



SPECIFICATIONS FOR:

CAPITAL IMPROVEMENTS PROJECTS – PACKAGE NO. 2 MAIN BUILDING

SED No. 48-04-01-04-0-001-023

Main Building

OWNER: HALDANE CENTRAL SCHOOL DISTRICT
ADDRESS: 15 CRAIGSIDE DRIVE
CITY: COLD SPRING, NY 10516

PROJECT NAME: CAPITAL IMPROVEMENTS PROJECTS – PACKAGE NO. 2
F&D PROJECT No: 19338.02



ARCHITECTS:

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



ENVIRONMENTAL and MEP:

EISENBACH & RUHNKE ENGINEERING
291 Genesee Street
Utica, NY 13501



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: SEPTEMBER 13, 2021

HALDANE CENTRAL SCHOOL DISTRICT
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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 G-1.
- B. Drawings are the property of the Fuller and D'Angelo, P.C. 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
BIDDING 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 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. Submission Procedure
 - 3. Bid Ineligibility
- E. Bid Enclosures/Requirements
 - 1. Security Deposit
 - 2. Consent of Surety
 - 3. Performance Assurance
 - 4. Non Wick's Law Prime Subcontractor.
 - 5. Insurance
 - 6. Bid Form Requirements
 - 7. Bid Form Signature
 - 8. Selection and Award of Alternates
- F. Offer Acceptance/Rejection
 - 1. Duration of Offer
 - 2. Acceptance of Offer

1.3 RELATED DOCUMENTS

- A. Section 01 1000 - Summary of Contract.
- B. Section 00 4120 - Bid Form - Contract #1 HVAC.
- C. Section 00 4336 - List of Subcontractors.
- D. Section 00 4401 - Qualification of Bidders.
- E. Section 00 4402 - Hold Harmless Agreement
- F. Section 00 4460 - Certification of Compliance With the Iran Disinvestment Act **OR:**
- G. Section 00 4470 - Declaration of Bidder's Inability to Provide Certification of Compliance with the Iran Divestment Act.
- H. Section 00 5200 - Form of Agreement.
- I. Section 00 6000 - Bonds and Certificates.

- J. Section 00 7200 - General Conditions.
- K. Section 01 2100 - Allowances.
- L. Section 01 2300 - Alternates.
- M. Section 01 5000 - Temporary Facilities and Controls.
- N. Section 01 5500 - Vehicular Access and Parking
- O. Section 01 5719 - Temporary Environmental Controls
- P. Section 01 7000 - Execution.
- Q. 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 Haldane Central School District, 15 Craigsides Drive, Cold Spring, NY 10516 before 3:00 PM local time on 12th day of October 2021.
- B. Offers submitted after the above time shall be returned to the bidder unopened.
- C. Offers will be opened publicly 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 Mechanical Upgrades and Related Work located at the Haldane Central School District Main Building for a Stipulated Sum, in accordance with the Contract Documents.

1.6 NEW YORK STATE WICK'S LAW

- A. This project is exempt from the New York State Wick's Law separate bid requirements.
- B. Refer to Section 00 4336 List of subcontractors for further requirements.

1.7 LUMP SUM BIDS

- A. Bids will be received for one (1) Prime Contract:
 - 1. Contract #1 HVAC .

1.8 CONTRACT TIME

- A. 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 1000 Summary of Contract(s). Failure to complete either date listed in Section 01 1000 Summary of Contract(s), 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.
- B. 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.
- C. 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 1000 Summary of Contract(s)

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.
- B. Bid Documents: Contract Documents supplemented with Bidding Requirements, Bid Securities, Contractor's Proposal, Allowance Breakdown, 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. Bid, Offer, or Bidding: Act of submitting an offer under seal.

- D. 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 19338.02, 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 EXAMINATION

- A. Upon receipt of Bid Documents verify that documents are complete. Notify Fuller and D'Angelo, P.C. 45 Knollwood Road, Elmsford, New York 10523 should the documents be incomplete.
- B. 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.

1.12 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: Architect:
Fuller and D'Angelo, P.C.
45 Knollwood Road .
Elmsford, NY 10523 .
Attention: William Means, RA .
Voice: 914-592-4444
E-mail: WilliamM@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, 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.
- F. Verbal answers are not binding on any party.
- G. Clarifications requested by bidders must be in writing not less than 7 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 plan holders.
- H. 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, Architect, and Architect's Consultants.

1.13 PRODUCT/ASSEMBLY/SYSTEM SUBSTITUTIONS

- A. 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.
- B. Wherever in the Contract Documents an article, material, apparatus, product or process is identified by "Basis of Design", trade name or catalog reference, or by the name of the patentee, manufacturer or dealer, it is understood that it constitutes the standard requirement to meet the contract specifications. **All**

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ARCHITECTS AND PLANNERS

other products shall be considered as “substitutions” and shall be submitted in accordance to Section 01 2500 - Substitution Procedures.

- C. Where two or more articles, materials, apparatus, products or processes are listed as acceptable by reference to trade name or otherwise, the choice of these will be optional to the bidder. **All other products these shall be considered as “substitutions”** and shall be submitted in accordance to Section 01 2500 - Substitution Procedures.
- D. Where articles, materials, apparatus, products or processes are listed by reference to a named specified item as “or Equal”, **these shall be considered as “substitutions”** and shall be submitted in accordance to Section 01 2500 - Substitution Procedures.
- E. Bidders may base their bid on a product they may consider equal to the specified product. **These shall be considered as “substitutions”** and shall be submitted in accordance to Section 01 2500 - Substitution Procedures.
- F. The bidder is made aware that the Architect will make the final determination as to what constitutes an equal.
- G. If the Architect shall reject the proposed equal as not being the equal of that specifically named in the contract, the successful Contractor shall immediately proceed to furnish the designated article, material, apparatus, product or process specified or an approved equal without additional cost or time delay to the Owner.
- H. See Section 01 2500 - Substitution Procedures for additional requirements.

1.14 PREBID CONFERENCE

- A. A Bidders Conference has been scheduled for 3:30 PM on 28th day of September of 2021, Bidders shall meet at the Main Building, front entrance circle.
 - 1. All bidders, subcontractors and suppliers are invited.
- B. Representatives of Owner's Representative, Architect, and Architect's Consultants will be in attendance.
- C. Summarized minutes of this meeting may be circulated to all known bidders. These minutes will not form part of the Contract Documents.
- D. Information relevant to the Bid Documents will be recorded in an Addendum, issued to plan holders.

1.15 EVIDENCE OF QUALIFICATIONS

- A. The Owner reserves the right to require additional information it deems appropriate concerning the history of the contractor's performance of each such contract.
- B. **Bidder shall submit with their bid proposal a properly executed (Section 00 4401) Qualification of Bidders.**
- 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 & 00 4470.
- D. The final determination of whether the contractor possesses the requisite experience rests in the sole discretion of the Owner

1.16 SUBCONTRACTORS/SUPPLIERS/OTHERS

- A. Owner and Architect reserves the right to reject a proposed subcontractor for reasonable cause.
- B. Refer to General Conditions for additional requirements.

1.17 SUBMISSION PROCEDURE

- A. Bidders shall be solely responsible for the delivery of their bids in the manner and time prescribed.
- B. Submit one copy 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 Haldane Central School District'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, and Architect. 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.

1.18 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 Haldane Central School District, be declared unacceptable.
- B. Bid Forms, Appendices, and enclosures that are improperly prepared may, at the discretion of Haldane Central School District, be declared unacceptable.
- C. Failure to provide security deposit, bonding or insurance requirements may, at the discretion of Haldane Central School District, invalidate the bid.
- D. Failure to provide all costs, including Base Bid, Allowances, Alternate(s) and Total Base Bids may, at the discretion of Haldane Central School District, invalidate the bid.

1.19 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, including Alternates, if any, 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 Haldane Central School District as obligee, signed and sealed by the principal and surety.
- C. The security deposit will be returned after delivery to the Haldane Central School District of the required Performance and Payment Bond(s) by the accepted bidder.
- D. Include the cost of bid security in the Bid Amount.
- E. After a bid has been accepted, all securities will be returned to the respective bidders .
- F. If no contract is awarded, all security deposits will be returned.

1.20 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.

1.21 PERFORMANCE ASSURANCE

- A. Accepted Bidder: Shall provide a Performance and Payment bond, 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

1.22 INSURANCE

- A. 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 and Architect shall be listed as "Additionally Insured" on all applicable policies.
- B. All insurance purchased by Contractor shall constitute primary insurance and primary coverage for all risks insured and that any other liability insurance that 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.

1.23 BID FORM REQUIREMENTS

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

1.24 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.

1.25 FEES FOR CHANGES IN THE WORK

- A. Refer to the General Conditions Article 7.

1.26 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.
 - 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.

1.27 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 Section 01 6000 and utilized Substitution Request Form in Section 01 2500 Substitution Procedures.

1.28 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.

1.29 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

1.30 ADDITIONAL BID INFORMATION

- A. Submit the following Supplements concurrent with bid submission:
 - 1. Section 00 4336 - List of Subcontractors: Include the names of all Subcontractors and the portions of the Work they will perform required for Non-Wicks projects.
 - 2. Section 00 6000 - Bonds and Certificates for Bid Bond.
 - 3. Section 00 4401 - Contractor's Qualification Statement.
 - 4. Section 00 4402 - Hold Harmless Agreement
 - 5. Section 00 4460 - Certification of Compliance With the Iran Disinvestment Act **or** 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.
 - 8. Section 01 2300 - Alternates
- B. The bidder by making his bid represents that he has read and understands the bidding documents.
- C. The 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.

1.31 SELECTION AND AWARD OF ALTERNATES

- A. Indicate variation of bid price for Alternates listed on the Bid Form. Unless otherwise indicated, indicate Alternates as a difference in bid price by adding to or deducting from the base bid price.
- B. Bids will be evaluated on the total of the base bid price and alternatives selected by the Owner.

1.32 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).

1.33 ACCEPTANCE OF OFFER

- A. Haldane Central School District reserves the right to accept or reject any or all offers.
- B. The bidder acknowledges the right of the Haldane Central School District 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.

1.34 POST-BID PROCEDURE

- A. The bid proposal, alternates, the proposed subcontractors, the Contractor's Qualification Statement, and Information received from owners of other projects will be considered to determine whether the contractor is the "lowest 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 and Architect, bidders shall furnish all information and data required by the Owner within the time and in the form and manner requested by the Owner. Upon notification from the Owner, 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 1000 Summary of Contracts(s).
 - 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.
 - p. References and experience:
 - a) List of all past contracts with Public Building Projects.
 - b) Provide three (3) references (Name, Title, and Phone Number) associated with three (3) different projects (public or private sector) of similar scope and size to the one identified in this contract. Additionally, include the names of two major suppliers used for each of these three (3) projects.
 2. After receipt of the above information, the Owner will designate a time and place for the meeting between the Owner 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 Article 5 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.
 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 notification of Award of Bid or five (5) days following receipt of Contract, whichever 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

SECTION 00 2115
RFI FORM

CONTRACTOR'S REQUEST FOR INFORMATION NO. _____

F&D RFI NO: _____

(F&D USE)

NAME OF PROJECT: Mechanical Upgrades and Related Work

NAME OF OWNER: Haldane Central School District

FACILITY: Haldane Central School District

DATE: _____

A/E PROJECT NO: 19338.02

ARCHITECT: Fuller and D'Angelo, P.C.

45 Knollwood Road, Elmsford, NY 10523

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

William Means, RA

WilliamM@fullerdangelo.com

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

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

SECTION 00 4120
BID FORM CONTRACT #1 HVAC

THE PROJECT AND THE PARTIES

TO:

Haldane Central School District
15 Craigsides Drive
Cold Spring, NY 10516

FOR:

Mechanical Upgrades and Related Work - Contract #1 HVAC
Haldane Central School District
15 Craigsides Drive Cold Spring, NY 10516
Architect's Project No. 19338.02

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 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.1 HVAC is as follows:

(\$ _____) DOLLARS

2. CASH ALLOWANCES

- a. The total Cash Allowance as indicated in Section 01 2100 - Allowances is as follows:

Twelve Thousand _____ (\$12,000.00) DOLLARS

B. TOTAL BASE BID

1. The Total Base Bid of this Proposal for all work required by the Contract Documents for the Contract No.1 HVAC 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.
- E. All applicable federal taxes are included and New York taxes are excluded from the Bid Sum.

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

1.2 ALTERNATE HVAC -1.

The Alternates for this Proposal required by the Contract Documents are listed in Section 01 2300.

A. Alternate No. HVAC-1 - Main Office A/C

1. The Contractor for HVAC work shall state the amount to be ADDED TO the Base Bid to provide, furnish and install all labor, equipment and material required to install new ceiling-hung air handling unit, condenser unit, distribution ductwork, window modifications, suspended acoustical ceiling, light fixtures, controls, etc. in the Main Office in accordance with the specifications and shown on the contract drawings.

_____, (\$ _____), DOLLARS

B. Alternate No. (HVAC-2) - Nurse's Office A/C

1. The Contractor for [HVAC] work shall state the amount to be ADDED TO the Base Bid to provide, furnish and install all labor, equipment and material required to install new ceiling-hung air handling unit, condenser unit, distribution ductwork, window modifications, suspended acoustical ceiling, light fixtures, controls, etc. in the Nurse's Office in accordance with the specifications and shown on the contract documents.

_____, (\$ _____), DOLLARS

C. Alternate No. (HVAC-3) - Relocate Electrical Panels

1. The Contractor for HVAC work shall state the amount to be ADDED TO the Base Bid to provide, furnish and install all labor, equipment and material required to extend electrical circuits from the Pump Room to new Electrical Panels in the adjacent Storage Room in accordance with the specifications and shown on the contract documents.

_____, (\$ _____), DOLLARS

1.3 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 Haldane Central School District within the time period stated above, we will:
 - 1. Execute the Agreement within ten (10) days of receipt of Notice of Award or five (5) days following receipt of Contract, whichever is later.
 - 2. Furnish the required bonds within ten(10) days of receipt of Notice of Award or 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 Haldane Central School District 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.

1.4 REJECTION OF BIDS

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

1.5 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 Award of Contract by Owner. Work shall be phased as indicated in 01 1000 Summary of Contract. 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.

1.6 CHANGES TO THE WORK

- A. Refer to Article 7 of the General Conditions.

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 _____.

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

2. Addendum # _____ Dated _____.
3. Addendum # _____ Dated _____.

1.8 BID FORM SUPPLEMENTS

- A. The following information is included with Bid submission:
1. Bid Security.
 2. Contractors Qualification: Section 00 4401 - Qualification of Bidders.
 3. Section 00 4336 - List of Subcontractors, as required, by Non Wick's law provision.
 4. Section 00 4402 - Hold Harmless Agreement
 5. Section 00 4460 - Certification of Compliance with the Iran Disinvestment Act OR
 6. Section 00 4470 - Declaration of Bidder's Inability to Provide Certification of Compliance
 7. Section 00 4476 - Insurance Certification.
 8. 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 Haldane Central School District upon debt or contract, and is not a defaulter, as surety or otherwise upon any obligation to the said Haldane Central School District
 4. That no member of the Haldane Central School District or any officer or employee of the Haldane Central School District or person whose salary is payable in whole or in part from the Haldane Central School District 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)

(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 4336
LIST OF SUBCONTRACTORS

PARTICULARS

1.1 NEW YORK STATE WICK'S LAW

- A. Effective July 1, 2008, construction contracts of one million five hundred thousand dollars (\$1,500,000.00) or less will not require the preparation of separate contracts for plumbing and gas fitting; steam heating, hot water heating, ventilation and air conditioning apparatus; and electric wiring and standard illuminating fixtures
- B. Each bidder on a public work contract, where the preparation of separate contracts is not required, shall submit with its bid, **in a separate sealed envelope**, a list that names each subcontractor that the bidder will use to perform work on the contract, and the agreed upon amount to be paid to each for: (a) plumbing and gas fitting; (b) steam heating, hot water heating, ventilation and air conditioning apparatus; and (c) electric wiring and standard illuminating fixtures.
- C. After the low bid is announced, the sealed list of subcontractors submitted with the bid shall be opened and the names of such subcontractors shall be announced. Thereafter, any changes of subcontractors or agreed-upon amount to be paid to each shall require the approval of the Owner upon a showing of legitimate construction need for such change.
- D. The sealed lists of subcontractors submitted by all other bidders shall be returned to them unopened after the contract award.

1.2 LIST OF SUBCONTRACTORS

- A. Herewith is the list of subcontractors referenced in the bid submitted to be provide by the bidder as applicable:

(BIDDER) _____

TO (OWNER) Haldane Central School District

Dated _____ **and which is an integral part of the Bid Form.**

- A. The following work will be performed (or provided) by Subcontractors and coordinated by us:

WORK SUBJECT SUBCONTRACTOR NAME and AMOUNT:

GENERAL CONSTRUCTION _____
_____ \$ _____) DOLLARS

PLUMBING _____
_____ \$ _____) DOLLARS

HVAC _____
_____ \$ _____) DOLLARS

ELECTRICAL _____
_____ (\$ _____) DOLLARS

_____ - _____ (\$ _____) DOLLARS)

Note: If work is to be performed by bidder's own forces indicate "By Bidder".

END OF SECTION

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. The Haldane Central School District reserves the right to waive any informalities if, at its discretion the interest of the Haldane Central School District will be better served.
- D. Each Company (Bidder) shall have been in existence under the same name for no less than five (5) years.
- E. Each Company (Bidder) shall have a 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.
- F. The contractor shall furnish, on the attached form, the three (3) three projects of that 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 reserves the right to require additional information it deems appropriate concerning the history of the contractor's performance of each such contract.
- G. The final determination of whether the contractor possesses the requisite experience rests in the sole discretion of the Owner.
- H. 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 company 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 capable of and intends and intends to perform the work with its own employees in accordance with Article 5.2.5 of the General Conditions.
 - 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 of the field work by its own employees Contractors for HVAC and Security shall perform at least seventy-five (75)% of the field work by its own employees.
 - b. 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. The bidder will perform the work with sufficient personnel as required to comply with the schedule.
 - 5. Each subcontractor must have a minimum of five (5) years experience in the work and/or applicable trade.

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: Haldane Central School District

Address: 15 Craigsides Drive

City/Town: Cold Spring, NY 10516

Submitted By: _____

Corporation _____ Partnership _____ Individual _____

Address: _____

Principal Office: _____

Other: _____

Name of Project: Mechanical Upgrades and Related Work Contract No.1 HVAC Haldane Central School District

Main Building Contract No. 2 Security

Type of Work: (file separate for each Contract)

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): _____
- _____
- _____
- 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 _____ Partner: 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. Joint Ventures: Provide information for all firms involved. Fill in name, % owned, office held; indicate by Y or N whether director, officer, partner and title

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 ____

First Name: _____ MI _____ Last Name _____ DOB _____

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

- C. 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:

- D. 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: _____

- E. 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..

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__
 - 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__

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 Haldane Central School District awarding a contract or approving a subcontract; acknowledges that the Owner 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 or imprisonment of up to 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 Project Information Form attached.

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** _____

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** _____

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 4402
HOLD HARMLESS AGREEMENT

_____ herein the
"CONTRACTOR" assumes responsibility for any and all injury to or death of any and all persons, including the CONTRACTOR'S agents, servants and employees, and in addition thereto, for any and all damages to property caused by or resulting from or arising out of any act or omission in connection with this contract or the prosecution of work hereunder, whether caused by the CONTRACTOR or the CONTRACTOR'S agents, servants or employees, or the CONTRACTOR'S subcontractors or suppliers, and the CONTRACTOR shall indemnify and hold harmless the Haldane Central School District, and the (engineer/architect) Fuller and D'Angelo, P.C. their employees and consultants from and against any and all loss and/or expense which they or either of them may suffer or pay as a result of claims or suits due to, because of or arising out of any and all such injuries, deaths and/or damage. The CONTRACTOR if requested, shall assume and defend at the CONTRACTOR'S own expense, any suit, action or other legal proceedings arising therefrom, and the CONTRACTOR hereby agrees to satisfy, pay and cause to be discharged of record any judgment which may be rendered against the owner or architect arising therefrom.

Dated at _____ this day of 202____.

Signed, Sealed and Delivered SIGNED

Name _____

Title _____

in the presence of by:

Name _____ Title _____

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

Haldane Central School District
Mechanical Upgrades & Related Work - Package No. 2

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: _____

BIDDERS SHALL COMPLETE THIS FORM IF THEY CANNOT CERTIFY THAT THE BIDDER
/CONTRACTOR OR ANY PROPOSED

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

SECTION 00 4476
INSURANCE CERTIFICATION

BID OR PROJECT NO. # 19338.02

NAME OF PROJECT: Mechanical Upgrades and Related Work

Haldane Central School District

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: _____ **Tele. #:** _____

ADDRESS: _____

Are you an agent for the companies providing the coverage?

Yes _____ No _____

DATE: _____

Signature Insurance Representative

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 Haldane Central School District will reject my bid and award to the next lowest qualified bidder.

FIRM NAME:

_____ **Tele.#** _____

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. 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

DRAFT 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 « »
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

Haldane Central School District
15 Craigsides Drive
Cold Spring, NY 10516

and the Contractor:
(Name, legal status, address and other information)

« » « »
« »
« »
« »

for the following Project:

Capital Improvements Projects Package 2
Main Building: SED #: 48-04-01-04-0-001-023

The Architect:
Fuller and D'Angelo, P.C.
Architects and Planners
45 Knollwood Road, Suite 401
Elmsford, NY 10523
Telephone Number: 914-592-4444

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.

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.

ELECTRONIC COPYING of any portion of this AIA® Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.

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 CONTRACTORS 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:

☒ A date set forth in a Letter of Award issued by the Owner.

§ 3.2 The Contract Time shall be measured from the date of 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 01100-Summary of Contracts** or for various phases, if any, of work and overall completion.

§ 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.

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 ***** and 00/100 (\$ « »), 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. (Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item	Price	Conditions for Acceptance
None		

§ 4.3 Allowances, if any, included in the Contract Sum:
(Identify each allowance.)

Item	Price
Cash Allowance	\$12,000.00

§ 4.4 Unit prices, if any:
(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit (\$0.00)
None		

§ 4.5 Liquidated damages, if any:

As indicated in Article 8 of the General Conditions

§ 4.6 Other:

None

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.

§ 5.1.1.1 Provide a separate application for each school building. Include the SED and Fuller and D'Angelo's project numbers.

§ 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 « » month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the 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.

§ 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.

§ 5.1.7.2 The Contractor agrees that maximum 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.

§ 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 completed 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.

§ 5.3 Interest

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 another individual, not a party to this Agreement, to serve as the Initial Decision Maker.

§ 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:

☒] Litigation in a court of competent jurisdiction

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.

§ 7.1.1 If the Contract is terminated for the Owner's convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Contractor a termination fee as follows:

(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner's convenience.)

Article 14.4 of the General Conditions

§ 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:
(Name, address, email address, and other information)

Tim Walsh, Director of Facilities
Haldane Central School District
15 Craigsides Drive
Cold Spring, NY 10516

§ 8.3 The Contractor's representative:
(Name, address, email address, and other information)

<< >>
<< >>
<< >>
<< >>
<< >>
<< >>

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

§ 8.5 Insurance and Bonds

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

§ 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
- .2 AIA Document A101™–2017, **Exhibit A**, Insurance and Bonds

.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
List Addenda		

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:

.9 Other documents, if any, listed below:

Exhibit C	Date	Pages
Contractor's Proposal»		

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

OWNER (Signature)

« »« »

(Printed name and title)

CONTRACTOR (Signature)

« »« »

(Printed name and title)

ATTACHMENTS

EXHIBIT A List of Drawings.

EXHIBIT B List of Specifications.

EXHIBIT C Contractor's proposal.

SECTION 00 6000
BONDS AND CERTIFICATES

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 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 Haldane Central School District 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.
 - 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. Refer to General Conditions Article 11 for additional requirements.
- B. A Performance and Payment Bond will be required for this project. The bond premiums will be paid for by the Contractor.
- C. 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.
- D. 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" Rated or better.
- E. Every Bond under this paragraph must display the Surety's Bond Number.
- F. Each bond must be accompanied by an original Power of Attorney, giving the name of attorney's in fact and extent of bonding capacity.
- G. **The Surety Company shall be obligated for the bonds for a two year period after substantial completion.**
- H. **All Surety Companies shall be permitted to do business in the State of New York and be A.M. Best Rating of "A" or better as to Policy Holder Ratings and "VII" or better as to Financial Size Category.**
- I. 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.

END OF SECTION



AIA[®] Document A310™ – 2010

Bid Bond

CONTRACTOR:

(Name, legal status and address)

SURETY:

(Name, legal status and principal place of business)

OWNER:

(Name, legal status and address)

Haldane Central School District
15 Craigside Drive
Cold Spring, NY 10516

BOND AMOUNT: \$

PROJECT:

(Name, location or address, and Project number, if any)

Capital Improvements Projects Package 2
Main Building – SED #: 48-04-01-04-0-001-023

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.

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.

Signed and sealed this day of ,

(Witness)

(Witness)

(Contractor as Principal)

(Seal)

(Title)

(Surety)

(Seal)

(Title)

Init.

/



AIA® Document A312™ – 2010

Payment Bond

CONTRACTOR:

(Name, legal status and address)

SURETY:

(Name, legal status and principal place of business)

OWNER:

(Name, legal status and address)

Haldane Central School District
15 Craigsides Drive
Cold Spring, NY 10516

CONSTRUCTION CONTRACT

Date:

Amount: \$

Description:

(Name and location)

**Capital Improvements Project Package 2 at
Main Building**

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:

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

Signature: _____

Name and

Title:

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:
OWNER'S REPRESENTATIVE:

(Architect, Engineer or other party:)

Tim Walsh, Director of Facilities
Haldane Central School District

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 Contract Documents and all changes made to the agreement and the Contract Documents.

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

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

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

§ 18 Modifications to this bond are as follows:

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 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 Lender and 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)

Signature: _____
Name and Title: _____
Address: _____

SURETY

Company: _____ (Corporate Seal)

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)

OWNER:

(Name, legal status and address)

Haldane
Central School District
15 Craigsides Drive
Cold Spring, NY 10516

CONSTRUCTION CONTRACT

Date:

Amount: \$

Description:

(Name and location)

**Capital Improvements Projects
Main Building**

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:

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

Signature: _____

Name and

Title:

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:
OWNER'S REPRESENTATIVE:

(Architect, Engineer or other party:)

Tim Walsh, Director of Facilities
Haldane Central School District

(Row 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.

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

Init.

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User Notes:

(1362051634)

§ 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 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 Lender and 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)

Signature: _____
Name and Title: _____
Address: _____

SURETY

Company: _____ (Corporate Seal)

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 A201, General Conditions of the Contract for Construction, 2017 Edition, attached, is the General Conditions between the Owner and Contractor and has been revised. 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 A201, 2017 Edition, as revised..

1.3 RELATED REQUIREMENTS

- A. Section 00 5200 - Form of Agreement
- B. Section 00 6000 - Bonds and Certificates
- C. Section 01 4216 - Definitions

END OF DOCUMENT

AIA® Document A201® – 2017

General Conditions of the Contract for Construction

for the following PROJECT:

Capital Improvements Projects Package 2
Main Building – SED #: 48-04-01-04-0-001-023

THE OWNER:

Haldane Central School District
15 Craigsides Drive
Cold Spring, NY 10516

THE ARCHITECT:

Fuller and D'Angelo, P.C.
Architects and Planners
45 Knollwood Road – Suite 401
Elmsford, NY 10523

TABLE OF ARTICLES

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13	MISCELLANEOUS PROVISIONS

ADDITIONS AND DELETIONS:

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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.

14 TERMINATION OR SUSPENSION OF THE CONTRACT

15 CLAIMS AND DISPUTES

(Paragraphs deleted)

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.

§ 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.

§ 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 to 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. All 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 describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The shall exercise proper precautions relating to the safe performance of the Work.

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

§ 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.

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. 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.

§ 3.3 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:

- 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 **Section 9.8.4**.

§ 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.
Add the following for public projects

§ 3.6.3 This project will be considered tax exempt and Contractors shall not include sales tax in their proposal. 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 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.

§ 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 and Allowances.

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

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. 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.

§ 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.

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

§ 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 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.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent 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.**

§ 3.12.2 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 **approving and** submitting 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. If this Section conflicts with Section 01300, Section 01300 shall control

3.13 Use of Site

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.

§ 3.14 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 01731 and Section 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, the owner's representative, and the architect, the 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.

§ 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, Contractor shall perform at least twenty-five (25)% 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

§ 5.2.5.1 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

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.

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 case where unit prices or allowances as 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

§ 7.3 Construction Change Directives

§ 7.3.1 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 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) _____
 - h. Contractor's overhead & profit
on sub-contract changes (5%) _____
 - Sub-Total #3** (items f, g & h) _____

TOTAL QUOTATION (Sub totals 1, 2, 3) _____

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.

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

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.

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

§ 7.3.4.1 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
(Paragraph deleted)

§ 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.

§ 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. 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.

§7.4.2 Minor Changes in the work are not to be construed as Change Orders. A signed minor change order 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 controller (4) 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 school district'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:

REVIEW WITH OWNER REVISE TO SUIT PROJECT

Contract #1 – HVAC

\$1,000

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 **\$250.00** per hour per consultant.

§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 school 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

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

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

§ 9.2 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. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect.

§ 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. Comply with Section 01 2000 Price and Payment Procedures.

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

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

§ 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 be made for materials and equipment suitably 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

§ 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) , or 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.

§ 9.5.2 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 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

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.

§ 9.8.2 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 Architect a comprehensive list of items to be completed or corrected 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 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 Architect to determine Substantial Completion.

§ 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 close out 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, 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 Architect will promptly make such inspection. When the 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 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.

§ 9.10.2 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 close out documents as listed in Section 01 7800 Closeout Submittals (7) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (8) 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.

§ 9.10.3 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.

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.

§ 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.
- .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.

§ 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 regulations of any governing authority, shall be paid for by the Contractor. This shall include any interest or late charges which accrue due to the Contractor's failure to remit payment upon receipt of such levies

§ 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.

§ 10.2.4 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.

§ 10.2.5 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 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

§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 **Certificates of Insurance:** Each certificate shall include the following clause:

- .1 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 Fuller & D'Angelo, P.C. Architects & Planners, prior to the effective date of such change or cancellation."
- .2 Shall specifically describe the work to be performed and the job site location.
- .3 Shall include Owner, Architect and Owner's Representative as "Additional Insured".
- .4 A copy of the endorsement(s) providing additional insured sections must be attached to the Certificates.
- .5 Additional Insured status shall be provided by ISO endorsement CG 20 10 11 85 or its equivalent".

§11.1.1.3 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 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. Failure to provide said insurance shall cause the immediate suspension of all work and possible cancellation of this contract.

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

- .1 Claims under workers' compensation, disability benefit and other similar employee benefit acts which are applicable to the Work to be performed;
- .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;

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- .6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle; and
- .7 Claims for bodily injury or property damage arising out of completed operations; and
- .8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18.

§11.1.2 Certificates of Insurance: Each certificate shall include the following clause:

- .1 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, Construction Manager and Fuller & D'Angelo, P.C. Architects & Planners, prior to the effective date of such change or cancellation."
- .2 Shall specifically describe the work to be performed 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, Construction Manager, their 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 Indemnatee hereunder. The Contractor and each of its Subcontractors and to all Shared Services Contracts (Purchase Order Agreements) shall include the Owner, Architect, Construction Manager 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. Additional Insured status shall be provided by ISO endorsement CG 20 38 04 13 and CG 20 37.**
- .4 A copy of the endorsement(s) providing additional insured sections must be attached to the Certificates.

§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 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. Failure to provide said insurance shall cause the immediate suspension of all work and possible cancellation of this contract.

(Paragraph deleted)

§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 and Employers Liability Insurance:** Statutory Workmen's Compensation and Employers Liability insurance 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 and Employer's Liability insurance for all of the employees to be engaged in such work. Provide Statuary Limits and Coverages
- .2 **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: (General Aggregate to apply on a per project basis).	\$2,000,000.00.
Personal Injury:	\$1,000,000.00.
Fire Damage Legal:	\$50,000.00.
Medical Payment:	\$10,000.00

Other Requirements: No Explosion, Underground, Collapse (XCU) exclusions.

- .3** 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.

- .4 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 or 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

- .5 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 insured carrier and such to stipulated in the insurance contract.

- .6 Umbrella Liability.** Limit: **\$5,000,000.00** per occurrence and aggregate excess over Underlying Comprehensive General Liability, Automobile Liability, Employers Liability Policies.

- .7 Self-Insured retention** \$10,000.00 per occurrence.

- .8 Owner Contractor Protective Liability Insurance (OCP):** If the Contract amount is greater than **\$250,000** the Contractor shall purchase and maintain an Owner's Protective Liability policy naming the Owner, Owner's Representative, Construction Manager and Fuller & D'Angelo, P.C. as named insured. The original and duplicate policy shall be filed with Owner and the policy shall remain in effect until the job is formally accepted by the Owner.

Limits of Liability:	\$1,000,000.00 each occurrence.
	\$2,000,000.00 aggregate

- .9 Asbestos/Lead/Hazardous Materials Liability Insurance :** With coverage for the services rendered for the district, 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 in addition to Insurance specified, The Contractor shall provide the following liability insurance:

Workman's Compensation: State: Statutory

Applicable Federal: (e.g., Longshoremen, harbor work, Work at or outside U.S. Boundaries): Statutory

Employer's Liability: \$100,000

Said policy shall be endorsed to indicate that the term "Insured" shall include the "Owner" Owner's Representative, and Fuller & D'Angelo, P.C. Architects & Planners and be deemed to include their authorities, boards, bureaus, departments and officers thereof in their official capacities.

Said policy shall be endorsed to indicate that the contractor is solely responsible for the premium cost of the policy including any audit adjustments.

Said policy shall contain a 30-day notice of cancellation clause with said notice to be sent to the Owner, Owner's Representative, and Fuller & D'Angelo, P.C. Architects & Planners by certified mail.

Minimum limits:

\$2,000,000 per occurrence/\$3,000,000, including products and completed operations. If a retroactive date is used, it must pre-date the inception of the contract

If automobiles are to be used for transporting hazardous materials, the Contractor shall provide pollution liability broadened coverage (ISO endorsement CA 9948) as well as proof of MCS 90:

- .10 Builders Risk:** Unless otherwise provided for hereunder, the Contractor shall purchase and maintain throughout the course of the entire contract, and until final acceptance, a Builders Risk Policy providing a Builder's Risk Coverage Form or Builder's Risk Renovation Form in an amount equal to 100% of the construction replacement cost.
- The coverage format shall be the "Special Coverage" form (all risk) naming the Owner, the Contractor and all sub-contractors and suppliers as their interest appear. Loss, if any, shall be payable to the Owner as trustee for all interests. Contractor shall be solely responsible for the cost of any deductible.
- .11 Flood and Earthquake Coverage:** The Contractor, prior to commencing any work on the project, shall ascertain whether the site is subject to the perils of Flood, Mudslide and/or earthquake. If the exposure is present, the Contractor, at his sole cost expense, shall purchase and maintain coverage for the duration of the contract.
- The Contractor, prior to signing of the contract, shall provide the Owner and Fuller & D'Angelo, P.C. Architects & Planners with a written report and notice from a P.E. as to the Flood and Earthquake exposures at the site and indicate what coverage, if any is to be provided.
- .12 Equipment, Tools and Supplies:** By signing this contract, the Contractor agrees and understands that he is solely responsible for all loss to any tools, equipment or supplies, owned, rented, or leased, stored at or off the site. Further, the Contractor certifies that he has provided, or will provide notice to this effect to all sub-contractors and suppliers.

(Paragraph deleted)

§11.1.5 Subcontractors Insurance: The Contractor agrees to provide all sub-contractors with a copy of these insurance requirements and further, agrees to require all subcontractors, manufacturers and suppliers to provide evidence of insurance of the same coverage and limits as are required from the Contractor pursuant to Section 11.1.4.

(Paragraph deleted)

§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 Fuller & D'Angelo, P.C. Architects and Planners for a period of 2 years from the date of final acceptance.

(Paragraph deleted)

§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 Fuller & D'Angelo, P.C. Architects & Planners.

§11.1.9 The signing of this contract acknowledges that the Contractors have notified their insurance carriers accordingly.

§11.1.10 Renewal Certificates of Insurance: Renewal Certificates of Insurance must be filed with the Owner, Owner's Representative, Construction Manager and Fuller & D'Angelo, P.C. Architects & Planners at least 30 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, Construction Manager and Fuller & D'Angelo, P.C. 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 to this effect, annually with the Owner, Owner's Representative, Construction Manager and Fuller & D'Angelo, P.C. and the Contractor shall obtain and record like certificates from his sub- contractors

§11.1.14 Insurance Carriers: All insurance carriers providing coverage on the project must be **licensed** to do business in the State in which the project is located, and in the State in which the Contractor is domicile. The companies must be Best "Secured" rated or better. This requirement applies to all sub-contractors 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 Failure to provide, maintain or deliver satisfactory insurance during the course of 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 it's 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 sub-contractor's. Said policy shall be endorsed to indicate that the term "Insured" shall include the "Owner" Owner's Representative, Construction Manager and Fuller & D'Angelo, P.C. Architects & Planners 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 Manager and Architects & Engineers

§ 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 notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall 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

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. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

§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 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.

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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.

§ 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. 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

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.

§ 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 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

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, 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 13.7.

§ 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

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

§ 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.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, 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; 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 back charged for costs incurred by the Owner.

§ 14.3 Suspension by the Owner for Convenience

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

§ 14.3.2 The Contract Sum and 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**

14.4 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.

§ 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.**

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

§ 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.

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.

(Paragraph deleted)

§ 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.

§ 15.1.5 Claims for Additional Cost

§ 15.1.5.1 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.

§ 15.1.7 Waiver of Claims for Consequential Damages

(Paragraphs deleted)

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

§ 15.2 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. 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

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract shall be subject to 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 part may engage the Mediator as its representative after the Mediation. Statements made and documents provided or exchanged as part of the Mediation shall be considered to 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 to mediation or 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.

§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 CONTRACT

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 PROJECT

- A. Project Name: Mechanical Upgrades and Related Work
- B. Owner's Name: Haldane Central School District.
- C. Architect's Name: Fuller and D'Angelo, P.C.
- D. The Project consists of the Mechanical Upgrades and Related Work, Haldane Central School District, Cold Spring, NY 10516.

1.3 DEFINITIONS

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

1.4 CONTRACT DESCRIPTION

- A. This project is exempt from the New York State Wick's Law separate bid requirements. All work shall be performed as a single prime contract based on a Stipulated Price as described in Section 00 5200 - Agreement Form
 - 1. Refer to Section 00 4336 - Proposed Subcontractors Form for further requirements.
- B. 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 Heating, Ventilating, Air-Conditioning (HVAC) .
- C. The work of each Contractor is identified in this Project Manual and on the Drawings.
- D. Local custom and trade-union jurisdictional settlements do not control the scope of Work included in the contract. When a potential jurisdictional dispute or similar interruption of work is first identified or threatened, the affected prime contractor(s) shall promptly negotiate a reasonable settlement to avoid or minimize the pending interruption and delays.
- E. 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.
- F. 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, Architect's, or Construction Manager's attention in writing for determination.
- G. Summary by References: Work of the contract can be summarized by reference to the prime contract(s), General Conditions, Instructions to Bidders, Specification sections, Drawings, Addenda, or Modifications 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.
- B. Section 00 7200 - General Conditions : Additional requirements for progress payments, final payment, and Changes in the Work.

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- C. Section 01 2000 - Price and Payment Procedures.
- D. Section 01 2100 - Allowances.
- E. Section 01 2300 - Alternates: (Contract #1) Payment procedures relating to alternates, if any.
- F. Section 01 2500 - Substitution Procedures.
- G. Section 01 3553 - Site Safety and Security Procedures.
- H. Section 01 5000 - Temporary Facilities and Controls.
- I. Section 01 5500 - Vehicular Access and Parking.
- J. Section 01 5721 - Indoor Air Quality Controls
- K. Section 01 7000 - Execution.
- L. Section 01 7800 - Closeout Submittals.

1.6 JURISDICTIONAL DISPUTES

- A. The 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.
- B. 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'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.
- C. 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. Refer to Section 00 4336 - Proposed Subcontractors Form for subcontractors required to be submitted with the Bid Proposal.

1.8 DESCRIPTION OF ALTERATIONS WORK

- A. Scope of demolition and removal work is shown on drawings.
- B. Plumbing: Alter existing system and add new construction, keeping existing in operation.
- C. HVAC: Alter existing system and add new construction, keeping existing in operation.
- D. Electrical Power and Lighting: Alter existing system and add new construction, keeping existing in operation.
- E. Fire Alarm: Alter existing system and add new construction, keeping existing in operation.
- F. Haldane Central School District will remove the following items before start of work:
 - 1. Loose furniture, computers, loose books etc. at window walls..
- G. Haldane Central School District shall reinstall all furniture, computers, loose books etc..
- H. Contractor shall cover all fixed items in each room and floor with polyethylene 6 mil plastic.

1.9 OWNER OCCUPANCY

- A. Haldane Central School District intends to occupy portions of the existing building during the entire construction period..
- B. Haldane Central School District intends to occupy the Project upon Substantial Completion.
- C. Cooperate with Owner's representative to minimize conflict and to facilitate Haldane Central School District's operations.
- D. Schedule the Work to accommodate Owner's occupancy.

1.10 CONTRACTOR USE OF SITE AND PREMISES

- A. Construction Operations: as stated above..
- B. Arrange use of site and premises to allow:
 - 1. Haldane Central School District occupancy.
 - 2. Work by Haldane Central School District.
 - 3. Use of site and premises by the public.
- C. Provide access to and from site as required by law and by Haldane Central School District:
 - 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 contractor shall have the use of the work area for construction operations, as indicated in schedule of work 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 Contractor shall administer allocation of available space equitably among the separate prime or subcontractors and other entities needing access and space, so as to produce the best overall efficiency in performance of the total work of the project. The Contractors shall schedule deliveries so as to minimize space and time requirements for storage of materials and equipment on site.
 - 2. The 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. 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'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. Site work shall be scheduled and coordinated with Owner's Representative. The Owner decisions shall be final and binding on all contractors.
 - 1. Confine operations at the site to the areas permitted under the Contract. Portions of the site beyond areas on which work is indicated are not to be disturbed. Conform to site rules and regulations affecting the work while engaged in project construction
- K. 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.
- L. 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.
- M. 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 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..
- N. Without prior approval of the Owner and Owner's Representative, the Contractors 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. . 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 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 may, in the Owner'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.
- O. 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.
- P. Keep public areas such as hallways, stairs, and toilet rooms free from accumulation of waste material, rubbish or construction debris.
- Q. Smoking, drinking of alcoholic beverages or open fires will not be permitted on the project site.
- R. 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 alarm system, electrical, data, and heating system, without 7 days notice to Owner 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 June 24th, 2022.

- a. 3:30 PM thru 10:30 PM Monday thru Friday only when programs and school occupancy are not disrupted and with the approval of the Owner's Representative. .
 2. June 26th thru August 31st, 2022.
 - a. 7:00 AM thru 4:00 PM Monday thru Friday. .
 3. September 1 thru June 30th, 2022
 - a. 3:30 PM thru 10:30- PM Monday thru Friday only when programs and school occupancy are not disrupted and with the approval of the Owner's Representative.
 4. Construction operations which create dust, noise or fumes, particularly welding operations shall be scheduled after school hours, when approved by the Owner.
- B. Upon request by the Contractor, the building may be made available, at the discretion of the Owner 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. All expenses shall be deducted from the Contractor's 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 COMPLETION OF WORK AFTER SCHEDULED COMPLETION DATE

- A. Contractor(s) shall perform work only within these limitations and all manpower, equipment, etc., shall be provided as required to complete the work as per schedule. In the event the contractor does not complete the work as scheduled all work to be performed shall be performed after 3:30 PM when the building is unoccupied and approved by the Owner's Representative. All costs shall be borne by the Contractor.
- B. The Contractor shall prepare a progress schedule in detail listing items of work, sections of building and the time required for each.
- C. The Contractor shall provide necessary manpower, equipment, etc., as required to maintain schedule developed within the time limitations as described above.

