

# SECTION A





Bid No.: 647

When a sealed bid is placed inside another delivery jacket, the bid delivery jacket must be clearly marked on the outside **"BID ENCLOSED"** and **"ATTENTION: PURCHASING UNIT"**. The Dormitory Authority will not be responsible for receipt of bids which do not comply with these instructions.

5. Mail bid responses early in order for them to be received before the time of the bid opening. **Late bids will be automatically rejected.** Individuals submitting bids in person or by private delivery services should allow sufficient time for processing through building security to assure that the bids are received prior to the deadline for submitting bids. All individuals who plan to attend bid openings will be required to present government-issued picture identification to building security officials and obtain a visitor's pass prior to attending the bid opening.
6. In accordance with State Finance Law § 139-j and 139-k, this solicitation includes and imposes certain restrictions on communications between Dormitory Authority personnel and an Offerer during this procurement process. Designated contact for this solicitation is:  
Stacie Craft, Purchasing Coordinator , at Dormitory Authority – State of New York, 515 Broadway, Albany, NY 12207,(518) 257-3085. Contacts made to other Dormitory Authority Personnel regarding this procurement may disqualify the Offerer and affect future procurements with governmental entities in the State of New York. Please refer to the Authority's website [www.dasny.org](http://www.dasny.org) for Authority policy and procedures regarding this law, or the NYS office of General Services website [www.ogs.ny.gov/BU/PC/](http://www.ogs.ny.gov/BU/PC/) for more information about this law.



Bid No.: 647

---

---

**If you are not submitting a bid it is requested that you complete and return the lower portion of this form**

*(Please check all that apply and provide comments in the space provided, if necessary)*

☐ We are not Submitting a bid.

☐ We Request removal of our name from the mailing list.

☐ Location of the job site.

☐ Commodity is not carried by our company.

☐ Scope is too large.

Other/Additional Explanation:

\_\_\_\_\_

\_\_\_\_\_

NAME OF  
BIDDER:

\_\_\_\_\_

ADDRESS  
:

Street  
Telephone

City

State

Zip

\_\_\_\_\_  
Signature of Bidder

\_\_\_\_\_  
Official Title

---

## CLAUSES PURSUANT TO THE OMNIBUS PROCUREMENT ACT OF 1992

It is the policy of New York State to maximize opportunities for the participation of New York State business enterprises, including minority and woman-owned business enterprises as bidders, subcontractors and suppliers on its procurement contracts.

Information on the availability of New York subcontractors and supplies is available from:

Empire State Development  
Small Business Division  
30 South Pearl Street, 7<sup>th</sup> Floor  
Albany, NY 12207  
Phone: (800) 782-8369

A directory of minority and woman-owned business enterprises is available from:

Empire State Development  
Division of Minority and Women Business Development  
30 South Pearl Street  
Albany, NY 12207  
Phone: (518) 292-5250

Online Directory: <https://ny.newnycontracts.com/FrontEnd/VendorSearchPublic.asp>

DASNY maintains a directory of minority and women-owned business enterprises:  
<http://www.dasny.org/construc/mwsbereg/index.php>

The contractor acknowledges notice that New York State may seek to obtain offset credits from foreign countries as a result of this contract and agrees to cooperate with the State in these efforts.

DASNY encourages the use of recycled Materials in the manufacturing process. To that end, the recycled product must meet the same codes, specifications and standards the non-recycled materials do, including requirements for cost, installation, aesthetics, availability and maintenance.

---

The Omnibus Procurement Act of 1992 and § 2879 of the NYS Public Authorities Law require that by signing this bid, contractors certify that whenever the total bid amount is greater than \$1 million:

1. The contractor has made reasonable efforts to encourage the participation of New York State Business Enterprises as suppliers and Subcontractors on this project, and has retained the documentation of these efforts to be provided upon request to the State. If the contractor determines that NYS business enterprises are not available to participate on the contract as subcontractors or suppliers, the contractor shall provide a statement indicating the method by which such determination was made. If the contractor does not intend to use subcontractors, contractor shall provide a statement verifying such;
2. The contractor has complied with the Federal Equal Opportunity Act of 1972 (PL 92-261), as amended;
3. The contractor agrees to make reasonable efforts to provide notification to New York State residents of employment opportunities on this project through listing any such positions with the Job Service Division of the New York State Department of Labor, or providing such notification in such manner as is consistent with existing collective bargaining contracts or agreements. The contractor agrees to document these efforts and to provide said documentation to the State upon request;

**DASNY is required by law to notify the NYS Department of Economic Development of any procurement contract for one million dollars or more that is to be awarded to an out-of-state vendor. This notice must be done simultaneous to the notification of award provided to the vendor. A purchase order or contract cannot be issued until fifteen (15) days after such notification is provided.**

## GENERAL SPECIFICATIONS

- (1) The enclosed Purchasing General Conditions are hereby incorporated by reference. Submission of a bid response shall constitute acceptance of such conditions. Any exceptions/clarifications/qualifications to these conditions or other specifications and/or requirements contained herein must be clearly stated in the bid response and, depending upon the nature of such, may be grounds for rejection of your bid.
- (2) Bids must be submitted in the bidder's full legal name, or the bidder's full legal name plus a registered assumed name, if any.
- (3) All NYS bidders are required to be registered to do business with the NYS Department of State or their local County Clerk, whichever is applicable.
- (4) All out-of-state bidders will be required to provide proof of registration to do business in their state. All out-of-state bidders that "do business in New York State" **MUST BE REGISTERED WITH THE NYS DEPARTMENT OF STATE**. Please contact the NYS Department of State at (518) 473-2492. Information is available at the DOS website: [www.dos.ny.gov](http://www.dos.ny.gov)
- (5) DASNY is required by law to notify the Empire State Development of any procurement contract for one million dollars or more that is to be awarded to an out-of-state vendor. This notice must be done simultaneous to the notification of award provided to the vendor. A purchase order or contract cannot be issued until fifteen (15) days after such notification is provided.
- (6) Empire State Development is required by law to identify states and other jurisdictions that impose preferences or other penalties against New York bidders. DASNY is precluded from soliciting bids or entering into procurement contracts with companies that have their principal place of business located in one of the listed jurisdictions, unless the procurement is for a product that is substantially manufactured in New York State or the services are to be performed in New York State. Currently, this list of jurisdictions includes the states of Alaska, Hawaii, Louisiana, South Carolina, West Virginia and Wyoming.
- (7) Unless otherwise indicated, any reference to brands or model numbers is intended to establish a standard. Items of all manufacturers will be considered, provided the item is determined to meet or exceed the required specification. DASNY's decision as to whether a substitute item meets specification will be final. Your attention is directed to Article II-7, Page 5 of the General Conditions. In order to evaluate substitute items, detailed specifications must be submitted for any product that is other than the one(s) specified in the bid.

## GENERAL SPECIFICATIONS CONTINUED

- (8) Unless otherwise noted, guarantee on all items is to be one year as detailed in Article XVI of the General Conditions
- (9) All upholstered furniture and drapery panels and lining must meet strict flammability requirements. Standards applicable to this bid, if any, will be delineated in the Detailed Specifications.
- (10) **LABOR/TRADES** - Any labor, materials or means whose employment, or utilization during the course of this contract, shall not in any way cause or result in strike, work stoppages, delays, suspension of work; or similar troubles by workers employed by this contractor or his subcontractors, or by any of the trades working in or about the buildings and premises where work is being performed. Any violation by the contractor of this requirement may in the sole judgment of DASNY be considered as proper and sufficient cause for declaring the contractor to be in default, and for the owner to take action against him as set forth in the Purchasing General Conditions, Article VIII, "Termination", or such other action as DASNY may deem proper.
- (11) Bid results are available on the DASNY website ([www.DASNY.org](http://www.DASNY.org)). Bid results will not be given over the phone.
- (12) If you are a NYS Certified Minority or Women Owned Business, please include a copy of your certification with the bid.



**DASNY**

**ANDREW M. CUOMO**  
Governor

**ALFONSO L. CARNEY, JR.**  
Chair

**GERRARD P. BUSHELL, Ph.D.**  
President & CEO

## SUPPLEMENTAL SPECIFICATIONS

**The following items are attached for informational purposes. Referenced documents need not be returned with the proposal.** These documents are only applicable to the successful bidder and the ensuing procurement contract. Documents are only applicable to the successful bidder and the ensuing procurement contract. Documents applicable to the procurement that will result from this Invitation for Bids are designated by a check box (☒). Unless otherwise indicated, the referenced documents are located at the end of this Invitation for Bids.

- ☒ **Purchasing General Conditions** – The DASNY Purchasing General Conditions contains terms and conditions of purchases made by DASNY. It is recommended that this document be reviewed fully.
- ☐ **M/WBE Utilization Plan and Request for Waiver** - Minority and Women-Owned Business Enterprise (M/WBE) goals for this project are 0% and 0%, respectively. The successful bidder shall be required to complete a Utilization Plan or Request for Waiver, to be approved by DASNY's Opportunity Programs Group. Reference Purchasing General Conditions, Article XIX, Affirmative Action for Contracts Mr. Michael Clay, DASNY Opportunity Programs Group at (518) 257-3464, is available to assist all bidders in attaining these goals. *Reference the enclosed "Good Faith Efforts Guidelines".*
- ☒ **Supplemental General Requirements** – Attached (if applicable) are the Supplemental General Requirements (SGRs) which provide important logistical information and additional conditions which govern this procurement. Please read these SGRs carefully.
- ☐ **Form of DASNY Contract** – The procurement resulting from the Invitation for Bids will be executed through a DASNY purchase order and a related contract. The contract executed with the successful bidder will be in the same substantial form as the attached "Form of Contract". Note that this Invitation for Bids and any response to such will be annexed as binding terms of the purchase agreement.
- ☐ **Certificate of Insurance** (*sample enclosed*) – The successful bidder will be required to provide a Certificate of Insurance pursuant to Article XIV of the enclosed Purchasing General Conditions. The certificate shall name DASNY and other designated parties as additional insureds.

