

January 22, 2025

**North Rockland High School Chiller & HVAC Upgrades**  
**MSA File No. 43065**  
**North Rockland Highschool**

**SED No. 50-02-01-06-0-016-037**

## **NOTICE TO BIDDERS**

Re: **ADDENDUM NO. 1**

**THE FOLLOWING REVISIONS TO THE PROJECT MANUAL AND OR THE DRAWINGS REFERENCED HEREIN SHALL BECOME A PART OF THE CONTRACT DOCUMENTS AND SHALL SUPERSEDE ANY PRIOR OR CONFLICTING INFORMATION.**

- 1) SEALED BIDS will be received until 2:00 PM. in the office of facilities, on the 28<sup>th</sup> of January 2025, at the North Rockland Central School District, 65 Chapel Street, Garnerville, NY 10923, at which time and place they will be publicly opened and read. Faxed bids will NOT be accepted. Bids must be in sealed envelope(s) approximately labeled with the following label:  
“North Rockland High School Chiller & HVAC Upgrades”
- 2) Deliver Bids to: North Rockland Central School District  
65 Chapel Street  
Garnerville, NY 10923
- 3) The North Rockland Central School District is exempt from sales tax.
- 4) All requests may be sent to [bidning@shilale.com](mailto:bidning@shilale.com). As per specification 001000 section 3.2.2, “Requests for clarification or interpretation of the bidding documents shall be submitted by the bidder in writing and shall be received by the architect at least seven (7) days prior to the date for receipt of bids.”
- 5) Requests for additional site visits may be emailed to [bidning@shilale.com](mailto:bidning@shilale.com). We will coordinate with the District for additional visits if required.
- 6) Removing and reinstalling existing ceiling tiles will be base bid work. Any damaged tiles will be required to be replaced by Contractor.
- 7) Allowance No. 4 and No. 5 have been removed from the project and are now void. See attached revised drawing A-000 Cover Sheet and specification sections 003000 E Electrical Bid Form and 012100 Allowances.
- 8) Unit Price No. 3 has been removed from the project and is now void. See attached revised drawing A-000 Cover Sheet and specification sections 003000 E Electrical Bid Form and 012200 Unit Prices.
- 9) Alternate No. 2 and No. 3 have been removed from the project and are now void. See attached revised drawing A-000 Cover Sheet and specification sections 003000 G General Construction Bid Form, 003001 HVAC Bid Form, 003002 Electrical Bid Form and 012300 Alternates.

- 10) RTU Structural Steel. As per specification section 011200 Multiple Contract Summary, item 1.7.D.4. the General Contractor is responsible to “Supply and install structural steel modifications required for RTU’s. Make structural modifications to the building’s steel frame to support the new RTU’s.”
- 11) Gym Floor Protection. Each Contractor is responsible for protection related to their work. Item 1.6.C in specification section 011200 Multiple Contract Summary specifies that each contractor is responsible for the responsibilities listed in 015000 Temporary Facilities and Controls. Protection of existing facilities is covered in specification section 015000 Temporary Facilities and Controls item 3.4.A. The Project Coordinator is responsible to “Coordinate protection of the Work” as per item 1.5.A.17 in specification section 011200 Multiple Contract Summary.
- 12) Asbestos Abatement. As per specification section 011200 Multiple Contract Summary, item 1.8.D.3. the HVAC Contractor is responsible for “All Hazardous materials removal will be a subcontractor of the HVAC Contractor.”
- 13) Do the curbs come with units on state contract?  
**See attached revised specification section 016400 Owner Furnished Products item 3.4.B. Curbs will be provided by the Owner under State Contract.**
- 14) Hot water storage tank and supports to be removed. In addition to the hot water storage tank to be removed, see keynote D9 on D-101, the hot water storage tank supports (masonry piers) are also to be removed.
- 15) Condensing boiler, domestic water tank, and all pumps to be provided and installed by HVAC Contractor.
- 16) See attached revised Drawing M-004 dated 01-22-25. Drawing was updated to revise the rooftop schedule to reflect that Siemens will be installing the DDC controls and sensors in the RTU’s for the BMS. Siemens will be retained by the Owner on State Contract.
- 17) See attached revised Drawing M-401 dated 01-22-25. Detail 1 drawing title was revised.
- 18) See attached revised Drawing M-403 dated 01-22-25. Drawing was updated to reflect that Siemens will be installing the DDC controls and sensors in the RTU’s for the BMS.
- 19) Please confirm what equipment the owner is providing:
- a) RTU’s D1-2, 3-6
  - b) Chillers
    - i) Pumps
  - c) Boilers/ Boiler Accessories
    - i) Expansion Tanks
    - ii) Air Separator
    - iii) Water Makeup Unit
    - iv) Chemical Shot Feeder
    - v) Domestic Water Heater
    - vi) Pumps
  - d) Controls
- See attached revised specification sections 011200 Multiple Contract Summary and 016400 Owner Furnished Products. The RTUs will be supplied by the Owner and installed by the HVAC Contractor. The chillers and pumps are not included in the contract. The boiler and all boiler accessories are to be provided and installed by the HVAC Contractor. Controls will be supplied through the Owner’s contract with Siemens. As Project Coordinator, the HVAC Contractor is responsible for coordinating all parties.**

20) Is startup, training, O&M, as built, and attic stock etc. for OFCI controls and equipment being provided by the owner or by the HVAC contractor? Please advise.

The Manufacturers for all Owner Furnished Contractor Installed products are responsible to provide all closeout related documents. The Project Coordinator is responsible to request, obtain, and provide to the Owner all closeout related documents. Training to be provided by the Manufacturers, but the Project Coordinator is responsible for scheduling and coordinating. Each contractor is responsible to provide As-Built for their trade's scope of work. The HVAC Contractor's as-builts shall include the HVAC systems installed.

21) Is the gas to the boilers to be provided by the HVAC contractor? Please advise.

HVAC Contractor to provide and install the gas boiler.

22) GC Bid Form Alternate 2&3 states:

Remove existing ceiling in annex gymnasium/ main gymnasium prepare and paint existing exposed roof deck/ structural steel/ conduits/ ductwork, rehang electrical components + fire alarm audio wire and install new suspended lighting. Install 800 LF of new cable trays for electrical wires. Please confirm the rehang of electrical components, fire alarm wiring, installation of new suspended lighting, installation of 800 LF of cable trays for electrical wires is by the electrical contractor.

Alternates 2&3 have been voided. See attached revised drawing A-000 Cover Sheet and specification sections 003000 G General Construction Bid Form, 003001 HVAC Bid Form, 003002 Electrical Bid Form and 012300 Alternates.

23) Please provide a starting date for the project (Milestone Schedule).

As per the Bid Forms, time of completion is: Substantial Completion by August 22<sup>nd</sup>, 2025 and Punch List work completed by September 12<sup>th</sup>, 2025. There is no official start date. After the Contracts are signed, the Contractor may schedule work as early as possible with coordination with the Owner. No work is permitted while classes are in session. The last day of classes is June 27<sup>th</sup>, 2025. Any work performed on class days is to be second shift and must be coordinated with the Owner. Work during holidays is also permitted but must be coordinated with the Owner.

## END OF ADDENDUM NO. 1

PART 1 - GENERAL

1.01 GENERAL

- A. Pursuant to, and in compliance with, your Advertisement for Bids and the Information to Bidders relative thereto and all of the Contract Documents, including any Addenda issued by the Architect and mailed to the undersigned prior to the opening Bids, whether received by the undersigned or not, we

\_\_\_\_\_ (CONTRACTOR NAME)

hereby proposes to furnish all plant, labor, supplies, materials, and equipment for North Rockland HS Chiller Replacement & HVAC Upgrades – General Construction, as required by and in strict accord with the applicable provisions of the Drawings and Specifications entitled “HS Chiller Replacement & HVAC Upgrades – General Construction at North Rockland High School, 106 Hammond Rd, Thiells, NY 10984 for the North Rockland Central School District, 65 Chapel Street, Garnerville, NY 10923 ”, all to the satisfaction and approval of the Architect and the Owner in accordance with the terms and conditions of the Contract Documents for the following prices:

1. \_\_\_\_\_ Dollars

(Write out in words)

( \_\_\_\_\_ ) Base Bid for all work.

\_\_\_\_\_ Consecutive Calendar Days for substantial completion \_\_\_\_\_ with base bid.

The undersigned further proposes and agrees hereby to commence work with an adequate force and equipment immediately after being notified in writing to do so, and to achieve substantial completion for all work as required by the plans and specifications within the number of consecutive calendar days as itemized above.

HS Chiller Replacement and HVAC Upgrades

Total Project General Construction (\$ \_\_\_\_\_)

- B. ALTERNATES

The undersigned further proposes and agrees that, should any of the following alternates be accepted and included in the Contract, the amount of the Base Bid, is hereto stated, shall be increased or decreased by the amounts indicated below.

Alternate No. 1: Void

Alternate No. 2: Void

Alternate No. 3: Void

- C. ALLOWANCES

The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents.

No allowances at this time.

1.02 TIME OF COMPLETION

- A. It is agreed by the undersigned that after receipt of Notice of Award and a consummation of a Contract Agreement in accord with the terms of the Contract Documents, Substantial completion will be by Augst 22<sup>nd</sup>

2025 . The punch list work will be completed by September 12<sup>th</sup>, 2025 and performed after school hours.

1.03 BID SECURITY

A. Attached hereto is Bid Security in the amount of five percent (5%) of the Base Bid.

1.04 UNIT PRICES

A. For work to be supplied or omitted at the price rate stipulated herein should the volume of work be increased, the following unit prices will be established as the limitations for such items of work, and each unit price shall include material, labor and services of each and everything necessary or required to complete for like work in kind, quality and function.

No unit prices at this time.

1.06 NON-COLLUSIVE BIDDING CERTIFICATION

A. By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of knowledge and belief:

1. The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor.
2. Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor; and
3. No attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not submit a bid for the purpose of restricting competition.

Resolved that \_\_\_\_\_  
(Name of Individual)

be authorized to sign and submit the bid or proposal of this corporation for the following project \_\_\_\_\_ and to include in such bid or proposal the certificate as to non-collusion required by Section One Hundred Three (d) (103d) of the General Municipal Law as the act and deed of such corporation, and for any inaccuracies or misstatements in such certificate this corporate bidder shall be liable under the penalty of perjury.

The foregoing is a true and correct cop of the resolution by

\_\_\_\_\_  
Corporation at a meeting of its Board of Directors held on the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

(SEAL OF THE CORPORATION)

\_\_\_\_\_  
Secretary

1.07 ACCEPTANCE

A. When this Proposal is accepted, the undersigned agrees to enter into Contract with the Owner as provided in the Form of Agreement.

1.08 AFFIRMS

- A. The undersigned affirms and agrees that this Proposal is a firm one which remains in effect and will be irrevocable for a period of forty-five (45) days after opening of Bids.

1.09 TYPE OF BUSINESS

- A. The undersigned hereby represents that it is a \_\_\_\_\_ (Corporation, Partnership, or an Individual). If a corporation, then the undersigned further represents that it is duly qualified as a corporation under laws of New York State and it is authorized to do business in this State.

1.10 DOL REGISTRATION REQUIREMENTS

- A. In compliance with section 220-i of the NY Labor Law. Contractors must be registered with NYS DOL before bidding on public work projects.
- B. Contractors are required to submit a valid DOL certificate of registration with this bid.
- C. Contractors must ensure that subcontractors are registered with DOL prior to commencing any work on public works projects.

1.11 PLACE OF BUSINESS

- A. The following is the name and address of the person to whom all notices required in the connection with this Proposal may be telephoned, mailed, or delivered.

\_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Telephone)

1.12 EXECUTION OF CONTRACT

- A. When written Notice of Acceptance of the Proposal is mailed or delivered to the undersigned within forty-five (45) days after the opening of Bids, or anytime thereafter should the Proposal not be withdrawn, the undersigned, within ten (10) days, will execute the Form of Agreement with the Owner.

1.13 ADDENDA

- A. Any Addenda issued by the Architect and mailed or delivered to the undersigned prior to the Bid opening date shall become part of the Contract Documents. The Bidder shall enter on this list any addenda issued after this Form of Proposal has been received and shall fill in the addenda number and date.

Addendum # _____	Dated _____

1.14 ASBESTOS

- A. The Contractor certifies that no asbestos or asbestos-containing material will be incorporated into the Work of this Contract.

