



1126 South Commerce St.  
Harlingen, TX 78550  
Off: (956) 230-3435  
Fax: (956) 720-0830  
[www.ethoseng.net](http://www.ethoseng.net)



05/03/2024

May 3, 2024

IDEA Public Schools Middle RGV Mechanical Upgrades CSP#24-MRMU-0424

## **ADDENDUM NO. 2**

### **A. PURPOSE AND INTENT**

This addendum is issued for the purpose of modifying the plans for the project referenced above. This addendum shall become part of the contract and all contractors shall be bound by its content. All aspects of the specifications and drawings not covered herein shall remain the same. The General Conditions and the Special Conditions of the specifications shall govern all parts of the work and apply in full force to this addendum.

### **B. SCOPE**

#### **I. Clarifications**

1. Bid submission due date has changed to Wednesday, May, 15, 2024 at 8:00 AM. Place remains unchanged.

#### **II. Specifications**

1. 233116 – Nonmetal Ducts
  - a) Added specification for exterior ductwork.

#### **III. Drawings**

1. Sheet ME2.1 – See attached.
  - a) Added mechanical keyed notes.
2. Sheet ME2.2 – See attached.
  - a) Changed location of wall mounted mini split and rerouted refrigerant and condensate lines.
  - b) Revised mechanical keyed notes.
  - c) Revised electrical keyed notes.
3. Sheet ME2.3 – See attached.
  - a) Included point of connection.
  - b) Added mechanical keyed note.

4. Sheet ME3.3 – See attached.
  - a) Reconfigured exterior ductwork to be demolished from RTU-7 & 8.
  - b) Added mechanical keyed note.
  - c) Revised equipment connection schedule.
  - d) Updated electrical keyed notes.
5. Sheet ME3.4 – See attached.
  - a) Reconfigured ductwork and ductwork transitions from RTU's in gym and kitchen space.
  - b) Revised mechanical keyed notes.
  - c) Updated electrical keyed notes.
6. Sheet ME3.5 – See attached.
  - a) Updated RTU locations, addition of exterior ductwork from RTU-7 & 8 and updated mechanical keynotes.
  - b) Added exterior ductwork off RTU-7 & RTU-8 to be routed to existing penetrations.
  - c) Added existing roof equipment to remain.
  - d) Updated mechanical key notes.
7. Sheet ME3.6 – See attached.
  - a) Reconfigured demo ductwork and ductwork transitions from RTU's.
  - b) Updated ceiling demo keynote location.
8. Sheet ME3.7 – See attached.
  - a) Updated new ductwork to be installed.
  - b) Updated legend.
  - c) Revised mechanical keyed notes.
  - d) Revised equipment connection schedule.
9. Sheet ME3.8 – See attached.
  - a) Updated mechanical keyed notes.
10. Sheet ME3.9 – See attached.
  - a) Reconfigured ductwork and orientation from OAU-1 & OAU-2 to better reflect existing conditions.
  - b) Added concrete housekeeping pad for condensing units.
  - c) Added ceiling demo notes.
  - d) Revised mechanical keyed notes.
  - e) Added electrical keyed notes.
  - f) Added equipment connection schedule.
11. Sheet ME3.10 – See attached.
  - a) Reconfigured new ductwork from OAU-1 & OAU-2.

- b) Added mechanical keyed notes.
- 12. Sheet ME3.11 – See attached.
  - a) Added sheet.
- 13. Sheet ME4.1 – See attached.
  - a) Revised schedules.
  - b) Added base bid/alternate identification to schedules.
- 14. Sheet ME4.2 – See attached.
  - a) Added base bid/alternate identification to schedules.
  - b) Added Air Device Schedule
- 15. Sheet ME5.1 – See attached.
  - a) Added mechanical details.
- 16. Sheet ME5.2 – See attached.
  - a) Added sheet.

## SECTION 233116 - NONMETAL DUCTS

### 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. Section Includes:
  - 1. Thermoset FRP ducts and fittings [for exterior application](#).
- B. Related Requirements:
  - 1. Section 230548.13 "Vibration Controls for HVAC" for vibration-isolated ductwork and hangers.
  - 2. Section 233113 "Metal Ducts" for single- and double-wall, rectangular and round ducts.

#### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of the following products:
  - 1. Thermoset FRP duct materials.
- B. Shop Drawings:
  - 1. Fabrication, assembly, and installation, including plans, elevations, sections, components, and attachments to other work.
  - 2. Duct layout indicating sizes and pressure classes.
  - 3. Elevation of top of ducts.
  - 4. Dimensions of main duct runs from building grid lines.
  - 5. Fittings.
  - 6. Reinforcement and spacing.
  - 7. Seam and joint construction.
  - 8. Penetrations through fire-rated, smoke-rated, and other partitions.
  - 9. Fire and smoke damper locations.
  - 10. Equipment installation based on equipment being used on Project.
  - 11. Hangers and supports, including methods for duct and building attachment, **wind restraints**, and vibration isolation.
- C. Delegated-Design Submittal: For nonmetal ducts, signed and sealed by a qualified professional engineer.
  - 1. Duct materials and thicknesses.
  - 2. Joint and seam construction and sealing.
  - 3. Reinforcement details and spacing.
  - 4. Design calculations for selecting hangers and supports and wind restraints. Include analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

## SECTION 233116 - NONMETAL DUCTS

### 1.4 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Plans, or BIM model, drawn to scale, showing the items described in this Section and coordinated with all building trades.
- B. Wind Qualification Data: Certificates, for nonmetal ducts, accessories, and components, from manufacturer.
  - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
  - 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
  - 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- C. Welding certificates.
- D. Field quality-control reports.

### 1.5 QUALITY ASSURANCE

- A. Hanger and Support Welding Qualifications: Qualify procedures and personnel according to the following:
  - 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel," for steel hangers and supports.
  - 2. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum," for aluminum hangers and supports.

### 1.6 WARRANTY

- A. Warranty: Manufacturer agrees to repair or replace components of ductwork system that fail in material or workmanship within specified warranty period.
  - 1. Warranty Period, Duct System: 10 year(s) from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Duct Design: Duct construction, including duct closure, reinforcements, and hangers and supports, shall comply with the following and with the Works' performance requirements and design criteria:
  - 1. SMACNA's "Thermoset FRP Duct Construction Manual."
  - 2. Static-Pressure Classes:
    - a. Supply Ducts (except in Mechanical Rooms): **2-inch wg.**
    - b. Return Ducts (Negative Pressure): **1-inch wg.**
- B. Wind-Restraint Performance:
  - 1. See Section 230548.13 "Vibration Controls for HVAC" for requirements.

## SECTION 233116 - NONMETAL DUCTS

2. Coordinate with structural engineer and Architect.
- C. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1, Section 5.4 - "Airstream Surfaces."
- D. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 5 - "Systems and Equipment" and Section 7 - "Construction and System Start-up."
- E. ASHRAE/IES Compliance: Applicable requirements in ASHRAE/IES 90.1, Section 6.4.4 - "HVAC System Construction and Insulation."
- F. NFPA Compliance:
  1. NFPA 90A, "Installation of Air Conditioning and Ventilating Systems."
  2. NFPA 90B, "Installation of Warm Air Heating and Air Conditioning Systems."

### 2.2 THERMOSET FRP DUCTS AND FITTINGS

- A. Acceptable Manufacturers:
  1. Thermaduct
  2. QDuct
  3. The panel shall be manufactured of CFC-free closed cell rigid thermoset resin thermally bonded on both sides to a factory applied .001" (25 micron) aluminum foil facing reinforced with a fiberglass scrim. An added UV stable, 1000 micron high impact resistant titanium infused vinyl is factory bonded to the outer surfaces to provide a zero permeability water tight barrier.
  4. The thermal conductivity shall be no greater than 0.13BTU • in/Hr •ft<sup>2</sup>•°F (.018W/m•°C), the thermal conductivity shall be no greater than 0.13BTU • in/Hr •ft<sup>2</sup>•°F (.018W/m•°C)
  5. The density of the foam shall not be less than 3.5 pcf (56 Kg/m<sup>3</sup>) with a minimum compressive strength of 28 psi (.2 MPa).
  6. Standard panel shall be 1 ¾" thick with R-12 unless indicated otherwise on the print.
    - a. Maximum Temperature: Continuous rating of 185 degrees F (70 deg C) inside ducts or ambient temperature surrounding ducts.
    - b. Maximum Thermal Conductivity: 0.13 Btu x in./h x sq. ft. x deg F at 75 deg F mean temperature.
    - c. Permeability: 0.00 perms maximum when tested according to ASTM E 96/E 96M, Procedure A.
    - d. Antimicrobial Agent: Additive for antimicrobial shall not be used but instead, raw product must pass UL bacteria growth testing.
    - e. Noise-Reduction Coefficient: 0.05 minimum when tested according to ASTM C 423, Mounting A.
    - f. Required Markings: All interior duct liner shall bear UL label and other markings required by UL 181 on each full sheet of duct panel; UL ratings for internal closure materials.
    - g. All insulation materials shall be closed cell with a closed cell content of >90%.
    - h. R-value:
      - 1) 1 ¾" (45 mm) Thick Panel: 12 R
  7. Closure Materials:
    - a. V-Groove Adhesive: Silicone (interior only).
    - b. UV stable 1000 micron high impact resistant titanium infused vinyl (exterior).
      - 1) Factory manufactured seamless corners for zero perms.

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- 2) Cohesive bonded over-lap at corner seam covers for zero perms.
- 3) Water resistant titanium infused welded vinyl seams.
- 4) Mold and mildew resistant.
- c. Polymeric Sealing System:
  - 1) Structural Membrane: Aluminum scrim with woven glass fiber with a laminated UV stable vinyl jacket.
  - 2) Minimum Seam Cover Width: 2 7/8" (75 mm)
  - 3) Sealant: Low VOC.
  - 4) Color: Standard White (other light reflective colors available).
  - 5) Water resistant.
  - 6) Mold and mildew resistant.
- d. Duct Connectors.
  - 1) Factory manufactured cohesive bonded strips (low pressure only).
  - 2) Factory manufactured all aluminum grip flange.
    - a) Grip flange
    - b) F-flange
    - c) H-flange
    - d) U-flange
  - 3) Factory manufactured galvanized 4-bolt flange.
8. Outdoor Cladding
  - a. Outdoor Installations: Duct segments shall incorporate UV stable 1000 micron high impact resistant titanium infused vinyl which is introduced during the manufacturing process.
9. Flange coverings
  - a. Flanges are field sealed airtight before flange covers are installed. Flange covering consists of the following:
    - 1) Foam tape insulation with molded 1000 micron covers.
    - 2) Air gap (heating only application) with molded 1000 micron covers.
10. Weight
  - a. Duct shall provide low weight stresses on the building framing and support members. Assembled duct shall have a weight of 0.86 lbs. per square foot to maximum weight of 2.7 lbs. per square foot (depending on R-value). Hangers and tie-downs are to be detailed on the manufacturer's installing contractors detail drawings prior to installation but not exceeding 13' for duct girth <84" and 8' for duct girth >85" between hangers and designed to carry the weight and wind load of the ductwork.