**CORPORATE HEADQUARTERS**  
515 Broadway  
Albany, NY 12207-2964

T 518-257-3000  
F 518-257-3100

**NEW YORK CITY OFFICE**  
One Penn Plaza, 52nd Floor  
New York, NY 10119-0098

T 212-273-5000  
F 212-273-5121

**BUFFALO OFFICE**  
539 Franklin Street  
Buffalo, NY 14202-1109

T 716-884-9780  
F 716-884-9787

**DORMITORY AUTHORITY STATE OF NEW YORK**

**WE FINANCE, BUILD AND  
DELIVER.**

[www.dasny.org](http://www.dasny.org)



**DASNY**

**ANDREW M. CUOMO**  
Governor

**ALFONSO L. CARNEY, JR.**  
Chair

**GERRARD P. BUSHELL, Ph.D.**  
President & CEO

**SUPPLEMENTAL SPECIFICATIONS CONTINUED**

- ☐ **Worker's Compensation / Disability Insurance** – The successful proposer will be required to provide specific documentation with respect to Worker's Compensation and Disability Insurance pursuant to Article XIV of the enclosed Purchasing General Conditions. Requirements are detailed in the enclosed "Workers' Compensation and Disability Benefits Requirements" document.
- ☐ **Prevailing Wage Schedule** – NYS Labor Law requires all wages paid by contractors and subcontractors on public work projects be paid at the prevailing wage rates. Enclosed is the current rate schedule for the appropriate county. Contractors and Subcontractors are responsible for obtaining current rates throughout the course of the project. The NYS Department of Labor (NYS DOL) updates these rates on July 1st of each year. Current rates can be obtained on the NYS DOL website ([www.labor.state.ny.us](http://www.labor.state.ny.us)) or by fax at (518) 485-1870. Note that an executed Contractor and Subcontractor Certification and certified payrolls, which include the hours and days worked by each workman, laborer or mechanic, the occupation at which he worked, the hourly wage rate paid and the supplements paid or provided, must be submitted with each and every payment requisition. **DASNY will not process an invoice without this information.** Forms are available on the DASNY website: <http://www.dasny.org/construc/forms2/vendors.php>
- ☐ **Labor and Material Payment Bond** – The successful bidder must be prepared to provide surety bonds prior to award in accordance with Article XIV of the DASNY Purchasing General Conditions. The costs of these bonds are to be separately stated in the total bid price as indicated on the Bid Breakdown and Schedule.
- ☐ **Performance Bond** – The Successful bidder must be prepared to provide surety bonds prior to award in accordance with Article XIV of DASNY Purchasing General Conditions. The costs of these bonds are to be separately stated in the total bid price as indicated on the Bid Breakdown and Schedule.
- ☒ **Standard Vendor Responsibility Questionnaire (SVRQ)** – The successful proposer, in accordance with Article XXII of DASNY Purchasing General Conditions, will be required to complete the enclosed SVRQ. The award of a contract will be subject to a review of the information contained in these forms.

**CORPORATE HEADQUARTERS**  
515 Broadway  
Albany, NY 12207-2964

T 518-257-3000  
F 518-257-3100

**NEW YORK CITY OFFICE**  
One Penn Plaza, 52nd Floor  
New York, NY 10119-0098

T 212-273-5000  
F 212-273-5121

**BUFFALO OFFICE**  
539 Franklin Street  
Buffalo, NY 14202-1109

T 716-884-9780  
F 716-884-9787

**DORMITORY AUTHORITY STATE OF NEW YORK**

**WE FINANCE, BUILD AND  
DELIVER.**

[www.dasny.org](http://www.dasny.org)



**DASNY**

**ANDREW M. CUOMO**  
Governor

**ALFONSO L. CARNEY, JR.**  
Chair

**GERRARD P. BUSHELL, Ph.D.**  
President & CEO

**SUPPLEMENTAL SPECIFICATIONS CONTINUED**

- ☐ **NYS Uniform Contracting Questionnaire (UCQ)** – The successful proposer will be required to complete the enclosed UCQ. The award of a contract will be subject to a review of the information contained in these forms.
- ☐ **DASNY Contractor and Consultant Questionnaire (CCQ)** – The successful proposer will be required to complete the enclosed CCQ. The award of a contract will be subject to a review of the information contained in these

**CORPORATE HEADQUARTERS**  
515 Broadway  
Albany, NY 12207-2964

T 518-257-3000  
F 518-257-3100

**NEW YORK CITY OFFICE**  
One Penn Plaza, 52nd Floor  
New York, NY 10119-0098

T 212-273-5000  
F 212-273-5121

**BUFFALO OFFICE**  
539 Franklin Street  
Buffalo, NY 14202-1109

T 716-884-9780  
F 716-884-9787

**DORMITORY AUTHORITY STATE OF NEW YORK**

**WE FINANCE, BUILD AND  
DELIVER.**

[www.dasny.org](http://www.dasny.org)



**DASNY**

**ANDREW M. CUOMO**  
Governor

**ALFONSO L. CARNEY, JR.**  
Chair

**GERRARD P. BUSHELL, Ph.D.**  
President & CEO

## SUPPLEMENTAL GENERAL REQUIREMENTS

### **Requests for Information:**

All questions pertaining to Bid No. 647 – Furnish and Deliver Air Handlers are due no later than 4:00 p.m. on September 25, 2019 to [scraft@dasny.org](mailto:scraft@dasny.org). RFI Responses will be posted via Addenda to DASNY's Website in the Attachments Section of the Bid Opportunity Page for Bid No. 647

---

#### **CORPORATE HEADQUARTERS**

515 Broadway  
Albany, NY 12207-2964

**T** 518-257-3000  
**F** 518-257-3100

#### **NEW YORK CITY OFFICE**

One Penn Plaza, 52nd Floor  
New York, NY 10119-0098

**T** 212-273-5000  
**F** 212-273-5121

#### **BUFFALO OFFICE**

539 Franklin Street  
Buffalo, NY 14202-1109

**T** 716-884-9780  
**F** 716-884-9787

#### **DORMITORY AUTHORITY STATE OF NEW YORK**

**WE FINANCE, BUILD AND  
DELIVER.**

[www.dasny.org](http://www.dasny.org)



**DASNY**

**ANDREW M. CUOMO**  
Governor

**ALFONSO L. CARNEY, JR.**  
Chair

**GERRARD P. BUSHELL, Ph.D.**  
President & CEO

## **DETAILED SPECIFICATIONS**

**See Attached**

---

**CORPORATE HEADQUARTERS**  
515 Broadway  
Albany, NY 12207-2964  
  
**T** 518-257-3000  
**F** 518-257-3100

**NEW YORK CITY OFFICE**  
One Penn Plaza, 52nd Floor  
New York, NY 10119-0098  
  
**T** 212-273-5000  
**F** 212-273-5121

**BUFFALO OFFICE**  
539 Franklin Street  
Buffalo, NY 14202-1109  
  
**T** 716-884-9780  
**F** 716-884-9787

**DORMITORY AUTHORITY STATE OF NEW YORK**  
  
**WE FINANCE, BUILD AND  
DELIVER.**

[www.dasny.org](http://www.dasny.org)

## SECTION 237416.13 - AIR-HANDLING UNITS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section includes packaged, outdoor, air-handling units:
  - 1. AHU-2 (Heat- Electric, Cooling- Electric)
  - 2. AHU-4 (Heat- Electric, Cooling- Electric)

#### 1.3 DEFINITIONS

- A. DDC: Direct-digital controls.
- B. AHU: Air Handling unit. As used in this Section, this abbreviation means packaged, outdoor, central-station air-handling units. This abbreviation is used regardless of whether the unit is mounted on the roof or on a concrete base on ground.
- C. Supply-Air Fan: The fan providing supply air to conditioned space. "Supply air" is defined as the air entering a space from air-conditioning, heating, or ventilating apparatus.

#### 1.4 ACTION SUBMITTALS

- A. Product Data: Include manufacturer's technical data for each unit, including rated capacities, dimensions, required clearances, characteristics, furnished specialties, and accessories.
- B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, unit performance data including sound data, door sizes and elevations, drain pan detail, control panel layout, fan sound data, and location and size of each field connection.
  - 1. Wiring Diagrams: Power, signal, and control wiring.
  - 2. Furnish fan performance rating and fan curve with specified operation points clearly plotted

## 1.5 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Plans and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
  - 1. Structural members to which AHUs will be attached.
  - 2. Roof openings
- B. Field quality-control test reports.
- C. Warranty: Special warranty specified in this Section.

## 1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For AHUs to include in emergency, operation, and maintenance manuals.

## 1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Filters: two (2) sets of filters for each unit.

## 1.8 QUALITY ASSURANCE

- A. ARI Compliance:
  - 1. Comply with ARI 210/240 and ARI 340/360 for testing and rating energy efficiencies for AHUs.
  - 2. Comply with ARI 270 for testing and rating sound performance for AHUs.
- B. ASHRAE Compliance:
  - 1. Comply with applicable requirements in ASHRAE 62.1, Section 5 - "Systems and Equipment" and Section 7 - "Construction and startup."
- C. ASHRAE/IESNA 90.1 Compliance: Applicable requirements in ASHRAE/IESNA 90.1, Section 6 - "Heating, Ventilating, and Air-Conditioning."
- D. UL Compliance: Comply with UL 1995.
- E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

- F. Standard catalog unit requiring modification to meet this specification shall not be considered or accepted. The manufacturer must have been a manufacturer of the package energy recovery equipment for at least ten years prior to the date of bidding on this equipment. The complete package unit including air- to air heat exchanger must be manufacturer in the United States of America.