(Sign Bid Here)

Dated \_\_\_\_\_, 20\_\_\_\_\_

Legal Name of Person, Partnership  
or Corporation

By \_\_\_\_\_

Title \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

PART 1 - GENERAL

1.01 GENERAL

A. Pursuant to, and in compliance with, your Advertisement for Bids and the Information to Bidders relative thereto and all of the Contract Documents, including any Addenda issued by the Architect and mailed to the undersigned prior to the opening Bids, whether received by the undersigned or not, we

\_\_\_\_\_  
(CONTRACTOR NAME)

hereby proposes to furnish all plant, labor, supplies, materials, and equipment for HS Chiller Replacement & HVAC Upgrades – HVAC, as required by and in strict accord with the applicable provisions of the Drawings and Specifications entitled “HS Chiller Replacement & HVAC Upgrades – HVAC at North Rockland High School, 106 Hammond Rd, Thiells, NY 10984 for the North Rockland Central School District, 65 Chapel Street, Garnerville, NY 10923”, all to the satisfaction and approval of the Architect and the Owner in accordance with the terms and conditions of the Contract Documents for the following prices:

1. \_\_\_\_\_ Dollars  
(Write out in words)  
( \_\_\_\_\_ ) Base Bid for all work.

\_\_\_\_\_ Consecutive Calendar Days for substantial completion \_\_\_\_\_ with base bid.

The undersigned further proposes and agrees hereby to commence work with an adequate force and equipment immediately after being notified in writing to do so, and to achieve substantial completion for all work as required by the plans and specifications within the number of consecutive calendar days as itemized above.

HS Chiller Replacement and HVAC Upgrades  
Total Project HVAC Construction (\$ \_\_\_\_\_)

B. ALTERNATES

The undersigned further proposes and agrees that, should any of the following alternates be accepted and included in the Contract, the amount of the Base Bid, is hereto stated, shall be increased or decreased by the amounts indicated below.

Alternate No. 1: Void

Alternate No. 2: Void

Alternate No. 3: Void

C. ALLOWANCES

The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents.

Allowance No. 1:  
Clean existing main ductwork for 20 linear feet per unit  
At RTUS D1 and D2. (\$ \_\_\_\_\_)

Allowance No. 2:  
Replace existing supply and return piping and insulation for  
20 linear feet per unit at RTUS D1 and D2. (\$ \_\_\_\_\_)

Allowance No. 3:

Provide proposal from third party HVAC commissioning agent for owners to contract with (deduct allowance).

(\$ \_\_\_\_\_)

1.02 TIME OF COMPLETION

A. It is agreed by the undersigned that after receipt of Notice of Award and a consummation of a Contract Agreement in accord with the terms of the Contract Documents, Substantial completion will be by Augst 22<sup>nd</sup> 2025 . The punch list work will be completed by September 12<sup>th</sup>, 2025 and performed after school hours.

1.03 BID SECURITY

A. Attached hereto is Bid Security in the amount of five percent (5%) of the Base Bid.

1.04 UNIT PRICES

A. For work to be supplied or omitted at the price rate stipulated herein should the volume of work be increased, the following unit prices will be established as the limitations for such items of work, and each unit price shall include material, labor and services of each and everything necessary or required to complete for like work in kind, quality and function.

Unit Price No. 1:

Provide unit price to add or reduce 10 linear feet of existing main ductwork Cleaning for each unit. Price is per 10 linear foot to modify allowance No. 1.

(\$ \_\_\_\_\_ per 10 linear feet)

Unit Price No. 2:

Provide unit price to add or reduce existing supply and return to piping and insulation for 10 linear feet. Price is per 10 linear foot to modify allowance No. 2.

(\$ \_\_\_\_\_ per 10 linear feet)

1.06 NON-COLLUSIVE BIDDING CERTIFICATION

A. By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of knowledge and belief:

- 1. The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor.
- 2. Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor; and
- 3. No attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not submit a bid for the purpose of restricting competition.

Resolved that \_\_\_\_\_  
(Name of Individual)

be authorized to sign and submit the bid or proposal of this corporation for the following project \_\_\_\_\_ and to include in such bid or proposal

the certificate as to non-collusion required by Section One Hundred Three (d) (103d) of the General Municipal Law as the act and deed of such corporation, and for any inaccuracies or misstatements in such certificate this corporate bidder shall be liable under the penalty of perjury.

The foregoing is a true and correct cop of the resolution by

\_\_\_\_\_  
Corporation at a meeting of its Board of Directors held on the  
\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

(SEAL OF THE CORPORATION)

\_\_\_\_\_  
Secretary

1.07 ACCEPTANCE

A. When this Proposal is accepted, the undersigned agrees to enter into Contract with the Owner as provided in the Form of Agreement.

1.08 AFFIRMS

A. The undersigned affirms and agrees that this Proposal is a firm one which remains in effect and will be irrevocable for a period of forty-five (45) days after opening of Bids.

1.09 TYPE OF BUSINESS

A. The undersigned hereby represents that it is a \_\_\_\_\_  
(Corporation, Partnership, or an Individual). If a Corporation, then the undersigned further represents that it is duly qualified as a Corporation under laws of New York State and it is authorized to do business in this State.

1.10 DOL REGISTRATION REQUIREMENTS

A. In compliance with section 220-i of the NY Labor Law. Contractors must be registered with NYS DOL before bidding on public work projects.

B. Contractors are required to submit a valid DOL certificate of registration with this bid.

C. Contractors must ensure that all subcontractors are registered with DOL prior to commencing any work on public works projects.

1.11 PLACE OF BUSINESS

A. The following is the name and address of the person to whom all notices required in the connection with this Proposal may be telephoned, mailed or delivered.

\_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Telephone)

1.12 EXECUTION OF CONTRACT

- A. When written Notice of Acceptance of the Proposal is mailed or delivered to the undersigned within forty-five (45) days after the opening of Bids, or anytime thereafter should the Proposal not be withdrawn, the undersigned, within ten (10) days, will execute the Form of Agreement with the Owner.

1.13 ADDENDA

- A. Any Addenda issued by the Architect and mailed or delivered to the undersigned prior to the Bid opening date shall become part of the Contract Documents. The Bidder shall enter on this list any addenda issued after this Form of Proposal has been received and shall fill in the addenda number and date.

B.

Addendum # _____	Dated _____

1.14 ASBESTOS

- A. The Contractor certifies that no asbestos or asbestos-containing material will be incorporated into the Work of this Contract.

(Sign Bid Here)

Dated \_\_\_\_\_, 20\_\_\_\_

\_\_\_\_\_

Legal Name of Person, Partnership  
or Corporation

By \_\_\_\_\_

Title \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

PART 1 - GENERAL

1.01 GENERAL

A. Pursuant to, and in compliance with, your Advertisement for Bids and the Information to Bidders relative thereto and all of the Contract Documents, including any Addenda issued by the Architect and mailed to the undersigned prior to the opening Bids, whether received by the undersigned or not, we

\_\_\_\_\_  
(CONTRACTOR NAME)

hereby proposes to furnish all plant, labor, supplies, materials and equipment for HS Chiller Replacement & HVAC Upgrades - Electrical, as required by and in strict accord with the applicable provisions of the Drawings and Specifications entitled "HS Chiller Replacement & HVAC Upgrades - Electrical at 106 Hammond Rd, Thiells, NY 10984 for the North Rockland Central School District, 65 Chapel Street, Garnerville, NY 10923 ", all to the satisfaction and approval of the Architect and the Owner in accordance with the terms and conditions of the Contract Documents for the following prices:

1. \_\_\_\_\_ Dollars

(Write out in words)

( \_\_\_\_\_ ) Base Bid for all work.

\_\_\_\_\_ Consecutive Calendar Days for substantial completion \_\_\_\_\_ with base bid.

The undersigned further proposes and agrees hereby to commence work with an adequate force and equipment immediately after being notified in writing to do so, and to achieve substantial completion for all work as required by the plans and specifications within the number of consecutive calendar days as itemized above.

HS Chiller Replacement & HVAC Upgrades

( \$ \_\_\_\_\_ )

B. ALTERNATES

The undersigned further proposes and agrees that, should any of the following alternates be accepted and included in the Contract, the amount of the Base Bid, is hereto stated, shall be increased or decreased by the amounts indicated below.

Alternate No. 1: Void

Alternate No. 2: Void

Alternate No. 3: Void

C. ALLOWANCES

The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents.

Allowance No.4: Void

Allowance No. 5: Void

1.02 TIME OF COMPLETION

- A. It is agreed by the undersigned that after receipt of Notice of Award and a consummation of a Contract Agreement in accord with the terms of the Contract Documents, Substantial completion will be by Augst 22<sup>nd</sup> 2025. The punch list work will be completed by September 12<sup>th</sup>, 2025 and performed after school hours.

1.03 BID SECURITY

- A. Attached hereto is Bid Security in the amount of five percent (5%) of the Base Bid.

1.04 UNIT PRICES

Unit Price No. 3:Void

1.06 NON-COLLUSIVE BIDDING CERTIFICATION

- A. By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of knowledge and belief:
  1. The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor.
  2. Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor; and
  3. No attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not submit a bid for the purpose of restricting competition.

Resolved that \_\_\_\_\_  
(Name of Individual)

be authorized to sign and submit the bid or proposal of this corporation for the following project \_\_\_\_\_ and to include in such bid or proposal the certificate as to non-collusion required by Section One Hundred Three (d) (103d) of the General Municipal Law as the act and deed of such corporation, and for any inaccuracies or misstatements in such certificate this corporate bidder shall be liable under the penalty of perjury.

The foregoing is a true and correct cop of the resolution by

\_\_\_\_\_  
Corporation at a meeting of its Board of Directors held on the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

(SEAL OF THE CORPORATION)

\_\_\_\_\_  
Secretary

1.07 ACCEPTANCE

- A. When this Proposal is accepted, the undersigned agrees to enter into Contract with the Owner as provided in the Form of Agreement.

1.08 AFFIRMS

- A. The undersigned affirms and agrees that this Proposal is a firm one which remains in effect and will be irrevocable for a period of forty-five (45) days after opening of Bids.

1.09 TYPE OF BUSINESS

- A. The undersigned hereby represents that it is a \_\_\_\_\_ (Corporation, Partnership, or an Individual). If a Corporation, then the undersigned further represents that it is duly qualified as a Corporation under laws of New York State and it is authorized to do business in this State.

1.10 DOL REGISTRATION REQUIREMENTS

- A. In compliance with section 220-I of the NY Labor Law. Contractors must be registered with NYS DOL before bidding on public works projects.
- B. Contractors are required to submit a valid DOL certificate of registration with this bid.
- C. Contractors must ensure that all subcontractors are registered with DOL prior to commencing any work on public works projects.

1.11 PLACE OF BUSINESS

- A. The following is the name and address of the person to whom all notices required in the connection with this Proposal may be telephoned, mailed or delivered.

\_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Telephone)

1.12 EXECUTION OF CONTRACT

- A. When written Notice of Acceptance of the Proposal is mailed or delivered to the undersigned within forty-five (45) days after the opening of Bids, or anytime thereafter should the Proposal not be withdrawn, the undersigned, within ten (10) days, will execute the Form of Agreement with the Owner.

1.13 ADDENDA

- A. Any Addenda issued by the Architect and mailed or delivered to the undersigned prior to the Bid opening date shall become part of the Contract Documents. The Bidder shall enter on this list any addenda issued after this Form of Proposal has been received and shall fill in the addenda number and date.

Addendum # _____	Dated _____

1.14 ASBESTOS

- A. The Contractor certifies that no asbestos or asbestos-containing material will be incorporated into the Work of this

Contract.

(Sign Bid Here)

Dated \_\_\_\_\_, 20\_\_\_\_

\_\_\_\_\_  
Legal Name of Person, Partnership  
or Corporation

By \_\_\_\_\_

Title \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

## SECTION 011200 - MULTIPLE CONTRACT SUMMARY

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. Section includes a summary of each contract, including responsibilities for coordination and temporary facilities and controls.
- B. Specific requirements for Work of each contract are also indicated in individual Specification Sections and on Drawings.
- C. Related Requirements:
  - 1. Section 011000 "Summary" for the Work covered by the Contract Documents, restrictions on use of Project site, phased construction, coordination with occupants, and work restrictions.
  - 2. Section 013100 "Project Management and Coordination" for general coordination requirements.

## 1.3 DEFINITIONS

- A. Permanent Enclosure: As determined by Architect, the condition at which roofing is insulated and weathertight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction or substantial temporary closures equivalent in weather protection to permanent construction.

## 1.4 PROJECT COORDINATOR

- A. Project coordinator shall be responsible for coordination between the General Construction Contract, HVAC Contract, and Electrical Contract.
  - 1. HVAC Contractor will act as the project Coordinator for the entire HVAC project at the High School Building, and coordination with Electrical and General for tasks which HVAC contractor is coordinator for.
  - 2. Chiller Replacement work has been awarded by the owner and is currently under construction. Any chiller work referenced in the construction documents is Not In Contract for the HVAC contractor.

