **all punch list items** submit the following:
 - 1. Application for Payment showing 100 percent completion for portion of the Work claimed as substantially completed.
 - 2. Manufacturer's Warranties/guarantees.
 - 3. Contractor's Warrantee Two (2) years minimum and extended warranties.
 - 4. Maintenance agreements, if any.
 - 5. Manifest for disposal of Hazardous Material.
 - 6. Manifest for disposal of material.
 - 7. Test/adjust/balance reports and records.
 - 8. Maintenance Manuals and Instructions Manuals
 - 9. Signed Receipt by Owner's Representative of spare parts and attic stock.

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10. Start-up performance reports.
 11. Changeover information related to Owner's occupancy, use, and maintenance.
 12. Advice on shifting insurance coverage.
 13. List of incomplete Work, recognized as exceptions to Architect's "punch list".
 14. Removal of temporary facilities and services.
 15. Removal of surplus materials, rubbish and similar elements.
 16. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
 17. As Built Drawings.
 18. Project Record Documents.
 19. DOL Final Completion Form. (PW 200).
 20. Fully executed Certificate of Substantial Completion (AIA G 704)
- E. Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
1. If necessary re-inspection will be repeated and the contractor shall pay for all additional inspections.
 2. Results of completed inspection will form the basis of requirements for Final Completion.

1.5 FINAL COMPLETION

- A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
1. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Owner's Representative and Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Owner's Representative and Architect will not process a final Certificate for Payment until after the inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
 - a. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
- B. Following Final Inspection and acceptance of work submit the following: (As applicable to each Contractor)
1. Submit a final Application for Payment according to Division 1 Section 01 2000 - Price and Payment Procedures.
 2. Architect's punch list certifying all punch list items have been completed with each item signed off by the **Owner's Representative and Contractor**.
 3. Update final statement, accounting for final changes to the Contract Sum.
 4. Release of liens from contractor and all entitles of the contractor.
 5. Consent of Surety to Final Payment, AIA Document G707
 6. Final Liquidated Damages settlement statement.
 7. Contractor's Affidavit of Release of Liens (AIA G706A).
 8. Contractors Affidavit of Payment of Debts and Claims (AIA G706)
 9. Contractor's Certification of Payment of Prevailing Wage Rates.
 10. Contractor's Certification of Compliance that products comply with VOC requirements stated in Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.
 11. Contractor's Certified Statement certifying that no asbestos containing material was incorporated into the project.
 12. Underwriters Certificate or authorized third party Certificate.

1.6 SUBMITTALS

- A. Contractor shall submit all documentation identified in this section within thirty (30) working days from the time the Contractor submits the list of items to be corrected, in addition to other rights of the Owner set forth elsewhere in the Contract Documents, to include but not limited to withholding of final payment. If the documentation has not been submitted within Thirty (30) day period, the Owner's Representative will obtain such through whatever means necessary. The Contractor shall solely be responsible for all expenses incurred by the Owner, provided the Owner has advised the Contractor of this action seven (7) days prior to the culmination date by written notice.
- B. Project Record Documents: Submit documents to Architect with claim for final Application for Payment. Refer to Section 01 1000 Summary of Work for addition information.
- C. Operation and Maintenance Data:
 - 1. Refer to individual sections for additional requirements.
 - 2. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Owner's Representative and Architect will review draft and return one copy with comments.
 - 3. Submit two sets of revised final documents in final form within 10 days after final inspection.
- D. Warranties and Bonds.:
 - 1. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed shop drawings, product data, and samples.
 - 6. Manufacturer's instruction for assembly, installation, and adjusting.
 - 7. O&M Manuals.
- B. Ensure entries are complete and accurate, enabling future reference by Owner's Representative.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
 - 1. Review with Owner's Representative with each application for payment.
 - 2. Owner's Representative shall verify record mark-up are up to date.
 - 3. Failure to maintain mark up will be cause for rejecting the application.
- E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates utilized.
 - 3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
 - 1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 2. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.

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3. Field changes of dimension and detail.
4. Details not on original Contract drawings.
- G. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and approved Shop Drawings at the project site.
- H. Each Contractor is responsible for marking up Sections that contain its own Work and for submitting the complete set of record Specifications as specified.
- I. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
 1. Accurately record information in an understandable drawing technique.
 2. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
- J. Content: Types of items requiring marking include, but are not limited to, the following:
 1. Dimensional changes to Drawings.
 2. Revisions to details shown on Drawings.
 3. Revisions to routing of piping and conduits.
 4. Revisions to electrical circuitry.
 5. Actual equipment locations.
 6. Duct size and routing.
 7. Locations of concealed internal utilities.
 8. Changes made by Change Order or Construction Change Directive.
 9. Changes made following Owner's Representative and Architect 's written orders.
 10. Details not on the original Contract Drawings.
 11. Field records for variable and concealed conditions.
 12. Record information on the Work that is shown only schematically.
- K. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
- L. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.
- M. Mark important additional information that was either shown schematically or omitted from original Drawings.
- N. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- O. **Provide ALL final record documents on flash drive in PDF-A Format.**

3.2 FORMAT

- A. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location. Contractor shall certify and sign.
- B. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
- C. Record PDF Drawings: Organize PDF 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 PDF file.
- D. Identify Record Drawing as follows:
 1. Project name.

- a. Date.
- b. Designation "PROJECT RECORD DRAWINGS."
- c. Name of Architect and Owner's Representative.
- d. Name of Contractor.
- e. Contractor shall certify and sign each drawings or attached TOC as follows:
 - a) "We the undersigned certify that we have reviewed and coordinated the As-Built Drawings and they are in conformance to the plans, specifications, applicable codes and provisions of the Contract Documents. To the best of our knowledge all items reflected on the As-Built Drawings are a true representation of the site and building conditions".

3.3 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

- A. For Each Product, Applied Material, and Finish:
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- C. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.4 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

- A. For Each Item of Equipment and Each System:
 - 1. Description of unit or system, and component parts.
 - 2. Identify function, normal operating characteristics, and limiting conditions.
 - 3. Include performance curves, with engineering data and tests.
 - 4. Complete nomenclature and model number of replaceable parts.
- B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
- C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
- D. Include color coded wiring diagrams as installed.
- E. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- F. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- G. Provide servicing and lubrication schedule, and list of lubricants required.
- H. Include manufacturer's printed operation and maintenance instructions.
- I. Include sequence of operation by controls manufacturer.
- J. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- K. Provide control diagrams by controls manufacturer as installed.
- L. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- M. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- N. Additional Requirements: As specified in individual product specification sections.

3.5 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

- A. Assemble operation and maintenance data into durable manuals for Port Chester-Rye UFSD's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.
- B. Where systems involve more than one specification section, provide separate tabbed divider for each system.
- C. Binders: Commercial quality, 8-1/2 by 11 inch (216 by 280 mm) three D side ring binders with durable plastic covers; 2 inch (50 mm) maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Owner's Representative, Fuller and D'Angelo, P.C., Consultants, Contractor, and Subcontractors, with names of responsible parties.
- F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.
- G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.
- H. Text: Manufacturer's printed data, or typewritten data on 24 pound paper.
- I. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- J. Arrangement of Contents: Organize each volume in parts as follows:
 - 1. Project Directory.
 - 2. Table of Contents, of all volumes, and of this volume.
 - 3. Operation and Maintenance Data: Arranged by system, then by product category.
 - a. Source data.
 - b. Operation and maintenance data.
 - c. Field quality control data.
 - d. Photocopies of warranties and bonds.
- K. Arrange content by systems under section numbers and sequence of Table of Contents of this Project Manual.
 - 1. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.

3.6 WARRANTIES

- A. Obtain warranties executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Port Chester-Rye UFSD's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties until time specified for submittal.
- E. Include originals of each in operation and maintenance manuals, indexed separately on Table of Contents.

CHECKLIST FOR PROJECT CLOSEOUT AND PROCESSING OF FINAL PAYMENT

Project: Flood Repairs and Related Work

Owner: PORT CHESTER-RYE UFSD

Architect Project #: 21444.01

CLOSE-OUT SUBMITTALS: (As Applicable. Include this checklist with submittal)

Substantial Completion

- ☐ UL Certification or equivalent.
- ☐ Three (3) Ring Binder Brochures Of Operation And Maintenance Manuals For All Equipment Installed On The Project Including The Following:
 - ☐ Typed Or Printed Instructions Covering The Care And Operations Of Equipment And Systems Furnished And Installed.
 - ☐ Start-up Performance Reports
 - ☐ Test/Balancing Reports.
 - ☐ Final Survey
 - ☐ Manufacturers Instruction Books, Diagrams, Spare Parts Lists Covering All Equipment.
 - ☐ Instruction Of Owner's Representative In Care And Maintenance Of New Equipment.
 - ☐ All Approved Shop Drawings and submittals.
 - ☐ Certificates Of Compliance And Inspection. (Where Applicable Electric, Elevator, Etc.)
- ☐ Spare Parts And Maintenance Materials. (Receipt Signed By Field Superintendent)
- ☐ Evidence Of Compliance With Requirements Of Governing Authorities (Certificates Of Inspection Electrical).
- ☐ Certificates Of Insurance For Products And Completed Operations .
- ☐ Fully Executed Certificate Of Substantial Completion: AIA G704.
- ☐ Contractor's Written Two-Year Warranty And Extended Warranties (If Any Required).
- ☐ Manufacturer's Warranty/Guaranties
- ☐ Manifest for Disposal of Hazardous Material.
- ☐ Manifest for Disposal of Material.
- ☐ DOL PW 200 Form.
- ☐ Project Record Documents.
- ☐ As-Built Drawings.
- ☐ **All files listed above shall be submitted on USB flash drive**

EVIDENCE OF PAYMENT AND RELEASE OF LIEN (Include this checklist with submittal)

Final Completion

- ☐ Contractor's Affidavit Of Payment Of Debts And Claims: AIA G706.
- ☐ Contractor's Affidavit Of Release Of Liens - AIA G706a With:
- ☐ Separate Written Release Of Waivers And Liens For Sub- Contractors, Suppliers And Others With Lien Right Against The Owner's Property, Together With List Of Those Parties.
- ☐ Notarized Statement That Only Non-Asbestos Materials Were Installed On This Project.
- ☐ Consent Of Surety To Final Payment AIA G707.
- ☐ Contractor's Certification of Payment of Prevailing Wage Rates.
- ☐ Contractor's Certification of Compliance that products comply with VOC requirements stated in Section 01 6116.

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CLOSEOUT SUBMITTALS

[] Architect's Punch List Items Certifying all Punch List have been completed with sign-off by
Owner's Representative or Construction Manager

**Final payment will not be processed until all items indicated are received in accordance with
Section 01 7800 - closeout submittals.**

END OF SECTION

SECTION 01 7900
DEMONSTRATION AND TRAINING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Demonstration of products and systems where indicated in specific specification sections.
- B. Training of Port Chester-Rye UFSD personnel in operation and maintenance is required for:
 - 1. All software-operated systems.
 - 2. HVAC systems and equipment.
 - 3. Electrical systems and equipment.
 - 4. Items specified in individual product Sections.
- C. Training of Port Chester-Rye UFSD personnel in care, cleaning, maintenance, and repair is required for:
 - 1. Roofing, waterproofing, and other weather-exposed or moisture protection products.
 - 2. Finishes, including flooring, wall finishes, ceiling finishes.
 - 3. Fixtures and fittings.
 - 4. Items specified in individual product Sections.

1.3 RELATED REQUIREMENTS

- A. Section 01 7800 - Closeout Submittals: Operation and maintenance manuals.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
 - 1. Make all submittals specified in this section, and elsewhere where indicated for commissioning purposes, directly to the Commissioning Authority.
- B. Training Plan: Port Chester-Rye UFSD will designate personnel to be trained; tailor training to needs and skill-level of attendees.
 - 1. Submit to Owner's representative for transmittal to Port Chester-Rye UFSD.
 - 2. Submit to Commissioning Authority for review and inclusion in overall training plan.
 - 3. Submit not less than four weeks prior to start of training.
 - 4. Include at least the following for each training session:
 - a. Identification, date, time, and duration.
 - b. Description of products and/or systems to be covered.
 - c. Name of firm and person conducting training; include qualifications.
 - d. Intended audience, such as job description.
 - e. Methods to be used, such as classroom lecture, live demonstrations, hands-on, etc.
 - f. Media to be used, such as slides, hand-outs, etc.
 - g. Training equipment required, such as projector, projection screen, etc., to be provided by Contractor.
- C. Training Manuals: Provide training manual for each attendee; allow for minimum of two attendees per training session.
 - 1. Include applicable portion of O&M manuals.
 - 2. Include copies of all hand-outs, slides, overheads, video presentations, etc., that are not included in O&M manuals.
 - 3. Provide one extra copy of each training manual to be included with operation and maintenance data.

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- D. Training Reports:
 - 1. Identification of each training session, date, time, and duration.
 - 2. Sign-in sheet showing names and job titles of attendees.
- E. Video Recordings: Submit digital video recording of each demonstration and training session for Port Chester-Rye UFSD's subsequent use.
 - 1. Format: DVD Disc.
 - 2. Label each disc and container with session identification and date.

1.5 QUALITY ASSURANCE

- A. Instructor Qualifications: Familiar with design, operation, maintenance and troubleshooting of the relevant products and systems.
 - 1. Provide as instructors the most qualified trainer of those contractors and/or installers who actually supplied and installed the systems and equipment.
 - 2. Where a single person is not familiar with all aspects, provide specialists with necessary qualifications.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 DEMONSTRATION - GENERAL

- A. Demonstrations conducted during system start-up do not qualify as demonstrations for the purposes of this section, unless approved in advance by Construction Manager.
- B. Demonstration may be combined with Port Chester-Rye UFSD personnel training if applicable.
- C. Operating Equipment and Systems: Demonstrate operation in all modes, including start-up, shut-down, seasonal changeover, emergency conditions, and troubleshooting, and maintenance procedures, including scheduled and preventive maintenance.
 - 1. Perform demonstrations not less than two weeks prior to Substantial Completion.
 - 2. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- D. Non-Operating Products: Demonstrate cleaning, scheduled and preventive maintenance, and repair procedures.
 - 1. Perform demonstrations not less than two weeks prior to Substantial Completion.

3.2 TRAINING - GENERAL

- A. Conduct training on-site unless otherwise indicated.
- B. Owner's representative will provide classroom and seating at no cost to Contractor.
- C. Provide training in minimum two hour segments.
- D. Training schedule will be subject to availability of Port Chester-Rye UFSD's personnel to be trained; re-schedule training sessions as required by Port Chester-Rye UFSD; once schedule has been approved by Port Chester-Rye UFSD failure to conduct sessions according to schedule will be cause for Port Chester-Rye UFSD to charge Contractor for personnel "show-up" time.
- E. Product- and System-Specific Training:
 - 1. Review the applicable O&M manuals.
 - 2. For systems, provide an overview of system operation, design parameters and constraints, and operational strategies.
 - 3. Review instructions for proper operation in all modes, including start-up, shut-down, seasonal changeover and emergency procedures, and for maintenance, including preventative maintenance.
 - 4. Provide hands-on training on all operational modes possible and preventive maintenance.

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5. Emphasize safe and proper operating requirements; discuss relevant health and safety issues and emergency procedures.
 6. Discuss common troubleshooting problems and solutions.
 7. Discuss any peculiarities of equipment installation or operation.
 8. Discuss warranties and guarantees, including procedures necessary to avoid voiding coverage.
 9. Review recommended tools and spare parts inventory suggestions of manufacturers.
 10. Review spare parts and tools required to be furnished by Contractor.
 11. Review spare parts suppliers and sources and procurement procedures.
- F. Be prepared to answer questions raised by training attendees; if unable to answer during training session, provide written response within three days.

END OF SECTION

SECTION 02 6500
UNDERGROUND STORAGE TANK REMOVAL

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

- A. Section 01 7000 - Execution: Dewatering of excavations and water control.
- B. Section 31 2323 - Fill: Fill materials, filling, and compacting.

1.2 REFERENCE STANDARDS

- A. API RP 1604 - Closure of Underground Petroleum Storage Tanks; 1996 (R2010).

1.3 QUALITY ASSURANCE

- A. Perform work in accordance with local, state, and federal regulations and 40 CFR 280.
- B. Qualifications: Prior to start of work, submit documentation of recent experience and resumes of personnel working on the project.
- C. References: Furnish data proving experience on at least three prior projects that included types of activities similar to those in this project. Provide project titles, dates of projects, owners of projects, point of contact for each project, and phone numbers of each point of contact.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 EXCAVATION

- A. Provide Fuller and D'Angelo P.C. with written documentation, no later than 30 days before work begins, that proper state or local authorities have been notified.
- B. Notify Fuller and D'Angelo P.C. at least 48 hours prior to start of tank removal work.
 - 1. Stage operations to minimize the time that tank excavation is open and the time that contaminated soil is exposed to the weather.
- C. Excavation: Excavate as required to remove tanks and piping.
 - 1. Collect and temporarily store water runoff from stockpiled soils.
- D. Excavation Methods: Select methods and equipment to remove soil to minimize disturbance to areas beyond the limits of the excavation area.
 - 1. Material that becomes contaminated as a result of Contractor's operations shall be removed and disposed of at no additional cost to Port Chester-Rye UFSD.
 - 2. Where excavation extends into groundwater levels, dewatering methods shall be employed on a localized basis to facilitate excavation operations, as specified in Section 01 7000.

3.2 DISPOSAL OF UNDERGROUND TANKS, ANCHORS, SLABS, AND ASSOCIATED PIPING

- A. Preparation: API RP 1604. Remove the fill pipe, gauge pipe, vapor recovery truck connection, submersible pumps, and drop tube.
 - 1. Cap or remove non-product piping, except vent piping.
 - 2. Plug tank openings so that vapors will exit through vent piping during the vapor-freeing process.
- B. Purging: Remove flammable vapors in accordance with API RP 1604. Tanks shall be certified as "vapor free" prior to further work.
- C. Cleaning and Testing: Clean tank and perform atmosphere testing in accordance with API RP 1604.
 - 1. Distribution (product delivery) piping shall be cleaned and removed or the piping shall be cleaned, filled with concrete, and abandoned in place.
 - 2. Test the tank atmosphere and the excavation area for flammable or combustible vapor concentrations, with a combustible gas indicator until the tank is removed from the excavation and from the site.

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D. Tank Removal and Disposal:

1. Plug or cap accessible holes. One plug shall have a minimum 1/8 inch (3 mm) vent hole.
2. Remove tank from the excavation, place it on a level surface and render it useless in accordance with API RP 1604.
3. Provide warning labels on tank if tank contained leaded fuels, as follows:
 - a. "TANK HAS CONTAINED LEADED GASOLINE -- NOT VAPOR FREE -- NOT SUITABLE FOR STORAGE OF FOOD OR LIQUIDS INTENDED FOR HUMAN OR ANIMAL CONSUMPTION -- DATE OF REMOVAL: MONTH/DAY/YEAR"
4. Transport and dispose of tank at an EPA approved disposal site in accordance with federal, state, and local regulations.

3.3 BACKFILLING

- A. Provide backfill, compaction, grading, and seeding in accordance with 31 2323.

END OF SECTION

SECTION 03 3000
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Concrete formwork.
- B. Concrete for composite floor construction.
- C. Floors and slabs on grade.
- D. Concrete footings.
- E. Concrete reinforcement.
- F. Fiber reinforcement
- G. Joint devices associated with concrete work.
- H. Concrete curing.
- I. Fence posts.
- J. Concrete toppings.
- K. Patching.
- L. Finishes.
- M. Mix design.
- N. Vapor Retarder.
- O. Concrete materials.
- P. Placement procedure.
- Q. Field Quality Control.

1.3 RELATED REQUIREMENTS

1.4 REFERENCE STANDARDS

- A. ACI 301 - Specifications for Structural Concrete; 2016.
- B. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000 (Reapproved 2009).
- C. ACI 305R - Guide to Hot Weather Concreting; 2010.
- D. ACI 308R - Guide to External Curing of Concrete; 2016.
- E. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2014 (Errata 2017).
- F. ACI 347R - Guide to Formwork for Concrete; 2014.
- G. ASTM A185/A185M - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete; 2007.
- H. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2016.
- I. ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement; 2016.
- J. ASTM A775/A775M - Standard Specification for Epoxy-Coated Steel Reinforcing Bars; 2017.
- K. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2017.

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- L. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2016, with Editorial Revision (2016).
- M. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2017a.
- N. ASTM C150/C150M - Standard Specification for Portland Cement; 2018.
- O. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete; 2016.
- P. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a (Reapproved 2016).
- Q. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete; 2011.
- R. ASTM C330/C330M - Standard Specification for Lightweight Aggregates for Structural Concrete; 2017a.
- S. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2015.
- T. ASTM C827/C827M - Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures; 2016.
- U. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; 2013.
- V. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2014a.
- W. ASTM C1116/C1116M - Standard Specification for Fiber-Reinforced Concrete; 2010a (Reapproved 2015).
- X. ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures; 2015.
- Y. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2012.
- Z. ASTM D3963/D3963M - Standard Specification for Fabrication and Jobsite Handling of Epoxy-Coated Steel Reinforcing Bars; 2015.
- AA. ASTM E1643 - Standard Practice for Selection, Design, Installation and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; 2011 (Reapproved 2017).
- AB. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2017.
- AC. COE CRD-C 513 - COE Specifications for Rubber Waterstops; 1974.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions for each product indicated.
- C. Mix Design: Submit proposed concrete mix design with NY State PE seal and signature.
 - 1. Indicate proposed mix design complies with requirements of ACI 301, Section 4 - Concrete Mixtures.
 - 2. Indicate proposed mix design complies with requirements of ACI 318, Chapter 5 - Concrete Quality, Mixing and Placing.
 - 3. Indicate proposed mix design complies with fiber reinforcing manufacturer's written recommendations.
 - 4. Indicate amounts of mixing water to be withheld for later addition at Project site.
- D. Samples: Submit samples of underslab vapor retarder to be used.

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- E. Samples: Submit two, 12 inch (305 mm) long samples of waterstops and construction joint devices.
- F. Test Reports: Submit report for each test or series of tests specified.
- G. Manufacturer's Installation Instructions: For concrete accessories, indicate installation procedures and interface required with adjacent construction.
- H. Sustainable Design Submittal: If any fly ash, ground granulated blast furnace slag, silica fume, rice hull ash, or other waste material is used in mix designs to replace Portland cement, submit the total volume of concrete cast in place, mix design(s) used showing the quantity of portland cement replaced, reports showing successful cylinder testing, and temperature on day of pour if cold weather mix is used.
- I. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.
- J. Warranty: Submit manufacturer warranty and ensure forms have been completed in Port Chester-Rye UFSD's name and registered with manufacturer.
- K. Product Data: For each type of product indicated.
- L. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
 - 1. Indicate amounts of mixing water to be withheld for later addition at Project site.
- M. 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.
 - 1. Include foundation plans and elevations.
 - 2. Indicate all penetrations and sleeve location and reinforcing.
 - 3. Identify areas of exposed surfaces and finish.
- N. Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional engineer detailing fabrication, assembly, and support of formwork.
 - 1. Shoring and Restoring: Indicate proposed schedule and sequence of stripping formwork, shoring removal, and installing and removing restoring.
- O. Qualification Data: For installer, testing agency, concrete supplier, and lab responsible for design mixes.
.
- P. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:
- Q. Material Certificates: For each of the following, signed by manufacturers:
 - 1. Cementitious materials.
 - 2. Admixtures.
 - 3. Form materials and form-release agents.
 - 4. Steel reinforcement and accessories.
 - 5. Waterstops.
 - 6. Curing compounds.
 - 7. Bonding agents.
 - 8. Adhesives.
 - 9. Vapor retarders.
 - 10. Semirigid joint filler.
 - 11. Joint-filler strips.
 - 12. Repair materials.
 - 13. Anti-spalling treatment (see 3.10.E.7).

1.6 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 301 and ACI 318.
- B. Follow recommendations of ACI 305R when concreting during hot weather.
- C. Follow recommendations of ACI 306R when concreting during cold weather.
- D. For slabs required to include moisture vapor reducing admixture (MVRA), do not proceed with placement unless manufacturer's representative is present for every day of placement.
- E. Installer Qualifications: The work of this section shall be performed by a qualified installer, with a minimum of five (5) years experience, approved by the Architect. The term "installer" used herein, shall mean a firm of established reputation which is regularly engaged in and which maintains a regular force of workmen skilled in the installation of the type of work specified in this section.
- F. 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.
- G. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from one source, and obtain admixtures through one source from a single manufacturer.
- H. Welding: Qualify procedures and personnel according to AWS D1.4, "Structural Welding Code--Reinforcing Steel."
- I. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.
- J. Preinstallation Conference: Conduct conference at Project site to comply with requirements.-
 - 1. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
 - a. Contractor's superintendent.
 - b. Independent testing agency responsible for concrete design mixtures.
 - c. Concrete subcontractor.
 - 2. Review special inspection and testing and inspecting agency procedures for field quality control, concrete finishes and finishing, cold and hot weather concreting procedures, curing procedures, construction contraction and isolation joints, and joint-filler strips, semirigid joint fillers, forms and form removal limitations, shoring and reshoring procedures, vapor-retarder installation, anchor rod and anchorage device installation tolerances, steel reinforcement installation, concrete repair procedures, and concrete protection.
- K. Delivery Records: Each delivery to the site of concrete shall be accompanied by weigh master's certification. Retain all copies for inspection by the Architect.
 - 1. Indicate water added to mix a job site on each delivery ticket. Show quantity of water added. Site water tempered mixes exceeding specified slump range will be rejected as not complying with specification requirements
- L. WARRANTY
 - 1. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
 - 2. Slabs with Porosity Inhibiting Admixture (PIA) or Moisture Vapor Reducing Admixture (MVRA): Provide warranty to cover cost of flooring failures due to moisture migration from slabs for life of the concrete.
 - a. Include cost of repair or removal of failed flooring, placement of topical moisture remediation system, and replacement of flooring with comparable flooring system.
 - 3. Moisture Emission-Reducing Curing and Sealing Compound, Membrane-Forming: Provide warranty to cover cost of flooring delamination failures for 10 years.

- a. Include cost of repair or removal of failed flooring, remediation with a moisture vapor impermeable surface coating, and replacement of flooring with comparable flooring system.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.
- B. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.
- C. All packed materials shall be delivered to the site in original unopened containers, clearly indicating manufacturer's name, brand name, and other identifying information.

1.8 PROJECT CONDITIONS

- A. Coordinate with the work of all other sections and separate contracts.

PART 2 PRODUCTS

2.1 FORMWORK

- A. Formwork Design and Construction: Comply with guidelines of ACI 347R to provide formwork that will produce concrete complying with tolerances of ACI 117.
- B. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
 - 1. Form Facing for Exposed Finish Concrete: Steel.
 - 2. Earth Cuts: Do not use earth cuts as forms for vertical surfaces. Natural rock formations that maintain a stable vertical edge may be used as side forms.
 - 3. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
 - 4. Form Ties: Cone snap type that will leave no metal within 1-1/2 inches (38 mm) of concrete surface.
 - 5. Composite metal deck.
- C. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.

2.2 REINFORCEMENT MATERIALS

- A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi) (420 MPa).
 - 1. Type: Deformed billet-steel bars.
 - 2. Finish: Unfinished, unless otherwise indicated.
 - 3. Finish: Galvanized in accordance with ASTM A767/A767M, Class I, unless otherwise indicated.
 - 4. Finish: Epoxy coated in accordance with ASTM A775/A775M, unless otherwise indicated.
- B. Steel Welded Wire Reinforcement (WWR): Galvanized, plain type, ASTM A1064/A1064M.
 - 1. Form: Flat Sheets.
 - 2. Mesh Size: 6 x 6 (150 x 150).
 - 3. Wire Gage: W 6 x W6.
- C. Reinforcement Accessories:
 - 1. Tie Wire: Annealed, minimum 16 gauge, 0.0508 inch (1.29 mm).
 - 2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
 - 3. Provide stainless steel or plastic coated steel components for placement within 1-1/2 inches (38 mm) of weathering surfaces.

2.3 CONCRETE MATERIALS

- A. Cement: ASTM C150/C150M, Type I - Normal Portland type.
 - 1. Acquire cement for entire project from same source.
- B. Fine and Coarse Aggregates: ASTM C33/C33M.

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1. Acquire aggregates for entire project from same source.
- C. Lightweight Aggregate: ASTM C330/C330M.
 1. 1.Nominal Maximum Aggregate Size:3/4 inch.
- D. Fly Ash: ASTM C618, Class C or F.
- E. Calcined Pozzolan: ASTM C618, Class N.
- F. Silica Fume: ASTM C1240, proportioned in accordance with ACI 211.1.
- G. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.
- H. Structural Fiber Reinforcement: ASTM C1116/C1116M.
 1. Fiber Type: Alkali-resistant synthetic.
 2. Fiber Length: 0.25 inch (6 mm), nominal.
 3. Manufacturers:
 - a. GCP Applied Technologies; STRUX 90/40: www.gcpat.com/#sle.
 - b. SI Concrete Systems; Fibermesh.
 - c. Axim Concrete Technologies; Fibrasol F.
 - d. Euclid Chemical Company (The); Fiberstrand F.
 - e. FORTA Corporation; Forta.
 - f. Grace Construction Products, W. R. Grace & Co.; Grace Fibers.
 - g. Substitutions: See Section 01 2500 Substitution Procedures..

2.4 ADMIXTURES

- A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
- B. Air Entrainment Admixture: ASTM C260/C260M.
- C. High Range Water Reducing and Retarding Admixture: ASTM C494/C494M Type G.
- D. High Range Water Reducing Admixture: ASTM C494/C494M Type F.
- E. Water Reducing and Accelerating Admixture: ASTM C494/C494M Type E.
- F. Water Reducing and Retarding Admixture: ASTM C494/C494M Type D.
- G. Accelerating Admixture: ASTM C494/C494M Type C.
- H. Retarding Admixture: ASTM C494/C494M Type B.
- I. Water Reducing Admixture: ASTM C494/C494M Type A.
- J. Shrinkage Reducing Admixture:
 1. ASTM C494/C494M, Type S.

2.5 ACCESSORY MATERIALS

- A. Underslab Vapor Retarder:
 1. Installation: Comply with ASTM E1643.
 2. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations.
 3. Manufacturers:
 - a. "Griffolyn T-65G" by Reef Industries In, three-ply, nylon- or polyester-cord-reinforced, high-density polyethylene sheet; laminated to a nonwoven geotextile fabric, 30 mils (0.76 mm) thick.
 - b. Substitutions: 01 6000 - Product Requirements.
- B. Dovetail Anchor: 14 gauge, 1" wide, stainless steel designed for fastening to concrete backup.
 1. Seismic Feature: Provide lip, hook, or clip on end of wire ties to engage or enclose not less than one continuous horizontal joint reinforcement wire of 0.1875 inch diameter.

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- a. 303-SV Seismic-Notch Dovetail Anchor, Hohmann & Barnard
- C. Non-Shrink Cementitious Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
 - 1. Grout: Comply with ASTM C1107/C1107M.
 - 2. Height Change, Plastic State; when tested in accordance with ASTM C827/C827M:
 - a. Maximum: Plus 4 percent.
 - b. Minimum: Plus 1 percent.
 - 3. Minimum Compressive Strength at 48 Hours, ASTM C109/C109M: 2,000 pounds per square inch (13.7 MPa).
 - 4. Minimum Compressive Strength at 28 Days, ASTM C109/C109M: 7,000 pounds per square inch (48 MPa).
 - 5. Products containing aluminum powder are not permitted.
 - 6. Flowable Products:
 - a. Five Star Products, Inc; Five Star Fluid Grout 100: www.fivestarpromducts.com/#sle.
 - b. Kaufman Products Inc; SureGrout: www.kaufmanproducts.net/#sle.
 - c. The QUIKRETE Companies; QUIKRETE® Exterior Use Anchoring Cement: www.quikrete.com/#sle.
- D. Non-Shrink Epoxy Grout: Moisture-insensitive, two-part; consisting of epoxy resin, non-metallic aggregate, and activator.
 - 1. Composition: High solids content material exhibiting positive expansion when tested in accordance with ASTM C827/C827M.
 - a. Maximum Height Change: Plus 4 percent.
 - b. Minimum Height Change: Plus 1 percent.
- E. Liquid Curing Compound: ASTM C 309, Type 1, clear or translucent.
 - 1. Acceptable Products:
 - a. Klear-Kote Cure-Sealer-Hardener, 30 percent solids; Burke Group, LLC (The).
 - b. Vocomp-30; W. R. Meadows, Inc

2.6 BONDING AND JOINTING PRODUCTS

- A. Latex Bonding Agent: Non-redispersable acrylic latex, complying with ASTM C1059/C1059M, Type II.
 - 1. Manufacturers:
 - a. Kaufman Products Inc; SureBond: www.kaufmanproducts.net/#sle.
 - b. SpecChem, LLC; Strong Bond Acrylic Bonder: www.specchemllc.com/#sle.
 - c. W. R. Meadows, Inc; ACRY-LOK-: www.wrmeadows.com/#sle.
 - d. Substitutions: 01 6000 - Product Requirements.
- B. Epoxy Bonding System:
 - 1. Complying with ASTM C881/C881M and of Type required for specific application.
 - 2. Manufacturers:
 - a. Adhesives Technology Corporation; _____: www.atcepoxy.com/#sle.
 - b. Dayton Superior Corporation; _____: www.daytonsuperior.com/#sle.
 - c. Types I and II, non-load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.
- C. Waterproofing Admixture Slurry: Slurry coat of Portland cement, sand, and crystalline waterproofing additive, mixed with water in proportions recommended by manufacturer to achieve waterproofing at cold joints in concrete.
- D. Waterstops: Rubber, complying with COE CRD-C 513.
 - 1. Configuration: As indicated on drawings.

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2. Size: As indicated on drawings.
- E. Reglets: Formed steel sheet, galvanized, with temporary filler to prevent concrete intrusion during placement.
 1. Size: As indicated on drawings.
- F. Slab Construction Joint Devices: Combination keyed joint form and screed, galvanized steel, with rectangular or round knockout holes for conduit or rebar to pass through joint form at 6 inches (150 mm) on center; ribbed steel stakes for setting.
 1. Provide removable plastic cap strip that forms wedge-shaped joint for sealant installation.
 2. Height: To suit slab thickness.
 3. Manufacturers:
 - a. Vinylex, Knoxville, TN 37921 (615) 690-2211..
 - b. Substitutions: See Section 01 2500 Substitution Procedures..

2.7 CURING MATERIALS

- A. Evaporation Reducer: Liquid thin-film-forming compound that reduces rapid moisture loss caused by high temperature, low humidity, and high winds; intended for application immediately after concrete placement.
 1. Manufacturers:
 - a. Dayton Superior Corporation; _____: www.daytonsuperior.com/#sle.
 - b. Kaufman Products Inc; VaporAid: www.kaufmanproducts.net/#sle.
 - c. Substitutions: 01 6000 - Product Requirements.
- B. Curing Compound, Naturally Dissipating: Clear, water-based, liquid membrane-forming compound; complying with ASTM C309.
 1. Product dissipates within 4 to 6 weeks.
 2. Manufacturers:
 - a. Dayton Superior Corporation; Clear Cure VOC J7WB: www.daytonsuperior.com/#sle.
 - b. SpecChem, LLC; SpecRez: www.specchemllc.com/#sle.
 - c. W. R. Meadows, Inc; 1100-Clear: www.wrmeadows.com/#sle.
- C. Curing Agent, Water-Cure Equivalent Type: Clear, water-based, non-film-forming, liquid-water cure replacement agent.
 1. Comply with ASTM C309 standards for water retention.
 2. Compressive Strength of Treated Concrete: Equal to or greater than strength after 28-day water cure when tested according to ASTM C39/C39M.
 3. VOC Content: Zero.
 4. Manufacturers:
 - a. Sinak Corporation; The Cure™ WCE: www.sinak.com/#sle.
- D. Moisture-Retaining Sheet: ASTM C171.
 1. Polyethylene film, white opaque, minimum nominal thickness of 4 mil, 0.004 inch (0.102 mm).
- E. Water: Potable, not detrimental to concrete.

2.8 REPAIR MATERIALS

- A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch (3.2 mm) and that can be feathered at edges to match adjacent floor elevations.
 1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
 2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.

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3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3 to 6 mm) or coarse sand as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than 4100 psi (29 MPa) at 28 days when tested according to ASTM C 109/C 109M.
- B. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
 1. Replace as much Portland cement as possible with fly ash, ground granulated blast furnace slag, silica fume, or rice hull ash as is consistent with ACI recommendations.
- C. Concrete Patching and Repair: One-component, early strength gaining, cementitious, patching material.
 1. Flexural Strength (ASTM C-293): 28 days 850 psi.
 2. Splitting Tensile Strength (ASTM C-496): 28 days 550 psi.
 3. Bond Strength (ASTM C-882 modified): 28 days 1,800 psi.
 4. Compressive Strength (ASTM C-109): 28 days 7,000 psi.
 5. Color Concrete gray
 6. Manufacturers:
 - a. Acceptable Products: SilkaRepair 223
 - b. Substitutions: 01 6000 - Product Requirements.

2.9 CONCRETE MIX DESIGN

- A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch (3.2 mm) and that can be feathered at edges to match adjacent floor elevations.
 1. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3 to 6 mm) or coarse sand as recommended by underlayment manufacturer.
- B. Proportioning Normal and Structural Lightweight Concrete: Comply with ACI 211.2 recommendations.
 1. Replace as much Portland cement as possible with fly ash, ground granulated blast furnace slag, silica fume, or rice hull ash as is consistent with ACI recommendations.
 2. Cement Binder: ASTM C 150, portland cement.
 3. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
- C. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.
 1. For trial mixtures method, employ independent testing agency acceptable to Fuller and D'Angelo P.C. for preparing and reporting proposed mix designs.
 2. Compressive Strength: Not less than 4,000 29 MPa) at 28 days when tested according to ASTM C 109/C 109M.
- D. Identify sources of all products used in design mixes.
- E. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.
- F. Fiber Reinforcement: Add to mix at rate of 1.5 pounds per cubic yard (0.89 kg per cubic meter), or as recommended by manufacturer for specific project conditions. Slabs on grade only.
- G. Normal Weight Concrete:
 1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: 4,000 pounds per square inch (27.6 MPa).
 2. Fly Ash Content: Maximum 15 percent of cementitious materials by weight.
 3. Calcined Pozzolan Content: Maximum 10 percent of cementitious materials by weight.
 4. Silica Fume Content: Maximum 5 percent of cementitious materials by weight.
 5. Water-Cement Ratio: Maximum 0.45 .
 6. Total Air Content: 6 percent, determined in accordance with ASTM C173/C173M.

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7. Maximum Slump: 4 inches (100 mm).
 8. Maximum Aggregate Size: 3/4 inch (19 mm).
- H. Structural Lightweight Concrete:
1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: 4,000 pounds per square inch (27.6 MPa).
 2. Water-Cement Ratio: Maximum 45 percent by weight.
 3. Total Air Content: 6 percent, determined in accordance with ASTM C173/C173M.
 4. Maximum Slump: 4 inches (100 mm).
 5. Maximum Aggregate Size: 3/4 inch (19 mm).
 6. Maximum dry unit weight: ____ pound per cubic foot (____ kg per cubic meter).

2.10 MIXING

- A. Transit Mixers: Comply with ASTM C94/C94M.
- B. Adding Water: If concrete arrives on-site with slump less than suitable for placement, do not add water that exceeds the maximum water-cement ratio or exceeds the maximum permissible slump.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.2 PREPARATION

- A. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.
- B. Verify that forms are clean and free of rust before applying release agent.
- C. For metal deck forms see Section 05 3100.
- D. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
- E. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning and applying bonding agent in according to bonding agent manufacturer's instructions.
 1. Use epoxy bonding system for bonding to damp surfaces, for structural load-bearing applications, and where curing under humid conditions is required.
 2. Use latex bonding agent only for non-load-bearing applications.
- F. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.
- G. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Comply with ASTM E1643. Lap joints minimum 6 inches (150 mm). Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.
 1. Vapor Retarder Over Granular Fill: Install compactible granular fill before placing vapor retarder as indicated on drawings. Do not use sand.

3.3 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

- A. Fabricate and handle epoxy-coated reinforcing in accordance with ASTM D3963/D3963M.
- B. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.
- C. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.

- D. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with concrete placement.

3.4 WATERSTOPS

- A. Flexible Waterstops: Install in construction joints, all joints between foundation walls and footing or slab and as indicated to form a continuous diaphragm. Install in longest lengths practicable. Support and protect exposed waterstops during progress of Work. Field-fabricate joints in waterstops according to manufacturer's written instructions.

3.5 PLACING CONCRETE

- A. Place concrete in accordance with ACI 304R.
- B. Notify Fuller and D'Angelo P.C. not less than 24 hours prior to commencement of placement operations.
- C. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- D. Ensure reinforcement, waterstops, and formed construction joint devices will not be disturbed during concrete placement.
- E. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.

3.6 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete Work.
- B. Equipment Bases and Foundations: Provide machine, locker and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates of manufacturer furnishing machines and equipment.
- C. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in inserts and accessories as shown on Drawings. Screed, tamp, and trowel-finish concrete surfaces.

3.7 DEFLECTIONS FOR ALL METAL DECK/CONCRETE WORK:

- A. It shall be the Contractor's responsibility and choice as to how the proper elevations or grades are to be accomplished at the top of the slab. Where concrete is poured over metal deck and steel framing it must be assumed that the composite deck, beams, and girders will deflect as the wet concrete is placed unless shored. The contractor shall provide shoring or additional concrete, or both to bring the slab up to the proper grade at no additional cost to the Owner. Monitor top of slab elevation continuously during pour from a fixed position to assure flatness criteria are met.

3.8 CONCRETE FINISHING

- A. Repair surface defects, including tie holes, immediately after removing formwork.
- B. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch (6 mm) or more in height.
- C. Exposed Form Finish: Rub down or chip off and smooth fins or other raised areas 1/4 inch (6 mm) or more in height. Provide finish as follows:
 - 1. Smooth Rubbed Finish: Wet concrete and rub with carborundum brick or other abrasive, not more than 24 hours after form removal.
- D. 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.

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- E. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
1. Surfaces to Receive Thick Floor Coverings: "Wood float" as described in ACI 302.1R; thick floor coverings include quarry tile, ceramic tile, and Portland cement terrazzo with full bed setting system.
 2. Surfaces to Receive Thin Floor Coverings: "Steel trowel" as described in ACI 302.1R; thin floor coverings include carpeting, resilient flooring, seamless flooring, resinous matrix terrazzo, thin set quarry tile, and thin set ceramic tile.
 3. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch in 1 direction.
 - a. Revise locations of scratch finish in subparagraph below to suit Project.
 - b. Apply scratch finish to surfaces to receive mortar setting beds for bonded cementitious floor finishes.
 4. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Re-straighten, cut down high spots, and fill low spots. Repeat float passes and re-straightening until surface is left with a uniform, smooth, granular texture
 5. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces indicated where ceramic or quarry tile is to be installed by either thickset or thin-set method. While concrete is still plastic, slightly scarify surface with a fine broom.
 - a. Comply with flatness and levelness tolerances for trowel finished floor surfaces.
 6. Broom Finish: Apply a broom finish to exterior sidewalks, concrete platforms, steps, and ramps, and elsewhere as indicated.
 - a. 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.
 7. Anti-Spalling Treatment: Apply compound to exterior concrete surfaces no sooner than 28 days after placement. Apply to clean, dry concrete, free of oil, dirt and other foreign materials, in 2-sprayed applications. First application at rate of 40 square yards per gallon; second application, 60 square yards per gallon. Allow complete drying between applications
 8. Other Surfaces to Be Left Exposed: Trowel as described in ACI 302.1R, minimizing burnish marks and other appearance defects.
- F. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains as indicated on drawings.

3.9 CURING AND PROTECTION

- A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
 1. Normal concrete: Not less than seven days.
 2. High early strength concrete: Not less than four days.
- C. Formed Surfaces: Cure by moist curing with forms in place for full curing period.

3.10 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.
- B. Provide free access to concrete operations at project site and cooperate with appointed firm.
- C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.

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- D. Compressive Strength Tests: ASTM C39/C39M, for each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cubic yards (76 cu m) or less of each class of concrete placed.
- E. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
- F. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.

3.11 DEFECTIVE CONCRETE

- A. Test Results: The testing agency shall report test results in writing to Fuller and D'Angelo P.C. and Contractor within 24 hours of test.
- B. Defective Concrete: Concrete not complying with required lines, details, dimensions, tolerances or specified requirements.
- C. Repair or replacement of defective concrete will be determined by the Fuller and D'Angelo P.C.. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
- D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Fuller and D'Angelo P.C. for each individual area.

3.12 PROTECTION

- A. Do not permit traffic over unprotected concrete floor surface until fully cured.

END OF SECTION

SECTION 03 5400
CAST UNDERLAYMENT

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 SECTION INCLUDES

1.3 RELATED REQUIREMENTS

- A. Section 01 7000 - Execution: Alteration project procedures; selective demolition for remodeling.
- B. Section 03300 - Cast in Place Concrete for concrete construction and finish.
- C. Section 09650 - Resilient Flooring for flashing patching.

1.4 REFERENCE STANDARDS

- A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 2016a.
- B. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2012.
- C. ASTM C 580 Flexural Strength
- D. ASTM D 3931 Bond Strength (concrete).
- E. ASTM F-2170 Relative Humidity in Concrete
- F. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's data sheets documenting physical characteristics and product limitations of underlayment materials. Include information on surface preparation, environmental limitations, and installation instructions.
- C. Certificate: Certify that products meet or exceed specified requirements.
- D. Manufacturer's Instructions.
- E. Material Test Reports: From a qualified testing agency indicating and interpreting test results of underlayments for compliance with requirements indicated.
- F. Minutes of preinstallation conference.
- G. Submit certification, in writing, by the finish floor manufacturer, that the cast underlayment is compatible and acceptable for their product.

1.6 QUALITY ASSURANCE

- A. Applicator Qualifications: Company specializing in performing the work of this section with minimum five years of experience who has completed work similar in material, design, and extent to that indicated for this Project.
- B. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.
- C. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section 01300 Administrative Requirements

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.

- B. Keep dry and protect from direct sun exposure, freezing, and ambient temperature greater than 105 degrees F (41 degrees C).

1.8 REGULATORY REQUIREMENTS

- A. Conform to New York State Building Codes for combustibility or flame spread requirements.

1.9 MOCK-UP

- A. Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - 1. Prepare mock-up in location designated by Fuller and D'Angelo P.C..
 - 2. Area: 6 ft by 6 ft (2 m by 2 m).
 - 3. Do not proceed with underlayment work until workmanship of mock-up has been approved by Fuller and D'Angelo P.C.
 - 4. If Architect determines that mockups do not meet requirements, demolish and remove them from the site and cast others until mockups are approved.
 - 5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 - 6. Demolish and remove mockups when directed.
 - 7. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- B. Mock-up may remain as part of the Work.

1.10 FIELD CONDITIONS

- A. Do not install underlayment until floor penetrations and peripheral work are complete.
- B. Comply with manufacturer's written instructions for substrate temperature and moisture content, ambient temperature and humidity, ventilation, and other conditions affecting underlayments performance.
- C. Maintain minimum ambient temperatures of 50 degrees F (10 degrees C) 24 hours before, during and 72 hours after installation of underlayment.
- D. During the curing process, ventilate spaces to remove excess moisture.
- E. Close areas to traffic during underlayments application and, after application, for time period recommended in writing by manufacturer

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Cementitious Underlayment:
 - 1. ARDEX Engineered Cements; ARDEX K 15: www.ardexamericas.com.
 - a. Locations where finish flooring is specified.
 - 2. ARDEX Engineered Cements; ARDEX SD-T: www.ardexamericas.com.
 - a. Locations where painted finish flooring is specified.
 - 3. Substitutions: 01 6000 - Product Requirements.

2.2 MATERIALS

- A. Cementitious Underlayment: Blended cement mix, that when mixed with water in accordance with manufacturer's directions will produce self-leveling underlayment with the following properties:
 - 1. Compressive Strength: Minimum _____ pounds per square inch (_____ MPa) after 28 days, tested per ASTM C109/C109M.
 - 2. Flexural Strength: Minimum 1000 psi (6.9 MPa) after 28 days, tested per ASTM C348.
 - 3. Bond Strength: 350-400 psi when tested in conformance with ASTM D 3931
 - 4. Thickness: Capable of thicknesses from feather edge to maximum 3-1/2 inch (89 mm).

- 5. Surface Burning Characteristics: Flame spread/Smoke developed index of 0/0 in accordance with ASTM E84.
- B. Aggregate: Dry, well graded, washed silica aggregate, approximately 1/8 inch (3 mm) in size and acceptable to underlayment manufacturer.
- C. Reinforcement: Galvanized metal lath complying with recommendations of underlayment manufacturer for specific project circumstances.
- D. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to underlayment mix materials.
- E. Primer: Manufacturer's recommended type.
- F. Epoxy Joint Filler: Two-component, semirigid, 100 percent solids, epoxy resin with a Shore A hardness of 80 per ASTM D 2240
- G. Acrylic-Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

2.3 MIXING

- A. Site mix materials in accordance with manufacturer's instructions.
- B. Add aggregate for areas where thickness will exceed 1/2 inch (12.7 mm). Mix underlayment and water for at least two minutes before adding aggregate, and continue mixing to assure that aggregate has been thoroughly coated.
- C. Mix to self-leveling consistency without over-watering.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that substrate surfaces are clean, dry, unfrozen, do not contain petroleum byproducts, or other compounds detrimental to underlayment material bond to substrate.

3.2 PREPARATION

- A. Concrete: Mechanically prepare steel troweled concrete to create a textured surface necessary to achieve the best bond; acceptable methods include bead blasting and scarifying. Do not use acid etching.
- B. Existing Concrete: Remove existing surface treatments and deteriorated and unsound concrete. Mechanically profile 100% of base slabs to produce a heavily scarified surface profile with an amplitude of 1/4 inch
 - 1. After profiling test substrate by place drop of water, or other means to insure all coatings, sealers etc have been removed. Repeat profiling if necessary.
 - 2. Prepare and clean existing base slabs according to topping manufacturer's written instructions. Fill voids, cracks, and cavities in base slabs.
 - 3. Mechanically remove contaminants from existing concrete that might impair bond of topping.
 - 4. Saw cut existing contraction and construction joints to a depth of 1/2 inch and fill with epoxy joint filler.
- C. Install joint-filler strips where topping abuts 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 topping surface, unless otherwise indicated.
 - 2. Terminate full-width joint-filler strips 1/2 inch below topping surface where joint sealants, specified in Division 7 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.
- D. Remove substrate surface irregularities. Fill voids and deck joints with filler. Finish smooth.
- E. Vacuum clean surfaces.

- F. Prime substrate in accordance with manufacturer's instructions. Allow to dry.
- G. Close former roof and floor openings where items and equipment have been removed and as indicated..

3.3 APPLICATION

- A. Start topping application in presence of manufacturer's technical representative.
- B. Existing Concrete: Apply epoxy-bonding adhesive, mixed according to manufacturer's written instructions, and scrub into dry base slabs to a thickness of 1/16 to 1/8 inch, without puddling. Place topping while adhesive is still tacky
- C. Install underlayment in accordance with manufacturer's instructions.
- D. Pump or pour material onto substrate. Do not retemper or add water.
 - 1. Pump, move, and screed while the material is still highly flowable.
 - 2. Be careful not to create cold joints.
 - 3. Wear spiked shoes while working in the wet material to avoid leaving marks.
- E. Place to indicated thickness, with top surface level to 1/8 inch in 10 ft (1:1000).
- F. For final thickness over 1-1/2 inches (38 mm), place underlayment in layers. Allow initial layer to harden to the point where the material has lost its evaporative moisture. Immediately prime and begin application of the subsequent layer within 24 hours.
- G. Place before partition installation.
- H. Where additional aggregate has been used in the mix, add a top layer of neat mix (without aggregate), if needed to level and smooth the surface.
- I. Construction Joints: Construct joints true to line with faces perpendicular to surface plane of topping, at locations indicated or as approved by Architect.
 - 1. Coat face of construction joint with epoxy adhesive at locations where topping is placed against hardened or partially hardened topping.
- J. Contraction Joints: Form weakened-plane contraction 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 topping develops random contraction cracks.
 - 1. Form joints in topping over contraction joints in base slabs, unless otherwise indicated.
 - 2. Construct contraction joints for a combined depth equal to topping thickness and not less than one-fourth of base-slab thickness.
 - 3. Construct contraction joints for a depth equal to one-half of topping thickness, but not less than 1/2 inch deep
- K. If a fine, feathered edge is desired, steel trowel the edge after initial set, but before it is completely hard.

3.4 CURING

- A. Once underlayment starts to set, prohibit foot traffic until final set has been reached.
- B. Air cure in accordance with manufacturer's instructions.
- C. Begin curing immediately after finishing topping. Cure by one or a combination of the following methods, according to topping manufacturer's written instructions:
 - 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 repair any holes or tears during curing period using cover material and waterproof tape.

3.5 JOINT FILLING

- A. Prepare and clean contraction joints and install epoxy joint filler, according to manufacturer's written instructions, once topping has fully cured.

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- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.
- C. Install epoxy joint filler full depth of contraction joints. Overfill joint and trim joint filler flush with top of joint after hardening

3.6 FIELD QUALITY CONTROL

- A. Placed Material: Agency will inspect and test for compliance with specification requirements.

3.7 REPAIRS

- A. Defective Topping: Repair and patch defective topping areas, including areas that have not bonded to concrete substrate

3.8 PROTECTION

- A. Do not permit traffic over unprotected floor underlayment surfaces.

END AOF SECTION

SECTION 04 7200
CAST STONE MASONRY

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Units required are:
 - 1. Exterior units, including , coping, sills, and cornice bands.

1.3 RELATED REQUIREMENTS

- A. Section 04 0511 - Mortar and Masonry Grout: Mortar for setting cast stone.
- B. Section 04 2000 - Unit Masonry: Installation of cast stone in conjunction with masonry.
- C. Section 07 9200 - Joint Sealants: Sealing joints indicated to be left open for sealant.
- D. Section 07 6200 - Sheet metal flashings and trim
- E. Section 07 9200 - Joint Sealants: Materials and execution methods for sealing soft joints in cast stone work.

1.4 REFERENCE STANDARDS

- A. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2016.
- B. ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement; 2016.
- C. ASTM A775/A775M - Standard Specification for Epoxy-Coated Steel Reinforcing Bars; 2017.
- D. ASTM A884/A884M - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement; 2014.
- E. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2017.
- F. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2016, with Editorial Revision (2016).
- G. ASTM C150/C150M - Standard Specification for Portland Cement; 2018.
- H. ASTM C 231 – Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
- I. ASTM C 426 – Standard Test Method for Linear Shrinkage of Concrete Masonry Units.
- J. ASTM C 260 – Standard Specification for Air Entrained Admixtures for Concrete.
- K. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2014a.
- L. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2017.
- M. ASTM C 618 – Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for use as a Mineral Admixture in Concrete
- N. ASTM C 666 – Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing.
- O. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete; 2016.
- P. ASTM C 989 – Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete.
- Q. ASTM C 1194 – Standard Test Method for Compressive Strength of Architectural Cast Stone
- R. ASTM C 1195 – Standard Test Method for Absorption of Architectural Cast Stone.

- S. ASTM C1364 - Standard Specification for Architectural Cast Stone; 2017.
- T. ASTM D 2244 – Standard Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates.
- U. Cast Stone Institute® Technical Manual Cast Stone Institute® Technical Manual.

1.5 DEFINITIONS

- A. Cast Stone – a refined architectural concrete building unit manufactured to simulate natural cut stone, used in unit masonry applications.
 - 1. Dry Cast Concrete Products – manufactured from zero slump concrete.
 - a. a. Vibrant Dry Tamp (VDT) casting method: Vibratory ramming of earth moist, zero-slump concrete against a rigid mold until it is densely compacted.
 - b. b. Machine casting method: manufactured from earth moist, zero-slump concrete compacted by machinery using vibration and pressure against a mold until it becomes densely consolidated.
 - 2. 2. Wet Cast Concrete Products - manufactured from measurable slump concrete.
 - a. Wet casting method: manufactured from measurable slump concrete and vibrated into a mold until it becomes densely consolidated.

1.6 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Test results of cast stone components made previously by the manufacturer.
 - 1. Include one copy of ASTM C1364 for Fuller and D'Angelo P.C.'s use.
- C. Shop Drawings: Include plans, elevations, dimensions, layouts, profiles, cross sections, reinforcement, exposed faces, arrangement of joints, anchoring methods, anchors, and piece numbers.
- D. Mortar Color Selection Samples.
- E. Verification Samples: Pieces of actual cast stone components not less than 12 inches (305 mm) square, illustrating range of color and texture to be anticipated in components furnished for the project.
- F. Full-Size Samples: One unit of each shape, for review.
- G. Source Quality Control Test Reports.
- H. Manufacturer's Qualification Data: Documentation showing compliance with specified requirements.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm with a minimum of 5 years of experience in producing cast stone of the types required for project and:
 - 1. Adequate plant capacity to furnish quality, sizes, and quantity of cast stone required without delaying progress of the work.
 - 2. Products previously produced by plant and exposed to weather that exhibit satisfactory appearance.
- B. Standards: Comply with the requirements of the Cast Stone Institute® Technical Manual and the project specifications. Where a conflict may occur, the contract documents shall prevail.
- C. Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.
 - 1. Job Site Testing - One (1) sample from production units may be selected at random from the field for each 500 cubic feet delivered to the job site. Perform tests in accordance ASTM C 1194 and C 1195.

2. Three (3) field cut cube specimens from each of these samples shall have an average minimum compressive strength of not less than 85% with no single specimen testing less than 75% of design strength as allowed by ACI 318.
 3. Three (3) field cut cube specimens from each of these samples shall have an average maximum cold-water absorption of 6%.
 4. Field specimens shall be tested in accordance with ASTM C 1194 and C 1195
- D. Source Limitations for Cast Stone: Obtain cast stone units through one source from a single manufacturer

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Package units and protect them from staining or damage during shipping and storage.
- B. Provide an itemized list of product to support the bill of lading.
- C. Deliver cast stone components secured to shipping pallets and protected from damage and discoloration. Protect corners from damage.
- D. Number each piece individually to match shop drawings and schedule.
- E. Store cast stone components and installation materials in accordance with manufacturer's instructions.
- F. Store cast stone components on pallets with nonstaining, waterproof covers. Ventilate under covers to prevent condensation. Prevent contact with dirt.
- G. Protect cast stone components during handling and installation to prevent chipping, cracking, or other damage.
- H. Store mortar materials where contamination can be avoided.
- I. Lift with wide-belt slings; do not use wire rope or ropes that might cause staining. Move cast stone units, if required, using dollies with wood supports
- J. Schedule and coordinate production and delivery of cast stone components with unit masonry work to optimize on-site inventory and to avoid delaying the work.

PART 2 PRODUCTS

2.1 MANUFACTURERS

2.2 MATERIALS

- A. Portland Cement: ASTM C150/C150M.
 1. For Units: Type I, white or gray as required to match Fuller and D'Angelo P.C. 's sample.
- B. Coarse Aggregate: ASTM C33/C33M, except for gradation; granite, quartz, or limestone.
- C. Fine Aggregate: ASTM C33/C33M, except for gradation; natural or manufactured sands.
- D. Pigments: ASTM C979, inorganic iron oxides; do not use carbon black.
- E. Admixtures: ASTM C 494/C 494M for water reducing, retarding, accelerating and high range admixtures.
- F. Air-Entraining Admixture: ASTM C 260, certified by the manufacturer to be compatible with other admixtures used.
 1. Add to mixes for units exposed to the exterior at manufacturer's prescribed rate to result in an air content of 5 to 7 percent
- G. Water: Potable.
- H. Reinforcing Bars: ASTM A615/A615M deformed bars, epoxy coated.
- I. Steel Welded Wire Reinforcement: ASTM A1064/A1064M, galvanized or ASTM A884/A884M, epoxy coated.
- J. Cast Stone Anchor:
 1. Type 304 Stainless Steel, eye rod anchor with 7-1/2" x 1/4" diameter shank,

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- a. 167-A, with 1-1/2" bend, stone anchor ,by Hohmann & Barnard
- 2. Spring Loaded Dowel: 3/8" x 3", stainless steel rod with 3'2": stainless steel spring.
 - a. #355 Heckmann Building Products.
- 3. Type 304 Stainless Steel Dowel: 3/8" x 3".
 - a. #155 Heckmann Building Products.
- 4. Stone and Masonry Anchor: Type 304 Stainless Steel, 1" x 16 ga. x length required.
 - a. #274 and #275V by Hohmann & Barnard.
- 5. Anchor Pin: Type 304 Stainless Steel, 8" x 1/2"diameter.
 - a. #407 by Hohmann & Barnard.
- 6. Back-up Wall Anchor: Type 304 stainless steel.
 - a. "Pos-I-Tie" with triangle wire tie by Heckman Building Industries.
- K. Shelf Angles and Similar Structural Items: Type 304 stainless steel, of shapes and sizes as required for conditions.
- L. Mortar: Portland cement-lime, as specified in Section 04 0511; do not use masonry cement.
- M. Cleaner: General-purpose cleaner designed for removing mortar and grout stains, efflorescence, and other construction stains from new masonry surfaces without discoloring or damaging masonry surfaces; approved for intended use by cast stone manufacturer and by cleaner manufacturer for use on cast stone and adjacent masonry materials.
- N. Refer to Section 07 6200 - Sheet Metal Flashing and Trim for metal flashings.
- O. Section 04 0511 - Mortar and Masonry Grout for mortar and epoxy grout.
- P. Section 04 2000 - Unit Masonry for flashings and accessories.

2.3 FABRICATION

- A. Provide cast stone units complying with ASTM C 1364.
- B. Provide units that are resistant to freezing and thawing as determined by laboratory testing according to ASTM C 666, Procedure A, as modified by ASTM C 1364.
- C. Reinforce units as indicated and as required by ASTM C 1364. Use epoxy-coated reinforcement when covered with less than 1-1/2 inches of material.
 - 1. Reinforce units as required for safe handling and structural stress.
- D. Fabricate units with sharp arris and details accurately reproduced with indicated texture on all exposed surfaces, unless otherwise indicated.
 - 1. Slope exposed horizontal surfaces at least 1:12, unless otherwise indicated.
 - 2. Provide drips on projecting elements.
- E. Fabricate all corner coping stones in 90 degree section
- F. Cure and finish units as follows:
 - 1. Cure units in totally enclosed curing room under dense fog and water spray at 95 percent relative humidity for 24 hours.
 - 2. Yard cure units until the sum of the mean daily temperatures for each day equals or exceeds 350 deg F.
 - 3. Acid etch units to remove cement film from surfaces indicated to be finished.
 - 4. Colors and Textures: As selected from manufacturer's full range of colors and textures..

2.4 MORTAR MATERIALS

- A. Provide mortar materials that comply with Section 04 0511 - Mortar and Masonry Grout

2.5 ACCESSORIES

- A. High Impact resilient setting shims.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine construction to receive cast stone components. Notify Fuller and D'Angelo P.C. if construction is not acceptable.
- B. Do not begin installation until unacceptable conditions have been corrected.

3.2 INSTALLATION

- A. Install cast stone components in conjunction with masonry, complying with requirements of Section 04 2000.
- B. Mechanically anchor cast stone units indicated; set remainder in mortar.
- C. Setting:
 - 1. Drench cast stone components with clear, running water immediately before installation.
 - 2. Set units in a full bed of mortar unless otherwise indicated.
 - 3. Fill vertical joints with mortar.
 - 4. Fill dowel holes and anchor slots completely with mortar or non-shrink grout.
 - 5. Set dowels with epoxy grout.
 - 6. Build concealed flashing into mortar joints as units are set.

3.3 TOLERANCES

- A. Manufacturing Tolerances:
 - 1. Cross section dimensions shall not deviate by more than $\pm 1/8$ in. (3mm) from approved dimensions.
 - 2. Length of units shall not deviate by more than length/ 360 or $\pm 1/8$ in. (3 mm), whichever is greater, not to exceed $\pm 1/4$ in. (6 mm).
 - a. 1. Maximum length of any unit shall not exceed 15 times the average thickness of such unit unless otherwise agreed by the manufacturer.
 - 3. Warp, bow or twist of units shall not exceed length/ 360 or $\pm 1/8$ in. (3 mm), whichever is greater.
 - a. Location of dowel holes, anchor slots, flashing grooves, false joints and similar features - On formed sides of unit, $1/8$ in. (3 mm), on unformed sides of unit, $3/8$ in.
- B. Installation Tolerances:
 - 1. Variation from Plumb: Not more than $1/8$ inch in 10 feet (3 mm in 3 m) or $1/4$ inch in 20 feet (6 mm in 6 m) or more.
 - 2. Variation from Level: Not more than $1/8$ inch in 10 feet (3 mm in 3 m) or $1/4$ inch in 20 feet (6 mm in 6 m), or $3/8$ inch (9 mm) maximum.
 - 3. Variation in Joint Width: Not more than $1/8$ inch in 36 inches (3 mm in 900 mm) or $1/4$ of nominal joint width, whichever is less.
 - 4. Variation in Plane Between Adjacent Surfaces (Lipping): Not more than $1/16$ inch (1.5 mm) difference between planes of adjacent units or adjacent surfaces indicated to be flush with units.
- C. Color and Finish:
 - 1. ASTM D 2244 permissible variation in color between units of comparable age subjected to similar weathering exposure.
 - a. Total color difference - not greater than 6 units.
 - b. Total hue difference - not greater than 2 units
 - 2. Minor chipping resulting from shipment and delivery shall not be grounds for rejection. Minor chips shall not be obvious under direct daylight illumination from a 20-ft (6 m) distance.

3.4 CLEANING

- A. Repair chips and other surface damage noticeable when viewed in direct daylight at 20 feet (6 m).

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1. Repair with matching touchup material provided by the manufacturer and in accordance with manufacturer's instructions.
 2. Repair methods and results subject to Fuller and D'Angelo P.C. 's approval.
- B. Clean completed exposed cast stone after mortar is thoroughly set and cured.
1. Wet surfaces with water before applying cleaner.
 2. Apply cleaner to cast stone in accordance with manufacturer's instructions.
 3. Remove cleaner promptly by rinsing thoroughly with clear water.
 4. Do not use acidic cleaners.

3.5 PROTECTION

- A. Protect completed work from damage.
- B. Clean, repair, or restore damaged or mortar-splashed work to condition of new work.
- C. Protect from splashing by mortar and other damage.

END OF SECTION

SECTION 05 1200
STRUCTURAL STEEL FRAMING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Structural steel support members, suspension cables, sag rods, struts, and tie rods.
- B. Architecturally exposed structural steel, columns, rolled steel trusses, and ties.
- C. Base plates, shear stud connectors and expansion joint plates.
- D. Grouting under base plates.
- E. Anchor bolts, base and bearing plates.
- F. Openings, reinforced and un-reinforced in structural steel.
- G. Hung lintel assemblies including diagonal braces.
- H. Basketball backstop supports.

1.3 RELATED REQUIREMENTS

- A. Section 01 4533 - Code-Required Special Inspections and Procedures.
- B. Section 01 7000 - Execution for survey requirements.
- C. Section 05 3100 - Steel Decking: Support framing for small openings in deck.
- D. Section 05 5000 - Metal Fabrications: Steel fabrications affecting structural steel work.
- E. Section 05 5100 - Metal Stairs.
- F. Section 07 8100 - Applied Fire Protection: Fireproof protection to framing and metal deck systems.
- G. Section 09 9113 - Exterior Painting.
- H. Section 09 9123 - Interior Painting.

1.4 REFERENCE STANDARDS

- A. AISC (MAN) - Steel Construction Manual; 2017.
- B. AISC 303 - Code of Standard Practice for Steel Buildings and Bridges; 2016.
- C. AISC S348 - Specification for Structural Joints Using ASTM A325 or A490 Bolts; 2004.
- D. AISC's "Seismic Provisions for Structural Steel Buildings" and "Supplement No. 2."
- E. AISC's "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design.
- F. AISC's "Specification for Allowable Stress Design of Single-Angle Members.
- G. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- H. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.
- I. ASTM A108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold Finished; 2013.
- J. ASTM A242/A242M - Standard Specification for High-Strength Low-Alloy Structural Steel; 2013 (Reapproved 2018).
- K. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.
- L. ASTM A529/A529M - Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality; 2014.

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- M. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts; 2015.
- N. ASTM A563M - Standard Specification for Carbon and Alloy Steel Nuts (Metric); 2007 (Reapproved 2013).
- O. ASTM A572/A572M - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel; 2015.
- P. ASTM A992/A992M - Standard Specification for Structural Steel Shapes; 2011 (Reapproved 2015).
- Q. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2014a.
- R. ASTM E165/E165M - Standard Test Method for Liquid Penetrant Examination for General Industry; 2012.
- S. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions; 2015a.
- T. ASTM F436/F436M - Standard Specification for Hardened Steel Washers Inch and Metric Dimensions; 2016.
- U. ASTM F959/F959M - Standard Specification for Compressible-Washer-Type Direct Tension Indicators for Use with Structural Fasteners, Inch and Metric Series; 2017.
- V. ASTM F959 - Standard Specification for Compressible-Washer-Type Direct Tension Indicators for Use with Structural Fasteners; 2013.
- W. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength; 2015, with Editorial Revision (2017).
- X. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions; 2015a.
- Y. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2012.
- Z. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015, with Errata (2016).
- AA. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel; 2017.
- AB. RCSC (HSBOLT) - Specification for Structural Joints Using High-Strength Bolts; Research Council on Structural Connections; 2014, with Errata (2015).
- AC. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 1999 (Ed. 2004).
- AD. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).
- AE. UL (FRD) - Fire Resistance Directory; Current Edition.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings:
 - 1. Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and fasteners.
 - 2. Connections.
 - 3. Indicate cambers and loads.
 - 4. Indicate welded connections with AWS A2.4 welding symbols. Indicate net weld lengths.
 - 5. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
 - 6. Include embedment drawings.

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7. Indicate type, size, and length of bolts. Identify Pretensioned and slip-critical high-strength bolted connections.
 8. For structural-steel connections indicated to comply with design loads, include structural analysis data prepared by the qualified professional engineer responsible for their preparation.
 9. Qualification Data: For Installer, fabricator and professional engineer.
- C. Manufacturer's Mill Certificate: Certify that products meet or exceed specified requirements.
- D. Mill Test Reports: Indicate structural strength, destructive test analysis and non-destructive test analysis.
- E. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within the previous 12 months.
- F. Submit non-shrink grout, primer, finish paint, and manual of high strength bolts.
- G. Fabricator's Qualification Statement: Provide documentation showing steel fabricator is accredited under IAS AC172.

1.6 PERFORMANCE REQUIREMENTS

- A. Comply with New York State Uniform Fire and Building Code Chapter 16 "Structural Design" -
- B. Construction: Types 1, rigid frame; 2, simple framing.
- C. Construction: Type FR, fully restrained.
- D. Connections: Provide details of connections required by the Contract Documents to be selected or completed by structural-steel fabricator to withstand ASD-service loads indicated and comply with other information and restrictions indicated.
1. Select and complete connections using schematic details indicated and AISC's "Manual of Steel Construction, Allowable Stress Design," Part 4 and comply with connection details shown on structural drawings.
 2. Engineering Responsibility: Fabricator's responsibilities include using a qualified professional engineer, license to practice in the State of New York, to prepare structural analysis data for structural-steel connections, including splices where required.

1.7 QUALITY ASSURANCE

- A. Fabricate structural steel members in accordance with AISC (MAN) "Steel Construction Manual."
- B. Structural steel members designated as architecturally-exposed structural steel (AESS) to also comply with Section 05 1213.
- C. Fabricator: Company specializing in performing the work of this section with minimum 10 years of documented experience, and is a designated an AISC-Certified Plant
- D. Erector: Company specializing in performing the work of this section with minimum 10 years of documented experience and is a designated an AISC-Certified Erector.
- E. Design connections not detailed on the drawings under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in New York. Where steel splices are required due site conditions, design splices for 100% of beam capacity.
- F. Professional Engineer Qualifications: A professional engineer who is legally authorized to practice in the New York State and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for projects with structural steel framing that are similar to that indicated for this Project in material, design, and extent.
1. Engineering Responsibility: Fabricator's responsibilities include using a qualified professional engineer to prepare structural analysis data for structural-steel connections

1.8 COORDINATION

- A. Furnish 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 REGULATORY REQUIREMENTS

- A. Conform to UL (FRD) Assembly Design No. as indicated on drawings.

2.2 MATERIALS

- A. Steel Angles and Plates: ASTM A36/A36M.
- B. Steel W Shapes and Tees: ASTM A992/A992M.
- C. Rolled Steel Structural Shapes: ASTM A992/A992M.
- D. Steel Shapes, Plates, and Bars: ASTM A242/A242M high-strength, corrosion-resistant structural steel.
- E. Steel Shapes, Plates, and Bars: ASTM A529/A529M high-strength, carbon-manganese structural steel, Grade 50.
- F. Steel Plates and Bars: ASTM A572/A572M, Grade 50 (345) high-strength, columbium-vanadium steel.
- G. Cold-Formed Structural Tubing: ASTM A500/A500M, Grade B.
- H. Pipe: ASTM A53/A53M, Grade B, Finish black.
- I. Shear Stud Connectors: Made from ASTM A108 Grade 1015 bars.
- J. High-Strength Structural Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, with matching compatible ASTM A563 or ASTM A563M nuts and ASTM F436/F436M washers.
- K. Unheaded Anchor Rods: ASTM F1554, Grade 36, plain, with matching ASTM A563 or ASTM A563M nuts and ASTM F436/F436M Type 1 washers.
- L. Load Indicator Washers: Provide washers complying with ASTM F959/F959M at connections requiring high-strength bolts.
- M. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
- N. Grout: Non-shrink, non-metallic aggregate type, complying with 1 and capable of developing a minimum compressive strength of 7,000 psi (48 MPa) at 28 days.
- O. Shop and Touch-Up Primer: Fabricator's standard, complying with VOC limitations of authorities having jurisdiction.
- P. Touch-Up Primer for Galvanized Surfaces: Fabricator's standard, complying with VOC limitations of authorities having jurisdiction.

2.3 FABRICATION

- A. Shop fabricate to greatest extent possible.
- B. Space shear stud connectors at 12 inches (300 mm) on center, unless otherwise noted on plans.
- C. Continuously seal joined members by continuous welds. Grind exposed welds smooth.
- D. Fabricate connections for bolt, nut, and washer connectors.
- E. Develop required camber for members.
- F. Architecturally Exposed Structural Steel: Comply with fabrication requirements, including tolerance limits, of AISC's "Code of Standard Practice for Steel Buildings and Bridges" for structural steel identified as architecturally exposed structural steel.
 - 1. Fabricate with exposed surfaces smooth, square, and free of surface blemishes including pitting, rust, scale, seam marks, roller marks, rolled trade names, and roughness.
 - 2. Remove blemishes by filling or grinding or by welding and grinding, before cleaning, treating, and shop priming
- G. Weld Connections: Comply with AWS D1.1 for welding procedure specifications, tolerances, appearance, and quality of welds and for methods used in correcting welding work

1. Verify that weld sizes, fabrication sequence, and equipment used for architecturally exposed structural steel will limit distortions to allowable tolerances. Prevent weld show-through on exposed steel surfaces.
 - a. Grind butt welds flush.
 - b. Grind or fill exposed fillet welds to smooth profile. Dress exposed welds.
2. All exposed welds shall be Type 1

2.4 FINISH

- A. Prepare structural component surfaces in accordance with SSPC SP6/NACE No. 3, "Commercial Blast Cleaning" for all exposed steel.
- B. SSPC-SP 3, "Power Tool Cleaning" for steel not exposed
- C. Shop prime structural steel members. Do not prime surfaces that will be fireproofed, field welded, in contact with concrete, or high strength bolted.
- D. Painting: Apply a 1-coat, nonasphaltic primer complying with SSPC-PS Guide 7.00, "Painting System Guide 7.00: Guide for Selecting One-Coat Shop Painting Systems," to provide a dry film thickness of not less than 1.5 mils

2.5 SOURCE QUALITY CONTROL

- A. Provide shop testing and analysis of structural steel.
 1. Members to be Tested: welded, shop-welded shear connectors .
 2. Test Method: AWS D1.1.
- B. High-Strength Bolts: Provide testing and verification of shop-bolted connections in accordance with RCSC (HSBOLT) "Specification for Structural Joints Using High-Strength Bolts", testing at least 2 percent of bolts at each connection.
- C. Welded Connections: Visually inspect all shop-welded connections and test at least 10 percent of welds using one of the following:
 1. Radiographic testing performed in accordance with ASTM E94/E94M.
 2. Ultrasonic testing performed in accordance with ASTM E164.
 3. Liquid penetrant inspection performed in accordance with ASTM E165/E165M.
 4. Magnetic particle inspection performed in accordance with ASTM E709.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that conditions are appropriate for erection of structural steel and that the work may properly proceed.
- B. Verify elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments, with steel erector present, for compliance with requirements

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. Erect structural steel in compliance with AISC 303.
- B. Allow for erection loads and provide sufficient temporary bracing to maintain structure in safe condition, plumb, and in true alignment until completion of erection and installation of permanent bracing.
- C. Field weld components and shear studs indicated on shop drawings.

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- D. Use carbon steel bolts only for temporary bracing during construction, unless otherwise specifically permitted on drawings. Install high-strength bolts in accordance with RCSC (HSBOLT) "Specification for Structural Joints Using High-Strength Bolts".
- E. Do not field cut or alter structural members without approval of Fuller and D'Angelo P.C..
- F. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.
- G. Grout solidly between column plates and bearing surfaces, complying with manufacturer's instructions for nonshrink grout. Trowel grouted surfaces smooth, splaying neatly to 45 degrees.
- H. Base and Bearing Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting base and bearing plates. Clean bottom surface of base and bearing plates.
 - 1. Set base and bearing plates for structural members on wedges, shims, or setting nuts as required.
 - a. Leveling plates will not be permitted.
 - 2. Weld plate washers to top of base plate.
 - 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 base or bearing plate before packing with grout.
 - 4. Promptly pack grout solidly between bearing surfaces and base and bearing 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

3.4 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch (6 mm) per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch (6 mm).

3.5 FIELD QUALITY CONTROL

- A. Owner will engage an independent testing and inspecting agency to perform shop tests and inspections and prepare test reports. All tests to be done under supervision of NY State Licensed P.E.
 - 1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections
- B. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.
 - 1. All test shall be performed under the supervision of a NY State licensed Engineer.
- C. High-Strength Bolts: Provide testing and verification of field-bolted connections in accordance with RCSC "Specification for Structural Joints Using High-Strength Bolts", testing at least 25 percent of bolts at any given connection. If any bolt in a connection falls short of torque specified by bolt manufacturer, test all remaining bolts at connection.. Provide follow up reports.
- D. Welded Connections: Visually inspect all field-welded connections and test at least 20 percent of welds using one of the following:
 - 1. Ultrasonic testing performed in accordance with ASTM E164.
 - 2. Liquid penetrant inspection performed in accordance with ASTM E165/E165M.
 - 3. Magnetic particle inspection performed in accordance with ASTM E709.
- E. In addition to visual inspection, shop-welded shear connectors will be tested and inspected according to requirements in AWS D1.1 for stud welding and as follows:
 - 1. Bend tests will be performed if visual inspections reveal either a less-than- continuous 360-degree flash or welding repairs to any shear connector.
 - a. Tests will be conducted on additional shear connectors if weld fracture occurs on shear connectors already tested, according to requirements in AWS D1.1

END OF SECTION

**SECTION 05 3100
STEEL DECKING**

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 SECTION INCLUDES

- A. Acoustical cellular roof deck.
- B. Roof deck and accessories.
- C. Composite floor deck and accessories.
- D. Supplementary framing for openings from 6 - 18 inches (150- 450 mm) and at columns.
- E. Bearing plates and angles.
- F. Acoustical insulation in roof deck flutes.

1.3 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Concrete topping over metal deck.
- B. Section 05 1200 - Structural Steel Framing: Support framing for openings larger than 18 inches (450 mm) and shear stud connectors.
- C. Section 07 5323 - Ethylene-Propylene-Diene-Monomer Roofing (EPDM).
- D. Section 07 8100 - Applied Fire Protection: Spray applied fireproofing.
- E. Section 09 9113 - Exterior Painting.
- F. Section 09 9123 - Interior Painting.

1.4 REFERENCE STANDARDS

- A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- B. ASTM A510/A510M - Standard Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel, and Alloy Steel; 2013.
- C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2017.
- D. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2015.
- E. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015, with Errata (2016).
- F. AWS D1.3/D1.3M - Structural Welding Code - Sheet Steel; 2018.
- G. FM (AG) - FM Approval Guide; current edition.
- H. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel; 2017.
- I. ICC-ES AC43 - Acceptance Criteria for Steel Deck Roof and Floor Systems; 2016.
- J. ICC-ES AC70 - Acceptance Criteria for Fasteners Power Driven into Concrete, Steel and Masonry Elements; 2016.
- K. SDI (DM) - Publication No.30, Design Manual for Composite Decks, Form Decks, and Roof Decks; 2007.
- L. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).
- M. UL (FRD) - Fire Resistance Directory; Current Edition.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittals procedures.

- B. Shop Drawings: Indicate deck plan, support locations, projections, openings, reinforcement, pertinent details, accessories, and including pour stops at slab edges and openings and column closures. Show required weld patterns for deck to supports. Show side lap connections.
- C. Product Data: Provide deck profile characteristics, dimensions, structural properties, and finishes.
- D. Certificates: Certify that products furnished meet or exceed specified requirements.
- E. Submit manufacturer's installation instructions.
- F. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within the previous 12 months.
- G. Fabricator's Qualification Statement: Provide documentation showing steel decking fabricator is accredited under IAS AC172.

1.6 QUALITY ASSURANCE

- A. Design deck layout, spans, fastening, and joints under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in State of New York.
- B. Fabricator Qualifications: A qualified steel fabricator that is accredited by the International Accreditation Service (IAS) Fabricator Inspection Program for Structural Steel in accordance with IAS AC172.
- C. Installer Qualifications: Company specializing in performing the work of this Section with minimum 5 years of experience.
- D. Fire-Resistance Ratings: Indicated by design designations of applicable testing and inspecting agency.
 - 1. Steel deck units shall be identified with appropriate markings of applicable testing and inspecting agency.
 - a. Fire-Test-Response Characteristics: Where indicated, provide steel deck units identical to those tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.
- E. G.FMG Listing: Provide steel roof deck evaluated by FMG and listed in its "Approval Guide, Building Materials" for Class 1 fire rating and Class 1-90 windstorm ratings.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Cut plastic wrap to encourage ventilation.
- B. Separate sheets and store deck on dry wood sleepers; slope for positive drainage.
- C. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling
 - 1. Protect and ventilate acoustical cellular roof deck with factory-installed insulation to maintain insulation free of moisture

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Steel Deck:
 - 1. Canam Steel Corporation; -: www.canam-steeljoists.ws.
 - 2. Nucor-Vulcraft Group; -: www.vulcraft.com.
 - 3. Wheeling Corrugating Co: www.wheelingcorrugating.com.
 - 4. Substitutions: Section 01 2500 Substitution Procedures.
- B. Acoustic Cellular Deck - Basis of Design: Metal Deck Group, Deep-Dek 4.5.

2.2 STEEL DECK

- A. All Deck Types: Select and design metal deck in accordance with SDI Design Manual.
 - 1. Calculate to structural working stress design and structural properties specified.
 - 2. Maximum Vertical Deflection of Floor Deck: 1/360 of span.

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3. Maximum Vertical Deflection of Roof Deck: $1/360$ of span.
 4. Maximum Lateral Deflection of Diaphragms: $1/500$ of the height of the wall.
- B. Cellular Acoustical Roof Deck (Use at Gymnasium barrel roofs.): Non-composite type, steel sheet with plain vertical flute faces perforated with $1/8$ inch (3 mm) diameter holes staggered $3/8$ inch (10 mm) on center:
1. Galvanized Steel Sheet: ASTM A653/A653M, Structural Steel (SS) Grade 33/230, with G90/Z275 galvanized coating.
 2. Futed deck equipped with bottom flat sheet.
 3. Structural Properties:
 - a. Section modulus: See structural drawings..
 - b. Span Design: See structural drawings..
 4. Minimum Base Metal Thickness: 20 gage, 0.0359 inch (0.91 mm). See structural drawings.
 5. Nominal Height: 4.5 inch (112.5 mm).
 6. Profile: Fluted.
 7. Formed Sheet Width: 24 inch (600 mm).
 8. Side Joints: Lapped, welded.
 9. End Joints: Lapped, welded.
 10. Fire Resistance Classification: Comply with ULUL (FRD).
 11. NRC: 1.00
- C. Roof Deck: Non-composite type, fluted steel sheet:
1. Galvanized Steel Sheet: ASTM A653/A653M, Structural Steel (SS) Grade 33/230, with G90/Z275 galvanized coating.
 2. Deck Profile: As indicated.
 3. Profile Depth: As indicated.
 4. Design Uncoated-Steel Thickness: As indicated.
 5. Span Condition: Three span continuous wherever possible, unless otherwise shown
 6. Structural Properties:
 - a. For required size and gauge of deck, see structural drawings.
 7. Minimum Base Metal Thickness: 22 gauge, 0.0299 inch (0.76 mm).
 8. Nominal Height: 1-1/2 inch (38 mm).
 9. Profile: Fluted; SDI NR.
 10. Formed Sheet Width: 36 inch (900 mm).
 11. Side Joints: Lapped, welded or screwed.
 12. End Joints: Lapped, welded.
- D. Composite Floor Deck: Fluted steel sheet embossed to interlock with concrete:
1. Galvanized Steel Sheet: ASTM A653/A653M, Structural Steel (SS) Grade 33/230, with G90/Z275 galvanized coating.
 2. Structural Properties:
 - a. For required size and gauge of deck, see structural drawings.
 - b. Shear stress resistance see structural drawings.
 3. Span Design: Multiple. 3 spans wherever possible.
 4. Minimum Metal Thickness, Excluding Finish: As indicated on drawings.
 5. Nominal Height: 1-1/2 inches (38 mm).
 6. Profile: As indicated on drawings.
 7. Formed Sheet Width: 36 inch (900 mm).
 8. Side Joints: Lapped, welded or screwed.
 9. End Joints: Lapped, welded.

10. Fire Resistance Classification: Comply with UL (FRD)

2.3 ACCESSORY MATERIALS

- A. Bearing Plates and Angles: ASTM A36/A36M steel, unfinished.
- B. Welding Materials: AWS D1.1/D1.1M.
- C. Fasteners: Galvanized hardened steel, self tapping.
- D. Powder Actuated Mechanical Fasteners: Steel; with knurled shank and forged ballistic point. Comply with applicable requirements of ICC-ES AC70.
 - 1. Design Requirements: Provide number and type of fasteners that comply with the applicable requirements of SDI (DM) design method for roof deck and floor deck applications and ICC-ES AC43.
 - 2. Material: Steel; ASTM A510/A510M.
 - a. Hardness: Rockwell C 54.5, minimum.
 - b. Tensile Strength: 285 kips per square inch (1965 MPa), minimum.
 - c. Shear Strength: 175 kips per square inch (1205 MPa), minimum.
 - d. Washers:
 - a) Exposed Roof Deck Applications: 0.591 inch (15 mm) diameter, minimum.
 - e. Corrosion Resistance:
 - 3. Products:
 - a. Hilti.
 - b. Substitutions: Section 01 2500 Substitutio Procedures.
- E. Mechanical Fasteners: Steel; hex washer head, self-drilling, self-tapping.
 - 1. Design Requirements for Sidelap Connections: Provide number and type of fasteners that comply with the applicable requirements of SDI (DM)SDI design method for roof deck and floor deck applications and ICC-ES AC43.
 - 2. Fasteners for Steel Roof Decks Protected with Waterproofing Membrane: ASTM B633, SC1, Type III zinc electroplate.
 - 3. Fasteners for Exposed Steel Roof Deck Application: Manufacturer's standard stainless steel with bonded neoprene washer.
 - 4. Products:
 - a. ITW Commercial Construction North America; ITW CCNA-Buildex Teks Select Series: www.ITWBuildex.com.
 - b. Substitutions: Section 01 2500 Substitution Procedures.
- F. Weld Washers: Mild steel, uncoated, 3/4 inch (19 mm) outside diameter, 1/8 inch (3 mm) thick.
- G. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- H. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, complying with VOC limitations of authorities having jurisdiction.
- I. Flute Closures: Closed cell synthetic rubber, 1 inch (25 mm) thick; profiled to fit tight to the deck.
- J. Acoustical Insulation: Glass fiber type, minimum 1.1 lb/cu ft (18 kg/cu m) density; profiled to suit deck.
- K. Pour Stops and Girder Fillers: Steel sheet, minimum yield strength of 33,000 psi of same material and finish as deck, and of thickness and profile recommended by SDI Publication No. 30
- L. Column Closures,, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material, finish, and thickness as deck, unless otherwise indicated
- M. Weld Washers: Uncoated steel sheet, shaped to fit deck rib, [0.0598 inch (1.52 mm)] [0.0747 inch (1.90 mm)] thick, with factory-punched hole of 3/8-inch (9.5-mm) minimum diameter.

- N. Recessed Sump Pans: Single-piece steel sheet, 0.0747 inch (1.90 mm) thick, of same material and finish as deck, with 3-inch- (76-mm-) wide flanges and [level] [sloped] recessed pans of 1-1/2-inch (38-mm) minimum depth. For drains, cut holes in the field and provide deck supports around recess. Seal watertight.
- O. Flat Sump Plate: Single-piece steel sheet, 0.0747 inch (1.90 mm) thick, of same material and finish as deck. For drains, cut holes in the field.

2.4 FABRICATED DECK ACCESSORIES

- A. Sheet Metal Deck Accessories: Metal closure strips, wet concrete stops, and cover plates, 22 gauge, 0.0299 inch (0.76 mm) thick sheet steel; of profile and size as indicated; finished same as deck.
- B. Floor Drain Pans: Formed sheet steel, 14 gauge, 0.0747 inch (1.90 mm) minimum thickness, flat bottom, sloped sides, recessed 1-1/2 inches (38 mm) below floor deck surface, bearing flange 3 inches (75 mm) wide, sealed watertight.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions prior to beginning work.