1.13 WORK SEQUENCE

- A. Start Date: Letter of Award of Contract:
- B. Construct Work in phases during the construction period:
 1. Phase 1: Award of Contract.
 - a. Tasks: Schedule of Values, Progress Schedule, Contracts, Bonds and Insurance, Field verification of existing conditions, and Submittals
 - b. Completion Phase 1: 6 weeks from Award of Contract.
 2. Phase 2: Construction.
 - a. Tasks: 6 weeks from Award of Contract
 - b. Completion Phase 2: August 31, 2022
 3. Phase 3: Punch List:
 - a. Start Date: September 1, 2022
 - b. Completion Phase 3: September 15, 2022
 4. Phase 4: Closeout.
 - a. Start Date: September 16, 2022

b. Completion Phase: October 1, 2022

C. Coordinate construction schedule and operations with Owner's Representative.

1.14 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.

DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS

00 0115 LIST OF DRAWING SHEETS
00 2113 BIDDING REQUIREMENTS
00 2115 RFI FORM
00 4120 BID FORM – CONTRACT #1 HVAC
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

DIVISION 01 - GENERAL REQUIREMENTS

01 1000 SUMMARY OF CONTRACTS
01 2000 PRICE AND PAYMENT PROCEDURES
01 2005 PARTIAL RELEASE OF LIEN
01 2100 ALLOWANCES
01 2300 ALTERNATES
01 2500 SUBSTITUTION PROCEDURES
01 3000 ADMINISTRATIVE REQUIREMENTS
01 3216 CONSTRUCTION PROGRESS SCHEDULE
01 3306 NONDISCRIMINATION 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 5000 TEMPORARY FACILITIES AND CONTROLS
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 7800 CLOSEOUT SUBMITTALS
01 7900 DEMONSTRATION AND TRAINING

APPENDIX

LIMITED ASBESTOS SURVEY & LEAD-BASED PAINT INSPECTION (Dated 8/10/17)
LEAD BASED PAINT SURVEY (Dated 9/25/18)

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155.5 UNIFORM SAFETY STANDARDS FOR SCHOOL CONSTRUCTION AND
MAINTENANCE

1.15 CONTRACT #1 - HVAC

A. Work in the HVAC Contract #1 includes, but is not limited to, the following:

DIVISION 03 - CONCRETE

03 3000 CAST IN PLACE CONCRETE

DIVISION 05 METALS

05 5000 METAL FABRICATIONS

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

06 1000 ROUGH CARPENTRY

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

07 5010 MODIFICATIONS TO EXISTING ROOFING

07 7720 ROOF ACCESSORIES

07 8400 FIRESTOPPING

07 9200 JOINT SEALANTS

DIVISION 08 OPENINGS

08 4313 ALUMINUM FAMED STOREFRONTS

DIVISION 09 FINISHES

09 2116 GYPSUM BOARD ASSEMBLIES

09 5100 ACOUSTICAL CEILINGS

09 9123 INTERIOR PAINTING

DIVISION 22 – PLUMBING

22 0517 SLEEVES AND SLEEVE SEALS FOR PLUMBING PIPING

22 0519 METERS AND GAUGES FOR PLUMBING PIPING

22 0523 GENERAL-DUTY VALVES FOR PLUMBING PIPING

22 0529 HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

22 0553 IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

22 0716 PLUMBING EQUIPMENT INSULATION

22 0719 PLUMBING PIPING INSULATION

22 1005 PLUMBING PIPING

22 3000 PLUMBING EQUIPMENT

DIVISION 23 - HVAC

23 0513 COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT

23 0516 EXPANSION FITTINGS AND LOOPS FOR HVAC PIPING

23 0517 SLEEVES AND SLEEVE SEALS FOR HVAC PIPING

23 0519 METERS AND GAUGES FOR HVAC PIPING

23 0523 GENERAL-DUTY VALVES FOR HVAC PIPING

23 0529 HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

23 0553 IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

23 0593 TESTING, ADJUSTING, AND BALANCING FOR HVAC

23 0713 DUCT INSULATION

23 0719 HVAC PIPING INSULATION

23 0800 COMMISSIONING OF HVAC

23 0993 SEQUENCE OF OPERATIONS FOR HVAC CONTROLS

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23 3100 HVAC DUCTS AND CASINGS
23 3300 AIR DUCT ACCESSORIES
23 3700 AIR OUTLETS AND INLETS
23 7223 PACKAGED AIR-TO-AIR ENERGY RECOVERY UNITS
23 8126 SMALL-CAPACITY SPLIT-SYSTEM AIR CONDITIONERS
23 8200 CONVECTION HEATING AND COOLING UNITS

DIVISION 26 – ELECTRICAL

26 0505 SELECTIVE DEMOLITION FOR ELECTRICAL
26 0526 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS
26 0529 HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS
26 0533 CONDUIT FOR ELECTRICAL SYSTEMS
26 0533.23 SURFACE RACEWAYS FOR ELECTRICAL SYSTEMS
26 0583 WIRING CONNECTIONS
26 2416 PANELBOARDS
26 2816 ENCLOSED CIRCUIT BREAKERS
26 5100 INTERIOR LIGHTING

DIVISION 31 - EARTHWORK

31 2301 EXCAVATION, BACKFILL AND COMPACTION

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

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 7200 - General Conditions: Additional requirements for progress payments, final payment, changes in the Work.
- C. Section 01 7800 - Closeout Submittals for additional requirements for Final Payment.
- D. Section 01 2005 - Partial Release of Lien.
- 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. Form to be used: AIA G702/703 .
- 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) Mobilization: 3% of Contract Sum which includes the following:
 - (a) Bonds, Insurance, and Submittals.
 - b) OCP Insurance, Change Orders, Sub-Contractors, and Allowances
 - c) As-built Drawings (2% of contract amount)
 - d) Punch List (1% of contract amount).
 - e) Final Cleaning
 - f) Closeout Documents (3% of contract amount).
- F. Revise schedule to list approved Change Orders, with each Application For Payment.

1.5 APPLICATIONS FOR PROGRESS PAYMENTS

- A. Payment Period: Submit at intervals stipulated in the Agreement but not more than one per month.
- B. Form to be used: Approved Schedule of Values Form.
- C. 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.
- D. Execute certification by signature of authorized officer.
- E. 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.
- F. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of work.
- G. List each Allowance as a separate line item, listing allowance number and dollar amount as for an original item of work.
- H. Submit one (1) electronic "pencil copy", in PDF format, of each Application for Payment to Owner's Representative and Fuller and D'Angelo, P.C. for approval.
- I. After Architect's approval of the "pencil copy" submit three hard copies of approved Application for Payment to Fuller and D'Angelo, P.C.
- J. 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 3216.
 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.
 - 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.
- K. 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
- L. Project record documents as specified in Section 01 7800 - Closeout Submittals, shall be available for review by Owner's Representative and Fuller and D'Angelo P.C as a prerequisite for approval of payment.
- M. 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).

- N. 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.
- O. 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 and on site superintendent.
 - 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 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, Fuller and D'Angelo, P.C. will issue instructions directly to the contractor.
- D. For other required changes, Fuller and D'Angelo. will issue a document signed by the Haldane Central School District instructing the 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.
- E. 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 ten (10) days.
- F. Contractor may propose a change by submitting a request for change to 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 .
- G. Computation of Change in Contract Amount:
 - 1. Refer to AIA 201 Article 7.
- H. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
 - 1. For change requested by Fuller and D'Angelo for work falling under a fixed price contract, the amount will be based on Contractors's price quotation.
 - 2. For change requested by the contractor, the amount will be based on the Contractor's request for a Change Order as approved by Fuller and D'Angelo.
 - 3. For pre-determined unit prices, unit costs, allowance and quantities, the amount will based on the fixed allowance.

4. For change ordered by Fuller and D'Angelo without a quotation from, the amount will be determined by Fuller and D'Angelo based on the Contractor's substantiation of costs as specified for Time and Material work.
- I. 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 and Construction Manager prior to starting and will present an itemized T&M sheet daily for Owner's Representative and Construction Manager signature at the end of the shift. No payments will be made for any T&M work without daily signed worksheets.
- J. Execution of Change Orders: Fuller and D'Angelo will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
- K. 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.
- L. 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.
- M. 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 1000 - Summary of Contract, 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 at 100% complete, less 5% retainage.

1.11 APPLICATION FOR FINAL PAYMENT

- A. Comply with Section 01 7800 - Closeout Submittals.
- B. 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

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

SECTION 01 2005
PARTIAL RELEASE OF LIEN

CONTRACTOR/SUBCONTRACTOR/VENDOR'S LETTERHEAD

Name of Facility: Haldane Central School District

Address: 15 Craigsides Drive Cold Spring, NY 10516

Name of Owner: Haldane Central School District

Address: 15 Craigsides Drive , Cold Spring, NY 10516

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 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

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

**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.
 - 1. Selected materials and equipment are specified in the Contract Documents by allowances. In some cases, these allowances include installation. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by Change Order.
- B. Cash allowances.
- C. 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.
- B. Cash Allowance: Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts **shall be determined in accordance with Article 7 of the General Conditions.**
- C. The Contract Sum for all costs, regardless if more than or less than allowances, shall be adjusted accordingly by Change Order.
- D. 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 performed or placed beyond the lines and levels of the required Work.
 - 5. Products remaining on hand after completion of the Work.
 - 6. Loading, hauling, and disposing of rejected Products.

1.5 CASH ALLOWANCES

- A. Refer to paragraph 1.4 above.
- B. Costs Included in Cash Allowances: Cost of product to contractor or subcontractor, less applicable trade discounts, less applicable taxes.
- C. Costs Not Included in Cash Allowances: Product handling at the site, including unloading, uncrating, and storage; protection of products from elements and from damage; and labor for installation and finishing.
_____.
- D. Owner's Representative and Architect Responsibilities:
 - 1. Consult with Owner's Representative, Architect, and Contractor, for consideration and selection of products, suppliers, and installers.
 - 2. Select products in consultation with Haldane Central School District and transmit decision to Contractor.
 - 3. Prepare Change Order.
- E. Contractor Responsibilities: **(To be included in the Contract Sum but not in the allowances.)**
 - 1. Assist Owner's Representative and Architect in selection of products, suppliers, and installers.

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

2. Obtain proposals from suppliers and installers and offer recommendations.
 3. On notification of which products have been selected, execute purchase agreement with designated supplier and installer.
 4. Arrange for and process shop drawings, product data, and samples. Arrange for delivery.
 5. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for transportation damage.
- F. Differences in costs will be adjusted by Change Order.
- G. TOTAL CASH ALLOWANCE .
1. Refer to Bid Form.

1.6 ALLOWANCES SCHEDULE

A. CONTRACT #1 - HVAC CONTRACTOR

1. ALLOWANCES

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

Twelve Thousand _____ \$12,000.00 DOLLARS

TOTAL ALLOWANCES CONTRACT #1 - HVAC CONTRACTOR

Twelve Thousand _____ (\$12,000.00) DOLLARS

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 2300
ALTERNATES**

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. Description of alternates for selection by the Owner, not included in the Base Bid.

1.3 RELATED REQUIREMENTS

- A. Section 00 2113 - Bidding Requirements: Instructions for preparation of pricing for Alternates.
- B. Section 00 4120 - Bid Form Contract #1 HVAC - Bid Form for listing amount of each Alternates.
- C. Section 00 5200 - Form of Agreement: Incorporating monetary value of accepted Alternates.

1.4 ACCEPTANCE OF ALTERNATES

- A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Haldane Central School District's option. Accepted Alternates will be identified in the Owner-Contractor Agreement.
- B. Coordinate related work and modify surrounding work to integrate the Work of each Alternate.

1.5 SCHEDULE OF ALTERNATES HEATING VENTILATING AND AIR CONDITIONING

- A. Alternate No. HVAC-1 - Main Office IT :
 - 1. The Contractor for HVAC work shall state the amount to be ADDED TO the Base Bid to provide, furnish and install all labor, equipment and material required to install new ceiling-hung air handling unit, condenser unit, distribution ductwork, window modifications, suspended acoustical ceiling, light fixtures, controls, etc. in the Main Office in accordance with the specifications and shown on the contract documents.
- B. Alternate No. (HVAC-2) - Nurse's Office A/C
 - 1. The Contractor for [HVAC] work shall state the amount to be ADDED TO the Base Bid to provide, furnish and install all labor, equipment and material required to install new ceiling-hung air handling unit, condenser unit, distribution ductwork, window modifications, suspended acoustical ceiling, light fixtures, controls, etc. in the Nurse's Office in accordance with the specifications and shown on the contract documents.
- C. Alternate No. (HVAC-3) - Relocate Electrical Panels
 - 1. The Contractor for HVAC work shall state the amount to be ADDED TO the Base Bid to provide, furnish and install all labor, equipment and material required to extend electrical circuits from the Pump Room to new electrical panels in the adjacent Storage Room in accordance with the specifications and shown on the contract documents.

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 - Bidding Requirements: Restrictions on timing of substitution requests.
- B. Section 01 3000 - Administrative Requirements: Submittal procedures, coordination.
- C. Section 01 6000 - Product Requirements: Fundamental product requirements, definitions for substitutions, product options, delivery, storage, and handling and restrictions on timing of substitution requests.
- D. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions: Restrictions on emissions of indoor substitute products.

1.4 DEFINITIONS

- A. Refer to Section 01 6000 - Product Requirements.
- B. Substitutions: Changes from Contract Documents requirements proposed by Contractor to materials, products, assemblies, and equipment.
 - 1. Substitutions for Cause: Proposed due to changed Project circumstances beyond Contractor's control.
 - a. Unavailability.
 - 2. Substitutions for Convenience: Proposed due to possibility of offering substantial advantage to the Project.
 - a. Substitution requests offering advantages solely to the Contractor will not be considered.

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 Haldane Central School District.
 - 5. Waives claims for additional costs or time extension that may subsequently become apparent.
 - 6. Agrees to reimburse Architect 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.
 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.
 - (d) Drawings, when required to show impact on adjacent construction elements.
 - d. Impact of Substitution:
 - a) Savings to Haldane Central School District 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 30 days after date Letter of Award.
- C. Submit request for Substitution for Cause within 14 days of discovery of need for substitution, but not later than 14 days prior to time required for review and approval by Architect and Consultant, in order to stay on approved project schedule.
- D. Submit request for Substitution for Convenience immediately upon discovery of its potential advantage to the project, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.
 - 1. In addition to meeting general documentation requirements, document how the requested substitution benefits the Haldane Central School District through cost savings, time savings, greater energy conservation, or in other specific ways.
 - 2. Document means of coordinating of substitution item with other portions of the work, including work by affected prime contractors and subcontractors.
 - 3. Bear the costs engendered by proposed substitution of:
 - a. Haldane Central School District's compensation to the Architect and Consultant for any required redesign, time spent processing and evaluating the request.
 - b. Other construction by Haldane Central School District.
 - c. Other unanticipated project considerations.
- E. 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.
 - 1. Architect's decision following review of proposed substitution will be noted on the submitted form.

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 following this section.

SUBSTITUTION REQUEST FORM

SUBSTITUTION REQUEST No. _____

(After the Bidding Phase)

Project: Mechanical Upgrades and Related Work

Contract # _____

Substitution Request Number: _____

From: _____

Date: _____

A/E Project Number: 19338.02

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.

Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by: _____

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

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

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. Submittals for review and information.
- E. Number of copies of submittals.
- F. Submittal procedures.

1.3 RELATED REQUIREMENTS

- A. Section 01 1000 - Summary of Contract: Sequence of Work, occupancy, .
- B. Section 01 2000 - Price and Payment Procedures.
- C. Section 00 2115 - RFI Form.
- D. Section 01 3216 - Construction Progress Schedule: Form, content, and administration of schedules.
- E. Section 01 3553 - Site Safety and Security Procedures
- F. Section 01 7000 - Execution: Additional coordination requirements.
- G. 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. Design data.
 - 6. Manufacturer's instructions and field reports.
 - 7. Applications for payment and change order requests.
 - 8. Progress schedules.
 - 9. Correction Punch List and Final Correction Punch List for Substantial Completion.
 - 10. Closeout submittals.

1.6 PROJECT COORDINATION

- A. Owner's Representative: Tim Walsh, Director of Facilities.
- B. The 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. Coordination: The contractor shall coordinate its construction operations with those of other Contractors and subcontractors and entities to ensure efficient and orderly installation of each part of the Work. The contractor shall coordinate its operations with operations, included in different Sections that depend on each other for proper installation, connection, access to the work and operation.
 - a. Coordinate installation of different components with other contractors and/or subcontractors to ensure maximum accessibility for required maintenance, service, and repair
 3. The Contractor shall cooperate with the Owner's Representative in allocation of mobilization areas of site, access, traffic, parking facilities, and sheds.
 4. During construction, coordinate use of site and facilities through the Owner's Representative .
 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. Coordinate field engineering and layout work under instructions of the Owner's Representative.
- C. Make the following types of submittals to Fuller and D'Angelo, P.C.:
1. Requests for Interpretation.
 2. Requests for substitution.
 3. Shop drawings, product data, and samples.
 4. Test and inspection reports.
 5. Design data.
 6. Manufacturer's instructions and field reports.
 7. Applications for payment and change order requests.
 8. Progress schedules.
 9. Correction Punch List and Final Correction Punch List for Substantial Completion.
 10. Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 PRECONSTRUCTION MEETING

- A. Fuller and D'Angelo, P.C. will schedule a meeting after Notice of Award.
- B. Attendance Required:
 1. Haldane Central School District.
 2. Fuller and D'Angelo, P.C.
 3. Consultants.
 4. Contractors.
 5. Contractor's Field Superintendent.
- C. Agenda:
 1. Execution of Haldane Central School District-Contractor Agreement.
 2. Submission of executed Bonds and Insurance certificates..
 3. Submission of schedule of values, progress schedule, list of products,, and list of subcontractors/suppliers.
 4. Submission of initial Submittal schedule.
 5. Submission of DOL Award of Contract form (PW-39).
 6. Designation of personnel representing the parties to Contract.

7. Procedures and processing of field decisions, submittals, substitutions, applications for payments, change orders, and contract closeout procedures.
 8. Review construction scheduling.
 9. Use of premises by Owner and Contractor(s).
 10. Haldane Central School District's requirements and occupancy prior to completion.
 11. Temporary utilities provided by Haldane Central School District.
 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.
 17. Inspection and acceptance of equipment put into service during construction period.
- 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. Architect will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- B. Meetings will be scheduled throughout progress of the Work at minimum of two week intervals.
- C. Attendance Required:
1. Contractor.
 2. Haldane Central School District.
 3. Fuller and D'Angelo, P.C.
 4. Contractor's superintendent.
 5. Major Subcontractors.
 6. Suppliers as appropriate to agenda topics for each meeting.
- D. Attendees: In addition to representatives of the Owner's representative and Architect/Engineer, 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 Owner's Representative. Subcontractors, suppliers, or other entities will be invited at the discretion of the Owner's representative and Architect.
 2. 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 delivery schedules.
 7. Review construction safety programs.
 8. Maintenance of progress schedule.
 9. Corrective measures to regain projected schedules.
 10. Planned progress during succeeding work period.
 11. Coordination of projected progress.
 12. Maintenance of quality and work standards.
 13. Effect of proposed changes on progress schedule and coordination.
 14. 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. The Contractor(s) 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 - See Section 01 3216

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 and Architect at weekly intervals.

3.6 REQUESTS FOR INTERPRETATION (RFI)

- A. Definition: A request seeking one of the following:
 - 1. An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in Contract Documents.
 - 2. A resolution to an issue which has arisen due to field conditions and affects design intent.
- B. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.
- C. 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.
 - 2. Prepare using an electronic version of the form in Section 00 2115 - RFI Form.

3.7 SUBMITTAL SCHEDULE

- A. Submit to Owner's Representative and Architect for review a schedule for submittals in tabular format.
 - 1. Submit at the same time as the preliminary schedule.

3.8 SUBMITTALS FOR REVIEW

- A. All submittals are the product and the property of the Contractor. The Owner, Owner's Representative, or Architect 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
- B. Shop Drawing Submittal Log no later than five (5) days after award of contract.
- C. All Shop Drawing Submittals shall be submitted no later than twenty (20) days after Letter of Award of Contract. No further payments will be made to the Contractor after twenty (20) until all submittals are made.
- D. When the following are specified in individual sections, including but not limited to the following, submit them for review:
 - 1. Product data.
 - 2. Design data.
 - 3. Shop drawings.
 - 4. Samples for selection.
 - 5. Templates.
 - 6. Standard wiring diagrams.
- E. Submit to Owner's Representative and Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.

- F. Samples will be reviewed only for aesthetic, color, or finish selection and for record documents purposes described in Section 01 7800 - Closeout Submittals.
- G. After review, provide copies and distribute in accordance with Submittal Procedures article below .
- H. 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 Contractor.** The Architect shall not be required to review partial submissions or those for which submissions of correlated items have not been received.
- I. 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.
- J. **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.**
- K. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.
- L. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals.

3.9 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.

3.10 SUBMITTALS FOR PROJECT CLOSEOUT

- A. Refer to Section 01 7800 - Closeout Submittals..

3.11 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;
 - 3. Add Revision number (Rev2 Rev3, etc) to the file name when resubmitting items, for example:

- a. 03 3000 Concrete Revl.pdf
4. Use capital letters and spaces to make the names "readable" do not use special characters, underscores, hyphens, etc.
5. Provide transmittal, attached to this section with each electronic submittal and list each item that's included.
6. Provide a Cover Sheet with each item - in the same file as the technical submittal.
7. Do not add dates to the file names, the files are automatically dated when created..
8. Do not zip the files, and do not put the files in Folders.
9. Do not email electronic submittal attachments larger than 5 MB.
10. Do not email multiple electronic submittals- rather burn the submittals on a CD and send the CD via FedEx or other overnight mail.
11. Make all technical submittals at one time per trade- refer to the specification for additional submittal requirements for example:
 - a. Concrete; Masonry; Miscellaneous Fabrications; Roofing; etc.
12. 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 Owner's Representative.
 1. After review, produce duplicates.
 2. Approved sample will be retained at the project site.
 3. Retained samples will not be returned to Contractor unless specifically so stated.
 4. Submit with each sample, in electronic PDF format, data, cuts, photos, color, charts, etc.

3.12 SUBMITTAL PROCEDURES

- A. 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.
 3. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.
- B. 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.

3.13 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. Architect's actions on items submitted for review:
 1. Authorizing purchasing, fabrication, delivery, and installation:
 - a. "Approved", or language with same legal meaning.
 - b. "Approved as Noted, Resubmission not required", or language with same legal meaning.
 - c. "Approved as Noted, Resubmit for Record", or language with same legal meaning.
 2. 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.
- E. 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.

SUBMITTAL COVERSHEET

Haldane Central School District
Mechanical Upgrades and Related Work

Haldane Central School District

ARCHITECT:

Fuller and D'Angelo, P.C.
45 Knollwood Rd.
Elmsford, NY10523

OWNER:

Haldane Central School District
Tim Walsh, Director of Facilities
15 Craigside Drive .
Cold Spring, NY 10516

CONTRACTOR: _____ **CONTRACT:** _____

ADDRESS: _____

DATE _____ **TELEPHONE:** _____ **EMAIL:** _____

Facility Name: Haldane Central School District

Type of Submittal: Re-submittal: [] No [] Yes [] Certificate [] Warranty [] Color Sample
[] Shop Drawings [] Product Data [] Schedule [] Sample [] Test Report [] Certificate

SUBMITTAL DESCRIPTION: _____

PRODUCT NAME: _____

MANUFACTURER: _____

SUBCONTRACTOR/ _____

SUPPLIER: _____

SPEC.# _____ **DWG.#s** _____ **PAR.#:** _____ **RM. OR DETAIL #s:** _____

Contractor Review Statement: These documents have been checked for accuracy and coordinated with job conditions and Contract requirements by this office and have been found to comply with the provisions of the Contract documents.

Contractor Remarks:

Architect's Comments and Stamp.: _____

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.

1.3 RELATED SECTIONS

- A. Section 01 1000 - Summary of Contract: Work sequence and occupancy.
- B. Section 01 3000 - Administrative Requirements

1.4 REFERENCE STANDARDS

- A. AGC (CPSM) - Construction Planning and Scheduling Manual; 2004.

1.5 RESPONSIBILITY

- A. The Contractor shall be responsible for preparing and updating the contract progress schedule,
- B. The Contractor shall develop a full schedule, in sufficient detail and clarity of form and technique so that the Contractor can plan and control his work properly and the Owner's Representative and Architect can readily monitor and follow the progress for all portions of the work. The Contractor shall complete and submit the detailed schedule within 10 days after contract award
 - 1. Identify all long lead items and dates required on site.
 - 2. In the event of conflict Owner's Representative and Architect shall resolve and provide direction which is in the best interest on the District.
- C. The Contractor shall coordinate their work with work of other prime contractors.
- D. 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.
- E. 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 into logical modules or blocks and levels. Pods A, B, C and D, etc.
 - 2. Responsibility: Contractor or subcontractor responsible for the work.
 - 3. Specifications: CSI format.
 - 4. Milestone: Work associated with completion of interim completion dates.

1.6 SUBMITTALS

- A. After the Letter of Award, within 10 days the Contractor shall submit to the Architect a preliminary schedule with copies to Owner's Representative.
- B. If preliminary schedule requires revision after review, submit revised schedule within 5 days.
- C. Within 5 days after review of preliminary schedule, submit draft of proposed complete schedule for review and approval..
- D. Submit updated schedule with each Application for Payment.
- E. Submit under transmittal letter form specified in Section 01 3000 - Administrative Requirements.
- F. The Contractor(s) are hereby notified that payment requisitions will not be processed by the Architect and Owner's Representative nor paid by the Owner until all schedules are reviewed and approved by the Architect or Owner's Representative.

1.7 QUALITY ASSURANCE

- A. Scheduler: The Contractor's personnel or specialist Consultant specializing in construction scheduling with three (3) 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.

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 horizontal bar chart.
- B. Based on the preliminary development of the progress schedule and on feedback from Owner's Representative and Architect or whatever updating may have occurred during the project start-up, the Contractor shall, for the entire work of the contract, prepare the Final Schedule and secure critical time commitments for performing major elements of all the work.

3.2 GENERAL CONTENT.

- A. The Contractor shall prepare a schedule for their work to be incorporated into the schedule.
- B. Include in schedule, but not limited to, Notice of Award, Submittals, Asbestos/Lead Abatement, Removals, Delivery of major equipment, Installation, Substantial Completion dates, Completion of Punch List, Final Completion, and Closeout
- C. Show complete sequence of construction by activity, by room with dates for beginning and completion of each element of construction.
- D. Identify work of each building and each phases of each building and other logically grouped activities.
- 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 legend for symbols and abbreviations used.

3.3 BAR CHARTS

- A. Identify the first work day of each week.

3.4 REVIEW AND EVALUATION OF SCHEDULE

- A. Participate in joint review and evaluation of schedule with Owner's Representative and Architect at each submittal.
- B. Evaluate project status to determine work behind schedule and work ahead of schedule.
- C. After review, revise as necessary as result of review, 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 approved until satisfactory evidence is presented to put the project on schedule.

3.5 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.
- G. GC to submit revised schedule at each progress meeting.

3.6 DISTRIBUTION OF SCHEDULE

- A. Distribute copies of updated schedules to Contractor's site files, other prime contractors, subcontractors, major suppliers, Owner's Representative , and Architect and other concerned parties.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

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 other 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 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 SPECTIAL 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.
- B. **SUMMARY**
 - 1. This Section specifies special requirements of State Education Department, including Commissioner's Regulation Part 155.5, 155.7
 - a. Copies of Commissioner's Regulation Part 155.5, 155.7 are available on the State Education Department's web site. www.p12nysed.gov.
 - b. Copy of Commissioner's Regulation Part 155.5 is included as Appendix to the specification.
- C. **CERTIFICATE OF OCCUPANCY**
 - 1. The occupied portion of any school building shall always comply with the minimum requirements necessary to maintain a Certificate of Occupancy.
- D. **GENERAL SAFETY AND SECURITY DURING CONSTRUCTION**
 - 1. All construction materials shall be stored in a safe and secure manner.
 - a. Fences around construction supplies or debris shall be maintained.
 - b. Gates shall always be locked unless a worker is in attendance, to prevent unauthorized entry.
 - c. 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.
 - d. Workers shall be required to wear photo-identification badges at all times for identification and security purposes while working at occupied sites.
- E. **SEPARATION OF CONSTRUCTION**
 - 1. 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.
 - a. 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.
- F. **FIRE PREVENTION**
 - 1. There is no smoking on school property for fire prevention and New York State Law.
 - 2. Any holes in floors or walls shall be sealed with a fire resistant material.
 - 3. General Contractor shall maintain existing fire extinguishers.

4. Fire alarm and smoke section systems shall remain in operation at all times.

G. CONSTRUCTION DIRECTIVES

1. 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.
 - a. 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.
 - b. 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.

H. ASBESTOS

1. 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.
2. 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).
 - a. 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.
 - b. 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.

I. VENTILATION

1. 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."

J. ELECTRICAL CERTIFICATION:

1. The electrical Contractor shall obtain UL Certification or Inspection from a Certified Electrical Organization for electrical installation.

K. EXITING

1. Exiting: Work will be performed when school is not in session or after school hours. All exiting will be clear and usable at all times.
2. All exits shall be clear and usable at all times.
3. All modifications or changes to the exiting plan shall be approved by the Architect.

L. CONSTRUCTION WORKER IN OCCUPIED AREAS

1. 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 provided 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 other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. The safety requirements, which must be followed by the Contractor during the execution of this contract.
- B. The 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 Contract: Use of premises and occupancy .
- B. Section 01 5000 - Temporary Facilities and Controls: 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 Contractor and all costs shall be included in their bid.
- B. Protect Work, existing premises and Haldane Central School District's operations from theft, vandalism, and unauthorized entry.
- C. Initiate program in coordination with Haldane Central School District's existing security system at project mobilization.
- D. Maintain program throughout construction period until directed by Fuller and D'Angelo, P.C..

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 is notified and arrangements made to deactivate the system
- B. The Contractor shall restrict entrance of persons and vehicles into Project site and existing facilities.
- C. Allow entrance only to authorized persons with proper identification.
- D. Maintain log of workers and visitors, make available to Haldane Central School District on request.

- E. Haldane Central School District will control entrance of persons and vehicles related to Haldane Central School District's operations.
- F. Coordinate access of Haldane Central School District's personnel to site in coordination with Owner's Representative and Haldane Central School District and security forces.
- 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. The Contractor shall maintain access for emergency vehicles, fireman and pedestrians and protect from damage all persons and property within the limits of and for the duration of the contract .
 - 2. Conduct construction operations so that the traveling public and pedestrian safety is subjected to a minimum of hazard and delay.
 - 3. The Contractor shall perform the following minimum requirements 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: 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 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 include the base bid of 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 Owner's Representative.
 - b. The amount of calendar day nonpayment will be determined by dividing the lump sum amount bid for Maintenance and Protection of Traffic by the number of calendar days between the date of the contractor commences work and the date of completion, as designated in the proposal, without regard to any extension of time.
 - c. In addition, for each calendar day or part thereof of any unsatisfactory work violating the required provisions of any subsection under Traffic Control, liquidated damages will be assessed as listed in the General Conditions.
 - d. If the 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.

- e. 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. The 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, security, automatic temperature control, PA, sprinkler 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 the Contractor and made conveniently available throughout the construction site. Contractor(s) shall notify their employees of the location of the nearest fire alarm box at all locations where work is in progress.
- D. The 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 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's Representative 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.

1.9 PERSONNEL IDENTIFICATION

- A. Provide identification badge or other approved identification to each person authorized to enter premises.
- B. Maintain a list of accredited persons, submit copy to Haldane Central School District 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 Haldane Central School District and to complete any and all forms or procedures, all at no cost or expense to the Haldane Central School District.

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, the Contractor shall exercise every precaution to prevent injury to workers and the public or damage to property.
 - 1. The 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. The 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. The 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. The 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
- 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. The Contractor shall clean up the site daily and keep the site free of debris, refuse, rubbish, and scrap materials. The site shall be kept in a neat and orderly fashion. Before the termination of the contract. The Contractor shall remove all surplus materials, falsework, temporary fences, temporary structures, including foundations thereof.
- F. The 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 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# 2020011713
- 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. Contractor's construction-related professional design services.
- E. Control of installation.
- F. Mock-ups.
- G. Tolerances.
- H. Manufacturers' field services.
- I. Defect Assessment.

1.3 RELATED REQUIREMENTS

- A. Section 01 2100 - Allowances: Allowance for payment of cash allowance services.
- 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 C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation; 2017.
- B. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2018.
- C. IAS AC89 - Accreditation Criteria for Testing Laboratories; 2017.

1.5 CONTRACTOR'S DESIGN-RELATED PROFESSIONAL DESIGN SERVICES

- A. Coordination: Contractor's professional design services are subject to requirements of project's Conditions for Construction Contract.
- B. Base design on performance and/or design criteria indicated in individual specification sections.
- C. Scope of Contractor's Professional Design Services: Provide for the following items of work:
 - 1. Concrete Mix Design: As described in Section 03 3000 - Cast-in-Place Concrete. No specific designer qualifications are required.
 - 2. Structural Design of Metal Fabrications: As described in Section 05 5000 - Metal Fabrications.

1.6 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. 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.
 - 1. Include calculations that have been used to demonstrate compliance to performance and regulatory criteria provided, and to determine design solutions.

2. Include signature and seal of design professional responsible for allocated design services on calculations and drawings.
- C. Test Reports: After each test/inspection, promptly submit one (1) copies of report to Owner's Representative and Architect :
 1. 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.
- D. Certificates: When specified in individual specification sections and/or drawings, submit certification by the manufacturer and Contractor or installation/application subcontractor to Owner's Representative, in quantities specified for Product Data.
- E. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, 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.
- F. Manufacturer's Field Reports: Submit reports for Owner's Representative and Architect's benefit as contract administrator.
 1. Submit report in PDF format within 30 days of observation to Owner's Representative, 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.

1.7 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.
- B. Designer Qualifications: Where professional engineering design services and design data submittals are specifically required of Contractor by Contract Documents, provide services of a Professional Engineer experienced in design of this type of work and licensed in New York.

1.8 REFERENCES AND STANDARDS - See Section 01 4219

1.9 TESTING AND INSPECTION AGENCIES AND SERVICES

- A. Refer to Section 23 0593 for additional requirements.
- 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 the Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- D. Contractor Employed Agency:
 1. Laboratory: Authorized to operate in New York.

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 Architect 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 seven (7) 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. Obtain Owner's Representative and Architect's approval of mock-ups before starting work, fabrication, or construction.
- F. Fuller and D'Angelo, P.C. 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.

3.5 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, adjusting 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 in writing to Owner's Representative and Architect.

3.6 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not complying with specified requirements.

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 GENERAL

- A. Electrical Certification: The Electrical subcontractor shall obtain UL Certification or Inspection from a Certified Electrical Organization for certification of electrical installations.
- B. The Owner shall file and obtain the Building Permit.
- C. The 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 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.
- D. 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 for decision, which decision shall be final and binding.
- E. The work shall not be deemed to have reached a state of completion until the certificates have been delivered.

1.3 SUMMARY OF REFERENCE STANDARDS

- A. Regulatory requirements applicable to this project are the following:
 - 1. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.
 - 2. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
 - 3. 29 CFR 1910 - Occupational Safety and Health Standards; current edition.
 - 4. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.
 - 5. NFPA 101 - Life Safety Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
 - 6. NFPA 72 - National Fire Alarm Code
 - 7. New York State Uniform Fire and Building Codes known as the "Building Codes of the State of New York" and consist of the following:
 - a. State Education Department Planning Standards, including Commissioner's Regulation Part 155.5, 155.7
 - b. Energy Conservation Construction Code of New York State
 - c. Fire Code of New York State
 - d. Fuel Gas Code of New York State
 - e. Mechanical Code of New York State
 - f. Plumbing Code of New York State
 - g. Utility Company Regulations and Requirements.
 - h. Classification of Construction: Type IIB.
 - i. Occupancy Classification: Education E
 - j. 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. <http://www.p12.nysed.gov/facplan/>
 - 8. EPA - Environmental Protection Agency
 - 9. UL - Underwriters Laboratories

10. OSHA Part 1926 Safety and Health Regulations for Construction.
11. Federal Regulation for Asbestos Abatement
 - a. Title 30 CFR Part 61, Subpart G; The Transport and Disposal of Asbestos Waste
 - b. The Transport and Disposal of Asbestos Waste]
 - c. Title 40 CFR, Part 763 Asbestos Containing Materials in Schools; Final Rule and Notice
 - d. Title 49 CFR Parts 106, 107, and 171-179. The Transportation Safety Act of 1974 and the Hazardous Material Transportation Act..
 - e. Public Law 101-637 ASHARA
12. New York State Official Compilation of Codes, Rules and Regulations
 - a. Title 12 Part 56
 - b. Title 10 Part 73
 - c. Title 6 Parts 360-364
 - d. Labor Law - Article 30 and Sections 900-912
 - e. All applicable Additions, Addenda, Variances and Regulatory Interpretation Memoranda

1.4 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 school property, wear an ID badge, safety vest, hard hat, etc. and all other required personal protective equipment as required by OSHA

1.5 RELATED REQUIREMENTS

- A. Section 01 4000 - Quality Requirements.
- B. Section 01 4219 - Reference Standards
- C. Section 02 2080 - Asbestos Abatement.
- D. Section 31 2316 - Excavation.
- E. Division 22 - Plumbing.
- F. Division 23 - Heating, Ventilation and Air Conditioning.
- G. Division 26 - Electrical.
- H. Division 27 - Communications.
- I. Division 28 - Electronic Safety and Security.

1.6 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 Haldane Central School District and their duly authorized representative.
- 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, P.C. 45 Knollwood Road, Elmsford, New York 10523.
- C. Owner's Representative: The term Owner's Representative shall mean Tim Walsh, Director of Facilities
- D. MEP Consultant shall mean Eisenbach & Ruhnke Engineering, 291 Genesee Street, Utica, NY 13501
- E. Sub-Contractor for Plumbing: The term "Plumbing Contract", "Plumbing Contractor" "Contractor for Plumbing" shall have the same meaning.
- F. Contractor for HVAC: The term "HVAC Contract", "HVAC Contractor" "Contractor for HVAC", "Mechanical Contractor" "Ventilation Contractor" shall have the same meaning.
- G. Sub-Contractor for Electrical: The term "Electrical Contract", Electrical Contractor" "Contractor for Electric" shall have the same meaning.
- H. Prime Contractors: Shall include all separate contractors have contractos with the Owner for the same project and may include but not limited to: HVAC and Security.
- I. "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.
- J. "Directed": Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by Architect, requested by Architect, and similar phrases.
- K. "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.
- L. "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.
- M. "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.
- N. 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.
- O. 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.

- P. "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.
- Q. The term "Building Code" shall mean the Building Code of the State of New York including all amendments and reference standards to date.
- R. "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.
- S. "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.
- T. "Concealed" - Embedded in masonry or other construction, installed behind wall furring, within double partitions, or hung ceilings, in trenches, or in crawl spaces.
- U. "Exposed" - Not installed underground or "Concealed" as defined above.
- V. Furnish: The term "furnish" means to supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations..
- W. 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.
- X. 'Noted' - as indicated on the drawings and/or specifications.
- Y. 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.
- Z. Project Manual: The book-sized volume that includes the procurement requirements (if any), the contracting requirements, and the specifications.
- AA. Provide: To furnish and install complete and ready for the intended use.
- AB. 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 Conditions and other Division 1 Specification Sections, apply to this Section.General

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 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. Dewatering facilities and drains.
- B. Temporary water.
- C. Temporary electric power and light.
- D. Ventilation.
- E. Temporary telephone service.
- F. Temporary sanitary facilities.
- G. Dust control.
- H. Storage shed.
- I. Temporary enclosures.
- J. Hoists and temporary elevator use
- K. Waste removal facilities and services.
- L. Construction aids and miscellaneous services and facilities.
- M. Temporary fire protection
- N. Environmental 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.
- D. Section 01 5500 - Vehicular Access and Parking.

1.4 REFERENCE STANDARDS

- A. Refer to Section 01 4219 - Reference Standards.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018b.

1.5 DEWATERING

- A. Provide temporary means and methods for dewatering all temporary facilities and controls.

1.6 REPORTS AND PERMITS:

- A. Refer to 01 3000 - Administrative Requirements and 01 4100 - Regulatory Requirements.

1.7 QUALITY ASSURANCE

- A. Refer to Section 01 4000 - Quality Requirements .

1.8 STANDARDS

- A. Refer to Section 01 4219 - Reference Standards.

1.9 PROJECT CONDITIONS

- A. General: The 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. 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 by owner. Do not allow unsanitary conditions, public nuisances or hazardous conditions to develop or persist on the site.
- C. 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.
- D. Security and Protection: Maintain site security and protection facilities in a safe, lawful, publicly acceptable manner. Take measures necessary to prevent site erosion.

1.10 TEMPORARY UTILITIES

- A. Provide for all electrical power, lighting, and water required for construction purposes.
 - 1. Existing facilities may be used.
- B. Use trigger-operated nozzles, with back flow devices, for water hoses, to avoid waste of water.

1.11 DIVISION OF RESPONSIBILITIES

- A. The 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. Temporary heat, ventilation, humidity control, and enclosure of the building where these facilities are necessary for its construction activity.
 - 9. All hoisting and scaffolding for its own work.
 - 10. Collection and disposal, off site, of its own hazardous, dangerous, unsanitary, or other harmful waste material.
 - 11. Collection and disposal of major equipment removed.
 - 12. Collection of general waste and debris and disposing into containers provided by the Contractor.
 - 13. Secure lockup of its own tools, materials and equipment.
 - 14. Construction aids and miscellaneous services and facilities necessary exclusively for its own construction activities.
 - 15. Temporary telephone service.
 - 16. Temporary toilets, including disposable supplies.
 - 17. Temporary wash facilities, including disposable supplies.
 - 18. Containerized bottled-water drinking-water units.
 - 19. Temporary heat.
 - 20. First Aid Station and Supplies.
 - 21. Containers for non-hazardous waste and debris.
 - 22. Temporary enclosure of the work area.
 - 23. Project temporary signs.
 - 24. Disposal of wastes containers.
 - 25. Rodent and pest control.
 - 26. Barricades, warning signs, and lights.
 - 27. Security enclosure and lockup.
 - 28. Temporary Fire Protection

29. Temporary Protection for existing flooring, within and from altered areas to exits.
 30. Construction aids and miscellaneous services and facilities.
 31. Temporary dust control.
- B. Water Service: The 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.
- C. Temporary Electric Power Service: 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. Connect temporary service to Owner's existing main in the manner directed by Owner's Representative.
 2. The Contractor shall maintain all parts of the electrical system temporary 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.
 3. 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.
 4. Provide temporary service with an automatic ground-fault interrupter feature, activated from the circuits of the system.
 5. 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.
- D. Temporary Lighting: The 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 .
- E. The Contractor shall maintain power and lighting during the normal work week during the hours established by Owner's Representative whether or not they fall within established working hours.

1.12 ELECTRIC WELDERS

- A. Separate Power Sources Required: Power for electric welders and for other loads larger than the maximum allowable sizes shall be taken from portable power sources provided, paid for and operated by the Contractor or Sub-Contractor requiring the use of such equipment. Remove such power sources when no longer needed.

1.13 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 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.

1.14 TELECOMMUNICATIONS SERVICES

- A. The Contractor shall provide and pay for its own telephone service. Provide mobile phone service for all field superintendents and foreman.
- B. At central 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

1.15 TEMPORARY SANITARY FACILITIES

- A. Responsibilities: The Contractor is responsible for temporary sanitary facilities and their maintenance, including supplies .
- 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.