## 1.5 COORDINATION ACTIVITIES

- A. Coordination activities of Project coordinator include, but are not limited to, the following:
  - 1. Provide overall coordination of the Work.
  - 2. Coordinate shared access to workspaces.
  - 3. Coordinate product selections for compatibility.
  - 4. Provide overall coordination of temporary facilities and controls.
  - 5. Coordinate, schedule, and approve interruptions of permanent and temporary utilities, including those necessary to make connections for temporary services.
  - 6. Coordinate construction and operations of the Work with work performed by each Contract and Owner's construction forces and separate contracts.

7. Prepare coordination drawings in collaboration with each contractor to coordinate work by more than one contract.
  8. Coordinate sequencing and scheduling of the Work. Include the following:
    - a. Initial Coordination Meeting: At the earliest possible date, arrange and conduct a meeting with contractors for sequencing and coordinating the Work; negotiate reasonable adjustments to schedules.
    - b. Prepare a combined contractors' construction schedule for entire Project. Base schedule on preliminary construction schedule. Secure time commitments for performing critical construction activities from contractors. Show activities of each contract on a separate sheet. Prepare a simplified summary sheet indicating combined construction activities of contracts.
      1. Submit schedules for approval.
      2. Distribute copies of approved schedules to contractors.
  9. Provide photographic documentation.
  10. Provide quality-assurance and quality-control services specified in Section 014000 "Quality Requirements."
  11. Coordinate sequence of activities to accommodate tests and inspections, and coordinate schedule of tests and inspections.
  12. Provide information necessary to adjust, move, or relocate existing utility structures affected by construction.
  13. Locate existing permanent benchmarks, control points, and similar reference points, and establish permanent benchmarks on Project site.
  14. Provide field surveys of in-progress construction and site work and final property survey.
  15. Provide progress cleaning of common areas and coordinate progress cleaning of areas or pieces of equipment where more than one contractor has worked.
  16. Coordinate cutting and patching.
  17. Coordinate protection of the Work.
  18. Coordinate firestopping.
  19. Coordinate completion of interrelated punch list items.
  20. Coordinate preparation of Project record documents if information from more than one contractor is to be integrated with information from other contractors to form one combined record.
  21. Print and submit record documents if installations by more than one contractor are indicated on the same contract drawing or shop drawing.
  22. Collect record Specification Sections from contractors, collate Sections into numeric order, and submit complete set.
  23. Coordinate preparation of operation and maintenance manuals if information from more than one contractor is to be integrated with information from other contractors to form one combined record.
- B. Responsibilities of Project coordinator for temporary facilities and controls include, but are not limited to, the following:
1. HVAC Contract shall provide common-use field office for use by all personnel engaged in General & Electrical construction activities.

## 1.6 GENERAL REQUIREMENTS OF CONTRACTS

- A. Extent of Contract: Unless the Agreement contains a more specific description of the Work of each Contract, requirements indicated on Drawings and in Specification Sections determine which contract includes a specific element of Project.
1. Unless otherwise indicated, the work described in this Section for each contract shall be complete systems and assemblies, including products, components, accessories, and installation required by the Contract Documents.
  2. Trenches and all excavation/backfill for the work of each contract shall be by the HVAC contract.
  3. Blocking, backing panels, sleeves, and metal fabrication supports for the work of each contract shall be the work of each contract for its own work.
  4. Furnishing of access panels for the work of each contract shall be the work of each contract for its own work. Installation of access panels shall be the work of the General Construction Contract.
  5. Equipment pads for the work of each contract shall be the work of each contract for its own work.
  6. Roof-mounted equipment curbs for the work of each contract shall be the work of each contract for its own work.

7. Painting for the work of each contract shall be the work of each contract for its own work.
  8. Cutting and Patching: Each contract shall perform its own cutting; patching shall be under the General Construction Contract.
  9. Through-penetration firestopping for the work of each contract shall be provided by each contract for its own work.
  10. Contractors' Startup Construction Schedule: Within five working days after startup horizontal bar-chart-type construction schedule submittal has been received from Project coordinator, submit a matching startup horizontal bar-chart schedule showing construction operations sequenced and coordinated with overall construction.
- B. Substitutions: Each contractor shall cooperate with other contractors involved to coordinate approved substitutions with the remainder of the work.
1. Project coordinator shall coordinate substitutions.
- C. Temporary Facilities and Controls: In addition to specific responsibilities for temporary facilities and controls indicated in this Section and in Section 015000 "Temporary Facilities and Controls," each contractor is responsible for the following:
1. Installation, operation, maintenance, and removal of each temporary facility necessary for its own normal construction activity, and costs and use charges associated with each facility, except as otherwise provided for in this Section.
  2. Plug-in electric power cords and extension cords, supplementary plug-in task lighting, and special lighting necessary exclusively for its own activities.
  3. Its own field office, complete with necessary furniture, utilities, and telephone service.
  4. Its own storage and fabrication sheds.
  5. Temporary enclosures for its own construction activities.
  6. Staging and scaffolding for its own construction activities.
  7. General hoisting facilities for its own construction activities.
  8. Waste disposal facilities, including collection and legal disposal of its own hazardous, dangerous, unsanitary, or other harmful waste materials.
  9. Progress cleaning of work areas affected by its operations on a daily basis.
  10. Secure lockup of its own tools, materials, and equipment.
  11. Construction aids and miscellaneous services and facilities necessary exclusively for its own construction activities.
- D. Temporary Heating, Cooling, and Ventilation: Project coordinator is responsible for temporary heating, cooling, and ventilation, including utility-use charges, temporary meters, and temporary connections.
- E. Use Charges: Comply with the following:
1. Water Service: Include the cost for water service, whether metered or otherwise, for water used by all entities engaged in construction activities at Project site in the HVAC Contract.
  2. Electric Power Service: Include the cost for electric power service, whether metered or otherwise, for electricity used by all entities engaged in construction activities at Project site in the HVAC Contract.

#### 1.7 GENERAL CONSTRUCTION CONTRACT

- A. Supply all necessary materials, labor, services, equipment, and tools required to perform the following General Construction, work for the Chiller replacement and HVAC upgrades at NRCSD High School. All work to be installed in strict accordance with Specifications and Drawings.
- B. Supply all necessary materials, equipment, devices and labor for implementation and up-keep of site safety as it relates to this scope of work, to meet or exceed OSHA and / or safety agencies having jurisdiction on this project. Any and all costs resulting from OSHA sited violations will be the complete responsibility of this subcontractor.
- C. This project is a prevailing wage project, and it is the responsibility of this sub-contractor to ensure that all of the latest rules and regulations published by the NYS Department of Labor, Wage and Workplace Standards Division, Public Contract Compliance Unit are strictly followed and adhered to. In the events of an audit conduct by the NYS

Department of Labor, this sub-contractor will be responsible for any and all costs associated with the audit and the Departments' final decision.

- D. Work in the General Construction Contract includes, but is not limited to, the following:
1. Supply all materials, labor, equipment, and tools to install and finish gypsum soffits/ ACT tile at renovated locations. Finish and print all new surfaces, and any damaged existing surfaces. Repair gypsum ceiling if damaged during removal.
  2. Demolition of existing ceilings as noted in the plans.
  3. Supply all materials, labor, equipment, and tools for modification to all ACT & gypsum ceiling. Base bid and alternates.
  4. Supply all materials, labor, and equipment, and tools to finish and paint all new surfaces, and any damaged existing surfaces.
  5. Supply and install structural steel modifications required for RTU's. Make structural modifications to building's steel frame to support the new RTU's.
  6. Structural steel for chiller dunnage will be by Chiller contract. (Not in General Scope)
  7. Supply all materials, labor, equipment and tools to modify/ construct all interior walls, gypsum and masonry patching and paint as required.
  8. Remove and reinstall existing ceiling tiles for necessary mechanical, electrical, and structural work.
  9. Schedule and perform all inspections required by this scope of work.
  10. Demolition under all systems under the general contractor shall be by the General Contract.
  11. Removal and disposal of daily generated debris. Upon completion of this contractor's work, all excess material and debris in the building and site are to be removed and disposed of promptly.
  12. This is a prevailing wage project.
- E. Temporary facilities and controls in the General Contract include, but are not limited to, the following:
1. Temporary enclosure.
  2. Temporary weather protection of finished spaces.

#### 1.8 HVAC CONTRACT

- A. Supply all necessary materials, labor, services, equipment and tools required to perform the following site HVAC work for the project. All work to be installed in strict accordance with Specifications and Drawings. All installations shall conform to the NYS Building Code, and requirements of appropriate regulatory agencies.
- B. Supply all necessary materials, equipment, devices and labor for implementation and up-keep of site safety as it relates to this scope of work, to meet or exceed OSHA and / or safety agencies having jurisdiction on this project. All costs resulting from OSHA sited violations will be the complete responsibility of this subcontractor.
- C. This project is a prevailing wage project, and it is the responsibility of this sub-contractor to ensure that all the latest rules and regulations published by the NYS Department of Labor, Wage and Workplace Standards Division, Public Contract Compliance Unit are strictly followed and adhered to. In the events of an audit conduct by the NYS Department of Labor, this sub-contractor will be responsible for all costs associated with the audit and the Departments' final decision.
- D. Work in the HVAC Contract includes, but is not limited to, the following:
1. Installation of Curbs and RTUs on High School.
  2. Provide and install boilers, domestic hot water tank and pumps.
  3. All equipment demolition and removal will be by HVAC Contractor.
  4. All Hazardous materials removal will be a subcontractor of the HVAC Contractor.
  5. Equipment will be hoisted into place by HVAC contract.
  6. Assemble roof curbs, set in place, anchor and flash to roof structure.
  7. Roof flashing for HS RTU's and Boilers will be by HVAC Contract.
  8. Supply and install galvanized supply and return curb transitions.
  9. Supply and install all interior and exterior ductwork, registers and diffusers and modifications.

10. Install RTUs onto curbs and weather tight.
11. Install all RTU accessories, including filters.
12. Supply and install all Boiler and domestic hot water tank, piping, pumps, devices.
13. Install thermostats and make connections at RTUs and thermostats.
14. Structural steel for Chiller dunnage will be by Chiller contract. (not in HVAC Scope)
15. Program thermostats for heat, cooling and occupied & unoccupied times.
16. Start up and test RTUs, Split system for heat, cooling and fresh air.
17. Adjust all volume dampers and diffusers to provide proper air flow.
18. Make all ductwork connections for fans.
19. Integration of all new RTU's/Boilers and motors with the districts existing BMS will be by the districts controls vendor. See section "016400 Owner Furnished Products"
20. The remaining work not identified as work under other contracts.
21. Test all fans.
22. Balance system as per specifications.
23. Schedule and perform all inspections required by this scope of work.
24. Removal and disposal of daily generated debris.
25. Supply and install all VFD's.
26. Site Restoration of damaged areas
27. All equipment not stated as supplied by owner in section "016400 Owner Furnished Products" will be provided and installed by the HVAC Contract.
28. Upon completion of this contractor's work, all excess materials and debris in the building and site are to be removed and disposed of promptly.
29. File, pay for, and obtain all required permits, inspections and approvals.
30. This is a prevailing wage project.

E. Temporary facilities and controls in the HVAC Contract include, but are not limited to, the following:

1. Temporary facilities and controls that are not otherwise specifically assigned to the Electrical Contract or General Contract.
2. Temporary enclosure for building exterior, except as indicated.
3. General waste disposal facilities.
4. Temporary fire-protection facilities.
5. Environmental protection.
6. Restoration of Owner's existing facilities used as temporary facilities.

## 1.9 ELECTRICAL CONTRACT

- A. Supply all necessary materials, labor, services, equipment and tools required to perform the following site electrical work for the project. All work to be installed in strict accordance with Specifications and Drawings. All installations shall conform to the NYS Building Code, and requirements of appropriate regulatory agencies.
- B. Supply all necessary materials, equipment, devices and labor for implementation and up-keep of site safety as it relates to this scope of work, to meet or exceed OSHA and / or safety agencies having jurisdiction on this project. Any and all costs resulting from OSHA sited violations will be the complete responsibility of this subcontractor.
- C. This project is a prevailing wage project and it is the responsibility of this sub-contractor to ensure that all of the latest rules and regulations published by the NYS Department of Labor, Wage and Workplace Standards Division, Public Contract Compliance Unit are strictly followed and adhered to. In the events of an audit conduct by the NYS Department of Labor, this sub-contractor will be responsible for any and all costs associated with the audit and the Departments' final decision.
- D. Work in the Electrical Contract includes, but is not limited to, the following:
  1. Supply and install all electrical materials, devices and equipment for the project.
  2. Supply and install complete electrical service from source to factory installed transformers, MDP, electrical panels, wiring, and devices.
  3. Disconnect and reconnection to all RTU's, Boilers, pumps and equipment.
  4. Supply and install all conduits, wiring from existing High School panels to new equipment.
  5. Disconnect and reconnect all electrical equipment for other trades.