### B. Fabrication:

1. Fabricated joints, seams, transitions, reinforcement, elbows, branch connections, access doors and panels, and damage repairs according to manufacturer's written and detailed instructions.
2. Fabricated 90-degree mitered elbows to include turning vanes.
3. Fabricated duct segments in accordance with manufacturer's written details.
4. Duct Fittings shall include 6 inches of connecting material, as measured, from last bend line to the end of the duct. Connections on machine manufactured duct may be 4 inches.
5. Fabricated duct segments utilizing v-groove method of fabrication. Factory welded or cohesively bonded seams will apply to fully manufactured ductwork and fittings. Internal seams will be supplied with an unbroken layer of low VOC silicone or bonding (for paint shop applications). Each duct segment will be factory supplied with either aluminum grip pro-file or pre-insulated duct connectors in accordance with manufacturer's detailed submittal guide. Applied duct reinforcement to protect against

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side deformation from both positive and negative pressure per manufacturer's design guide based on specified ductwork size and system pressure.

### 2.3 HANGERS AND SUPPORTS

- A. Hanger Rods for Corrosive Environments: Electrogalvanized, all-thread rods or galvanized rods with threads painted with zinc-chromate primer after installation.
- B. Strap and Rod Sizes: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," **Table 5-1 (Table 5-1M)**, "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct."
- C. Steel Cables: **ASTM A492**, **stainless**-steel cables with end connections made of **stainless**-steel assemblies with brackets, swivel, and bolts designed for duct hanger service; with an automatic-locking and clamping device.
- D. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.
- E. Trapeze and Riser Supports: Steel shapes complying with ASTM A36/A36M.

### 2.4 WIND-RESTRAINT DEVICES

- A. Channel Support System: Shop- or field-fabricated support assembly made of slotted steel channels with accessories for attachment to braced component at one end and to building structure at the other end. Include matching components and corrosion-resistant coating.
- B. Restraint Cables: **ASTM A492**, **stainless**-steel cables with end connections made of **stainless**-steel assemblies with brackets, swivel, and bolts designed for restraining cable service; with an automatic-locking and clamping device or double-cable clips.
- C. Hanger Rod Stiffener: **Reinforcing steel angle clamped** to hanger rod.
- D. Mechanical Anchor Bolts: Drilled-in and stud-wedge or female-wedge type. Select anchor bolts with strength required for anchor and as tested according to ASTM E488/E488M.

## PART 3 - EXECUTION

### 3.1 DUCT INSTALLATION

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of duct system. Indicated duct locations, configurations, and arrangements were used to size ducts and calculate friction loss for air-handling equipment sizing and for other design considerations. Install duct systems as indicated unless deviations to layout are approved on Shop Drawings and Coordination Drawings.
- B. Install duct sections in maximum practical lengths with fewest possible joints.



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- C. Install factory- or shop-fabricated fittings for changes in direction, size, and shape and for branch connections.
- D. Unless otherwise indicated, install ducts vertically and horizontally, and parallel and perpendicular to building lines.
- E. Install ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building.
- F. Install ducts with a minimum clearance of **1 inch**, plus allowance for insulation thickness.
- G. Route ducts to avoid passing through transformer vaults and electrical equipment rooms and enclosures.
- H. Where ducts pass through non-fire-rated interior partitions and exterior walls, and are exposed to view, cover the opening between the partition and duct or duct insulation with sheet metal flanges. Overlap openings on four sides by at least **1-1/2 inches**.
- I. Install fire[, **combination fire/smoke,**] and smoke dampers where indicated on Drawings and as required by code and by authorities having jurisdiction. Comply with requirements in Section 233300 "Air Duct Accessories" for fire and smoke dampers and specific installation requirements of the fire damper UL listing.
- J. Install heating coils, cooling coils, air filters, dampers, and all other duct-mounted accessories in air ducts where indicated on Drawings.
- K. Protect duct interiors from moisture, construction debris and dust, and other foreign materials both before and after installation. **Comply with SMACNA's "IAQ Guidelines for Occupied Buildings under Construction," Appendix G, "Duct Cleanliness for New Construction Guidelines."**
- L. Elbows: Use long-radius elbows wherever they fit.
  - 1. Fabricate 90-degree rectangular mitered elbows to include turning vanes, and 90-degree round elbows with a minimum of three segments for **12 inches** and smaller and a minimum of five segments for **14 inches** and larger.
- M. Branch Connections: Use lateral or conical branch connections.
- N. Install thermoset FRP ducts and fittings to comply with SMACNA's "Thermoset FRP Duct Construction Manual."

### 3.2 HANGER AND SUPPORT INSTALLATION

- A. Install hangers and supports for thermoset FRP ducts and fittings to comply with SMACNA's "Thermoset FRP Duct Construction Manual," Ch. 7, "Requirements."
- B. Building Attachments: Concrete inserts, powder-actuated fasteners, or structural-steel fasteners appropriate for construction materials to which hangers are being attached.
  - 1. Install concrete inserts before placing concrete.

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- C. Install upper attachments to structures. Select and size upper attachments with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

### 3.3 WIND-RESTRAINT-DEVICE INSTALLATION

- A. Install ducts with hangers and braces designed to support the duct and to restrain against wind forces required by applicable building codes. See Section 230548 "Vibration and Seismic Controls for HVAC."
- B. Select sizes of components so strength will be adequate to carry calculated static and wind loads within restraint device capacity.
- C. Install restraint cables so they do not bend across edges of adjacent equipment or building structure.
- D. Install restraint cables where ducts are suspended with vibration isolators.
- E. Attachment to Structure: If specific attachment is not indicated, anchor bracing and restraints to structure to flanges of beams, to upper truss chords of bar joists, or to concrete members.

### 3.4 PAINTING

- A. Paint interior of **thermoset FRP** ducts that are visible through registers and grilles and that do not have duct liner. Apply one coat of flat, black, acrylic or latex paint that is chemically compatible with duct material. Confirm compatibility information with paint manufacturer. Oil-based paint is not recommended. Paint materials and application requirements are specified in Section 099123 "Interior Painting."

### 3.5 STARTUP SERVICE

- A. Air Balance: Comply with requirements in Section 230593 "Testing, Adjusting, and Balancing for HVAC."

### 3.6 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.
- B. Perform tests and inspections with the assistance of a factory-authorized service representative.
  - 1. Leakage Tests:
    - a. Comply with SMACNA's "HVAC Air Duct Leakage Test Manual." Submit a test report for each test.
    - b. Where static pressure and leakage values shown below differ from those in the SMACNA manual, the more stringent values shall apply.
    - c. Test the following systems:

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- 1) Supply and Return Ducts: Test representative duct sections, **selected by Architect from sections installed**, totaling no less than **100** percent of total installed duct area for each designated pressure class.
  - d. Disassemble, reassemble, and seal segments of systems to accommodate leakage testing and for compliance with test requirements.
  - e. Test for leaks before applying external insulation.
  - f. Conduct tests at static pressures equal to maximum design pressure of system or section being tested. If static-pressure classes are not indicated, test entire system at maximum system design pressure. Do not pressurize systems above maximum design operating pressure.
  - g. Give **[seven]** days' advance notice for testing.
2. Duct System Cleanliness Tests:
  - a. Test protocols shall be performed according to NADCA ACR, "Assessment, Cleaning and Restoration of HVAC Systems," "Section 5 - Cleanliness Verification and Documentation."
  - b. Visually inspect duct system to ensure that no visible contaminants are present.
  - c. Test sections of fibrous-glass duct system chosen randomly by Owner for cleanliness according to "Method 2 Protocol."
  - d. Test sections of Thermoset FRP duct systems chosen randomly by Owner, for cleanliness according to "Method 3 - NADCA Vacuum Test."
    - 1) Acceptable Cleanliness Level: Net weight of debris collected on the filter media shall not exceed 0.75 mg/100 sq. cm.
3. Duct system will be considered defective if it does not pass tests and inspections.
4. Prepare test and inspection reports.

### 3.7 DUCT CLEANING

- A. Clean duct system(s) before testing, adjusting, and balancing.
- B. Use service openings for entry and inspection.
  1. Create new openings and install access panels appropriate for duct static-pressure class if required for cleaning access. Provide insulated panels for insulated or lined duct. Patch duct as recommended by duct manufacturer. Comply with Section 233300 "Air Duct Accessories" for access panels and doors.
  2. Disconnect and reconnect flexible ducts as needed for cleaning and inspection.
  3. Remove and reinstall ceiling to gain access during the cleaning process.
- C. Particulate Collection and Odor Control:
  1. When venting vacuuming system inside the building, use HEPA filtration with 99.97 percent collection efficiency for 0.3-micron (or larger) particles.
  2. When venting vacuuming system to outdoors, use filter to collect debris removed from HVAC system, and locate exhaust downwind and away from air intakes and other points of entry into building.
- D. Clean the following components by removing surface contaminants and deposits:

## SECTION 233116 - NONMETAL DUCTS

1. Air outlets and inlets (registers, grilles, and diffusers).
2. Supply, return, and exhaust fans including fan housings, plenums (except ceiling supply and return plenums), scrolls, blades or vanes, shafts, baffles, dampers, and drive assemblies.
3. Air-handling unit internal surfaces and components including mixing box, coil section, air wash systems, spray eliminators, condensate drain pans, humidifiers and dehumidifiers, filters and filter sections, and condensate collectors and drains.
4. Coils and related components.
5. Return-air ducts, dampers, actuators, and turning vanes except in ceiling plenums and mechanical equipment rooms.
6. Supply-air ducts, dampers, actuators, and turning vanes.
7. Dedicated exhaust and ventilation components and makeup air systems.