1.16 BARRIERS

- A. Responsibility: Contractor shall be responsible for construction barriers required for the project.
- B. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public and to protect existing facilities and adjacent properties from damage from construction operations and removals .
- C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.17 FENCING

- A. Contractor shall be responsible for its own fencing if required to enclose any materials stored on site.
- B. Construction: Commercial grade chain link fence.
- C. Locate where indicated, or if not indicated, enclosed portions of the site determined to be sufficient to accommodate construction operations. Install in a manner that will prevent people, dogs and other animals from easily entering the site, except through entrance gates.
 1. Self-supporting fence with movable bases may be used when approved by the Owner's Representative.

1.18 EXTERIOR ENCLOSURES

- A. Responsibilities: Contractor #1 HVAC is responsible for temporary enclosure.
- B. Tarpaulins: Provide waterproof, fire-resistant, UL labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures where work is being or will be performed, provide translucent tarpaulins made of nylon reinforced laminated polyethylene to admit the maximum amount of daylight and reduce the need for temporary lighting
- C. Close openings through roof deck and other horizontal surfaces with substantial load-bearing metal framing or similar construction

1.19 INTERIOR ENCLOSURES

- A. Refer to Section 02 2080 Asbestos Abatement for additional requirements.
- B. Provide temporary dustproof partitions as required to separate work areas from Haldane Central School District-occupied areas, to prevent penetration of dust and moisture into Haldane Central School District-occupied areas, and to prevent damage to existing materials and equipment.
- C. Construction: Framing and gypsum board sheet materials with closed joints and sealed edges at intersections with existing surfaces.
- D. Paint surfaces exposed to view from Haldane Central School District-occupied areas.

1.20 SITE SAFETY AND SECURITY PROCEDURES- See Section 01 3553

1.21 VEHICULAR ACCESS AND PARKING - See Section 01 5500

1.22 WASTE REMOVAL

- A. See Section 01 7419 - Construction Waste Management and Disposal, for additional requirements.
- B. The 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. The Contractor shall broom clean the work area at the end of each work day.
 - 1. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- E. Provide containers with lids. Remove trash from site periodically.
- 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. Site: The Contractor shall maintain Project site free of waste materials and debris.
- H. Concealed Spaces: The contractor shall remove debris from concealed spaces before enclosing the space.

1.23 FIELD OFFICES

- A. Contractor's Field offices: Contractor, at their option, shall provide a temporary field office of sufficient size to accommodate required office personnel at the project site when approved by the Owner's Representative.

1.24 HOISTS AND TEMPORARY ELEVATOR USE

- A. The 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.

1.25 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 SCAFFOLDING AND STAGING

- A. All scaffold, 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 FIRE PREVENTION AND CONTROL

- A. Refer to Section 01 3553 - Site Safety and Security Procedures.

3.3 DISCONTINUE, CHANGES AND REMOVAL

- A. The 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 Owner's Representative without additional cost to the Owner, and shall restore the site and the work to a condition satisfactory to the Owner.

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. Parking.
- B. Existing pavements and parking areas.
- C. Construction parking controls.
- D. Maintenance.

1.3 RELATED REQUIREMENTS

- A. Section 01 1000 - Summary of Contract: For occupancy.
- B. Section 01 5000 - Temporary Facilities and Controls.

PART 2 PRODUCTS

2.1 RESPONSIBILITY

- A. The Contractor is responsible for the requirements of this section.

2.2 SIGNS, SIGNALS, AND DEVICES

- A. Post Mounted and/or Wall Mounted Traffic Control and Informational Signs.
- B. Traffic Cones and Drums, Flares and Lights: As approved by Owner's Representative.

PART 3 EXECUTION

3.1 ACCESS ROADS

- A. Use of existing on-site streets and driveways for construction traffic is permitted as approved Owner's Representative.
 - 1. Provide dust-control treatment that is nonpolluting and contracting. Reapply treatment as required to minimize dust.
 - 2. Road Cleaning: Maintain roads and walkways in an acceptably clean condition. This includes the removal of debris daily, if required, and/or a minimum of once a week due to all project traffic. Road cleaning equipment to be wet/vacuum type. The Contractor will clean roads for debris from building-related activities.

3.2 PARKING

- A. Temporary parking by construction personnel shall be allowed only in areas so designated by the 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 Haldane Central School District and Haldane Central School District's operations.
- B. Prevent parking on or adjacent to access roads or in non-designated areas.
- C. Traffic Regulations:
 - 1. Access through Owner's entrances shall be limited.
 - 2. Utilize only entrances/temporary roads as designated by the Owner's Representative.
 - 3. Construction Employee parking to be located as directed by the Owner's Representative.

3.4 TRAFFIC SIGNS AND SIGNALS

- A. At approaches to site and on site, install at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.

3.5 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.

3.6 REMOVAL, REPAIR

- A. Repair existing facilities damaged by use, to original condition.
- B. Remove equipment and devices when no longer required.

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. Substitution limitations.
- E. Maintenance materials, extra materials.

1.3 RELATED REQUIREMENTS

- A. Section 00 4401 - Qualification of Bidders.
- B. Section 01 1000 - Summary of Contract.
- C. Section 01 2500 - Substitution Procedures: Substitutions made after the Bidding/Negotiation Phase.
- D. Section 01 4000 - Quality Requirements: Product quality monitoring.
- E. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions: Requirements for VOC-restricted product categories.
- F. Section 01 7419 - Construction Waste Management and Disposal: Waste disposal requirements potentially affecting product selection, packaging and substitutions.
- G. Divisions 22, 23, 26 & 28 for additional requirements.

1.4 DEFINITIONS

- A. Refer to General Conditions and Section 01 4216 - Definitions for additional definitions.
- B. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- C. Substitutions: Changes in products, materials, equipment, and methods of construction from those required or specified by the Contract Documents and proposed by Contractor.
- D. Basis-of-Design Or Equal Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," or "or equal", including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers **shall be submitted as substitutions**.
 - 1. Refer to Section 01 2500 - Substitution Procedures.
- E. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.

1.5 SUBMITTALS

- A. Refer to Section 01 3000 - Administrative Requirements for additional requirements
- B. Proposed Products List: Submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
 - 1. Submit within 10 days after date of Notice of Award.
 - 2. For products specified only by reference standards, list applicable reference standards.

- C. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- D. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
 - 1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

1.6 ASBESTOS

- A. Asbestos: All products, materials, etc., used in conjunction with this Project shall be Asbestos-Free.
 - 1. Contractor shall provide a certified letter to the Owner's Representative 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 Haldane Central School District, or otherwise indicated as to remain the property of the Haldane Central School District, become the property of the Contractor; 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.
- C. Where other criteria are met, Contractor shall give preference to products that:
 - 1. If used on interior, have lower emissions, as defined in Section 01 6116.
 - 2. If wet-applied, have lower VOC content, as defined in Section 01 6116.
 - 3. Are extracted, harvested, and/or manufactured closer to the location of the project.
 - 4. Have longer documented life span under normal use.
 - 5. Result in less construction waste. See Section 01 7419
 - 6. Are Cradle-to-Cradle Certified.
 - 7. Have a published Environmental Product Declaration (EPD).
 - 8. Have a published Health Product Declaration (HPD).

2.3 PRODUCT OPTIONS

- A. Refer to Section 00 2113 - Bidding Requirements for Product/Assembly/System Substitutions.
- B. Refer to Section 01 2500 - Substitution Procedures.
- C. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- D. 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.
- E. 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.

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 LIMITATIONS

- A. See Section 01 2500 - Substitution Procedures.
- B. **Fuller and D'Angelo, P.C. will consider requests for substitutions only within 30 days after date Letter of Award.**
- C. Substitutions **will not be considered during the bidding phase.**

3.2 SUBSTITUTION SUBMITTAL PROCEDURE AFTER BIDDING PHASE

- A. Refer to Section 01 2500 - Substitution Procedures.
- B. Submit in electronic PDF format one copy of request for substitution for consideration. Limit each request to one proposed substitution.
- C. 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.
- D. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.

3.3 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. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- F. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.
- G. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.4 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. Comply with manufacturer's warranty conditions, if any.
- E. Do not store products directly on the ground.
- F. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- G. Prevent contact with material that may cause corrosion, discoloration, or staining.
- H. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

- I. 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. VOC restrictions for product categories listed below under "DEFINITIONS."

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.
- 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.

1.4 DEFINITIONS

- A. VOC-Restricted Products: All products of each of the following categories when installed or applied on-site in the building interior:
 - 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.

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. 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. 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.

PART 2 PRODUCTS

2.1 MATERIALS

- A. All Products: Comply with the most stringent of federal, State, and local requirements, or these specifications.
- B. Adhesives and Joint Sealants: Provide only products having volatile organic compound (VOC) content not greater than required by South Coast Air Quality Management District Rule No. 1168.
 - 1. Evidence of Compliance: Acceptable types of evidence are:

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- a. Report of laboratory testing performed in accordance with requirements.
- C. Aerosol Adhesives: Provide only products having volatile organic compound (VOC) content not greater than required by GreenSeal GS-36.
- D. Paints and Coatings: Provide products having VOC content as specified in Section 09 9123 - Painting.

PART 3 EXECUTION

3.1 FIELD QUALITY CONTROL

- A. Haldane Central School District 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 Haldane Central School District.
- 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 and asbestos/lead abatement.
- 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. Cleaning and protection.
- K. Starting of systems and equipment.
- L. Demonstration and instruction of Haldane Central School District personnel.
- M. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.
- N. Progress cleaning.
- O. Final Cleaning.

1.3 RELATED REQUIREMENTS

- A. Section 01 1000 - Summary of Contract: Limitations on working in existing building; work sequence.
- B. Section 01 3000 - Administrative Requirements: Submittals procedures.
- C. Section 01 3553 - Site Safety and Security Procedures
- D. Section 01 4000 - Quality Requirements: Testing and inspection procedures.
- E. Section: 01 5000 - Temporary Facilities and Controls.
- F. Section 01 5716 - Environmental Protection During Construction
- G. Section 01 7419 - Construction Waste Management and Disposal: Additional procedures for trash/waste removal, recycling, salvage, and reuse.
- H. Section 01 7800 - Closeout Submittals: Project record documents, operation and maintenance data, warranties.
- I. Section 01 7900 - Demonstration and Training: Demonstration of products and systems to be commissioned and where indicated in specific specification sections
- J. Section 01 9113 - General Commissioning Requirements: Contractor's responsibilities in regard to commissioning.
- K. Section 01 2100 - Allowances.
- L. Section 07 8400 - Firestopping.
- M. Section 31 2316 - Excavation.
- N. 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.

1.5 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 hazardous materials, for 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. Integrity of weather exposed or moisture resistant element.
 - 3. Efficiency, maintenance, or safety of any operational element.
 - 4. Include in request:
 - a. Location and description of affected work.
 - b. Necessity for cutting or alteration.
 - c. Effect on work of Haldane Central School District.
 - d. Date and time work will be executed.
- D. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.6 QUALIFICATIONS

- A. Refer to Section 00 4401 - Qualification of Bidders.
- B. Refer to individual sections for additional requirements.

1.7 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.
- C. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.

1.8 COORDINATION

- A. See Section 01 1000 - Summary of Contracts for occupancy-related requirements.
- B. 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.
- C. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- D. After Haldane Central School District occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Haldane Central School District activities.
- E. General: Contract 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 .

1.9 CODES, PERMITS, FEES, ETC. Refer to Section 01 4100 Regulatory Requirements

1.10 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. New Materials: As specified in product sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
- C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 2500 - Substitution Procedures.
- D. 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. 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.
- B. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- C. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- D. Examine and verify specific conditions described in individual specification sections.
- E. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- F. 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. Asbestos and lead containing material shall be removed as per asbestos and lead abatement sections of the specifications.
 - a. Refer to Section 02 2080 Asbestos Removal and Disposal.

2. Interior:
 - a. Floor surfaces shall be provided with a minimum of one layer of six mil plastic.
 - 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.
 - d. All TV's, smart boards, furniture, books and clocks, moveable objects will be removed as indicated in Section 01 1000 Summary of Work. Items to remain, floors and fixed furniture, etc. shall cover with a six mil plastic by the Contractor.
 - e. Owner shall reinstall objects to their original location.
 - f. All corridors from renovated areas to exitways, used by Contractors, shall be mopped and left clean daily by the Contractor.
3. The Contractor shall provide labor for daily cleanup on the interior and the exterior of the building as required or directed by the Owner's Representative. Any visible debris shall be removed prior to occupancy the following day.
 - a. Only wet cleaning methods and/or HEPA vacuuming shall be used to clean.
4. All debris shall be disposed of properly in accordance with Federal, State and Local Regulations. Refer to Section 01 5000 - Temporary Facilities and Controls .
5. Do not leave any openings unprotected at end of work day or during periods of excessive cold weather or precipitation.
6. 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. Saw cut all concrete slabs and asphalt paving as indicated.
- E. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- F. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- G. 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 and existing record documents 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. Keep areas in which alterations are being conducted separated from other areas that are still occupied.
 1. Provide, erect, and maintain temporary dustproof partitions of construction 01 5000 - Temporary Facilities and Controls .
- C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
- D. Remove existing work as indicated and as required to accomplish new work.
 1. Remove items indicated on drawings.
 2. Relocate items indicated on drawings.
 3. 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.

4. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.
 - E. Services (Including but not limited to HVAC 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 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.
 - 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.
 - F. Protect existing work to remain.
 1. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 2. Repair adjacent construction and finishes damaged during removal work.
 3. Patch as specified for patching new work.
 - G. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
 1. When existing finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Fuller and D'Angelo, P.C..
 2. Where removal of windows, partitions or walls results in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.
 3. Where a change of plane of 1/4 inch or more occurs in existing work, submit recommendation for providing a smooth transition for Fuller and D'Angelo, P.C. review and request instructions.
 - H. 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.
 - I. Refinish existing surfaces as indicated:
 1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
 2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.
 - J. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.
 - K. Do not begin new construction in alterations areas before demolition is complete.
 - L. 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. See Alterations article above for additional requirements.
 - 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 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 samples of installed work for testing when requested.
 8. 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. In existing work, minimize damage and restore to original condition.
- E. Restore work with new products in accordance with requirements of Contract Documents.
- F. 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.
- G. 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 SPECIAL REQUIREMENTS

- A. All existing systems are required and shall remain operational during the performance of the work.
- B. Notwithstanding anything contained in the Contract Documents to the contrary, the Contractor(s) shall not be permitted to disrupt operation of any building system or any of the services without Owner's Representative's prior written consent, which shall not be unreasonably withheld. Any request to perform such work shall be in writing, received by Owner's Representative no less than five (5) working days prior to the commencement of the request for disruption, and shall detail:
1. The exact nature and duration of such interruption;
 2. The area of the Building affected, and;
 3. Any impact upon the Construction Schedule caused by such proposed temporary disruption. All Work shall be performed during the hours and on the days set forth in the Specifications.

3.9 MISCELLANEOUS PROVISIONS:

- A. Except as otherwise indicated comply with applicable requirements of Division-22, 23, 26, 27, and 28 (MPE) sections for mechanical provisions within units of general Divisions 2-14, 31 work. Except as otherwise indicated, comply with applicable requirements of Division-22, 23, 26, 27, and 28 sections for electrical provisions within units of general (Divisions 2-14) work.
- B. Service Connections: Refer to Division-22, 23, 26, 27, and 28 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.

3.10 FIRE PREVENTION AND CONTROL Refer to Section 01 3553

3.11 WATCHMAN

- A. The Owner will not provide watchman. 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.

3.12 SECURITY SYSTEM Refer to 01 3553 - Security Procedures

3.13 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. 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

3.14 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- C. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.
- D. Contractor is responsible for own daily debris removal into containers provided by each Contractor. Working areas are to be broom swept on a daily basis by the Contractor.
- E. If daily cleaning and dust protection is not provided the Contractor will be back charged for cleanup performed by employees of the Owner or a separate contractor retained by the Owner.

3.15 PROTECTION OF INSTALLED WORK

- A. 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. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- F. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- G. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.16 SYSTEM STARTUP

- A. Coordinate with requirements of Section 01 9113 - General Commissioning Requirements.
- B. Coordinate schedule for start-up of various equipment and systems.
- C. Notify Owner's Representative seven days prior to start-up of each item.
- D. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.
- E. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- F. Verify that wiring and support components for equipment are complete and tested.
- G. Execute start-up under supervision of applicable personnel in accordance with manufacturers' instructions.
- H. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
- I. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.17 DEMONSTRATION AND INSTRUCTION

- A. See Section 01 7900 - Demonstration and Training.

3.18 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.
- B. Testing, balancing and Adjusting HVAC. See applicable drawings and and Section 23 0593.

3.19 FINAL CLEANING

- A. Final cleaning shall be the responsibility of the Contractor, and all costs for final cleaning shall be included in their 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 site; sweep paved areas, rake clean landscaped surfaces.
- G. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.
- H. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- 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. 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
- L. Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
- M. Leave Project clean and ready for occupancy.
- N. 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.

3.20 CLOSEOUT PROCEDURES 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. Haldane Central School District requires that this project generate the least amount of trash and waste possible.
- B. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.
- C. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.
- D. 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. Concrete: May be crushed and used as riprap, aggregate, sub-base material, or fill.
 - 5. 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.
 - 6. Glass.
 - 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.
- E. The Contractor shall submit periodic Waste Disposal Reports; 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.
- F. The Contractor shall develop and follow a Waste Management Plan designed to implement these requirements.
- G. The following sources may be useful in developing the Waste Management Plan:
- 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.
 - 5. Incineration, either on- or off-site.
- I. Regulatory Requirements: The 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.

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 7000 - Execution: Trash/waste prevention procedures related to cutting and patching, installation, protection, and cleaning.
- D. Section 31 2316 - Excavation.

1.4 DEFINITIONS

- A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.
- B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.
- C. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.
- D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.
- E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.
- F. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.
- G. Reuse: To reuse a construction waste material in some manner on the project site.
- H. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.
- I. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
- J. Toxic: Poisonous to humans either immediately or after a long period of exposure.
- K. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- L. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.5 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. Landfill Disposal: Include the following information:
 - a. Identification of material.

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 subcontractor, Owner's Representative.
- C. Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.
 - 1. Refer to Section 02 2080 for additional requirements.
- D. 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.
- E. Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.

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- F. Salvage: Set aside, sort, and protect products to be salvaged for reuse off-site.

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

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: Specific requirements for operation and maintenance data.
- F. 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 **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. Manifest for disposal of Hazardous Material.
 - 5. Manifest for disposal of material.
 - 6. Test/adjust/balance reports and records.
 - 7. Maintenance Manuals and Instructions Manuals
 - 8. Signed Receipt by Owner's Representative of spare parts and attic stock.
 - 9. Final cleaning.
 - 10. List of incomplete Work, recognized as exceptions to Architect's "punch list".

11. Removal of temporary facilities and services.
 12. Removal of surplus materials, rubbish and similar elements.
 13. As Built Drawings.
 14. Project Record Documents.
 15. DOL Final Completion Form. (PW 200).
- 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 Contract)
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, if any.
 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. Asbestos/PCB waste manifest.
 13. Underwriters certificate.
 14. Underwriters 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:
 - 1. Make submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
 - 2. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

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.
- 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. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
 - 1. Field changes of dimension and detail.
 - 2. 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. 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.
- I. Content: Types of items requiring marking include, but are not limited to, the following:
 - 1. Revisions to details shown on Drawings.
 - 2. Depths of foundations below first floor.
 - 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.
- J. 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.
- K. Mark important additional information that was either shown schematically or omitted from original Drawings.
- L. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- M. **Provide ALL final record documents on CD or USB in PDF 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 drawing

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.
 - 1. Include HVAC outdoor and exhaust air damper calibration strategy.
 - a. Include provisions which ensure that full closure of dampers can be achieved.
 - 2. Include Carbon Dioxide Monitoring Protocol.
 - 3. Include Carbon Monoxide Monitoring Protocol.
- 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 contractors's coordination drawings, with color coded piping diagrams as installed.
- M. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- N. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- O. Include test and balancing reports.
- P. 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 Haldane Central School District's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.
- B. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- C. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- D. 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.
- E. 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.
- F. 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.
- G. Text: Manufacturer's printed data, or typewritten data on 24 pound paper.
- H. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- I. 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.
- J. 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 Haldane Central School District'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**

JOB TITLE: - Haldane Central School District Mechanical Upgrades and Related Work Haldane Central School District

BOARD OF EDUCATION BID NUMBER;

CLOSE-OUT SUBMITTALS: (As Applicable)

[] PREVAILING WAGE CERTIFICATION.

[] UL CERTIFICATION

**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.**

**[] 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.

**[] 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.**

**[] NOTARIZED STATEMENT THAT ONLY NON-ASBESTOS MATERIALS
WERE INSTALLED ON THIS PROJECT.**

[] FULLY EXECUTED CERTIFICATE OF SUBSTANTIAL COMPLETION: AIA G704.

**[] CONTRACTOR'S WRITTEN TWO-YEAR WARRANTY AND EXTENDED
WARRANTIES (IF ANY REQUIRED).**

[] DOL PW 200 FORM.

[] PROJECT RECORD DOCUMENTS.

[] AS-BUILT DRAWINGS.

EVIDENCE OF PAYMENT AND RELAEASE OF LIEN

[] CONTRACTOR'S AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS: AIA G706.

**[] CONTRACTOR'S AFFIDAVIT OF RELEASE OF LIENS - AIA G706A PRIME
CONTRACTORS AND SUBCONTRACTORS.**

[] CONSENT OF SURETY TO FINAL PAYMENT AIA G707.

**REFER TO SECTION 01 7800 PAR 1.4 AND 1.5 FOR ADDITIONAL REQUIREMENTS. FINAL
PAYMENT WILL NOT BE PROCESSED UNTIL ALL ITEMS INDICATED ARE RECEIVED
IN ACCORDANCE WITH SECTION 01 7800 - CLOSEOUT SUBMITTALS.**

END OF SECTION

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

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 Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. **Refer to Section 23 0800 for additional requirements.** In the event of conflict the individual section shall prevail.
- B. Demonstration of products and systems to be commissioned and where indicated in specific specification sections.
- C. Training of Haldane Central School District personnel in operation and maintenance is required for:
 - 1. HVAC systems and equipment.
 - 2. Electrical systems and equipment.
- D. Training of Haldane Central School District personnel in care, cleaning, maintenance, and repair is required for:
 - 1. 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; except:
 - 1. Make all submittals specified in this section, and elsewhere where indicated for commissioning purposes, directly to the Commissioning Authority.
 - 2. Submit one copy to the Commissioning Authority, not to be returned.
 - 3. Make commissioning submittals on time schedule specified by Commissioning Authority.
 - 4. Submittals indicated as "Draft" are intended for the use of the Commissioning Authority in preparation of overall Training Plan; submit in editable electronic format, Microsoft Word 2003 preferred.
- B. Draft Training Plans: Haldane Central School District will designate personnel to be trained; tailor training to needs and skill-level of attendees.
 - 1. Submit to Commissioning Authority for review and inclusion in overall training plan.
 - 2. Submit not less than four weeks prior to start of training.
 - 3. Revise and resubmit until acceptable.
 - 4. Provide an overall schedule showing all training sessions.
- C. Training Manuals: Provide training manual for each attendee; allow for minimum of two attendees per training session.
- D. Video Recordings: Submit digital video recording of each demonstration and training session for Haldane Central School District'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. Refer to
- B. Demonstrations conducted during system start-up do not qualify as demonstrations for the purposes of this section, unless approved in advance by Owner's representative.
- C. Demonstrations conducted during Functional Testing need not be repeated unless Haldane Central School District personnel training is specified.
- D. 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.
- E. 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. Commissioning Authority will prepare the Training Plan based on draft plans submitted.
- B. Conduct training on-site unless otherwise indicated.
- C. Owner's representative will provide classroom and seating at no cost to Contractor if required.
- D. Do not start training until Functional Testing is complete, unless otherwise specified or approved by the Commissioning Authority.
- E. The Commissioning Authority is responsible for determining that the training was satisfactorily completed and will provide approval forms.
- F. Product- and System-Specific Training:
 - 1. Review the applicable O&M manuals.
- G. 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 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 reinforcement.
- C. Miscellaneous concrete elements, including equipment pads.
- D. Concrete curing.
- E. Finishes.
- F. Mix design.
- G. Concrete materials.
- H. Placement procedure.

1.3 RELATED REQUIREMENTS

- A. Section 31 2316 - Excavation for drainage fill under equipment pads.

1.4 REFERENCE STANDARDS

- A. ACI 117 - Specifications for Tolerances for Concrete Construction and Materials; 2010 (Reapproved 2015).
- B. ACI 301 - Specifications for Structural Concrete; 2016.
- C. ACI 303 "Guide to Cast-in-Place Architectural Concrete Practice."
- D. ACI 305R - Guide to Hot Weather Concreting; 2010.
- E. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2014 (Errata 2018).
- F. ASTM A185/A185M - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete; 2007.
- G. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2016, with Editorial Revision (2016).
- H. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2018.
- I. ASTM C150/C150M - Standard Specification for Portland Cement; 2018.
- J. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2012.
- K. ASTM D3963/D3963M - Standard Specification for Fabrication and Jobsite Handling of Epoxy-Coated Steel Reinforcing Bars; 2015.
- L. AWS D1.4 "Structural Welding Code - Reinforcing Steel."

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.
- D. Samples: Submit samples of underslab vapor retarder to be used.

- E. Test Reports: Submit report for each test or series of tests specified.
- F. Qualification Data: For installer, testing agency, and concrete supplier.

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. Manufacturer/Supplier 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.
- D. 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 Owner's Representative. 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.
- E. Welding: Qualify procedures and personnel according to AWS D1.4, "Structural Welding Code--Reinforcing Steel."
- F. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.
- G. Delivery Records: Each delivery to the site of concrete shall be accompanied by weigh master's certification. Retain all copies for inspection by the Testing Agency.
 - 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

1.7 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store materials so as to preserve their quality and fitness for work.
- B. Store reinforcement and formwork in manner to prevent bending, damage (including damage to coatings), and accumulation of dirt.

1.9 PROJECT CONDITIONS

- A. Coordinate with the work of all other sections and/or 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.

2.2 REINFORCEMENT MATERIALS

- A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
- B. Type: Deformed billet-steel bars.
- C. Finish: Epoxy coated in accordance with ASTM A775/A775M, unless otherwise indicated.
- D. Steel Welded Wire Reinforcement (WWR): Class A epoxy coated, deformed type, ASTM A884/A884M.
 - 1. Form: Flat Sheets.
 - 2. Mesh Size: 6 x 6.
 - 3. Wire Gage: W 6 x W6.
- E. Reinforcement Accessories:
 - 1. Tie Wire: Annealed, minimum 16 gauge, 0.0508 inch.

2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
 - a. Supports for epoxy-coated reinforcing shall be either wire bar-type coated with epoxy, plastic, or vinyl compatible with concrete for a minimum distance of 2 inches from the point of contact with reinforcing or all plastic-type.

2.3 CONCRETE MATERIALS

- A. Cement: ASTM C150/C150M, Type I - Normal Portland type.
- B. Fine and Coarse Aggregates: ASTM C33/C33M.
 1. Fine Aggregate: Clean, sharp, natural sand free from loam, clay, lumps, or other deleterious substances.
 2. Coarse Aggregate: Clean, uncoated, processed aggregate free from clay, mud, loam, or foreign matter.
 3. Gradations:
 - a. For Slabs on Grade:

Sieve Size	Percent Passing
1 inch	95 to 98.5
3/4 inch	75 to 94
1/2 inch	25 to 50
3/8 inch	10 to 25
No.4	0 to 10

- C. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.

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.

2.5 ACCESSORY MATERIALS

- A. 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 CURING MATERIALS

- A. 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. SpecChem, LLC; SpecRez: www.specchemllc.com.
 - b. W. R. Meadows, Inc; 1100-Clear: www.wrmeadows.com.
- B. Water: Potable, not detrimental to concrete.

2.7 CONCRETE MIX DESIGN

- A. Proportioning Normal and Structural Lightweight Concrete: Comply with ACI 211.2 recommendations.
- B. Concrete Strength: Establish required average strength for 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 for preparing and reporting proposed mix designs.
 - a. here concrete production facility can establish uniformity of its production for concrete of similar strength and materials based on recent test data, the average strength used as a basis

for determining mix design proportions shall exceed specified design strength by requirements of ACI 318, Section 5.3.2.1 or ACI 301, Section 3.9.

2. Compressive Strength: Not less than 4,000 at 28 days when tested according to ASTM C 109/C 109M.
- C. Identify sources of all products used in design mixes.
- D. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.
- E. Normal Weight Concrete:
 1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: 4,000 pounds per square inch.
 2. Water-Cement Ratio: Maximum 0.45.
 3. Total Air Content: 6 percent, determined in accordance with ASTM C173/C173M.
 4. Maximum Slump: 4 inches.

2.8 MIXING

- A. On Project Site: Mix in drum type batch mixer, complying with ASTM C685/C685M. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.
- B. Transit Mixers: Comply with ASTM C94/C94M.

2.9 REINFORCING FABRICATION

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice." Fabricate bars to required lengths, shapes, and bends. Do not rebend or straighten reinforcement in manner that could weaken material.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify lines, levels, and dimensions before proceeding with work of this section.
- B. Do not proceed with work until unsatisfactory conditions are corrected.

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. Clean and coat forms before erection. Do not coat forms in place.
- D. Chamfer exposed corners and edges as indicated using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.
- E. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Comply with ASTM E1643. Lap joints minimum 6 inches. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.

3.3 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement
- B. Fabricate and handle epoxy-coated reinforcing in accordance with ASTM D3963/D3963M.
- C. 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.
- D. Place slab reinforcing one-third of slab thickness below top surface of slab. Support reinforcement by metal chairs, runners, bolsters, or concrete brick as required.
- E. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.

- F. Epoxy-Coated Reinforcement: Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D 3963. Use epoxy-coated steel wire ties to fasten epoxy-coated steel reinforcement.
- G. Comply with manufacturer-recommended procedures for installing and anchoring of doweled reinforcement using chemical adhesives, including drilling and cleaning of holes and mixing and applying of adhesives.
- H. Coordinate placement of reinforcement with openings, including sleeves and other embedded items. Where one or more bars are interrupted, provide additional reinforcement at openings. Additional reinforcement is noted in drawings.
- I. Use of nails in forms and use of clay brick to support reinforcement is prohibited.

3.4 PLACING CONCRETE

- A. Place concrete in accordance with ACI 304R.
- B. Notify Owner's Representative 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. Repair underslab vapor retarder damaged during placement of concrete reinforcing. Repair with vapor retarder material; lap over damaged areas minimum 6 inches and seal watertight
- E. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI 309.
- F. Do not allow vibrator to come in contact with form.

3.5 CONCRETE FINISHING

- A. Repair surface defects, immediately after removing formwork.
- B. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.

3.6 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.

3.7 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 to inspection and testing firm for review prior to commencement of concrete operations.
- 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 or less of concrete placed.
- E. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.
- F. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

3.8 DEFECTIVE CONCRETE

- A. Test Results: The testing agency shall report test results in writing to Owner's Representative 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 Owner's Representative. The cost of additional testing shall be borne by Contractor when defective concrete is identified.

3.9 PROTECTION

- A. Do not permit traffic over unprotected concrete floor surface until fully cured.

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. Communications and electrical room mounting boards.

1.3 RELATED REQUIREMENTS

- A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

1.4 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018b.
- B. AWPA U1 - Use Category System: User Specification for Treated Wood; 2017.
- C. 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 plywood and fasteners .

1.6 QUALITY ASSURANCE

- A. 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.

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.

1.8 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

PART 2 PRODUCTS

2.1 CONSTRUCTION PANELS

- A. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.

2.2 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

2.3 FACTORY WOOD TREATMENT

- A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
 - 1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
- B. 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

PART 3 EXECUTION

3.1 PREPARATION

- A. Coordinate installation of rough carpentry members specified in other sections.

3.2 INSTALLATION - GENERAL

- A. Select material sizes to minimize waste.

3.3 BLOCKING, NAILERS, AND SUPPORTS

- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

3.4 INSTALLATION OF CONSTRUCTION PANELS

- A. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
 1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
 2. Size and Location: As indicated on drawings.

3.5 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.

3.6 CLEANING AND PROTECTION

- A. General: Comply with the requirements of Section 01 7419 - Construction Waste Management and Disposal.
 1. Do not burn scrap on project site.
 2. Do not burn scraps that have been pressure treated.
 3. 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 drainage system.

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. Existing Roof is under warranty.
- B. The existing roof is under warranty. Coordinate with Owner's representative for further information.
 - 1. Contractor must notify and be authorized by the manufacturer to perform all work as per the manufacturer's instruction.
 - 2. Refer to paragraph 1.10
- C. Remove all existing membrane, insulation, flashings, curbs, cover boards, vapor barrier, and dunnage as required to provide and install new openings, mechanical equipment, and connection to existing roofing as shown on drawings.
- D. Cut new openings and install curbs.
- E. Fill in abandoned equipment openings.
- F. Disposal of removal and construction waste is the responsibility of HVAC Contractor. Perform disposal in manner complying with all applicable federal, state, and local regulations.
- G. Install new isocyanurate insulation on all roof areas indicated or required.
- H. Clean all residual material from substrate surfaces and the flutes of any exposed steel deck - prior to installing new insulation and roofing. Install new insulation, roofing and flashings only on dry smooth surfaces.
- I. The Contractor shall provide any hoisting and other work needed, and remove, adjust, modify, reset and reconnect all roof-mounted and roof-penetrating devices to enable new roofing and flashings to be installed as shown. Coordinate with mechanical and electrical primes.
- J. The Contractor shall provide any hoisting and other work needed, and remove, adjust, modify, reset and reconnect all roof-mounted and roof-penetrating devices to enable new roofing and flashings to be installed as shown. Coordinate with mechanical and electrical primes.
- K. Maintain building watertight at all times.
- L. Install new support steel and decking; insulation to finish flush with existing the deck substrate, new insulation and roofing to make the building permanently watertight.
- M. Comply with the published recommendations and instructions of the roofing membrane manufacturer.
- N. 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 REFERENCE STANDARDS

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2018.
- B. ASTM D1079 - Standard Terminology Relating to Roofing and Waterproofing; 2016.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018b.
- D. FM DS 1-29 - Roof Deck Securement and Above-Deck Roof Components; Factory Mutual System; 2016.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Installation Conference: Before start of roofing work, HVAC Contractor shall hold a meeting to discuss the proper installation of materials, status of the existing warranty and requirements to maintain the existing warranty.
 - 1. Require attendance with all parties directly influencing the quality of roofing work or affected by the performance of roofing work.
 - 2. Notify Owner's Representative well in advance of meeting.

1.5 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.
 - 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, and penetrations.
- D. Pre-Installation Notice: Copy to show that manufacturer's required Pre Installation Notice has been accepted and approved by the manufacturer.
- E. Executed Warranty.

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.

1.7 QUALITY ASSURANCE

- A. Existing Roof is under warranty.
- B. 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 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.
- C. **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.
- D. **Pre-Work Conference:** Meet at the project site approximately one week prior to starting roof work, with the Owner's Representative 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. Generally accepted industry practice, the Manufacturer's instructions for handling and installing his products, and project specific work requirements.
 - 3. The condition of the substrate (deck), curbs, penetrations and preparatory work needed by trades other than the roofer.
 - 4. Submittals, if any remain incomplete.
 - 5. 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.
 - 6. A schedule for Manufacturer and Owner's Representative inspections.

1.8 JOB CONDITIONS (CAUTIONS & WARNINGS)

- A. 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.
- B. Remove empty adhesive and solvent containers and contaminated rags from the roof and legally dispose of them daily.
- C. 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.

1.9 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. Store all materials in accordance to manufacturer's instructions.
- 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.

1.10 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 HVAC 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.
 - 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. Manufacturer'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. 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

2.2 ACCESSORY MATERIALS

- A. 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. Minimum Base Metal Thickness: Match existing.
 3. Nominal Height: Match existing
 4. Side Joints: Lapped, mechanically fastened.
 5. End Joints: Lapped, mechanically fastened.

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. 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.
- C. 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.
- D. 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 Owner's Representative 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 NEW TO EXISTING INTERFACE

- A. Remove and replace portions of existing roofing at the construction interface between new construction and existing roof areas.
1. Install new isocyanurate insulation, mechanically fastened, to match existing insulation thickness and to maintain the slope of the existing insulation.
 2. Install 60 mil. fully adhered EPDM membrane to lap a minimum of 12 inches onto existing EPDM membrane.

3. Existing roof is under a full system warranty. Work on existing membrane shall be performed by an authorized manufacturer's applicator in a manner approved by the manufacturer and to maintain the existing warranty.

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 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 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.

3.6 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 concrete pavers.
- B. Walkway Pads: Adhere to the roofing membrane, spacing each pad at minimum of 1.0 inch and maximum of 3.0 inches from each other to allow for drainage.
 1. If installation of walkway pads over field fabricated splices or within 6 inches 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 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. Provide walkpads where indicates on Drawings and all concrete pavers.

3.7 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.

3.8 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.

3.9 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 7200
ROOF ACCESSORIES

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. Pipe Portals.
- B. Roof walkway pads.
- C. APE portals.

1.3 RELATED REQUIREMENTS

- A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 07 5010 - Modifications to Existing Roofing.

1.4 REFERENCE STANDARDS

- A. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process; 2010 (Reapproved 2015).
- B. UL (DIR) - Online Certifications Directory; Current Edition.

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.
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
 - 4. Maintenance requirements.
- C. Shop Drawings: Submit detailed layout developed for this project and provide dimensioned location and number for each type of roof accessory.
 - 1. Non-penetrating Rooftop Supports: Submit design calculations for loadings and spacings.
- D. Warranty Documentation:
 - 1. Submit manufacturer warranty.
 - 2. Ensure that forms have been completed in Haldane Central School District's name and registered with manufacturer.

1.6 QUALITY ASSURANCE

- A. Standards: Comply with SMACNA "Architectural Sheet Metal Manual" fabrication details and "NRCA Roofing and Waterproofing Manual" installation details unless otherwise indicated.
- B. Manufacturer Qualifications: Provide each primary product, produced by a single Manufacturer, which has produced that type product successfully for not less than five (5) years.
- C. Installer Qualifications: A firm with not less than five (5) years of successful experience installing specialties similar to those required for this project.
- D. Installer's Field Supervision: Maintain full time supervisor/foreman on jobsite during times that installation work is in progress. Supervisor must have minimum of 5 years experience in work similar in nature and scope, and speak fluent English.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store products under cover and elevated above grade.

1.8 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. The Guarantee shall provide that in the event the work installed fails to so perform, the Contractor will make the repairs and modifications necessary to enable the work to perform as warranted, at his own expense
- C. The Guarantee shall include the removal and replacement of items or materials installed with the roof specialties as part of the original work, if removal is needed to effect guaranteed repairs.

PART 2 PRODUCTS

2.1 ROOF MOUNTED CURB PORTAL

- A. Prefabricated Box Section Design, 18 gauge galvanized steel with continuous welded corner seams. Welds coated with chrome enamel.
- B. Insulation: 1 1/2" fiberglass fire proof thermal insulation.
- C. Galvanized steel insulated flashing cap.
- D. Factory installed wood nailer.
- E. Height: 12" above finish roof surface.
- F. Size: As required.
- G. Manufacturer: Model PB-3, as manufacturer by FastCurbs, 6532 Tower Lane, Claremore, OK 74019.
 - 1. Phone: (877)-728 3278 Fax: (877)-203-1998.

2.2 ROOF WALKWAY PADS

- A. 30 inches by 30 inches hard rubber walkway pads, color; black, as manufactured by Firestone or equal.

2.3 ROOF WALKWAY PADS

- A. Roof Walkway Pads
 - 1. 2 inches thick, 24 inches by 24 inches precast concrete pavers, natural buff color and finish, minimum 7500 psi compressive strength as manufactured by Hanover Architectural Products, Co., Inc. or approved equal.
 - a. Bearing Pads: 30 inches by 30 inches hard rubber walkway pads, color; black, as manufactured by Firestone or equal. Provide under all concrete walkway pads.
- B. 30 inches by 30 inches hard rubber walkway pads, color; black, as manufactured by Firestone or equal.

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.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using methods recommended by manufacturer for achieving acceptable results for applicable substrate under project conditions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions, in manner that maintains roofing system weather-tight integrity.
- B. Roof Walkway Pads
 - 1. Install hard rubber walkway pad for walkways to provide a path 2-1/2 feet wide, where shown on the Drawings, adhered to the membrane surface with 5 strips of peel and stick SeamTape, and at all roof access points, i.e., doors, ladders and hatches, and under all concrete pavers used for conduit supports

C. Safety Railings

1. Carefully cut, cope and shop fabricate the railings with continuous arc welds. After welding, carefully grind all welds and adjoining surfaces smooth.
 - a. Hot dip galvanize the ladder assemblies after fabrication.
 - b. Shop prime all fabricated items. Spot prime all field joints and scratches prior to finish painting with two coats of finish paint.
 - c. Install the railings to fit over the stainless steel posts and secure the railing sections with two stainless steel bolts installed at right angles to each other.
2. Fasten the stainless steel posts and plates to the roof deck with eight # 14 stainless steel flat head screws

3.4 CLEANING

- A. Clean installed work to like-new condition.

3.5 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

**SECTION 07 8400
FIRESTOPPING**

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. Firestopping of all joints and penetrations in fire resistance rated and smoke resistant assemblies.

1.3 RELATED REQUIREMENTS

- A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 01 7000 - Execution: Cutting and patching.

1.4 REFERENCE STANDARDS

- A. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2018c.
- B. SCAQMD 1168 - Adhesive and Sealant Applications; 1989 (Amended 2017).
- C. UL (FRD) - Fire Resistance Directory; Current Edition.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on product characteristics.
- C. 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 documented experience.

PART 2 PRODUCTS

2.1 MATERIALS

2.2 FIRESTOPPING ASSEMBLY REQUIREMENTS

- A. Floor-to-Floor (FF), Floor-to-Wall (FW), Head-of-Wall (HW), and Wall-to-Wall (WW) Joints, Except Perimeter, Where Both Are Fire-Rated: Use system that has been tested according to ASTM E1966 or UL 2079 to have fire resistance F Rating equal to required fire rating of the assembly in which the joint occurs.
- B. 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.

2.3 FIRESTOPPING PENETRATIONS THROUGH GYPSUM BOARD WALLS

- A. Penetrations By:
 - 1. Uninsulated Metallic Pipe, Conduit, and Tubing:
 - a. 1 Hour Construction: UL System W-L-1164; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - 2. Uninsulated Non-Metallic Pipe, Conduit, and Tubing:
 - a. 1 Hour Construction: UL System W-L-2128; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - 3. Electrical Cables Not In Conduit:
 - a. 1 Hour Construction: UL System W-L-3334; Hilti CP 653 Speed Sleeve.
 - 4. Insulated Pipes:
 - a. 1 Hour Construction: UL System W-L-5028; Hilti FS-ONE MAX 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.

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 authorities having jurisdiction.
- C. Install labeling required by code.

3.4 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. Self-leveling pourable joint sealants.
- C. 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 04 0100 - Maintenance of Masonry.
- C. Section 07 8400 - Firestopping: Firestopping sealants.
- D. Section 08 8000 - Glazing: Glazing sealants and accessories.
- E. Section 08 1116 - Aluminum Doors and Frames.
- F. Section 09 2116 - Gypsum Board Assemblies.

1.4 REFERENCE STANDARDS

- A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2015.
- B. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2012 (Reapproved 2017).
- C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
- D. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems; 2016.
- E. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.
- F. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants; 2018.

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. Installation instructions, including precautions, limitations, and recommended backing materials and tools.
 - 6. Certification by manufacturer indicating that product complies with specification requirements.
- 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.

