

**SOUTH WINDSOR PUBLIC SCHOOLS**

**1737 Main Street  
South Windsor, CT 06074**

**Bidding Manual for  
TIMOTHY EDWARDS MIDDLE SCHOOL AIR CONDITIONING FOR  
(4) CLASSROOMS  
RFP # 2023-007**

**BID OPENING  
January 13, 2023  
11:00 A.M.**

**Ms. Chris M. Chemerka  
Director of Finance & Operations**

**Mr. Darrell Crowley  
Director of Facility Operations**

**LEGAL NOTICE**

**SOUTH WINDSOR PUBLIC SCHOOLS**

**REQUEST FOR PROPOSALS  
FOR  
TIMOTHY EDWARDS MIDDLE SCHOOL AIR CONDITIONING FOR (4) CLASSROOMS  
RFP # 2023-007**

Documents for TEMS Air Conditioning for (4) Classrooms for the South Windsor Public Schools, RFP# 2023-007 may be obtained online at [www.southwindsorschools.org](http://www.southwindsorschools.org) on or after 8:00 a.m., December 9, 2022.

Sealed proposals must be received at the following address on or before 10:50 a.m., Eastern Standard Time, on Friday, January 13, 2023. Thereafter, the name of the firms that have submitted proposals will be publicly read aloud.

Mr. Darrell Crowley, Director of Facility Operations  
South Windsor Public Schools  
1737 Main Street  
South Windsor, CT, 06074

A mandatory pre-bid walk through will be conducted on Wednesday, December 28, 2022 at 9:00 am. Bidders should meet at the Timothy Edwards Middle School, 100 Arnold Way, SW. Bids will not be accepted from any firm that does not attend.

The South Windsor Public Schools reserve the rights to: amend or terminate this Request for Proposal; accept all or any part of a proposal; reject any or all proposals, in whole or in part; waive any technical defects, informalities or non-material deficiencies in a proposal; and award the proposal, in whole or in part, including accepting a proposal or part of a proposal, that, in its judgment, will be in the South Windsor Public School's best interests.

## **PURPOSE OF REQUEST FOR PROPOSAL (RFP)**

The South Windsor Public Schools is seeking Proposals for qualified Mechanical Contractors to provide air conditioning to four internal classrooms.

## **ISSUING OFFICE/ADMINISTRATIVE GUIDANCE**

The SWPS is the issuing office for this document and all subsequent addenda relating to it.

The information provided herein is intended to assist interested bidders in the preparation of proposals necessary to properly respond to this RFP. The RFP is designed to provide interested bidders with sufficient basic information to submit proposals meeting minimum requirements, but is not intended to limit a proposal's content or to exclude any relevant or essential data therefrom. Bidders are at liberty and are encouraged to expand upon the specifications to evidence service capability under any agreement.

Please note, however, that all forms provided must be completed and become part of the submitted proposal in order for the proposal to be considered complete.

## **QUESTIONS AND AMENDMENTS**

Any questions regarding the bid, including the process and procedures and specifications, are to be submitted in writing (e-mail acceptable) to:

Darrell Crowley, Director of Facility Operations  
[dcrowley@swindsor.k12.ct.us](mailto:dcrowley@swindsor.k12.ct.us)

And:

Karen Dallaire, Administrative Secretary  
[kdallaire@swindsor.k12.ct.us](mailto:kdallaire@swindsor.k12.ct.us)

The representatives listed above must receive any questions no later than January 6, 2023 by 2:00 p.m. The SWPS will answer all pertinent written questions by issuing an addendum, which shall become a part of the Invitation to Bid, containing all pertinent questions received as provided above and decision regarding same. Such addenda will be posted on the SWPS's website ([www.southwindsorschools.org](http://www.southwindsorschools.org)) by January 9, 2023 by 4:00 p.m. Each bidder is responsible for confirming with the SWPS whether any addenda have been issued, and if so, obtaining a copy of such addenda and completing its Bid in accordance with the Bid Documents modified by such addenda.

No oral statement of the SWPS, including oral statements by the representative listed above, shall be effective to waive, change, or otherwise modify any provision of the Bid Documents, and no bidder or prospective bidder shall rely on any alleged oral statement.

## **RESPONSE DATE**

Two paper copies and one digital copy of your proposal must be received at the SWPS Facility Operations Office, Room 100, 1737 Main Street, South Windsor, CT 06074, prior to 10:50 a.m. on Friday, January 13, 2023. Proposals received after the above time will be rejected.

- a. Sealed bids will be received at the Office of the Director of Facility Operations, SWPS, 1737 Main Street, Room 100, South Windsor, CT 06074, until 10:50 a.m., Eastern Standard Time, on January 13, 2023.
- b. Bids received after that time will not be considered and will be returned unopened to the bidder.
- c. All bids must be submitted in sealed envelopes, bearing on the outside, the name of the proposal for which the bid is submitted: TEMS Air Conditioning for (4) Classrooms, Bid # 2023-007 and the name and address of the bidder.
- d. If forwarded by US Postal mail, the sealed envelope containing the bid and marked as directed above, must be enclosed in another envelope, address as specified.
- e. The bid forms must be completed with a bid price for any or all of the options presented therein, except as otherwise expressly provided herein.

## **TERM OF CONTRACT**

The contract cannot be assigned, sublet, sold, transferred, or otherwise disposed of by either party without the written consent of the other.

## **CONSIDERATION OF PROPOSALS**

The submission of a bid will serve as conclusive evidence that the bidder has satisfied itself as to all requirements outlined in the bid documents and to all conditions concerning the work of the contract and the execution of any contract which may ensue. Each proposal should be submitted with the most favorable price and services standpoint. The SWPS reserves the right to reject any and/or all proposals or any parts thereof for any reason whatsoever, to waive any informality in any proposal or in any provision in the request for proposals, to require a modification of the contract terms at any time, and to select the bidder who, in the opinion of the SWPS, will best meet the interests of the SWPS, provided nothing herein, shall be deemed to waive any requirement of federal, state, or local law. Under no circumstances will the SWPS be responsible for the cost of preparing any proposal.

Proposers are advised to provide information detailed sufficiently to enable evaluation of their capabilities, experience, and approach to the services outlined in the proposal. Each proposal should provide a straight forward, concise description of the proposer's capabilities to satisfy the requirements of this Request for Proposals.

## **OTHER INFORMATION**

The contractor at all times shall observe and comply with all federal, state, and local laws and by-laws, ordinances and regulations in any manner affecting the conduct of the work.

All contractors or other persons providing services for the South Windsor Public Schools shall conform to the provisions of the Connecticut Occupational Safety & Health Act (OSHA) of the State of Connecticut.

Bidders are to address all aspects of the Bid Documents as they will be incorporated into the contract that the SWPS enters into with the selected vendor.

The SWPS reserves the right, either before or after the opening of bids, to ask any bidder to clarify its bids or submit additional information that the SWPS in its sole discretion deems desirable.

### **Costs for preparing bid**

Each bidder's cost incurred in developing its bid are solely its responsibility, and the SWPS shall have no liability for such costs.

### **Ownership of bids**

All bids submitted become the property of the SWPS and will not be returned to bidders.

### **Freedom of Information Act**

All information submitted in a bid or in response to a request for additional information is subject to disclosure under the Connecticut Freedom of Information Act as amended and judicially interpreted. A bidder's responses may contain financial, trade secret or other data that it claims should not be public (the "Confidential Information"). A bidder must identify specifically the pages and portions of its proposal that contain the claimed Confidential Information by visibly marking all such pages and portions. Provided that the bidder cooperates with the SWPS, the SWPS shall, to the extent permitted by law, protect from unauthorized use and disclosure such Confidential Information.

### **Non-Collusion**

By submitting a bid, each bidder, and each person signing on behalf of any bidder, certifies under penalty of perjury that, to the best of his/her knowledge and belief, the prices in this bid have been arrived at independently, without collusion, consultation, communication, or agreement with any other bidder or competitor, and further, that the prices which have been quoted in this bid have not been knowingly disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or competitor.

## **CONTRACT AWARD/EXECUTION**

All bids will be publicly opened and names of companies submitting bids will be read aloud, on the date, time, and at the place identified in the Invitation to Bid. Bidders may be present at the opening.

The SWPS may elect to award the contract to other than the lowest bidder if it is judged to be in the best interest of the SWPS. Criteria which could be applied in the determination would include, but not be limited to, financial responsibility, service, performance on contracts, and experience. During the evaluation of the bids, the SWPS may request bidders to make oral presentations.

The SWPS reserves the following rights: (a) to reject any and all bids, in whole or in part, (b) to waive any irregularity, (c) to award or reject a bid on the basis of previous performance, reputation or experience, (d) to accept the one that will be in the best interest of the district.

No bid will be accepted, nor contract awarded, to any contractor whose performance on any previous contract with this or any other school district has been determined to be unsatisfactory. The SWPS reserves the right to be the sole judge in this decision.

No contract will exist unless and until a written contract is executed by both the SWPS and the contractor. No bidder can claim any contract rights by virtue of submitting a bid, including the lowest bid.

Bidders will not include federal excise taxes nor state sales taxes from which SWPS are exempt.

## **INDEMINIFICATION**

The contractor agrees to indemnify, defend, and hold harmless the SWPS, its respective officers, employees and agents from any and all claims and losses accruing or resulting to any person, firm or corporation who may be injured or damaged by the contractor in the performance of this contract.

## **INSURANCE**

The successful contractor shall provide a certificate of insurance naming the SWPS and the Town of South Windsor as "additional insured" in the minimum amounts as specified herein. Said insurance shall be provided at the sole expense of the bidder with an insurance company which is licensed to do business in the State of Connecticut.

- A. General Liability (including completed operations coverage) - \$1,000,000 (combined single limit) and \$2,000,000 aggregate coverage  
Bodily Injury – Property Damage Coverage/occurrence and \$2,000,000 aggregate coverage.
- B. Worker's Compensation per state statute
- C. Comprehensive Automobile Liability:  
Bodily Injury – Property Damage Coverage/occurrence and \$2,000,000 aggregate coverage.
- D. Excess/Umbrella Liability (with all liability coverages as underlyers): \$5,000,000
- E. Workers' Compensation & Employers Liability-\$1,000,000 in Employers Liability limits

## **PREVAILING WAGE REQUIREMENTS**

Prevailing wage rates set forth by the State of Connecticut pursuant to section 31-53/31-54/31-55 of the Connecticut General Statutes as amended and as referenced in the Specifications must be paid on this project.