3.2 INSTALLATION

- A. Erect metal deck in accordance with SDI Design Manual and manufacturer's instructions. Align and level.
- B. On concrete and masonry surfaces provide minimum 4 inch (100 mm) bearing.
- C. On steel supports provide minimum 1-1/2 inch (38 mm) bearing.
- D. Install temporary shoring before placing deck panels, where indicated on deck shop drawings. Coordinate with Section 03300 "Cast in Place Concrete"
- E. Fasten deck to steel support members at ends and intermediate supports at 12 inches (300 mm) on center maximum, as shown on shop drawings, parallel with the deck flute and at each transverse flute using welds.
 - 1. Welding: Use fusion welds or screwed fastenthrough weld washers. Not required for 18 ga. deck.
- F. Clinch lock seam side laps.
- G. At mechanically fastened male/female side laps fasten at 24 inches (600 mm) on center maximum.
- H. Drive mechanical sidelap connectors completely through adjacent lapped sheets; positively engage adjacent sheets with minimum three-thread penetration.
- I. At welded male/female side laps weld or screw fasten at 18 inches (450 mm) on center maximum.
- J. Weld deck in accordance with AWS D1.3/D1.3M.
- K. At deck openings from 6 inches (150 mm) to 18 inches (450 mm) in size, provide 2 by 2 by 1/4 inch (50 by 50 by 6 mm) steel angle reinforcement. Place angles perpendicular to flutes; extend minimum two flutes beyond each side of opening and fusion weld to deck at each flute.
- L. Where deck (other than cellular deck electrical raceway) changes direction, install 6 inch (150 mm) minimum wide sheet steel cover plates, of same thickness as deck. Fusion weld 12 inches (300 mm) on center maximum.
- M. At floor edges, install concrete stops upturned to top surface of slab, to contain wet concrete. Provide stops of sufficient strength to remain stationary without distortion. See Structural drawings for additional information.
- N. At openings between deck and walls, columns, and openings, provide sheet steel closures and angle flashings to close openings.
- O. Close openings above walls and partitions perpendicular to deck flutes with double row of foam cell closures.

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- P. Position floor drain pans with flange bearing on top surface of deck. Fusion weld at each deck flute.
- Q. Immediately after welding deck and other metal components in position, coat welds, burned areas, and damaged surface coating, with touch-up galvanizing paint primer.

3.3 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Field welds will be subject to inspection.
- C. Testing agency will report inspection results promptly and in writing to Contractor and Architect.
- D. Remove and replace work that does not comply with specified requirements.
- E. Additional inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements

3.4 REPAIRS AND PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Repair Painting: Wire brush and clean rust spots, welds, and abraded areas on both surfaces prime-painted deck immediately after installation, and apply repair paint.
- C. Apply repair paint, of same color as adjacent shop-primed deck, to bottom surfaces of deck exposed to view.
- D. Provide final protection and maintain conditions to ensure that steel deck is without damage or deterioration at time of Substantial Completion.

END OF SECTION

SECTION 05 4000
COLD-FORMED METAL FRAMING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Formed steel stud exterior wall and interior wall framing.
- B. Polyethylene vapor barrier.

1.3 RELATED REQUIREMENTS

- A. Section 01 4533 - Code-Required Special Inspections and Procedures.
- B. Section 04 2000 - Unit Masonry for masonry anchors, cavity insulation., and embedded flashings.
- C. Section 05 1200 - Structural Steel Framing .
- D. Section 05 3100 - Steel Decking.
- E. Section 05 5000 - Metal Fabrications for masonry shelf angles and connections.
- F. Section 06 1000 - Rough Carpentry: Wood blocking and miscellaneous framing.
- G. Section 07 2100 - Thermal Insulation: Insulation within framing members.
- H. Section 07 2500 - Weather Barriers: Water-resistive barrier over sheathing.
- I. Section 07 5323 - Ethylene-Propylene-Diene-Monomer Roofing (EPDM)
- J. Section 07 6200 - Sheet Metal Flashing and Trim: Head and sill flashings.
- K. Section 07 9200 - Joint Sealers .
- L. Section 09 2116 - Gypsum Board Assemblies: Lightweight, non-load bearing metal stud framing.
- M. Section 09 2662 - Gypsum Sheathing.

1.4 REFERENCE STANDARDS

- A. AISI S100 - North American Specification for the Design of Cold-Formed Steel Structural Members; 2016.
- B. AISI S100-12 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2012.
- C. AISI SG02-1 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2001 with 2004 supplement. (replaced SG-971)
- D. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2017.
- F. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable; 2016.
- G. ASTM C955 - Standard Specification for Load-Bearing (Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Panel Products and Metal Plaster Bases; 2017.
- H. ASTM C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories; 2011a (Reapproved 2015).

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- I. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2013.
- J. ASTM D2103 - Standard Specification for Polyethylene Film and Sheeting; 2015.
- K. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015, with Errata (2016).
- L. AWS D1.3/D1.3M - Structural Welding Code - Sheet Steel; 2018.
- M. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 1999 (Ed. 2004).
- N. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).

1.5 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate with work of other sections that is to be installed in or adjacent to the metal framing system, including but not limited to structural anchors, cladding anchors, utilities, insulation, and firestopping.

1.6 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide cold-formed metal framing capable of withstanding design loads within limits and under conditions indicated
- B. Design Loads: Refer to Structural drawings for the following
 - 1. Dead Loads: 20 psf.
 - 2. Live Loads: 50 psf.
 - 3. Roof Loads: 40psf.
 - 4. Snow Loads: 35 psf.
 - 5. Seismic Loads: _____

1.7 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on standard framing members; describe materials and finish, product criteria, limitations and manufacturer's brochures showing section properties and specifications. .
- C. Product Data: Provide manufacturer's data on factory-made framing connectors, showing compliance with requirements.
- D. Shop Drawings: Indicate component details, framed openings, bearing, anchorage, loading, welds, type and location of fasteners, and special framing, and accessories or items required of related work.
 - 1. Provide elevations showing stud layout.
 - 2. Indicate locations of wind bracing straps and connections. For locations see structural drawings.
 - 3. Describe method for securing studs to tracks and for bolted framing connections.
 - 4. Show framing above, below and each side of openings with all required fasteners.
 - 5. Design data:
 - 6. Provide calculations for loadings and stresses of framing, stamped by a Professional Structural Engineer. Provide calculations showing that framing around openings can withstand minimum wind load of 40 psf on windows and door.
 - 7. Masonry anchors as shown on structural and architectural drawings.
- E. Fire-Test-Response Characteristics: Where indicated, provide cold-formed metal framing identical to that of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction
- F. Manufacturer's Installation Instructions: Indicate special procedures, conditions requiring special attention .

1.8 QUALITY ASSURANCE

- A. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in State of New York and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of cold-formed metal framing that are similar to those indicated for this Project in material, design, and extent
- B. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, and with minimum three years of documented experience.
- C. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience.

1.9 MOCK-UP

- A. Provide mock-up of exterior framed wall, including components specified elsewhere, such as insulation, sheathing, window frame, door frame, exterior wall finish, and interior wall finish.
- B. Location: As directed.
- C. Mock-up may remain as part of the Work.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Protect cold-formed metal framing from corrosion, deformation, and other damage during delivery, storage, and handling.
- B. Store cold-formed metal framing, protect with a waterproof covering, and ventilate to avoid condensation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Framing Connectors and Accessories:
 - 1. Same manufacturer as metal framing.
 - 2. Substitutions: Section 01 2500 Substitution Procedures.

2.2 FRAMING SYSTEM

- A. Provide primary and secondary framing members, bridging, bracing, plates, gussets, clips, fittings, reinforcement, and fastenings as required to provide a complete framing system.
- B. Design Requirements: Provide completed framing system having the following characteristics:
 - 1. Design: Calculate structural characteristics of cold-formed steel framing members according to AISI S100.
 - 2. Structural Performance: Design, engineer, fabricate, and erect to withstand specified design loads for project conditions within required limits.
 - 3. Design Loads: As indicated on the drawings.
 - a. Floor Live Loads:
 - a) Minimum Uniformly Distributed: 50 psf (244 kg/sq m).
 - b) Minimum Concentrated: 1,000 lbs (454 kg).
 - b. Roof Live Loads:
 - a) Minimum Uniformly Distributed: 40 psf.
 - b) Minimum Concentrated: 400 psf (1952 kg/sq).
 - c) Snow Load: 40 psf (192 kg/sq).
 - c. Wind Loads: 40 psf (192 kPa) positive and 40 psf (192 kPa) negative.
 - 4. Live load deflection meeting the following, unless otherwise indicated:
 - a. Floors: Maximum vertical deflection under live load: 1/480 of span.
 - b. Roofs: Maximum vertical deflection under live load: 1/240 of span.
 - c. Exterior Walls: Maximum horizontal deflection under wind load: 1/360 of span. 1/600 of span at walls with brick veneer.

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5. Able to tolerate movement of components without damage, failure of joint seals, undue stress on fasteners, or other detrimental effects when subject to seasonal or cyclic day/night temperature ranges.
 6. Able to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.
 7. Design framing systems to provide for movement of framing members without damage or overstressing, sheathing failure, panel failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change of 120 deg F.
 8. Design exterior non-load-bearing curtain-wall framing to accommodate horizontal deflection without regard for contribution of sheathing materials
- C. Shop fabricate framing system to the greatest extent possible.
- D. Deliver to project site in largest practical sections.

2.3 FRAMING MATERIALS

- A. Studs and Track: ASTM C955; studs formed to channel, C- or Sigma-shaped with punched web; U-shaped track in matching nominal width and compatible height.
1. Gage and Depth: As indicated on the drawings and as required to meet specified performance minimum levels..
 2. Galvanized in accordance with ASTM A653/A653M, G90/Z275 coating.
 3. Provide components fabricated from ASTM A1008/A1008M, Designation SS (structural steel).
- B. Framing Connectors: Factory-made, formed steel sheet.
1. Material: ASTM A653/A653M SS Grade 33 and 40 (minimum), with G90/Z275 hot dipped galvanized coating for base metal thickness less than 10 gauge, 0.1345 inch (3.42 mm), and factory punched holes and slots.
 2. Structural Performance: Maintain load and movement capacity required by applicable code, when evaluated in accordance with AISI S100.
 3. Movement Connections: Provide mechanical anchorage devices that accommodate movement using slotted holes, shouldered screws or screws and anti-friction or stepped bushings, while maintaining structural performance of framing. Provide movement connections where indicated on drawings.
 4. Fixed Connections: Provide non-movement connections for tie-down to foundation, floor-to-floor tie-down, roof-to-wall tie-down, joist hangers, gusset plates, and stiffeners.
 5. Wall Stud Bridging Connections: Provide mechanical load-transferring devices that accommodate wind load torsion and weak axis buckling induced by axial compression loads. Provide bridging connections where indicated on the drawings.

2.4 FASTENERS

- A. Self-Drilling, Self-Tapping Screws, Bolts, Nuts and Washers: Hot dip galvanized per ASTM A153/A153M.
1. Products:
 - a. ITW Commercial Construction North America; ITW CCNA-Buildex Tek's Select Series: www.ITWBuildex.com.
- B. Anchorage Devices: Powder actuated.
- C. Welding: Comply with AWS D1.1/D1.1M.

2.5 WALL SHEATHING

- A. Section 09 2662 - Gypsum Sheathing.

2.6 ACCESSORIES

- A. Interior Vapor Barrier: Polyethylene Film: ASTM D2103, 4 mil, 0.004 inch (0.102 mm) thick, clear.
 - 1. Applied between studs and gypsum board.
 - 2. Tape: Bright aluminum self-adhering type, mesh reinforced, 2" wide.
- B. Bracing, Furring, Bridging: Formed sheet steel, thickness determined for conditions encountered; finish to match framing components.
- C. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- D. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.7 SILL-SEALER GASKETS

- A. Ribbed polyethylene foam, 3/16 inch thick, selected from manufacturer's standard widths to suit width of sill members indicated.
 - 1. Product: Reflectix Inc. #1 School Street, P.O. Box 108, Markleville, IN 46056

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that building framing components are ready to receive work.
- B. Verify field measurements and adjust installation as required.

3.2 PREPARATION

- A. Grout bearing surfaces uniform and level to ensure full contact of track webs on supporting concrete or masonry construction

3.3 INSTALLATION OF STUDS

- A. 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
- B. Install components in accordance with manufacturers' instructions and ASTM C1007 requirements.
- C. Align floor and ceiling tracks; locate to wall layout. Secure in place with fasteners at maximum 16 inches (- mm) on center. Coordinate installation of sealant with floor and ceiling tracks.
- D. Place studs at 16 inches (400 mm) on center; not more than 2 inches (50 mm) from abutting walls and at each side of openings. Connect studs to tracks using welding or fastener method. Studs must bear tight on tracks at top and bottom of wall.
 - 1. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
 - 2. Locate mechanical fasteners and install according to Shop Drawings, with screw penetrating joined members by not less than three exposed screw threads
- E. Construct corners using minimum of three studs. Install double studs at wall openings, door and window jambs.
- F. Install framing members in one-piece lengths, unless splice connections are indicated for track or tension members
- G. Install temporary bracing and supports to secure framing and support loads
- H. Coordinate placement of insulation in multiple stud spaces made inaccessible after erection.
- I. Install intermediate studs above and below openings to align with wall stud spacing.
- J. Provide deflection allowance in stud track, directly below horizontal building framing at non-load bearing framing.
- K. Attach cross studs to studs for attachment of fixtures anchored to walls.

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- L. Install framing between studs for attachment of mechanical and electrical items, and to prevent stud rotation.
- M. Frame wall openings with not less than a double stud at each jamb of frame as indicated on Drawings. Fasten jamb members together to uniformly distribute loads.
- N. Provide cross bracing or horizontal bracing at story heights of greater than 14'-0".
- O. Install runner tracks and jack studs above and below wall openings in addition to full height double studs. Anchor tracks to jamb studs with clip angles or by welding, and space jack studs same as full-height wall studs
- P. Touch-up field welds and damaged galvanized surfaces with primer.

3.4 INSTALLATION OF WALL SHEATHING

- A. Refer to Section 09 2662 - Gypsum Sheathing.

3.5 INSTALLATION OF WEATHER BARRIER

- A. Refer to Section 07 2500 - Weather Barriers.

3.6 FIELD QUALITY CONTROL

- A. Testing: Owner will engage a qualified independent testing agency to perform field quality-control testing. Installation of studs, wind bracing straps and framing at wall openings to be checked against approved shop drawings including connections.
- B. Screws and PDF's will be checked for conformance with approved shop drawings. All deficiencies will be noted in field reports and re-inspected until approved.
- C. Field and shop welds will be subject to inspection and testing.
- D. Testing agency will report test results promptly and in writing to Contractor and Architect.
- E. Remove and replace Work that does not comply with specified requirements.
- F. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of corrected Work with specified requirements

3.7 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. Protect paper-surfaced gypsum sheathing that will be exposed to weather for more than 30 days by covering exposed exterior surface of sheathing with a securely fastened air-infiltration barrier. Apply covering immediately after sheathing is installed.
- C. Protect cutouts, corners, and joints in sheathing by filling with a flexible sealant or by applying tape recommended by sheathing manufacturer at time sheathing is applied.
- D. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer that ensure cold-formed metal framing is without damage or deterioration at time of Substantial Completion

3.8 TOLERANCES

- A. Maximum Variation from True Position: 1/16 inch (1.56 mm).
- B. Maximum Variation of any Member from Plane: 1/16 inch (1.56 mm).

END OF SECTION

SECTION 05 5000
METAL FABRICATIONS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Downspout boots.
- B. Steel framing and supports for mechanical roof support systems, gymnasium equipment supports, scoreboard, and framing supports and bracing for screens, and similar items indicated on drawings.
- C. Steel framing and supports for applications where framing and supports are not specified in other Sections.
- D. Loose lintel where required, shown on drawings or for work under this section.
- E. Elevator machine hoist beams.
- F. Support angles for elevator door sills.
- G. Elevator pit steel ladder.
- H. Metal bollards.
- I. Corner Wheel Guards.
- J. Steel angle corner guards.
- K. Metal downspout boots.
- L. Abrasive metal nosing for concrete stairs.
- M. Channels for fire rated glass block.

1.3 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Placement of metal fabrications in concrete.
- B. Section 04 2000 - Unit Masonry: Placement of metal fabrications in masonry.
- C. Section 05 1200 - Structural Steel Framing: Structural steel column anchor bolts.
- D. Section 05 3100 - Steel Decking: Bearing plates for metal deck bearing, including anchorage.
- E. Section 05 4000 - Cold-Formed Metal Framing.
- F. Section 05 5100 - Metal Stairs.
- G. Section 05 5213 - Pipe and Tube Railings.
- H. Division 7 for roofing and sheet metal flashings for roof penetrations and installations associated with steel support roof framing.
- I. Section 09 2116 - Gypsum Board Assemblies for miscellaneous framing associated with metal stud framing .
- J. Section 09 9113 - Exterior Painting: Paint finish.

1.4 REFERENCE STANDARDS

- A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2014 (2015 Errata).
- B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- C. ASTM A48/A48M - Standard Specification for Gray Iron Castings; 2003 (Reapproved 2016).
- D. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.

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- E. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- F. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2013.
- G. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2014 (Editorial 2017).
- H. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2014.
- I. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2017.
- J. ASTM B210/B210M - Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes; 2019.
- K. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021.
- L. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- M. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions; 2015a.
- N. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2012.
- O. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015, with Errata (2016).
- P. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel; 2017.
- Q. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).
- R. SSPC-SP 2 - Hand Tool Cleaning; 1982, with Editorial Revision (2004).

1.5 PERFORMANCE REQUIREMENTS

- A. Structural Performance of Ladders: Provide ladders capable of withstanding the effects of loads and stresses within limits and under conditions specified in ANSI A14.3.
- B. Thermal Movements: Provide exterior metal fabrications that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces

1.6 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: For the following:
 - 1. Elevator pit ladder.
 - 2. Metal downspout boots.
 - 3. Projection mounts and associated supports.
 - 4. Miscellaneous framing for gymnasium equipment.
 - 5. Gymnasium perforated grills
 - 6. Exterior canopy and vestibule perforated grills.
 - 7. Roof supports.
 - 8. Miscellaneous framing for scoreboard..
- C. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.

1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
 2. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer, licensed in the State of New York, responsible for their preparation.
- D. Welders' Certificates: Submit certification for welders employed on the project, verifying AWS qualification within the previous 12 months.
- E. Fabricator's Qualification Statement: Provide documentation showing steel fabricator is accredited under IAS AC172.

1.7 QUALITY ASSURANCE

- A. Design engineering under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in New York.
- B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in the State of New York and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of cold-formed metal framing that are similar to those indicated for this Project in material, design, and extent
- C. Welding: Qualify procedures and personnel according to the following:
1. AWS D1.1, "Structural Welding Code--Steel."

1.8 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication and indicate measurements on Shop Drawings.
1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating metal fabrications without field measurements. Coordinate wall and other contiguous construction to ensure that actual dimensions correspond to established dimensions.
 2. Provide allowance for trimming and fitting at site.

1.9 COORDINATION

- A. Coordinate installation of anchorages for metal fabrications. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- B. Coordinate installation of steel weld plates and angles for casting into concrete that are specified in this Section but required for work of another Section. Deliver such items to Project site in time for installation.

PART 2 PRODUCTS

2.1 MATERIALS - STEEL

- A. Steel Sections: ASTM A36/A36M.
- B. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.
- C. Plates: ASTM A283/A283M.
- D. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.
- E. Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, plain.
- F. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
- G. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

- H. Touch-'Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.2 MATERIALS - ALUMINUM

- A. Extruded Aluminum: ASTM B221 (ASTM B221M), 6063 alloy, T6 temper.
- B. Sheet Aluminum: ASTM B209/B209M, 5052 alloy, H32 or H22 temper.
- C. Aluminum-Alloy Drawn Seamless Tubes: ASTM B210/B210M, 6063 alloy, T6 temper.
- D. Bolts, Nuts, and Washers: Stainless steel.

2.3 FABRICATION

- A. Shop Assembly: Preassemble rolled steel members in the shop. Other items also preassemble 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. Fit and shop assemble items in largest practical sections, for delivery to site.
- E. Fabricate items with joints tightly fitted and secured.
- F. Continuously seal joined members by continuous welds.
- G. 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. Do not use ferrous material and equipment on stainless steel components.
 - 3. Obtain fusion without undercut or overlap.
 - 4. Remove welding flux immediately.
 - 5. 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
- H. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate
- I. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- J. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- K. Furnish components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.4 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, Class Fe/Zn 5, at exterior walls. Provide stainless-steel fasteners for fastening aluminum. Select fasteners for type, grade, and class required.
- B. Cast-in-Place Anchors in Concrete: Anchors capable of sustaining, without failure, a load equal to four times the load imposed, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.

1. Threaded or wedge type; galvanized ferrous castings, either ASTM A 47/A 47M malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, hot-dip galvanized per ASTM A 153/A 153M.
- C. Expansion Anchors: Anchor bolt and sleeve assembly with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
 1. Material for Anchors in Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B 633, Class Fe/Zn 5
 2. Material for Anchors in Exterior Locations: Alloy Group 1 stainless-steel bolts complying with ASTM F 593 and nuts complying with ASTM F 594

2.5 FABRICATED ITEMS

- A. Ladders: Steel; in compliance with ANSI A14.3; with mounting brackets and attachments; painted finish.
 1. Comply with ANSI A14.3, unless otherwise indicated.
 - a. For elevator pit ladders, comply with ASME A17.1.
 - b. Side Rails: 3/8 x 2 inches (9 x 50 mm) members spaced at 20 inches (500 mm). Extend a minimum 42" above finish floor level.
 - c. Rungs: 3/4 inch (- mm) diameter solid round bar spaced 12 inches (300 mm) on center.
 - d. Space rungs 7 inches (175 mm) from wall surface.
 - e. Provide nonslip surfaces on top of each rung by coating with abrasive material metallurgically bonded to rung by a proprietary process
- B. Fixed Bollards
 1. Bollards: Steel pipe, concrete filled, crowned cap, as detailed; galvanized finish.
 2. Basis of Design Distributor: Reliance Foundry Company; 1-8877-789-3245.
www.reliance-foundry.com.
 3. Diameter: 6 inches
 4. Material: Schedule 40 steel pipe galvanized
 5. Cap bollards with prefabricated 1/4-inch- thick steel cone cap.
 6. Sleeves steel pipe 1/4-inch thick steel plate welded to bottom of sleeve. Make sleeves not less than 8 inches deep and 3/4 inch larger than OD of bollard.
 7. Concrete filled for fixed bollards.
 8. Polyethylene Plastic Covers: High-density polyethylene (HDPE).
 - a. Color as selected by the Architect,
- C. Wheel Guards: Heavy duty, 3/4 round castings with extensions.
 1. Gray Iron.
 2. 42" high with 42" extensions.
 3. Countersunk anchor bolt holes.
 4. Model R-4984 -C as manufactured by Neenah Foundry, 800.558.5075
- D. Metal Downspout Boots: Provide downspout boots made from extruded aluminum in heights indicated with inlets of size and shape to suit downspouts
 1. Size: 4" x 6".
 2. Finish: Powder blast satin finish, color as selected by Architect.
 3. Outlet: Vertical, to discharge into drainage system.
 4. Type DS-4 as manufactured by McKinley Iron Works.
- E. Lintels: As detailed. Finish: Prime paint interior lintels; galvanized for exterior lintels. Refer to Section 09 9000 - Painting and Coating.

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1. Fabricate loose steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated. Weld adjoining members together to form a single unit where indicated
 2. 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.
 3. Galvanize loose steel lintels located in exterior walls
- F. Abrasive Metal Nosings.
1. Cast aluminum stair nosing, with abrasive filler consisting of #24 virgin grain silicon carbide in an epoxy-resin binder. Fabricate units in sizes and configurations indicated and in lengths necessary to accurately fit openings or conditions
 2. Surface Design: Cast aluminum solid surface tread plate 3/8 inch thick.
 3. Provide anchors for embedding units in concrete, either integral or applied to units, as standard with manufacturer.
 - a. Space anchors 3" from ends and 12" oc.
 4. Apply bituminous paint to concealed bottoms, sides, and edges of cast-metal units set into concrete
 5. Available Manufacturers:
 - a. Balco Inc. CA-300

2.6 DOWNSPOUT BOOTS

- A. Downspout Boots: Smooth interior without boxed corners or choke points; include integral lug slots, integral cleanout, cleanout cover, and tamper proof fasteners.
1. Configuration: Angular.
 2. Material: Cast iron; ASTM A48/A48M; casting thickness 3/8 inch (9.5 mm), minimum.
 3. Color: To be selected by Fuller and D'Angelo P.C. from manufacturer's standard range.
 4. Accessories: Manufacturer's standard stainless steel fasteners, stainless steel building wall anchors, integral neoprene gaskets, and rubber coupling.

2.7 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

2.8 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 retained by framing and supports. Cut, drill, and tap units to receive hardware, hangers, and similar items.
- C. Exterior Ferrous Metal: Galvanizing of Structural Steel Members after fabrication to ASTM A123/A123M requirements. Provide minimum 1.7 oz/sq ft (530 g/sq m) galvanized coating.
- D. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

2.9 FINISHES - STEEL Refer to Section 09900 Paints and Coatings.

- A. Prime paint steel items.
- B. Prepare surfaces to be primed in accordance with SSPC-SP2.
- C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- D. Prime Painting: One coat.
1. Interior ferrous metal: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with performance requirements in FS TT-P-664
 2. Exterior ferrous metal: Organic zinc-rich primer, complying with SSPC-Paint 20 and compatible with topcoat.

- a. Finish shall be black.
- 3. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.
- 4. Exterior Zinc-Rich Primer: Complying with SSPC-Paint 20 or SSPC-Paint 29 and compatible with topcoat
- 5. Dunnage to receive primer and Tnemec weatherproof topcoat.
- E. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A123/A123M requirements. Provide minimum 1.7 oz/sq ft (530 g/sq m) galvanized coating.
 - 1. Fastener Locations:
 - a. Locations as shown on drawings.
- F. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

2.10 FABRICATION TOLERANCES

- A. Squareness: 1/16 inch (- mm) maximum difference in diagonal measurements.
- B. Maximum Offset Between Faces: 1/16 inch (1.5 mm).
- C. Maximum Misalignment of Adjacent Members: 1/16 inch (1.5 mm).
- D. Maximum Bow: 1/8 inch (3 mm) in 48 inches (1.2 m).
- E. Maximum Deviation From Plane: 1/16 inch (1.5 mm) in 48 inches (1.2 m).

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.

3.2 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Furnish setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.3 INSTALLATION

- A. Install fabricated items as per manufacturer's instructions
- B. Install items plumb and level, accurately fitted, free from distortion or defects.
- C. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- D. Field weld components as indicated on drawings.
- E. Perform field welding in accordance with AWS D1.1/D1.1M.
- F. Obtain approval prior to site cutting or making adjustments not scheduled.
- G. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

3.4 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch (6 mm) per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/8 inch (3 mm).
- C. Maximum Out-of-Position: 1/8 inch (3 mm).

END OF SECTION

SECTION 05 5100
METAL STAIRS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Stairs with concrete treads.
- B. Stairs with grating treads.
- C. Prefabricated stairs.
- D. Prefabricated stair treads and nosings.
- E. Steel preparation for painting.

1.3 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Placement of metal anchors in concrete.
- B. Section 05 5213 - Pipe and Tube Railings: Metal handrails for the stairs specified in this section.
- C. Section 09 9113 - Exterior Painting: Paint finish.
- D. Section 09 9123 - Interior Painting: Paint finish.

1.4 REFERENCE STANDARDS

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. AISC 201 - AISC Certification Program for Structural Steel Fabricators, Standard for Steel Building Structures; 2006.
- C. ASTM A6/A6M - Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling; 2017.
- D. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- E. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- F. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- G. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2013.
- H. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.
- I. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2014.
- J. ASTM A 570/A 570M, Grade 30, Uncoated, Hot-Rolled Steel Sheet: Commercial quality, complying with ASTM A 569/A 569M; or structural quality, unless another grade is required by design loads.
- K. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2017.
- L. ASTM A786/A786M - Standard Specification for Hot-Rolled Carbon, Low-Alloy, High-Strength Low-Alloy, and Alloy Steel Floor Plates; 2015.
- M. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable; 2016.

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- N. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2017.
- O. ASTM E985 - Standard Specification for Permanent Metal Railing Systems and Rails for Buildings; 2000 (Reapproved 2006).
- P. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions; 2015a.
- Q. ASTM E 894: - Standard Test Method for Anchorage of Permanent Metal Railing Systems and Rails for Buildings.
- R. ASTM E935: - Standard Test Method for Performance of Permanent Metal Railing Systems and Rails for Buildings.
- S. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015, with Errata (2016).
- T. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel; 2017.
- U. New York State Building Code.
- V. NAAMM AMP 510 - Metal Stairs Manual; 1992.
- W. NAAMM MBG 531 - Metal Bar Grating Manual; 2017.
- X. NAAMM MBG 532 - Heavy Duty Metal Bar Grating Manual; 2009.
- Y. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 1999 (Ed. 2004).
- Z. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).
- AA. SSPC-SP 2 - Hand Tool Cleaning; 1982, with Editorial Revision (2004).

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide metal-pan stair treads., Paint products., and Grout. and open metal bar grates.
- C. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories.
 - 1. Include plans, elevations, sections, and details of metal stairs and their connections. Include angle post supports and angle hangers for intermediate landings welded to floor bearing.
 - 2. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
 - 3. Include NYS licensed engineer's stamp or seal on each sheet of shop drawings.
 - 4. Show all retainer channels and connections for wire mesh infill panels.
- D. Welders' Certificates.
- E. Fabricator's Qualification Statement: Provide documentation showing steel fabricator is certified under AISC 201.
- F. Qualification Data: For professional engineer.
- G. Structural calculations sealed and signed by professional engineer.

1.6 PERFORMANCE REQUIREMENTS

- A. Structural Performance of Stairs: Provide metal stairs capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - 1. Uniform Load: 100 lbf/sq. ft.
 - 2. Concentrated Load: 300 lbf applied on an area of 4 sq. in.

3. Stair Framing: Capable of withstanding stresses resulting from loads specified above in addition to stresses resulting from railing system loads.
 4. Limit deflection of treads, platforms, and framing members to $L/360$ or 1/4 inch (6.4 mm), whichever is less.
- B. Structural Performance of Handrails and Railings: Provide handrails and railings capable of withstanding the following structural loads without exceeding the allowable design working stress of materials for handrails, railings, anchors, and connections:
1. Top Rail of Guards: Capable of withstanding the following loads applied as indicated:
 - a. Concentrated load of 200 lbf applied at any point and in any direction.
 - b. Uniform load of 50 lbf/ft. applied horizontally and concurrently with uniform load of 100 lbf/ft. applied vertically downward.
 - c. Concentrated and uniform loads above need not be assumed to act concurrently.
 2. Handrails Not Serving as Top Rails: Capable of withstanding the following loads applied as indicated:
 - a. Concentrated load of 200 lbf applied at any point and in any direction.
 - b. Uniform load of 50 lbf/ft. applied in any direction.
 - c. Concentrated and uniform loads above need not be assumed to act concurrently.
 3. Infill Area of Guards: Capable of withstanding a horizontal concentrated load of 200 lbf applied to 1 sq. ft. at any point in system, including panels, intermediate rails, balusters, or other elements composing infill area.
 - a. Load above need not be assumed to act concurrently with loads on top rails in determining stress on guards.

1.7 QUALITY ASSURANCE

- A. Structural Designer Qualifications: Professional Structural Engineer experienced in design of this work and licensed in New York, or personnel under direct supervision of such an engineer.
1. Engineering services are defined as those performed for installations of metal stairs (including handrails and railing systems) that are similar to those indicated for this Project in material, design, and extent.
 2. Engineering Responsibility: Fabricator's responsibilities include using a qualified professional engineer to prepare structural analysis data for structural-steel connections
- B. Welder Qualifications: Show certification of welders employed on the Work, verifying AWS qualification within the previous 12 months.
- C. Fabricator Qualifications: A qualified steel fabricator with a minimum of five (5) years experienced in producing metal stairs similar to those indicated for this Project that is accredited by the International Accreditation Service (IAS) Fabricator Inspection Program for Structural Steel (AC172).
1. AWS D1.1, "Structural Welding Code--Steel AWS D1.3, "Structural Welding Code--Sheet Steel
 2. Installer Qualifications: Arrange for metal stairs specified in this Section to be fabricated and installed by the same firm.
 3. Engineering Responsibility: Fabricator's responsibilities include using a qualified professional engineer to prepare structural analysis data for structural-steel connections
- D. Erector: Company specializing in performing the work of this section with minimum 5 years of documented experience and is a designated an AISC-Certified Erector.

1.8 COORDINATION

- A. Coordinate installation of anchorages for metal stairs. 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 MANUFACTURERS

- A. Prefabricated Metal Stairs:
 - 1. Lapeyre Stair, Inc: www.lapeyrestair.com/#sle.
 - 2. Pacific Stair Corporation: www.pacificstair.com.
 - 3. Substitutions: See Section 01 6000 - Product Requirements.

2.2 FERROUS METALS

- A. Metal Surfaces, General: Provide metal free from pitting, seam marks, roller marks, and other imperfections where exposed to view on finished units. Do not use steel sheet with variations in flatness exceeding those permitted by referenced standards for stretcher-leveled sheet.
- B. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- C. Steel Tubing: Cold-formed steel tubing complying with ASTM A 500.
- D. Rolled-Steel Floor Plate: ASTM A 786/A 786M, rolled from plate complying with ASTM A 36/A 36M or ASTM A 283/A 283M, Grade C or D.
- E. Uncoated, Hot-Rolled Steel Sheet: Commercial quality, complying with ASTM A 569/A 569M; or structural quality, complying with ASTM A 570/A 570M, Grade 30, unless another grade is required by design loads.
- F. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- G. Steel Bars for Grating Treads: ASTM A 36/A 36M.

2.3 METAL STAIRS - GENERAL

- A. Metal Stairs: Provide stairs of the design specified, complete with landing platforms, vertical and horizontal supports, railings, and guards, fabricated accurately for anchorage to each other and to building structure.
 - 1. Regulatory Requirements: Provide stairs and railings that comply with most stringent requirements of local, state, and federal regulations; where requirements of Contract Documents exceed those of regulations, comply with Contract Documents.
 - 2. Handrails: Comply with applicable accessibility requirements of ADA Standards.
 - 3. Structural Design: Provide complete calculations for stair and railing assemblies complying with the applicable local code and loads specified in 1.6 A & B.
 - 4. Dimensions: As indicated on drawings.
 - 5. Shop assemble components; disassemble into largest practical sections suitable for transport and access to site.
 - 6. No sharp or rough areas on exposed travel surfaces and surfaces accessible to touch.
 - 7. Separate dissimilar metals using paint or permanent tape.
- B. Metal Jointing and Finish Quality Levels:
 - 1. Architectural: All joints as inconspicuous as possible, whether welded or mechanical.
 - a. Welded Joints: Continuously welded and ground smooth and flush.
 - b. Mechanical Joints: Butted tight, flush, and hairline; concealed fastenings only.
 - c. Exposed Edges and Corners: Eased to small uniform radius.
 - d. Metal Surfaces to be Painted: Sanded or ground smooth, suitable for highest quality gloss finish.
 - 2. Commercial: Exposed joints as inconspicuous as possible, whether welded or mechanical; underside of stair not covered by soffit IS considered exposed to view.
 - a. Welded Joints: Intermittently welded on back side, filled with body putty, and sanded smooth and flush.

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- b. Welds Exposed to View: Ground smooth and flush.
 - c. Mechanical Joints: Butted tight, flush, and hairline.
 - d. Bolts Exposed to View: Countersunk flat or oval head bolts; no exposed nuts.
 - e. Exposed Edges and Corners: Eased to small uniform radius.
 - f. Metal Surfaces to be Painted: Sanded or ground smooth, suitable for satin or matte finish.
- C. Fasteners General: Provide zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 25 for exterior use, and Class Fe/Zn 5 where built into exterior walls. Select fasteners for type, grade, and class required.
 - 1. Fasteners: Same material or compatible with materials being fastened; type consistent with design and specified quality level.
 - 2. Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A; with hex nuts, ASTM A 563; and, where indicated, flat washers.
 - 3. Machine Screws: ASME B18.6.3.
 - 4. Lag Bolts: ASME B18.2.1.
 - 5. Plain Washers: Round, carbon steel, ASME B18.22.1.
 - 6. Lock Washers: Helical, spring type, carbon steel, ASME B18.21.1.
 - 7. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and equal to four times the load imposed when installed in concrete, as determined by testing per ASTM E 488, conducted by a qualified independent testing agency.
 - a. Material: Carbon-steel components zinc-plated to comply with ASTM B 633, Class Fe/Zn 5.
- D. Anchors and Related Components: Same material and finish as item to be anchored, except where specifically indicated otherwise; provide all anchors and fasteners required.
- E. Galvanizing: Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123/ A 123M.
 - 1. Fill vent holes and grind smooth after galvanizing.

2.4 METAL STAIRS WITH CONCRETE TREADS

- A. Jointing and Finish Quality Level: Architectural, as defined above.
- B. Risers: Closed.
- C. Treads: Metal pan with field-installed concrete fill.
 - 1. Concrete Depth: 1-1/2 inches (38 mm), minimum.
 - 2. Tread Pan Material: Steel sheet.
 - 3. Tread Pan Thickness: As required by design; 14 gauge, 0.075 inch (1.9 mm) minimum.
 - 4. Concrete Reinforcement: Welded wire mesh.
 - 5. Concrete Finish: For resilient floor covering.
- D. Risers: Same material and thickness as tread pans.
 - 1. Nosing Depth: Not more than 1-1/2 inch (38 mm) overhang.
 - 2. Nosing Return: Flush with top of concrete fill, not more than 1/2 inch (12 mm) wide.
- E. Stringers: Rolled steel channels.
 - 1. Stringer Depth: 12 inches (305 mm).
 - 2. End Closure: Sheet steel of same thickness as risers welded across ends.
- F. Landings: Same construction as treads, supported and reinforced as required to achieve design load capacity.
- G. Railings: As indicated on drawings.
- H. Finish: Shop- or factory-prime painted.

- I. Under Side of Stair: Exposed to view, to be finished same as specified for other exposed to view surfaces.

2.5 METAL STAIRS AND PLATFORM WITH GRATING TREADS

- A. Jointing and Finish Quality Level: Architectural, as defined above.
- B. Risers: Closed.
- C. Treads: Steel bar grating.
1. Grating Type: Welded.
 2. Bearing Bar Depth: 7/16 inch (- mm), minimum.
 3. Top Surface: Non Slip.
 4. Nosing: Manufacturer's standard.
 5. Factory Fabricated Tread and Nosing: Manufacturer's standard, with integral tread, nosing, abrasive filler and factory applied finishes.
 6. Anchorage to Stringers: End plates welded to grating, bolted to stringers.
 7. Manufacturer: GCM Series by McNichols 1-800-237-3820
- D. Stringers: Rolled steel channels.
1. Stringer Depth: 12 inches (305 mm).
 2. End Closure: Sheet steel, 14 gauge, 0.075 inch (1.9 mm) minimum; welded across ends.
- E. Landings: Same construction as treads, supported and reinforced as required to achieve design load capacity.
1. Provide templates at open-sided edges of grating platforms. Weld grating to platform framing
- F. Railings: Steel pipe railings.
- G. Finish: Galvanized after fabrication.

2.6 PREFABRICATED STAIRS

- A. Prefabricated Egress Stairs: Welded unit, factory fabricated to greatest degree practical and in the largest components possible.
1. Design Requirements: Comply with structural design criteria stated elsewhere in this section and applicable local code.
 - a. Comply with ADA Standards.
 2. Materials: Manufacturer's standard steel tubes, plates, bars, shapes, sheets, wire and mesh that comply with requirements of MATERIALS article of this section.
 3. Manufacturers:
 - a. Lapeyre Stair, Inc: www.lapeyrestair.com/#sle.
 - b. Substitutions: See Section 01 2500 - Substitution Procedures.

2.7 HANDRAILS AND GUARDS

- A. Guards: Refer to Section 05 5213 - Pipe and Tube Railings.

2.8 MATERIALS

- A. Steel Sections: ASTM A 36/A 36M.
- B. Ungalvanized Steel Sheet: Hot- or cold-rolled, except use cold-rolled where finished work will be exposed to view.
1. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Designation CS (commercial steel).
 2. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Designation CS (commercial steel).
- C. Gratings: Bar gratings that comply with NAAMM MBG 531 or NAAMM MBG 532, whichever applies based on bar sizes.

- D. Concrete Fill: Portland cement Type I, 3000 psi (20 MPa) 28 day strength, 2 to 3 inch (51 to 76 mm) slump.
- E. Concrete Reinforcement: Mesh type, galvanized. See paragraph 2.9.B.

2.9 ACCESSORIES

- A. Concrete Fill and Reinforcing Material: Concrete Materials and Properties: Comply with requirements in Division 3 Section "Cast-in-Place Concrete" for normal-weight, ready-mixed concrete with a minimum 28-day compressive strength of 4,000 psi, unless higher strengths are indicated.
- B. Welded Wire Fabric: ASTM A 185, 2 by 2 inches--W1.4 by W1.4, unless otherwise indicated.
- C. Grout: 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.
- D. Steel Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, and galvanized to ASTM A153/A153M where connecting galvanized components.
- E. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
- F. Shop and Touch-Up Primer: SSPC-Paint 15, and comply with VOC limitations of authorities having jurisdiction.
- G. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, and comply with VOC limitations of authorities having jurisdiction.
- H. Grout: 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.

2.10 FABRICATION, GENERAL

- A. NAAMM Stair Standard: Comply with "Recommended Voluntary Minimum Standards for Fixed Metal Stairs" in NAAMM AMP 510, "Metal Stairs Manual," for class of stair designated, unless more stringent requirements are indicated or required by code.
 - 1. Commercial class, unless otherwise indicated.
- B. Shop Assembly: Preassemble stairs in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.
- C. Provide miscellaneous metal framing, clips, brackets, bearing plates, and other components necessary to support and anchor stairs treads and platforms on supporting structure.
 - 1. Join components by welding.
- D. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm), unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- E. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- F. Ease exposed edges to a minimum radius of approximately 1/32 inch. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- G. Weld connections 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. Weld exposed corners and seams continuously, unless otherwise indicated.

- 5. 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.
- H. Join components by welding
- I. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts unless otherwise indicated. Locate joints where least conspicuous.

2.11 SHOP FINISHING

- A. Comply with NAAMM'S "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Finish metal stairs after assembly.
- C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- D. Do not prime surfaces in direct contact with concrete or where field welding is required.
- E. Prime Painting: Use specified shop- and touch-up primer.
 - 1. Preparation of Steel: In accordance with SSPC-SP 2, Hand Tool Cleaning.
 - 2. Number of Coats: One.
- F. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with minimum requirements indicated below for SSPC surface-preparation specifications and environmental exposure conditions of installed metal fabrications:
 - 1. Exteriors (SSPC Zone 1B): SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
 - 2. Interiors (SSPC Zone 1A): SSPC-SP 3, "Power Tool Cleaning."
- G. Galvanizing: Hot-dip galvanize to minimum requirements of ASTM A123/A123M.
 - 1. Touch up abraded areas after fabrication using specified touch-up primer for galvanized surfaces.
 - 2. Provide for all exterior components.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.

3.2 PREPARATION

- A. When field welding is required, clean and strip primed steel items to bare metal.
- B. Supply items required to be cast into concrete with setting templates.

3.3 INSTALLATION

- A. Install components plumb and level, accurately fitted, free from distortion or defects.
- B. Provide anchors, plates, angles, hangers, and struts required for self supporting stair.
- C. Allow for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- D. Provide welded field joints where specifically indicated on drawings. Perform field welding in accordance with AWS D1.1/D1.1M.
- E. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing metal stairs to in-place construction. Include threaded fasteners for concrete and masonry inserts, through-bolts, lag bolts, and other connectors.
- F. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal stairs. Set units accurately in location, alignment, and elevation, measured from established lines and levels and free from rack.

- G. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction
- H. Other field joints may be either welded or bolted provided the result complies with the limitations specified for jointing quality levels.
- I. Obtain approval prior to site cutting or creating adjustments not scheduled.
- J. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

3.4 INSTALLING STEEL RAILINGS AND HANDRAILS

- A. Refer to Section 05 5213 - Pipe and Tube Railings.

3.5 FIELD QUALITY CONTROL

- A. Owner will 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 work is being fabricated or produced to perform tests and inspections
- B. An independent testing agency will perform field quality control tests, as specified in Section 01 4000.
- C. High-Strength Bolts: Provide testing and verification of field-bolted connections in accordance with RCSC "Specification for Structural Joints Using High-Strength Bolts", testing at least 25 percent of bolts at any given connection. If any bolt fails, test all bolts at that connection. Provide follow up reports.
- D. Welded Connections: Visually inspect all field-welded connections and test at least 25 percent of welds using the following:
 - 1. Ultrasonic testing performed in accordance with ASTM E164.
 - 2. Liquid penetrant inspection performed in accordance with ASTM E165/E165M.
 - 3. Magnetic particle inspection performed in accordance with ASTM E709.
- E. In addition to visual inspection, shop-welded shear connectors will be tested and inspected according to requirements in AWS D1.1 for stud welding and as follows:
 - 1. Bend tests will be performed if visual inspections reveal either a less-than- continuous 360-degree flash or welding repairs to any shear connector.
 - a. Tests will be conducted on additional shear connectors if weld fracture occurs on shear connectors already tested, according to requirements in AWS D1.1

3.6 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch (6 mm) per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch (6 mm).

3.7 ADJUSTING AND CLEANING

- A. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Division 9 Section "Painting."

END OF SECTION

SECTION 05 5213
PIPE AND TUBE RAILINGS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Stainless steel wall and free standing railings at stairs.
- B. Wire mesh infill panels for railings, guardrails and stairs.
- C. Retainer channels as required to accept wire mesh infill panels.

1.3 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Placement of anchors in concrete.
- B. Section 05 5100 - Metal Stairs: Handrails specified in this section.
- C. Section 09 9113 - Exterior Painting: Paint finish.
- D. Section 09 9123 - Interior Painting: Paint finish.

1.4 REFERENCE STANDARDS

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.
- C. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.
- D. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings; 2013, with Editorial Revision.
- E. ASTM E985 - Standard Specification for Permanent Metal Railing Systems and Rails for Buildings; 2000 (Reapproved 2006).
- F. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Arrange for all railings and handrails specified in this Section to be fabricated and installed by the same firm.
- B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of metal stairs (including handrails and railing systems) that are similar to those indicated for this Project in material, design, and extent.
- C. Fabricator Qualifications: A firm, with a minimum of five (5) years experience in producing metal stairs & railings 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. Source Limitations: Obtain each type of railing through one source from a single manufacturer.
- E. Welding: Qualify procedures and personnel according to the following:
 - 1. AWS D1.2 Structural Welding Code – Aluminum.

1.6 PERFORMANCE REQUIREMENTS

- A. Structural Performance of Handrails and Railings: Provide handrails and railings capable of withstanding the following structural loads without exceeding the allowable design working stress of materials for handrails, railings, anchors, and connections:
 - 1. Top Rail of Guards: Capable of withstanding the following loads applied as indicated:
 - a. Concentrated load of 200 lbf applied at any point and in any direction.
 - b. Uniform load of 50 lbf/ft. applied horizontally and concurrently with uniform load of 100 lbf/ft. applied vertically downward.
 - c. Concentrated and uniform loads above need not be assumed to act concurrently.
 - 2. Handrails Not Serving as Top Rails: Capable of withstanding the following loads applied as indicated:
 - a. Concentrated load of 200 lbf applied at any point and in any direction.
 - b. Uniform load of 50 lbf/ft. applied in any direction.
 - c. Concentrated and uniform loads above need not be assumed to act concurrently.
 - 3. Infill Area of Guards: Capable of withstanding a horizontal concentrated load of 200 lbf applied to 1 sq. ft. at any point in system, including panels, intermediate rails, balusters, or other elements composing infill area.
 - a. Load above need not be assumed to act concurrently with loads on top rails in determining stress on guards.

1.7 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.
- C. Samples: Submit two, 12 inch (- mm) long samples of handrail. Submit two samples of elbow, wall bracket, and end stop.

PART 2 PRODUCTS

2.1 RAILINGS - GENERAL REQUIREMENTS

- A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of applicable local code.
- B. Distributed Loads: Design railing assembly, wall rails, and attachments to resist distributed force of 75 pounds per linear foot (1095 N/m) applied to the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E 935.
- C. Concentrated Loads: Design railing assembly, wall rails, and attachments to resist a concentrated force of 200 pounds (890 N) applied at any point on the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E 935.
- D. Allow for expansion and contraction of members and building movement without damage to connections or members.
- E. Thermal Movements: Provide exterior railings that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.
- F. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

- G. Guards:
1. Top Rails and Posts: Tube rails unless otherwise indicated.
 - a. 1-1/2" x 1-1/2"
 2. Railings: Outside diameter: 1 1/2 inch (- mm), minimum, to 1-1/2 inches (38 mm), maximum unless otherwise indicated.
 3. Infill at Mesh Railings: Woven wire mesh panels.
 - a. Material and Finish: Same as stair.
 - b. Wire Size: 0.192-inch- diameter, lock-crimp steel wire woven inserted through frame holes and welded into frame.
 - c. Wire Spacing: 2" x 2" inch (50 x 50 mm).
 - d. Vertical and Horizontal Panel Framing: 1/2 x 1/2 inch cold-rolled, C-shaped for direct connection to railing system.
 - e. Framing: 2" x 2" x 1/8" steel tube.
 - f. Mounting: Mesh welded to steel frame, frame welded to posts.
 4. End and Intermediate Posts: Same material and size as top rails.
 - a. Horizontal Spacing: As indicated on drawings.
 - b. Mounting: Welded to top surface of stringer.
- H. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.
1. For anchorage to stud walls, provide backing plates, for bolting anchors.
- I. Provide welding fittings to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.
- J. Welded Wire Mesh: 1/8" diameter, 1-1/2" square opening, woven, plain for interior and galvanized for exterior wire cloth as manufactured by McNichols, or equivalent.
- K. Retainer Channel: 1/2" x 1/2" steel channel to accept welded wire mesh

2.2 STAINLESS STEEL

- A. Handrails Pipe: ASTM A 312/A 312M, Grade TP 316L.
- B. Castings: ASTM A 743/A 743M, Grade CF 8M or CF 3M.
- C. Plate and Sheet: ASTM A 666, Type 316L.

2.3 HANDRAILS AND GUARDS

- A. Guards:
1. Top Rails and Posts: Tube rails unless otherwise indicated.
 - a. 1-1/2" x 1-1/2"
 2. Railings: Outside diameter: 1 1/2 inch (- mm), minimum, to 1-1/2 inches (38 mm), maximum unless otherwise indicated.
 3. Infill at Mesh Railings: Woven wire mesh panels.
 - a. Material and Finish: Same as stair.
 - b. Wire Size: 0.192-inch- diameter, lock-crimp steel wire woven inserted through frame holes and welded into frame.
 - c. Wire Spacing: 2" x 2" inch (- mm).
 - d. Vertical and Horizontal Panel Framing: 1/2 x 1/2 inch cold-rolled, C-shaped for direct connection to railing system.
 - e. Mounting: Mesh welded to steel bar frame, frame welded to posts.
 4. End and Intermediate Posts: Same material and size as top rails.
 - a. Horizontal Spacing: As indicated on drawings.

- b. Mounting: Welded to top surface of stringer.

2.4 BRACKETS, CONECTORS AND MISCELLANEOUS ITEMS

- A. Wall Brackets: Provide wall brackets as follows:
 - 1. Universal Weld Bracket as manufactured by Wagner Company.
 - a. Model 1980SS for stainless steel railings.
- B. Base Flanges: Wagner heavy flush base flanges.
 - 1. Stainless steel with stainless steel railings.

2.5 MISCELLANEOUS MATERIALS

- A. Shop Primers: Provide primers that comply with Division 9 painting Sections.
 - 1. Use primer with a VOC content of 420 g/L (3.5 lb/gal.) or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- B. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.
 - 1. Water-Resistant Product: At exterior locations provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by manufacturer for exterior use.
- 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.
- D. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound.

2.6 FABRICATION

- A. Provide complete assemblies including handrails, railings, clips, brackets other components necessary to support and anchor stairs and platforms on supporting structure.
 - 1. Join components by welding, unless otherwise indicated.
 - 2. Use connections that maintain structural value of joined pieces
- B. Shop Assembly: Pre-assemble railings in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations.
- C. Accurately form components to suit specific project conditions and for proper connection to building structure.
- D. Fit and shop assemble components in largest practical sizes for delivery to site.
- E. Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.
- F. Ease exposed edges to a radius of approximately 1/32 inch, unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work
- G. Close exposed ends of railing members with prefabricated end fittings.
- H. Provide wall returns at ends of wall-mounted handrails, unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.
- I. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work
 - 1. At brackets and fittings fastened to plaster or gypsum board partitions, provide fillers made from crush-resistant material, or other means to transfer wall loads through wall finishes to structural supports and prevent bracket or fitting rotation and crushing of substrate.
 - 2. Connect railing posts to stair framing by direct welding.

- 3. For ungalvanized handrails and railings, provide ungalvanized ferrous metal fittings, brackets, fasteners and sleeves.
- 4. For all exterior applications and use stainless steel or aluminum anchors, including anchors embedded in exterior masonry and concrete construction.
- J. Fasteners: Provide hex set screws for all fasteners.
- K. Toe Boards: Provide toe boards at railings around openings and at edge of open-sided floors and platforms. Fabricate to dimensions and details indicated and if not indicated a minimum of 6" high..
- L. For railing posts set in concrete, provide steel sleeves not less than 6 inches long with inside dimensions not less than 1/2 inch greater than outside dimensions of post, with steel plate forming bottom closure.

2.7 STAINLESS-STEEL FINISHES

- A. Remove tool and die marks and stretch lines or blend into finish.
- B. Grind and polish surfaces to produce uniform, directionally textured, polished finish indicated, free of cross scratches. Run grain with long dimension of each piece.
- C. 180-Grit Polished Finish: Oil-ground, uniform, directionally textured finish.
- D. 320-Grit Polished Finish: Oil-ground, uniform, fine, directionally textured finish.
- E. Polished and Buffed Finish: Oil-ground, 180-grit finish followed by buffing.
- F. Directional Satin Finish: No. 4.
- G. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

2.8 STEEL AND IRON FINISHES

- A. Galvanized Railings:
 - 1. Hot-dip galvanize exterior steel and iron railings, including hardware, after fabrication.
 - 2. Comply with ASTM A 123/A 123M for hot-dip galvanized railings.
- B. For ungalvanized steel railings, provide ungalvanized ferrous-metal fittings, brackets, fasteners, and sleeves, except galvanize anchors to be embedded in exterior concrete or masonry.
- C. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed railings:
 - 1. Interior Railings (SSPC Zone 1A): SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning."
- D. Apply shop primer to prepared surfaces of railings, unless otherwise indicated. Comply with requirements in SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting. Primer need not be applied to surfaces to be embedded in concrete or masonry.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.

3.2 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Supply items required to be cast into concrete with setting templates, for installation as work of other sections.
- C. Apply one coat of bituminous paint to concealed aluminum surfaces that will be in contact with cementitious or dissimilar materials.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

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- B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.
- C. Anchor railings securely to structure.
- D. Field weld anchors as indicated on shop drawings. Touch-up welds with primer. Grind welds smooth.
- E. Conceal anchor bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.

3.4 INSTALLING STEEL RAILINGS AND HANDRAILS

- A. Adjust handrails and railing systems before anchoring to ensure matching alignment at abutting joints. Space posts at spacing indicated or, if not indicated, as required by design loads. Plumb posts in each direction. Secure posts and railing ends to building construction as follows:
 - 1. Anchor handrail ends to concrete and masonry with steel round flanges welded to rail ends and anchored with post installed anchors and bolts.
 - 2. Attach handrails to wall with wall brackets. Provide bracket with 1-1/2-inch clearance from inside face of handrail and finished wall surface. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads. Secure wall brackets to building construction as follows:
 - a. Use type of bracket with flange tapped for concealed anchorage to threaded hanger bolt.
 - b. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.
 - c. For hollow masonry anchorage, use toggle bolts.
 - d. For steel-framed gypsum board assemblies, fasten brackets directly to steel framing or concealed reinforcements using self-tapping screws of size and type required to support structural loads.
 - e. Wire Mesh Railing Insert Panels: Attach wire mesh railing insert panels to railing system by welding as specified and indicated on Drawings

3.5 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch (6 mm) per floor level, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch (6 mm).
- C. Maximum Out-of-Position: 1/4 inch (6 mm).

END OF SECTION

**SECTION 06 1000
ROUGH CARPENTRY**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Fire retardant treated wood materials.
- B. Concealed wood blocking, nailers, and supports toilet accessories.
- C. Miscellaneous wood nailers, furring, and grounds.

1.3 RELATED REQUIREMENTS

- A. Section 01 2100 - Allowances
- B. Section 10 1100 - Visual Display Boards
- C. Section 10 2113 - Plastic Toilet Compartments
- D. Section 10 2800 - Toilet And Bath Accessories
- E. Section 12 2940 - Roller Shades.

1.4 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018.
- B. AWPA U1 - Use Category System: User Specification for Treated Wood; 2017.
- C. ICC (IBC) - International Building Code; 2018.
- D. PS 2 - Performance Standard for Wood-Based Structural-Use Panels; 2010.
- E. PS 20 - American Softwood Lumber Standard; 2015.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide technical data on lumber, plywood, and fasteners .

1.6 QUALITY ASSURANCE

- A. A firm (Installer) with not less than 5 continuous years experience performing carpentry work comparable to that required for this project, employing personnel skilled in the work specified.
- B. The Installer shall directly employ the personnel performing the work of this section.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.
- B. Deliver and store materials dry at all times.
- C. Do not overload the structure when storing material on the roof.
- D. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, and installation.

1.8 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

PART 2 PRODUCTS

2.1 GENERAL REQUIREMENTS

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.

1. Wood, including shims, nailers, blocking, furring and similar members, in the sizes indicated or required, worked into the shapes shown.
2. Acceptable Lumber Inspection Agencies: Any agency with rules approved by American Lumber Standards Committee.
3. Species: Douglas Fir, unless otherwise indicated, construction grade solid lumber free of splits, large knots and other imperfections.

2.2 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

- A. Moisture Content: Kiln-dry or MC15.
- B. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
 1. Lumber: S4S, No. 2 or Standard Grade.

2.3 ACCESSORIES

- A. Fasteners and Anchors:
 1. General: Provide fasteners of size and type that comply with requirements specified in this article by the authority having jurisdiction, International Building Code, International Residential Code, Wood Frame Construction manual, and National Design Specification
 2. Metal and Finish: Stainless steel for preservative-treated wood and toilet locations, hot-dipped galvanized steel per ASTM A153/A153M for interior use.
 3. Use screws wherever possible, minimum size diameter #12. If nails are used they shall be annular ring shank type. Do not use dry wall screws to secure wood blocking assemblies.

2.4 FACTORY WOOD TREATMENT

- A. Fire Retardant Treatment:
 1. Manufacturers:
 - a. Arch Wood Protection, Inc: www.wolmanizedwood.com.
 - b. Koppers, Inc: www.koppers.com.
 - c. Substitutions: 01 2500 - Substitution Procedures
 2. Interior Type A: AWWPA U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
 - a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
 - b. Treat rough carpentry items all interior concealed blocking.
 - c. Do not use treated wood in applications exposed to weather or where the wood may become wet.

PART 3 EXECUTION

3.1 INSTALLATION - GENERAL

- A. Select material sizes to minimize waste.
- B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
- C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.2 BLOCKING, NAILERS, AND SUPPORTS

- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

- B. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.
- C. Provide the following specific nonstructural framing and blocking:
 - 1. Wall-mounted door stops.
 - 2. Visual display boards.
 - 3. Toilet accessories.
 - 4. Toilet partitions

3.3 SITE APPLIED WOOD TREATMENT

- A. Apply preservative treatment compatible with factory applied treatment at site-sawn cuts, complying with manufacturer's instructions.
- B. Allow preservative to dry prior to erecting members.

3.4 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements for additional requirements.

3.5 CLEANING AND PROTECTION

- A. General: Comply with the requirements of Section 01 7419 - Construction Waste Management and Disposal.
 - 1. Comply with applicable regulations.
 - 2. Do not burn scrap on project site.
 - 3. Do not burn scraps that have been pressure treated.
 - 4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or "waste-to-energy" facilities.
- B. Do not leave wood, shavings, sawdust, etc. on the ground or buried in fill.
- C. Prevent sawdust and wood shavings from entering the storm or sanitary drainage system.

END OF SECTION

SECTION 06 1010
ROOF RELATED ROUGH CARPENTRY

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. All plant, labor, materials, equipment, testing and services necessary to complete the work shown on the schedules, keynotes, drawings, as specified herein, and as may be required by conditions and including, but not limited to, the following:
 - 1. Related wood nailers, blocking, shims, and plywood.

1.3 RELATED REQUIREMENTS

- A. Section 04 2000 - Unit Masonry.
- B. Section 04 7200 - Cast Stone Masonry.
- C. Section 07 4113 - Metal Roof Panels.
- D. Section 07 5010 - Modifications to Existing Roofing.
- E. Section 07 5323 - EPDM ROOFING
- F. Section 07 6200 - Sheet Metal Flashing and Trim
- G. Section 07 7200 - Roof Accessories.
- H. Section 09 2662 - Gypsum Sheathing.

1.4 REFERENCE STANDARDS

- A. APA PRP-108 - Performance Standards and Qualification Policy for Structural-Use Panels (Form E445); 2001.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2017.
- D. ASTM C208 - Standard Specification for Cellulosic Fiber Insulating Board; 2012.
- E. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2017a.
- F. ASTM D2898 - Standard Test Methods for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing; 2010 (Reapproved 2017).
- G. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2016.
- H. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials; 2013.
- I. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018.
- J. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- K. AWPA U1 - Use Category System: User Specification for Treated Wood; 2017.
- L. ICC (IBC) - International Building Code; 2018.
- M. ICC (IECC) - International Energy Conservation Code; 2018.
- N. ICC-ES AC310 - Acceptance Criteria for Water-resistive Membranes Factory-bonded to Wood-based Structural Sheathing, Used as Water-Resistive Barriers; 2008, with Editorial Revision (2015).
- O. PS 1 - Structural Plywood; 2009.

- P. WCLIB (GR) - Standard Grading Rules for West Coast Lumber No. 17; 2015.
- Q. WWPA G-5 - Western Lumber Grading Rules; 2017.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. A firm (Installer) with at least 5 continuous years experience performing carpentry work comparable to that required for this project, employing personnel skilled in the work specified.
 - 2. The Installer shall directly employ the personnel performing the work of this section.
 - 3. The Installer shall have a full time supervisor on the roof when work is in progress. The Supervisor shall have a minimum of 5 years experience in work similar in nature and scope to this project, and speak fluent English.
- B. Pre-Construction Conference: Attend the pre-construction meeting to discuss how and when carpentry work will be performed and coordinated with other work, and how the building will be kept watertight as work occurs.

1.6 SUBMITTALS

- A. Submit the following items far enough in advance to obtain approval prior to performing any work on site:
 - 1. A pre-work site and building inspection report with photos, to document conditions before work starts.
 - 2. Mill or Manufacturer data sheets to identify the source for each type of lumber and fastener.
 - 3. Do not submit trade association literature.
 - 4. Shop drawings or 2 foot long on-site samples which show the size, shape, configuration and method of fastening for all wood blocking assemblies, and which show how the blocking assemblies will relate to other adjoining work.
 - 5. Simultaneously provide all technical data submittals needed for this project, for all technical sections, collated by section. Incomplete submittals will not be reviewed.
 - a. Submittals shall be prepared and made by the firm that will perform the actual work.
 - b. Provide electronic submittals in pdf format, organized in folders by Section.
- B. Safety Data Sheets: Simultaneously provide all Safety Data Sheets needed for this project, for all specification sections - collated by section, in three ring binders. Provide two binders for each building to the Construction Manager.
- C. Payment requisitions will not be processed until all submittals are received and approved.
- D. Manufacturer's Certificate: Certify that wood products supplied meet or exceed specified requirements.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store materials dry at all times.
 - 1. Cover with tarps and protect against exposure to weather and contact with damp or wet surfaces.
- B. Support stacked products to prevent deformation and to allow air circulation.
- C. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, or installation.
- D. Do not overload the structure when storing material on the roof. Material stored on the roof shall be placed on 2 by 10 wooden planks, placed over 1-1/2 inch foam insulation, that is laid on a layer of 6 mil fire retardant polyethylene.

1.8 GUARANTEE

- A. Provide a Contractor's written Guarantee which warrants that all work will remain free of material and workmanship defects and in a watertight condition for a five year period beginning upon Final Completion:
 - 1. Defects includes but are not limited to the following: leakage, delamination, lifting, loosening, splitting, cracking, warping and undue expansion.

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2. The Guarantee shall provide that the Contractor will make the repairs and modifications necessary to enable the work to perform as warranted at his own expense.
 3. Guarantee coverage shall include removing and replacing items or materials installed as part of the original work, if removal is needed to affect guaranteed repairs.
- B. The Contractor's Guarantee shall be issued no more than 30 days before the satisfactory completion of punch list work.
- C. Refer to Section 01 7800 - Closeout Submittals for additional requirements.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Wood, including shims, nailers, blocking, furring and similar members, in the sizes indicated, worked into the shapes shown, and as follows:
1. Lumber: Douglas Fir dimension lumber, free of large knots and other imperfections.
 2. Plywood: Exterior grade APA rated Type CDX underlayment plywood.
 3. Beveled Siding: Utility grade cedar, redwood, or synthetic siding, 1/2 inch by 6 inches and 3/4 inch by 10 inches wide, tapered to 1/8 inch thick.
 4. Fascia Boards: 5/4 inch clear white pine where painted. Douglas Fir dimension lumber where covered with metal or other materials
- B. Lumber: Comply with PS 20 and approved grading rules and inspection agencies.
1. Acceptable Lumber Inspection Agencies: Any agency with rules approved by American Lumber Standards Committee.
 2. Material Quality: Obtain each type of material from a single source to ensure consistent quality, color, pattern, and texture.
 3. Pre-Work Conference: Attend the pre-roofing meeting to discuss how carpentry work will be performed and coordinated with other work.
- C. Lumber fabricated from old growth timber is not permitted.
- D. Metal including light gage metal channels and studs shall be factory formed of minimum 24 gauge cold, unless otherwise noted, formed galvanized steel.
1. Refer to Section 05 4000 - Cold-Formed Metal Framing for additional information.

2.2 FASTENERS

- A. Hot dipped galvanized steel, stainless steel, or steel covered with a proprietary rust inhibiting coating.
- B. Use screws wherever possible, minimum size diameter #12. If nails are used they shall be annular ring shank type. Do not use dry wall screws to secure wood blocking assemblies.
- C. Use stainless steel threaded adhesive anchors for fastening wood blocking to solid masonry.
1. Hilti "HIT-HY 150" or equal.
- D. Hot dipped galvanized steel, stainless steel, or steel covered with a proprietary rust inhibiting coating.
- E. Metal and Finish: Stainless steel for high humidity and preservative-treated wood locations, hot dipped galvanized steel elsewhere.

2.3 ACCESSORIES

- A. Batt Insulation: un-faced fiberglass insulation, minimum thickness 6 inches, R=30, as needed to fill the expansion joints.
- B. Polyethylene: 6 mil thick fire retardant polyethylene sheeting.

PART 3 EXECUTION

3.1 INSTALLATION - GENERAL

- A. Coordinate carpentry work with the installation of the roofing system, insulation, flashings, and other similar items.

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- B. Shim and set carpentry work plumb and true, except provide slope at the top surfaces of horizontal members as indicated.
- C. Stagger joints in built up assemblies at least 2 feet to obtain maximum strength. Provide the appropriate shapes needed and adjust wood members to suit existing conditions for full bearing and secure attachment. Discard defective material, and pieces which are too small, and fabricate the work with a minimum of joints and an optimum joint arrangement.
- D. Securely attach carpentry work to resist a pull of 275 pounds per lineal foot in any direction. Countersink all fasteners flush unless otherwise shown.
- E. Space fasteners to achieve adequate holding power, generally as follows:
 - 1. Anchor bolts embedded in concrete, drilled anchors into concrete or masonry, screws into a steel deck or structural steel member, or screws into wood framing: 12 inches on center.
 - 2. Nails into wood: 8 inches on center.
 - 3. Install two rows of fasteners on blocking wider than 5 inches.
- F. Fit carpentry work neatly scribed and cut to fit within 1/8 inch of adjoining materials. Position furring, nailers, blocking, shims and similar supports for the proper attachment of subsequent work.
- G. Fasten wood blocking assemblies to metal decks with #12 screws. Pre-drill holes as needed. .

3.2 CLEANING, PROTECTION AND WATERTIGHTNESS

- A. Contractor shall inspect the interior and exterior of the building and grounds, and submit a written report with photos to document any leaks or damage, prior to performing any work.
- B. The Construction Manager will conduct a similar inspection at the completion of the work, and the Contractor will be charged for all leaks or damage which was not documented in the Contractor's report, or repaired to the Owners satisfaction at the Contractor's expense.
- C. Provide any equipment, material and labor necessary to protect the site, the building, its contents and occupants, pedestrians, and surrounding landscaped and paved areas from damage due to the construction work or from inclement weather during construction.
- D. Do not perform work during inclement weather. Protect incomplete work and the building from damage by inclement weather which may occur unexpectedly. Make all work areas watertight at the end of each day's work.
- E. Frequently clean up all refuse, rubbish, scrap materials and debris so the work site presents a neat, orderly and workmanlike appearance.
- F. Carefully clean the roof to remove all residual debris when work is complete. After cleaning the roof, thoroughly clean all drain sumps, drain lines, leader heads and leaders. Do not allow debris to enter the drainage system.

3.3 WASTE DISPOSAL

- A. Comply with the requirements of Section 01 7419 - Construction Waste Management and Disposal.
- B. Comply with applicable regulations.
- C. Do not burn scrap on project site.
- D. Do not burn scraps that have been pressure treated.
- E. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or "waste-to-energy" facilities.

END OF SECTION

SECTION 07 1113
BITUMINOUS DAMPPROOFING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Bituminous dampproofing
- B. Exterior, below-grade surfaces of concrete foundation walls and structures.
- C. Exterior face of inner wythe of exterior masonry cavity walls.
- D. Interior face of exterior concrete and masonry walls, above grade.
- E. Exterior columns, beams, lintels, and hangers not receiving concealed flashings or embedded in concrete.
- F. Protection boards.
- G. Drainage panels.

1.3 RELATED REQUIREMENTS

- A. Section 07 2100 - Thermal Insulation: Rigid insulation board used as protection board.
- B. Section 04 2000 - Unit Masonry.
- C. Section 07 1300 - Sheet Waterproofing.

1.4 REFERENCE STANDARDS

- A. ASTM D449/D449M - Standard Specification for Asphalt Used in Dampproofing and Waterproofing; 2003 (Reapproved 2014).
- B. ASTM D1187/D1187M - Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal; 1997 (Reapproved 2011).
- C. ASTM D1227/D1227M - Standard Specification for Emulsified Asphalt Used as a Protective Coating for Roofing; 2019.
- D. ASTM D1227 - Standard Specification for Emulsified Asphalt Used as a Protective Coating for Roofing; 2013.
- E. NRCA ML104 - The NRCA Roofing and Waterproofing Manual; Fifth Edition, with interim updates.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide properties of primer, bitumen, and mastics.
- C. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- D. Certification by dampproofing manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs)

1.6 QUALITY ASSURANCE

1.7 FIELD CONDITIONS

- A. Maintain ambient temperatures above 40 degrees F (5 degrees C) for 24 hours before and during application until dampproofing has cured.
- B. Substrate: Proceed with dampproofing only after substrate construction and penetrating work have been completed

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- C. Ventilation: Provide adequate ventilation during application of dampproofing in enclosed spaces. Maintain ventilation until dampproofing has thoroughly cured

PART 2 PRODUCTS

2.1 GENERAL

- A. Odor Elimination: For interior and concealed-in-wall uses, provide type of bituminous dampproofing material warranted by manufacturer to be substantially odor free after drying for 24 hours under normal conditions.
- B. Asbestos Free: All material shall be asbestos free.
- C. Bituminous Dampproofing Manufacturers:

2.2 MANUFACTURERS

- A. Karnak Corporation: www.karnakcorp.com.
 - 1. W.R. Meadows, Inc: www.wrmeadows.com/sle.
 - 2. Substitutions: See Section 01 6000 - Product Requirements.

2.3 BITUMINOUS DAMPPROOFING

- A. Bituminous Dampproofing: Cold-applied water-based emulsion; asphalt with mineral colloid or chemical emulsifying agent; with or without fiber reinforcement; asbestos-free; suitable for application on vertical and horizontal surfaces.
 - 1. Composition - Vertical Application: ASTM D1227/D1227M Type III or ASTM D1187/D1187M Type I.
 - 2. Composition - Horizontal and Low-Slope Application: ASTM D1227/D1227M Type II or III.
 - 3. VOC Content: Not more than permitted by local, State, and federal regulations.
 - 4. Applied Thickness: 1/16 inch (1.5 mm), minimum, wet film.
 - 5. Products:
 - a. W. R. Meadows, Inc; Sealmastic Emulsion Type I (spray-grade): www.wrmeadows.com/#sle.
 - b. Substitutions: See Section 01 6000 - Product Requirements.
- B. Primers, Mastics, and Related Materials: Type as recommended by dampproofing manufacturer.

2.4 ACCESSORIES

- A. Protection Board: Rigid insulation specified in Section 07 2100.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions are acceptable prior to starting this work.
- B. Verify substrate surfaces are durable, free of matter detrimental to adhesion or application of dampproofing system.
- C. Verify that items penetrating surfaces to receive dampproofing are securely installed.

3.2 APPLICATION

- A. Foundation Walls: Apply two coats of asphalt dampproofing.
- B. Patch disturbed areas of existing dampproofing with two coats of new dampproofing of the same generic type.
- C. Perform this work in accordance with manufacturer's instructions and NRCA (WM) applicable requirements.
- D. Prime surfaces at a rate approved by manufacturer for application indicated, and allow primer to dry thoroughly.

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- E. Apply bitumen with mop.
- F. Apply bitumen at a temperature limited by equiviscous temperature (EVT) plus or minus 25 degrees F (14 degrees C); do not exceed finish blowing temperature for four hours.
- G. Apply from 2 inches (50 mm) below finish grade elevation down to top of footings.
- H. Seal items watertight with mastic, that project through dampproofing surface.
- I. Install flashings and corner protection stripping at internal and external corners, changes in plane, construction joints, cracks, and where shown as "reinforced," by embedding an 8-inch- wide strip of asphalt-coated glass fabric in a heavy coat of dampproofing. Dampproofing coat required for embedding fabric is in addition to other coats required
- J. On Concrete Foundations: Apply two brush or spray coats at not less than 1.5 gal./100 sq. ft. for first coat and 1 gal./100 sq. ft. for second coat, one fibered brush or spray coat at not less than 3 gal./100 sq. ft., or one trowel coat at not less than 4 gal./100 sq. ft.
- K. On Exterior Face of Inner Wythe of Cavity Walls: Apply primer and one brush or spray coat at not less than 1 gal./100 sq. ft.
 - 1. Lap dampproofing at least 1/4 inch (6 mm) onto flashing, masonry reinforcement, veneer ties, and other items that penetrate inner wythe.
- L. Extend dampproofing over outer face of structural members and concrete slabs that interrupt inner wythe, and lap dampproofing at least 1/4 inch (6 mm) onto shelf angles supporting veneer
- M. On Interior Face of Single-Wythe Exterior Masonry Walls: Where above grade and indicated to be furred and finished, apply primer and one brush or spray coat at not less than 1 gal./100 sq. ft.

END OF SECTION

SECTION 07 1300
SHEET WATERPROOFING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Product provided by this Section is a self-adhesive membrane of not less than 60 mils thickness, consisting of a rubberized asphalt membrane laminated to a 4 mil cross-laminated polyethylene film.
- B. Sheet Waterproofing:
 - 1. Self-adhered modified bituminous sheet membrane.
- C. Waterstop.
- D. Below-grade waterproofing accessories.

1.3 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Concrete substrate.
- B. Section 07 2100 - Thermal Insulation: Insulation used for protective cover.
- C. Section 07 6200 - Sheet Metal Flashing and Trim: Metal parapet, coping, and counterflashing.
- D. Section 07 9005 - Joint Sealers: Sealant for joints in substrates.

1.4 REFERENCE STANDARDS

- A. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2016.
- B. ASTM D570 - Standard Test Method for Water Absorption of Plastics; 1998 (Reapproved 2010).
- C. ASTM D 751 Test Method for Coated Fabrics
- D. ASTM D882 - Standard Test Method for Tensile Properties of Thin Plastic Sheeting; 2012.
- E. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2017.
- F. ASTM D5295/D5295M - Standard Guide for Preparation of Concrete Surfaces for Adhered (Bonded) Membrane Waterproofing Systems; 2014.
- G. ASTM D 3767 - Standard Practice for Rubber - Measurements of Dimensions
- H. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- I. ASTM E154/E154M - Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover; 2008a, with Editorial Revision (2013).
- J. NRCA (WM) - The NRCA Waterproofing Manual; 2005.
- K. UL 790 Tests for Fire Resistance of Roof Covering Materials

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data for membrane.
- C. Shop Drawings: Indicate special joint or termination conditions and conditions of interface with other materials.
- D. Certificate: Certify that products meet or exceed specified requirements.
- E. Manufacturer's Installation Instructions: Indicate special procedures.

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- F. Warranty: Submit manufacturer warranty and ensure forms have been completed in Port Chester-Rye UFSD's name and registered with manufacturer.
- G. Schedule of inspections and inspections reports prepared by the manufacturer. Manufacturer's representative shall perform a minimum of three (3) inspections on the work in progress

1.6 QUALITY ASSURANCE

- A. Membrane Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Installer Qualifications: Company specializing in performing the work of this section with minimum five years documented experience and approved in writing by the manufacture.
- C. Materials: For each type of material required for the work of this section, provide primary materials which are the products of one manufacturer
- D. Regulatory Requirements: Comply with applicable codes, regulations, ordinances, and laws regarding use and application of products that contain volatile organic compounds (VOC).
- E. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work. Agenda for meeting shall include review of special details and flashing
 - 1. Manufacturer's representative shall be present at meeting.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials and products in labeled packages. Store and handle in strict compliance with manufacturer's instructions, recommendations and material safety data sheets. Protect from damage from sunlight, weather, excessive temperatures and construction operations. Remove damaged material from the site and dispose of in accordance with applicable regulations.
 - 1. Do not double-stack pallets of membrane on the job site. Provide cover on top and all sides, allowing for adequate ventilation.
 - 2. Protect mastic and adhesive from moisture and potential sources of ignition.
 - 3. Store drainage composite or protection board flat and off the ground. Provide cover on top and all sides.
 - 4. Protect surface conditioner from freezing.
- B. Sequence deliveries to avoid delays, but minimize on-site storage.

1.8 MOCK-UPS

- A. Construct mock-up consisting of 100 sq ft (10 sq m) of horizontal and vertical sheet waterproofing panel; to represent finished work including internal and external corners, seam jointing, attachment method, and _____.
- B. Mock-up may remain as part of work.

1.9 FIELD CONDITIONS

- A. Maintain ambient temperatures above 40 degrees F (5 degrees C) for 24 hours before and during application and until liquid or mastic accessories have cured.
- B. Coordinate waterproofing work with other trades. The applicator shall have sole right of access to the specified areas for the time needed to complete the installation.
- C. Warn personnel against breathing of vapors and contact of material with skin or eyes. Wear applicable protective clothing and respiratory protection gear.
- D. Keep flammable products away from spark or flame. Do not allow the use of spark producing equipment during application and until all vapors have dissipated. Post "NO SMOKING" signs.

- E. Maintain work area in a neat and orderly condition, removing empty containers, rags, and rubbish daily from the site.

1.10 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Upon completion and acceptance of the work required by this section, the manufacturer will issue a warranty agreeing to promptly replace defective materials for a period of 5 years.
 - 1. Manufacturer and Contractor shall correct defective Work within a five year period after Date of Substantial Completion; remove and replace materials concealing waterproofing at no extra cost to Port Chester-Rye UFSD.

PART 2 PRODUCTS

2.1 WATERPROOFING APPLICATIONS

2.2 MEMBRANE MATERIALS

- A. Self-Adhered Modified Bituminous Sheet Membrane:
 - 1. Thickness: 60 mil, 0.060 inch (1.5 mm), minimum.
 - 2. Sheet Width: 36 inches (0.914 m), minimum.
 - 3. Tensile Strength:
 - a. Film: 5,000 psi (34.57 MPa), minimum, measured in accordance with ASTM D882 and at grip-separation rate of 2 inches (50 mm) per minute.
 - b. Membrane: 325 psi (2.24 MPa), minimum, measured in accordance with ASTM D412 Method A, using die C and at spindle-separation rate of 2 inches (50 mm) per minute.
 - 4. Elongation at Break: 300 percent, minimum, measured in accordance with ASTM D412.
 - 5. Water Vapor Permeance: 0.05 perm (2.9 ng/(Pa s sq m)), maximum, measured in accordance with ASTM E96/E96M.
 - 6. Low Temperature Flexibility: Unaffected when tested according to ASTM D1970 at -45degrees F (- mm) , 180 degree bend on 1 inch (25 mm) mandrel.
 - 7. Peel Strength: 7 lb per inch (1226 N/m), minimum, when tested in accordance with ASTM D903.
 - 8. Lap Adhesion Strength: 5 lb per inch (875.6 N/m), minimum, when tested in accordance with ASTM D1876.
 - 9. Puncture Resistance: 60 pounds (27 kg), minimum, measured in accordance with ASTM E154/E154M.
 - 10. Water Absorption: 0.1 percent increase in weight, maximum, measured in accordance with ASTM D570, 24 hour immersion.
 - 11. Hydrostatic Resistance: Resists the weight of 230 feet when tested according to ASTM D5385.
 - 12. Adhesives, Sealants, Tapes, and Accessories: As recommended by membrane manufacturer.
 - 13. Products:
 - a. Carlisle Coatings & Waterproofing Incorporated; MiraDRI 860/861; www.carlisle-ccw.com.
 - b. Henry Company; Blueskin WP 200: www.henry.com/#sle.
 - c. W.R. Meadows, Inc; MEL-ROL: www.wrmeadows.com/#sle.
 - d. Substitutions: See Section 01 2500 Substitution Procedures. .
- B. Primer: As recommended by membrane manufacturer.
- C. Seaming Materials: As recommended by membrane manufacturer.
- D. Membrane Sealant: As recommended by membrane manufacturer.
- E. Termination Bars: Aluminum; compatible with membrane and adhesives.
- F. Surface Conditioner: type, compatible with membrane and recommended by manufacturer for substate.
- G. Adhesives: As recommended by membrane manufacturer.

- H. Thinner and Cleaner: As recommended by adhesive manufacturer, compatible with sheet membrane.

2.3 ACCESSORIES

- A. Protection Board: Rigid insulation, see Section 07 2100.
- B. Drainage Panel: Drainage layer with geotextile filter fabric on earth side.
1. Composition: Dimpled polystyrene, polyethylene, polypropylene, or polymeric core; polypropylene or polyester filter fabric.
 2. Thickness: As indicated on drawings.
 - a. Products:
 - a) Mar-flex Waterproofing & Building Products; ArmorDrain 150:
www.mar-flex.com/#sle.
- C. Waterstop: Carlisle Coating and Waterproofing: CCW MiraStop TDS
- D. Flexible Flashings: Type recommended by membrane manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions are acceptable prior to starting this work.
- B. Verify substrate surfaces are durable; free of matter detrimental to adhesion or application of waterproofing system.
- C. Verify items that penetrate surfaces to receive waterproofing are securely installed.
- D. Condition of Concrete Surfaces:
1. The concrete surfaces shall be of sound structural grade and shall have a smooth finish, free of fins, ridges, protrusions, rough spalled areas, loose aggregate, exposed coarse aggregate, voids or entrained air holes. Rough surfaces shall receive a well-adhered parget coat.
 2. Concrete shall be cured by water curing method. Any curing compounds must be of the pure sodium silicate type and be approved by the Carlisle representative.
 3. Concrete shall be cured at least 7 days and shall be sloped for proper drainage.
 4. Voids, rock pockets and excessively rough surfaces shall be repaired with approved non-shrink grout or ground to match the unrepaired areas.
 5. Surfaces at cold joints shall be on the same plane

3.2 PREPARATION

- A. Protect adjacent surfaces from damage not designated to receive waterproofing.
- B. Clean and prepare surfaces to receive waterproofing in accordance with manufacturer's instructions; vacuum substrate clean.
- C. Do not apply waterproofing to surfaces unacceptable to membrane manufacturer.
- D. Seal cracks and joints with sealant using depth to width ratio as recommended by sealant manufacturer.
1. All cracks over 1/16" in width and all moving cracks under 1/16" in width shall be routed out to 1/4" minimum in width and depth and filled flush with an approved polyurethane sealant recommended by manufacturer.
 2. Install a 3/4" face, 45 degree cant of polyurethane sealant at all angle changes and inside corners including penetrations through the deck, walls, curbs, etc.
 3. All expansion joints less than 1" wide shall be cleaned, primed, fitted with a backing rod and caulked with polyurethane sealant. For larger joints, contact manufacturer's representative.
 4. Allow all sealant to cure at least overnight.
- E. Surfaces for Adhesive Bonding: Apply surface conditioner at a rate recommended by manufacturer, and protect conditioner from rain or frost until dry.

- F. Concrete Surfaces for Adhesive Bonding: Prepare concrete substrate in accordance with ASTM D5295/D5295M.
 - 1. Remove substances that inhibit adhesion including form release agents, curing compounds admixtures, laitance, moisture, dust, dirt, grease and oil.
 - 2. Repair surface defects including honeycombs, fins, tie holes, bug holes, sharp offsets, rutted cracks, ragged corners, deviations in surface plane, spalling and delaminations, as described in the reference standard.
 - 3. Remove and replace areas of defective concrete; see Section 03 3000.
 - 4. Prepare concrete for adhesive bonded waterproofing using mechanical or chemical methods described in the referenced standard.
 - 5. Test concrete surfaces as described in referenced standards, and verify surfaces are ready to receive adhesive bonded waterproofing membrane system.
- G. Concrete Substrate: Do not proceed with installation until concrete has properly cured and dried (minimum 7 days for normal structural concrete and minimum 14 days for lightweight structural concrete. Primer as recommended by the manufacture may be used to allow priming and installation of membrane sooner than 7 days. Priming may begin in this case as soon as the concrete will maintain structural integrity.
 - 1. Fill form tie rod holes with concrete and finish flush with surrounding surface.
 - 2. Repair bugholes over 13 mm in length and 6 mm deep and finish flush with surrounding surface.
 - 3. Remove scaling to sound, unaffected concrete and repair exposed area.
 - 4. Grind irregular construction joints to suitable flush surface.

3.3 INSTALLATION - MEMBRANE

- A. Install membrane waterproofing in accordance with manufacturer's instructions and NRCA (WM) applicable requirements.
- B. Roll out membrane, and minimize wrinkles and bubbles.
- C. Self-Adhering Membrane: Remove release paper layer, and roll out onto substrate with a mechanical roller to provide full contact bond.
- D. Overlap edges and ends, minimum 3 inches (76 mm), seal permanently waterproof by method recommended by manufacturer, and apply uniform bead of sealant to joint edge.
- E. Reinforce membrane with multiple thickness of membrane material over joints, whether joints are static or dynamic.
- F. Weather lap joints on sloped substrate in direction of drainage, and seal joints and seams.
- G. Flexible Flashings: Seal items watertight that penetrate through waterproofing membrane with flexible flashings.
- H. Seal membrane and flashings to adjoining surfaces.
- I. Install self-adhering sheets according to waterproofing manufacturer's written instructions and recommendations in ASTM D 6135.
- J. Apply primer to substrates at required rate and allow to dry. Limit priming to areas that will be covered by sheet waterproofing in same day. Reprime areas exposed for more than 24 hours.
- K. Apply and firmly adhere sheets over area to receive waterproofing. Accurately align sheets and maintain uniform 2-1/2-inch- (64-mm-) minimum lap widths and end laps. Overlap and seal seams and stagger end laps to ensure watertight installation.

3.4 INSTALLATION - DRAINAGE PANEL

- A. Install self-adhering sheets according to waterproofing manufacturer's written instructions and recommendations in ASTM D 6135.

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- B. Place drainage panel directly against membrane, butt joints, and position to encourage drainage downward; scribe and cut boards around projections, penetrations, and interruptions.
- C. Apply primer to substrates at required rate and allow to dry. Limit priming to areas that will be covered by sheet waterproofing in same day. Reprime areas exposed for more than 24 hours.
- D. Apply and firmly adhere sheets over area to receive waterproofing. Accurately align sheets and maintain uniform 3 inch- minimum lap widths and end laps. Overlap and seal seams and stagger end laps to ensure watertight installation.

3.5 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements for additional requirements.
- B. Port Chester-Rye UFSD will provide testing services; see Section 01 4000 - Quality Requirements. Contractor to provide temporary construction and materials for testing.
- C. If leaking is found, remove water, repair leaking areas with new waterproofing materials as directed by Fuller and D'Angelo P.C.; repeat flood test, and repair damage to building.

3.6 PROTECTION

- A. Do not permit traffic over unprotected or uncovered membrane.
- B. Vertical Application:
 - 1. Install perimeter drainage System as the first course of drainage composite immediately after membrane has been installed on vertical surfaces. Install protection board Stop drainage board 6" below final grade level.

END OF SECTION

SECTION 07 2100
THERMAL INSULATION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Board insulation at perimeter foundation wall, underside of floor slabs, and over waterproofing.
- B. Batt insulation in exterior wall construction.
- C. Batt insulation for interior partitions.
- D. Foam sealant for filling perimeter door frames translucent wall panels.
- E. Sill Sealer.

1.3 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete.
- B. Section 04 2000 - Unit Masonry for cavity wall insulation.
- C. Section 05 4000 - Cold-Formed Metal Framing: Batt insulation within metal framing and vapor barrier..
- D. Section 06 1000 - Rough Carpentry: Supporting construction for batt insulation.
- E. Section 07 2600 - Vapor Retarders: Separate vapor retarder materials.
- F. Section 07 1300 - Sheet Waterproofing
- G. Section 07 2500 - Weather Barriers: Separate air barrier.
- H. Section 07 5323 - Ethylene-Propylene-Diene-Monomer Roofing (EPDM): Insulation specified as part of roofing system.
- I. Section 07 8400 - Firestopping: Insulation as part of fire-rated through-penetration assemblies.
- J. Section 09 2116 - Gypsum Board Assemblies.
- K. Section 12 3200 - Plastic Laminated Casework: Reflective barrier installed on casework.

1.4 REFERENCE STANDARDS

- A. ASTM C 203- Breaking Load and Flexural Properties of Block-Type Thermal Insulation ASTM C 203
- B. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2017.
- C. ASTM C272 Water Absorption
- D. ASTM C 518 - Standard Test Method for Steady-State Thermal Transmission
- E. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2017a.
- F. ASTM D 696 Coefficient of Linear Thermal Expansion.
- G. ASTM D1621 Compressive Strength.
- H. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018.
- I. ASTM E 119 Fire-Resistance Ratings
- J. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- K. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace At 750 Degrees C; 2016a.
- L. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials; National Fire Protection Association; 2006.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.
- C. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.6 FIELD CONDITIONS

- A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

1.7 QUALITY ASSURANCE

- A. Single-Source Responsibility for Insulation Products: Obtain each type of building insulation from a single source with resources to provide products complying with requirements indicated without delaying the Work.
- B. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated on Drawings or specified elsewhere in this Section as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency
 - 1. Surface-Burning Characteristics: ASTM E 84.
 - 2. Fire-Resistance Ratings: ASTM E 119.
 - 3. Combustion Characteristics: ASTM E 136.

1.8 WARRANTY

- A. Provide manufacturer's written that the actual thermal resistance of the extruded polystyrene insulation will not vary by more than ten (10%) from its published thermal resistance.
 - 1. Warranty Period: 5 years.