## 1.9 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to replace components of AHUs that fail in materials or workmanship within specified warranty period.
1. Warranty Period for Compressors: Manufacturer's standard
  2. Warranty Period for Control Boards: Manufacturer's standard

## PART 2 - PRODUCTS

- A. Manufacturers: Subject to compliance with requirements (Basis of Design-Trane), provide products by one of the following:
1. Carrier Corporation; a unit of United Technologies Corp.
  2. Daikin Applied.
  3. YORK; a Johnson Controls company.

### 2.1 AIR HANDLING UNIT (AHU-2&4)

The unit shall be either configured at the factory (OAG) for Down/Horizontal discharge for Supply Openings. Cooling performance shall be rated in accordance with ARI testing procedures. All units shall be factory assembled, internally wired, fully charged with R-410A, and 100 percent run tested to check cooling operation, fan and blower rotation, and control sequence before leaving the factory. Wiring internal to the unit shall be colored and numbered for simplified identification. Units shall be ETL listed and labeled, classified in accordance to UL 1995/CAN/CSA No. 236-M40 for Central Cooling Air Conditioners. Canadian units shall be CSA Certified.

### 2.2 Casing

Unit casing shall be constructed of zinc coated, heavy gauge, galvanized steel. Exterior surfaces shall be cleaned, phosphatized, and finished with a weather-resistant baked enamel finish. Unit's surface shall be tested 1000 hours in a salt spray test in compliance with ASTM B117. Unit shall have a 2 inch thick Antimicrobial Insulation. All insulation edges shall be either captured or sealed. The unit's base pan shall

have no penetrations within the perimeter of the curb other than the raised downflow supply/return openings to provide an added water integrity precaution, if the condensate drain backs up.

### 2.3 Unit Top

The top cover shall be one piece construction or, where seams exist, it shall be double-hemmed and gasket-sealed. The ribbed top adds extra strength and enhances water removal from unit top

### 2.4 Sensors

A factory installed combination outdoor air sensor located in the outdoor air hood is designed to sense both outdoor air temperature and relative humidity for use by the microprocessor controller to make required ventilation, cooling, dehumidification and heating decisions. Refer to the Sequence of Operations section of the Installation, Operation and Maintenance manual for detailed unit control and operational modes. A factory installed sensing tube is designed to sense the supply air temperature downstream of the indoor fan section.

### 2.5 Indoor Coil Type: DX 6-Row

Internally finned, inch copper tubes mechanically bonded to a configured aluminum plate fin shall be standard. Coils shall be leak tested at the factory to ensure the pressure integrity. The evaporator coil shall be leak tested to 500 psig and pressure tested to 500 psig. A Stainless-Steel double-sloped condensate drain pan with provision for through the unit wall condensate drain is standard. Evaporator coil will have 6 interlaced rows for superior sensible and latent cooling.

### 2.6 Reheat: Fin & Tube Modulating HGRH

This option shall consist of a modulating hot-gas reheat coil located on the leaving air side of the evaporator coil pre-piped and circuited with a low pressure switch. Refer to the Sequence of Operations section of the Installation, Operation and Maintenance manual for detailed unit control and operational modes.

### 2.7 Compressor: Digital Scroll-1st Circuit Only

All units shall have direct-drive, hermetic, digital scroll type compressors with centrifugal type oil pumps. Motor shall be suction gas-cooled and shall have a voltage utilization range of plus or minus 10 percent of unit nameplate voltage. Internal overloads shall be provided with the scroll compressors. Crankcase heaters shall be included. Compressor shall be able to fully modulate from 20%-100%.

## 2.8 Outdoor Coil Type: Air Cooled Fin & Tube

(Fin and Tube Coil) - Internally finned, copper tubes mechanically bonded to a configured aluminum plate fin shall be standard. Coils shall be leak tested at the factory to ensure the pressure integrity. The condenser coil shall be leak tested to 500 psig and pressure tested to 500 psig. The condenser coil shall have a fin design with slight gaps for ease of cleaning.

Outdoor Fans: Shall be direct drive vertical discharge design with low-noise corrosion resistant glass reinforced polypropylene props, powder coated wire discharge guards and electro-plated motor mounting brackets. Fans shall be statically and dynamically balanced.

## 2.9 Heat Type - Primary: Electric - SCR Modulating

2.10 Primary heat is supplied using Electric Resistance heaters. Heaters shall meet the requirements of the National Electrical Code and shall be listed by Underwriters Laboratories for zero clearance to combustible surfaces and for use with heat pumps and air conditioning equipment. Heating elements shall be open coil, 80% nickel, 20% chromium, Type A resistance wire, Type C alloys containing iron or other alloys are not acceptable. Coils shall be machine crimped into stainless steel terminals extending at least 1" into the air stream and all terminal hardware shall be stainless steel. Coils shall be supported by ceramic bushings staked into supporting brackets. Brackets are not to be spaced more than 4-1/2" apart. Heater frames and terminal boxes shall be corrosion resistant steel. Unless otherwise indicated, the terminal box shall be NEMA 1 construction and shall be provided with a hinged, latching cover. Open coil heaters shall be furnished with an airflow switch, disconnecting contactors, fuses (if over 48 amps), control circuit transformer (with primary fusing on Class I circuits as required), built-in, snap acting, door interlock disconnect switch, and a disk type, automatic reset thermal cutout for primary overtemperature protection. Heaters shall also be furnished with disk type, load-carrying manual reset thermal cutouts, factory wired in series with heater stages for secondary protection. Heat limiters or other fusible overtemperature devices are not acceptable. For modulating heaters, control will be SCR type. For staged heaters, 5kW capacity will be 2 stage and all heaters above 5kW will be 4 stage. If the unit is selected with horizontal discharge a NEMA 3R construction heater to be installed by the field in the supply duct of the unit will be provided in place of the standard NEMA 1 construction. NEMA 3R CONSTRUCTION - UL rain-tight Type 3R heaters are to provide protection against falling rain, sleet, external ice formation, and for indoor use for protection against dripping water. Unit shall be suitable for use with Electric Resistance Heat.

## 2.11 Evaporator Coil: DX 6 Row Interlaced

Internally finned, 5/16 inch copper tubes mechanically bonded to a configured aluminum plate fin shall be standard. Coils shall be leak tested at the factory to ensure the pressure integrity. The evaporator coil shall be leak tested to 500 psig and pressure tested to 500 psig. A Stainless Steel double-sloped condensate

drain pan with provision for through the unit wall condensate drain is standard. Evaporator coil will have 6 interlaced rows for superior sensible and latent cooling.

#### 2.12 Hot Gas Reheat: Modulating

This option shall consist of a modulating hot-gas reheat coil located on the leaving air side of the evaporator coil pre-piped and circuited with a low pressure switch. Refer to the Sequence of Operations section of the Installation, Operation and Maintenance manual for detailed unit control and operational modes.

#### 2.13 Supply Fan Motor Type: Direct Drive w/VFD

Supply Fan motor shall be direct drive type with factory installed Variable Frequency Drive (unless no controls option is selected, VFD can be provided by others). All motors shall be thermally protected. All indoor fan motors meet the U.S. Energy Policy Act of 2005 (EPACT). All Fans shall be mounted on rubber vibration isolators, to reduce the transmission of noise.

#### 2.14 Compressor: Digital Scroll Primary Circuit

All units shall have direct-drive, hermetic, digital scroll type compressors with centrifugal type oil pumps. Motor shall be suction gas-cooled and shall have a voltage utilization range of plus or minus 10 percent of unit nameplate voltage. Internal overloads shall be provided with the scroll compressors. Crankcase heaters shall be included. Compressor shall be able to fully modulate from 20%-100%.

#### 2.15 Condenser: Air Cooled

(Fin and Tube Coil) - Internally finned, 5/16 inch copper tubes mechanically bonded to a configured aluminum plate fin shall be standard. Coils shall be leak tested at the factory to ensure the pressure integrity. The condenser coil shall be leak tested to 500 psig and pressure tested to 500 psig. The condenser coil shall have a fin design with slight gaps for ease of cleaning.

2.16 Outdoor Fans: Shall be direct drive vertical discharge design with low-noise corrosion resistant glass reinforced polypropylene props, powder coated wire discharge guards and electro-plated motor mounting brackets. Fans shall be statically and dynamically balanced.

2.17 Indoor Blower Motor: ECM w/ Backward Curved Plenum Fan Supply Fan shall be a high efficiency backward curved impeller. The supply motor shall be an electronic commuted motor with integrated power electronics.

2.18 Unit Controls: Discharge Air Control - UC600

2.19 Filter: MERV-13, 80%

Aluminum Mesh Filters (D, K and N Cabinets) and Galvanized Mesh Bird Screen (B and G Cabinets) shall be installed on the intake of the unit. In addition, one row of 2 inch MERV-13 shall be installed prior to the evaporator coil. Unit shall be equipped with a filter rack upstream of the evaporator. Frame shall be field-adjustable to match any filter combination specified in the attached selection.