## **EQUAL OPPORTUNITY – AFFIRMATIVE ACTION**

The South Windsor Public Schools is an Equal Opportunity Employer. The Board of Education transacts business with firms which are in compliance with all Federal and State Statutes and Executive Orders pertaining to non-discrimination. By submitting a bid you are indicating your firm does not make employment decisions (including decisions related to hiring, assignment, compensation, promotion, demotion, disciplinary action and termination) on the basis of race, color, religion, age, sex, marital status, sexual orientation, national origin, alienage, ancestry, disability, pregnancy, veteran status, or gender identify or expression, except in the case of a bona fide occupational qualification.

--END SECTION--

## Detailed Specifications

### Description of Services

The scope of the services requested is as follows:

The South Windsor Public Schools is seeking Proposals for qualified Mechanical Contractors to provide air conditioning to four interior classrooms. The proposal shall include ceiling mounted VRF cassettes with roof mounted condensing unit, new construction work identified and shall comply with Terms and Conditions provided by the Town of South Windsor and the South Windsor Public Schools.

This Request for Proposal (RFP) seeks to provide new air conditioning equipment as follows:

- Provide (8) 1 ½-ton ceiling mounted VRF cassette units with (1) one 12-ton roof mounted condensing unit.
- Each classroom shall have (2) two 1 ½-ton ceiling mounted VRF cassette units with dedicated wall mounted thermostat.
- Provide insulated refrigerant piping between indoor & outside units.
- Provide condensate piping.
- Provide new accessories and features as specified.
- Provide electrical work as required.
- The School has an existing Invensys / SNE Energy Management and Controls System (EMCS) in place. The Owner will engage SNE Building Systems (Controls Contractor) separate from the Construction Contract to wire and commission the unit controls. The temperature control and staging control of the units shall be controlled by the packaged controller. The scheduling and energy management functions shall be controlled by the Invensys EMCS. Coordinate work with SNE Building Systems. Contact Jeff Hammick at SNE 860-653-5095 to provide the controls wiring, programming and commissioning.
- Controls shall be factory furnished and wiring to include all operating and safety controls for fan, compressor and reversing valve operation. Controller shall have a BACNet MS/TP communications interface or shall be a native BACNet controller. Include a new room temperature sensor with each unit that is compatible with the HP Unit's factory supplied controller.
- Start of work must occur after the close of the current school year, approximately June 16, 2023 and be completed prior to August 11, 2023.

Additional specific scope of work information and specifications follow below on Drawing Set M0-M4.

The Contractor will enter into an agreement with the South Windsor Public Schools for all work including mechanical HVAC work, supporting electrical work, and any general trades work identified in the Scope of Work. The Contractor will be responsible for the complete execution of all work indicated in this RFP and in accordance with the Specifications. All subcontractors (insulators, electricians, etc.) shall be under the control of the Contractor.

Within this RFP and other Contract Documents, where the term "Contractor" is used, it shall mean the Contractor submitting the Proposal and providing the overall execution, coordination and management of the Project.



Within this RFP and other Contract Documents, where the term “Owner’s Engineering Consultant” is used, it shall mean the Owner’s consultants preparing this RFP and the Specifications and providing consultation and review services throughout the Project to completion.

Within this RFP where the term “Owner” is used, it shall mean the agents and staff of South Windsor Public Schools and/or their separately contracted vendors, subcontractors or agents.

#### Contractor Qualifications

All Contractors bidding on this RFP shall be Mechanical Contractor Firms regularly engaged in the construction, installation and servicing of HVAC and Refrigeration systems.

#### Proposal Criteria

Include in the Proposal a description of the Systems, Manufacturers and Equipment intended to be provided under the Contract. Construction permits shall be taken for all trades.

Proposals received after the due date and time will not be accepted, nor will proposals be accepted from bidders who have not attended a Pre-Bid Walkthrough.

#### Owner’s Engineering Consultant

The Owner has retained the services of an Engineer (Owner’s Engineering Consultant) for the purpose of establishing the project RFP and Specifications and to review the proposals and the work of the mechanical contractors. The Contractor’s proposals and the performance and quality of work shall remain the responsibility of the Contractor.

The Contractor shall agree to the review comments and terms of the Owner’s Engineering Consultant in all matters relative to the equipment and material specifications and the Consultant’s review of equipment and materials submittals and review of work in progress.

#### Design Criteria - General

The Codes and Standards listed below shall apply to all mechanical and electrical work.

Connecticut State Building Code:  
Connecticut Fire Safety Code 2022  
The International Building Code 2021  
The International Existing Building Code 2021  
The International Plumbing Code 2021  
The International Mechanical Code 2021  
International Energy Conservation Code 2021  
NFPA-70 The National Electrical Code 2020  
ICC A117.1 Accessible and Usable Buildings & Facilities  
The International Fire Code 2021

NOTE: The codes and standards listed above are subject to change as the State of Connecticut assigns from time to time. Those listed above are applicable on the date of this RFP. The Contractor shall at all times, work in accordance with the most current applicable versions and editions as may be in effect at the time of permit application and procurement.

The Contractor shall clean up the project site daily, recognizing that the school may have nearby activities during construction. No materials, equipment tools or demolition debris shall be left in the open or outside.

The Contractor shall provide their own dumpsters as required, located where acceptable to the Building Department and Fire Marshal's Office.

The Contractor shall take precautions to prevent damage to the existing building, furnishings and site and make reparations whenever damage occurs at no cost to the Owner.

#### Form of Contract

The Contractor shall enter into an Agreement with the South Windsor Public Schools using the AIA Document A101 – Standard Form of Agreement Between Owner and Contractor. (Sample Copy Attached.)

Payment requisitions shall be submitted to the Owner periodically using the AIA Form G702/A – Application and Certificate for Payment including Schedule of Values and appropriate Supplemental Continuation Sheets. (Sample Copy Attached.) Payment requests are to be sent to the Engineer for signature and verification of the payment request. SWPS will review payment paperwork and when appropriate, submit for payment.

#### Bonding

Bid Bonds and Performance & Payment Bonds will not be required.

#### **Vendor References:**

The organization/company must have successfully provided similar services in Connecticut. Please list four other Connecticut client(s) including contact names, addresses, phone numbers and email addresses.

#### **Selection Criteria:**

Selection will be based on the candidate's ability to offer a complete range of services at a competitive price. Candidate responses will be evaluated based on:

- Responsiveness of the proposal in developing a comprehensive work plan and processes
- Qualifications, experience in and credentials of the professionals assigned to the client
- Ability to communicate effectively
- Cost

--END SECTION--

**REQUEST FOR PROPOSALS  
FOR SOUTH WINDSOR PUBLIC SCHOOLS  
PROPOSAL FORM**

The company identified below agrees to all of the conditions, specifications and instructions contained in the attached specifications and will provide the services designated therein as specified.

**TOTAL BASE BID:**

\$
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Acknowledgement of Addendum #1 \_\_\_\_\_ (if issued)

(Please Sign)

Acknowledgement of Addendum #2 \_\_\_\_\_ (if issued)

(Please Sign)

**List of References:**

<u>Name</u>	<u>Address</u>	<u>E-mail</u>	<u>Phone</u>

In addition to the above, please provide, on a separate sheet under letterhead, a brief description of the proposed schedule, project management and coordination procedures and any other supporting information relative to means and methods to be employed on this project.

The undersigned is submitting this bid without collusion with any other individual or corporation.

**SUBMITTED BY:**

Firm:\_\_\_\_\_

Signature\_\_\_\_\_

Address:\_\_\_\_\_

Name\_\_\_\_\_

\_\_\_\_\_

Title:\_\_\_\_\_

\_\_\_\_\_

Telephone:\_\_\_\_\_

E-mail Address \_\_\_\_\_

**AFFIRMATIVE ACTION STATEMENT**

Date\_\_\_\_\_

The employment policies and practices of \_\_\_\_\_  
(Vendor)  
Are to recruit and employ qualified job applicants without discrimination based on race, creed,  
color, religion, age, sex, national origin or handicap and to treat all employees equally without  
discrimination because of race, creed, color, religion, age, sex, national origin or handicap.

\_\_\_\_\_  
(Signature)

**MUST BE ENCLOSED WITH BID**

# **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)

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

for the following Project:  
(Name, location and detailed description)

The Architect:  
(Name, legal status, address and other information)

The Owner and Contractor agree as follows.

### **ADDITIONS AND DELETIONS:**

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

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

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

Init.

## 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
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9	ENUMERATION OF CONTRACT DOCUMENTS

**EXHIBIT A INSURANCE AND BONDS – (See insurance limits of coverage in Specification Section "SUPPLEMENTAL GENERAL CONDITIONS," ARTICLE 34 CONTRACTOR'S AND SUBCONTRACTOR'S INSURANCE) .**

### 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:

*(Check one of the following boxes.)*

- ☐ The date of this Agreement.
- ☐ A date set forth in a notice to proceed issued by the Owner.
- ☐ Established as follows:  
*(Insert a date or a means to determine the date of commencement of the Work.)*

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

**§ 3.2** The Contract Time shall be measured from the date of commencement of the Work.

#### § 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:

*(Check one of the following boxes and complete the necessary information.)*

Init.

[ ] Not later than ( ) calendar days from the date of commencement of the Work.

[ ] By the following date:

**§ 3.3.2** Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates:

Portion of Work	Substantial Completion Date
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**§ 3.3.3** 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 (\$ ), 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: Form of Proposal as set forth in Exhibit B

Item	Price
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**§ 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
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**§ 4.3** Allowances, if any, included in the Contract Sum: Form of Proposal as set forth in Exhibit B.  
(Identify each allowance.)

Item	Price
------	-------

**§ 4.4** Unit prices, if any: Form of Proposal as set forth in Exhibit B.  
(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)
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**§ 4.5** Liquidated damages, if any:  
(Insert terms and conditions for liquidated damages, if any.)

**§ 4.6** Other:  
(Insert provisions for bonus or other incentives, if any, that might result in a change to the Contract Sum.)



## ARTICLE 5 PAYMENTS

**NOTE: ALL PAYMENTS TO BE PROCESSED -PAID WITHIN 30 DAYS AFTER WINDSOR PUBLIC BUILDING COMMISSION APPROVAL. THE PUBLIC BUILDING COMMISSION MEETS EVERY MONTH, ALWAYS ON THE SECOND TUESDAY AND FOR EIGHT MONTHS ON THE FOURTH TUESDAY. FOR THE MONTHS OF JULY, AUGUST, NOVEMBER AND DECEMBER THEY MEET ONCE A MONTH.**

### § 5.1 Progress Payments

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

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

**§ 5.1.3** Provided that an Application for Payment is received by the Architect not later than the First day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the Thirtieth day of the Same 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 Thirty ( 30 ) days after the Architect receives the Application for Payment.