PART 2 PRODUCTS

2.1 FOAM BOARD INSULATION MATERIALS

- A. Extruded Polystyrene (XPS) Board Insulation: Complies with ASTM C578 with either natural skin or cut cell surfaces.
 - 1. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
 - 2. Smoke Developed: 165 or less, when tested in accordance with ASTM E84.
 - 3. Type and Thermal Resistance, R-value (RSI-value): Type IV, 5.0 (0.88), minimum, per 1 inch (25.4 mm) thickness at 75 degrees F (24 degrees C) mean temperature.
 - 4. R-value (RSI-value); 1 inch (25 mm) of material at 72 degrees F (22 C): 5 (0.88), minimum.
 - 5. Board Size: 24 x 96 inch (610 x 2440 mm).
 - 6. Board Thickness: 1-1/2 inches (37.5 mm).
 - 7. Board Edges: Square.
 - 8. Thermal Resistance: per inch, ASTM C518 @ 75°F R-value 5.0
 - 9. Compressive Resistance: ____ psi (30 kPa).
 - 10. Product: Dow Chemical Co. "Styrofoam".
 - a. "Styrofoam Perimate". Use for vertical foundation walls over membrane waterproofing.
 - b. "Styrofoam HighLoad 40" . Use for under slabs
 - c. "Styrofoam Square Edge" Use for vertical foundation walls, except over membrane water proofing.

2.2 FIBERBOARD INSULATION MATERIALS

- A. Mineral Fiberboard Insulation: Rigid mineral fiber, in accordance with ASTM C612.
 - 1. Facing: None, unfaced.
 - 2. Flame Spread Index: 25 or less, when tested with facing, if any, in accordance with ASTM E84.
 - 3. Smoke Developed Index: 50 or less, when tested with facing, if any, in accordance with ASTM E84.
 - 4. Board Size: 24 by 48 inch (600 by 1200 mm).
 - 5. Board Thickness: 1" and 1-1/2 inches (25 and 37.5 mm) as shown on drawings.
 - 6. Board Edges: Square.
 - 7. Thermal Conductivity (k-factor): BTU inch/hr sq ft degrees F (W/m K) of 0.26 (0.037) per inch, minimum, at 75 degrees F (24 degrees C) when tested in accordance with ASTM C518.
 - 8. Maximum Density: 3 lb/cu ft (1.35 kg/cu m). ASTM C303
 - 9. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
 - 10. Smoke Developed Index: 50, when tested in accordance with ASTM E84.
 - 11. Products:
 - a. Owens Corning Corp: "Fiberglas 703 Series", www.owenscorning.com.
 - a) Locations: Shaft walls and furred walls.

2.3 BATT INSULATION MATERIALS

- A. Glass Fiber Batt Insulation: Flexible preformed batt or blanket, complying with ASTM C665; friction fit.
 - 1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
 - 2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
 - 3. Combustibility: Non-combustible, when tested in accordance with ASTM E136, except for facing, if any.
 - 4. Formaldehyde Content: Zero.
 - 5. Thermal Resistance: R-11 and R-19 walls.
 - 6. Thickness: 3-1/2, 5-1/2 or 10 inch (87.5, 137.5 or 250 mm) as required to fill stud depth.
 - 7. Facing: Unfaced.
 - 8. Creased: Provide material 1" wider than standard stud spacing to bow into stud cavity.
 - 9. Products:
 - a. Owens Corning Corp: "FiberGlas" thermal batt insulation www.owenscorning.com.
 - a) Locations: All exterior partitions
 - 10. Substitutions: Section 01 2500 Substitution Procedures.
- B. Mineral Fiber Batt Insulation: Flexible or semi-rigid preformed batt or blanket, complying with ASTM C665; friction fit; unfaced flame spread index of 0 (zero) when tested in accordance with ASTM E84.
 - 1. Smoke Developed Index: 0 (zero), when tested in accordance with ASTM E84.
 - 2. Thermal Resistance: R of 3.7 per inch of thickness (25 mm).
 - 3. Thickness: 3-1/2 or 5-1/2 inch (70 or 137.5 mm) as required to fill stud cavity.
 - 4. Products:
 - a. "Thermafiber SAFB" Thermafiber, Inc: www.thermafiber.com.
 - a) Locations: All interior partitions.
 - 5. Substitutions: Section 01 2500 Substitution Procedures.

2.4 ACCESSORIES

- A. Insulation Fasteners: Impaling clip of unfinished steel with washer retainer and clips, to be adhered to surface to receive insulation, length to suit insulation thickness and substrate, capable of securely and rigidly fastening insulation in place.
- B. Wire or Wire Mesh: Galvanized steel, hexagonal wire mesh. Gauges as required to support insulation.

- C. Adhesive: Type recommended by insulation manufacturer for application.
- D. Window and Door Joint Seal: Polyurethane-based joint filler:
 - 1. UL Classified.
 - 2. Product: "Great Stuff" as manufactured by Dow Chemical.
 - a. "Gaps and Cracks: for joints less than 1".
 - b. "Big Gap Filler" for joint over 1".
 - 3. Use for all joints around windows and doors located on exterior walls.
- E. Sill Sealer: Owens Corning "FoamSealer",
 - 1. Width: As required to provide total coverage under 6" metal stud track.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.
- B. Verify substrate surfaces are flat, free of irregularities.

3.2 BOARD INSTALLATION AT FOUNDATION PERIMETER

- A. Preparation:
 - 1. Surface shall be smooth, monolithic and free of coarse aggregate.
 - 2. Clean off debris from footings.
 - 3. Waterproofing shall be cured and free of solvent.
- B. Adhere a 6 inches (152 mm) wide strip of polyethylene sheet over construction, control, and expansion joints with double beads of adhesive each side of joint.
 - 1. Tape seal joints.
 - 2. Extend sheet full height of joint.
- C. Apply adhesive to back of boards:
 - 1. Three continuous beads per board length.
 - 2. Full bed 1/8 inch (3.2 mm) thick.
- D. Install boards vertically on foundation perimeter.
 - 1. Place boards to maximize adhesive contact.
 - 2. Be sure shi lap on long edge of panel overlaps previous panel. Continue until a corner is reached.
 - a. Cut and install corner panels, cutting off shi lap at corner.
 - 3. When additional tiers are required, shi lap edges at both horizontal and vertical joints
 - 4. Seal off top edge of panels below grade to prevent soil entry, using a J or Z channel, sheathing tape, or soil fabric.
 - a. Protect exposed panels above grade from physical damage and ultraviolet exposure with protection panel, flashing, or latex coating
 - 5. Butt edges and ends tightly to adjacent boards and to protrusions.
- E. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.3 BOARD INSTALLATION UNDER CONCRETE SLABS

- A. Place insulation over existing slabs
- B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.
- C. Prevent insulation from being displaced or damaged while placing vapor retarder and placing slab.

3.4 BATT INSTALLATION

- A. Install insulation and vapor retarder in accordance with manufacturer's instructions.

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- B. Install in exterior wall spaces without gaps or voids. Do not compress insulation.
- C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
- D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.
- E. Install with factory-applied vapor retarder membrane facing warm side of building spaces. Lap ends and side flanges of membrane over framing members.
- F. Tape insulation batts in place.
- G. Tape seal butt ends, lapped flanges, and tears or cuts in membrane.
- H. At metal framing, place vapor retarder on warm side of insulation; lap and seal sheet retarder joints over face of member
- I. Tape seal tears or cuts in vapor retarder.
- J. Extend vapor retarder tightly to full perimeter of adjacent window and door frames and other items interrupting the plane of the membrane; tape seal in place.
- K. Coordinate work of this section with requirements for vapor retarder, see Section 07 2600.

3.5 FOAM WINDOW AND DOOR SEAL

- A. Fill all exterior joint between windows and doors solid in accordance with manufacture's instructions.
- B. Cut back to permit application of joint sealant.

3.6 SILL SEALER

- A. Smooth top surface of wall to provide maximum variation of 1/4".
- B. Butt ends and perpendicular joists tightly.
- C. Pierce sill sealer thru anchor bolts or reinforcing rods.
- D. Anchor sill plate to wall.

3.7 PROTECTION

- A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION

SECTION 07 2400
EXTERIOR INSULATION AND FINISH SYSTEMS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Composite wall and soffit cladding of rigid insulation and reinforced finish coating, Class PB.
- B. Drainage and water-resistive barriers behind insulation board.

1.3 RELATED REQUIREMENTS

- A. Section 05 4000 - Cold-Formed Metal Framing: Sheathing on metal studs.
- B. Section 07 6200 - Sheet Metal Flashing and Trim: Perimeter flashings.
- C. Section 07 9200 - Joint Sealants: Sealing joints between EIFS and adjacent construction and penetrations through EIFS.

1.4 REFERENCE STANDARDS

- A. ASTM B117 - Standard Practice for Operating Salt Spray (Fog) Apparatus; 2016.
- B. ASTM C150/C150M - Standard Specification for Portland Cement; 2018.
- C. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus; 2013.
- D. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2017a.
- E. ASTM C847 - Standard Specification for Metal Lath; 2014a.
- F. ASTM C1397 - Standard Practice for Application of Class PB Exterior Insulation and Finish Systems (EIFS) and EIFS with Drainage; 2013.
- G. ASTM D968 - Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive; 2017.
- H. ASTM D2247 - Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity; 2015.
- I. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2016.
- J. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018.
- K. ASTM E2273 - Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies; 2003 (Reapproved 2011).
- L. ASTM E2486/E2486M - Standard Test Method for Impact Resistance of Class PB and PI Exterior Insulation and Finish Systems (EIFS); 2013.
- M. ASTM G153 - Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials; 2013.
- N. ASTM G155 - Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Nonmetallic Materials; 2013.
- O. ICC-ES AC219 - Acceptance Criteria for Exterior Insulation and Finish Systems; 2009, with Editorial Revision (2014).
- P. ICC-ES AC235 - Acceptance Criteria for EIFS Clad Drainage Wall Assemblies; 2009, with Editorial Revision (2012).
- Q. ISO 9001 - Quality management systems -- Requirements; 2015.

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- R. NFPA 268 - Standard Test Method for Determining Ignitability of Exterior Wall Assemblies Using a Radiant Heat Energy Source; 2012.
- S. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components; 2012.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on system materials, product characteristics, performance criteria, and system limitations.
- C. Shop Drawings: Indicate wall and soffit joint patterns, joint details, and molding profiles.
- D. Selection Samples: Submit manufacturer's standard range of samples illustrating available coating colors and textures.
- E. Verification Samples: Submit actual samples of selected coating on specified substrate, minimum 12 inches (300 mm) square, illustrating project colors and textures.
- F. Manufacturer's Installation Instructions: Indicate preparation required, installation techniques, and jointing requirements.

1.6 QUALITY ASSURANCE

- A. Maintain copy of specified installation standard and manufacturer's installation instructions at project site during installation.
- B. EIFS Manufacturer Qualifications: Provide EIFS products other than insulation from the same manufacturer with qualifications as follows:
 - 1. Member in good standing of EIMA (EIFS Industry Members Association).
 - 2. Manufacturer of EIFS products for not less than 5 years.
 - 3. Manufacturing facilities ISO 9001 certified.
- C. Insulation Manufacturer Qualifications: Approved by manufacturer of EIFS and approved and labeled under third party quality program as required by applicable building code.
- D. Installer Qualifications: Company specializing in the type of work specified and with at least Five (5) years of documented experience.

1.7 MOCK-UPS

- A. Construct mock-up of typical EIFS application on specified substrate, size as required to include examples of all key conditions, and including flashings, joints, and edge conditions.
- B. Locate mock-up at approved location convenient for comparison to finished work.
- C. Mock-up may remain as part of the Work.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to project site in manufacturer's original, unopened containers with labels intact. Inspect materials and notify manufacturer of any discrepancies.
- B. Storage: Store materials as directed by manufacturer's written instructions.
 - 1. Protect adhesives and finish materials from freezing, temperatures below 40 degrees F (4 degrees C) and temperatures in excess of 90 degrees F (32 degrees C).
 - 2. Protect Portland cement based materials from moisture and humidity. Store under cover off the ground in a dry location.
 - 3. Protect insulation materials from exposure to sunlight.

1.9 FIELD CONDITIONS

- A. Do not prepare materials or apply EIFS under conditions other than those described in the manufacturer's written instructions.
- B. Do not prepare materials or apply EIFS during inclement weather unless areas of installation are protected. Protect installed EIFS areas from inclement weather until dry.
- C. Do not install coatings or sealants when ambient temperature is below 40 degrees F (5 degrees C).
- D. Do not leave installed insulation board exposed to sunlight for extended periods of time.

1.10 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Provide manufacturer's standard material warranty, covering a period of not less than 5 years.
- C. Provide separate warranty from installer covering labor for repairs or replacement for a period of not less than 5 years.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design:
 - 1. Master Wall, Inc; Aggre-flex Drainage System - Class PB Drainage EIFS:
www.masterwall.com/#sle.
 - 2. Substitutions: Section 01 2500 Substitution Procedures .

2.2 EXTERIOR INSULATION AND FINISH SYSTEM

- A. Exterior Insulation and Finish System: DRAINAGE type; reinforced finish coating on mechanically fastened insulation board over sheet-type drainage layer over substrate; provide a complete system that has been tested to show compliance with the following characteristics; include all components of specified system and substrate(s) in tested samples.
- B. Allowable Wind Loading: At least 40 psf, positive and negative, determined in accordance with ICC-ES AC219 or ICC-ES AC235, using factor of safety of 3.0.
- C. Fire Characteristics:
 - 1. Flammability: Pass, when tested in accordance with NFPA 285.
 - 2. Ignitibility: No sustained flaming when tested in accordance with NFPA 268.
 - 3. Fire Resistance: Complies with fire resistance requirements specified as part of an exterior non-load-bearing exterior wall assembly when tested in accordance with NFPA 285.
- D. Drainage Efficiency: Average minimum efficiency of 90 percent, when tested in accordance with ASTM E2273 for 75 minutes.
- E. Salt Spray Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating after 300 hours exposure in accordance with ASTM B117, using at least three samples matching intended assembly, at least 4 by 6 inches (100 by 150 mm) in size.
- F. Freeze-Thaw Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating when viewed under 5x magnification after 10 cycles, when tested in accordance with ICC-ES AC219 or ICC-ES AC235.
- G. Weathering Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating when viewed under 5x magnification after 2000 hours of accelerated weathering conducted in accordance with ASTM G153 Cycle 1 or ASTM G155 Cycles 1, 5, or 9.
- H. Water Degradation Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating after 14 days exposure, when tested in accordance with ASTM D2247.
- I. Mildew Resistance: No growth supported on finish coating during 28 day exposure period, when tested in accordance with ASTM D3273.

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- J. Abrasion Resistance Of Finish: No cracking, checking or loss of film integrity when tested in accordance with ASTM D968 with 113.5 gallons (500 liters) of sand.
- K. Impact Resistance: Construct system to provide the following impact resistance without exposure of broken reinforcing mesh, when tested in accordance with ASTM E2486/E2486M:

2.3 MATERIALS

- A. Finish Coating Top Coat: Water-based, air curing, acrylic or polymer-based finish with integral color and texture.
 - 1. Provide separate warranty from installer covering labor for repairs or replacement for a period of not less than 5 years.
 - 2. Texture: MasterWall Medium Sand 1.5.
- B. Base Coat: Acrylic- or polymer-modified, fiber reinforced Portland cement coating, Class PM.
 - 1. Portland Cement: ASTM C150/C150M, Type I or II.
 - 2. Products:
 - a. Substitutions: Section 01 2500 Substitution Procedures .
- C. Reinforcing Mesh: Balanced, open weave glass fiber fabric, treated for compatibility and improved bond with coating, weight, strength, and number of layers as required to meet required system impact rating.
- D. Expanded Polystyrene (EPS) Board Insulation: Complies with ASTM C578.
 - 1. Board Size: As recommended by EIFS finish manufacturer.
 - 2. Board Thickness: 2 inches (50 mm).
 - 3. Board Edges: Square.
 - 4. Type and Thermal Resistance, R-value (RSI-value): Type I, 3.6 (0.63) per 1 inch (25.4 mm) thickness at 75 degrees F (24 degrees C) mean temperature using ASTM C177 test method.
 - 5. Type and Board Density: Type I, 0.90 pcf (15 kg/cu m), minimum.
 - 6. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/450, when tested in accordance with ASTM E84.
 - 7. Products:
 - a. As approved by the EIFS Manufacturer.
- E. Water-Resistive Barrier Sheet: Constitutes an air retarder but which is vapor permeable; one of the following unless otherwise required by EIFS manufacturer or authorities having jurisdiction:
 - 1. Tyvek Stucco Wrap or approved equal.

2.4 ACCESSORIES

- A. Insulation Fasteners: Fastener and plate system appropriate for substrate and as recommended by EIFS manufacturer.
- B. Metal Flashings: See Section 07 6200.
- C. Trim: EIFS manufacturer's standard galvanized steel trim accessories, as required for a complete project and including starter track and drainage accessories.
- D. Sealant Materials: Compatible with EIFS materials and as recommended by EIFS manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that substrate is sound and free of oil, dirt, other surface contaminants, efflorescence, loose materials, or protrusions that could interfere with EIFS installation and is of a type and construction that is acceptable to EIFS manufacturer. Do not begin work until substrate and adjacent materials are complete and thoroughly dry.

- B. Verify that substrate surface is flat, with no deviation greater than 1/4 in (6 mm) when tested with a 10 ft (3 m) straightedge.

3.2 PREPARATION

- A. Prior to installation the contractor shall verify that the substrate is in compliance to the EIFS system manufacturer's requirement.

3.3 INSTALLATION - GENERAL

- A. Install in accordance with EIFS manufacturer's instructions and ASTM C1397.
 - 1. Where different requirements appear in either document, comply with the most stringent.
 - 2. Neither of these documents supercedes provisions of Contract Documents that defines contractual relationships between parties or scope of this work.

3.4 INSTALLATION - WEATHER-RESISTIVE BARRIER

- A. Apply barrier as recommended by manufacturer.
- B. Seal substrate transitions and intersections with other materials to form continuous water-resistive barrier on exterior of sheathing, using method recommended by manufacturer.
- C. At door and window rough openings and other wall penetrations, seal weather-resistive barrier and flexible flashings to rough opening before installation of metal flashings, sills, or frames, using method recommended by manufacturer.
- D. At moving expansion joints, apply flexible flashing or flashing tape across and recessed into joint with U-loop forming continuous barrier but allowing movement.
- E. Lap flexible flashing or flashing tape at least 2 inches (50 mm) on each side of joint or transition.

3.5 INSTALLATION - INSULATION

- A. Install in accordance with manufacturer's instructions.
- B. Prior to installation of boards, install starter track and other trim level and plumb and securely fastened. Install only in full lengths, to minimize moisture intrusion; cut horizontal trim tight to vertical trim.
- C. Install back wrap reinforcing mesh at all openings and terminations that are not to be protected with trim.
- D. Place boards in a method to maximize tight joints. Stagger vertical joints and interlock at corners. Butt edges and ends tight to adjacent board and to protrusions. Achieve a continuous flush insulation surface, with no gaps in excess of 1/16 inch (1.6 mm).
- E. Fill gaps greater than 1/16 inch (1.6 mm) with strips or shims cut from the same insulation material.
- F. Rasp irregularities off surface of installed insulation board.
- G. Mechanical Fastening: Space fasteners as recommended by EIFS manufacturer.

3.6 INSTALLATION - CLASS PB FINISH

- A. Base Coat: Apply in thickness as necessary to fully embed reinforcing mesh, wrinkle free, including back-wrap at terminations of EIFS. Install reinforcing fabric as recommended by EIFS manufacturer.
 - 1. Lap reinforcing mesh edges and ends a minimum of 2-1/2 inches (64 mm).
 - 2. Allow base coat to dry a minimum of 24 hours before next coating application.
- B. Apply finish coat after base coat has dried not less than 24 hours and finish to a uniform texture and color.
- C. Finish Coat Thickness: As recommended by manufacturer.
- D. Finish Coat Thickness: 3/32 to 1/8 inch (2.3 to 3.1 mm).
- E. Seal control and expansion joints within the field of exterior finish and insulation system, using procedures recommended by sealant and finish system manufacturers.

3.7 CLEANING

- A. See Section 01 7000 - Execution for additional requirements.

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- B. Clean EIFS surfaces and work areas of foreign materials resulting from EIFS operations.

3.8 PROTECTION

- A. Protect completed work from damage and soiling by subsequent work.

END OF SECTION

**SECTION 07 2500
WEATHER BARRIERS**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Air Barriers: Materials that form a system to stop passage of air through exterior walls and joints around frames of openings in exterior walls.
- B. Self Adhering flashing;
- C. Through wall flashing.
- D. Joint Tape.
- E. Joint Compound.

1.3 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Vapor retarder under concrete slabs on grade.
- B. Section 04 2000 - Unit Masonry
- C. Section 05 4000 - Cold-Formed Metal Framing: Water-resistive barrier under exterior cladding.
- D. Section 06 1000 - Rough Carpentry: Water-resistive barrier under exterior cladding.
- E. Section 07 2100 - Thermal Insulation: Vapor retarder installed in conjunction with batt insulation.
- F. Section 07 5300 - Elastomeric Membrane Roofing: Vapor retarder installed as part of roofing system.
- G. Section 07 6200 - Sheet Metal Flashing and Trim: Metal flashings installed in conjunction with weather barriers.
- H. Section 07 9200 - Joint Sealants: Sealing building expansion joints.
- I. Section 09 2116 - Gypsum Board Assemblies: Water-resistive barrier under exterior cladding.
- J. Section 09 2662 - Gypsum Sheathing

1.4 DEFINITIONS

- A. Weather Barriers: Assemblies that form either water-resistive barriers, air barriers, or vapor retarders.
- B. Air Barrier: Air tight barrier made of material that is relatively air impermeable but water vapor permeable, both to the degree specified, with sealed seams and with sealed joints to adjacent surfaces.
Note: For the purposes of this specification, vapor impermeable air barriers are classified as vapor retarders.
- C. Vapor Retarder: Air tight barrier made of material that is relatively water vapor impermeable, to the degree specified, with sealed seams and with sealed joints to adjacent surfaces.
 - 1. Water Vapor Permeance: For purposes of conversion, $57.2 \text{ ng}/(\text{Pa s sq m}) = 1 \text{ perm}$.
- D. Water-Resistive Barrier: A material behind an exterior wall covering that is intended to resist liquid water that has penetrated behind the exterior covering from further intruding into the exterior wall assembly.

1.5 REFERENCE STANDARDS

- A. AATCC Test Method 127 - Water Resistance: Hydrostatic Pressure Test; 2014.
- B. ASTM C 1250 - Standard Test Method for Nonvolatile Content of Cold Liquid-Applied Elastomeric Waterproofing Membranes
- C. ASTM C 1305 - Standard Test Method for Crack Bridging Ability of Liquid-Applied Waterproofing Membrane

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- D. ASTM D882; Test Method for Tensile Properties of Thin Plastic Sheeting
- E. ASTM D 2240 - Standard Test Method for Rubber Property - Durometer Hardness.
- F. ASTM D 4541 - Standard Test Method for Pull-off Strength of Coatings Using Portable Adhesion Testers
- G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018.
- H. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- I. ASTM E 283 - Standard Test Method for Determining the Rate of Air Leakage through Exterior Windows, Curtain Walls, and Doors under Specified Pressure Differences Across the Specimen.
- J. ASTM E 331 - Standard Test Method for Water Penetration of Exterior Windows, Skylight, Doors and Curtain Walls by Uniform Static Air Pressure Differences.
- K. ASTM E 779 - Standard Test Method for Determining Air Leakage Rate by Fan Pressurization.
- L. ASTM E 783 - Standard Test Method for Field Measurement of Air Leakage through Installed Exterior Windows and Doors.
- M. ASTM E 1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference.
 - 1. ASTM E 1186 - Standard Practices for Air Leakage Site Detection in Building Envelopes and Air Barrier Systems.
- N. ASTM E1677; Specification for Air Retarder Material or System for Framed Building Walls
- O. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials; 2013.
- P. ASTM E 2357 - Standard Test Method for Determining Air Leakage of Air Barrier Assemblies
- Q. ASTM G155 - Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials
- R. AATCC Test Method 127 Water Resistance: Hydrostatic Pressure Test.
- S. TAPPI Test Method T-410; Grams of Paper and Paperboard (Weight per Unit Area).
- T. TAPPI Test Method T-460; Air Resistance (Gurley Hill Method)

1.6 QUALITY ASSURANCES

- A. Manufacturer's Field Service Reports: Provide site reports from authorized field service representative, indicating observation of weather barrier assembly installation.
- B. Design Data, Test Reports: Provide manufacturer test reports indicating product compliance with indicated requirements.
- C. Qualifications
 - 1. Installer shall have experience with installation of weather barrier assemblies under similar conditions.
 - 2. Installation shall be in accordance with weather barrier manufacturer's installation guidelines and recommendations.
 - 3. Source Limitations: Provide weather barrier and accessory materials produced by single manufacturer

1.7 PRE-INSTALLATION MEETING

- A. Refer to Section 01 3000 - Administrative Requirements.
- B. Hold a pre-installation conference, two weeks prior to start of weather barrier installation. Attendees shall include Contractor, Architect, Engineer, Consultant, Installer, Owner's Representative, and Weather Barrier Manufacturer's Designated Representative.
- C. Review all related project requirements and submittals, status of substrate work and preparation, areas of potential conflict and interface, availability of weather barrier assembly materials and components,

installer's training requirements, equipment, facilities and scaffolding, and coordinate methods, procedures and sequencing requirements for full and proper installation, integration and protection

1.8 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on material characteristics, performance criteria, and limitations.
- C. Samples: Weather Barrier Membrane, minimum 8-1/2 inches by 11 inch
- D. Shop Drawings: Provide drawings of special joint conditions.
- E. Manufacturer's Installation Instructions: Indicate preparation, installation methods, and storage and handling criteria.
- F. Manufacturer's Field Service Reports: Provide site reports from authorized field service representative, indicating observation of weather barrier system installation

1.9 MOCK-UPS

- A. Install water-resistive barrier materials in mock-up specified in Section 01 4000.
- B. Contact manufacturer's designated representative prior to weather barrier assembly installation, to perform required mock-up visual inspection and analysis as required for warranty
- C. Install mock-up using approved weather barrier assembly including fasteners, flashing, and tape and related accessories per manufacturer's current printed instructions and recommendations.
 - 1. Mock-up size: 10' X 10'.
 - 2. Mock-up Substrate: Match wall assembly construction, including window opening.
 - 3. Mock-up may remain as part of the work.
- D. Contact manufacturer's designated representative prior to weather barrier system installation, to perform required mock-up visual inspection and analysis as required for warranty

1.10 FIELD CONDITIONS

- A. Maintain temperature and humidity recommended by materials manufacturers before, during, and after installation.

1.11 DELIVERY, STORAGE AND HANDLING

- A. Deliver weather barrier materials and components in manufacturer's original, unopened, undamaged containers with identification labels intact.
- B. Store weather barrier materials as recommended by weather barrier manufacturer.

1.12 SCHEDULING

- A. Review requirements for sequencing of installation of weather barrier assembly with installation of doors, louvers, flashings, sheathing, and wall panel to provide a weather-tight barrier assembly.
- B. Schedule installation of weather barrier materials and exterior cladding within nine months of weather barrier assembly installation

1.13 WARRANTY

- A. Special Warranty
 - 1. Special weather-barrier manufacturer's warranty for weather barrier assembly for a period of ten (10) years from date of final weather barrier installation.
 - 2. Approval by weather barrier manufacturer for warranty is required prior to assembly installation.

PART 2 PRODUCTS

2.1 WEATHER BARRIER ASSEMBLIES

- A. Air Barrier:
 - 1. On outside surface of sheathing of exterior walls; use air barrier sheet, mechanically fastened type.

2.2 AIR BARRIER MATERIALS (WATER VAPOR PERMEABLE AND WATER-RESISTIVE)

- A. Air Barrier Sheet, Mechanically Fastened:
 - 1. Air Permeance: 0.004 cubic feet per minute per square foot (0.02 L/s/sq m), maximum, when tested in accordance with ASTM E2178.
 - 2. Water Vapor Permeance: 5 perms (286 ng/(Pa s sq m)), minimum, when tested in accordance with ASTM E96/E96M Procedure A (desiccant procedure).
 - 3. Air Penetration: 0.001 cfm/ft² at 75 Pa, when tested in accordance with ASTM E2178. Type I per ASTM E1677. ≤0.04 cfm/ft² at 75 Pa, when tested in accordance with ASTM E2357
 - 4. Water Penetration Resistance: Withstand a water head of 21 inches (55 cm), minimum, for minimum of 5 hours, when tested in accordance with AATCC Test Method 127.
 - 5. Ultraviolet (UV) and Weathering Resistance: Approved in writing by manufacturer for up to 180 days of weather exposure.
 - 6. Surface Burning Characteristics: Flame spread index of 25 or less, and smoke developed index of 50 or less, when tested in accordance with ASTM E84.
 - 7. Seam and Perimeter Tape: Polyethylene self adhering type, mesh reinforced, 2 inches (50 mm) wide, compatible with sheet material; unless otherwise specified.
 - 8. Basis Weight: Minimum 2.7 oz/yd², when tested in accordance with TAPPI Test Method T-410.
 - 9. Air Resistance: Air infiltration at >1500 seconds, when tested in accordance with TAPPI Test Method T-460.
 - 10. Tensile Strength: Minimum 38/35 lbs/in., when tested in accordance with ASTM D882, Method A.
 - 11. Tear Resistance: 12/10 lbs., when tested in accordance with ASTM D1117.
 - 12. Surface Burning Characteristics: Class A, when tested in accordance with ASTM E84. Flame Spread: 10, Smoke Developed: 10
 - 13. Manufacturers:
 - a. DuPont Company; Tyvek CommercialWrap: www.dupont.com.
 - b. Substitutions: See Section 01 2500 - Substitution Procedures

2.3 SEALANTS

- A. Polyurethane Sealant: as specified in Section 07 9200 - Joint Sealants.
- B. Primers, Cleaners, and Other Sealant Materials: As recommended by sealant manufacturer, appropriate to application, and compatible with adjacent materials.

2.4 ADHESIVES

- A. Provide adhesive recommended by weather barrier manufacturer.

2.5 ACCESSORIES

- A. Sealants, Tapes, and Accessories Used for Sealing Water-Resistive Barrier and Adjacent Substrates: As indicated or complying with water-resistive barrier manufacturer's installation instructions.
- B. Joint Treatment.
 - 1. Joint Tape:
 - a. Seam Tape: 3 inch wide, DuPont™ Tyvek® Tape for commercial applications.
- C. Flashings
 - 1. Sheet flashing with butyl adhesive layer.
 - a. Product: DuPont™ StraightFlash™.
 - 2. Flexible flashing with butyl adhesive layer.
 - a. DuPont Flex Wrap NF
 - 3. Primers for flexible flashing and sheet flashing:

- a. Provide flashing manufacturer recommended primer to assist in adhesion between substrate and flashing.
- D. Fasteners: 1-5/8 inch rust resistant screw with 2-inch diameter plastic cap or manufacturer approved 1-1/4" or 2" metal gasketed washer.
- E. Sealants: Refer to Section 07900 Joint Sealants and approved by the weather barrier manufacturer

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify substrate and surface conditions are in accordance with weather barrier manufacturer recommended tolerances prior to installation of weather barrier and accessories.
- B. Verify that surfaces and conditions comply with requirements of this section.

3.2 PREPARATION

- A. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.
- B. Clean and prime substrate surfaces to receive air barrier system in accordance with manufacturer's instructions.

3.3 INSTALLATION

- A. Install materials in accordance with manufacturer's installation instructions.
- B. Air Barriers: Install continuous air tight barrier over surfaces indicated, with sealed seams and with sealed joints to adjacent surfaces.
- C. Sheathing:
 - 1. Joints shall be prepared per manufacturer's approved joint treatment details.
 - 2. Apply joint tape as recommended by fluid-applied weather barrier manufacturer.
 - a. No joint treatment required for joints up to 1/16 inch.
 - b. Joints 1/16 to 1/4 inch: Fluid-applied joint compound applied to form a 1 inch width on each side of sheathing joint; smooth joint compound across sheathing joint. Thickness shall be 15 to 25 mils.
 - c. Joints 1/16 to 1/2 inch: Apply joint tape to bridge both sides of joint equally. Apply fluid-applied joint compound and trowel smooth embedding joint compound uniformly into joint tape to form a 1 inch width on each side of sheathing joint at a consistent thickness of 15 to 25 mils.
 - d. Joints 1/2 to 1 inch: Apply sheet flashing primer above and below sheathing joint. Center sheet flashing over sheathing joint and press firmly in place per manufacturer's recommendations.
- D. Non-movement joints in masonry and transitions to columns and beams:
 - 1. Joints 1/4 inch wide or less: Apply fluid-applied joint compound a minimum of 2 inches wide by 60 mils thick to each side of joint or crack
 - 2. Joints 1/4 to 1/2 inch: Apply joint tape to joint, then apply joint compound to joint 2 inches wide by 60 mils thick OR Apply primer 2 inches on each side of joint. Center sheet flashing over joint and press firmly in place per manufacturer's recommendations.
- E. Mechanically Fastened Exterior Sheets:
 - 1. Install sheets shingle-fashion to shed water, with seams aligned horizontal.
 - 2. Overlap seams as recommended by manufacturer, 6 inches (152 mm), minimum.
 - 3. Overlap at outside and inside corners as recommended by manufacturer, 12 inches (305 mm), minimum.

4. Attach to framed construction with fasteners extending through sheathing into framing, and space fasteners at 12 to 18 inches (305 to 460 mm) on center along each framing member supporting sheathing.
5. For applications indicated to be airtight, seal seams, laps, penetrations, tears, and cuts with self-adhesive tape; use only large-headed, gasketed fasteners as recommended by manufacturer.
6. Where stud framing rests on concrete or masonry substrate, extend lower edge of barrier sheets at least 4 inches (102 mm) below bottom of framing and seal to substrate with sealant or approved mounting tape.
7. Install air barrier and vapor retarder UNDER jamb flashings.
8. Install head flashings under water-resistive barrier.
9. At framed openings with frames having nailing flanges, extend sheet into opening and over flanges; at head of opening, seal sheet over flange and flashing.

3.4 FLASHINGS (NON FLANGED WINDOWS)

- A. Cut flexible flashing a minimum of 12 inches longer than width of sill rough opening.
- B. Cover horizontal sill by aligning flexible flashing edge with inside edge of sill. Adhere to rough opening across sill and up jambs a minimum of 6 inches. Secure flashing tightly into corners by working in along the sill before adhering up the jambs.
- C. Fan flexible flashing at bottom corners onto face of wall. Firmly press in place. Mechanically fasten fanned edges.
- D. Apply 9-inch wide strips of flashing at jambs. Align flashing with interior edge of jamb framing. Start flashing at head of opening and lap sill flashing down to the sill.
- E. Spray-apply primer to top 6 inches of jambs and exposed sheathing.
- F. Install flexible flashing at opening head using same installation procedures used at sill. Overlap jamb flashing a minimum of 2 inches.
- G. Coordinate flashing with window installation.
- H. On exterior, install backer-rod in joint between window frame and flashed rough framing. Apply sealant at jambs and head, leaving sill unsealed. Apply sealants in accordance with sealant manufacturer's instructions and ASTM C1193.
- I. Position weather barrier head flap across head flashing. Adhere using flashing over the 45-degree seams.
- J. Tape top of window in accordance with manufacturer recommendations.
- K. On interior, install backer rod in joint between frame of window and flashed rough framing. Apply sealant around entire window to create air seal. Apply sealant in accordance with sealant manufacturer's instructions and ASTM C1193.

3.5 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements for additional requirements.
- B. Port Chester-Rye UFSD's Inspection and Testing: Cooperate with Port Chester-Rye UFSD's testing agency.
 1. Allow access to work areas and staging.
 2. Notify Port Chester-Rye UFSD's testing agency in writing of schedule for work of this section to allow sufficient time for testing and inspection.
 3. Do not cover work of this section until testing and inspection is accepted.
- C. Coordination of ABAA Tests and Inspections:
- D. Notify manufacturer's designated representative to obtain required periodic observations of weather barrier assembly installation

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- E. Obtain approval of installation procedures from water-resistive barrier manufacturer based on a mock-up installed in place, prior to proceeding with remainder of installation.
- F. Take digital photographs of each portion of installation prior to covering up weather barriers.

3.6 PROTECTION

- A. Do not leave paper- or felt-based barriers exposed to weather for longer than one week.
- B. Protect installed weather barrier from damage.

END OF SECTION

SECTION 07 4213
ALUMINUM SOFFIT PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. The extent of aluminum soffit shown on the drawings.
- B. Manufactured metal aluminum panels for exterior soffits, with accessory components
- C. All metal trim, fasteners and sealants

1.3 RELATED REQUIREMENTS

- A. Section 05 5000 - Metal Fabrications.
- B. Section 06 1000 - Rough Carpentry: Wall panel substrate.
- C. Section 07 4113 - Metal Roof Panels.
- D. Section 07 6200 - Sheet Metal Flashing and Trim.
- E. Section 07 9200 - Joint Sealants.

1.4 REFERENCE STANDARDS

- A. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document); 2015.
- B. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018.
- D. ASTM E-330 Structural Performance Tested.
- E. New York State Building Code.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's standard printed product data and installation instructions for specified products.
- C. Shop Drawings: Indicate dimensions, layout, joints, construction details and methods of anchorage, and thickness, dimension, components of parts and installation instructions.
- D. Samples: Submit two samples of soffit panel, 12 inch by 12 inch (305 mm by 305 mm) in size illustrating finish color, sheen, and texture.
- E. Affidavit certifying materials meet all requirements as specified.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum Twenty (20) years of documented experience.
- B. Installer Qualifications: Company specializing in installing products of the type specified in this section with minimum three years of documented experience and approved by manufacturer.
- C. Soffit System shall be designed to meet applicable New York State Building Code and the System shall have tested by the Manufacturer per ASTM E-1592 and have the applicable Load Tables published from this testing for loads.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap and in accordance with panel manufacturer's recommendations.
- B. Store material off the ground, in original packaging and protected from weather; prevent twisting, bending, or abrasion; provide ventilation; slope metal sheets to ensure proper drainage.
- C. Prevent contact with materials that may cause discoloration or staining of products.

1.8 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Finish warranty: Manufacturer's standard form in which manufacturer agrees to repair finish or replace standing seam metal roof panels that show evidence of deterioration of factory-applied finish within specified warranty period.
 - 1. Exposed Panels Finish - deterioration includes the following:
 - a. Cracking, checking, peeling or failure of a paint to adhere to a bare metal
 - 2. Warranty Period: 30 non pro-rated Years from the date of substantial completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design: PAC-850 Full Flush Vent as manufactured by: Petersen.Aluminum Corporation, 1005 Tonne Road, Elk Grove Village, IL 60007

2.2 ALUMINUM SOFFIT PANELS

- A. Aluminum Soffit Panels:
 - 1. Style: 1" x 12" wide Flush Panels Full Vented.
 - a. Thickness: Nominal 0.04; aluminum alloy 3105-H14:
 - a) Interlocking edges and elongated nailing hems.
 - b. Finish: AlumaLure 2000; two-phase operation including corrosion-inhibiting primer and baked-on high-performance acrylic topcoat.
 - a) Color: As selected by Architect from manufacturer's full line.

2.3 FINISHES

- A. Custom Fluoropolymer Coating System: Polyvinylidene fluoride (PVDF) multi-coat thermoplastic fluoropolymer coating system, including minimum 70 percent PVDF color topcoat and minimum total dry film thickness (DFT) of 0.9 mil (0.023 mm); color and gloss as selected from manufacturer's standard line.

2.4 ACCESSORIES

- A. Accessories: Flashings and Trim Aluminum of same thickness, finish, and color as soffit.
 - 1. Provide "J" channel color to match soffit.

2.5 FABRICATION

- A. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- B. Form pieces in longest practicable lengths.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrate conditions before beginning installation of soffit products; verify dimensions and acceptability of substrate.
 - 1. For the record, prepare written report, endorsed by installer, listing conditions detrimental to performance of the Work

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- B. Examine alignment of structural steel, framing and related supports, primary and secondary roof framing, solid roof sheathing, prior to installation. Components should comply with shop drawings and be smooth, even, sound and free of depressions.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install metal panels, fasteners, trim and related sealants in accordance with approved shop drawings and as may be required for a weather-tight installation. Conform to standards set forth in SMACNA architectural sheet metal manuals and approved shop drawings for this project.
- B. Remove all strippable coating and provide a dry-wipe down cleaning of the panels as they are erected.
- C. Install panel system so it is watertight, without waves, warps, buckles or distortions, and allow for thermal movement considerations.
- D. Abrasive devices shall not be used to cut on or near soffitpanel system.
- E. Fasten panels to structural supports; aligned, level, and plumb.
- F. Use concealed fasteners unless otherwise approved by Fuller and D'Angelo P.C.
- G. Secure units to supports.
- H. Place fasteners as indicated in manufacturer's standards.
- I. Seal and place gaskets to prevent weather penetration. Maintain neat appearance.

3.3 ADJUSTING AND CLEANING

- A. Clean dirt from surface of installed products, using mild soap and water.
- B. After completing installation, remove from project site excess materials and debris resulting from installation.

END OF SECTION

SECTION 07 4213.23
METAL COMPOSITE MATERIAL WALL PANELS

PART 2 PRODUCTS

1.1 WALL PANEL SYSTEM

- A. Wall Panel System: Metal panels, fasteners, and anchors designed to be supported by framing or other substrate provided by others; provide installed panel system capable of maintaining specified performance without defects, damage, or failure.
 - 1. Provide structural design by or under direct supervision of a Structural Engineer licensed in New York.
 - 2. Provide panel jointing and weatherseal using a "wet", sealant-sealed system.
 - 3. Anchor panels to supporting framing without exposed fasteners.
- B. PERFORMANCE REQUIREMENTS
 - 1. Thermal Movement: Provide for free and noiseless vertical and horizontal thermal movement due to expansion and contraction under material temperature range of minus 20 degrees F (minus 29 degrees C) to 180 degrees F (82 degrees C) without buckling, opening of joints, undue stress on fasteners, or other detrimental effects; allow for ambient temperature at time of fabrication, assembly, and erection procedures.

1.2 MATERIALS

- A. Metal Composite Material (MCM) Sheet: Two sheets of aluminum sandwiching a core of extruded thermoplastic material; no foamed insulation material content.
 - 1. Overall Sheet Thickness: 0.118 inch (3 mm), minimum.
 - 2. Bond and Peel Strength: No adhesive failure of the bond between the core and the skin nor cohesive failure of the core itself below 22.4 inch-pound/inch (100 N-mm/mm) with no degradation in bond performance, when tested in accordance with ASTM D1781, simulating resistance to panel delamination, after 8 hours of submersion in boiling water and after 21 days of immersion in water at 70 degrees F (21 degrees C).
 - 3. Surface Burning Characteristics: Flame spread index of 25, maximum; smoke developed index of 450, maximum; when tested in accordance with ASTM E84.
 - 4. Flammability: Self-ignition temperature of 650 degrees F (343 degrees C) or greater when tested in accordance with ASTM D1929.
- B. Metal Framing Members: Include sub-girts, zee-clips, base and sill angles and channels, hat-shaped and rigid channels, and furring channels required for complete installation.
 - 1. Provide material strength, dimensions, configuration as required to meet the applied loads applied and in compliance with applicable building code.
 - 2. Sheet Steel Components: ASTM A653/A653M galvanized to G90/Z275 or zinc-iron alloy-coated to A60/ZF180; or ASTM A792/A792M aluminum-zinc coated to AZ60/AZM180.
 - 3. Stainless Steel Sheet Components: ASTM A480/A480M.
 - 4. Aluminum Components: ASTM B209/B209M; or ASTM B221 (ASTM B221M).

END OF SECTION

SECTION 07 5010
MODIFICATIONS TO EXISTING ROOFING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Modification to existing EPDM membrane roofing system.
- B. Remove all existing roofing and flashings as required to provide new openings for mechanical equipment as shown on drawings.
- C. Cut new openings and install curbs.
- D. Fill in abandoned equipment openings.
- E. Disposal of removal and construction waste is the responsibility of General Contractor. Perform disposal in manner complying with all applicable federal, state, and local regulations.
- F. Roof top mechanical equipment work is specified else-where. Coordinate with the mechanical contractors to set new curbs and equipment, and make modifications to the existing curbs and equipment; then install new roof flashings as indicated.
- G. Install new support steel and decking, insulation to finish flush with the deck substrate, new insulation and roofing to make the building permanently watertight - within 72 hours after each piece of equipment is removed.
- H. Maintain building watertight at all times.
- I. Commencement of work by Contractor shall constitute acknowledgement by Contractor that this specification can be satisfactorily executed, under the project conditions and with all necessary prerequisites for warranty acceptance by roofing membrane manufacturer. No modification of the Contract Sum will be made for failure to adequately examine the Contract Documents or the project conditions.

1.3 RELATED REQUIREMENTS

- A. Section 05 5000 - Metal Fabrications. Roofing modifications required by miscellaneous roof supports.
- B. Section 06 1010 - Roof Related Rough Carpentry Wood nailers associated with roofing and roof insulation.
- C. Section 07 6200 - Sheet Metal Flashing and Trim: Formed metal flashing and trim items associated with roofing.
- D. Section 07 7200 - Roof Accessories: Roof hatches, vents, and manufactured curbs.

1.4 REFERENCE STANDARDS

- A. ASTM D1079 <http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM D1079> - Standard Terminology Relating to Roofing and Waterproofing; 2016.
- B. PS 1 <http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=APA PS 1> - Structural Plywood; 2009.
- C. PS 20 <http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ALSC PS 20> - American Softwood Lumber Standard; 2010.

1.5 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Installation Conference: Before start of roofing work, General Construction Contractor shall hold a meeting to discuss the proper installation of materials, status of the existing warranty, requirements to maintain the existing warranty, and manufacturer's approval of the installer and requirements to maintain the existing warranty..

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1. Require attendance with all parties directly influencing the quality of roofing work or affected by the performance of roofing work.
2. Notify Architect or Construction Manager well in advance of meeting.

1.6 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data:
 1. Provide manufacturer's printed data sufficient to show that all components of roofing systems, including insulation and fasteners, comply with the specified requirements and with the roofing manufacturer's requirements and recommendations for the system type specified; include at least the following:
 - a. Technical data sheet for roof membrane.
 - b. Technical data sheets for splice tape and adhesives.
 - c. Technical data sheet for each insulation type.
 - d. Technical data sheet for pavers.
 2. Where the existing roofing system is UL or FM approved provide documentation that shows that the modification installed is UL-Classified or FM-approved, as applicable; include data itemizing the components of the classified or approved system.
 3. Installation Instructions: Provide manufacturer's instructions to installer, marked up to show exactly how all components will be installed; where instructions allow installation options, clearly indicate which option will be used.
 4. Pre-Work Site and Building Inspection Report with photos to documents conditions before commencing work.
 5. Written certification from the manufacturer which states that the installer is acceptable or licensed to install the specified roofing; if not previously provided.
- C. Shop Drawings: Provide:
 1. The roof membrane manufacturer's standard details customized for this project for all relevant conditions, including flashings, base tie-ins, roof edges, terminations, expansion joints, penetrations, and drains.
- D. Specimen Warranty: Submit manufacturer's certification that work installed will maintain the existing warranty prior to starting work.
- E. Installer Qualifications: Letter from manufacturer attesting that the roofing installer meets the specified qualifications for all systems under warranty.
- F. Executed Warranty.

1.7 CODE APPROVAL REQUIREMENTS

- A. Install roofing and insulation system components to meet the following minimum requirements:
 1. New York State Uniform Fire Prevention and Building Code, which includes by reference the New York State Energy Conservation Code.
 2. Underwriters Laboratories Inc. Class A External Fire Rating for roof assemblies tested in accordance with ASTM E 108 or UL 790.
 3. Underwriters Laboratories Inc. Standard 1256 for roof assemblies with foam insulation.
 4. Minimum wind uplift pressure calculated using ASCE 7 and a safety factor of 2:
 - a. Field Zone - 90 psf
 - b. Perimeter Zones - 135 psf
 - c. Corner Zone - 180 psf
- B. Provide written certification from the roof material Manufacturer, before beginning work, to confirm the roofing system meets these requirements.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: Roofing installer shall have the following:
 - 1. A firm (Installer) with not less than 5 continuous years experience performing EPDM roofing work similar to that required for this project, employing personnel skilled in the specified work.
 - a. The Installer shall directly employ the personnel performing the work of this section.
 - b. The Installer shall have a full time supervisor/foreman on the roof when roofing work is in progress. The Supervisor shall have a minimum of 5 years experience in roofing work similar in nature and scope to this project, and speak fluent English.
 - c. The Installer shall provide a reference list of at least three projects of comparable size and similar design, within a fifty mile radius of this project, which may be observed by representatives of the Owner:
 - a) The reference list shall include at a minimum, the completion date, a description of the work performed, the Owner's name - contact person - phone number and address and the Architect's name - contact person and phone number.
 - b) The Installer shall provide the reference list prior to contract award if requested.
 - d. The Installer shall be acceptable to or licensed by the Manufacturer of the primary roofing materials, and provide written certification from the Manufacturer to confirm this prior to award if requested.
- B. Material Quality: Obtain each product, including the insulation, cover board, EPDM roofing and flashing, and cements, primers and adhesives produced by a single Manufacturer, which has manufactured the same products in the United States of America for not less than 5 continuous years.
- C. Pre-Work Conference: Meet at the project site approximately one week prior to starting roof work, with the Architect, Owner and other representatives concerned about the work, to discuss the following:
 - 1. How the building will be kept watertight as old roofing is removed and the work progresses.
 - 2. How new roofing work will be coordinated with mechanical equipment work, replacement of deteriorated existing insulation and the installation of new insulation, cover board, flashings and other items to provide a watertight installation.
 - 3. Generally accepted industry practice, the Manufacturer's instructions for handling and installing his products, and project specific work requirements.
 - 4. The condition of the substrate (deck), curbs, penetrations and preparatory work needed by trades other than the roofer.
 - 5. Submittals, if any remain incomplete.
 - 6. The construction schedule, weather forecast for the work period, availability of materials, personnel, equipment and facilities needed to proceed and complete the work in an expeditious manner and on schedule.
 - 7. A schedule for Manufacturer and Architect inspections.

1.9 JOB CONDITIONS (CAUTIONS & WARNINGS)

- A. Do not use oil base or plastic roof cement with EPDM roofing. Do not allow waste products, (petroleum grease or oil, solvents, vegetable or mineral oil, animal fat) or direct steam venting to come in contact with any roofing, insulation or flashing product. Do not expose EPDM roofing and accessories to a temperature in excess of 175 degrees Fahrenheit.
- B. Splice cleaner, primer, cements and bonding adhesives are flammable. Do not breathe vapors or use near fire or flame or in a confined or unventilated area. Dispense only from a UL listed or approved safety can.
- C. Remove empty adhesive and solvent containers and contaminated rags from the roof and legally dispose of them daily.

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- D. Do not apply adhesives adjacent to open ventilation system louvers, or windows. Temporarily cover the louvers and windows with 6 mil fire retardant polyethylene and prevent adhesive odors from entering the building. Remove temporary covers at the end of each days work.

1.10 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver material to the site in the Manufacturer's original and unopened packaging, bearing labels which identify the type and names of the products and Manufacturers, with the labels intact and legible.
- B. Cover all stored materials, except rolls of EPDM and sealed cans of adhesives, with watertight tarpaulins installed immediately upon delivery.
- C. Immediately remove any insulation which gets wet from the job site.
- D. Do not overload the structure when storing materials on the roof.
- E. Store and install all material within the Manufacturer's recommended temperature range.

1.11 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Existing Roof System Under Warranty
 - 1. The existing roofing system is under warranty and the General Construction Contractor or their subcontractor must notify and be authorized by the manufacturer to perform all work as per the manufacturer's instruction.
 - a. Manufacture's Warranty: Certification from manufacturer that the existing warranty covering membrane, roof insulation, and other indicated components of the system, shall remain the new and existing terms of the original warranty.
 - b. b.
 - 2. Comply with all warranty procedures required by manufacturer, including notifications
Manufacture's Warranty: Certification from manufacturer that the existing warranty covering membrane, roof insulation, and other indicated components of the system, shall remain the new and existing terms of the original warranty, scheduling, and inspections:
 - 3. Manufacture's Warranty: Certification from manufacturer that the existing warranty covering membrane, roof insulation, and other indicated components of the system, shall remain the new and existing terms of the original warranty Contractors warranty.
 - 4. Manufacturer's and Contractor's Guarantees/Warranties shall be issued no more than 30 days before the satisfactory completion of punch list work.
- C. Manufacturer's and Contractor's Guarantees/Warranties shall be issued no more than 30 days before the satisfactory completion of punch list work.
- D. Guarantees/Warranties shall include the removal and replacement of items or materials superimposed over the EPDM roof as part of the original work, if removal is needed to make warranty repairs.

PART 2 PRODUCTS

2.1 GENERAL

- A. Acceptable Manufacturer - Roofing System: Match existing manufacturers roofing system.
 - 1. Roofing systems by other manufacturers are not acceptable if existing roof is under warranty.
 - 2. Roofing systems manufactured by others are acceptable provided the roofing system is completely equivalent in materials and warranty conditions and the manufacturer meets the following qualifications:
 - a. Specializing in manufacturing the roofing system to be provided.
 - b. Minimum ten years of experience manufacturing the roofing system to be provided.
- B. Substitutions: See Section 01 2500 - Substitution Procedures

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2.2 EPDM ROOFING

- A. Unreinforced 60 mils thick, fire retardant, EPDM (Ethylene Propylene Diene Monomer) sheet membrane conforming to the following minimum physical properties.
- | 1. PROPERTY | TEST METHOD | SPECIFICATION |
|---|-------------|--|
| 2. Color- | | Gray/Black |
| 3. Elongation | ASTM D-412 | 300% min |
| 4. Tear Strength | ASTM D-624 | 150 lb/in min |
| 5. Ozone Resistance
days/100
strain | ASTM D-1149 | No cracks, 7
pphm/100°F/50% |
| 6. Heat Aging | ASTM D-573 | 1200 psi min@
200% elongation/4 wks/240°F |
| 7. Brittleness Temperature | ASTM D-746 | -49°F |
| 8. Water Vapor Permanence | ASTM E-96 | 2.0 perm max |
| 9. Thickness | ASTM D-412 | 60 mils plus/minus 6 mils |
| 10. Fire Retardant | | UL Class A |
- B. Related Materials:
1. Cleaners, adhesives, sealants, caulking and fasteners furnished by the EPDM system Manufacturer. Use low VOC adhesives and cleaners to comply with regulations in effect at the time of application.
 - a. Stripping: 90 mil thick 5 inch and 9 inch wide self adhering flashing, consisting of 45 mils of semi-cured EPDM factory laminated to 45 mils of cured seaming tape.
 - b. Bonding Adhesive: High strength contact adhesive.
 - c. Splice Adhesive: High strength synthetic polymer based contact cement formulated specifically to splice EPDM sheets.
 - d. Lap Sealant: EPDM rubber based gun grade sealant.
 - e. Water Block Seal: One component low viscosity butyl rubber sealant.
 - f. Pre-Molded Pipe Flashing: Pressure sensitive prefabricated flashings with pre-applied adhesive.
 - g. Pourable Sealer: Two component, solvent free polyurethane based sealant.
 - h. Reinforced Perimeter Fastening Strips: .030 inch thick reinforced cured EPDM.
 - i. Seam Tape Primer: Synthetic rubber polymer based primer designed to clean and prime seam tape splice areas prior to installing the tape.
 - j. Seam Splice Tape: Nominal 30 mil thick cured polymer self adhesive tape with release paper carrier, 6 inches wide.
 - k. Plates and Bars: Galvanized and corrosion resistant specialty products.
 - l. Fasteners: #14 Fluorocarbon polymer coated heavy duty screws.
- C. Gypsum Cover Board: 1/4 inch thick fire resistant gypsum board decking with inorganic glass mat facers and a water resistant core, formulated in 48 x 48 inch square edge boards, UL Class A, meeting ASTM C-1177, manufactured under the trade name Dens-Deck Prime

2.3 INSULATION:

- A. Isocyanurate - Tapered rigid cellular polyisocyanurate boards with fibrous felt/fiberglass mat facers, sloping 1/2 inch per foot, minimum starting thickness 1-1/2 inches, minimum compressive strength 20 psi, meeting ASTM C1289-01, Type II, Class1, Grade 2.
1. Tapered insulation sloping 1/4 inch per foot, minimum starting thickness as shown on the roof plan.
 2. Crickets sloping 1/4 inch per foot.
 3. At repairs to existing building match thickness of existing insulation.

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4. Product: Firestone "ISO 95+ Isocyanurate Insulation" or approved equal.

2.4 ACCESSORY MATERIALS

- A. Wood Nailers: PS 20 dimension lumber, Structural Grade No. 2 or better Southern Pine, Douglas Fir; or PS 1 <http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=APA PS 1>, APA Exterior Grade plywood.
1. Thickness: Same as thickness of roof insulation.
- B. Cant Strips and Tapered Edge Strips: 45 degree face slope and minimum 5 inch (127 mm) face dimension; provide at all angle changes between vertical and horizontal planes that exceed 45 degrees.

PART 3 INSTALLATION

3.1 GENERAL

- A. Construct the new roofing system in a watertight, workmanlike manner, meeting the guarantee requirements specified herein; in strict accordance with the drawings and in conformance with the Manufacturer's requirements, except as enhanced in this specification.
- B. Perform work at areas with roof mounted mechanical equipment, so the work coincides with equipment shutdown periods and does not affect building occupants. Temporarily cover and protect equipment openings, and windows adjoining the work area, with 6 mil fire retardant polyethylene, so dirt, dust and odors do not enter the equipment or building. Remove covers at the end of each workday, and as soon as roof work is complete.
- C. Clean the surface on which roofing system components will be applied, of all laitance, dirt, oil, grease or other foreign matter which would in any way affect the quality of the installation.
- D. Install roof system components on dry surfaces only. Do not install any items when weather conditions and outside temperatures are not suitable in accordance with the Manufacturer's recommendations.
- E. Complete all work in sequence as quickly as possible so that as small an area as practicable is in the process of construction at any one time. Complete the entire area of work begun each day, the same day, and make all exposed edges watertight at the end of each day's work.

3.2 SUBSTRATE INSPECTION

- A. Remove portions of existing roofing, insulation, and flashings, and carefully check the existing deck and new roof substrate. To be an acceptable surface for the new roofing system, the deck and substrate shall be well secured to the underlying structure, dry and not otherwise deteriorated.
- B. Immediately notify the Architect and Owner by telephone and in writing if defects in the substrate are discovered.
- C. Maintain the building watertight in the interim, but do not install new insulation or roofing until substrate defects have been corrected.

3.3 DECK REPAIR

- A. Steel deck repairs:
1. Remove damage decking across the entire width of individual sections by a length equal to a minimum of two joist bays.
2. Install new galvanized steel decking, to match the thickness, gauge and cross section configuration of the existing deck.
3. Fasten new deck to the joists / beams with #12 screws spaced 6 inches on center in each joist / beam.
4. Stitch side seams of steel deck with #10 screws spaced 24 inches apart.

3.4 PREPARATION

- A. Remove all of the existing roof system down to the roof deck including all existing composition base flashings. Dispose of all materials properly. Perform asbestos removal in accordance with federal, state and local regulations and dispose of waste in legal manner.
 - 1. At penetrations, remove all existing flashings, including lead, asphalt, mastic, etc.
 - 2. At walls, curbs, and other vertical and sloped surfaces, remove loose and unsecured flashings; remove mineral surfaced and coated flashings; remove excessive asphalt to provide a smooth, sound surface for new flashings.
- B. Take appropriate measures to ensure that fumes from adhesive solvents are not drawn into the building through air intakes.
- C. Prior to proceeding, prepare roof surface so that it is clean, dry, and smooth, and free of sharp edges, fins, roughened surfaces, loose or foreign materials, oil, grease and other materials that may damage the membrane.
- D. Fill all surface voids in the immediate substrate that are greater than 1/4 inch (6 mm) wide with fill material acceptable insulation to membrane manufacturer.
- E. Seal, grout, or tape deck joints, where needed, to prevent bitumen seepage into building.

3.5 SINGLE-PLY MEMBRANE INSTALLATION

- A. Beginning at low point of roof, place membrane without stretching over substrate and allow to relax at least 30 minutes before attachment or splicing; in colder weather allow for longer relax time.
- B. Lay out the membrane pieces so that field and flashing splices are installed to shed water.
- C. Install membrane without wrinkles and without gaps or fishmouths in seams; bond and test seams and laps in accordance with membrane manufacturer's instructions and details.
- D. Fully adhere EPDM to the substrate with bonding adhesive, on all roof areas except the terrace courtyard.
 - 1. Allow contact bonding adhesive to dry to the touch before joining the EPDM to the substrate. Roll the EPDM onto the bonding adhesive and immediately rub it vigorously with a soft bristle broom to ensure complete adhesion.
 - 2. Do not punch holes in cans of adhesive and use them in a "Better Spreader" without first opening the cans to mix them.
 - 3. Replace used roller covers each day; discard covers after each days use.
 - 4. Allow bonding adhesive to dry to the touch before joining the EPDM to the substrate.
 - 5. Allow bonding adhesive to dry to the touch before joining the EPDM to the substrate.
- E. Roofing installed over improperly applied adhesive or with adhesive that wasn't stirred, and roofing installed with blisters, ridges, mole runs and similar deficiencies shall be removed and replaced at the Contractor's expense
- F. Mechanical Attachment: Install fasteners in the seams, covered by membrane.
 - 1. Lay out fasteners in compliance with FM Class specified in PART 2, as recommended by membrane manufacturer, and as indicated, whichever is most stringent.
 - 2. Properly engage fasteners in the deck with head flush with the countersunk portion of seam plate.
- G. Edge Securement: Secure membrane at all locations where membrane terminates or goes through an angle change greater than 2 in 12 inches (1:6) using mechanically fastened reinforced perimeter fastening strips, plates, or metal edging as indicated or as recommended by roofing manufacturer.
 - 1. Exceptions: Round pipe penetrations less than 18 inches (460 mm) in diameter and square penetrations less than 4 inches (200 mm) square.
 - 2. Metal edging is not merely decorative; ensure anchorage of membrane as intended by roofing manufacturer.

3.6 FLASHING AND ACCESSORIES INSTALLATION

- A. Install flashings, including laps, splices, joints, bonding, adhesion, and attachment, as required by membrane manufacturer's recommendations and details.
- B. Flashing at Penetrations: Flash all penetrations passing through the membrane; make flashing seals directly to the penetration.

3.7 FINISHING AND WALKWAY INSTALLATION

- A. Install walkways at access points to the roof, around rooftop equipment that may require maintenance, and where indicated on the drawings.
 - 1. Use specified walkway pads unless otherwise indicated.
- B. Walkway Pads: Adhere each pad to the roof surface with 5 strips of seam tape, space the pads 3 inches apart to allow for drainage.
 - 1. If installation of walkway pads over field fabricated splices or within 6 inches (150 mm) of a splice edge cannot be avoided, adhere another layer of flashing over the splice and extending beyond the walkway pad a minimum of 6 inches (150 mm) on either side.
 - 2. Prime the membrane, remove the release paper on the pad, press in place, and walk on pad to ensure proper adhesion.

3.8 FIELD QUALITY CONTROL

- A. Inspection by Manufacturer: Provide final inspection of the roofing system by a Technical Representative employed by roofing system manufacturer specifically to inspect installation for warranty purposes (i.e. not a sales person).
- B. Perform all corrections necessary for issuance of warranty.

3.9 CLEANING

- A. Clean all contaminants generated by roofing work from building and surrounding areas, including bitumen, adhesives, sealants, and coatings.
- B. Repair or replace building components and finished surfaces damaged or defaced due to the work of this section; comply with recommendations of manufacturers of components and surfaces.
- C. Remove leftover materials, trash, debris, equipment from project site and surrounding areas.

3.10 PROTECTION

- A. Where construction traffic must continue over finished roof membrane, provide durable protection and replace or repair damaged roofing to original condition.

END OF SECTION

SECTION 07 5323
ETHYLENE-PROPYLENE-DIENE-MONOMER ROOFING (EPDM)

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Fully adhered EPDM roofing system, including insulation, flashing, stripping and accessories related to the installation, over flat and tapered isocyanurate insulation configured to create a minimum slope of 1/4 inch per foot for drainage.
- B. Disposal of construction waste is the responsibility of Contractor. Perform disposal to comply with all applicable federal, state, and local regulations.
- C. Install flashings at the roof drains and at all roof-mounted and roof-penetrating equipment.
- D. Install fully adhered EPDM over isocyanurate insulation to make all roof-top work waterproof.
- E. Commencement of work by Contractor shall constitute acknowledgement by Contractor that this specification can be satisfactorily executed, under the project conditions and with all necessary prerequisites for warranty acceptance by roofing membrane manufacturer. No modification of the Contract Sum will be made for failure to adequately examine the Contract Documents or the project conditions.
- F. Work on existing roof areas covered by a Manufacturer's warranty shall be performed by a "Manufacturer's authorized applicator" only after notifying the manufacturer in writing before work begins.
- G. Inspect the underside of the roof deck before starting work, and periodically each day as work occurs, to determine if there are conduits, pipes, ceiling hangers or fixtures next to the deck or fastened to the deck that could be affected as roof work occurs.
 - 1. Perform roof work so any conduits, pipes, ceiling hangers or fixtures are not disturbed.
 - 2. Replace and reset any conduits, pipes, ceiling hangers or fixtures that are affected by the work.

1.3 RELATED REQUIREMENTS

- A. Section 05 3100 - Steel Decking: Product requirements for acoustical insulation for deck flutes, for placement under this section.
- B. Section 06 1010 - Roof Related Rough Carpentry
- C. Section 07 6200 - Sheet Metal Flashing and Trim: Formed metal flashing and trim items associated with roofing.
- D. Section 07 7200 - Roof Accessories: Roof hatches, vents, snow guards and manufactured curbs.
- E. Section 22 1006 - Plumbing Piping Specialties: Roof drains.

1.4 REFERENCE STANDARDS

- A. ASTM C518 <http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM C518> - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2015.
- B. ASTM C1289 <http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM C1289> - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2016.
- C. ASTM D1079 <http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM D1079> - Standard Terminology Relating to Roofing and Waterproofing; 2016.

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- D. ASTM D4811/D4811M
<https://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20D4811/D4811M> - Standard Specification for Nonvulcanized (Uncured) Rubber Sheet Used as Roof Flashing; 2006 (Reapproved 2013)e1.
- E. FM DS 1-29 <<http://www.fmglobal.com>> - Roof Deck Securement and Above-Deck Roof Components; Factory Mutual System; 2006.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Submit the following items far enough in advance to obtain approval prior to performing any work on site:
 - 1. Pre-work site and building inspection report with photos to document conditions before work starts.
 - 2. Written certification from the Manufacturer which states the Installer is acceptable or licensed to install the specified roofing; if not previously provided.
 - 3. Manufacturer's installation instructions and technical data sheets for each component of the roofing system. Material sample submittals are not needed or wanted.
 - 4. Samples of the Contractor's guarantee and Manufacturer's warranty forms.
 - 5. A copy of the Manufacturer's Pre-Installation Notice, to show the project has been filed, accepted and approved by the manufacturer.
 - 6. Simultaneously provide all technical submittals needed for this project, for all technical sections, collated by section. Incomplete submittals will not be reviewed.
 - 7. Technical submittals shall be prepared and made by the firm that will perform the actual work.
- C. Safety Data Sheets. Simultaneously provide all Safety Data Sheets needed for this project, for all specification sections - collated by section, in three ring binders.
- D. 1. Submit two complete binders to the Construction Manager
- E. Payment requisitions will not be processed until all submittals are received and approved.

1.6 CODE APPROVAL REQUIREMENTS

- A. Install roofing and insulation system components to meet the following minimum requirements:
 - 1. New York State Uniform Fire Prevention and Building Code, which includes by reference the New York State Energy Conservation Code.
 - 2. Underwriters Laboratories Inc. Class A External Fire Rating for roof assemblies tested in accordance with ASTM E 108 or UL 790.
 - 3. Underwriters Laboratories Inc. Standard 1256 for roof assemblies with foam insulation.
 - 4. Minimum wind uplift pressure calculated using ASCE 7 and a safety factor of 2:
 - a. Field Zone - 90 psf
 - b. Perimeter Zones - 135 psf
 - c. Corner Zone - 180 psf
- B. Provide written certification from the roof material Manufacturer, before beginning work, to confirm the roofing system meets these requirements.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Provide primary products, including roof membrane, insulation, fasteners, flashing, and adhesives, produced by a single Manufacturer, which has produced the same type of product successfully, in the United States, for not less than 10 years. Provide secondary products only as recommended by the Manufacturer of the primary products
- B. Installer Qualifications:

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1. The Installer (a firm) shall have at least five years experience performing work similar to that required for this project, employing personnel skilled in the work specified.
 2. The Installer shall directly employ the personnel performing the work of this section.
 3. The Installer shall have a full time Supervisor on the roof when roofing work is in progress. The Supervisor shall have at least five years experience with work similar in nature and scope to this project, and speak fluent English.
 4. The Installer shall provide a reference list of at least five projects of comparable size and similar design, within a fifty mile radius of this project, which may be observed by representatives of the Owner:
 - a. The reference list shall include at a minimum, the completion date, type of system, Manufacturer, square foot size, Owner's name - contact person - phone number and address and Architect's name - contact person and phone number.
 - b. 2.
- C. Pre-Roofing Conference: Approximately two weeks prior to starting work, the Installer and his full time supervisor-foreman shall meet at the project site with the Owner, Architect, Construction Manager, roofing system Manufacturer's representative, and other representatives concerned about the roof. The Construction Manager will record items discussed at the conference and furnish a copy to each party attending. Items to be discussed, include the following:
1. How the application of the new roofing system will be coordinated with the inspection of and repairs to the deck - if any are required, and the installation of gypsum board, wood blocking, roof insulation, crickets, roof drains, metal and membrane flashings and other items to provide a watertight installation.
 2. Commercial practice and the Manufacturer's instructions for handling and use of materials.
 3. The expected condition of the roof deck, drains, curbs, penetrations and other preparatory work needed and/or performed by other trades.
 4. Submittals, both completed and yet to be completed.
 5. The construction schedule, material availability, crew size and work hours, equipment and facilities needed to make progress and avoid delays.
 6. A schedule for Manufacturer and Architect inspections.
 7. Expected weather conditions, and procedures for coping with unfavorable weather

1.8 JOB CONDITIONS (CAUTIONS & WARNINGS)

- A. Do not use oil base or plastic roof cement with EPDM roofing. Do not allow waste products, (petroleum grease or oil, solvents, vegetable or mineral oil, animal fat) or direct steam venting to come in contact with any roofing, insulation or flashing product. Do not expose membrane and accessories to a temperature in excess of 175 degrees Fahrenheit.
- B. Splice cleaner, primer, cements and bonding adhesives are flammable. Do not breathe the vapors or use near fire or flame or in a confined or unventilated area. Dispense only from a UL listed or approved safety can.
- C. Remove empty adhesive and solvent containers and contaminated rags from the roof daily and legally dispose of them daily.
- D. Do not apply adhesives adjacent to open ventilation system louvers, or windows. Temporarily cover the louvers and windows with 6 mil fire retardant polyethylene and prevent adhesive odors from entering the building. Remove temporary covers at the end of each day's work.

1.9 DELIVERY, STORAGE AND HANDLING

- A. Deliver products in manufacturer's original containers, dry and undamaged, with seals and labels intact and legible.

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- B. Store materials a minimum of 4 inches clear of the ground or roof surface with weather protective covering immediately upon delivery. Store and install all material within the Manufacturer's recommended temperature range
- C. Keep combustible materials away from ignition sources.

1.10 GUARANTEE/WARRANTY

- A. Provide a written Manufacturer's Full System Warranty which warrants that the roofing system, including the insulation, cover board, EPDM roofing and flashings, will remain in a watertight condition for a twenty year period beginning upon Final Completion.
 - 1. Warranty coverage shall remain in effect for gust wind speeds up to 72 miles per hour, measured at ground level at the site.
 - 2. Warranty coverage shall have no dollar value limit.
- B. Provide a Contractor's written Guarantee which warrants that all work will remain free of material and workmanship defects and in a watertight condition for a five year period beginning upon Final Completion:
 - 1. Defects include but are not limited to: leakage, adhesive separation, delamination, lifting, loosening, splitting, cracking, and undue expansion.
 - 2. The Contractor shall make the repairs and modifications necessary to enable the work to perform as guaranteed at his own expense:
 - 3. Guarantee coverage shall include removing and replacing items installed as part of the original work, if removal is needed to affect guarantee repairs.
 - 4. Provide one Contractor's Guarantee that covers "all work performed" when a single contractor is awarded work specified in multiple Sections.
- C. The Contractor's Guarantee and Manufacturer's Warranty shall take effect no more than 30 days before the satisfactory completion of all punch list work.
- D. Guarantee and Warranty coverage may be cancelled, for the affected portion of the roof, if the work is damaged by winds in excess of 72 mph, by hail, lightning, insects or animals, by failure of the structural substrate, by exposure to harmful chemicals, by other trades on the roof, by vandalism, or if the Owner fails to maintain the roof in accordance with, or makes roof alterations contrary to, the Manufacturer's printed recommendations.
- E. Guarantee and Warranty coverage shall be reinstated, for the remainder of the original period; if the Owner restores the roof to the condition it was in prior to the damage occurring.
- F. The Contractor's Surety Company may add a rider to the Performance Bond which clarifies that Bond Coverage expires two years after Final Completion; i.e., Performance Bond Coverage does not run for the entire five year term of the Contractor's Guarantee.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design: Firestone Building Products LLC, Carmel, IN: www.firestonebpco.com.
 - 1. Roofing systems manufactured by Carlisle Syntec and Johns Manville are acceptable provided the material components, system and warranty are equivalent.
- B. Substitutions: See Section 01 2500 - Substitution Procedures

2.2 ROOFING SYSTEM DESCRIPTION

- A. Roofing System: Ethylene-propylene-diene-monomer (EPDM) single-ply membrane.
 - 1. Membrane Attachment: Fully adhered.
 - 2. Warranty: Full system warranty; Manufacturer 20 year Red Shield Limited Warranty covering membrane, roof insulation, and membrane accessories.

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3. Provide assembly having Underwriters Laboratories, Inc. (UL) Class A Fire Hazard Classification.
 4. Provide assembly complying with Factory Mutual Corporation (FM) Roof Assembly Classification, FM DS 1-28 <<http://www.fmglobal.com/scripts/store/indds.asp>> and FM DS 1-29 <<http://www.fmglobal.com>>, and meeting minimum requirements of FM 1-90 wind uplift rating.
- B. Roofing System Components: Listed in order from the top of the roof down:
1. Membrane: 60 mil thick fire rated EPDM
 2. 1/4 inch thick ggypsum cover board, set in low rise foam adhesive.
 3. Tapered and flat isocyanurate insulation and crickets, secured with screws, minimum thickness 5-1/2 inches.

2.3 EPDM MEMBRANE MATERIALS

- A. Unreinforced 60 mils thick, fire retardant, EPDM (Ethylene Propylene Diene Monomer) sheet membrane conforming to the following minimum physical properties.

1. PROPERTY	TEST METHOD	TYPICAL VALUE
2. Gray/Black		
3. Tensile Strength	ASTM D-412	1305 psi min.
4. Elongation	ASTM D-412	300% min
5. Tear resistance	ASTM D-624	150 lb/in min.
a. 62 Shore A		
b. Ozone Resistance	ASTM D-1149	No cracks,7
c. pphm/100°F/50% strain		
d. Heat Aging	ASTM D-573	1200 psi @ 200%
e. elongation/4 wks/240°F		
f. Brittleness Temperature	ASTM D-746	-49°F
g. Water Vapor Permanence	ASTM E-96	2.0 perm
h. Thickness		60 mils
i. Fire Retardant	ASTM D-412	UL Class A

2.4 RELATED MATERIALS

- A. Membrane cleaners, adhesives, sealants, caulking and fasteners shall be furnished by the membrane system Manufacturer, and comply with low VOC regulations in effect at the time of application.
1. Stripping: 90 mil thick 5 inch and 9 inch wide self adhering flashing, consisting of 45 mils of semi-cured EPDM factory laminated to 45 mils of cured seaming tape.
 2. Bonding Adhesive: High strength solvent based contact adhesive.
 3. Splice Adhesive: High strength synthetic polymer based contact cement formulated specifically to splice EPDM sheets.
 4. Lap Sealant: EPDM rubber based gun grade sealant.
 5. Water Block Seal: One component low viscosity butyl rubber sealant.
 6. Pre-Molded Pipe Flashing: Pressure sensitive prefabricated flashings with pre-applied adhesive.
 7. Pourable Sealer: Two component, solvent free polyurethane based sealant.
 8. Reinforced Perimeter Fastening Strips: .045 inch thick reinforced cured EPDM.
 9. Seam Tape Primer: Synthetic rubber polymer based primer designed to clean and prime seam tape splice areas prior to installing the tape.
 10. Seam Splice Tape: Nominal 30 mil thick cured polymer self adhesive tape with release paper carrier. Use 6 inch wide tape to form on-site seams; 3 inch wide tape may be used for factory applied tape seams.
 11. Plates and Bars: Galvanized and corrosion resistant specialty products.

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12. Fasteners: #14 Fluorocarbon polymer coated heavy duty screws.
13. Tapered edge strips - high density isocyanurate or wood fiberboard strips installed at the drain sumps, and insulation transition points.
14. Insulation adhesive: Two component low rise polyurethane foam adhesive, installed with a mixing extruding Pace Cart dispenser, or with a pleural heated foam rig, Firestone I.S.O. Adhesive.
 - a. Use insulation adhesive suitable for application at the intended application temperatures.
 - b. Do not use twin cartridge "caulking gun" adhesive except on very small isolated sections of roof.

2.5 GYPSUM COVER BOARD:

- A. 1/4 inch thick fire resistant gypsum board decking with inorganic glass mat facers and a water resistant core, formulated in 48 x 96 inch square edge boards, UL Class A, meeting ASTM C-1177, manufactured under the trade name Dens-Deck Prime.

2.6 INSULATION:

- A. Insulation- Tapered and flat rigid cellular polyisocyanurate boards with fibrous felt/fiberglass mat facers, minimum compressive strength 20 psi, meeting ASTM C1289-01, Type II, Class1, Grade 2.
 1. Tapered insulation sloping 1/4 inch per foot, minimum starting thickness 5-1/2 inches and as shown on the roof plan.
 2. Crickets sloping 1/2 inch per foot.
 3. Product: Firestone "ISO 95+ Isocyanurate Insulation" or approved equal.

2.7 ROOF TOP DUCT WATERPROOFING:

- A. Duct surface preparation and inspection:
 1. Seal all duct joints with duct mastic and self adhesive EPDM flashings.
 2. Air test the duct system to insure joints are tight and not leaking.
 3. Immediately notify the Architect and Owner in writing if defects (air leaks), are discovered.
- B. Cover the ductwork with isocyanurate insulation and fully adhered 60 mil thick EPDM roofing. .
 1. Secure the isocyanurate insulation with screws and plates, installed at the rate of one fastener per 2 square feet.
 2. Install flat 3 inch thick insulation on the sides and bottom of the ducts.
 3. Install tapered insulation sloping 1/4 inch per foot, minimum-starting thickness 3 inches on top of the ducts to shed water.
 4. Cover the insulation with fully adhered 60 mil fire retardant EPDM.
 5. Install two roller applied coats of white acrylic coating on the EPDM duct wrap.

2.8 METAL ACCESSORIES

- A. Metal Roof Edging and Fascia: Continuous metal edge member serving as termination of roof membrane and retainer for metal fascia; watertight with no exposed fasteners; mounted to roof edge nailer.
 1. Fascia Face Height: 10 inches (254 mm).
 2. Fascia shall be .050 inch thick aluminum with a Kynar 500 paint finish
 3. Edge Member Height Above Nailers: 1-1/4 inches (31 mm).
 4. Length: 144 inches (3650 mm).
 5. Anchor Bar: Continuous 6063-T6 alloy aluminum extrusion with pre-punched slotted holes and welded miters.
 6. Curved Applications: Factory formed.
 7. Fasteners: Hidden #9 stainless steel screws.
 8. Special Shaped Components: Provide factory-fabricated pieces necessary for complete installation, including miters, scuppers, and end caps; minimum 14 inch (355 mm) long legs on corner pieces.

9. Scuppers: Welded watertight.
10. Accessories: Provide matching brick wall cap, downspout, extenders, and other special fabrications as shown on the drawings.

2.9 ACCESSORY MATERIALS

PART 3 INSTALLATION

3.1 GENERAL

- A. Install roofing, insulation, flashings, and accessories in accordance with roofing manufacturer's published instructions and recommendations for the specified roofing system. Where manufacturer provides no instructions or recommendations, follow good roofing practices and industry standards. Comply with federal, state, and local regulations.
- B. Construct the entire new roofing system in a watertight, workmanlike manner, meeting the guarantee requirements specified herein; in strict accordance with the drawings and in conformance with the Manufacturer's requirements, except as enhanced in this specification and drawings
- C. Perform work in areas with roof mounted mechanical equipment, so the work coincides with equipment shutdown periods and does not affect building occupants. Temporarily cover and protect equipment openings, and windows adjoining the work area, with 6 mil fire retardant polyethylene, so dirt, dust and odors do not enter the equipment or building. Remove covers at the end of each workday, and as soon as roof work is complete.
- D. Obtain all relevant instructions and maintain copies at project site for duration of installation period.
- E. Do not start work until Pre-Installation Notice has been submitted to manufacturer as notification that this project requires a manufacturer's warranty.
- F. Perform work using competent and properly equipped personnel.
- G. Clean the surface on which roofing system components will be applied, of all laitance, dirt, oil, grease or other foreign matter which would in any way affect the quality of the installation
- H. Temporary closures, which ensure that moisture does not damage any completed section of the new roofing system, are the responsibility of the applicator. Completion of flashings, terminations, and temporary closures shall be completed as required to provide a watertight condition.
- I. Install roofing membrane only when surfaces are clean, dry, smooth and free of snow or ice; do not apply roofing membrane during inclement weather or when ambient conditions will not allow proper application; consult manufacturer for recommended procedures during cold weather. Do not work with sealants and adhesives when material temperature is outside the range of 60 to 80 degrees F (15 to 25 degrees C).
- J. Protect adjacent construction, property, vehicles, and persons from damage related to roofing work; repair or restore damage caused by roofing work.
 1. Protect from spills and overspray from bitumen, adhesives, sealants and coatings.
 2. Particularly protect metal, glass, plastic, and painted surfaces from bitumen, adhesives, and sealants within the range of wind-borne overspray.
 3. Protect finished areas of the roofing system from roofing related work traffic and traffic by other trades.
- K. Until ready for use, keep materials in their original containers as labeled by the manufacturer.
- L. Consult membrane manufacturer's instructions, container labels, and Safety Data Sheets for specific safety instructions. Keep all adhesives, sealants, primers and cleaning materials away from all sources of ignition.
- M. Do not overload the structure when storing material on the roof.

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- N. Protect existing and new roof surfaces where material and equipment is placed on them, and where construction traffic occurs, with 6 mil fire retardant polyethylene, covered with 1-1/2 inch foam insulation, overlaid with 2 by 10 wooden planks.

3.2 EXAMINATION

- A. Examine roof deck to determine that it is sufficiently rigid to support installers and their mechanical equipment and that deflection will not strain or rupture roof components or deform deck.
- B. Verify that surfaces and site conditions are ready to receive work. Correct defects in the substrate before commencing with roofing work.
- C. Examine roof substrate to verify that it is properly sloped to drains.
- D. Verify that the specifications and drawing details are workable and not in conflict with the roofing manufacturer's recommendations and instructions; start of work constitutes acceptable of project conditions and requirements.
- E. Verify that wood nailers have been properly installed.
- F. Immediately notify the Architect and Construction Manager by telephone and in writing if defects in the substrate are observed

3.3 PREPARATION

- A. Take appropriate measures to ensure that fumes from adhesive solvents are not drawn into the building through air intakes.
- B. Prior to proceeding, prepare roof surface so that it is clean, dry, and smooth, and free of sharp edges, fins, roughened surfaces, loose or foreign materials, oil, grease and other materials that may damage the membrane.
- C. Fill all surface voids in the immediate substrate that are greater than 1/4 inch (6 mm) wide with fill material acceptable insulation to membrane manufacturer.

3.4 METAL DECK PREPARATION

- A. Install preformed sound absorbing glass fiber insulation strips supplied by Section 05 3100 in acoustic deck flutes. Install in accordance with manufacturer's instructions.

3.5 INSULATION AND COVER BOARD

- A. Install tapered insulation neatly cut at all miters and transitions. Do not lace corner boards.
- B. Install insulation with joints offset between rows and layers a minimum of 12 inches. Cut insulation to fit neatly at penetrations and joints. Fill any gap which is greater than 1/4 inch.
- C. Over metal deck: Fasten all layers of insulation, only to the top flute of steel decks, with screws and discs which penetrate through the deck a minimum of 3/4 inch and a maximum of 1-1/2 inches.
 - 1. Install 16 fasteners per 4 by 8 foot insulation board in the field of the roof.
 - 2. Install 28 fasteners per 4 by 8 foot insulation board in 8 foot wide perimeter zones.
 - 3. Install 32 fasteners per 4 by 8 foot insulation board in 8 foot square corner zones.
- D. Perform pull tests using the intended fasteners, on each roof area before beginning work, and obtain the Manufacturer's written approval of the fastener that will be used.
- E. Carefully choose the length and position of each screw to ensure the screws do not protrude through the underside of the deck where visible inside the school and to insure the screws do not damage conduit mounted on the underside of the deck.
- F. Install gypsum cover board over the insulation with joints offset between rows and layers a minimum of 12 inches. Cut gypsum cover board to fit neatly at penetrations and joints. Fill any gap which is greater than 1/4 inch.

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- G. Install the gypsum cover board in low rise polyurethane foam adhesive applied in accordance with the Manufacturer's recommendations and to achieve the specified minimum uplift resistance, over the insulation with joints offset between rows and layers a minimum of 12 inches. Cut gypsum cover board to fit neatly at penetrations and joints. Fill any gaps which are greater than 1/4 inch.
 - 1. Install 1/2 inch diameter adhesive beads spaced 12 inches on center in the field of the roof.
 - 2. Install 1/2 inch diameter adhesive beads spaced 6 inches on center in 8 foot wide perimeter zones.
 - 3. Install 1/2 inch diameter adhesive beads spaced 4 inches on center in 8 foot square corner zones.
- H. Place 5 gallon pails half full of gravel or concrete on the insulation and gypsum cover boards to hold them firmly in position for at least 15 minutes while the low rise foam adhesive sets. Position the pails no more than 24 inches apart in all directions.

3.6 EPDM

- A. Position EPDM roofing over the substrate without stretching it, and allow it to relax approximately one hour - before adhering it to the substrate and forming the seams.
- B. Position adjoining sheets in the same manner lapping the edges to shed water.
- C. Fully adhere the EPDM roof to the substrate with bonding adhesive.
 - 1. Open each can of adhesive and stir it with an electric paddle mixer for at least 5 minutes before applying the adhesive. Re-stir adhesive that isn't used within two hours of initial mixing.
 - 2. Do not punch holes in cans of adhesive and use them in a "Better Spreader" without first opening the cans to mix them.
 - 3. Replace used roller covers each day; discard covers after each days use.
 - 4. Allow bonding adhesive to dry to the touch before joining the EPDM to the substrate.
 - 5. Roll the EPDM onto the dried bonding adhesive and immediately rub it vigorously with a soft bristle broom to ensure complete adhesion.
- D. Roofing installed over improperly applied adhesive or with adhesive that wasn't stirred, and EPDM roofing installed with blisters, ridges, mole runs and similar deficiencies shall be removed and replaced at the Contractor's expense.

3.7 SPLICING

- A. Form all membrane splices with 6 inch wide field applied seam tape or with 3 inch wide factory applied seam tape.
- B. Fold the top sheet back and clean both mating surfaces at the splice area using clean rags and splice wash.
- C. Scrub a smooth coat of QuickPrime to both mating surfaces, with long strokes obtaining complete coverage, at the rate of approximately 225 square feet per gallon. Do not allow the QuickPrime to glop, streak or puddle. Allow it to dry to the touch before installing the seam tape.
- D. Install the seam splice tape on to the bottom sheet of EPDM membrane, using guide marks to position it so 1/8 inch minimum and 1/2 inch maximum will be exposed out of the seam when the seam is complete.
- E. Roll and allow the top sheet to fall freely into place without stretching or wrinkling it.
- F. Pull the splice tape release paper from within the seam area and neatly mate the seam using hand pressure to rub the membrane together.
- G. Immediately roll the splice with a 2 inch wide roller, using positive pressure, toward the outer edge of splice.
- H. Install uncured EPDM surface patches, with rounded corners, over all T-Seam intersections

3.8 EDGE SECUREMENT:

- A. Secure the membrane at the perimeter of each roof level, and at eaves, penetrations, expansion joints and slope changes greater than 1 inch in 12 inches, with discs spaced 6 inches on center or by adhering it to continuous reinforced EPDM fastening strips. Secure the disc and EPDM strips 12 inches-on-center.

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3.9 FLASHING AND ACCESSORIES INSTALLATION

- A. Install flashings, including laps, splices, joints, bonding, adhesion, and attachment, as required by membrane manufacturer's recommendations and details.
- B. Utilized cured EPDM for all flashings; utilize self-curing EPDM at corners and angle changes only where required by the Manufacturer.
- C. Form flashing splices, and the splice between the flashing and main roof sheet with 7 inch seam tape.
- D. Adhere the flashing to vertical surfaces with bonding adhesive.
- E. Fasten the top edge of all flashings, positioning the fasteners 6 inches-on-center, to be covered by the cap flashing.
- F. Install pre-molded pipe flashings wherever possible. Where pre-molded pipe flashings cannot be installed, use field wrapped flashings. Install pitch pockets as a last resort.

3.10 ROOF DRAINS

- A. Coordinate the drain installation with the Plumbing Contractor, so the new drains get installed 3 inches below the surface of the finished roof.
- B. Install tapered insulation sumps at the roof drains to provide smooth transition from roof surface to drain. Use specified pre-manufactured tapered insulation with facer or suitable bonding surface to achieve slope.
- C. Make neat round holes in the EPDM approximately 1 inch smaller than the inside diameter of the clamping ring. Do not cut the EPDM back to bolt holes.
- D. Apply water cut off mastic on top of the drain bowl immediately before setting the EPDM into it and installing the clamping ring.
- E. Install roof drain clamping ring and clamping bolts, then tighten clamping bolts to achieve constant compression, immediately after installing the EPDM into the water cut off mastic.

3.11 FLASHING AT PENETRATIONS

- A. Flash all penetrations passing through the membrane; make flashing seals directly to the penetration.
- B. Pipes, Round Supports, and Similar Items: Flash with specified pre-molded pipe flashings wherever practical; otherwise use specified self-curing elastomeric flashing.
- C. Pipe Clusters and Unusual Shaped Penetrations: Provide penetration pocket at least 2 inches (50 mm) deep, with at least 1 inch (25 mm) clearance from penetration, sloped to shed water.