### E. Mechanical Cleaning Methodology:

1. All duct cleaning shall be performed according to NADCA ACR, "Assessment, Cleaning and Restoration of HVAC Systems."
2. Use vacuum-collection devices that are operated continuously during cleaning. Connect vacuum device to downstream end of duct sections so areas being cleaned are under negative pressure.
3. Use mechanical agitation to dislodge debris adhered to interior duct surfaces without damaging integrity of ducts or duct accessories.
4. Clean fibrous-glass duct with HEPA vacuuming equipment; do not permit duct to get wet. Replace fibrous-glass duct that is damaged, deteriorated, or delaminated or that has friable material, mold, or fungus growth.
5. Clean coils and coil drain pans according to NADCA 1992. Keep drain pan operational. Rinse coils with clean water to remove latent residues and cleaning materials; comb and straighten fins.
6. Provide drainage and cleanup for washdown procedures.
7. Antimicrobial Agents and Coatings: Apply EPA-registered antimicrobial agents if fungus is present. Apply antimicrobial agents according to manufacturer's written instructions after removing surface deposits and debris.

## 3.8 DUCT SCHEDULE

### A. Outdoor Ducts and Fittings:

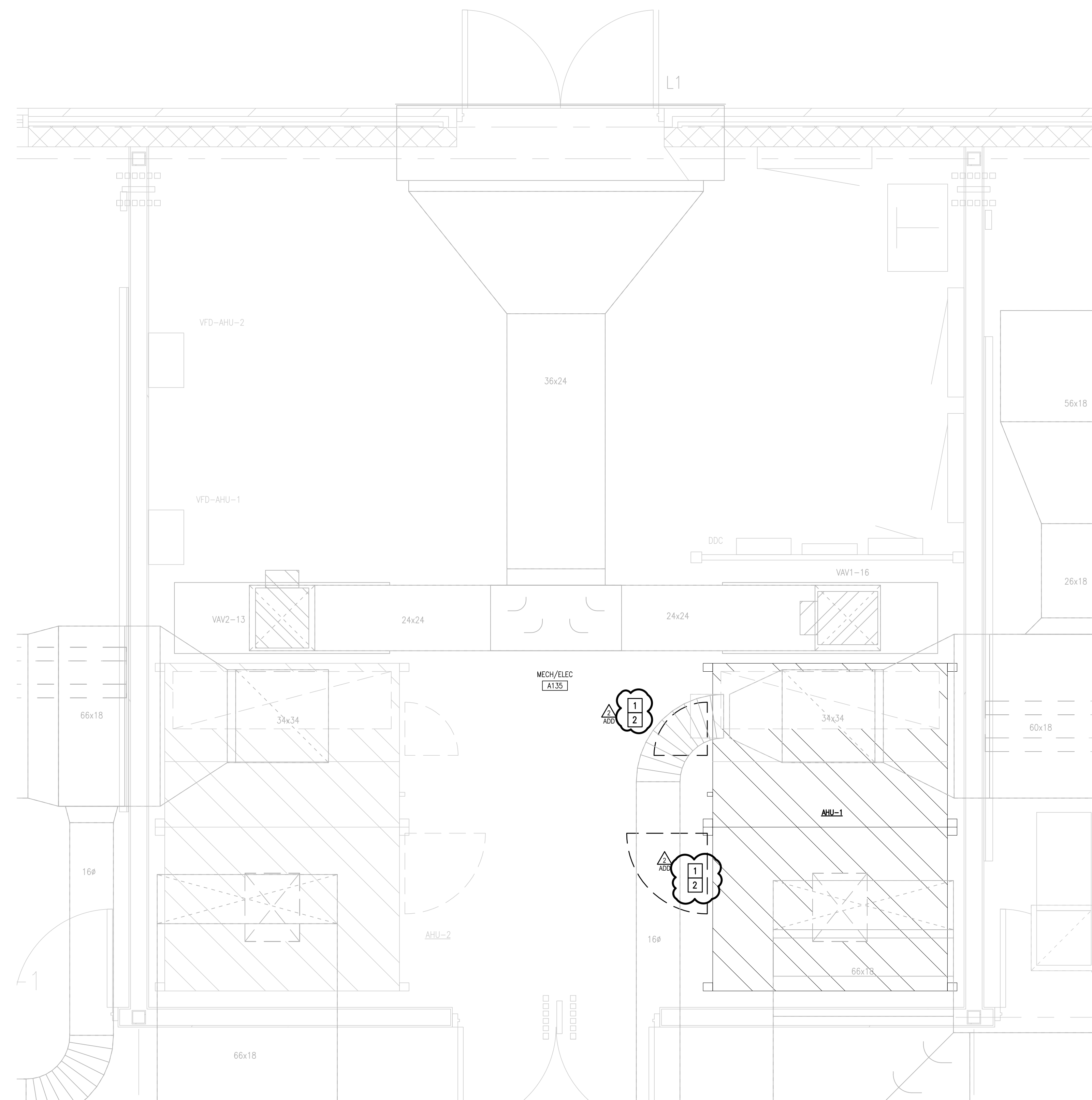
1. Provide suitable external surface protection as recommended by manufacturer.
2. Thermoset FRP Round Ducts and Fittings: Insulation thickness and jacketing per drawings notes.

END OF SECTION 233116

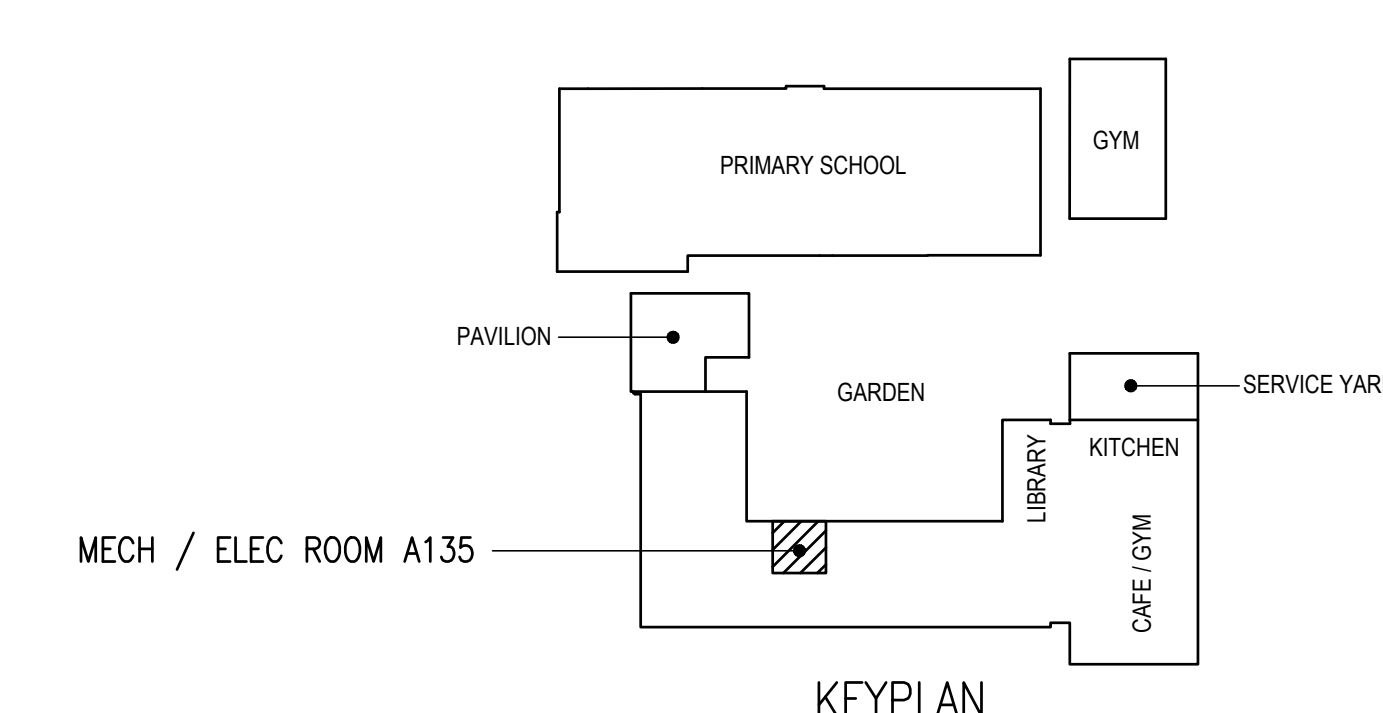


LEGEND	
	NEW EQUIPMENT TO BE INSTALLED
	EXISTING EQUIPMENT TO REMAIN
	EXISTING EQUIPMENT TO BE WORKED ON
	EXISTING DUCTWORK TO REMAIN
	EXISTING SUPPLY DIFFUSER TO BE REMAIN
	EXISTING RETURN AIR GRILLE TO REMAIN

- MECHANICAL KEYED NOTES:**
- 1 DEMOLISH AND REPLACE EXISTING AHU DOORS WITH NEW OEM (ORIGINAL EQUIPMENT MANUFACTURER) DOORS, DOOR HINGES, AND GASKET SEALS. SEE EXISTING UNIT SCHEDULE AT ASSOCIATED SCHEDULE SHEET FOR REFERENCE.
  - 2 CONTACT TEXAS AIR SYSTEMS (MANUFACTURER REP) AT PHONE NUMBER 210-499-0004 FOR PRICING.



**01 IDEA SAN JUAN FIRST FLOOR ENLARGED MECHANICAL FLOOR PLAN**  
 SCALE: 1/2" = 1'-0"





ELECTRICAL SYMBOL LEGEND:

SYMBOL	DESCRIPTION	MNTG. HT. UNO
	DISCONNECT SWITCH - NON FUSED	AS REQUIRED
	CONCEALED RACEWAY	AS REQUIRED
	DUPLEX RECEPTACLE TAMPER RESISTANT W/ GROUND FAULT INTERRUPTING TYPE - HUBBELL MODEL #GFTWRST20W (WHITE) AND WHILE IN USE WEATHERPROOF COVER - HUBBELL MODEL #WP26EH	18" AFF
	THERMAL SWITCH - SQUARE "D" #2510 IN A NEMA 1 ENCLOSURE	AS REQUIRED

NOTES:  
 1) U.N.O. INDICATES UNLESS NOTED OTHERWISE.  
 18" AFF INDICATES TO TOP OF DEVICE.  
 ALL OTHER MOUNTING HEIGHTS REFER TO CENTERLINE OF DEVICE.