*(Federal, state or local laws may require payment within a certain period of time.)*

**§ 5.1.4** Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor 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 as follows:

**§ 5.1.6.1** The amount of each progress payment shall first include:

- .1 That portion of the Contract Sum properly allocable to completed Work;
- .2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and
- .3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

**§ 5.1.6.2** The amount of each progress payment shall then be reduced by:

- .1 The aggregate of any amounts previously paid by the Owner;
- .2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201-2017;
- .3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
- .4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201-2017; and
- .5 Retainage withheld pursuant to Section 5.1.7.

### § 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:

*(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)*

Five Percent (5.00%)

§ 5.1.7.1.1 The following items are not subject to retainage:

*(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)*

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:

*(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)*

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:

*(Insert any other conditions for release of retainage upon Substantial Completion.)*

§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201–2017.

§ 5.1.9 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

### § 5.2 Final Payment

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

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

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

### § 5.3 Interest

Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

*(Insert rate of interest agreed upon, if any.)*

%

## ARTICLE 6 DISPUTE RESOLUTION

### § 6.1 Initial Decision Maker

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

*(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)*

### § 6.2 Binding Dispute Resolution

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

*(Check the appropriate box.)*

- ☐ Arbitration pursuant to Section 15.4 of AIA Document A201–2017
- ☒ Litigation in a court of competent jurisdiction
- ☐ Other *(Specify: Refer to Section 15.3 Mediation of AIA Document A201-2017)*

## ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner as provided in Article 14 of AIA Document A201–2017.

*(Paragraphs deleted)*

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

## ARTICLE 8 MISCELLANEOUS PROVISIONS

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

§ 8.2 The Owner's representative:

*(Name, address, email address, and other information)*

§ 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 Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101™-2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance (See insurance limits of coverage in Specification Section "SUPPLEMENTAL GENERAL CONDITIONS," ARTICLE 34 CONTRACTOR'S AND SUBCONTRACTOR'S INSURANCE) and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A101™-2017 Exhibit A (See insurance limits of coverage in Specification Section "SUPPLEMENTAL GENERAL CONDITIONS," ARTICLE 34 CONTRACTOR'S AND SUBCONTRACTOR'S INSURANCE) and elsewhere in the Contract Documents.

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

*(If other than in accordance with AIA Document E203-2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)*

§ 8.7 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

*(Paragraphs deleted)*

**(See insurance limits of coverage in Specification Section "SUPPLEMENTAL GENERAL CONDITIONS," ARTICLE 34 CONTRACTOR'S AND SUBCONTRACTOR'S INSURANCE)**

- .5 Drawings – As set forth in Exhibit D

Number	Title	Date
--------	-------	------

- .6 Specifications – As set forth in Exhibit C

Section	Title	Date	Pages
---------	-------	------	-------

- .7 Addenda, if any:

Number	Date	Pages
--------	------	-------

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

- .8 Other Exhibits:

Init.



(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

☐ AIA Document E204™-2017, Sustainable Projects Exhibit, dated as indicated below:  
(Insert the date of the E204-2017 incorporated into this Agreement.)

☐ The Sustainability Plan:

Title	Date	Pages
-------	------	-------

☐ Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
----------	-------	------	-------

.9 Other documents, if any, listed below:

(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201™-2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

AIA Document A101-2017, Exhibit A, Insurance and Bonds - (See insurance limits of coverage in Specification Section "SUPPLEMENTAL GENERAL CONDITIONS," ARTICLE 34 CONTRACTOR'S AND SUBCONTRACTOR'S INSURANCE)– enumerated in the Table of Contents – contained in the Project Manual as set forth in Exhibit C

Bid Proposal -submitted by \_\_\_\_\_ as set forth in Exhibit B

All Documents Enumerated in the Table of Contents – contained in the Project Manual as set forth in Exhibit C

List of Drawings – contained in the Project Manual as set forth in Exhibit D

Performance, Labor and Material Payment Bond – submitted by \_\_\_\_\_ as set forth in Exhibit E

Certificate of Insurance – submitted by \_\_\_\_\_ as set forth in Exhibit F

AIA Document A701 and the Invitation to Bid – contained in the Project Manual as set forth in Exhibit G

Construction Schedule (including 30 calendar days float time) as set forth in Exhibit H

List of all Major Subcontractors for (Site, Roofing, Plumbing, HVAC, Electrical, Security) as set forth in Exhibit I

List of Personnel on the Job (names, resumes e.g. Project Manager, Superintendent, etc.) as set forth in Exhibit J

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

Init.

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User Notes:

(1833194036)

OWNER (Signature)

CONTRACTOR (Signature)

(Printed name and title)

(Printed name and title)

## Application and Certificate for Payment

**TO OWNER:**
**PROJECT:**
**APPLICATION NO:** 001

**Distribution to:**
**FROM  
CONTRACTOR:**
**VIA  
ARCHITECT:**
**PERIOD TO:**
**CONTRACT FOR:** General Construction

**OWNER:** ☐
**CONTRACT DATE:**
**ARCHITECT:** ☐
**PROJECT NOS:** / /

**CONTRACTOR:** ☐
**FIELD:** ☐
**OTHER:** ☐

### CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract. Continuation Sheet, AIA Document G703, is attached.

<b>1. ORIGINAL CONTRACT SUM</b> .....	\$0.00
<b>2. NET CHANGE BY CHANGE ORDERS</b> .....	\$0.00
<b>3. CONTRACT SUM TO DATE (Line 1 ± 2)</b> .....	\$0.00
<b>4. TOTAL COMPLETED &amp; STORED TO DATE (Column G on G703)</b> .....	\$0.00
<b>5. RETAINAGE:</b>	
a. <u>0</u> % of Completed Work (Column D + E on G703) .....	\$0.00
b. <u>0</u> % of Stored Material (Column F on G703) .....	\$0.00
Total Retainage (Lines 5a + 5b or Total in Column I of G703) .....	\$0.00
<b>6. TOTAL EARNED LESS RETAINAGE</b> .....	\$0.00
(Line 4 Less Line 5 Total)	
<b>7. LESS PREVIOUS CERTIFICATES FOR PAYMENT</b> .....	\$0.00
(Line 6 from prior Certificate)	
<b>8. CURRENT PAYMENT DUE</b> .....	\$0.00
<b>9. BALANCE TO FINISH, INCLUDING RETAINAGE</b> (Line 3 less Line 6) .....	\$0.00

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	\$0.00	\$0.00
Total approved this Month	\$0.00	\$0.00
<b>TOTALS</b>	<b>\$0.00</b>	<b>\$0.00</b>
<b>NET CHANGES by Change Order</b>		\$0.00

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

**CONTRACTOR:**

By: \_\_\_\_\_

Date: \_\_\_\_\_

State of: \_\_\_\_\_

County of: \_\_\_\_\_

 Subscribed and sworn to before  
me this \_\_\_\_\_ day of \_\_\_\_\_

Notary Public: \_\_\_\_\_

My Commission expires: \_\_\_\_\_

### ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

**AMOUNT CERTIFIED** ..... \$0.00

(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)

**ARCHITECT:**

By: \_\_\_\_\_

Date: \_\_\_\_\_

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.



## Continuation Sheet

AIA Document, G702™-1992, Application and Certification for Payment, or G736™-2009, Project Application and Project Certificate for Payment, Construction Manager as Adviser Edition, containing Contractor's signed certification is attached.

In tabulations below, amounts are in US dollars.

Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO:

001

APPLICATION DATE:

**PERIOD TO:**

ARCHITECT'S PROJECT NO:

[illegible]