2.20 AHU-2: 480-3V Electric Heater: 48 and AHU-4: 480-3V Electric Heater: 48

2.21 Heat Type - Primary: Electric - SCR Modulating- Primary- 48 KW

Primary heat is supplied using Electric Resistance heaters. Heaters shall meet the requirements of the National Electrical Code and shall be listed by Underwriters Laboratories for zero clearance to combustible surfaces and for use with heat pumps and air conditioning equipment. Heating elements shall be open coil, 80% nickel, 20% chromium, Type A resistance wire, Type C alloys containing iron or other alloys are not acceptable. Coils shall be machine crimped into stainless steel terminals extending at least 1" into the air stream and all terminal hardware shall be stainless steel. Coils shall be supported by ceramic bushings staked into supporting brackets. Brackets are not to be spaced more than 4-1/2" apart. Heater frames and terminal boxes shall be corrosion resistant steel. Unless otherwise indicated, the terminal box shall be NEMA 1 construction and shall be provided with a hinged, latching cover. Open coil heaters shall be furnished with an airflow switch, disconnecting contactors, fuses (if over 48 amps), control circuit transformer (with primary fusing on Class I circuits as required), built-in, snap acting, door interlock disconnect switch, and a disk type, automatic reset thermal cutout for primary overtemperature protection. Heaters shall also be furnished with disk type, load-carrying manual reset thermal cutouts, factory wired in series with heater stages for secondary protection. Heat limiters or other fusible overtemperature devices are not acceptable. For Modulating heaters, control will be SCR type. For staged heaters, 5kW capacity will be 2 stage and all heaters above 5kW will be 4 stage. If the unit is selected with horizontal discharge a NEMA 3R construction heater to be installed by the field in the supply duct of the unit will be provided in place of the standard NEMA 1 construction. NEMA 3R CONSTRUCTION - UL rain-tight Type 3R heaters are to provide protection against falling rain, sleet, external ice formation, and for indoor use for protection against dripping water. Unit shall be suitable for use with Electric Resistance Heat.

2.22 Unit Controls: Trane UC600 - Discharge Air Control w/BACNET w/Display

Unit is completely factory wired with necessary controls and contactor pressure lugs for power wiring. Units will provide an external location for mounting fused disconnect device. Micro-processor controls are provided for all 24 volt control functions. The resident control algorithms will make all heating, cooling and/or ventilating decisions in response to electronic signals from sensors measuring outdoor

temperature and humidity as well as indoor temperature. The control algorithm maintains accurate temperature control, minimizes drift from set point and provides better building comfort. A centralized micro-processor (OACM) will provide anti-short cycle timing for a higher level of machine protection. Terminals are provided for a field installed dry contact or switch closure to put the unit in the Occupied or Unoccupied modes.

#### 2.23 Damper Options: 100% OA 2-Position Damper

The unit shall have a factory installed and integrated 100% outdoor air hood with damper controlled by a direct coupled actuator and 2 inch permanent and washable aluminum mesh filters accessible through a hinged access panel. The return air damper tray is blocked off to allow 100% outdoor airflow.

#### 2.24 Electrical Options: Non-Fused Disconnect Switch (B/G)

A 3-pole, molded case, HACR circuit breaker with provisions for through the base electrical connections shall be installed. The disconnect switch will be installed in the unit in a water tight enclosure. Wiring will be provided from the switch to the unit high voltage terminal block. The switch will be UL/CSA agency recognized. The disconnect switch will be sized per NEC and UL guidelines but will not be used in place of unit overcurrent protection. Factory wired Voltage/Phase monitor shall be included as standard. In the event of any of the following, the units will be shut down and a fault code will be stored in the monitor for the most recent 25 faults. Upon correction of the fault condition the unit will reset and restart automatically.

- I. Phase Unbalance Protection: Factory set 2%
- II. Over/Under/Brown Out Voltage Protection: +/-10% of nameplate voltage
- III. Phase Loss/Reversal

#### 2.25 Air Flow Monitoring: IFM Fan Piezo Ring/Tap

Air flow measurement will be accomplished through the use of Piezo Ring or Tap technology installed in the supply fan wheel area.

#### 2.26 Accessories: Condenser Hailguard

Hail guards shall be installed on the outside of the condenser coil. The guards shall consist of perforated metal, of the same gauge and color as the unit itself. Airflow through the hail guards shall not be restricted due to location or size of the perforations. Guards shall be removable to accommodate coil cleaning.

#### 2.27 Supply Fan Motor Type: Direct Drive w/VFD

Supply Fan motor shall be direct drive type with factory installed Variable Frequency Drive. All motors shall be thermally protected. All indoor fan motors meet the U.S. Energy Policy Act of 2005 (EPACT). All Fans shall be mounted on rubber vibration isolators, to reduce the transmission of noise.

- 2.28 Smoke Detector: Supply Smoke Detector  
Smoke detector shall be factory installed photoelectric smoke detector mounted in the supply air section. The detector will be wired for continuous power whenever the unit is energized. Upon detection of smoke, the detector will shut down all unit operations. Local codes may dictate the location of detectors.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of AHUs.
- B. Examine roughing-in for AHUs to verify actual locations of piping and duct connections before equipment installation.
- C. Examine roofs for suitable conditions where AHUs will be installed.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.2 INSTALLATION

- A. Unit Support: Install unit level on structural members. Coordinate wall penetrations and flashing with wall construction. Secure AHUs to structural support with anchor bolts.

#### 3.3 CONNECTIONS

- A. Install condensate drain, minimum connection size, with trap and indirect connection to nearest roof drain or area drain.
- B. Install piping adjacent to AHUs to allow service and maintenance.
- C. Duct installation requirements are specified in other HVAC Sections. Drawings indicate the general arrangement of ducts. The following are specific connection requirements:
  - 1. Install ducts to termination at top of roof curb.
  - 2. Remove roof decking only as required for passage of ducts. Do not cut out decking under entire roof curb.

3. Connect supply ducts to AHUs with flexible duct connectors specified in Section 233300 "Air Duct Accessories."
4. Install return-air duct continuously through roof structure.

### 3.4 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections. Report results in writing.
- B. Perform tests and inspections and prepare test reports.
  1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing. Report results in writing.
- C. Tests and Inspections:
  1. After installing AHUs and after electrical circuitry has been energized, test units for compliance with requirements.
  2. Inspect for and remove shipping bolts, blocks, and tie-down straps.
  3. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
  4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Remove and replace malfunctioning units and retest as specified above.

### 3.5 START-UP SERVICE

- A. Engage a factory-authorized service representative to perform startup service.
- B. Complete installation and startup check according to manufacturer's written instructions and do the following:
  1. Inspect for visible damage to unit casing.
  2. Inspect for visible damage to furnace combustion chamber.
  3. Inspect for visible damage to compressor, coils, and fans.
  4. Inspect internal insulation.
  5. Verify that labels are clearly visible.
  6. Verify that clearances have been provided for servicing.
  7. Verify that controls are connected and operable.
  8. Verify that filters are installed.
  9. Clean condenser coil and inspect for construction debris.
  10. Remove packing from vibration isolators.
  11. Inspect operation of barometric relief dampers.

12. Verify lubrication on fan and motor bearings.
13. Inspect fan-wheel rotation for movement in correct direction without vibration and binding.
14. Adjust fan belts to proper alignment and tension.
15. Inspect and record performance of interlocks and protective devices; verify sequences.
16. Operate unit for an initial period as recommended or required by manufacturer.
17. Calibrate thermostats.
18. Adjust and inspect high-temperature limits.
19. Inspect outdoor-air dampers for proper stroke and interlock with return-air dampers.
20. Inspect controls for correct sequencing of heating, mixing dampers, refrigeration, and normal and emergency shutdown.
21. After startup and performance testing and prior to Substantial Completion, replace existing filters with new filters.

### 3.6 CLEANING AND ADJUSTING

- A. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to site during other-than-normal occupancy hours for this purpose.
- B. After completing system installation, testing and adjusting, AHU and air-distribution systems, clean filter housings and install new filters.

### 3.7 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain AHUs.

END OF SECTION 237413

THESE DOCUMENTS CONTAIN POTENTIALLY SENSITIVE INFORMATION AND SHALL BE USED FOR THEIR INTENDED PURPOSE. ONCE THE INTENDED PURPOSE HAS CEASED, THE DOCUMENTS SHALL BE DESTROYED IN A SECURE MANNER.

IT IS A VIOLATION OF STATE EDUCATION LAW FOR ANY PERSON, UNLESS UNDER THE DIRECTION OF A LICENSED ARCHITECT/ENGINEER TO ALTER THIS DOCUMENT IN ANYWAY. ALTERATIONS MUST HAVE THE SEAL AFFIXED ALONG WITH A DESCRIPTION OF THE ALTERATIONS, DATE AND ARCHITECT'S/ENGINEER'S SIGNATURE. COPYRIGHT © 2015

Consultants:



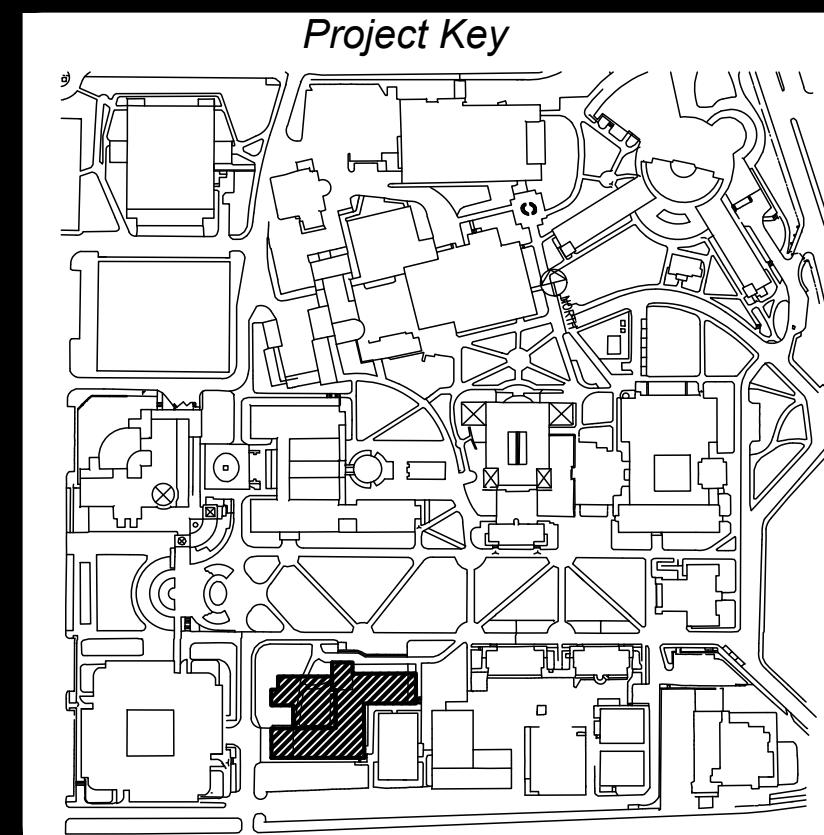
629 FIFTH AVENUE BLDG 3, SUITE 111 PELHAM, NEW YORK 10803  
TEL: (914) 633-6480 FAX: (914) 633-6951

APA

AHUJA PARTNERSHIP ARCHITECTS  
200 VARICK STREET, SUITE 912, NEW YORK, NY 10014  
TEL: (212) 675-5660

ROBERT SILMAN ASSOCIATES, P.C.