3.12 FINISHING AND WALKWAY INSTALLATION

- A. Install walkways at roof access points, around all rooftop equipment, and where indicated on the drawings.
- B. ROOF INSPECTIONS BY MANUFACTURER
- C. Arrange for the roofing Manufacturer, or his authorized representative, to make a minimum of four inspections in accordance with the following schedule and submit a written report of each inspection to the Architect within one week following each inspection:
 - 1. First inspection during the first two days of new roof installation.
 - 2. Second inspection when roofing is approximately one half complete.
 - 3. Third inspection when all roofing and flashings are installed.
 - 4. Final inspection at the completion of all work.
- D. Provide 48 hours advance written notice to the Architect, so he may have a representative attend the inspections.
- E. Payment requisitions will not be reviewed nor approved until the inspection reports are received.

3.13 CLEANING, PROTECTION AND WATERTIGHTNESS

- A. Inspect the interior and exterior of the building and grounds, and submit a written report with photos to document any leakages or damage, prior to performing any work on site.
- B. The Construction Manager will conduct a similar inspection at the completion of the work, and the Contractor will be charged for all leakage or damage which was not documented in the Contractor's report, or repaired to the Owner's and Construction Managers satisfaction at the Contractor's expense
- C. Provide any equipment, material and labor necessary to protect the site, the building, its contents and occupants, pedestrians, and surrounding landscaped and paved areas from damage due to the construction work or from inclement weather during construction
- D. Clean all contaminants generated by roofing work from the building and surrounding areas, including bitumen, adhesives, sealants, and coatings.
- E. Repair or replace building components and finished surfaces damaged or defaced due to the work of this section; comply with recommendations of manufacturers of components and surfaces.
- F. Do not perform work during inclement weather. Protect incomplete work and the building from damage by inclement weather which may occur unexpectedly Make work areas watertight at the end of each day's work.
- G. Take precautions to insure against adhesive drippage around pipes, drains, and any other openings through roof. Do not over apply adhesive on the exterior face of the building or on mechanical equipment or the interior face of the parapet above cap flashing. Clean surfaces that are soiled or damaged
- H. At least twice a day; at noon and at the end of the work day, clean up all litter, refuse, rubbish, scrap materials and debris so the roof and site presents a neat, orderly and workmanlike appearance. Place the debris in a dumpster, and remove the dumpster from the site as soon as it is full or no longer being used
- I. Carefully clean the roof to remove all residual debris when work is complete. After cleaning the roof, thoroughly clean all drain sumps, drain lines, leader heads and leaders. Do not allow debris to enter the drainage system
- J. Remove leftover materials, trash, debris, equipment from project site and surrounding areas.

3.14 PROTECTION

- A. Protect new and existing roofing where construction traffic occurs. Install 2 by 10 planks, over a layer of 1-1/2 inch polystyrene insulation, over a layer of 6 mil fire retardant polyethylene. Keep protection 1 inch from all roof drains and maintain the drains clear and functional at all times.
- B. Remove roof protection only when the Architect confirms that all work is complete.

END OF SECTION

SECTION 07 6200
SHEET METAL FLASHINGS & SPECIALTIES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. All plant, labor, materials, equipment, testing and services necessary to complete the work shown on the schedules, keynotes, drawings, as specified herein, and as may be required by conditions and authorities having jurisdiction, including, but not limited to, the following:
 - 1. Sheet metal work that is compatible with the roofing systems specified, including cap and through wall flashings, hook strips, fascia, drip edges, gravel stops, factory fabricated roof edge systems, batten seam panels and caps, and miscellaneous flashings.

1.3 Related Requirements

- A. Section 04 2000 - Unit Masonry.
- B. Section 06 1010 - Roof Related Rough Carpentry.
- C. Section 07 4113 - Metal Roof Panels.
- D. Section 07 5323 - EPDM Roofing.
- E. Section 07 7200 - Roof Accessories.

1.4 CODE APPROVAL REQUIREMENTS

- A. Fabricate and install roof perimeter flashings that comply with the NY State Uniform Fire Prevention and Building Code and with ANSI/SPRI ES-1 "Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems" requirements.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. A firm (Installer) with at least 5 continuous years experience performing sheet metal work similar to that required for this project, employing personnel skilled in the work specified.
 - 2. The Installer shall directly employ the personnel performing the work of this section.
 - 3. The Installer shall have a full time supervisor on the roof when work is in progress. The Supervisor shall have a minimum of 5 years experience with work similar in nature and scope to this project, and speak fluent English.
 - 4. The Installer shall provide a reference list of at least three previously completed projects of comparable size and similar design, within a fifty mile radius of this project, which may be observed by representatives of the Owner:
 - a. The reference list shall include at a minimum, the completion date, a description of the work performed, the Owner's name - contact person - phone number and address and the Architect's name - contact person and phone number.
 - b. The Installer shall provide the reference list prior to contract award if requested.
- B. Material Quality:
 - 1. Obtain each product from a single Manufacturer which has manufactured the same product in the United States of America for not less than 5 continuous years.
 - 2. Obtain copper and pre-finished sheet metal items from the same mill run to maintain consistent color hue and surface finish.
- C. Pre-Construction Conference: Meet at the project site between one and two weeks prior to starting work, with the Architect, Owner and other representatives concerned about the work, to discuss the following:
 - 1. How the building will be kept watertight as work progresses.

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2. How sheet metal work will be coordinated with the installation of the vapor barrier, thermal barrier, insulation, cover board, roofing, flashings, roof accessories and other items to provide a watertight installation.
3. Generally accepted industry practice and the Manufacturer's instructions for handling and installing his products.
4. The condition of the substrate, curbs, penetrations and other preparatory work needed.
5. Incomplete submittals; note that progress payments will not be processed until all submittals are received and approved.
6. The construction schedule, weather forecast, availability of materials, personnel, equipment and facilities needed to proceed and complete the work on schedule.
7. A schedule for Manufacturer and Architect inspections.

1.6 SUBMITTALS

- A. Submit the following items far enough in advance to obtain approval prior to performing any work:
 1. A pre-work site and building inspection report with photos to document conditions before any other work starts on site.
 2. 2 foot long samples of each sheet metal item, to show how it will fit on adjoining masonry and wood blocking assemblies, and with the roof, stripping, and flashings.
 3. 6 inch square pieces of each type of sheet metal to show surface finish, texture and color.
 4. Data literature for each type of sheet metal, sealant and fastener.
 5. Sample of the Contractor's guarantee form.
 6. Sample of Manufacturer's warranty/guarantee
 7. Simultaneously provide all technical submittals needed for this project, for all technical sections, collated by section. Incomplete submittals will not be reviewed.
 - a. Submittals shall be prepared and made by the firm that will perform the actual work.
 - b. Provide electronic submittals on CD, in pdf format, organized in folders by Section.
 - c. Safety Data Sheets: Simultaneously provide all Safety Data Sheets needed for this project, for all specification sections - collated by section, in three ring binders. Provide two binders for each building to the Owner's Representative.
- B. Payment requisitions will not be processed until all submittals are received and approved.

1.7 JOB MOCK-UPS

- A. After the submittals are approved, prepare in actual job locations, mock-ups of cap and through wall flashings, hook strips, drip edges, fascia, gravel stops, factory fabricated roof edge systems, copings, gutters, leaders, and all other items of sheet metal and related work, for inspection and approval by the Architect.
- B. Construct each mock-up of two full lengths of metal, fastened, connected and stripped-in to the related roofing system, to show the following:
 1. Type, gauge, color, cross-sectional dimensions and shape, and joint and mitering techniques.
 2. Related masonry work, wood blocking, and the attachment techniques and fasteners for all wood and metal components.
 3. Other sheet metal related materials and their installation techniques to fully define the detailing of each mock-up.
- C. Mock-ups shall be constructed to establish the minimum standard of materials and workmanship, and to assure that completed work which matches the mock-ups will be fully functional and serve the purpose for it has been designed.
- D. Approved mock-ups may be left in place and incorporated into the permanent installation. Rejected mock-ups shall be removed and replaced until an acceptable mock-up is approved.

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- E. Do not purchase or fabricate sheet metal items until mock-up installation, inspection and approval are completed and approval is documented in writing.

1.8 GUARANTEE

- A. Provide a Contractor's written Guarantee which warrants that all work will remain free of material and workmanship defects and in a watertight condition for a five year period beginning upon Final Completion:
1. Defective work includes but is not limited to the following: peeling paint, leaks, adhesive separation, delamination, lifting, loosening, splitting, cracking, and undue expansion.
 2. The Contractor's Guarantee shall provide that the Contractor will make the repairs and modifications necessary to enable the work to perform as warranted at his own expense.
 3. Guarantee coverage shall include the removal and replacement of components installed as part of the original work, if removal is needed to make guarantee repairs.
- B. Provide one Contractor's Guarantee that covers "all work performed" when a single contractor is awarded work specified in multiple Sections.
- C. The Guarantee shall be issued no more than 30 days before the satisfactory completion of punch list work.
- D. The Contractor's Surety Company may add a rider to the Performance Bond which clarifies that Bond Coverage expires two years after Final Completion; i.e., Performance Bond Coverage does not run for the entire five year term of the Contractor's Guarantee.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Copper sheet: ASTM B370, 99.0 % pure copper, thickness 16 ounces per square foot. Use copper for all metal items not otherwise indicated
- B. Zinc-Tin coated copper: copper sheet, coated on both sides, with a smooth uniform coating of zinc and tin, base metal weight 16 ounces per square foot, cold rolled temper, available as Freedom Gray Copper by Revere.
- C. Solder:
1. 50-50 tin and lead for plain copper, supplied in one pound bars with the alloy mixture stamped into the bar by the Manufacturer.
 2. Lead free / or pure tin solder for zinc-tin coated copper, Number 497 by Johnson Manufacturing.
- D. Flux:
1. Water-Soluble Liquid Flux, Kester #3345 for iron soldering of brass and copper.
 2. Tin-bearing flux such as "Flux-N-Solder E127 with pure tin" by Johnson Manufacturing.
- E. Aluminum fascias, hook strips, gravel stops and miscellaneous trim: #3105-H14 alloy aluminum, minimum thickness .050 inches unless otherwise indicated, mill finish or factory finished as indicated on drawings. .
1. Factory Finish: Fluoropolymer Kynar 500 finish, color as selected by the Architect, from the full range of custom and standard colors
- F. Factory Fabricated Roof Edge System: Extruded aluminum, #3105-H14 alloy aluminum, minimum thickness .050 inches, anchor bars secured with #9 stainless steel screws spaced 12 inches on center.
1. Finish: Kynar 500 prefinished aluminum trim covers, independently tested to comply with the ANSI / SPRI ES-1 Wind Design Guide.
 2. Product: Metel-Era, AF-70 or approved equal.
- G. Fasteners: Stainless steel, or to match the sheet metal being fastened.
- H. Glass Cloth: Open mesh glass fabric coated on each side with plasticized asphalt.
1. Produce: Karnak Corporation.
- I. Asphalt Cement: Federal Specifications SS_C153B, Type 1, asbestos free grade.

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- J. Sealant: High performance, solvent free, formulated and moisture curing silyl-terminated polyether sealant, ASTM C-920, Type S, Grade NS, Class 25, NovaLink construction sealant by ChemLink, color as selected.

2.2 FABRICATION

- A. Form sections true to shape, accurate in size, square, and free from distortion or defects.
1. Accurately reproduce the details and design shown, and form the profiles, bends and intersections, sharp, true and even. Fabricate sheet metal in the shop whenever possible, and form joints, laps, splices and connections to shed water and condensation in the direction of flow.
 2. Provide any miscellaneous flashing and sheet metal work not shown on the drawings but otherwise needed to leave the project complete and entirely watertight, neatly and carefully executed in a thorough and workmanlike manner
- B. Fabricate and install copper work in accordance with the current edition of "Copper and Common Sense" published by the Revere Copper and Brass Company, unless otherwise indicated
- C. Fabricate cleats of same material as sheet, minimum 1" inches (25 mm) wide, interlocking with sheet.
- D. Form pieces in longest possible lengths.
- E. Hem exposed edges on underside 1/2 inch (13 mm); miter and seam corners.
- F. Form material with flat lock seams, except where otherwise indicated. At moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.
- G. Tin edges of copper sheet to be soldered. Solder shop formed metal joints. After soldering, remove flux. Wipe and wash solder joints clean. Weather seal joints.
- H. Fabricate corners from one piece with minimum 18 inch (450 mm) long legs; seam for rigidity, seal with sealant.
- I. Cap Flashings: Fabricate new cap flashings built into masonry walls properly joined to all related materials in a watertight manner. Form all seams in the new flashings, except sealant filled expansion seams, to overlap approximately 2 inches; secure the seams with rivets spaced 1 inch on center, and sweat solder them.
1. Form 2 inch wide flat locked sealant filled expansion seams 32 feet on center.
 2. Install new cap flashings where shown on the drawings, and above all coping, gravel stop, and through-wall flashing terminations.
 3. Form new cap flashing built into masonry to turn up 2 inches minimum inside the wall, and finish with a hem on the bottom exposed edge.
 4. Lap new cap flashing under fabric type wall flashing, where existing. Where it is not possible to obtain the proper lap to shed water, install a ply of glass cloth set in and coated with plastic cement to insure a watertight connection of the new cap flashing to the existing wall flashing. In the absence of existing wall flashings, or at solid masonry walls, turn up the new cap flashing 2 inches behind the first wythe of masonry.
 5. Fabricate new cap flashings on flat roof equipment curbs from .040 inch thick aluminum, to extend 2 inches under the equipment, 4 inches over the base flashing, and finish with a 1/2 inch hem on the bottom edge. Install a 1/2 inch thick by 2 inch wide continuous foam gasket between the cap flashing and equipment. Do not set the equipment in sealant. Secure the equipment to its curb with stainless steel screws spaced 12 inches on center
- J. Through Wall Flashing: Fabricate new through wall flashings to extend the entire width of the masonry wall, turn down 3/4 inch on the exterior and 4 inches with a 1/2 inch hem on the interior.
1. Set through wall flashings on a skim coat of mortar used to level the wall.
 2. Form all seams, except sealant filled expansion seams, in the through wall flashing to overlap 2 inches. Secure the seams with rivets spaced 1 inch apart and sweat solder the joint.

3. Form 2 inch wide flat locked sealant filled expansion seams 32 feet on center.
 4. Install stainless steel dowels through the new through wall flashings, positioned so that each piece of coping will be secured with a minimum of two dowels.
 5. Pre-tin the dowels, and solder the dowels to the through wall flashing to form a watertight seal, before the copings are re-installed
- K. Gravel Stop: Fabricate new gravel stops from copper, with 4 inch wide nailing flanges. Secure the gravel stop with a continuous hook strip and by nailing the flange 4 inches apart along the raw edge with roofing nails. Form joints in the gravel stop with a 5 inch wide under plate set in a full bed of sealant. Form the gravel stop to turn up 6 inches at rising walls, extend the stripping up the wall and terminate it under a cap flashing
- L. Fascia: Fabricate new metal fasciae to hook onto the wood fasciae 3/4 inch minimum. Secure the fascia with roofing nails along the top edge spaced 8 inches apart, positioned to be covered by the drip edge. Form joints in the fascia with 5 inch wide concealed under plates.

PART 3 EXECUTION

3.1 GENERAL

- A. Accurately reproduce the details and design shown, and form profiles, bends and intersections, sharp, true and even. Fabricate sheet metal in the shop whenever possible, and form joints, laps, splices and connections to shed water and condensation in the direction of flow.
- B. Provide any miscellaneous flashing and sheet metal work not shown on the drawings but otherwise needed to leave the project complete and entirely watertight, neatly and carefully executed in a thorough and workmanlike manner.

3.2 INSPECTION

- A. Examine surfaces to receive work of this section and report any defects to the Owner. Commencement of work will be construed as complete acceptance of surfaces.

3.3 INSTALLATION

- A. Fabricate and install copper work in accordance with the current edition of "Copper and Common Sense" as published by the Revere Copper and Brass Company, unless otherwise indicated.
1. Form all joints, except loose locked sealant filled expansion joints, to overlap 2 inches.
 2. Secure the joints with rivets spaced 1 inch on center positioned about 1/2 inch from the top edge of the joint, then sweat solder the joint.
 3. Use solder only to fill and seal the joint, not for mechanical strength. Form soldered joints continuous, strong and free from defects, with well heated soldering irons. Do not use open flame torches for soldering.
 4. Clean soldered joints daily, immediately after soldering, by washing them with soap and water applied with a soft bristle brush, then rinsing with clear water.
- B. Securely fasten and anchor all work, and make provisions for thermal expansion. Submit details of expansion joints for approval. Install fasteners through one edge of metal only, use a hook strip on the other edge.
- C. Use stainless steel pin Zamac type nail-in fasteners, or stainless steel screws and washers with neoprene inserts where fasteners will be exposed.

3.4 CAP FLASHINGS

- A. Install new copper cap flashings built into masonry walls properly joined to all related materials in a watertight manner.
1. Solder all joints in the new cap flashing, except form 2 inch wide flat locked sealant filled expansion joints a maximum of 32 feet on center.
 2. Form the cap flashing to extend 2 inches under the equipment or skylight, 4 inches over the base flashing, and finish with a 1/2 inch hem on the bottom edge.

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3. Fasten the top edge of the cap flashing to the backup wall / masonry 12 inches on center.
4. Install the new cap flashing under flexible type wall flashings where possible. Where it is not possible to lap the new cap flashing under an existing wall flashing, install a ply of glass cloth set in and coated with asphalt cement to connect the new cap flashing to the existing wall flashing.
5. In the absence of an existing wall flashing, or at a solid masonry wall, turn up the new cap flashing 2 inches behind the first wythe of masonry.
6. Install new cap flashings where shown on the drawings, and at a height of 10 to 12 inches above the roof surface.
7. Install new zinc tin coated copper cap flashings on skylight and equipment curbs.
8. Install a 1/2 inch thick by 2 inch wide continuous foam gasket between the cap flashing and mechanical equipment or skylight. Do not set the equipment or skylight in sealant.
9. Secure the equipment or skylight to the curb with stainless steel screws spaced 12 inches on center.

3.5 DRIP EDGES

- A. Fabricate drip edges to extend 1-1/2 inches past the roof edge, and turn down to ensure water cannot track back and run down the fascia. Secure the drip edge with roofing nails along the top edge, spaced 4 inches apart along the raw metal edge. Form joints in the drip edge with 6 inch wide concealed under plates which duplicate the profile of the drip edge. Set the underplates in a full bed of sealant.

3.6 HOOK STRIPS

- A. Form continuous hook strips with locks that engage the superimposed trim piece a minimum of 3/4 inch, and to cover the entire underside edge of the wood blocking and neatly extend to the building wall.
- B. Fasten hook strips along their bottom edge, just above the 45 degree bend, with nails spaced 4 inches on center into underlying wood blocking; Zamac type nail-in type fasteners spaced 8 inches on center into masonry surfaces, or screws spaced 8 inches on-center into sheet metal surfaces.

3.7 FASCIA

- A. Fabricate new fascia to engage the hook strip 3/4 inch minimum and extend to the top of the wood fascia blocking. Secure the fascia with a continuous hook strip along the bottom edge and roofing nails along the top edge spaced 8 inches apart, positioned to be covered by the roof edge trim. Form joints in the fascia with 6 inch wide concealed under plates which duplicate the profile of the fascia. Set the underplates in a full bed of sealant.

3.8 ROOF EDGE SYSTEM

- A. Install a factory fabricated roof edge system on all roof eaves.
 1. Extend the EPDM roof lapped over and down the face of the fascia trim, so it stops just short of the bottom edge of the anchor bar.
 2. Install the anchor bar straight, level and true, set in a full bed of sealant, and secure the bar with #9 by 2 inch long stainless steel screws spaced no more than 12 inches apart.
 3. Pre-drill screw holes in the underlying metal fascia trim, and where extra fasteners are needed, and at corners and special conditions.
 4. Install color matching under plates at each joint in the roof edge trim; set the under plates in a full bed of sealant.

3.9 CLEANING, PROTECTION AND WATERTIGHTNESS

- A. Conduct an inspection of the interior and exterior of the building and grounds, and submit a written report with photos to document any pre-existing leakage or damage, prior to performing any work.
- B. The Owner will conduct a similar inspection at the completion of the work, and the Contractor will be charged for all leakage or damage which was not documented in the Contractor's report, or repaired to the Owners satisfaction at the Contractor's expense.

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- C. Provide any equipment, material and labor necessary to protect the site, the building, its contents and occupants, pedestrians, and surrounding landscaped and paved areas from damage due to the construction work or from inclement weather during construction.
- D. Do not perform work during inclement weather. Protect incomplete work and the building from damage by inclement weather which may occur unexpectedly. Make all work areas watertight at the end of each day's work.
- E. At least twice a day; at noon and at the end of the work day, clean up all litter, refuse, rubbish, scrap materials and debris so the roof and site presents a neat, orderly and workmanlike appearance. Place the debris in a dumpster, and remove the dumpster from the site as soon as it is full or no longer being used.
- F. Carefully and thoroughly clean the entire roof to remove all residual debris when all work is complete. After cleaning the roof, thoroughly clean all drain sumps, drain lines, leader heads and leaders. Do not allow debris to enter the drainage system.

END OF SECTION

SECTION 07 7100
ROOF SPECIALTIES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Manufactured roof specialties, including copings, fascias, and gravel stops.
- B. Roof control and expansion joint covers.

1.2 RELATED REQUIREMENTS

- A. Section 07 7200 - Roof Accessories: Manufactured curbs, roof hatches, and snow guards.

1.3 REFERENCE STANDARDS

- A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2014 (2015 Errata).
- B. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2017a.
- C. ANSI/SPRI/FM 4435/ES-1 - Test Standard for Edge Systems Used with Low Slope Roofing Systems; 2017.
- D. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.
- E. NRCA (RM) - The NRCA Roofing Manual; 2018.
- F. NRCA ML104 - The NRCA Roofing and Waterproofing Manual; Fifth Edition, with interim updates.
- G. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.
- H. SPRI ES-1 - Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems; 2011.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on shape of components, materials and finishes, anchor types and locations.
- C. Shop Drawings: Indicate configuration and dimension of components, adjacent construction, required clearances and tolerances, and other affected work.
- D. Samples: Submit two appropriately sized samples of coping and gravel stop.

1.5 QUALITY ASSURANCE

- A. Perform work in accordance with 1 details.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Roof Edge Flashings and Copings:
 - 1. W.P. Hickman Company; PermaSnap 2 Coping: www.wph.com.
 - 2. Substitutions: See Section 01 6000 - Product Requirements.
- B. Control and Expansion Joint Covers:
 - 1. Johns Manville: www.jm.com.
 - 2. MM Systems Corp: www.mmsystemscorp.com.
 - 3. Substitutions: See Section 01 6000 - Product Requirements.
- C. Pipe and Penetration Flashings:
 - 1. Portals Plus: www.portalsplus.com.
 - 2. Substitutions: See Section 01 6000 - Product Requirements.

2.2 COMPONENTS

- A. Roof Edge Flashings: Factory fabricated to sizes required; corners mitered; concealed fasteners.
 - 1. Configuration: Fascia, cant, and edge securement for roof membrane.
 - 2. Pull-Off Resistance: Tested in accordance with ANSI/SPRI/FM 4435/ES-1 using test methods RE-1 and RE-2 to positive and negative design wind pressure as defined by applicable local building code.
 - 3. Material: Extruded aluminum, 0.08 inch (2.0 mm) thick, minimum.
 - 4. Color: To be selected by Fuller and D'Angelo P.C. from manufacturer's standard range.
- B. Copings: Factory fabricated to sizes required; corners mitered; concealed fasteners.
 - 1. Configuration: Concealed continuous hold down cleat at both legs; internal splice piece at joints of same material, thickness, and finish as cap; concealed stainless steel fasteners.
 - 2. Pull-Off Resistance: Tested in accordance with ANSI/SPRI/FM 4435/ES-1 using test method RE-3 to positive and negative design wind pressure as defined by applicable local building code.
 - 3. Material: Formed aluminum sheet, 0.063 inch (1.6 mm) thick, minimum.
 - 4. Color: To be selected by Fuller and D'Angelo P.C. from manufacturer's standard range.
- C. Control and Expansion Joint Covers: Composite construction of wide flexible EPDM flashing of black color with closed cell urethane foam backing, each edge seamed to aluminum sheet metal flanges, designed for nominal joint width of 1 inch (25 mm). Include special formed corners, tees, intersections, and wall flashings, each sealed watertight.
- D. Pipe and Penetration Flashing: Base of rounded aluminum, compatible with sheet metal roof systems, and capable of accomodating pipes sized between 3/8 inch (9.5 mm) and 12 inch (305 mm).
 - 1. Caps: EPDM.

2.3 ACCESSORIES

- A. Sealant for Joints in Linear Components: As recommended by component manufacturer.
- B. Adhesive for Anchoring to Roof Membrane: Compatible with roof membrane and approved by roof membrane manufacturer.

2.4 FINISHES

- A. Fluoropolymer Coating: High Performance Organic Finish, AAMA 2604; multiple coat, thermally cured fluoropolymer finish system; color as indicated.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that deck, curbs, roof membrane, base flashing, and other items affecting work of this Section are in place and positioned correctly.

3.2 INSTALLATION

- A. Install components in accordance with manufacturer's instructions and NRCA (RM) applicable requirements.
- B. Seal joints within components when required by component manufacturer.
- C. Anchor components securely.
- D. Comply with NRCA (RM) drawing details as noted:
- E. Coordinate installation of components of this section with installation of roofing membrane and base flashings.
- F. Coordinate installation of sealants and roofing cement with work of this section to ensure water tightness.

END OF SECTION

SECTION 07 7123
MANUFACTURED GUTTERS AND DOWNSPOUTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Pre-finished aluminum gutters and downspouts.
- B. Spring gutter strainer.
- C. Sheet metal splash pans.

1.2 RELATED REQUIREMENTS

- A. Section 05 5000 - Metal Fabrications: Downspout boots.
- B. Section 07 6200 - Sheet Metal Flashing and Trim.

1.3 REFERENCE STANDARDS

- A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2014 (2015 Errata).
- B. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2017a.
- C. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- D. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric); 2014.
- E. ASTM B370 - Standard Specification for Copper Sheet and Strip for Building Construction; 2012.
- F. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.4 DESIGN REQUIREMENTS

- A. Conform to SMACNA 1793 for sizing components for rainfall intensity determined by a storm occurrence of 1 in 5 years.
- B. Conform to applicable code for size and method of rain water discharge.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on prefabricated components.
- C. Shop Drawings: Indicate locations, configurations, jointing methods, fastening methods, locations, and installation details.
- D. Samples: Submit two samples, 12 inch (300 mm) long illustrating component design, finish, color, and configuration.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Stack material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope to drain.
- B. Prevent contact with materials that could cause discoloration, staining, or damage.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Gutters and Downspouts:
 - 1. Garrety Gutters, 128 West Vaughn St, Kingston, PA 18704; (800) 628-5849; garretymanufacturing@gmail.com
 - 2.
 - 3. Substitutions: See Section 01 2500 Substitution Procedures.

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2.2 MATERIALS

- A. Pre-Finished Aluminum Sheet: ASTM B209 (ASTM B209M); 0.032 inch (0.8 mm) thick.
 - 1. Finish: Plain, shop pre-coated with modified silicone coating.
 - 2. Color: As selected from manufacturer's standard colors.
- B. 7 inch wide seamless aluminum gutters, fabricated from custom colored metal stock.
 - 1. Furnish gutters with concealed aluminum fascia brackets, formed to hook onto the front edge of the gutter and get fastened through the back of the gutter with a stainless steel screw in each bracket

2.3 COMPONENTS

- A. Gutters: Profile as indicated.
- B. Gutters: .050 inch thick, 7 inch wide seamless aluminum gutters, fabricated from custom colored metal stock.
 - 1. Furnish gutters with concealed aluminum fascia brackets, formed to hook onto the front edge of the gutter and get fastened through the back of the gutter with a stainless steel screw in each bracket
- C. Downspouts: .05 inch thick 3-13/16 inches by 5-1/4 inches rectangular aluminum leaders factory finished with same finish as gutters. Fasten leaders with 1/16 inch thick 1 inch wide straps spaced 7 feet on center
- D. Anchors and Supports: Profiled to suit gutters and downspouts.
 - 1. Gutter Supports: Brackets.

2.4 ACCESSORIES

- A. Splash Pads: Precast concrete type, size and profiles indicated; minimum 3,000 psi (21 MPa) at 28 days, with minimum 5 percent air entrainment.

2.5 FABRICATION

- A. Form gutters and downspouts of profiles and size indicated.
- B. Fabricate with required connection pieces.
- C. Form sections square, true, and accurate in size, in maximum possible lengths, free of distortion or defects detrimental to appearance or performance. Allow for expansion at joints.
- D. Hem exposed edges of metal.
- E. Fabricate gutter and downspout accessories; seal watertight.

2.6 FINISHES

- A. Fluoropolymer Coating: High Performance Organic Finish, AAMA 2604; multiple coat, thermally cured fluoropolymer finish system; color as scheduled..
- B. **SPRING GUTTER STRAINER**
 - 1. 3" Spring Gutter Strainer 3" x 4" or 4" round downspouts.
 - 2. Stainless Steel.

PART 3 EXECUTION

3.1 PREPARATION

- A. Paint concealed metal surfaces and surfaces in contact with dissimilar metals with protective backing paint to a minimum dry film thickness of 15 mil, 0.015 inch (0.381 mm).

3.2 INSTALLATION

- A. Install gutters, downspouts, and accessories in accordance with manufacturer's instructions.

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- B. Sheet Metal: Join lengths with formed seams sealed watertight. Flash and seal gutters to downspouts and accessories.
- C. Slope gutters 1/16 inch per foot (1.56 mm/m).
- D. Connect downspouts to cast iron boots and storm sewer system. Grout connection watertight.
- E. Set splash pans under downspouts where shown.

END OF SECTION

SECTION 07 7200
ROOF ACCESSORIES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 DESCRIPTION OF WORK

- A. Roof specialties which are compatible with the roofing systems specified, including:
 - 1. Installing pre-fabricated curbs and equipment supports.
 - 2. Roof walkway pads and concrete pavers.
 - 3. Snow guards.
 - 4. Gas line pipe supports.

1.3 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 06 1000 - Rough Carpentry.
- B. Section 06 1010 - Roof Related Rough Carpentry.
- C. Section 07 5010 - Modifications to Existing Roofing Section.
- D. Section 07 5323 - Ethylene-Propylene-Diene-Monomer Roofing (EPDM)
- E. Section 07 6200 - Sheet Metal Flashing and Trim.
- F. Section [].
- G. Division 22 Plumbing for roof drains.
- H. Division 26 Mechanical for roof curbs.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. A firm (Installer) with not less than 5 continuous years experience performing Roof Specialty work similar to that required for this project, employing personnel skilled in the specified work.
 - a. The Installer shall directly employ the personnel performing the work of this section.
 - b. The Installer shall have a full time supervisor/foreman on the roof when work is in progress. The Supervisor shall have a minimum of 5 years experience in roofing work similar in nature and scope to this project, and speak fluent English.
 - 2. The Installer shall provide a reference list of at least three projects of comparable size and similar design, within a fifty mile radius of this project, which may be observed by representatives of the Owner:
 - a. The reference list shall include at a minimum, the completion date, a description of the work performed, the Owner's name - contact person - phone number and address and the Architect's name - contact person and phone number.
 - b. The Installer shall provide the reference list prior to contract award if requested.
- B. Material Quality: Obtain each product from a single Manufacturer, which has manufactured the same product in the United States of America for not less than 5 continuous years.
- C. Pre-Work Conference: Meet at the project site approximately one week prior to starting work, with the Architect, Owner and other representatives concerned about the work, to discuss the following:
 - 1. How the building will be kept watertight as work progresses.
 - 2. How roof accessory work will be coordinated with the installation of the insulation, cover board, roofing, flashings, and other items to provide a watertight installation.
 - 3. Generally accepted industry practice, the Manufacturer's instructions for handling and installing his products, and specified work requirements.

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4. The condition of the substrate (deck), curbs, penetrations and other preparatory work needed.
5. Submittals, both completed and yet to be completed.
6. The construction schedule, forecast weather, availability of materials, personnel, equipment and facilities needed to proceed and complete the work on schedule.
7. A schedule for Manufacturer and Architect inspections.

1.5 SUBMITTALS

- A. Submit the following items far enough in advance to obtain approval prior to performing any work:
 1. Pre-work site and building inspection report with photos to document conditions before work starts.
 2. Manufacturer's installation instructions and technical data sheets for each item. Material sample submittals are not needed unless requested to show color and texture.
 3. Samples of the Contractor's and Manufacturer's guarantee/warranty forms.
 4. Material Safety Data Sheets.
- B. Simultaneously provide all Material Safety Data Sheets needed for this project, for all specification sections - collated by section, in three ring binders. Provide two binders.
- C. Simultaneously provide all technical submittals needed for this project, for all technical sections, collated by section.
 1. Technical submittals shall be prepared and made by the firm that will perform the actual work.
- D. Payment requisitions will not be processed until all submittals are received and approved.

1.6 GUARANTEE

- A. Provide a Contractor's written Guarantee which warrants that all work will remain free of material and workmanship defects and in a watertight condition for a five year period beginning upon Final Completion:
 1. Defective work includes but is not limited to the following types of failure: leakage, delamination, lifting, loosening, splitting, cracking, and undue expansion.
 2. The Contractor's Guarantee shall provide that the Contractor will make the repairs and modifications necessary to enable the work to perform as warranted at his own expense.
 3. The Guarantee shall include the removal and replacement of items or materials installed as part of the original work, if removal is needed to affect guaranteed repairs.
- B. Provide one Contractor's Guarantee that covers "all work performed" when a single trade contract is awarded for work specified in multiple Sections.
- C. The Guarantee shall be issued no more than 30 days before the satisfactory completion of punch list work.
- D. Guarantee coverage shall include the removal and replacement of related material installed as part of the original work, if removal is needed to make warranty repairs.
- E. Guarantee coverage may be cancelled, for the affected portion of the work, if the work is damaged by winds in excess of 72 mph, by hail, lightning, insects or animals, by failure of the structural substrate, by exposure to harmful chemicals, by other trades or vandalism, or if the Owner fails to maintain the roof and specialties in accordance with, or makes roof alterations contrary to, the Manufacturers printed recommendations.
- F. Guarantee coverage shall be reinstated, for the remainder of the original term, if the Owner restores the specialty item to the condition it was in prior to the damage occurring.
- G. The Contractor's Surety Company may add a rider to the Performance Bond which clarifies that Bond Coverage expires two years after Final Completion; i.e., Performance Bond Coverage does not run for the entire five year term of the Contractor's Guarantee.

PART 2 PRODUCTS

2.1 GENERAL

- A. Provide the Manufacturer's standard units, modified as necessary to comply with the specified requirements. Fabricate each unit in a shop to the greatest extent possible.
- B. Aluminum Sheet: ASTM B 209 alloy 3003, tempered for forming and performance; mill finish, except as otherwise noted.
- C. Extruded Aluminum: Standard extrusions alloy 6063-T52; 0.078 inch minimum thicknesses for primary framing and curb member legs, 0.062 inch thickness for secondary framing and covers; mill finish, except as otherwise indicated.
- D. Fasteners: Nonmagnetic stainless steel or hot dipped galvanized steel, factory finished to match the material being fastened.
- E. Gaskets: Tubular neoprene or polyvinyl chloride, or block sponge neoprene.
- F. Sealant: Polyisobutylene; nonhardening, nonskinning, nondrying, nonmigrating sealant.

2.2 GAS LINE AND EQUIPMENT PIPE SUPPORTS

- A. Factory fabricated adjustable pipe supports as manufactured by Miro Industries, Inc. Model 20-Base Strut-12.

2.3 SNOW GUARDS

- A. Pipe Type Snow Guard: Two continuous snow guard tubing set in brackets and bracket plates that attaches directly to the roof deck.
 - 1. Brackets: Stainless steel, 11 gauge shaped to fit roofing..
 - 2. Pipe Type Snow Guard.
 - 3. Distance From Eaves: 12 inches (305 mm).
 - 4. Bracket Spacing: 60 inches (___ mm). Minimum 2 per length less than 60 inches.
 - 5. Brackets: Adjustable Brass on stainless steel base plate.
 - 6. Tubing: Type 304 Stainless Steel:
 - a. Outside Diameter: 1 inch (25 mm)).
 - b. Pipe or Tube Wall Thickness: 1/8 inch (31.25 mm).
 - c. Threaded Couplings: As recommended by manufacturer.
 - d. End Collars and Caps: Caps are 304 stainless steel; Collars are 6061 T-6 aluminum shaft collars.
 - 7. Fasteners
 - a. 304 Stainless Steel.
 - b. To be of metal compatible with snowguards.
 - c. Fasteners shall be compatibility with the roof deck.
 - d. Fastener strength shall exceed or be equal to that of the snowguard system.
 - 8. Manufacturer: Alpine SnowGuards "Model #115 Snowguard".

2.4 ROOF WALKWAY PADS

- A. Concrete Pavers: Interlocking, with shiplap edges on all sides and integral radiused bearing pads.
 - 1. Size: Approximately 12 inches (305 mm) by 16 inches (405 mm) by 1-1/2 inches (38 mm) thick.
 - 2. Density: 125 pounds per cubic foot (2000 kg/cu m), nominal.
 - 3. Compressive Strength: 5000 psi (35 MPa), nominal.
 - 4. Water Absorption: 5 percent, nominal.
 - 5. Manufacturer: Same as roofing membrane.

2.5 PAINT AND PRIMER

- A. Alkyd base rust inhibiting exterior primer and high gloss alkyd finish paint for ferrous metal surfaces as manufactured by Benjamin Moore or equal.

PART 3 EXECUTION

3.1 INSTALLATION

- A. General: Field measure existing conditions and openings. Comply with manufacturer's instructions and recommendations, except as modified in this specification. Coordinate with the installation of roof deck, other substrates to receive specialty units, vapor barriers, roof insulation, roofing and flashing to ensure that each element of the work performs and fits properly, and that combined elements are waterproof and weathertight. Anchor units securely to supporting structural substrates, adequate to withstand lateral and thermal stresses as well as inward and outward loading pressures.

3.2 PRE-FABRICATED CURBS AND EQUIPMENT SUPPORTS

- A. Contract #1 GC shall install prefabricated curbs and equipment supports supplied by Contract#2 MC. Refer to contract drawings.

3.3 PIPE SNOW GUARD ASSEMBLIES

- A. Install snow guard plates in place of a full piece of slate, spaced 5 feet on center, and fasten each bracket plate to the underlying wood deck six #14 flat head stainless steel screws. Join pipe sections with threaded couplings, and install end caps at each end of all pipes. Secure each length of pipe by drilling a 3/16 inch diameter hole in the pipe on each side of the center snow guard bracket, and inserting a 3/16 inch stainless steel cotter pin into the holes

3.4 ROOF WALKWAY PADS

- A. Install concrete pavers for spaced 5 feet on center, over a hard rubber walk pad for conduit and equipment support.
- B. Install hard rubber walkway pads to provide a path 2-1/2 feet wide where shown, and at all roof access points, i.e., ladders and under concrete pavers used for conduit and pipe supports, and around all HVAC equipment.
 - 1. Adhere each pad with five self adhesive strips

3.5 GAS LINE AND EQUIPMENT PIPE SUPPORTS

- A. Install pipe supports spaced five feet on center over a concrete paver and walkway.
- B. Fasten pipes and conduits to the new pipe supports with new stainless steel clamps

3.6 PAINTING

- A. Scrape and wire brush roof top equipment, ladders, access doors and frames (both sides) and the vent pipes to remove loose and peeling paint and surface rust.
- B. Install one coat of primer and two finish coats of paint using a brush or roller. Wait 24 hours for each coat of paint top dry before applying the next coat.

3.7 MISCELLANEOUS

- A. Provide and install any sealants needed, where shown or required.
- B. Perform mechanical and electrical work using skilled and licensed tradesmen.
- C. Provide new material, couplings, transition pieces, blocking, fasteners and the similar accessories needed to complete the work.

3.8 CLEANING, PROTECTION AND WATERTIGHTNESS

- A. Conduct an inspection of the interior and exterior of the building and grounds, and submit a written report with photos to document any pre-existing leakage or damage, prior to performing any work.

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- B. The Owner will conduct a similar inspection at the completion of the work, and the Contractor will be charged for all leakage or damage which was not documented in the Contractor's report, or repaired to the Owners satisfaction at the Contractor's expense.
- C. Provide any equipment, material and labor necessary to protect the site, the building, its contents and occupants, pedestrians, and surrounding landscaped and paved areas from damage due to the construction work or from inclement weather during construction.
- D. Do not perform work during inclement weather. Protect incomplete work and the building from damage by inclement weather which may occur unexpectedly. Make all work areas watertight at the end of each day's work.
- E. Frequently clean up all refuse, rubbish, scrap materials and debris so the work site presents a neat, orderly and workmanlike appearance.
- F. Carefully clean the roof to remove all residual debris when work is complete. After cleaning the roof, thoroughly clean all drain sumps, drain lines, leader heads and leaders. Do not allow debris to enter the drainage system.

END OF SECTION

SECTION 07 8100
APPLIED FIRE PROTECTION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Fireproofing of interior structural steel beams and decking.

1.3 RELATED REQUIREMENTS

- A. Section 05 1200 - Structural Steel Framing.
- B. Section 05 3100 - Steel Decking.
- C. Section 07 8400 - Firestopping.

1.4 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018.
- B. ASTM E119 - Standard Methods of Fire Tests of Building Construction and Materials
- C. ASTM E605/E605M - Standard Test Methods for Thickness and Density of Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members; 1993, with Editorial Revision (2015).
- D. ASTM E736/E736M - Standard Test Method for Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members; 2017.
- E. ASTM E759/E759M - Standard Test Method for Effect of Deflection on Sprayed Fire-Resistive Material Applied to Structural Members; 1992, with Editorial Revision (2015).
- F. ASTM E760/E760M - Standard Test Method for Effect of Impact on Bonding of Sprayed Fire-Resistive Material Applied to Structural Members; 1992, with Editorial Revision (2015).
- G. ASTM E761/E761M - Standard Test Method for Compressive Strength of Sprayed Fire-Resistive Material Applied to Structural Members; 1992, with Editorial Revision (2015).
- H. ASTM E859/E859M - Standard Test Method for Air Erosion of Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members; 1993, with Editorial Revision (2015).
- I. ASTM E937/E937M - Standard Test Method for Corrosion of Steel by Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members; 1993, with Editorial Revision (2015).
- J. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015.
- K. Underwriters Laboratories Inc. (UL) Fire Resistance Directory (Latest Edition)
 - 1. UL/ANSI 263 Fire Tests of Building Construction Materials
- L. UL (FRD) - Fire Resistance Directory; Current Edition.
- M. National Fireproofing Contractors Association
 - 1. NFCA 100 - Standard Practice for Application of Spray-Applied Fire Resistive Materials (SFRMs)
 - 2. NFCA 200 - Field Quality Assurance Procedures Pertaining to the Application of SFRMs

1.5 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate with placement of ceiling hanger tabs, mechanical component hangers, and electrical components.
- B. Preinstallation Meeting: Convene one week before starting work of this section.

1.6 DEFINITIONS

- A. Aggregate slurry Fireproofing as defined by Underwriters Laboratories Inc. (CHPX) in the latest edition of the UL Fire Resistance Directory

1.7 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittals procedures.
- B. Product Data: Provide data indicating product characteristics.
- C. Test Reports: Reports from reputable independent testing agencies for proposed products, indicating compliance with specified criteria, conducted under conditions similar to those on project, as follows:
 - 1. Bond Strength per ASTM E736
 - 2. Bond Impact per ASTM E759 .
 - 3. Compressive Strength per ASTM E761 .
 - 4. Fire tests using substrate materials similar those on project.
 - 5. Air Erosion per ASTM E859
 - 6. Corrosion Resistance per ASTM E937
 - 7. Abrasion Resistance (Test Method developed by City of San Francisco, Bureau of Building Inspection)
 - 8. Impact Penetration (Test Method developed by City of San Francisco, Bureau of Building Inspection)
 - 9. High Speed Air Erosion per ASTM E859
 - 10. Deflection
 - 11. Bond Impact per ASTM E760
 - 12. Surface Burning Characteristics per ASTM E84
 - 13. Combustibility per ASTM E1354 Cone Calorimeter
- D. Fire Testing: Submit evidence that the aggregate slurry fireproofing has been subjected to full-scale UL 263/ASTM E119 fire testing at Underwriters Laboratories Inc., or an other accredited laboratory, by the manufacturer
- E. Thickness Schedule: Provide schedule indicating material to be used, structural elements to be protected with spray applied fireproofing, hourly rating and material thickness provided and appropriate references.
- F. Mold Resistance per ASTM G21
- G. Manufacturer's Installation Instructions: Indicate special procedures.
- H. Manufacturer's Certificate: Certify that sprayed-on fireproofing products meet or exceed requirements of contract documents.
- I. Manufacturer Reports: Indicate environmental conditions that applied fireproofing materials were installed.

1.8 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience
 - 1. Having minimum 3 years of documented experience.
 - 2. Approved by manufacturer.
- C. Products, execution, and fireproofing thicknesses shall conform to the applicable code requirements for the required fire-resistance ratings.

- D. Contractor, fireproofing subcontractor and independent testing laboratory shall attend a pre-installation conference to review the substrates for acceptability, method of application, applied thicknesses, inspection procedures and other issues.

1.9 MOCK-UP

- A. Construct mock-up, 100 square feet (9.3 sq m) in size.
- B. Comply with project requirements for fire ratings.
- C. Locate where directed.
- D. Examine installation within one hour of application to determine variances from specified requirements due to shrinkage, temperature, and humidity.
- E. Where shrinkage and cracking are evident, adjust mixture and method of application as necessary; remove materials and re-construct mock-up.
- F. Mock-up may remain as part of the Work.

1.10 FIELD CONDITIONS

- A. Do not apply fireproofing when temperature of substrate material and surrounding air is below 40 degrees F (4 degrees C) or when temperature is predicted to be below said temperature for 24 hours after application.
- B. Provide ventilation in areas to receive fireproofing during application and 24 hours afterward, to dry applied material.
- C. Provide temporary enclosure to prevent spray from contaminating air.

1.11 SEQUENCING AND SCHEDULING

- A. Sequence and coordinate application of aggregate slurry fireproofing with work in other sections which would interfere with efficient fireproofing application.

1.12 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a two year period after Date of Substantial Completion.
 - 1. Include coverage for fireproofing to remain free from cracking, checking, dusting, flaking, spalling, separation, and blistering.
 - 2. Reinstall or repair failures that occur within warranty period.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Applied Fire Protection:
 - 1. GCP Applied Technologies: www.gcpat.com/sle.

2.2 APPLIED FIRE PROTECTION ASSEMBLIES

- A. Provide assemblies as indicated on drawings.

2.3 MATERIALS

- A. Sprayed Fire-Resistive Material Interior Locations, Concealed Conditions: Manufacturer's standard factory mixed material, which when combined with water is capable of providing the indicated fire resistance, and conforming to the following requirements:
 - 1. Bond Strength: 150 pounds per square foot (7.2 kPa), individual minimum and minimum average bond strength of 200 psf, when tested in accordance with ASTM E736 when set and dry.
 - 2. Dry Density: Minimum average density of 15 lb/cu ft (240 kg/cu m), with minimum individual density of any test sample of 14 lb/cu ft (224 kg/cu m), when tested in accordance with ASTM E605/E605M.

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3. Thickness: As required for fire-resistance design indicated, measured according to requirements of fire-resistance design or ASTM E 605, whichever is thicker, but not less than 0.375 inch (9 mm)
4. Compressive Strength: 1,453 pounds per square inch (10 kPa), minimum when tested in accordance with ASTM E761.
5. Effect of Impact on Bonding: No cracking, spalling or delamination, when tested in accordance with ASTM E760/E760M.
6. Corrosivity: No evidence of corrosion, when tested in accordance with ASTM E937/E937M.
7. Air Erosion Resistance: Weight loss of 0.00g/sq ft, maximum, when tested in accordance with ASTM E859 after 24 hours. Sample surface shall be "as applied" (not pre-purged) and the total reported weight loss shall be the total weight loss over a 24 hour period from the beginning of the test.
8. High Speed Air Erosion: Materials to be used in plenums or ducts shall exhibit no continued erosion after 4 hours at an air speed of 2500 ft/min (29 mph) when tested per ASTM E859.
9. Surface Burning Characteristics: Maximum flame spread index of 0 (zero) and maximum smoke developed index of 0 (zero), when tested in accordance with ASTM E84.
10. Effect of Deflection: No cracking, spalling, or delamination, when tested in accordance with ASTM E759/E759M.
11. Corrosion Resistance: Fireproofing applied to steel shall be tested in accordance with ASTM E937 and shall not promote corrosion of steel.
12. Mixing water shall be clean, fresh, and suitable for domestic consumption and free from such amounts of mineral or organic substances as would affect the set of the fireproofing material. Provide water with sufficient pressure and volume to meet the fireproofing application schedule.
13. Fungal Resistance: Treat products with manufacturer's standard antimicrobial formulation to result in no growth on specimens per ASTM G 21.
14. Manufacturers:
 - a. GCP Applied Technologies; Monokote MK-6: www.gcpat.com/#sle.
 - b. Substitutions: 01 2500 - Substitution Procedures.

2.4 ACCESSORIES

- A. General: Provide auxiliary materials that are compatible with fireproofing and substrates and are approved by UL or another testing and inspecting agency acceptable to authorities having jurisdiction for use in fire-resistance designs indicated
- B. Provide accessories to comply with manufacturer's recommendations and to meet fire resistance design and code requirements. Such accessories include, but are not limited to, any required or optional items such as Spatterkote SK-3; bonding agents, mechanical attachments; application aids such as metal lath, scrim, or netting; and Monokote Accelerator.
- C. Primer Primers approved by fireproofing manufacturer and complying with one or both of the following requirements:
 1. Primer and substrate are identical to those tested in required fire-resistance design by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
 2. Primer's bond strength in required fire-resistance design complies with specified bond strength for fireproofing and with requirements in UL's "Fire Resistance Directory" or in the listings of another qualified testing agency acceptable to authorities having jurisdiction, based on a series of bond tests according to ASTM E 736.
- D. Bonding Agent: Product approved by fireproofing manufacturer and complying with requirements in UL's "Fire Resistance Directory" or in the listings of another qualified testing agency acceptable to authorities having jurisdiction.
- E. Water: Clean, potable.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces are ready to receive fireproofing.
- B. Verify that clips, hangers, supports, sleeves, and other items required to penetrate fireproofing are in place.
- C. Verify that ducts, piping, equipment, or other items that would interfere with application of fireproofing have not been installed.
- D. Verify that voids and cracks in substrate have been filled.
- E. Verify that projections have been removed where fireproofing will be exposed to view as a finish material.
- F. All surfaces to receive spray applied fireproofing shall be provided free of oil, grease, loose mill scale, dirt or other foreign substances which may impair proper adhesion of the fireproofing to the substrate. Where necessary, cleaning or other corrections of surfaces to receive fireproofing shall be the responsibility of the supplier of the incompatible surface.
- G. Objects penetrating fireproofing, including clips, hangers, support sleeves, and similar items, are securely attached to substrates.
- H. Substrates receiving fireproofing are not obstructed by ducts, piping, equipment, or other suspended construction that will interfere with fireproofing application
- I. Verify that concrete work on steel deck has been completed before beginning fireproofing work.
- J. Conduct tests according to fireproofing manufacturer's written recommendations to verify that substrates are free of substances capable of interfering with bond.
- K. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- L. Application of the fireproofing shall not begin until the contractor, applicator and fireproofing testing laboratory (inspector) have examined surfaces to receive fireproofing and determined that the surfaces are acceptable to receive the fireproofing material.

3.2 PREPARATION

- A. Perform tests as recommended by fireproofing manufacturer in applications where adhesion of fireproofing to substrate is in question.
- B. Remove incompatible materials that could effect bond by scraping, brushing, scrubbing, or sandblasting.
- C. Prepare substrates to receive fireproofing in strict accordance with instructions of fireproofing manufacturer.
- D. Apply fireproofing manufacturer's recommended bonding agent on primed steel.
- E. Prime substrates where included in fire-resistance design and where recommended in writing by fireproofing manufacturer unless compatible shop primer has been applied and is in satisfactory condition to receive fireproofing.
- F. Verify other trades have installed clips, hangers, support sleeves and other attachments required to penetrate the fireproofing, prior to application of the fireproofing materials.
- G. Other trades shall not install ducts, piping, equipment or other suspended items until the fireproofing is complete.
- H. Complete placing of concrete on floor and roof decking prior to application of the fireproofing to the underside of steel deck and supporting beams and joists.
- I. On roof decks without a concrete cover, complete all roofing applications and roof mounted equipment installation prior to application of the fireproofing to the underside of roof decking and supporting beams and joists. Prohibit all roof traffic upon commencement of the fireproofing and until the fireproofing material is dry.

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- J. For applications visible on completion of Project, repair substrates to remove surface imperfections that could affect uniformity of texture and thickness in finished surface of fireproofing. Remove minor projections and fill voids that would telegraph through fire-resistive products after application
- K. Protection of permanently exposed walls or floors, or special surfaces:
- L. Protect surfaces not scheduled for fireproofing and equipment from damage by overspray, fall-out, and dusting.
- M. Close off and seal duct work in areas where fireproofing is being applied.

3.3 APPLICATION

- A. Equipment and application procedures shall conform to the material manufacturer's application instructions.
- B. Construct fireproofing assemblies that are identical to fire-resistance design indicated and products as specified, tested, and substantiated by test reports; for thickness, primers, sealers, topcoats, finishing, and other materials and procedures affecting fireproofing work.
- C. Comply with fireproofing manufacturer's written instructions for mixing materials, application procedures, and types of equipment used to mix, convey, and apply fireproofing; as applicable to particular conditions of installation and as required to achieve fire-resistance ratings indicated.
- D. Construct fireproofing assemblies that are identical to fire-resistance design indicated and products as specified, tested, and substantiated by test reports; for thickness, primers, sealers, topcoats, finishing, and other materials and procedures affecting fireproofing work.
- E. Comply with fireproofing manufacturer's written instructions for mixing materials, application procedures, and types of equipment used to mix, convey, and apply fireproofing; as applicable to particular conditions of installation and as required to achieve fire-resistance ratings indicated.
- F. Coordinate application of fireproofing with other construction to minimize need to cut or remove fireproofing.
 - 1. Do not begin applying fireproofing until clips, hangers, supports, sleeves, and other items penetrating fireproofing are in place.
 - 2. Defer installing ducts, piping, and other items that would interfere with applying fireproofing until application of fireproofing is completed.
- G. Install metal lath over structural members as indicated or as required by UL Assembly Design Numbers.
- H. Post appropriate cautionary "Slippery When Wet" signs in all areas in contact with wet fireproofing material. Erect appropriate barriers to prevent entry by non-fireproofing workers into the fireproofing spray and mixing areas and other areas exposed to wet fireproofing material.
- I. Apply a discontinuous textured spray of Spatterkote SK-3 in accordance with manufacturer's instructions to all cellular steel floor units with flat plate on the bottom and to roof deck assemblies as required to meet the fire resistance ratings, before application of the Monokote fireproofing to these surfaces
- J. Apply fireproofing in accordance with manufacturer's instructions.
- K. Apply fireproofing in uniform thickness and density as necessary to achieve required ratings.
- L. In exposed locations, trowel surface smooth and form square edges, using tools and procedures recommended by fireproofing manufacturer.
- M. The contractor shall follow the application provisions and the field application quality control provisions of NFCA 100 - Standard Practice for Application of Spray-Applied Fire Resistive Materials (SFRMs) and NFCA 200 - Field Quality Assurance Procedures Pertaining to the Application of SFRMs.
- N. Install auxiliary materials as required, as detailed, and according to fire-resistance design and fireproofing manufacturer's written recommendations for conditions of exposure and intended use. For auxiliary

materials, use attachment and anchorage devices of type recommended in writing by fireproofing manufacturer.

- O. Spray apply fireproofing to maximum extent possible. Following the spraying operation in each area, complete the coverage by trowel application or other placement method recommended in writing by fireproofing manufacturer.
- P. Extend fireproofing in full thickness over entire area of each substrate to be protected.
- Q. Install body of fireproofing in a single course unless otherwise recommended in writing by fireproofing manufacturer
- R. Provide a uniform finish complying with description indicated for each type of fireproofing material and matching finish approved for required mockups.
- S. Cure fireproofing according to fireproofing manufacturer's written recommendations.
- T. Do not install enclosing or concealing construction until after fireproofing has been applied, inspected, and tested and corrections have been made to deficient applications
- U. Finishes: Where indicated, apply fireproofing to produce the following finishes:
 - 1. Manufacturer's Standard Finishes: Finish according to manufacturer's written instructions for each finish selected.
 - 2. Spray-Textured Finish: Finish left as spray applied with no further treatment.

3.4 FIELD QUALITY CONTROL

- A. Perform field inspection and testing in accordance with Section 01 4000 - Quality Requirements.
- B. Inspect installed fireproofing after application and curing for integrity, prior to its concealment.
- C. Ensure that actual thicknesses, densities, and bond strengths meet requirements for specified ratings and requirements of authorities having jurisdiction (AHJ).
- D. Re-inspect installed fireproofing for integrity of fire protection, after installation of subsequent Work.
- E. The Owner will retain and pay for an independent testing laboratory to randomly sample and verify the thickness and the density of the fireproofing in accordance with provisions of ASTM E605, or the "Inspection Procedure for Field-applied Sprayed Fire Protection Materials" as published by the Association of Wall and Ceiling Contractors International (AWCI), or the Uniform Building Code Standard No. 7-6. Fireproofing density samples should be tested in accordance with the displacement method in ASTM E605 to determine in-place fireproofing density.
- F. The Owner will retain and pay for an independent testing laboratory to randomly sample and verify the bond strength of the fireproofing in accordance with provisions of ASTM E736.
 - 1. Fireproofing will be considered defective if it does not pass tests and inspections.
 - a. Remove and replace fireproofing that does not pass tests and inspections, and retest.
 - b. Apply additional fireproofing, per manufacturer's written instructions, where test results indicate insufficient thickness, and retest
- G. The results of the above tests shall be made available to all parties at the completion of pre-designated areas which shall have been determined during the pre-job conference.

3.5 CLEANING

- A. Remove excess material, overspray, droppings, and debris.
- B. Remove fireproofing from materials and surfaces not required to be fireproofed.
- C. Protect fireproofing, according to advice of manufacturer and Installer, from damage resulting from construction operations or other causes, so fireproofing will be without damage or deterioration at time of Substantial Completion.
- D. As installation of other construction proceeds, inspect fireproofing and repair damaged areas and fireproofing removed due to work of other trades.

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- E. Repair fireproofing damaged by other work before concealing it with other construction.
- F. Repair fireproofing by reapplying it using same method as original installation or using manufacturer's recommended trowel-applied product
- G. At exposed fireproofing, clean surfaces that have become soiled or stained, using manufacturer's recommended procedures.

END OF SECTION

**SECTION 07 8400
FIRESTOPPING**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 RELATED REQUIREMENTS

- A. Section 09 2116 - Gypsum Board Assemblies: Gypsum wallboard fireproofing.

1.3 REFERENCE STANDARDS

- A. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2016a.
- B. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2013a (Reapproved 2017).
- C. ASTM E2174 - Standard Practice for On-Site Inspection of Installed Firestops; 2014b.
- D. ASTM E2393 - Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers; 2010a (Reapproved 2015).
- E. ITS (DIR) - Directory of Listed Products; current edition.
- F. FM 4991 - Approval Standard for Firestop Contractors; 2013.
- G. FM (AG) - FM Approval Guide; current edition.
- H. SCAQMD 1168 - Adhesive and Sealant Applications; 1989 (Amended 2017).
- I. UL (FRD) - Fire Resistance Directory; Current Edition.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.
- C. Sustainable Design Submittal: Submit VOC content documentation for nonpreformed materials.
- D. Manufacturer's qualification statement.
- E. Installer's qualification statement.

1.5 QUALITY ASSURANCE

- A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with methods indicated.
 - 1. Listing in UL (FRD), FM (AG), or ITS (DIR) will be considered as constituting an acceptable test report.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- C. Installer Qualifications: Company specializing in performing the work of this section and:
 - 1. Verification of minimum three years experience installing work of this type.

1.6 MOCK-UP

- A. Install one firestopping assembly representative of each fire rating design required on project.
 - 1. Where one design may be used for different penetrating items or in different wall constructions, install one assembly for each different combination.
- B. If accepted, mock-up will represent minimum standard for this work.
- C. If accepted, mock-up may remain as part of the Work. Removed and replaced mock-ups not accepted.

1.7 FIELD CONDITIONS

- A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation; maintain minimum temperature before, during, and for three days after installation of materials.
- B. Provide ventilation in areas where solvent-cured materials are being installed.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Firestopping Manufacturers:
 - 1. 3M Fire Protection Products: www.3m.com/firestop.
 - 2. A/D Fire Protection Systems Inc: www.adfire.com.
 - 3. Hilti, Inc: www.us.hilti.com.
 - 4. Substitutions: See Section 01 2500 - Substitution Procedures.

2.2 MATERIALS

- A. Firestopping Materials: Any materials meeting requirements.
- B. Volatile Organic Compound (VOC) Content: Provide products having VOC content lower than that required by SCAQMD 1168.
- C. Mold and Mildew Resistance: Provide firestoppping materials with mold and mildew resistance rating of zero(0) in accordance with ASTM G21.
- D. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Provide type of materials as required for tested firestopping assembly.
- E. Fire Ratings: Refer to drawings for required systems and ratings.

2.3 FIRESTOPPING ASSEMBLY REQUIREMENTS

- A. Through Penetration Firestopping: Use system that has been tested according to ASTM E814 to have fire resistance F Rating equal to required fire rating of penetrated assembly.

2.4 FIRESTOPPING PENETRATIONS THROUGH GYPSUM BOARD WALLS

- A. Blank Openings:
 - 1. 2 Hour Construction: UL System W-L-0038; Specified Technologies Inc. FP Intumescent Firestop Plug.
 - 2. 2 Hour Construction: UL System W-L-3334; Hilti CP 653 Speed Sleeve.
 - 3. 1 Hour Construction: UL System W-L-0020; Specified Technologies Inc. Composite Sheet.
 - 4. 1 Hour Construction: UL System W-L-0032; Specified Technologies Inc. FP Intumescent Firestop Plug.
 - 5. 1 Hour Construction: UL System W-L-3334; Hilti CP 653 Speed Sleeve.
- B. Penetrations By:
 - 1. Multiple Penetrations in Large Openings:
 - a. 2 Hour Construction: UL System W-L-8013; Hilti CFS-BL Firestop Block.
 - b. 1 Hour Construction: UL System W-L-1408; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - 2. Uninsulated Metallic Pipe, Conduit, and Tubing:
 - a. 2 Hour Construction: UL System W-L-1054; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - b. 1 Hour Construction: UL System W-L-1164; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - c. 1 Hour Construction: UL System W-L-1506; Hilti CFS-D Firestop Cable Disc.

3. Electrical Cables Not In Conduit:
 - a. 1 Hour Construction: UL System W-L-3065; Hilti FS-ONE MAX Intumescent Firestop Sealant, CP 606 Flexible Firestop Sealant, CD 601S Elastomeric Firestop Sealant, or CP 618 Firestop Putty Stick.
 - b. 1 Hour Construction: UL System W-L-3334; Hilti CP 653 Speed Sleeve.
 - c. 1 Hour Construction: UL System W-L-3393; Hilti CFS-SL RK Retrofit Sleeve Kit for Existing Cables.
4. Insulated Pipes:
 - a. 1 Hour Construction: UL System W-L-5028; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - b. 1 Hour Construction: UL System W-L-5029; Hilti FS-ONE Intumescent Firestop Sealant.
5. HVAC Ducts, Insulated:
 - a. 2 Hour Construction: UL System W-L-7156; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - b. 1 Hour Construction: UL System W-L-7156; Hilti FS-ONE MAX Intumescent Firestop Sealant.

2.5 MATERIALS

- A. Firestopping Sealants: Provide only products having lower volatile organic compound (VOC) content than required by South Coast Air Quality Management District Rule No.1168.
- B. Elastomeric Silicone Firestopping: Single component silicone elastomeric compound and compatible silicone sealant; conforming to the following:
 1. Manufacturers:
 - a. 3M Fire Protection Products: www.3m.com/firestop.
 - b. Substitutions: 01 2500 - Substitution Procedures
- C. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Type required for tested assembly design.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify openings are ready to receive the work of this section.

3.2 PREPARATION

- A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other materials that could adversely affect bond of firestopping material.
- B. Remove incompatible materials that could adversely affect bond.
- C. Install backing materials to prevent liquid material from leakage.

3.3 INSTALLATION

- A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.
- B. Do not cover installed firestopping until inspected by Port Chester-Rye UFSD's Independent Testing Agency.
- C. Do not cover installed firestopping until inspected by authorities having jurisdiction.
- D. Install labeling required by code.

3.4 FIELD QUALITY CONTROL

- A. Independent Testing Agency: Inspection agency employed and paid by Port Chester-Rye UFSD, will examine penetration firestopping in accordance with ASTM E2174 and ASTM E2393.

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- B. Repair or replace penetration firestopping and joints at locations where inspection results indicate firestopping or joints do not meet specified requirements.

3.5 CLEANING

- A. Clean adjacent surfaces of firestopping materials.

3.6 PROTECTION

- A. Protect adjacent surfaces from damage by material installation.

END OF SECTION

**SECTION 07 9200
JOINT SEALANTS**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Nonsag gunnable joint sealants.
- B. Joint backings and accessories.

1.3 RELATED REQUIREMENTS

- A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions: Additional requirements for sealants and primers.
- B. Section 07 8400 - Firestopping: Firestopping sealants.
- C. Section 08 1113 - Hollow Metal Doors and Frames.
- D. Section 09 2116 - Gypsum Board Assemblies: Sealing acoustical and sound-rated walls and ceilings.
- E. Section 09 3000 - Tiling: Sealant between tile and plumbing fixtures and at junctions with other materials and changes in plane.

1.4 REFERENCE STANDARDS

- A. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2012 (Reapproved 2017).
- B. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
- C. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.
 - 1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
 - 2. List of backing materials approved for use with the specific product.
 - 3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
 - 4. Substrates the product should not be used on.
 - 5. Substrates for which use of primer is required.
- C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.
- D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years experience.
- B. Installer Qualifications: Company specializing in performing the work of this section and with at least three years of experience.

1.7 MOCK-UP

- A. Mockups: Before installing joint sealants, apply elastomeric sealants as follows to verify selections made under sample submittals and to demonstrate aesthetic effects and qualities of materials and execution:
 - 1. Joints in mockups of assemblies specified in other Sections that are indicated to receive elastomeric joint sealants, which are specified by reference to this Section.
- B. Construct mock-up with specified sealant types and with other components noted.
- C. Locate where directed.
- D. Mock-up may remain as part of the Work.

1.8 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.
- C. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Non-Sag Sealants: Permits application in joints on vertical surfaces without sagging or slumping.
 - 1. Bostik Inc: www.bostik-us.com.
 - 2. Dow Corning Corporation: www.dowcorning.com/construction/#sle.
 - 3. Sika Corporation: www.usa-sika.com.
 - 4. W.R. Meadows, Inc: www.wrmeadows.com/sle.

2.2 JOINT SEALANT APPLICATIONS

- A. Scope:
 - 1. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
 - 2. Joints between door, window, and other frames and adjacent construction.
 - a. Other joints indicated below.

2.3 JOINT SEALANTS - GENERAL

- A. Sealants and Primers: Provide products with acceptable levels of volatile organic compound (VOC) content; see Section 01 6116.

2.4 NONSAG JOINT SEALANTS

- A. Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
 - 1. Color: White.
 - 2. Applications: Use for:
 - a. Use for perimeter joints of toilet fixtures and similar locations..
 - 3. Manufacturers:
 - a. 786 Mildew Resistant; Dow Corning.
 - b. Pecora Corporation; 898 Silicone Sanitary Sealant: www.pecora.com.
 - c. Sanitary 1700; GE Silicones..
 - 4. Substitutions: 01 2500 - Substitution Procedures
- B. Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single component; not expected to withstand continuous water immersion or traffic.
 - 1. Movement Capability: Plus and minus 25 percent, minimum.

2. Color: To be selected by Fuller and D'Angelo P.C. from manufacturer's standard range.
 3. Service Temperature Range: Minus 40 to 180 degrees F (Minus 40 to 82 degrees C).
 4. Manufacturers:
 - a. Pecora Corporation; Dynatrol I;: www.pecora.com.
 - b. Sika Corporation; Sikaflex-1a: www.usa.sika.com/#sle.
 5. Applications: Use for:
 - a. Joints between metal frames and other materials.
 - b. All interior joints except where silicone sealant is required..
 6. Substitutions: 01 2500 - Substitution Procedures
- C. Acrylic Emulsion Latex: Water-based; ASTM C834, single component, non-staining, non-bleeding, non-sagging; not intended for exterior use.
1. Color: To be selected by Fuller and D'Angelo P.C. from manufacturer's standard range.
 2. Grade: ASTM C834; Grade 0 Degrees F (Minus 18 Degrees C).
 3. Manufacturers:
 - a. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant: www.pecora.com.
 - b. Specified Technologies Inc; Smoke N' Sound Acoustical Sealant: www.stifirestop.com/#sle.
 4. Applications: Use for:
 - a. Use for all interior joints where acoustical sealant indicated.
 5. Substitutions: See Section 01 2500 - Substitution Procedures.

2.5 ACCESSORIES

- A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.
 1. Type for Joints Not Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type O - Open Cell Polyurethane.
 2. Open Cell: 40 to 50 percent larger in diameter than joint width.
- B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.
- C. Masking Tape: Self-adhesive, nonabsorbent, non-staining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.
- D. Primers: Type recommended by sealant manufacturer to suit application; non-staining.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that joints are ready to receive work.
- B. Verify that backing materials are compatible with sealants.
- C. Verify that backer rods are of the correct size.

3.2 PREPARATION

- A. Remove loose materials and foreign matter that could impair adhesion of sealant.
- B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

3.3 INSTALLATION

- A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Perform installation in accordance with ASTM C1193.
- C. Measure joint dimensions and size joint backers to achieve the following, unless otherwise indicated:
 - 1. Width/depth ratio of 2:1.
 - 2. Neck dimension no greater than 1/3 of the joint width.
 - 3. Surface bond area on each side not less than 75 percent of joint width.
- D. Install bond breaker backing tape where backer rod cannot be used.
- E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.
- F. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.
- G. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

3.4 FIELD QUALITY CONTROL

- A. Perform field quality control inspection/testing as specified in PART 1 under QUALITY ASSURANCE article.
- B. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.

END OF SECTION

SECTION 08 1113
HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Non-fire-rated hollow metal doors in new steel frames.
- B. Fire-rated steel doors in existing steel frames.
- C. Hollow metal frames in existing openings.
- D. Accessories, including glazing.
- E. Verification of existing rated doors and or frames.

1.3 RELATED REQUIREMENTS

- A. Section 08 7100 - Door Hardware.
- B. Section 09 9123 - Interior Painting: Field painting.

1.4 REFERENCE STANDARDS

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; current edition.
- B. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- C. ANSI/ICC A117.1 - American National Standard for Accessible and Usable Buildings and Facilities; International Code Council; 2009.
- D. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015.
- E. ANSI/SDI A250.3 - Test Procedure and Acceptance Criteria for Factory Applied Finish Coatings for Steel Doors and Frames; 2007 (R2011).
- F. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors; 2011.
- G. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2014.
- H. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2011.
- I. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2017.
- J. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass; 2014.
- K. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018.
- L. ASTM E413 - Classification for Rating Sound Insulation; 2016.
- M. BHMA A156.115 - American National Standard for Hardware Preparation in Steel Doors and Steel Frames; 2016.
- N. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2016.
- O. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2018.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes.

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- C. Shop Drawings: Details of each opening, showing elevations, glazing, and existing frame profiles.
- D. Samples: Submit two samples of metal, 2 by 2 inches (51 by 51 mm) in size, showing factory finishes, colors, and surface texture.
- E. Installation Instructions: Manufacturer's published instructions, including any special installation instructions relating to this project.
- F. Manufacturer's Certificate: Certification that products meet or exceed specified requirements.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of experience.
- C. Maintain at project site copies of reference standards relating to installation of products specified.
- D. Installed Fire Rated Door Assembly: Conform to NFPA 80 for fire rated class as scheduled.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
- B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Hollow Metal Doors and Frames:
 - 1. Basis of Design: Steelcraft, an Allegion brand 11819 N. Pennsylvania St. Carmel, IN 46032; Toll Free Tel: 877-578-1247; Product L-Series: GrainTech laminated full flush design door and Flush Hollow Metal Doors and Frames: www.allegion.com/us.
 - 2. Assa Abloy Ceko: www.assaabloydss.com.
 - 3. Substitutions: See Section 01 2500 Substitution Procedures.

2.2 PERFORMANCE REQUIREMENTS

- A. Requirements for all Doors:
 - 1. Accessibility: Comply with ICC A117.1 and ADA Standards.
 - 2. Door Top Closures: Flush end closure channel, with top and door faces aligned.
 - 3. Door Edge Profile: Beveled.
 - 4. Typical Door Face Sheets: Embossed with wood grain and flush metal doors as shown on door schedule.
 - 5. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings.
 - 6. Hardware Preparations, Selections and Locations: Comply with NAAMM HMMA 830 and NAAMM HMMA 831 or BHMA A156.115 and ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
 - a. Provide 14 gauge channel reinforcing for all door closers.
 - 7. Galvanizing All doors and components shall be hot-dipped zinc-iron alloy-coated (galvannealed), manufacturer's standard coating thickness.
 - 8. Finish: Wood Grain shall be completely factory finished. Flush metal doors shall be Factory primed for field finishing.

2.3 STEEL DOORS NON EMBOSSED

- A. Interior Doors, Non-Fire Rated:
 - 1. Grade: ANSI A250.8 (16 gauge) Level 2, physical performance Level B, Model 2, seamless, continuous welded.
 - a. Level 2 - Heavy-duty.
 - b. Physical Performance Level B, 500,000 cycles; in accordance with ANSI/SDI A250.4.
 - c. Model 1 - Full Flush.
 - d. Door Face Metal Thickness: 16 gauge, 0.053 inch (1.3 mm), minimum.
 - e. Zinc Coating: A60/ZF180 galvanized coating; ASTM A653/A653M.
 - 2. Core Material: Manufacturers standard core material/construction and in compliance with requirements.
 - a. STC Rating: 25
 - 3. Door Thickness: 1-3/4 inches (44.5 mm), nominal.
 - 4. Door Face Sheets: Flush.
 - 5. Door Finish: Factory primed and field finished.

2.4 EMBOSSED WOOD GRAIN FINISH DOORS

- A. Acceptable Product: Steelcraft GrainTech L Series.
 - 1. Performance:
 - a. Sound attenuation (gasketed):
 - a) Honeycomb core, 35 STC.
- B. Door Thickness: 1-3/4 inches.
- C. Door faces reinforced and sound deadened as follows:
 - 1. Honeycomb Core: 1" cell kraft honeycomb, 99 lbs., configuration to provide increased structural integrity.
 - 2. Sanded for maximum adhesion.
 - 3. Impregnated with phenolic resin.
 - 4. Laminate to both face sheets with contact adhesive
- D. Vertical edge seams: Provide doors with continuous vertical mechanical inter-locking joints at lock and hinge edges. Finish edges as follows:
 - 1. Full Height, Epoxy Filled Mechanical Interlock Edges provide structural support and stability the full height of the door edges.
 - a. Filled Edge Seam: Seam filled with structural adhesive and dressed smooth.
- E. Gauge: 16 gauge,
- F. Bevel hinge and lock door edges 1/8 inch (3 mm) in 2 inches (50 mm). Square edges on hinge and/or lock stiles are not acceptable.
- G. Reinforce top and bottom of doors with galvanized 14 gage (1.7 mm), welded to both panels.
- H. Top Caps: Sealed flush.
- I. Glazing Bead: Formed steel sheet or snap-in Designer trim.
- J. Fire Rating: Supply door units bearing Labels for fire ratings indicated in Door Schedule for the locations indicated.
- K. In addition to the requirements listed in Par 2.3 the following apply where wood grain finished are indicated:
 - 1. Fabricated from steel that has an embossed wood grain pattern extending the full height and width of the door. Provide a wood grain embodiment minimum .005" deep. Applied grain pattern or material is not acceptable.

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- L. Anchors: Manufacturer's standard framing anchors, specified in manufacturer's printed installation instructions for project conditions.
- M. Astragals for pairs of doors: Manufacturer's standard for labeled and non-labeled openings.
- N. Finish: Complete factory finish.

2.5 HOLLOW METAL FRAMES

- A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.
- B. Interior Door Frames, Non-Fire Rated: Knock-down type.
 - 1. Frame Metal Thickness: 16 gage, 0.053 inch (1.3 mm), minimum.

2.6 FINISHES

- A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.
- B. Factory Finish: Complying with ANSI/SDI A250.3, manufacturer's standard coating.
 - 1. Color: As indicated on drawings.

2.7 ACCESSORIES

- A. Door Window Frames: Door window frames with glazing securely fastened within door opening.
 - 1. Size: As indicated on drawings.
 - 2. Frame Material: 18 gauge, 0.0478 inch (1.21 mm), galvanized steel.
 - 3. Metal Finish: Match door color with polyester powder coating.
 - 4. Fire Rated Glazing: 5/16" (7.9 mm) thick, minimum in compliance with requirements of authorities having jurisdiction.
 - a. Firelite Plus, clear ceramic laminated with 2 pieces of Premium FireLite and a proprietary interlayer specialty high impact fire rated glazing material.
 - b. Use for all fire rated doors.
 - 5. Laminated Safety Glass: 1/4" thick Float glass laminated in accordance with ASTM C1172.
 - a. Complies with ANSI Z97.1 and 16 CFR 1201 test requirements for Category II.
 - b. Glass Type: Heat-strengthened float glass (Laminated)
 - c. Tint: Clear
 - d. Interlayer: Polyvinyl butyral (PVB), thickness as required to meet performance criteria.
 - e. Glazing Method: Dry glazing method.
 - f. Use for all non-fire rated doors.
 - g. Manufacturers:
 - a) Viracon, Architectural Glass segment of Apogee Enterprises, Inc:
www.viracon.com.
 - b) Substitutions: Refer to Section 01 2500 - Substitution Procedures
- B. Glazing Trim: As per manufacturer's standard designer trim for embossed doors and glass thickness.
- C. Removable Stops: Formed sheet steel, shape as indicated on drawings, mitered or butted corners; prepared for countersink style tamper proof screws.
- D. Mechanical Fasteners for Concealed Metal-to-Metal Connections: Self-drilling, self-tapping, steel with electroplated zinc finish.
- E. Frame Repairs:
 - 1. Repair dents, patch rust holes, fill in chips etc.
 - 2. Body Filler With Hardener.
Remove existing continuous hinge and strike.
 - 3. Color: Match doors.

4. Manufacturer: 3M Product "Bondo Body Filler 265".

2.8 FINISHES

- A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.
- B. Factory Finish: Wood grain embossed complying with ANSI A 250.3, manufacturer's standard coating.
 1. Color: As indicated on drawings.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify existing frame and opening sizes and tolerances are acceptable.
- C. Verify that finished walls are in plane to ensure proper door alignment.

3.2 PREPARATION

- A. Patch existing frames as required to remove rust, dents, chips and fill holes.
 1. Apply body filler in accordance to manufacturer's instruction.
 2. Sand surfaces smooth.

3.3 INSTALLATION

- A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.
- B. Install fire rated units in accordance with NFPA 80.
- C. Install door hardware as specified in Section 08 7100.
- D. Touch up damaged factory finishes.

3.4 TOLERANCES

- A. Clearances Between Door and Frame: Comply with related requirements of specified frame standards or custom guidelines indicated in accordance with SDI 117 or NAAMM HMMA 861.
- B. Maximum Diagonal Distortion: 1/16 inch (1.6 mm) measured with straight edge, corner to corner.

3.5 ADJUSTING

- A. Adjust for smooth and balanced door movement.
- B. Adjust sound control doors so that seals are fully engaged when door is closed.

END OF SECTION

SECTION 08 3100
ACCESS DOORS AND PANELS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Wall mounted access units.

1.3 RELATED REQUIREMENTS

- A. Section 09 9123 - Interior Painting: Field paint finish.
- B. Division 22 & 23: Mechanical components requiring access.
- C. Division 26: Electrical components requiring access.

1.4 REFERENCE STANDARDS

- A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- B. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications; 2016.
- C. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.
- D. ITS (DIR) - Directory of Listed Products; current edition.
- E. UL (FRD) - Fire Resistance Directory; Current Edition.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.
- C. Shop Drawings: Indicate exact position of each access door and/or panel unit.
- D. Manufacturer's Installation Instructions: Indicate rough-in dimensions.
- E. Project Record Documents: Record actual locations of each access unit.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years experience.

PART 2 PRODUCTS

2.1 ACCESS DOORS AND PANELS ASSEMBLIES

- A. Wall-Mounted Units:
 - 1. Location: As indicated on drawings.
 - 2. Panel Material: Steel.
 - 3. Size: As indicated on drawings..
 - 4. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.
 - 5. Plaster Mounting Criteria: Provide drywall bead frame with door surface flush with wall surface.
- B. Wall-Mounted Units in Wet Areas:
 - 1. Location: As indicated on drawings.
 - 2. Material: Stainless steel.

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3. Size: As indicated on drawings.
4. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.
5. Wall Mounting Criteria: Provide surface-mounted face frame and door surface flush with frame surface.
6. Mounting Criteria: Provide drywall bead frame with door surface flush with wall surface.
7. ACUDOR Products Inc: www.acudor.com/#sle.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that rough openings are correctly sized and located.
- B. Begin installation only after substrates have been properly prepared, and if the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to proceeding with this work.
- B. Prepare surfaces using methods recommended by manufacturer for applicable substrates in accordance with project conditions.

3.3 INSTALLATION

- A. Install units in accordance with manufacturer's instructions.
- B. Install frames plumb and level in openings, and secure units rigidly in place.
- C. Position units to provide convenient access to concealed equipment when necessary.

END OF SECTION

SECTION 08 7100
FINISH HARDWARE

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes:
 - 1. Mechanical door hardware for:
 - a. Interior Swinging doors.
 - 2. Field verification, preparation and modification of existing doors and frames to receive new door hardware.
- B. Exclusions: Unless specifically listed in hardware sets, hardware is not specified in this section for:
 - 1. Windows
 - 2. Cabinets (casework), including locks in cabinets
 - 3. Signage
 - 4. Toilet accessories

1.3 RELATED SECTIONS:

- A. Section 07 9200 - Joint Sealants for sealant requirements applicable to threshold installation specified in this section.
- B. Sections 09 9123 - Interior Painting for touchup finishing or refinishing of existing openings modified by this section.

1.4 REFERENCES

- A. Fire/Life Safety
 - 1. NFPA - National Fire Protection Association
 - a. NFPA 70 – National Electric Code
 - b. NFPA 80 - Standard for Fire Doors and Fire Windows
 - c. NFPA 101 - Life Safety Code
 - d. NFPA 105 - Smoke and Draft Control Door Assemblies
 - e. New York State Fire Safety Code.
- B. UL - Underwriters Laboratories
 - 1. UL 10B - Fire Test of Door Assemblies
 - 2. UL 10C - Positive Pressure Test of Fire Door Assemblies
 - 3. UL 1784 - Air Leakage Tests of Door Assemblies
 - 4. UL 305 - Panic Hardware
- C. Accessibility
 - 1. ADA - Americans with Disabilities Act.
 - 2. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
- D. DHI - Door and Hardware Institute
 - 1. Sequence and Format for the Hardware Schedule
 - 2. Recommended Locations for Builders Hardware
 - 3. Key Systems and Nomenclature
- E. ANSI - American National Standards Institute
 - 1. ANSI/BHMA A156.1 - A156.29, and ANSI A156.31 - Standards for Hardware and Specialties

1.5 SUBMITTALS

- A. General:
 - 1. Submit in accordance with Conditions of Contract and Division 01 requirements.
 - 2. Highlight, encircle, or otherwise specifically identify on submittals deviations from Contract Documents, issues of incompatibility or other issues which may detrimentally affect the Work.
 - 3. Prior to forwarding submittal, comply with procedures for verifying existing frame compatibility for new hardware, as specified in PART 3, "EXAMINATION" article, herein.
- B. Action Submittals:
 - 1. Product Data: Product data including manufacturers' technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
 - 2. Door Hardware Schedule: Submit schedule with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule as published by the Door and Hardware Institute. Indicate complete designations of each item required for each door or opening, include:
 - a. Door Index; include door number, heading number, and Architects hardware set number.
 - b. Opening Lock Function Spreadsheet: List locking device and function for each opening.
 - c. Name and manufacturer of each item.
 - d. Fastenings and other pertinent information.
 - e. Location of each hardware set cross-referenced to indications on Drawings.
 - f. Explanation of all abbreviations, symbols, and codes contained in schedule.
 - g. Mounting locations for hardware.
 - h. Door and frame sizes and materials.
 - 3. Key Schedule:
 - a. After Keying Conference, provide keying schedule listing levels of keying as well as explanation of key system's function, key symbols used and door numbers controlled.
 - b. Index keying schedule by door number, keyset, hardware heading number, cross keying instructions, and special key stamping instructions.
 - c. Prepare key schedule by or under supervision of supplier, detailing Owner's final keying instructions for locks.
 - d. Templates: After final approval of hardware schedule, provide templates for doors, frames and other work specified to be factory prepared for door hardware installation.
- C. Informational Submittals:
 - 1. Qualification Data: For Supplier, Installer and Architectural Hardware Consultant.
- D. Closeout Submittals:
 - 1. Operations and Maintenance Data : Provide in accordance with Section 01 7800 - Closeout Submittals and include:
 - a. Complete information on care, maintenance, and adjustment; data on repair and replacement parts, and information on preservation of finishes.
 - b. Catalog pages for each product.
 - c. Name, address, and phone number of local representative for each manufacturer.
 - d. Parts list for each product.
 - e. Final approved hardware schedule, edited to reflect conditions as-installed.
 - f. Final keying schedule
 - g. Copy of warranties including appropriate reference numbers for manufacturers to identify project.

1.6 QUALITY ASSURANCE

- A. Supplier Qualifications and Responsibilities: Recognized architectural hardware supplier with record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this Project and that provides certified Architectural Hardware Consultant (AHC) available to Owner, Architect, and Contractor, at reasonable times during the Work for consultation.
 - 1. Warehousing Facilities: In Project's vicinity.
 - 2. Scheduling Responsibility: Preparation of door hardware and keying schedules.
- B. Installer Qualifications: Qualified tradesmen, skilled in application of commercial grade hardware with record of successful in-service performance for installing door hardware similar in quantity, type, and quality to that indicated for this Project.
- C. Architectural Hardware Consultant Qualifications: Person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and meets these requirements:
 - 1. For door hardware, DHI-certified, Architectural Hardware Consultant (AHC).
 - 2. Can provide installation and technical data to Architect and other related subcontractors.
 - 3. Can inspect and verify components are in working order upon completion of installation.
 - 4. Capable of producing wiring diagrams.
 - 5. Capable of coordinating installation of electrified hardware with Architect and electrical engineers.
- D. Single Source Responsibility: Obtain each type of door hardware from single manufacturer.
- E. Fire-Rated Door Openings: Provide door hardware for fire-rated openings that complies with NFPA 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and are identical to products tested by Underwriters Laboratories, Intertek Testing Services, or other testing and inspecting organizations acceptable to authorities having jurisdiction for use on types and sizes of doors indicated, based on testing at positive pressure and according to NFPA 252 or UL 10C and in compliance with requirements of fire-rated door and door frame labels.
- F. Means of Egress Doors: Latches do not require more than 15 lbf (67 N) to release latch. Locks do not require use of key, tool, or special knowledge for operation.
- G. Accessibility Requirements: For door hardware on doors in an accessible route, comply with governing accessibility regulations cited in "REFERENCES" article, herein.
 - 1. Provide operating devices that do not require tight grasping, pinching, or twisting of wrist and that operate with force of not more than 5 lbf (22.2 N).
 - 2. Maximum opening-force requirements:
 - a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf (22.2 N) applied perpendicular to door.
 - b. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
 - c. Bevel raised thresholds with slope of not more than 1:2. Provide thresholds not more than 1/2 inch (13 mm) high.
 - d. Adjust door closer sweep periods so that, from open position of 70 degrees, door will take at least 3 seconds to move to 3 inches (75 mm) from latch, measured to leading edge of door.
- H. Keying Conference: Conduct conference at Project site to comply with requirements in Division 01.
 - 1. Attendees: Owner, Contractor, Architect, Installer, and Supplier's Architectural Hardware Consultant.
 - 2. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including:
 - a. Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
 - b. Preliminary key system schematic diagram.
 - c. Requirements for key control system.

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- d. Requirements for access control.
 - e. Address for delivery of keys.
- I. Pre-installation 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 and avoid delays.
 - 2. Inspect and discuss preparatory work performed by other trades.
 - 3. Inspect and discuss electrical roughing-in for electrified door hardware.
 - 4. Review sequence of operation for each type of electrified door hardware.
 - 5. Review required testing, inspecting, and certifying procedures.
- J. Coordination Conferences:
 - 1. Installation Coordination Conference: Prior to hardware installation, schedule and hold meeting to review questions or concerns related to proper installation and adjustment of door hardware.
 - a. Attendees: Door hardware Supplier/Installer, Contractor.
 - b. After meeting, provide letter of compliance to Architect, indicating when meeting was held and who was in attendance.
- K. Existing Conditions: Verify all existing conditions in the field to ensure compatibility with hardware specified in the Hardware Sets herein. Any discrepancies between the existing field conditions and hardware specified shall be brought to the attention of the Architect immediately. Hardware Supplier shall not order any hardware until all discrepancies are rectified and the Architect grants written approval.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up for hardware delivered to Project site.
- B. Tag each item or package separately with identification coordinated with final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.
 - 1. Deliver each article of hardware in manufacturer's original packaging.
- C. Project Conditions:
 - 1. Maintain manufacturer-recommended environmental conditions throughout storage and installation periods.
 - 2. Provide secure lock-up for door hardware delivered to Project, but not yet installed. Control handling and installation of hardware items so that completion of Work will not be delayed by hardware losses both before and after installation.
- D. Protection and Damage:
 - 1. Promptly replace products damaged during shipping.
 - 2. Handle hardware in manner to avoid damage, marring, or scratching. Correct, replace or repair products damaged during Work.
 - 3. Protect products against malfunction due to paint, solvent, cleanser, or any chemical agent.
- E. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.
- F. Deliver keys to Owner by registered mail or overnight package service.

1.8 COORDINATION

- A. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- B. Security: Coordinate installation of door hardware, keying, and Contractor's hardware consultant.
- C. Existing Openings: Where hardware components are scheduled for application to existing construction or where modifications to existing frame hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide proper door operation.

1.9 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Years from date of Substantial Completion, for durations indicated.
 - a. Closers:
 - a) Mechanical: 10 years.
 - b. Exit Devices:
 - a) Mechanical: 3 years.
 - c. Locksets:
 - a) Mechanical: 3 years.
 - d. Continuous Hinges: Lifetime warranty.
 - 2. Warranty does not cover damage or faulty operation due to improper installation, improper use or abuse.