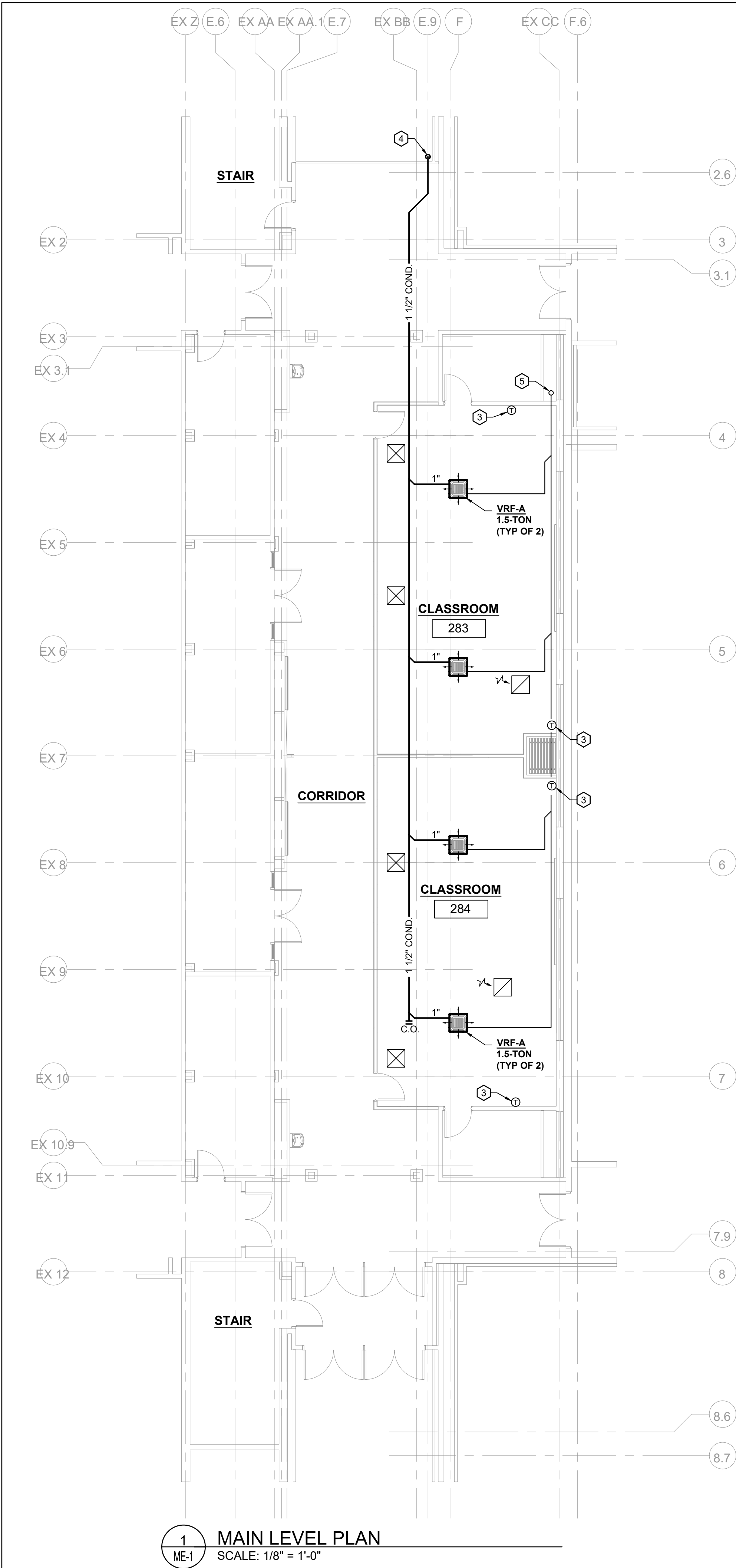
ABBREVIATIONS

a	48" ABOVE FINISHED FLOOR	FCU	FAN COIL UNIT
A	AMPS	FD	FIRE DAMPER
AC	AIR COMPRESSOR	FD/SB	FIRE DAMPER WITH INTEGRAL SECURITY BARS
ACD	AUTOMATIC COOLING CONDENSATE PUMP	FD	FLOOR DRAIN
ACF	AIRFLOW CENTRIFUGAL FAN	FDC	FIRE DEPARTMENT CONNECTION
ACU	AIR CONDITIONING UNIT(S)	FDV	FIRE DEPARTMENT VALVE
AD	ACCESS DOOR	FHC	FIRE HOSE CABINET
AD	AREA DRAIN	FM	FLOW METER
AFF	ABOVE FINISHED FLOOR	FOB	FLAT ON BOTTOM
AFG	ABOVE FINISHED GRADE	FOF	FUEL OIL FILL
AHU	AIR HANDLING UNIT	FOR	FUEL OIL RETURN
AMB	AMBIENT	FOS	FUEL OIL SUPPLY
ANN	ANNUNCIATOR	FOT	FLAT ON TOP
APD	AIR PRESSURE DROP	FVM	FUEL OIL VENT
APPROX	APPROXIMATE	FV	FIRE VALVE CABINET
ARV	AXIAL ROOF VENTILATOR	FPM	FEET PER MINUTE
AS	AIR SEPARATOR	FPS	FEET PER SECOND
ATC	AUTOMATIC TEMPERATURE CONTROL	FS	FLOOR SINK
AVG	AVERAGE	FT	FOOT OR FEET
AWT	AVERAGE WATER TEMPERATURE	FVC	FIRE VALVE CABINET
b	42" ABOVE FINISHED FLOOR	G	GROUND
BDD	BACK DRAFT DAMPER	GA	GAUGE
BFW	BOILER FEED WATER	GAL	GALLONS
BHP	BRAKE HORSEPOWER	GPH	GALLONS PER HOUR
BICF	BACKWARD INCLINED CENTRIFUGAL FAN	GPM	GALLONS PER MINUTE
BSMT	BASEMENT	GR	GRAINS
BTUH	BRITISH THERMAL UNITS/HOUR	GW	GAS WATER HEATER
C	CONDUIT	H	HEIGHT
CV	COEFFICIENT, VALVE FLOW	HC	HEATING COIL
CC	COOLING COIL	H/C	HEATING/COOLING
CD	CONDENSATE	HD	HEAD
CER/CEG	CEILING EXHAUST REG./GRILLE	HD/CP	HANDICAP
CFM	CUBIC FEET PER MINUTE	HP	HORSEPOWER
CHWR	CHILLED WATER RETURN	HPS	HIGH PRESSURE GAS
CHWS	CHILLED WATER SUPPLY	HR	HOUR(S)
CHP	CONSOLE HEAT PUMP	HT	HEAT
CI	CAST IRON	HTR	HEATER
CLGWTR	COOLING WATER	HUM	HUMIDIFIER
CLG	CEILING	HV	HEATING/VENTILATION UNIT
CMV	CEILING MOUNTED VENTILATOR	HW	HOT WATER
CO	CLEANOUT	HWR	HOT WATER RETURN
CO2	CARBON DIOXIDE	HWRP	HOT WATER RETURN PUMP
COMP	COMPRESSOR	HWRR	HOT WATER REVERSE RETURN
COND	CONDENSER	HWS	HOT WATER SUPPLY
CONV	CONVECTOR	HX	HEAT EXCHANGER
CP	CONDENSATE PUMP	ICF	IN-LINE CENTRIFUGAL FAN
CRU	COMPUTER ROOM UNIT	ID	INSIDE DIAMETER
CRV	CENTRIFUGAL ROOF VENTILATOR	IEF	IN-LINE EXHAUST FAN
CWR	CONDENSER WATER RETURN	IN	INCHES
CWS	CONDENSER WATER SUPPLY	IN WG	INCHES OF WATER, GAUGE (PRESS.)
CWV	CENTRIFUGAL WALL VENTILATOR	IW	INCHES OF WATER
CT	COOLING TOWER	JP	JOCKEY PUMP
CJ	CONDENSING UNIT	KEF	KITCHEN EXHAUST FAN
CU FT	CUBIC FEET	KHWST	KITCHEN HOT WATER STORAGE TANK
CUH	CABINET UNIT HEATER	KWH	KITCHEN WATER HEATER
CV	CONSTANT VOLUME	L	LENGTH
CW	COLD WATER	LAT	LEAVING AIR TEMPERATURE
dB	DECIBEL	LAV	LAVATORY
D	DEPTH	LBS/HR	POUNDS PER HOUR
DB	DRY BULB TEMPERATURE	LF	LINEAR FEET
DCV	DOUBLE CHECK VALVE	LIQ	LIQUID
DEG or °	DEGREE	LV	LABORATORY VACUUM
DIA or Ø	DIAMETER	LWT	LEAVING WATER TEMPERATURE
DN	DOWN	MA	MIXED AIR
DP	DIFFERENTIAL PRESSURE	MAX	MAXIMUM
DSA	DUCT SOUND ATTENUATORS	MBH	BTU PER HOUR (THOUSAND)
DWG	DRAWING	MD	MOTORIZED DAMPER
DX	DIRECT EXPANSION	MECH	MECHANICAL
EA	EXHAUST AIR	MFF	MIXED FLOW FAN
EAT	ENTERING AIR TEMPERATURE	MFR	MANUFACTURER
EBR	ELECTRIC BASEBOARD RADIATION	MIN	MINIMUM
EDR	EQUIVALENT DIRECT RADIATION	MJAU	MAKE UP AIR UNIT
EF	EXHAUST FAN	N/A	NOT APPLICABLE
EFF	EFFICIENCY	N.C.	NORMALLY CLOSED
ELEC	ELECTRICAL	NEC	NATIONAL ELECTRICAL CODE
ESP	EXTERNAL STATIC PRESSURE	NIC	NOT IN CONTRACT
ET	EXPANSION TANK (HVAC)	N.O.	NORMALLY OPEN
ETR	EXISTING TO REMAIN	NTS	NOT TO SCALE
ETP	ELECTRIC TRAP PRIMER	OA	OUTSIDE AIR
EUH	ELECTRIC UNIT HEATER	OD	OUTSIDE DIAMETER
EVAP	EVAPORATOR	ORD	OVERFLOW ROOF DRAIN
EWB	ENTERING WET BULB TEMPERATURE	ORWL	OVERFLOW RAIN WATER LEADER
EWT	ENTERING WATER TEMPERATURE	P	PHASE
EXH	EXHAUST	PCD	PUMPED CONDENSATE DRAIN (COOLING)
EXP	EXPANSION	PD	PRESSURE DROP
F	FAHRENHEIT	PF	PROPELLER FAN
FCCF	FORWARD CURVE CENTRIFUGAL FAN	PH / Ø	PHASE

PIV	POST INDICATOR VALVE
PLEF	PLENUM FAN
PLUF	PLUG FAN
PRESS	PRESSURE
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
RA	RETURN AIR
RAF	RETURN AIR FAN
RD	ROOF DRAIN
REF	REFRIGERANT PIPING (MULTIPLE PIPES)
REF	ROOF EXHAUST FAN
REG	REGISTER
RF	RELIEF FAN
RH	RELATIVE HUMIDITY
RHC	REHEAT COIL
RHG	REFRIGERANT HOT GAS
RL	RELOCATED
RM	ROOM
RMS	ROOT MEAN SQUARED
RPD	REDUCED PRESSURE DEVICE
RPM	REVOLUTIONS PER MINUTE
RTU	ROOF TOP UNIT
RV	RADON VENT
RWL	RAIN WATER LEADER
S	SOIL
S&R	SUPPLY AND RETURN
SA	SHOP AIR COMPRESSOR
SCC	SPRINKLER CONTROL CABINET
SD	SMOKE DAMPER
SP	STANDPIPE
SP	STATIC PRESSURE
SP	SUMP PUMP
SPEC	SPECIFICATION
SPK	SPRINKLER
SPK/SP	COMBINED SPRINKLER/ STANDPIPE
SPST	SINGLE POLE SINGLE THROW
SQ	SQUARE
SS	STAINLESS STEEL
ST	STORM
STD	STANDARD
SUCT	SUCTION
SWBD	SWITCHBOARD
SW	SWITCH
TAF	TUBESHAFT FAN
TAG	IDENTIFICATION OF EQUIPMENT
TD	TEMPERATURE DIFFERENCE
TEMP	TEMPERATURE
TMV	THERMOSTATIC MIXING VALVE
TP	TAMPERPROOF
TP	TRAP PRIMER
TSP	TOTAL STATIC PRESSURE
TSTAT	THERMOSTAT
TW	TEMPERED WATER
TWR	TEMPERED WATER RETURN
TYP	TYPICAL
UH	UNIT HEATER
UPF	UPBLAST PROPELLER ROOF EXHAUST FAN
UR	URINAL
USF	UTILITY SET FAN
V	VENT
V	VOLTAGE
VAF	VANEAXIAL FAN
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VEL	VELOCITY
VFC	VARIABLE FREQUENCY CONTROLLER
VIF	VERIFY IN FIELD
VOL	VOLUME
VTR	VENT THRU ROOF
W	WATT
W	WIRE
WB	WET BULB TEMPERATURE
WC	WATER CLOSET
WEF	WALL EXHAUST FAN
WH	WALL HYDRANT (HOSE BIBB)
WHA	WATER HAMMER ARRESTER
WI	WIDTH
WP	WEATHERPROOF
WPD	WATER PRESSURE DROP
WTG	WALL TRANSFER GRILLE
WTR	WATER
WV	WASTE AND VENT COMBINATION
WWM	WELDED WIRE MESH