6. Supply and install Boiler's/RTU disconnects and make electrical connections.
  7. Supply and install Boiler's/RTU maintenance receptacles and make electrical connections.
  8. Supply and install all interior light fixtures.
  9. Supply and install all exit lights and emergency lights.
  10. Wire all VFD's.
  11. Disconnection and reconnection of all Fire alarm devices
  12. Disconnect and re-connection of all audio systems.
  13. Provide and install new Lighting and cable support and support trays.
  14. Test all site installed systems.
  15. Test all factory installed systems.
  16. Supply and install fire alarm modifications and new systems. Coordinate with owners monitoring service.
  17. File and obtain and pay for all required permits, inspections and approval.
  18. Schedule and perform all inspections required by this scope of work.
  19. Removal and disposal of daily generated debris.
  20. Upon completion of this contractor's work, all excess materials and debris in the building, connecting link and site are to be removed and disposed of promptly, and site restored to original condition.
  21. This is a prevailing wage project.
- E. Temporary facilities and controls in the Electrical Contract include, but are not limited to, the following:
1. Electric power service and distribution.
  2. Lighting, including site lighting.
  3. Electrical connections to existing systems and temporary facilities and controls furnished by the, HVAC Contract, Electrical Contract, General Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011200

## SECTION 012100 - ALLOWANCES

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. Section includes administrative and procedural requirements governing allowances.
- B. Types of allowances include the following:
  - 1. Lump-sum allowances.
  - 2. Unit-cost allowances.
  - 3. Quantity allowances.
  - 4. Testing and inspecting allowances.
- C. Related Requirements:
  - 1. Section 012200 "Unit Prices" for procedures for using unit prices, including adjustment of quantity allowances when applicable.
  - 2. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
  - 3. Section 014000 "Quality Requirements" for procedures governing the use of allowances for field testing by an independent testing agency.

## 1.3 DEFINITIONS

- A. Allowance: A quantity of work or dollar amount included in the Contract, established in lieu of additional requirements, used to defer selection of actual materials and equipment to a later date when direction will be provided to Contractor. If necessary, additional requirements will be issued by Change Order.

## 1.4 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection, or purchase and delivery, of each product or system described by an allowance must be completed by the Owner to avoid delaying the Work.
- B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- C. Purchase products and systems selected by Architect from the designated supplier.

## 1.5 ACTION SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances in the form specified for Change Orders.

## 1.6 INFORMATIONAL SUBMITTALS

- A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.
- B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.
- C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

## 1.7 LUMP-SUM ALLOWANCES

- A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Architect under allowance and shall include freight [,] and delivery to Project site.
- B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner or selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.
- C. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.
  - 1. If requested by Architect, retain and prepare unused material for storage by Owner. Deliver unused material to Owner's storage space as directed.

## 1.8 UNIT-COST ALLOWANCES

- A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Architect under allowance and shall include freight [,] and delivery to Project site.
- B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner or selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.
- C. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.
  - 1. If requested by Architect, retain and prepare unused material for storage by Owner. Deliver unused material to Owner's storage space as directed.

## 1.9 QUANTITY ALLOWANCES

- A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Architect under allowance and shall include freight [,] and delivery to Project site.
- B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner or selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.
- C. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.
  - 1. If requested by Architect, retain and prepare unused material for storage by Owner. Deliver unused material to Owner's storage space as directed.

## ALLOWANCES

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## 1.10 TESTING AND INSPECTING ALLOWANCES

- A. Testing and inspecting allowances include the cost of engaging testing agencies, actual tests and inspections, and reporting results.
- B. The allowance does not include incidental labor required to assist the testing agency or costs for retesting if previous tests and inspections result in failure. The cost for incidental labor to assist the testing agency shall be included in the Contract Sum.
- C. Costs of testing and inspection services not specifically required by the Contract Documents are Contractor responsibilities and are not included in the allowance.
- D. At Project closeout, credit unused amounts remaining in the testing and inspecting allowance to Owner by Change Order.

## 1.11 ADJUSTMENT OF ALLOWANCES

- A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, required maintenance materials, and similar margins.
  - 1. Include installation costs in purchase amount only where indicated as part of the allowance.
  - 2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other markups.
  - 3. Submit substantiation of a change in scope of Work, if any, claimed in Change Orders related to unit-cost allowances.
  - 4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.
- B. Submit claims for increased costs due to a change in the scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.
  - 1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of Work has changed from what could have been foreseen from information in the Contract Documents.
  - 2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

## PART 2 - PRODUCTS (Not Used)

## PART 3 - EXECUTION

## 3.1 EXAMINATION

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

## 3.2 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

- A. Allowance No. 1: Clean existing main ductwork for 20 linear feet per unit at RTUS D1 and D2.
- B. Allowance No. 2: Replace existing supply and return piping and insulation for 20 linear feet per unit at RTUS D1 and D2.
- C. Allowances No. 3: Provide proposal from third party HVAC commissioning agent for owner to contract with (deduct allowance).
- D. Allowance No. 4: Void
- E. Allowance No. 5: Void

END OF SECTION 012100

## SECTION 012200 - UNIT PRICES

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. Section includes administrative and procedural requirements for unit prices.
- B. Related Requirements:
  - 1. Section 012100 "Allowances" for procedures for using unit prices to adjust quantity allowances.
  - 2. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
  - 3. Section 014000 "Quality Requirements" for field testing by an independent testing agency.

## 1.3 DEFINITIONS

- A. Unit price is an amount incorporated into the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

## 1.4 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, overhead, and profit.
- B. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.
- D. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the Part 3 "Schedule of Unit Prices" Article contain requirements for materials described under each unit price.

## PART 2 - PRODUCTS (Not Used)

## PART 3 - EXECUTION

## 3.1 SCHEDULE OF UNIT PRICES

- A. Unit Price No. 1: Provide unit price to add or reduce 10 linear feet of existing main ductwork cleaning for each unit. Price is per 10 linear feet to modify allowance No. 1.

- B. Unit Price No. 2: Provide unit price to add or reduce existing supply and return piping and insulation for 10 linear feet each unit. Price is per 10 linear feet to modify allowance No. 2
- C. Unit Price No. 3: Void.

END OF SECTION 012200

## SECTION 012300 - ALTERNATES

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. Section includes administrative and procedural requirements for alternates.

## 1.3 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if the Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
  - 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
  - 2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternates into the Work. No other adjustments are made to the Contract Sum.

## 1.4 PROCEDURES

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
  - 1. Include, as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation, whether or not indicated as part of alternate.
- B. Execute accepted alternates under the same conditions as other Work of the Contract.
- C. Schedule: A Part 3 "Schedule of Alternates" Article is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

## PART 2 - PRODUCTS (Not Used)

## PART 3 - EXECUTION

## 3.1 SCHEDULE OF ALTERNATES

- A. Alternate No. 1: Void
- B. Alternate No. 2: Void

C. Alternate No. 3: Void

END OF SECTION 012300

## SECTION 016400 - OWNER FURNISHED PRODUCTS

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SECTION INCLUDES

- A. Requirements for installing Owner-furnished products, including providing miscellaneous items and accessories for a complete, functioning installation.

## 1.3 RELATED SECTIONS

- A. Section 015800 - Project Identification and Signage: Owner-furnished, Contractor-installed (OFCI) temporary signage.

## 1.4 PRODUCT HANDLING

- A. Protection: Contractor shall use means necessary to protect the materials of this Section before, during, and after installation and to protect completed Work, including products installed by others.
- B. Replacements: In the event of damage, Contractor shall immediately repair all damaged and defective Work to satisfaction of Owner's Representative, at no change in Contract Time and Contract Sum.

## PART 2 - PRODUCTS

## 2.1 OWNER-FURNISHED/CONTRACTOR-INSTALLED (OFCI) PRODUCTS

- A. Products Identified with Contractor Responsibility for Installation:

1. Contractor shall verify mounting and utility requirements for accepted products.
2. Contractor shall provide mounting and utility rough-ins for OFCI products.
  - a. Rough-in locations, sizes, capacities and similar type shall be as indicated and required by product manufacturers.
  - b. If the Owner substitutes items similar to those scheduled there shall be no change in rough-in cost, unless substitution occurs after rough-in has been completed or rough-in involves other mounting requirements, utilities of different capacity than those required by item originally specified.
3. For items Designated to Be Owner- or Vendor-Furnished: Owner or its vendor will furnish manufacturer's literature or information, shop drawings, or appropriate information for preparing required shop drawings.

- B. Installation Instructions: Approved manufacturer's printed descriptions, specifications and recommendations shall govern the Work, unless specifically indicated otherwise.
- C. Electrical Components: Contractor shall comply with requirements specified in Division 26 - Electrical, including National Electrical Code (NEC).
- D. Plumbing and HVAC Components: Contractor shall comply with requirements specified in Division 22 – Plumbing and Division 23 – HVAC.

## 2.2 OWNER-FURNISHED/CONTRACTOR-INSTALLED PRODUCT REQUIREMENTS

- A. Products Furnished by Owner and Installed by Contractor:
  - 1. Contractor shall coordinate delivery of OFCI products. Owner will furnish products to coincide with construction schedule.
  - 2. Owner will:
    - a. Furnish standard integral components of products.
    - b. Deliver products to site. Contractor shall assist Owner in offloading products.
  - 3. The Contractor shall:
    - a. Receive products at site and give written receipt for product at time of delivery, noting visible defects and omissions; if such declaration is not given, the Contractor shall assume responsibility for such defects and omissions.
    - b. Store products until ready for installation and protect from loss and damage.
    - c. Uncrate, assemble and set products in place.
    - d. Install products in accordance with manufacturer's recommendations, instructions and shop drawings under supervision of manufacturer's representative where specified, supplying labor and material required and making mechanical, plumbing and electrical connections necessary to operate equipment.
    - e. Where so specified, installation shall be only by installer approved by manufacturer. If known, approved installer is identified on the Drawings or in the Specifications.
    - f. Provide and install backing for all products weighing 20 pounds or more.
    - g. Treat all Owner or Vendor supplied products with the same care as all Contractor furnished items.
- B. Products Furnished and Installed by Owner:
  - 1. Contractor prepare; vendor install:
    - a. General: Contractor shall coordinate deliveries of vendor-supplied products. Vendor will furnish products to coincide with the construction schedule.
    - b. Vendor will:
      - 1) Furnish standard integral components of products.
      - 2) Deliver products to site.
      - 3) Make connections to roughed-in utilities.
    - c. Contractor shall:
      - 1) Receive products at site and give written notice of receipt of each product at time of delivery, noting visible defects.

- 2) Provide rough-in of utility products in accordance with manufacturer's recommendations, instructions and shop drawings under supervision of the manufacturer's representative where specified.
- 3) Provide and install backing for all products weighing 20 pounds or more.

### PART 3 - EXECUTION

#### 3.1 SURFACE CONDITIONS

##### A. Inspection:

1. Prior to commencing Work, Contractor shall verify that Work specified in other Sections has been properly completed and installed as specified to allow for installation of all materials and methods required of this Section.
2. Contractor shall verify that new and existing products and conditions are satisfactory for installation or relocation of OFCI products. If unsatisfactory conditions exist, do not commence the installation until such conditions have been corrected.

##### B. Discrepancies:

1. In the event of discrepancy, Contractor shall immediately notify the Owner's Representative.
2. Contractor shall not proceed with installation in areas of discrepancy until all such discrepancies have been resolved.

#### 3.2 INSTALLATION

- A. Contractor shall relocate and reinstall existing products in accordance with Contract Documents and reviewed shop drawings, original manufacturer's instructions and recommendations if applicable and as directed.
- B. Contractor shall install Owner-furnished products in accordance with reviewed shop drawings and manufacturer's printed instructions, as applicable.

#### 3.3 ADJUSTING AND CLEANING

- A. Contractor shall adjust products as necessary and as directed by Owner's Representative.
- B. Contractor shall clean all new and relocated OFCI products.
- C. Contractor shall protect OFCI products from damage until Contract Completion.

#### 3.4 LIST OF OWNER FURNISHED PRODUCTS

- A. Owner will provide HVAC Contractor with rooftop unit RTU-D1, RTU-D2, RTU3, RTU4, RTU5, and RTU6 for HVAC contractor to install.
- B. Owner will provide curbs RTUs. This includes new curbs for units at the Annex Gym and adapter curb and extender curb at the Main Gym.
- C. Owner will contract with Siemens via state contract for controls installation and BMS integration.