1.10 MAINTENANCE

- A. Maintenance Tools:
 - 1. Furnish complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Approval of manufacturers other than those listed shall be in accordance with QUALITY ASSURANCE article, herein.
- B. Approval of products from manufacturers indicated as "Acceptable Manufacturer" is contingent upon those products providing all functions and features and meeting all requirements of scheduled manufacturer's product.
- C. Scheduled Manufacturer
 - 1. Continuous Hinges Ives (IVE)
 - 2. Flush Bolt Ives (IVE)
 - 3. Exit Devices & Mullions Von Duprin (VON)
 - 4. Cylinders & Keying Schlage (SCH); Best (BES)
 - 5. Door Closers LCN (LCN)
 - 6. Door Trim Ives (IVE)
 - 7. Protection Plates Ives (IVE)
 - 8. Stops & Holders Ives (IVE)
 - 9. Silencers Ives (IVE)
 - 10. Magnetic Holders LCN (LCN)
- D. Hand of Door: Drawings show direction of slide, swing, or hand of each door leaf. Furnish each item of hardware for proper installation and operation of door movement as shown.
- E. Where specified hardware is not adaptable to finished shape or size of members requiring hardware, furnish suitable types having same operation and quality as type specified, subject to Architect's approval.

2.2 MATERIALS

- A. Fasteners
 - 1. Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation.
 - 2. Furnish screws for installation with each hardware item. Finish exposed (exposed under any condition) screws to match hardware finish, or, if exposed in surfaces of other work, to match finish of this other work including prepared for paint surfaces to receive painted finish.

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3. Provide concealed fasteners for hardware units exposed when door is closed except when no standard units of type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work unless thru-bolts are required to fasten hardware securely. Review door specification and advise Architect if thru-bolts are required.
4. Install hardware with fasteners provided by hardware manufacturer.
- B. Modification and Preparation of Existing Doors: Provide necessary fillers, Dutchmen, reinforcements, and fasteners, compatible with existing materials, as required for mounting new opening hardware and to cover existing door and frame preparations.
 1. Use materials which match materials of adjacent modified areas.
 2. When modifying existing fire-rated openings, provide materials permitted by NFPA 80 as required to maintain fire-rating.
- C. Provide screws, bolts, expansion shields, drop plates and other devices necessary for hardware installation.
 1. Where fasteners are exposed to view: Finish to match adjacent door hardware material.

2.3 CONTINUOUS HINGES

- A. Aluminum Geared
- B. Manufacturers:
 1. Scheduled Manufacturer: Ives.
 2. Acceptable Manufacturers: Markar, Stanley.
- C. Requirements:
 1. Provide aluminum geared continuous hinges conforming to ANSI A156.25, Grade 2.
 2. Provide aluminum geared continuous hinges, where specified in the hardware sets, fabricated from 6063-T6 aluminum, with 0.25-inch (6 mm) diameter Teflon coated stainless steel hinge pin.
 3. Provide split nylon bearings at each hinge knuckle for quiet, smooth, self-lubricating operation.
 4. Provide hinges capable of supporting door weights up to 450 pounds, and successfully tested for 1,500,000 cycles.
 5. On fire-rated doors, provide aluminum geared continuous hinges that are classified for use on rated doors by testing agency acceptable to authority having jurisdiction.
 6. Install hinges with fasteners supplied by manufacturer.
 7. Provide hinges with symmetrical hole pattern.

2.4 CYLINDRICAL LOCKS - GRADE 1

- A. Manufacturers and Products:
 1. Scheduled Manufacturer and Product: Schlage ND Series
 2. Acceptable Manufacturers and Products: Best 9k Series
- B. Requirements:
 1. Provide cylindrical locks conforming to the following standards and requirements:
 - a. ANSI/BHMA A156.2 Series 4000, Grade 1.
 - b. UL 10C for 4'-0" x 10'-0" 3-hour fire door.
 - c. Florida Building Code (ASTM E330, E1886, E1996) and Miami Dade (TAS 201, 202, 203) requirements for hurricanes.
 2. Cylinders: Refer to "KEYING" article, herein.
 3. Provide cylindrical locksets exceeding the ANSI/BHMA A156.2 Grade 1 performance standards for strength, security, and durability in the categories below:
 - a. Abusive Locked Lever Torque Test - minimum 3,100 inch-pounds without gaining access

- b. Cycle life - tested to minimum 10 million cycles per ANSI/BHMA A156.2 Cycle Test with no visible lever sag or use of performance aids such as set screws or spacers.
- 4. Provide locks with standard 2-3/4 inches (70 mm) backset, unless noted otherwise, with 1/2 inch latch throw. Provide proper latch throw for UL listing at pairs.
- 5. Provide locksets with separate anti-rotation thru-bolts, and no exposed screws.
- 6. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.
- 7. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
- 8. Provide electrified options as scheduled in the hardware sets.
- 9. Lever Trim: Solid cast levers without plastic inserts, and wrought roses on both sides.
 - a. Lever Design: Schlage Rhodes.
 - b. Tactile Warning (Knurling): Where required by authority having jurisdiction. Provide on levers on exterior (secure side) of doors serving rooms considered to be hazardous.

2.5 CYLINDERS

- A. Manufacturer and Product:
 - 1. Scheduled Manufacturer and Product: Best.
- B. Requirements: Provide cylinders/cores complying with the following requirements.
 - 1. Cylinders/cores compliant with ANSI/BHMA A156.5; latest revision, Section 12, Grade 1; permanent cylinders; cylinder face finished to match lockset, manufacturer's series as indicated.
- C. Full-sized cylinders in the below-listed configuration(s), distributed throughout the Project as indicated.
 - 1. Conventional: Everest T cylinder with interchangeable core with patented, restricted keyway.
- D. Patent Protection: Cylinders/cores requiring use of restricted, patented keys, patent-protected until the year, 2029.
- E. Mark permanent cylinders/cores and keys with applicable blind code per DHI publication "Keying Systems and Nomenclature" for identification. Blind code marks shall not include actual key cuts.
- F. Identification stamping provisions must be approved by the Architect and Owner.
- G. Failure to comply with stamping requirements shall be cause for replacement of cylinders/cores involved at no additional cost to Owner.
 - 1. Forward cylinders/cores to Owner, separately from keys, by means as directed by Owner.
- H. Project Cylinder/Core Distribution: Provide cylinders/cores complying with the following requirements in Project locations as indicated.
 - 1. Exterior and Interior Doors: Conventional cylinders with interchangeable cores requiring use of restricted, patented keys incorporating dual-locking mechanism with 1 nickel silver blocking pin to check for patented key features; and integrated into exterior system without change to bitting combinations.
- I. Replaceable Construction Cores.
 - 1. Provide temporary construction cores for exterior doors only replaceable by permanent cores, furnished in accordance with the following requirements.
- J. 12 construction change (day) keys.
 - 1. Owner or Owner's Representative will replace temporary construction cores with permanent cores.

2.6 KEYING

- A. Keying System: Factory registered, complying with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.
- B. Keying Requirements – General
 - 1. Final key system shall be small format inter changeable cores by Best.
 - 2. Permanent cylinders/cores to be furnished by the Owner according to the following key system:

- a. Keying system as directed by the Owner.
- C. Key Features: Provide keys with the following features.
- D. Keys
 - 1. Material: Nickel silver; minimum thickness of .107-inch (2.3mm)
 - 2. Identification:
- E. Coordinate with cylinder/core and key identification requirements above.
- F. Stamp keys with Owner's unique key system facility code as established by the manufacturer; key symbol and embossed or stamped with "DO NOT DUPLICATE" along with the "PATENTED" or patent number to enforce the patent protection.
- G. Failure to comply with stamping requirements shall be cause for replacement of keys involved at no additional cost to Owner.
 - 1. Quantity: Furnish in the following quantities.
 - a. Change (Day) Keys: 3 per cylinder/core.
 - b. Permanent Control Keys: 2.
 - c. Master Keys: 2 per type.
- H. Return all construction cores to the hardware supplier.

2.7 KEY CONTROL SYSTEM

- A. Key Control System Manufacturers:
 - 1. Acceptable Manufacturers: HPC, Lund
- B. Requirements:
 - 1. Provide key control system, including envelopes, labels, tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, existing metal cabinet.
 - a. Provide complete cross index system set up by hardware supplier, and place keys on markers and hooks in existing cabinet as determined by final key schedule.

2.8 FINAL CYLINDERS AND KEYING

- A. Final key system shall be small format interchangeable cores by Best, provided by Owner.
- B. Coordinate a meeting with the owner to determine the key requirements for the building.
- C. Final Cylinders to have the following;
 - 1. Core to have concealed key control stampings
 - 2. Final core to be installed by the owner's represented.
 - 3. Return all construction cores to the hardware supplier.
 - 4. Final biting list to be delivered to the owner no additional cost to the owner.
- D. Keys shall have the following;
 - 1. Material: Nickel silver; minimum thickness of .092-inch (2.3mm)
 - 2. Keys to be stamped with visual key control.
 - 3. Key bow to have stamped "DO NOT DUPLICATE".
 - 4. Quantity: Furnish in the following quantities.
 - a. Change (Day) Keys: 3 per cylinder/core.
 - b. Final Control Keys: 3.
 - c. Master Keys: 6

2.9 DOOR CLOSERS

- A. Manufacturers:
 - 1. Scheduled Manufacturer: LCN 4010 and 4110 series.

B. Requirements:

1. Provide door closers certified to ANSI/BHMA A156.4 Grade 1 requirements by a BHMA certified independent testing laboratory. Surface mounted mechanical closers shall be certified to exceed ten million (10,000,000) full load cycles by a recognized independent testing laboratory. Closers shall be ISO 9000 certified. Units shall be stamped with date of manufacture code.
2. Door closers shall have fully hydraulic, full rack and pinion action with a high strength cast iron cylinder, and shall utilize full complement bearings at shaft. Cylinder body shall be 1-1/2 inch diameter, and double heat-treated pinion journal shall be 11/16 inch diameter.
3. Provide hydraulic fluid requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F. Fluid shall be fireproof and shall pass the requirements of the UL10C "positive pressure" fire test.
4. Spring power shall be continuously adjustable over the full range of closer sizes, and allow for reduced opening force as required by accessibility codes and standards. Hydraulic regulation shall be by tamper-proof, non-critical valves. Closers shall have separate adjustment for latch speed, general speed, and backcheck.
5. Provide closers with a solid forged steel main arms and factory assembled heavy-duty forged forearms for parallel arm closers. When closers are parallel arm mounted, provide closers which mount within a 6-inch top rail without the use of a mounting plate so that closer shall not be visible through vision panel from pull side.
6. Closers shall not incorporate Pressure Relief Valve (PRV) technology.
7. Closer cylinders, arms, adapter plates, and metal covers shall have a powder coating finish which has been certified to exceed 100 hours salt spray testing as described in ANSI Standard A156.4 and ASTM B117, or shall have special rust inhibitor (SRI).
8. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.
9. Mount closers on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Closers shall not be visible in corridors, lobbies and other public spaces unless approved by Architect.

2.10 COORDINATORS

A. Manufacturers:

1. Scheduled Manufacturer: Ives
2. Acceptable Manufacturers: Burns, Rockwood

B. Requirements:

1. Where pairs of doors are equipped with automatic flush bolts, an astragal, or other hardware that requires synchronized closing of the doors, provide bar-type coordinating device, surface applied to underside of stop at frame head.
2. Provide filler bar of correct length for unit to span entire width of opening, and appropriate brackets for parallel arm door closers and surface vertical rod exit device strikes. Factory-prep coordinators for vertical rod devices if required.

2.11 DOOR TRIM

A. Manufacturers:

1. Scheduled Manufacturer: Ives.
2. Acceptable Manufacturers: Burns, Rockwood.

B. Requirements:

1. Provide push plates 4 inches (102 mm) wide by 16 inches (406 mm) high by 0.050 inch (1 mm) thick and beveled 4 edges. Where width of door stile prevents use of 4 inches (102 mm) wide plate, adjust width to fit.
2. Provide flush pulls as scheduled. Where required back mounted model.

2.12 PROTECTION PLATES

- A. Manufacturers:
 - 1. Scheduled Manufacturer: Ives.
- B. Requirements:
 - 1. Provide kick plates, mop plates, and armor plates minimum of 0.050 inch (1 mm) thick as scheduled. Furnish with sheet metal or wood screws, finished to match plates.
 - 2. Sizes of plates:
 - a. Kick Plates: 8 inches (254 mm) high by 2 inches (51 mm) less width of door on single doors, 1 inch (25 mm) less width of door on pairs
 - b. Mop Plates: 8 inches (102 mm) high by 2 inches (51 mm) less width of door on single doors, 1 inch (25 mm) less width of door on pairs

2.13 DOOR STOPS AND HOLDERS

- A. Manufacturers:
 - 1. Scheduled Manufacturer: Ives.
- B. Provide door stops at each door leaf in accordance with the following requirements:
 - 1. Provide wall stops wherever possible. Provide convex type where mortise type locks are used and concave type where cylindrical type locks are used.
 - 2. Where a wall stop cannot be used, provide dome type floor stops for low or high rise options.
 - 3. Where wall or floor stop cannot be used, provide medium duty surface mounted overhead stop.

2.14 SILENCERS

- A. Manufacturers:
 - 1. Scheduled Manufacturer: Ives.
- B. Requirements:
 - 1. Provide "push-in" type silencers for hollow metal frames.
 - 2. Provide one silencer per 30 inches (762 mm) of height on each single frame, and two for each pair frame.

2.15 FINISHES

- A. A. Finish of all hardware shall be as specified within the hardware sets, confirm to match existing.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Prior to installation of hardware, examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Existing Door and Frame Compatibility: Field verify existing frames receiving new hardware and existing conditions receiving new openings. Verify that new hardware is compatible with existing door and frame preparation and existing conditions.
- C. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Where on-site modification of doors and frames is required prepare hardware locations in accordance with the following:
 - 1. Field modify and prepare existing door and frame for new hardware being installed.
 - 2. Prepare hardware locations in accordance with:

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- a. Steel Doors and Frames: For surface applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.
- b. Where doors are in rated assemblies, comply with NFPA 80 for restrictions on on-site door hardware preparation.
 - a) Where on-site modification of existing frames is required:
 - b) Field modify and prepare existing door and/or frame for new hardware being installed.
 - c) When modifications are exposed to view, use concealed fasteners, when possible.
- B. Verify that frames are ready to receive work; labeled, fire-rated doors and frames are present and properly installed, and dimensions are as indicated on shop drawings.
- C. Ensure that walls and frames are square and plumb before hardware installation.
- D. The installer shall notify the architect, in writing, of all unacceptable condition that could affect the proper operation of the finish hardware.
- E. Locate hardware per SDI-100 and applicable building, fire, life-safety, accessibility, and security codes.
- F. Where new hardware is to be installed near existing doors/hardware scheduled to remain, match locations of existing hardware.
- G. Existing frames and doors scheduled to receive new hardware: carefully remove existing hardware and turn over to Owner. Patch and fill wood frames and doors with solid wood stock or dowel material before cutting for new hardware. Do not reuse existing screw holes fill and re-pilot.
- H. Provide hole preparation in existing frames for door position switch.
- I. Contractor to fill/patch any old hardware preparations in existing frames that will no longer be used with new door/hardware. Contractor is responsible for any new mortises/cylindrical Hardware preparation to existing frame to accommodate new door and hardware.

3.3 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights to comply with the following, unless otherwise indicated or required to comply with governing regulations.
 - 1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
- B. Install each hardware item in compliance with manufacturer's instructions and recommendations, using only fasteners provided by manufacturer.
- C. Do not install surface mounted items until finishes have been completed on substrate. Protect all installed hardware during painting.
- D. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.
- E. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- F. Frame set into new or existing masonry wall and filled with mortar, drill and tap fasteners.
- G. Install operating parts so they move freely and smoothly without binding, sticking, or excessive clearance.
- H. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than quantity recommended by manufacturer for application indicated or one hinge for every 30 inches (750 mm) of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.
- I. Lock Cylinders: Install construction cores to secure building and areas during construction period.
 - 1. Replace construction cores with permanent cores as indicated in keying section.
 - 2. Coordinate with owner for direction of the installation of permanent.

- J. Mount Closers to be capable of swinging 180 degree. Closer/Holders: Mount closer/holders on room side of corridor doors, inside of exterior doors, and stair side of stairway doors.
- K. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they may impede traffic or present tripping hazard.
- L. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

3.4 FIELD QUALITY CONTROL

- A. After installation has been completed, the hardware supplier and manufacturers representative for locksets, door closers, exit devices, and overhead stops shall check the project and verify compliance with installation instructions, adjustment of all hardware items, and proper application according to the approved hardware schedule. Provide a written report, with itemized confirmation, by hardware supplier listing all hardware that has not been installed correctly.
- B. After installation has been completed, the hardware supplier and manufacturers representative shall meet with the owner to explain the functions, uses, adjustment, and maintenance of each item of hardware.
- C. The contractor shall retain, at their cost, a qualified independent Architectural Hardware Consultant, duly certified by the Hardware Industry and approved by the Architect, prior to Substantial Completion, to inspect the installation and certify that the installation has been furnished and installed in accordance with manufacturer's instructions and specified and is in proper working order. Consultant shall submit a written report.
 - 1. Architectural Hardware Consultant will inspect door hardware and state in each report whether installed work complies with or deviates from requirements, including whether door hardware is properly installed and adjusted.

3.5 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
 - 1. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.
- B. Occupancy Adjustment: Approximately twelve (12) months after date of Substantial Completion, Installer's Architectural Hardware Consultant shall examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors, door hardware, and electrified door hardware.

3.6 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items as necessary to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

3.7 DEMONSTRATION

- A. Provide training for Owner's maintenance personnel to adjust, operate, and maintain door hardware and door hardware finishes. Refer to 01 7900 - Demonstration and Training.

3.8 DOOR HARDWARE SCHEDULE

- A. Provide hardware for each door to comply with requirements of this section and the below-listed scheduled sets.

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- B. It is intended that the following schedule includes complete items of door hardware necessary to complete the work. If a discrepancy is found in the scheduled hardware sets, such as a missing item, improper hardware for a frame, door or fire codes, provisions of the above-specifications shall govern.
- C. Locksets, exit devices, and other hardware items are referenced in the following hardware sets for series, type and function. Refer to the above-specifications for special features, options, cylinders/keying, and other requirements.

NOTE: CONTRACTOR TO FILL/PATCH ANY OLD HARDWARE PREPARATIONS IN EXISTING FRAME THAT WILL BE NO LONGER USED WITH NEW DOOR/HARDWARE. CONTRACTOR IS RESPONSIBLE FOR ANY NEW MORTISES/HARDWARE PREPARATION TO EXISTING FRAME TO ACCOMMODATE NEW DOOR AND HARDWARE.

- D. **ALL EXISTING HINGES AND STRIKES PLATES SHALL BE REMOVED.**

ALL LOCK SETS: SHALL BE OPENABLE AT ALL TIMES FROM THE INSIDE (OCCUPIED SIDE) WITHOUT THE USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT.

HARDWARE SETS:

HARDWARE GROUP NO. 01

Provide each SGL door(s) with the following:

Qty	Description	Catalog Number	Finish	Mfr
1 EA	CONT. HINGE	224HD	628	IVE
1 EA	VANDL CLASSRM SEC	ND95BDCD RHO	626	SCH
1 EA	SURFACE CLOSER	4011 DEL	689	LCN
1 EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1 EA	WALL STOP	WS406/407CVX	630	IVE
1 EA	GASKETING	8144S-BK	S-Bk	ZER

Hardware Group No. 02

Provide each SGL door(s) with the following:

	Description	Catalog Number	Finish	Mfr
1 EA	CONT. HINGE	224HD	628	IVE
1 EA	VANDL ENTRANCE LOCK	ND92BDCD RHO	626	SCH
1 EA	PERMANENT CORE	BY OWNER	62	
1 EA	SURFACE CLOSER	4011	689	LCN
1 EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1 EA	WALL STOP	WS406/407CCV	630	IVE
1 EA	GASKETING	8144S-BK	S-Bk	ZER
1 EA	THRESHOLD	PER DETAIL	A	ZER

Hardware Group No. 03

Provide each PR door(s) with the following:

Qty	Description	Catalog Number	Finish	Mfr
2 EA	CONT. HINGE	224HD	628	IVE
1 SET	AUTO FLUSH BOLT	FB31P	630	IVE

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1 EA	DUST PROOF STRIKE	DP2	626	IVE
1 EA	PERMANENT CORE	BY OWNER	626	
1 EA	COORDINATOR	COR X FL	628	IVE
2 EA	SURFACE CLOSER	4011T	689	LCN
1 EA	GASKETING	8144S-BK	S-Bk	ZER
1 EA	MEETING STILE	328AA	AA	ZER
TIE MAGNETIC HOLD OPENS TO FIRE ALARM - COORDINATE WITH ELECTRICAL CONTRACTOR				

Hardware Group No. 04

Provide each PR door(s) with the following:

Qty	Description	Catalog Number	Finish	Mfr
2 EA	CONT. HINGE	224HD	628	IVE
2 EA	FIRE EXIT HARDWARE	9849-L-F-06-LBL	626	VON
2 EA	SFIC RIM CYLINDER	80-116	626	SCH
2 EA	PERMANENT CORE	BY OWNER	626	
2 EA	SURFACE CLOSER	4111 EDA	689	LCN
2 EA	KICK PLATE	8400 10" X 1" LDW B-CS	630	IVE
2 EA	FIRE/LIFE WALL MAG	SEM7840	689	LCN
1 EA	GASKETING	8144S-BK	S-Bk	ZER
2 EA	MEETING STILE	328AA	AA	ZER

Hardware Group No. 05

Provide each SGL door(s) with the following:

Qty	Description	Catalog Number	Finish	Mfr
1 EA	CONT. HINGE	24HD	628	IVE
1 EA	PRIVACY W/DB & IND	LV9496BDC 06A L583-363	626	SCH
1 EA	PERMANENT CORE	BY OWNER	626	
EA	SURFACE CLOSER	4111 EDA	689	LCN
EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
EA	WALL STOP	WS406/407CVX	630	IVE
1 EA	SILENCER	SR64	GRY	IVE

Hardware Group No. 06

Provide each SGL door(s) with the following:

Qty	Description	Catalog Number	Finish	Mfr
1 EA	CONT. HINGE	224HD	628	IVE
1 EA	VANDL CLASSRM LOCK	ND94BDCD RHO	626	SCH
1 EA	PERMANENT CORE	BY OWNER	626	
1 EA	SURFACE CLOSER	4011	689	LCN

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1 EA	WALL STOP	WS406/407CCV	630	IVE
3 EA	SILENCER	SR64	GRY	IVE

Hardware Group No. 07

Provide each SGL door(s) with the following:

Qty	Description	Catalog Number	Finish	Mfr
EA	CONT. HINGE	224HD	628	IVE
EA	VANDL CLASSRM SEC ND95BDCD RHO		626	SCH
EA	PERMANENT CORE	BY OWNER	626	
EA	SURFACE CLOSER	4011 DEL	689	LCN
EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
EA	WALL STOP	WS406/407CVX	630	IVE
EA	GASKETING	8144S-BK	S-Bk	ZER

Hardware Group No. 08

Provide each SGL door(s) with the following:

Qty	Description	Catalog Number	Finish	Mfr
1 EA	CONT. HINGE	224HD	628	IVE
1 EA	VANDL LOCK	ND96BDCD RHO	626	SCH
		STOREROOM		
1 EA	PERMANENT CORE	BY OWNER	626	
1 EA	SURFACE CLOSER	4011	689	LCN
1 EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1 EA	WALL STOP	WS406/407CVX	630	IVE
1 EA	GASKETING	8144S-BK	S-Bk	ZER

END OF SECTION

SECTION 09 2116
GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Repair to metal stud wall framing. (Allowance).
- B. Metal furring (Allowance).
- C. Metal trim.
- D. Acoustical fire rated insulation.
- E. Cement board.
- F. Joint treatment and accessories.
- G. Cement plaster finish.

1.3 RELATED REQUIREMENTS

- A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 06 1000 - Rough Carpentry:
 - 1. Replacement/repairing existing wood blocking. (Allowance).
 - 2. New Blocking.
- C. Section 07 8400 - Firestopping: Penetrations at fire rated walls.
- D. Section 07 9200 - Joint Sealants.
- E. Section 09 3000 - Tiling.

1.4 REFERENCE STANDARDS

- A. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 1999 (Reaffirmed 2016).
- B. ASTM C150 Standard Specification for Portland Cement.
- C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2017.
- D. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2014, with Editorial Revision (2015).
- E. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2017.
- F. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2017a.
- G. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2015.
- H. ASTM C1047 - Standard Specification for Accessories For Gypsum Wallboard and Gypsum Veneer Base; 2014a.
- I. ASTM C1288 - Standard Specification for Discrete Non-Asbestos Fiber-Cement Interior Substrate Sheets; 2017.
- J. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2017.
- K. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2016.

- L. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018.
- M. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2016a.
- N. UL (FRD) - Fire Resistance Directory; Current Edition.

1.5 SYSTEM DESCRIPTION

- A. General: Master Wall Inc.® Interior Coatings for Wet Areas applied over approved cement board or other moisture-resistant substrates, consisting cement base coat with reinforcing mesh and cement plaster finish. The substrate shall be attached over existing metal stud support.
- B. Methods of Installation
 - 1. Field Applied: The Interior Coatings for Wet Areas System is applied to the substrate system in place.
- C. Design Requirements
 - 1. Substrate:
 - a. The maximum deflection under full flexural design loads of the substrate system shall not exceed $L/360$.
 - 2. Expansion Joints
 - a. Design and location of expansion joints in the Interior Coatings for Wet Areas System is the responsibility of the project designer and shall be noted on the project drawings. As a minimum, expansion joints shall be placed at the following locations:
 - a) Where expansion joints occur in the substrate system.
 - (a) Where the Interior Coatings for Wet Areas System abuts dissimilar materials.
 - (b) Where the substrate type changes
 - 3. Control Joints
 - a. Control joints may be required and located by the designer in the stucco substrate at the following locations: (Reference construction documents for specific locations).
 - a) Where required by the substrate manufacturer.

1.6 PERFORMANCE REQUIREMENTS

- A. Weather Resistance and Durability Performance
 - 1. Accelerated Weathering: ASTM G 153 (Formerly ASTM G 23). No deleterious effects at 2000 hours when viewed under 5x magnification. .
 - a. Passes
 - 2. Accelerated Weathering ASTM G 154 (Formerly ASTM G 53) No deleterious effects at 2000 hours Pass
 - a. Passes
 - 3. Freeze/Thaw Resistance ASTM E 2485 No deleterious effects at 10 cycles when viewed under 5x magnification.
 - a. Passes
 - 4. Water Resistance ASTM D 2247 No deleterious effects at 14-day exposure. Pass @ 28 days.
 - a. Passes @ 28 days
 - 5. Salt Spray ASTM B 117 No deleterious effects* at 300 hours. Pass @ 300 hrs.
 - a. Passes @ 300 hrs
 - 6. Abrasion Resistance ASTM D 968 No cracking or loss of film integrity at 528 quarts (500 L) of sand.
 - a. Passes
 - 7. Mildew Resistance ASTM D 3273 No growth supported during 28-day exposure period.
 - a. Passes

- B. Fire Performance:
 - 1. Surface Burning (individual components); ASTM E 84; Individual components shall each have, flame spread of 25 or less, and smoke developed of 450 or less; Flame Spread: 0, Smoke Developed: 0.
 - 2. Component Performance:
 - a. Alkali Resistance of Reinforcing Mesh: ASTM E2098 (formerly EIMA 105.01), Greater than 120 pli (21 dN/cm) retained tensile strength
 - b. Passes

1.7 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on gypsum board, cement board, joint finishing system, insulation, and accessories.
- C. Samples: Submit two samples of cement board and gypsum board finished with proposed texture application, 12 by 12 inches (300 by 300 mm) in size, illustrating finish color and texture.

1.8 QUALITY ASSURANCE

- A. Perform in accordance with ASTM C 840. Comply with requirements of GA-600 for fire-rated assemblies.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum Ten (10) years of experience.
- C. Installer Qualifications: Company specializing in performing gypsum board installation and finishing, with minimum 5 years of documented experience.
 - 1. Installer for the plaster system shall be approved by the manufacturer..

1.9 REGULATORY REQUIREMENTS

- A. Refer to Section 01 4100 - Regulatory Requirements.

PART 2 PRODUCTS

2.1 BOARD ASSEMBLIES

- A. Fire-Resistance-Rated Assemblies: Provide completed assemblies with the following characteristics:
 - 1. Fire Rated Partitions: Rating as indicated on the drawings..
 - 2. UL Assembly Numbers: Provide construction equivalent to that listed for the particular assembly in the current UL (FRD).

2.2 METAL FRAMING MATERIALS

- A. Refer to Section 01 2100 - Allowances.

2.3 BOARD MATERIALS

- A. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
 - 1. Application: Use for areas shown on drawings.
 - 2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 - a. **Mold resistant board is required at all locations.**
 - 3. At Assemblies Indicated with Fire-Resistance Rating: Use type required by indicated tested assembly U433; Type X board, UL or WH listed.
 - 4. Thickness:
 - a. Vertical Surfaces: 5/8 inch (16 mm) and 1/2 inch (13 mm).
 - b. Product: NGC Corporation, Gold Bond, Fire-Shield 2001 Rexford Road, Charlotte, North Carolina 28211 800.628.4662
- B. Cement Board:

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1. ASTM Cement-Based Board: Non-gypsum-based, cementitious board complying with ANSI A118.9.
 - a. Thickness: 5/8 inch (16 mm) for tile finish.
 - b. Thickness: 1/2 inch (12.7 mm) for plaster finish.
2. Application: Use for all applications, including areas behind ceramic tile.
3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
4. Classification: ANSI Cement-Based Board: Non-gypsum-based; aggregated Portland cement panels with glass fiber mesh embedded in front and back surfaces complying with ANSI A118.9, ASTM A108.11 and ASTM C1325 provide with manufacturer's standard edges.
 - a. Thickness: 1/2 inch (12.7 mm) 5/8 inch (15.9 mm). Where indicated.
 - b. Board Length: 8 feet (2438 mm).
 - c. Board Width: 48 inches (1219 mm)] indicated.
 - d. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.
5. Fastener Requirements: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and application
 - a. Screws for Fastening cement board to Cold-Formed Metal Framing: In accordance to cement board manufacturer's recommended steel drill screws with corrosion-resistant coating.
 - b. Products:
 - a) NGC Corporation, PermaBase, 2001 Rexford Road, Charlotte, North Carolina 28211 800.628.4662 .
 - b) Substitutions: See Section 01 2500 Substitution Procedures

2.4 WALLBOARD ACCESSORIES

- A. Stone Wool Insulation:
 1. Lightweight sound absorbency and fire protection
 2. Density: 2.5 lbs/cubic foot.
 3. Airflow Resistivity: Greater than 5,500 (mks rayls/m).
 4. Non-combustible: Flame Spread:0; Smoke Developed: 0.
 5. Water repellent.
 6. Mold and fungus resistance: None.
 7. Thickness: Match metal stud framing.
 8. Width: Match metal stud framing.
 9. Product:
 - a. Rockwool AFB as manufactured by ROCKWOOL 8024 Esquesing Line Milton, ON L9T 6W3 Tel: 1 800 265 6878
 - b. Use for all exposed existing metal partitions.
- B. Plaster Base Coat:
 1. Water Resistant Adhesive & Base Coat:
 - a. Acrylic-based product mixed one-to-one by weight with Portland cement for use as a base coat with reinforcing mesh over substrate.
 - b. Portland Cement: Type I or II, meeting ASTM C 150 fresh and free of lumps.
 2. Product: Guardian as manufactured by Master Wall Inc. PO Box 397, Fortson, GA 31808, 800-755-0825,
 3. Use for applying entire surface of cement board.
- C. Plaster:
 1. One Coat Application:

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- a. Superior Finishes: Acrylic-based wall coatings:
 - a) Texture:
 - (a) Versatex 0.5 – Fine texture.
 - b. Product: Versatex 0.5 as manufactured by Master Wall Inc. PO Box 397 , Fortson, GA 31808, 800-755-0825,
- D. Beads, Joint Accessories, and Other Trim: ASTM C1047, galvanized steel, unless noted otherwise.
 - 1. Zinc L-Trim: Applied after panel installation to finish veneer plaster edges at wall where shown on drawings.
 - a. Products:
 - a) ClarkDietrich; #Z701B/#801B Zinc 5/8": www.clarkdietrich.com.
 - b) Use for all plaster locations as shown on detail
 - 2. Metal L-Trim: Applied to edges of gypsum board wall where shown on drawings.
 - a. Products:
 - a) ClarkDietrich; #200-B 5/8".: www.clarkdietrich.com.
 - b) Use for all gypsum board locations as shown on drawings.
 - 3. Control Joints:
 - a. Type: V-shaped metal with factory-installed protective tape.
 - b. Use from floor to ceiling.
 - c. Products:
 - a) USG Zinc Control Joint No 093.
 - b) Substitutions: See Section 01 2500 Substitution Procedures
- E. Joint Materials: ASTM C475/C475M For rated partitions..
 - 1. 2 in. wide polypropylene mesh tape for rated partitions as required for UL 433.
 - 2. Mold resistant and asbestos free.
 - 3. Joint Compound: Latex-modified cement mortar:
 - a. Products:
 - a) Latex-modified cement mortar for rated partitions as required for UL 433 rate partitions and recommended by the manufacturer.
- F. Joint Material: For Non-Rated Partition: For base layer of cement board provide reinforcing mesh on vertical and horizontal joints or other approved joint material approved by the manufacturer
- G. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.
- H. Utility angle: 2"x 2" 20 ga. for attachments of intersection framing and right angle corner enclosures.
- I. Flat Strap: 6", 16 gauge. Use for Stud bridging.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that project conditions are appropriate for work of this section to commence.
- B. Prior to installation of the Interior Coatings for Wet Areas System, the contractor shall verify that the substrate:
 - 1. Is of a type listed in the specifications.
 - 2. Is flat within 6.4 mm (1/4 in) in a 3 m (10 ft) radius.
 - 3. Is sound, dry, connections are tight, has no surface voids, projections or other conditions that may interfere with the Interior Coatings for Wet Areas System installation or performance.

3.2 PREPARATION

- A. Protect adjoining work during Interior Coatings for Wet Areas installation.

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- B. The substrate shall be prepared as to be free of foreign materials, such as, oil, dust, dirt, form release agents, efflorescence, paint, wax, water repellents, moisture, frost and any other condition that inhibit adhesion.

3.3 GENERAL GUIDELINES

- A. The system shall be installed in accordance with the current manufacturer's product application Instructions.
- B. The overall minimum base coat thickness shall be sufficient to fully embed the mesh.
- C. When installing the Interior Coatings for Wet Areas System, adhere according to manufacturer's and local requirements

3.4 INTERIOR COATINGS FOR WET AREAS INSTALLATION

- A. Mixing
 - 1. Mix the products following the instructions on the product data sheets.
 - 2. Additives shall not be added to manufacturer's materials unless written approval has been received from manufacturer.
- B. Preparation
 - 1. Protect contiguous work from damage during application. Temporary covering may be required to prevent splattering of finish coatings on other work.
 - 2. Adhesive, Base Coats and Finishes shall not be installed when ambient air temperature is below 40°F (4°C). The temperature shall remain at or above 40°F (4°C) during mixing, application and until materials have cured.
 - 3. Sufficient scaffolding, manpower and tools shall be provided to prevent cold joints.
- C. Installation, General
 - 1. Reference architectural details for full wall system requirements.
 - 2. Comply with the manufacturers' current published instructions, (specifications, details, data sheets and technical bulletins) for the installation of the Interior Coatings for Wet Areas System.
 - 3. Verify that all trim and other items are in place.

3.5 BASE COAT APPLICATION

- A. Base Coat Application
 - 1. Apply the base coat to the entire surface of the substrate to the thickness required for the specified reinforcing mesh to be applied in a given area. a. Standard, Detail and Hi-Tech Mesh require a nominal 1/16" (1.6 mm).
 - 2. Immediately embed manufacturer's reinforcing mesh into wet base coat with a trowel, working from the center toward the edges, until the mesh is fully covered and a smooth surface is achieved. The color of the mesh shall not be visible but a slight mesh pattern may be visible.
 - 3. Lap mesh 2 1/2" (64 mm) minimum on all sides.
 - 4. Reinforcing Mesh shall be continuous through all interior and exterior corners extending beyond the corner a minimum of 12" from both directions creating a minimum of two layers of standard reinforcing mesh on all interior and exterior corners.
 - 5. Allow the base coat to cure a minimum of 12 hours prior to additional base coat or finish coat applications.

3.6 FINISH COAT APPLICATION

- A. Superior Finish Coat Application
 - 1. Surface irregularities in the base coat, such as trowel marks and reinforcing mesh laps shall be corrected prior to the finish application.

2. Apply the manufacturer's Superior Finish in the color and texture as approved by the project Architect with sufficient manpower and equipment to insure a continuous operation without cold joints, scaffolding lines etc. Texture finish shall match approved jobsite samples. Thickness and coverage will vary depending on the specified final appearance.
3. Trowel Application: Versatex Smooth Texture
 - a. Apply the finish to the clean, dry and cured base coat with a stainless steel trowel.
 - b. Level the surface to a uniform thickness of 1/16 ".
 - c. Float the Finish with a plastic float in a uniform motion to achieve the desired texture.
4. Specialty Finishes: Follow individual product data sheet application instructions

3.7 ACOUSTIC ACCESSORIES INSTALLATION

- A. Acoustic Fire Batt Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.
- B. Acoustic Sealant: Install in accordance with manufacturer's instructions.
 1. Place one bead continuously on substrate before installation of perimeter framing members.
 2. Place continuous bead at perimeter of each layer of gypsum board.
 3. Seal around all penetrations by metal trim., except where firestopping is provided.

3.8 BOARD INSTALLATION

- A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
- B. Single-Layer Nonrated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
- C. Double-Layer, Nonrated: Use gypsum board for first layer, placed parallel to framing or furring members, with ends and edges occurring over firm bearing. Place second layer perpendicular to framing or furring members. Offset joints of second layer from joints of first layer.
- D. Fire-Resistance-Rated Construction: Install cement board in strict compliance with requirements of assembly listing.
 1. Install Cement Board to steel framing with approved screws spaced 8" o.c. Treat joints as specified.
- E. When joint tape and compound has completely dried, treat the **entire wall surface** with cement plaster base course according to the application directions. Then apply one coat cement finish plaster smooth and dense for painting.
- F. Penetrations: Penetrations thru cement board shall be as detailed on drawings in accordance with manufacturer's instruction.
 1. Provide sealant on the face of the outer board as indicated.
- G. Cementitious Backing Board: Install over steel framing members where indicated, in accordance with ANSI A108.11 and manufacturer's instructions.
 1. Install Cement Board to steel framing with metal screws spaced 8" o.c. Treat joints as specified
 2. Fire-Resistance-Rated Partitions: Install cement board board in strict compliance with requirements of assembly listing(U433).
 3. Non-Fire Rated Partitions: In strict compliance with cement board manufacturer's instructions.

3.9 INSTALLATION OF TRIM AND ACCESSORIES

- A. Control Joints: Place control joints consistent with lines of building spaces and as follows:
 1. Apply USG Plaster Bonder in a continuous film to joint areas, then treat joint areas with joint tape compound to fully conceal the tape. Provide an additional coat of setting-type to fully conceal the tape if required. Allow to completely dry.

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2. Install where indicated on plans. Break base behind joint and back by double studs. Apply acoustical sealant behind control joint. Remove protective tape after plastering
- B. Corner Beads: Install at external corners, using longest practical lengths.
- C. L-Trim: Install at locations where gypsum board and cement board abuts dissimilar materials and as indicated.

3.10 FIELD QUALITY CONTROL

- A. The Contractor shall be responsible for the proper application of the Interior Coatings for Wet Areas materials.
- B. The Contractor shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures, workmanship and as to the specific products used.
- C. Manufacturer's current published details, specifications, data sheets, technical bulletins and other literature/information are minimum standards and guidelines that shall be followed when designing and detailing a project with the Interior Coatings for Wet Areas System.
- D. **Manufacturer must approve deviations from the standard published documents in writing.**

3.11 FIRE RATED WALL MARKING AND IDENTIFICATION

- A. For all walls or partitions indicated to be fire rated, or smoke rated, where there is an accessible concealed floor, ceiling or attic space adjacent to said wall. Contractor shall permanently mark with signs or stenciling within the concealed space, in accordance with BIC 703.7 in concealed spaces.
 1. Identifications shall be located within 15 feet of the end of each wall or partition and at intervals not exceeding 30 feet measured horizontally along the wall or partition.
 2. Identifications shall include lettering not less than 3 inches in height with a minimum 3/8 inch stroke width in a contrasting color incorporating the wording "FIRE AND/OR SMOKE BARRIER - PROTECT ALL OPENINGS".

3.12 JOB SITE CLEANUP

- A. Clean work area in accordance with contract documents removing all excess materials, droppings and debris. Clean adjacent surfaces.
- B. Other trades may now install their work –Mechanical (Division 23) and Electrical (Division 23)

3.13 PROTECTION

- A. Protect finished application from inclement weather and other sources of damage until ready for use.

END OF SECTION

**SECTION 09 3000
TILING**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Preparation.
- B. Tile for floor applications.
- C. Tile for wall applications.
- D. Tile for shower receptors.
- E. Stone thresholds.
- F. Ceramic trim.
- G. Non-ceramic trim.

1.3 RELATED REQUIREMENTS

- A. Section 00 4440 - Owner Supplied Contractor Installed.
- B. Section 01 6000 - Product Requirements.
- C. Section 03 5400 - Cast Underlayment.
- D. Section 09 2116 - Gypsum Board Assemblies: Cement Board for wall backerboard.

1.4 REFERENCE STANDARDS

- A. ANSI A108/A118/A136 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium); 2017.
 - 1. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework; 1999 (Reaffirmed 2010).
 - 2. ANSI A118.1 - American National Standard Specifications for Dry-Set Cement Mortar; 2012 (Revised).
 - 3. ANSI A118.4 - American National Standard Specifications for Modified Dry-Set Cement Mortar; 2012 (Revised).
 - 4. ANSI A118.12 - American National Standard Specifications for Crack Isolation Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation; 2014.
 - 5. ANSI A118.15 - American National Standard Specifications for Improved Modified Dry-Set Cement Mortar; 2012.
 - 6. ANSI A136.1 - American National Standard for Organic Adhesives for Installation of Ceramic Tile; 2008 (Reaffirmed 2013).
 - 7. ANSI A137.1 - American National Standard Specifications for Ceramic Tile; 2012.
- B. ASTM C373 - Standard Test Methods for Determination of Water Absorption and Associated Properties by Vacuum Method for Pressed Ceramic Tiles and Glass Tiles and Boil Method for Extruded Ceramic Tiles and Non-tile Fired Ceramic Whiteware Products; 2017.
- C. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2017.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide manufacturers' data sheets on mortar, grout, and accessories. Include instructions for using grouts and adhesives.

- C. Tile layout, patterns, color arrangement, junctions with dissimilar materials, thresholds, and ceramic accessories as shown on drawings.
- D. Maintenance Data: Include recommended cleaning methods, cleaning materials, and stain removal methods.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Company specializing in performing tile installation, with minimum of five years of documented experience.

1.7 MOCK-UPS

- A. Construct tile mock-up incorporating all components specified for the location.
 - 1. Minimum size of mock-up is 10' x 10'.
 - 2. Approved mock-up may remain as part of work.
 - 3. Include floor, wall and door threshold.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

1.9 FIELD CONDITIONS

- A. Do not install solvent-based products in an unventilated environment.
- B. Maintain ambient and substrate temperature above 50 degrees F (10 degrees C) and below 100 degrees F (38 degrees C) during installation and curing of setting materials.

PART 2 PRODUCTS

2.1 TILE

- A. **All tile will be Owner Supplied Contractor Installed.** Refer to Section 00 4440 - Owner Supplied Contractor Installed.
- B. Floor Tile Ceramic Mosaic: ANSI A137.1, standard grade.
 - 1. Moisture Absorption: 0 to 0.5 percent as tested in accordance with ASTM C373.
 - 2. Size: 12 x 24 inch (300 by 600 mm), nominal.
 - 3. Thickness: 1/6"
 - 4. Edges: Square.
 - 5. Surface Finish: Matte glazed, Non-slip, to comply with or exceed DC of 0.42.
 - 6. Color(s): As indicated on drawings.
Pattern: As indicated on drawings
 - 7. Products:
 - a. Stone Peak Ceramics, Inc, Wave Collection.
- C. Wall Tile: ANSI A137.1, standard grade and as follows:
 - 1. Size: 4 x 12 inches.
 - 2. Edges: Cushioned.
 - 3. Surface Finish: Matte and Gloss as indicated on finish schedule.
 - 4. Color(s): As indicated on drawings.
 - 5. Pattern: As indicated on drawings.
 - 6. Products:
 - a. Prospec, Pro Linear Series.
 - 7. Substitutions: Section 01 2500 Substitution Procedures.

2.2 TRIM AND ACCESSORIES

- A. Ceramic Trim: Matching bullnose, cove base, and cove ceramic shapes in sizes coordinated with field tile.
 - 1. Applications:
 - a. Open Edges: Bullnose.
 - b. Inside Corners: Jointed.
 - c. Floor to Wall Joints: Cove base.
 - 2. Manufacturers: Same as for tile.
- B. Non-Ceramic Trim: Brushed stainless steel, style and dimensions to suit application, for setting using tile mortar or adhesive.
 - 1. Applications: Refer to Finish Schedule for types and finish.
 - a. Wall corners, outside and inside, open edges of wall tile.
 - a) Product: RONDEC-AC stainless steel.
 - 2. Manufacturers:
 - a. Schluter-Systems: www.schluter.com.
 - b. Substitutions: Section 01 2500 Substitution Procedures.
- C. Thresholds: Full width of door frame; beveled edge on both long edges; without holes, cracks, or open seams. Refer to details.
 - 1. Material: Travertine, honed finish where indicated on drawings.

2.3 SETTING MATERIALS

- A. Manufacturers:
 - 1. Mapei Corporation. Product: Keraflex Super.
 - 2. Substitutions: Section 01 2500 Substitution Procedures.
 - 3. Applications: Use this type of bond coat for all walls and floors.

2.4 PRIMER.

- A. For use over existing concrete.
 - 1. Mapei ECO Prim Grip primer.

2.5 GROUTS

- A. Manufacturers:
 - 1. Mapei Corporation ; Product Mapei Ultracolor, Plus FA
 - a. Use for all area all floors and walls.
 - b. Joint Thickness: 1/16".
 - c. Color:
 - a) Floors: #185 New Taupe.
 - b) Walls: #10 Antique White.
 - 2. Substitutions: Section 01 2500 Substitution Procedures.

2.6 ACCESSORY MATERIALS

- A. 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
- B. Grout Sealer: Manufacturer's standard silicone product for sealing grout joints that does not change color or appearance of grout.
 - 1. Products: MAPEI Corporation; KER 003, Silicone Spray Sealer for Cementitious Tile Grout
 - a. Provide sealer coat over all tile floors

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.
- B. Verify that subfloor surfaces are dust free and free of substances that could impair bonding of setting materials to subfloor surfaces.
- C. Cementitious Subfloor Surfaces: Verify that substrates are ready for tiling installation by testing for moisture and alkalinity (pH).
 - 1. Obtain instructions if test results are not within limits recommended by tiling material manufacturer and setting material manufacturer.
- D. Verify that required floor-mounted utilities are in correct location.

3.2 PREPARATION

- A. Remove existing setting bed substrate in the toilets.
- B. Crack and Joint Repair: Concrete must be structurally sound, solid, dry, and free of laitance, dirt, debris, coatings, sealers, solvent base adhesives and any contaminant that may act as a bond breaker as per ANSI A108.01.
 - 1. Prepare substrate in accordance with adhesive manufacturer's instructions.
 - 2. Remove sub-floor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with sub-floor filler to achieve smooth, flat, hard surface up to 1/2".
 - 3. Dry diamond blade may be used to prepare cracks and create a clean surface for bonding.
 - 4. Do not use sweeping compounds, solvents or acid etching to prepare the surface.
 - 5. Cracks or joints should be free of dust, dirt, oils and any other debris.
 - 6. Prohibit traffic until filler is fully cured.
- C. Install concrete underlayment.
- D. All concrete substrates must be solid, thoroughly clean and free of oil, wax, grease, asphalt, latex and gypsum compounds, curing compounds, sealers and any contaminant that might act as a bond breaker.
- E. Protect surrounding work from damage.
- F. Vacuum clean surfaces and damp clean.

3.3 INSTALLATION - GENERAL

- A. Install tile and thresholds and grout in accordance with applicable requirements of ANSI A108.1A thru A108.13, manufacturer's instructions, and TCNA (HB) recommendations.
- B. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.
- C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.
- D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.
- E. Install non-ceramic trim in accordance with manufacturer's instructions.
- F. Install thresholds where indicated.
- G. Sound tile after setting. Replace hollow sounding units.
- H. Keep control and expansion joints free of mortar, grout, and adhesive. Refer to TCNA (HB) EJ 171 for location and frequency of joints.
- I. Keep expansion joints free of adhesive or grout. Apply sealant to joints.
- J. Prior to grouting, allow installation to completely cure; minimum of 48 hours.

- K. Grout tile joints unless otherwise indicated.
- L. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.
- M. Apply sealant to junction of tile and dissimilar materials and junction of dissimilar planes.

3.4 INSTALLATION - FLOORS - THIN-SET METHODS

- A. Over exterior concrete substrates, install primer and in accordance with TCNA (HB) Method F102, with specified adhesive and grout.

3.5 INSTALLATION - WALL TILE

- A. Over cementitious backer units install in accordance with TCNA (HB) Method W223, with specified adhesive and grout. adhesive.

3.6 CLEANING

- A. Clean tile and grout surfaces.
- B. Provide sealer coat in accordance with manufacturer's instructions.

3.7 PROTECTION

- A. Do not permit traffic over finished floor surface for 4 days after installation.

END OF SECTION

SECTION 09 5100
ACOUSTICAL CEILINGS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Suspended metal grid ceiling system.
- B. Acoustical units.
- C. Division 23, 26 for existing fire alarm, air outlets and inlets and light fixtures.

1.3 RELATED REQUIREMENTS

- A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 07 9200 - Joint Sealants: Acoustical sealant.
- C. Divisions 22, 23, and 26 for fire alarm, air outlets and inlets, and light fixtures

1.4 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018.
- B. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions; 2017.
- C. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2014.
- D. CHPS (HPPD) - High Performance Products Database; Current Edition at www.chps.net/.
- E. Ceilings and Interior Systems Construction Association (CISCA): Code of Practices.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on acoustical units.
- C. Samples: Submit two samples 12 x 12 inch (300 by 300 mm) in size illustrating material and finish of acoustical units.
- D. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- E. Maintenance Materials: Furnish the following for Port Chester-Rye UFSD's use in maintenance of project.
 - 1. Extra Acoustical Units: Quantity equal to 5 percent of total installed.

1.6 QUALITY ASSURANCE

- A. Fire-Resistive Assemblies: Complete assembly listed and classified by UL (FRD) for the fire resistance indicated.
- B. Fire Performance: ASTM E84 surface burning characteristics. Flame Spread index 25 or less. Smoke development index 50 or less. (UL Labeled) Class A in accordance to ASTM E1264
- C. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum 10 years documented experience.
- D. Installers Qualifications: Company specializing in the installation of acoustical ceilings specified in this section with minimum 5 years documented experience.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver in unopened bundles and store in a dry place with adequate air circulation. Do not deliver material to building until wet conditions such as concrete, plaster, paint, and adhesives have been completed and cured.
- B. Store products in manufacturer's unopened packaging until ready for installation.
- C. Protect system components from excessive moisture in shipment, storage, and handling

1.8 WARRANTY

- A. Warranty: Provide manufacturer's standard warranty against manufacturing defects in material or workmanship when installed in accordance with the current CISCA Handbook and ASTM C367.
 - 1. Warranty Period: 30 years.

1.9 FIELD CONDITIONS

- A. Maintain uniform temperature of minimum 60 degrees F (16 degrees C), and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acoustic Tiles/Panels:
 - 1. Armstrong World Industries, Inc: www.armstrong.com.
 - 2. Substitutions: See Section 01 2500 - Substitution Procedures.

2.2 ACOUSTICAL UNITS

- A. Acoustical Panels, Type ACT-1 and ACT-2: Painted mineral fiber, with the following characteristics:
 - 1. Classification: ASTM E1264 Type III.
 - a. Form: 1, modular.
 - b. Pattern: EIC..
 - 2. Size: 24 by 48 inch (610 by 1219 mm) for ACT-1 and 24 by 24 inches (610 by 610 mm) for ACT-2.
 - 3. Thickness: 7/8 inches (21 mm).
 - 4. Light Reflectance: 85 percent, determined in accordance with ASTM E1264.
 - 5. NRC Range: 0.75, determined in accordance with ASTM E1264.
 - 6. Articulation Class (AC): 170, determined in accordance with ASTM E1264.
 - 7. Ceiling Attenuation Class (CAC): 35, determined in accordance with ASTM E1264.
 - 8. Sag/Humidity Resistance: Standard
 - 9. Fire Performance: Class A.
 - 10. Edge: Beveled tegular
 - 11. Color: White.
 - 12. Suspension System: Existing Exposed grid.
 - 13. Products:
 - a. Armstrong World Industries, Inc; Citrus High NRC 551 for ACT-1 and Citrus High NRC 556 for ACT-2 www.armstrongceilings.com/#sle.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work including all existing ceiling mounted appurtenances, including but not limited to ceiling grills, smoke detector, etc.

3.2 INSTALLATION - ACOUSTICAL UNITS

- A. Install acoustical units in accordance with manufacturer's instructions.
- B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
- C. Fit border trim neatly against abutting surfaces.
- D. Install units after above-ceiling work is complete.
- E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
- F. Cutting Acoustical Units:
 - 1. **Make field cut edges of same profile as factory edges.**

3.3 TOLERANCES

- A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet (3 mm in 3 m).
- B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

3.4 ADJUSTING AND CLEANING

- A. Replace damaged or broken material, Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members. Comply with mfg., touch up procedures using touch up paint as required for small nicks and minor scratches in the surface, Remove and replace any work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.
 - 1. Provide touch up kit for Owner's use.

END OF SECTION

**SECTION 09 6500
RESILIENT FLOORING**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Moisture mitigation testing.
- B. Resilient tile flooring.
- C. Resilient base.
- D. Resilient stair accessories.
- E. Installation accessories.

1.3 RELATED REQUIREMENTS

- A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 03 5400 - Cast Underlayment.
- C. Section 09 2116 - Gypsum Board Assemblies - USG.

1.4 REFERENCE STANDARDS

- A. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2017.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- C. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2017.
- D. ASTM F925: Standard Test Method for Resistance to Chemicals of Resilient Flooring.
- E. ASTM F1066 - Standard Specification for Vinyl Composition Floor Tile; 2004, with Editorial Revision (2014).
- F. ASTM F1700 - Standard Specification for Solid Vinyl Floor Tile; 2013a.
- G. ASTM F1861 - Standard Specification for Resilient Wall Base; 2016.
- H. ASTM F-1869 Test Method for Measuring Moisture Vapor Emissions in Concrete.
- I. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs.
- J. ASTM F2420 - Standard Test Method for Determining Relative Humidity on the Surface of Concrete
- K. CAL (CHPS LEM) - Low-Emitting Materials Product List; California Collaborative for High Performance Schools (CHPS); current edition at www.chps.net/.
- L. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; 2015.

1.5 QUALITY ASSURANCE

- A. Manufacturer: Provide resilient flooring manufactured by a firm with a minimum of 10 years' experience with resilient flooring of types equivalent to those specified. Manufacturers proposed for use, which are not named in this section, shall submit evidence of ability to meet performance requirements specified as per Section 01 2500 - Substitution Procedures.
 - 1. Color Matching: Provide resilient flooring products, including wall base and accessories, from one manufacturer to ensure color matching.
 - 2. Manufacturer capable of providing technical training and field service representation.

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- B. Installer Qualifications: Installer shall be recognized and approved by the manufacturer for the requirements of the project or INSTALL (International Standards & Training Alliance) resilient certified for the requirements of the project.

1.6 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
- C. Verification Samples: Submit two samples, 12" x 12" in size illustrating color and pattern for each resilient flooring product specified.
- D. Concrete Testing Standard: Submit a copy of ASTM F710.
- E. Concrete Subfloor Test Report: Submit a copy of the moisture and alkalinity (pH) test reports.
- F. Certification: Prior to installation of flooring, submit written certification by flooring manufacturer and adhesive manufacturer that condition of subfloor is acceptable.
- G. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.
- H. MSDS (Material Safety Data Sheets) shall be submitted for all adhesives used:
- I. Current subfloor preparation guidelines, as published by the Manufacturer.
- J. Current installation guidelines, as published by the Manufacturer

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing specified flooring with minimum 5 years experience.
- B. Installer Qualifications: Company specializing in installing specified flooring with minimum three years documented experience.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.
- B. Store all materials off of the floor in an acclimatized, weather-tight space.
- C. Deliver products to Project site in manufacturer's original, unopened cartons and containers, each bearing names of product and manufacturer, Project identification, and shipping and handling instructions

1.9 FIELD CONDITIONS

- A. Store materials for not less than 48 hours before, during, and 72 hours after installation, in area of installation at a temperature of 70 degrees F (21 degrees C) to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F (13 degrees C).

1.10 PRE-INSTALLATION TESTING

- A. Conduct pre-installation testing as follows:
 - 1. ASTM F-1869 Test Method for Measuring Moisture Vapor Emissions in Concrete Maximum: 3 lbs/1000 SF
 - 2. ASTM F-2170 Test Method for Determining Relative Humidity in Concrete: Maximum RH: 55%.

1.11 WARRANTY

- A. Provide manufacturer's non-prorated ten (5) year limited warranty to be free from defects in material and workmanship, under normal use and service, to repair or replace all defective tiles including reasonable labor.

PART 2 PRODUCTS

2.1 TILE FLOORING

- A. Vinyl Enhanced Tile - Type VCT-1 and VCT-2: Homogeneous, with color extending throughout thickness..
 - 1. Manufacturers:
 - a. As indicated on finish schedule drawing.
 - b. Johnsonite, a Tarkett Company; Vinyl Enhanced Tile: www.johnsonite.com/#sle.
 - c. Substitutions: Sec Section 01 2500 - Substitution Procedures
 - 2. Minimum Requirements: Comply with ASTM F1066, of Class corresponding to type specified.
 - 3. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E 648 or NFPA 253.
 - 4. Size: 12 by 12 inch (305 by 305 mm).
 - 5. VOC Content Limits: As specified in Section 01 6116.
 - 6. Thickness: 0.125 inch (3.2 mm).
 - 7. Pattern: As indicated on drawings.
 - 8. Color: As indicated on drawings.

2.2 STAIR COVERING

- A. Stair Treads with Integral Risers: Rubber; full height of riser, full width and depth of tread in one piece; tapered thickness.
 - 1. Manufacturers:
 - a. Johnsonite, a Tarkett Company: www.johnsonite.com.
 - a) Stair A: Series VICFLTR.
 - b) Stair B: Series VIHTR.
 - b. Substitutions: Sec Section 01 2500 - Substitution Procedures
 - 2. Nosing: Match existing.
 - 3. Striping: 2 inch (24 mm) wide contrasting color abrasive strips.
 - 4. Tread Texture: Match existing.
 - 5. Color: Match existing.

2.3 RESILIENT BASE

- A. Resilient Base: ASTM F1861, Type TS rubber, vulcanized thermoset; top set Style B, Cove, and Style A straight for carpet installation as follows:
 - 1. Manufacturers:
 - a. As indicated on finish schedule drawing.
 - b. Substitutions: Sec Section 01 2500 - Substitution Procedures
 - 2. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E 648 or NFPA 253.
 - 3. Height: 6 inch (150 mm).
 - 4. Thickness: 0.125 inch (3.2 mm).
 - 5. Finish: Satin.
 - 6. Length: 4 foot (1.2 m) sections.

2.4 ACCESSORIES

- A. Trowelable Leveling and Patching Compounds: Latex-modified, Portland-cement-based formulation provided or approved by flooring manufacturer for applications indicated
- B. Primers, Adhesives, and Seam Sealer: Waterproof; types recommended by flooring manufacturer.
 - 1. VOC Content Limits: As specified in Section 01 6116.

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- C. Vinyl Tile Adhesives: Latex adhesive, non-flammable, moisture and alkali resistant bond.
 - 1. Adhesive shall be as recommended by the manufacturer, compatible with tile and substrate.
- D. Moisture Control System: One-coat moisture control system that suppresses excessive moisture vapor emissions in existing concrete prior to the installation of finished flooring.
 - 1. Product: Ardex MC Rapid, Moisture Control System, Ardex Engineered Cements, 400 Ardex Park Drive, Aliquippa, PA 1500, 888-512-7339, www.ardex.com.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.
- B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.
- C. Moisture Testing: Moisture testing shall be performed using ASTM test method ASTM F 2170 in situ Relative Humidity Test. The acceptable test result when using test method F 2170 should not exceed seventy five per cent (75%) AND pH readings should not exceed 9.0.
- D. Verify that existing concrete sub floor do not containing curing compound by placing 1/4 cup of water on surface. If water beads up scarify surface.

3.2 PREPARATION

- A. Concrete substrate that fully conforms to the requirements of ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring is required, or as detailed in the manufacturer's Installation Guide.
- B. Remove sub-floor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with sub-floor filler to achieve smooth, flat, hard surface up to 1/2".
- C. Completely remove existing solvent base adhesives to prevent bleeding and staining
- D. **Mechanically profile with grinder 100% of all existing substrates receiving resilient flooring. Provide dust control as required.**
 - 1. After profiling test substrate by place drop of water, or other means to insure all coatings, sealers etc have been removed. Repeat profiling if necessary.
- E. Prohibit traffic until filler is fully cured.
- F. Clean substrate.

3.3 INSTALLATION GENERAL

- A. Starting installation constitutes acceptance of subfloor conditions.
- B. Install in accordance with manufacturer's written instructions.
- C. Do not install resilient flooring over building expansion joints.
- D. Do not install defective or damaged resilient flooring.
- E. Lay resilient flooring with arrows in the same direction (excluding borders).
- F. Install resilient flooring without voids at seams. Lay seams together without stress.
- G. Roll joints with minimum 50# roller.
- H. Remove excess adhesive immediately

3.4 INSTALLATION TILE FLOORING

- A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.

- B. Lay flooring with joints and seams parallel to building lines to produce symmetrical pattern.
- C. Lay out tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half of a tile at perimeter.
- D. Match tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Cut tiles neatly around all fixtures. Discard broken, cracked, chipped, or deformed tiles
 - 1. Lay tiles with grain running in one direction for multicolor tiles.
 - 2. Lay tiles in pattern of colors and sizes indicated on Drawings.

3.5 INSTALLATION RESILIENT BASE

- A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches (45 mm) between joints.
- B. Miter internal corners. At external corners, use premolded units. At exposed ends, use premolded units.
- C. Install base on solid backing. Bond tightly to wall and floor surfaces.
- D. Scribe and fit to door frames and other interruptions.

3.6 Installation - Stair Coverings

- A. Install stair coverings in one piece for full width and depth of tread.
- B. Adhere over entire surface. Fit accurately and securely.

3.7 CLEANING

- A. Remove excess adhesive from floor, base, and wall surfaces without damage.
- B. Clean in accordance with manufacturer's written instructions.
- C. Cleaning of Vinyl Composition Tile
 - 1. Sweep or dust mop to remove dirt and grit. Do not use treated dust mops.
 - 2. Add heavy duty cleaner to cool water following the manufacturer's instructions.
 - 3. Scrub with a 175-rpm machine or auto scrubber. Use a blue or green pad. Always wet the pad before use. Do not use a black or a build-up removal pad.
 - 4. Remove the solution with a wet-dry vacuum or auto scrubber until floor is dry and free of residue.
 - 5. Rinse the floor with clean water. Repeat the rinse process as necessary to remove all haze and residue.
 - 6. Apply three to five coats of high gloss or matte floor finish following the manufacturer's instructions.
 - 7. Owner shall wax all VCT flooring

3.8 PROTECTION

- A. Prohibit traffic on resilient flooring for 48 hours after installation and 72 hours heavy rolling loads.

3.9 SCHEDULE

- A. Refer to Finish Schedule on drawings

END OF SECTION

**SECTION 09 9123
INTERIOR PAINTING**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Surface preparation.
- B. Field application of paints.
- C. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
 - 1. Existing and new steel door frames.
 - 2. New steel doors.
 - 3. Gypsum Board/Plaster walls and soffits.
 - 4. Concrete floors.
 - 5. Mechanical and Electrical:
 - a. In all areas, paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, and hangers, brackets, collars and supports, unless otherwise indicated.
 - b. Paint interior surfaces of air ducts and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black paint to visible surfaces.
- D. Do Not Paint or Finish the Following Items:
 - 1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
 - 2. Items indicated to receive other finishes.
 - 3. Items indicated to remain unfinished.
 - 4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
 - 5. Floors, unless specifically indicated.
 - 6. Glass.
 - 7. Acoustical materials, unless specifically indicated.
 - 8. Concealed pipes, ducts, and conduits.

1.3 RELATED REQUIREMENTS

- A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 08 1113 - Hollow Metal Doors and Frames.
- C. Section 09 2116 - Gypsum Board Assemblies.

1.4 DEFINITIONS

- A. Comply with ASTM D16 for interpretation of terms used in this section.

1.5 REFERENCE STANDARDS

- A. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association; Current Edition.
- B. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.
- C. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).
- D. SSPC-SP 2 - Hand Tool Cleaning; 1982, with Editorial Revision (2004).
- E. SSPC-SP 3 - Power Tool Cleaning; 1982, with Editorial Revision (2004).

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- F. SSPC-SP 13 - Surface Preparation of Concrete; 1997 (Reaffirmed 2003).

1.6 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide complete list of products to be used, with the following information for each:
 - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g., "alkyd enamel").
 - 2. MPI product number (e.g., MPI #47).
 - 3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
 - 4. Manufacturer's installation instructions.
- C. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches (216 by 279 mm) in size, illustrating range of colors available for each finishing product specified.
 - 1. Where sheen is specified, submit samples in only that sheen.
- D. Certification: By manufacturer that paints and finishes comply with VOC limits specified.
- E. Manufacturer's Instructions: Indicate special surface preparation procedures.
- F. Maintenance Data: Submit data including product technical data sheets, care and cleaning instructions, touch-up procedures, and repair of painted and finished surfaces.
- G. Maintenance Materials: Furnish the following for Port Chester-Rye UFSD's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.
 - 2. Extra Paint and Finish Materials: 1 gallon (4 L) of each color; from the same product run, store where directed.
 - 3. Label each container with color in addition to the manufacturer's label.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum 10 years documented experience.
- B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum 3 years experience and approved by manufacturer.

1.8 MOCK-UP

- A. See Section 01 4000 - Quality Requirements, for general requirements for mock-up.
- B. Provide panel, 4 feet (1.2 m) long by 4 feet (1.2 m) wide, illustrating paint color, texture, and finish.
- C. Provide door and frame assembly illustrating paint color, texture, and finish.
- D. Locate where directed by Owner's Representative.
- E. Mock-up may remain as part of the work.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Paint Materials: Store at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer's instructions.

1.10 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Provide lighting level of 80 ft candles (860 lx) measured mid-height at substrate surface.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Provide paints and finishes from the same manufacturer.
 - 1. Refer to Finish Schedule on drawings.
- B. Paints:
 - 1. Basis of Design Benjamin Moore & Co: www.benjaminmoore.com.
- C. Substitutions: 01 2500 - Substitution Procedures.

2.2 PAINTS AND FINISHES - GENERAL

- A. Paints and Finishes: Ready-mixed, unless intended to be a field-catalyzed paint.
 - 1. Where MPI paint numbers are specified, provide products listed in Master Painters Institute Approved Product List, current edition available at www.paintinfo.com, for specified MPI categories, except as otherwise indicated.
 - 2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
 - 3. **For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.**
- B. Volatile Organic Compound (VOC) Content: Comply with Section 01 6116.
- C. Flammability: Comply with applicable code for surface burning characteristics.
- D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Fuller and D'Angelo P.C. from the manufacturer's full line.
- E. Colors: As indicated on drawings.
 - 1. In all areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling they are mounted on/under.

2.3 PAINT SYSTEMS - INTERIOR

- A. Refer to Finish Schedule on drawings for additional items.
- B. All Interior surfaces indicated to be painted, unless otherwise indicated; Including gypsum board, cement board, plaster, existing and new door frames, concrete floors.
- C. Ferrous metals, primed or existing painted, Acrylic Latex, 2 coat:
 - 1. Clean existed painted ferrous metal.
 - 2. Touch up with latex primer.
 - 3. Finish Coats: Semi-gloss: 2 coats of Super Spec HP DTM Acrylic (P29),
 - 4. or 2 coats of Super Spec Interior Latex (276)
- D. Gypsum Board/Plaster, Latex, 3 coat: (New Surfaces)
 - 1. One coat of Moore Super Spec Latex Enamel Undercoater & Primer Sealer.(253)
 - 2. Finish Coats: Semi-Gloss: 2 coats of Latex Enamel; Moore Super Spec Interior Latex (276)
- E. Gypsum Board, Latex, 2 coat: (Existing Surfaces)

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1. One coat of Alkyd Primer sealer, Moore Super Spec Latex Enamel Undercoater & Primer Sealer.(253)
 2. Finish Coat: Semi-Gloss: 1 coats of Latex Enamel; Moore Super Spec Interior Latex (276)
- F. Concrete Floor Surface, Urethane modified alkyd resin, 1 coat (Existing surfaces)
1. Clean existing surface.
 2. Test for moisture level.
 3. High Gloss: 1 coat of Moore Porch & Floor Enamel, # C112.

2.4 ACCESSORY MATERIALS

- A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.
- B. Patching Material: Latex filler.
- C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin application of paints and finishes until substrates have been adequately prepared.
- B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- D. Test shop-applied primer for compatibility with subsequent cover materials.
- E. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces is below the following maximums:
 1. Gypsum Wallboard: 12 percent.
 2. Plaster and Stucco: 12 percent.
 3. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
 4. Concrete Floors and Traffic Surfaces: 8 percent.

3.2 PREPARATION

- A. Clean surfaces thoroughly and correct defects prior to application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- D. Seal surfaces that might cause bleed through or staining of topcoat.
- E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- F. Concrete:
 1. 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.
 2. Prepare surface as recommended by top coat manufacturer and according to SSPC-SP 13.
- G. Concrete Floors: Remove contamination, acid etch and rinse floors with clear water. Verify required acid-alkali balance is achieved. Allow to dry.
- H. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.

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- I. Plaster: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.
- J. Galvanized Surfaces:
 - 1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
- K. Cleaning Existing Walls: Remove all loose paint, plaster and other coatings.
 - 1. Working from bottom to top, apply prepared cleaning solution to a dry surface.
 - 2. Leave solution on the surface for 5-20 minutes. If solution begins to dry, reapply.
 - 3. Gently scrub heavily soiled areas.
 - 4. Rinse thoroughly with clean water with by masonry washing equipment generating 400-1000 psi with a water flow rate of 6-8 gallons per minute delivered through a 15-45 degree fan spray tip.
 - 5. Apply after wash. Let the Afterwash stay on the surface for three to five minutes.
 - 6. Pressure rinse from the bottom of the treated area to the top.

3.3 APPLICATION

- A. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
- B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- C. Apply each coat to uniform appearance in thicknesses specified by manufacturer.
- D. Sand metal surfaces lightly between coats to achieve required finish.
- E. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- F. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.4 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection.

3.5 CLEANING

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.6 PROTECTION

- A. Protect finishes until completion of project.
- B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION

**SECTION 10 1100
VISUAL DISPLAY BOARDS**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Porcelain enamel steel Markerboards and Tackboards.
 - 1. Owner Supplied Contractor Installed.
 - 2. Contractor shall provide all mounting brackets and supports required for installation.

1.3 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Blocking and supports.
- B. Section 09 2116 - Gypsum Board Assemblies: Concealed supports in metal stud walls.

1.4 REFERENCE STANDARDS

- A. ASTM A424/A424M - Standard Specification for Steel, Sheet, for Porcelain Enameling; 2009a (Reapproved 2016).
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018.
- C. ASTM F793/F793M - Standard Classification of Wall Coverings by Use Characteristics; 2015.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's data on accessories.
- C. Shop Drawings: Indicate wall elevations, dimensions, joint locations, special anchor details.
- D. Manufacturer's printed installation instructions.
- E. Maintenance Data: Include data on regular cleaning, stain removal .

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years documented experience.

1.7 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.1 VISUAL DISPLAY BOARDS

- A. Fixed Markerboards: Porcelain enamel on steel, laminated to core.
 - 1. Review existing markerboards on site to determine required mounting hardware
- B. Tackboard:
 - 1. Review existing markerboards on site to determine required mounting hardware

2.2 ACCESSORIES

- A. Mounting Brackets: Concealed.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that internal wall blocking is ready to receive work and positioning dimensions are as required.

3.2 PREPARATION

- A. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install boards in accordance with manufacturer's instructions.
- B. Secure units level and plumb.
- C. Butt Joints: Install with tight hairline joints.

3.4 CLEANING

- A. Clean board surfaces in accordance with manufacturer's instructions.
- B. Cover with protective cover, taped to frame.
- C. Remove temporary protective cover at Date of Substantial Completion.

END OF SECTION

SECTION 10 1400
SIGNAGE

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Room and Corridor Door signs.
- B. Emergency evacuation maps.

1.3 RELATED REQUIREMENTS

- A. Section 01 5000 - Temporary Facilities and Controls for temporary Project identification signs and for temporary information and directional signs

1.4 REFERENCE STANDARDS

- A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.
- B. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- C. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.
- C. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.
 - 1. When room numbers to appear on signs differ from those on drawings, include the drawing room number on schedule.
 - 2. Submit for approval by Port Chester-Rye UFSD through Fuller and D'Angelo P.C. prior to fabrication.
- D. Samples: Submit one sample of each type of sign, of size similar to that required for project, illustrating sign style, font, and method of attachment.
- E. Verification Samples: Submit samples showing colors specified.
- F. Manufacturer's Installation Instructions: Include installation templates and attachment devices.
- G. Manufacturer's Qualification Statement.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.
- B. Regulatory Requirements: Comply with applicable provisions in ADA-ABA Accessibility Guidelines.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Package signs as required to prevent damage before installation.
- B. Store tape adhesive at normal room temperature.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which 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 metal or polymer finishes beyond normal weathering.
- b. Deterioration of embedded graphic image colors and sign lamination.
- 2. Warranty Period: two (2) years from date of Substantial Completion

PART 2 PRODUCTS

2.1 PANEL SIGN

- A. Manufacturers
 - 1. Flat Signs:
 - a. Crown Signs.
 - b. Best Sign Systems, Inc: www.bestsigns.com.
- B. Manufacturer's standard monolithic tactile plaque constructed utilizing a thermoforming process, which provides a fully homogeneous plaque sign. The sign body, face, raised text and Braille are compression molded to form a single dimensional component that results in a sign surface that exhibits a toughness that resists scratching, cracking, gouging and graffiti.
 - 1. Style: Identification: Photopolymer Signs with raised lettering is physically attached, not laminated to the face plate.
 - a. Sign to be satin Braille and pictograms raised. "Tipping" shall be provided where just the tips or the raised areas are finished providing an extra layer of protection to the sign and paint.
 - b. Provide VHB Tape , radius comers, and window areas for paper inserts.
- C. Interior: Provide smooth sign panel surfaces constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch (1.5 mm) measured diagonally from corner to corner, complying with the following requirements:
 - 1. Graphic Content and Style: Provide sign copy that complies with the requirements indicated for size, style, spacing, content, position, material, finishes, and colors of letters, numbers, and other graphic devices.
 - a. Raised copy color - Identification letters require second color, to be selected by Architect.
 - b. Provide name slots as indicated.
 - 2. Fasteners: Use fasteners fabricated from metals that are not corrosive to the sign material and mounting surface.
 - a. All fastener shall philips head type.
 - 3. Anchors and Inserts: Use nonferrous metal or hot-dipped galvanized anchors and inserts for installations as required for corrosion resistance. Use toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work

2.2 MATERIALS

- A. Acrylic Sheet: ASTM D 4802, Category A-1 (cell-cast sheet), Type UVA (UV absorbing).
 - 1. Plastic (self-extinguishing material) engraving stock with face and core piles in contrasting colors, in finishes and color combinations indicated or, if not indicated, as selected from the manufacturer's standard.

2.3 SIGNAGE APPLICATIONS

- A. Accessibility Compliance: Signs are required to comply with ADA Standards and ICC A117.1 and applicable building codes, unless otherwise indicated; in the event of conflicting requirements, comply with the most comprehensive and specific requirements.
 - 1. Flame Spread: Less than 25.
 - 2. Smoke Development: Less than 450
- B. Room and Door Signs: Refer to schedule on drawings.
 - 1. Character Height: As shown on drawings.

2. Sign Height: As shown on drawings.
 3. Classroom and Office Doors: Identify with the room names and numbers indicated on drawings; in addition, provide "window" section for replaceable occupant name.
 4. Service Rooms: Identify with the room names and numbers indicated on drawings.
 5. Rest Rooms: Identify with pictograms, the names as shown on drawings and braille.
- C. Emergency Evacuation Maps:
1. One (1) screen printed fire evacuation sign map per each classroom and entry door of occupied space opening into a corridor.
 2. Map content as shown on drawings.
 3. Contractor to provide (1) screen printed fire evacuation sign for each classroom.

2.4 SIGN TYPES

- A. Flat Signs: Signage media in matching plastic frame.
1. Corners: Radius.
 2. Frame edge: Eased
 3. Wall Mounting of One-Sided Signs: Security type Concealed screws and foam tape.
- B. Color and Font: Unless otherwise indicated:
1. Character Font: Helvetica, Arial, or other sans serif font.
 2. Character Case: Upper case only.
 3. Background Color: Match existing school signage.
 4. Character Color: Match existing school signage color.
 5. Frame Color: Match existing school signage.

2.5 TACTILE SIGNAGE MEDIA

- A. Applied Character Panels: Acrylic plastic base, with applied acrylic plastic letters and braille.
1. Total Backer Thickness: 1/16 inch (1.5625 mm).
 2. Letter Thickness: 1/16 inch (1.5625 mm).
 3. Letter Edges: Square.
 4. Total Frame depth: 3/8 inch
 5. Name slot height: 3/4"

2.6 NON-TACTILE SIGNAGE MEDIA

- A. Silk Screened Plastic Panels: Letters and graphics silk screened onto reverse side of plastic surface:
1. Sign Color: Clear.
 2. Total Thickness: 1/8 inch (3 mm).

2.7 ACCESSORIES

- A. Concealed Screws: Security type Stainless steel, galvanized steel, chrome plated, or other non-corroding metal.
- B. Tape Adhesive: Double sided tape, permanent adhesive.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that substrate surfaces are ready to receive work.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. All signs to be mechanically fastened and taped.
- C. Install neatly, with horizontal edges level.

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- D. Locate signs and mount at heights indicated on drawings and in accordance with ADA Standards and ICC A117.1.
- E. Protect from damage until Date of Substantial Completion; repair or replace damaged items.

END OF SECTION

SECTION 10 2113
PLASTIC TOILET COMPARTMENTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Solid polymer toilet compartments. (HDPE Toilet Partitions and NFPA 286 certification)
- B. Urinal screens. NFPA 286

1.3 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Blocking and supports.
- B. Section 10 2800 - Toilet And Bath Accessories.

1.4 REFERENCE STANDARDS

- A. NFPA 286 certification
- B. ASTM E 84: Standard Test Method for Surface Burning Characteristics of Building Materials

1.5 PERFORMANCE REQUIREMENTS

- A. HDPE Toilet Partitions and NFPA 286 certification
- B. Fire Resistance: Partition materials shall comply with the following requirements, when tested in accordance with the ASTM E 84:
 - 1. Smoke Developed Index: Not to exceed 450.
 - 2. Flame Spread Index: Not to exceed 75.
 - 3. Material Fire Ratings:
 - a. National Fire Protection Association (NFPA): Class B
 - b. International Code Council (ICC): Class B
 - 4. Heat Sink: Aluminum heat sink to dissipate heat from incendiary devices used by vandals. Attached to bottom of all doors and panels.

1.6 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: A company regularly engaged in manufacture of products specified in this section, and whose products have been in satisfactory use under similar service conditions for not less than 5 years.
- B. Installer's Qualifications: A Company or Individual, regularly engaged in installation of products specified in this Section, with a minimum of 5 years experience.

1.7 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate the work with placement of support framing and anchors in walls and ceilings.

1.8 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on panel construction, hardware, and accessories.
- C. Shop Drawings: Indicate partition plan, elevation views, dimensions, details of wall and floor supports, door swings and toilet accessory cutouts.
- D. Samples: Submit two samples of partition panels, 12 x 12 inch (300 x 300 mm) in size illustrating panel finish, color, and sheen.
- E. Manufacturer's Installation Instructions: Indicate special procedures.
- F. Manufacturer's guarantee.

1.9 WARRANTY

- A. Manufacturer's guarantees its plastic against breakage, corrosion, and delamination under normal conditions for 25 years from the date of receipt by the customer. If materials are found to be defective during that period for reasons listed above, the materials will be replaced free of charge.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design: ASI Global Partitions, which is located at: 2171 Liberty Hill Rd. ; Eastanollee, GA 30538; Tel: 706-827-2700; Fax: 706-827-2710; Email: request info (sales@globalpartitions.com); Web: www.globalpartitions.com
 - 1. Substitutions: See Section 01 2500 Substitution Procedures.

2.2 PLASTIC TOILET COMPARTMENTS

- A. Toilet Compartments: Factory fabricated doors, pilasters, and divider panels made of solid molded high density polyethylene (HDPE), overhead braced. (**Floated HDPE is not acceptable.**)
 - 1. Color: Mocha-9212.
 - 2. Finish: Pebble grain.
- B. Doors:
 - 1. Thickness: 1 inch (25 mm).
 - 2. Width: 24 inch (610 mm).
 - 3. Width for Handicapped Use: 36 inch (915 mm), out-swinging.
 - 4. Height: 55 inch (1397 mm).
- C. Panels:
 - 1. Thickness: 1 inch (25 mm).
 - 2. Height: 55 inch (1397 mm).
- D. Pilasters: Pilasters shall be 81-1/2" high finished height. Pilasters shall include a mounting system comprised of a one piece 304 stainless steel with #4 finish 3" high shoe with an integral plate in the bottom. The shoe shall be mounted to the floor utilizing concrete anchors supplied by Global Partitions or equal. The concrete anchors shall be driven through the plate affixing it to the concrete floor. The concrete anchors shall have 2700lbs of holding strength when used in 5000psi concrete flooring. The pilaster height shall be adjusted by utilizing the machine thread bolt supplied which is placed into a metal insert installed in the bottom of the pilaster at the manufacturing facility.
- E. Urinal Screens: To match compartments; mounted to wall with continuous Aluminum panel brackets .

2.3 ACCESSORIES

- A. Pilaster Shoes: Stainless steel, satin finish, 3 inches (76 mm) high; concealing floor fastenings.
 - 1. Provide adjustment for floor variations with screw jack through steel saddles integral with pilaster.
- B. Head Rails: Manufacture's standard anodized aluminum rail with anti-grip profile.
- C. Wall Brackets: Continuous type, heavy duty "U" shape natural anodized aluminum.
- D. Attachments, Screws, and Bolts: Stainless steel, tamper proof type.
 - 1. For attaching panels and pilasters to brackets: Through-bolts and nuts; tamper proof.
- E. Hardware: Satin stainless steel:
 - 1. Hinges: Heavy-duty 8" aluminum hinge shall have gravity-acting cam. Slide latch, strike/keeper and hinges are through bolted onto doors and pilasters using stainless steel, vandal-resistant through bolts. Keeper provides for emergency access into the stall by lifting up on the bottom of the door.
 - 2. Door Latch: Slide type with lift emergency access feature in strike keeper.

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3. Door strike and keeper with rubber bumper; mounted on pilaster in alignment with door latch.
4. Coat hook with rubber bumper; one per compartment, mounted on door.
5. Provide door pull for outswinging doors.
6. **Provide door pull both sides of ADA compartments.**

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify correct spacing of and between plumbing fixtures.
- C. Verify correct location of built-in framing, anchorage, and bracing.
- D. Start of work constitutes acceptance of job.

3.2 INSTALLATION

- A. Install partitions secure, rigid, plumb, and level in accordance with manufacturer's instructions.
- B. Maintain 3/8 to 1/2 inch (9 to 13 mm) space between wall and panels and between wall and end pilasters.
- C. Attach panel brackets securely to walls using anchor devices.
- D. Attach panels and pilasters to brackets. Locate head rail joints at pilaster center lines.
- E. No evidence of cutting, drilling, and/or patching shall be visible on the finished work.
- F. All panels shall typically be mounted at 14" above finished floor
- G. Field touch-up of scratches or damaged finish will not be permitted. Replace damaged or scratched materials with new materials.
- H. Coordinate cut-outs with approved toilet accessories.

3.3 TOLERANCES

- A. Maximum Variation From True Position: 1/4 inch (6 mm).
- B. Maximum Variation From Plumb: 1/8 inch (3 mm).

3.4 ADJUSTING/CLEANING

- A. Adjust and align hardware to uniform clearance at vertical edge of doors, not exceeding 3/16 inch (5 mm).
- B. Adjust hinges to position doors in partial opening position when unlatched. Return out-swinging doors to closed position.
- C. Adjust adjacent components for consistency of line or plane.
- D. Finished surfaces shall be cleaned after installation and be left free of all imperfections.

3.5 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.
- C. Remove factory protective coverings and clean finish surfaces in accordance with manufacturer's instructions before substantial completion.

END OF SECTION

SECTION 10 2800
TOILET AND BATH ACCESSORIES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Commercial toilet accessories.
- B. Commercial shower and bath accessories.
- C. Electric hand dryers.
- D. Grab Bars
- E. Mirror Units.
- F. Toilet Tissue Dispenser. (Provided by Owner, Installed by Contractor)
- G. Liquid Soap Dispenser. (Provided by Owner, Installed by Contractor)
- H. Surface Mount Sanitary Napkin Disposal.
- I. Recessed Sanitary Napkin Disposal.
- J. Surfaced Sanitary Napkin/Tampon Vendor
- K. Lavatory Protective Enclosure.

1.3 RELATED REQUIREMENTS

- A. Section 10 2113 - Plastic Toilet Compartments.

1.4 REFERENCE STANDARDS

- A. ASTM A167 - Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip; 1999 (Reapproved 2009).
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2017.
- C. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.
- D. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium; 2017.
- E. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2012.

1.5 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the work with the placement of internal wall reinforcement, concealed ceiling supports, and reinforcement of toilet partitions to receive anchor attachments.

1.6 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.
- C. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

1.7 WARRANTY

- A. Warranty: Contractor shall provide a warranty for two (2) years after the date of Substantial Completion of the Contractor's work or designated portion thereof. Refer to Article 15 B.1.

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- B. Manufacturer's Mirror Warranty: Written warranty, executed by mirror manufacturer agreeing to replace mirrors that develop visible silver spoilage defects within minimum warranty period indicated.
 - 1. Minimum Warranty Period: 5 years from date of Substantial Completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Basis for Design: American Specialties, Inc, 441 Saw Mill River Road, Yonkers, NY 10701; 914.476.9000.
- B. Substitutions: Section 01 2500 Substitution Procedures.
- C. All items of each type to be made by the same manufacturer, unless noted otherwise.

2.2 MATERIALS

- A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
 - 1. Grind welded joints smooth.
 - 2. Fabricate units made of metal sheet of seamless sheets, with flat surfaces.
- B. Keys: Provide two (2) keys for each accessory to Port Chester-Rye UFSD; master key lockable accessories.
- C. Stainless Steel Sheet: ASTM A666, Type 304.
- D. Stainless Steel Tubing: ASTM A269/A269M, Grade TP304 or TP316.
- E. Galvanized Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.
- F. Mirror Glass: Tempered safety glass, ASTM C1048; and ASTM C1036 Type I, Class 1, Quality Q2, with silvering as required.
- G. Fasteners, Screws, and Bolts: Hot dip galvanized; tamper-proof; security type.

2.3 FINISHES

- A. Stainless Steel: Satin finish, unless otherwise noted.
- B. Chrome/Nickel Plating: ASTM B456, SC 2, polished finish, unless otherwise noted.
- C. Baked Enamel: Pretreat to clean condition, apply one coat primer and minimum two coats epoxy baked enamel.

2.4 COMMERCIAL TOILET ACCESSORIES

- A. **Toilet Tissue** Dispenser: Provided by Owner, Installed by Contractor.
- B. **Paper** Towel Dispenser: Provided by Owner, Installed by Contractor.
- C. **Electric** Hand Dryer:
 - 1. Operation: Automatic, IR sensor-operated.
 - 2. Electrical: 110-120, Volts, 50/60 Hertz, 10.4 Amps max.; 840 - 1000 watts.
 - 3. Motor: Brush Type Dual Ball Bearings:
 - a. HP: 0.67.
 - b. RPM: 16,000-29,000 ADJ
 - c. Fan Type: Multi Inlet centrifugal.
 - d. Heating Element: 325-450Watt with auto reset circuit breaker. Range Adjustable by Owner
 - e. Air Flow: 42-60 cfm (-cu m/h).
 - f. Air Output Temperature: 131o F ± 5@ 77 degree F.
 - g. Decibel Level: 68.9dB-A min @2 min, adjustable by Owner
 - 4. Drying Time: less than 15 seconds.