HVAC SYMBOLS

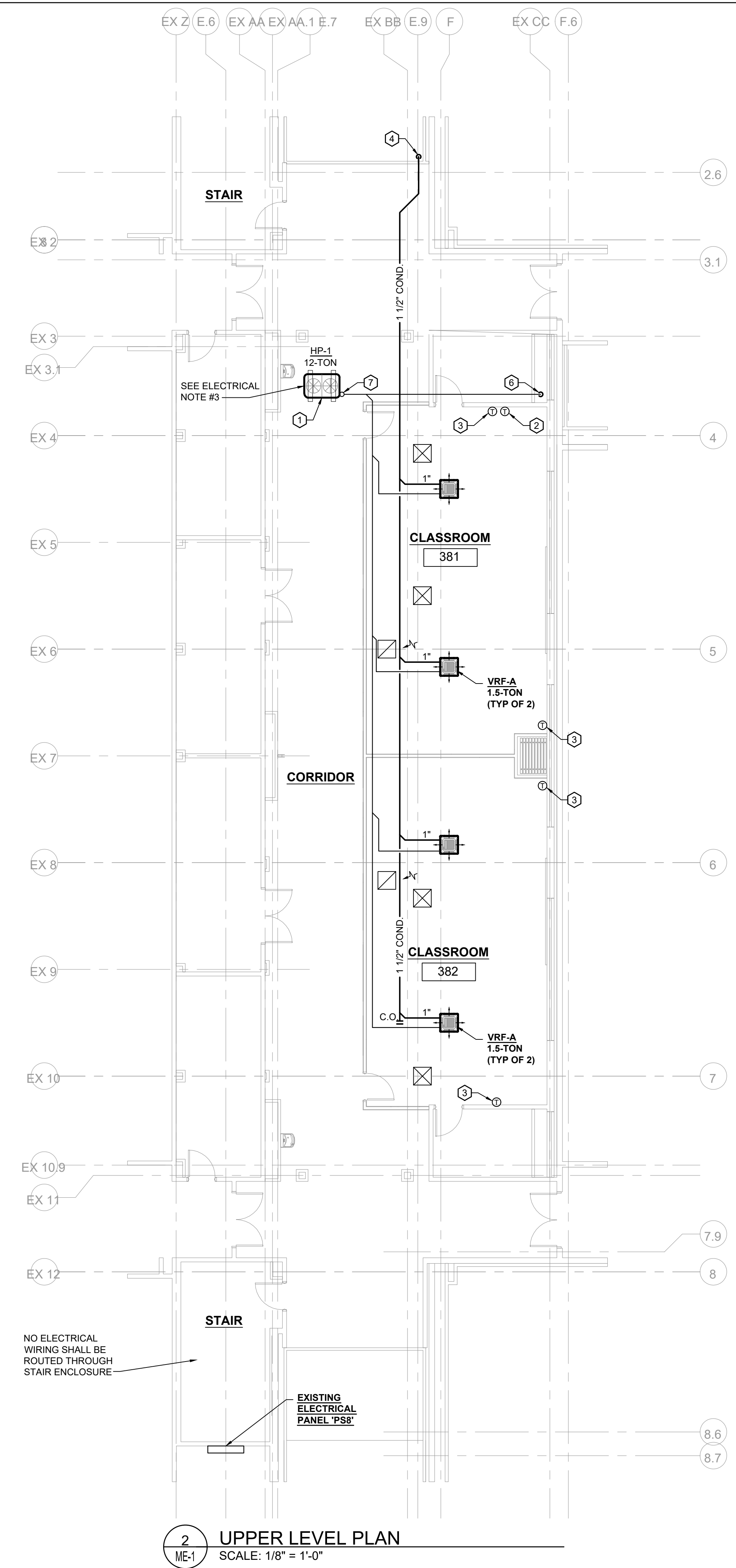
	RECTANGULAR, FLAT OVAL OR ROUND AIR DUCT
	AIR DUCT WITH ACOUSTICAL LINING
	SUPPLY AIR DUCT UP
	SUPPLY AIR DUCT DOWN
	RETURN AIR DUCT UP
	RETURN AIR DUCT DOWN
	EXHAUST AIR DUCT UP
	EXHAUST AIR DUCT DOWN
	TURNING VANES
	ACCESS DOOR
	FLEXIBLE DUCT CONNECTION
	CEILING SUPPLY DIFFUSERS
	CEILING RETURN / EXHAUST GRILLE
	HARD DUCTED DIFFUSER OR GRILLE WITH FULL SIZE BOTTOM TAKE-OFF
	DIRECTION OF SUPPLY OR OUTDOOR AIRFLOW
	DIRECTION OF RETURN OR EXHAUST AIRFLOW
	DOOR UNDERCUT
	BACK DRAFT DAMPER
	VOLUME DAMPER
	FIRE DAMPER
	MOTORIZED DAMPER



- GENERAL NOTES**
- ALL SERVICING AREAS SHALL BE KEPT CLEAR OF ANY DUCTWORK OR PIPING.
  - ALL ROOF MOUNTED EQUIPMENT THAT NEEDS SERVICING SHALL BE LOCATED MINIMUM 10'-0" AWAY FROM EDGE OF THE ROOF.
  - REFER TO DRAWING M-2 FOR REFRIGERANT PIPING LAYOUTS AND ADDITIONAL INFORMATION. VERIFY EXACT PIPING LAYOUTS IN FIELD.
  - INSTALL ALL REFRIGERANT IN STRICT ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS AND RECOMMENDATIONS.]
  - COORDINATE EXACT REFRIGERANT ROUTING IN FIELD.
  - COORDINATE NEW EQUIPMENT LOCATION WITH EXISTING LIGHTS.

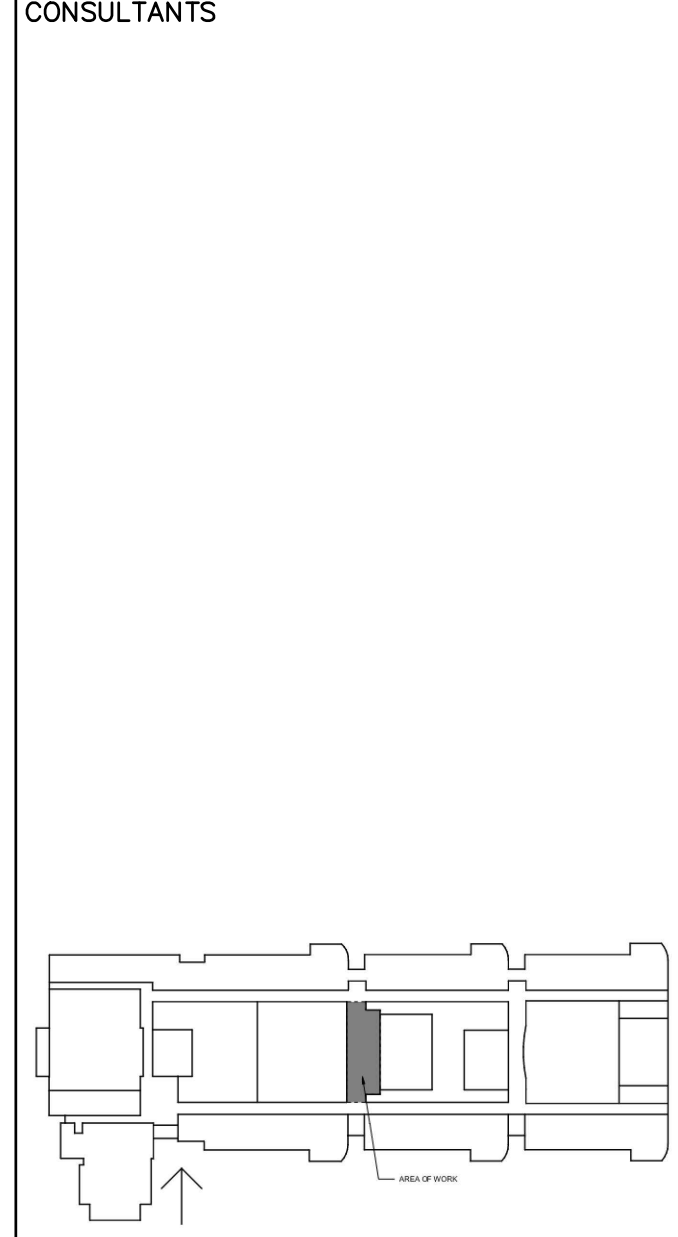
- ELECTRICAL NOTES**
- PROVIDE 70A 2P C/B IN EXISTING PANEL 'PS8' TO FEED NEW HEAT PUMP HP-1 ON ROOF. PROVIDE 3#3+1#8G, 1 1/2" C FROM NEW C/B TO NEW 100A 3P 4W SN FUSIBLE, NEMA 3R DISCONNECT SWITCH AT NEW HP-1.
  - PROVIDE 20A 2P C/B IN EXISTING PANEL 'PS8' TO FEED NEW VRF UNITS. PROVIDE 2#12+1#12G, 3/4" C FROM NEW C/B TO NEW THERMAL DISCONNECT SWITCH AT EACH VRF.
  - PROVIDE WP/GFI RECEPTACLE ON ROOF ADJACENT TO HP-1 (MOUNT 24" ABOVE ROOF) CONNECT TO 120V CIRCUIT FEEDING VRF UNITS.

- DRAWING NOTES**
- HEAT PUMP UNIT ON THE ROOF. PROVIDE ROOF EQUIPMENT SUPPORT RAILS. COORDINATE EXACT LOCATION IN FIELD.
  - CENTRAL CONTROLLER (OVERSEE AND MANAGE INDOOR UNITS). VERIFY EXACT LOCATION WITH OWNER.
  - ROOM THERMOSTAT. COORDINATE EXACT LOCATION IN FIELD.
  - RUN 1 1/2" CONDENSATE DOWN TO LOWER ROOF. PROVIDE A SPLASH BLOCK. INSTALL PIPE IN THE CORNER OF THE BUILDING, SO IT IS NOT VISIBLE FROM THE INSIDE.
  - REFRIGERANT PIPING UP.
  - REFRIGERANT PIPING DOWN.
  - RUN REFRIGERANT PIPING UP TO HEAT PUMP UNIT HP-1 ON THE ROOF.