END OF SECTION

# NORTH ROCKLAND HIGH SCHOOL CHILLER & HVAC UPGRADES

**NORTH ROCKLAND HIGH SCHOOL  
SED NO. 50-02-01-06-0-016-037  
106 Hammond Rd  
Thiells, NY 10984**

**OWNER:  
North Rockland Central School District  
65 Chapel St  
Garnerville, NY 10923**

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DRAWING No.	DRAWING TITLE	DATE	DRAWING No.	DRAWING TITLE	DATE
A-000	COVER SHEET	1-22-25	M-403	MECHANICAL CONTROL DIAGRAM - RTU'S	1-22-25
B-100	CODE ANALYSIS	1-8-25	M-501	MECHANICAL DETAILS - 1	1-8-25
EN-001	ENERGY CODE COMPLIANCE	1-8-25	M-502	MECHANICAL DETAILS - 2	1-8-25
AA-000	ABATEMENT NOTES	1-8-25	M-503	MECHANICAL DETAILS - 3	1-8-25
AA-100	MECHANICAL ROOM ABATEMENT PLAN	1-8-25	M-504	MECHANICAL DETAILS - 4	1-8-25
D-101	DEMO BOILER ROOM FLOOR PLAN	1-8-25	M-505	MECHANICAL DETAILS - 5	1-8-25
D-102	DEMO BOILER ROOM ROOF PLAN	1-8-25	E-001	ELECTRICAL NOTES AND ABBREVIATIONS	1-8-25
D-103	DEMO ANNEX GYM ROOF PLAN	1-8-25	E-101	MECHANICAL ROOM - BOILER CHILLER REMOVAL	1-8-25
S-001	STRUCTURAL NOTES AND ABBREVIATIONS	1-8-25	ED-102	MECHANICAL ROOM ROOF - COOLING TOWER REMOVAL	1-8-25
S-101	BOILER ROOM ROOF EXISTING DUNNAGE DEMOLITION PLAN	1-8-25	ED-103	ELECTRICAL MAIN GYM ROOM - RTU REMOVAL	1-8-25
S-102	CHILLER DUNNAGE FRAMING PLAN, SECTIONS AND DETAILS	1-8-25	E-101	MECHANICAL ROOM - BOILER CHILLER INSTALLATION	1-8-25
S-103	ANNEX BLDG. ROOF FRAMING PLAN & TYPICAL DETAIL	1-8-25	E-102	MECHANICAL ROOM ROOF - CHILLER INSTALLATION	1-8-25
A-100	ROOF PLAN	1-8-25	E-103	ELECTRICAL MAIN GYM ROOF - RTU INSTALLATION	1-8-25
A-101	BOILER ROOM FLOOR PLAN	1-8-25	E-104	ELECTRICAL ANNEX GYM ROOF - RTU INSTALLATION	1-8-25
A-102	BOILER ROOM ROOF PLAN	1-8-25	E-501	ELECTRICAL DETAILS	1-8-25
A-103	ANNEX GYM ROOF PLAN	1-8-25	E-502	ELECTRICAL DETAILS - SHEET 2	1-8-25
A-400	GYMNASIUM REFLECTED CEILING PLANS	1-8-25	FA-001	FIRE ALARM GENERAL NOTES, SYMBOL LIST, & ABBREVIATIONS	1-8-25
A-401	BOILER ROOM REFLECTED CEILING PLAN	1-8-25	FA-101	FIRE ALARM MAIN GYM ROOF - RTU INSTALLATION	1-8-25
A-500	ROOF DETAILS	1-8-25	FA-102	FIRE ALARM ANNEX GYM ROOF - RTU INSTALLATION	1-8-25
A-501	ROOF DETAILS	1-8-25	FA-103	FIRE ALARM MECHANICAL ROOM - BOILER INSTALLATION	1-8-25
A-600	FINISH SCHEDULE	1-8-25			
M-001	MECHANICAL GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS	1-8-25			
M-002	MECHANICAL LEGEND, SYMBOLS, AND ABBREVIATIONS	1-8-25			
M-003	MECHANICAL SCHEDULES - 1	1-8-25			
M-004	MECHANICAL SCHEDULES - 2	1-22-25			
MD-101	MECHANICAL ROOM - BOILER CHILLER REMOVAL	1-8-25			
MD-102	MECHANICAL ROOM ROOF - COOLING TOWER REMOVAL	1-8-25			
MD-103	MECHANICAL MAIN GYM - RCP	1-8-25			
M-101	MECHANICAL ROOM BOILER CHILLER INSTALL PLAN	1-8-25			
M-102	MECHANICAL ROOM ROOF - CHILLER INSTALL	1-8-25			
M-103	MECHANICAL MAIN GYM - RCP INSTALL	1-8-25			
M-104	MECHANICAL MAIN GYM ROOF - INSTALL	1-8-25			
M-105	MECHANICAL ANNEX GYM 1ST FLOOR - INSTALL	1-8-25			
M-106	MECHANICAL ANNEX GYM ROOF - INSTALL	1-8-25			
M-301	MECHANICAL RISER DIAGRAM - CHILLER	1-8-25			
M-302	MECHANICAL RISER DIAGRAM - BOILER	1-8-25			
M-303	MECHANICAL RISER DIAGRAM - ANNEX GYM	1-8-25			
M-401	MECHANICAL CONTROL DIAGRAMS - BOILER	1-22-25			
M-402	MECHANICAL CONTROL DIAGRAM - CHILLER	1-8-25			

## LIST OF DRAWINGS

ACT	ACOUSTICAL CEILING TILE
A.F.F.	ABOVE FINISH FLOOR
ASPH	ASPHALT
BLK	BLOCK
BLK'G	BLOCKING
BUR	BUILT UP ROOFING
CLG	CEILING
CMP	CORRUGATED METAL PIPE
CONC	CONCRETE
CONT	CONTINUOUS CONTROL JOINT
C.J.	CONTROL JOINT
DN	DOWN
DIA	DIAMETER
DWG	DRAWING
E.F.	EACH FACE
E.F.S.	EXTERIOR INSULATION AND FINISH SYSTEM
E.W.	EACH WAY
E.W.C.	ELECTRICAL WATER COOLER
EL	ELEVATION
ELC	ELECTRICAL CONTRACTOR
E.T.R	EXISTING TO REMAIN
EXIST	EXISTING
EXP	EXPANSION
EXT'G	EXISTING EXTERIOR
EXTR	EXTERIOR
FP	FIREPROOF FINISH(ED)
FIN.	FINISH
GA	GAUGE
GC	GENERAL CONTRACTOR
GALV	GALVANIZED
GLV	GLASS
GWB	GYPSUM WALL BOARD
HDPE	HIGH DENSITY POLYETHYLENE
HM	HOLLOW METAL
H.P.	HIGH POINT
HAC	HEATING & A/C CONTRACTOR
ITR	INDIVIDUAL TREATMENT ROOM
JT	JOINT
LAM	LAMINATE
LAV	LAVATORY
LF	LINEAR FOOT
LP	LOW POINT
MAX	MAXIMUM
MFR	MANUFACTURER
MTL	METAL
MIN	MINIMUM
MO	MASONRY OPENING
N.I.C.	NOT IN CONTRACT
NO.	NUMBER
CC	ON CENTER
OPN'G	OPENING
PBC	PLUMBING CONTRACTOR
PLAS.LAM.	PLASTIC LAMINATE
PL	PLATE
PLY'D	PLYWOOD
RAD	RADIUS
REF.CLG.	REFLECTED CEILING
REQ'D	REQUIRED
RO	ROUGH OPENING
ROO'D	REQUIRED
SIM	SIMILAR
S.P.	STARTING POINT
STL	STEEL
SUSP.CLG.	SUSPENDED CEILING
T.O.M.	TOP OF MASONRY
T.O.S.	TOP OF STEEL
TYP	TYPICAL
U.O.N.	UNLESS OTHERWISE NOTED
V.I.F.	VERIFY IN FIELD
VCT	VINYL COMPOSITE TILE
W/	WITH
WD	WOOD

## ABBREVIATIONS

①	DOOR NUMBER
①	KEY NOTE
①	PARTITION TYPE
①	REVISION NUMBER
①	WINDOW TYPE
①	MECHANICAL EQUIPMENT
—	EXISTING PARTITION
- - -	EXISTING PARTITION TO BE REMOVED
—	NEW PARTITION (SEE PARTITION LEGEND)
—	NEW DOOR
—	EXISTING DOOR
—	EXISTING DOOR TO BE REMOVED
—	EXISTING WINDOW
—	NEW WINDOW
OFFICE	ROOM NAME
100 SF 101	ROOM NAME/ NUMBER IDENTIFICATION
101	ROOM NUMBER
100	ROOM AREA
1	DRAWING NUMBER
A-100	WALL SECTION/ ELEVATION REFERENCE
1	SHEET NUMBER
1	DETAIL NUMBER
A-100	DETAIL REFERENCE
1	SHEET NUMBER
1	COLUMN LINE DESIGNATION

## SYMBOLS LEGEND

- ALL PLAN DIMENSIONS ARE NOMINAL U.O.N. DIMENSIONS TO THE FINISHED FACE OF AN ELEMENT OR WALL WILL BE DESIGNATED WITH AN "F" AS SHOWN.
- G.C. TO VERIFY ALL DIMENSIONS IN THE FIELD AND IS TO NOTIFY ARCHITECT IF THERE ARE ANY DISCREPANCIES.

## GENERAL NOTES

	CONCRETE MASONRY UNIT
	BRICK
	RIGID INSULATION
	CONCRETE
	GRAVEL OR STONE
	EARTH
	EIFS
	ASPHALT PAVING
	SAND/MORTAR/GYPSUM BOARD
	STEEL
	ACT
	ROUGH WOOD
	BRONZE

## MATERIALS LEGEND

• UNIT PRICE NO. 1: PROVIDE UNIT PRICE TO ADD OR REDUCE 10 LINEAR FEET OF EXISTING MAIN DUCTWORK CLEANING FOR EACH UNIT. PRICE IS PER 10 LINEAR FEET TO MODIFY ALLOWANCE NO. 1.

• UNIT PRICE NO. 2: PROVIDE UNIT PRICE TO ADD OR REDUCE EXISTING SUPPLY AND RETURN PIPING AND INSULATION FOR 10 LINEAR FEET. PRICE IS PER 10 LINEAR FEET TO MODIFY ALLOWANCE NO. 2.

• UNIT PRICE NO. 3: VOID.

## UNIT PRICES

• ALLOWANCE NO. 1: CLEAN EXISTING MAIN DUCTWORK FOR 20 LINEAR FEET PER UNIT AT RTUS D1 AND D2.

• ALLOWANCE NO. 2: REPLACE EXISTING SUPPLY AND RETURN PIPING AND INSULATION FOR 20 LINEAR FEET PER UNIT AT RTUS D1 AND D2.

• ALLOWANCE NO. 3: PROVIDE PROPOSAL FROM THIRD PARTY HVAC COMMISSIONING AGENT FOR OWNER TO CONTRACT WITH (DEDUCT ALLOWANCE)

• ALLOWANCE NO. 4: VOID.

• ALLOWANCE NO. 5: VOID.

## ALLOWANCES

• ALT. NO. 1: VOID

• ALT. NO. 2: VOID

• ALT. NO. 3: VOID.

## ALTERNATES

No.	Date	Revisions
1	01-22-25	ADDENDUM 1
2	01-08-25	ISSUED FOR BIDDING

Drawn by	JR/MAL
Checked by	MS/JC
Project No.	4-3065
Scale	AS NOTED
Date	11/28/23

Mechanical & Electrical Engineer:	Structural Engineer:
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**NORTH ROCKLAND HIGH SCHOOL CHILLER & HVAC UPGRADES**  
HIGH SCHOOL SED# 50-02-01-06-0-016-037  
106 Hammond Rd., Thiells NY 10984  
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**COVER SHEET**

Drawing No. **A-000**

IT IS A VIOLATION OF THE LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ARCHITECT, TO ALTER AN ITEM IN ANY WAY.