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5. Internal resetting automatic thermal protection.
 6. Automatic 60 second shut off.
 7. Self-adjusting time-out and fail-safe off protection controlled by a microprocessor that shall detect and reject false signals and shall automatically self-calibrate to provide uniform sensitivity over its entire life span.
 8. Air Nozzle: Fixed directional heavy-duty, rust proof and highly tamper resistant. Air intake slots shall not allow access to internal parts.
 9. Cover Material: Heavy-duty, one piece formed 18 gage stainless steel satin finished on all exposed surfaces.
 10. Mounting Height: to the bottom of the nozzle.
 - a. As indicated on drawings.
 11. Warranty: Unit shall be warranted against defects in materials or workmanship for five (5) years
 12. Manufacturers:
 - a. #0199-1 High Speed manufactured by American Specialties .
- D. **Soap Dispenser:** Provided by Owner, Installed by Contractor.
- E. **Mirrors:** Stainless steel angle framed, with 1/4 inch (6 mm) thick tempered safety glass; ASTM C1048.
1. Size: 18" x 30".
 2. Angle Frame: 3/4" x 5/8", rolled formed, 18 gauge, Type 304 stainless steel angle shapes, with mitered and heliarc welded and ground corners; No.4 finish. Mirror to be hung on concealed brackets that locks into top and bottom of frame with tamperproof set screws. One piece backplate attached to frame with theft resistant locking device.
 3. Backing: Full-mirror sized, minimum 0.03 inch (0.8 mm) galvanized steel sheet and 1/8" nonabsorptive filler material.
 4. Product: 0600 manufactured by ASI.
- F. **Grab Bars:** Stainless steel, nonslip grasping surface finish.
1. Standard Duty Grab Bars:
 - a. Push/Pull Point Load: 250 pound-force (1112 N), minimum to meet and exceed ADA requirements.
 - b. Dimensions: 1-1/4 inch (32 mm) outside diameter, minimum 0.05 inch (1.3 mm) wall thickness, exposed flange mounting, 1-1/2 inch (38 mm) clearance between wall and inside of grab bar.
 - c. Length and Configuration: As indicated on drawings.
 - d. Snap-On Flange Covers, shall be 22 gauge for concealed mounting, type 304 stainless steel alloy 18-8.
 - e. Products:
 - a) ASI 3700P Series
- G. **Dual Sanitary Napkin/Tampon Dispenser:** Stainless steel, surface-mounted and recessed as indicated on the drawings.
1. Door: Seamless 0.05 inch (1.3 mm) door with returned edges and tumbler lock.
 2. Cabinet: Fully welded, 0.03 inch (0.8 mm) thick sheet.
 3. Identify dispensers slots without using brand names.
 4. Minimum capacity: 30 napkins and 27 tampons.
 5. Products:
 - a. American Specialties, Inc; #8064: www.americanspecialties.com/#sle.
- H. **Sanitary Napkin Disposal Unit:** End Stall Sanitary Napkin Disposal, surface-mounted, self-closing door, locking bottom panel with full-length stainless steel piano-type hinge, removable receptacle.
1. Capacity: 1.5 gallon.

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2. Unit shall be 22 gauge type 304 stainless steel alloy 18-8 with satin finish and shall have contoured cover finger lift relief and be protected during shipment with PVC film.
 3. Full top door shall be 22 gauge type 304 stainless steel alloy 18-8 with satin finish and shall be attached to the cabinet at back with a concealed full-width 9/64" diameter heavy-duty stainless steel multi-staked piano hinge spring loaded.
 4. Structural assembly of body and door components shall be of welded construction and shall have no exposed fastening devices or spot-welded seams
 5. Receptacle: Removable waste container shall be captured internally by full width Z- retainer and shall have a safety-edged finger grip.
 6. Product: Model # 0473-A manufactured by ASI.
- I. **Sanitary** Napkin Disposal Unit: Stainless steel, back-to-back partition mounting with adjustable flanges, self-closing door, locking bottom panel with full-length stainless steel piano-type hinge, removable receptacle.
1. Capacity: 1.5 gallon
 2. Unit shall be 22 gauge type 304 stainless steel alloy 18-8 with satin finish and shall have contoured cover finger lift relief and be protected during shipment with PVC film.
 3. Doors shall operate independently and shall be attached to cabinet with a full-length 3/16" diameter (Ø4.8) stainless steel multi-staked piano hinge and shall be spring loaded to hold in closed position.
 4. International graphic symbol for waste disposal label shall be adhered to doors.
 5. Structural assembly of body and door components shall be of welded construction and shall have no exposed fastening devices or spot-welded seams.
 6. Face trim mounting flanges shall be of one piece construction 1" (25) wide with no welded miters and shall have square 1/4" (6) returns with an Adjustability range for partition thickness of 1/2" (13) to 3" (76).
 7. Waste container shall have hemmed edges for safety and shall be retained by a tumbler lock keyed alike to other ASI washroom equipment and shall have a fully hemmed finger-grip for safety and service removal from one side only.
 8. Product: Model # 0472-1 manufactured by ASI.
- J. **Lavatory** Protective Enclosure
1. ADA-conforming, lavatories molded lavatory enclosure..
 - a. Molded Ridged vinyl, High-impact, stain-resistant 1/8 in. thick.
 - b. Size: 20" x 18"
 - c. Color: China white.
 - d. Flammability: UL-94 V-0 Rating.
 - e. Fasteners: 7-tamperproof stainless steel.
 - f. Product: LAV-SHIELDTM Model #2018-AS manufactured by TRUEBRO, INC.
 - g. Provide factory precut enclosures if available. Coordinate with Division 22 Plumbing.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify exact location of accessories for installation.
- C. For electrically-operated accessories, verify that electrical power connections are ready and in the correct locations.
- D. Verify that field measurements are as indicated on drawings.
- E. See Section 06 1000 for installation of blocking, reinforcing plates, and concealed anchors in walls.

3.2 PREPARATION

- A. Deliver inserts and rough-in frames to site for timely installation.
- B. Provide templates and rough-in measurements as required.

3.3 INSTALLATION

- A. Install accessories in accordance with manufacturers' instructions in locations indicated on drawings.
- B. Install plumb and level, securely and rigidly anchored to substrate.
- C. Mounting Heights: As required by accessibility regulations as indicated on drawings.

3.4 PROTECTION

- A. Protect installed accessories from damage due to subsequent construction operations.

END OF SECTION

SECTION 10 4400
FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of each prime contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Fire extinguishers.
- B. Fire extinguisher cabinets.
- C. Accessories.

1.3 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Wood blocking product and execution requirements.

1.4 REFERENCE STANDARDS

- A. NFPA 10 - Standard for Portable Fire Extinguishers; 2017.
- B. UL (DIR) - Online Certifications Directory; Current Edition.

1.5 PERFORMANCE REQUIREMENTS

- A. Conform to NFPA 10.
- B. Provide extinguishers classified and labeled by Underwriters Laboratories Inc. for the purpose specified and indicated.

1.6 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide extinguisher operational features.
- C. Shop Drawings: Indicate locations of cabinets and cabinet physical dimensions.
- D. Manufacturer's Installation Instructions: Indicate special criteria and wall opening coordination requirements.
- E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- F. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

1.7 FIELD CONDITIONS

- A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Fire Extinguishers:
 - 1. LARSENS, MP Series.
 - 2. Substitutions: Section 01 2500 Substitution Procedures.

2.2 FIRE EXTINGUISHERS

- A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
- B. Multipurpose Dry Chemical Type Fire Extinguishers: Carbon steel tank, with pressure gauge.
 - 1. Stored Pressure Operated: Deep Drawn.
 - 2. Class: A:B:C type.
 - 3. Size: 10 pound (4.54 kg).
 - 4. Finish: Baked polyester powder coat, RED color.

5. Temperature range: Minus 40 degrees F (Minus 40 degrees C) to 120 degrees F (49 degrees C).

2.3 FIRE EXTINGUISHER CABINETS

- A. Metal: Formed stainless steel sheet; 0.036 inch (0.9 mm) thick base metal.
- B. Cabinet Configuration: Surface type.
 - 1. Size to accommodate accessories.
- C. Door Glazing: Plastic, clear, 1/8 inch (3 mm) thick acrylic bubble. Set in resilient channel gasket glazing.
- D. Cabinet Mounting Hardware: Appropriate to cabinet, with pre-drilled holes for placement of anchors.
- E. Fabrication: Weld, fill, and grind components smooth.
- F. Finish of Cabinet Exterior Trim and Door: No.4 - Brushed stainless steel.
- G. Finish of Cabinet Interior: White colored enamel.

2.4 ACCESSORIES

- A. Extinguisher Brackets: Formed steel, chrome-plated.
- B. Cabinet Signage: "FIRE EXTINGUISHER".

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify rough openings for cabinet are correctly sized and located.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install cabinets plumb and level in wall openings, as indicated on drawings from finished floor to inside bottom of cabinet.
- C. Secure rigidly in place.
- D. Place extinguishers in cabinets.

3.3 SCHEDULES

- A. Fire Extinguishers
 - 1. Model MP10
 - a. Capacity: 10 lbs
 - b. Weight: 18 lbs
 - c. Cylinder Diameter: 5"
 - d. Height: 20"
 - e. Width: 7-3/4"
 - f. UL rating: 4A-80B: C
 - g. Standard Bracket: 5525
 - h. Location: All corridors.
- B. Fire Extinguisher Cabinets.
 - 1. Larson's Cameo Series C2409-SM Surface Mounted design suitable for fire extinguishers specified.
 - 2. Trim: None
 - 3. Acrylic Bubble.
 - 4. Finish: Stainless Steel #4 satin finish.

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5. Construction: High impact plastic with white letters.
END OF SECTION

**SECTION 11 3013
RESIDENTIAL APPLIANCES**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of each prime contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Refrigerator
- B. Microwave Oven,

1.3 RELATED REQUIREMENTS

- A. Division 22 for plumbing connections to residential equipment.
- B. Division 26 for electrical connections to residential casework
- C. Section 26 0583 - Wiring Connections: Electrical connections for appliances.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data indicating dimensions, capacity, and operating features of each piece of residential equipment specified.
- C. Copies of Warranties: Submit manufacturer warranty and ensure that forms have been completed in Port Chester-Rye UFSD's name and registered with manufacturer.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Electric Appliances: Listed and labeled by UL (DIR) and complying with NEMA Standards (National Electrical Manufacturers Association).

1.6 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Provide five (5) year manufacturer warranty on refrigeration system of refrigerators.
- C. Provide ten (10) year manufacturer warranty on magnetron tube of microwave ovens.

PART 2 PRODUCTS

2.1 KITCHEN APPLIANCES

- A. Refrigerator: Free-standing, top-mounted freezer, and frost-free.
 - 1. Capacity: Total minimum storage of 18 cubic ft (0.51 cu m); minimum 15 percent freezer capacity.
 - 2. Energy Usage: Minimum 20 percent more energy efficient than energy efficiency standards set by U.S. Department of Energy (DOE).
 - 3. Features: Include glass shelves.
 - 4. Exterior Finish: Stainless steel.
 - 5. Manufacturer:
 - a. GE Appliances; 15.5 cu.ft Model # GE16GSHSS: www.geappliances.com.
 - b. Substitutions: Refer to 01 2500 - Substitution Procedures.
- B. Microwave: Over-the-range.
 - 1. Capacity: 1.1 cubic ft (____ cu m).
 - 2. Power: 700 watts.

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3. Features: Include turntable and 2-speed exhaust fan.
4. Exterior Finish: Black.
5. Manufacturers:
 - a. GE Appliances; 1.1 cu .ft. Model: JE1145SHSS: www.geappliances.com.
 - b. GE Appliances; ____: www.geappliances.com/#sle.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify utility rough-ins are provided and correctly located.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Anchor built-in equipment in place.

3.3 ADJUSTING

- A. Adjust equipment to provide efficient operation.

3.4 CLEANING

- A. Remove packing materials from equipment and properly discard.
- B. Wash and clean equipment.

END OF SECTION

SECTION 12 2940
ROLLER SHADES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Provide one shade for each window.
- B. Manual operated bead chain clutch operated roller shades.
- C. Accessories.
- D. Emergency Rescue Window sticker.

1.3 RELATED SECTIONS

- A. Section 06 1000 - Rough Carpentry: Wood blocking and grounds for mounting roller shades and accessories.
- B. Section 09 5100 - Acoustical Ceilings: Coordination with acoustical ceiling systems for installation of unit closures and related accessories.

1.4 REFERENCES

- A. ASTM G 21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
- B. NFPA 70 - National Electrical Code.
- C. NFPA 701 - Fire Tests for Flame-Resistant Textiles and Films.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01 3000 - Administrative Requirements.
- B. Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Styles, material descriptions, dimensions of individual components, profiles, features, finishes and operating instructions.
 - 3. Storage and handling requirements and recommendations.
 - 4. Mounting details and installation methods.
- C. Shop Drawings: Plans, elevations, sections, product details, installation details, operational clearances, wiring diagrams and relationship to adjacent work.
 - 1. Prepare shop drawings on AutoCAD format using base sheets provided electronically by the Architect.
- D. Window Treatment Schedule: For all roller shades. Use same room designations as indicated on the Drawings and include opening sizes and key to typical mounting details.
- E. Selection Samples: For each finish product specified, one set of shade cloth options and aluminum finish color samples representing manufacturer's full range of available colors and patterns.
- F. Maintenance Data: Methods for maintaining roller shades, precautions regarding cleaning materials and methods, instructions for operating hardware and controls.
- G. Maintenance Materials: Furnish the following for Port Chester-Rye UFSD's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.
 - 2. **Extra Chains: Provide 500 linear feet of #10 qualified stainless steel chain rated to 90 lb.**

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Obtain roller shades through one source from a single manufacturer with a minimum of twenty years experience in manufacturing products comparable to those specified in this section.
- B. Installer Qualifications: Installer trained and certified by the manufacturer with a minimum of ten years experience in installing products comparable to those specified in this section and approved by the manufacturer. .
- C. Fire-Test-Response Characteristics: Passes NFPA 701 small and large-scale vertical burn. Materials tested shall be identical to products proposed for use.
- D. Anti-Microbial Characteristics: 'No Growth' per ASTM G 21 results for fungi ATCC9642, ATCC 9644, ATCC9645.

1.7 MOCK-UP

- A. Provide a mock-up (manual shades only) of one roller shade assembly for evaluation of mounting, appearance and accessories.
 - 1. Locate mock-up in window designated by Architect or Ray Renda, Director of Facilities
 - 2. Do not proceed with remaining work until, mock-up is accepted by Architect.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver shades in factory-labeled packages, marked with manufacturer and product name, fire-test-response characteristics, and location of installation using same room designations indicated on Drawings and in the Window Treatment Schedule.

1.9 PROJECT CONDITIONS

- A. Environmental Limitations: Install roller shades after finish work including painting is complete and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.10 WARRANTY

- A. Roller Shade Hardware and Chain Warranty: Manufacturer's standard non-depreciating twenty-five year limited warranty.
- B. Standard Shadecloth: Manufacturer's standard twenty-five year warranty.
- C. Roller Shade Installation: Two years from date of Substantial Completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: MechoShade Systems, Inc., which is located at: 42-03 35th St., Long Island City, NY 11101; Tel: 718-729-2020; Fax: 718-729-2941; Email: jesse.fried@mechoshade.com. Web: www.mechoshade.com
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 2500 - Substitution Procedures.

2.2 ROLLER SHADE TYPES

- A. Manual operating, chain drive, sunscreen roller shades shall be provided at all exterior windows of classrooms and spaces shown on the Drawings. Shades are to be reverse roll unless otherwise noted.
- B. Manual Shades
 - 1. Mounting: Surface mounted.
 - 2. Product: Mecho/5 bracket with fascia.

2.3 SHADE CLOTH

- A. Solar Shadecloths:
 - 1. Fabric: ThermoVeil 1300, 5 percent open, 2 by 2 dense basket-weave pattern.
 - 2. Color: Eggshell #1316(Match existing).
 - 3. Visually Transparent Shadecloth: MechoShade Systems, Inc., ThermoVeil series, single thickness non-raveling 0.030-inch (0.762 mm) thick vinyl fabric, woven from 0.018-inch (0.457 mm) diameter extruded vinyl yarn comprising of 21 percent polyester and 79 percent reinforced vinyl.
 - 4. Use for all shades except where blackout shades are specified

2.4 SHADE BAND

- A. Shade Bands: Construction of shade band includes the fabric, the hem weight, hem-pocket, shade roller tube, and the attachment of the shade band to the roller tube. Sewn hems and open hem pockets are not acceptable.
 - 1. Hem Pockets and Hem Weights: Fabric hem pocket with RF-welded seams (including welded ends) and concealed hem weights. Hem weights shall be of appropriate size and weight for shade band. Hem weight shall be continuous inside a sealed hem pocket. Hem pocket construction and hem weights shall be similar, for all shades within one room.
 - 2. Shade Band and Shade Roller Attachment:
 - a. Use extruded aluminum shade roller tube of a diameter and wall thickness required to support shade fabric without excessive deflection. Roller tubes less than 1.55 inch (39.37 mm) in diameter for manual shades, and less than 2.55 inches (64.77 mm) for motorize shades are not acceptable.
 - b. Provide for positive mechanical engagement with drive / brake mechanism.
 - c. Provide for positive mechanical attachment of shade band to roller tube; shade band shall be made removable / replaceable with a "snap-on" snap-off" spline mounting, without having to remove shade roller from shade brackets.
 - d. Mounting spline shall not require use of adhesives, adhesive tapes, staples, and/or rivets.
 - e. Any method of attaching shade band to roller tube that requires the use of: adhesive, adhesive tapes, staples, and/or rivets are not acceptable.

2.5 SHADE FABRICATION

- A. Fabricate units to completely fill existing openings from head to sill and jamb-to-jamb, unless specifically indicated otherwise
- B. Fabricate shadecloth to hang flat without buckling or distortion. Fabricate with heat-sealed trimmed edges to hang straight without curling or raveling. Fabricate unguided shadecloth to roll true and straight without shifting sideways more than 1/8 inch (3.18 mm) in either direction per 8 feet (2438 mm) of shade height due to warp distortion or weave design. Fabricate hem as follows:
 - 1. Standard concealed hem bar.
- C. Provide battens in standard shades as required to assure proper tracking and uniform rolling of the shadebands. Contractor shall be responsible for assuring the width-to-height (W:H) ratios shall not exceed manufacturer's standards or, in absence of such standards, shall be responsible for establishing appropriate standards to assure proper tracking and rolling of the shadecloth within specified standards. Battens shall be roll-formed stainless steel or tempered steel, as required.
- D. For railroaded shadebands, provide seams in railroaded multi-width shadebands as required to meet size requirements and in accordance with seam alignment as acceptable to Architect. Seams shall be properly located. Furnish battens in place of plain seams when the width, height, or weight of the shade exceeds manufacturer's standards. In absence of such standards, assure proper use of seams or battens as required to, and assure the proper tracking of the railroaded multi-width shadebands.

- E. Provide battens for railroaded shades when width-to-height (W:H) ratios meet or exceed manufacturer's standards. In absence of manufacturer's standards, be responsible for proper use and placement of battens to assure proper tracking and roll of shadebands.
- F. Blackout shadebands, when used in side channels, shall have horizontally mounted, roll-formed stainless steel or tempered-steel battens not more than 3 feet (115 mm) on center extending fully into the side channels. Battens shall be concealed in a integrally-colored fabric to match the inside and outside colors of the shadeband, in accordance with manufacturer's published standards for spacing and requirements.
 - 1. Batten pockets shall be self-colored fabric front and back RF welded into the shadecloth. A self-color opaque liner shall be provided front and back to eliminate any see through of the batten pocket that shall not exceed 1-1/2 inches (38.1 mm) high and be totally opaque. A see-through moire effect, which occurs with multiple layers of transparent fabrics, shall not be acceptable.

2.6 COMPONENTS

- A. Access and Material Requirements:
 - 1. Provide shade hardware allowing for the removal of shade roller tube from brackets without removing hardware from opening and without requiring end or center supports to be removed.
 - 2. Provide shade hardware that allows for removal and re-mounting of the shade bands without having to remove the shade tube, drive or operating support brackets.
 - 3. Use only Delrin engineered plastics by DuPont for all plastic components of shade hardware. Styrene based plastics, and /or polyester, or reinforced polyester will not be acceptable.
- B. Manual Operated Chain Drive Hardware and Brackets:
 - 1. Provide for universal, regular and offset drive capacity, allowing drive chain to fall at front, rear or non-offset for all shade drive end brackets. Universal offset shall be adjustable for future change.
 - 2. Provide hardware capable for installation of a removable fascia, for both regular and/or reverse roll, which shall be installed without exposed fastening devices of any kind.
 - 3. Provide shade hardware system that allows for removable regular and/or reverse roll fascias to be mounted continuously across two or more shade bands without requiring exposed fasteners of any kind.
 - 4. Provide shade hardware system that allows for operation of multiple shade bands (multi-banded shades) by a single chain operator, subject to manufacturer's design criteria. Connectors shall be offset to assure alignment from the first to the last shade band.
 - 5. Provide shade hardware system that allows multi-banded manually operated shades to be capable of smooth operation when the axis is offset a maximum of 6 degrees on each side of the plane perpendicular to the radial line of the curve, for a 12 degrees total offset.
 - 6. Provide positive mechanical engagement of drive mechanism to shade roller tube. Friction fit connectors for drive mechanism connection to shade roller tube are not acceptable
 - 7. Provide shade hardware constructed of minimum 1/8-inch (3.18 mm) thick plated steel or heavier as required to support 150 percent of the full weight of each shade.
 - 8. Drive Bracket / Brake Assembly:
 - a. MechoShade Drive Bracket model M5 shall be fully integrated with all MechoShade accessories, including, but not limited to: SnapLoc fascia, room darkening side / sill channels, center supports and connectors for multi-banded shades.
 - b. M5 drive sprocket and brake assembly shall rotate and be supported on a welded 3/8 inch (9.525 mm) steel pin.
 - c. The brake shall be an over-running clutch design which disengages to 90 percent during the raising and lowering of a shade. The brake shall withstand a pull force of 50 lbs. (22 kg) in the stopped position.
 - d. The braking mechanism shall be applied to an oil-impregnated hub on to which the brake system is mounted. The oil impregnated hub design includes an articulated brake assembly,

which assures a smooth, non-jerky operation in raising and lowering the shades. The assembly shall be permanently lubricated. Products that require externally applied lubrication and or not permanently lubricated are not acceptable.

- e. The entire M5 assembly shall be fully mounted on the steel support bracket, and fully independent of the shade tube assembly, which may be removed and reinstalled without effecting the roller shade limit adjustments.
- f. Drive Chain: #10 qualified stainless steel chain rated to 90 lb. (41 kg) minimum breaking strength. Nickel plate chain shall not be accepted.

2.7 ACCESSORIES

- A. Fascia:
 - 1. Continuous removable extruded aluminum fascia that attaches to shade mounting brackets without the use of adhesives, magnetic strips, or exposed fasteners.
 - 2. Fascia shall be able to be installed across two or more shade bands in one piece.
 - 3. Fascia shall fully conceal brackets, shade roller and fabric on the tube.
 - 4. Provide bracket / fascia end caps where mounting conditions expose outside of roller shade brackets.
 - 5. Notching of Fascia for manual chain shall not be acceptable.
 - 6. Color: Alabaster (Match existing)
- B. Bead chain Hold Down Device: WCMA approved.
- C. Rescue Labels: Windows designated on drawings as "EEW" emergency escape and rescue windows shall meet all applicable codes and shall include two (2) conforming label as follows:
 - "RESCUE WINDOW
FOR EMERGENCY USE ONLY"
 - 1. Signs shall be 3" x 5" with bright yellow background with black letter.
 - 2. One label shall be placed on the window treatment (roller shade, horizontal blinds etc.) and visible from occupied side when closed.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect or Ray Renda, Director of Facilities of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install roller shades level, plumb, square, and true according to manufacturer's written instructions, and located so shade band is not closer than 2 inches (50 mm) to interior face of glass. Allow proper clearances for window operation hardware.
- B. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.
- C. Clean roller shade surfaces after installation, according to manufacturer's written instructions.
- D. Engage Installer to train Owner's maintenance personnel to adjust, operate and maintain roller shade systems.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 12 3200
PLASTIC LAMINATED CASEWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Provide all plastic laminated casework and accessory items as specified herein. Refer to drawings for specific details, requirements, types and locations.
 - 1. All casework shall be plastic laminate, unless noted otherwise and shall include but not be limited to the following:
 - a. Wall cabinets.
 - b. Shelf units.
 - c. Hanging rails.
 - d. Handicapped accessible workstations
 - e. Label holders.
 - f. Adjustable legs.
 - g. Custom units where indicated.

1.3 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 06 1000 - Rough Carpentry for blocking within walls.
- B. Section 09 2116 - Gypsum Board Assemblies.
- C. Section 09 6500 - Resilient Flooring. Base molding furnished and installed.
- D. Section 12 3600 - Solid Surfacing Countertops for solid surface countertops.
- E. Refer to Section 22 0300 for Sinks, faucets, fittings, traps, stops, and tail pieces

1.4 DEFINITIONS

- A. Identification of casework components and related products by surface visibility.
 - 1. Open Interiors: Any open storage unit without solid door or drawer fronts, units with full glass insert doors and/or acrylic doors, and units with sliding solid doors.
 - 2. Closed Interiors: Any closed storage unit behind solid door or drawer fronts.
 - 3. Exposed Ends: Any storage unit exterior side surface that is visible after installation.
 - 4. Other Exposed Surfaces: Faces of doors and drawers when closed, and tops of cabinets less than 72 inches above furnished floor.
 - 5. Semi-Exposed Surfaces: Interior surfaces which are exposed to view when doors or drawers are opened, bottoms of wall cabinets and tops of cabinets 72 inches or more above finished floor.
 - 6. Concealed Surfaces: Any surface not visible after installation.

1.5 QUALITY ASSURANCE

- A. System Structural Performance: Casework and support framing system shall withstand the effects of the following gravity loads and stresses without permanent deformation, excessive deflection, or binding of drawers and doors:
 - 1. Support Framing System: 600 lb/ft.
 - 2. Work Surfaces (Including Tops of Suspended Base Cabinets): 160 lb/ft
 - 3. Wall Cabinets (Upper Cabinets): 160 lb/ft.
 - 4. Shelves: 40 lb/ft .
 - 5. Delegated Design: Design casework, including comprehensive engineering analysis by a qualified professional engineer, using seismic performance requirements and design criteria indicated.

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6. Seismic Performance: Casework and support framing system or including attachments to other work and shall withstand the effects of earthquake motions determined according to New York State Building Code.
- B. Installer Qualifications: A single installer shall perform the work of this section, and shall be a firm with not less than five (5) continuous years of successful experience in the installation of this work, similar to that required for this project and approved by the manufacturer..
 1. The installer shall provide a list of at least five projects of comparable size and similar in design within a fifty mile radius of this project, which may be observed by the representative of the Architect, and or Owner.
 2. Provide laminate clad casework and countertops furnished and installed by the same supplier for single responsibility and integration with other building trades.
- C. Manufacturer: Minimum of 10 years experience in providing manufactured casework systems for similar types of projects, produce evidence of financial stability, bonding capacity, and adequate facilities and personnel required to perform on this project.
 1. Provide products certified as meeting or exceeding ANSI-A 161.1-2000 testing standards.
 2. Single Source Manufacturer: Casework and architectural millwork products must all be engineered and built by a single source manufacturer in order to ensure consistency and quality for these related products. Splitting casework and architectural millwork between multiple manufacturers will not be permitted.
 3. Manufacturer shall be member of the Architectural Woodwork Institute and Approved Quality Certification Program.
- D. Test data performed and certified by an independent testing agency, covering the following areas of product performance:
 1. Base cabinet construction racking test. 990 lbs.
 2. Cabinet front joint loading test: 650 lbs.
 3. Wall cabinet static load test: 1,850 lbs.
 4. Drawer front joint loading test: 940 lbs.
 5. Drawer construction/static load test: 920 lbs.
 6. Cabinet adjustable shelf support device:
 - a. Static load test: 1150 lbs.
 7. Particleboard screws holding power: Face: 225 lbs. / Edge: 155 lbs.
- E. Casework must conform to design quality of materials, workmanship and function of casework specified and shown on drawings.
- F. Design: Door/Drawer overlay cabinet end panels, as reveal overlay design. Door/Drawer and all cabinet body edges to be 3mm PVC as specified herein. Overlay door designs and/or edging other than specified are not acceptable.
- G. 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.
- H. Preinstallation Conference: Construction Manager shall schedule pre-installation meeting three (3) weeks prior to start of work at project site.

1.6 ADA AMERICANS WITH DISABILITIES ACT REQUIREMENTS:

- A. The following special requirements shall be met, where specifically indicated on architectural plans as "ADA" or by General Note. To be in compliance with Federal Register Volume 56, No. 144, Rules and Regulations:
 1. Countertop height: with or without cabinet below not to exceed a height of 34 inches A.F.F. (Above Finished Floor), at a surface depth of 24 inches.
 - a. Knee space clearance: to be a minimum 27 inches A.F.F., and 30 inches clear span width.

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- b. 12 inch deep shelving, adjustable or fixed: not to exceed a range from 9 inches A.F.F. to 54 inches A.F.F.
- c. Sink cabinet clearances: in addition to above, upper knee space frontal depth to be no less than 8 inches, and lower toe frontal depth to be no less than 11 inches, at a point 9 inches A.F.F. and as further described in Volume 56, Section 4.19.
- d. No cabinets shall be install closer than 18" to the pull side of any door. Co-ordinate with electrical drawings for electrical devices.

1.7 SUBMITTALS

- A. Comply with Section 01 3000 - Administrative Requirements, unless otherwise indicated
- B. Shop Drawings:
 - 1. Submit CAD production shop drawings prepared by manufacturer for laminate clad casework and countertops showing layout, elevations, ends, cross-sections, service run spaces, specific modifications, component connections, anchorage details, location methods, hardware, and installation procedures .
 - 2. Verify all dimensions and conditions in field.
 - 3. Include layout of units with relation to and clearances of surrounding walls, doors, windows, and other building components.
 - 4. Indicate locations of blocking and reinforcements required for installing casework.
 - 5. Coordinate shop drawings with other work involved.
- C. Samples: When requested by Architect:
 - 1. Submit one full-size sample base cabinet unit with hardware, doors and drawers, without countertop.
 - 2. Submit one full-size sample wall cabinet unit complete with hardware, doors, and adjustable shelves.
 - 3. Acceptable sample units will be used for comparison inspections at the project. Unless otherwise directed, acceptable sample units may be incorporated in the work. Notify Owner's Representative of their exact locations. If not incorporated in the work, retain acceptable sample units in the building until completion and acceptance of the work.
 - 4. Remove sample units from the premises when directed by the Owner's Representative
 - 5. Plastic-laminate products, 8 by 10 inches, for each type, color, pattern, and surface finish as indicated on finish Schedule.
 - 6. Corner pieces as follows:
 - a. Miter joints for standing trim.
 - 7. Component samples: Two sets of samples for each of the following:
 - a. Decorative laminate color charts, PVC edgings, and Solid surface countertops.

1.8 PRODUCT HANDLING:

- A. Deliver laminate clad casework and countertops only after wet operations in building are completed.
- B. Store completed laminate clad casework and countertops in a ventilated place, protected from the weather, with relative humidity range of 25% to 55%.
- C. Protect finished surfaces from soiling and damage during handling and installation. Keep covered with a protective covering.

1.9 JOB CONDITIONS:

- A. Environmental Requirements: Do not install casework until permanent HVAC systems are operating and temperature and humidity have been stabilized for at least 1 week.
 - 1. Manufacturer/Supplier shall advise Contractor of temperature and humidity requirements for architectural casework installation areas.

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2. After installation, control temperature and humidity to maintain relative humidity between 25 percent and 55 percent.
- B. Conditions: Do not install casework until interior concrete work, masonry, plastering and other wet operations are complete

1.10 WARRANTY:

- A. All materials shall be guaranteed for a period of 5 years from manufacturer's defects and workmanship from date of acceptance.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

- A. For purpose of determining minimum performance and quality standards, this specification is based upon drawings, specifications and manufacturer's literature from TMI SYSTEMS CORPORATION, 50 South Third Avenue West, Dickinson, North Dakota, 58601, Phone: 800-456-6716, fixed modular, flexible rail mounted, and mobile casework and accessories.
- B. Regardless of manufacturer or model numbers indicated, construction shall be in accordance with TMI Systems Corporation and AWI Architectural Woodwork Standards (AWS)s for modular cabinets except where modified by these specifications. Where standard manufacturers' units do not conform to layout and/or dimensions indicated, custom fabricate unit to conform to these specifications unless such non-conformance is specifically approved by the Architect.
 1. Submit proof of ability to provide Certificate of Compliance in AWI, Architectural Woodwork Institute Quality Certification Program .
- C. Substitutions: Refer to Section 01 2500 - Substitution Procedures.

2.2 MATERIALS:

- A. Core Materials:
 1. All core material shall be a blended bio fiber composition with ultra-low formaldehyde resin system. Board shall exceed performance requirements listed below. Testing for conformance to the listed specifications must be done in accordance with procedures described in the American National Standard for Particleboard (ANSI A208.1 2016 section 5.2 Sampling for Acceptance). Board shall comply with formaldehyde emission requirements for Particleboard in CPA-ECC-2011, ANSI A208.1 2016 and CCR 93120.2 (CARB Composite Wood ATCM Phase II) Casework manufacturer shall provide documentation and certification of use within the entire cabinet. No formaldehyde, no exceptions.
 2. Core material shall meet the following average performance requirements: Submit compliance data from the manufacturer prior to fabrication:
 - a. Density: Minimum 45 lbs.
 - b. Modulus of Rupture: 1,800 psi.
 - c. Modulus of Elasticity: 298,000 psi.
 - d. Average Internal Bond: 80 psi.
 - e. Screw holding Face: 2 225 lbs.
 - f. Screw holding Edge: 155 lbs.
 - g. Thickness Tolerance: 0.003+/- inches.
 - h. Linear expansion: 0.2%
 - i. Thickness swell: 5.5%
 - j. Thickness used are 1/4", 1/2", 3/4" and 1".
 - k. Plywood: Shall be 9-ply pressure treated hardwood plywood, "A" faced, hardwood veneer.
 - l. Provide moisture resistant core material at sink locations and wet areas:

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- a) Meeting ANSI MR10 minimum requirements, adding protection against occasional wetting and high humidity.

B. Decorative Laminates:

1. High Pressure Decorative Laminates (HPDL) shall be as follows:
 - a. Exposed Casework Surfaces, Including Exposed Interior Surfaces:
 - a) HGS, matte finish, nominal thickness, 0.048+0.001-0.005 as manufactured by Wilsonart Brand Decorative Laminate.
 - b. Thermally Fused Laminate (TFL) meeting, NEMA Test LD 3-2005. (TFM allowed on casework interiors only, as specified below. Utilization of TFL on any exterior casework surfaces, including door and drawer faces and finished ends, will not be permitted.)
 - c. All laminate shall be counter balanced with heavy gauge neutral colored backing sheet.
2. Plastic laminate shall comply with the following minimum:

PHYSICAL PROPERTIES

PHYSICAL PROPERTIES	LD3 TEST	Type 107	Type 335
Appearance	3.1	No ABC Defects.	No ABC Defects
Light Resistance	3.3	Slight.	Slight
Cleanability	3.4	10.	10.
Stain Resistance	3.4		
Reagents 1 - 10		No Effect.	No Effect.
Reagents 11 - 15		Slight.	Slight.
Boiling Water Resistance	3.5	No Effect.	No Effect.
High Temperature Resistance	3.6	Slight.	No Effect.
Ball Impact Resistance - in	3.8	65	40".
Radiant Heat Resistance - sec	3.10	210 minimum.	200.
Dimensional Change	3.11		
Machine Direction -%		0.3	0.5
Cross Direction - %		0.7	0.8
Wear Resistance - cycles	3.13	400 (min.)	400 (min.)
Formability - inches		N/A	5/16".
Blistering -sec		N/A	45.
Weight:		0.322 psf.	0.186 psf
Fire Rating: ASTM E -84:			
As required by NYS Building Code		Flame spread 50	45.
		Smoke: 45	40.

3. Substitutions: Refer to Section 01 2500 - Substitution Procedures.

- C. Laminate Color Selection as indicated on drawings are as selected by the Architect. Final acceptance of colors by other manufacturer(s) even if listed, as "acceptable manufactures" shall be at the sole discretion of the Architect.
- D. Edgebanding: 3mm PVC banding, machine applied with waterproof hot melt adhesive with external edges and outside corners of door machine profiled to 1/8" radius for safety.
- E. Metal Parts: Countertop support brackets, legs and miscellaneous metal parts shall be furniture steel, welded, degreased, cleaned, treated and epoxy powder coated in color selected by the Architect.

2.3 CABINET HARDWARE:

A. Hinges:

1. Shall be five knuckle, epoxy powder coated, institutional grade, 2 3/4" overlay type with hospital tip, eased edges for safety, and a full, 270° door swing for easy access Steel shall be minimum .095" thick and have minimum of nine (9) edge and leaf fastenings. Hinges shall pass

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ANSI-BHMA standard A156.9, Grade 1 requirement for both vertical and horizontal set and sag (pair of hinges will hold minimum of 310 pounds); copy of test result shall be provided upon request. Casework manufacturer shall use nine specifically engineered screws for attachment of hinges; wood screws shall not be permitted. Doors 48" and over in height shall have three (3) hinges per door.

2. Magnetic door catch with maximum 5 pound pull provided, attached with screws and slotted for adjustment.
 3. Color: Almond powder coated.
- B. Pulls:
1. Door and drawer front pull shall be ABS plastic, semi recessed, designed of molded plastic and a large gripping space, impact resistance, and no sharp edges. Pull design shall be compatible with Americans with Disability Act (ADA), Federal Register Volume 56, No. 144, specifically paragraph 4.27.4. Other pulls may be acceptable pending architect approval.
 - a. Color: Cream.
- C. Adjustable Shelf Supports:
1. Injection molded transparent polycarbonate friction fit into cabinet end panels and vertical dividers, adjustable on 32mm centers. Each shelf support has 2 integral support pins, 5mm diameter, to interface pre-drilled holes, and to prevent accidental rotation of support. The support automatically adapts to 3/4 inch or 1 inch thick shelving and provides non-tip feature for shelving. Supports may be field fixed if desired. Structural load to 1200 pounds (300 pounds per support) without failure
- D. Under Counter Support Legs:
1. Polished Chrome plated steel round support legs with adjustable feet and steel mounting plate.
 - a. Model: #635.68.271.
 - b. Manufacturer: Hafele of America 1-800-423-3531.
- E. Grommets: Mockett, mocket.com; "BRV2" flush mounted, single slot with steel cap.
1. Finish Satin aluminum.
- F. Double Wardrobe Hooks:
1. Double wardrobe hooks with mounting screws.
 - a. Finish: Satin Chrome brass.
 - b. Model #582
 - c. Manufacturer: Ives Architectural Hardware Products.
- G. Label Holders:
1. Nickel plated steel.
 - a. Provide rounded head screws.
 - b. 1 3/8" x 2 11/16".
 - c. Model # 168.02.761
 - d. Manufacturer: Hafele American Co.

2.4 LOCKS:

- A. Provide for all doors. Locks shall be, removable core, pin tumbler, cam style lock with strike. Each lock shall be furnished with two (2) keys.
- B. Locks shall be keyed alike for each room and MASTERKEYED. Keying shall be reviewed with Owner and approved in writing by the Owner. **Locks and Keying system shall match the exiting facility's system.**

2.5 SOLID SURFACING COUNTERTOP

- A. Refer to Section 12 3600 - Solid Surfacing Countertops.

2.6 STAINLESS STEEL SINKS

- A. Refer to Division 22 Plumbing for furnishing and installing stainless steel sinks.

2.7 FABRICATION

- A. Fabricate casework to dimensions, profiles, and details shown.
1. Cabinet Body Construction:
 - a. Fabricate casework, countertops and related products to dimensions, profiles, and details shown on shop drawings.
 - b. All casework panel components must go through a supplemental sizing process after cutting, producing a panel precisely finished in size and square to within 0.010 inches, ensuring strict dimensional quality and structural integrity in the final fabricated product.
 - c. Solid sub-top shall be furnished for all base and tall cabinets.
 - d. At cabinets over 36 inches wide, bottoms and tops shall be joined by a fixed vertical divider.
 - e. Exterior exposed wall cabinet bottoms shall be white thermally fused laminate (TFL) on both sides. Assembly devices shall be concealed on bottom side of wall cabinets
 - f. Tops and bottoms are glued and doweled to cabinet sides and internal cabinet components such as fixed horizontals, rails and verticals. Minimum 6 dowels each joint for 24 inch deep cabinets and a minimum of 4 dowels each joint for 12 inch deep cabinets. (Mechanical or metal hardware fasteners joining cabinet top and bottom panels to the sides will not be accepted.)
 - a) Tops, bottoms and sides of all cabinets are particleboard core
 - g. Unless specifically indicated, core shall be 3/4" thick particleboard. Edging and surface finishes as indicated herein.
 - h. Cabinet backs: 1/4 inch thick medium density fiberboard panel fully captured by the cabinet top, bottom and side panels. Finish to match cabinet interior. 3/4 inch x 4 inch particleboard rails will be placed behind the back panel at the top and bottom, and doweled to the sides utilizing 10mm hardwood fluted dowels. A third intermediate rail will be included on all cabinets taller than 56 inches. Utilize hot melt glue to further secure back and increase overall strength
 - a) Exposed back on fixed or movable cabinets to be 3/4" particleboard, color matched to cabinet interior, exterior surface GP28 laminate as selected.
 - b) Hang rails shall be located at rear of cabinet back and fastened to cabinet sides. Provide minimum of 2 at base, 2 at wall, and 3 at tall cabinets.
 - i. All end panels and vertical dividers, except sink base units, shall be prepared to receive adjustable shelf hardware at 32mm (approximately 1-1/4") centers. Door hinges, drawer slides and pull-out shelves shall mount on line boring to maintain vertical alignment of components and provide for future relocation of doors, drawers, shelves and/or pull-out shelves.
 - j. All exposed and semi exposed edges of basic cabinet components shall be factory edged with 3 mm PVC banding, machine applied with waterproof hot melt adhesive. Color as selected by the Architect.
 - k. Adjustable Shelves in Cabinets
 - a) Core: Particleboard.
 - b) Core Thickness: 3/4 inch up to 30 inches wide, 1 inch over 30 inches wide.
 - c) Edge: 3mm PVC on Front Edge Only
 - l. Interior finish, units with open Interiors:
 - a) Top, bottom, back, sides, horizontal and vertical members, and adjustable shelving faces with Thermally Fused Laminate (TFL).
 - m. Interior finish, units with closed Interiors:

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- a) Top, bottom, back, sides, horizontal and vertical members, and adjustable shelving faces with Thermally Fused Laminate (TFL).
 - n. Exposed ends:
 - a) Faced with high-pressure decorative VGS laminate. Use of TFM on exposed ends will not be permitted.
 - o. Wall and Tall Unit Tops: (when visible from above):
 - a) The top edge of all wall and tall unit end panels shall be factory edged with 3mm PVC to match basic cabinet body color; raw edges at top of wall and tall end panels will not be permitted.
 - b) Top surface will be laminated with melamine in color as selected by the Architect.
 - p. Balanced construction of all laminated panels is mandatory. Unfinished core stock surfaces, even on concealed surfaces (excluding edges), will not be permitted. No exceptions.
- B. Door Fronts:
- 1. Laminated Door fronts shall be 13/16 inch (20.6 mm) finished thickness for all hinged and sliding doors. Hinged door and drawer shall overlay cabinet end panels, as reveal overlay design the cabinet body. Maintain a maximum 1/8 inch (3.2 mm) reveal between pairs of doors, between door and drawer front, or between multiple drawer fronts within the cabinet.
 - 2. Double doors shall be used on all cabinets in excess of 24" wide.
 - 3. Exterior faces shall be laminated with high pressure decorative laminate specified, color as selected. Interior face shall be high balanced with pressure cabinet liner CL20.
 - 4. All edges shall be finished with 3mm PVC available in color as selected by the Architect. External edges and outside corners shall be machine profiled to 1/8" radius.
- C. Miscellaneous Shelving (not in Cabinets):
- 1. Core material: 1 inch thick particleboard.
 - 2. High-pressure decorative VGS laminate on both faces.
 - 3. Edges: 3mm PVC, external edges and outside corners machine profiled to 1/8 inch radius

2.8 SHEET METALS:

- A. Moisture resistant MDF: ANSI A208, MR50 and made with binder containing no urea formaldehyde .
- 1. Product: Georgia-Pacific, Ultrastock M.

PART 3 - EXECUTION

3.1 INSPECTION:

- A. The installer must examine the jobsite and the conditions under which the work under this section is to be performed, and notify the contractor in writing of unsatisfactory conditions. Do not proceed with work under this section until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

3.2 PREPARATION:

- A. Condition laminate clad casework to average prevailing humidity conditions in installation areas prior to installing.

3.3 COORDINATION:

- A. Verify site dimensions of cabinet locations in building prior to fabrication.
- B. Coordinate layout and installation of framing and reinforcements for support of casework, and equipment furnished by others and installed in casework..
- C. Coordinate installation of roughing with other prime contractors.
- D. Coordinate layout and installation of framing and reinforcements for support of casework.
- E. Coordinate installation of casework with installation of other casework equipments and accessories

3.4 INSTALLATION OF CABINETSL

- A. Install all base cabinets on a separate base as shown on drawings.
- B. Install 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. Do not exceed the following tolerances:
 - 1. Variation of Tops of Base Cabinets from Level: 1/16 inch in 10 feet.
 - 2. Variation of Bottoms of Upper Cabinets from Level: 1/8 inch in 10 feet.
 - 3. Variation of Faces of Cabinets from a True Plane: 1/8 inch in 10 feet.
 - 4. Variation of Adjacent Surfaces from a True Plane (Lippage): 1/32 inch.
 - 5. Variation in Alignment of Adjacent Door and Drawer Edges: 1/16 inch.
 - 6. Base Cabinets: Fasten cabinets as indicated on drawings.
 - 7. Wall Cabinets: Fasten to hanging strips and blocking, or reinforcements as shown on drawings. Fasten each cabinet through back, near top, at not less than 24 inches o.c.
 - 8. Install hardware uniformly and precisely. Set hinges snug and flat in mortises.
 - 9. Adjust casework and hardware so doors and drawers align and operate smoothly without warp or bind and contact points meet accurately. Lubricate operating hardware as recommended by manufacturer.
- C. Erect casework, plumb, level, true and straight with no distortions. Shim as required. Where laminate clad casework abuts other finished work, scribe and cut to accurate fit.
- D. All fasteners shall be approved by the architect and provide with screw caps or approved washers. Gypsum board screws are not permitted.

3.5 INSTALLATION OF COUNTERTOPS

- A. Abut top and edge surfaces in one true plane with flush hairline joints and with internal supports placed to prevent deflection. Locate joints only where shown on Shop Drawings.
 - 1. Field Jointing: Where possible, make in same manner as shop-made joints using dowels, splines, fasteners, adhesives, and sealants recommended by manufacturer. Prepare edges in shop for field-made joints.
 - a. Use concealed clamping devices for field-made joints in plastic-laminate countertops. Locate clamping devices within 6 inches of front and back edges and at intervals not exceeding 24 inches (600 mm). Tighten according to manufacturer's written instructions to exert a uniform heavy pressure at joints.
 - 2. Fastening:
 - a. Secure countertops, except for epoxy countertops, to cabinets with Z-type fasteners or equivalent, using two or more fasteners at each cabinet front, end, and back.
 - b. Secure epoxy countertops to cabinets with epoxy cement, applied at each corner and along perimeter edges at not more than 48 inches o.c.
 - a) Where necessary to penetrate countertops with fasteners, countersink heads approximately 1/8 inch and plug hole flush with material equal to countertop in chemical resistance, hardness, and appearance.
 - 3. Provide required holes and cutouts for service fittings.
 - a. Seal unfinished edges and cutouts in plastic-laminate countertops with heavy coat of polyurethane varnish.
 - b. Provide scribe moldings for closures at junctures of countertop, curb, and splash with walls as recommended by manufacturer for materials involved. Match materials and finish to adjacent laboratory casework. Use chemical-resistant, permanently elastic sealing compound where recommended by manufacturer.
 - c. Carefully dress joints smooth, remove surface scratches, and clean entire surface.

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- B. Adjust casework and hardware so that doors operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

3.6 PROTECTION

- A. Storage and Protection: Casework shall be protected in storage. Store under cover in a ventilated building not exposed to extreme temperature and humidity changes. Store off the floor to prevent chipping of laminate. Do not store or install casework in building until concrete, masonry or other wet trades are dry.

3.7 ADJUSTING

- A. Repair or remove and replace defective work, as directed by Architect upon completion of installation.
- B. Adjust doors, drawers, hardware, fixtures and other moving or operating parts to function smoothly.

3.8 CLEANING AND PROTECTION:

- A. Repair or remove and replace defective work as directed upon completion of installation.
 - 1. Clean plastic surfaces, repair minor damage per plastic laminate manufacturer's recommendations. Replace other damaged parts or units.
 - 2. Remove all cartons, debris, sawdust, scraps, etc. and leave space ready for final cleaning.
 - 3. Protect all casework and tops from damage by other trades until acceptance of the work by the Owner.

END OF SECTION

SECTION 12 3600
SOLID SURFACING COUNTERTOPS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Countertops for manufactured casework.

1.3 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry for wood blocking.
- B. Section 12 3200 - Plastic Laminated Casework.
- C. Section 22 0300 - Plumbing Fixtures: Sinks.

1.4 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018.
- B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014, with Errata (2016).
- C. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.1; 2016, with Errata (2017).
- D. ISFA 2-01 - Classification and Standards for Solid Surfacing Material; 2013.
- E. PS 1 - Structural Plywood; 2009.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Specimen warranty.
- C. Shop Drawings: Complete details of materials and installation .
- D. Verification Samples: For each finish product specified, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.
- E. Test Reports: Chemical resistance testing, showing compliance with specified requirements.
- F. Certificate: Submit labels and certificates required by quality assurance and quality control programs.
- G. Maintenance Data: Manufacturer's instructions and recommendations for maintenance and repair of countertop surfaces.

1.6 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing the products specified in this section, with minimum ten years of documented experience.
- B. Quality Certification:
 - 1. Provide labels or certificates indicating that the installed work complies with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade or grades specified.
 - 2. Provide designated labels on shop drawings as required by certification program.
 - 3. Provide designated labels on installed products as required by certification program.
 - 4. Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.8 FIELD CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.1 COUNTERTOP ASSEMBLIES

- A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
- B. Solid Surfacing Window Sills and Countertops: Solid surfacing sheet or plastic resin casting over continuous substrate:
 - 1. Flat Sheet Thickness: 1/2 inch (12.5 mm), minimum.
 - 2. Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISFA 2-01 and NEMA LD 3; acrylic or polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
 - a. Manufacturers:
 - a) Dupont: www.corian.com.
 - b) Substitutions: 01 2500 - Substitution Procedures.
 - b. Surface Burning Characteristics: Flame spread 25, maximum; smoke developed 25, maximum; when tested in accordance with ASTM E84.
 - c. Finish on Exposed Surfaces: Polished, gloss rating of 55 to 80.
 - d. Color and Pattern: As indicated on finish schedule.
 - e. Exposed Edge Treatment: Built up to minimum 1-1/4 inch (32 mm) thick; radiused edge.
 - f. Back and End Splashes: Same sheet material, square top; minimum 4 inches (102 mm) high.
 - g. Fabricate in accordance with manufacturer's standard requirements.

2.2 MATERIALS

- A. Plywood for Supporting Substrate: PS 1 Exterior Grade, A-C veneer grade, minimum 5-ply; minimum 3/4 inch (19 mm) thick; join lengths using metal splines.
- B. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.
- C. Joint Sealant: Mildew-resistant silicone sealant, color as selected..
 - 1. Mildew resistant conforming to FDA NSF 51, UL listed.

2.3 FABRICATION

- A. Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.
 - 1. Join lengths of tops using best method recommended by manufacturer.
 - 2. Fabricate to overhang fronts and sides as shown on drawings.
 - 3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.
- B. Provide back/end splash wherever counter edge abuts vertical surface unless otherwise indicated.

1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
 2. Height: 4 inches (102 mm), unless otherwise indicated.
- C. Solid Surfacing: Fabricate tops up to 72 inches (___ mm) long in one piece; join pieces with adhesive sealant in accordance with manufacturer's recommendations and instructions. Form joints between components to be non conspicuous.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Fuller and D'Angelo P.C. of unsatisfactory preparation before proceeding.
- C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

3.2 PREPARATION

- A. Verify dimensions of all existing countertops to be replaced.
- B. Clean surfaces thoroughly prior to installation.
- C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Attach solid surfacing window sills using compatible adhesive and mechanical fastened.
 1. Countersink screws and plug opening with matching material.
- B. Attach solid surfacing window sills using compatible silicone bonding material.
- C. Seal joint between window sills back and end splashes and adjacent surfaces.
- D. Provide products in largest pieces available.
- E. Cut and finish edges with clean sharpe returns.
- F. Provide radius at outside corners.
- G. Dress joints smooth, remove surface scratches and clean entire surfaces.
- H. Installation of Countertops
 1. Abut top and edge surfaces in one true plane with flush hairline joints and with internal supports placed to prevent deflection. Locate joints only where shown on Shop Drawings.
 - a. Field Jointing: Where possible, make in same manner as shop-made joints using dowels, splines, fasteners, adhesives, and sealants recommended by manufacturer. Prepare edges in shop for field-made joints.
 - a) Use concealed clamping devices for field-made joints in plastic-laminate countertops. Locate clamping devices within 6 inches of front and back edges and at intervals not exceeding 24 inches (600 mm). Tighten according to manufacturer's written instructions to exert a uniform heavy pressure at joints.
 - b. Fastening:
 - a) Secure countertops, except for epoxy countertops, to cabinets with Z-type fasteners or equivalent, using two or more fasteners at each cabinet front, end, and back.
 - b) Secure epoxy countertops to cabinets with epoxy cement, applied at each corner and along perimeter edges at not more than 48 inches o.c.
 - (a) Where necessary to penetrate countertops with fasteners, countersink heads approximately 1/8 inch and plug hole flush with material equal to countertop in chemical resistance, hardness, and appearance.
 - c. Provide required holes and cutouts for service fittings.

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- a) Seal unfinished edges and cutouts in plastic-laminate countertops with heavy coat of polyurethane varnish.
 - b) Provide scribe moldings for closures at junctures of countertop, curb, and splash with walls as recommended by manufacturer for materials involved. Match materials and finish to adjacent laboratory casework. Use chemical-resistant, permanently elastic sealing compound where recommended by manufacturer.
 - c) Carefully dress joints smooth, remove surface scratches, and clean entire surface.
2. Adjust casework and hardware so that doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

3.4 TOLERANCES

- A. Variation From Horizontal: 1/8 inch in 10 feet (3 mm in 3 m), maximum.

3.5 CLEANING

- A. Clean surfaces thoroughly. Remove adhesives, sealant and other stains.

3.6 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

SECTION 22 0100

GENERAL CONDITIONS

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section.

1.1 GENERAL CONDITIONS

- A. Before submitting a proposal, Bidders shall examine all Drawings related to this work and shall become fully informed as to the extent and character of the work required and its relation to the other work in the building.
- B. Before commencing work, the Contractor will examine all conditions of the project upon which his work is in any way dependent for perfect workmanship according to the intent of this Specification. No "waiver of responsibility" for incomplete, inadequate, or defective adjoining work will be considered unless notice has been filed by this Contractor and acceded to by the Owner's representative in writing before the Contractor begins any part of the work.
- C. The Contractor will pay for all licenses, permits and inspection fees required by civil authorities having jurisdiction. Comply with all laws, ordinances, regulations, fire underwriter's requirements applicable to work herein specified without additional expense to the Owner. (Also, local building code requirements.).
- D. It is specifically intended that anything (whether material or labor) which is usually furnished as a part of such equipment as is hereinafter called for (and which is necessary for the completion and proper operation) shall be furnished as part of this Contract without additional cost the Owner, whether or not shown in detail on the Drawings or described in the Specifications.
- E. When Drawings and Specifications conflict or there is a question as to the proper intent of this Contract, the Contractor shall assume the more expensive method in his pricing. All questions shall be directed to the Architect/Engineer in writing only and only up to ten (10) days prior to bidding.
- F. The Drawings indicate the general runs of the piping, ductwork, etc. systems and the location of equipment and apparatus, but it shall be understood that the right is reserved by the Architect/Engineer to change the location of piping work, ductwork, equipment and apparatus to a reasonable extent as building conditions may dictate, prior to their installation without extra cost to the Owner.
- G. Small scale drilling through walls and floors which may contain asbestos shall be performed by a person with a "restricted asbestos handler allied trades certificate" and shall always have a copy of it in his possession while working on the project.
- H. Any changes from the Drawings and Specifications and any interpretation thereof shall have the prior approval of the Architect/Engineer. The Contractor shall submit in writing, at the time of signing the Contract, any items of necessary labor and materials, which, in his opinion, are lacking in requirements of the Drawings and Specifications to insure a complete job in all respects. No consideration will be granted to alleged misunderstanding of materials to be furnished, work to be done, or conditions to be complied with, it being understood that the tender of a proposal carries with it the agreement to all items and conditions referred to herein, or indicated on the accompanying Drawings.

END OF SECTION

SECTION 22 0125

SCOPE OF WORK

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section.

1.1 SCOPE OF WORK

- A. The work under this section includes all labor, materials, equipment, tools, transportation, cutting and patching, excavation and backfill and the performance of all work necessary and required for the furnishing and installation complete of all Plumbing and Drainage work as shown on Contract Drawings, as specified herein and as otherwise required by job conditions or reasonably implied, including but not necessarily limited to the following:
1. Provide complete new and altered hot and cold-water piping to all new and reinstalled plumbing fixtures, equipment, etc. as indicated.
 2. Existing ceiling mounted transformers, low voltage wiring, conduits and J-Boxes may remain. Provide all new sensor assemblies and reconnect to new faucets and flush valves. Use sloan or replace back to 120v power source.
 3. Reinstall all plumbing fixtures where indicated, complete including traps, stops, drains, strainers, tailpieces, faucets, escutcheons, etc.
 4. Provide complete new piping and final connections to equipment furnished under other Divisions.
 5. Provide all demolition, removal disconnecting, capping, sealing of all existing plumbing piping, apparatus, equipment, fixtures, specialties, accessories, etc. which are not included or incorporated in the new layout.
 6. Provide all required temporary connections to maintain all plumbing services without interruption.
 7. Replace all damaged pipe insulation as indicated.
 8. Tests and adjustments.
 9. This Contractor shall obtain all permits, bonds, approvals, etc. at no additional cost to the Owner.
 10. This Contractor shall provide shop drawings for all plumbing fixtures, piping, valves, insulation, equipment, etc.
 11. For Cutting and Patching refer to front end of spec.
 12. Furnish minimum 18" x 18" access doors for all valves, cleanouts, etc. in all inaccessible walls, ceilings, etc. Installation by General Contractor.
 13. Fire stopping per FM/UL and NFPA. Refer to Division 1.

1.2 ALTERATION WORK

- A. All equipment, piping, plumbing, fixtures, etc. to be removed, shall be disposed of or salvaged as directed by the Owner. They shall not be removed from the premises without Owner's approval.
- B. All piping to be removed shall be properly plugged or capped so that upon completion of all new work, all abandoned piping shall be concealed in finished areas.
- C. No dead ends shall be left on any piping upon completion of job.
- D. The existing systems shall be left in perfect working order upon completion of all new work.
- E. Location and sizes of existing piping are approximate. Exact sizes and locations of all existing piping shall be verified on the job.
- F. All removals shall be removed from the site.

END OF SECTION

SECTION 22 0130

WATER SUPPLY SYSTEM

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 DESCRIPTION OF WORK

- A. Furnish and install a complete cold-water distribution system to supply water to all new fixtures, water consuming equipment, and valved outlets for the use of other trades and connect to existing piping.
- B. The water supply system shall be complete with all pipe, fittings, valves, mains, risers, branches, shock absorbers, air chambers, hangers, anchors, expansion loops, connections to existing piping, covering, tests, etc. all as shown on the Drawings, as hereinafter specified.
- C. Furnish and install a complete hot water distribution system to supply water to all new fixtures and equipment requiring heated water.

PART 2 - PRODUCTS

2.1 PIPING, FITTINGS AND MATERIALS

- A. All components of water supply system shall confirm to all "No Lead" requirements including NSF/ANSI-372.
- B. The domestic water systems shall be of the following material and shall be in accordance with the latest ASTM and ASME Standards.
- C. Domestic water piping within the buildings shall be seamless drawn or extruded tubing type "L" copper. Both shall be of Chase, Anaconda, Revere, and approved equal, hard temper ASTM B88 with solder joint sweat end fittings. Fittings for use with copper tubing shall be cast brass of Muellers "Streamlin" pattern or approved equal.
- D. Joints for copper tubing shall be made with 95-5 (lead and antimony free) solder. Flanges where required shall be cast brass. Provide dielectric adapters between ferrous and non-ferrous pipe joints.

2.2 VALVES

- A. All shut-off valves 2" and smaller shall be ball valves equal to Apollo 70 Series or Milwaukee BA100 Series Valve. Bronze body with chrome plated trim
- B. This Contractor shall furnish all valves as indicated on the Drawings, or as may be required for the proper control of the pipelines installed under this Specification, so that any fixture, line, or piece of apparatus may be cut out for repair without interference or interruption of the service to the rest of the Facility.
- C. All domestic water valves shall have a minimum working pressure of 125 psig, steam rated unless otherwise noted on the Drawings or specified herein. All valves shall be of one manufacture as manufactured by Milwaukee Valve or Hammond.
- D. All gate valves within the buildings shall be wedge gauge valves with painted iron wheel handles, shall have gland followers in stuffing boxes, and shall be so constructed that they may be repacked while open and under pressure. All valves shall have the name of the manufacturer and working pressure cast or stamped thereon.

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- E. All gate valves shall be all bronze with sweat or screwed joint ends as required by the piping system in which they are installed.
- F. Globe valves shall be of all bronze with composition disc, threaded or sweat joint ends as required by piping system in which they are installed.
- G. Check valves shall be all bronze swing check type with threaded or sweat joint ends. Check valves 4 inch and larger shall be iron body bronze mountings and shall be provided with screwed or flanged joint ends as required by piping system in which they are installed.
- H. Drain valves, at risers and at low points, shall be 3/4-inch heavy cast brass with composition washers with male thread for hose connections.

2.3 SHOCK ABSORBERS

- A. Shock absorbers shall be similar and equal to J.R. Smith 5000 series or Zurn Z1700 series with stainless steel pressurized shell sized in accordance with P.D.I. Bulletin WH-201.
- B. Provide shock absorbers on all fixtures and equipment having quick closing valves whether or not indicated on the Drawings.
- C. Provide access doors where shock absorbers are concealed.

2.4 VACUUM BREAKERS

- A. Provide vacuum breakers on water supply piping to each fixture and equipment with submerged inlets, and on faucets and outlets, within the facility to which hose can be, or is attached forming a submerged inlet.
- B. Set vacuum breakers in exposed readily accessible locations at least four inches above floor rim level of fixture, or high point of equipment.
- C. Vacuum breakers shall be chrome-plated brass. "Watts" or other approved.
- D. Vacuum breakers under constant pressure shall be of the continuous pressure type No. 9 "Watts" or Wilkins BFP-8CH or approved equal.

2.5 EXPANSION JOINTS, ANCHORS AND GUIDES

- A. The entire piping installation shall be installed with adequate provision for expansion. No rigid connections will be permitted. Refer to Drawings for locations of expansion joints and related guides and anchors. The joints, guides and anchors shall be as manufactured by Flexonics Products, Metraflex or Flex-weld.
- B. Branches shall be of sufficient length and have three elbow swings to allow for pipe expansion.
- C. Any breaks in the piping within the guarantee period due to improper provision for expansion must be replaced at the expense of this Contractor, and the conditions corrected to prevent future recurrence.
- D. Any damages to surrounding areas and equipment due to this failure shall also be repaired and paid for at the expense of this Contractor.
- E. Joints to have 150 psi rating, ANSI-B16.5 with liner and cover.

2.6 STERILIZATION

- A. The entire domestic water piping system shall be thoroughly sterilized with chlorine before acceptance for domestic operation.
- B. The amount of chlorine applied shall be such as to provide a dosage of not less than 50 parts per million for 24 hours or 200 p.p.m. for one hour. The chlorinating material shall be either liquid chlorine or sodium hypochlorite solution and shall be introduced into the system and drawn to all points of the system. If possible to do so, the lines shall be thoroughly flushed before introduction of the chlorinating material. After a contact period of not less than 24 hours, the system shall be flushed with clean water until the residual content is not greater than 0.2 parts per million. All valves in the lines being sterilized shall be opened and closed several times during the contact period.
- C. Sterilization and tests for purity of water in the entire piping system shall be performed by the Contractor through an approved independent testing laboratory and a certificate shall be furnished to the Architect certifying the quality of purity.
- D. Per ANSI/AWWA Standard C651-05.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. It is the intent that each part of the plumbing system shall be complete in all details and water lines provided with all control valves as indicated on Drawings, or as may be required for the proper control of the pipelines under this Specification so that any fixture, line or piece of apparatus may be cut out for repair without interference or interruption of the service to the rest of the facility.
- B. This Contractor shall carefully examine the Architectural Drawings in detail and familiarize himself with all conditions relative to the installation of piping, particularly where same is concealed behind furring or in hung ceilings.
- C. In no case shall this Contractor permit his pipes to be exposed beyond finished walls or ceilings unless specifically shown on Drawings. He shall consult with the Contractors of other trades in the building and install his piping in such a way as to least interfere with the installation of other trades.
- D. The water piping shall all be installed to drain to a valve provided by this Contractor and branches shall not be trapped but shall have continuous pitch. Where necessary to raise or lower mains, the same shall be provided with a drip and shall be properly valved.
- E. Piping shall be installed, whether indicated or not, to rise and/or drop to clear any and all conduits, lighting fixtures, ductwork and heating mains to maintain the desired clear heights. This Contractor shall consult with the Contractors of other trades and facilitate the erection of the equipment and piping.
- F. Run piping straight and as direct as possible, in general forming right angles with or parallel to walls or other piping. Risers shall be erected plumb and true.
- G. After cutting, all pipes shall be reamed out to full bore and before erection the inside of all pipes shall be thoroughly cleaned.
- H. No piping or work shall be concealed or covered until all required tests have been satisfactorily completed and work has been approved by the Architect.
- I. All materials shall be new and installed in a first-class manner.

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- J. In erecting pipe, friction wrenches and vises shall be used exclusively, and any pipe cut, dented or otherwise damaged shall be replaced by this Contractor.
- K. All ferrous to non-ferrous pipe connections shall be made with approved dielectric pipe or flange unions isolating joints to prevent any electrolytic action between dissimilar materials.
- L. Any piece of pipe 6 inches in length or less shall be considered a nipple. All nipples with unthreaded portion 1-1/2 inch and less shall be of weight corresponding to fitting connected. Only shoulder nipples shall be used, close nipples will not be accepted.
- M. Revised water service shall be in accordance with the local water supply department requirements. All water lines are to be protected from freezing. Install new piping for water service below frost line and provide concrete separations when crossing other utilities. Provide concrete thrust mass at changes of pipe direction conforming to authorities having jurisdiction.

END OF SECTION

SECTION 22 0160

SANITARY DRAINAGE SYSTEMS

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 DESCRIPTION OF WORK

- A. The work under this section includes all labor, materials, equipment, and appliances necessary and required to completely install all drainage systems as required by the Drawings; code and as specified herein, including but not limited to the following:
- B. Complete sanitary drainage and venting systems including connections to the existing sanitary drainage and venting systems.
- C. Piping and final connections for equipment furnished under other Divisions.
- D. Alterations and removals to existing sanitary and vent systems.
- E. Tests.

1.2 QUALITY ASSURANCE

- A. All Cast Iron soil pipe and fittings shall bear the collective trademark of the Cast Iron Soil Pipe Institute (CISPI) and be listed by NSF International.
- B. Hubless Couplings:
Standard, Stainless-Steel Shielded, Couplings: Standard Couplings shall conform to CISPI 310 and ASTM C 1277. Shield Assemblies shall consist of a stainless steel bi-directional corrugated shield; stainless-steel bands and tightening devices; and an ASTM C 564, rubber sleeve with integral center stop. Couplings shall bear the NSF Trademark, and be manufactured in the USA.

PART 2 - PRODUCTS

2.1 PIPING AND FITTING MATERIALS

- A. All indoor underground storm soil, waste and vent piping shall be service weight cast iron with fittings of bell and spigot type. All exterior underground storm soil and waste piping shall be extra heavy cast iron. Each length shall have the size, weight per foot and the manufacturer's name clearly cast or stamped thereon. Weight shall be as defined by the Plumbing Code. Fittings and traps shall be similarly marked and of corresponding weights.
- B. All above ground storm, soil, waste and vent piping and fittings 3" and larger shall be service weight and fittings of bell and spigot type as specified in paragraph above. Above ground waste and vent piping 2" and smaller shall be galvanized steel, fittings on waste piping shall be galvanized cast iron, recessed drainage pattern, fitting on vent piping shall be galvanized cast iron, beaded pattern, screwed joints shall be made up to be perfectly tight without the use of lead or filler of any kind, except oil or graphite. Nipples for galvanized pipe shall be shoulder type. No close nipples shall be permitted.

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- C. Joints shall be made with gasket or hemp or picked oakum and lead, at least 12 oz. of fine soft pig lead shall be used for each inch of diameter pipe used. Lead shall be run in one (1) pouring. All lead shall be pure and soft and of the best quality and shall be sufficiently heated to run joint full at one pouring without hardening. Dross shall not be allowed to accumulate in the melting pot. See 2.1, E. for joint options where permitted.
- D. All galvanized pipe and fittings shall be galvanized with prime western spelter by hot drip process.
- E. The Contractor has the option of using the following types of joints with hubbless cast iron pipe only if approved by the governing agencies. These joints shall be used throughout the project. No mixing of joints shall be permitted.
 - 1. Neoprene gasketed joints similar to Ty-Seal (for above and underground application).
 - 2. Hubbless cast iron pipe with neoprene gaskets and stainless-steel clamps (by Clamp-All or equal) above ground only. All in accordance with Cast Iron Soil and Pipe Institute Standard 301 latest edition. Hangers and supports shall be in accordance with manufacturer's recommendations.
 - 3. Copper DWV system with 50-50 tin antimony solder, DWV with solvent welded or screwed joints meeting CS-270-65.

2.2 CLEANOUTS

- A. Provide easily accessible cleanouts where indicated at base of vertical stacks at ends of horizontal drainage lines and at intervals not exceeding 50 ft.; at each change of direction; on handholes of running traps, and where necessary to make entire drainage system accessible for rodding. Provide at least 18" clearance to permit access to cleanout plugs.
- B. Cleanouts for cast iron pipe shall consist of tarped extra heavy cast iron ferrule caulked into cast iron fittings and extra heavy brass tapered screw plug with solid hexagonal unit. Cleanouts for wrought iron pipe shall consist of extra heavy brass screw plug in drainage fitting.
- C. Cleanouts turning out through walls and up through floors shall be made by long sweep ells or "Y" and 1/8 bends with plugs and face or deck plates to conform to Architectural finish in the room. Where no definite finish is indicated on the Architectural and/or Mechanical Drawings, wall plates shall be chrome plated cast brass and floor plates shall be nickel bronze.
- D. Cleanouts shall be full size at the pipe up to 6" inclusive. On larger size piping 6" size plugs shall be used.
- E. Cleanout fittings in vertical stacks shall consist of tapped tees capable of receiving a rough brass raised head cleanout plug, J.R. Smith S-4730, Zurn Z1445-A-BP or approved equal.
- F. All cleanout plugs shall be brass lubricated with graphite before installation.
- G. Cleanouts occurring in cast iron soil pipe above floor at change of direction of pipe run and at ends of horizontal runs shall be J.R. Smith S-4425, Zurn Z1441-A-BP or approved equal with cast iron ferrule for caulk connection and fitted with a straight threaded tapered bronze plug with raised hex head.
- H. Cleanout deck plates for finished areas shall be similar and equal to J.R. Smith 4020 series, Zurn ZB1400-X or approved equal with cast iron ferrule, scoriated cutoff sections, brass cleanout plus collar with brass bolts for waterproofed slabs. In tile floor areas the cleanout deck plates shall be recessed to tile.

2.3 FLASHING

- A. Provide 6 lb. lead flashing extending at least 10" beyond edge of all floor drains and vents through roof and all floor sleeves in floors with waterproofing or vapor barriers. Flashing shall be held securely in by clamping devices.
- B. All floor drains shall be provided with flashing rings and 24" square 6 lb. sheet lead flashing, properly flashed into flashing ring of the drain.

2.4 SANITARY DRAINAGE

- A. A complete system of drainage shall be provided as shown on the Drawings. The system shall include all drains, leaders, branches, house drains with all pipe fittings, hangers, anchors, etc. to make a complete sanitary drainage system. The systems shall extend through house drains and terminate as indicated on the Drawings.
- B. Piping shall be sizes as indicated on the Drawings. The sanitary drains shall have a pitch of 1/8" per ft. minimum unless otherwise noted. Branch connections to stacks and house drains shall pitch a minimum of 1/8" per ft.

2.5 PIPING AND FITTINGS

- A. Provide piping of one of the following materials, of weight/class indicated. Provide pipe fittings and accessories of same material and weight/class as pipes, with joining method as indicated.

PART 3 - EXECUTION

3.1 INSTALLATION OF PIPING

- A. The size of soil, waste and vent piping shall be as determined by the State codes, rules and regulations for plumbing and drainage, except where specifically noted to be larger by the Specifications or Drawings and all fixed rules of installation, as set forth in the codes, rules and regulations, shall be followed as part of the Specifications.
- B. This Contractor shall carefully examine the Architectural plans in detail and familiarize himself with all conditions relative to the installation of piping, particularly where same is concealed behind furring or in hung ceilings.
- C. In no case shall this Contractor permit his pipes to be exposed beyond finished plaster lines unless specifically shown on Drawings. He shall consult with the Contractors of other trades in the building and install his piping in such a way as to least interfere with the installation of other trades.
- D. Piping shall be installed, whether indicated or not, so to rise and/or drop to clear all conduits, lighting fixtures, ductwork and heating mains to maintain the desired cleat heights. This Contractor shall consult with the Contractors of other trades and facilitate the erection of the equipment and piping.
- E. Run piping straight and as direct as possible in general forming right angles with or parallel to walls or other piping. Risers and stacks shall be erected plumb and true. After cutting, all pipes shall be reamed out to full bore and before erection the inside of all pipes shall be thoroughly cleaned.
- F. No piping or work shall be concealed or covered until all required tests have been satisfactorily completed and work had been approved by the Architect and all other authorities having jurisdiction.

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- G. Branch connections shall be made with "Wye" and long "Tee-Wye" fittings, short 1/4 bends, common offsets and double hubs will not be permitted. Short "Tee-Wye" fittings are to be used in vertical piping only. All fittings shall conform to code requirements.
- H. Cleanouts shall be provided at foot of all stacks, at changes of directions, at the ends of branch runs where shown and as required by code and shall be terminated as described under cleanouts.
- I. The house drains must be run at a minimum grade of 1/8" per ft. downward in the direction of flow. Wherever possible, a 1/4" per ft. pitch shall be maintained. Branch connections to stacks from fixtures shall pitch 1/4" per ft. where possible. Attention is again called to the necessity of maintaining the ceiling heights established.
- J. Furnish and install complete systems of vent pipes from the various plumbing fixtures and other equipment to which drainage connections are made. Vent pipes shall be connected to the discharge of each trap and shall be carried to a point above the ultimate overflow level of the fixture before connecting with any other vent pipe; in general, this will be approximately 3'-6" above the finished floor. Branches shall be arranged to pitch back to fixtures.
- K. The individual vent pipes shall be collected in branch vent lines and connected to existing vent connections through roof.
- L. Any existing vents through roof, damaged, or if flashing on roof comes loose while connecting new vent to them shall be repaired and reflashed to the roof as required to maintain waterproofing the satisfaction of the Architect.

END OF SECTION

SECTION 22 0300

PLUMBING FIXTURES AND EQUIPMENT

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 DESCRIPTION OF WORK

- A. The work under this section shall consist of furnishing all labor, materials, equipment, and appliances necessary and required to completely do all plumbing fixture work, as required by the Drawings and as specified herein, including but not limited to the following: plumbing fixtures, traps, fittings, trimmings, brackets, plates, anchor, chair carriers and supports.
- B. Just before the Owner's taking over the work in the building, this Contractor shall thoroughly clean all fixtures furnished and set under this Contract, leaving every fixture in perfect condition and ready for use.
- C. Submit shop drawings and roughing sheets for all equipment for checking and approval.

PART 2 – PRODUCTS

2.1 PLUMBING FIXTURES AND EQUIPMENT

- A. All fixtures shall be free from imperfections, true as to line angles, curves and color, smooth, watertight, complete in every respect and practically noiseless in operation, Fixtures specified are given as the typical standard required as manufactured by American Standard and they or other similar approved fixtures as made by Kohler or Eljer Companies shall be furnished, set and connected in good substantial, neat workmanlike manner.
- B. The letter designations hereinafter correspond with the schedule on the Drawings.

NOTE: All fixtures were removed and stored by owner after flood unless otherwise noted on drawings. Contractor is to reinstall on existing carriers and reconnect to existing roughing All faucets and flush valves systems shall be new. Existing ceiling mounted transformers and wiring may be reused.

- 1. Water Closet - Type A1
Flush valve type, wall mounted 2257.103 "Afwall" vitreous china, siphon jet action, elongated bowl, 1-1/2" top spud, Sloan Optima hard wired sensor operated model 111-1.6 low consumption flush valve, Olsonite #95 open front seat cover.
- 2. Water Closet - Type A2 (Handicapped)
Same as above except Handicapped.
- 3. Lavatory - Type B (Handicapped)
0356.015 "Lucerne" white vitreous china lavatory with 4" centers, concealed arm support, 7723.018 offset grid drain, adjustable trap, loose key stops and all required trim. Sloan Optima hard wired sensor operated model ETF-600 faucet with vandal-proof aerator. Cover "P" trap and supplies and stops with Truebro "Handi-Lav-Guard" insulation kits.

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4. Urinal - Type C
6501.010 "Washbrook" white vitreous china, siphon jet urinal, wall hanger, 3/4" top spud, outlet connection threaded 2" inside, Sloan Optima hard wired sensor operated model 186-1.5 low consumption flush valve with vacuum breaker and angle stop.
5. Electric Water Cooler – Type D (Handicapped) Replace with new and modify piping.
Elkay model LMABFTL8WSLK with bi-level ADA cooler bottle filling station.
6. Mop Receptor - Type E
"Mustee" model 65M with model 63.600A heavy duty faucet, model 65.600 mop hanger, model 67.2436 wall guard.
7. Janitors Sink - Type F
7692.049 "Lakewell" acid resisting 22" x 18" service sink, enameled cast iron with 47076.07 rim guard and wall hanger, 8341.075 faucet with vacuum breaker and 7798.176 trap with strainer.
8. Pantry Sink - Type G
Elkay model no. DLR-1722, 18-gauge stainless steel type 302, self-rimming single bowl, Chicago Faucet model no. 404A-317, 8-inch center, 5-inch spout, 317 4-inch blade handles, E12 aerator.
9. Shower - Type H
By General Contractor (GC), Plumbing Contractor to hook up complete.
10. Eye Wash - (Wall Mounted)
Encon model no. 01045622 chrome plated brass piping fittings and swivel, chrome plated bronze ball valve with stainless steel push plate, 90° locking swivel to swing over sink, plastic heads with float off covers, vandal resistant self-adjusting regulators assure even flow of 3.5 gpm under varying hydraulic conditions. Provide 11x17 sign.
12. Floor Drains
Josam series 30000A or Zurn Z415 type "B" coated cast iron, two-piece body with double drainage flange, flashing collar, weepholes, bottom outlet, and adjustable strainer.
14. Wall Hydrants (Interior): J.R. Smith 5609 QT bronze nickel-plated quarter turn with 3/4" hose connection, integral vacuum breaker with vandal resistant cap and T-handle key. Install under lavatories in all toilet rooms.
15. Electric Water Heater (Replace)
Equal to A.O. Smith DSE -20A, 20-gallons ASME glass lined steel tank, 9kw, 208/3/60 41 G.P.H. recovery at 90° temperature rise. Provide ASME T&P relief valve and drain valve.
16. Domestic Hot Water Circulator Pump
Furnish and install domestic water circulator as indicated on Drawings between heater and storage tank. Grundfos model no. UP-43-75-BF, 22 gpm @ 15 ft. of head, 1/6 hp, stainless steel impeller, aluminum housing, bronze pump volute.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. All fixtures shown on Drawings shall be set, connected and tested by the Contractor. He shall also make all water; soil, waste, vent and other service connections to fixtures as shown on Drawings or as directed and shall set, furnish, connect and test all necessary fittings.

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- B. All pipes at fixtures passing into walls, floors or partitions shall be provided with heavy cast brass escutcheons and security (tamperproof) set screws finished to match the pipe. No "waiving" of this section will be permitted.
- C. All fittings' escutcheons, faucets, traps, exposed piping etc. shall be brass, chrome plated over nickel plate with polished finish. Any visible hanger nuts shall be security (tamperproof) type and shall likewise be chrome plated over nickel plate.
- D. This Contractor shall be responsible for protecting all plumbing fixtures including in these Specifications against injury from the building materials, tools and equipment. Any fixtures damaged during the construction period shall be replaced new. After all fixtures are set, this Contractor shall carefully grout all around fixtures.

END OF SECTION

SECTION 22 0420

SUPPORTS, SLEEVES AND PLATES

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 DESCRIPTION OF WORK

- A. This Contractor shall furnish and install all plates, hangers and supports for his piping.
- B. All piping shall be hung or supported from structural members only.

PART 2 - PRODUCTS

2.1 PIPING

- A. All piping shall be supported from building structure in a neat and workmanlike manner wherever possible, parallel runs of horizontal piping shall be grouped together on trapeze hangers. Vertical risers shall be supported at each floor line with steel pipe clamps. Use of wire perforated metal to support pipes will not be permitted. Hanging pipes from other pipes will not be permitted.
- B. Necessary structural members, hangers and supports of approved design to keep piping in proper alignment and prevent transmission of injurious thrusts and vibrations shall be furnished and installed. In all cases where hangers, brackets, etc., are supported from concrete construction, care shall be taken not to weaken concrete or penetrate waterproofing.
- C. All hangers and supports shall be capable of screw adjustment after piping is erected. Hangers supporting piping expanding into loops, bends and offsets shall be secured to the building structure in such a manner that horizontal adjustment perpendicular to the run of piping supported may be made to accommodate displacement due to expansion. All such hangers shall be finally adjusted, both in the vertical and horizontal direction, when the supported piping is hot.
- D. Pipe hangers shall be as manufactured by Grinnell, whose catalog numbers are given herein, or equivalent Carpenter and Paterson, or F&S Mfg. Co.
- E. Piping shall be supported as follows unless otherwise indicated on the Drawings:
 - 1. Piping: 1-1/2 inch and smaller Fig. #260 adjustable clevis hanger. 2 inch and larger Fig. #174 one-rod swivel roll hanger.
 - 2. Two-rod hangers shall be used for piping close to the ceiling slab or where conditions prohibit use of other hanger types.
 - 3. Anchors for hanger rods shall be Phillips "Red Head" self-drilling type. Anchors shall be placed only in vertical surfaces.
 - 4. Spacing of pipe supports shall not exceed 6 feet for pipes up to 1-1/2 inch and 10 feet on all other piping.
 - 5. Hangers shall pass around insulation and a 16-gauge steel protective band, 12-inch-long shall be inserted between hangers and insulation.

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6. All piping shall be supported to allow free movement where expanding or contracting. Pipe shall be anchored as required or directed.
 7. All lateral runs of piping shall be securely supported on hangers, rolls, brackets, etc. and in a manner to allow for proper expansion and elimination of vibration.
 8. 2 inch and smaller pipe, where run on walls, shall be supported on wrought iron "J" hook brackets with anchor bolts.
 9. All horizontal pipe, where run overhead or on walls, shall be supported as follows unless otherwise indicated: On adjustable steel clevis type hangers suspended on hanger rods, pipe sizes up to and including 4 inch.
- F. Space limitations in hung ceilings spaces and conditions in other locations may require use of other type of hangers than those specified above. Suitable and approved pipe hangers shall be provided for such job conditions.
- G. All supports shall be fastened to structural members or additional steel supports furnished by this Contractor.
- H. Hanger rods shall be steel, threaded with nuts and lock nuts, sizes in accordance with following schedule:

<u>Pipe Size</u>	<u>Rod Size</u>
3/4" to 2" inclusive	3/8"
2-1/2" and 3" inclusive	1/2"
4" and 5" inclusive	5/8"
6"	3/4"
8" to 12" inclusive	7/8"

- I. Cast iron piping shall be supported at intervals of not more than (5) feet (at each hub) on straight runs.

PART 3 - EXECUTION

3.1 PIPING

- A. Where pipes pass through masonry, concrete walls, foundations, or floors, this Contractor shall set sleeves as are necessary for passage of pipes. These sleeves shall be of sufficient size to permit insulation where required to be provided around pipe passing through. This Contractor shall be responsible for exact location of these sleeves.
- B. Sleeves shall not be used in any portion of building where use of same would impair strength or construction features of the building. Inserts for supporting lateral pipes and equipment shall be placed and secured to form work, and all sleeves inserts locations shall be thoroughly checked with Architect so as not to conflict with other trades.
- C. Where pipes pass through floor or walls, they shall be provided with chromium plated escutcheons.
- D. Anchor horizontal piping where indicated and wherever necessary to localize expansion or prevent undue strain on branches. Anchors shall be heavy forged construction entirely separate from supports.

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- E. Anchor vertical piping wherever indicated and wherever necessary to prevent undue strains on offsets and branches. Anchors, unless otherwise noted shall be heavy steel clamps securely bolted and welded to pipes. Extension ends shall bear on building construction.
- F. Auxiliary steel supports that may be required for all mechanical equipment shall be furnished and installed by this Contractor.
- G. All operating equipment including pumps, piping, etc. shall be supported so as to produce minimum amount of noise transmission.

END OF SECTION

SECTION 22 0430

INSULATION

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 DESCRIPTION OF WORK

- A. The work under this section shall consist of furnishing all labor, materials, equipment and appliances necessary and required to completely do all insulation work as required by the Drawings and as specified herein including but not limited to the following: Insulation, covering, bands, tie wire.

PART 2 - PRODUCTS

2.1 INSULATION

- A. The materials as specified have been selected from the catalogs of Owens-Corning Fiberglass Corp. and Johns-Manville Sales Corporation and are representative of the quality, design and finish desired. Insulation as manufactured by Gustin Bacon Co., or other approved manufacturer may be submitted for approval provided the product meets fully in all respects (such as density, moisture absorption, alkalinity, thermal-conductivity, jackets) to the materials as delineated below.
- B. All insulation shall be UL rated non-combustible type classified flame spread-25, smoke-developed-50.

2.2 PIPING, FITTINGS AND VALVES

- A. All insulation thickness shall be in accordance with the latest edition of the New York State Energy Conservation Construction Code.
- B. Minimum pipe insulation shall be:
 - 1. Hot water piping up to 2"-1" insulation and piping 2-1/2" and larger - 1-1/2" insulation.
 - 2. Cold water piping up to 2" - 3/4" insulation and piping 2-1/2" and larger - 1" insulation.
- C. Domestic cold, hot water hot water return indirect waste, storm and piping aboveground. All piping shall be insulated with sectional glass fiber insulation, Owens-Corning 2-piece ASJ/SSL. Joints between sections shall be sealed with factory supplied 3-inch-wide sealing strips. Sealing by means of Owens Corning self-sealing lap will also be acceptable. Install (anti-sweat) vapor barriers on all cold-water piping.
- D. Domestic hot and cold water valves and fittings - Fittings, valves, etc. shall be insulated with flexible blanket insulation compressed to 1/2 its thickness, tied on with jute twine over which shall be applied a flood coat of Insul-Coustic IC-102 and 10-20 open weave glass cloth. Glass cloth to be finished within additional coat of IC-102. Insulation blanket shall be Owens-Corning wrap.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. All insulation on pipes running through walls, floors, partitions and beams shall be continuous through sleeves and openings.
- B. Insulation shall be installed only after all tests of the piping system have been completed.
- C. All insulation shall fit snugly.
- D. All surfaces shall be clean and dry when insulation is applied.
- E. Longitudinal joints shall be on least conspicuous side off the pipe.
- F. Valves shall be insulated up to the packing unit.
- G. As specified hereinbefore, all horizontal runs of piping will be supported on adjustable clevis or group trapeze type hangers. Pipe hangers will be installed outside of the insulation. Where hangers occur, prefabricated insulation protective saddles shall be "Insul-Shield-Multi-Purpose-Saddle" as manufactured by Insul-Coustic Corp. or approved equal.
- H. Hot and cold water branch piping extending through slab or knockout panels to serve equipment shall be insulated to a point 4 inch above the top of sleeve provided for pipe.
- I. The use of staples shall not be permitted.
- J. It is the intent of this Specification that all vapor barriers be continuous throughout. Reinstate existing piping at point of new pipe connections.

END OF SECTION

SECTION 22 0470

TESTS AND ADJUSTMENTS

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section.

1.1 TESTS AND ADJUSTMENTS

- A. The Contractor shall, at his own expense, during the progress of the work or upon its completion as ordered make such tests as are specified or as required by and in the presence of the Architects, Building Inspectors, etc. At least 48 hours' notice shall be given in advance of all tests.
- B. The Contractors shall provide all apparatus, temporary work or other requirements necessary for all tests. He shall take all due precautions to prevent damage to the building, its contents or the work of the other Contractors, that may be incurred by all tests. This Contractors shall also be responsible for the work of other Contractors that may be damaged or disturbed by the tests or the repair or replacement of his work, and he shall without extra charges, restore to its original condition, any work of other Contractors to do the work of restoration.
- C. Tests on the various systems may be conducted in sections as the work progresses or when the systems are completed.
- D. No caulking of pipe joints to remedy leaks will be permitted except where joints are made with lead and oakum.
- E. Each section of the sanitary, storm and vent piping tested shall have all openings tightly closed with screw plugs, or equal device. The drainage and vent systems shall be filled with water and proven tight under a 10'-0" head for a minimum of four (4) hours. Water level must remain constant through test without adding water.
- F. Upon final completion of the sanitary systems and when all fixtures and appurtenances have been set and the systems are in complete working order, all traps in the systems shall be filled with water and a thick penetrating smoke shall be introduced into the entire system.
- G. As smoke appears at the stack openings on the roof, such openings on the roof shall be tightly closed and a pressure equivalent to 1-1/2 inch of water shall be maintained during the test. Oils of peppermint shall be added at the smoke making machines so that any leakage is readily discernible.
- H. Before any covering is applied to the domestic water piping systems, the entire domestic water piping systems shall be hydrostatically tested for eight (8) hours to a hydraulic pressure of 125 psig.
- I. At the completion of the test, Contractor shall furnish the Owner with one (1) copy of test certificates as issued by the insurance company.
- J. Adjustments: Tests and adjustments shall be repeated as often as necessary until the systems are tight and are to the entire satisfaction of the Plumbing Inspector, Engineers and any other authorities having jurisdiction.
 - 1. Contractor is to thoroughly instruct the building custodian in the proper care and operation of the entire system. Contractor shall prepare for use by custodian, detailed brochures of instructions in non-technical terms, describing the maintenance and operation of all fixtures, apparatus, valves, controls etc. furnished by him.

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2. Should any part of the work performed under this Contract fail to function because of cracked piping, obstructions, debris in piping, leaks in piping or any other cause, this Contractor shall disconnect, clean and reconstruct the work at his own expense and pay for any damages to adjoining work.
3. Water flow is to be balanced and adjusted to all flush valves, faucets, etc.
4. All parts of the plumbing system are to be thoroughly flushed until cleared of all grease and sediment and all dirt pockets cleaned. Repeat as often as necessary, open all cleanouts and reset in graphite.
5. All new motors shall be oiled as required.
6. All new valves are to have stuffing boxes packed and adjusted.