SEAL

CONSULTANTS



SUBMISSION HISTORY


JOB INFO

**Timothy Edwards  
Middle School  
A/C**

**100 Arnold Way, South  
Windsor, CT 06074**

DWG DATA

PROJECT NUMBER:	22-347
SUBMISSION DATE:	11/30/2021
DRAWN:	DS
REVIEWED:	BJZ
SCALE:	AS NOTED

DWG TITLE

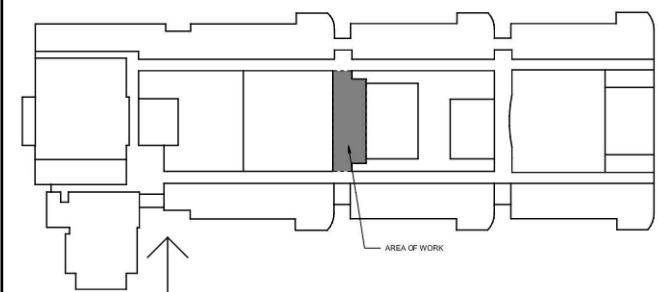
**MECHANICAL  
ELECTRICAL  
PART PLANS**

DWG #

**ME-1**

SEAL

CONSULTANTS



SUBMISSION HISTORY

JOB INFO

**Timothy Edwards  
Middle School  
A/C**  
  
**100 Arnold Way, South  
Windsor, CT 06074**

DWG DATA

PROJECT NUMBER: 22-347  
SUBMISSION DATE: 11/30/2021  
DRAWN: DS  
REVIEWED: BJZ  
SCALE: AS NOTED

DWG TITLE

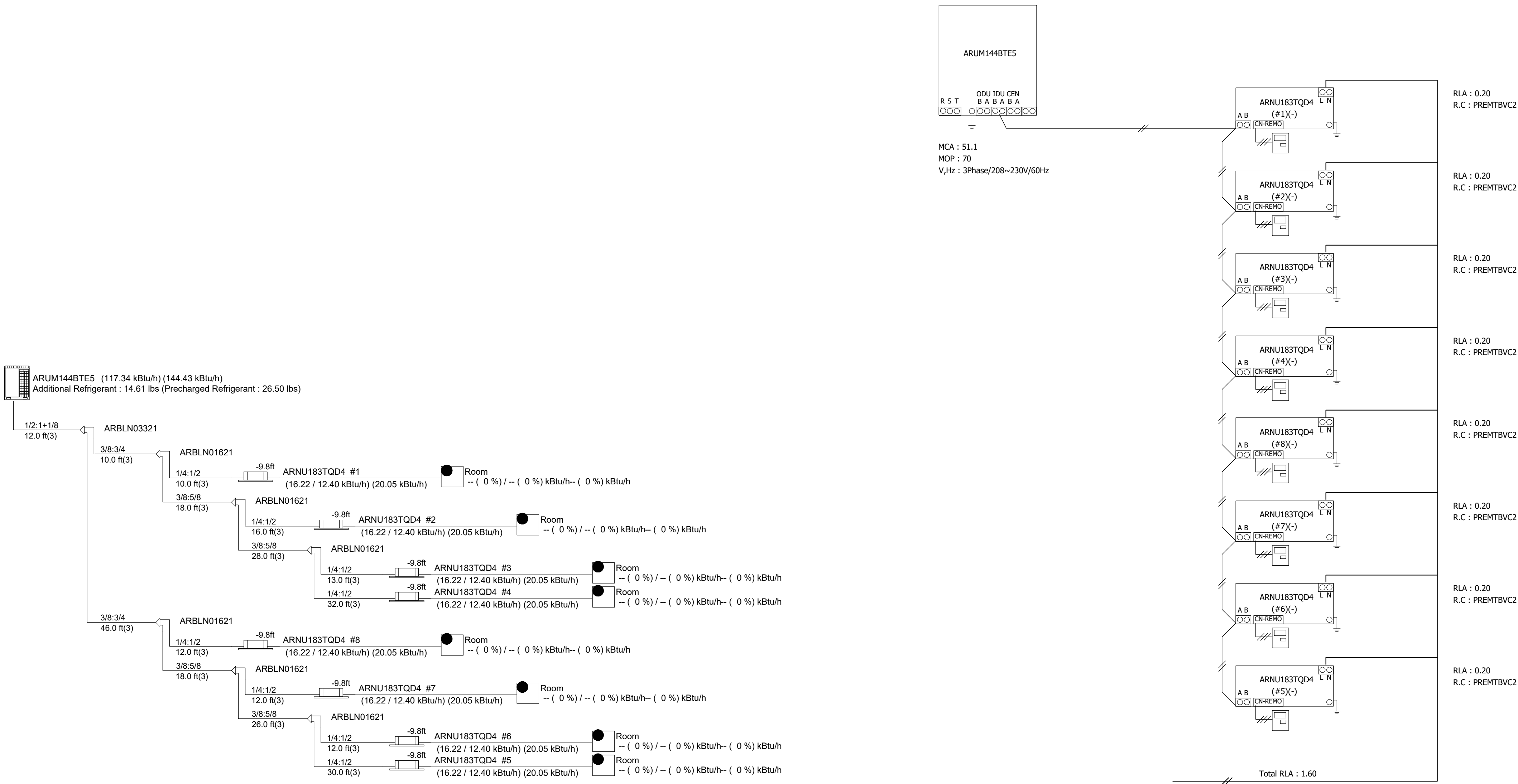
**MECHANICAL  
AND ELECTRICAL  
RISER DIAGRAMS**

DWG #

**ME-2**

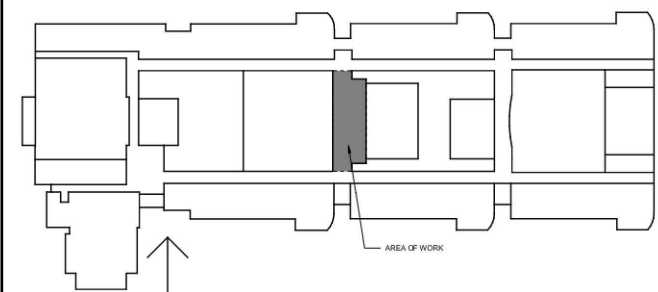
# Note :  
Power wiring, breaker size, and disconnects should follow local code and NEC.  
Multi-frame outdoor units require a separate power connection for each frame.  
Refer to the most up-to-date submittal sheets for applicable electrical data.

- Power line(Outdoor unit)
- Power line(Indoor unit / HR unit)
- Communication line (ODU-IDU / ODU-ODU) : Twisted, Stranded and shielded AWG 18 x 2C
- Communication line (ODU-CEN) : Twisted, Stranded and shielded AWG 18 x 2C
- Communication line(Remote controller) : Twisted and stranded AWG 22 x 3C
- Ground shield wire at ODU only
- Note : Polarity matters: Always connect 'A' to 'A' and 'B' to 'B'



SEAL

CONSULTANTS



SUBMISSION HISTORY

JOB INFO

**Timothy Edwards**  
**Middle School**  
**A/C**

**100 Arnold Way, South**  
**Windsor, CT 06074**

DWG DATA

PROJECT NUMBER: 22-347  
SUBMISSION DATE: 11/30/2021  
DRAWN: DS  
REVIEWED: BJZ  
SCALE: AS NOTED

DWG TITLE

**MECHANICAL  
DETAILS AND  
SCHEDULES**

DWG #

**ME-3**

**INDOOR FAN COIL UNIT SCHEDULE**

EVAPORATOR							
TAG	MFR	MODEL	TONS	COOLING CAPACITY (BTUH)	HEATING CAPACITY (BTUH)	CFM	MAX SOUND LEVEL dB(a)
VRF-A	LG	ARNU183TQD4	1.5	19,100	21,500	396/388/353	37/35/34

**EVAPORATOR ELECTRICAL**

TAG	AMPS	VOLTS/PHASE	WEIGHT (LBS)	REMARKS
VRF-A	0.20	208/1	35	FITS INTO 2'x2' CEILING GRID

**GENERAL NOTES/ACCESSORIES:**

1. ACCEPTABLE MANUFACTURERS BY: MITSUBISHI & DAIKIN.
2. CEILING MOUNTED CASSETTE 4-WAY BLOW.
3. PROVIDE MASTER CONTROLLER.
4. PROVIDE WALL MOUNTED THERMOSTATS.
5. PROVIDE DRAIN PAN UL LISTED CONDENSATE LEVEL SENSOR.
6. INTEGRAL CONDENSATE PUMP WITH UP TO 27" OF LIFT

**OUTDOOR HEAT PUMP UNIT SCHEDULE**

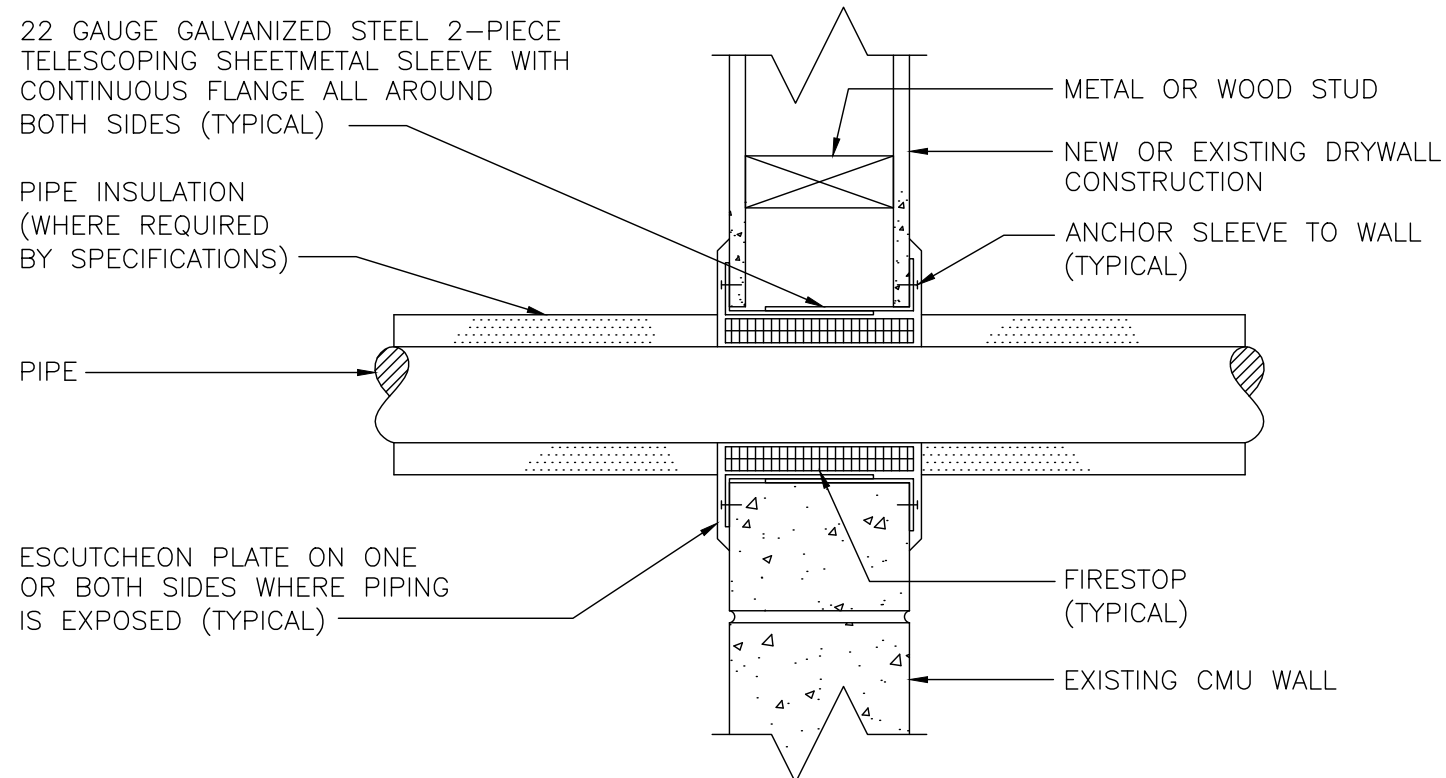
TAG	MFR	MODEL	AMBIENT TEMP (F)	TONS	COOLING (BTUH)	HEATING (BTUH)	COP	SHE
HP-1	LG	ARUM144BTE55	95	12	144,000	162,000	3.57	25.90