STRUCTURAL ENGINEERS  
32 OLD SLIP, 10TH FLOOR, NEW YORK, N.Y. 10005  
TEL: (212)620-7970



| REVISIONS   |                      |         |
|-------------|----------------------|---------|
| Rev No.     | Description          | Date:   |
| 1           | ISSUE FOR DOB FILING | 8-20-19 |
| 2           |                      |         |
| 3           |                      |         |
| DOB JOB NO: |                      |         |

Client

THE CITY UNIVERSITY OF NEW YORK  
555 WEST 57th STREET  
NEW YORK, NEW YORK, 10019

Project Title

QUEENS COLLEGE  
REMSEN HALL SWING SPACE  
ROOM- RE 024 & 107  
66-50 KISSENA BLVD.,  
FLUSHING, NY 11367

Drawing Title

REMSEN HALL  
MECHANICAL  
SCHEDULE SHEET

Drawn By:  
E.S.

Checked By:  
G.S.

Approved By:  
G.S.S.

Date:  
08/20/2018

Seal & Signature

GENESYS Project No:  
0361.22-101  
Drawing Number

DASNY Project No:  
3066809999



M-900.00

Drawing 16 of 16

| ELECTRIC AIR HANDLING UNIT SCHEDULE |             |             |           |                   |              |              |              |                       |                      |                |                     |          |          |                         |          |     |      |     |                  |                         |                 |              |         |         |         | BASIS OF DESIGN: TRANE |           |                       |              |             |      |         |
|-------------------------------------|-------------|-------------|-----------|-------------------|--------------|--------------|--------------|-----------------------|----------------------|----------------|---------------------|----------|----------|-------------------------|----------|-----|------|-----|------------------|-------------------------|-----------------|--------------|---------|---------|---------|------------------------|-----------|-----------------------|--------------|-------------|------|---------|
| UNIT No.                            | LOCATION    | AREA SERVED | TOTAL CFM | COOLING COIL DATA |              |              |              |                       |                      |                | HEATING COIL DATA   |          |          |                         | FAN DATA |     |      |     |                  |                         | ELECTRICAL DATA |              |         |         |         |                        | MODEL     | DIMENSION LXWXH (FT.) | WEIGHT (LBS) | SOUND (dBA) | EER  | REMARKS |
|                                     |             |             |           | ENT. DB (°F)      | ENT. WB (°F) | LAT. DB (°F) | LAT. WB (°F) | TOTAL COOLING MBTU/HR | SEN. COOLING MBTU/HR | MIN. ROWS DEEP | HEATING CAPACITY KW | EAT (°F) | LAT (°F) | STATIC PRESS. (IN.W.G.) | RPM      | HP  | RPM  | BHP | DISCHARGE CONFI. | EMER. POWER (YES OR NO) | HP              | VOLT /PH/HZ. | MCA (A) | MFS (A) | FLA (A) |                        |           |                       |              |             |      |         |
| AHU-2                               | FIRST FLOOR | PHYSICS LAB | 2000      | 92                | 76           | 55           | 54.9         | 138                   | 79                   | 6              | 48                  | 0        | 83       | 2.24                    | 1944     | 1.5 | 1800 | 1   | VERTICAL         | NO                      | 1.5             | 460/3/60     | 84.8    | 90      | 67.8    | HORIZON                | OADG010A3 | 14X5X6                | 3050         | 88.7        | 13.1 | 1-13    |
| AHU-4                               | FIRST FLOOR | 107         | 2000      | 92                | 76           | 55           | 54.9         | 138                   | 79                   | 6              | 48                  | 0        | 83       | 2.24                    | 1944     | 1.5 | 1800 | 1   | VERTICAL         | NO                      | 1.5             | 460/3/60     | 84.8    | 90      | 67.8    | HORIZON                | OADG010A3 | 14X5X6                | 3050         | 88.7        | 13.1 | 1-13    |

- REMARKS:
1. HEAT: FIN & TUBE MODULATING HORH ELECTRIC

2. SCR CONTROL

3. SUPPLY FAN MOTOR: DIRECT DRIVE W/VFD

4. UNIT CONTROLLER- TRANE TD7- DISCHARGE AIR CONTROL W/BACNET W/DISPLAY

5. COOLING CONTROL- RELIATEL

6. STAINLESS STEEL DRIP PAN

7. SMOKE DETECTOR

8. SPACE TEMP THERMOSTAT

9. HORIZONTAL DISCHARGE CURB-PRIMARY CABINET

10. ADJUSTABLE DISCHARGE AIR TEMP. CONTROL

11. FILTER- MERV-13

12. SOUND ATTENUATION PACKAGE

13. STANDARD MANUFACTURER WARRANTY. FROM DATE OF ACCEPTANCE BY CUNY.

| EXHAUST FAN SCHEDULE |          |             |          |           |                          |                       |           |                       |                   |                      |          |                         | BASIS OF DESIGN: STROBIC AIR |    |                     |                       |                       |                    |         |           |                  |         |
|----------------------|----------|-------------|----------|-----------|--------------------------|-----------------------|-----------|-----------------------|-------------------|----------------------|----------|-------------------------|------------------------------|----|---------------------|-----------------------|-----------------------|--------------------|---------|-----------|------------------|---------|
| ITEM NO.             | UNIT NO. | AREA SERVED | LOCATION | NO OF FAN | LABORATORY EXHAUST (CFM) | STATIC PRESSURE IN WG | FAN (RPM) | INLET FLOW RATE (CFM) | BYPASS FLOW (CFM) | ENTRAINED FLOW (CFM) | POWER    | EMER. POWER (YES OR NO) | SINGLE FAN PERFORMANCE       |    |                     |                       |                       |                    |         | MODEL NO. | OPERATING WEIGHT | REMARKS |
|                      |          |             |          |           |                          |                       |           |                       |                   |                      |          |                         | BHP                          | HP | FAN FLOW RATE (CFM) | TOTAL FLOW RATE (CFM) | NOZZLE VELOCITY (CFM) | DILUTION RATIO (%) |         |           |                  |         |
| 2                    | EF-2     | 024         | ROOF     | 1         | 2,000                    | 2                     | 1800      | 2,500                 | 210               | 2304                 | 460/3/60 | NO                      | 2                            | 3  | 2710                | 5014                  | 5420                  | 200                | BS00218 | 3,000     | 1 THRU 9         |         |

- REMARKS:
1. FAN SHALL BE SPARK RESISTANT CONSTRUCTION

2. ISOLATION MOTORIZED DAMPER

3. BYPASS MOTORIZED DAMPER

4. BYPASS RAIN HOOD

5. MIXING PLENUM

6. DISCONNECT SWITCH/FAN

7. OUTLET NOZZLE SILENCER

8. TRI-STACK SMART CONTROL SYSTEM

9. STANDARD MANUFACTURER WARRANTY FROM DATE OF ACCEPTANCE BY CUNY.

| SCHEDULE OF GRILLES, REGISTERS AND DIFFUSERS |           |           |                   |                 |            |                         |             |           |         | BASIS OF DESIGN: TITUS |  |
|----------------------------------------------|-----------|-----------|-------------------|-----------------|------------|-------------------------|-------------|-----------|---------|------------------------|--|
| TYPE                                         | CFM RANGE | NECK SIZE | NOMINAL FACE SIZE | NUMBER OF SLOTS | SLOT WIDTH | REGISTER BAR DEFLECTION | ACCESSORIES | MODEL No. | REMARKS |                        |  |
| SR-1                                         | 250-360   | -         | 12x10             | -               | 3/4"       | DOUBLE DEFLECTION       | -           | 300R      | -       |                        |  |
| EG-1                                         | 250-360   | -         | 12x10             | -               | 3/4"       | 35°                     | -           | 350R      | -       |                        |  |
| CD-4                                         | SEE PLANS | SEE PLANS | 24x24             | -               | -          | -                       | -           | TMS       | -       |                        |  |

| DRAIN PUMP |                 |               |           |          |                |                  |                  |                |           |              |       | BASIS OF DESIGN: LIBERTY PUMPS |  |
|------------|-----------------|---------------|-----------|----------|----------------|------------------|------------------|----------------|-----------|--------------|-------|--------------------------------|--|
| UNIT No.   | LOCATION        | SERVICE       | PUMP DATA |          |                |                  |                  |                |           | WEIGHT (LBS) | MODEL | REMARKS                        |  |
|            |                 |               | HP        | VOLT/ PH | FULL LOAD. (A) | LOCKED ROTOR (A) | OPER. TEMP. (°F) | DISCHARGE (IN) | AUTOMATIC |              |       |                                |  |
| DP-1       | REMSEN ROOM-024 | LAB EQUIPMENT | 1/4       | 115/1    | 5.2            | 8                | 140              | 1 1/2          | YES       | 13           | 404CV | 1-3                            |  |
| DP-2       | REMSEN ROOM-024 | SINK          | 1/4       | 115/1    | 5.2            | 8                | 140              | 1 1/2          | YES       | 13           | 404CV | 1-3                            |  |

- REMARKS:
1. STATOR WINDING CLASS-B

2. THERMAL OVERLOAD

3. STANDARD MANUFACTURER WARRANTY FROM DATE OF ACCEPTANCE BY CUNY.



**DASNY**

**ANDREW M. CUOMO**  
Governor

**ALFONSO L. CARNEY, JR.**  
Chair

**GERRARD P. BUSHELL, Ph.D.**  
President & CEO

## DETAILED DRAWINGS

### See Attached

Drawing M-801 - refer to detail-6 for horizontal discharge curb detail for reference AHU's.