- E. Samples for Verification: Where custom sealant color is specified, obtain directions from Fuller and D'Angelo, P.C. and submit at least two physical samples for verification of color of each required sealant.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- B. Installer Qualifications: Company specializing in performing the work of this section and with at least three years of documented 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 JOINT SEALANT APPLICATIONS

- A. Scope:
 - 1. Exterior Joints: Seal open joints, whether or not the joint is indicated on drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to, the following items.
 - a. Wall expansion and control joints.
 - b. Joints between door, window, and other frames and adjacent construction.
 - c. Joints between different exposed materials.
 - d. Openings below ledge angles in masonry.
 - e. Other joints indicated on drawing.
 - 2. 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.
 - a. Joints between door, window, and other frames and adjacent construction.
 - b. Other joints indicated below.
 - 3. Do not seal the following types of joints.
 - a. Intentional weepholes in masonry.
 - b. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
 - c. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
 - d. Joints where installation of sealant is specified in another section.
 - e. Joints between suspended panel ceilings/grid and walls.
- B. Vertical Exterior Joints: Use non-sag non-staining silicone sealant, unless otherwise indicated.
- C. Interior Vertical Joints: Use non-sag non-staining silicone sealant, unless otherwise indicated.
 - 1. Joints between Fixtures in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant; white.

- D. Exterior and Interior Horizontal Joints: Single component, self-leveling, premium-grade polyurethane sealant

2.2 JOINT SEALANTS - GENERAL

- A. Sealants and Primers: Provide products with levels of volatile organic compound (VOC) content as indicated in Section 01 6116.

2.3 NONSAG JOINT SEALANTS

- A. General Purpose Exterior Sealant: Polyurethane; ASTM C920, Grade NS, Class 25 minimum; Uses M, G, and A; single component.
1. Product: manufactured by .
 - a. Sikaflex - 1a; Sika Corporation
 - b. NP 1; Sonneborn Building Products Div., ChemRex Inc.
 - c. Dynatrol I; Pecora
 2. Applications: Use for:
 - a. All exterior and interior joints.
- B. 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 all perimeter joints of countertops, window sills and similar locations.
 3. Manufacturers:
 - a. 786 Mildew Resistant; Dow Corning.
 - b. Pecora Corporation; 898 Silicone Sanitary Sealant: www.pecora.com.
 - c. Sika Corporation; Sikasil GP: www.usa-sika.com/#sle.
 - d. Sanitary 1700; GE Silicones..
 4. Substitutions: 01 2500 - Substitution Procedures

2.4 SELF-LEVELING SEALANTS

- A. Self-Leveling Silicone Sealant: ASTM C920, Grade P, Uses M and A; single or multicomponent, explicitly approved by manufacturer for traffic exposure when recessed below traffic surface; not expected to withstand continuous water immersion.
1. Movement Capability: Plus 100 percent, minus 50 percent, minimum.
 2. Hardness Range: 0 to 15, Shore A, when tested in accordance with ASTM C661.
 3. Manufacturers:
 - a. Sika Corporation; Sikaflex 1c SL: www.usa-sika.com/#sle.
 - b. Use for all horizontal exterior joints..
 - c. Substitutions: 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. Type for Joints Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type C - Closed Cell Polyethylene.
 3. Open Cell: 40 to 50 percent larger in diameter than joint width. (Not to be used in flat or horizontal joints)
 4. Closed Cell and Bi-Cellular: 25 to 33 percent larger in diameter than joint width. (Use for flat and horizontal joints)
- 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.

3.3 INSTALLATION

- A. Perform installation in accordance with ASTM C1193.
- B. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer.
- C. Install bond breaker backing tape where backer rod cannot be used.
- D. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.
- E. Self-leveling joints: Recess joint depth as recommended by the sealant manufacturer.

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 4313
ALUMINUM-FRAMED STOREFRONTS

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. Internal metal reinforcement, if required.
- B. Thermal Break Units.
- C. Insulated in-fill panels.
- D. Perimeter sealant.
- E. Connections to building structure, including anchors, shims, fasteners, inserts, accessories and support brackets. Foam framing seal.
- F. Foam framing seal.

1.3 RELATED REQUIREMENTS

- A. Section 05 5000 - Metal Fabrications: Steel attachment devices.
- B. Section 07 8400 - Firestopping: Firestop at system junction with structure.
- C. Section 07 9005 - Joint Sealers: Perimeter sealant and back-up materials.
- D. Section 12 4940 - Roller Shades: Attachments to framing members .

1.4 REFERENCE STANDARDS

- A. Aluminum Association (AA)
 - 1. Aluminum Construction Manual
 - 2. Specifications for Aluminum Structures
- B. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site; 2015.
- C. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document); 2015.
- D. AAMA 503-92 Voluntary Specification for Field Testing of Metal Storefronts, Curtain Wall and Sloped Glazing Systems
- E. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2017a.
- F. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2017a.
- G. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2017a.
- H. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- I. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- J. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.
- K. ASTM C 864 Specification for Dense Elastomeric Compression Seal Gasket and Material
- L. ASTM D 2240 Standard Test Method for Rubber Property - Durometer Hardness.
- M. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014.

- N. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2016).
- O. DWS 1.1 Structural Welding Code

1.5 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate with installation of other components that comprise the exterior enclosure.
- B. Preinstallation Meeting: Conduct a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

1.6 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, infill panels, and internal drainage details.
- C. Shop Drawings: Shop drawings shall be prepared by the manufacture. Indicate system dimensions, framed opening requirements and tolerances, affected related Work, expansion and contraction joint location and details, and field welding required.
 - 1. Include design engineer's stamp or seal on shop drawings for attachments and anchors.
- D. Samples: Submit two samples 6 x 6 inches in size illustrating finished aluminum surface, infill panels, materials.
 - 1. Fabrication Sample: Of each vertical-to-horizontal intersection of aluminum-framed systems, made from 12" (304.8 mm) lengths of full-size components and showing details of the following:
 - a. Joinery.
 - b. Anchorage.
 - c. Expansion provisions.
 - d. Infill Panels.
 - e. Flashing and drainage
- E. Manufacturer's Certificate: Certify that the products supplied meet or exceed the specified requirements.
- F. Product Test Reports: Provide comprehensive test reports not more than four years old prepared by a qualified testing agency for each window type being used on the project. Test reports based on the use of downsized test units will not be accepted
- G. Engineering Calculations: Submit calculations prepared and certified by a professional Engineer, registered and licensed for practice in the State of New York showing compliance with specifications, including type and location of all fasteners.
 - 1. Calculations shall include, but not necessarily be limited to, the engineering analysis of a particular manufacturer of all individual and aggregate components, fastening devices, connections, and embeds of work of this section.
 - 2. Calculations shall be strictly coordinated with referenced to and submitted concurrently with shop drawings
- H. Warranty: Submit manufacturer warranty and ensure forms have been completed in Haldane Central School District's name and registered with manufacturer.
- I. Warranty Period: Manufacturer's and installers shall provide Two (2) years from Date of Substantial Completion of the project.

1.7 QUALITY ASSURANCE

- A. Design structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the State of New York.
- B. Source Limitations: Obtain aluminum-framed entrance door through one source from a single manufacturer
- C. Manufacturer Qualifications: Company specializing in manufacturing aluminum-framed entrance doors and storefronts glazing systems with minimum ten (10) years of documented experience.

- D. Installer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience and approved by manufacturer.
- E. Structural-Sealant Glazing: Comply with ASTM C 1401, "Guide for Structural Sealant Glazing" for design and installation of structural-sealant-glazed systems.
- F. Structural-Sealant Joints: Design reviewed and approved by structural-sealant manufacturer

1.8 PRE-INSTALLATION MEETING

- A. Conduct pre installation meeting one week prior to installation.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Handle products of this section in accordance with AAMA CW-10.
- B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.10 FIELD CONDITIONS

- A. Field Measurements: Verify actual dimensions of aluminum-framed storefront openings by field measurements before fabrication and indicate field measurements on Shop Drawings
- B. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.

1.11 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a 2 year period after Date of Substantial Completion for aluminum doors.
- C. Provide 15 year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.
- D. Provide 25 year manufacturer warranty of exterior finish for infill panels.

PART 2 PRODUCTS

2.1 BASIS FOR DESIGN: FRAMING SYSTEM FOR INSULATED PANEL SYSTEM

- A. Manufacturer:
 - 1. Aluminum Frames Kawneer North America;; Product Trifab® VG 451T Framing System - 2" x 4-1/2" framing system; Thermal Break; Infill panels.www.kawneer.com

2.2 COMPONENTS

- A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
 - 1. Thermally Broken entrance Framing - Kawneer IsoLock™ Thermal Break with a 1/4" (6.4 mm) separation consisting of a two-part chemically curing, high-density polyurethane, which is mechanically and adhesively joined to aluminum storefront sections.
 - a. Thermal Break shall be designed in accordance with AAMA TIR-A8 and tested in accordance with AAMA 505
 - 2. Unitized, shop assembly.
 - 3. Vertical Mullion Dimensions: 2 inches wide by 4-1/2 inches deep.
 - 4. Design Wind Load: 40 lbf/sq ft, positive and negative.
 - 5. Finish: High performance organic coatings.
 - a. Factory finish all surfaces that will be exposed in completed assemblies.
 - b. Touch-up surfaces cut during fabrication so that no natural aluminum is visible in completed assemblies, including joint edges.
 - 6. Finish Color: Match existing windows.
 - 7. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors and hardware; fasteners and attachments concealed from view; reinforced as required for imposed loads.

8. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.
9. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
10. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.
11. Movement: Allow for movement between storefront and adjacent construction, without damage to components or deterioration of seals.
12. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.

B. Performance Requirements

1. Wind Loads: Design and size components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M, using loads 1.5 times the design wind loads and 10 second duration of maximum load.
 - a. Positive Design Wind Load: 40 lbf/sq ft.
 - b. Negative Design Wind Load: 40 lbf/sq ft.
 - c. Member Deflection: Limit member deflection to 1/175 in any direction, with full recovery of glazing materials.
2. Air Leakage: Maximum of 0.06 cu ft/min sq ft of wall area, when tested in accordance with ASTM E283 at 6.24 psf pressure differential across assembly.
3. Condensation Resistance Factor of Framing: 50, minimum, measured in accordance with AAMA 1503.
4. Solar Heat Gain Coefficient (SHGC): 0.40.
5. Water Leakage: None, when measured in accordance with ASTM E331 at specified pressure differential.

2.3 COMPONENTS

A. Infill Panels:

1. Thermal Barrier: Insulated panels shall conform to the requirements of IBC-2015 2603.4. Foam plastic shall be separated from the interior of a building by an approved thermal barrier of 0.5-inch (12.7 mm) gypsum wallboard or equivalent thermal barrier material that is tested in accordance with and meets the acceptance criteria of both the Temperature Transmission Fire Test and the Integrity Fire Test of NFPA 275.

B. Infill Panels : Insulated, aluminum sheet face and back, with edges formed to fit glazing channel and sealed.

1. Thickness: 1".
2. Exterior Sheet: 1/16 inch thick.
3. Interior Sheet: 1/16 inch thick.
4. Insulation Core: Isocyanurate insulation core with minimum R value of 6.41/inch.
5. Exterior and Interior Substrate: Gypsum Board.
6. Exterior Finish: Superior performing organic coatings.
7. Interior Finish: Mill finish.
8. Warranty: 25 years.
9. Product: "Mapes-R" as manufactured by Mapes Architectural Panels; sales@mapes.com / www.mapespanels.com

C. Infill Panels : Insulated, aluminum sheet face and back, with edges formed to fit glazing channel and sealed.

1. Thickness: 1-1/4".
2. Exterior Skin: Aluminum 1/16 inch thick.

3. Interior Skin: Aluminum 1/16 inch thick.
4. Insulation Core: Isocyanurate insulation core with minimum R value of 6.41/inch.
5. Exterior Substrate: 3/16" High density tempered hardboard inch thick.
6. Interior Substrate: Fire code gypsum for 1`-1/4" panels.
7. Exterior Finish: High performance organic coatings.
8. Interior Finish: Pigmented organic coatings.
9. Warranty: 25 years.
10. Product: "Mapestop" as manufactured by Mapes Architectural Panels; sales@mapes.com / www.mapespanels.com

2.4 MATERIALS

- A. Extruded Aluminum: ASTM B221 (ASTM B221M).
 1. Alloy and temper recommended by aluminum storefront manufacturer for strength, corrosion resistance, and application of required finish and not less than 0.070" (1.8 mm) wall thickness at any location for the main frame and complying with ASTM B 221: 6063-T6 alloy and temper.
- B. Sheet Aluminum: ASTM B209 (ASTM B209M).
- C. Reinforcing Members: Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated
- D. Structural Steel Sections: ASTM A36/A36M; galvanized in accordance with requirements of ASTM A123/A123M.
- E. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated
- F. Fasteners: Aluminum, nonmagnetic stainless steel or other materials to be non-corrosive and compatible with aluminum framing members, trim hardware, anchors, and other components.
- G. Perimeter Sealant: Type specified in Section 07 9200 - Joint Sealants.

2.5 ACCESSORY MATERIALS

- A. Bituminous Paint: Cold-applied, asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos; formulated for 30 mil (0.762 mm) thickness per coat.

2.6 FABRICATION

- A. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:
 1. Profiles that are sharp, straight, and free of defects or deformations.
 2. Accurately fit joints; make joints flush, hairline and weatherproof.
 3. Means to drain water passing joints, condensation within framing members, and moisture migrating within the system to exterior.
 4. Physical and thermal isolation of glazing from framing members.
 5. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
- B. Storefront Framing: Fabricate components for assembly using manufacturer's standard installation instructions.
- C. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings

2.7 FINISHES

- A. Pigmented Organic Coatings: AAMA 2603; polyester or acrylic baked enamel finish.
- B. High Performance Organic Coating: AAMA 2604; multiple coats, thermally cured fluoropolymer system.

- C. Superior Performing Organic Coatings System: Polyvinylidene fluoride (PVDF) multi-coat superior performing organic coatings system complying with AAMA 2605, including at least 70 percent PVDF resin, and at least 80 percent of aluminum extrusion and panels surfaces having minimum total dry film thickness (DFT) of 1.2 mils, 0.0012 inch.
- D. High Performance Organic Coatings: AAMA 2604; multiple coats, thermally cured fluoropolymer system.
 - 1. Manufacturers:
 - a. Kawneer Permafluor™ (70% PVDF), AAMA 2605, Fluoropolymer Coating Color: Match existing windows..

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify dimensions, tolerances, and method of attachment with other work.
- B. Verify that wall openings and adjoining air and vapor seal materials are ready to receive work of this section.
- C. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work. Verify rough opening dimensions, levelness of sill plate and operational clearances. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure a coordinated, weather tight framed aluminum storefront system installation.
 - 1. Masonry Surfaces: Visibly dry and free of excess mortar, sand, and other construction debris.
 - 2. Metal Surfaces: Dry; clean; free of grease, oil, dirt, rust, corrosion, and welding slag; without sharp edges or offsets at joints.
 - 3. Proceed with installation only after unsatisfactory conditions have been corrected

3.2 INSTALLATION

- A. Install wall system in accordance with manufacturer's instructions.
- B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- C. Provide alignment attachments and shims to permanently fasten system to building structure.
- D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
- E. Provide thermal isolation where components penetrate or disrupt building insulation.
- F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.
- G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.
- H. Coordinate attachment and seal of perimeter air and vapor barrier materials.
- I. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- J. Install perimeter sealant in accordance with Section 07 9005.
- K. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.3 TOLERANCES

- A. Maximum Variation from Plumb: 0.06 inch per 3 feet non-cumulative or 0.06 inch per 10 feet, whichever is less.
- B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.
- C. Offset from Alignment: The maximum offset from true alignment between two identical members abutting end to end in line shall not exceed 1/16 inch.
- D. Diagonal Measurements: The maximum difference in diagonal measurements shall not exceed 1/8 inch.

- E. Offset at Corners: The maximum out-of-plane offset of framing at corners shall not exceed 1/32 inch

3.4 FIELD QUALITY CONTROL

- A. Air Infiltration Tests: Conduct tests in accordance with ASTM E 783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft², whichever is greater
- B. Water Infiltration Tests: Conduct tests in accordance with ASTM E 1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 6.24 psf (300 Pa).

3.5 ADJUSTING

- A. Adjust operating hardware and sash for smooth operation.

3.6 CLEANING

- A. Remove protective material from pre-finished aluminum surfaces.
- B. Provide protective treatment and other precautions required through the remainder of the construction period, to ensure that the frames will be without damage or deterioration (other than normal weathering) at the time of acceptance
- C. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths, and take care to remove dirt from corners and to wipe surfaces clean.
- D. Upon completion of installation, thoroughly clean aluminum surfaces in accordance with AAMA 609 & 610.
- E. Remove excess sealant by method acceptable to sealant manufacturer.

3.7 PROTECTION

- A. Protect installed products from damage until Date of Substantial Completion.

END OF SECTION

SECTION 08 9100
LOUVERS

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. Louvers, frames, and accessories.
- B. Foam sealant for filling perimeter of louver space..

1.3 RELATED REQUIREMENTS

- A. Section 07 9200 - Joint Sealants: Sealing joints between frames and adjacent construction.
- B. Section 23 3100 - HVAC Duct and Casings: Attachment of duct work to louver, including blank-off panels.

1.4 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. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2017a.
- D. AMCA 511 - Certified Ratings Program for Air Control Devices; 2010.
- E. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data describing design characteristics, maximum recommended air velocity, design free area, materials and finishes.
- C. Shop Drawings: Indicate louver layout plan and elevations, opening and clearance dimensions, and tolerances; head, jamb and sill details; blade configuration, screens, blank-off areas required, and frames.
- D. Samples: Submit two samples 2 by 2 inches in size illustrating finish and color of exterior and interior surfaces.
- E. Test Reports: Independent agency reports showing compliance with specified performance criteria.
- F. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section, with minimum five (5) years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.
- C. Source Limitations: Obtain louvers and vents through one source from a single manufacturer where indicated to be of same type, design, or factory-applied color finish.
- D. Welding: Qualify procedures and personnel according AWS D1.2, "Structural Welding Code--Aluminum."
- E. AMCA Seal: Mark units with AMCA Certified Ratings Seal.

1.7 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

- B. Provide five year manufacturer's warranty against distortion, metal degradation, and connection failures of louver components.
 - 1. Finish: Include twenty year coverage against degradation of exterior finish.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Louvers:
 - 1. Airolite Company, LLC: www.airolite.com/#sle.

2.2 LOUVERS

- A. Louvers: Factory fabricated and assembled, complete with frame, mullions, and accessories; AMCA Certified in accordance with AMCA 511.
 - 1. Wind Load Resistance: Design to resist positive and negative wind load of 25 psf without damage or permanent deformation.
 - 2. Drainable Blades: Continuous rain stop at front or rear of blade aligned with vertical gutter recessed into both jambs of frame.
 - 3. Screens: Provide insect screens at intake louvers and bird screens at exhaust louvers.
- B. Stationary Louvers, Type Set in existing window frame: Horizontal blade, formed galvanized steel sheet construction.
 - 1. Free Area: 54.2, minimum.
 - 2. Static Pressure Loss: 0.12 inch wg maximum per square foot of free area at velocity of 700 fpm, when tested in accordance with AMCA 500-L.
 - 3. Blades: Drainable.
 - 4. Frame: 2 inches deep, channel profile; glazing frame option; corner joints mitered and, with continuous recessed caulking channel each side.
 - 5. Aluminum Thickness: Frame 14 gage, 0.083 inch minimum; blades 12 gage, 0.0808 inch minimum.
 - 6. Product: Use the following : Airolote K6772 set in window frame.
 - a. Substitutions: See Section 01 2500 Substitution Procedures.
- C. Stationary Louvers, Set in existing metal door: Inverted "V" blade, hot-rolled steel construction.
 - 1. Free Area: 50 percent, minimum.
 - 2. Blades: V-shaped, 24 gauge with hemmed edges, 3 inch by 3 inch legs, sight-proof.
 - 3. Frame: 18 gage, angle profile; corner joints mitered.
 - a. Mounting Type: As indicated on drawings.
 - b. Mounting Flanges: At head/sill and jambs, welded construction.
 - 4. Screen: Interwoven wire mesh of galvanized steel, 22 gauge diameter wire, 1/2 inch open weave, square design, mounted on the interior.
 - 5. Steel Thickness, Galvanized: Frame ____ gauge, ____ inch minimum base metal; blades 1/4 inch minimum base metal.
 - 6. Steel Finish: Powder Coat, Color as selected from manufacturer's standard..
 - 7. Products:
 - a. L-700-RXNGP National Guard Products, 1-800-647-7874..
 - b. Substitutions: See Section 001 2500 Substitution Procedures.

2.3 FINISHES

- A. Superior Performing Organic Coatings System: Manufacturer's standard multi-coat superior performing organic coatings system complying with AAMA 2605, including at least 70 percent polyvinylidene fluoride (PVDF) resin, and at least 80 percent of aluminum extrusion and panels surfaces having minimum total dry film thickness (DFT) of 1.2 mils, 0.0012 inch.
- B. Color: As selected from manufacturer's standard colors.

2.4 ACCESSORIES

- A. Blank-Off Panels: Aluminum face and back sheets, polyisocyanurate foam core, 1-1/2 inch thick, painted black on exterior side; provide where duct connected to louver is smaller than louver frame, sealing off louver area outside duct. Coordinated with HVAC Contractor.
- B. Screens: Frame of same material as louver, with reinforced corners; removable, screw attached; installed on inside face of louver frame.
- C. Insect Screen: 18 x 16 size material to match frame. mesh.
- D. Fasteners and Anchors: Stainless steel.
- E. 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 filling all spaces and joints around louvers located on exterior walls.
- F. Sealant: Type, as specified in Section 07 9200 - Joint Sealants.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that prepared openings are ready to receive this work and opening dimensions are as indicated on shop drawings.
- B. Verify that field measurements are as indicated.

3.2 INSTALLATION

- A. Remove existing window and cut opening in existing doors.
- B. Install louver assembly in accordance with manufacturer's instructions.
- C. Coordinate with installation of flashings by others.
- D. Install louvers level and plumb.
- E. Align louver assembly to ensure moisture shed from flashings and diversion of moisture to exterior.
- F. Secure louver frames in openings with concealed fasteners.
- G. Fill all exterior spaces and joint between windows and doors solid with foam in accordance with manufacture's instructions.
 - 1. Cut back to permit application of joint sealant.
- H. Install perimeter sealant and backing rod in accordance with 07 9200 - Joint Sealants.
- I. Coordinate with installation of mechanical ductwork.

3.3 CLEANING

- A. Strip protective finish coverings.
- B. Clean surfaces and components.

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. Metal channel soffit/ceiling framing.
- B. Metal Trim
- C. Gypsum wallboard.
- D. Joint treatment and accessories.

1.3 RELATED REQUIREMENTS

- A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 04 0100 - Maintenance of Masonry.
- C. Section 06 1000 - Rough Carpentry: Wood blocking.
- D. Section 07 8400 - Firestopping: Top-of-wall assemblies and penetrations at fire rated walls.
- E. Section 07 9200 - Joint Sealants: Sealing acoustical gaps in construction other than gypsum board or plaster work.
- F. Section 09 5100 - Acoustical Ceilings.

1.4 REFERENCE STANDARDS

- A. 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)
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2018.
- C. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2015.
- D. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2017.
- E. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2018b.
- F. 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.
- G. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2017.
- H. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2016.
- I. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018b.
- J. GA-216 - Application and Finishing of Gypsum Panel Products; 2016.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on metal framing, gypsum board, accessories, and joint finishing system.

1.6 QUALITY ASSURANCE

- A. Perform in accordance with ASTM C 840.
- B. Installer Qualifications: Company specializing in performing gypsum board installation and finishing, with minimum 5 years of experience.

1.7 REGULATORY REQUIREMENTS

- A. Refer to Section 01 4100 - Regulatory Requirements.

PART 2 PRODUCTS

2.1 GYPSUM BOARD ASSEMBLIES

- A. Provide completed assemblies complying with ASTM C840 and GA-216.

2.2 METAL FRAMING MATERIALS

- A. Manufacturers - Metal Framing, Connectors, and Accessories:
1. Marino: www.marinoware.com.
 2. Substitutions: 01 2500 - Substitution Procedures
- B. Suspended Ceiling and Soffit Framing:
1. Components, General: Comply with ASTM C 754 for conditions indicated.
 2. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.0625-inch-diameter wire, or double strand of 0.0475-inch-diameter wire.
 3. Carrying Channels: Cold-rolled, commercial-steel sheet with a base metal thickness of 0.0538 inch, a minimum 1/2-inch-wide flange, with ASTM A 653, G40 (Z120), hot-dip galvanized zinc coating.
 - a. Depth: 1-1/2" unless otherwise indicated.
 4. Grid Suspension System for Interior Ceilings: ASTM C 645, direct-hung system composed of main beams and cross-furring members that interlock.
 - a. Main Beam: Shall be double-web construction (minimum 0.0179 inch prior to protective coating), hot dipped galvanized (per ASTM A653).
 - b. Primary Cross Tees: Shall be double-web steel construction (minimum 0.0179 inch prior to protective coating), hot dipped galvanized (minimum G40 or G90 per ASTM A653), web height 1-1/2 inch with rectangular bulb and prefinished 1-1/2" knurled flange.
 - c. Wall Molding:
 - a) HD7859: Hot dipped galvanized (minimum G40), hemmed angle molding, 1-1/4 inch height with 1-1/4 inch flange.
 - d. Screws for wallboard application shall be bugle head screws in accordance with thickness of material used.
 5. Structural Classification:
 - a. Main Beam shall be heavy duty per ASTM C 635.
 - b. Deflection of fastening suspension system supporting light fixtures, ceiling grilles, access doors, verticals and horizontal loads shall have a maximum deflection of 1/360 of the span.

2.3 BOARD MATERIALS

- A. Manufacturers - Gypsum-Based Board:
1. Georgia-Pacific Gypsum: www.gpgypsum.com.
 2. National Gypsum Company: www.nationalgypsum.com/#sle.
 3. USG Corporation: www.usg.com.
- B. 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 ceilings and soffits, unless otherwise indicated.
 2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 - a. **Mold resistant board is required at all locations.**
 3. Thickness:
 - a. Soffits and Ceilings: 5/8 inch.

2.4 GYPSUM WALLBOARD ACCESSORIES

- A. Beads, Joint Accessories, and Other Trim: ASTM C1047, galvanized steel, unless noted otherwise.

1. Corner Beads: Low profile, for 90 degree outside corners.
- B. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
 1. Mold resistant and asbestos free.
 2. Paper Tape: 2 inch wide, creased paper tape for joints and corners, except as otherwise indicated.
 3. Joint Compound: Drying type, vinyl-based, ready-mixed.
 - a. Products:
 - a) CertainTeed Corporation; Extreme All-Purpose Joint Compound: www.certainteed.com/#sle.
 - b) Substitutions: 01 2500 - Substitution Procedures
- C. Screws for Fastening of Gypsum Panel Products to Steel Members from 0.033 to 0.112 inch in Thickness: ASTM C954; steel drill screws, corrosion-resistant.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that project conditions are appropriate for work of this section to commence.

3.2 FRAMING INSTALLATION

- A. Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions.
- B. Suspended Ceilings and Soffits: Space framing and furring members as indicated.
 1. Level ceiling system to a tolerance of 1/1200.
 2. Laterally brace entire suspension system.
- C. Suspended Ceiling and Soffits: Space framing and furring members as indicated.

3.3 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. Installation on Metal Framing: Use screws for attachment of gypsum board.

3.4 INSTALLATION OF TRIM AND ACCESSORIES

- A. Corner Beads: Install at external corners, using longest practical lengths.
- B. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

3.5 JOINT TREATMENT

- A. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
 1. Level 5: Walls and ceilings to receive semi-gloss or gloss paint finish and other areas specifically indicated.
 2. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
- B. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
 1. Feather coats of joint compound so that camber is maximum 1/32 inch.
 2. Taping, filling, and sanding are not required at base layer of double-layer applications.

3.6 TOLERANCES

- A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

3.7 FINISH LEVEL SCHEDULE

- A. Level 1: Above finished ceilings concealed from view.
- B. Level 4: Walls and ceilings scheduled to receive flat or eggshell paint finish.

- C. Level 5: Walls and ceilings scheduled to receive semi-gloss or gloss paint finish.

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. Replacement of acoustical panels and suspended grid as required and where indicated on drawings.

1.3 RELATED REQUIREMENTS

- A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 07 9200 - Joint Sealants.
- C. Section 09 2116 - Gypsum Board Assemblies.

1.4 REFERENCE STANDARDS

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2018.
- B. ASTM C635/C635M - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2017.
- C. 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.
- D. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2014.
- E. UL (FRD) - Fire Resistance Directory; Current Edition.

1.5 ADMINISTRATIVE REQUIREMENTS

- A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.
- B. Do not install acoustical units until after interior wet work is dry.

1.6 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate grid layout and related dimensioning.
- C. Product Data: Provide data on acoustical units and suspension system components.
- D. Samples: Submit two samples 12 x 12 inch in size illustrating material and finish of acoustical units.
- E. Samples: Submit two samples each, 12 inches long, of suspension system main runner.
- F. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

1.7 QUALITY ASSURANCE

- A. 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
- B. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years experience.
- C. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum 10 years experience.
- D. Installers Qualifications: Company specializing in the installation of acoustical ceilings specified in this section with minimum 5 years experience.

- E. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - 1. Finish areas designated by Owner's Representative.
 - 2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Owner's Representative.
 - 3. Refinish mock-up area as required to produce acceptable work.
- F. Pre-installation Conference: Conduct conference at Project site minimum one week before installation. Agenda shall include project conditions, coordination with work of other trades, and layout of items which penetrate ceilings.
- G. Finish areas designated by Owner's Representative.

1.8 EXTRA MATERIALS

- A. Deliver extra acoustical units for Owner's use in maintenance. Label and store where directed by the Owner including codes used on the Drawings. Do not deliver to the Project site until the Owner is prepared to receive and store maintenance materials.
 - 1. Panels: Furnish 5 percent of total acoustic unit area of extra panels to Owner.
 - 2. Suspension System Components: Furnish 5 percent of each exposed component of the quantity installed

1.9 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

1.10 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.

PART 2 PRODUCTS

2.1 ACOUSTICAL UNITS

- A. Acoustical Panels, Type ACT-1: Painted mineral fiber, with the following characteristics:
 - 1. Classification: ASTM E1264 Type III.
 - a. Form: 1, nodular.
 - b. Pattern: "C" - perforated, small holes.
 - 2. Size: 24 by 48 inch.
 - 3. Thickness: 7/8 inches.
 - 4. Light Reflectance: 0.85 percent, determined in accordance with ASTM E1264.
 - 5. NRC Range: 0.75 to 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. Fire Performance: Class A (UL)
 - 9. Sag/Humidity Resistance: HumiGuard Plus.
 - 10. BioBlock.
 - 11. Panel Edge: Square.
 - 12. Color: White.
 - 13. Suspension System: Exposed grid.
 - 14. Products:

- a. Armstrong World Industries, Inc; Fine Fissured High NRC1755:
www.armstrongceilings.com/#sle.
 - b. Substitutions: See Section 01 2500 Substitution Procedures.
- B. Acoustical Panels ACT-2: Glass fiber with membrane-faced overlay, with the following characteristics:
 - 1. Classification: ASTM E1264 Type XII.
 - a. Form: 2, cloth.
 - b. Pattern: "E" - lightly textured.
 - 2. Size: 24 by 48 inch.
 - 3. Thickness: 1 inch.
 - 4. Light Reflectance: 88 percent, determined in accordance with ASTM E1264.
 - 5. NRC Range: 0.95 to 0.95, determined in accordance with ASTM E1264.
 - 6. Articulation Class (AC): 190, determined in accordance with ASTM E1264.
 - 7. Fire Performance: Class A (UL)
 - 8. Sag/Humidity Resistance: HumiGuard Plus.
 - 9. Panel Edge: Square.
 - 10. Color: White.
 - 11. Suspension System: Exposed.
 - 12. Products:
 - a. Armstrong World Industries, Inc; Optima Lay-in 3153: www.armstrongceilings.com/#sle.
 - b. Substitutions: See Section 01 2500 Substitution Procedures..

2.2 SUSPENSION SYSTEM(S)

- A. Metal Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with stabilizer bars, clips, splices, and perimeter moldings as required.
 - 1. Materials:
 - a. Steel Grid: ASTM A653/A653M, G30 coating, unless otherwise indicated.
- B. Exposed Suspension System: Hot-dipped galvanized steel grid with aluminum cap.
 - 1. Application(s): Seismic.
 - 2. Structural Classification: Heavy-duty, when tested in accordance with ASTM C635/C635M.
 - 3. Profile: Tee; 15/16 inch face width.
 - 4. Finish: Baked enamel.
 - 5. Color: White.
 - 6. Products:
 - a. Armstrong World Industries, Inc; Product Prelude XL 15/16": www.armstrong.com.
 - b. Substitutions: See Section 01 2500 - Substitution Procedures..

2.3 ACCESSORIES

- A. Support Channels and Hangers: Galvanized steel; size and type to suit application and ceiling system flatness requirement specified.
- B. Hanger Wire: 12 gauge, 0.08 inch galvanized steel wire.
- C. Seismic Clips: Manufacturer's standard clips for seismic conditions and to suit application.
- D. Perimeter Moldings: Same metal and finish as grid.
 - 1. Minimum 7/8" horizontal flange
- E. Acoustical Sealant For Perimeter Moldings: Specified in Section 07 9200 - Joint Sealants.
- F. Touch-up Paint: Type and color to match acoustical and grid units.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.

- B. Verify that layout of hangers will not interfere with other work.

3.2 PREPARATION

- A. Install after major above-ceiling work is complete.
- B. Coordinate the location of hangers with other work.

3.3 INSTALLATION - SUSPENSION SYSTEM

- A. Remove, replace, and install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, and manufacturer's instructions and as supplemented in this section and as required to match existing pattern..
- B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
- C. Locate system on room axis according to reflected plan.
- D. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
 - 1. Install in bed of acoustical sealant.
 - 2. Use longest practical lengths.
- E. Suspension System, Non-Seismic: Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- F. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- G. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
- H. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.
- I. Install light fixture boxes constructed of acoustical panel above light fixtures in accordance with fire rated assembly requirements and light fixture ventilation requirements.

3.4 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 acoustical units level, in uniform plane, and free from twist, warp, and dents.
- E. Cutting Acoustical Units:
 - 1. Make field cut edges of same profile as factory edges.
- F. Install seismic clips or stabilizer bars as per code requirements.

3.5 TOLERANCES

- A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.
- B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

3.6 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 Armstrong Item #5760 8 oz, 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.

END OF SECTION

SECTION 09 9123
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:
 - 1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
 - 2. Gypsum Board/Plaster walls, soffits, and disturbed surfaces.
 - 3. Mechanical, Fire Protection and Electrical:
 - a. In all areas, paint insulated and exposed pipes, conduit, boxes, mechanical equipment, and electrical equipment, unless otherwise indicated.
- 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.

1.3 RELATED REQUIREMENTS

- A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 09 2116 - Gypsum Board Assemblies.

1.4 REFERENCE STANDARDS

- A. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.
- B. 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 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.
- C. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches 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.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum 10 years experience.
- B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum 3 years experience.

1.7 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.

1.8 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Provide paints and finishes from the same manufacturer..
- B. Paints:
 - 1. Base Manufacturer: Sherwin-Williams Company: www.sherwin-williams.com.
- C. Primer Sealers: Same manufacturer as top coats.
- D. 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. 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.
 - 2. 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.
 - 3. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.
- B. Volatile Organic Compound (VOC) Content: Comply with Section 01 6116.
- C. Flammability: Comply with applicable code for surface burning characteristics.
- D. Colors: To be selected from manufacturer's full range of available colors.
 - 1. Selection to be made by Fuller and D'Angelo, P.C. after award of contract.

2.3 PAINT SYSTEMS - INTERIOR

- A. Gypsum Board/Plaster, Latex, 3 coat: (New Surfaces)
 - 1. One Coat latex primer spreading rate recommended by manufacturer to achieve a dry film thickness of 4 mils wet and 1.3 mils dry.
 - a. Sherwin Williams QUICK DRY Interior Exterior Stain Blocking Primer Latex
 - 2. Topcoat: Two Coats of Acrylic Latex spreading rate recommended by manufacturer to achieve a dry film thickness of 4 mils wet; 1.3 mils dry to 5.6 mils
 - a. Sherwin Williams ProMar 400 Zero VOC, 7757 High Reflective Flat
- B. Gypsum Board/Plaster, Latex, 2 coat: (Existing Surfaces)ProMar 400 Zero
 - 1. One Coat latex primer spreading rate recommended by manufacturer to achieve a dry film thickness of 4 mils wet and 1.1 mils dry..
 - a. Sherwin Williams QUICK DRY Interior Exterior Stain Blocking Primer Latex
 - 2. Topcoat: One Coat of Latex spreading rate recommended by manufacturer to achieve a dry film thickness of 4 mils wet; 1.3 mils dry to 5.6 mils
 - a. Sherwin Williams ProMar 400 Zero VOC, 7757 High Reflective Flat

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.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin application of paints and finishes until substrates have been properly prepared.
- B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

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.

3.3 APPLICATION

- A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- B. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
- C. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.
- D. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- E. 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 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. For locations see window schedule and drawings.
- B. Removals.
- C. Manual operated bead chain clutch operated roller shades.
- D. Ceiling pocket.
- E. Accessories.
- F. Emergency Rescue Window sticker.
- G. Provide one roller shade for each window section. Refer to drawings.

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 shade pockets, closures and related accessories.

1.4 REFERENCES

- A. ASTM G 21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
- B. 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 Haldane Central School District's use in maintenance of project.
 - 1. **Extra Chains: Provide 500 linear feet of #10 qualified stainless steel chain rated to 90 lb.**
 - 2. **Bead Stops: Provide 100 beads stops.**
 - 3. **Chain Connectors: Provide 50 chain connector.**

- H. See Section 01 6000 - Product Requirements, for additional provisions.

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 bay assembly for evaluation of mounting, appearance and accessories.
1. Locate mock-up in window designated by Owner's representative .
 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.

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. Mecho5x, Managed Lift Force, Hardware: Lifts single band or multiband shade assemblies:
1. Lifting Force: 3.5 to 8.5 pounds (1.6 to 3.9 kg) for shade assemblies with a shade band hanging weight, not including mounting hardware, of 35 pounds (16 kg).
 2. Backward compatible to Mecho-5 components including facia, regular and reverse roll, pockets, and wall-mounting accessories.
 3. Includes offset drive capability, left/right, front, or back to allow for utilization of ShadeLoc Zipper channels.

4. Offset chain drive shall not cause an increase of friction or pull force when operated up to a 26 degree angle from vertical

2.3 SHADE CLOTH

- A. Room Darkening Shadecloth: MechoShade Systems, Inc., Equinox series, 0.008 inches thick PVC-free blackout material and weighing 0.94 lbs. per square yard, comprising of 53 percent fiberglass, 45 percent acrylic, 2 percent poly finish.
 1. Color: As selected by Architect from manufacture's standard colors.

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.

2.6 COMPONENTS

- A. Access and Material Requirements:

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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, Mecho5x:
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 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. Mecho Drive Bracket model Mecho5x shall be fully integrated with all Mecho accessories, including, but not limited to: SnapLoc fascia, SnapLoc Zipper channels, room darkening side / sill channels, center supports and connectors for multi-banded shades.
 - b. Mecho5x drive sprocket and brake assembly shall rotate and be supported on a welded 3/8 inch (9.5 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 Mecho5x 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: No. 10 qualified stainless steel chain rated to 90 lbs (41 kg) minimum breaking strength. Nickel plate chain shall not be accepted.

2.7 ACCESSORIES

- A. Roller Shade Pocket: Non-Electro Pocket For recessed mounting in acoustical tile, or drywall ceilings as indicated on the Drawings. For Non-Electro shades.
1. Provide "Vented Pocket" such that there will be a minimum 12 sq inch (7742 sq mm) of return air per lineal foot allowing the solar gain to flow above the ceiling line into the plenum or over the roller shades into the interior space.
 2. Pocket Accessories: As indicated on the Drawings
- B. Model: Non-ElectroPocket Model # 4133 with tile support.

- C. Bead chain Hold Down Device: WCMA approved.
- D. Blocking: Provide blocking as shown on drawings including supports and anchoring.
- E. Room Darkening Channels:
 - 1. Side Channels, MechoShade: Extruded aluminum with polybond edge seals and SnapLoc-mounting brackets and with concealed fastening. Exposed fastening is not acceptable. Units 1-15/16 inches (49.2 mm) wide by 1-3/16 inches (30.1 mm) deep, two-band center channels, 2-5/8 inches (66.6 mm) wide by 1-3/16 inches (30.1 mm) deep. The 2-5/8-inch (66.6 mm) double-center channels may be installed at center-support positions of multi-band-shade ElectroShades. MechoShade side channels 2-5/8 inch (66.6 mm) may be used as center supports for ElectroShades; shadebands up to 8 high. For shadebands over 8 feet (2438 mm), provide ElectroShade side channels.
- F. 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. Rescue labels will be provide by the window installer and shall be placed on the window treatment (roller shade, horizontal blinds etc.) and visible from occupied side when closed. Coordinate with window installer.

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 Tim Walsh, Director of Facilities of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Remove existing shades.
- B. Clean surfaces thoroughly prior to installation.
- C. Prepare shade pocket work as required.
- D. 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. Coordinate multiple shades per overall window opening, as per documents, install all shades both surface and pocket type to work and cover windows in full.
- C. Coordinate multiple window chains to be together (same side) as much as possible.
- D. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.
- E. Clean roller shade surfaces after installation, according to manufacturer's written instructions.
- F. 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

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COMMON MOTOR REQUIREMENTS FOR PLUMBING EQUIPMENT

SECTION 22 0513

COMMON MOTOR REQUIREMENTS FOR PLUMBING EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General construction and requirements.

PART 2 PRODUCTS

2.01 GENERAL CONSTRUCTION AND REQUIREMENTS

- A. Construction:
 - 1. Open drip-proof type except where specifically noted otherwise.
 - 2. Design for continuous operation in 104 degrees F (40 degrees C) environment.
 - 3. Design for temperature rise in accordance with NEMA MG 1 limits for insulation class, service factor, and motor enclosure type.
- B. Visible Nameplate: Indicating motor horsepower, voltage, phase, cycles, RPM, full load amps, locked rotor amps, frame size, manufacturer's name and model number, service factor, power factor, efficiency.
- C. Wiring Terminations:
 - 1. Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70, threaded for conduit.
 - 2. For fractional horsepower motors where connection is made directly, provide threaded conduit connection in end frame.

END OF SECTION

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MECHANICAL UPGRADES & RELATED WORK - PACKAGE NO. 2
SLEEVES AND SLEEVE SEALS FOR PLUMBING PIPING

SECTION 22 0517

SLEEVES AND SLEEVE SEALS FOR PLUMBING PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Pipe sleeves.

1.02 REFERENCE STANDARDS

- A. ASTM C592 - Standard Specification for Mineral Fiber Blanket Insulation and Blanket-Type Pipe Insulation (Metal-Mesh Covered) (Industrial Type); 2016.
- B. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2013a (Reapproved 2017).

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate pipe materials used, jointing methods, supports, floor and wall penetration seals. Indicate installation, layout, weights, mounting and support details, and piping connections.