END OF SECTION

SECTION 22 0480

TAGS, CHARTS AND IDENTIFICATION

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 TAGS, CHARTS AND IDENTIFICATION

- A. Every valve installed under this Contract shall be tagged or labeled as follows: Tag shall be etched brass securely fastened to valve handwheels with heavy brass "S" hooks, soldered closed. At lock shield and similar type valves, tags for same shall be securely wired to valve body.
- B. Charts shall be provided for each piping system, as approved and shall consist of schematic diagrams of piping layouts showing and identifying each valve and piece of equipment etc., and its use. Upon completion one (1) copy of diagrams and valve charts suitably framed under glass, shall be furnished and mounted where directed. One (1) copy of diagrams and valve charts shall be delivered to Owner.
- C. This Contractor shall provide on all piping, semi-rigid, wrap around plastic identification markers equal to Seton Snap-Around and/or Seton Strap-On pipe markers.
- D. Each marker background is to be appropriately color coded with a clearly printed legend to identify the contents of the pipe. Directions of flow arrows are to be included on each marker.
- E. Identification of all piping shall be adjacent to each valve, at each pipe passage through wall, floor and ceiling construction and at each branch and riser take-off.
- F. Identification shall be on all horizontal pipe runs, marked every 15 ft. as well as at each inlet outlet of equipment at changes in direction.

END OF SECTION

SECTION 22 0490

GUARANTEE

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section.

1.1 GUARANTEE

- A. The Contractor shall remove, replace and/or repair at his own expense and at the convenience of the Owner, any defects in workmanship, materials, ratings, capacities and/or characteristics occurring in the work within one (1) year or within such longer period as may be provided in the Drawings and/or Section of the Specifications, which guarantee period shall commence with the final acceptance of the entire Contract in accordance with provisions stated in the General Conditions, and the Contractor shall pay for all damage to the system resulting from defects in the work and all expenses necessary to remove, replace and/or repair and any other work which may be damaged in removing, replacing and/or repairing the work.

END OF SECTION

SECTION 23 0100

GENERAL CONDITIONS

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section.

1.1 GENERAL CONDITIONS

- A. Before submitting a proposal, Bidders shall examine all related to this work and shall become fully informed as to the extent and character of the work required and its relation to the other work in the building.
- B. Before commencing work, the Contractor will examine all conditions of the project upon which his work is in any way dependent for perfect workmanship according to the intent of this Specification. No "waiver of responsibility" for incomplete, inadequate or defective adjoining work will be considered unless notice has been filed by this Contractor and acceded to by the Owner's representative in writing before the Contractor begins any part of the work.
- C. The Contractor will pay for all licenses, permits and inspection fees required by civil authorities having jurisdiction. Comply with all laws, ordinances, regulations, and fire underwriter's requirements applicable to work herein specified without additional expense to the Owner.
- D. Small scale drilling through walls and floors or cutting of piping insulation which may contain asbestos shall be performed by a person with a "restricted asbestos handler allied trades certificate" and shall have a copy of it in his possession at all times while working of the project. This shall also apply to removal of piping, ductwork or equipment insulation.
- E. It is specifically intended that anything (whether material or labor), which is usually furnished as a part of such equipment, as is hereinafter called for (and which is necessary for the completion and proper operation) shall be furnished as part of this Contract without additional cost the Owner, whether or not shown in detail or described in the Specifications.
- F. When Drawings and Specifications conflict or there is a question as to the proper intent of this Contract, the Contractor shall assume the greater quantity, the higher quality and/or the more expensive method in his pricing. All questions shall be directed to the Architect/Engineer in writing only and only up to ten (10) days prior to bidding.
- G. The Drawings indicate the general runs of the piping, ductwork, etc. systems and the location of equipment and apparatus, however it shall be understood that the right is reserved by the Architect/Engineer to change the location of piping work, ductwork, equipment and apparatus to a reasonable extent as building conditions may dictate, prior to their installation without extra cost to the Owner.
- H. All components supplied by this Contractor shall be UL listed and/or ETL labeled and shall conform to ASHRAE Standard 15.
- I. Any changes from the Drawings and Specifications and any interpretation thereof shall have the prior approval of the Architect/Engineer. The Contractor shall submit in writing, at the time of signing the Contract, any items of necessary labor and materials, which, in his opinion, are lacking in requirements of the Drawings and Specifications to insure a complete job in all respects. No consideration will be granted to alleged misunderstanding of materials to be furnished, work to be done, or conditions to be complied with, it being understood that the tender of a proposal carries with it the agreement to all items and conditions referred to herein, or indicated on the accompanying Drawings.

END OF SECTION

SECTION 23 0110

SCOPE OF WORK

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section.

1.1 SCOPE OF WORK (JOHN F. KENNEDY ES)

A. The work under this section includes all labor, materials, equipment, tools, transportation, and the performance of all work necessary and required for the furnishing and installation complete of all work as shown on the Contract Documents, including but not necessarily limited to the following:

1. Wall or grade mounted condensing units.
2. Floor mounted energy recovery units and related appurtenances.
3. All required hot water, refrigerant and condensate drain piping, valves and related specialties.
4. Electric wall mounted heaters, hot water fin-tube radiation, convectors, cabinet and unit heaters and related appurtenances.
5. Sheetmetal ductwork and related accessories.
6. Duct and pipe insulation.
7. Registers, diffusers, and dampers.
8. Rigging of equipment.
9. Furnish all combination motor starter/disconnects for equipment (with the exception of starters and electric items already mounted on equipment or equipment not requiring same). Fan motor starter/disconnects shall have contacts for ATC connection and a terminal block connection for Fire Alarm fan shutdown. Starters per manufacturers recommendations. Underwriters inspection and certificate required. Coordinate with Electrical Contractor.
10. Air and Water Balancing.
11. Automatic temperature controls with complete wiring (regardless of voltage).
12. Testing, adjusting and start-up of equipment.
13. Painting and identification of all equipment and piping.
14. Firestopping per NFPA requirements (UL approved systems).
15. Operating and maintenance instructions.
16. As-Built Drawings - Refer to Division 1.
17. Cutting and Patching - Refer to Division 1.
18. Systems Commissioning - Refer to Division 1.

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- B. Coordination Drawings (if applicable): Attention is directed to Division 1 for coordination drawing requirements for this project. These drawings are critical to the proper execution of the work and failure to honor these requirements may become the basis for denial of any and all claims for either or both “time” and “money”.

1.3 REMOVALS

- A. Removals should be coordinated with other trades affected.
- B. Piping which penetrates the construction may be cut and capped provided capping is done beneath the finished surfaces so that construction over it can be achieved.
- C. Soot Removal: In connection with the dismantling of boilers, Contractor shall gather together with a vacuum-cleaning machine all accumulations of soot. He shall remove all soot from the base of the chimney.
- D. All removals shall be removed from the site.

1.4 ALTERATION WORK

- A. All equipment, piping, control components, etc. to be removed, shall be disposed of or salvaged as directed by the Owner. They shall not be removed from the premises without the Owner’s approval.
- B. All piping to be removed shall be properly plugged or capped so that upon completion of all new work, all abandoned piping shall be concealed in finished areas.
- C. No dead ends shall be left on any piping upon completion of job. The existing system shall be left in perfect working order upon completion of new work.
- D. Location and sizes of existing piping, ductwork, equipment, etc. are approximate. Exact sizes and locations of all existing work shall be verified on the job.

END OF SECTION

SECTION 23 0200

HYDRONIC SPECIALTIES

PART 1 - GENERAL

Applicable provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

PART 2 - PRODUCTS

2.1 AIR VENTS

- A. Install at all high points automatic air vents to eliminate air binding. All automatic air vents shall be approved heavy duty type equipped with petcocks and tubing for manual venting. All vents installed in coils, etc. shall be of manual key operated type.
- B. All vents concealed from view shall be accessible through access doors. Vents shall be by Hoffman, Anderson or ITT Bell & Gossett, 125 psig rated.

2.2 PRESSURE GAUGES

- A. Furnish and install pressure gauges on suction and discharge sides of each pump and as required to check operation of equipment; pressure gauges shall have 4-1/2" diameter dials, Ashton, Ashcroft or approved equal.

2.3 THERMOMETERS

- A. Install thermometers at all locations in piping system as noted on Drawings and as required to check system performance. Thermometers shall be installed at the supply and return of coils and 3-way diverting valves as manufactured by Trerice, Weksler or Moeller, with 4-1/2 inch face, cast aluminum case, chrome plated steel ring, white background with black embossed markings, glass window, stainless steel pointer, brass movement, 316 stainless steel bulb. Provide separable, universal angle sockets for all thermometers.

2.4 COMBINATION BALANCING / SHUT-OFF VALVES (Circuit Sensors /Setters and Flow Meters)

- A. Provide Circuit Sensor/Setter balance valves as manufactured by Bell & Gossett or approved equal.
- B. Circuit Sensors: Furnish and install as shown on Drawings, a cast iron wafer-type flow meter designed for low pressure drop operation.
 - 1. The flow meter will be equipped with brass readout valves (with integral check valve) for taking differential pressure readings across the orifice of the flow meter.
 - 2. The flow meter shall be designed to operate at a maximum working pressure of 300 psig at 250 degrees F.
 - 3. The flow meter must be furnished with a calibrated nameplate for determining an accurate system flow rate.
 - 4. Each flow meter shall be ITT Bell & Gossett Circuit Sensor Flow Meter model no. OP.
- C. Circuit Setters: Furnish and install as shown on Drawings and with manufacturer's recommendations model no. CB calibrated balance valves.
 - 1. Valves to be designed to allow installing Contractor to pre-set balance points for proportional system balance prior to system start-up.
 - 2. All valves 1/2 inch to 3 inch pipe size to be of bronze body/brass ball construction with glass and carbon filled TFE seat rings.

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3. Valves to have differential pressure read-out ports across valve seat area. Read-out ports to be filled with internal EPT inert and check valve.
 4. Valve bodies to have 1/4 inch NPT tapped drain/purge port.
 5. Valves to have memory stop feature to allow valve to be closed for service and then reopened to set point without disturbing balance position. All valves to have calibrated nameplate to assure specific valve settings. Valves to be leak-tight at full rated working pressure. Valves 4 inch pipe size to be of cast iron body/brass vane construction with differential pressure read-out ports fitted with internal EPT insert and check valve.
- D. Readout Meters: Provide a portable Readout Meter with provision for hanging, capable of indicating pressure differential across a system component. Unit to be complete with all necessary hoses, shut-off and vent valves, and carrying case. Reading range to be .5' to .16'. Read Out Kits to be ITT Bell & Gossett model no. RO-3.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Inspect equipment space locations before beginning installation. Verify that the space is correct for entry and access. Do not proceed with installation of the equipment until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's instructions and recommendations for installation of equipment, accessories and components.
- B. All heating, ventilating and air conditioning equipment shall be carefully designed, constructed and installed so as to prevent any objectionable noise or vibration reaching any part of the building outside of the mechanical equipment room. Care shall also be taken to prevent transmission of noise or odor through ductwork into other spaces. The Contractor shall be required to rectify or replace at his own expense, any equipment not complying with the foregoing requirements.

3.3 CLEANING

- A. Clean interior and exterior surfaces promptly after installation of equipment and components. Take care to avoid damage to protective coatings and finishes. Remove excess sealants, lubrication, dirt and other foreign substances.

END OF SECTION

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ENERGY RECOVERY VENTILATORS (PRE-PURCHASED BY OWNER)

SECTION 23 0235

ENERGY RECOVERY VENTILATORS (PRE-PURCHASED BY OWNER)

PART 1 - GENERAL

Applicable provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 GENERAL

- A. Packaged air-to-air fixed plate Energy Recovery Ventilator (ERV) from Energy Wall or approved equal.
- B. ERV must include the following components:
 - 1. Fixed plate air-to-air energy recovery core
 - 2. Fresh air blower
 - 3. Exhaust air blower
 - 4. Filters ahead the core in both fresh and exhaust air circuits
 - 5. Cabinet for indoor installation
 - 6. Temperature gauge and controllers for an autonomous use
- C. The ERV must be capable of transferring sensible energy.
- D. The ERV must be designed to be used as a stand-alone unit or as a component in a dedicated HVAC system or as complete ventilation/HVAC unit.
- E. The unit must be delivered fully assembled with gauge and controllers, ready to be plugged on the field.

1.2 QUALITY ASSURANCE

- A. The unit must be tested as per ANSI/UL 1995 and CAN/CSA C22.2 No. 236, Fourth Edition, October 14, 2011.
- B. The unit must be ETL certified.
- C. The insulation shall comply with NFPA 90A requirements for flame spread and smoke generation.
- D. Unit must be free of fabrication defect and maintain proper operation under normal use for a period of two years from purchasing date.
- E. Unit must be fully tested before delivery.
- F. Unit shall be certified under UL 1812, Standard for Ducted Air to Air Heat Exchangers. Specific UL-1812 Listing Standards for outdoor units including rain testing, UV exposure testing, corrosion resistance and temperature extremes testing shall be required for these models. Due to ongoing product offerings and upgrades, some models and options are not included in UL Listing reports. Consult Aldes for more information.
- G. The energy recovery ventilator will be warranted to be free from defects in material and workmanship for a period of two years from the purchase date. The heat recovery core will be warranted to be free from defects in material and workmanship for a period of ten years from the purchase date.

PART 2 - PRODUCTS

2.1 CABINET

- A. The cabinet must have a single wall construction of 1" insulated with fiberglass insulation. The fiberglass insulation must be covered with an aluminum foil.
- B. External wall of the unit must be made of prepainted steel, , satin enamel paint finish, of gauge 22. The exterior wall of the unit must be made of prepainted galvanized steel 22 gauge. The paint must be made of a silicone based polyurethane and withstand 150 rub (back and forth) with methyl ethyl ketone (MEK) when tested as per ASTM-D5402.
- C. The structural base of the unit must be made of 22 gauge prepainted steel.
- D. Unit base must have lifting anchorage.
- E. Internal components must be accessible from both sides using hinged panels.
- F. All components that need maintenance must be easily removed from the unit by either sides.

2.2 FIXED PLATE ENERGY RECOVERY CORE

- A. The energy recovery section must be of the fixed plate air-to-air type.
- B. The energy recovery section must recover sensible heat only.
- C. The energy recovery fixed plated core must be made of polypropylene or aluminum per specifications in the project schedule.
- D. The fixed plate air-to-air energy recovery core must be easily cleanable.

2.3 FANS

- A. The supply and exhaust fans must be motorized backward inclined impeller.
- B. Fans diameter must be 250 mm.
- C. The unit must have four fans, two on each air circuit for the H1100-Fi and two fans, one in each air circuit for the H650-Fi.
- D. Each air circuit must be air balanceable electronically. No choke or mechanical adjustment will be accepted.

2.4 MOTORS

- A. Motors and fans must be combined.
- B. Motors must work with an electrical tension of 120 VAC.
- C. Motors must offer a selection of five speeds, High, Medium, Low, Medium Low and Extra Low.

2.5 FILTERS

- A. Filters must be in aluminum, unless specified in the project schedule.
- B. Filters must be installed ahead of the heat recovery core in both, fresh and exhaust, air circuit.
- C. Filters must be easily cleaned.

2.6 ELECTRICAL REQUIREMENT

- A. Unit must have a single point electrical connection.
- B. Electrical tension per Drawing Schedule (coordinate with Electrical Contractor before release).
- C. The unit shall require:
 - 1. 14 amps current and 1680 Watt for the H1800.
 - 2. 10.5 amps current and 1260 Watt for the H1100.
 - 3. 5.5 amps current and 660 Watt for the H650.

2.7 FROST CONTROL

- A. Frost control must be made through an evacuation cycle or recirculation cycle.
- B. Frost control evacuation cycle must be fully autonomous.
- C. Frost control cycle must be field adjustable from standard to extended cycle.

2.8 UNIT CONTROL

- A. Unit must be delivered with all the electrical and control components, pre wired, for an autonomous use.
- B. Default speed must be field settable electronically (Off, low, medium and high).
- C. Unit must have an optional reduced speed, field settable.
- D. Unit must be capable of functioning without any external signal.
- E. Unit must be capable of functioning in an elaborate building management system using dry contacts.
 - 1. Unit must be supplied with dry contacts (24VAC 20 Va) for :
 - Occupancy control (Start/stop)
 - Synchronization (NO and NC) with other HVAC unit
 - Speed selection (Low speed and High speed)
 - 2. Unit must have auxiliary connection 24 VAC 10 Va to control independently :
 - Supply air damper
 - Exhaust air damper
- F. Unit must be capable of functioning with wall controller from Aldes:
 - 1. Humidity Control (611224)
 - 2. LCD Multifunction Control (611227)
 - 3. 20/40/60 Minute Timer (611228)
 - 4. Speed Control (611229)
 - 5. Mode Control (611230)
 - 6. 7-Day Programmable Time (29 023)

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PART 3 - EXECUTION

3.1 INSPECTION

- A. Inspect equipment space locations before beginning installation. Verify that the space is correct for entry and access. Do not proceed with installation of the equipment until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's instructions and recommendations for installation of equipment, accessories and components.
- B. All heating, ventilating and air conditioning equipment shall be carefully designed, constructed and installed so as to prevent any objectionable noise or vibration reaching any part of the building outside of the mechanical equipment room. Care shall also be taken to prevent transmission of noise or odor through ductwork into other spaces. The Contractor shall be required to rectify or replace at his own expense, any equipment not complying with the foregoing requirements.

3.3 CLEANING

- A. Clean interior and exterior surfaces promptly after installation of equipment and components. Take care to avoid damage to protective coatings and finishes. Remove excess sealants, lubrication, dirt and other foreign substances.

END OF SECTION

SECTION 23 0240

CONDENSING UNITS

PART 1 - GENERAL

Applicable provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 SYSTEM DESCRIPTION

- A. Outdoor-mounted, air-cooled split system outdoor section suitable for on-the-ground, rooftop, wall hung, balcony, or under-deck installation. Unit shall consist of a hermetic or rotary compressor, an air-cooled coil, propeller-type blow-thru outdoor fans, accumulator, full refrigerant charge, and control box. Unit shall discharge air horizontally as shown on the contract drawings. Units shall function as the outdoor component of an air-to-air cooling and system. Unit shall be packaged condensing unit from York or approved equal.
- B. Units shall be used in a refrigeration circuit matched to a duct-free cooling fan coil unit or an approved ducted cooling fan coil unit.

1.2 QUALITY ASSURANCE

- A. Unit construction shall comply with ANSI/ASHRAE 15, latest revision, and with the NEC.
- B. Units shall be constructed in accordance with UL standards.
- C. Units shall be listed in the CEC directory.
- D. Unit cabinet shall be capable of withstanding Federal Test Standard No. 141 (method 6061) 500-hour salt spray test.
- E. Air-cooled condenser coils shall be leak tested at 350 psig air pressure with the coil submerged in water.

1.3 DELIVERY, STORAGE AND HANDLING

- A. Units shall be shipped in one piece and shall be stored and handled per unit manufacturer's recommendations.

PART 2 - PRODUCTS

2.1 CONDENSING UNIT

- A. General: Factory assembled, single piece, air-cooled outdoor unit. Contained within the unit enclosure shall be all factory wiring, piping, controls, compressor, full charge of Puron R-410A refrigerant and special features required prior to field start-up.
- B. Unit Cabinet
 - 1. Unit cabinet shall be constructed of galvanized-steel, bonderized and coated with a baked-enamel finish.
 - 2. Unit access panels shall be removable with minimal screws and shall provide full access to the compressor, fan, and control components.
 - 3. Outdoor compartment shall be isolated and have an acoustic lining to assure quiet operation.

C. Fans

1. Outdoor fans shall be direct-drive propeller type, and shall discharge air through the outdoor coil.
2. Outdoor fan motors shall be totally-enclosed, single-phase motors with class B insulation and permanently-lubricated sleeve bearings. Motor shall be protected by internal thermal overload protection.
3. Shaft shall have inherent corrosion resistance.
4. Fan blades shall be corrosion resistant and shall be statically and dynamically balanced.
5. Outdoor fan openings shall be equipped with PVC coated protection grille over fan and coil.

D. Compressor

1. Compressor shall be fully hermetic reciprocating or scroll type.
2. Compressor shall be equipped with oil system, operating oil charge, and motor. Internal overloads shall protect the compressor from over temperature and over current. Scroll compressors shall also have high discharge gas temperature protection if required.
3. Motor shall be NEMA rated class F, suitable for operation in a refrigerant atmosphere.
4. Reciprocating compressors shall be equipped with crankcase heaters to minimize liquid refrigerant accumulation in compressor during shutdown and to prevent refrigerant dilution of oil.
5. Compressor assembly shall be installed on rubber vibration isolators and shall have internal spring isolation.
6. Compressors shall be single-phase or 3-phase as specified on the contract drawings.

E. Outdoor Coil: Coil shall be constructed of aluminum fins mechanically bonded to internally enhanced, seamless copper tubes which are cleaned, dehydrated, and sealed.

F. Refrigeration Components: Refrigerant circuit components shall include brass external liquid line service valve with service gage port connections, suction line service valve with service gage connection port, service gage port connections on compressor suction and discharge lines with Schrader-type fittings with brass caps, accumulator, pressure relief, and a full charge of refrigerant.

G. Controls and Safeties - Operating controls and safeties shall be factory selected, assembled, and tested. The minimum control functions shall include the following:

1. Controls

- a. Time delay restart to prevent compressor reverse rotation on single-phase scroll compressors.
- b. Automatic restart on power failure.
- c. Safety lockout if any outdoor unit safety is open.
- d. A time delay control sequence provided through the fan coil board, thermostat, or controller.
- e. High-pressure and liquid line low-pressure switches.
- f. Automatic outdoor-fan motor protection.
- g. Start capacitor and relay (single-phase units without scroll compressors).

2. Safeties
 - a. System diagnostics.
 - b. Compressor motor current and temperature overload protection.
 - c. High pressure relief.
 - d. Outdoor fan failure protection.
- H. Electrical Requirements
 1. Nominal 3/4 ton unit shall operate on single-phase, 60 Hz power at 115 volt. All units shall operate on single or three-phase, 60 cycle power at 208/ 230 v.
 2. Unit electrical power shall be a single point connection.
 3. Unit control voltage to the indoor-fan coil shall be 24 v, except 38ACA09 and 012 units which shall supply line voltage.
 4. All power and control wiring must be installed per NEC and all local building codes.
 5. High- and low-voltage terminal block connections.
- I. Special Features (Field Installed):
 1. Low-Ambient Kit: Control shall regulate fan-motor cycles in response to saturated condensing pressure of the unit. The control shall be capable of maintaining a condensing temperature of 100 F $\pm$ 10 F with outdoor temperatures to -20 F. Installation of kit shall not require changing the outdoor-fan motor.
 2. Liquid Solenoid Valve: This electronically operated shutoff valve shall close and open in response to compressor operation. The valve should be used with all long-lines applications (over 100 ft).
 3. Winter Start Control: Field supplied and installed winter start control shall permit start-up for cooling operation under low-load conditions and at low-ambient temperatures by bypassing the low-pressure switch for a 3-minute delay period. NOTE: Winter start control shall be required when unit is intended to operate in cooling at outdoor ambient below 40 F. Crankcase Heater (units with scroll compressors only): Unit shall be shipped with a clamp-on compressor oil sump heater.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Inspect equipment space locations before beginning installation. Verify that the space is correct for entry and access. Do not proceed with installation of the equipment until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's instructions and recommendations for installation of equipment, accessories and components.
- B. All heating, ventilating and air conditioning equipment shall be carefully designed, constructed and installed so as to prevent any objectionable noise or vibration reaching any part of the building outside of the mechanical equipment room. Care shall also be taken to prevent transmission of noise or odor through ductwork into other spaces. The Contractor shall be required to rectify or replace at his own expense, any equipment not complying with the foregoing requirements.

3.3 CLEANING

- A. Clean interior and exterior surfaces promptly after installation of equipment and components. Take care to avoid damage to protective coatings and finishes. Remove excess sealants, lubrication, dirt and other foreign substances.

END OF SECTION

SECTION 23 0310

HOT WATER CABINET HEATERS

PART 1 - GENERAL

Applicable provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

PART 2 - PRODUCTS

2.1 HOT WATER CABINET HEATERS

- A. Furnish and install where indicated on the Drawings hot water cabinet heaters as manufactured by Sterling Co. of model, capacity and performance noted on the Drawing schedule.
- B. The cabinet shall be 16 gauge steel, four side overlap front panels, with M-shaped stiffener running entire panel length as standard. Integral, stamped, inlet and outlet insulated over entire coil section.
- C. Front panel removed with two tamperproof screws, and shall be of finish as selected by Architect. Unit to be equipped with factory mounted fan cycling thermostat. Fans are forwardly curved double-inlet centrifugal of aluminum construction and are modular in design.
- D. The water coil is constructed of copper tubing mechanically expanded into aluminum fins. All joints are brazed with high temperature silver alloy. Water coils have a plugged drain tube and vent tube extended into the unit end compartment. Automatic air vent fittings shall be provided. Coils are field reversible.
- E. Filters are removable by removing front panel. 1" woven glass filters standard to be used.
- F. Provide factory finished trim flange for all semi-recessed applications.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Inspect equipment space locations before beginning installation. Verify that the space is correct for entry and access. Do not proceed with installation of the equipment until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's instructions and recommendations for installation of equipment, accessories and components.

3.3 CLEANING

- A. Clean interior and exterior surfaces promptly after installation of equipment and components. Take care to avoid damage to protective coatings and finishes. Remove excess sealants, lubrication, dirt and other foreign substances.

END OF SECTION

SECTION 23 0330

CONVECTORS

PART 1 - GENERAL

Applicable provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

PART 2 - PRODUCTS

2.1 CONVECTORS

- A. Furnish and install Convectors as manufactured by Sterling Co., Airtherm Co. and American Air Filer Co. considered equal as indicated on the Drawings. Type and size as noted on Drawing. Unit shall be installed in a neat and workmanlike manner in accordance with the Specifications and manufacturer's recommendations.
- B. Convector element shall be constructed of copper tubes expanded and rolled into cast iron headers with contact further strengthened by brass bushings, aluminum fins, ribbed steel side plates and fin tube supports.
- C. Cabinet shall have a one piece 14 gauge steel front panel. Front panel shall be held in place by camlock fasteners.
- D. Dampers shall be factory mounted on the element to reduce heating capacity up to 70% when closed. Key operated damper-tamperproof. Baked enamel finish shall be provided in standard manufacturer's colors as selected by the Architect. Unit shall have (camlock) access doors to provide access to valves.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Inspect equipment space locations before beginning installation. Verify that the space is correct for entry and access. Do not proceed with installation of the equipment until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's instructions and recommendations for installation of equipment, accessories and components.

3.3 CLEANING

- A. Clean interior and exterior surfaces promptly after installation of equipment and components. Take care to avoid damage to protective coatings and finishes. Remove excess sealants, lubrication, dirt and other foreign substances.

END OF SECTION

SECTION 23 0340

FIN TUBE RADIATION

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

PART 2 - PRODUCTS

2.1 FIN TUBE RADIATION

- A. Furnish and install fin-tube heating elements and enclosures, indicated on Drawings, together with required mounting components and accessories.
- B. Materials shall be as manufactured by Sterling Radiator Co., Vulcan Radiator Co. or Standard Fin-Pipe Radiator Corp.
- C. Heating Elements
 - 1. Various lengths and assemblies are indicated on the plan together with their pipe sizes, fin sizes, and spacing. Elements shall be completely independent of and shall not touch enclosures to assure low surface temperature.
 - 2. Heating elements shall consist of full-hard aluminum plate fins not less than .20" thick, permanently bonded to copper seamless drawn tube and guaranteed for working pressure at 300 degrees F not less than 200 psi for 1-1/4" tube. Fins shall be actually embedded in the copper tube.
- D. Enclosure and Accessories
 - 1. Enclosures and accessories shall be of style and dimensions indicated on our Drawings and shall be fabricated from zinc-coated steel. Enclosures shall be 16 gauge. On wall-to-wall applications, enclosures shall be furnished in one piece up to a maximum of 10' - 10" enclosure length for rooms or spaces measuring a maximum of 10' - 10" wall length, using a 6" end trim each end. Enclosures shall be furnished in two or more lengths for wall lengths exceeding 10' - 10".
 - 2. Left end of all enclosures shall have spot-welded back-up angles. The mating right end shall be fastened securely with screws. End enclosures shall have same method of joining.
 - 3. End trims, furnished with roll-flanged edges, shall be used between ends of enclosures and walls on wall-to-wall applications. End trims to be 6" maximum length and shall be attached without visible fasteners. End enclosures shall be furnished where indicated, shall be same gauge as enclosures, and be factory-welded to enclosures.
 - 4. Enclosures shall be supported at top and bottom by means of heavy gauge mounting channel and allow installation and removal of enclosures without scraping walls or disturbing paint lines. Enclosures are securely fastened to the bottom support.
 - 5. Access doors shall be provided where noted on Drawings. Doors shall be 8" x 8" and shall be located directly in the enclosures. Doors shall be hinged. Where radiation is located behind casework coordinate access door locations with casework vendor.

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6. Provide vertical and horizontal enclosure for pipe risers and runouts which are exposed above/below/adjacent to radiation enclosure. Riser enclosure shall be of same gauge and finish as radiation enclosure. Provide wall plate which enclosure shall snap onto without exposed fasteners. Sterling model PCH (V).
 7. Enclosure finish shall be as selected by Architect (and shall match unit ventilator finish when unit ventilators are also specified for the project).
- E. Enclosure Brackets and Element Hangers
1. Enclosure bracket and element hangers shall be installed not farther than 4' apart. Brackets shall be die-formed from 3/16" thick stock, 1-1/2" wide, and shall be lanced to support and position lower flange of enclosure. Enclosures shall be firmly attached to brackets by set screws, operated from under the enclosure. Devices, which do not provide positive fastening of enclosures, are not acceptable. Brackets shall be inserted in pre-punched slots in mounted channel to insure correct alignment and shall be fastened securely to wall at bottom.
 2. Sliding saddles shall support heating elements and provide positive positioning of element in enclosure to insure maximum heating efficiency while preventing any possibility of fin impingement on brackets or enclosure joints during expansion or contraction. Element supports shall be a double saddle design fabrication from 16 gauge zinc-coated steel.
 3. Saddle shall slide freely on saddle support arm bolted to support bracket. Support arm shall allow 1-1/2" height adjustment for pinch. The element support saddle shall allow 1-5/8" lateral movement for expansion and contraction of heating element. Rod or wire hangers not acceptable.
 4. Submit shop drawings of all heating elements and enclosures. Enclosure measurements and accessories are not to be fabricated until after verified measurements have been taken at the site.
- F. Piping Enclosures: Where concealed piping in ceilings and wall of finished spaces is not possible, provide vertical or horizontal metal piping enclosures equal to "Sterling" model PCH (horizontal) or PCHV (vertical). Provide all required hangers, supports, corners, brackets, etc. color per Architect.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Inspect equipment space locations before beginning installation. Verify that the space is correct for entry and access. Do not proceed with installation of the equipment until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's instructions and recommendations for installation of equipment, accessories and components.
- B. All heating, ventilating and air conditioning equipment shall be carefully designed, constructed and installed so as to prevent any objectionable noise or vibration reaching any part of the building outside of the mechanical equipment room. The Contractor shall be required to rectify or replace at his own expense, any equipment not complying with the foregoing requirements.

3.3 CLEANING

- A. Clean interior and exterior surfaces promptly after installation of equipment and components. Take care to avoid damage to protective coatings and finishes. Remove excess sealants, lubrication, dirt and other foreign substances.

END OF SECTION

SECTION 23 0400

SHEETMETAL WORK AND RELATED ACCESSORIES

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements shall govern work in this section. Submit shop drawings for checking and approval.

PART 2 - PRODUCTS

2.1 SHEETMETAL DUCTWORK

- A. Contractor shall furnish and install all sheetmetal ducts as shown on the Drawings. While the Drawings shall be adhered to as closely as possible, the Engineer reserves the right to vary the run and size to meet the field conditions. Any duct size not shown shall be sized in proportion to the air carried at the same resistance in similar ductwork, or of size as directed.
- B. All ductwork shall be constructed of galvanized steel gauges in accordance with the latest edition of the ASHRAE/SMACNA Guide. Bracing angles for ductwork shall be hot dipped galvanized for steel ductwork and appropriate gauge for aluminum ductwork. All ducts 18" and over in width shall be cross broken to prevent flutter.
- C. Round ductwork shall be galvanized steel, spiral lock seam construction of gauges in accordance with the latest edition of ASHRAE/SMACNA guide. Fittings shall be constructed in standing seam manner. All seams, joints and collars shall be sealed in accordance with SMACNA guidelines for medium pressure ductwork to minimize noise and streaking. Ductwork and fittings shall be connected with sheetmetal couplings and sealed as to allow no leakage.
- D. Ducts shall be braced as follows:
 - 1. All ducts not exceeding 24" on one side shall be assembled with airtight slip joints.
 - 2. 25" to 40" larger dimension 1" x 1" x 1/8" angles.
 - 3. 41" to 60" larger dimension 1-1/2" x 1-1/2" x 1/8" angles.
 - 4. All bracing angles shall be a minimum of 4' apart along the length of the duct.
 - 5. Furnish and install all angles and frames for all registers, diffusers, grilles, and louvers.
 - 6. Support horizontal ducts with hangers spaced not more than 8' apart. Place hangers at all changes in direction. Use strap hangers for cuts up to 30" wide.
- E. Comply with all State and Local regulations regarding fire stopping and fireproofing. Provide fusible link fire dampers as required by State, local and Underwriter authorities and where indicated on the Drawings. Each fire damper shall be installed in such a manner as to permit ready access for inspection and maintenance purposes.
- F. Provide splitter and butterfly dampers, deflecting vanes for control of air volume and direction and for balancing systems, where indicated, specified, directed and as required for the proper operation of the systems. Dampers shall be of the same material as the duct, at least one gauge heavier than the duct, reinforced where indicating quadrant and locking device for adjusting damper and locking in position.

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- G. Where ducts fewer than 100 square inches penetrate a rated wall, steel ductwork system of a minimum 0.0127 inch thickness shall be used.
- H. All elbows shall have a minimum center line radius of 150% of duct width. If the radius is smaller, turning vanes shall be used: Turning vanes shall be double thickness, fitted into slide strips and screwed or riveted to duct below.
- I. Contractor shall furnish and install all access doors in ducts as required. Access doors shall be of the pan type 1" thick and shall be provided with two galvanized hinges and suitable latched. Access doors insulated with same thickness material as duct and shall be double casing construction.

2.2 REGISTERS AND DIFFUSERS

- A. Registers and diffusers shall be installed where shown on the Drawings and shall be of the sizes specified and the type indicated on the drawing schedule.
- B. All registers and diffusers shall be installed in accordance with manufacturer's recommendations.
- C. Registers and diffusers shall be as manufactured by Carnes, Hart and Cooley or Anemostat Co.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Inspect equipment space locations before beginning installation. Verify that the space is correct for entry and access. Do not proceed with installation of the equipment until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's instructions and recommendations for installation of equipment, accessories and components.
- B. All heating, ventilating and air conditioning equipment shall be carefully designed, constructed and installed so as to prevent any objectionable noise or vibration reaching any part of the building outside of the mechanical equipment room. Care shall also be taken to prevent transmission of noise or odor through ductwork into other spaces. The Contractor shall be required to rectify or replace at his own expense, any equipment not complying with the foregoing requirements.

3.3 CLEANING

- A. Clean interior and exterior surfaces promptly after installation of equipment and components. Take care to avoid damage to protective coatings and finishes. Remove excess sealants, lubrication, dirt and other foreign substances.

END OF SECTION

SECTION 23 0410

PIPING, FITTINGS, VALVES AND NOTES (HOT WATER)

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements shall govern work in this section. Submit shop drawings for checking and approval.

1.1 PIPING NOTES

- A. The Contractor shall erect all pipe, fittings, valves, hangers, anchors, expansion joints and all accessories specified, indicated on the Drawings or required to assure proper operation of all piping systems installed under this Contract. All piping shall be maintained at a proper level to assure satisfactory operation, venting and drainage. Piping and valves in any locality where possible shall be grouped neatly and shall be run so as to avoid reducing headroom or passage clearance.
- B. All piping shall be new and of the material and weight specified under various services. Steel and wrought iron pipe 2" and larger shall be seamless or lap welded. All piping shall have the maker's name and brand rolled on each length of pipe.
- C. All piping, fittings, valves and strainers shall be cleaned of grease, dirt and scale before installation. All temporary pipe openings shall be kept closed during the performance of the work. The ends of all piping shall be reamed smooth and all burrs removed before installation.
- D. All piping shall be cut accurately to measurements taken on the job. Offset connections shall be installed alignment of vertical to horizontal piping and where required to make a true connection and to provide for expansion. Bent or sprung pipe shall not be installed where shown on Drawings and where necessary to provide for expansion of piping. Cold spring hot lines one-half estimated distance of maximum expansion. Suitable pipe anchors shall be installed where shown or required.
- E. Piping connections shall have unions where necessary for replacement and repair of equipment. Gate valves and controls valves shall be installed where shown and where necessary for proper operation and service.
- F. Vertical piping shall be plumb and horizontal piping shall be parallel to walls and partitions. Piping shall be supported as required to prevent the transmission of noise and vibration.
- G. Work shall include all pipe, fittings, offsets and requirements for the installation of piping of other work including ducts and conduit. Reducing fittings shall be used where pipe changes size. All piping shall be installed with ample clearance to center accurately in sleeves through floors, and walls and partitions.
- H. Piping shall be downgraded to drain connections at low points and upgraded to vent connections at high points unless otherwise noted. Drain connections shall be valved and piped to a floor drain. Vent connections on mains shall be equipped with air vent valves fitted with a copper tube drip line extended to a drain outlet. Vent connections on branches and equipment shall be fitted with key type manual vent cocks.
- I. Drain piping shall be installed from all equipment as required. The Contractor shall extend drain piping and turn down over floor drains.

PART 2 - PRODUCTS

2.1 PIPING (ABOVEGROUND)

- A. All piping installed under this Section of the Specifications shall be in accordance with the following schedule.
 - 1. All piping, except where indicated differently, (i.e. underground piping) shall be standard weight black steel pipe Schedule 40, Grade A53, black steel. Pipe 2" and smaller, cast iron screwed fittings. Pipe 2-1/2" and larger, steel welding fittings. Pipe and fittings as manufactured by National, Wheeling, Bethlehem or equal, manufactured in accordance with ASTM current edition. All pipes must be reamed before installation.
 - 2. Where the Contractor elects to use copper piping, it shall be rigid Type "L" copper, Chase, Anaconda or approved equal. Fittings shall be wrought copper, Nibco, Anaconda, Mueller or approved equal. Where copper piping is used, make all additional provisions for expansion. All condensate piping shall be Type "M" copper, rigid, full size of unit drain tapping, or larger as shown on Drawings.
 - 3. All drainage pipe lines, 2" larger except where galvanized screw pipe is shown on the Drawings or specified hereafter, shall be extra heavy cast iron soil pipe and fittings.
- B. Piping installation shall be arranged for draining through accessible valves at low points.
- C. Threaded short and close nipples shall be Schedule 80, extra heavy weight of the same material as pipe in system in which they are installed.
- D. All bare copper pipe, tubing and fittings shall be cleaned with steel wool and all excess solder shall be removed.

2.2 VALVES

- A. All valves, unless specified or noted otherwise, shall be designed for a working pressure of not less than 200 psi water or 125 psi steam with name and pressure rating of valve cast in body. All valves shall be of the same manufacturer, unless specified otherwise. Valves for cut-off shall be gate valves, unless otherwise specified.
- B. All valves of same manufacturer: similar to Jenkins Bros., Walworth, Kennedy or approved equal.
- C. Four inch and larger, flanged; smaller sizes, screwed.
- D. All Gate and Globe valves shall be installed with handle in an upright position.
- E. The Contractor shall furnish and install all valves shown on Drawings and all valves that are necessary for proper operation and maintenance of systems and equipment. All piping connections to each piece of equipment and all branch connections to mains shall have cut-off valves.
- F. The following schedule of valves for steam condensate, hot water, etc. is based on Jenkins Brothers, Inc. catalog numbers (except as noted); equivalent Lukenheimer, Walworth, O-I-C, Crane Fairbanks Company valves will be acceptable.

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G. Ball Valves

1. 1/4" to 2-1/2" rated for 600 psi wog, with brass body, chrome plated brass ball, virgin PTFE seats, and full port with threaded or solder connections.
2. 2-1/2" and larger rated for 200 psi with carbon steel body, stainless steel full port ball, RTFE seats, lever operated to 4" gear operated 6" and above, with flanged end connections.

H. Gate Valves

1. Up to 2" : Bronze gate solid wedge, inside screw traveling stem union bonnet, -Fig. 47U
2. 2-1/2" and 3" : Iron body, bronze-mounted gate, solid wedge, OS&Y rising stem, -Fig. 650-A
3. 4" and larger: Iron body, bronze-mounted gate, solid wedge, OS&Y rising stem, -Fig. 651-A

I. Globe Valves

1. Up to 2" : Bronze body, regrinding seat ring and plug, union bonnet, -Fig. 546P
2. 2-1/2" and 3" : Iron body, bronze-mounted globe and angle, regrinding disc and seat ring, OS&Y - Fig. 613
3. All gate valves 6" and larger: Fitted 3/4" by-pass globe valve.

J. Plug Valves

1. Up to 2" : Lubricated, semi-steel short pattern wrench operated, -Fig. 142
2. 2-1/2" and larger: Lubricated, semi-steel short pattern wrench operated, -Fig. 143
3. Similar to Rockwell Mgd. Co., Jenkins, Kennedy or approved equal.

K. Butterfly Valves used for chilled water, condenser water and hot water shall be the following:

1. 2-1/2" to 12" rated for 175 psi bubble tight close off, 14" and larger for 150 psi close-off.
2. Full lug cast iron body, aluminum bronze disc, stainless steel stem EPDM peroxide cured seat.
3. 2-14" to 6" valves to be equipped with 10 position notch plate and lever lock handle. 8" and larger with handwheel gear operator.
4. On installation, valves to be in full open position when flange bolts are tightened and stem in a horizontal position except when equipped with a chainwheel gear operator.
5. Provide chain wheel gear operator on all valves installed 7 feet or higher.
6. Valves to be designed with replaceable seat and parts kits.
7. Valve to be Bray series 31, Dezurik 637 or Demco.

L. Check Valves

1. 150 psi WSP class.
2. Up to 2" : Bronze, regrinding bronze disc, screw-in cap, -Fig. 762A
3. 2-1/2" and 3" : Iron body, bronze mounted regrinding bronze seat ring and disc, -Fig. 623
4. 4" and larger: Iron body, bronze mounted regrinding bronze seat ring and disc, -Fig. 624

- M. Drain Valves: All low points shall have drain valves, with hose ends. Where 1/2" and 3/4" sizes are indicated, "Standard" hose end drain valves shall be used. Provide brass hose end drain caps at each drain valve. Where larger than 3/4" drains are shown, gate valve shall be used. Provide brass nipples and reducer from drain valve size to 3/4" terminating with 3/4" hose end drain valve and cap.

2.3 FITTINGS

A. Nipples

1. All nipples shall have clean cut threads and shall be made from new pipe, standard weight for all lengths, except that close and shoulder nipples shall be extra heavy.
2. Fittings - 2-1/2 and Smaller: All fittings shall be standard weight steam pattern gray cast iron, Grinnell, Stockholm or equal approved.
3. Fitting - 3" and Larger: The Contractor has the option to use screwed, flanged or welded fittings so long as all ASME requirements are met.

B. Joints and Unions

1. Threaded joints shall be full and clean cut. The ends of pipe shall be reamed to the full inside diameter, all burrs shall be removed and no more than three threads shall be exposed beyond fittings when made up. Joints shall be made up tight with graphite base pipe joint compound. Exposed threads of ferrous pipe shall be painted with acid-resisting paint after caulking, lampwick or other material will be allowed for correction of defective joints.
2. Flange joints shall be made up perfectly square and tight. Screwed flanges and loose flanges shall be cast iron and welding flanges shall be steel. Flanges shall be faced true and bolted up tight with 1/16" Carlock ring type gasket.
3. Bolts shall be high quality steel with hexagon nuts and heads. The Contractor shall apply grease to threads of bolt.
4. Welded joints in piping shall be by the electric or oxyacetylene process using welding rods if the characteristics similar to pipe material and as recommended by the pipe manufacturer and shall be done in accordance with the ASME Code for pressure piping. Welding shall be done by qualified welders under the requirements of the ASME Boiler and Pressure Vessel Code.
5. The pipe lengths shall be aligned with welding rings and the abutting pipe ends shall be concentric. Prior to welding, the groove and adjacent surfaces shall be thoroughly cleaned of all grease, scale, or rust. During welding, all slag, or flux remaining on the bead shall be removed before laying down the next bead. The welding metal shall be thoroughly fused with the base metal at all sections of the weld. Short lengths of pipe may be beveled on the job with oxyacetylene torch, provided all scale and oxides are removed.
6. Joints shall be butt-welded, single V-type. All fittings shall be steel welding fittings. Elbows and fittings formed with coupling or welded cut pipe sections shall not be acceptable.

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7. Bonney Weldolets or welding saddles may be used for branch connections, which are less than one-half the size of the main to which they connect.
 8. Ground Joint Unions, Flange Connections, Reaming & Filling Ground joint unions shall be 200 lb. s.w.p. for brass. Flanges shall be 150 lb. s.w.p. for brass, 125 lb. s.w.p. for cast iron.
 9. Ground joint unions of flanges shall be used only on exposed accessible piping. Where concealed, right and left nipples and couplings must be used. Where flanged connections are used, full size gaskets must be inserted.
- C. Threads: Shall be standard, clean cut and tapered. All piping shall be reamed free from burrs. All piping shall be kept free of scale and dirt. Caulking of threads will not be permitted. All piping shall be threaded and made up in accordance with the current edition of the ASA Standard Specifications for pipe threads.
- D. Unions
1. Unions for use on ferrous pipe 2" and smaller shall be malleable iron with brass to iron ground joint spherical seat and threaded connections. Unions 2 1/2" and over shall be flanged type with gasket.
 2. Unions for copper tubing shall be cast bronze conforming to ASA B16. The Contractor shall furnish adapters where required for copper pipe.
 3. Where copper pipe connects to ferrous pipe or metals, the Contractor shall furnish EPCO isolating type dielectric unions. Plastic type isolating bushings are not acceptable.
 4. Unions shall be installed wherever necessary for repair or replacement of equipment, valves, strainers, etc. Final connections to equipment shall be made in a manner that will permit removal without cutting of pipelines.
- E. Solder
1. All sweat joints shall be made up with 95/5 solder.
 2. Solder shall be National Lead or approved equal. Flux shall be non-toxic and non-corrosive.
 3. All copper tubing ends shall be reamed, filed and cleared of burrs and rough edges. All pipes shall be reamed after cutting and threading.
- F. Expansion
1. The entire piping installation shall be installed with adequate provision for expansion. No rigid connections will be permitted.
 2. Branches shall be of sufficient length and have 3 elbow swings to allow for pipe expansion.
 3. Provide expansion joints, guides and anchors equal to "Metra-Flex MetraLoops" where indicated on Drawings or where necessary for proper expansion compensation. Submit shop drawing.
 4. Any breaks in the piping within the guarantee period due to improper provision for expansion must be replaced at the expense of this Contractor, and the conditions corrected to prevent future recurrence.
 5. Any damages to surrounding areas and equipment due to this failure shall also be repaired and paid for at the expense of the Contractor.
 6. Joints to have 150 psi rating, ANSI-B16.5 with liner and cover.

2.4 PIPING SLEEVES

- A. Furnish sleeves built into place for all piping passing through walls, floors or building construction. Sleeves, not less than 1/2" larger in diameter than piping and its covering, if any, and extending full depth of construction pierced. Pack sleeves through walls/floors in accordance with Underwriters' Requirements.
- B. Sleeves piercing exterior walls, integral waterproofed walls shall be standard weight steel piping. Furnish welded center flange buried in construction for sleeves through exterior walls below grade. At exterior walls, make pipes watertight in sleeves with oakum packing and caulked lead joints on both sides of wall. All other sleeves: Galvanized sheet steel with lockseam joints, #22 USSG for 3" or under. Sleeves for piping 4" and larger, #18 USSG.
- C. Pipes passing through interior membrane waterproofed floors, cast iron flashing sleeve, with integral flashing flange and clamping ring, similar to Josam Series #1880. Adjust sleeves to floor construction with steel or wrought iron pipe nipples top and bottom, extending 3" above finished floor. Burn & J.R. Smith are equal.
- D. Pipes passing through membrane waterproofed walls, cast iron flashing sleeve with internal flashing flange and clamping ring similar to Josam Series #1870. Make pipes watertight in sleeves with oakum packing and caulked lead joints. Burn & J.R. Smith are equal.
- E. For flashing sleeves specified in Pars. C and D, lead flashing extended at least 10" around flashing sleeves, securely held in place by clamping device.

2.5 PIPING ENCLOSURES

- A. Where concealed piping in ceilings and wall of finished spaces is not possible vertical or horizontal metal piping enclosures equal to "Sterling" model PCH (horizontal) or PCHV (vertical). Provide all required hangers, supports, corners, brackets, etc. color per Architect.

PART 3 - EXECUTION

3.1 GENERAL NOTES - PIPING NOTES, DRAINING, VENTING AND MISCELLANEOUS WATER SPECIALTIES

- A. Piping shall be installed as indicated on Drawings. Elevations and dimensions are indicated as a guide only and are subject to change with actual job conditions.
- B. Except for drainage piping, which shall pitch down with flow, mains shall pitch upward or be installed dead level as indicated. Horizontal runs shall be parallel to walls.
- C. In general, all branch connections shall be top of bottom 45 degree or 90 degree, pitching up or down from mains.
- D. Where indicated, flexible connectors shall be installed. All final connections to equipment, pumps, units, etc. shall have companion flanged, flange unions or ground joint unions. (125 lbs.)
- E. All piping shall be adequately supported with approved type hangers so as to prevent absolutely any sagging of lines, or any undue strain on pipes or fittings. All pipe lines shall be capped during construction to prevent entry of dirt or other foreign material. All piping lines after erection shall be blown or flushed out to render the piping system as clean as possible before system water is added for operation.
- F. Clean interior and exterior surfaces promptly after installation of equipment and components. Take care to avoid damage to protective coatings and finishes. Remove excess sealants, lubrication, dirt and other foreign substances.

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- G. Comply with manufacturer's instructions and recommendations for installation of equipment, accessories and components.
- H. All heating, ventilating and air conditioning equipment shall be carefully designed, constructed and installed so as to prevent any objectionable noise or vibration reaching any part of the building outside of the mechanical equipment room. The Contractor shall be required to rectify or replace at his own expense, any equipment not complying with the foregoing requirements.

3.2 DRAINING

- A. All low points shall have drain valves with hose ends. Where 1/2" and 3/4" sizes are indicated, "Standard" hose end drain valves shall be used. Provide brass hose end drain caps at each drain valve. Where larger than 3/4" drains are shown, gate valve shall be used. Provide brass nipple and reducer from drain valve size to 3/4" terminating with 3/4" hose end drain valve and cap.

3.3 VENTING (For Hot Water)

- A. All high points in piping shall be vented automatically with float vents. At all high points of piping, whether specifically indicated or not, provide Maid-o-Mist or B&G No. 7 or 27 Air Eliminators with shut off cock, auxiliary key vent and copper tubing overflow carried to floor along wall as indicated or directed.

3.4 WATER SPECIALTIES

- A. Air Vents: Install at all high points automatic air vents to eliminate air binding. All automatic air vents shall be approved heavy duty type equipped with petcocks and tubing for manual venting. All vents installed in coils, etc. shall be of manual key operated type. All vents concealed from view shall be accessible through access doors. Vents shall be by Hoffman, Anderson or Bell & Gossett, 125 psig rated.
- B. Pressure Gauge: Furnish and install pressure gauges on suction and discharge sides of each pump and as required to check operation of equipment; pressure gauges shall have 4-1/2" diameter dials, Ashton, Ashcroft or approved equal.
- C. Install thermometers at all locations in piping system as noted on Drawings and as required to check system performance. Thermometers shall be installed at the supply and return of coils and 3-way diverting valves as manufactured by Trerice, Weksler or Moeller, with 4-1/2 inch face, cast aluminum case, chrome plated steel ring, white background with black embossed markings, glass window, stainless steel pointer, brass movement, 316 stainless steel bulb. Provide separable, universal angle sockets for all thermometers.

END OF SECTION

SECTION 23 0420

SUPPORTS, SLEEVES AND PLATES

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section. Submit shop drawings for checking and approval.

1.1 DESCRIPTION OF WORK

- A. This Contractor shall furnish and install all plates, hangers and supports for his equipment including piping, headers, fans expansion tank, ductwork, etc.
- B. All ductwork, piping and equipment shall be hung or supported from structural members only.

PART 2 - PRODUCTS

2.1 PIPING, DUCTWORK AND EQUIPMENT

- A. All piping shall be supported from building structure in a neat and workmanlike manner wherever possible, parallel runs of horizontal piping shall be grouped together on trapeze hangers. Vertical risers shall be supported at each floor line with steel pipe clamps. Use of wire perforated metal to support pipes will not be permitted. Hanging pipes from other pipes will not be permitted.
- B. Necessary structural members, hangers and supports of approved design to keep piping in proper alignment and prevent transmission of injurious thrusts and vibrations shall be furnished and installed. In all cases where hangers, brackets, etc., are supported from concrete construction, care shall be taken not to weaken concrete or penetrate waterproofing.
- C. All hangers and supports shall be capable of screw adjustment after piping is erected. Hangers supporting piping expanding into loops, bends and offsets shall be secured to the building structure in such a manner that horizontal adjustment perpendicular to the run of piping supported may be made to accommodate displacement due to expansion. All such hangers shall be finally adjusted, both in the vertical and horizontal direction, when the supported piping is hot.
- D. Pipe hangers shall be as manufactured by Grinnell, whose catalog numbers are given herein, or equivalent Carpenter and Paterson, or F&S Mfg. Co.
- E. Piping shall be supported as follows unless otherwise indicated on the Drawings:
 - 1. Heating piping shall be 1-1/2 " and smaller Fig. #260 adjustable clevis hanger. 2" and larger Fig. #174 one-rod swivel roll hanger.
 - 2. Two-rod hangers shall be used for piping close to the ceiling slab or where conditions prohibit use of other hanger types.
 - 3. Anchors for hanger rods shall be Phillips "Red Head" self-drilling type. Anchors shall be placed only in vertical surfaces.
 - 4. Spacing of pipe supports shall not exceed 8 feet for pipes up to 1-1/2" and 10 feet on all other piping.
 - 5. Hangers shall pass around insulation and a 16 gauge steel protective cradle; 12" long shall be inserted between hangers and insulation. Insulation under cradle shall be high density calcium silicate or approved equal to prevent crushing.

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6. All piping shall be supported to allow free movement where expanding or contracting. Pipe shall be anchored as required or directed.
7. All lateral runs of piping shall be securely supported on hangers, rolls, brackets, etc. and in manner to allow for proper expansion and elimination of vibration.
8. 2" and smaller pipe, where run on walls, shall be supported on wrought iron "J" hook brackets with anchor bolts.
9. All horizontal pipes, where run overhead or on walls, shall be supported as follows unless otherwise indicated: On adjustable steel clevis type hangers suspended on hanger rods, pipe sizes up to and including 4".
- F. Space limitations in hung ceilings spaces and conditions in other locations may require use of other type of hangers than those specified above. Suitable and approved pipe hangers shall be provided for such job conditions.
- G. All supports shall be fastened to structural members or additional steel supports furnished by this Contractor.
- H. Hanger rods shall be steel, threaded with nuts and lock nuts sizes in accordance with the following schedule:
- | <u>Pipe Size</u> | <u>Rod Size</u> |
|-------------------------|-----------------|
| 3/4" to 2" inclusive | 3/8" |
| 2-1/2" and 3' inclusive | 1/2" |
| 4" and 5" inclusive | 5/8" |
| 6" | 3/4" |
| 8" to 12" inclusive | 7/8" |
- I. Hangers for copper tubing shall be tacked up with formed lead sheet on which tubing or pipe shall be placed.
- J. Where pipes pass through masonry, concrete walls, foundations, or floors, this Contractor shall set sleeves as are necessary for passage of pipes. These sleeves shall be of sufficient size to permit insulation where required to be provided around pipe passing through. This Contractor shall be responsible for exact location of these sleeves.
- K. Sleeves shall not be used in any portion of building where use of same would impair strength of construction features of the building. Inserts for supporting lateral pipes and equipment shall be placed and secured to form work, and all sleeves inserts locations shall be thoroughly checked with Architect so as not to conflict with other trades.
- L. Where pipes pass through floor or walls, they shall be provided with chromium plated escutcheons.
- M. Anchor horizontal piping where indicated and wherever necessary to localize expansion or prevent undue strain on branches. Anchors: Heavy forged construction entirely separate from supports.
- N. Anchor vertical piping wherever indicated and wherever necessary to prevent undue strain on offsets and branches. Anchors, unless otherwise noted: Heavy steel clamps securely bolted and welded to pipes. Extension ends shall bear on building construction.
- O. Ducts shall be hung with 1" x 1/8" metal straps. When width of duct is less than 48", hangers shall be fastened to side of ducts. Auxiliary steel supports that may be required for all mechanical equipment shall be furnished and installed by this Contractor. All operating equipment including fans, piping, etc. shall be supported so as to produce minimum amount of noise transmission.
- P. Refer to "General Conditions" as well.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Inspect equipment space locations before beginning installation. Verify that the space is correct for entry and access. Do not proceed with installation of the equipment until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's instructions and recommendations for installation of equipment, accessories and components.
- B. All heating, ventilating and air conditioning equipment shall be carefully designed, constructed and installed so as to prevent any objectionable noise or vibration reaching any part of the building outside of the mechanical equipment room. Care shall also be taken to prevent transmission of noise or odor through ductwork into other spaces. The Contractor shall be required to rectify or replace at his own expense, any equipment not complying with the foregoing requirements.

3.3 CLEANING

- A. Clean interior and exterior surfaces promptly after installation of equipment and components. Take care to avoid damage to protective coatings and finishes. Remove excess sealants, lubrication, dirt and other foreign substances.

END OF SECTION

SECTION 23 0430

INSULATION AND COVERINGS

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section. Submit shop drawings for checking and approval.

1.1 DESCRIPTION OF WORK

- A. Furnish insulation for all piping, equipment and sheetmetal work as noted.
- B. Insulate no piping, ducts or equipment until tested and approved for tightness. All piping and ducts shall be dry when covered. Where existing insulation has been damaged, altered or removed during the course of the work, it shall be replaced with new insulation in a neat manner to match the adjacent insulation.
- C. All insulation must be done by an approved Sub-Contractor or by mechanics skilled in this line of work.
- D. Fire hazard classification shall be 2550 per ASTM E-84, NFPA 255 and UL 723. Insulation shall be rated non-combustible type classified flame spread - 25, smoke developed - 50.

PART 2 - PRODUCTS

2.1 DUCTWORK (INDOOR)

- A. All supply, outside air intake and exhaust (on discharge side of fan) and return (in unconditioned spaces) ductwork shall be covered with fiberglass with aluminum foil vapor barrier. All joints shall be lapped so maximum coverage is achieved.
- B. All insulated ductwork shall be insulated with fiberglass board insulation with canvas finish in areas where ductwork is exposed.
- C. Insulation thickness shall be in accordance with the latest edition of the New York State Energy Conservation Construction Code.
- D. Thermal acoustic lining of ductwork where indicated shall be 1" thickness fiberglass unless otherwise noted. The lining shall have a mat facing and shall meet the Life Safety Standards as established by NFPA 90A and 9B and conform to the requirements of ASTM C 1071.
- E. Insulate Kitchen exhaust ductwork per NFPA requirements (minimum 2" calcium silicate insulation) and all other agencies having jurisdiction.

2.2 DUCTWORK (OUTDOOR)

- A. All exposed ductwork shall be lined with 1" thick closed cell insulation similar to Armacell Armaflex FS.
- B. Caulk all duct joints and seams weather-tight (ductwork shall be additionally covered with rigid insulation and roofing membrane by General Contractor).
- C. Make proper provision with ductwork support(s) so that insulation is not crushed.

2.3 PIPING / EQUIPMENT (INDOOR)

- A. All new or altered heating and chilled water system supply and return piping shall be covered with Manville Micro-Lok or equal approved fiberglass insulation with all service (factory applied) vapor retardant jacket. Seal with type H mastic.
- B. Fittings shall be insulated with same material and thickness as adjoining pipe insulation and shall be pre-molded fittings or mitre cut segmental insulation wired on. Over the insulation, apply a wrapper of OCF glass cloth sealed with type H mastic. Apply aluminum bands on pipe covering in addition to self-sealing feature.
- C. Insulation Material: Molded fibrous glass insulation, density not less than 4 lbs. per cubic foot.
- D. Insulation Thickness: Shall be in accordance with the latest edition of the New York State Energy Conservation Construction Code.
- E. Jacket and Finish: White flame retardant type, meeting all requirements of "Fire Hazard Classification" of NFPA, similar to "Fiberglass" Type FRJ, Insul-Coustic, Johns-Manville or approved equal.
- F. Insulation and Finishes for Fittings, Valves and Flanges
 - 1. Valves, fittings and flanges other than vapor seal insulation: Insulated in same manner and same thickness as piping in which installed.
 - 2. Use pre-molded sectional covering where available; otherwise use mitered segments of pipe covering.
 - 3. Obtain written approval prior to using other than molded sectional covering.
- G. Vapor seal Insulation for Valves, Fittings and Flanges: Same as above, except joints sealed with vapor barrier adhesive and wrapped with glass mesh tape. Each fitting shall be finished with two coats of vapor seal mastic adhesive.
- H. Jacket and Finishes: Exposed fittings - 6 oz. canvas jacket adhered with lagging adhesive.
- I. Concealed fittings: Standard weight canvas jacket adhered with lagging adhesive and with bands of 18 gauge copper coated steel - 2 bands at elbows, 3 at tee.
- J. Insulation at Pipe Hangers
 - 1. Where shields are specified at hangers on piping with fibrous glass covering, provide load bearing calcium silicate between shields and piping as follows:
 - a. For pipe covering without vapor barrier jacket, furnish at each shield 12" - long calcium silicate section with canvas section with canvas jacket continuous between shield and insulation.
 - b. For pipe covering with vapor barrier jacket, furnish at each shield 12" - long vapor barrier jacket section with section of fibrous glass replaced with section of calcium silicate. Vapor barrier jacket, continuous between shield and insulation for continuous vapor barrier.
- K. Condensate drain and refrigerant piping shall be insulated with 1/2" Imcosheild un-split polyolefin insulation.

L. Equipment

1. Secure fibrous glass block or board insulation in place with wire or galvanized steel bands.
 - a. Small Areas: Secure insulation with 16 gauge wire on maximum 6" centers.
 - b. Large Areas: Secure insulation with 14 gauge wire or .015" thick by 1/2" wide galvanized steel bands on maximum 10" centers. Stagger insulation joints.
 - c. Irregular Surfaces: Where application of block or board insulation is not practical insulate with insulating cement built-up to same thickness as adjoining insulation.
2. Fill joints, voids and irregular surfaces with insulating cement to a uniform thickness.
3. Stretch wire mesh over entire insulated surface and secure to anchors with wire edges laced together.
4. Apply finishing cement, total of 1/2" thick, in 1/4" thick coats. Trowel second coat to a smooth hard finish.
5. Neatly bevel insulation around handholes, cleanouts, ASME stamp, manufacturer's nametag and catalog number.

- M. Insulated Covers for Pumps: Do not extend pump insulation beyond or interfere with stuffing boxes or interfere with adjustment and servicing of parts regular maintenance or operating attention.

2.4 PIPING (OUTDOOR)

- A. All supply and return piping shall be covered with 2" thickness insulation.
- B. Insulation shall be calcium silicate with aluminum jacket.
- C. Calcium silicate insulation shall conform with ASTM C 533, Type I, and shall be Manville "Thermo-12" or approved equal.
- D. Insulation jacket shall be 0.016 inch thick aluminum for pipes 2-1/2 inches and larger, and 0.010 inch thick for pipes 2 inches and smaller with a built-in isolation felt. All seams and joints shall be weatherproof.
- E. Refrigerant piping shall be insulated with 1/2" Imcosheild un-split polyolefin insulation.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Inspect equipment space locations before beginning installation. Verify that the space is correct for entry and access. Do not proceed with installation of the equipment until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's instructions and recommendations for installation of equipment, accessories and components.
- B. All heating, ventilating and air conditioning equipment shall be carefully designed, constructed and installed so as to prevent any objectionable noise or vibration reaching any part of the building outside of the mechanical equipment room. Care shall also be taken to prevent transmission of noise or odor through ductwork into other spaces. The Contractor shall be required to rectify or replace at his own expense, any equipment not complying with the foregoing requirements.

3.3 CLEANING

- A. Clean interior and exterior surfaces promptly after installation of equipment and components. Take care to avoid damage to protective coatings and finishes. Remove excess sealants, lubrication, dirt and other foreign substances.

END OF SECTION

SECTION 23 0440

DAMPERS AND MISCELLANEOUS

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section. Submit shop drawings for checking and approval.

PART 2 - PRODUCTS

2.1 DAMPERS AND MISCELLANEOUS

- A. Furnish and install where shown on Drawings ARROW PIN-LOCK Dampers No. OBDPL-507 (Opposed) as manufactured by the Arrow Louver & Damper Corp. of Maspeth, NY 11378, or approved equal. Frames and blades to 1/8" extruded aluminum.
- B. Blades to be single unit PIN-LOCK design 6" wide, with the PIN-LOCK an integral section within the blade center axis. Frames to be a combination of 4" extruded aluminum channel and angle, with reinforcing bosses and groove inserts for vinyl seals.
- C. Pivot rods to be 1/2" diameter extruded aluminum, PIN-LOCK design interlocking into blade section. Bearings to be "Double-Sealed" type with Celcon inner bearing on rod riding in Merlon Polycarbonate outer bearing inserted in frame so that outer bearing cannot rotate.
- D. Blade linkage hardware is to be installed in angle or channel frame section out of air stream. All hardware to be of non-corrosive reinforced material or to be cadmium plated.
- E. Rod bearing to be designed for minimum air leakage by means of overlapping design and by extruded vinyl seals to fit into integral ribbed groove inserts in both frames and blades. All dampers in excess of 10 sq. ft. free area to have reinforced corners by means of gusset plates.
- F. Dampers shall be sized by the Control Manufacturer to properly control the flow of air and ensure minimum air stratification in mixing applications. Sizing shall be submitted for approval with information similar to that submitted on valve when sizing valve.

2.2 FIRE DAMPERS

- A. Dampers shall be multi blade construction UL labeled and be installed in accordance with UL 555, with breakaway connections. The units shall have stainless steel actuator springs with locking devices for horizontally mounted type.

2.3 COMBINATION FIRE / SMOKE DAMPERS

- A. Furnish and install at locations shown on Drawings, or as described in schedules, combination fire smoke dampers.
- B. Frame shall be a minimum of 16 gauge galvanized steel formed into a structural hat channel reinforced at corners for added strength. The blades shall be airfoil shaped single-piece hollow construction with 14 gauge equivalent thicknesses. Blade action shall be opposed. Bearings shall be stainless steel sleeve turning in an extruded hole in the frame for long life. Galvanized bearing shall not be acceptable.

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- C. Blade edge seals shall be silicone rubber and galvanized steel mechanically locked into blade edge (adhesive or clip fastened seals shall be acceptable) and shall withstand a minimum of 450 degrees F. (232 degrees C.) Jamb seals shall be non-corrosive stainless steel flexible metal compression type to further ensure smoke management.
- D. Each combination fire/smoke damper shall be classified for use for fire resistance ratings of less than 3 hours in accordance with UL Standard 555, and shall further be classified by Underwriters Laboratories as a Leakage Rated Damper for use in smoke control systems in accordance with the latest version of UL555S, and bear a UL label attesting to same. Damper manufacturer shall have tested, and qualified with UL, a complete range of damper sizes covering all dampers, required by this Specification. Testing and UL qualifying a single damper size is not acceptable. The leakage rating under UL555S shall be leakage Class I (4 c.f.m./sq. ft. at 1" w.g. and 8 c.f.m./ft. at 4" w.g.).
- E. As part of UL qualification, dampers shall have demonstrated a capacity to operate (to open and close) under HVAC system operating conditions, with pressures of at least 4" w.g. in the closed position, and 4000 f.p.m. air velocity in the open position.
- F. In addition to the leakage rating already specified herein, the dampers and their actuators shall be qualified under UL555S to an elevated temperature of 350 degrees F. (177 degrees C.). Appropriate electric actuators (equal to Ruskin model MA) shall be installed by the damper manufacturer at time of damper fabrication. Damper and actuator shall be supplied as a single entity, which meets all applicable UL555S qualifications for both dampers and actuators. Damper and actuator assembly shall be factory cycled 10 times to assure operation.
- G. Manufacturer shall provide factory assembled sleeve of 17" minimum length (Contractor to verify requirement). Factory supplied caulked sleeve shall be 20 gauge for dampers through 84" wide and 18 gauge above 84" wide.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Inspect equipment space locations before beginning installation. Verify that the space is correct for entry and access. Do not proceed with installation of the equipment until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's instructions and recommendations for installation of equipment, accessories and components.
- B. All heating, ventilating and air conditioning equipment shall be carefully designed, constructed and installed so as to prevent any objectionable noise or vibration reaching any part of the building outside of the mechanical equipment room. Care shall also be taken to prevent transmission of noise or odor through ductwork into other spaces. The Contractor shall be required to rectify or replace at his own expense, any equipment not complying with the foregoing requirements.

3.3 CLEANING

- A. Clean interior and exterior surfaces promptly after installation of equipment and components. Take care to avoid damage to protective coatings and finishes. Remove excess sealants, lubrication, dirt and other foreign substances.

END OF SECTION

SECTION 23 0460

AUTOMATIC TEMPERATURE CONTROLS

PART 1 - GENERAL

Applicable provisions of the conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 QUALIFICATIONS OF BIDDER

- A. All bidders must be building automation contractors in the business of installing direct digital control building automation systems for a minimum of 10 years.
- B. All bidders must have an office in the within 50 miles of jobsite.
- C. All bidders must be authorized distributors or branch offices of the manufacturers specified.
- D. All bidders must have a trained staff of application Engineers, who have been certified by the manufacturer in the configuration, programming and service of the automation system.

1.2 SCOPE OF WORK

- A. This Contractor shall furnish an electronic system of temperature controls as manufactured by Andover or approved equal. The District has standardized on this manufacturer. All submitted controls shall be directly compatible with existing hardware and software without patch panels or translators or any kind. The ATC Sub-Contractor shall be subject to the District's approval.
- B. This Contractor shall review and study all HVAC Drawings and the entire Specification to familiarize himself with the equipment and system operation and to verify the quantities and types of dampers, operators, alarms, etc. to be provided.
- C. This Contractor shall be responsible for the integration of all new equipment (including, boilers, pumps, packaged equipment, condensing units, VRF systems, etc.) into the ATC system for seamless operation. HVAC Contractor shall include factory controls with appropriate protocol (BACnet, LonMark, etc.) to allow integration with the ATC system.
- D. Prior to commencement of schedule programming meet with Owner to discuss block/individual scheduling of system/equipment and alarm protocols. Review equipment designations and graphics screens to be provided. Take minutes of this meeting and issue them to the Construction Manager/Owner's representative.
- E. RS-232 Drivers or Hardware Translators: All DDC components shall communicate on existing Level 1 or Level 2 networks in native mode.
- F. The new installed system shall communicate to the existing graphic Workstation in the Buildings and Grounds office at the Middle School. All new graphics shall match established standards of the existing District system.
- G. All temperature control wiring regardless of voltage shall be done by this Contractor. This shall include power wiring of control panels/components from available spare circuits in electrical panels. The automatic temperature control manufacturer shall provide wiring diagrams, field supervision and one (1) year guarantee on the installed DDC system and three (3) year factory warranty on all control equipment manufactured by the DDC manufacturer.
- H. Thermostats, temperature sensors, heating control devices, etc. are indicated on the Drawings in general. Provide any additional devices required to carry out project intent as herein described.

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- I. Thermostats/Temperature sensors in areas subject to vandalism shall have in addition separately mounted extra heavy guards. Submit sample.
- J. Contractor shall include all new heating control devices, thermostats, etc. indicated on Drawings or that is part of a new system.
- K. Contractor shall furnish all necessary electrical controls, motor starters, switches, etc. for proper operation of equipment furnished by him under this Contract, and as herein noted.
- L. Point and component lists are to be used as a guide. If the sequence of operation requires additional points/control devices, this Contractor shall be responsible for providing same.
- M. All control system components installed shall be manufactured by the DDC system manufacturer.
- N. Communications cabling shall be run in hallways above hung ceiling with plenum cable and wiremold where exposed.
- O. Removals shall include switches, relays, electric components not required for the new intent. Do not leave behind items with no function. Provide appropriate blanking plates/patching where removals occur in finished spaces.
- P. Provide services and manpower necessary for commissioning of system in coordination with the HVAC Contractor, Balancing Contractor and Owner's representative.

1.2 SOFTWARE CODE

- A. Owner shall be furnished with a complete, hard-bound copy of all installed software code. Final payment shall be contingent upon this requirement being met.

PART 2 - PRODUCTS

2.1 CONTROL VALVES (With Electric Actuator)

- A. Provide automatic control valves suitable for the specified controlled media (water or glycol). Provide valves, which mate and match the material of the connected piping. Equip control valves with the actuators of required input power type and control signal type to accurately position the flow control element and provide sufficient force to achieve required leakage specification.
- B. Control valves shall meet the heating and cooling loads specified, and closes off against the differential pressure conditions within the application. Valves should be sized to operate accurately and with stability from 10% to 100% of the maximum design flow.
- C. Trim material shall be stainless steel for hot water and high differential pressure applications.
- D. Electric actuation should be provided on all terminal unit reheat applications.

2.2 DAMPERS (With Electric Actuators)

- A. Automatic dampers, furnished by the Building Automation Contractor shall be single or multiple blade as required. Dampers are to be installed by the HVAC Contractor under the supervision of the BAS Contractor. All blank-off plates and conversions necessary to install smaller than duct size dampers are the responsibility of the Sheetmetal Contractor.

- B. Damper frames are to be constructed of 13 gauge galvanized sheet steel mechanically joined with linkage concealed in the side channel to eliminate noise as friction. Compressible spring stainless steel side seals and acetyl or bronze bearings shall also be provided.
- C. Damper blade width shall not exceed eight inches. Seals and 3/8 inch square steel zinc plated pins are required. Blade rotation is to be parallel or opposed as shown on the schedules.
- D. For high performance applications, control dampers will meet or exceed the UL Class I leakage rating.

2.3 DAMPER ACTUATORS

- A. Electronic Actuators: The actuator shall be direct coupled over the shaft, enabling it to be mounted directly to the damper shaft without the need for connecting linkage. The actuator shall have electronic overload circuitry to prevent damage. For power-failure/safety applications, an internal mechanical, spring return mechanism shall be built into the actuator housing. Non-spring return actuators shall have an external manual gear release to allow positioning of the damper when the actuator is not powered.
- B. All valves shall be fully proportioning, unless otherwise specified, quiet in operation, and shall be arranged to fail safe, in either a normally open or normally closed position, in the event of power failure. The open or closed position shall be as specified or as required to suit job conditions. All valves shall be capable of operating at varying rates of speed to correspond to the exact dictates of the controller and variable load requirements.
- C. Where valves operate in sequence with other valves or damper operators, provide on each valve a pilot positioner to provide adjustable operating ranges and starting points and positive close off at the required control signal pressure. Positioners must be directly connected to the valve stem. Ratio relays are not acceptable.
- D. Valves shall be sized by the Temperature Control Manufacturer and guaranteed to meet the heating or requirements as specified and indicated on the Drawings. Unless otherwise specified, all shall conform to the requirements herein specified for the piping system in which they are installed.

2.4 CENTRAL CONTROL PANEL

- A. Integrate new controls into existing central control touch screen panel. This central panel will allow for time clock scheduling, setpoints, monitoring of points and alarm. All freezestats will be reset manually at the central panel. All alarms will be displayed and reset manually at central panel.
- B. All exhaust fans shall be controlled by the central control panel.
- C. Central control panel shall be connected to existing District IT Network. District shall provide data drop.

2.5 LOCAL STAND-ALONE CONTROLLERS

- A. Provide local stand-alone controllers as required. These controllers will, through DDC programs control local units. They shall be networked together to central touch screen panel.

2.6 ENCLOSURES

- A. All control components shall be mounted in NEMA-1, lockable, hinged enclosures.

PART 3 - EXECUTION

3.1 GENERAL

- A. All DDC Controllers shall be networked to Central Communications controller.
- B. Existing Front End Workstation in B & G office at the Middle School shall be configured for Elementary School Addition access. Text/Graphic screens for each system shall match existing.
- C. Communications cabling shall be run in hallways above hung ceiling with plenum cable and wiremold where exposed.

3.2 CONTRACTOR RESPONSIBILITIES

- A. General: The Contractor or a Sub-Contractor shall perform installation of the building automation system. However, all installation shall be under the personal supervision of the Contractor. The Contractor shall certify all work as proper and complete.
- B. Demolition: Remove controls, which do not remain as part of the building automation system, all associated abandoned wiring and conduit and all associated pneumatic tubing. The Owner will inform the Contractor of any equipment, which is to be removed, that will remain the property of the Owner. The Contractor will dispose of all other equipment that is removed.
- C. Access to Site: Unless notified otherwise, entrance to building is restricted. No one will be permitted to enter the building unless their names have been cleared with the Owner or the Owner's representative.
- D. Code Compliance: All wiring shall be installed in accordance with all applicable electrical codes and will comply with equipment manufacturer's recommendations. Should any discrepancy be found between wiring Specifications in Division 26 and Division 22, wiring requirements of Division 26 will prevail for work specified in Division 26.
- E. Cleanup: At the completion of the work, all equipment pertinent to this Contract shall be checked and thoroughly cleaned, and all other areas shall be cleaned around equipment provided under this Contract. Clean the exposed surfaces of tubing, hangers, and other exposed metal of grease, plaster, or other foreign materials.

3.3 WIRING, CONDUIT, TUBING AND CABLE

- A. All wire will be copper and meet the minimum wire size and insulation class listed below:

Wire Class	Wire Size	Isolation Class
Power	12 Gauge	600 Volt
Class One	14 Gauge Std.	600 Volt
Class Two	18 Gauge Std.	300 Volt
Class Three	18 Gauge Std.	300 volt
Communications	Per Mfr.	Per Mfr.

- B. Power and Class One wiring may be run in the same conduit. Class Two and Three wiring and communications wiring may be run in the same conduit.
- C. Where different wiring classes terminate within the same enclosure, maintain clearances and install barriers per the National Electric Code.

- D. Where wiring is required to be installed in conduit, EMT shall be used. Conduit shall be minimum 1/2 inch galvanized EMT. Setscrew fittings are acceptable for dry interior locations. Watertight compression fittings shall be used for exterior locations and interior locations subject to moisture. Provide conduit seal off fitting where exterior conduits enter the building or between areas of high temperature/moisture differential.
- E. Flexible metallic conduit (max. 3 feet) shall be used for connections to motors, actuators, controllers, and sensors mounted on vibration producing equipment. Liquid-tight flexible conduit shall be use in exterior locations and interior locations subject to moisture.
- F. Junction boxes shall be provided at all cable splices, equipment termination, and transitions from EMT to flexible conduit. Interior dry location J-boxes shall be galvanized pressed steel, nominal four-inch square with blank cover. Exterior and damp location JH-boxes shall be cast alloy FS boxes with threaded hubs and gasket covers.
- G. Where the space above the ceiling is a supply or return air plenum, the wiring shall be plenum rated. Teflon wiring can be run without conduit above suspended ceilings. EXCEPTION: Any wire run in suspended ceilings that is used to control outside air dampers or to connect the system to the fire management system shall be in conduit.
- H. Coaxial cable shall conform to RG62 or RG59 rating. Provide plenum rated coaxial cable when running in return air plenums.

3.4 HARDWARE INSTALLATION

- A. Installation Practices for Wiring and Tubing
 - 1. All controllers are to be mounted vertically and per the manufacturer's installation documentation.
 - 2. The 120 VAC power wiring to each Ethernet or Remote Site controller shall be a dedicated run, with a separate breaker. Each run will include a separate hot, neutral and ground wire. The ground wire will terminate at the breaker panel ground. This circuit will not feed any other circuit or device.
 - 3. A true earth ground must be available in the building. Do not use a corroded or galvanized pipe, or structural steel.
 - 4. Wires are to be attached to the building proper at regular intervals such that wiring does not drop. Wires are not to be affixed to or supported by pipes, conduit, etc.
 - 5. Wiring in finished areas will be concealed in ceiling cavity spaces, plenums, and furred spaces and wall construction. Exception; metallic surface raceway may be used in finished areas on masonry walls. All surface raceway in finished areas must be color matched to the existing finish within the limitations of standard manufactured colors.
 - 6. Wiring, in non-finished areas where possible, will be concealed in ceiling cavity spaces, plenums, furred spaces, and wall construction. Exposed conduit will run parallel to or at right angles to the building structure.
 - 7. Wires are to be kept a minimum of three (3) inches from hot water or condense piping.
 - 8. Where sensor wires leave the conduit system, they are to be protected by a plastic insert.

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B. Installation Practices for Field Devices

1. Well-mounted sensors will include thermal conducting compound within the well to insure good heat transfer to the sensor.
2. Actuators will be firmly mounted to give positive movement and linkage will be adjusted to give smooth continuous movement throughout 100 percent of the stroke.
3. Relay outputs will include transient suppression across all coils. Suppression devices shall limit transients to 150% of the rated coil voltage.
4. Water line mounted sensors shall be removable without shutting down the system in which they are installed.
5. For duct static pressure sensors, the high-pressure port shall be connected to a metal static pressure probe inserted into the duct pointing upstream. The low-pressure port shall be left open to the plenum area at the point that the high-pressure port is tapped into the ductwork.
6. For building static pressure sensors, the high-pressure port shall be inserted into the space via a metal tube. Pipe the low-pressure port to the outside of the building.

C. Enclosures

1. For all I/O requiring field interface devices, these devices, where practical, will be mounted in a field interface panel (FIP). The Contractor shall provide an enclosure, which protects the device(s) from dust, moisture, conceals integral wiring and moving parts.
2. FIP's shall contain power supplies for sensors, interface relays and Contractors, safety circuits, and I/P transducers.
3. The FIP enclosure shall be of steel construction with baked enamel finish; NEMA 1 rated with a hinged door and keyed lock. The enclosure will be sized for 20% spare mounting space. All locks will be keyed identically.
4. All wiring to and from the FIP will be to screw type terminals. Analog or communications wiring may use the FIP as a raceway without terminating. The use of wire nuts within the FIP is prohibited.
5. All outside mounted enclosures shall meet the NEMA-4 rating.
6. The wiring within all enclosures shall be run in plastic track. Wiring within controllers shall be wrapped and secured.

D. Identification

1. Identify all control wires with labeling tape or sleeves using either words, letters, or numbers that can be exactly cross-referenced with As-Built Drawings.
2. All field enclosures, other than controllers, shall be identified with a Bakelite nameplate. The lettering shall be in white against a black or blue background.
3. Junction box covers will be marked to indicate that they are a part of the BAS system.
4. All I/O field devices (except space sensors) that are not mounted within FIP's shall be identified with nameplates.
5. All I/O field devices inside FIP's shall be labeled.

E. Control System Switch-Over

1. Demolition of the existing control system will occur after the new temperature control system is in place including new sensors and new field interface devices.
2. Switch over from the existing control system to the new system will be fully coordinated with the Owner. A representative of the Owner will be on site during switch over.
3. The Contractor shall minimize control system downtime during switch over. Sufficient installation mechanics will be on site so that the entire switch over can be accomplished in a reasonable time frame.

F. Location

1. The location of sensors is per Mechanical and Architectural Drawings.
2. Outdoor air sensors will be mounted on the north building face directly in the outside air. Install these sensors such that the effects of heat radiated from the building or sunlight is minimized.
3. Field enclosures shall be located immediately adjacent to the controller panel(s) to which it is being interfaced.

3.5 SOFTWARE INSTALLATION

- A. General: The Contractor shall provide all labor necessary to install, initialize, start-up and debug all system software as described in this section. This includes any operating system software or other third party software necessary for successful operation of the system.
- B. Database Configuration: The Contractor will provide all labor to configure those portions of the database that are required by the points list and sequence of operation.
- C. Color Graphic Slides: Unless otherwise directed by the Owner, the Contractor will provide color graphic displays as depicted in the Mechanical Drawings for each system and floor plan. For each system or floor plan, the display shall contain the associated points identified in the point list and allow for set point changes as required by the Owner.
- D. Reports - The Contractor will configure a minimum of 6 reports for the Owner as listed below:
1. Central Plant Status Report
 2. Air Handler Status Report
 3. Energy Consumption Report
 4. Space Temperature Report
 5. Specialty Equipment Status Report
- E. Documentation - As-built software documentation will include the following:
1. Descriptive point lists
 2. Application program listing
 3. Application programs with comments
 4. Printouts of all reports
 5. Alarm list
 6. Printouts of all graphics

3.6 COMMISSIONING AND SYSTEM STARTUP

- A. Point-to-Point Checkout:
Each I/O device (both field mounted as well as those located in FIP's) shall be inspected and verified for proper installation and functionality. A checkout sheet itemizing each device shall be filled out, dated and approved by the Project Manager for submission to the Owner or Owner's representative.
- B. Controller and Workstation Checkout:
A field checkout of all controllers and front-end equipment (computers, printers, modems, etc.) shall be conducted to verify proper operation of both hardware and software. A checkout sheet itemizing each device and a description of the associated tests shall be prepared and submitted to the Owner or Owner's representative by the completion of the project.
- C. System Acceptance Testing
 - 1. All application software will be verified and compared against the sequences of operation. Control loops will be exercised by inducing a setpoint shift of at least 10% and observing whether the system successfully returns the process variable to setpoint. Record all test results and attach to the Test Results Sheet.
 - 2. Test each alarm in the system and validate that the system generates the appropriate alarm message, that the message appears at all prescribed destinations (workstations or printers), and that any other related actions occur as defined (i.e. graphic panels are invoked, reports are generated, etc.). Submit a Test Results Sheet to the Owner.
 - 3. Perform an operational test of each unique graphic display and report to verify that the item exists, that the appearance and content are correct, and that any special features work as intended. Submit a Test Results Sheet to the Owner.
 - 4. Perform an operational test of each third party interface that has been included as part of the automation system. Verify that all points are properly polled, that alarms have been configured, and that any associated graphics and reports have been completed. If the interface involves a file transfer over Ethernet, test any logic that controls the transmission of the file, and verify the content of the specified information.

3.7 SEQUENCES OF OPERATION

- A. Energy Recovery Units
 - 1. Point List
 - a. Supply Fan VFD (Speed and Status)
 - b. Exhaust Fan VFD (Speed and Status)
 - c. Energy Recovery Wheel VFD (Speed and Status) – where applicable
 - d. Space Temperature (See Drawings for Quantity)
 - e. Space Temperature Setpoint(s)
 - f. OA, EA, RA and Mixed Air Temperatures
 - g. Heating Coil Valve(s) Modulation
 - h. DX Cooling Start/Stop/Status
 - i. OA, EA, RA Damper Modulation
 - j. Freeze-stat
 - k. Discharge Temperature

2. Sequence of Operation

- a. Unoccupied: Unit fans off, OA and EA dampers closed, RA damper open, Heating Coil valve(s) open. Fin Tube Radiation valve(s) shall modulate to maintain night setback temperature. If radiation alone cannot maintain night setback temperature, unit supply fan shall be cycled on.
- b. Morning Warm-Up: OA and EA dampers closed, RA damper open, Heating Coil valve(s) open. Fin Tube Radiation and Unit Supply Fan shall be sequenced to bring room up to occupied setpoint.
This shall be scheduled to occur prior to room occupancy.
- c. Occupied: OA and EA dampers open, RA damper closed, Unit Supply and Exhaust Fans (VFD driven) shall run continuously. Fin Tube Radiation, Heating Coil valve(s) and DX cooling (where applicable) shall be sequenced/modulated to maintain occupied setpoint. A unit mounted freeze-stat shall stop fans, close OA and EA dampers, open RA damper, open all coil valves and generate an alarm. Freeze-stat shall be resettable from the OWS. Energy recovery wheel (where applicable) shall be energized during occupied mode unless outside air is suitable for free cooling (economizer mode). Wheel shall be VFD driven for frost prevention.
- d. If AC Alternate(s) are accepted, integrate factory VRF system controls for seamless operation.

B. Ceiling Hung Fan Coil Unit

1. Point List

- a. Space Temperature
- b. Discharge Temperature
- c. Freezestat Status
- d. Fan Start/Stop
- e. OA Damper
- f. Hot Water Valve Modulation
- g. Radiation Valve Modulation
- h. DX Cooling Start/Stop

2. Sequence of Operation

- a. Unoccupied Mode: The outside air damper shall be closed and unit coil valve shall be open. The radiation valve shall modulate to maintain night setback setpoint. Should the radiation alone fail to maintain the setpoint, the unit fan shall be energized.
- b. Occupied Mode: Unit fan and return fan shall run continuously. During morning warm-up mode (room temperature more than 2 degrees below daytime setpoint), outside air damper shall be closed. As room temperature rises, OA damper shall open to minimum position. Should room temperature continue to rise past setpoint, radiation valve and unit coil valves shall modulate closed. Upon further room temperature rise past setpoint DX cooling (if AC Alternate is accepted) shall be energized. As room temperature decreases the reverse shall occur. A manual freezestat shall stop fan, close outside air damper and open unit coil valve.

C. Fin-Tube Radiation

1. Point List
 - a. Space Temperature
 - b. Valve Modulation
2. Sequence of Operation
 - a. Unoccupied Mode: Modulate control valve to maintain night setback temperature setpoint.
 - b. Occupied Mode: Modulate control valve to maintain daytime temperature setpoint.

I. Cabinet Heaters

1. Point List
 - a. Space Temperature
 - b. Space Temperature Setpoint
 - c. Fan Start/Stop
2. Sequence of Operation
 - a. Unit fan shall cycle based on space temperature setpoint.

3.8 TRAINING

- A. The Contractor shall supply personnel to train key customer personnel in the operation and maintenance of the installed system. The training program shall be designed to provide a comprehensive understanding and basic level of competence with the system. It shall be sufficiently detailed to allow customer personnel to operate the system independent of any outside assistance. On-line context sensitive HELP screens shall be incorporated into the system to further facilitate training and operation.
- B. The training plan shall include detailed session outlines and related reference materials. The customer personnel shall be able to utilize these materials in the subsequent training of their co-workers.
 1. Training time shall not be less than a total of 40 hours, and shall consist of:
 - a. 16 hours during normal day shift periods for system operators. Specific schedules shall be established at the convenience of the customer.
 - b. 24 hours of system training shall be provided to customer supervisory personnel so that they are familiar with system operation.
 - c. The specified training schedule shall be coordinated with the customer and will follow the training outline submitted by the Contractor as part of the submittal process.
 - d. Provide an as built Video training tape, showing & explaining all animated graphics in detail, all controllers and equipment the FMS operates. (Four (4) Copies shall be supplied).
 - e. If further training is needed, the Contractor shall provide another 40 hours at no extra cost.
 2. All training sessions shall be scheduled by the Construction Manager. The Contractor shall provide sign-in sheets and distribute minutes of each session prior to the subsequent session. This documentation shall be included in the Operation and Maintenance manuals.