Horizontal curb is required for basis of design unit as Trane. They might not be required for an approved equal manufacturer. Contractor to co-ordinate all structure support detail if any different unit is selected.

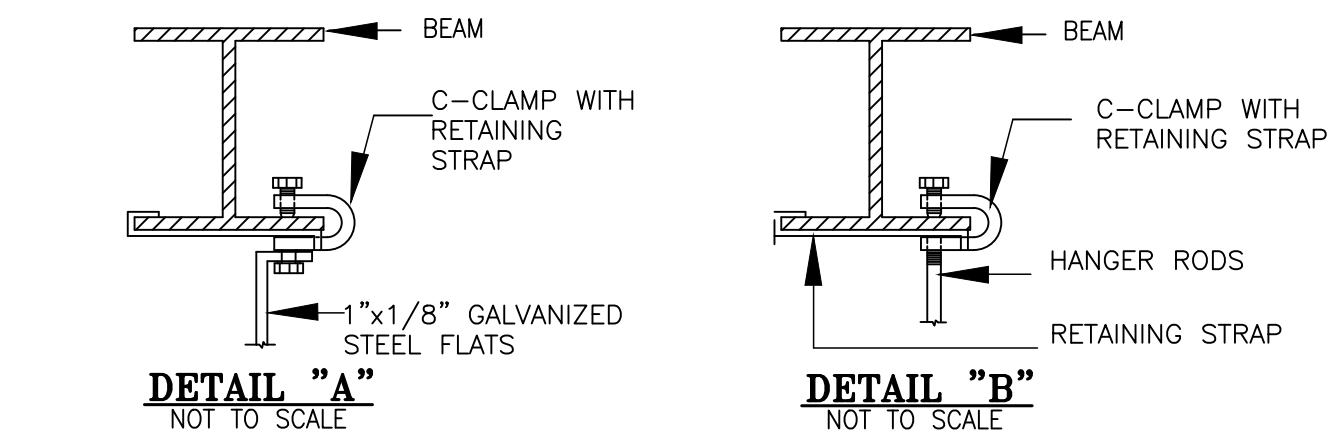
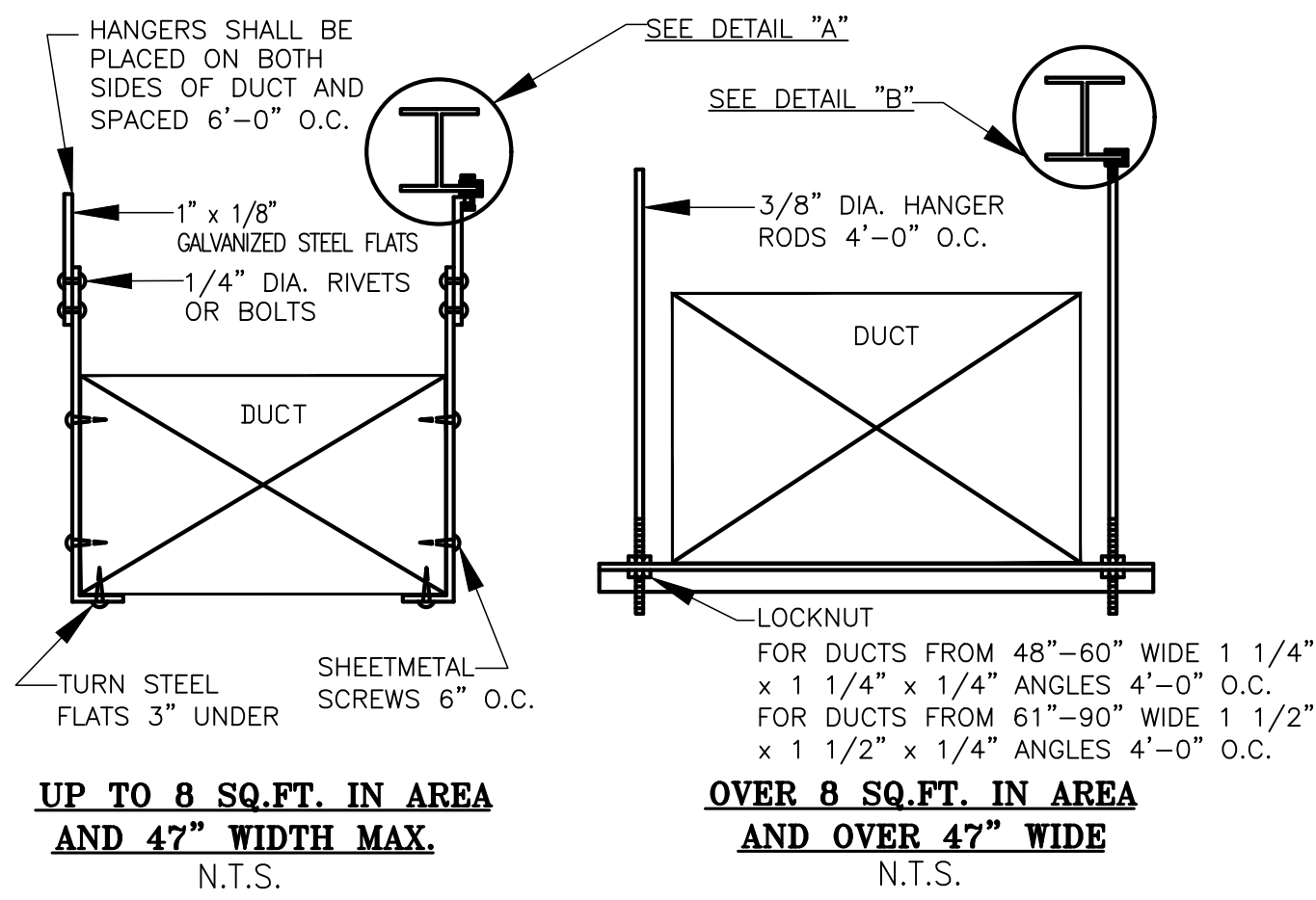
**CORPORATE HEADQUARTERS**  
515 Broadway  
Albany, NY 12207-2964  
  
T 518-257-3000  
F 518-257-3100

**NEW YORK CITY OFFICE**  
One Penn Plaza, 52nd Floor  
New York, NY 10119-0098  
  
T 212-273-5000  
F 212-273-5121

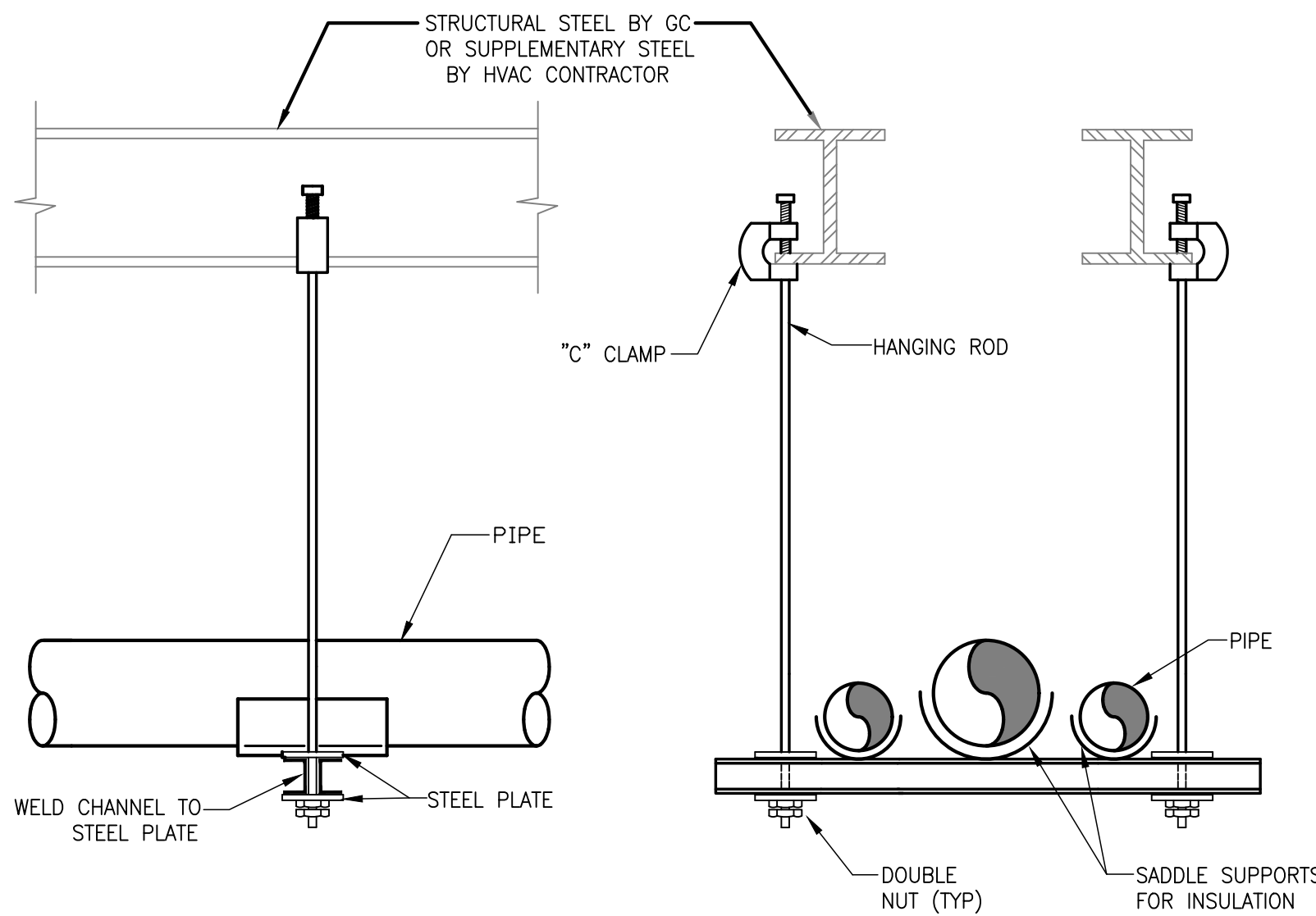
**BUFFALO OFFICE**  
539 Franklin Street  
Buffalo, NY 14202-1109  
  