PART 2 PRODUCTS

2.01 PIPE SLEEVES

- A. Manufacturers:
 - 1. Flexicraft Industries; Pipe Wall Sleeve: www.flexicraft.com/#sle.
 - 2. or approved equal.
- B. Vertical Piping:
 - 1. Sleeve Length: 1 inch (25 mm) above finished floor.
 - 2. Provide sealant for watertight joint.
- C. Clearances:
 - 1. Provide allowance for insulated piping.
 - 2. Wall, Floor, Floor, Partitions, and Beam Flanges: 1 inch (25 mm) greater than external; pipe diameter.
 - 3. All Rated Openings: Caulked tight with fire stopping material complying with ASTM E814 in accordance with Section 07 8400 to prevent the spread of fire, smoke, and gases.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Route piping in orderly manner, plumb and parallel to building structure. Maintain gradient.
- B. Install piping to conserve building space, to not interfere with use of space and other work.
- C. Install piping and pipe sleeves to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- D. Provide sleeves when penetrating footings, floors, walls, partitions, and _____. Seal pipe including sleeve penetrations to achieve fire resistance equivalent to fire separation required.
- E. When installing more than one piping system material, ensure system components are compatible and joined to ensure the integrity of the system. Provide necessary joining fittings. Ensure flanges, union, and couplings for servicing are consistently provided.

END OF SECTION

SECTION 22 0519

METERS AND GAUGES FOR PLUMBING PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Flow meters.
- B. Thermometers and thermometer wells.

1.02 REFERENCE STANDARDS

- A. ASME B40.100 - Pressure Gauges and Gauge Attachments; 2013.
- B. ASME MFC-3M - Measurement of Fluid Flow in Pipes Using Orifice, Nozzle and Venturi; 2004 (Reaffirmed 2017).
- C. ASTM E1 - Standard Specification for ASTM Liquid-in-Glass Thermometers; 2014.
- D. ASTM E77 - Standard Test Method for Inspection and Verification of Thermometers; 2014, with Editorial Revision (2017).

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide list that indicates use, operating range, total range and location for manufactured components.

PART 2 PRODUCTS

2.01 LIQUID FLOW METERS

- A. Manufacturers:
 - 1. Dwyer Instruments, Inc: www.dwyer-inst.com/#sle.
 - 2. Venture Measurement, a Danaher Corporation Company: www.venturemeasurement.com/#sle.
 - 3. McCrometer, Inc: www.mccrometer.com/#sle.
 - 4. or approved equal.
- B. Calibrated ASME MFC-3M venturi orifice plate and flanges with valved taps, chart for conversion of differential pressure readings to flow rate, with pressure gauge in case.

2.02 STEM TYPE THERMOMETERS

- A. Manufacturers:
 - 1. Dwyer Instruments, Inc: www.dwyer-inst.com/#sle.
 - 2. Omega Engineering, Inc: www.omega.com/#sle.
 - 3. Weksler Glass Thermometer Corp: www.wekslerglass.com/#sle.
 - 4. or approved equal
- B. Thermometers - Fixed Mounting: Red- or blue-appearing non-toxic liquid in glass; ASTM E1; lens front tube, cast aluminum case with enamel finish.
 - 1. Size: 9 inch (225 mm) scale.
 - 2. Window: Clear Lexan.
 - 3. Accuracy: 2 percent, per ASTM E77.
 - 4. Calibration: Degrees F.

2.03 DIAL THERMOMETERS

- A. Manufacturers:
 - 1. Dwyer Instruments, Inc: www.dwyer-inst.com/#sle.
 - 2. Omega Engineering, Inc: www.omega.com/#sle.
 - 3. Weksler Glass Thermometer Corp: www.wekslerglass.com/#sle.
 - 4. or approved equal.

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- B. Thermometers - Fixed Mounting: Dial type bimetallic actuated; ASTM E1; stainless steel case, silicone fluid damping, white with black markings and black pointer, hermetically sealed lens, stainless steel stem.
 - 1. Size: 5 inch (125 mm) diameter dial.
 - 2. Lens: Clear glass.
 - 3. Accuracy: 1 percent.
 - 4. Calibration: Degrees F.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install thermometers in piping systems in sockets in short couplings. Enlarge pipes smaller than 2-1/2 inch (60 mm) for installation of thermometer sockets. Ensure sockets allow clearance from insulation.

END OF SECTION

SECTION 22 0523

GENERAL-DUTY VALVES FOR PLUMBING PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Applications.
- B. Ball valves.
- C. Butterfly valves.
- D. Check valves.
- E. Gate valves.

1.02 ABBREVIATIONS AND ACRONYMS

- A. CWP: Cold working pressure.
- B. EPDM: Ethylene propylene copolymer rubber.
- C. NBR: Acrylonitrile-butadiene, Buna-N, or nitrile rubber.
- D. NRS: Non-rising stem.
- E. OS&Y: Outside screw and yoke.
- F. PTFE: Polytetrafluoroethylene.
- G. RS: Rising stem.
- H. SWP: Steam working pressure.
- I. TFE: Tetrafluoroethylene.
- J. WOG: Water, oil, and gas.

1.03 REFERENCE STANDARDS

- A. ASME B1.20.1 - Pipe Threads, General Purpose (Inch); 2013 (Reaffirmed 2018).
- B. ASME B16.1 - Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250; 2015.
- C. ASME B16.10 - Face-to-Face and End-to-End Dimensions of Valves; 2017.
- D. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; 2018.
- E. ASME B16.34 - Valves - Flanged, Threaded and Welding End; 2017.
- F. ASTM B62 - Standard Specification for Composition Bronze or Ounce Metal Castings; 2017.
- G. MSS SP-70 - Cast Iron Gate Valves, Flanged and Threaded Ends; 2011.
- H. MSS SP-71 - Cast Iron Swing Check Valves, Flanged and Threaded Ends; 2018.
- I. MSS SP-80 - Bronze Gate, Globe, Angle and Check Valves; 2013.
- J. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends; 2010.
- K. NSF 61 - Drinking Water System Components - Health Effects; 2019.
- L. NSF 372 - Drinking Water System Components - Lead Content; 2016.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on valves including manufacturers catalog information. Submit performance ratings, rough-in details, weights, support requirements, and piping connections.

PART 2 PRODUCTS

2.01 APPLICATIONS

- A. See drawings for specific valve locations.
- B. Provide the following valves for the applications if not indicated on drawings:

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1. Shutoff: Ball, butterfly, gate.
 2. Throttling: Provide globe, angle, ball, or butterfly.
- C. Domestic, Hot and Cold Water Valves:
1. 2 NPS (50 DN) and Smaller:
 - a. Bronze and Brass: Provide with solder-joint ends.
 - b. Ball: One piece, full port, brass with brass trim.
 - c. Bronze Swing Check: Class 125, bronze disc.
 - d. Bronze Gate: Class 125, NRS.

2.02 GENERAL REQUIREMENTS

- A. Valve Pressure and Temperature Ratings: No less than rating indicated; as required for system pressures and temperatures.
- B. Valve Sizes: Match upstream piping unless otherwise indicated.
- C. Valve Actuator Types:
- D. Valve-End Connections:
1. Threaded End Valves: ASME B1.20.1.
 2. Flanges on Iron Valves: ASME B16.1 for flanges on iron valves.
- E. General ASME Compliance:
1. Ferrous Valve Dimensions and Design Criteria: ASME B16.10 and ASME B16.34.
 2. Solder-joint Connections: ASME B16.18.
- F. Potable Water Use:
1. Certified: Approved for use in compliance with NSF 61 and NSF 372.
 2. Lead-Free Certified: Wetted surface material includes less than 0.25 percent lead content.

2.03 BRASS, BALL VALVES

- A. Two Piece, Full Port with Brass Trim and Threaded Connections:
1. Comply with MSS SP-110.
 2. SWP Rating: 150 psig (1035 kPa).
 3. CWP Rating: 600 psig (4140 kPa), WOG.
 4. Body: Forged brass.
 5. Seats: PTFE.
 6. Ball: Chrome-plated brass.

2.04 BRASS, HORIZONTAL SWING CHECK VALVES

- A. Threaded End-Connections:
1. Class 125: CWP Rating: 200 psig (1,380 kPa), WOG.
 2. Body: Forged brass.
 3. Disc: Forged brass.
 4. Hinge-Pin, Screw, and Cap: Forged brass.

2.05 BRONZE, SWING CHECK VALVES

- A. General:
1. Fabricate from dezincification resistant material.
 2. Copper alloys containing more than 15 percent zinc are not permitted.
- B. Class 125 CWP Rating; 200 psig (1,380 kPa) WOG:
1. Comply with MSS SP-80, Type 3.
 2. Design: Y-pattern, horizontal or vertical flow.
 3. Body: Bronze, ASTM B62.
 4. Ends: Threaded.
 5. Disc: Bronze.

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GENERAL-DUTY VALVES FOR PLUMBING PIPING

2.06 BRONZE, GATE VALVES

- A. General:
 - 1. Fabricate from dezincification resistant material.
 - 2. Copper alloys containing more than 15 percent zinc are not permitted.
- B. NRS (Non-rising Stem) or OS & Y (Rising Stem):
 - 1. Comply with MSS SP-80, Type I.
 - 2. Class 125: CWP Rating 200 psig (1380 kPa).
 - 3. Body: ASTM B62, bronze with integral seat and screw-in bonnet.
 - 4. Ends: Threaded or solder joint joint.
 - 5. Stem: Bronze.
 - 6. Disc: Solid wedge; bronze.
 - 7. Packing: Asbestos free.
 - 8. Handwheel: Malleable iron, bronze, or aluminum.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Discard all packing materials and verify that valve interior, including threads and flanges are completely clean without signs of damage or degradation that could result in leakage.
- B. Verify valve parts to be fully operational in all positions from closed to fully open.
- C. Confirm gasket material to be suitable for the service, to be of correct size, and without defects that could compromise effectiveness.
- D. Should valve is determined to be defective, replace with new valve.

3.02 INSTALLATION

- A. Provide unions or flanges with valves to facilitate equipment removal and maintenance while maintaining system operation and full accessibility for servicing.
- B. Provide separate valve support as required and locate valve with stem at or above center of piping, maintaining unimpeded stem movement.

END OF SECTION

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HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

SECTION 22 0529

HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Support and attachment components for equipment, piping, and other plumbing work.

1.02 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- C. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2019.
- D. MFMA-4 - Metal Framing Standards Publication; 2004.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for metal channel (strut) framing systems, nonpenetrating rooftop supports, post-installed concrete and masonry anchors, and thermal insulated pipe supports.

1.04 QUALITY ASSURANCE

- A. Comply with applicable building code.

PART 2 PRODUCTS

2.01 SUPPORT AND ATTACHMENT COMPONENTS

- A. General Requirements:
 - 1. Provide all required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for the complete installation of plumbing work.
 - 2. Provide products listed, classified, and labeled as suitable for the purpose intended, where applicable.
 - 3. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported. Include consideration for vibration, equipment operation, and shock loads where applicable.
 - 4. Steel Components: Use corrosion resistant materials suitable for the environment where installed.
 - a. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
 - b. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.
- B. Metal Channel (Strut) Framing Systems:
 - 1. Manufacturers:
 - a. Cooper B-Line, a division of Eaton Corporation: www.cooperindustries.com/#sle.
 - b. Thomas & Betts Corporation: www.tnb.com/#sle.
 - c. Unistrut, a brand of Atkore International Inc: www.unistrut.com/#sle.
 - d. or approved equal.
 - 2. Comply with MFMA-4.
- C. Hanger Rods: Threaded zinc-plated steel unless otherwise indicated.
 - 1. Minimum Size, Unless Otherwise Indicated or Required:
 - a. Equipment Supports: 1/2 inch (13 mm) diameter.
 - b. Piping up to 1 inch (27 mm) nominal: 1/4 inch (6 mm) diameter.
 - c. Piping larger than 1 inch (27 mm) nominal: 3/8 inch (10 mm) diameter.
- D. Anchors and Fasteners:

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1. Manufacturers - Mechanical Anchors:
 - a. Hilti, Inc: www.us.hilti.com/#sle.
 - b. ITW Red Head, a division of Illinois Tool Works, Inc: www.itwredhead.com/#sle.
 - c. Powers Fasteners, Inc: www.powers.com/#sle.
 - d. Simpson Strong-Tie Company Inc: www.strongtie.com/#sle.
 - e. or approved equal.
2. Manufacturers - Powder-Actuated Fastening Systems:
 - a. Hilti, Inc: www.us.hilti.com/#sle.
 - b. ITW Ramset, a division of Illinois Tool Works, Inc: www.ramset.com/#sle.
 - c. Powers Fasteners, Inc: www.powers.com/#sle.
 - d. Simpson Strong-Tie Company Inc: www.strongtie.com/#sle.
 - e. or approved equal.
3. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.
4. Concrete: Use preset concrete inserts, expansion anchors, or screw anchors.
5. Preset Concrete Inserts: Continuous metal channel (strut) and spot inserts specifically designed to be cast in concrete ceilings, walls, and floors.
 - a. Comply with MFMA-4.
 - b. Channel Material: Use galvanized steel.
 - c. Manufacturer: Same as manufacturer of metal channel (strut) framing system.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive support and attachment components.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Provide independent support from building structure. Do not provide support from piping, ductwork, conduit, or other systems.
- C. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.
- D. Unless specifically indicated or approved by Architect, do not provide support from roof deck.
- E. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.
- F. Equipment Support and Attachment:
 1. Use metal fabricated supports or supports assembled from metal channel (strut) to support equipment as required.
 2. Use metal channel (strut) secured to studs to support equipment surface-mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
 3. Use metal channel (strut) to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
 4. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.
- G. Preset Concrete Inserts: Use manufacturer-provided closure strips to inhibit concrete seepage during concrete pour.
- H. Secure fasteners according to manufacturer's recommended torque settings.
- I. Remove temporary supports.

END OF SECTION

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IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

SECTION 22 0553

IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Nameplates.
- B. Tags.
- C. Pipe markers.
- D. Ceiling tacks.

1.02 REFERENCE STANDARDS

- A. ASME A13.1 - Scheme for the Identification of Piping Systems; 2015.
- B. ASTM D709 - Standard Specification for Laminated Thermosetting Materials; 2017.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

PART 2 PRODUCTS

2.01 IDENTIFICATION APPLICATIONS

- A. Piping: Tags.
- B. Pumps: Nameplates.
- C. Valves: Tags and ceiling tacks where located above lay-in ceiling.

2.02 NAMEPLATES

- A. Manufacturers:
 - 1. Brimar Industries, Inc: www.pipemarker.com/#sle.
 - 2. Kolbi Pipe Marker Co: www.kolbipipemarkers.com/#sle.
 - 3. Seton Identification Products: www.seton.com/#sle.
 - 4. or approved equal.
- B. Description: Laminated three-layer plastic with engraved letters.
 - 1. Letter Color: White.
 - 2. Letter Height: 1/4 inch (6 mm).
 - 3. Background Color: Black.
 - 4. Plastic: Comply with ASTM D709.

2.03 TAGS

- A. Metal Tags: Brass with stamped letters; tag size minimum 1-1/2 inch (40 mm) diameter with smooth edges.

2.04 PIPE MARKERS

- A. Manufacturers:
 - 1. Craftmark Pipe Markers: www.craftmarkid.com/#sle.
 - 2. Kolbi Pipe Marker Co: www.kolbipipemarkers.com/#sle.
 - 3. Seton Identification Products: www.seton.com/#sle.
 - 4. or approved equal.
- B. Comply with ASME A13.1.
- C. Plastic Pipe Markers: Factory fabricated, flexible, semi- rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid being conveyed.

2.05 CEILING TACKS

- A. Description: Steel with 3/4 inch (20 mm) diameter color coded head.

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PART 3 EXECUTION

3.01 PREPARATION

- A. Degrease and clean surfaces to receive adhesive for identification materials.

3.02 INSTALLATION

- A. Install plastic nameplates with corrosive-resistant mechanical fasteners, or adhesive. Apply with sufficient adhesive to ensure permanent adhesion and seal with clear lacquer.
- B. Install tags with corrosion resistant chain.
- C. Install plastic pipe markers in accordance with manufacturer's instructions.

END OF SECTION

SECTION 22 0716
PLUMBING EQUIPMENT INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Equipment insulation.

1.02 REFERENCE STANDARDS

- A. ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications; 2013 (Reapproved 2019).
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2020.
- C. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide product description, thermal characteristics, list of materials and thickness for equipment scheduled.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

- A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

2.02 GLASS FIBER, FLEXIBLE

- A. Insulation: ASTM C553; flexible, noncombustible.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that equipment has been tested before applying insulation materials.
- B. Verify that surfaces are clean and dry, with foreign material removed.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Cover glass fiber insulation with metal mesh and finish with heavy coat of insulating cement.

END OF SECTION

SECTION 22 0719
PLUMBING PIPING INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Piping insulation.
- B. Jackets and accessories.

1.02 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2020.
- B. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

- A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

2.02 GLASS FIBER

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that piping has been tested before applying insulation materials.
- B. Verify that surfaces are clean and dry, with foreign material removed.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install in accordance with North American Insulation Manufacturers Association (NAIMA) National Insulation Standards.
- C. Exposed Piping: Locate insulation and cover seams in least visible locations.
- D. Insulated pipes conveying fluids below ambient temperature: Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, and expansion joints.
- E. Glass fiber insulated pipes conveying fluids above ambient temperature:
 - 1. Provide standard jackets, with or without vapor barrier, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples.
 - 2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.

END OF SECTION

**SECTION 22 1005
PLUMBING PIPING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Pipe, pipe fittings, specialties, and connections for piping systems.
 - 1. Domestic water.
 - 2. Pipe hangers and supports.
 - 3. Ball valves.
 - 4. Balancing valves.

1.02 REFERENCE STANDARDS

- A. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; 2018.
- B. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; 2018.
- C. ASTM B32 - Standard Specification for Solder Metal; 2008 (Reapproved 2014).
- D. ASTM B42 - Standard Specification for Seamless Copper Pipe, Standard Sizes; 2020.
- E. ASTM B68/B68M - Standard Specification for Seamless Copper Tube, Bright Annealed; 2011.
- F. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2020.
- G. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric); 2020.
- H. ASTM B813 - Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube; 2016.
- I. ASTM B828 - Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings; 2016.
- J. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2018.
- K. NSF 61 - Drinking Water System Components - Health Effects; 2019.
- L. NSF 372 - Drinking Water System Components - Lead Content; 2016.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Potable Water Supply Systems: Provide piping, pipe fittings, and solder and flux (if used), that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.

2.02 DOMESTIC WATER PIPING, ABOVE GRADE

- A. Copper Tube: ASTM B88 (ASTM B88M), Type K (A), Drawn (H).
 - 1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.
 - 2. Joints: ASTM B32, alloy Sn95 solder.

2.03 PIPE HANGERS AND SUPPORTS

- A. Provide hangers and supports that comply with MSS SP-58.
 - 1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
 - 2. Overhead Supports: Individual steel rod hangers attached to structure or to trapeze hangers.
 - 3. Trapeze Hangers: Welded steel channel frames attached to structure.
 - 4. Vertical Pipe Support: Steel riser clamp.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.
- C. Copper Pipe and Tube: Make soldered joints in accordance with ASTM B828, using specified solder, and flux meeting ASTM B813; in potable water systems use flux also complying with NSF 61 and NSF 372.

END OF SECTION

SECTION 22 3000
PLUMBING EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Water Heaters:
 - 1. Commercial oil fired.
- B. In-line circulator pumps.

1.02 REFERENCE STANDARDS

- A. NFPA 31 - Standard for the Installation of Oil Burning Equipment; 2018.
- B. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittals procedures.
- B. Product Data:
 - 1. Provide dimension drawings of water heaters indicating components and connections to other equipment and piping.
 - 2. Indicate pump type, capacity, power requirements.
 - 3. Provide certified pump curves showing pump performance characteristics with pump and system operating point plotted. Include NPSH curve when applicable.
 - 4. Provide electrical characteristics and connection requirements.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.
- B. Certifications:
 - 1. Oil-Fired Water Heaters: To NFPA 31.

PART 2 PRODUCTS

2.01 WATER HEATERS

- A. Manufacturers:
 - 1. A.O. Smith Water Products Co: www.hotwater.com/#sle.
 - 2. Bock Water Heaters, Inc: www.bockwaterheaters.com/#sle.
 - 3. Rheem Manufacturing Company: www.rheem.com/#sle.
 - 4. or approved equal.
- B. Commercial Oil-Fired:
 - 1. Type: Automatic, oil-fired, vertical storage.
 - 2. Tank: Glass lined welded steel with single flue passage, flue baffle and draft hood; thermally insulated and encased in corrosion-resistant steel jacket; baked-on enamel finish; floor shield and legs.
 - 3. Controls: Automatic water thermostat, temperature range adjustable from 120 to 170 degrees F (49 to 77 degrees C), flame retention oil burner, safety high limit control.
 - 4. Accessories:
 - a. Water Connections: Brass.
 - b. Dip Tube: Brass.
 - c. Drain valve.
 - d. Anode: Magnesium.

2.02 IN-LINE CIRCULATOR PUMPS

- A. Manufacturers:

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1. Armstrong Fluid Technology: www.armstrongfluidtechnology.com/#sle.
 2. Bell & Gossett, a xylem brand: www.bellgossett.com/#sle.
 3. Sterling SIHI GmbH: www.sterlingsihi.com/#sle.
 4. or approved equal.
- B. Casing: Bronze, rated for 125 psig (860 kPa) working pressure, with stainless steel rotor assembly.
- C. Impeller: Bronze.
- D. Shaft: Alloy steel with integral thrust collar and two oil lubricated bronze sleeve bearings.
- E. Seal: Carbon rotating against a stationary ceramic seat.
- F. Drive: Flexible coupling.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install plumbing equipment in accordance with manufacturer's instructions, as required by code, and complying with conditions of certification, if any.
- B. Coordinate with plumbing piping and related fuel piping work to achieve operating system.
- C. Pumps:
1. Ensure pumps operate at specified system fluid temperatures without vapor binding and cavitation, are non-overloading in parallel or individual operation, and operate within 25 percent of midpoint of published maximum efficiency curve.

END OF SECTION

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COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT

SECTION 23 0513

COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General construction and requirements.
- B. Applications.
- C. Single phase electric motors.
- D. Three phase electric motors.
- E. Electronically Commutated Motors (ECM).

1.02 REFERENCE STANDARDS

- A. NEMA MG 1 - Motors and Generators; 2018.
- B. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide wiring diagrams with electrical characteristics and connection requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Baldor Electric Company/ABB Group: www.baldor.com/#sle.
- B. Leeson Electric Corporation: www.leeson.com/#sle.
- C. Regal-Beloit Corporation (Century): www.centuryelectricmotor.com/#sle.
- D. or approved equal.

2.02 GENERAL CONSTRUCTION AND REQUIREMENTS

- A. Construction:
 - 1. Open drip-proof type except where specifically noted otherwise.
 - 2. Design for continuous operation in 104 degrees F (40 degrees C) environment.
 - 3. Design for temperature rise in accordance with NEMA MG 1 limits for insulation class, service factor, and motor enclosure type.
- B. Visible Nameplate: Indicating motor horsepower, voltage, phase, cycles, RPM, full load amps, locked rotor amps, frame size, manufacturer's name and model number, service factor, power factor, efficiency.
- C. Wiring Terminations:
 - 1. Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70, threaded for conduit.
 - 2. For fractional horsepower motors where connection is made directly, provide threaded conduit connection in end frame.

2.03 APPLICATIONS

- A. Single phase motors for shaft mounted fans or blowers: Permanent split capacitor type.
- B. Single phase motors for fans, pumps, blowers, and air compressors: Capacitor start type.
- C. Single phase motors for fans, blowers, and pumps: Capacitor start, capacitor run type.
- D. Motors located in exterior locations, wet air streams downstream of sprayed coil dehumidifiers, draw through cooling towers, air cooled condensers, humidifiers, direct drive axial fans, roll filters, explosion proof environments, and dust collection systems: Totally enclosed type.

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- E. Motors located in outdoors, in wet air streams downstream of sprayed coil dehumidifiers, in draw through cooling towers, and in humidifiers: Totally enclosed weatherproof epoxy-treated type.

2.04 SINGLE PHASE POWER - PERMANENT-SPLIT CAPACITOR MOTORS

- A. Open Drip-proof or Enclosed Air Over Enclosure: Class A (50 degrees C temperature rise) insulation, minimum 1.0 Service Factor, prelubricated sleeve or ball bearings, automatic reset overload protector.

2.05 SINGLE PHASE POWER - CAPACITOR START MOTORS

- A. Motors: Capacitor in series with starting winding; provide capacitor-start/capacitor-run motors with two capacitors in parallel with run capacitor remaining in circuit at operating speeds.
- B. Drip-proof Enclosure: Class A (50 degrees C temperature rise) insulation, NEMA Service Factor, prelubricated sleeve bearings.
- C. Enclosed Motors: Class A (50 degrees C temperature rise) insulation, 1.0 Service Factor, prelubricated ball bearings.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install securely on firm foundation. Mount ball bearing motors with shaft in any position.
- C. Check line voltage and phase and ensure agreement with nameplate.

END OF SECTION

SECTION 23 0516

EXPANSION FITTINGS AND LOOPS FOR HVAC PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Flexible pipe connectors.
- B. Pipe loops, offsets, and swing joints.

1.02 REFERENCE STANDARDS

- A. ASME B16.5 - Pipe Flanges and Flanged Fittings NPS 1/2 Through NPS 24 Metric/Inch Standard; 2017.
- B. EJMA (STDS) - EJMA Standards; Tenth Edition.
- C. FM (AG) - FM Approval Guide; current edition.
- D. UL (DIR) - Online Certifications Directory; Current Edition.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data:
 - 1. Flexible Pipe Connectors: Indicate maximum temperature and pressure rating, face-to-face length, live length, hose wall thickness, hose convolutions per foot (meter) and per assembly, fundamental frequency of assembly, braid structure, and total number of wires in braid.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

- A. Comply with UL (DIR) requirements.

2.02 FLEXIBLE PIPE CONNECTORS - STEEL PIPING

- A. Manufacturers:
 - 1. Mercer Rubber Company: www.mercer-rubber.com/#sle.
 - 2. The Metraflex Company: www.metraflex.com/#sle.
 - 3. or approved equal.
- B. Inner Hose: Bronze.
- C. Exterior Sleeve: Single braided, stainless steel.
- D. Pressure Rating: 125 psi and 450 degrees F (862 kPa and 232 degrees C).

2.03 FLEXIBLE PIPE CONNECTORS - COPPER PIPING

- A. Manufacturers:
 - 1. Mercer Rubber Company: www.mercer-rubber.com/#sle.
 - 2. The Metraflex Company: www.metraflex.com/#sle.
 - 3. or approved equal.
- B. Inner Hose: Bronze.
- C. Exterior Sleeve: Braided bronze.
- D. Pressure Rating: 125 psi and 450 degrees F (862 kPa and 232 degrees C).

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install in accordance with EJMA (Expansion Joint Manufacturers Association) Standards.
- C. Install flexible pipe connectors on pipes connected to vibration isolated equipment. Provide line size flexible connectors.

END OF SECTION

SECTION 23 0517

SLEEVES AND SLEEVE SEALS FOR HVAC PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Pipe sleeves.

1.02 RELATED REQUIREMENTS

- A. Section 07 8400 - Firestopping.

1.03 REFERENCE STANDARDS

- A. ASTM C592 - Standard Specification for Mineral Fiber Blanket Insulation and Blanket-Type Pipe Insulation (Metal-Mesh Covered) (Industrial Type); 2016.
- B. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2013a (Reapproved 2017).

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate pipe materials used, jointing methods, supports, floor and wall penetration seals. Indicate installation, layout, weights, mounting and support details, and piping connections.

PART 2 PRODUCTS

2.01 PIPE SLEEVES

- A. Manufacturers:
 - 1. Flexicraft Industries; Pipe Wall Sleeve: www.flexicraft.com/#sle.
 - 2. or approved equal.
- B. Vertical Piping:
 - 1. Sleeve Length: 1 inch (25 mm) above finished floor.
 - 2. Provide sealant for watertight joint.
- C. Pipe Passing Through Below Grade Exterior Walls:
 - 1. Zinc coated or cast iron pipe.
 - 2. Provide watertight space with link rubber or modular seal between sleeve and pipe on both pipe ends.
- D. Clearances:
 - 1. Provide allowance for insulated piping.
 - 2. Wall, Floor, Floor, Partitions, and Beam Flanges: 1 inch (25 mm) greater than external; pipe diameter.
 - 3. All Rated Openings: Caulked tight with fire stopping material in compliance with ASTM E814 in accordance with Section 07 8400 to prevent the spread of fire, smoke, and gases.

PART 3 EXECUTION

3.01 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and foreign material, from inside and outside, before assembly.

3.02 INSTALLATION

- A. Route piping in orderly manner, plumb and parallel to building structure. Maintain gradient.
- B. Install piping to conserve building space, to not interfere with use of space and other work.
- C. Install piping and pipe sleeves to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

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- D. Provide sleeves when penetrating footings, floors, walls, and partitions. Seal pipe including sleeve penetrations to achieve fire resistance equivalent to fire separation required.
 - 1. Underground Piping: Caulk pipe sleeve watertight with lead and oakum or mechanically expandable chloroprene inserts with bitumen sealed metal components.
 - 2. Aboveground Piping:
 - a. Pack solid using mineral fiber in compliance with ASTM C592.
 - b. Fill space with an elastomer caulk to a depth of 0.50 inch (15 mm) where penetrations occur between conditioned and unconditioned spaces.
 - 3. All Rated Openings: Caulk tight with fire stopping material in compliance with ASTM E814 in accordance with Section 07 8400 to prevent the spread of fire, smoke, and gases.
- E. When installing more than one piping system material, ensure system components are compatible and joined to ensure the integrity of the system. Provide necessary joining fittings. Ensure flanges, union, and couplings for servicing are consistently provided.

END OF SECTION

SECTION 23 0519
METERS AND GAUGES FOR HVAC PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Positive displacement meters.
- B. Flow meters.
- C. Thermometers and thermometer wells.

1.02 REFERENCE STANDARDS

- A. ASME B40.100 - Pressure Gauges and Gauge Attachments; 2013.
- B. ASTM E1 - Standard Specification for ASTM Liquid-in-Glass Thermometers; 2014.
- C. ASTM E77 - Standard Test Method for Inspection and Verification of Thermometers; 2014, with Editorial Revision (2017).
- D. AWWA C700 - Cold-Water Meters -- Displacement Type, Metal Alloy Main Case; 2015.
- E. AWWA M6 - Water Meters -- Selection, Installation, Testing, and Maintenance; 2012, with Addendum (2018).

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide list that indicates use, operating range, total range and location for manufactured components.

PART 2 PRODUCTS

2.01 POSITIVE DISPLACEMENT METERS (LIQUID)

- A. Manufacturers:
 - 1. Dwyer Instruments, Inc: www.dwyer-inst.com/#sle.
 - 2. FMC Technologies: www.fmctechnologies.com/#sle.
 - 3. Venture Measurement, a Danaher Corporation Company: www.venturemeasurement.com/#sle.
 - 4. or approved equal.
- B. AWWA C700, positive displacement disc type suitable for fluid with metal alloy main case and cast iron frost-proof, breakaway bottom cap, hermetically sealed register, remote reading.

2.02 LIQUID FLOW METERS

- A. Manufacturers:
 - 1. Dwyer Instruments, Inc: www.dwyer-inst.com/#sle.
 - 2. McCrometer: www.mccrometer.com/#sle.
 - 3. Venture Measurement, a Danaher Company: www.venturemeasurement.com/#sle.
 - 4. Veris Industries: www.veris.com/#sle.
 - 5. or approved equal.

2.03 STEM TYPE THERMOMETERS

- A. Manufacturers:
 - 1. Dwyer Instruments, Inc: www.dwyer-inst.com/#sle.
 - 2. Omega Engineering, Inc: www.omega.com/#sle.
 - 3. Weksler Glass Thermometer Corp: www.wekslerglass.com/#sle.
 - 4. or approved equal.
- B. Thermometers - Fixed Mounting: Red- or blue-appearing non-toxic liquid in glass; ASTM E1; lens front tube, cast aluminum case with enamel finish.
 - 1. Size: 9 inch (225 mm) scale.
 - 2. Window: Clear Lexan.

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3. Accuracy: 2 percent, per ASTM E77.
4. Calibration: Degrees F.
- C. Thermometers - Adjustable Angle: Red- or blue-appearing non-toxic liquid in glass; ASTM E1; lens front tube, cast aluminum case with enamel finish, cast aluminum adjustable joint with positive locking device; adjustable 360 degrees in horizontal plane, 180 degrees in vertical plane.
 1. Size: 9 inch (225 mm) scale.
 2. Window: Clear Lexan.
 3. Stem: 3/4 inch (20 mm) NPT brass.
 4. Accuracy: 2 percent, per ASTM E77.
 5. Calibration: Degrees F.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install positive displacement meters with isolating valves on inlet and outlet to AWWA M6. Provide full line size valved bypass with globe valve for liquid service meters.

END OF SECTION

SECTION 23 0523

GENERAL-DUTY VALVES FOR HVAC PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Applications.
- B. Ball valves.
- C. Check valves.
- D. Gate valves.

1.02 ABBREVIATIONS AND ACRONYMS

- A. CWP: Cold working pressure.
- B. EPDM: Ethylene propylene copolymer rubber.
- C. NBR: Acrylonitrile-butadiene, Buna-N, or nitrile rubber.
- D. NRS: Nonrising stem.
- E. OS&Y: Outside screw and yoke.
- F. PTFE: Polytetrafluoroethylene.
- G. RS: Rising stem.
- H. SWP: Steam working pressure.
- I. TFE: Tetrafluoroethylene.
- J. WOG: Water, oil, and gas.

1.03 REFERENCE STANDARDS

- A. ASME B31.9 - Building Services Piping; 2017.
- B. ASTM B62 - Standard Specification for Composition Bronze or Ounce Metal Castings; 2017.
- C. MSS SP-80 - Bronze Gate, Globe, Angle and Check Valves; 2013.
- D. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends; 2010.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on valves including manufacturers catalog information. Submit performance ratings, rough-in details, weights, support requirements, and piping connections.

PART 2 PRODUCTS

2.01 APPLICATIONS

- A. See drawings for specific valve locations.
- B. Provide the following valves for the applications if not indicated on drawings:
 - 1. Throttling (Hydronic): Ball and gate.
 - 2. Isolation (Shutoff): Gate and Ball.
- C. Heating Hot Water Valves:
 - 1. 2 NPS (50 DN) and Smaller, Brass and Bronze Valves:
 - a. Threaded ends.
 - b. Ball: Full port, one piece, brass trim.
 - c. Gate: NRS, Class 125.

2.02 GENERAL REQUIREMENTS

- A. Valve Pressure and Temperature Ratings: No less than rating indicated; as required for system pressures and temperatures.

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- B. Valve Sizes: Match upstream piping unless otherwise indicated.
- C. Valve Actuator Types:
- D. Valve-End Connections:
- E. General ASME Compliance:
 - 1. Building Services Piping Valves: ASME B31.9.

2.03 BRASS, BALL VALVES

- A. Two Piece, Full Port with Stainless Steel Trim and Threaded Connections:
 - 1. Comply with MSS SP-110.
 - 2. SWP Rating: 150 psig (1035 kPa).
 - 3. CWP Rating: 600 psig (4140 kPa), WOG.
 - 4. Vacuum Rating: 14.2 psig (97.9 kPa).
 - 5. Body: Forged brass.
 - 6. Seats: PTFE.
 - 7. Stem: Stainless Steel.
 - 8. Ball: Chrome-plated brass.

2.04 BRONZE, GATE VALVES

- A. Non-Rising Stem (NRS) or Rising Stem (RS):
 - 1. Comply with MSS SP-80, Type I.
 - 2. Class 125: CWP Rating: 200 psig (1380 kPa).
 - 3. Body Material: Bronze with integral seat and union-ring bonnet.
 - 4. Ends: Threaded or solder joint.
 - 5. Stem: Bronze.
 - 6. Disc: Solid wedge; bronze.
 - 7. Packing: Asbestos free.
 - 8. Handwheel: Malleable iron, bronze, or aluminum.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Discard all packing materials and verify that valve interior, including threads and flanges, are completely clean without signs of damage or degradation that could result in leakage.
- B. Verify valve parts to be fully operational in all positions from closed to fully open.
- C. Confirm gasket material to be suitable for the service, to be of correct size, and without defects that could compromise effectiveness.
- D. Should valve is determined to be defective, replace with new valve.

3.02 INSTALLATION

- A. Provide unions or flanges with valves to facilitate equipment removal and maintenance while maintaining system operation and full accessibility for servicing.
- B. Provide separate valve support as required and locate valve with stem at or above center of piping, maintaining unimpeded stem movement.

END OF SECTION

HALDANE CENTRAL SCHOOL DISTRICT
MECHANICAL UPGRADES & RELATED WORK - PACKAGE NO. 2
HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

SECTION 23 0529

HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Support and attachment components for equipment, piping, and other HVAC/hydronic work.

1.02 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- C. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2019.
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2020.
- E. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- F. MFMA-4 - Metal Framing Standards Publication; 2004.
- G. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for channel (strut) framing systems, nonpenetrating rooftop supports, post-installed concrete and masonry anchors, and thermal insulated pipe supports.

1.04 QUALITY ASSURANCE

- A. Comply with applicable building code.

PART 2 PRODUCTS

2.01 SUPPORT AND ATTACHMENT COMPONENTS

- A. General Requirements:
 - 1. Provide all required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for the complete installation of plumbing work.
 - 2. Provide products listed, classified, and labeled as suitable for the purpose intended, where applicable.
 - 3. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported. Include consideration for vibration, equipment operation, and shock loads where applicable.
 - 4. Steel Components: Use corrosion resistant materials suitable for the environment where installed.
 - a. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
 - b. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.
- B. Metal Channel (Strut) Framing Systems: Factory-fabricated continuous-slot metal channel (strut) and associated fittings, accessories, and hardware required for field-assembly of supports.
 - 1. Manufacturers:
 - a. Cooper B-Line, a division of Eaton Corporation; _____: www.cooperindustries.com/#sle.
 - b. Ferguson Enterprises Inc: www.fnw.com/#sle.
 - c. Thomas & Betts Corporation: www.tnb.com/#sle.
 - d. Unistrut, a brand of Atkore International Inc: www.unistrut.com/#sle.
 - e. or approved equal.

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HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

2. Comply with MFMA-4.
- C. Hanger Rods: Threaded zinc-plated steel unless otherwise indicated.
 1. Minimum Size, Unless Otherwise Indicated or Required:
 - a. Equipment Supports: 1/2 inch (13 mm) diameter.
 - b. Piping up to 1 inch (27 mm) nominal: 1/4 inch (6 mm) diameter.
 - c. Piping larger than 1 inch (27 mm) nominal: 3/8 inch (10 mm) diameter.
- D. Thermal Insulated Pipe Supports:
 1. Manufacturers:
 - a. Buckaroos, Inc: www.buckaroos.com/#sle.
 - b. KB Enterprises: www.snappitz.com/#sle.
 - c. or approved equal.
 2. General Construction and Requirements:
 - a. Insulated pipe supports to be provided at hanger, support, and guide locations on pipe requiring insulation or additional support.
 - b. Surface Burning Characteristics: Flame spread index/smoke developed index of 5/30, maximum, when tested in accordance with ASTM E84 or UL 723.
 - c. Pipe supports to be provided for nominally sized, 1/2 inch to 30 inch (12.7 mm to 762 mm) iron pipes.
 - d. Insulation inserts to consist of rigid polyisocyanurate (urethane) insulation surrounded by a 360 degree, PVC jacketing.
 3. PVC Jacket:
 - a. Pipe insulation protection shields to be provided with a ball bearing hinge and locking seam.
 - b. Moisture Vapor Transmission: 0.0071 perm inch (0.0092 ng/Pa s m), when tested in accordance with ASTM E96/E96M.
 - c. Thickness: 60 mil (1.524 mm).
- E. Anchors and Fasteners:
 1. Manufacturers - Mechanical Anchors:
 - a. Hilti, Inc: www.us.hilti.com/#sle.
 - b. ITW Red Head, a division of Illinois Tool Works, Inc: www.itwredhead.com/#sle.
 - c. Powers Fasteners, Inc: www.powers.com/#sle.
 - d. Simpson Strong-Tie Company Inc: www.strongtie.com/#sle.
 - e. or approved equal.
 2. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive support and attachment components.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Provide independent support from building structure. Do not provide support from piping, ductwork, conduit, or other systems.
- C. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.
- D. Unless specifically indicated or approved by Architect, do not provide support from roof deck.
- E. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.

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HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

- F. Provide thermal insulated pipe supports complete with hangers and accessories. Install thermal insulated pipe supports during the installation of the piping system.
- G. Equipment Support and Attachment:
 - 1. Use metal fabricated supports or supports assembled from metal channel (strut) to support equipment as required.
 - 2. Use metal channel (strut) secured to studs to support equipment surface-mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
 - 3. Use metal channel (strut) to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
 - 4. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.
- H. Secure fasteners according to manufacturer's recommended torque settings.
- I. Remove temporary supports.

END OF SECTION

HALDANE CENTRAL SCHOOL DISTRICT
MECHANICAL UPGRADES & RELATED WORK - PACKAGE NO. 2
IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

SECTION 23 0553

IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Nameplates.
- B. Tags.
- C. Adhesive-backed duct markers.
- D. Pipe markers.
- E. Ceiling tacks.

1.02 REFERENCE STANDARDS

- A. ASME A13.1 - Scheme for the Identification of Piping Systems; 2015.
- B. ASTM D709 - Standard Specification for Laminated Thermosetting Materials; 2017.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. List: Submit list of wording, symbols, letter size, and color coding for mechanical identification.
- C. Chart and Schedule: Submit valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.

PART 2 PRODUCTS

2.01 IDENTIFICATION APPLICATIONS

- A. Air Handling Units: Nameplates.
- B. Air Terminal Units: Tags.
- C. Dampers: Ceiling tacks, where located above lay-in ceiling.
- D. Ductwork: Nameplates.
- E. Piping: Tags.
- F. Thermostats: Nameplates.
- G. Valves: Tags and ceiling tacks where located above lay-in ceiling.

2.02 NAMEPLATES

- A. Manufacturers:
 - 1. Advanced Graphic Engraving, LLC: www.advancedgraphicengraving.com/#sle.
 - 2. Brimar Industries, Inc: www.pipemarker.com/#sle.
 - 3. Craftmark Pipe Markers: www.craftmarkid.com/#sle.
 - 4. Kolbi Pipe Marker Co: www.kolbipipemarkers.com/#sle.
 - 5. Seton Identification Products, a Tricor Direct Company: www.seton.com/#sle.
 - 6. or approved equal.

2.03 TAGS

- A. Manufacturers:
 - 1. Advanced Graphic Engraving: www.advancedgraphicengraving.com/#sle.
 - 2. Brady Corporation: www.bradycorp.com/#sle.
 - 3. Brimar Industries, Inc: www.pipemarker.com/#sle.
 - 4. Craftmark Pipe Markers: www.craftmarkid.com/#sle.
 - 5. Kolbi Pipe Marker Co: www.kolbipipemarkers.com/#sle.
 - 6. Seton Identification Products, a Tricor Company: www.seton.com/#sle.
 - 7. or approved equal.

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- B. Metal Tags: Brass with stamped letters; tag size minimum 1-1/2 inch (40 mm) diameter with smooth edges.

2.04 ADHESIVE-BACKED DUCT MARKERS

- A. Manufacturers:
 - 1. Brimar Industries, Inc: www.pipemarker.com/#sle.
 - 2. Craftmark Pipe Markers: www.craftmarkid.com/#sle.
 - 3. or approved equal.
- B. Material: High gloss acrylic adhesive-backed vinyl film 0.0032 inch (0.76 mm); printed with UV and chemical resistant inks.
- C. Style: Individual Label.
- D. Color: Yellow/Black.