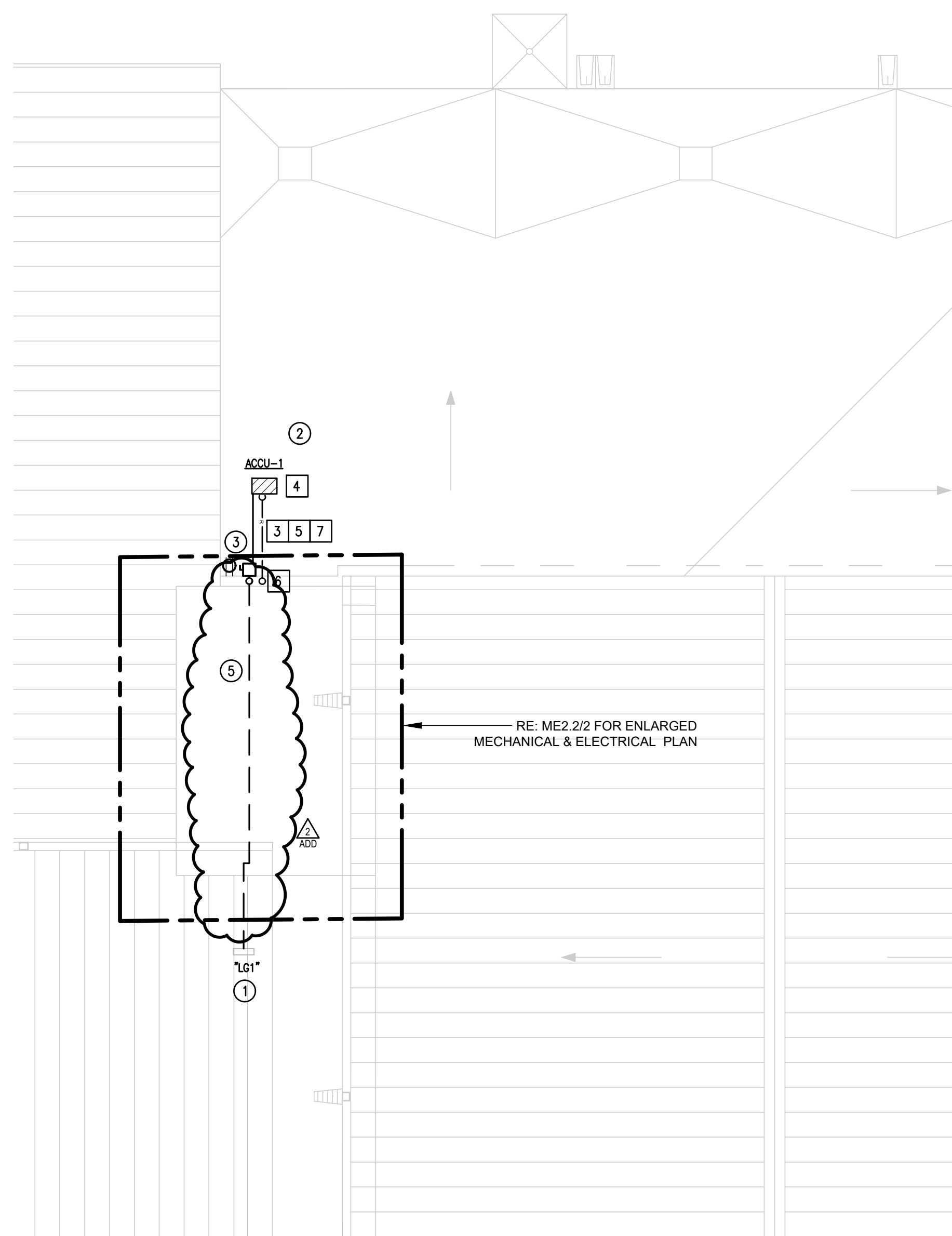
MECHANICAL LEGEND	
	NEW EQUIPMENT TO BE INSTALLED
	EXISTING DUCTWORK TO REMAIN
	PIPING TO BE INSTALLED

ELECTRICAL KEYED NOTES:

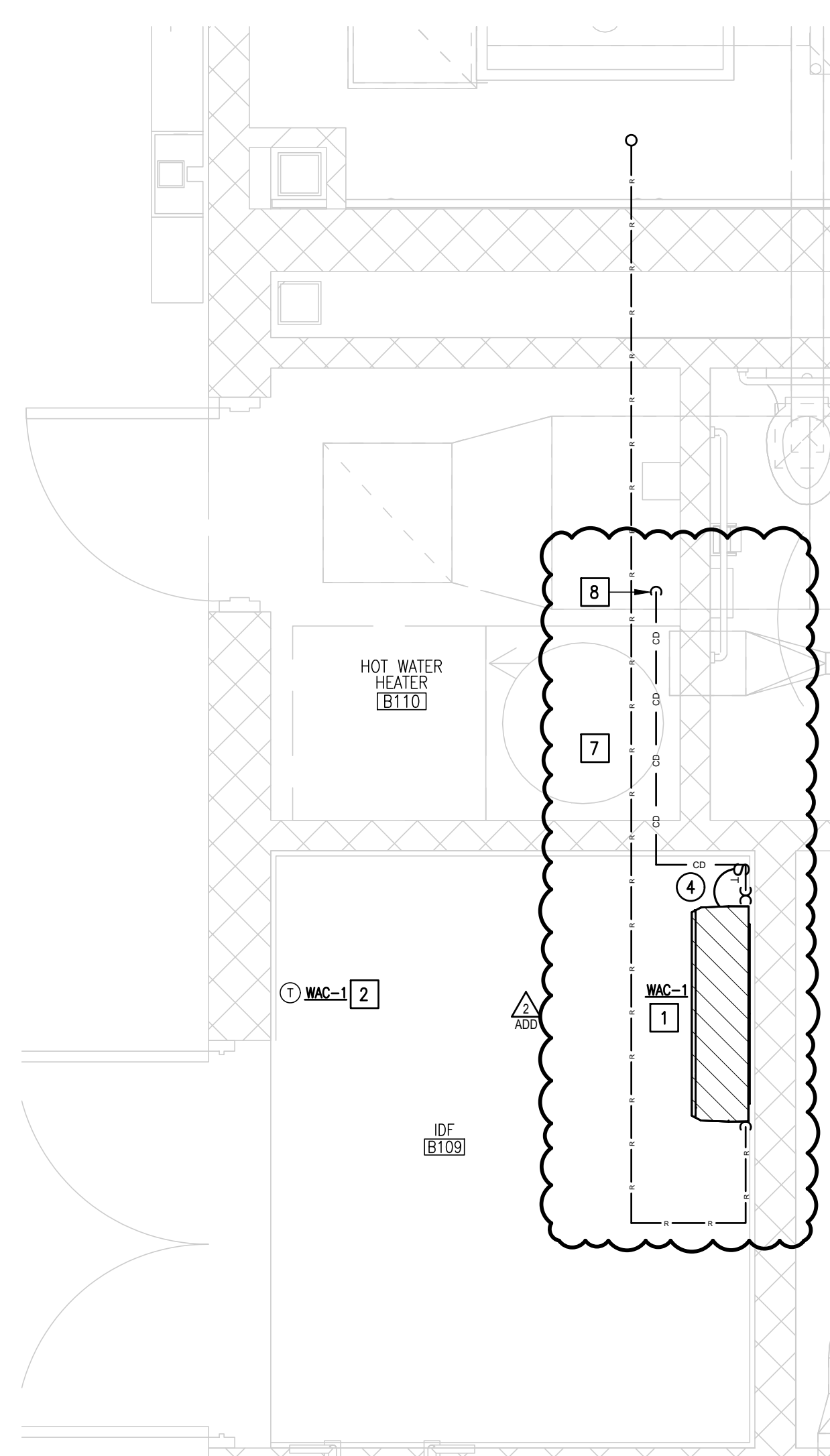
- APPROXIMATE LOCATION OF EXISTING 100A, 120/208V, 3Ø, 4W, SIEMENS TYPE P1 PANELBOARD SERVING NEW HVAC EQUIPMENT AT 1ST FLOOR ELECTRICAL ROOM. PROVIDE A 30A/2P BREAKER IN AVAILABLE SPACE TO CONNECT NEW HVAC EQUIPMENT.
- CONNECT HVAC EQUIPMENT; BRANCH CIRCUIT: 3/4" - 2#10 & #10G, LG1-34,36. PROVIDE A WALL MOUNTED DISCONNECT 30A, 2PNF, 240V, NEMA 3R.
- PROVIDE WALL MOUNTED RECEPTACLE; BRANCH CIRCUIT: 1/2" - 2#12 & #12G. CONNECT TO NEAREST 120V NON-GFCI CIRCUIT. VERIFY LOAD PRIOR TO ANY NEW CONNECTION.
- CONNECT HVAC EQUIPMENT; BRANCH CIRCUIT: 3/4" - 2#10 & #10G. OBTAIN POWER FROM OUTDOOR UNIT. PROVIDE A THERMAL SWITCH.
- PATHWAY INTO BUILDING FOR ELECTRICAL RACEWAYS TO FOLLOW PARALLEL WITH HVAC REFRIGERANT LINES.

MECHANICAL KEYED NOTES:

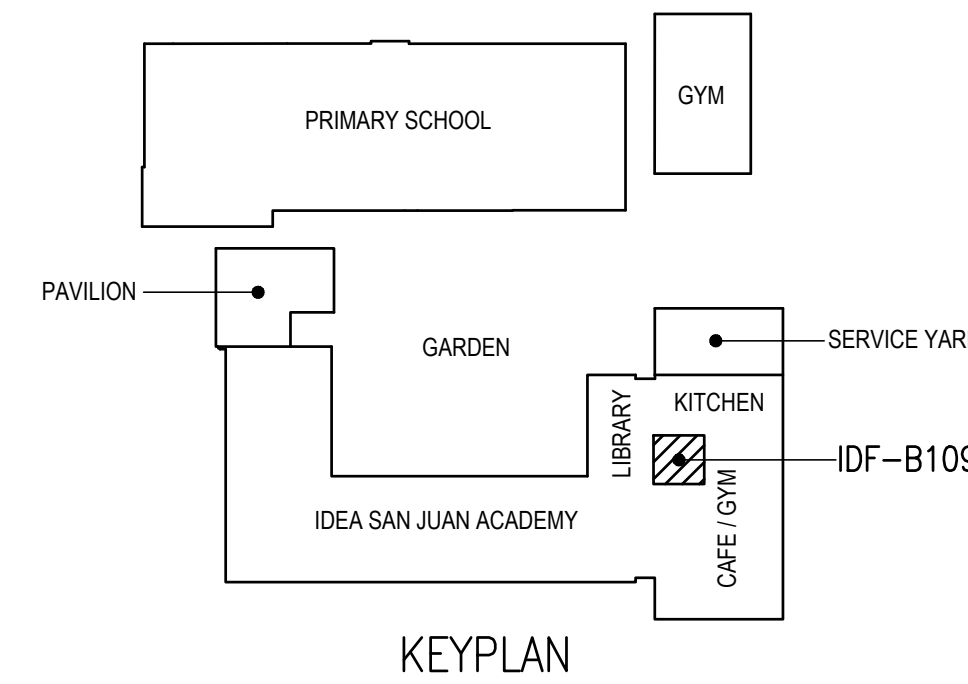
- INSTALL NEW WAC-1 AT THIS APPROXIMATE LOCATION. REFER TO PROVIDED SCHEDULE AND TAB SPECIFICATIONS FOR MORE INFORMATION.
- PROVIDE NEW THERMOSTAT FOR WAC-1. MOUNT 48" ABOVE FINISHED FLOOR & COORDINATE WITH ARCHITECT AND OWNER TO MEET ADA REQUIREMENTS. PROVIDE CLEAR LOCKING COVER FOR ALL SENSORS.
- ROUTE NEW ROUTE REFRIGERANT PIPING TO INDOOR UNIT. COORDINATE ROUTING WITH OTHER TRADES PRIOR TO INSTALLATION. ROUTE INSIDE WALL ABOVE CEILING TO INDOOR UNIT TO AVOID EXPOSED PIPING WITHIN THE SPACE. SLEEVE WALL PENETRATION. SEAL AIRTIGHT AROUND PIPE PENETRATION. (TYPICAL)
- PROVIDE NEW AIR COOLED CONDENSING UNIT AND INSULATED REFRIGERANT PIPING PER SPECIFICATIONS. MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCES AND PROVIDE SUPPORT FRAME PROVIDED BY STRUCTURAL. PAD SHALL BE MINIMUM 6" LARGER THAN EQUIPMENT FOOTPRINT ON ALL SIDES. REFRIGERANT PIPING SHOWN IS STRICTLY SCHEMATIC. VERIFY NUMBER OF CIRCUITS AND PIPE SIZES WITH MANUFACTURER'S DATA. BOLT EQUIPMENT DOWN TO STEEL FRAMING. ATTACHMENT SHALL BE CAPABLE OF WITHSTANDING THE LOCAL WIND PRESSURES.
- PROVIDE 1" INSULATION & ALUMINUM METAL JACKET ON EXPOSED REFRIGERANT LINES. SEE SPECIFICATIONS. PROVIDE REFRIGERANT LINE SUPPORTS PER SPECIFICATIONS. SEE ASSOCIATED DETAIL.
- SLEEVE ALL PENETRATIONS PER SPECIFICATIONS. SEAL AROUND PIPING WITH FIRE PROOF CAULKING. PROVIDE ESCUTCHEON PLATES AND FLASHING AROUND PENETRATION BOTH INSIDE AND OUTSIDE TO PROVIDE FINISHED LOOK.
- PROVIDE AND INSTALL REFRIGERANT LINES PER MANUFACTURER RECOMMENDATIONS. PROVIDE INSULATION ON RETURN LINES. REFER TO ASSOCIATED ENLARGED PLAN FOR REFRIGERANT LINES CONTINUATION.
- ROUTE FULL SIZE CONDENSATE DRAIN LINE TO SERVICE SINK UNDERNEATH HOT WATER HEATER AT THIS APPROXIMATE LOCATION. TERMINATE TWO INCHES ABOVE THE RIM.



01 IDEA SAN JUAN MECHANICAL & ELECTRICAL ROOF PLAN  
 SCALE: 1/8" = 1'-0" NORTH



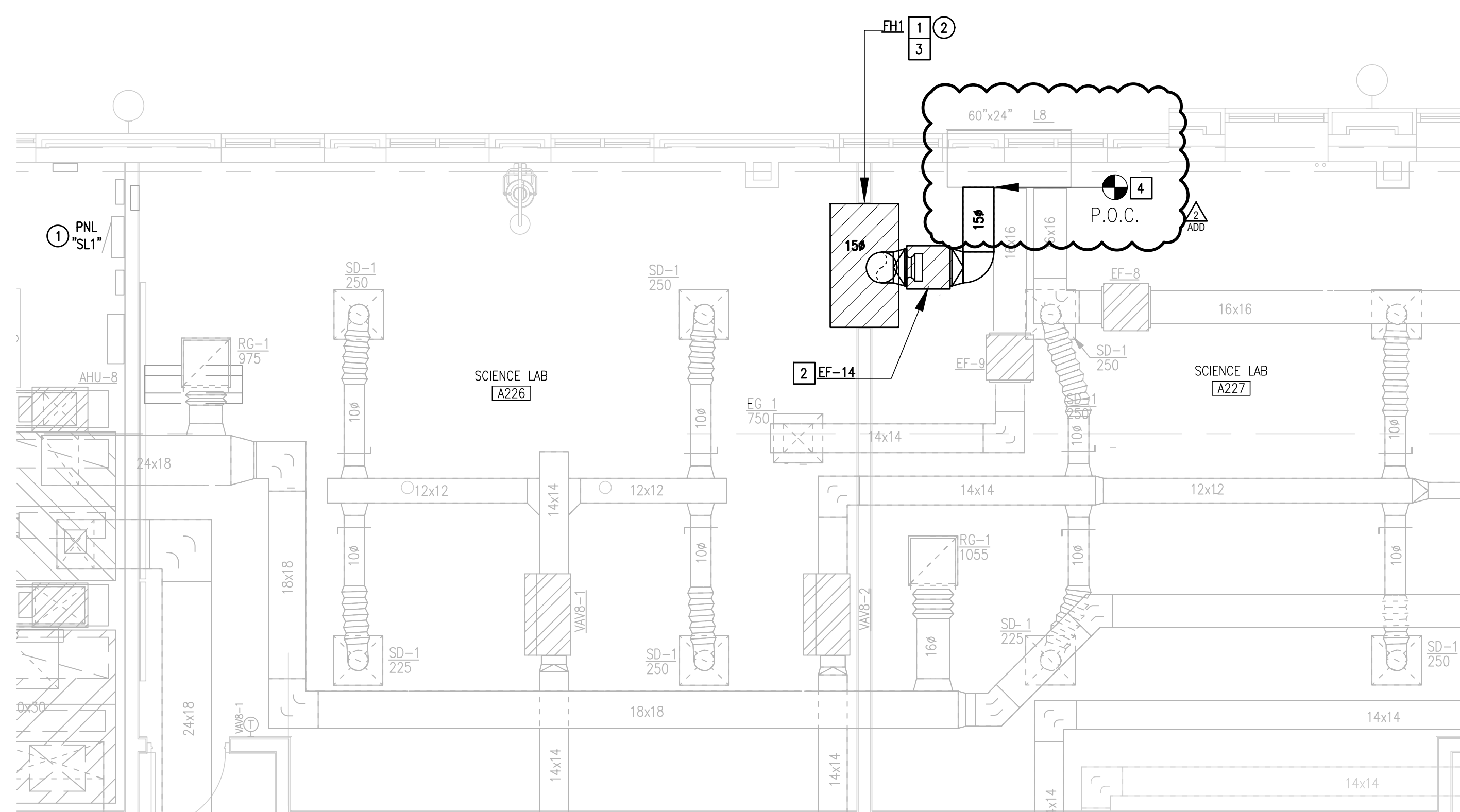
02 IDEA SAN JUAN FIRST FLOOR ENLARGED MECHANICAL & ELECTRICAL PLAN  
 SCALE: 1/2" = 1'-0" NORTH



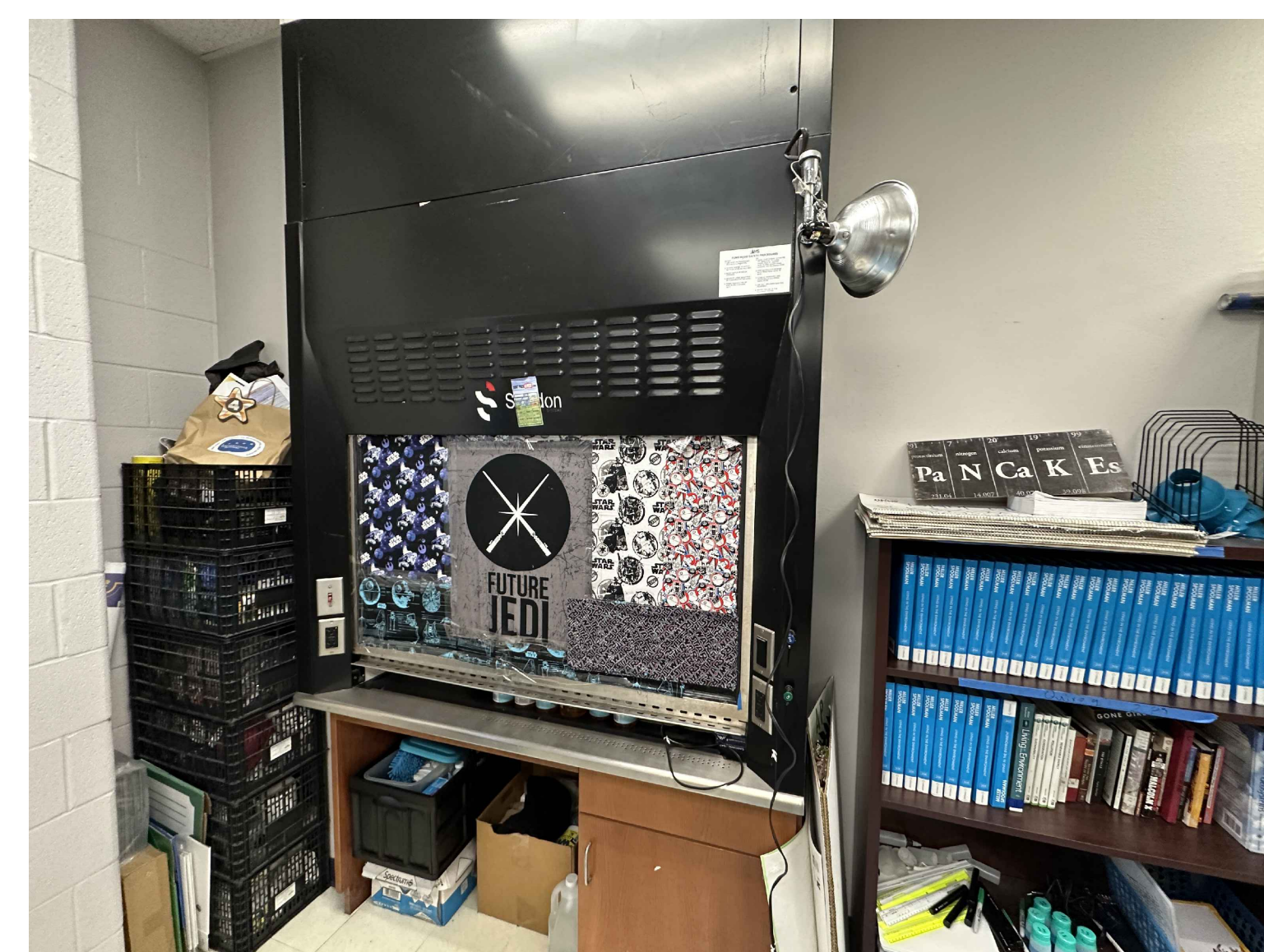
KEYPLAN



LEGEND	
	NEW EQUIPMENT TO BE INSTALLED
	NEW DUCTWORK
	EXISTING DUCTWORK TO REMAIN
	EXISTING SUPPLY DIFFUSER TO BE REMAIN
	EXISTING RETURN AIR GRILLE TO REMAIN
	EXISTING EQUIPMENT TO REMAIN