**ELECTRICAL**

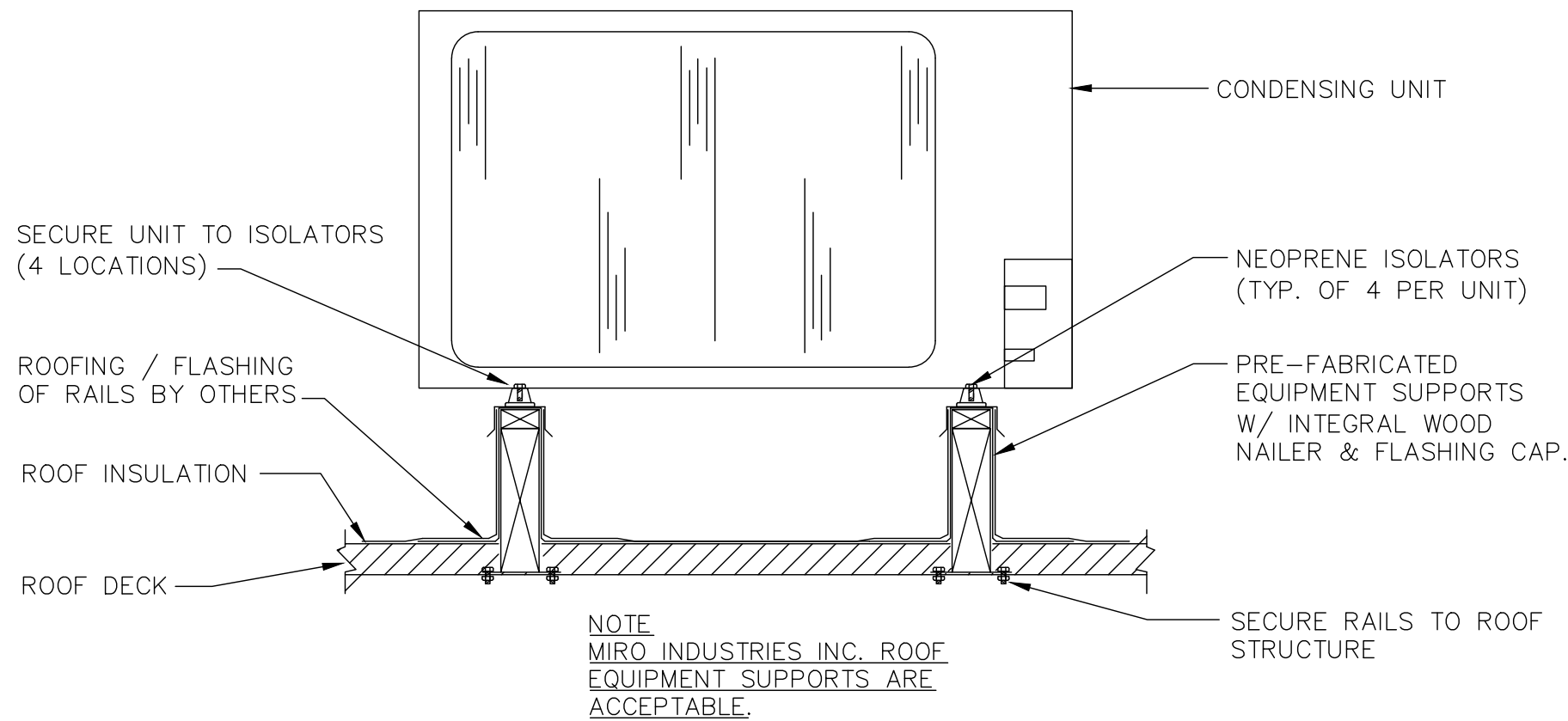
TAG	COMPRESSOR TYPE	REFRIGERANT	MCA	MCB	VOLTS/PHASE	WEIGHT (LBS)	EER	IEER	REMARKS
HP-1	INVERTER	R410A	51	70	208/1	639	12.10	23.00	

**GENERAL NOTES/ACCESSORIES:**

- ACCEPTABLE MANUFACTURERS BY: MITSUBISHI.
1. PROVIDE HAIL GUARD KIT.
  2. PROVIDE ROOF EQUIPMENT SUPPORTS EQUIVALENT TO CONN-FAB OR MIRO INDUSTRIES INC..
  3. PROVIDE BACNET INTERFACE CARD
  4. HEAT PUMPS MUST HAVE FULLY MODULATING INVERTER COMPRESSORS
  5. INSTALL ALL REFRIGERANT PIPING IN STRICT ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS AND RECOMMENDATIONS.




**DETAIL - PIPE SLEEVE**  
NOT TO SCALE



**ROOF MOUNTED CONDENSING UNIT DETAIL**  
NOT TO SCALE



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SEAL

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SUBMISSION HISTORY

JOB INFO

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DWG DATA

PROJECT NUMBER: 22--347  
SUBMISSION DATE: 11/30/2021  
DRAWN: DS  
REVIEWED: BJZ  
SCALE: AS NOTED

DWG TITLE

**MECHANICAL SPECIFICATIONS**

DWG #

**ME-4**

**MECHANICAL SPECIFICATIONS**

**GENERAL**

- WHEN A CONFLICT BETWEEN THE DRAWINGS, NOTES AND/OR SPECIFICATIONS OCCUR, THE MORE LARGENT, AND/OR LARGER AMOUNT OF MATERIAL AND/OR MORE EXPENSIVE SHALL APPLY. THE REQUIREMENTS LISTED WITHIN NOTES OR SPECIFICATIONS SHALL BE REQUIRED, PROVIDED AND INSTALLED WHETHER SPECIFICALLY INDICATED ON THE DRAWINGS OR NOT.
- IT IS THE INTENTION OF THE SPECIFICATIONS AND DRAWINGS TO PROVIDE FOR FINISHED WORK, TESTED AND READY FOR OPERATION.
- ITEMS AND SERVICES NOT SHOWN ON DRAWINGS OR SPECIFICATIONS BUT REQUIRED TO RENDER THE WORK COMPLETE AND READY FOR OPERATION, SHALL BE PROVIDED WITHOUT ADDITIONAL COST.
- WORK OF THIS SECTION SHALL BE GOVERNED BY THE CONTRACT DOCUMENTS. PROVIDE MATERIALS, LABOR, EQUIPMENT AND SERVICES NECESSARY TO FURNISH, DELIVER AND INSTALL ALL WORK AS REQUIRED BY JOB CONDITIONS. WHERE A CONFLICT EXISTS BETWEEN THESE NOTES, THE DRAWINGS AND THE SPECIFICATIONS, THE MORE STRINGENT REQUIREMENT SHALL APPLY.
- DRAWINGS ARE DIAGRAMMATIC AND INDICATE A GENERAL ARRANGEMENT OF WORK AND ARE NOT TO BE CONSIDERED SUB-CONTRACTOR DOCUMENTS. IT IS THE INTENT OF THESE DOCUMENTS TO INCLUDE THE PROVISION AND INSTALLATION OF ALL NECESSARY WORK AND MATERIALS FOR COMPLETE OPERATIONAL AND CODE COMPLIANT SYSTEMS BY THE CONTRACTOR. GENERAL DESIGN CONCEPTS INDICATED MUST BE FOLLOWED OR BETTERED. THE BID SHALL INCLUDE OFFSETS, ADDITIONAL PIPING, VALVES AND EQUIPMENT AND COMPONENTS AS REQUIRED TO MEET CONSTRUCTION CONDITIONS FOR PROPER OPERATION. DO NOT SCALE DRAWINGS. CONSULT ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR SPACE CONDITIONS AND ADDITIONAL REQUIREMENTS. DO NOT SCALE THE DRAWINGS.
- PERFORM THE WORK IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT GENERAL CONDITIONS AND IN COORDINATION WITH ALL OTHER TRADES. ALL WORK SHALL BE DONE IN CONFORMANCE AND PROVISIONS OF ALL APPLICABLE LOCAL, STATE AND FEDERAL CODES AND LAWS.

**CODES AND STANDARDS:**

CONNECTICUT BUILDING CODE AND ALL SUPPLEMENTS  
IBC 2015 INTERNATIONAL BUILDING CODE  
IEBC 2015 INTERNATIONAL EXISTING BUILDING CODE  
IMC 2015 INTERNATIONAL MECHANICAL CODE  
IMP 2015 INTERNATIONAL PLUMBING CODE  
IECC 2015 INTERNATIONAL ENERGY CONSERVATION CODE  
NEC 2017 NATIONAL ELECTRICAL CODE / NFPA 70  
NFPA NFPA-101 FIRE SAFETY CODE  
ICC/ANSI A117.1-2003 ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES

- WORK SHALL INCLUDE ALL INCIDENTALS, LABOR, MATERIALS, EQUIPMENT, APPLIANCES, SERVICES, HOISTING, SCAFFOLDING, SUPPORTS, TOOLS, CONSUMABLE ITEMS, FEES, LICENSES, AND ADMINISTRATIVE TASKS REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM.
- STORE MATERIALS INSIDE AND PROTECTED FROM DEBRIS, WEATHER AND MOISTURE.
- THE CONTRACTOR SHALL EXAMINE THE DRAWINGS AND SPECIFICATIONS RELATING TO THE WORK OF ALL DIVISIONS AND TRADES AND BECOME FULLY FAMILIAR AND INFORMED AS TO THE EXTENT AND CHARACTER OF WORK REQUIRED, AND ITS RELATIONSHIP TO THE REQUIREMENTS OF THIS DIVISION. INCLUDE ALL SUCH REQUIREMENTS AS PART OF THIS MECHANICAL WORK.
- BEFORE SUBMITTING A BID, THE CONTRACTOR SHALL VISIT THE SITE, AND SHALL BECOME THOROUGHLY FAMILIAR WITH ALL CONDITIONS UNDER WHICH THE WORK WILL BE INSTALLED. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR ANY ASSUMPTIONS, OMISSIONS OR ERRORS MADE AS A RESULT OF FAILURE TO BECOME FAMILIAR WITH THE SITE AND EXISTING BUILDING AND THE CONTRACT DOCUMENTS.