2.05 PIPE MARKERS

- A. Manufacturers:
 - 1. Brady Corporation: www.bradycorp.com/#sle.
 - 2. Brimar Industries, Inc: www.pipemarker.com/#sle.
 - 3. Craftmark Pipe Markers: www.craftmarkid.com/#sle.
 - 4. Kolbi Pipe Marker Co: www.kolbipipemarkers.com/#sle.
 - 5. Seton Identification Products, a Tricor Company: www.seton.com/#sle.
 - 6. or approved equal.
- B. Color: Comply with ASME A13.1.
- C. Plastic Pipe Markers: Factory fabricated, flexible, semi- rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid being conveyed.
- D. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.

2.06 CEILING TACKS

- A. Manufacturers:
 - 1. Craftmark Pipe Markers: www.craftmarkid.com/#sle.
 - 2. or approved equal.
- B. Description: Steel with 3/4 inch (20 mm) diameter color coded head.
- C. Color code as follows:
 - 1. HVAC Equipment: Yellow.
 - 2. Heating/Cooling Valves: Blue.

PART 3 EXECUTION

3.01 PREPARATION

- A. Degrease and clean surfaces to receive adhesive for identification materials.

3.02 INSTALLATION

- A. Install nameplates with corrosive-resistant mechanical fasteners, or adhesive. Apply with sufficient adhesive to ensure permanent adhesion and seal with clear lacquer.
- B. Install tags with corrosion resistant chain.
- C. Install plastic pipe markers in accordance with manufacturer's instructions.
- D. Install plastic tape pipe markers complete around pipe in accordance with manufacturer's instructions.
- E. Locate ceiling tacks to locate valves or dampers above lay-in panel ceilings. Locate in corner of panel closest to equipment.

END OF SECTION

SECTION 23 0593

TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Testing, adjustment, and balancing of air systems.
- B. Measurement of final operating condition of HVAC systems.
- C. Sound measurement of equipment operating conditions.
- D. Commissioning activities.

1.02 RELATED REQUIREMENTS

- A. Section 01 9113 - General Commissioning Requirements: Commissioning requirements that apply to all types of work.
- B. Section 23 0800 - Commissioning of HVAC.

1.03 REFERENCE STANDARDS

- A. AABC (NSTSB) - AABC National Standards for Total System Balance, 7th Edition; 2016.
- B. ASHRAE Std 111 - Measurement, Testing, Adjusting, and Balancing of Building HVAC Systems; 2008 (Reaffirmed 2017).
- C. NEBB (TAB) - Procedural Standards for Testing Adjusting and Balancing of Environmental Systems; 2015, with Errata (2017).
- D. SMACNA (TAB) - HVAC Systems Testing, Adjusting and Balancing; 2002.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. TAB Plan: Submit a written plan indicating the testing, adjusting, and balancing standard to be followed and the specific approach for each system and component.
 - 1. Include at least the following in the plan:
 - a. List of all air flow, water flow, sound level, system capacity and efficiency measurements to be performed and a description of specific test procedures, parameters, formulas to be used.
 - b. Copy of field checkout sheets and logs to be used, listing each piece of equipment to be tested, adjusted and balanced with the data cells to be gathered for each.
 - c. Discussion of what notations and markings will be made on the duct and piping drawings during the process.
 - d. Final test report forms to be used.
 - e. Procedures for formal deficiency reports, including scope, frequency and distribution.
- C. Final Report: Indicate deficiencies in systems that would prevent proper testing, adjusting, and balancing of systems and equipment to achieve specified performance.
 - 1. Revise TAB plan to reflect actual procedures and submit as part of final report.
 - 2. Submit draft copies of report for review prior to final acceptance of Project. Provide final copies for Architect and for inclusion in operating and maintenance manuals.
 - 3. Include actual instrument list, with manufacturer name, serial number, and date of calibration.
 - 4. Form of Test Reports: Where the TAB standard being followed recommends a report format use that; otherwise, follow ASHRAE Std 111.
 - 5. Units of Measure: Report data in both I-P (inch-pound) and SI (metric) units.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

- A. Perform total system balance in accordance with one of the following:
 - 1. AABC (NSTSB), AABC National Standards for Total System Balance.

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- B. Begin work after completion of systems to be tested, adjusted, or balanced and complete work prior to Substantial Completion of the project.
- C. TAB Agency Qualifications:
 - 1. Company specializing in the testing, adjusting, and balancing of systems specified in this section.

3.02 EXAMINATION

- A. Verify that systems are complete and operable before commencing work. Ensure the following conditions:
 - 1. Systems are started and operating in a safe and normal condition.
 - 2. Temperature control systems are installed complete and operable.
 - 3. Duct systems are clean of debris.
 - 4. Fans are rotating correctly.
 - 5. Air outlets are installed and connected.

3.03 PREPARATION

- A. Provide instruments required for testing, adjusting, and balancing operations. Make instruments available to Architect to facilitate spot checks during testing.

3.04 ADJUSTMENT TOLERANCES

- A. Air Handling Systems: Adjust to within plus or minus 5 percent of design for supply systems and plus or minus 10 percent of design for return and exhaust systems.
- B. Air Outlets and Inlets: Adjust total to within plus 10 percent and minus 5 percent of design to space. Adjust outlets and inlets in space to within plus or minus 10 percent of design.

3.05 AIR SYSTEM PROCEDURE

- A. Adjust air handling and distribution systems to provide required or design supply, return, and exhaust air quantities at site altitude.
- B. Measure air quantities at air inlets and outlets.
- C. Adjust distribution system to obtain uniform space temperatures free from objectionable drafts and noise.
- D. Adjust outside air automatic dampers, outside air, return air, and exhaust dampers for design conditions.
- E. Measure temperature conditions across outside air, return air, and exhaust dampers to check leakage.

3.06 COMMISSIONING

- A. See Sections 01 9113 - General Commissioning Requirements and 23 0800 for additional requirements.
- B. Perform prerequisites prior to starting commissioning activities.
- C. Fill out Prefunctional Checklists for:
 - 1. Air side systems.
 - 2. Water side systems.
- D. Furnish to the Commissioning Authority, upon request, any data gathered but not shown in the final TAB report.
- E. In the presence of the Commissioning Authority, verify that:
 - 1. Final settings of all valves, splitters, dampers and other adjustment devices have been permanently marked.
 - 2. The air system is being controlled to the lowest possible static pressure while still meeting design loads, less diversity; this shall include a review of TAB methods, established control setpoints, and physical verification of at least one leg from fan to diffuser having all balancing dampers wide open and that during full cooling of all terminal units taking off downstream of the static pressure sensor, the terminal unit on the critical leg has its damper 90 percent or more open.
 - 3. The water system is being controlled to the lowest possible pressure while still meeting design loads, less diversity; this shall include a review of TAB methods, established control setpoints, and

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physical verification of at least one leg from the pump to the coil having all balancing valves wide open and that during full cooling the cooling coil valve of that leg is 90 percent or more open.

3.07 SCOPE

- A. Test, adjust, and balance the following:
 - 1. Air Cooled Refrigerant Condensers.
 - 2. Unit Air Conditioners.
 - 3. Electric Duct Heaters.
 - 4. Air Handling Units.
 - 5. Fans.
 - 6. Air Terminal Units.
 - 7. Air Inlets and Outlets.
 - 8. Controls.

END OF SECTION

SECTION 23 0713
DUCT INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Duct insulation.

1.02 REFERENCE STANDARDS

- A. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2017.
- B. ASTM C534/C534M - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form; 2020.
- C. ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications; 2013 (Reapproved 2019).
- D. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation; 2014 (Reapproved 2019).
- E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2020.
- F. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- G. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

- A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

2.02 GLASS FIBER, FLEXIBLE

- A. Manufacturer:
 - 1. CertainTeed Corporation: www.certainteed.com/#sle.
 - 2. Johns Manville: www.jm.com/#sle.
 - 3. JP Lamborn Co; Thermal Sleeve MT: www.jpflex.com/#sle.
 - 4. Knauf Insulation; Atmosphere Duct Wrap: www.knaufinsulation.com/#sle.
 - 5. Owens Corning Corporation: www.ocbuildingspec.com/#sle.
 - 6. or approved equal.
- B. Insulation: ASTM C553; flexible, noncombustible blanket.
 - 1. K (Ksi) value: 0.36 at 75 degrees F (0.052 at 24 degrees C), when tested in accordance with ASTM C518.
 - 2. Maximum Service Temperature: 1200 degrees F (649 degrees C).
 - 3. Maximum Water Vapor Absorption: 5.0 percent by weight.
- C. Vapor Barrier Jacket:
 - 1. Kraft paper with glass fiber yarn and bonded to aluminized film.
 - 2. Moisture Vapor Permeability: 0.02 perm inch (0.029 ng/Pa s m), when tested in accordance with ASTM E96/E96M.
 - 3. Secure with pressure sensitive tape.

2.03 GLASS FIBER, RIGID

- A. Manufacturer:
 - 1. CertainTeed Corporation: www.certainteed.com/#sle.
 - 2. Johns Manville: www.jm.com/#sle.
 - 3. Knauf Insulation: www.knaufinsulation.com/#sle.
 - 4. Owens Corning Corporation; 700 Series FIBERGLAS Insulation: www.ocbuildingspec.com/#sle.
 - 5. or approved equal.
- B. Insulation: ASTM C612; rigid, noncombustible blanket.
 - 1. K (Ksi) Value: 0.24 at 75 degrees F (0.036 at 24 degrees C), when tested in accordance with ASTM C518.
 - 2. Maximum Service Temperature: 450 degrees F (232 degrees C).
 - 3. Maximum Water Vapor Absorption: 5.0 percent.
 - 4. Maximum Density: 8.0 lb/cu ft (128 kg/cu m).
- C. Vapor Barrier Jacket:
 - 1. Kraft paper with glass fiber yarn and bonded to aluminized film.
 - 2. Moisture Vapor Permeability: 0.02 perm inch (0.029 ng/Pa s m), when tested in accordance with ASTM E96/E96M.
 - 3. Secure with pressure sensitive tape.

2.04 FLEXIBLE ELASTOMERIC CELLULAR INSULATION

- A. Manufacturers:
 - 1. Aeroflex USA, Inc; Aerocel Sheet and Roll with PSA: www.aeroflexusa.com/#sle.
 - 2. Armacell LLC; ArmaFlex Ultra with FlameDefense: www.armacell.us/#sle.
 - 3. K-Flex USA LLC; Insul-Sheet: www.kflexusa.com/#sle.
 - 4. or approved equal.
- B. Insulation: Preformed flexible elastomeric cellular rubber insulation complying with ASTM C534/C534M Grade 1, in sheet form.
 - 1. Minimum Service Temperature: Minus 40 degrees F (Minus 40 degrees C).
 - 2. Maximum Service Temperature: 180 degrees F (82 degrees C).
 - 3. Connection: Waterproof vapor barrier adhesive.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Test ductwork for design pressure prior to applying insulation materials.
- B. Verify that surfaces are clean, foreign material removed, and dry.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install in accordance with NAIMA National Insulation Standards.

END OF SECTION

SECTION 23 0719
HVAC PIPING INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Piping insulation.
- B. Flexible removable and reusable blanket insulation.
- C. Jackets and accessories.

1.02 REFERENCE STANDARDS

- A. ASTM B117 - Standard Practice for Operating Salt Spray (Fog) Apparatus; 2019.
- B. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus; 2019.
- C. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2017.
- D. ASTM C534/C534M - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form; 2020.
- E. ASTM C547 - Standard Specification for Mineral Fiber Pipe Insulation; 2019.
- F. ASTM C552 - Standard Specification for Cellular Glass Thermal Insulation; 2017, with Editorial Revision (2018).
- G. ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications; 2013 (Reapproved 2019).
- H. ASTM C795 - Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel; 2008 (Reapproved 2018).
- I. ASTM D610 - Standard Practice for Evaluating Degree of Rusting on Painted Steel Surfaces; 2008 (Reapproved 2019).
- J. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2020.
- K. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- L. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

- A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

2.02 GLASS FIBER, FLEXIBLE

- A. Manufacturers:
 - 1. JP Lamborn Co; Thermal Sleeve MT: www.jpflex.com/#sle.
 - 2. or approved equal.
- B. Insulation: ASTM C553; flexible, noncombustible blanket.
 - 1. K (Ksi) Value: 0.36 at 75 degrees F (0.052 at 24 degrees C), when tested in accordance with ASTM C518.
 - 2. Maximum Service Temperature: 1200 degrees F (649 degrees C).

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3. Maximum Water Vapor Absorption: 5.0 percent by weight.

2.03 GLASS FIBER, RIGID

- A. Manufacturers:
 1. CertainTeed Corporation: www.certainteed.com/#sle.
 2. Johns Manville Corporation: www.jm.com/#sle.
 3. Knauf Insulation; Earthwool 1000 Degree Pipe Insulation: www.knaufinsulation.com/#sle.
 4. Owens Corning Corporation; Fiberglas Pipe Insulation ASJ: www.ocbuildingspec.com/#sle.
 5. Owens Corning Corporation; VaporWick Pipe Insulation: www.ocbuildingspec.com/#sle.
 6. or approved equal.
- B. Insulation: ASTM C547 and ASTM C795; rigid molded, noncombustible.
 1. K (Ksi) Value: ASTM C177, 0.24 at 75 degrees F (0.035 at 24 degrees C).
 2. Maximum Service Temperature: 850 degrees F (454 degrees C).
 3. Maximum Moisture Absorption: 0.2 percent by volume.

2.04 CELLULAR GLASS

- A. Manufacturers:
 1. Owens Corning Corporation: www.ocbuildingspec.com/#sle.
 2. or approved equal.
- B. Pipe and Tubing Insulation: ASTM C552, Type II, Grade 6.
 1. K (Ksi) Value: 0.35 (0.050) at 100 degrees F (38 degrees C).
 2. Service Temperature Range: From 250 degrees F (121 degrees C) to 800 degrees F (427 degrees C).
 3. Water Vapor Permeability: 0.005 perm inch (0.007 ng/Pa s m) maximum per inch.
 4. Water Absorption: 0.5 percent by volume, maximum.
 5. Density: A minimum of 6.12 lb/cu ft (98 kg/cu m).

2.05 FLEXIBLE ELASTOMERIC CELLULAR INSULATION

- A. Manufacturers:
 1. Aeroflex USA, Inc; Aerocel Stay-Seal with Protape (SSPT): www.aeroflexusa.com/#sle.
 2. Armacell LLC; ArmaFlex Ultra with FlameDefense: www.armacell.us/#sle.
 3. K-Flex USA LLC; K-Flex Titan: www.kflexusa.com/#sle.
 4. or approved equal.
- B. Insulation: Preformed flexible elastomeric cellular rubber insulation complying with ASTM C534/C534M Grade 1; use molded tubular material wherever possible.
 1. Minimum Service Temperature: Minus 40 degrees F (Minus 40 degrees C).
 2. Maximum Service Temperature: 180 degrees F (82 degrees C).
 3. Connection: Waterproof vapor barrier adhesive.

2.06 JACKETS

- A. PVC Plastic.
 1. Manufacturers:
 - a. Johns Manville Corporation: www.jm.com/#sle.
 - b. or approved equal.
 2. Jacket: One piece molded type fitting covers and sheet material, off-white color.
 - a. Minimum Service Temperature: 0 degrees F (minus 18 degrees C).
 - b. Maximum Service Temperature: 150 degrees F (66 degrees C).
 - c. Moisture Vapor Permeability: 0.002 perm inch (0.0029 ng/Pa s m), maximum, when tested in accordance with ASTM E96/E96M.
 - d. Thickness: 10 mil (0.25 mm).
 - e. Connections: Brush on welding adhesive.

2.07 ACCESSORIES

- A. General Requirements:
 - 1. Furnish compatible materials which do not contribute to corrosion, soften, or otherwise attack surfaces to which applied, in either the wet or dry state.
 - 2. Comply with ASTM C795 requirements for materials to be used on stainless steel surfaces.
 - 3. Supply materials that are asbestos free.
- B. Corrosion Inhibitors:
 - 1. Corrosion Control Gel:
 - a. Corrosion Protection: Comply with ASTM B117 and ASTM D610.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Test piping for design pressure, liquid tightness, and continuity prior to applying insulation materials.
- B. Verify that surfaces are clean and dry, with foreign material removed.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install in accordance with NAIMA National Insulation Standards.

END OF SECTION

SECTION 23 0800
COMMISSIONING OF HVAC

PART 1 GENERAL

1.01 SUMMARY

- A. See Section 01 9113 - General Commissioning Requirements for overall objectives; comply with the requirements of Section 01 9113.
- B. This section covers the Contractor's responsibilities for commissioning; each subcontractor or installer responsible for the installation of a particular system or equipment item to be commissioned is responsible for the commissioning activities relating to that system or equipment item.
- C. The Commissioning Authority (CA) directs and coordinates all commissioning activities and provides Prefunctional Checklists and Functional Test Procedures for Contractor's use.
- D. The following HVAC equipment is to be commissioned, including commissioning activities for the following specific items:
 - 1. Control system.
 - 2. Major and minor equipment items.
 - 3. Ductwork and accessories.
 - 4. Terminal units.
 - 5. Other equipment and systems explicitly identified elsewhere in Contract Documents as requiring commissioning.
- E. The Prefunctional Checklist and Functional Test requirements specified in this section are in addition to, not a substitute for, inspection or testing specified in other sections.

1.02 REFERENCE STANDARDS

- A. ASHRAE Guideline 1.1 - The HVAC&R Technical Requirements for the Commissioning Process; 2007, with Errata (2012).

1.03 SUBMITTALS

- A. Updated Submittals: Keep the Commissioning Authority informed of all changes to control system documentation made during programming and setup; revise and resubmit when substantial changes are made.
- B. Draft Prefunctional Checklists and Functional Test Procedures for Control System: Detailed written plan indicating the procedures to be followed to test, checkout and adjust the control system prior to full system Functional Testing; include at least the following for each type of equipment controlled:
 - 1. System name.
 - 2. List of devices.
 - 3. Step-by-step procedures for testing each controller after installation, including:
 - a. Process of verifying proper hardware and wiring installation.
 - b. Process of downloading programs to local controllers and verifying that they are addressed correctly.
 - c. Process of performing operational checks of each controlled component.
 - d. Plan and process for calibrating valve and damper actuators and all sensors.
 - e. Description of the expected field adjustments for transmitters, controllers and control actuators should control responses fall outside of expected values.
 - 4. Copy of proposed log and field checkout sheets to be used to document the process; include space for initial and final read values during calibration of each point and space to specifically indicate when a sensor or controller has "passed" and is operating within the contract parameters.
 - 5. Description of the instrumentation required for testing.
 - 6. Indicate what tests on what systems should be completed prior to TAB using the control system for TAB work. Coordinate with the Commissioning Authority and TAB contractor for this determination.

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- C. Startup Reports, Prefunctional Checklists, and Trend Logs: Submit for approval of Commissioning Authority.
- D. HVAC Control System O&M Manual Requirements. In addition to documentation specified elsewhere, compile and organize at minimum the following data on the control system:
 - 1. Specific step-by-step instructions on how to perform and apply all functions, features, modes, etc. mentioned in the controls training sections of this specification and other features of this system. Provide an index and clear table of contents. Include the detailed technical manual for programming and customizing control loops and algorithms.
 - 2. Full as-built set of control drawings.
 - 3. Full as-built sequence of operations for each piece of equipment.
 - 4. Full points list; in addition to the information on the original points list submittal, include a listing of all rooms with the following information for each room:
 - a. Floor.
 - b. Room number.
 - c. Room name.
 - d. Air handler unit ID.
 - e. Reference drawing number.
 - f. Air terminal unit tag ID.
 - g. Heating and/or cooling valve tag ID.
 - h. Minimum air flow rate.
 - i. Maximum air flow rate.
 - 5. Full print out of all schedules and set points after testing and acceptance of the system.
 - 6. Full as-built print out of software program.
 - 7. Electronic copy on disk of the entire program for this facility.
 - 8. Marking of all system sensors and thermostats on the as-built floor plan and HVAC drawings with their control system designations.
 - 9. Maintenance instructions, including sensor calibration requirements and methods by sensor type, etc.
 - 10. Control equipment component submittals, parts lists, etc.
 - 11. Warranty requirements.
 - 12. Copies of all checkout tests and calibrations performed by the Contractor (not commissioning tests).
 - 13. Organize and subdivide the manual with permanently labeled tabs for each of the following data in the given order:
 - a. Sequences of operation.
 - b. Control drawings.
 - c. Points lists.
 - d. Controller and/or module data.
 - e. Thermostats and timers.
 - f. Sensors and DP switches.
 - g. Valves and valve actuators.
 - h. Dampers and damper actuators.
 - i. Program setups (software program printouts).
- E. Project Record Documents: See Section 01 7800 for additional requirements.
 - 1. Submit updated version of control system documentation, for inclusion with operation and maintenance data.
 - 2. Show actual locations of all static and differential pressure sensors (air, water and building pressure) and air-flow stations on project record drawings.
- F. Draft Training Plan: In addition to requirements specified in Section 01 7900, include:
 - 1. Follow the recommendations of ASHRAE Guideline 1.1.
 - 2. Control system manufacturer's recommended training.

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3. Demonstration and instruction on function and overrides of any local packaged controls not controlled by the HVAC control system.
- G. Training Manuals: See Section 01 7900 for additional requirements.
 1. Provide three extra copies of the controls training manuals in a separate manual from the O&M manuals.

PART 2 PRODUCTS

2.01 TEST EQUIPMENT

- A. Provide all standard testing equipment required to perform startup and initial checkout and required functional performance testing; unless otherwise noted such testing equipment will NOT become the property of Owner.
- B. Equipment-Specific Tools: Where special testing equipment, tools and instruments are specific to a piece of equipment, are only available from the vendor, and are required in order to accomplish startup or Functional Testing, provide such equipment, tools, and instruments as part of the work at no extra cost to Owner; such equipment, tools, and instruments are to become the property of Owner.

PART 3 EXECUTION

3.01 PREPARATION

- A. Cooperate with the Commissioning Authority in development of the Prefunctional Checklists and Functional Test Procedures.
- B. Furnish additional information requested by the Commissioning Authority.
- C. Prepare a preliminary schedule for HVAC pipe and duct system testing, flushing and cleaning, equipment start-up and testing, adjusting, and balancing start and completion for use by the Commissioning Authority; update the schedule as appropriate.
- D. Notify the Commissioning Authority when pipe and duct system testing, flushing, cleaning, startup of each piece of equipment and testing, adjusting, and balancing will occur; when commissioning activities not yet performed or not yet scheduled will delay construction notify ahead of time and be proactive in seeing that the Commissioning Authority has the scheduling information needed to efficiently execute the commissioning process.
- E. Put all HVAC equipment and systems into operation and continue operation during each working day of testing, adjusting, and balancing and commissioning, as required.
- F. Provide test holes in ducts and plenums where directed to allow air measurements and air balancing; close with an approved plug.
- G. Provide temperature and pressure taps in accordance with Contract Documents.

3.02 INSPECTING AND TESTING - GENERAL

- A. Submit startup plans, startup reports, and Prefunctional Checklists for each item of equipment or other assembly to be commissioned.
- B. Perform the Functional Tests directed by the Commissioning Authority for each item of equipment or other assembly to be commissioned.
- C. Provide two-way radios for use during the testing.
- D. Valve/Damper Stroke Setup and Check:
 1. For all valve/damper actuator positions checked, verify the actual position against the control system readout.
 2. Set pump/fan to normal operating mode.
 3. Command valve/damper closed; visually verify that valve/damper is closed and adjust output zero signal as required.
 4. Command valve/damper open; verify position is full open and adjust output signal as required.
 5. Command valve/damper to a few intermediate positions.

- 6. If actual valve/damper position does not reasonably correspond, replace actuator or add pilot positioner (for pneumatics).
- E. Isolation Valve or System Valve Leak Check: For valves not by coils.
 - 1. With full pressure in the system, command valve closed.
 - 2. Use an ultra-sonic flow meter to detect flow or leakage.
- F. Deficiencies: Correct deficiencies and re-inspect or re-test, as applicable, at no extra cost to Owner.

3.03 TAB COORDINATION

- A. TAB: Testing, adjusting, and balancing of HVAC.
- B. Coordinate commissioning schedule with TAB schedule.
- C. Review the TAB plan to determine the capabilities of the control system toward completing TAB.
- D. Provide all necessary unique instruments and instruct the TAB technicians in their use; such as handheld control system interface for setting terminal unit boxes, etc.
- E. Have all required Prefunctional Checklists, calibrations, startup and component Functional Tests of the system completed and approved by the Commissioning Authority prior to starting TAB.
- F. Provide a qualified control system technician to operate the controls to assist the TAB technicians or provide sufficient training for the TAB technicians to operate the system without assistance.

3.04 CONTROL SYSTEM FUNCTIONAL TESTING

- A. Prefunctional Checklists for control system components will require a signed and dated certification that all system programming is complete as required to accomplish the requirements of Contract Documents and the detailed Sequences of Operation documentation submittal.
- B. Do not start Functional Testing until all controlled components have themselves been successfully Functionally Tested in accordance with Contract Documents.
- C. Using a skilled technician who is familiar with this building, execute the Functional Testing of the control system as required by the Commissioning Authority.
- D. Functional Testing of the control system constitutes demonstration and trend logging of control points monitored by the control system.
 - 1. The scope of trend logging is partially specified; trend log up to 50 percent more points than specified at no extra cost to Owner.
 - 2. Perform all trend logging specified in Prefunctional Checklists and Functional Test procedures.
- E. Functionally Test integral or stand-alone controls in conjunction with the Functional Tests of the equipment they are attached to, including any interlocks with other equipment or systems; further testing during control system Functional Test is not required unless specifically indicated below.
- F. Demonstrate the following to the Commissioning Authority during testing of controlled equipment; coordinate with commissioning of equipment.
 - 1. Setpoint changing features and functions.
 - 2. Sensor calibrations.
- G. Demonstrate to the Commissioning Authority:
 - 1. That all specified functions and features are set up, debugged and fully operable.
 - 2. That scheduling features are fully functional and setup, including holidays.
 - 3. That all graphic screens and value readouts are completed.
 - 4. Correct date and time setting in central computer.
 - 5. That field panels read the same time as the central computer; sample 10 percent of field panels; if any of those fail, sample another 10 percent; if any of those fail test all remaining units at no extra cost to Owner.
 - 6. Functionality of field panels using local operator keypads and local ports (plug-ins) using portable computer/keypad; demonstrate 100 percent of panels and 10 percent of ports; if any ports fail, sample another 10 percent; if any of those fail, test all remaining units at no extra cost to Owner.

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7. Power failure and battery backup and power-up restart functions.
 8. Global commands features.
 9. Security and access codes.
 10. Occupant over-rides (manual, telephone, key, keypad, etc.).
 11. O&M schedules and alarms.
 12. Occupancy sensors and controls.
 13. All control strategies and sequences not tested during controlled equipment testing.
- H. If the control system, integral control components, or related equipment do not respond to changing conditions and parameters appropriately as expected, as specified and according to acceptable operating practice, under any of the conditions, sequences, or modes tested, correct all systems, equipment, components, and software required at no additional cost to Owner.

3.05 OPERATION AND MAINTENANCE MANUALS

- A. See Section 01 7800 for additional requirements.
- B. Add design intent documentation furnished by Architect to manuals prior to submission to Owner.
- C. Submit manuals related to items that were commissioned to Commissioning Authority for review; make changes recommended by Commissioning Authority.
- D. Commissioning Authority will add commissioning records to manuals after submission to Owner.

3.06 DEMONSTRATION AND TRAINING

- A. Demonstrate operation and maintenance of HVAC system to Owner' personnel; if during any demonstration, the system fails to perform in accordance with the information included in the O&M manual, stop demonstration, repair or adjust, and repeat demonstration. Demonstrations may be combined with training sessions if appropriate.
- B. These demonstrations are in addition to, and not a substitute for, Prefunctional Checklists and demonstrations to the Commissioning Authority during Functional Testing.
- C. Provide classroom and hands-on training of Owner's designated personnel on operation and maintenance of the HVAC system, control system, and all equipment items indicated to be commissioned. Provide the following minimum durations of training:
 1. HVAC Control System: 8 hours.
 2. Air Handling Units: 8 hours.
 3. Split System AC or Heat Pumps: 8 hours.
- D. TAB Review: Instruct Owner's personnel for minimum 8 hours, after completion of TAB, on the following:
 1. Review final TAB report, explaining the layout and meanings of each data type.
 2. Discuss any outstanding deficient items in control, ducting or design that may affect the proper delivery of air or water.
 3. Identify and discuss any terminal units, duct runs, diffusers, coils, fans and pumps that are close to or are not meeting their design capacity.
 4. Discuss any temporary settings and steps to finalize them for any areas that are not finished.
 5. Other salient information that may be useful for facility operations, relative to TAB.
- E. HVAC Control System Training: Perform training in at least three phases:
 1. Phase 1 - Basic Control System: Provide minimum of 8 hours of actual training on the control system itself. Upon completion of training, each attendee, using appropriate documentation, should be able to perform elementary operations and describe general hardware architecture and functionality of the system.
 - a. This training may be held on-site or at the manufacturer's facility.
 - b. If held off-site, the training may occur prior to final completion of the system installation.
 - c. For off-site training, Contractor shall pay expenses of up to two attendees.
 2. Phase 2 - Integrating with HVAC Systems: Provide minimum of 8 hours of on-site, hands-on training after completion of Functional Testing. Include instruction on:

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- a. The specific hardware configuration of installed systems in this facility and specific instruction for operating the installed system, including interfaces with other systems, if any.
 - b. Security levels, alarms, system start-up, shut-down, power outage and restart routines, changing setpoints and alarms and other typical changed parameters, overrides, freeze protection, manual operation of equipment, optional control strategies that can be considered, energy savings strategies and set points that if changed will adversely affect energy consumption, energy accounting, procedures for obtaining vendor assistance, etc.
 - c. Trend logging and monitoring features (values, change of state, totalization, etc.), including setting up, executing, downloading, viewing both tabular and graphically and printing trends; provide practice in setting up trend logging and monitoring during training session.
 - d. Every display screen, allowing time for questions.
 - e. Point database entry and modifications.
3. Phase 3 - Post-Occupancy: Six months after occupancy conduct minimum of 8 hours of training. Tailor training session to questions and topics solicited beforehand from Owner. Also be prepared to address topics brought up and answer questions concerning operation of the system.
- F. Provide the services of manufacturer representatives to assist instructors where necessary.
- G. Provide the services of the HVAC controls instructor at other training sessions, when requested, to discuss the interaction of the controls system as it relates to the equipment being discussed.

END OF SECTION

SECTION 23 0923

DIRECT-DIGITAL CONTROL SYSTEM FOR HVAC

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. System description.
- B. Operator interface.
- C. Controllers.
- D. Power supplies and line filtering.
- E. System software.
- F. Controller software.
- G. HVAC control programs.

1.02 RELATED REQUIREMENTS

- A. Section 23 0913 - Instrumentation and Control Devices for HVAC.
- B. Section 23 0993 - Sequence of Operations for HVAC Controls.
- C. Section 26 0583 - Wiring Connections: Electrical characteristics and wiring connections.

1.03 REFERENCE STANDARDS

- A. ASHRAE Std 135 - A Data Communication Protocol for Building Automation and Control Networks; 2016, with Errata (2020).
- B. CTA-709.1 - Control Network Protocol Specification; Revision D, 2014.
- C. IEEE 802.11 - IEEE Standard for Information Technology--Telecommunications and Information Exchange Between Systems Local and Metropolitan Area Networks--Specific Requirements - Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications ; 2016, with Errata (2017).
- D. MIL-STD-810 - Environmental Engineering Considerations and Laboratory Tests; 2019h.
- E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- F. UL (DIR) - Online Certifications Directory; Current Edition.

1.04 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.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data for each system component and software module.
- C. Shop Drawings:
 - 1. Indicate trunk cable schematic showing programmable control unit locations, and trunk data conductors.
 - 2. List connected data points, including connected control unit and input device.
 - 3. Indicate system graphics indicating monitored systems, data (connected and calculated) point addresses, and operator notations. Provide demonstration digital media containing graphics.
 - 4. Show system configuration with peripheral devices, batteries, power supplies, diagrams, modems, and interconnections.
 - 5. Indicate description and sequence of operation of operating, user, and application software.
- D. Designer's Qualification Statement.
- E. Manufacturer's Qualification Statement.

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- F. Installer's Qualification Statement.
- G. Project Record Documents: Record actual locations of control components, including control units, thermostats, and sensors.
 - 1. Revise shop drawings to reflect actual installation and operating sequences.
 - 2. Include submittals data in final "Record Documents" form.
- H. Operation and Maintenance Data:
 - 1. Include interconnection wiring diagrams complete field installed systems with identified and numbered, system components and devices.
 - 2. Include keyboard illustrations and step-by-step procedures indexed for each operator function.
 - 3. Include inspection period, cleaning methods, cleaning materials recommended, and calibration tolerances.
- I. Warranty: Submit manufacturer's warranty and ensure forms have been filled out in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

- A. Perform work in accordance with NFPA 70.
- B. Designer Qualifications: Perform design of system using manufacturer's software under direct supervision of a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.
- C. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.
- D. Installer Qualifications: Company specializing in performing work of the type specified and with minimum three years of documented experience.
- E. Products Requiring Electrical Connection: Listed and classified by UL (DIR) as suitable for purpose specified and indicated.

1.07 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Correct defective Work within a five year period after Substantial Completion.
- C. Provide five year manufacturer's warranty for field programmable micro-processor based units.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Match existing (TBS Controls).
- B. or approved equal.

2.02 SYSTEM DESCRIPTION

- A. Automatic temperature control field monitoring and control system using field programmable micro-processor based units.
- B. Base system on distributed system of fully intelligent, stand-alone controllers, operating in a multi-tasking, multi-user environment on token passing network, with central and remote hardware, software, and interconnecting wire and conduit.
- C. Include computer software and hardware, operator input/output devices, control units, local area networks (LAN), sensors, control devices, actuators.
- D. Controls for variable air volume terminals, radiation, reheat coils, unit heaters, fan coils, and the like when directly connected to the control units. Individual terminal unit control is specified in Section 23 0913.

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- E. Provide control systems consisting of thermostats, control valves, dampers and operators, indicating devices, interface equipment and other apparatus and accessories required to operate mechanical systems, and to perform functions specified.
- F. Include installation and calibration, supervision, adjustments, and fine tuning necessary for complete and fully operational system.

2.03 OPERATOR INTERFACE

- A. PC Based Work Station:
 - 1. Connected to server for full access to all system information.
- B. Workstation, controllers, and control backbone to communicate using BACnet protocol and addressing.
- C. BACnet protocol to comply with ASHRAE Std 135.

2.04 CONTROLLERS

- A. Building Controllers:
 - 1. General:
 - a. Manage global strategies by one or more, independent, standalone, microprocessor based controllers.
 - b. Provide sufficient memory to support controller's operating system, database, and programming requirements.
 - c. Share data between networked controllers.
 - d. Controller operating system manages input and output communication signals allowing distributed controllers to share real and virtual object information and allowing for central monitoring and alarms.
 - e. Utilize real-time clock for scheduling.
 - f. Continuously check processor status and memory circuits for abnormal operation.
 - g. Controller to assume predetermined failure mode and generate alarm notification upon detection of abnormal operation.
 - h. Communication with other network devices to be based on assigned protocol.
 - 2. Communication:
 - a. Controller to reside on a BACnet network using ISO 8802-3 (ETHERNET) Data Link/Physical layer protocol.
 - b. Perform routing when connected to a network of custom application and application specific controllers.
 - c. Provide service communication port for connection to a portable operator's terminal or hand held device with compatible protocol.
 - 3. Anticipated Environmental Ambient Conditions:
 - a. Outdoors and/or in Wet Ambient Conditions:
 - 1) Mount within waterproof enclosures.
 - 2) Rated for operation at 40 to 150 degrees F (4 to 65 degrees C).
 - b. Conditioned Space:
 - 1) Mount within dustproof enclosures.
 - 2) Rated for operation at 32 to 120 degrees F (0 to 50 degrees C).
 - 4. Provisions for Serviceability:
 - a. Diagnostic LEDs for power, communication, and processor.
 - b. Make all wiring connections to field removable, modular terminal strips, or to a termination card connected by a ribbon cable.
 - 5. Memory: In the event of a power loss, maintain all BIOS and programming information for a minimum of 72 hours.
 - 6. Power and Noise Immunity:
 - a. Maintain operation at 90 to 110 percent of nominal voltage rating.
 - b. Perform orderly shutdown below 80 percent of nominal voltage.

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- c. Operation protected against electrical noise of 5 to 120 Hz and from keyed radios up to 5 W. at 3 feet (1 m).
- B. Input/Output Interface:
 - 1. Hardwired inputs and outputs tie into the DDC system through building, custom application, or application specific controllers.
 - 2. All Input/Output Points:
 - a. Protect controller from damage resulting from any point short-circuiting or grounding and from voltage up to 24 volts of any duration.
 - b. Provide universal type for building and custom application controllers where input or output is software designated as either binary or analog type with appropriate properties.
 - 3. Binary Inputs:
 - a. Allow monitoring of On/Off signals from remote devices.
 - b. Provide wetting current of 12 mA minimum, compatible with commonly available control devices and protected against the effects of contact bounce and noise.
 - c. Sense dry contact closure with power provided only by the controller.
 - 4. Pulse Accumulation Input Objects: Comply with all requirements of binary input objects and accept up to 10 pulses per second.
 - 5. Analog Inputs:
 - a. Allow for monitoring of low voltage 0 to 10 VDC, 4 to 20 mA current, or resistance signals (thermistor, RTD).
 - b. Compatible with and field configurable to commonly available sensing devices.
 - 6. Binary Outputs:
 - a. Used for On/Off operation or a pulsed low-voltage signal for pulse width modulation control.
 - b. Outputs provided with three position (On/Off/Auto) override switches.
 - c. Status lights for building and custom application controllers to be selectable for normally open or normally closed operation.
 - 7. Analog Outputs:
 - a. Monitoring signal provides a 0 to 10 VDC or a 4 to 20 mA output signal for end device control.
 - b. Provide status lights and two position (AUTO/MANUAL) switch for building and custom application controllers with manually adjustable potentiometer for manual override on building and custom application controllers.
 - c. Drift to not exceed 0.4 percent of range per year.
 - 8. Tri State Outputs:
 - a. Coordinate two binary outputs to control three point, floating type, electronic actuators without feedback.
 - b. Limit the use of three point, floating devices to the following zone and terminal unit control applications:
 - 1) Duct mounted heating coils.
 - 2) Zone dampers.
 - c. Control algorithms run the zone actuator to one end of its stroke once every 24 hours for verification of operator tracking.
 - 9. System Object Capacity:
 - a. System size to be expandable to twice the number of input output objects required by providing additional controllers, including associated devices and wiring.
 - b. Hardware additions or software revisions for the installed operator interfaces are not to be required for future, system expansions.

2.05 POWER SUPPLIES AND LINE FILTERING

- A. Power Supplies:
 - 1. Provide UL listed control transformers with Class 2 current limiting type or over-current protection in both primary and secondary circuits for Class 2 service as required by the NEC.

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2. Limit connected loads to 80 percent of rated capacity.
 3. Match DC power supply to current output and voltage requirements.
 4. Unit to be full wave rectifier type with output ripple of 5.0 mV maximum peak to peak.
 5. Regulation to be 1 percent combined line and load with 100 microsecond response time for 50 percent load changes.
 6. Provide over-voltage and over-current protection to withstand a 150 percent current overload for 3 seconds minimum without trip-out or failure.
 7. Operational Ambient Conditions: 32 to 120 degrees F (0 to 50 degrees C).
 8. EM/RF meets FCC Class B and VDE 0871 for Class B and MIL-STD-810 for shock and vibration.
 9. Line voltage units UL recognized and CSA approved.
- B. Power Line Filtering:
1. Provide external or internal transient voltage and surge suppression component for all workstations and controllers.
 2. Minimum surge protection attributes:
 - a. Dielectric strength of 1000 volts minimum.
 - b. Response time of 10 nanoseconds or less.
 - c. Transverse mode noise attenuation of 65 dB or greater.
 - d. Common mode noise attenuation of 150 dB or greater at 40 to 100 Hz.

2.06 LOCAL AREA NETWORK (LAN)

- A. Provide communication between control units over local area network (LAN).
- B. LAN Capacity: Not less than 60 stations or nodes.
- C. Break in Communication Path: Alarm and automatically initiate LAN reconfiguration.
- D. LAN Data Speed: Minimum 19.2 Kb.
- E. Communication Techniques: Allow interface into network by multiple operation stations and by auto-answer/auto-dial modems. Support communication over telephone lines utilizing modems.
- F. Transmission Median: Fiber optic or single pair of solid 24 gauge twisted, shielded copper cable.
- G. Network Support: Time for global point to be received by any station, shall be less than 3 seconds. Provide automatic reconfiguration if any station is added or lost. If transmission cable is cut, reconfigure two sections with no disruption to system's operation, without operator intervention.

2.07 SYSTEM SOFTWARE

- A. Operating System:
1. Concurrent, multi-tasking capability.
 - a. Common Software Applications Supported: Microsoft Excel.
 - b. Acceptable Operating Systems: _____.
 2. System Graphics:
 - a. Allow up to 10 graphic screens, simultaneously displayed for comparison and monitoring of system status.
 - b. Animation displayed by shifting image files based on object status.
 - c. Provide method for operator with password to perform the following:
 - 1) Move between, change size, and change location of graphic displays.
 - 2) Modify on-line.
 - 3) Add, delete, or change dynamic objects consisting of:
 - (a) Analog and binary values.
 - (b) Dynamic text.
 - (c) Static text.
 - (d) Animation files.
 3. Custom Graphics Generation Package:
 - a. Create, modify, and save graphic files and visio format graphics in PCX formats.
 - b. HTML graphics to support web browser compatible formats.

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- c. Capture or convert graphics from AutoCAD.
- 4. Standard HVAC Graphics Library:
 - a. HVAC Equipment:
 - 1) Air Handlers.
 - 2) Terminal HVAC Units.
 - 3) Unit Ventilators.
 - 4) Heat Pumps.
 - b. Ancillary Equipment:
 - 1) Dampers.
 - 2) Ductwork.
- B. Workstation System Applications:
 - 1. Automatic System Database Save and Restore Functions:
 - a. Current database copy of each Building Controller is automatically stored on hard disk.
 - b. Automatic update occurs upon change in any system panel.
 - c. In the event of database loss in any system panel, the first workstation to detect the loss automatically restores the database for that panel unless disabled by the operator.
 - 2. Manual System Database Save and Restore Functions by Operator with Password Clearance:
 - a. Save database from any system panel.
 - b. Clear a panel database.
 - c. Initiate a download of a specified database to any system panel.
 - 3. Software provided allows system configuration and future changes or additions by operators under proper password protection.
 - 4. On-line Help:
 - a. Context-sensitive system assists operator in operation and editing.
 - b. Available for all applications.
 - c. Relevant screen data provided for particular screen display.
 - d. Additional help available via hypertext.
 - 5. Security:
 - a. Operator log-on requires user name and password to view, edit, add, or delete data.
 - b. System security selectable for each operator.
 - c. System supervisor sets passwords and security levels for all other operators.
 - d. Operator passwords to restrict functions accessible to viewing and/or changing system applications, editor, and object.
 - e. Automatic, operator log-off results from keyboard or mouse inactivity during user-adjustable, time period.
 - f. All system security data stored in encrypted format.
 - 6. System Diagnostics:
 - a. Operations Automatically Monitored:
 - 1) Workstations.
 - 2) Printers.
 - 3) Modems.
 - 4) Network connections.
 - 5) Building management panels.
 - 6) Controllers.
 - b. Device failure is annunciated to the operator.
 - 7. Alarm Processing:
 - a. All system objects are configurable to "alarm in" and "alarm out" of normal state.
 - b. Configurable Objects:
 - 1) Alarm limits.
 - 2) Alarm limit differentials.
 - 3) States.
 - 4) Reactions for each object.