01 IDEA SAN JUAN SECOND FLOOR MECHANICAL & ELECTRICAL PLAN  
 SCALE: 1/4" = 1'-0" NORTH



02 IDEA SAN JUAN SECOND FLOOR EXISTING FUME HOOD LOCATION  
 NOT TO SCALE

**MECHANICAL KEYED NOTES:**

- 1 DEMOLISH EXISTING FUME HOOD IN SCIENCE LAB A226 & A227. REPLACE IT WITH NEW FUME HOOD AS SCHEDULED PER MANUFACTURER'S INSTRUCTIONS. CONNECT NEW DUCTWORK TO NEW FUME HOOD AND TRANSITION AS NECESSARY.
- 2 DEMOLISH EXISTING EXHAUST FAN. REPLACE IT WITH NEW EXHAUST FAN AT THIS APPROXIMATE LOCATION. PROVIDE NEW DUCTWORK TO EXHAUST FAN AS SHOWN. CONNECT NEW DUCTWORK TO EXISTING EXHAUST LOUVER. REFER TO PROVIDED SCHEDULE AND TAB SPECIFICATIONS FOR MORE INFORMATION.
- 3 PRIOR TO DEMOLITION AND INSTALLATION, DOCUMENT CONDITIONS SURROUNDING EXISTING FUME HOOD LOCATION. AFTER INSTALLATION OF NEW FUME HOOD, RETURN AREA TO ITS ORIGINAL CONDITION.
- 4 CONNECT NEW DUCTWORK INTO EXISTING AT THIS APPROXIMATE LOCATION. (TYPICAL)

**ELECTRICAL KEYED NOTES:**

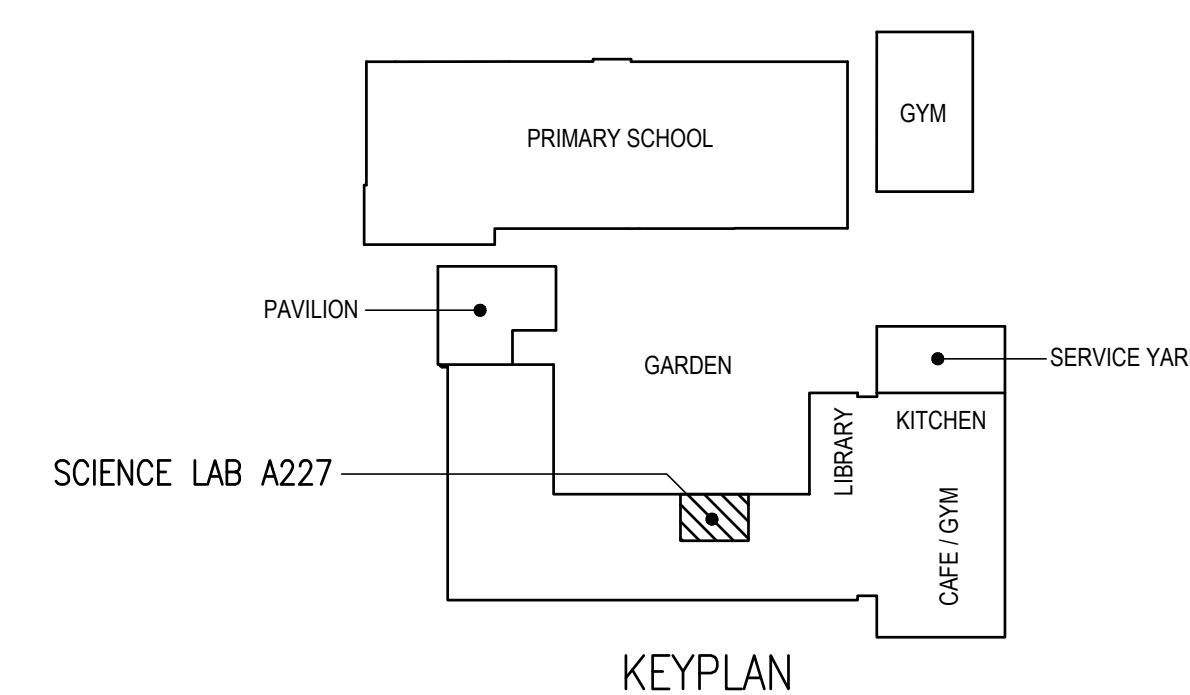
- 1 APPROXIMATE LOCATION OF EXISTING PANELBOARD SERVING EXISTING FUME HOOD.
- 2 TEMPORARILY DISCONNECT EXISTING FUME HOOD FOR INSTALLATION OF A NEW FUME HOOD. RETAIN AND REUSE EXISTING BRANCH CIRCUIT.

**CEILING DEMO GENERAL NOTES**

1. PRIOR TO DEMOLITION, IN CEILINGS SCHEDULED TO BE REMOVED, PREPARE REFLECTED CEILING PLAN SKETCH SHOWING LOCATIONS OF ALL CEILING COMPONENTS AND DEVICES TO BE RE-USED INCLUDING BUT NOT LIMITED TO: EXISTING LIGHT FIXTURES, SPEAKERS, FIRE ALARM DEVICES, EMERGENCY LIGHTING, ETC. IF ANY OF THE ABOVE ITEMS ARE IN NON-WORKING CONDITION, SUBMIT A WRITTEN REPORT TO OWNER/ENGINEER.
2. CONTRACTOR TO EVALUATE CEILING GRID PRIOR TO DEMOLITION AND DOCUMENT ALL BROKEN, CRACKED, MISSING TILES, ETC. AND PROVIDE REPORT TO OWNER AND ENGINEER.

**CEILING DEMO KEYNOTES:**

- 1 TEMPORARILY REMOVE EXISTING CEILING TILES/GRID, LIGHT FIXTURES, FIRE ALARM DEVICES, SENSORS, ETC. AS NECESSARY FOR DEMOLITION AND PROVISION OF MEP SYSTEMS (DUCTWORK, CHW PIPING, FIRE DAMPERS, WATER PIPING, ELECTRICAL CONDUITS, ETC.) AND RE-INSTALL AFTER WORK ABOVE CEILING HAS BEEN COMPLETED.



1128 SOUTH COMMERCE ST.  
 HARLINGEN, TX  
 PHONE: 361-205-3435  
 TEXAS REGISTERED  
 ENGINEERING FIRM  
 E-15998

DATE: APRIL 29, 2024  
 CHECKED BY: B.B.  
 DRAWN BY: D.G.  
 PROJECT NO.: 23V77  
 CAD FILE:  
 SHEET:



LEGEND	
	EXISTING EQUIPMENT TO BE DEMOLISHED
	EXISTING DUCTWORK TO BE DEMOLISHED
	EXISTING DUCTWORK TO REMAIN
	EXISTING SUPPLY DIFFUSER TO BE REMAIN
	EXISTING RETURN AIR GRILLE TO REMAIN
	EXISTING EQUIPMENT TO REMAIN
	CEILING REMOVAL

**MECHANICAL KEYED NOTES:**

- DEMOLISH EXISTING ROOF TOP UNIT (RTU) AND ASSOCIATED CURB, CURB ADAPTER AND CONTROLS WIRING INCLUDING SENSORS IN THIS APPROXIMATE LOCATION. REFER TO ELECTRICAL NOTES FOR WORK RELATED TO DISCONNECTS, CONDUITS, WIRING, ETC.
- DEMOLISH EXISTING DUCTWORK, TRANSITIONS, FITTINGS AND FLEX CONNECTORS UNDERNEATH THE EXISTING RTU AND WITHIN THE EXISTING CURB OPENING AS NECESSARY TO ACCOMMODATE NEW UNIT.
- DEMOLISH EXISTING EF IN THIS APPROXIMATE LOCATION. COORDINATE WITH CONTROLS CONTRACTOR PRIOR TO DEMOLITION.
- DEMOLISH ALL EXISTING PIPING ASSOCIATED WITH THE ROOFTOP UNITS. SEE RENOVATION ROOF PLAN. (TYPICAL)
- RETAIN AND REUSE EXISTING MAIN DUCTWORK BRANCH. DEMOLISH EXISTING TRANSITION FITTINGS AND SUPPLY GRILLES ASSOCIATED WITH THE MAIN DUCTWORK BRANCH. SEE RENOVATION PLAN FOR NEW LOCATION.
- DEMOLISH ALL EXISTING EXTERIOR DUCTWORK SERVING RTU-7 & RTU-8 AND THAT IS LOCATED ON THE KITCHEN ROOF.

**ELECTRICAL KEYED NOTES:**

- APPROXIMATE LOCATION OF EXISTING PANELBOARD SERVING HVAC EQUIPMENT.
- DISCONNECT EXISTING HVAC EQUIPMENT FOR REPLACEMENT. SEE EQUIPMENT CONNECTION SCHEDULE.
- TEMPORARILY DISCONNECT EXISTING EF FOR INSTALLATION OF A NEW EF. RETAIN AND REUSE EXISTING BRANCH CIRCUIT.
- APPROXIMATE LOCATION OF EXISTING SILENT KNIGHT 5820XL FIRE ALARM CONTROL PANEL. PRIME CONTRACTORS SHALL CONTACT FIRE-APPROVED SUBCONTRACTORS TO WORK ON SUCH SYSTEM AS BUT NOT LIMITED TO: SAFEGUARD FIRE SECURITY (956) 618-1478. SUPERIOR ALARMS (956) 793-9771, TOR THE BEST ALARM COMPANY (956) 330-2733.