MECHANICAL VENTILATION SCHEDULE														
ROOM	OCCUPANCY CLASSIFICATION	FLOOR AREA (FT²)	ROOM VOLUME (FT³)	OCCUPANT LOAD (OCCUPANT/1,000 FT²)	# OF OCCUPANTS	REQUIRED CFM/OCCUPANT	REQUIRED CFM/FT²	BREATHING ZONE OUTDOOR AIRFLOW (CFM)	ZONE DISTRIBUTION EFFECTIVENESS	TOTAL ROOM OUTDOOR AIR REQUIRED (CFM)	ACTUAL ROOM OUTDOOR AIRFLOW RATE (CFM)	TOTAL SUPPLY AIRFLOW (CFM)	AIR CHANGE RATE (ACH)	
									COOLING	COOLING	COOLING	COOLING	COOLING	
MAIN GYM	GYM	12736	318400	7	89	20	0.18	4076	0.8	5094	5095	9000	1.7	
ANNEX GYM	GYM	11810	295250	7	83	20	0.18	3779	0.8	4724	4725	9000	1.8	

**MECHANICAL VENTILATION SCHEDULE NOTES:**

1. ACTUAL OUTDOOR AIR VENTILATION SUPPLY IS BASED OFF MAX OCCUPANCY POSTED IN GYMNASIUM

ROOFTOP HEAT PUMP UNIT SCHEDULE																														
UNIT #	AREA SERVED	SUPPLY FAN					RETURN/EXHAUST FAN				COOLING					HEATING - HEAT PUMP			HEATING COIL (30% GLYCOL)				FILTER	ELECTRICAL				WEIGHT (LBS)	MAKE & MODEL NO.	REMARKS
		AIRFLOW (CFM)	OUTSIDE AIR (CFM)	ESP (IN WC)	TSP (IN WC)	MOTOR (HP)	AIRFLOW (CFM)	ESP (IN WC)	TSP (IN WC)	MOTOR (HP)	NOMINAL CAPACITY (TONS)	REFRIG.	TOTAL CAPACITY (MBH)	SENS. CAPACITY (MBH)	EER	CONDENSER EAT (°F DB)	EDB/LDB (°F)	TOTAL CAPACITY (MBH)	COOP	EDB/LDB (°F)	FLOW (GPM)	EWTL/WT (°F)		TOTAL CAPACITY (MBH)	MERV	MCA	MAX FUSE SIZE			
RTU-D1	MAIN GYM	9000	4500	1.25	3.35	10	6049	1.0	2.23	5	40	R410A	384.4	233.1	11.0	95	69.5/104.1	368.5	3.2	69.5/99.8	30.6	180/160	299.2	14	90.3	100	460/3/60	7912	TRANE HORIZON OANE480A4	
RTU-D2	MAIN GYM	9000	4500	1.25	3.35	10	6049	1.0	2.23	5	40	R410A	384.4	233.1	11.0	95	69.5/104.1	368.5	3.2	69.5/99.8	30.6	180/160	299.2	14	90.3	100	460/3/60	7912	TRANE HORIZON OANE480A4	
RTU-3	ANNEX GYM	4000	2250	1.50	3.25	5	2431	1.0	2.18	1.5	15	R410A	162.8	117.4	10.6	95	60.8/84.7	110.5	3.2	60.8/115.7	24.6	180/160	240.2	14	42.3	50	460/3/60	3914	TRANE HORIZON OADG015C3	
RTU-4	ANNEX GYM	4000	2250	1.50	3.25	5	2431	1.0	2.18	1.5	15	R410A	162.8	117.4	10.6	95	60.8/84.7	110.5	3.2	60.8/115.7	24.6	180/160	240.2	14	42.3	50	460/3/60	3914	TRANE HORIZON OADG015C3	
RTU-5	ANNEX GYM	4000	2250	1.50	3.25	5	2431	1.0	2.18	1.5	15	R410A	162.8	117.4	10.6	95	60.8/84.7	110.5	3.2	60.8/115.7	24.6	180/160	240.2	14	42.3	50	460/3/60	3914	TRANE HORIZON OADG015C3	
RTU-6	ANNEX GYM	4000	2250	1.50	3.25	5	2431	1.0	2.18	1.5	15	R410A	162.8	117.4	10.6	95	60.8/84.7	110.5	3.2	60.8/115.7	24.6	180/160	240.2	14	42.3	50	460/3/60	3914	TRANE HORIZON OADG015C3	

**REMARKS:**

- BASIS OF DESIGN IS BY TRANE OR APPROVED EQUAL.
- RTU - D1 & D2 TO HAVE ADAPTER CURBS.
- RTU - 3, 4, 5, 6, MECHANICAL CONTRACTOR TO PROVIDE NEW 14" HIGH INSULATED ROOF CURB WITH VIBRATION ISOLATORS, GENERAL CONTRACTOR TO INSTALL.
- PROVIDE SUPPLY AND RETURN SMOKE DETECTORS (FACTORY INSTALLED) TO SHUTDOWN UNIT.
- PROVIDE 4" PLEATED AIR FILTERS, MERV 14 RATING, SEE SPEC 234100 FOR MORE INFO. MC TO REPLACE ALL FILTERS PRIOR TO TURN OVER.
- PROVIDE START-UP BY MANUFACTURER'S AUTHORIZED TECHNICIAN.
- SIEMENS TO PROVIDE WITH 0-100% ECONOMIZER CONTROL OF UNIT.
- UNIT TO BE DELIVERED VIA CRANES, ALL NECESSARY PERMITS FOR RIGGING REQUIRED.
- MC TO PROVIDE FACTORY INSTALLED VFD W/ INTEGRAL MOTOR STARTERS FOR EACH FAN, EC TO FURNISH AND INSTALL NON-FUSIBLE TYPE DISCONNECT SWITCHES(FIELD INSTALL)
- MC TO FURNISH UNIT WITH CONVENIENCE OUTLET AND SUPPLY AN EXHAUST FAN SERVICE LIGHT, COORDINATE WITH EC.
- PROVIDE WITH MODULATING DIGITAL SCROLL COMPRESSORS AND MODULATING HOT GAS REHEAT.
- PROVIDE WITH 2" DOUBLE WALL CONSTRUCTION.
- PROVIDE HOT GAS BYPASS WITH CONTINUOUS CAPACITY MODULATION (MAXIMUM 25% TOTAL CAPACITY).
- SIEMENS TO PROVIDE FULL DDC CONTROL OF UNIT AND SHALL TIE-IN TO EXISTING SIEMENS BMS. ALL CONTROLS SHALL BE BACNET COMPATIBLE AND SHALL BE FIELD INSTALLED.
- ALL FAN AND WHEEL VFDs TO BE PROVIDED WITH BACNET COMMUNICATION CARDS FOR INTEGRATION TO EXISTING SIEMENS BMS.
- SIEMENS TO PROVIDE HEATING CONTROL VALVE, SEE COIL PIPING DETAILS ON DRAWING M203 VALVE TO BE INSTALLED BY MECHANICAL CONTRACTOR.
- UNIT WEIGHT DOES NOT INCLUDES WEIGHT OF CURB. EXACT CURB WEIGHT TO BE CONFIRMED WITH MANUFACTURER.
- MC TO FIELD INSTALL VIBRATION ISOLATION SUPPORTS FOR ENERGY RECOVERY WHEEL AT EACH UNIT.
- POWER/CIRCUIT INFORMATION OF NEW UNITS TO BE COORDINATED WITH ELECTRICAL CONTRACTOR. SHOWN HERE FOR REFERENCE ONLY.
- UNITS TO BE PROVIDED WITH AND HAVE DEMAND CONTROL VENTILATION.
- UNITS TO HAVE TWO CO2 SENSORS PER UNIT MOUNTED IN CONDITIONED SPACE.

ROOFTOP HEAT PUMP UNIT SCHEDULE - CONTINUED																
UNIT #	ENERGY RECOVERY WHEEL															
	WINTER CONDITIONS									SUMMER CONDITIONS						
	SUPPLY AIR			EXHAUST AIR			THERMAL EFF %	HEAT RECOVERED MBH	SUPPLY AIR			EXHAUST AIR			THERMAL EFF %	HEAT RECOVERED MBH
INLET DB/WB	OUTLET DB/WB	AIR PD	INLET DB/WB	OUTLET DB/WB	AIR PD	INLET DB/WB			OUTLET DB/WB	AIR PD	INLET DB/WB	OUTLET DB/WB	AIR PD			
RTU-D1	9/5.6	64.1/55.6	0.78	75/63	31.6/31.4	0.98	83%	424.32	88/76	77/67.3	0.78	75/65	83.5/72.3	0.98	84%	148.95
RTU-D2	9/5.6	64.1/55.6	0.78	75/63	31.6/31.4	0.98	83%	424.32	88/76	77/67.3	0.78	75/65	83.5/72.3	0.98	84%	148.95
RTU-3	9/5.6	53.6/46.8	0.98	70/58	25.2/24.3	0.98	73%	163.46	77/63	75.5/63	0.98	75/63	76.5/63.1	0.98	74%	6.96
RTU-4	9/5.6	53.6/46.8	0.98	70/58	25.2/24.3	0.98	73%	163.46	77/63	75.5/63	0.98	75/63	76.5/63.1	0.98	74%	6.96
RTU-5	9/5.6	53.6/46.8	0.98	70/58	25.2/24.3	0.98	73%	163.46	77/63	75.5/63	0.98	75/63	76.5/63.1	0.98	74%	6.96
RTU-6	9/5.6	53.6/46.8	0.98	70/58	25.2/24.3	0.98	73%	163.46	77/63	75.5/63	0.98	75/63	76.5/63.1	0.98	74%	6.96

AIR OUTLETS SCHEDULE									
TAG	SERVICE	TYPE	FACE SIZE (IN)	NECK SIZE (IN)	MOUNTING	MAX. NOISE CRITERIA (NC)	BASIS OF DESIGN		REMARKS
							MFR.	MODEL #	
S-1	SUPPLY	STEEL ROUND PLAQUE DIFFUSER	27-3/8"Ø	SEE PLANS	DUCT MOUNTED	25	NAILOR	RUNI	1, 3, 4, 5
R-1	RETURN	STEEL RETURN REGISTER	24x24	-	LAY IN	25	NAILOR	6145H	1, 2, 3, 4, 5
S-3	SUPPLY	STEEL SUPPLY GRILLE	6X4	-	WALL MOUNTED	25	NAILOR	6145H	3, 4, 5
TG	RETURN	STEEL RETURN GRILLE	SEE PLANS	-	WALL MOUNTED	25	NAILOR	6145H	3, 4, 5

**NOTES:**

- NECK SIZES ARE INDICATED ON THE PLANS.
- PROVIDE 48X24 CEILING MODULE.
- PROVIDE VOLUME DAMPERS OPPOSED BLADE DAMPER FROM MANUFACTURER.
- COORDINATE FINISH, BORDER TYPE, AND INSTALLATION WITH ARCHITECTURAL PLANS.
- OR APPROVED EQUAL.

0 1/2  
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

No.	Date	Revisions
2	01/22/25	ADDENDUM 1 ISSUED FOR BID
1	07/08/25	

REC. EXP. DATE: 10-31-26

Drawn by: A.W.  
Checked by: P.C.  
Project No.: 43065  
Scale: AS NOTED  
Date: 12/06/23

**GREENMAN PEDERSEN, INC.**  
MECHANICAL & ELECTRICAL ENGINEERS  
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Mechanical & Electrical Engineer:  
Structural Engineer:

**NORTH ROCKLAND HIGH SCHOOL CHILLER & HVAC UPGRADES**  
HIGH SCHOOL, SED# 50-02-01-06-0-016-007  
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Drawing Title: **MECHANICAL SCHEDULES - 2**  
Drawing No.: **M-004**

**SEQUENCE OF OPERATIONS:**

REFER TO SPECIFICATION SECTION 230993 FOR SEQUENCE OF OPERATION AND CONTROL OF MECHANICAL EQUIPMENT LISTED AND SHOWN ON DRAWING M003. REFER TO MECHANICAL EQUIPMENT SPECIFICATIONS FOR ADDITIONAL INFORMATION.

**A. GENERAL:**

- THE OCCUPANCY MODE (UNOCCUPIED OR OCCUPIED) SHALL BE DETERMINED THROUGH A USER-DEFINABLE TIME SCHEDULE. SUMMERTIME MODE SHALL INCLUDE TIMES DURING WHICH HEATING IS NOT REQUIRED. WINTERTIME MODE SHALL INCLUDE TIMES DURING WHICH HEATING IS REQUIRED.
- BOILER B-3 SHALL BE THE PRIMARY LEAD BOILER. BOILER B-4 SHALL BE THE LAG BOILER. SEE LEAD-LAG PROGRAMMING CONTROLS BELOW.
- BOILER B-4 SHALL RUN WHEN MAINTENANCE IS REQUIRED ON BOILER B-3.
- NEW BREAK GLASS STATION AT EACH BOILER ROOM DOORWAY SHALL SHUT DOWN BOTH BOILER PRIMARY CONTROL CIRCUITS AND CLOSE MAIN FUEL VALVES.