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8. Alarm Messages:
 - a. Descriptor: English language.
 - b. Recognizable Features:
 - 1) Source.
 - 2) Location.
 - 3) Nature.
9. Configurable Alarm Reactions by Workstation and Time of Day:
 - a. Logging.
 - b. Printing.
 - c. Starting programs.
 - d. Displaying messages.
 - e. Dialing out to remote locations.
 - f. Paging.
 - g. Providing audible annunciation.
 - h. Displaying specific system graphics.
10. Custom Trend Logs:
 - a. Definable for any data object in the system including interval, start time, and stop time.
 - b. Trend Data:
 - 1) Sampled and stored on the building controller panel.
 - 2) Archivable on hard disk.
 - 3) Retrievable for use in reports, spreadsheets and standard database programs.
 - 4) Archival on LAN accessible storage media including hard disk, tape, Raid array drive, and virtual cloud environment.
 - 5) Protected and encrypted format to prevent manipulation, or editing of historical data and event logs.
11. Alarm and Event Log:
 - a. View all system alarms and change of states from any system location.
 - b. Events listed chronologically.
 - c. Operator with proper security acknowledges and clears alarms.
 - d. Alarms not cleared by operator are archived to the workstation hard disk.
12. Object, Property Status and Control:
 - a. Provide a method to view, edit if applicable, the status of any object and property in the system.
 - b. Status Available by the Following Methods:
 - 1) Menu.
 - 2) Graphics.
 - 3) Custom Programs.
13. Reports and Logs:
 - a. Reporting Package:
 - 1) Allows operator to select, modify, or create reports.
 - 2) Definable as to data content, format, interval, and date.
 - 3) Archivable to hard disk.
 - b. Real-time logs available by type or status such as alarm, lockout, normal, etc.
 - c. Stored on hard disk and readily accessible by standard software applications, including spreadsheets and word processing.
 - d. Set to be printed on operator command or specific time(s).
14. Reports:
 - a. Standard:
 - 1) Objects with current values.
 - 2) Current alarms not locked out.
 - 3) Disabled and overridden objects, points and SNVTs.
 - 4) Objects in manual or automatic alarm lockout.

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- 5) Objects in alarm lockout currently in alarm.
 - 6) Logs:
 - (a) Alarm History.
 - (b) System messages.
 - (c) System events.
 - (d) Trends.
 - b. Custom:
 - 1) Daily.
 - 2) Weekly.
 - 3) Monthly.
 - 4) Annual.
 - 5) Time and date stamped.
 - 6) Title.
 - 7) Facility name.
 - c. Tenant Override:
 - 1) Monthly report showing total, requested, after-hours HVAC and lighting services on a daily basis for each tenant.
 - 2) Annual report showing override usage on a monthly basis.
 - d. Electrical, Fuel, and Weather:
 - 1) Electrical Meter(s):
 - (a) Monthly showing daily electrical consumption and peak electrical demand with time and date stamp for each meter.
 - (b) Annual summary showing monthly electrical consumption and peak demand with time and date stamp for each meter.
 - 2) Fuel Meter(s):
 - (a) Monthly showing daily natural gas consumption for each meter.
 - (b) Annual summary showing monthly consumption for each meter.
 - 3) Weather:
 - (a) Monthly showing minimum, maximum, average outdoor air temperature and heating/cooling degree-days for the month.
- C. Workstation Applications Editors:
- 1. Provide editing software for each system application at PC workstation.
 - 2. Downloaded application is executed at controller panel.
 - 3. Full screen editor for each application allows operator to view and change:
 - a. Configuration.
 - b. Name.
 - c. Control parameters.
 - d. Set-points.
 - 4. Scheduling:
 - a. Monthly calendar indicates schedules, holidays, and exceptions.
 - b. Allows several related objects to be scheduled and copied to other objects or dates.
 - c. Start and stop times adjustable from master schedule.
 - 5. Custom Application Programming:
 - a. Create, modify, debug, edit, compile, and download custom application programming during operation and without disruption of all other system applications.
 - b. Programming Features:
 - 1) English oriented language, based on BASIC, FORTRAN, C, or PASCAL syntax allowing for free form programming.
 - 2) Alternative language graphically based using appropriate function blocks suitable for all required functions and amenable to customizing or compounding.
 - 3) Insert, add, modify, and delete custom programming code that incorporates word processing features such as cut/paste and find/replace.

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- 4) Allows the development of independently, executing, program modules designed to enable and disable other modules.
- 5) Debugging/simulation capability that displays intermediate values and/or results including syntax/execution error messages.
- 6) Support for conditional statements (IF/THEN/ELSE/ELSE-F) using compound Boolean (AND, OR, and NOT) and/or relations (EQUAL, LESS THAN, GREATER THAN, NOT EQUAL) comparisons.
- 7) Support for floating-point arithmetic utilizing plus, minus, divide, times, square root operators; including absolute value; minimum/maximum value from a list of values for mathematical functions.
- 8) Language consisting of resettable, predefined, variables representing time of day, day of the week, month of the year, date; and elapsed time in seconds, minutes, hours, and days where the variable values can be used in IF/THEN comparisons, calculations, programming statement logic, etc.
- 9) Language having predefined variables representing status and results of the system software enables, disables, and changes the set points of the controller software.

2.08 CONTROLLER SOFTWARE

- A. All applications reside and operate in the system controllers and editing of all applications occurs at the operator workstation.
- B. System Security:
 1. User access secured via user passwords and user names.
 2. Passwords restrict user to the objects, applications, and system functions as assigned by the system manager.
 3. User Log On/Log Off attempts are recorded.
 4. Automatic Log Off occurs following the last keystroke after a user defined delay time.
- C. Object or Object Group Scheduling:
 1. Weekly Schedules Based on Separate, Daily Schedules:
 - a. Include start, stop, optimal stop, and night economizer.
 - b. 10 events maximum per schedule.
 - c. Start/stop times adjustable for each group object.
- D. Provide standard application for equipment coordination and grouping based on function and location to be used for scheduling and other applications.
- E. Alarms:
 1. Binary object is set to alarm based on the operator specified state.
 2. Analog object to have high/low alarm limits.
 3. All alarming is capable of being automatically and manually disabled.
 4. Alarm Reporting:
 - a. Operator determines action to be taken for alarm event.
 - b. Alarms to be routed to appropriate workstation.
 - c. Reporting Options:
- F. Maintenance Management: System monitors equipment status and generates maintenance messages based upon user-designated run-time limits.
- G. Sequencing: Application software based upon specified sequences of operation in Section 23 0993.
- H. PID Control Characteristics:
 1. Direct or reverse action.
 2. Anti-windup.
 3. Calculated, time-varying, analog value, positions an output or stages a series of outputs.
 4. User selectable controlled variable, set-point, and PED gains.
- I. Staggered Start Application:

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1. Prevents all controlled equipment from simultaneously restarting after power outage.
 2. Order of equipment startup is user selectable.
- J. Energy Calculations:
1. Accumulated instantaneous power or flow rates are converted to energy use data.
 2. Algorithm calculates a rolling average and allows window of time to be user specified in minute intervals.
 3. Algorithm calculates a fixed window average with a digital input signal from a utility meter defining the start of the window period that in turn synchronizes the fixed-window average with that used by the power company.
- K. Anti-Short Cycling:
1. All binary output objects protected from short-cycling.
 2. Allows minimum on-time and off-time to be selected.
- L. On-Off Control with Differential:
1. Algorithm allows binary output to be cycled based on a controlled variable and set-point.
 2. Algorithm to be direct-acting or reverse-acting incorporating an adjustable differential.
- M. Run-Time Totalization:
1. Totalize run-times for all binary input objects.
 2. Provides operator with capability to assign high run-time alarm.

2.09 HVAC CONTROL PROGRAMS

- A. General:
1. Identify each HVAC Control system.
- B. Optimal Run Time:
1. Control start-up and shutdown times of HVAC equipment for both heating and cooling.
 2. Base on occupancy schedules, outside air temperature, seasonal requirements, and interior room mass temperature.
 3. Start-up systems by using outside air temperature, room mass temperatures, and adaptive model prediction for how long building takes to warm up or cool down under different conditions.
 4. Use outside air temperature to determine early shut down with ventilation override.
 5. Analyze multiple building mass sensors to determine seasonal mode and worse case condition for each day.
 6. Operator commands:
 - a. Define term schedule.
 - b. Add/delete outside air temperature point.
 - c. Add/delete mass temperature point.
 - d. Define heating/cooling parameters.
 - e. Define mass sensor heating/cooling parameters.
 - f. Lock/unlock program.
 - g. Request optimal run time control summary.
 - h. Request optimal run time mass temperature summary.
 - i. Request HVAC point summary.
 - j. Request HVAC saving profile summary.
 7. Control Summary:
 - a. HVAC Control system begin/end status.
 - b. Optimal run time lock/unlock control status.
 - c. Heating/cooling mode status.
 - d. Optimal run time schedule.
 - e. Start/Stop times.
 - f. Selected mass temperature point ID.
 - g. Optimal run time system normal start times.
 - h. Occupancy and vacancy times.

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- i. Optimal run time system heating/cooling mode parameters.
- 8. Mass temperature summary:
 - a. Mass temperature point type and ID.
 - b. Desired and current mass temperature values.
 - c. Calculated warm-up/cool-down time for each mass temperature.
 - d. Heating/cooling season limits.
 - e. Break point temperature for cooling mode analysis.
- 9. HVAC point summary:
 - a. Control system identifier and status.
 - b. Calculated optimal start and stop times.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that conditioned power supply is available to the control units and to the operator work station. Verify that field end devices, wiring, and pneumatic tubing is installed prior to installation proceeding.

3.02 INSTALLATION

- A. Install control units and other hardware in position on permanent walls where not subject to excessive vibration.
- B. Install software in control units and in operator work station. Implement all features of programs to specified requirements and appropriate to sequence of operation. Refer to Section 23 0993.
- C. Provide conduit and electrical wiring in accordance with Section 26 0583. Electrical material and installation shall be in accordance with appropriate requirements of Division 26.

3.03 MANUFACTURER'S FIELD SERVICES

- A. Start and commission systems. Allow sufficient time for start-up and commissioning prior to placing control systems in permanent operation.

3.04 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate complete and operating system to Owner.

3.05 MAINTENANCE

- A. Provide service and maintenance of energy management and control systems for one years from Date of Substantial Completion.
- B. Provide two complete inspections, one in each season, to inspect, calibrate, and adjust controls as required, and submit written reports.
- C. Provide complete service of systems, including call backs. Make minimum of ____ complete normal inspections of approximately ____ hours duration in addition to normal service calls to inspect, calibrate, and adjust controls, and submit written reports.

END OF SECTION

HALDANE CENTRAL SCHOOL DISTRICT
MECHANICAL UPGRADES & RELATED WORK - PACKAGE NO. 2
SEQUENCE OF OPERATIONS FOR HVAC CONTROLS

SECTION 23 0993

SEQUENCE OF OPERATIONS FOR HVAC CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. This section defines the manner and method by which controls function. Requirements for each type of control system operation are specified. Equipment, devices, and system components required for control systems are specified in other sections.
- B. Sequence of operation for:
 - 1. Air terminal units.
 - 2. Fan coil units.
 - 3. Heating coils.

1.02 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Sequence of Operation Documentation: Submit written sequence of operation for entire HVAC system and each piece of equipment.
 - 1. Preface: 1 or 2 paragraph overview narrative of the system describing its purpose, components and function.
 - 2. State each sequence in small segments and give each segment a unique number for referencing in Functional Test procedures; provide a complete description regardless of the completeness and clarity of the sequences specified in Contract Documents.
- C. Control System Diagrams: Submit graphic schematic of the control system showing each control component and each component controlled, monitored, or enabled.
- D. Points List: Submit list of all control points indicating at least the following for each point.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 AIR TERMINAL UNITS

- A. Fan-powered:
 - 1. Series Units:
 - a. Series-fan runs continuously via control interlock with the AHU supply fan.

3.02 HEATING COILS

- A. Single temperature thermostat set at 70 degrees F (21 degrees C) maintains constant space temperature during the day and 5 degrees F cooler at night (during the day and 3 degrees C cooler at night) by modulating two-way control heating valve.

END OF SECTION

SECTION 23 3100
HVAC DUCTS AND CASINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Metal ductwork.
- B. Casings and plenums.

1.02 REFERENCE STANDARDS

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2020.
- B. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2018.
- C. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2005 (Revised 2009).

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data for duct materials.
- C. Shop Drawings: Indicate duct fittings, particulars such as gauges, sizes, welds, and configuration prior to start of work for designed systems.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience, and approved by manufacturer.

PART 2 PRODUCTS

2.01 DUCT ASSEMBLIES

- A. Regulatory Requirements: Construct ductwork to comply with NFPA 90A standards.
- B. Ducts: Galvanized steel, unless otherwise indicated.

2.02 MATERIALS

- A. Galvanized Steel for Ducts: Hot-dipped galvanized steel sheet, ASTM A653/A653M FS Type B, with G60/Z180 coating.

2.03 DUCTWORK FABRICATION

- A. Fabricate and support in accordance with SMACNA (DCS) and as indicated.
- B. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.
- C. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
- D. Fabricate continuously welded round and oval duct fittings in accordance with SMACNA (DCS).

2.04 MANUFACTURED DUCTWORK AND FITTINGS

2.05 CASINGS AND PLENUMS

- A. Fabricate casings in accordance with SMACNA (DCS) and construct for operating pressures indicated.
- B. Mount floor mounted casings on 4 inch (100 mm) high concrete curbs. At floor, rivet panels on 8 inch (200 mm) centers to angles. Where floors are acoustically insulated, provide liner of galvanized 18 gauge, 0.0478 inch (1.21 mm) expanded metal mesh supported at 12 inch (300 mm) centers, turned up 12 inches (300 mm) at sides with sheet metal shields.
- C. Reinforce door frames with steel angles tied to horizontal and vertical plenum supporting angles. Install hinged access doors where indicated or required for access to equipment for cleaning and inspection.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install, support, and seal ducts in accordance with SMACNA (DCS).
- B. Install in accordance with manufacturer's instructions.
- C. Duct sizes indicated are inside clear dimensions. For lined ducts, maintain sizes inside lining.
- D. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.

END OF SECTION

SECTION 23 3300
AIR DUCT ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Air turning devices/extractors.
- B. Backdraft dampers - metal.
- C. Backdraft dampers - fabric.
- D. Combination fire and smoke dampers.
- E. Combination fire and smoke dampers - corridor dampers.
- F. Duct access doors.
- G. Fire dampers.
- H. Flexible duct connectors.
- I. Smoke dampers.
- J. Volume control dampers.

1.02 RELATED REQUIREMENTS

- A. Section 23 3100 - HVAC Ducts and Casings.

1.03 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2020.
- B. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2018.
- C. NFPA 92 - Standard for Smoke Control Systems; 2018.
- D. NFPA 96 - Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations; 2017.
- E. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2005 (Revised 2009).
- F. UL 555 - Standard for Fire Dampers; Current Edition, Including All Revisions.
- G. UL 555S - Standard for Smoke Dampers; Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide for shop fabricated assemblies including volume control dampers. Include electrical characteristics and connection requirements.

PART 2 PRODUCTS

2.01 AIR TURNING DEVICES/EXTRACTORS

- A. Manufacturers:
 - 1. Carlisle HVAC Products; Dynair Hollow Vane and Rail (Double Wall Vane): www.carlislehvac.com/#sle.
 - 2. Elgen Manufacturing Company, Inc: www.elgenmfg.com/#sle.
 - 3. Krueger-HVAC, Division of Air System Components: www.krueger-hvac.com/#sle.
 - 4. Ruskin Company: www.ruskin.com/#sle.
 - 5. Titus HVAC, a brand of Johnson Controls: www.titus-hvac.com/#sle.
 - 6. Ward Industries, a brand of Hart and Cooley, Inc: www.wardind.com/#sle.
 - 7. or approved equal.
- B. Multi-blade device with blades aligned in short dimension; steel construction; with individually adjustable blades, mounting straps.

2.02 BACKDRAFT DAMPERS - METAL

- A. Manufacturers:
 - 1. Louvers & Dampers, Inc, a brand of Mestek, Inc: www.louvers-dampers.com/#sle.
 - 2. Nailor Industries, Inc: www.nailor.com/#sle.
 - 3. Ruskin Company: www.ruskin.com/#sle.
 - 4. United Enertech: www.unitedenertech.com/#sle.
 - 5. or approved equal.

2.03 BACKDRAFT DAMPERS - FABRIC

- A. Fabric Backdraft Dampers: Factory-fabricated.
 - 1. Blades: Neoprene coated fabric material.
 - 2. Birdscreen: 1/2 inch (12 mm) nominal mesh of galvanized steel or aluminum.
 - 3. Maximum Velocity: 1000 fpm (5 mps) face velocity.

2.04 COMBINATION FIRE AND SMOKE DAMPERS

2.05 COMBINATION FIRE AND SMOKE DAMPERS - CORRIDOR DAMPERS

- A. Manufacturers:
 - 1. Ruskin Company: www.ruskin.com/#sle.
 - 2. United Enertech: www.unitedenertech.com/#sle.
 - 3. or approved equal.
- B. Fabricate in accordance with NFPA 90A, UL 555, UL 555S, and as indicated.

2.06 DUCT ACCESS DOORS

- A. Manufacturers:
 - 1. Ruskin Company: www.ruskin.com/#sle.
 - 2. SEMCO LLC: www.semcohvac.com/#sle.
 - 3. Ward Industries, a brand of Hart and Cooley, Inc: www.wardind.com/#sle.
 - 4. or approved equal.
- B. Fabricate in accordance with SMACNA (DCS) and as indicated.

2.07 FIRE DAMPERS

2.08 FLEXIBLE DUCT CONNECTORS

- A. Manufacturers:
 - 1. Carlisle HVAC Products; Dynair Connector Plus G90 Steel Offset Seam Neoprene Fabric: www.carlislehvac.com/#sle.
 - 2. Ductmate Industries, Inc, a DMI Company: www.ductmate.com/#sle.
 - 3. Elgen Manufacturing Company, Inc: www.elgenmfg.com/#sle.
 - 4. or approved equal.
- B. Fabricate in accordance with SMACNA (DCS) and as indicated.
- C. Flexible Duct Connections: Fabric crimped into metal edging strip.

2.09 SMOKE DAMPERS

2.10 VOLUME CONTROL DAMPERS

- A. Manufacturers:
 - 1. NCA, a brand of Metal Industries Inc: www.ncamfg.com/#sle.
 - 2. Ruskin Company: www.ruskin.com/#sle.
 - 3. United Enertech: www.unitedenertech.com/#sle.
 - 4. or approved equal.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install accessories in accordance with manufacturer's instructions, NFPA 90A, and follow SMACNA (DCS). Refer to Section 23 3100 for duct construction and pressure class.
- B. Provide backdraft dampers on exhaust fans or exhaust ducts nearest to outside and where indicated.
- C. Provide fire dampers, combination fire and smoke dampers, and smoke dampers at locations indicated, where ducts and outlets pass through fire rated components, and where required by Authorities Having Jurisdiction. Install with required perimeter mounting angles, sleeves, breakaway duct connections, corrosion resistant springs, bearings, bushings and hinges.
- D. Install smoke dampers and combination smoke and fire dampers in accordance with NFPA 92.
- E. Demonstrate re-setting of fire dampers to Owner's representative.

END OF SECTION

SECTION 23 3700
AIR OUTLETS AND INLETS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Diffusers:
 - 1. Rectangular ceiling diffusers.
- B. Registers/grilles:
 - 1. Ceiling-mounted, egg crate exhaust and return register/grilles.
 - 2. Ceiling-mounted, exhaust and return register/grilles.
 - 3. Ceiling-mounted, supply register/grilles.
 - 4. Wall-mounted, supply register/grilles.
 - 5. Wall-mounted, exhaust and return register/grilles.
- C. Wall and ceiling gypsum board access panels with return air grilles.

1.02 REFERENCE STANDARDS

- A. ASHRAE Std 70 - Method of Testing the Performance of Air Outlets and Inlets; 2006 (Reaffirmed 2011).
- B. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2018.
- C. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data for equipment required for this project. Review outlets and inlets as to size, finish, and type of mounting prior to submission. Submit schedule of outlets and inlets showing type, size, location, application, and noise level.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Ruskin Company: www.ruskin.com/#sle.
- B. Titus, a brand of Air Distribution Technologies: www.titus-hvac.com/#sle.
- C. Tuttle and Bailey: www.tuttleandbailey.com/#sle.
- D. or approved equal.

2.02 RECTANGULAR CEILING DIFFUSERS

- A. Manufacturers:
 - 1. Krueger-HVAC: www.krueger-hvac.com/#sle.
 - 2. Metalaire, a brand of Metal Industries Inc: www.metalair.com/#sle.
 - 3. or approved equal.

2.03 CEILING SUPPLY REGISTERS/GRILLES

- A. Manufacturers:
 - 1. Krueger-HVAC: www.krueger-hvac.com/#sle.
 - 2. Metalaire, a brand of Metal Industries Inc: www.metalair.com/#sle.
 - 3. or approved equal.
- B. Type: Streamlined and individually adjustable curved blades to discharge air along face of grille, one-way deflection.
- C. Damper: Integral, gang-operated, opposed blade type with removable key operator, operable from face.

2.04 CEILING EXHAUST AND RETURN REGISTERS/GRILLES

- A. Manufacturers:
 - 1. Krueger-HVAC: www.krueger-hvac.com/#sle.

2. or approved equal.

2.05 CEILING EGG CRATE EXHAUST AND RETURN GRILLES

- A. Manufacturers:
 1. Krueger-HVAC: www.krueger-hvac.com/#sle.
 2. or approved equal.

2.06 WALL SUPPLY REGISTERS/GRILLES

- A. Manufacturers:
 1. Metalaire, a brand of Metal Industries Inc: www.metalaire.com/#sle.
 2. or approved equal.

2.07 WALL EXHAUST AND RETURN REGISTERS/GRILLES

- A. Type: Streamlined blades, 3/4 inch (19 mm) minimum depth, 3/4 inch (19 mm) maximum spacing, with spring or other device to set blades, vertical face.
- B. Damper: Integral, gang-operated, opposed blade type with removable key operator, operable from face.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Comply with SMACNA (ASMM) for flashing/counter-flashing of roof penetrations and supports for roof curbs and roof mounted equipment.
- C. Check location of outlets and inlets and make necessary adjustments in position to comply with architectural features, symmetry, and lighting arrangement.

END OF SECTION

SECTION 23 7223

PACKAGED AIR-TO-AIR ENERGY RECOVERY UNITS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Energy recovery units.
- B. Filters.
- C. Dampers.
- D. Vibration isolation.
- E. Power and controls.

1.02 REFERENCE STANDARDS

- A. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- B. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2018.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's installation instruction, product data, and engineering calculations.
- C. Shop Drawings: Show design and assembly of energy recovery unit and installation and connection details.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Energy Recovery Ventilators:
 - 1. RenewAire: www.renewaire.com/#sle.
 - 2. Ruskin Company: www.ruskin.com/#sle.
 - 3. Semco Inc.: www.semcohvac.com/#sle.
 - 4. Systemair AB: www.systemair.com/#sle.
 - 5. or approved equal.

2.02 ENERGY RECOVERY UNITS

2.03 VIBRATION ISOLATION

- A. Vibration Isolation: Provide whole unit vibration isolation with the energy recovery unit assembly.
- B. Construct with appropriately-sized, seismic-rated, corrosion-resistant captive-spring isolators.

2.04 POWER AND CONTROLS

- A. Motor Control Panels: UL listed.
- B. Include necessary motor starters, fuses, transformers and overload protection according to NFPA 70.
- C. Install wiring in accordance with NFPA 70.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that structure is ready for installation of unit, that openings in deck for ductwork, if required, are correctly sized and located, and that mechanical and electrical utilities supplying unit are of correct capacities and are accessible.

3.02 INSTALLATION

3.03 SYSTEM STARTUP

- A. Provide services of manufacturer's authorized representative to provide start up of unit.

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PACKAGED AIR-TO-AIR ENERGY RECOVERY UNITS

3.04 CLEANING

- A. Clean filters, air plenums, interior and exposed-to-view surfaces prior to Substantial Completion.

END OF SECTION

SECTION 23 8126.13

SMALL-CAPACITY SPLIT-SYSTEM AIR CONDITIONERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Air cooled condensing units.
- B. Indoor air handling (fan and coil) units for ducted systems.
- C. Controls.

1.02 REFERENCE STANDARDS

- A. AHRI 520 - Performance Rating of Positive Displacement Condensing Units; 2004.
- B. ASHRAE Std 15 - Safety Standard for Refrigeration Systems and Designation and Classification of Refrigerants ; 2019.
- C. ASHRAE Std 23.1 - Methods for Performance Testing Positive Displacement Refrigerant Compressors and Condensing Units that Operate at Subcritical Pressures of the Refrigerant; 2019.
- D. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2018.
- E. NFPA 90B - Standard for the Installation of Warm Air Heating and Air-Conditioning Systems; 2018.
- F. UL 207 - Standard for Refrigerant-Containing Components and Accessories, Nonelectrical; Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide rated capacities, weights, accessories, electrical nameplate data, and wiring diagrams.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Carrier Corporation: www.carrier.com/#sle.
- B. Trane Inc: www.trane.com/#sle.
- C. York International Corporation / Johnson Controls: www.york.com/#sle.
- D. or approved equal.

2.02 SYSTEM DESIGN

- A. Includes: Applies to Air Handlers and Unit Ventilators paired with Air Cooled Condensers.
- B. Heat Pumps included: None
- C. Split-System Heating / Cooling Units: Self-contained, packaged, matched factory-engineered and assembled, pre-wired indoor and outdoor units; UL listed.
 - 1. Heating: Coil fed by boilers.
 - 2. Cooling: Outdoor electric condensing unit with evaporator coil in central ducted indoor unit.
 - 3. Provide refrigerant lines internal to units and between indoor and outdoor units, factory cleaned, dried, pressurized and sealed, with insulated suction line.
- D. Performance Requirements: See Drawings and Schedules for more information.
 - 1. Efficiency: Must meet or exceed values of specified units.

2.03 INDOOR AIR HANDLING UNITS FOR DUCTED SYSTEMS

- A. Location: Above Ceiling
- B. Indoor Units: Self-contained, packaged, factory assembled, pre-wired unit consisting of cabinet, supply fan, heating and cooling element(s), controls, and accessories; wired for single power connection with control transformer.

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SMALL-CAPACITY SPLIT-SYSTEM AIR CONDITIONERS

1. Air Flow Configuration: Upflow.
2. Cabinet: Steel with baked enamel finish, easily removed and secured access doors with safety interlock switches, glass fiber insulation with reflective liner.
- C. Supply Fan: Centrifugal type rubber mounted with direct or belt drive with adjustable variable pitch motor pulley.
 1. Motor: 1750 rpm multiple speed, permanently lubricated, hinge mounted.
 2. Motor Electrical Characteristics: See Drawings
- D. Air Filters: 1 inch (25 mm) thick urethane, washable type arranged for easy replacement.
- E. Evaporator Coils: Copper tube aluminum fin assembly, galvanized or polymer drain pan sloped in all directions to drain, drain connection, refrigerant piping connections, restricted distributor or thermostatic expansion valve.
 1. Construction and Ratings: In accordance with AHRI 210/240 and UL 207.
 2. Manufacturers: System manufacturer.

2.04 OUTDOOR UNITS

- A. Outdoor Units: Self-contained, packaged, pre-wired unit consisting of cabinet, with compressor and condenser.
 1. Construction and Ratings: In accordance with AHRI 210/240 with testing in accordance with ASHRAE Std 23.1 and UL 207.
- B. Air Cooled Condenser: Aluminum fin and copper tube coil, AHRI 520 with direct drive axial propeller fan resiliently mounted, galvanized fan guard.
- C. Accessories: Filter drier, high pressure switch (manual reset), low pressure switch (automatic reset), service valves and gauge ports, thermometer well (in liquid line).
 1. Provide thermostatic expansion valves.
- D. Operating Controls:
 1. Control by room thermostat to maintain room temperature setting.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrates are ready for installation of units and openings are as indicated on shop drawings.
- B. Verify that proper power supply is available and in correct location.
- C. Verify that proper fuel supply is available for connection.

3.02 INSTALLATION

- A. Install in accordance with NFPA 90A and NFPA 90B.
- B. Install refrigeration systems in accordance with ASHRAE Std 15.

END OF SECTION

SECTION 23 8200
CONVECTION HEATING AND COOLING UNITS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Unit ventilators.

1.02 RELATED REQUIREMENTS

- A. Section 23 0513 - Common Motor Requirements for HVAC Equipment.
- B. Section 23 2300 - Refrigerant Piping.
- C. Section 26 0583 - Wiring Connections: Electrical characteristics and wiring connections. Installation of room thermostats. Electrical supply to units.

1.03 REFERENCE STANDARDS

- A. AHRI Directory of Certified Product Performance - Air-Conditioning, Heating, and Refrigeration Institute (AHRI); Current Edition.
- B. AHRI 840 - Unit Ventilators; 1998.
- C. ASHRAE (HVAC) - ASHRAE Handbook - HVAC Applications; Most Recent Edition Cited by Referring Code or Reference Standard.
- D. ASHRAE Std 62.1 - Ventilation for Acceptable Indoor Air Quality; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- E. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2005 (Revised 2009).

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide typical catalog of information including arrangements.

PART 2 PRODUCTS

2.01 UNIT VENTILATORS

- A. Manufacturers:
 - 1. Carrier, a part of UTC Building and Industrial Systems, a unit of United Technologies Corp.: www.commercial.carrier.com/#sle.
 - 2. Daikin Applied: www.daikinapplied.com/#sle.
 - 3. Trane, a brand of Ingersoll Rand: www.trane.com/#sle.
 - 4. Magic Aire
 - 5. Modine.
- B. Performance Data and Safety Requirements:
 - 1. Unit capacities certified and tested in accordance with AHRI 840 and AHRI 350.
 - 2. Provide products listed, classified, and labeled by Underwriters Laboratories Inc. (UL), Intertek (ETL), or testing firm acceptable to Authority Having Jurisdiction as suitable for the purpose indicated.
- C. Required Directory Listings: AHRI Directory of Certified Product Performance - Air-Conditioning, Heating, and Refrigeration Institute (AHRI).
- D. Refrigerant Coils:
 - 1. Provide factory installed thermal expansion valves, properly sized to accommodate the selected condensing unit.
 - 2. Factory proof and leak tested to ensure leak tight operation.
 - 3. Provide insulated drain pan, to prevent condensation, with field convertible left or right hand connections.
- E. Electric Coils:

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CONVECTION HEATING AND COOLING UNITS

1. Provide factory installed, manual disconnect switch or dead front switch, to de-energize the electric coil or whenever the front panel or access panel is opened.
- F. Cabinet: 14 gauge, 0.0747 inch (1.90 mm) sheet steel on solid base pan with exposed edges rounded. Provide removable front panels with quick-acting, key-operated cam locks. Provide removable die-cast or fabricated steel discharge grilles. For units having cooling coils, insulate internal parts and surfaces exposed to conditioned air stream with moisture resistant insulation.
- G. Cabinet Accessories: Matching steel construction, reinforced, for use with unit ventilators or finned radiation, with steel alignment pins, adjustable kick plates with leveling bolts, shelves and sliding doors with locks as indicated, sinks, bubbler faucets and bowls, corner, end, and wall filler sections as required.
- H. Finish: Factory applied baked primer coat on visible surfaces of enclosure or cabinet.
- I. Fans: Centrifugal forward-curved double-width wheels, statically and dynamically balanced, direct driven, arranged to draw air through coil.
- J. Wall Louvers: Anodized aluminum wall intake box and louvers removable from frame with 1/2 inch (13 mm) square mesh galvanized screen in back of louver.
- K. Motor: Tap wound multiple speed permanent split capacitor with sleeve bearings, resiliently mounted.
- L. Controls:
 1. Provide units with control valves furnished by the unit ventilator manufacturer.
 2. Unit Ventilator Manufacturer's Controls:
 - a. Fan speed switch for unit mounting.
 - b. Disconnect switch.
 - c. Thermostats and controllers.
 3. Provide ASHRAE Cycle I as defined in ASHRAE (HVACA) Handbook - HVAC Applications.
- M. Mixing Dampers: Multi-blade with compressible seal, capable of varying proportion of mixed air from 100 percent room air to 100 percent outside air.
- N. Electrical Characteristics:
 1. 208 volts, single phase, 60 Hz.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's recommendations.
- B. Unit Ventilators:
 1. Locate as indicated, level and shim units, and anchor to structure.
 2. Coordinate exact location of wall louvers.

3.02 CLOSEOUT ACTIVITIES

- A. See Section 01 7800 - Closeout Submittals, for closeout submittals.
- B. See Section 01 7900 - Demonstration and Training, for additional requirements.

END OF SECTION

SECTION 26 0505

SELECTIVE DEMOLITION FOR ELECTRICAL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electrical demolition.

1.02 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Sustainable Design Documentation: Submit certification of removal and appropriate disposal of abandoned cables containing lead stabilizers.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. Materials and equipment for patching and extending work: As specified in individual sections.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that abandoned wiring and equipment serve only abandoned facilities.
- B. Beginning of demolition means installer accepts existing conditions.

3.02 PREPARATION

- A. Disconnect electrical systems in walls, floors, and ceilings to be removed.
- B. Coordinate utility service outages with utility company.
- C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.

3.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

- A. Perform work for removal and disposal of equipment and materials containing toxic substances regulated under the Federal Toxic Substances Control Act (TSCA) in accordance with applicable federal, state, and local regulations. Applicable equipment and materials include, but are not limited to:
- B. Remove, relocate, and extend existing installations to accommodate new construction.
- C. Remove abandoned wiring to source of supply.
- D. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.
- E. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets that are not removed.
- F. Repair adjacent construction and finishes damaged during demolition and extension work.
- G. Maintain access to existing electrical installations that remain active. Modify installation or provide access panel as appropriate.

END OF SECTION

HALDANE CENTRAL SCHOOL DISTRICT
MECHANICAL UPGRADES & RELATED WORK - PACKAGE NO. 2
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

SECTION 26 0526

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Grounding and bonding requirements.
- B. Conductors for grounding and bonding.
- C. Connectors for grounding and bonding.

1.02 RELATED REQUIREMENTS

- A. Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables: Additional requirements for conductors for grounding and bonding, including conductor color coding.
- B. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- B. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- C. UL 467 - Grounding and Bonding Equipment; Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittals procedures.

1.05 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

PART 2 PRODUCTS

2.01 GROUNDING AND BONDING REQUIREMENTS

- A. Existing Work: Where existing grounding and bonding system components are indicated to be reused, they may be reused only where they are free from corrosion, integrity and continuity are verified, and where acceptable to the authority having jurisdiction.
- B. Do not use products for applications other than as permitted by NFPA 70 and product listing.
- C. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.
- D. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.02 GROUNDING AND BONDING COMPONENTS

- A. General Requirements:
 - 1. Provide products listed, classified, and labeled as suitable for the purpose intended.
 - 2. Provide products listed and labeled as complying with UL 467 where applicable.
- B. Conductors for Grounding and Bonding, in Addition to Requirements of Section 26 0526:
 - 1. Use insulated copper conductors unless otherwise indicated.
 - a. Exceptions:
 - 1) Use bare copper conductors where installed underground in direct contact with earth.
 - 2) Use bare copper conductors where directly encased in concrete (not in raceway).
- C. Connectors for Grounding and Bonding:
 - 1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.

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GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

2. Unless otherwise indicated, use exothermic welded connections for underground, concealed and other inaccessible connections.
3. Unless otherwise indicated, use mechanical connectors, compression connectors, or exothermic welded connections for accessible connections.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Make grounding and bonding connections using specified connectors.
 1. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors. Do not remove conductor strands to facilitate insertion into connector.
 2. Remove nonconductive paint, enamel, or similar coating at threads, contact points, and contact surfaces.
 3. Exothermic Welds: Make connections using molds and weld material suitable for the items to be connected in accordance with manufacturer's recommendations.
 4. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
 5. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.
- D. Identify grounding and bonding system components in accordance with Section 26 0553.

END OF SECTION

HALDANE CENTRAL SCHOOL DISTRICT
MECHANICAL UPGRADES & RELATED WORK - PACKAGE NO. 2
HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

SECTION 26 0529

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Support and attachment requirements and components for equipment, conduit, cable, boxes, and other electrical work.

1.02 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- C. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2019.
- D. MFMA-4 - Metal Framing Standards Publication; 2004.
- E. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for channel (strut) framing systems, non-penetrating rooftop supports, and post-installed concrete and masonry anchors.

1.04 QUALITY ASSURANCE

- A. Comply with NFPA 70.
- B. Comply with applicable building code.

PART 2 PRODUCTS

2.01 SUPPORT AND ATTACHMENT COMPONENTS

- A. General Requirements:
 - 1. Provide all required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for the complete installation of electrical work.
 - 2. Provide products listed, classified, and labeled as suitable for the purpose intended, where applicable.
 - 3. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported. Include consideration for vibration, equipment operation, and shock loads where applicable.
 - 4. Do not use products for applications other than as permitted by NFPA 70 and product listing.
 - 5. Steel Components: Use corrosion resistant materials suitable for the environment where installed.
 - a. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
 - b. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.
- B. Conduit and Cable Supports: Straps, clamps, etc. suitable for the conduit or cable to be supported.
 - 1. Conduit Straps: One-hole or two-hole type; steel or malleable iron.
 - 2. Conduit Clamps: Bolted type unless otherwise indicated.
- C. Outlet Box Supports: Hangers, brackets, etc. suitable for the boxes to be supported.
- D. Metal Channel (Strut) Framing Systems: Factory-fabricated continuous-slot metal channel (strut) and associated fittings, accessories, and hardware required for field-assembly of supports.
 - 1. Comply with MFMA-4.

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HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

- E. Hanger Rods: Threaded zinc-plated steel unless otherwise indicated.
 - 1. Minimum Size, Unless Otherwise Indicated or Required:
 - a. Equipment Supports: 1/2 inch (13 mm) diameter.
- F. Anchors and Fasteners:
 - 1. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive support and attachment components.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
- D. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.
- E. Unless specifically indicated or approved by Architect, do not provide support from roof deck.
- F. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.
- G. Equipment Support and Attachment:
 - 1. Use metal fabricated supports or supports assembled from metal channel (strut) to support equipment as required.
 - 2. Use metal channel (strut) secured to studs to support equipment surface-mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
 - 3. Use metal channel (strut) to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
 - 4. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.
- H. Secure fasteners according to manufacturer's recommended torque settings.
- I. Remove temporary supports.

END OF SECTION

SECTION 26 0533.13
CONDUIT FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Galvanized steel rigid metal conduit (RMC).
- B. Intermediate metal conduit (IMC).
- C. Electrical metallic tubing (EMT).
- D. Conduit fittings.
- E. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 07 8400 - Firestopping.
- B. Section 26 0526 - Grounding and Bonding for Electrical Systems.
- C. Section 26 0529 - Hangers and Supports for Electrical Systems.

1.03 REFERENCE STANDARDS

- A. ANSI C80.1 - American National Standard for Electrical Rigid Steel Conduit (ERSC); 2015.
- B. ANSI C80.3 - American National Standard for Electrical Metallic Tubing -- Steel (EMT-S); 2015.
- C. ANSI C80.6 - American National Standard for Electrical Intermediate Metal Conduit (EIMC); 2018.
- D. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- E. NECA 101 - Standard for Installing Steel Conduits (Rigid, IMC, EMT); 2013.
- F. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2014.
- G. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- H. UL 6 - Electrical Rigid Metal Conduit-Steel; Current Edition, Including All Revisions.
- I. UL 514B - Conduit, Tubing, and Cable Fittings; Current Edition, Including All Revisions.
- J. UL 797 - Electrical Metallic Tubing-Steel; Current Edition, Including All Revisions.
- K. UL 1242 - Electrical Intermediate Metal Conduit-Steel; Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittals procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for conduits and fittings.

1.05 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

PART 2 PRODUCTS

2.01 CONDUIT APPLICATIONS

- A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70 and product listing.
- B. Unless otherwise indicated and where not otherwise restricted, use the conduit types indicated for the specified applications. Where more than one listed application applies, comply with the most restrictive requirements. Where conduit type for a particular application is not specified, use galvanized steel rigid metal conduit.
- C. Interior, Damp or Wet Locations: Use galvanized steel rigid metal conduit.

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CONDUIT FOR ELECTRICAL SYSTEMS

- D. Exposed, Interior, Not Subject to Physical Damage: Use galvanized steel rigid metal conduit, intermediate metal conduit (IMC), or electrical metallic tubing (EMT).
- E. Exposed, Interior, Subject to Physical Damage: Use galvanized steel rigid metal conduit or intermediate metal conduit (IMC).

2.02 CONDUIT REQUIREMENTS

- A. Existing Work: Where existing conduits are indicated to be reused, they may be reused only where they comply with specified requirements, are free from corrosion, and integrity is verified by pulling a mandrel through them.
- B. Provide all conduit, fittings, supports, and accessories required for a complete raceway system.
- C. Provide products listed, classified, and labeled as suitable for the purpose intended.
- D. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.03 GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

- A. Manufacturers:
 - 1. Allied Tube & Conduit, a division of Atkore International: www.alliedeg.com/#sle.
 - 2. Nucor Tubular Products: www.nucortubular.com/#sle.
 - 3. Western Tube, a division of Zekelman Industries: www.westerntube.com/#sle.
 - 4. Wheatland Tube, a division of Zekelman Industries: www.wheatland.com/#sle.
 - 5. or approved equal.
- B. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6.
- C. Fittings:
 - 1. Manufacturers:
 - a. Bridgeport Fittings Inc: www.bptfittings.com/#sle.
 - b. O-Z/Gedney, a brand of Emerson Electric Co: www.emerson.com/#sle.
 - c. Thomas & Betts Corporation: www.tnb.com/#sle.
 - d. or approved equal.
 - 2. Non-Hazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 - 3. Material: Use steel or malleable iron.
 - 4. Connectors and Couplings: Use threaded type fittings only. Threadless set screw and compression (gland) type fittings are not permitted.

2.04 INTERMEDIATE METAL CONDUIT (IMC)

- A. Manufacturers:
 - 1. Allied Tube & Conduit, a division of Atkore International: www.alliedeg.com/#sle.
 - 2. Nucor Tubular Products: www.nucortubular.com/#sle.
 - 3. Western Tube, a division of Zekelman Industries: www.westerntube.com/#sle.
 - 4. Wheatland Tube, a division of Zekelman Industries: www.wheatland.com/#sle.
 - 5. or approved equal.
- B. Description: NFPA 70, Type IMC galvanized steel intermediate metal conduit complying with ANSI C80.6 and listed and labeled as complying with UL 1242.
- C. Fittings:
 - 1. Manufacturers:
 - a. Bridgeport Fittings Inc: www.bptfittings.com/#sle.
 - b. O-Z/Gedney, a brand of Emerson Electric Co: www.emerson.com/#sle.
 - c. Thomas & Betts Corporation: www.tnb.com/#sle.
 - d. or approved equal.

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2. Non-Hazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
3. Material: Use steel or malleable iron.
4. Connectors and Couplings: Use threaded type fittings only. Threadless set screw and compression (gland) type fittings are not permitted.

2.05 ELECTRICAL METALLIC TUBING (EMT)

- A. Manufacturers:
 1. Allied Tube & Conduit, a division of Atkore International: www.alliedeg.com/#sle.
 2. Nucor Tubular Products: www.nucortubular/#sle.
 3. Western Tube, a division of Zekelman Industries: www.westerntube.com/#sle.
 4. Wheatland Tube, a division of Zekelman Industries: www.wheatland.com/#sle.
 5. or approved equal.
- B. Description: NFPA 70, Type EMT steel electrical metallic tubing complying with ANSI C80.3 and listed and labeled as complying with UL 797.
- C. Fittings:
 1. Manufacturers:
 - a. Bridgeport Fittings Inc: www.bptfittings.com/#sle.
 - b. O-Z/Gedney, a brand of Emerson Electric Co: www.emerson.com/#sle.
 - c. Thomas & Betts Corporation: www.tnb.com/#sle.
 - d. or approved equal.
 2. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 3. Material: Use steel or malleable iron.
 4. Connectors and Couplings: Use compression (gland) or set-screw type.
 - a. Do not use indenter type connectors and couplings.