**PERMITS AND FEES**

- THE CONTRACTOR SHALL GIVE ALL NECESSARY NOTICES, OBTAIN ALL PERMITS; AND PAY ALL GOVERNMENT AND STATE SALES TAXES AND FEES WHERE APPLICABLE, AND OTHER COSTS, INCLUDING UTILITY CONNECTIONS OR EXTENSIONS IN CONNECTION WITH THE WORK, FILE ALL NECESSARY DRAWINGS, PREPARE ALL DOCUMENTS AND OBTAIN ALL NECESSARY APPROVALS OF ALL GOVERNMENTAL AND STATE DEPARTMENTS HAVING JURISDICTION, OBTAIN ALL REQUIRED CERTIFICATES OF INSPECTIONS FOR HIS WORK, AND DELIVER A COPY TO THE OWNER'S REPRESENTATIVE BEFORE REQUEST FOR ACCEPTANCE AND FINAL PAYMENT FOR THE WORK. REFER TO THE SUPPLEMENTARY GENERAL CONDITIONS FOR INFORMATION ON WAIVING OF PERMIT FEES.

**ALTERATION WORK AND DEMOLITION**

- ALL EQUIPMENT, DUCTWORK, PIPING, CONTROL DEVICES ETC., TO BE REMOVED, SHALL BE DISPOSED OVER BY THE OWNER, OR TURNED OVER TO THE OWNER, DIRECTED BY THE OWNER. EQUIPMENT, DUCTWORK, PIPING, CONTROL DEVICES, ETC. SHALL NOT BE REMOVED FROM THE PREMISES WITHOUT THE OWNERS APPROVAL. REMOVE ALL EXISTING COMPONENTS REQUIRED TO MEET THE FUNCTIONAL INTENT OF THE DESIGN DRAWINGS.
- NO DEAD ENDS SHALL BE LEFT ON ANY DUCTWORK AND PIPING SYSTEMS UPON COMPLETION OF WORK. ALL DUCTWORK AND PIPING BEING REMOVED SHALL BE PROPERLY VALVED AND CAPPED AT THE MAINS.
- ALL SYSTEMS SHALL BE LEFT IN WORKING ORDER TO THE SATISFACTION OF THE OWNER UPON COMPLETION OF ALL NEW WORK.
- CONDUCT SELECTIVE DEMOLITION WORK IN A MANNER THAT WILL MINIMIZE NEED FOR DISRUPTION OF NORMAL OPERATIONS IN OTHER AREAS OF THE BUILDING. PROVIDE MINIMUM OF 48 HOURS ADVANCE NOTICE TO OWNER OF DEMOLITION OR SYSTEM SHUTDOWN ACTIVITIES THAT WILL AFFECT NORMAL OPERATIONS IN THE BUILDING OR REQUIRE THE INTERRUPTION OF UTILITY SERVICES.
- DRAINING OF PIPING SYSTEMS: WHERE EXISTING PIPING SYSTEMS REQUIRE DRAINING OF FLUIDS FROM EQUIPMENT AND PIPING, ALL DRAINAGE SHALL BE DIRECTED BY HOSE OR PIPE TO SUITABLE, FREE FLOWING DRAINS OR SUITABLE CONTAINERS. DO NOT ALLOW EXCESSIVE FLUID/WATER BUILUP ON FLOORS OR SITE AREA. ENSURE THAT EXISTING DRAINS ARE KEPT CLEAR OF DEBRIS TO PREVENT BLOCKAGES.
- CERTAIN ITEMS OF EXISTING EQUIPMENT AND PIPING OR DUCTWORK MAY BE INDICATED FOR REMOVAL, RELOCATION OR ABANDONMENT. ITEMS NOTED FOR REMOVAL SHALL BE DISCONNECTED AND DISPOSED OF BY THE CONTRACTOR OR TURNED OVER TO THE OWNER IF THE OWNER SO REQUESTS. IF INSTRUCTED TO DISPOSE OF ITEMS, THE CONTRACTOR SHALL REMOVE THE ITEMS FROM THE PREMISES AND DISPOSE OF THEM IN A SAFE, LEGAL AND RESPONSIBLE MANNER AND LOCATION. ITEMS NOTED FOR RELOCATION ARE INTENDED FOR REUSE IN ANOTHER LOCATION AS DESIGNATED ON THE DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REMOVE THE MATERIAL FROM ITS PRESENT LOCATION, STORE THE MATERIAL IN A SAFE PLACE, AND REINSTALL THE MATERIAL IN ITS NEW LOCATION. QUESTIONS REGARDING THE SUITABILITY OF THE MATERIAL OR EQUIPMENT SHALL BE BROUGHT, IN WRITTEN FORM, TO THE ATTENTION OF THE OWNER/ENGINEER. ABANDONMENT SHALL BE DEFINED AS LEAVING IN PLACE ANY ITEM SO DESIGNATED AND SHALL INCLUDE PROPER PIPING OR DUCTWORK TERMINATION WITHIN ANY OCCUPIED OR OPEN AREA. ALL ABANDONED PIPES AND DUCTS SHALL BE DISCONNECTED AND CAPPED AT THEIR MAINS.

**COORDINATION WITH OTHER DIVISIONS**

- ALL WORK SHALL BE CARRIED OUT IN CONJUNCTION WITH OTHER TRADES AND FULL COOPERATION SHALL BE GIVEN IN ORDER THAT ALL WORK MAY PROCEED WITH A MINIMUM OF DELAY AND INTERFERENCE. PARTICULAR EMPHASIS IS PLACED ON TIMELY INSTALLATION OF MAJOR APPARATUS AND FURNISHING

OTHER CONTRACTORS, ESPECIALLY THE CONSTRUCTION MANAGER, WITH INFORMATION AS TO OPENINGS, CHASES, SLEEVES, BASES, INSERTS, EQUIPMENT LOCATIONS, PANELS, ETC., REQUIRED BY OTHER TRADES.

- THE CONTRACTORS ARE REQUIRED TO EXAMINE ALL OF THE PROJECT DRAWINGS, INCLUDING THE SITE, ARCHITECTURAL, STRUCTURAL AND THOSE OF OTHER MECHANICAL AND ELECTRICAL TRADES AND MUTUALLY ARRANGE WORK SO AS TO AVOID INTERFERENCE WITH THE WORK OF OTHER TRADES AND /OR EXISTING SYSTEMS AND EQUIPMENT. IN GENERAL, DUCTWORK, HEATING PIPING, SPRINKLER PIPING AND DRAINAGE LINES TAKE PRECEDENCE OVER WATER, GAS AND ELECTRICAL CONDUITS. THE ENGINEER SHALL MAKE FINAL DECISIONS REGARDING THE ARRANGEMENT OF WORK WHICH CANNOT BE AGREED UPON BY THE CONTRACTORS.
- WHERE THE WORK OF THE CONTRACTOR WILL BE INSTALLED IN CLOSE PROXIMITY TO OR WILL INTERFERE WITH WORK OF OTHER TRADES, THE CONTRACTORS WILL COOPERATE IN WORKING OUT SPACE CONDITIONS TO MAKE A SATISFACTORY ADJUSTMENT.
- IF THE WORK UNDER A SECTION IS INSTALLED BEFORE COORDINATING WITH OTHER DIVISIONS OR SECTIONS OR SO AS TO CAUSE INTERFERENCE WITH WORK OF OTHER SECTIONS, THE NECESSARY CHANGES TO CORRECT THE CONDITION SHALL BE MADE BY THE CONTRACTOR CAUSING THE INTERFERENCE WITHOUT EXTRA CHARGE TO THE OWNER.

**SHUT DOWNS**

- WHEN INSTALLATION OF A NEW SYSTEM REQUIRES THE TEMPORARY SHUTDOWN OF AN EXISTING OPERATING SYSTEM, THE NEEDED SHUT DOWN OF THE NEW SYSTEM SHALL BE PERFORMED AT SUCH TIME AS DESIGNATED BY THE ENGINEER OR THE OWNER'S REPRESENTATIVE.
- THE ENGINEER AND THE OWNER SHALL BE NOTIFIED OF THE ESTIMATED DURATION OF THE SHUTDOWN PERIOD AT LEAST THREE (3) DAYS IN ADVANCE OF THE DATE THE WORK IS TO BE PERFORMED.
- WORK SHALL BE ARRANGED FOR CONTINUOUS PERFORMANCE WHENEVER POSSIBLE. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY LABOR, INCLUDING OVERTIME IF REQUIRED, TO ASSURE THAT EXISTING OPERATING SERVICES WILL BE SHUT DOWN ONLY DURING THE TIME ACTUALLY REQUIRED TO MAKE NECESSARY CONNECTIONS.

**ELECTRICAL CONNECTIONS**

- UNLESS OTHERWISE SPECIFIED, ALL WIRING SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH DIVISION 26.
- ALL POWER WIRING SHALL BE FURNISHED AND INSTALLED UNDER DIVISION 26 COMPLETE FROM POWER SOURCE TO MOTOR OR EQUIPMENT JUNCTION BOX INCLUDING POWER WIRING THROUGH THE STARTERS. ALL STARTERS NOT FACTORY MOUNTED ON EQUIPMENT SHALL BE MOUNTED UNDER THE SPECIFICATION SECTION FURNISHING THE STARTER.
- THE MECHANICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL TEMPERATURE CONTROL WIRING, INTERLOCK WIRING AND EQUIPMENT CONTROL WIRING FOR THE EQUIPMENT FURNISHED UNDER THIS DIVISION.
- THE MECHANICAL CONTRACTOR SHALL FURNISH STARTERS AND/OR DISCONNECTS TO THE ELECTRICAL CONTRACTOR FOR EQUIPMENT PROVIDED. THE MECHANICAL CONTRACTOR SHALL PROVIDE AND BE RESPONSIBLE FOR THE PROPERLY SIZED OVERLOAD HEATERS IN ALL STARTERS THAT HE FURNISHES.

**SHOP DRAWINGS**

- PRIOR TO DELIVERY TO THE JOBSITE AND SUFFICIENTLY IN ADVANCE TO ALLOW THOROUGH REVIEW, THE CONTRACTOR SHALL SUBMIT, FOR REVIEW, DETAILED SHOP DRAWINGS OF ALL EQUIPMENT AND MATERIAL SPECIFIED IN EACH SECTION AND COMMON WORK LAYOUTS. ALL DUCTWORK SHOP DRAWINGS, AUTOMATIC TEMPERATURE CONTROLS AND ALL DIAGRAMS AND RISERS SHALL BE SUBMITTED IN HARD