**B. WINTERTIME OCCUPIED MODE:**

HEATING MODE SHALL BE INITIATED WHEN OUTSIDE TEMPERATURE FALLS BELOW 55°F. (ADJUSTABLE). THE HOT WATER BOILER SHALL BE ENGAGED AND MAINTAIN AT LEAST MINIMUM HOT WATER TEMPERATURE REQUIRED BY THE BOILER.

- BOILER B-3: B-3 SHALL MODULATE TO MAINTAIN HOT WATER SUPPLY TEMPERATURE SETPOINT OF 180°F (ADJ.).
  - PUMP P-4/5: P-4/5 SHALL BE ENERGIZED AND SHALL OPERATE AT A CONSTANT SPEED WHENEVER B-3 IS ENERGIZED (HARDWIRED TO BOILER CONTROLLER). B-3 SHALL NOT OPERATE UNLESS P-4/5 IS RUNNING. P-4/5 FLOW RATE SHALL BE IN ACCORDANCE WITH BOILER MANUFACTURER'S PUMPING REQUIREMENTS.
  - B-3 BURNERS SHALL FULLY MODULATE AS FACTORY BURNER SET PROGRAMMING.
  - LOW RETURN TEMPERATURE: WHENEVER THE HOT WATER RETURN TEMPERATURE FALLS BELOW 140°F (ADJ.) AND B-1 IS ENERGIZED, AN ALARM SHALL GENERATE.
- BOILER B-4: B-4 SHALL MODULATE TO MAINTAIN HOT WATER SUPPLY TEMPERATURE SETPOINT OF 180°F (ADJ.).
  - PUMP P-6/7: P-6/7 SHALL BE ENERGIZED AND OPERATE AT VARIABLE SPEED WHENEVER B-4 IS ENERGIZED (HARD WIRED TO BOILER CONTROLLER). B-4 SHALL NOT OPERATE UNLESS P-6/7 IS RUNNING. P-6/7 FLOW RATE SHALL BE IN ACCORDANCE WITH BOILER MANUFACTURER'S PUMPING REQUIREMENTS.
  - B-4 BURNERS SHALL FULLY MODULATE AS FACTORY BURNER SET PROGRAMMING.
  - LOW RETURN TEMPERATURE: WHENEVER THE HOT WATER RETURN TEMPERATURE FALLS BELOW 140°F (ADJ.) AND B-4 IS ENERGIZED, AN ALARM SHALL GENERATE.
- SECONDARY PUMPS:
  - PUMPS P-8/9 AND P-10/11: P-8/9 AND P-10/11 SHALL OPERATE AT VARIABLE SPEED TO MAINTAIN ZONE HOT WATER SUPPLY TEMPERATURE AT A SETPOINT (BASED ON OUTSIDE AIR TEMPERATURE RESET) WHENEVER ANY OF THE PRIMARY PUMPS (P-4/5 OR P-6/7) IS ENERGIZED.
  - PUMPS P-8/9 AND P-10/11: P-8/9 AND P-10/11 SHALL ALTERNATE TO EQUALIZE RUN TIME. SELECTION OF LEAD PUMP IS EVALUATED ON A WEEKLY BASIS. THE PUMP WITH THE LEAST RUNTIME IS THE LEAD PUMP. THE PUMP WITH THE MOST RUNTIME IS THE LAG PUMP.
  - THE DDC SYSTEM USES CURRENT SWITCHES TO CONFIRM THE LEAD PUMP IS IN THE DESIRED STATE (I.E. ON OR OFF) AND GENERATES AN ALARM IF STATUS DEVIATES FROM DDC START/STOP CONTROL. IF THE LEAD PUMP GOES INTO ALARM, THE LAG PUMP STARTS.
- OUTSIDE AIR TEMPERATURE RESET:
  - NATURAL GAS MODE (BOILER B-4): B-4 SHALL MODULATE TO MAINTAIN HOT WATER SETPOINT ACCORDING TO THE MANUFACTURER'S SUGGESTED PROTOCOL. HOT WATER SUPPLY TEMPERATURE MAY BE RESET TO 140 DEG F (ADJ.)
  - OUTSIDE AIR RESET MODE SHALL BE CANCELED IF THE PRIMARY HOT WATER RETURN TEMPERATURE DROPS TO 140 DEG F. (ADJ.) WHENEVER B-3 IS ENERGIZED. THERE IS NO HOT WATER RETURN LOW LIMIT FOR B-4.
- LEAD LAG PROGRAMMING CONTROL:
 

A LEAD-LAG PROGRAMMING CONTROL SHALL SEQUENCE AUTOMATICALLY THE FIRING OF MULTIPLE BOILERS WITH CHANGING LOAD CONDITIONS. THE FIRST (LEAD) BOILER STARTS-UP AND REACHES ITS BURNER DELIVERY (HIGH FIRE) RATE. IF THE FIRST BOILER IS UNABLE TO MEET THE REQUIRED WATER TEMPERATURE, THE SECOND (LAG) BOILER SHALL AUTOMATICALLY FIRE. BOILERS SHALL OPERATE IN UNISON, MODULATING TO MEET THE DEMAND. IF THE DEMAND IS LESS THAN THE CAPACITY PROVIDED BY BOTH BOILERS FIRING AT LOW FIRE, THE LAG BOILER SHALL AUTOMATICALLY SHUT DOWN. THE LEAD BOILER SHALL SHUT DOWN WHEN THE DEMAND HAS BEEN EXCEEDED. SELECTION OF THE LEAD BOILER SHALL BE MADE EITHER MANUALLY BY MEANS OF A SELECTOR DIAL ON THE CONTROL CABINET OR AUTOMATICALLY AS A FUNCTION OF RUN TIME.
- BURNER OPERATING CONTROLS:
 

TO MAINTAIN SAFE OPERATING CONDITIONS, THE FOLLOWING BURNER SAFETY CONTROLS LIMIT BURNER OPERATION.

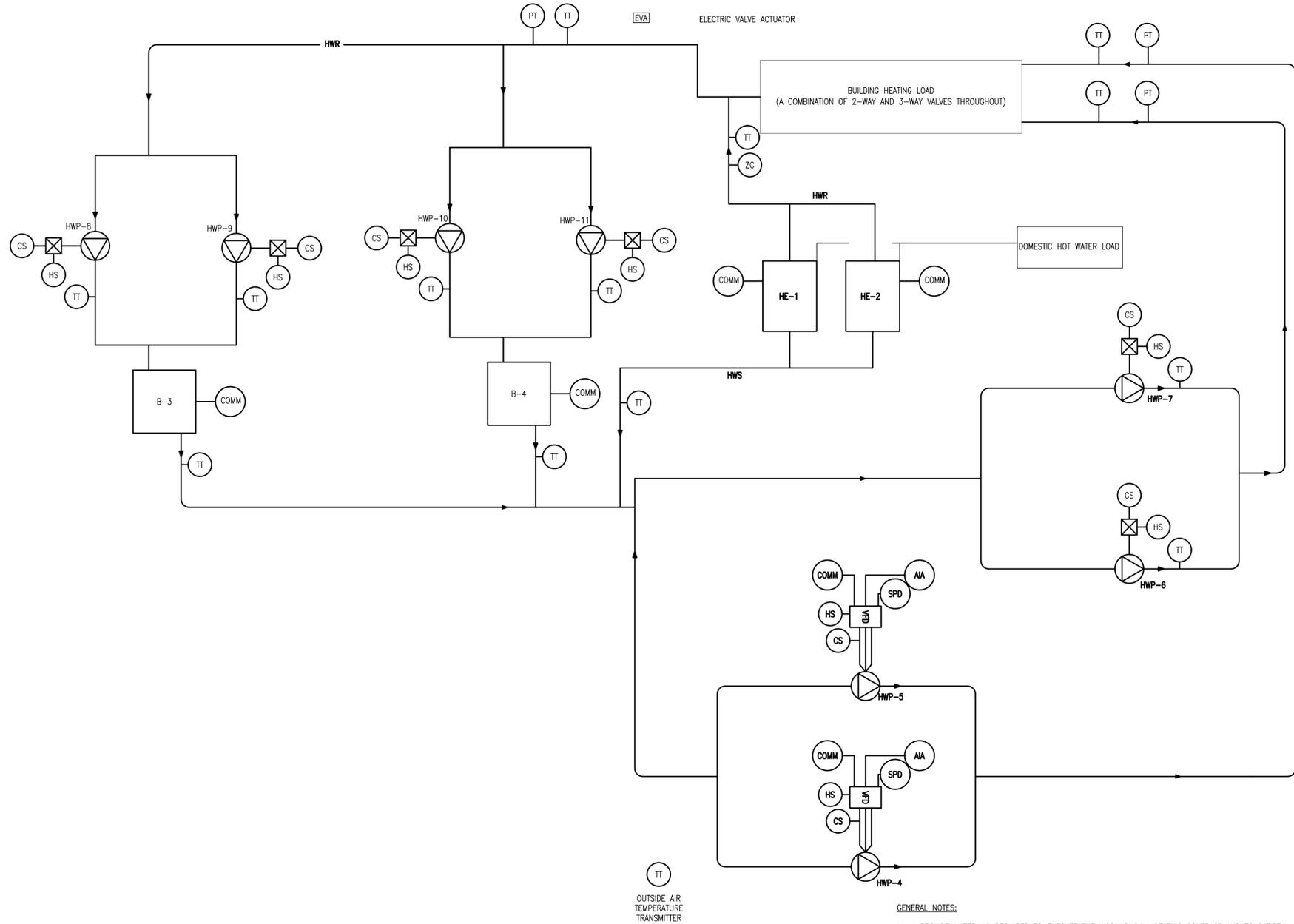
  - HIGH TEMPERATURE LIMIT: AUTOMATIC AND MANUAL RESET STOPS BURNER IF OPERATING CONDITIONS RISE ABOVE MAXIMUM BOILER DESIGN TEMPERATURE. LIMIT SWITCH TO BE MANUALLY RESET ON THE CONTROL INTERFACE.
  - LOW-WATER CUTOFF SWITCH: ELECTRONIC PROBE SHALL PREVENT BURNER OPERATION ON LOW WATER. CUTOFF SWITCH SHALL BE MANUALLY RESET ON THE CONTROL INTERFACE.
  - BLOCKED INLET SAFETY SWITCH: MANUAL-RESET PRESSURE SWITCH FIELD MOUNTED ON BOILER COMBUSTION-AIR INLET.
  - HIGH AND LOW GAS PRESSURE SWITCHES: PRESSURE SWITCHES SHALL PREVENT BURNER OPERATION ON LOW OR HIGH GAS PRESSURE. PRESSURE SWITCHES TO BE MANUALLY RESET ON THE CONTROL INTERFACE.
  - BLOCKED DRAIN SWITCH: BLOCKED DRAIN SWITCH SHALL PREVENT BURNER OPERATION WHEN TRIPPED. SWITCH TO BE MANUALLY RESET ON THE CONTROL INTERFACE.
  - LOW AIR PRESSURE SWITCH: PRESSURE SWITCHES SHALL PREVENT BURNER OPERATION ON LOW AIR PRESSURE. SWITCH TO BE MANUALLY RESET ON THE CONTROL INTERFACE.
  - AUDIBLE ALARM: FACTORY MOUNTED ON CONTROL PANEL WITH SILENCE SWITCH. SHALL SOUND ALARM FOR ANY LOCKOUT CONDITIONS.
  - EACH BURNER SHALL BE PROVIDED WITH A FLAME FAILURE (COMBUSTION SAFETY) PROGRAMMING CONTROL WHICH SHALL DE-ENERGIZE ALL ELECTRICALLY OPERATED FUEL VALVES AND BURNER EQUIPMENT WITHIN FOUR SECONDS, AND ACTUATE A VISUAL ALARM MOUNTED ON THE CONTROL PANEL AFTER AN OPERATING FLAME FAILURE HAS OCCURRED. AUTOMATIC START UP AND SHUTDOWN PROGRAMMING SHALL BE A PART OF THIS SAFETY EQUIPMENT.
  - CARBON MONOXIDE SHUT DOWN: BURNER EQUIPMENT SHALL BE SHUT DOWN BY THE STAND ALONE CO SYSTEM ON DETECTION OF HIGH CARBON MONOXIDE LEVELS.
  - LOW FIRE HOLD AQUASTAT: A LOW FIRE HOLD MINIMUM TEMPERATURE AQUASTAT SHALL LIMIT BURNER MODULATION TO PREVENT BOILER FROM MODULATING TO HIGH FIRE UNTIL WATER TEMPERATURE REACHES 180°F.