END OF SECTION

SECTION 23 0470

TESTING, START-UP AND ADJUSTMENTS

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section.

1.1 TESTING, START-UP AND ADJUSTMENTS

- A. Furnish all materials, supplies, labor and power required for testing. Make preliminary tests and prove work satisfactory. Notify Architect and all authorities having jurisdiction in ample time to be present for final testing of all piping. Test before insulating or concealing any piping. Repair defects disclosed by tests, or if required by Architect, replace defective work with new work without additional cost to Owner. Make tests in stages if so ordered by Architect to facilitate work of others. Use of wicking in tightening leaking joints not permitted.
- B. HVAC Contractor is responsible for work of other trades disturbed or damaged by tests and/or repair and replacement of his work, and shall cause work so disturbed or damaged to be restored to its original condition at his own expense.
- C. Unless otherwise specified, all piping systems shall be hydrostatically tested to 150 p.s.i.g. Tests shall be of four (4) hour duration during which time piping shall show no leaks and during time no sealing of leaks will be permitted.
- D. HVAC Contractor shall balance out system and submit test reports showing operating data to include the following:
 - 1. C.F.M. of all air handling equipment.
 - 2. C.F.M. at each air outlet.
 - 3. G.P.M. for equipment.
 - 4. R.P.M. for each fan and fan motor.
 - 5. Motor power consumption.
 - 6. Air temperature readings before and after coils.
 - 7. Water temperature readings in and out of coils and through equipment.
 - 8. Pressure gauge readings before and out of all pertinent equipment.
- E. If the performance of the systems does not conform to the design parameters the Contractor shall return to the site until the systems perform as designed.
- F. HVAC Contractor shall furnish services of qualified personnel, thoroughly familiar with job, to operate and make all adjustments so that system and control equipment shall operate as intended. This shall include adjustment/replacement of sheaves/impellers to achieve design performance. Adjustments shall be made including balancing of water and air systems in cooperation with qualified representatives of mechanical equipment manufacturers and temperature control manufacturer. This shall include any required adjustment/replacement of sheaves, belts, impellers, etc. to achieve design performance. Architect/Engineer is to be notified when this balancing is to be performed.
- G. When all work is in an acceptable operating condition, furnish operating and maintenance manuals as specified in General Requirements.
- H. All HVAC equipment shall be carefully designed, constructed and installed so as to prevent any objectionable noise or vibration reaching any part of the building outside of the mechanical equipment room. Care shall also be taken to prevent transmission of noise or odor through ductwork into other spaces.

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- I. Contractor shall include in his Bid, adjustment of air quantity below scheduled C.F.M. for air systems deemed “noisy” by Owner subsequent to initial balancing.
- J. The Contractor shall be required to rectify or replace at his own expense, any equipment not complying with the foregoing requirements.
- K. Final inspection and approval shall be made only after proper completion of all of above requirements.

END OF SECTION

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GENERAL LABELING, VALVE CHARTS AND PIPING IDENTIFICATION

SECTION 23 0480

GENERAL LABELING, VALVE CHARTS AND PIPING IDENTIFICATION

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section. Submit shop drawings for checking and approval.

1.1 GENERAL LABELING AND VALVE CHARTS

- A. This Contractor shall have appropriate descriptive labels, identification tags and nameplates of equipment, valves, etc. furnished and installed under this Contract and shall be properly placed and permanently secured to (or adjacent to) the item being installed. All such labels, identifications, tags, nameplates, etc. shall be selected by the Architect/Engineer.
- B. In general, labels shall be the lamacoid type of sufficient size to permit easy identification, black coated, white edged, with letters 3/16" high. Major equipment, apparatus, control panels, etc. shall have 8" x 4" lamacoid plates with lettering of appropriate size.
- C. Provide tags for all valves, automatic and manual dampers. Tags shall be Type #2020 anodized aluminum of #1420 lamacoid engraved. Tags may not necessarily be standard. Fasten tags to valve or damper with brass chain.
- D. All nameplates, labels, identifications and tags shall be as manufactured by the Seton Name Plate Co., of New Haven, CT or approved equal. Submit complete schedules, listings and descriptive data together with samples for checking and approval before purchasing. Labeling shall include the "number" of the equipment, valve, dampers, switch, etc. and service of the valve.
- E. Mount on laminated plastic boards with transparent surface all valves, wiring diagrams, control diagrams, instruction charts, permits, etc. Valve chart shall be non-fading with original copies laminated.

1.2 IDENTIFICATION OF PIPING

- A. This Contractor shall provide on all piping, semi-rigid, wrap around plastic identification markers equal to Seton Snap-Around and/or Seton Strap-On pipe markers.
- B. Each marker background is to be appropriately color coded with a clearly printed legend to identify the contents of the pipe. Directions of flow arrows are to be included on each marker.
- C. Identification of all piping shall be adjacent to each valve, at each pipe passage through wall, floor and ceiling construction and at each branch and riser take-off.
- D. Identification shall be on all horizontal pipe runs, marked every 15 ft. as well as at each inlet outlet of equipment.

END OF SECTION

SECTION 23 0490

GUARANTEE

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section.

1.1 GUARANTEE

- A. The Contractor shall remove, replace and/or repair at his own expense and at the convenience of the Owner, any defects in workmanship, materials, ratings, capacities and/or characteristics occurring in the work within one (1) year or within such longer period as may be provided in the Drawings and/or Section of the Specifications, which guarantee period shall commence with the final acceptance of the entire Contract in accordance with the guarantee provisions stated in the General Conditions, and the Contractor shall pay for all damage to the system resulting from defects in the work and all expenses necessary to remove, replace, and/or repair any other work which may be damaged in removing, replacing and/or repairing the work.

END OF SECTION

SECTION 26 01 00

GENERAL CONDITIONS

PART 1 - GENERAL

Applicable provisions of the conditions of the Contract and Division 1 General Requirements govern the work in this section.

1.1 DESCRIPTION OF WORK

- A. It is the intention of the Specification and Drawings to call for finish work, tested and ready for operation.
- B. Any apparatus, appliance material or work not shown on the Drawings but mentioned in the Specifications, or vice versa, or any incidental accessories or ancillary devices necessary to make ready for operation even if not particularly specified, shall be furnished, delivered and installed under their respective Division without additional expense to the Owner.
- C. Minor details not usually shown or specified, but necessary for proper installation and operation, shall be included in the work as though they were hereinafter specified or shown.
- D. Work under each section shall include giving written notice to the Architect of any materials or apparatus believed inadequate or unsuitable, in violation of laws, ordinances, rules and regulations of authorities having jurisdiction; and any necessary items of work omitted. In the absence of such written notice, it is mutually agreed that work under each section has included the cost of all necessary items for the approved satisfactory functioning of the entire system without extra compensation.
- E. Small scale drilling through walls and floors which may contain asbestos shall be performed by a person with a "restricted asbestos handler allied trades certificate" and shall have a copy of it in his possession at all times while working of the project.

1.2 DRAWINGS

- A. Drawings are diagrammatic and indicate the general arrangement of the system and work included in the Contract. (Do not scale the drawings). Consult the Architectural Drawings and details for exact location of fixtures and equipment; where same are not definitely located, obtain this information from the general construction supervisor.
- B. Work under each section shall closely follow Drawings in layout of work; check Drawings of other Divisions to verify spaces in which work will be installed. Maintain maximum headroom; do not begin work until unsatisfactory conditions are corrected.
- C. Make reasonable modifications in the layout as needed to prevent conflict with work of other Sections of the Specifications or for proper execution of the work.
- D. It shall be understood that the right is reserved by the Architect/Engineer to change the location of equipment and apparatus to a reasonable extent as building conditions may dictate, prior to their installation without extra cost to the Owner.

1.3 SURVEYS AND MEASUREMENTS

- A. Base all measurements, both horizontal and vertical, from established benchmarks. All work shall agree with these established lines and levels. Verify all measurements at site and check the correctness of same as related to the work.

- B. Before proceeding with the work resolve discrepancies between actual measurements and those indicated, which prevent following good practice or intent of the Drawings or Specifications.

1.4 CODES AND STANDARDS

- A. The Codes and Standards listed below apply to all Electrical work codes or standards that are mentioned in these Specifications; the latest edition or revision shall be followed:
 - 1. NEMA - Standards
 - 2. ANSI CI - National Electrical Code (NFPA 70)
 - 3. ANSI C50.13 - Rotating Electrical Machinery
 - 4. NEMA MG2 - Construction and guide for selection, installation and use of electric motors.
 - 5. NEMA MG1 - Motors and Generators
- B. The following State and Local Codes shall apply: New York State Uniform Fire Prevention and Building Code, and Local Building Codes.
- C. The following abbreviations are used within this Division of the Specifications:
 - 1. IES - Illuminating Engineering Society.
 - 2. NEC - National Electrical Code
 - 3. ANSI - American National Standards Institute
 - 4. ASTM - American Society for testing and materials
 - 5. EPA - Environmental Protection Agency
 - 6. IEEE - Institute of Electrical and Electronic Engineers
 - 7. NEMA - National Electrical Manufacturers Association
 - 8. NFPA - National Fire Protection Association.
 - 9. OSHA - Occupational Safety and Health Administration
 - 10. UL - Underwriter's Laboratories

1.5 PERMITS AND FEES

- A. Give all necessary notices, obtain all permits and pay all Government and State sales taxes and fees where applicable, and other costs, including utility connections or extensions in connection with work of this Division. File all necessary plans, prepare all documents and obtain all necessary approvals of all Governmental and State departments having jurisdiction; obtain all necessary certificates of inspections for his work and deliver a copy to the Architect before request for acceptance and final payment for the work. Pay fees for utility construction/connections.
- B. Include in the work, without extra cost to the Owner, any labor, materials, services, and apparatus, Drawings in order to comply with all applicable laws, ordinances, rules and regulations, whether or not shown on the Drawings and/or specified.
- C. All materials furnished and all work installed shall comply with the rules and recommendations of the National Fire Protection Association, with the requirements of the local utility companies, with the recommendations of fire insurance rating organization having jurisdiction and with the requirements of all governmental departments having jurisdiction.
- D. All materials and equipment for the electrical portion of the mechanical systems shall bear the approval label of or shall be listed by the Underwriter's Laboratories, Inc.

1.6 TEMPORARY LIGHT AND POWER

- A. The Contractor shall furnish, install, maintain and, upon direction to do so, remove system of temporary lighting and power for the use of all construction trades.

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- B. The Electrical Contractor shall provide adequate electrical service for the needs of all Contracting Trades.
- C. Wiring shall be provided for temporary use during building construction, including grounding and fused main cut-off switches. Temporary electric lines with branch switches shall be provided for lighting and for taps for electric tools, pumps and other temporary equipment; all connected to a main line looped through floor spaces and up stair wells or shafts. All power outlets shall be grounded to an equipment ground wire in an approved manner. Electric lines shall be extended to power tools, which cannot be located within reach of extension cords.
- D. Light bulbs shall be provided in sufficient quantity to light the building for safety purposes. Extension cords shall be provided as may be essential to the proper execution of the work. Temporary lighting shall be provided for all stairs and other locations where needed for safety or the proper execution of the work.
- E. The Electrical Contractor shall maintain temporary lighting and power systems in good working condition, including the relocation and reinstallation when required to avoid interference with the progress of construction.
- F. Provide ground-fault personnel ampere protection for all single phase, 15 and 20 ampere receptacles. All receptacles and portable cord connectors shall have NEMA standard locking type configurations.
- G. The Electrical Contractor shall turn lights on and off at the beginning and end of each working day of any trade unless otherwise directed. He shall arrange for all temporary light and power for all trades which do not have holidays (days off) similar to the electrical trade. The Electrical Contractor shall patch and repair all openings left damaged by the installation and removal of the temporary light and power.

1.7 MANUFACTURER'S IDENTIFICATION

- A. Manufacturer's nameplate, name or trademark and address shall be attached permanently to all equipment and materials furnished under this Division. The nameplate of a contractor or distributor may not be used.

1.8 SHOP DRAWINGS

- A. Submit for approval detailed shop drawings of all equipment and materials in accordance with working procedures.
- B. Furnish all necessary templates and patterns for installation work and for the purpose of making adjoining work conform; furnish setting plans and shop details to other trades as necessary.
- C. Submit shop drawings for the following:
 - 1. Light fixtures.
 - 2. Receptacles and switches.
 - 3. Overcurrent protective devices.
 - 4. Fire alarm system.

1.9 MATERIALS AND WORKMANSHIP

- A. All materials and apparatus necessary for the work, except as specifically indicated otherwise, shall be new, of first class quality and shall be furnished, delivered, erected, connected and finished in every detail and shall be so selected and arranged as to fit properly into the building spaces. Where no specific kind or quality of material is given, a first class standard article as accepted by the Architect shall be furnished.
- B. Furnish the services of an experienced Superintendent who shall be constantly in charge of the installation of the work, together with all skilled workmen, helpers, and labor to unload, transfer, erect, connect up, adjust, start, operate and test each system.

- C. Unless otherwise specifically indicated on the Drawings or Specifications, all equipment and materials shall be installed in accordance with the recommendations of the manufacturer. This includes the performance of such tests as the manufacturer recommends.

1.10 PROTECTION

- A. Work under each Section shall include protecting the work and materials of all other Sections from damage from work or workmen and shall include making good all damage thus caused. Be responsible for work and equipment until finally inspected, tested, and accepted; protect work against theft, injury or damage; and carefully store material and equipment received on site, which is not immediately installed. Close open ends of work with temporary covers or plugs during construction to prevent entry of obstructing or other foreign material.
- B. Work under each section includes receiving, unloading, uncrating, storing, protecting, setting in place and connecting up completely of any equipment supplied under each section. Work under each section shall also include exercising special care in handling and protecting equipment and fixtures, and shall include the cost of replacing any of the above equipment and fixtures which are missing or damaged by reason of mishandling or failure to protect on the part of the Contractor.

1.11 BASES AND SUPPORTS

- A. Unless specifically noted otherwise, provide all necessary supports, pads, bases, and piers required for all equipment under this Division. Provide all temporary bases and supports as required.
- B. All equipment, unless shown otherwise, shall be securely attached to the building structure. Attachments shall be of a strong and durable nature; any attachments that are, insufficient, shall be replaced as directed by the Architect.

1.12 SLEEVES, INSERTS AND ANCHOR BOLTS

- A. All conduits passing through floors, walls or partitions shall be provided with sleeves having an internal diameter one inch larger than the outside diameter of the conduit, or insulation enclosing the conduit.
- B. Furnish all sleeves, inserts, and anchor bolts necessary to be installed under other sections of the Specifications to accommodate work of this section.
- C. Sleeves through outside walls shall be cast iron sleeves with intermediate integral flange. Sleeves shall be set with ends flush with each face of wall. The remaining space shall be packed with oakum to within 2 inches of each face of the wall. The remaining shall be packed and made watertight with a waterproof compound.
- D. Sleeves through concrete floors or interior masonry walls shall be schedule 40 black steel pipe, set flush with finished walls or ceiling surfaces but extending 2 inches above finished floors.
- E. Sleeves through interior partitions shall be 22 gauge galvanized sheet steel, set flush with finished surfaces or partitions.
- F. Inserts shall be individual or strip type of pressed steel construction with accommodation for removable nuts and threaded rods up to 3/4" inch diameter, permitting lateral adjustment. Individual inserts shall have an opening at the top to allow reinforcing rods up to 1/2" diameter to be passed through the insert body. Strip inserts shall have attached rods having hooked ends to allow fastening to reinforcing rods. Inserts shall be as manufactured by Carpenter and Patterson, Inc. or Grinnell Co., Inc.
- G. Penetrations through fire-rated walls, ceilings and floors in which cables, conduits pass, shall be sealed by a UL approved fire stop fitting classified for an hourly rating equal to the fire rating of the floor, wall or ceiling shall be Gedney Fire Seal Type CFSF of CAPS.

1.13 PAINTING

- A. All finish painting in finished areas shall be performed by others.
- B. All materials shipped to the job site under the Division, such as panels and plates, shall have a prime coat and standard manufacturer's finish unless otherwise specified.
- C. Inaccessible conduits, hangers, supports and anchors and ducts shall be coated prior to installing.
- D. All components of the fire alarm system raceway shall be painted red. This includes but is not limited to conduit, junction boxes, pull boxes.

1.14 CUTTING AND PATCHING

- A. All cutting and patching required for the work of this Division shall be done by this Division.
- B. Work under this Division shall include furnishing, locating and setting inserts and/or sleeves. Do all drilling and cutting necessary for the installation.
- C. All holes cut through concrete slabs and structural steel shall be punched or drilled from the underside. No structural member shall be cut without the written acceptance of the Architect and all such cutting shall be done in a manner directed by him.
- D. Refer to Division 1 for additional requirements.

1.15 SCAFFOLDING, RIGGING, HOISTING

- A. Furnish all scaffolding, rigging, hoisting, and services necessary for erection and delivery into the premises of any equipment and apparatus furnished under this Division. Remove same from premises when no longer needed.

1.16 WATERPROOFING

- A. Where any work penetrates waterproofing, including waterproof concrete and floors in wet areas. Submit proposed method of installation for review by the Architect before beginning work. Furnish all necessary sleeves, caulking and flashing necessary to make opening absolutely watertight.

1.17 ACCESSIBILITY AND ACCESS PANELS

- A. Be responsible for the sufficiency of the size of shafts and chases, the adequate thickness of partitions, and the adequate clearance in double partitions and hung ceilings for the proper installation of the work of this Division.
- B. Locate all equipment, which must be serviced, operated or maintained in fully accessible positions. Minor deviations from Drawings may be allowed for better accessibility with approval of the Architect.

1.18 SHUTDOWNS

- A. When installation of a new system necessitates the temporary shutdown of an existing utility operating system the connection of the new system shall be performed at such time as designated by and in consultation with the Utility Company. Work required after normal business hours shall be done so at no additional cost to the Owner.

1.19 CLEANING

- A. Thoroughly clean all equipment of all foreign substances inside and out before being placed in operation.
- B. If any foreign matter should stop any part of a system after being placed in operation, the system shall be disconnected, cleaned and reconnected whenever necessary to locate and remove obstructions. Any work damaged in the course of removing obstructions shall be repaired or replaced when the system is reconnected at no additional cost to the Owner.
- C. Upon completion of work remove from the premises all rubbish, debris, and excess materials. Any oil or grease stains on floor areas caused by work of this Division shall be removed and floor areas left clean.

1.20 RECORD DRAWINGS

- A. Maintain at the job site a record set of Electrical Drawings on which any changes in location of equipment, panels, devices, and major conduits shall be recorded. Indicate dimensions of all items installed underground or in concrete.

1.21 OPERATING INSTRUCTIONS

- A. Upon completion of all work and all tests, the Contractor shall furnish the necessary skilled labor and helpers for operating his system and equipment for a period specified under each applicable Section of this Division. During this period, he shall instruct the Owner or his representative fully in the operation, adjustment and maintenance of all equipment furnished. Give at least 7 days notice to the Owner in advance of this period.
- B. Furnish four complete bound sets for delivery to the Architect of typewritten or blueprinted instructions for operating and maintaining all systems and equipment included in this Division. All instruction shall be submitted in draft for review prior to final issue. Manufacturer's advertising literature or catalogs may not be used for operating and maintenance instruction.
- C. In the above-mentioned instructions, include the maintenance schedule for the principal items of equipment furnished under this Division.
- D. The manufacturer shall attest in writing that his equipment has been properly installed prior to start. The following is some of the equipment necessary for this inspection: fire alarm system. These letters will be bound into the operating and maintenance books.

1.22 ADJUSTING AND TESTING

- A. After all equipment and accessories to be furnished are in place, they shall be put in final adjustment and subjected to such operating tests as will assure the Architect that they are in proper adjustment and in satisfactory permanent operating condition.
- B. This particular work shall include the services of a factory engineer to inspect the installation and assist in the initial startup and adjustment to the equipment. The period of these services shall be for such time as necessary to secure proper installation and adjustments. After the equipment is placed in permanent operation, there shall be furnished the service of said engineer for the purpose of supervising the initial operation of the equipment and to instruct the personnel responsible for operation and maintenance of the equipment.
- C. At the completion of the job when all panels, devices, etc. are at full working load the Contractor shall provide infrared scan thermographic inspection test of all connection points, terminals, etc. of wires #8 AWG and larger to detect "hot-spots" in the electrical current flow. Correct all hot-spots.

1.23 UNDERWRITER'S LABEL

- A. All electrical equipment and materials shall be new and shall comply with the standards of and shall bear the label of the Underwriter's Laboratories.

1.24 ELECTRICAL SAFETY INSPECTION

- A. Electrical Contractor shall arrange for an Electrical Safety Inspection to be performed by the Local Inspection Agency (i.e.: New York Electrical Inspection Services, Atlantic Inland, Middle Department Inspection Agency). A Certificate of Compliance "Underwriter's Certificate" shall be issued to the Owner. All costs and coordination required shall be included in this Contractors Base Bid.

1.25 REMOVALS

- A. The scope of removals shown on the Drawings are diagrammatic only and indicate the intent of the work to be performed and not the complete scope of demolition and/or removal work. It shall be the responsibility of this Contractor to remove any electrical devices even if not specifically indicated to be removed on these Drawings in order to accommodate new work.
- B. All power conductors, control wiring and conduit associated with mechanical equipment such as fans, pumps, etc. designated for removal on the HVAC Drawings shall be removed clear back to the source of power and disconnected. All motor starters, disconnect switches, control devices, etc. shall be removed. Refer to HVAC Drawings for extent of HVAC removals.
- C. Any device removed shall include (but shall not be limited to) the removal of all associated wiring, conduit, boxes, and auxiliary devices back to the previous device on the circuit, or back to the panelboard or origin of the circuit or any other items that are not incorporated in new layout, until such removal is complete. If the removal of any device interrupts service of any other device that is to remain, the Contractor shall provide all materials and labor to ensure continuity of service to those devices to remain.
- D. Junction boxes, pullboxes, wireways, conduits, or any other devices required to reconnect circuitry shall be installed concealed within the ceilings, partitions and/or walls, floors, no surface or exposed circuiting shall be permitted, unless specifically indicated.
- E. The Electrical Contractor shall patch all openings in walls, ceilings or roof that are left open as a result of removals. Refer to cutting and patching section. Any electrical device removed including but not limited to disconnect switches, panelboards, etc. shall be cleaned, protected and turned over to the Owner or disposed of as directed by Owner.

END OF SECTION

SECTION 26 0125

SCOPE OF WORK

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section.

1.1 SCOPE OF WORK

- A. The work under this section includes all labor, materials, equipment, tools, transportation and the performance of all work necessary and required for furnishing and installing all Electrical work shown on the Contract Documents, as specified herein and as otherwise required by job conditions or reasonably implied, including, but not necessarily limited to the following:
1. The addition of new fire alarm devices (i.e., automatic fan shutdown, for new HVAC equipment) and the replacement of the existing ones as shown on Drawings.
 2. The contractor shall dispose of all debris, including but not limited to fixtures, equipment, lamps, ballast, wiring devices and the like in accordance with, as defined by governing law and regulations of the jurisdiction where the work is being performed.
 3. Provisions for temporary fire prevention actions to be taken during the period of construction until the fire alarm system is operational.
 4. Conduit, conduit fittings, junction and pull boxes and all appurtenances necessary for the raceway systems including necessary supports and fasteners.
 5. Electrical conductors, connectors, fittings and connection lugs.
 6. Branch circuit devices, outlet boxes, pull boxes, motor disconnect switches, etc.
 7. Power wiring to HVAC and Plumbing equipment including disconnect switches as shown and/or required by NEC.
 8. Lighting fixtures and lamps.
 9. Remove and replace existing telephone CAT 6 bulkhead with new purple color bulkhead and match existing wiring configuration. Provide new stainless steel cover plate.
 10. Remove and replace existing data CAT 6 bulkhead with blue color bulkhead and match existing wiring configuration. Provide new stainless steel cover plate.
 11. Remove existing receptacle and replace with new. Provide new stainless steel cover plate.
 12. Existing call-in button shall be removed stored with bubble wrap, cleaned and reinstalled into existing junction box once new wall and finish is completed.
 13. Existing speaker and speaker bridge support shall be removed and reinstalled using existing wiring onto new ceiling tile.

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14. Existing smoke detector shall be removed from ceiling tile and ceiling tile shall be disposed by EC. Smoke detector shall be stored with bubble wrap, cleaned, and reinstalled onto new ceiling tile.
 15. Existing camera shall be removed and reinstalled by owner.
 16. Existing WAP's shall be removed and reinstalled by owner.
 17. Existing classroom recessed mounted speaker shall be dusted and cleaned by EC.
 18. Existing fire alarm device shall be removed and reinstalled using existing wiring and existing junction box once new wall and finishes are completed.
 19. Clocks shall be installed by owner.
 20. Existing light fixtures shall be cleaned. Lens shall be removed and wiped down with cleaner along with the reflector.
 21. Existing photocell shall be removed from ceiling tile and ceiling tile shall be disposed by EC. Photocell shall be stored with bubble wrap, cleaned, and reinstalled onto new ceiling tile.
 22. Existing occupancy sensor shall be removed from ceiling tile and ceiling tile shall be disposed by EC. Occupancy sensor shall be stored with bubble wrap, cleaned, and reinstalled onto new ceiling tile.
 23. Existing light switch control shall be remove, stored with bubble wrap, cleaned, and reinstalled once new wall installation has been completed.
 24. Core drilled holes for conduit passing through walls, ceilings and floors.
 25. All necessary cutting, patching and core drilling incidental to the electrical work.
 26. Temporary light and power.
 27. Licenses, permits, inspection and approvals.
 28. Grounding as required as per NEC.
 29. Sleeves for conduit and watertight caulking between conduit and sleeve.
 30. Testing.
 31. Cutting, patching and drilling.
- B. Coordination Drawings (if applicable): Attention is directed to Division 1 for coordination drawing requirements for this project. These drawings are critical to the proper execution of the work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

1.2 WORK NOT INCLUDED

- A. The following related items will be done by others:
1. Furnishing motors and controllers.

END OF SECTION

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FULLER AND D'ANGELO, P.C.
ARCHITECTS AND PLANNERS

SECTION 26 0150

APPROVED MANUFACTURERS

PART 1 - GENERAL

Applicable provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section.

1.1 APPROVED MANUFACTURERS

A. The following list of manufacturers constitutes an approved list:

1.	Disconnect Switches	Siemens, Square D, GE
2.	Conduit (steel)	Walker, Youngstown, Steelduct, Triangle
3.	Conduit Fittings (steel)	Appleton, Crouse-Hind, O-Z, T & B, M & W
4.	Wire and Cable	General, South Wire, Triangle, Rome, Hatfield, Crescent, Cerro
5.	Splicing Connectors	3M, O-Z, Thomas & Betts
6.	Outlet Boxes	Appleton, National, Steel City, Raco
7.	Wiring Devices	Arrow-Hart, Hubbell, P & S
8.	Fuses	Bussman, Ferraz-Shawmut, Littlefuse
9.	Lamp	GE, Sylvania, Philips
10.	Motion Sensors	Watt Stopper, Sensorswitch
11.	Fire Alarm System	Edwards System Technologies

- B. All materials and appliances shall have listing of Underwriters Laboratories, Inc. and be so labeled, or shall conform to their requirements, in which case certified statements to that effect shall be furnished by the manufacturer with a copy of an examination report by a recognized independent testing laboratory acceptable to the Architect and his Engineer. Use new materials and appliances throughout.
- C. Where several types or makes of materials are specified, the Contractor has the option of using any of these, but after a type or make has been selected and has received the approval of the Architect, it shall be used throughout.
- D. The Contractor shall provide all structural supports for the proper attachment of equipment supplied by him and also for all equipment supplied to him under other sections of the Specifications for mounting and connections.
- E. Secure all equipment to the building structure independently. Do not secure to work of other trades such as ceiling lath, piping racks, etc., unless specified or noted otherwise.

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- F. Wall mounted equipment shall be directly secured to wall by means of steel bolts. Maintain at least 1/4" air space between equipment and supporting wall. Pre-fabricated steel channels providing a high degree of mounting flexibility, such as those manufactured by Kindorf and Unistrut, shall be used for mounting arrays of equipment.
- G. All fastening, supports, hangers, anchors, etc., shall be of a type made for the specific purpose. On masonry walls, metallic expansion shield and machine screws shall be used. Screws with wooden plugs or anchors will not be acceptable on any part of the work.

END OF SECTION

SECTION 26 0200

CONDUIT

PART 1 - GENERAL

Applicable provisions of the conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 WORK INCLUDED

- A. The work under this section shall include the furnishing of all material, labor, tools and services necessary to install rigid metal conduit, electrical metallic tubing and liquid tight flexible metal conduit, including all fittings to complete all work shown on the Drawings or specified herein.

1.2 RELATED WORK

- A. Cutting and patching.
- B. Trenching: Excavation and backfill for conduit and utility on site.
- C. Sheet metal flashing and trim.

PART 2 - PRODUCTS

2.1 RIGID STEEL CONDUIT

- A. Industry standard heavy wall conduit.
- B. Minimum 3/4" trade size.
- C. Threaded.
- D. Hot dipped galvanized finish by means of plating after cutting of threads.

2.2 INTERMEDIATE METAL CONDUIT

- A. Industry standard steel conduit.
- B. Minimum 3/4" trade size.
- C. Threaded.
- D. Hot dipped galvanized finish by means of plating after cutting of threads.

2.3 ELECTRICAL METALLIC TUBING

- A. Industry standard thin wall conduit of galvanized steel only.
- B. Minimum 3/4" trade size.
- C. Maximum 4" trade size.

2.4 FLEXIBLE METAL CONDUIT

- A. Galvanized steel tape formed into an industry standard interlocking coil.
- B. Minimum 3/4" trade size except for connection of lighting fixtures.
- C. Grounding type.
- D. Separate ground conductor.
- E. Use for short connections to motor terminal box, other vibrating equipment using a minimum length of 18" with 50% slack and a maximum of 6'.
- F. From outlet box to recessed lighting fixtures with a maximum length of 6'.

2.5 WIREWAYS

- A. Lay-in type, UL listed as wireway or auxiliary gutter.
- B. Wireway shall be of code gauge steel construction (UL standard for Wireway Auxiliary Gutters and Associated Fittings) with removable cover. Tamperproof screws shall be provided for sealing covers to prevent access by unauthorized personnel. Wireway shall be provided with knockouts.
- C. Connector and covers shall be attached so that removal of connectors is not necessary to utilize the lay-in feature.
- D. Finish: All sheet metal parts shall be provided with a rust inhibiting phosphating coating and baked enamel finish. All hardware shall be plated to prevent corrosion. All screws extending into the wireway shall be protected by spring nuts or otherwise guarded to prevent wire insulation damage.

2.6 CONDUIT SUPPORTS

- A. Conduit clamps, straps and supports: Steel or malleable iron.

2.7 CONDUIT FITTINGS

- A. Use compression fittings for all EMT in exposed areas. Utilize set screw fittings only above hung ceilings and concealed areas.

2.8 SURFACE METAL RACEWAY

- A. Metal raceway shall be of a two-piece design with a base and snap-on cover.
- B. Raceway and all components shall be listed by Underwriters Laboratories
- C. Single Channel: Steel, zinc plated, off-white finish suitable for repainting. Two piece design with metal base and snap-on cover. Wire Mold V700, Hubbell Inc. 750 Series, or Panduit PMR5/PMR7
- D. Dual Channel: Steel, galvanized, off-white finish but suitable for repainting. Two-piece design with metal base and snap-on cover, minimum 0.04" thick base and cover. Base shall be divided by a removable barrier section. Provide duplex receptacles mounted in top cell and communication outlets in the bottom cell. Coordinate communications jack requirements with owner's IT personnel. Wiremold V4000, Wiremold DS4000 Series, Hubbell Inc. 4000 Series or Panduit PMR40.

PART 3 - EXECUTION

3.1 CONDUIT SIZING, ARRANGEMENT AND SUPPORT

- A. Minimum size - 3/4". Provide grounding bushings on all conduits 1-1/4" and larger.
- B. Arrange conduit to maintain headroom and present a neat appearance.
- C. Route exposed conduit and conduit above accessible ceilings parallel and perpendicular to walls and adjacent piping.
- D. Draw up couplings and fittings full and tight. Protect threads cut in field from corrosion. Paint newly threaded joints of steel conduit with T & B "Kopershield" compound before installation. Running threads prohibited; use three-piece unions or split couplings instead. Use only compression fittings for all EMT in areas where it will be exposed in finished and unfinished areas. Provide set screw fittings only when installed above hung ceilings.
- E. Maintain minimum 6-inch clearance between conduit and piping. Maintain 12-inch clearance between conduit and heat sources such as flues; steam pipes and heating appliances.
- F. Arrange conduit supports to prevent distortion of alignment by wire pulling operations. Fasten conduit using galvanized straps, lay-in adjustable hangers, clevis hangers, or bolted split stamped galvanized hangers.
- G. Group conduit in parallel runs where practical and use conduit rack constructed of steel channel with conduit straps or clamps. Provide space for 25 percent additional conduit.
- H. Do not fasten conduit with wire or perforated pipe straps. Remove all wire used for temporary conduit support during construction, before conductors are pulled.
- I. Exposed conduit on ceiling shall be parallel or perpendicular to wall and vice versa to ceiling when installed on wall. Secure conduit clamps and supports to masonry materials by toggle bolt, expansion bolt or steel insert. Spacing of conduit supports shall not exceed 7 feet.

3.2 CONDUIT INSTALLATION

- A. Cut conduit square using a saw or pipe cutter, Deburr cut ends.
- B. Bring conduit to the shoulder of fittings and couplings and fasten securely.
- C. Use conduit hubs or sealing locknuts for fastening conduit to cast boxes and for fastening conduit to sheet metal boxes in damp or wet locations.
- D. Install no more than the equivalent of three 90-degree bends between boxes.
- E. Use conduit bodies to make sharp changes in direction, as around beams.
- F. Use hydraulic one-shot conduit bender or factory elbows for bends in conduit larger than 2-inch size.
- G. Avoid moisture traps where possible; where unavoidable, provide junction box with drain fitting at conduit low point.
- H. Use suitable conduit caps to protect installed conduit against entrance of dirt and moisture.
- I. Provide No. 12 AWG insulated conductor or suitable pull string in empty conduit, except sleeves and nipples.

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- J. Install expansion-deflection joints where conduit crosses building expansion or seismic joints.
- K. Where conduit penetrates fire-rated walls and floors, provide pipe sleeves two sizes larger than conduit; Pack void around conduit with fire-stop fittings with UL listed fire rating equal to wall or floor ratings; Seal opening around conduit with UL listed foamed silicone elastomer compound.
- L. Installation of conduit in slab shall comply with ACI 318.
- M. Route conduit through roof openings for piping and duct work where possible; otherwise, route through roof with pitch pocket.
- N. Maximum size conduit in slabs above grade: 1 inch. Do not route conduits to cross each other in slabs above grade. Conduits crossing each other may not be larger than 3/4 inch.
- O. All conduit used for fire alarm system shall be painted red.

3.3 CONDUIT INSTALLATION OF SCHEDULE

- A. Underground installations: PVC minimum Schedule 40 conduit, unless otherwise noted on Drawings.
- B. Installations in or under concrete slab: PVC minimum Schedule 40 conduit, unless otherwise noted on Drawings.
- C. Exposed outdoor locations: Rigid galvanized steel conduit.
- D. Wet interior locations: Rigid galvanized steel conduit.
- E. Concealed dry interior locations and above accessible ceiling for receptacle and lighting branch wiring: Electrical metallic tubing up to first junction box and flexible metallic tubing (MC cable only) thereafter.
- F. Concealed dry interior locations other than receptacle and lighting branch wiring: Electrical metallic tubing.
- G. Concealed dry interior locations and above accessible ceiling for fire alarm runs: Fire alarm armored cable type MC with red stripe as manufactured by AFC series 1800.
- H. Concealed and exposed dry interior location for feeder runs: Electric metallic tubing.
- I. Exposed dry interior in unfinished locations other than Boiler Rooms: Electric metallic tubing.
- J. Final connections to motors: Flexible metallic tubing (MC cable). Minimum of 10" to maximum of 6' for connections to motors.
- K. Existing exposed dry interior locations (finished spaces), for branch wiring and fire alarm wiring, one-piece steel raceway (similar to Wiremold V-500, V-700).
- L. Final connections to motors: Flexible metallic tubing (MC cable). Minimum of 18" to maximum of 6' for connections to motors.
- M. All conduit installed in boiler room up to 10'-0" AFF and lower shall be rigid galvanized steel conduit. All conduit above 10'-0" shall be electric metallic tubing.
- N. Final connections to equipment and/or motors in boiler room, outdoors and potentially wet indoor areas: liquid tight, flexible; minimum of 18" to maximum 6'-0" connections.

END OF SECTION

SECTION 26 0300

WIRE AND CABLE

PART 1 - GENERAL

Applicable provisions of the conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 WORK INCLUDED

- A. The work under this section shall include the furnishing of all material, labor, tools and services necessary to wire and cable in raceway specified in other sections to complete all work shown on the Drawings or specified herein.

PART 2 - PRODUCTS

2.1 BUILDING WIRE

- A. Thermoplastic-insulated building wire: Type THHN.
- B. Rubber insulated building wire: NEMA WC 3.
- C. Feeders and branch circuits larger than number 6 AWG: Copper, stranded conductor, 600 volt insulation, type THHN.
- D. Feeder and branch circuits 6 AWG and smaller: Copper conductor, 600 volt insulation, THWN/THHN, 6 and 8 AWG, stranded conductor; Smaller than 8 AWG, solid conductor.
- E. Service feeders and branch circuits in conduit in contact with earth shall be type XHHW.
- F. Control circuits: Copper, stranded conductor 600 volt insulation, THHN.

2.2 ARMORED CABLE

- A. BX or pre-manufactured cables are not acceptable except for Type MC for branch wiring after the first junction box (for receptacle and lighting branch circuits) and final connections to motors in interior dry accessible locations, minimum length shall be 18" with a maximum length of 6' for motors.
- B. Type MC fire alarm cable with red stripe for concealed fire alarm wiring as manufactured by AFC series 1800.
- C. Armored cable, Type MC size 14 through 6 AWG: Copper conductor, 600 volt thermoplastic insulation, rated 90 degrees C., with separate green ground conductor.

2.3 REMOTE CONTROL AND SIGNAL CABLE

- A. Control cable for class 2 or class 3 remote control and signal circuits:
- B. Copper conductor, 300 volt insulation, rated 60 degree C, individual conductors twisted together shielded and covered with a nonmetallic jacket; UL listed for use in air handling ducts, hollow spaces used as ducts and plenums. Verify wiring type with manufacturer.

2.4 COLOR CODING

- A. All wiring shall be color-coded. Neutral wire shall be white throughout and each phase wire shall be identified any place in the system by its color code. All conductors in panel boxes and junction boxes shall be properly tagged with red non-flammable tags properly attached.
- B. Wire shall be color coded as follows:
- | | <u>120/208 volt system</u> | <u>Fire Alarm</u> |
|---------|----------------------------|-------------------|
| A Phase | Black | Red |
| B Phase | Red | |
| C Phase | Blue | |
- C. Equipment ground wires or ground jumpers shall be Green.
- D. In addition to the basic color-coding described the following additional identification and tagging shall apply.
1. The switch legs for the local wall switches and in switch panel shall have distinctive stripes. In instances where color-coding is not practicable, such as short runs of heavy feeder cables, taping the ends of the cable with coded colors as indicated above or tagging will be permitted.
 2. Cables shall be tagged in all pull boxes, wireways and wiring gutters of panels.
 3. Where two (2) or more circuits run to or through a control device, outlet box or junction box, each circuit shall be tagged as a guide in making connections.
 4. Tags shall identify wire or cable by number and/or piece of equipment served as shown on the Drawings.

PART 3 - EXECUTION

3.1 GENERAL WIRING METHODS

- A. Use no wire smaller than 12 AWG for power and lighting circuits, and no smaller than 14 AWG for control wiring.
- B. Use 10 AWG conductor for 20 ampere, 120 volt branch circuit home runs longer than 75 feet and for 20 ampere.
- C. Place an equal number of conductors for each phase of a circuit in same raceway or cable. No more than one of each phase shall be supported by a single neutral.
- D. Splice only in junction or outlet boxes.
- E. Neatly tag, identify, train and lace wiring inside boxes, equipment and panelboards.
- F. Make conductor lengths for parallel circuits equal.

3.2 WIRING INSTALLATION IN RACEWAYS

- A. Pull all conductors into a raceway at the same time. Use UL listed wire pulling lubricate for pulling 4 AWG and larger wires.
- B. Completely and thoroughly swab raceway system before installing conductors.

- C. Install wire in raceway after interior of building has been physically protected from the weather and all mechanical work likely to injure conductors has been completed.

3.3 CABLE INSTALLATION

- A. Support cables above accessible ceilings; do not rest on ceiling tiles. Use spring metal clips or metal cable ties to support cables from structure (not ceiling suspension system). Include bridle rings or drive rings.
- B. Use suitable cable fitting and connectors.

3.4 WIRING CONNECTIONS AND TERMINATIONS

- A. Splice only in accessible junction boxes.
- B. Use solderless pressure connections with insulating covers for copper wire splices and tape, 8 AWG and smaller. For 10 AWG and smaller, use insulated spring wire connectors with plastic caps.
- C. Provide extended gutters and tap blocks or pull boxes with tap rail systems similar to Burndy MT Series or Burndy Electroraill system for wire splices 6 AWG and larger.
- D. Tape uninsulated conductors with electrical tape to 150 percent of the insulation value of conductor.
- E. Thoroughly clean wires before installing lugs and connectors.
- F. Make splices, taps and terminations to carry full ampacity of conductors without perceptible temperature rise.
- G. Terminate spare conductors with electrical tape.

3.5 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of the Specifications.
- B. Inspect wire and cable for physical damage and proper connection.
- C. Torque test conductor connections and terminations to manufacturer's recommended values.
- D. Perform continuity test on all power and equipment branch circuit conductors. Verify proper phasing connections.

3.6 WIRE AND CABLE INSTALLATION SCHEDULE

- A. All wiring and cable shall be installed in conduit unless otherwise noted. Refer to conduit section 26 0200 for conduit types at various location.

END OF SECTION

SECTION 26 0320

OVERCURRENT PROTECTIVE DEVICES

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 WORK INCLUDED

- A. Work of this section includes all labor, materials, equipment and services necessary to complete the electrical work as shown of the Drawings and specified herein, including, but not limited to, the following:
- B. Fuses
 - 1. Current limiting cartridge fuses.
 - 2. Time delay cartridge fuses.
- C. Circuit Breakers
 - 1. Standard molded case circuit breakers "bolted in" type.
 - 2. Solid state circuit breakers.
 - 3. Current limiting circuit breakers.
 - 4. Enclosed circuit breakers.

1.2 SUBMITTALS

- A. Shop drawings showing dimensions, location of equipment and method of installation.
- B. Product Data: Manufacturer's printed data, catalog cuts.

1.3 DISCONNECT SWITCHES

- A. Fusible switch assemblies: Quick-make, quick-break, load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover when switch is in ON position. Handle lockable in OFF position. Fuse clips shall be designed to accommodate Class R, J fuses.
- B. Non-fusible switch assemblies: Quick-make, quick-break, load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover when switch is in ON position. Handle lockable in OFF position.
- C. Enclosures: NEMA Type 1, 3R or 4 as required.

1.4 FUSES

- A. Voltage ratings of fuses shall be suitable for the supply characteristics to which they are applied.
- B. Fuse type and size shall be suitable for installation in related disconnect switch or circuit breaker.
- C. Current limiting fuses shall be as follows:

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1. Regardless of actual available fault current, they shall, at full recovery voltage, be capable of safely interrupting fault currents of 200,000 amperes RMS symmetrical or 280,000 amperes RMS asymmetrical, deliverable at the line side of the fuse.
 2. They shall have average melting time-current characteristics to meet the Underwriters' Laboratories requirements for "Class RK-1" 0-600 amp fuses.
- D. Regardless of actual available fault current, they shall be capable of limiting peak let through current to the following values based on 200,000 amperes RMS symmetrical or 280,000 amperes asymmetrical being available:

<u>Rating In Amperes</u>	<u>Peak Let Through Current In Amps</u>
15-30	6,000
35-50	8,000
70-100	12,000
125-200	20,000
225-601	38,000

- E. Fuses shall be rejection type. Fuse clip shall be rejection type.

- F. Fuse Type and Application Table:

<u>Category of Application</u>	<u>Acceptable Fuse Types</u> (Bussman Designations @ 600V)
Motor feeder	LPS below 600A
Power panel feeders	LPS below 600A
Safety switches	LPS

1.5 CIRCUIT BREAKERS

- A. "Bolted-In" type, manually operated, quick-make, quick-break, mechanically trip-free operating mechanisms for simultaneous operation, of all poles, with contacts, arc interrupters and trip elements for each pole. "Plug-in" breakers are not permitted.
- B. Tripping units shall be "thermal-magnetic" type having bimetallic elements for time delay overload protection, and magnetic elements for short circuit protection.
- C. Manually operable by mean of toggle type operating handles having tripped positions midway between the "on-off" position. Handle to be clearly labeled as to breaker rating.
- D. Minimum frame size for all circuit breakers, 1, 2, or 3 pole shall be 100 amperes.
- E. Their interrupting rating shall not be less than 25,000 amperes RMS symmetrical at 208 volt for distribution panels and 10,000 amperes for power panels.

1.6 APPLICATIONS

- A. Category of Application for Fuses:
 - 1. Fused safety switch.
 - 2. Combination motor starters.
- B. Category of Application for Circuit Breakers:
 - 1. Panelboards.
 - 2. Individual enclosures.
 - 3. Combination motor starters.

1.7 SPARE FUSES

- A. Upon Engineer's acceptance of the electrical distribution system, provide spare fuses as follows: 10% of each type and rating installed 600 amperes and smaller (minimum of 3). Provide spare fuse cabinet with directory to store all spare fuses. Locate as directed by Engineer and/or Owner.

1.8 APPROVED MANUFACTURERS

- A. Fuses: Bussman, Ferraz-Shawmut.
- B. Circuit Breakers: Siemens, General Electric, Square D.

1.9 INSTALLATION

- A. All material installation shall be in accordance with manufacturer recommendations and the provisions of all applicable codes.
- B. All fuses and circuit breakers shall be selectively coordinated.
- C. Install disconnect switches where indicated on Drawings.
- D. Install fuses in fusible disconnect switches.
- E. Disconnects shall have NEMA 3R enclosure.

1.10 RECORD DRAWINGS

- A. Shop drawings showing dimensions, location of equipment and method of installation.
- B. Product Data: Manufacturer's printed data, catalog cuts, performance curves.

END OF SECTION

SECTION 26 0350

BOXES

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 WORK INCLUDED

- A. The work under this section shall include the furnishing of all material, labor, tools and services necessary to install wall and ceiling outlet boxes, floor boxes, pull and junction boxes to complete all work shown on the Drawings or specified herein.

1.2 RELATED WORK

- A. Access doors.
- B. Wiring devices: Service fittings and fire-rated poke-through fittings for floor boxes.
- C. Cabinets and enclosures.

PART 2 - PRODUCTS

2.1 OUTLET BOXES

- A. Sheet metal outlet boxes: ANSI/NEMA OS 1; Galvanized steel, with 1/2 inch male fixture studs where required.
- B. Cast boxes: Cast fer alloy, deep type, gasketed cover, threaded hubs.
- C. Typical receptacle box shall be 4" square metal boxes, 30.8 cubic inch capacity with brackets as required. Provide 4" square raised device covers.

2.2 PULL AND JUNCTION BOXES

- A. Sheet metal boxes: ANSI/NEMA OS 1; Galvanized steel.
- B. Sheet metal boxes larger than 12 inches in any dimension: hinged enclosure in accordance with Section 26 0450.
- C. Cast metal boxes for outdoor and wet location installations: NEMA 250; Type 4 and type 6, flat-flanged, surface-mounted junction box, UL listed as raintight. Galvanized cast iron box and cover with ground flange, neoprene gasket, and stainless steel cover screws.
- D. Cast metal boxes for underground installation: NEMA 250; Type 4, inside flanged, recessed cover box for flush mounting, UL listed as raintight. Galvanized cast iron box and plain cover with neoprene gasket and stainless cover screws.

PART 3 - EXECUTION

3.1 COORDINATION OF BOX LOCATIONS

- A. Provide electrical boxes as required in excess of that shown on Drawings and as required for splices, taps, wire pulling, equipment connections and code compliance.
- B. Electrical box locations shown on Contract Drawings are approximate unless dimensioned. Verify location of floor boxes and outlets in offices and work areas prior to rough-in.
- C. Locate and install boxes to allow access. Where installations are accessible, coordinate locations and sizes of required access doors with Division 1.
- D. Locate and install to maintain headroom and to present neat appearance.

3.2 OUTLET BOX INSTALLATION

- A. Do not install boxes back-to-back in walls. Provide minimum 6 inch separation, except provide minimum 24 inch separation in acoustic-rated walls.
- B. Locate boxes in masonry walls to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat openings for boxes.
- C. Provide knockout closures for unused openings.
- D. Support boxes independently of conduit except for cast iron boxes that are connected of rigid metal conduits, both supported within 12 inches of box.
- E. Use multiple-gang boxes where more than one device is mounted together; do not use sectional boxes. Provide barriers to separate wiring of different voltage systems.
- F. Install boxes in wall without damaging wall insulation.
- G. Coordinate mounting heights and locations of outlets mounted above counters, benches and backspaces.
- H. Position outlets to locate luminaries as shown on reflected ceiling plans.
- I. In inaccessible ceiling areas, position outlets and junction boxes within 6 inches of recessed luminaire, to be accessible through luminaire ceiling opening.
- J. Provide recessed outlet boxes in finished areas; secure boxes to interior wall and partition studs, accurately positioning to allow for surface finish thickness. Use stamped steel stud bridges for flush outlets in hollow stud wall, and adjustable steel channel fasteners for flush ceiling outlet boxes.
- K. Align wall-mounted outlet boxes for switches, thermostats, and similar devices.
- L. Provide cast outlet boxes in exterior locations exposed to the weather and wet locations.

3.3 PULL AND JUNCTION BOX INSTALLATION

- A. Locate pull boxes and junction boxes above accessible ceilings or in unfinished areas.
- B. Support pull and junction boxes independent of conduit.

3.4 FLOOR BOX INSTALLATION

- A. Set boxes level and flush with finish flooring material.
- B. Use cast iron floor boxes for installation in slab on grade.

END OF SECTION

SECTION 26 0400

WIRING DEVICES

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section. Submit shop drawings for checking and approval.

1.1 WORK INCLUDED

- A. The work under this section shall include the furnishing of all materials, labor, tools and services necessary to install receptacles, service fittings device plates and box covers to complete all work shown on the Drawings or specified herein.

1.2 REFERENCES

- A. FS W-C-596 - Electrical power connector, plug, receptacles and cable outlet.
- B. FS W-S-896 - Switch, toggle.
- C. NEMA WD 1 - General purpose wiring devices.
- D. NEMA WD 5 - Specific-purpose wiring devices.

1.3 SUBMITTALS

- A. Submit product data under Provisions of Contract and Division 1.
- B. Provide product data showing configurations, finishes, dimensions and manufacturer's instructions.

PART 2 - PRODUCTS

2.1 RECEPTACLES

- A. Convenience and straight-blade receptacles: 125 V, 2 pole, 3 wire, 20 ampere specification grade, ground fault interrupting or isolated ground type.
- B. Internal ground clip of receptacles shall be in one piece with the receptacle mounts.
- C. Receptacles with riveted ground clips will not be accepted.
- D. Isolated ground type receptacle shall be orange in color.

2.2 WALL SWITCHES

- A. Wall switches for lighting circuits and motor loads under 1/2 hp: AC general use snap switch with toggle handle, rated 20 amperes and 120-277 volts AC.
- B. Handle: Ivory plastic.
- C. Pilot light type: Lighted handle. Pilot strap in adjacent gang.
- D. Locator type: Lighted handle.

2.3 COVER PLATES

- A. Decorative cover plate: Stainless steel 302/304 smooth Hubbell "S" series.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install specific use receptacles at heights shown on contract drawings.
- B. Install plates on switch, receptacle, and blank outlets in finished areas, using jumbo size plates for outlets installed in masonry walls.
- C. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings and on surface mounted outlets.
- D. Install devices and wall plates flush and level.

END OF SECTION

SECTION 26 0450

CABINETS AND ENCLOSURES

PART 1 - GENERAL

Applicable Provisions of the conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 WORK INCLUDED

- A. The work under this section shall include the furnishing of all materials, labor, tools and services necessary to install hinged cover enclosures to complete all work shown on the Drawings or specified herein.

1.2 REFERENCES

- A. NEMA 250 - Enclosures for electrical equipment (1000 volts maximum).
- B. Submittals - Submit product data under Provisions of Contract and Division 1.

PART 2 - PRODUCTS

2.1 HINGED COVER ENCLOSURES

- A. Construction: NEMA 250; Type 1 and 3R steel.
- B. Finished: Manufacturer's standard enamel finish.
- C. Covers: Continuous hinge, held closed by operable by key.
- D. Provide barriers between normal and emergency wiring. Barriers shall be of non-current carrying material of adequate thickness for mechanical strength but in no case less than 1/4". Each barrier shall have an angle iron framing support all around.

2.2 FABRICATION

- A. Shop assemble enclosures in accordance with ANSI/NEMA ISC 6.
- B. Provide knockouts on enclosures.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install enclosures plumb; Anchor securely to wall and structural supports at each corner, minimum.
- B. Provide necessary feet for free-standing equipment enclosures.
- C. Install trim plumb.

END OF SECTION

SECTION 26 0500

SUPPORTING DEVICES

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section. Submit shop drawings for checking and approval.

1.1 WORK INCLUDED

- A. The work under this section shall include the furnishing of all material, labor, tools and services necessary to install rigid metal conduit, electrical metallic tubing and flexible metal conduit, including all fittings to complete all work shown on the Drawings or specified herein.

1.2 RELATED WORK

- A. Conduit and equipment supports.
- B. Fastening hardware.

1.3 REFERENCES

- A. Conduit supports.

1.4 QUALITY ASSURANCE

- A. Support system shall be adequate for weight of equipment and conduit, including wiring, which they carry.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Support channel: Galvanized or painted steel.
- B. Hardware: Corrosion resistant.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Fasten hanger rods, conduit clamps, outlet, junction boxes to building structure using preset inserts, beam clamps and spring steel clips.
- B. Use toggle bolts or hollow wall fasteners in hollow masonry, plaster, or gypsum board partitions and walls; Expansion anchors or preset inserts in solid masonry walls; self-drilling anchors or expansion anchors on concrete surfaces; sheet metal screws in sheet metal studs and wood screws in wood construction.
- C. Do not fasten supports to piping, ductwork, mechanical equipment, or conduit.
- D. Do not use powder-actuated anchors.
- E. Fabricate supports from structural steel or steel channel, rigidly welded or bolted to present a neat appearance. Use hexagon head bolts with spring lock washers under all nuts.

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- F. In wet locations install free-standing electrical equipment on concrete pads.
- G. Install surface mounted cabinets and panelboards with minimum of four anchors. Provide steel channel supports to stand cabinet one inch off wall.
- H. Bridge studs top and bottom with channels to support flush mounted cabinets and panelboards in stud walls.

END OF SECTION

SECTION 26 0550

GENERAL LABELING AND IDENTIFICATION

PART 1 - GENERAL

Applicable Provisions of the conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 WORK INCLUDED

- A. The work under this section shall include the furnishing of all material, labor, tools and services necessary to install nameplates, tape labels, wire markers, conduit color coding to complete all work shown on the Drawings or specified herein.

1.2 RELATED WORK

- A. Painting.

1.3 SUBMITTALS

- A. Submit shop drawings under provisions of Division 1.
- B. Include schedule for nameplates and tape labels.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Nameplates: Engraved three-layer laminated plastic, white letters on a black background.
- B. Tape labels: Embossed adhesive tape with 3/16 inch black letters on a white background.
- C. Wire and cable markers: Cloth markers, split sleeve or tubing type.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. De-grease and clean surfaces to receive nameplates and tape labels.
- B. Install nameplates and tape labels parallel to equipment lines.
- C. Secure nameplates to equipment fronts using screws, rivets, or adhesive. Secure nameplate to inside face of recessed panelboard doors in finished locations.
- D. Embossed tape will not be permitted for any application. Use embossed tape only for identification of individual wall switches and receptacles and control device stations.

3.2 WIRE IDENTIFICATION

- A. Provide wire markers on each conductor in panelboard gutters, pull boxes, outlet and junction boxes and at load connection. Identify each branch circuit or feeder number for power and lighting circuits and each control wire number as indicated on equipment manufacturer's shop drawings for control wiring.

3.3 NAMEPLATE ENGRAVING SCHEDULE

- A. Individual circuit breakers, switches and motor starters in panelboards, switchboards and motor control centers: 1/4 inch, identify circuit and load served, including location.
- B. Individual circuit breakers, enclosed switches and motor starters: 1/2 inch, identify load served.

3.4 FIRE ALARM

- A. All fire alarm raceway components shall be painted red and identified.

END OF SECTION

SECTION 26 0600

DISCONNECT SWITCHES

PART 1 - GENERAL

Applicable provisions of the conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 WORK INCLUDED

- A. The work under this section shall include the furnishing of all materials, labor, tools and services necessary to install disconnect switches, fuses and enclosures to complete all work shown on the Drawings or specified herein.

1.2 SUBMITTALS

- A. Submit product data under Provisions of Contract and Division 1.
- B. Include outline Drawings with dimensions, equipment ratings for voltage, capacity, horsepower and short circuit.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS - DISCONNECT SWITCHES

- A. Siemens.
- B. Square 'D'.
- C. General Electric.
- D. Or approved equal.

2.2 DISCONNECT SWITCHES

- A. Fusible switch assemblies: Quick-make, quick-break, load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch is in ON position. Handle lockable in OFF position. Fuse clips: Designed to accommodate class R, J fuses.
- B. Non-fusible switch assemblies: Quick-make, quick-break, load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position. Handle lockable in OFF position.
- C. Enclosures: NEMA Type 1; 3R; 4 as indicated on Drawings.

2.3 ACCEPTABLE MANUFACTURERS - FUSES

- A. Bussman.
- B. Ferraz-Shawmut.
- C. Or approved equal.

2.4 FUSES

- A. Fuses 600 amperes and less: ANSI/UL 198E, class RK1; RK5; Dual element, current limiting, time delay, 250 volt.
- B. Interrupting rating: 200,000 rms amperes.
- C. An additional fuse of each size required to be supplied.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install disconnect switches where indicated on Drawings.
- B. Install fuses in fusible disconnect switches.
- C. Disconnects installed outdoors shall have NEMA 3R enclosures.
- D. Disconnects installed indoors in dry locations shall have NEMA 1 enclosure.

END OF SECTION

SECTION 26 0650

GROUNDING

PART 1 - GENERAL

Applicable provisions of the conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 WORK INCLUDED

- A. The work under this section shall include the furnishing of all materials, labor, tools and services necessary to install the power system grounding to complete all work shown on the Drawings or specified herein.

1.2 RELATED WORK

- A. Raceways.
- B. Connection Equipment.
- C. Electric Equipment.
- D. Tests and Acceptance.

1.3 SUBMITTALS

- A. Manufacturers' data, catalog cuts of ground rods, connectors, bushings, etc., along with recommended installation procedures.

PART 2 - PRODUCTS

2.1 WIRING

- A. All wiring used for grounding shall be insulated copper, unless otherwise noted. Size shall be in accordance with code for the application, minimum #12.
- B. Where used in conjunction with computer equipment, grounding conductors shall be equal in size to the phase conductors.
- C. Avoid splices in ground conductors.

2.2 RACEWAY

- A. Grounding continuity shall be maintained for all metallic raceways.
- B. Provide bonding jumpers across metal parts separated by non-conducting materials.
- C. Where a grounding conductor is installed as a supplement to metallic raceway serving as the equipment grounding conductor, bonding conductor to the raceway at each end.
- D. All raceway accessories, such as locknuts, bushings, expansion fittings, etc. shall be installed to provide maximum metal-to-metal bonding.

2.3 CLAMPS

- A. Provide approved ground clamps for connecting grounding conductors to pipe, conduits, wireways, building steel, grounding rods, etc.

- B. Where bond will be in an inaccessible location or as an alternate to ground clamps, provide exothermic weld, similar to Cadweld.

2.4 ACCESSORIES

- A. Provide all necessary accessories of appropriate size and material for connection or termination of grounding conductors including:
 - 1. Straps.
 - 2. Clamps.
 - 3. Lugs.
 - 4. Bars and buses.
 - 5. Isolators (where applicable).
 - 6. Locknuts and bushings.

2.5 ACCEPTABLE MANUFACTURERS

- A. Copperweld.
- B. Cadweld (for exothermic welds).
- C. O.Z. Gedney.
- D. Burndy.

PART 3 - EXECUTION

3.1 STRUCTURAL STEEL BUILDINGS

- A. All grounding conductors in each closet shall be bonded in close proximity to one another.
- B. Where a grounding conductor to be bonded is not in proximity to the common column, bond to the nearest column or structural beam.
- C. Provide bonding jumper strap across all structural expansion joints where the grounding integrity of the structural system is reduced

3.2 RACEWAYS

- A. Grounding continuity is to be maintained for all metallic raceways. Provide necessary clamps, bushings, straps and locknuts to assure continuity.
- B. For non-metallic or flexible raceways, provide a separate equipment-grounding conductor bonded to both ends.
- C. Where indicated, an additional equipment-grounding conductor shall be provided in metallic raceway.
- D. Where indicated, an isolated ground conductor shall be provided in addition to the equipment-grounding conductor. Bond at each end to the isolated ground terminal identified.

3.3 EQUIPMENT

- A. All equipment shall be grounded.
- B. Where isolated grounding is indicated, it shall be for the isolation of internal equipment components only. All metallic enclosures of such equipment shall be connected to the equipment ground system.

3.4 TESTING

- A. Upon completion of the installation, confirm the grounding continuity of all raceways, conductors and equipment. Maximum allowable resistance is 25 ohms.

3.5 RECORD DRAWINGS

- A. Submit record As-Built Drawings indicating the location of all points where grounding conductors are bonded to steel, rods, plates, etc.
- B. Indicate the location of all grounding buses not installed within distribution equipment.

END OF SECTION

SECTION 26 08 00

FIRE ALARM SYSTEM

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section. Submit shop drawings for checking and approval.

1.1 FIRE ALARM SYSTEM

- A. The existing fire alarm system is an addressable system. The fire alarm control panel is located in the boiler room.
- B. Add and modify as required to the existing system, as specified/shown on the drawings and as per field requirements. All devices shall be suitable for operation and compatible with existing system. Provide relays modules, cards, power supplies, etc. as required.
- C. Provide sufficient quantity of relays for fan shutdown as specified/shown on Drawings.
- D. Connect, test and leave the system in first class operating condition.
- E. The system shall maintain all applicable Local, State and National Codes including the National Electrical Code, NPFA-72, NFPA-101, ADA 1971 and NEC. The system shall be listed by Underwriter's Laboratories, Inc.
- F. The Electrical Contractor shall provide a manufacturers certified technician to supervise installation, adjustments, final connection and system testing.
- G. Fire alarm wiring and cable shall be per manufacturer's requirements.
- H. Fire alarm system test shall be in accordance with NFPA-72 and local fire department requirements.

1.2 Fire Alarm System – Programming Out/In

- A. This Contractor shall include as part of this project the programming out of All Fire Alarm devices (Smoke Detectors, combo Carbon/Smoke Detectors and Carbon Monoxide Detectors) that could cause a trouble on Fire Alarm control panel in area of construction. Once work has been completed devices will be programmed back into the Fire Alarm System.

END OF SECTION

SECTION 26 0900

GUARANTEE

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section.

1.1 GUARANTEE

- A. The Contractor shall remove, replace and/or repair at his own expense and at the convenience of the Owner, any defects in workmanship, materials, ratings, capacities and/or characteristics occurring in the work within one (1) year or within such longer period as may be provided in the Drawings and/or Section of the Specifications, which guarantee period shall commence with the final acceptance of the entire Contract in accordance with the guarantee provisions stated in the General Conditions, and the Contractor shall pay for all damage to the system resulting from defects in the work and all expenses necessary to remove, replace, and/or repair any other work which may be damaged in removing, replacing and/or repairing the work.

END OF SECTION



TOTAL QUALITY ENVIRONMENTAL, INC.

Limited Asbestos Inspection & Lead Based Paint XRF Surveys Report



Port Chester High School
1 Tamarack Road
Port Chester NY 10573

Prepared for:

Port Chester High School
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Port Chester NY 10573

Prepared by:

Total Quality Environmental Inc.
116 Bay 19th Street
Brooklyn NY 11214
T: (718) 873-1411

Total Quality Environmental Inc. project #234.06.05

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1. LIMITED ASBESTOS SURVEY REPORT

At the request of Port Chester-Rye Union Free School District, Total Quality Environmental Inc. performed a survey for asbestos-containing materials (ACM) within the boiler room (room 104) of Port Chester High School located at 1 Tamarack Road, Port Chester NY 10573.

The inspection was conducted to confirm/dismiss the presence, locations, and quantities of any asbestos-containing materials (ACM) regarding planned renovation project.

The survey was performed on October 1, 2021, by Alexander Rukasov, a NYS Department of Labor licensed Asbestos Inspector (NYS DOL License #09-14011).

Our work included the visual assessment of building materials to determine if they were suspect asbestos-containing material (see Section 3 for sampling methodology), sampling, condition assessment of the materials sampled (in case they were determined to be ACM based on the laboratory analysis results), quantification, and location of suspect ACM.

Bulk samples were submitted to and analyzed by ALLAB, Inc. located at 1544 East 13th Street, Unit CA, Brooklyn, NY 11230. ALLAB Inc. is accredited by the New York State Department of Health (ELAP No.12118).

During the limited asbestos survey, Total Quality Environmental Inc. identified several suspect materials that might contain asbestos. These materials were as follows:

Sample #	Type of Material	Sample Location	Results % Asbestos
01-01	Duct insulation cover	Boiler room (room 104)	NAD
01-02	Duct insulation cover	Boiler room (room 104)	NAD
01-03	Duct insulation cover	Boiler room (room 104)	NAD
02-04	Duct insulation	Boiler room (room 104)	NAD
02-05	Duct insulation	Boiler room (room 104)	NAD
02-06	Duct insulation	Boiler room (room 104)	NAD
03-07	Duct insulation cloth	Boiler room (room 104)	NAD
03-08	Duct insulation cloth	Boiler room (room 104)	NAD
03-09	Duct insulation cloth	Boiler room (room 104)	NAD

NAD: NO ASBESTOS DETECTED

NA/PS: NOT ANALYZED POSITIVE STOP

BOLD: ASBESTOS-CONTAINING MATERIAL

Bulk samples of suspect ACM were analyzed using polarized light microscopy (PLM) coupled with dispersion staining, as described in 40 CFR Part 763 and the National Emissions Standard for Hazardous Air Pollutants (NESHAP). Asbestos-containing material (ACM) is defined by the Asbestos NESHAP, as any material containing more than one percent (1%) asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy (PLM), that, when dry, can be crumbled, pulverized or reduced to powder by hand pressure. (Sec. 61.141).

The results of the visual inspection and bulk samples analysis determined that none of the following samples collected were found to be asbestos-containing material.

Appendix B contains copy of the laboratory reports and chain-of-custody forms for your records.

2. XRF LEAD BASE PAINT SURVEY

The purpose of this investigation was to assess if building components being affected by scope of work contain actionable quantities of lead-based paint. The following report summarizes the results of our findings.

The LBP inspection involved the use of a Pb200i XRF Lead Paint Analyzer. Both the United States Department of Housing and Urban Development (HUD) and the New York City Department of Health (NYCDOH) recommend XRF analysis for inspection of lead in paint.

For quality control, the XRF instrument was calibrated using a U.S. Department of Commerce National Institute of Standards and Technology (NIST) Level III 1.0 mg/cm² lead-based paint film. For each calibration, three (3) XRF readings were taken on the paint film. The average of these three (3) readings was then subtracted from the known lead content in the paint film. The difference was compared with an Environmental Protection Agency (EPA)-approved tolerance range. Such calibration procedures were conducted at the start and at the end of the workday.

XRF readings were taken of each painted testing combination. A testing combination includes the building component, substrate, and paint color. Results were then classified as positive, negative, or inconclusive. Under HUD Guidelines, the definition of LBP by XRF testing is 1.0 mg/cm². The XRF was operated in "Quick Mode" for this project. In Quick Mode, the measurement time is determined by the LPA-1 Analyzer to achieve a 95% confidence measurement compared to an action level (1.0 mg/cm²).

XRF readings were taken from typical interior building components (i.e., int. wall) of the school. If an inconclusive XRF reading is recorded paint chip sample is collected and analyzed using Flame Atomic Absorption Spectrometry (AAS) methodology to verify the reading that fell within the inconclusive range of the spectrum analyzer. New York City Department of Health and HUD define LBP as any paint film with a lead content equal to or greater than 0.5% by weight when analyzed by laboratory methods.

Based on inspection results none of the following components were found to have paint that contains $>1.0 \text{ mg/cm}^2$ XRF or 0.5% of lead by weight.

XRF testing results are summarized in the Table 1.

Acknowledgement:

Total Quality Environmental Inc. appreciates the opportunity to have been of assistance to you on this project. If you have any questions concerning this report, please contact me at (718) 404-6704.

Sincerely,

Alexander Rukasov

Alexander Rukasov
Senior Project Manager
NYS DOL Asbestos Inspector
EPA Lead Risk Assessor

LIMITED XRF LEAD BASED PAINT SURVEY

1 Tamarack Road
Port Chester, NY 10573

TABLE 1
SUMMARY OF LBP SAMPLING FOR BOILER ROOM (ROOM 104)

XRF SHOT NUMBER	SAMPLE LOCATION	TESTING COMBINATION	XRF READING (mg/cm ²)	COLOR	SUBSTRATE	FINAL RESULTS	CONDITI ON OF PAINT
Boiler room							
01	Beginning of the day	Calibration Check	1.0			N/A (Calibration)	
02	Beginning of the day	Calibration Check	1.1			N/A (Calibration)	
03	Beginning of the day	Calibration Check	1.0			N/A (Calibration)	
04	Boiler room	Wall A	0.3	White	Cement	Not Lead Base Paint	Damaged
05	Boiler room	Wall B	0.2	White	Cement	Not Lead Base Paint	Damaged
06	Boiler room	Wall C	0.1	White	Cement	Not Lead Base Paint	Damaged
07	Boiler room	Wall D	0.3	White	Cement	Not Lead Base Paint	Damaged
08	Boiler room	Ceiling	0.4	White	Concrete	Not Lead Base Paint	Damaged
09	End of Day	Calibration Check	1.0			N/A (Calibration)	
10	End of Day	Calibration Check	1.1			N/A (Calibration)	
11	End of Day	Calibration Check	0.9			N/A (Calibration)	

**APPENDIX A:
SAMPLE LOCATION DRAWINGS**

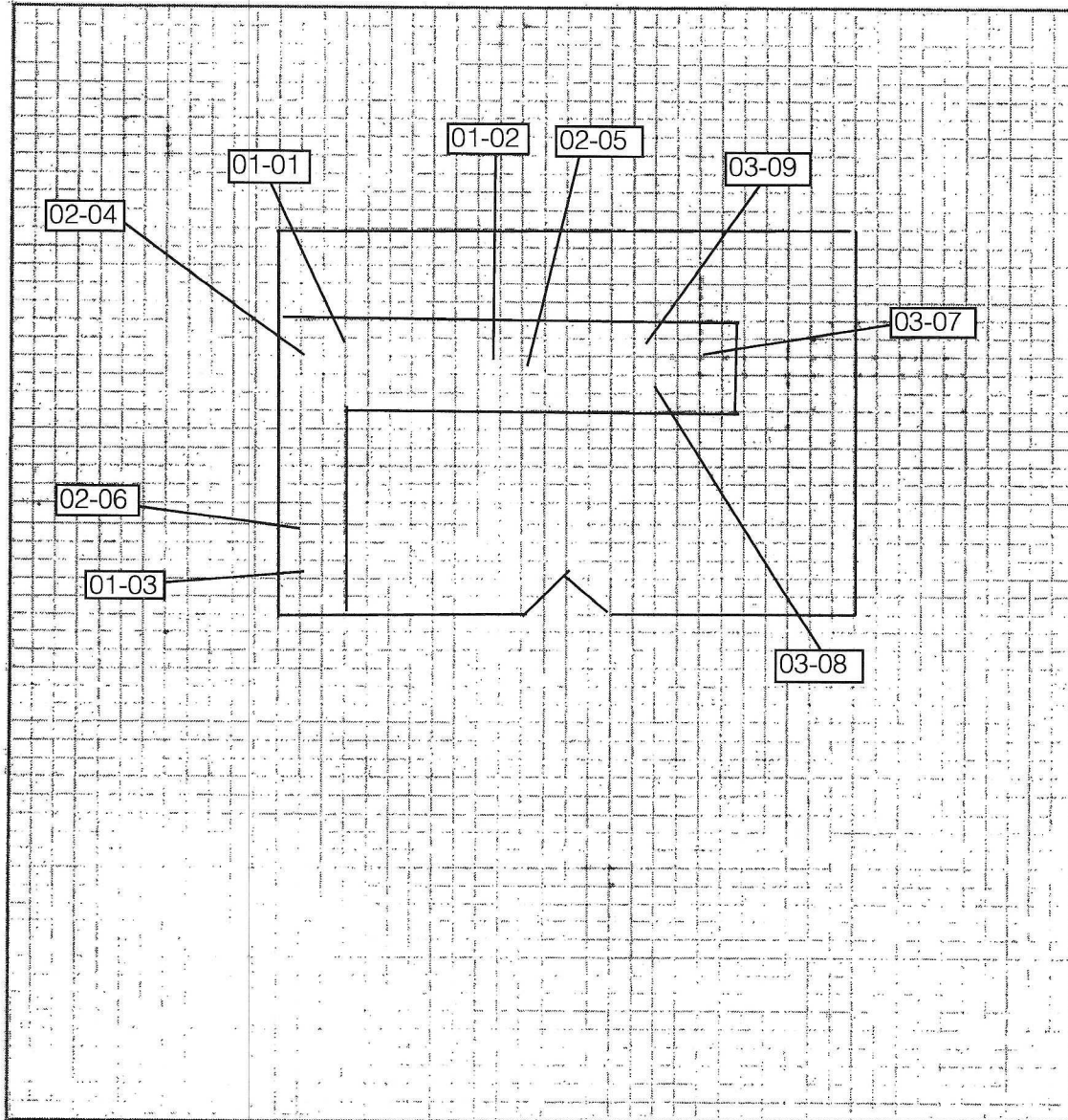
Total Quality Environmental Inc.

Environmental company

LIMITED ASBESTOS SURVEY DIAGRAM

Application ID:	Customer:	Port Chester - Rye Union Free School District			
Property Address:	1 Tamarack Road, Port Chester NY 10573				
Sampling Date:	10/1/2021	Basement	First Floor	2nd Floor	Roof

Boiler room (Room 104)



NYC Inspector / Investigator

A. Rukasov

Signature

A. Rukasov

**APPENDIX B:
LABORATORY REPORTS & CHAIN OF CUSTODIES FORMS**

Total Quality Environmental Inc CLIENT NAME:

Environmental company

116 Bay 19th Street

Brooklyn, NY 11214

T: 718.873.1411 | F: 347.729.0985

E: qualityenvironmental@icloud.com

PROPERTY ADDRESS:

SURVEY LOCATION:

PROJECT #:

Port Chester -Rye Union Fre School District

1 Tamarack Road, Port Chester NY 10573

Room 104 (boiler room) -basement

234.06.05

Page: 1 of 1

☒ PLM-EPA 600/M4/82/020

☒ PLM NOB-NYS 198.1/198.6

☒ TEM NOB - NYS 198.4

BULK SAMPLE - CHAIN-OF-CUSTODY FORM

211002-1

COMMENTS:

Turnaround Time: RUSH

24 HR

48 HR

QTY	Condition	Sample #		Location	Material Description	Results (lab use only)			
						PLM Friable	PLM NOB	TEM NOB	AAS
900 SF	Fair	01	01	Room 104 (boiler room)	Duct insulation cover				
↓		↓	02						
			03						
900 SF		02	04		Duct insulation				
↓		↓	05						
			06						
200 SF		03	07		Duct insulation cloth				
↓		↓	08						
			09						
			10						
			11						
			12						
			13						
			14						
			15						

Sampled by: A. Rukason
Signature:

Date: 10/1/2021
Time: 10:00

Received by: RECEIVED
Signature: OCT 02 2021

Date: 12:00
Time:

Relinquished by: A. Rukason
Signature

Date: 10/2/2021
Time:

Analyzed by: BY: AB
Signature:

Date:
Time:



BULK SAMPLE ANALYSIS REPORT

Laboratory Report

1544 East 13th Street
Brooklyn, NY 11230
Phone: (718) 864-3666

Client Name:	Total Quality Environmetal, Inc.	Report ID: 211002-1
Building Address:	1 Tamarack Rd, Port Chester, NY	Report Date: 10/2/2021
Client Project:	234.06.05	NYS-DOH ELAP # 12118

Client ID	LAB ID#	Layer	Sample Description	Sample Location:	HA No.	Analytical Method	Color	PLM Friable Asbestos Percentage and Type	Other Fiber Material Percentage and Type	Non-Fibros Material %	PLM NOB Asbestos Percentage and Type	GRAVIMETRIC			Vermiculite	TEM RESULT Item 198.4
												Organic, %	Non-organic, %	CACO3 %		
1	211002-1-1	1	Duct Insulation Cover	Room 104 (Boiler Room)	1	198.1	White	NAD	50% Fiber Glass	50					ND	
2	211002-1-2	1	Duct Insulation Cover	Room 104 (Boiler Room)	1	198.1	White	NAD	50% Fiber Glass	50					ND	
3	211002-1-3	1	Duct Insulation Cover	Room 104 (Boiler Room)	1	198.1	White	NAD	50% Fiber Glass	50					ND	
4	211002-1-4	1	Duct Insulation	Room 104 (Boiler Room)	2	198.1	Grey	NAD		100					ND	
5	211002-1-5	1	Duct Insulation	Room 104 (Boiler Room)	2	198.1	Grey	NAD		100					ND	
6	211002-1-6	1	Duct Insulation	Room 104 (Boiler Room)	2	198.1	Grey	NAD		100					ND	
7	211002-1-7	1	Duct Insulation Cloth	Room 104 (Boiler Room)	3	198.1	White	NAD	100% Fiber Glass						ND	
8	211002-1-8	1	Duct Insulation Cloth	Room 104 (Boiler Room)	3	198.1	White	NAD	100% Fiber Glass						ND	
9	211002-1-9	1	Duct Insulation Cloth	Room 104 (Boiler Room)	3	198.1	White	NAD	100% Fiber Glass						ND	

Date Collected: 10/1/2021 Date Received: 10/2/2021 Date of Analyses: 10/2/2021

Lab Director: Aleksandr Barengolts

PLM - Polarized-Light Microscopy. NOB - Non-Friable Organically Bound Materials. TEM - Transmission Electron Microscopy.
198.1 - Method Item 198.1 of ELAP Certification Manual. 198.6 - Method Item 198.6 of ELAP Certification Manual. 198.4 - Method Item 198.4 of ELAP Certification Manual.
EPA 600 - Method EPA 600/M4/82/020 NJ EPA - Method EPA 600/R-93-116
ND - Not Detected NAD - No asbestos detected Trace - Inconclusive. Asbestos detected at 1% or less.
Samples with inconclusive results must not be interpreted as being non-asbestos.
Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos containing.
Results NAD or TRACE by PLM are inconclusive.
The results relate only to the items tested. Samples will be stored for sixty (60) days.

**APPENDIX C:
COMPANY & PERSONNEL LICENSES**

New York State – Department of Labor

Division of Safety and Health
License and Certificate Unit
State Campus, Building 12
Albany, NY 12240

ASBESTOS HANDLING LICENSE

Total Quality Environmental Inc.

116 Bay 19th Street

Brooklyn, NY 11214

FILE NUMBER: 17-105220

LICENSE NUMBER: 105220

LICENSE CLASS: RESTRICTED

DATE OF ISSUE: 08/11/2021

EXPIRATION DATE: 09/30/2022

Duly Authorized Representative – Mariya Kotys:

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

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

Amy Phillips, Director
For the Commissioner of Labor

United States Environmental Protection Agency

This is to certify that

Total Quality Environmental Inc.

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

In the Jurisdiction of:

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

This certification is valid from the date of issuance and expires January 01, 2022

LBP-F196630-1

Certification #

December 18, 2018

Issued On

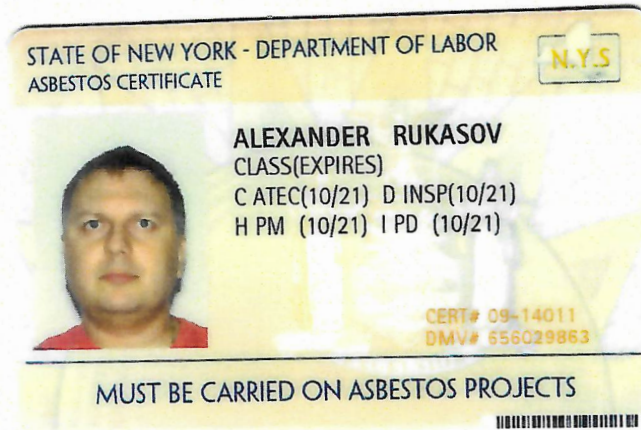


Michelle Price, Chief

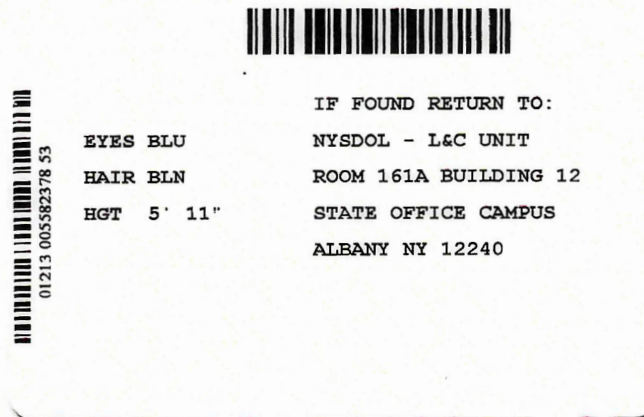
Lead, Heavy Metals, and Inorganics Branch

**Total Quality Environmental Inc. Employee
Alexander Rukasov**

Front of License



Back of License



Codes:

- A - Asbestos Handler
- B - Restricted Handler
- I - Allied Trades
- C - Project Air Sampling Technician
- D - Inspector - R III
- E - Management Planner
- F - Operations and Maintenance
- G - Supervisor
- H - Project Monitor
- I - Project Designer

United States Environmental Protection Agency

This is to certify that



Alexander Rukasov

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

Risk Assessor

In the Jurisdiction of:

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

This certification is valid from the date of issuance and expires March 28, 2024

LBP-R-I180279-2

Certification #

February 05, 2021

Issued On



Ben Conetta, Chief

Chemicals and Multimedia Programs Branch

**APPENDIX D:
LABORATORY ACCREDITATIONS**

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER



Expires 12:01 AM April 01, 2022
Issued April 01, 2021

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MR. ALEKSANDR BARENGOLTS
ALLAB INC
1544 EAST 13 STREET UNIT CA, BASEMENT
BROOKLYN, NY 11230-7281

NY Lab Id No: 12118

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

Miscellaneous

Asbestos in Friable Material	Item 198.1 of Manual EPA 600/M4/82/020
Asbestos in Non-Friable Material-PLM	Item 198.6 of Manual (NOB by PLM)
Asbestos in Non-Friable Material-TEM	Item 198.4 of Manual



NEW YORK
STATE OF
OPPORTUNITY

Department
of Health

Serial No.: 63391

Property of the New York State Department of Health. Certificates are valid only at the address shown, must be conspicuously posted, and are printed on secure paper. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify the laboratory's accreditation status.

Part 155 Regulations

Section 155.5 Uniform Safety Standards for School Construction and Maintenance

Projects [Disclaimer](#)

(a) Monitoring of construction and maintenance activities.

The occupied portion of any school building shall always comply with the minimum requirements necessary to maintain a certificate of occupancy and shall be monitored during construction or maintenance activities for safety violations by school district personnel. It is the responsibility of the board of education or board of cooperative educational services to assure that these standards are continuously maintained when the building or any portion thereof is occupied.

(b) Investigation and disposition of complaints relating to health and safety received as a result of construction and maintenance activities.

Boards of education and boards of cooperative educational services shall follow procedures established under section 155.4(d)(7) of this Part. (c) Pre-construction testing and planning for construction projects.

(1) Boards of education and boards of cooperative educational services shall assure that proper planning is made for safety of building occupants during construction. For all construction projects for which bids are issued on or after September 30, 1999, such boards shall assure that safety is addressed in the bid specifications and contract documents before contract documents are advertised for bid. All school areas to be disturbed during renovation or demolition shall be tested for lead and asbestos. Appropriate procedures to protect the health of building occupants shall be included in the final construction documents for bidding.

(2) Boards of education and boards of cooperative educational services shall establish procedures for involvement of the health and safety committee to monitor safety during school construction projects. The health and safety committees in school districts other than in cities with one million inhabitants or more shall be expanded during construction projects to include the project architect, construction manager, and the contractors. Such committee shall meet periodically to review issues and address complaints related to health and safety resulting from the construction project. In the case of a city school district in a city of one million inhabitants or more, the board of education shall submit procedures for protecting health and safety during construction to the commissioner for approval. Such procedures shall outline methods for compliance with this section.

(3) The district emergency management plan shall be updated to reflect any changes necessary to accommodate the construction process, including an updated emergency exit plan indicating temporary exits required due to construction. Provisions shall be made for the emergency evacuation and relocation or release of students and staff in the event of a construction incident.

(4) Fire drills shall be held to familiarize students and staff with temporary exits and revised emergency procedures whenever such temporary exits and revised emergency procedures are required.

(d) Pre-construction notification of construction projects.

The board of education or board of cooperative educational services shall establish procedures for notification of parents, staff and the community in advance of a construction project of \$10,000 or more to be conducted in a school building while the building is occupied. Such procedures shall provide notice at least two months prior to the date on which construction is scheduled to begin, provided that in the case of emergency construction projects, such notice shall be provided as far in advance of the start of construction as is practicable. Such notice shall include information on the district's obligations under this section to provide a safe school environment during construction projects. Such notice requirement may be met by publication in district newsletters, direct mailings, or holding a public hearing on the project to inform parents, students, school personnel and community members.

(e) General safety and security standards for construction projects.

(1) All construction materials shall be stored in a safe and secure manner.

(2) Fences around construction supplies or debris shall be maintained.

(3) Gates shall always be locked unless a worker is in attendance to prevent unauthorized entry.

(4) During exterior renovation work, overhead protection shall be provided for any sidewalks or areas immediately beneath the work site or such areas shall be fenced off and provided with warning signs to prevent entry.

(5) Workers shall be required to wear photo identification badges at all times for identification and security purposes while working at occupied sites.

(f) Separation of construction areas from occupied spaces.

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.

(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.

(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.

(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.

(g) Maintaining exiting and ventilation during school construction projects.

The following information shall be included in all plans and specifications for school building projects:

(1) A plan detailing how exiting required by the applicable building code will be maintained during construction. The plan shall indicate temporary construction required to isolate construction equipment, materials, people, dust, fumes, odors, and noise during the construction period.

Temporary construction details shall meet code-required fire ratings for separation and corridor enclosure. At a minimum, required exits, temporary stairs, ramps, exit signs, and door hardware shall be provided at all times.

A plan detailing how adequate ventilation will be maintained during construction. The plan shall indicate ductwork which must be rerouted, disconnected, or capped in order to prevent contaminants from the construction area from entering the occupied areas of the building. The plan shall also indicate how required ventilation to occupied spaces affected by construction will be maintained during the project.

(h) Fire and hazard prevention.

Areas of buildings under construction that are to remain occupied shall maintain a certificate of occupancy. In addition, the following shall be strictly enforced:

(1) No smoking is allowed on public school property, including construction areas.

(2) During construction daily inspections of district occupied areas shall be conducted by school district personnel to assure that construction materials, equipment or debris not block fire exits or emergency egress windows.

(3) Proper operation of fire extinguishers, fire alarm, and smoke/fire detection systems shall be maintained throughout the project.

(i) Noise abatement during construction and maintenance activities.

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. Noise level measurements (dba) shall be taken with a type 2 sound level meter in the occupied space in a location closest to the source of the noise.

Complaints regarding excessive noise shall be addressed through the health and safety committee.

The district should anticipate those times when construction noise is unacceptable and incorporate "no work" periods into the bid specifications.

(j) Control of chemical fumes, gases, and other contaminants during construction and maintenance projects.

The bid specifications and construction contracts for each construction project shall indicate how and where welding, gasoline engine, roofing, paving, painting or other fumes will be exhausted. Care must be taken to assure fresh air intakes do not draw in such fumes.

(1) The bid specifications shall require schedules of work on construction and maintenance projects which include time for off-gassing of volatile organic compounds introduced during construction before occupancy is allowed. Specific attention is warranted for activities including glues, paint, furniture, carpeting, wall coverings, and drapery. Manufacturers shall be contacted to obtain information regarding appropriate temperatures and times needed to cure or ventilate the product during use and before safe occupancy of a space can be assured. Building materials or furnishings which off-gas chemical fumes, gases, or other contaminants shall be aired out in a well ventilated heated warehouse before it is brought to the project for installation or the manufacturer's recommended off-gassing periods must be scheduled between installation and use of the space. If the work will generate toxic gases that cannot be contained in an isolated area, the work must be done when school classes and programs are not in session. The building must be properly ventilated and the material must be given proper time to cure or off-gas before re-occupancy.

(2) Manufacturer's material safety data sheets (MSD) shall be maintained at the site for all products used in the project. MSDS must be provided to anyone who requests them. MSDS indicate chemicals used in the product, product toxicity, typical side effects of exposure to the product and safe procedures for use of the product.

(k) Asbestos abatement protocols.

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). Large and small asbestos projects as defined by 12 NYCRR 56 shall not be performed while the building is occupied. Minor asbestos projects defined by 12 NYCRR 56 as an asbestos project involving the removal, disturbance, repair, encapsulation, enclosure or handling of 10 square feet or less of asbestos or asbestos material, or 25 linear feet or less of asbestos or asbestos material may be performed in unoccupied areas of an occupied building in accordance with the above referenced regulations.

(l) Lead paint.

Any construction or maintenance operations which will disturb lead based paint will require abatement of those areas pursuant to protocols detailed in the "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing" (June 1995; U.S. Department of Housing and Urban Development, Washington, D.C. 20410; available at the Office of Facilities Planning, Education Building Annex, Room 1060, State Education Department, Albany, NY 12234). All areas scheduled for construction as well as areas of flaking and peeling paint shall be tested for the presence of lead and abated or encapsulated in accordance with the above noted guidelines.

(m) Radon.

Districts shall take responsibility to be aware of the geological potential for high levels of radon and to test and mitigate as appropriate. This information is available from the New York State Department of Health Radon Measurement Database.

(n) Post construction inspection.

The school district or board of cooperative educational services shall provide the opportunity for a walk-through inspection by the health and safety committee members to confirm that the area is ready to be reopened for use.