T 716-884-9780  
F 716-884-9787

**DORMITORY AUTHORITY STATE OF NEW YORK**  
  
**WE FINANCE, BUILD AND  
DELIVER.**

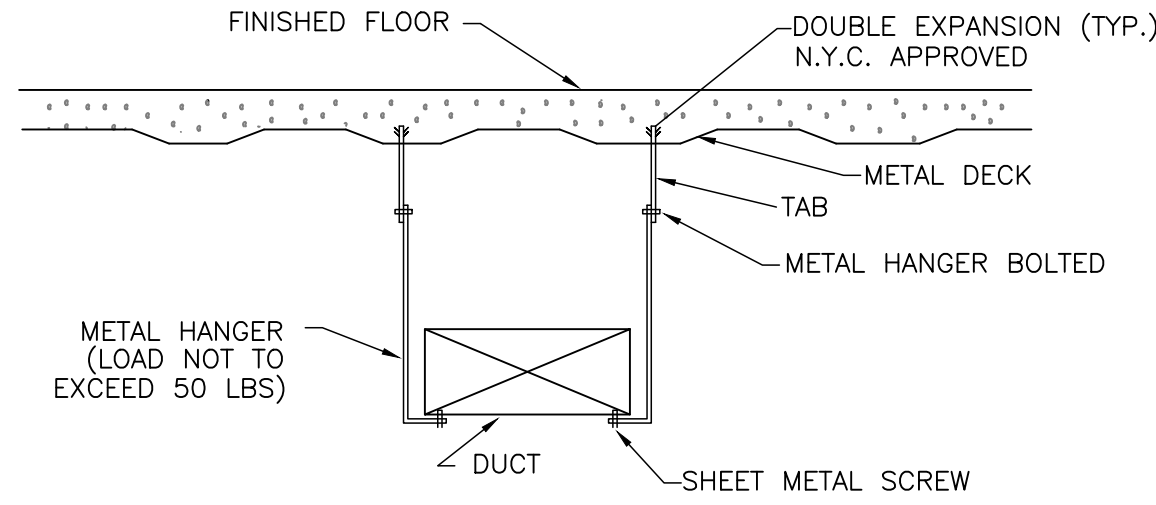
[www.dasny.org](http://www.dasny.org)