C. WINTERTIME UNOCCUPIED MODE: THE BOILER SHALL MODULATE ACCORDING TO THE SAME SEQUENCE ABOVE. THE TEMPERATURE CONTROL SYSTEM SHALL BE CAPABLE OF NIGHT SETBACK.

D. SUMMERTIME MODE: BOILERS B-3 AND B-4 SHALL BE TO MAINTAIN DOMESTIC HOW WATER HEATING REQUIREMENTS. THE SUMMER SWING VALVE SWITCH SHALL BE SET TO OFF. PRIMARY LOOP PUMPS SHALL BE OFF. SECONDARY LOOP PUMPS SHALL BE OFF.

**CONTROLS SYMBOLS**

- |    |                                     |      |                              |
|----|-------------------------------------|------|------------------------------|
| TT | TEMPERATURE TRANSMITTER             | VFD  | VARIABLE FREQUENCY DRIVE     |
| PT | PRESSURE TRANSMITTER                | ⊗    | MOTOR STARTER                |
| CS | CURRENT TRANSMITTER                 | DPS  | DIFFERENTIAL PRESSURE SENSOR |
| HS | HAND SWITCH (HAND-OFF-AUTO SWITCH)  | SPD  | SPEED COMMAND                |
| ZC | VALVE OR DAMPER POSITION CONTROLLER | AIA  | ANALOG INPUT                 |
| ES | DAMPER END SWITCH                   | COMM | COMMUNICATION                |
|    |                                     | ADJ  | ADJUSTABLE                   |
|    |                                     | EVA  | ELECTRIC VALVE ACTUATOR      |



**GENERAL NOTES:**

- PROVIDE MATERIALS REQUIRED TO EXECUTE THE WORK SHOWN OF THIS CONTRACT AND TO SATISFY THE SEQUENCE OF OPERATIONS WHICH SHALL INCLUDE, BUT NOT BE LIMITED TO: LOW VOLTAGE WIRING, CONDUIT, MATERIALS, PROGRAMMING, SOFTWARE, HARDWARE, AND APPURTENANCES.
- PROVIDE LOW VOLTAGE WIRING IN EMT CONDUIT THROUGHOUT. PAINT TO MATCH EXISTING FINISHES.
- SCHEDULE THE WORK WITH THE OWNER AND NOTIFY THE OWNER AT LEAST 48 HOURS IN ADVANCE OF PERFORMING ANY SHUTDOWNS.
- PERFORM CUTTING AND PATCHING AS REQUIRED TO ACCESS THE EXISTING VENT DAMPERS OR TO OTHERWISE EXECUTE THE WORK. RESTORE FINISHES TO MATCH EXISTING TO THE SATISFACTION OF THE OWNER.

**1 HEATING CONTROL SYSTEM SCHEMATIC DIAGRAM**  
SCALE: N.T.S.

0 1/2  
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

No.	Date	Revisions
2	01/08/25	ADDENDUM 1 ISSUED FOR BID

REC. EXP DATE: 10-31-26

Drawn by: A.W.  
Checked by: P.C.  
Project No.: 43065  
Scale: AS NOTED  
Date: 12/06/23

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Drawing Title: **MECHANICAL CONTROL DIAGRAMS - BOILER**  
Drawing No.: **M-401**

**GENERAL NOTES**

- DUCT SMOKE DETECTORS SHALL BE PROVIDED IN MAIN SUPPLY AND RETURN DUCT FOR SYSTEMS OVER 1,000 CFM AND ALSO UPSTREAM OF EACH STORY RETURN DUCT/RISER CONNECTION WHERE RETURN AIR RISERS SERVE TWO OR MORE STORIES FOR SYSTEMS OVER 15,000 CFM.
- INTEGRATE AIR FLOW MEASURING APPARATUS INTO THE BMS/DDC NETWORK. PROVIDE ONE OUTSIDE AIR FLOW MEASURING STATION FOR EACH OUTSIDE AIR INTAKE PORT.
- PROVIDE NEW THERMOSTATS WITH LOCK BOXES IN ROOMS BEING SERVED BY AHU. CONTRACTOR SHALL PROVIDE ALL ASSOCIATED CONTROL WIRING.
- SAFETY SHUTDOWN DEVICES SHALL BE HARDWIRED TO THE FAN STARTER CIRCUIT IN ADDITION TO THE DDC SYSTEM. COORDINATE WITH MANUFACTURER FOR SHUTDOWN UNDER ALL MODES OF OPERATION.
- MECHANICAL CONTRACTOR SHALL HIRE A FIRE ALARM SUBCONTRACTOR. FIRE ALARM CONTRACTOR TO FURNISH FIRE ALARM SYSTEM COMPLIANT SMOKE DETECTORS TO THE MECHANICAL CONTRACTOR WHO SHALL IN TURN FURNISH THEM TO THE CENTRAL AIR HANDLING UNIT MANUFACTURER FOR FACTORY INSTALLATION OR TO THE SHEET METAL CONTRACTOR FOR FIELD DUCTWORK INSTALLATION FOR THE FLOOR RETURN/RISER RETURN CONNECTIONS AS APPLICABLE. CONTRACTOR SHALL PROVIDE ALL SIGNAL AND CONTROL POWER WIRING TO UNIT.

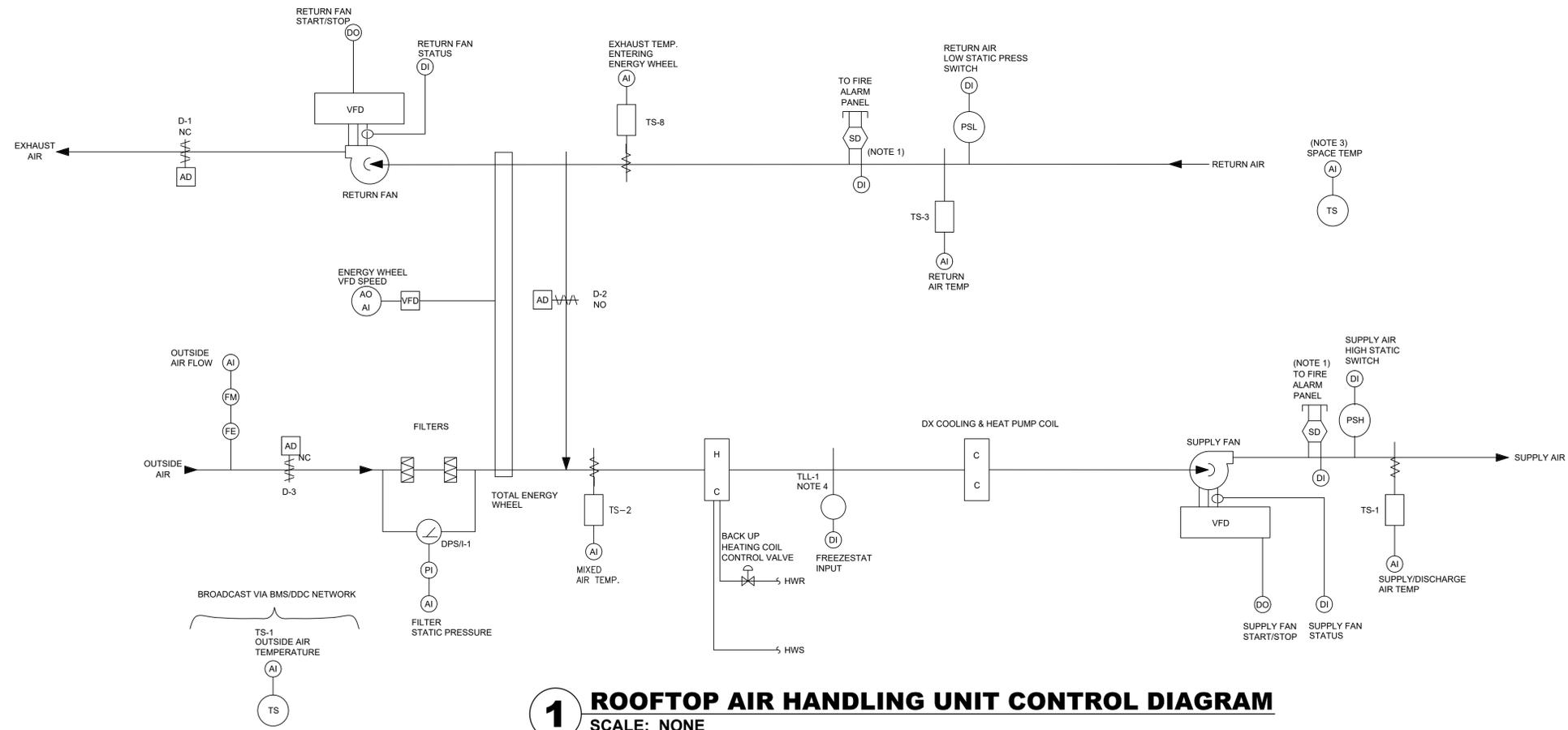
**DIAGRAM NOTES**

- THE POINT LISTED HEREIN ARE THE MINIMUM POINTS REQUIRED FOR THE CONTROL AND MONITORING OF THIS EQUIPMENT. THIS POINT LIST IS TYPICAL FOR EACH MECHANICAL/ELECTRICAL SYSTEM OF THIS TYPE. IF THE SEQUENCE OF OPERATION REQUIRES ADDITIONAL OR DIFFERING INFORMATION, IT MUST BE PROVIDED BY THE RESPECTIVE PROVIDER OF THE CONTROLS FOR THIS TYPE OF EQUIPMENT AS COORDINATED BY THE GENERAL AND MECHANICAL CONTRACTORS.
- THE TCC SHALL PROVIDE ALL DIGITAL ALARM LOGIC. ALL DIGITAL ALARMS SHALL BE COMPATIBLE WITH THE EXISTING SIEMENS BMS SYSTEM.
- THE TCC SHALL PROVIDE ALL TRENDRING AND ANALOG ALARMING VIA THE SOFTWARE USED AT THE EXISTING SIEMENS BMS SYSTEM.
- PROVIDE ACCUMULATED AIR FLOW FOR VALIDATION OF PURGE-MODE AND FOR PERMANENT VALIDATION OF OCCUPANT VENTILATION.
- PROVIDE MANUAL RESET DEVICE. NOTE THAT THIS DEVICE BOTH ALARMS IN THE BMS AND IS HARDWIRED TO THE VFDS FOR SHUTDOWN OF THE FANS IN ALL OPERATING CONDITIONS OF THE VFD.
- PROVIDE THE ALARM WHEN AT THE CALCULATED DIFFERENTIAL BETWEEN OUTSIDE AIR AND SPACE AIR CO2 VALUE IS 1000 ppm.

**LEGEND**

VFD	VARIABLE FREQUENCY DRIVE
TLL-1	TEMPERATURE LOW LIMIT
TCC	TEMPERATURE CONTROLS CONTRACTOR
TS-1	OUTSIDE AIR TEMP
TS-2	MIXED AIR TEMP
TS-3	HEATING COIL DISCHARGE
TS-4	DISCHARGE AIR TEMP
TS-5	RETURN AIR TEMP
FE	FLOW ELEMENT
FM	FLOW METER
DCV	DEMAND CONTROL VENTILATION
CO2	CARBON DIOXIDE
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
AI	ANALOG INPUT
AO	ANALOG OUTPUT
LON	LONWORKS NETWORK CONNECTION
BMS	BUILDING MANAGEMENT SYSTEM
PSL	PRESSURE SWITCH LOW
PSH	PRESSURE SWITCH HIGH
DPS/I	DIFF. PRESSURE SWITCH/INDICATOR
AD	DPR ACTUATORS

HEAT PUMPS ARE TO BE PRIMARY HEATING.  
HOT WATER COILS TO BE SECONDARY BACK UP HEATING.  
DURING DX COIL DEFROST MODE HOT WATER COILS TO BE USED.  
HOT WATER VALVES TO BE 5% OPEN ALL TIME FOR FREEZE PROTECTION.  
CIRCULATION PUMPS TO BE ON ALL TIMES.  
SEE SEQUENCE OF OPERATION FOR DETAILS  
EACH UNIT TO BE PROVIDED WITH SIEMENS FIELD-INSTALLED CONTROLS.



**1 ROOFTOP AIR HANDLING UNIT CONTROL DIAGRAM**  
SCALE: NONE

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No.	Date	Revisions
2	01/22/25	ADDENDUM 1
1	07/08/25	ISSUED FOR BID

REC. EXP DATE: 10-31-26

Drawn by	A.W.
Checked by	P.C.
Project No.	43065
Scale	AS NOTED
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	Structural Engineer:

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Drawing Title: **MECHANICAL CONTROL DIAGRAMS - RTU'S**  
Drawing No.: **M-403**