2.06 ACCESSORIES

- A. Corrosion Protection Tape: PVC-based, minimum thickness of 20 mil (0.51 mm).
- B. Conduit Joint Compound: Corrosion-resistant, electrically conductive; suitable for use with the conduit to be installed.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive conduits.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Install galvanized steel rigid metal conduit (RMC) in accordance with NECA 101.
- D. Install intermediate metal conduit (IMC) in accordance with NECA 101.
- E. Conduit Support:
 1. Secure and support conduits in accordance with NFPA 70 and Section 26 0529 using suitable supports and methods approved by the authority having jurisdiction.
 2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
- F. Connections and Terminations:

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1. Use approved zinc-rich paint or conduit joint compound on field-cut threads of galvanized steel conduits prior to making connections.
 2. Where two threaded conduits must be joined and neither can be rotated, use three-piece couplings or split couplings. Do not use running threads.
 3. Use suitable adapters where required to transition from one type of conduit to another.
 4. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.
 5. Provide insulating bushings or insulated throats at all conduit terminations to protect conductors.
 6. Secure joints and connections to provide maximum mechanical strength and electrical continuity.
- G. Penetrations:
1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
 2. Make penetrations perpendicular to surfaces unless otherwise indicated.
 3. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
 4. Conceal bends for conduit risers emerging above ground.
 5. Seal interior of conduits entering the building from underground at first accessible point to prevent entry of moisture and gases.
 6. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
 7. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty. Include proposed locations of penetrations and methods for sealing with submittals.
 8. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.
- H. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected equipment. This includes, but is not limited to:
1. Where conduits cross structural joints intended for expansion, contraction, or deflection.
 2. Where conduits are subject to earth movement by settlement or frost.
- I. Condensation Prevention: Where conduits cross barriers between areas of potential substantial temperature differential, provide sealing fitting or approved sealing compound at an accessible point near the penetration to prevent condensation. This includes, but is not limited to:
1. Where conduits pass from outdoors into conditioned interior spaces.
 2. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.
- J. Provide grounding and bonding in accordance with Section 26 0526.

END OF SECTION

SECTION 26 0533.23
SURFACE RACEWAYS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Surface raceway systems.

1.2 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- B. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- C. UL 5 - Surface Metal Raceways and Fittings; Current Edition, Including All Revisions.

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the placement of raceways with existing millwork, furniture, equipment, etc. .
 - 2. Verify minimum sizes of raceways with the actual conductors and components to be installed.
 - 3. Notify Fuller and D'Angelo, P.C. of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
- B. Sequencing:
 - 1. Do not install raceways until final surface finishes and painting are complete.
 - 2. Do not begin installation of conductors and cables until installation of raceways is complete between outlet, junction and splicing points.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets including dimensions, knockout sizes and locations, materials, fabrication details, finishes, service condition requirements, and accessories.
 - 1. Surface Raceway Systems: Include information on fill capacities for conductors and cables.

1.5 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.1 RACEWAY REQUIREMENTS

- A. Provide all components, fittings, supports, and accessories required for a complete raceway system.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Do not use raceways for applications other than as permitted by NFPA 70 and product listing.

2.2 SURFACE RACEWAY SYSTEMS

- A. Surface Metal Raceways: Listed and labeled as complying with UL 5.
- B. Surface Raceway System:
 - 1. Raceway Type: Single channel, painted steel.
 - 2. Color: Ivory.
 - 3. Accessory Device Boxes: Suitable for the devices to be installed; color to match raceway.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field conditions are as indicated.

- B. Verify that mounting surfaces are ready to receive raceways and that final surface finishes are complete, including painting.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.2 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Install raceways plumb and level.
- D. Install all raceways tight to existing surfaces. Modify existing surfaces and any projections to allow surface raceways to be mounted tight to existing surfaces.
- E. Secure and support raceways in accordance with Section 26 0529 at intervals complying with NFPA 70 and manufacturer's requirements.
- F. Close unused raceway openings.

3.3 FIELD QUALITY CONTROL

- A. Inspect raceways for damage and defects.
- B. Correct wiring deficiencies and replace damaged or defective raceways.

3.4 CLEANING

- A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

END OF SECTION

SECTION 26 0583
WIRING CONNECTIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electrical connections to equipment.

1.02 REFERENCE STANDARDS

- A. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide wiring device manufacturer's catalog information showing dimensions, configurations, and construction.

1.04 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

PART 2 PRODUCTS

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that equipment is ready for electrical connection, wiring, and energization.

3.02 ELECTRICAL CONNECTIONS

- A. Make electrical connections in accordance with equipment manufacturer's instructions.
- B. Make conduit connections to equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors in damp or wet locations.
- C. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.
- D. Provide receptacle outlet to accommodate connection with attachment plug.
- E. Provide cord and cap where field-supplied attachment plug is required.
- F. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.
- G. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.
- H. Install terminal block jumpers to complete equipment wiring requirements.
- I. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.

END OF SECTION

SECTION 26 2416
PANELBOARDS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Power distribution panelboards.
- B. Overcurrent protective devices for panelboards.

1.02 RELATED REQUIREMENTS

- A. Section 26 0526 - Grounding and Bonding for Electrical Systems.
- B. Section 26 0529 - Hangers and Supports for Electrical Systems.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- B. NECA 407 - Standard for Installing and Maintaining Panelboards; 2015.
- C. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2018.
- D. NEMA PB 1 - Panelboards; 2011.
- E. NEMA PB 1.1 - General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less; 2013.
- F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- G. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.
- H. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.
- I. UL 67 - Panelboards; Current Edition, Including All Revisions.
- J. UL 489 - Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures; Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for panelboards, enclosures, overcurrent protective devices, and other installed components and accessories.
- C. Shop Drawings: Indicate outline and support point dimensions, voltage, main bus ampacity, overcurrent protective device arrangement and sizes, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and accessories.

1.05 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. ABB/GE: www.geindustrial.com/#sle.
- B. Eaton Corporation: www.eaton.com/#sle.
- C. Schneider Electric; Square D Products: www.schneider-electric.us/#sle.
- D. Siemens Industry, Inc: www.usa.siemens.com/#sle.
- E. or approved equal.

2.02 PANELBOARDS - GENERAL REQUIREMENTS

- A. Provide products listed, classified, and labeled as suitable for the purpose intended.
- B. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
 - 1. Altitude: Less than 6,600 feet (2,000 m).
 - 2. Ambient Temperature:
 - a. Panelboards Containing Circuit Breakers: Between 23 degrees F (-5 degrees C) and 104 degrees F (40 degrees C).
- C. Short Circuit Current Rating:
- D. Mains: Configure for top or bottom incoming feed as indicated or as required for the installation.
- E. Branch Overcurrent Protective Devices: Replaceable without disturbing adjacent devices.
- F. Bussing: Sized in accordance with UL 67 temperature rise requirements.
 - 1. Provide solidly bonded equipment ground bus in each panelboard, with a suitable lug for each feeder and branch circuit equipment grounding conductor.
- G. Conductor Terminations: Suitable for use with the conductors to be installed.
- H. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
 - 1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
 - a. Indoor Clean, Dry Locations: Type 1.
 - 2. Boxes: Galvanized steel unless otherwise indicated.
 - a. Provide wiring gutters sized to accommodate the conductors to be installed.
 - 3. Fronts:
 - a. Fronts for Surface-Mounted Enclosures: Same dimensions as boxes.
 - 4. Lockable Doors: All locks keyed alike unless otherwise indicated.
- I. Future Provisions: Prepare all unused spaces for future installation of devices including bussing, connectors, mounting hardware and all other required provisions.

2.03 POWER DISTRIBUTION PANELBOARDS

- A. Description: Panelboards complying with NEMA PB 1, power and feeder distribution type, circuit breaker type, and listed and labeled as complying with UL 67; ratings, configurations and features as indicated on the drawings.
- B. Conductor Terminations:
 - 1. Main and Neutral Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
 - 2. Main and Neutral Lug Type: Mechanical.
- C. Bussing:
 - 1. Phase and Neutral Bus Material: Aluminum.
 - 2. Ground Bus Material: Aluminum.
- D. Circuit Breakers:
 - 1. Provide bolt-on type or plug-in type secured with locking mechanical restraints.
- E. Enclosures:
 - 1. Provide surface-mounted enclosures unless otherwise indicated.

2.04 OVERCURRENT PROTECTIVE DEVICES

- A. Molded Case Circuit Breakers:
 - 1. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.
 - 2. Interrupting Capacity:

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- a. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated, but not less than:
- b. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.
- 3. Conductor Terminations:
 - a. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
- 4. Multi-Pole Circuit Breakers: Furnish with common trip for all poles.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that the ratings and configurations of the panelboards and associated components are consistent with the indicated requirements.
- C. Verify that mounting surfaces are ready to receive panelboards.
- D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Perform work in accordance with NECA 1 (general workmanship).
- B. Install products in accordance with manufacturer's instructions.
- C. Install panelboards in accordance with NECA 407 and NEMA PB 1.1.
- D. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- E. Provide required support and attachment in accordance with Section 26 0529.
- F. Install panelboards plumb.
- G. Mount panelboards such that the highest position of any operating handle for circuit breakers or switches does not exceed 79 inches (2000 mm) above the floor or working platform.
- H. Provide grounding and bonding in accordance with Section 26 0526.
- I. Install all field-installed branch devices, components, and accessories.
- J. Provide filler plates to cover unused spaces in panelboards.

END OF SECTION

SECTION 26 2816.13
ENCLOSED CIRCUIT BREAKERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Enclosed circuit breakers.

1.02 RELATED REQUIREMENTS

- A. Section 26 0526 - Grounding and Bonding for Electrical Systems.
- B. Section 26 0529 - Hangers and Supports for Electrical Systems.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- B. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2018.
- C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- D. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.
- E. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.
- F. UL 489 - Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures; Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for circuit breakers, enclosures, and other installed components and accessories.

1.05 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. ABB/GE: www.geindustrial.com/#sle.
- B. Eaton Corporation: www.eaton.com/#sle.
- C. Schneider Electric; Square D Products: www.schneider-electric.us/#sle.
- D. Siemens Industry, Inc: www.usa.siemens.com/#sle.
- E. or approved equal.

2.02 ENCLOSED CIRCUIT BREAKERS

- A. Description: Units consisting of molded case circuit breakers individually mounted in enclosures.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
 - 1. Altitude: Less than 6,600 feet (2,000 m).
 - 2. Ambient Temperature: Between 23 degrees F (-5 degrees C) and 104 degrees F (40 degrees C).
- D. Short Circuit Current Rating:
 - 1. Provide enclosed circuit breakers with listed short circuit current rating not less than the available fault current at the installed location indicated on the drawings.
- E. Conductor Terminations: Suitable for use with the conductors to be installed.

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ENCLOSED CIRCUIT BREAKERS

- F. Provide solidly bonded equipment ground bus in each enclosed circuit breaker, with a suitable lug for terminating each equipment grounding conductor.
- G. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
 - 1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
 - a. Indoor Clean, Dry Locations: Type 1.
- H. Provide externally operable handle with means for locking in the OFF position.

2.03 MOLDED CASE CIRCUIT BREAKERS

- A. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.
- B. Interrupting Capacity:
 - 1. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated, but not less than:
 - 2. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.
- C. Conductor Terminations:
 - 1. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
- D. Multi-Pole Circuit Breakers: Furnish with common trip for all poles.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that the ratings of the enclosed circuit breakers are consistent with the indicated requirements.
- C. Verify that mounting surfaces are ready to receive enclosed circuit breakers.
- D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- D. Provide required support and attachment in accordance with Section 26 0529.
- E. Install enclosed circuit breakers plumb.
- F. Except where indicated to be mounted adjacent to the equipment they supply, mount enclosed circuit breakers such that the highest position of the operating handle does not exceed 79 inches (2000 mm) above the floor or working platform.
- G. Provide grounding and bonding in accordance with Section 26 0526.

END OF SECTION

SECTION 26 5100
INTERIOR LIGHTING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Interior luminaires.
- B. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 26 0529 - Hangers and Supports for Electrical Systems.
- B. Section 26 0533.16 - Boxes for Electrical Systems.

1.03 REFERENCE STANDARDS

- A. IES LM-79 - Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products; 2008.
- B. IES LM-80 - Approved Method: Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays, and Modules; 2015, with Errata (2017).
- C. NECA/IESNA 500 - Standard for Installing Indoor Commercial Lighting Systems; 2006.
- D. NECA/IESNA 502 - Standard for Installing Industrial Lighting Systems; 2006.
- E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- F. UL 1598 - Luminaires; Current Edition, Including All Revisions.
- G. UL 8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products; Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings:
 - 1. Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.

1.05 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

PART 2 PRODUCTS

2.01 LUMINAIRE TYPES

- A. Furnish products as indicated in luminaire schedule included on the drawings.

2.02 LUMINAIRES

- A. Manufacturers:
 - 1. Acuity Brands, Inc: www.acuitybrands.com/#sle.
 - 2. Alloy LED; www.alloyled.com/#sle.
 - 3. Cooper Lighting, a division of Cooper Industries: www.cooperindustries.com/#sle.
 - 4. Hubbell Lighting, Inc: www.hubbelllighting.com/#sle.
 - 5. or approved equal.
- B. Provide products that comply with requirements of NFPA 70.
- C. Provide products that are listed and labeled as complying with UL 1598, where applicable.
- D. Provide products listed, classified, and labeled as suitable for the purpose intended.

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- E. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.
- F. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, supports, trims, accessories, etc. as necessary for a complete operating system.
- G. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.
- H. LED Luminaires:
 - 1. Components: UL 8750 recognized or listed as applicable.
 - 2. Tested in accordance with IES LM-79 and IES LM-80.
 - 3. LED Estimated Useful Life: Minimum of 50,000 hours at 70 percent lumen maintenance, calculated based on IES LM-80 test data.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Coordinate locations of outlet boxes provided under Section 26 0533.16 as required for installation of luminaires provided under this section.
- B. Install products in accordance with manufacturer's instructions.
- C. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 500 (commercial lighting) and NECA 502 (industrial lighting).
- D. Provide required support and attachment in accordance with Section 26 0529.
- E. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
- F. Install accessories furnished with each luminaire.
- G. Bond products and metal accessories to branch circuit equipment grounding conductor.
- H. Install lamps in each luminaire.

END OF SECTION

**SECTION 28 1000
ACCESS CONTROL**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Access control point peripherals, including readers and door contacts.

1.2 RELATED REQUIREMENTS

- A. Section 07 8400 - Firestopping.
- B. Section 27 1000 - Structured Cabling: Data cables for access control system IP network connections.

1.3 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- B. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the work with existing components to provide suitable door hardware as required for both access control functionality and code compliance.
 - 2. Coordinate the placement of readers and door contacts with existing conditions and materials.
 - 3. Notify Fuller and D'Angelo, P.C. of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
- B. Preinstallation Meetings:
 - 1. Conduct meeting with facility representative to review reader and equipment locations.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for each system component. Include ratings, configurations, standard wiring diagrams, dimensions, finishes, service condition requirements, and installed features.

1.6 QUALITY ASSURANCE

- A. Comply with the following:
 - 1. NFPA 70.
 - 2. The requirements of the local authorities having jurisdiction.
 - 3. Applicable TIA/EIA standards.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.
- B. Store products in manufacturer's unopened packaging, keep dry and protect from damage until ready for installation.

1.8 FIELD CONDITIONS

- A. Verify field conditions of existing materials and doors.
- B. Verify compatibility of components with existing access control system.

PART 2 PRODUCTS

2.1 ACCESS CONTROL SYSTEM REQUIREMENTS

- A. Provide modifications and extensions to existing access control system consisting of required equipment, conduit, boxes, wiring, connectors, hardware, supports, accessories, software, system programming, etc. as necessary for a complete operating system that provides the functional intent indicated.
- B. Access Control Points:

- C. Interface with Other Systems:
 - 1. Provide products compatible with existing systems requiring interface with access control system.
- D. Provide products listed, classified, and labeled as suitable for the purpose intended.
 - 1. Access Control Units and Readers: Listed and labeled as complying with UL 294.

2.2 ACCESS CONTROL UNITS AND SOFTWARE

- A. Connect new peripheral devices to existing software and control system.
- B. Unless otherwise indicated, provide software and licenses required for fully operational system.

2.3 ACCESS CONTROL POINT PERIPHERALS

- A. Provide devices compatible with control units and software.
- B. Provide devices suitable for operation under the service conditions at the installed location.
- C. Readers :
 - 1. General Requirements:
 - a. Provide readers compatible with credentials to be used.
 - b. Color: To be selected by Architect from manufacturer's available standard colors.
- D. Proximity Readers:
 - 1. Proximity Reader Type T11 as manufactured by Gallagher Security, Inc.:
- E. Door Position Switches:
 - 1. Magnetic Contacts: Encapsulated reed switch(es) and separate magnet; designed to monitor opened/closed position of doors.
- F. Door Locking Devices (Electric Strikes): Comply with Section 08 7100.

2.4 ACCESSORIES

- A. Provide components as indicated or as required for connection of access control system to devices and other systems indicated.
- B. Provide cables as indicated or as required for connections between system components.
- C. Provide accessory racks/cabinets as indicated or as required for equipment mounting.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive system components.
- C. Verify that branch circuit wiring installation is completed, tested, and ready for connection to system.
- D. Verify that conditions are satisfactory for installation prior to starting work.

3.2 INSTALLATION

- A. Install access control system in accordance with NECA 1 (general workmanship).
- B. Install products in accordance with manufacturer's instructions.
- C. Wiring Method: Unless otherwise indicated, use cables (not in conduit).
 - 1. Use listed plenum rated cables in spaces used for environmental air.
 - 2. Conceal cables unless specifically indicated to be exposed.
 - 3. Provide surface mounted raceway for any cable runs that could no be concealed in walls or above suspended ceilings.

3.3 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Prepare and start system in accordance with manufacturer's instructions.
- C. Program system parameters according to requirements of Haldane Central School District.

- D. Test for proper interface with other systems.

3.4 CLEANING

- A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

3.5 CLOSEOUT ACTIVITIES

- A. Demonstration: Demonstrate proper operation of system to Haldane Central School District, and correct deficiencies or make adjustments as directed.
- B. Training: Train Haldane Central School District's personnel on operation, adjustment, and maintenance of system.
 - 1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.

END OF SECTION

SECTION 28 2000
VIDEO SURVEILLANCE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Cameras.
- B. Accessories.

1.2 RELATED REQUIREMENTS

- A. Section 07 8400 - Firestopping.
- B. Section 27 1000 - Structured Cabling: Data cables for IP video surveillance system network connections.

1.3 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- B. NECA 303 - Standard for Installing Closed-Circuit Television (CCTV) Systems; 2005.
- C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the placement of cameras with structural members, ductwork, piping, equipment, luminaires, diffusers, fire suppression system components, and other potential conflicts installed under other sections or by others.
 - 2. Notify Fuller and D'Angelo, P.C. of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Include plan views indicating locations of system components and proposed size, type, and routing of conduits and/or cables. Include elevations and details of proposed equipment arrangements. Include system interconnection schematic diagrams. Include requirements for interface with other systems.
- C. Product Data: Provide manufacturer's standard catalog pages and data sheets for each system component. Include ratings, configurations, standard wiring diagrams, dimensions, finishes, service condition requirements, and installed features.
- D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and operation of product.

1.6 QUALITY ASSURANCE

- A. Comply with the following:
 - 1. NFPA 70.
 - 2. Applicable TIA/EIA standards.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions and NECA 303.
- B. Store products in manufacturer's unopened packaging, keep dry and protect from damage until ready for installation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Cameras:

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1. Axis Communications.
- B. Source Limitations: Where possible, furnish system components and accessories produced by a single manufacturer and obtained from a single supplier.

2.2 VIDEO SURVEILLANCE SYSTEM

- A. System Description: Existing IP system with connection to network (IP) cameras.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.

2.3 CAMERAS

- A. Provide cameras and associated accessories suitable for operation under the service conditions at the installed location. Provide additional components (e.g. enclosures, heaters, blowers, etc.) as required.
- B. Where not factory-installed, provide additional components (e.g. lenses, mounting accessories, etc.) as necessary for complete installation.
- C. Network (IP) Cameras:
 1. Signal-to-Noise Ratio: Not less than 50 dB.
 2. Provide the following standard features:
 - a. Automatic electronic shutter.
 - b. Automatic gain control.
 - c. Automatic white balance.
 - d. Web-based interface for remote viewing and setup.
 - e. Password protected security access.
 3. Network (IP) Fixed Dome Camera - Basis of Design: Axis Communications P32 Series; Model P3225-LV Mk II (IR illumination, Vandal-resistant); www.axis.com/#sle.
 - a. Maximum Video Resolution: 1920 x 1080.
 - b. Maximum Frame Rate: 50/60 fps at 50/60 Hz.
 - c. Image Sensor Size: 1/3 inch.
 - d. Minimum Illumination/Light Sensitivity (Color): 0.16 lux.
 - e. Lens: 3-10.5 mm, F1.4; horizontal field of view of 92-34 degrees; varifocal, P-Iris, remote focus and zoom.
 - f. Features: Zipstream, forensic capture wide dynamic range, Lightfinder, local storage, Power over Ethernet (PoE), day and night functionality, built-in IR illumination, image rotation (0, 90, 180, or 270 degrees), IP52/IK08 casing.
- D. Camera Enclosures and Mounting Brackets:
 1. Where not factory-installed, provide accessory camera enclosures suitable for operation under the service conditions at the installed location.
 2. Where not factory-installed, provide accessory camera mounting brackets necessary for installation.

2.4 ACCESSORIES

- A. Provide components as indicated or as required for connection of video surveillance system to devices and other systems indicated.
- B. Provide cables as indicated or as required for connections between system components.
 1. Data Cables for IP Network Connections: Unshielded twisted pair (UTP), minimum Category 5e, complying with Section 27 1000.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that ratings and configurations of system components are consistent with the indicated requirements.
- C. Verify that mounting surfaces are ready to receive system components.

3.2 INSTALLATION

- A. Install video surveillance cameras and wiring in accordance with NECA 1 (general workmanship) and NECA 303.
- B. Install products in accordance with manufacturer's instructions.
- C. Provide required support and attachment as required by existing construction and manufacturer's requirements.
- D. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.

3.3 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Prepare and start system in accordance with manufacturer's instructions.
- C. Adjust cameras to provide desired field of view and produce suitable images under all service lighting conditions.

3.4 CLEANING

- A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

3.5 CLOSEOUT ACTIVITIES

- A. Demonstration: Demonstrate proper operation of system to Haldane Central School District, and correct deficiencies or make adjustments as directed.
- B. Training: Train Haldane Central School District's personnel on operation, adjustment, and maintenance of system.
 - 1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.

END OF SECTION

SECTION 28 4600
FIRE DETECTION AND ALARM

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Replacement and removal of indicated existing fire alarm system components, wiring, and conduits.

1.02 RELATED REQUIREMENTS

- A. Section 23 3300 - Air Duct Accessories: Smoke dampers monitored and controlled by fire alarm system.

1.03 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. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- D. NFPA 72 - National Fire Alarm and Signaling Code; Most Recent Edition Cited by Referring Code or Reference Standard.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Proposal Documents: Submit the following with cost/time proposal:
 - 1. NFPA 72 "Record of Completion", filled out to the extent known at the time.
 - 2. Manufacturer's detailed data sheet for each control unit, initiating device, and notification appliance.
 - 3. Certification by Contractor that the system design will comply with Contract Documents.
 - 4. Proposed maintenance contract.
- C. Evidence of designer qualifications.
- D. Design Documents: Submit all information required for plan review and permitting by authorities having jurisdiction, including but not limited to floor plans, riser diagrams, and description of operation:
 - 1. Copy (if any) of list of data required by authority having jurisdiction.
 - 2. NFPA 72 "Record of Completion", filled out to the extent known at the time.
 - 3. Clear and concise description of operation, with input/output matrix similar to that shown in NFPA 72 Appendix A-7-5-2.2(9), and complete listing of software required.
 - 4. System zone boundaries and interfaces to fire safety systems.
 - 5. Location of all components, circuits, and raceways; mark components with identifiers used in control unit programming.
 - 6. Circuit layouts; number, size, and type of raceways and conductors; conduit fill calculations; spare capacity calculations; notification appliance circuit voltage drop calculations.
 - 7. List of all devices on each signaling line circuit, with spare capacity indicated.
 - 8. Manufacturer's detailed data sheet for each component, including wiring diagrams, installation instructions, and circuit length limitations.
 - 9. Description of power supplies; if secondary power is by battery include calculations demonstrating adequate battery power.
 - 10. Certification by either the manufacturer of the control unit or by the manufacturer of each other component that the components are compatible with the control unit.
 - 11. Certification by the manufacturer of the control unit that the system design complies with Contract Documents.
 - 12. Certification by Contractor that the system design complies with Contract Documents.
 - 13. Do not show existing components to be removed.
- E. Evidence of installer qualifications.

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- F. Inspection and Test Reports:
 - 1. Submit inspection and test plan prior to closeout demonstration.
 - 2. Submit documentation of satisfactory inspections and tests.
 - 3. Submit NFPA 72 "Inspection and Test Form," filled out.
- G. Operating and Maintenance Data: See Section 01 7800 for additional requirements; revise and resubmit until acceptable; have one set available during closeout demonstration:
 - 1. Complete set of specified design documents, as approved by authority having jurisdiction.
 - 2. Additional printed set of project record documents and closeout documents, bound or filed in same manuals.
 - 3. Contact information for firm that will be providing contract maintenance and trouble call-back service.
 - 4. List of recommended spare parts, tools, and instruments for testing.
 - 5. Replacement parts list with current prices, and source of supply.
 - 6. Detailed troubleshooting guide and large scale input/output matrix.
 - 7. Preventive maintenance, inspection, and testing schedule complying with NFPA 72; provide printed copy and computer format acceptable to Owner.
 - 8. Detailed but easy to read explanation of procedures to be taken by non-technical administrative personnel in the event of system trouble, when routine testing is being conducted, for fire drills, and when entering into contracts for remodeling.
- H. Project Record Documents: See Section 01 7800 for additional requirements; have one set available during closeout demonstration:
 - 1. Complete set of floor plans showing actual installed locations of components, conduit, and zones.
 - 2. "As installed" wiring and schematic diagrams, with final terminal identifications.
 - 3. "As programmed" operating sequences, including control events by device, updated input/output chart, and voice messages by event.
- I. Closeout Documents:
 - 1. Certification by manufacturer that the system has been installed in compliance with manufacturer's installation requirements, is complete, and is in satisfactory operating condition.
 - 2. NFPA 72 "Record of Completion", filled out completely and signed by installer and authorized representative of authority having jurisdiction.

1.05 QUALITY ASSURANCE

- A. Designer Qualifications: NICET Level III or IV (3 or 4) certified fire alarm technician or registered fire protection engineer, employed by fire alarm control panel manufacturer, Contractor, or installer, with experience designing fire alarm systems in the jurisdictional area of the authorities having jurisdiction.
- B. Installer Qualifications: Firm with minimum 3 years documented experience installing fire alarm systems of the specified type and providing contract maintenance service as a regular part of their business.
 - 1. Authorized representative of control unit manufacturer; submit manufacturer's certification that installer is authorized; include name and title of manufacturer's representative making certification.
 - 2. Installer Personnel: At least 2 years of experience installing fire alarm systems.
 - 3. Supervisor: NICET level III or IV (3 or 4) certified fire alarm technician; furnish name and address.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Initiating Devices and Notification Appliances:
 - 1. Honeywell Security & Fire Solutions/Notifier: www.notifier.com/#sle.
 - 2. Same manufacturer as control units.
 - 3. Provide initiating devices and notification appliances made by the same manufacturer, where possible.

2.02 FIRE ALARM SYSTEM

- A. Fire Alarm System: Provide modifications and extensions to the existing automatic fire detection and alarm system:
 - 1. Provide all components necessary, regardless of whether shown in Contract Documents or not.
 - 2. Comply with the following; where requirements conflict, order of precedence of requirements is as listed:
 - a. ADA Standards.
 - b. The requirements of the State Fire Marshal.
 - c. Applicable local codes.
 - d. Contract Documents (drawings and specifications).
 - e. NFPA 72; where the word "should" is used consider that provision mandatory; where conflicts between requirements require deviation from NFPA 72, identify deviations clearly on design documents.

2.03 EXISTING COMPONENTS

- A. Existing Fire Alarm System: Remove existing components indicated and incorporate remaining components into newly modified system. Provide warranty for this system. Do not take existing portions of system out of service until new portions are fully operational, tested, and connected to existing system.
- B. Clearly label components that are "Not In Service."
- C. Remove unused existing components and materials from site and dispose of properly.

2.04 FIRE SAFETY SYSTEMS INTERFACES

- A. Supervision: Provide supervisory signals in accordance with NFPA 72
- B. Alarm: Provide alarm initiation in accordance with NFPA 72
 - 1. Duct smoke detectors.
- C. HVAC:
 - 1. Duct Smoke Detectors: Close dampers indicated; shut down air handlers indicated.

2.05 COMPONENTS

- A. General:
 - 1. Provide flush mounted units where installed in finished areas; in unfinished areas, surface mounted units are acceptable.
- B. Initiating Devices:
 - 1. Addressable Systems:
 - a. Addressable Devices: Individually identifiable by addressable fire alarm control unit.
 - b. Provide suitable addressable interface modules as indicated or as required for connection to conventional (non-addressable) devices and other components that provide a dry closure output.
 - 2. Smoke Detectors: _____.
 - 3. Duct Smoke Detectors: _____.
- C. Circuit Conductors: Copper or optical fiber; provide 200 feet (60 m) extra; color code and label.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with applicable codes, NFPA 72, NFPA 70, and Contract Documents.
- B. Conceal all wiring, conduit, boxes, and supports where installed in finished areas.
- C. Obtain Owner's approval of locations of devices, before installation.
- D. Install instruction cards and labels.

3.02 INSPECTION AND TESTING FOR COMPLETION

- A. Notify Owner 7 days prior to beginning completion inspections and tests.

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- B. Notify authorities having jurisdiction and comply with their requirements for scheduling inspections and tests and for observation by their personnel.
- C. Provide the services of the installer's supervisor or person with equivalent qualifications to supervise inspection and testing, correction, and adjustments.
- D. Prepare for testing by ensuring that all work is complete and correct; perform preliminary tests as required.
- E. Provide all tools, software, and supplies required to accomplish inspection and testing.
- F. Perform inspection and testing in accordance with NFPA 72 and requirements of local authorities; document each inspection and test.
- G. Correct defective work, adjust for proper operation, and retest until entire system complies with Contract Documents.

3.03 CLOSEOUT

- A. Closeout Demonstration: Demonstrate proper operation of all functions to Owner.
 - 1. Be prepared to conduct any of the required tests.
 - 2. Have at least one copy of operation and maintenance data, preliminary copy of project record drawings, input/output matrix, and operator instruction chart(s) available during demonstration.
 - 3. Have authorized technical representative of control unit manufacturer present during demonstration.
 - 4. Demonstration may be combined with inspection and testing required by authority having jurisdiction; notify authority having jurisdiction in time to schedule demonstration.
 - 5. Repeat demonstration until successful.

END OF SECTION

**SECTION 31 2316
EXCAVATION**

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. Excavating, trenching, and backfilling for footings, foundations, utilities within the building, slabs-on-grade, patio, and site utilities.
- B. Dewatering.
- C. Trenching of utilities outside the building to utility main connections.
- D. Temporary excavation support and protection systems.
- E. Drainage course for slabs on grade and footings
- F. Select fill.
- G. Subsurface drainage and backfill for walls, trenches, and under slab
- H. Final grading

1.3 RELATED REQUIREMENTS

- A. Section 01 5713 - Temporary Erosion and Sediment Control: Slope protection and erosion control.
- B. Section 02 4100 - Demolition: Shoring and underpinning existing structures.
- C. Section 03 3000 - Cast-in-Place Concrete.
- D. Section 31 1000 - Site Preparation and Clearing: Vegetation and existing debris removal.
- E. Section 32 1313 - Waterproof Concrete Paving.

1.4 REFERENCE STANDARDS

- A. All references apply to the latest revisions of the publications.
- B. ASTM D422: Particle Size Analysis of Soils
- C. ASTM D1556: Density and Unit Weight of Soil in Place by the Sand-Cone Method
- D. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.

1.5 MATERIAL EVALUATION/QUALITY CONTROL

- A. Subsurface Data.
 - 1. The results of available subsurface investigations are appended to these Specifications. The data is shown for general information only. No warranty, either expressed or implied, is made as to the accuracy of the subsurface information presented.

1.6 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Project Record Documents: Record drawings at project closeout according to Section 01 7800 - Closeout Submittals. Show locations of installed support materials left in place, including referenced locations and depths, on drawings.
- C. Field Quality Control Submittals: Document visual inspection of load-bearing excavated surfaces.
- D. Product Data: For the following:
 - 1. Sieve Analysis, Proctor Compaction Test and Certification of Specification Compliance for each fill materials at least 15 days before start of backfilling.
 - 2. Contractor shall submit copies of proposed materials with locations, methods and operations of backfilling and compaction.

- E. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:
 - 1. Classification according to ASTM D 2487 of each on-site or borrow soil material proposed for fill and backfill.
 - 2. Laboratory compaction curves according to ASTM D 2487 for each on-site or borrow soil material proposed for fill and backfill.
 - 3. Environmental testing results according to NYSDEC Part 375-6 and NYSDEC Policy Document CP-51 for all off-site imported fill/topsoil material proposed for fill or backfill. Provide results to be reviewed and approved by Owner's Representative for all analyses corresponding to the full list of Volatiles, Semi-volatiles, TAL metals, Pesticides/Herbicides, and PCB's. Results will be compared to Part 375-6.8 Unrestricted Use Soil Cleanup Objectives (SCO's). One composite sample analysis required per 1,000 cubic yards of imported fill.
 - 4. Submit the name of each supplier and specific type and source of each material. Any change in source throughout the job requires approval of the Owner's Representative.
 - 5. Submit soil test reports for organic content of loam from off-site sources. Loam shall closely match the approved samples and not be delivered to the site prior to receiving approval of the soil test report.
- F. Pre excavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by earthwork operations. Submit before earthwork begins.

1.7 QUALITY ASSURANCE

- A. Comply with: New York State Department of Transportation (NYSDOT) "Standard Specifications for Construction and Materials". Notify Owner's Representative of conflicts with these specifications.
- B. Temporary Support and Excavation Protection Plan:
 - 1. Indicate sheeting, shoring, and bracing materials and installation required to protect excavations and adjacent structures and property.
- C. Designer Qualifications: For design of temporary shoring and bracing, employ a Professional Engineer experienced in design of this type of work and licensed in New York.

1.8 DEFINITIONS

- A. Excavation: Material excavated and subsequent disposal of materials removed.
- B. Unauthorized Excavation: Removal of materials beyond indicated subgrade elevations or dimensions without specific direction of Owner's Representative. Unauthorized excavation and remedial work directed by Owner's Representative shall be at Contractor's expense.
 - 1. Under footings, foundations, bases, fill unauthorized excavation by extending indicated bottom elevation of footing or base to excavation bottom without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position when acceptable to Owner's Representative.
- C. Authorized Additional Excavation: If the Owner's Representative determines bearing materials at required subgrade elevations are unsuitable, continue excavation until suitable bearing materials are encountered. Replace excavated material as directed by Owner's Representative.
- D. Excavation classified as "earth excavation" and includes excavation to subgrade elevations indicated, regardless of character of materials and obstructions encountered, pavements and other obstructions visible on ground surface, underground structures, utilities and other items indicated to be demolished and removed, together with earth and other materials, excluding rock.
- E. Rock: Rock material in beds, ledges, un-stratified masses, conglomerate deposits, and boulders of rock material that exceed 1 cu. yd. footing that cannot be removed by rock excavating equipment equivalent to the following in size and performance ratings, without systematic drilling, ram hammering, ripping, or blasting, when permitted.
- F. Backfill: Soil material or controlled low-strength material used to fill an excavation.

- G. Fill: Soil materials used to raise existing grades.
- H. Drainage Fill: Layer supporting slab-on-grade, concrete pavement, and footings used to minimize capillary flow of pore water.
- I. Select Fill: Soil material to raise existing grades supporting slab-on-grade and concrete pavement.

1.9 PROJECT CONDITIONS

- A. Verify existing grades and notify Architect of differing conditions.
- B. Existing Utilities: Locate existing underground utilities in work area before starting earthwork operations.
 - 1. If uncharted or incorrectly charted piping or other utilities are encountered during excavation, consult with utility Owner immediately for directions. Cooperate with Owner's Representative and public and private utility companies to keep services and facilities in operation. Repair damaged utilities as required by utility owner.

1.10 PROTECTION

- A. Paved surfaces:
 - 1. Do not operate equipment that will cause damage on paved surfaces that are to remain. Any damage to existing roads or other paved surfaces caused by construction equipment shall be repaired at no additional cost to Owner.

1.11 PRODUCT HANDLING

- A. Store materials to preserve their quality and fitness for work.

1.12 WORKMANSHIP

Contractor shall be responsible for correction of work not conforming to specified requirements. Correct deficient work as directed by Owner's Representative.

- A. Remove work found to be defective. Replace with new acceptable work.

PART 2 PRODUCTS -

2.1 CLASSIFIED EXCAVATION

- A. Excavation for this project shall be ""classified" as earth".
 - 1. Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
- B. **Do not remove rock until quantities have been verified by the Owner's Representative.**

2.2 SOIL MATERIALS

- A. Excavations General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: ASTM D 2487 soil classification groups GW, SW, SP, and SM, or a combination of these group symbols; free of rock or gravel larger than 2 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Unsatisfactory Soils: ASTM D 2487 soil classification groups GC, SC, ML, MH, CL, CH, OL, and PT or a combination of these group symbols.
- D. General Fill Material: Soil materials free of clay, rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- E. Select Fill: Sound and durable, well-graded sand and gravel, free of deleterious materials such as pyritic shale, organics, or contaminants of a chemical, mineral, or biological nature and conforming to New York State Department of Transportation, paragraph 304-2.02, Type 2 and the following limits of gradation:

100%	passing a 2" sieve.
30-90%	passing a #10 sieve.
10-70%	passing a #40 sieve.

passing a #200 sieve

- F. Drainage Fill: ASTM C-33 Blend 57, a blend of NYSDOT No. 1 and No. 2 crushed stone that complies with material specification requirements of Article 703-02 for crushed stone and the following limits of gradation:

% Passing By Weight	Sieve Size
100%	1" sieve.
40-50%	3/4"
25-60%	passing a 1/2" sieve.
10-30%	passing a 3/8" sieve
0-10%	passing a # 4 sieve.
0-5%	passing a # 8 sieve

1. Location: Under slabs on grade, sidewalks, and footings.

100%	passing a 1" sieve.
30-100%	passing a 1/2" sieve.
0-30%	passing a 1/4" sieve
0-10%	passing a #10 sieve.
0-5%	passing a #20 sieve.

- I. Slag of any kind shall no be permitted.

PART 3 EXECUTION

3.1 PREPARATION

- F. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to drains and walkways.

3.2 TEMPORARY EXCAVATION SUPPORT AND PROTECTION

- A. Excavation Safety: Comply with OSHA's Excavation Standard, 29 CFR 1926, Subpart P.

3.3 DEWATERING

- B. The Contractor shall provide, maintain and operate pumps of adequate capacity required to maintain excavations, pits, trenches and depressions within the Contract Limit Lines as well as the Buildings free of water accumulated at any time and as necessary to permit the proper installation of the work required under all contracts. Disposal of pumped water shall be done with due respect to the rights of adjoining buildings. All costs in connection with the removal of water as above provided for shall be borne by the Contractor.

3.4 EXCAVATING GENERAL

- A. Underpin adjacent structures that could be damaged by excavating work.
- B. Excavate to accommodate construction operations.
 - 1. Excavate to the specified elevations.
 - 2. Excavate to the length and width required to safely install, adjust, and remove any forms, bracing, or supports necessary for the installation of the work.
 - 3. Cut utility trenches wide enough to allow inspection of installed utilities.
 - 4. Hand trim excavations. Remove loose matter.
 - 5. Slope banks of excavations deeper than 4 feet (1.2 meters) to angle of repose or less until shored.
- C. Notify Owner's Representative of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.

3.5 FILLING AND BACKFILLING

- A. Do not fill or backfill until all debris, water, unsatisfactory soil materials, obstructions, and deleterious materials have been removed from excavation.

3.6 STABILITY OF EXCAVATIONS

- A. Slope sides of excavations to comply with local codes, ordinances, and requirements of agencies having jurisdiction. Shore and brace, where sloping is not possible because of space restrictions or stability of material excavated, to comply with local codes, ordinances, and requirements of agencies having jurisdiction. Maintain sides and slopes of excavations in safe condition until completion of backfilling.

3.7 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch (25 mm). Extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
 - 1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
 - 2. Footing adjacent to existing building shall bear at same elevation or deeper.

3.8 EXCAVATION FOR WALKS AND PATIO

- A. See Section 32 1313 - Waterproof Concrete Paving for excavation and backfilling requirements. Construct to indicated cross sections, elevations, and grades.

3.9 SUBGRADE INSPECTION

- A. Notify Owner's Representative when excavations have reached required subgrade.
- B. Proof-roll subgrade below the building slabs and pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
 - 1. Completely proof-roll subgrade in one direction[, repeating proof-rolling in direction perpendicular to first direction]. Limit vehicle speed to 3 mph .
 - 2. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Owner's Representative, and replace with compacted backfill or select fill as directed.
- C. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.

3.10 UNAUTHORIZED EXCAVATION

- A. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.

3.11 STORAGE OF SOIL MATERIALS

- A. Stockpile borrows material and satisfactory excavated soil materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 1. Remove immediately from site when no longer needed.

3.12 BACKFILL

- A. Place and compact backfill in excavations promptly, but not before completing the following:
 - 1. Construction below finish grade including, where applicable, dampproofing, waterproofing, and perimeter insulation.
 - 2. Removing trash and debris.
 - 3. Removing temporary shoring, bracing, and sheeting.
 - 4. Installing permanent or temporary horizontal bracing on horizontally supported walls.
- B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.13 FILL

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact fill material in layers to required elevations as follows:
 - 1. Under building footings, foundations and slabs on grade, use select fill and drainage fill.
- C. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.14 COMPACTION OF BACKFILLS AND FILLS

- A. Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 1557:
 - 1. Under structures, building slabs, steps, and pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill material at 98 percent.

3.15 GRADING

- A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
 - 1. Provide a smooth transition between adjacent existing grades and new grades.
 - 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

3.16 SELECT FILL COURSES

- A. Place select fill course free of mud, frost, snow, or ice.

3.17 DRAINAGE FILL

- A. Under slabs-on-grade, pavements, and walks place drainage course on prepared subgrade and as follows:
 - 1. When compacted thickness of drainage course is 6 inches or less, place materials in a single layer.
 - 2. When compacted thickness of drainage course exceeds 6 inches, place materials in equal layers, with no layer more than 6 inches (150 mm) thick or less than 3 inches thick when compacted.
 - 3. Compact each layer of drainage course to required cross sections and thicknesses to not less than 95 percent of maximum dry unit weight according to ASTM D 698.

3.18 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection and testing.
- B. Provide for visual inspection of load-bearing excavated surfaces by Owner's Representative before placement of foundations.
- C. Testing Agency: The Owner will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.
- D. Allow testing agency to inspect and test the following:
 - 1. Confirmation of existing structure, foundation depths and undisturbed soil levels.
 - 2. Compaction of in place soil.

- E. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

3.19 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove all surplus soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.
- B. Refer to Section 01 7419 - Construction Waste Management and Disposal for additional requirements.

END OF SECTION