**CEILING DEMO GENERAL NOTES**

- PRIOR TO DEMOLITION, IN CEILINGS SCHEDULES TO BE REMOVED, PREPARE REFLECTED CEILING PLAN SKETCH SHOWING LOCATIONS OF ALL CEILING COMPONENTS AND DEVICES TO BE RE-USED INCLUDING BUT NOT LIMITED TO: EXISTING LIGHT FIXTURES, SPEAKERS, FIRE ALARM DEVICES, EMERGENCY LIGHTING, ETC. IF ANY OF THE ABOVE ITEMS ARE IN NON-WORKING CONDITION, SUBMIT A WRITTEN REPORT TO OWNER/ENGINEER.
- CONTRACTOR TO EVALUATE CEILING GRID PRIOR TO DEMOLITION AND DOCUMENT ALL BROKEN, CRACKED, MISSING TILES, ETC. AND PROVIDE REPORT TO OWNER AND ENGINEER.

**CEILING DEMO KEYNOTES:**

- TEMPORARILY REMOVE EXISTING CEILING TILES/GRID, LIGHT FIXTURES, FIRE ALARM DEVICES, SENSORS, ETC. AS NECESSARY FOR DEMOLITION AND PROVISION OF NEW RTU'S AND ASSOCIATED MEP SYSTEMS (DUCTWORK, FIRE DAMPERS, WATER PIPING, ELECTRICAL CONDUITS, ETC.) AND RE-INSTALL AFTER WORK ABOVE CEILING HAS BEEN COMPLETED.

**EQUIPMENT CONNECTION SCHEDULE:**

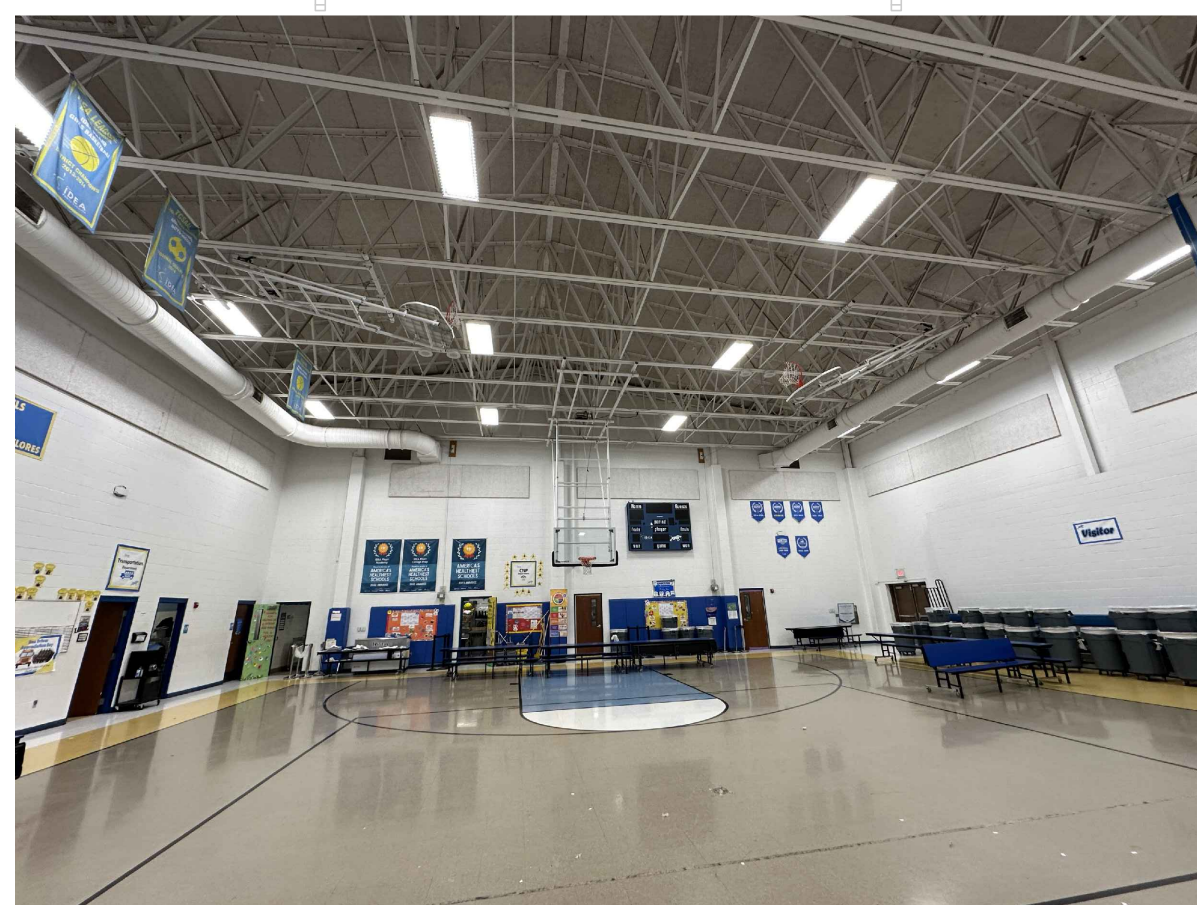
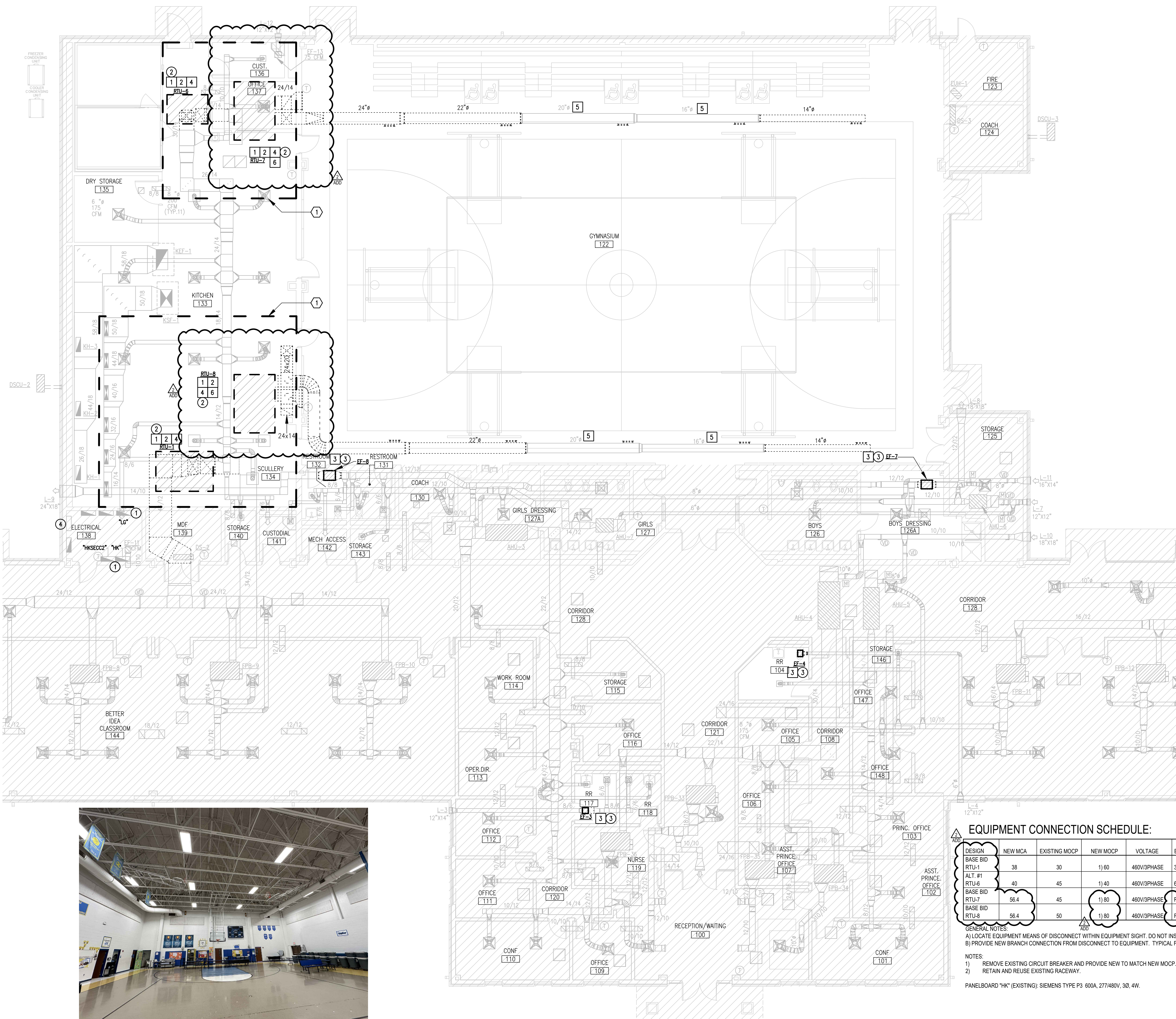
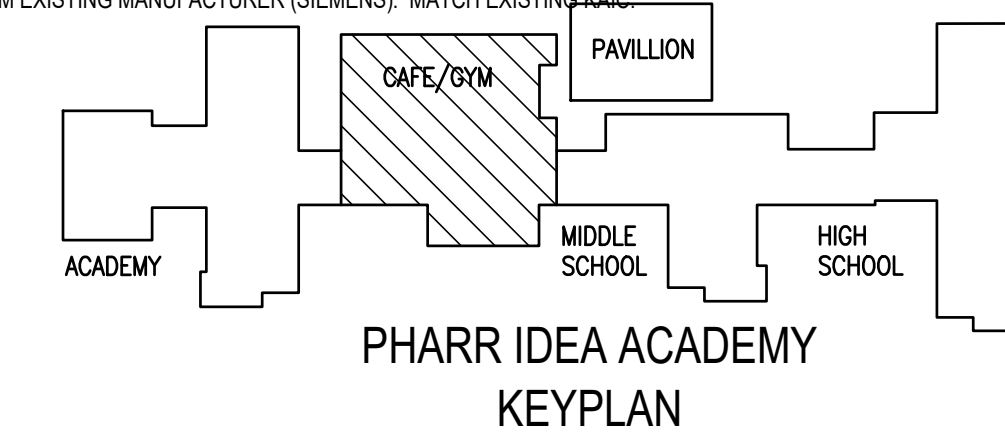
DESIGN	NEW MCA	EXISTING MOCP	NEW MOCP	VOLTAGE	EXISTING MEANS OF DISCONNECT	NEW MEANS OF DISCONNECT	EXISTING BRANCH CIRCUIT (75' COPPER)	NEW BRANCH CIRCUIT (75' COPPER)	EXISTING POWER SOURCE
BASE BID RTU-1	38	30	1)60	480V/3PHASE	30A, 3PNF, 600V, NEMA 3R	60A, 3PNF, 600V, NEMA 3R	3/4" - 3#8 & #10G	RETAIN EXISTING	HK
ALT. #1 RTU-6	40	45	1)40	480V/3PHASE	60A, 3PNF, 600V, NEMA 3R	RETAIN EXISTING	3/4" - 3#8 & #10G	RETAIN EXISTING	HK
BASE BID RTU-7	56.4	45	1)80	480V/3PHASE	REMOVE EXISTING	100A, 3PNF, 600V, NEMA 3R	REMOVE EXISTING WIRING.	2) 3/4" - 3#8 & #8G	HK
BASE BID RTU-8	56.4	50	1)80	480V/3PHASE	REMOVE EXISTING	100A, 3PNF, 600V, NEMA 3R	REMOVE EXISTING WIRING.	2) 3/4" - 3#8 & #8G	HK