1 METHOD OF SUPPORTING DUCTS

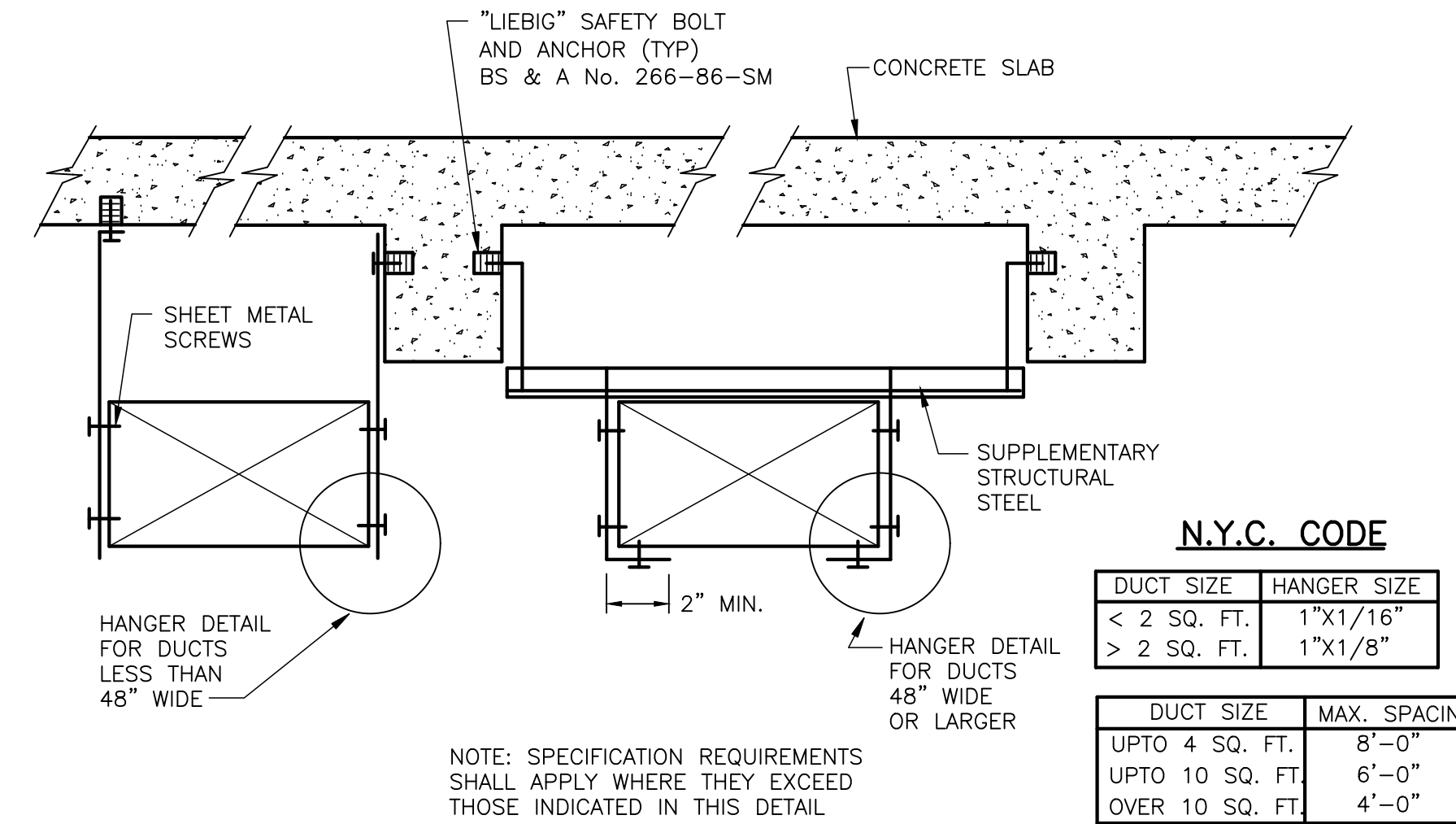


4 PIPE HANGING DETAIL  
NOT TO SCALE

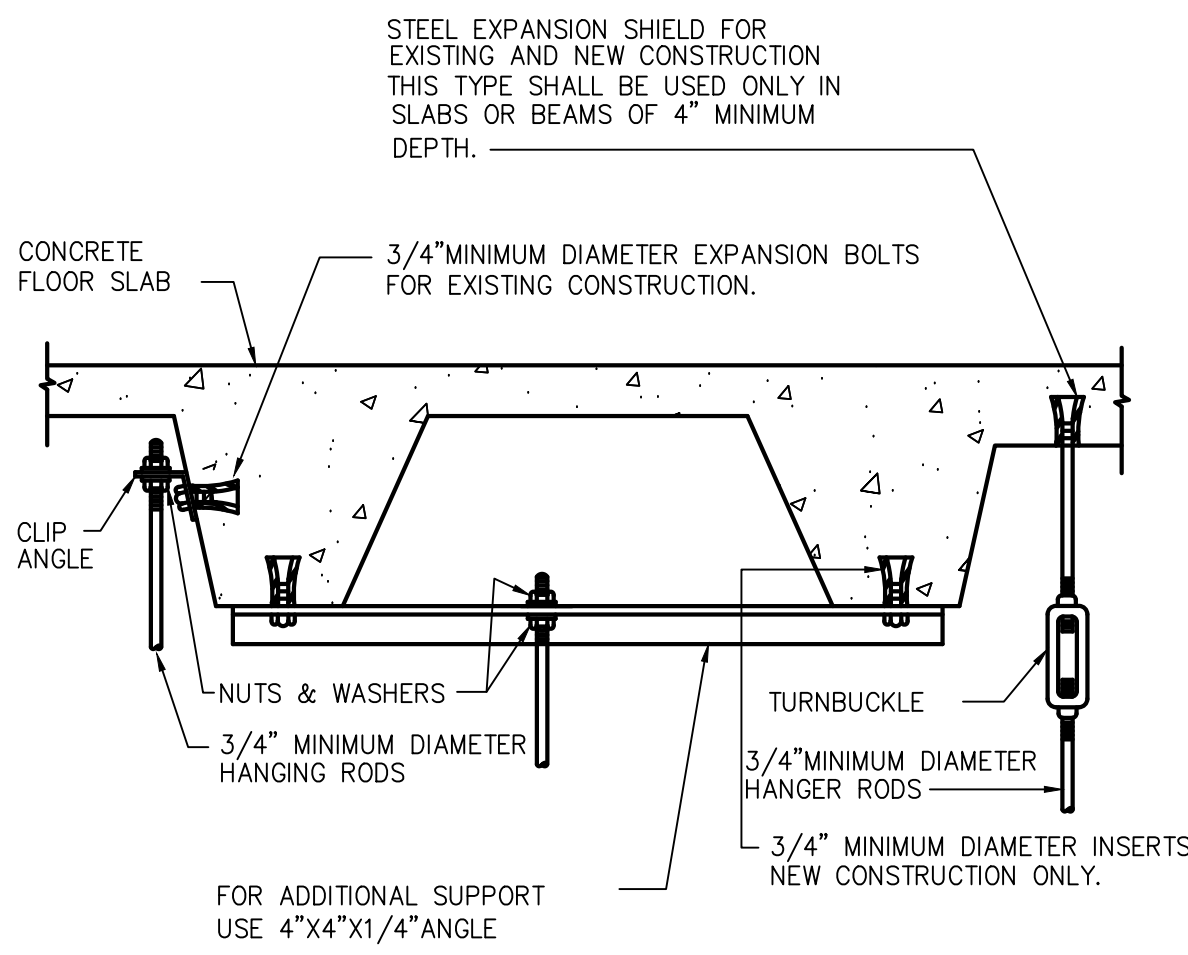


- NOTES:
1. DUCTS SHALL NOT BE HUNG FROM OR SUPPORTED BY HUNG CEILING.
  2. FOR DUCTS NOT EXCEEDING 250. FT. IN CROSS-SECTIONAL AREA, HANGERS SHALL BE OF METAL NOT LESS THAN 1/16"
  3. FOR DUCTS LARGER THAN 2 SQ. FT. IN CROSS-SECTIONAL AREA, HANGERS SHALL BE OF METAL NOT LESS THAN 1" BY 1/8"
  4. FOR ALL DUCTS, HANGERS SHALL BE TURNED UNDER AND FASTENED TO THE BOTTOM OF DUCT AS SHOWN ABOVE.
  5. WHERE CROSS - SECTIONAL AREA OF DUCT EXCEEDS 8 SQ. FT. HANGERS SHALL BE SPACED NOT MORE THAN 4 FT. ON CENTERS.

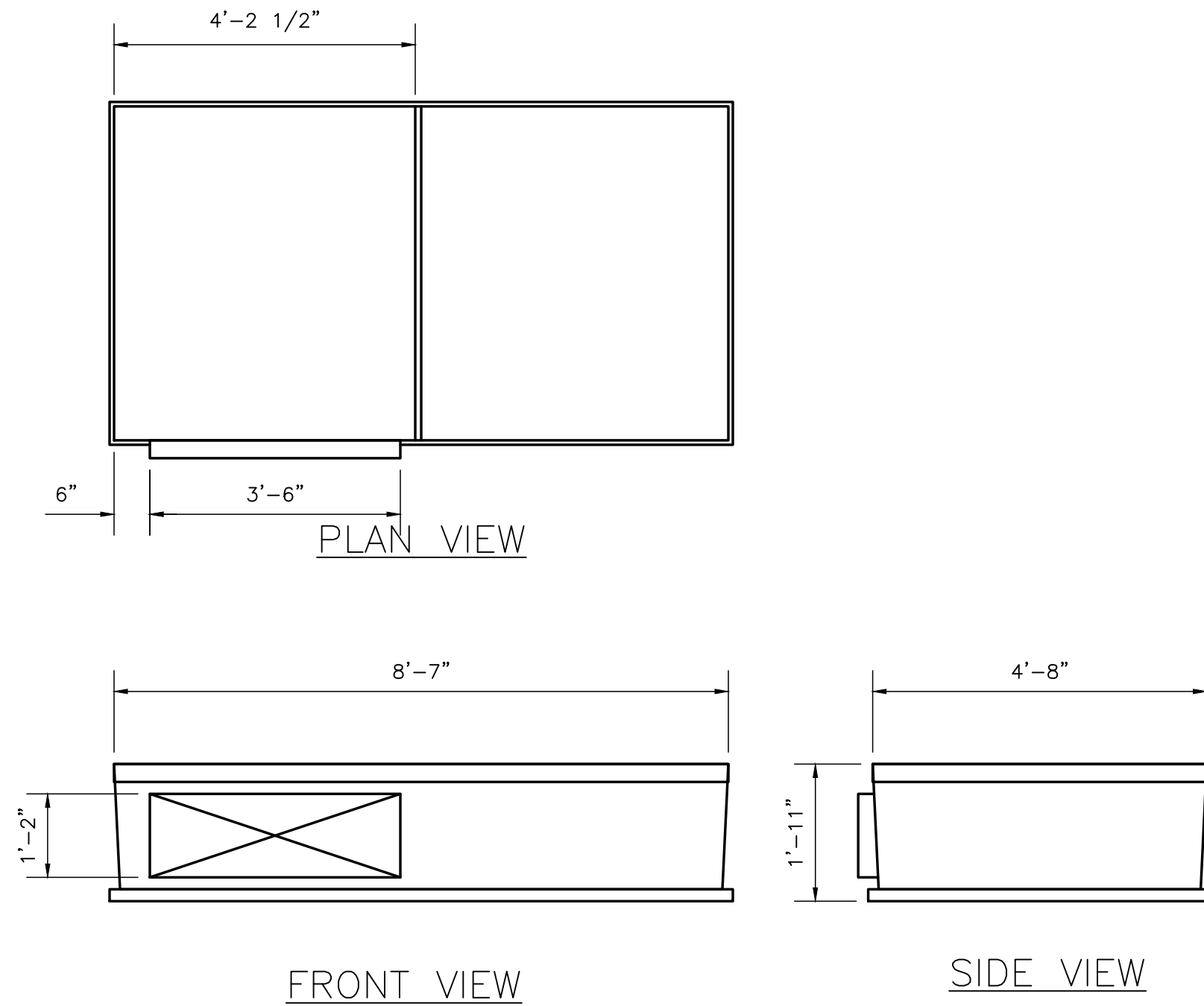
2 DUCT SUPPORT FROM METAL DECK  
(NOT TO SCALE)



3 DUCT SUPPORT DETAIL-N.Y.C.  
(NOT TO SCALE)



5 TYPICAL METHOD OF SECURING  
HANGER RODS IN CONCRETE  
SLABS AND BEAMS  
(NOT TO SCALE)



6 HORIZONTAL DISCHARGE CURB DETAIL  
AHU-2&4  
(N.T.S.)

**NEW YORK**  
STATE OF  
OPPORTUNITY

**DASNY**

515 Broadway, Albany, New York 12207-2864  
One Penn Plaza, 52 Floor NY, NY 10119-0098  
539 Franklin Street, Buffalo, NY 14202-1109  
WWW.DASNY.ORG

THESE DOCUMENTS CONTAIN POTENTIALLY SENSITIVE INFORMATION AND SHALL BE USED FOR THEIR INTENDED PURPOSE. ONCE THE INTENDED PURPOSE HAS CEASED, THE DOCUMENTS SHALL BE DESTROYED IN A SECURE MANNER.

IT IS A VIOLATION OF STATE EDUCATION LAW FOR ANY PERSON, UNLESS UNDER THE DIRECTION OF A LICENSED ARCHITECT/ENGINEER TO ALTER THIS DOCUMENT IN ANYWAY. ALTERATIONS MUST HAVE THE SEAL AFFIXED ALONG WITH A DESCRIPTION OF THE ALTERATIONS, DATE AND ARCHITECTS/ENGINEER'S SIGNATURE. COPYRIGHT © 2015

**Consultants:**

**Genesis Engineering P.C.**

629 FIFTH AVENUE BLDG 3, SUITE 111 PELHAM, NEW YORK 10803  
TEL: (914) 633-6490 FAX: (914) 633-6951

APA  
AHUJA PARTNERSHIP ARCHITECTS

200 VARICK STREET, SUITE 912, NEW YORK, NY 10014  
TEL: (212) 675-5560

ROBERT SILMAN ASSOCIATES, P.C.  
STRUCTURAL ENGINEERS

32 OLD SLIP, 10TH FLOOR, NEW YORK, N.Y. 10005  
TEL: (212) 620-7970

**Project Key**

**REVISIONS**

| Rev | Description          | Date    |
|-----|----------------------|---------|
| 1   | ISSUE FOR DOB FILING | 8-20-19 |
| 2   |                      |         |
| 3   |                      |         |

DOB JOB NO.:

**Client**

CUNY  
THE CITY UNIVERSITY OF NEW YORK  
555 WEST 57th STREET  
NEW YORK, NEW YORK, 10019

**Project Title**

QUEENS COLLEGE  
REMSEN HALL SWING SPACE  
ROOM- RE 024 & 107  
66-50 KISSENA BLVD.,  
FLUSHING, NY 11367

**Drawing Title**

REMSEN HALL  
MECHANICAL  
DETAILS SHEET-2

| Drawn By: | Checked By: | Approved By: | Date:      |
|-----------|-------------|--------------|------------|
| G.S.      | G.S.        | R.W.M.       | 08/20/2018 |

**Seal & Signature**

GENESIS Project No: 0361.22-101  
DASNY Project No: 3066809999  
Drawing Number

**M-801.00**

Drawing 15 of 16

## Roof Curb - 10-20 Ton PKGD Rooftop Horizontal Discharge Curb

Qty: 1    Tags: RTU-1-460v