GENERAL NOTES:  
 A) LOCATE EQUIPMENT MEANS OF DISCONNECT WITHIN EQUIPMENT SIGHT. DO NOT INSTALL BELOW DUCTWORK OR PLUMBING LINES.  
 B) PROVIDE NEW BRANCH CONNECTION FROM DISCONNECT TO EQUIPMENT. TYPICAL FOR ALL NEW HVAC EQUIPMENT.

**NOTES:**

- REMOVE EXISTING CIRCUIT BREAKER AND PROVIDE NEW TO MATCH NEW MOCP. PROVIDE UL LISTED UNIT FROM EXISTING MANUFACTURER (SIEMENS). MATCH EXISTING KAIC.
- RETAIN AND REUSE EXISTING RACEWAY.

PANELBOARD "HK" (EXISTING); SIEMENS TYPE P3 600A, 277/480V, 3Ø, 4W.



IDEA PHARR GYMNASIUM 122  
 EXISTING DUCTWORK FOR REFERENCE  
 NOT TO SCALE

IDEA PHARR AREA B  
 MECHANICAL & ELECTRICAL DEMOLITION FLOOR PLAN  
 SCALE: 1/8" = 1'-0"







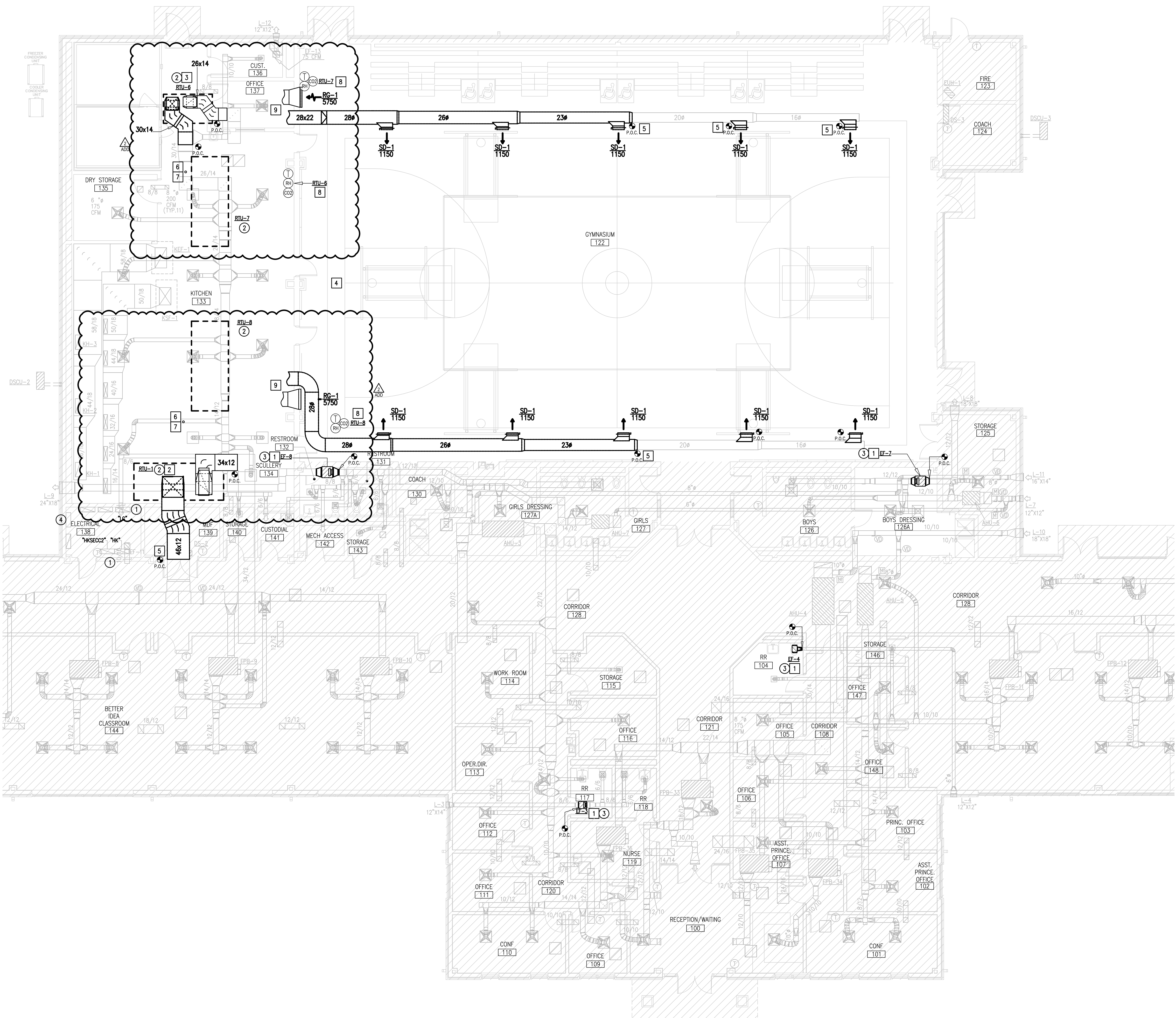
LEGEND	
	NEW EQUIPMENT TO BE INSTALLED
	NEW ROOF EQUIPMENT TO BE INSTALLED
	EXISTING DUCTWORK TO REMAIN
	EXISTING SUPPLY DIFFUSER TO BE REMAIN
	EXISTING RETURN AIR GRILLE TO REMAIN
	EXISTING EQUIPMENT TO REMAIN
	PIPING TO BE INSTALLED
	NEW T-STAT, RH, AND CO2 SENSORS
	NEW DUCTWORK

**MECHANICAL KEYED NOTES:**

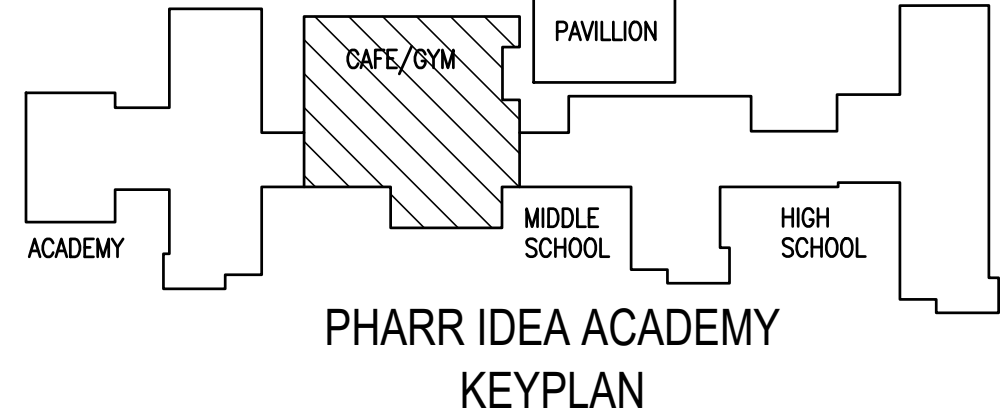
- 1 PROVIDE NEW EXHAUST FAN AT THIS APPROXIMATE LOCATION. PROVIDE NEW DUCTWORK TRANSITION WHERE NECESSARY. REFER TO PROVIDED SCHEDULE AND TAB SPECIFICATIONS FOR MORE INFORMATION.
- 2 46/12 SUPPLY AND 34/12 RETURN DUCTWORK UP TO RTU-1 ABOVE THROUGH EXISTING RECONFIGURED ROOF OPENING. TRANSITION AS NECESSARY.
- 3 30/14 SUPPLY AND 26/14 RETURN DUCTWORK UP TO RTU-6 ABOVE THROUGH EXISTING RECONFIGURED ROOF OPENING. TRANSITION AS NECESSARY.
- 4 DUCTWORK ROUTING SHOWN IS DIAGRAMMATIC IN NATURE. FIELD-VERIFY STRUCTURE AND SPACE AVAILABILITY PRIOR TO SUBMITTING SHOP DRAWINGS. COORDINATE WITH ENGINEER IN CASE OF CONFLICTS. (TYPICAL)
- 5 CONNECT NEW DUCTWORK INTO EXISTING AT THIS APPROXIMATE LOCATION. (TYPICAL)
- 6 ROUTE COPPER CONDENSATE LINES TO EXISTING DESIGNATED DRAIN. COORDINATE WITH PLUMBING CONTRACTOR.
- 7 PIPES SHALL BE TYPE L, DRAWN-TEMPER COPPER TUBING, WROUGHT-COPPER FITTINGS, AND SOLDERED JOINTS. PIPES SHALL BE SIZED TO MATCH EXISTING OR PER HVAC MANUFACTURER'S RECOMMENDATION, WHICHEVER IS LARGER. CONDENSATE AND EQUIPMENT DRAIN WATER INSULATION SHALL BE 3/4 INCH THICK FLEXIBLE ELASTOMERIC TYPE WITH VAPOR RETARDER, AND PAINTED FINISH.
- 8 PROVIDE THERMOSTAT, RH, AND CO2 SENSORS WHERE INDICATED. INSTALL 48" A.F.F. COORDINATE WITH ARCHITECT AND OWNER TO MEET ADA REQUIREMENTS. PROVIDE CLEAR LOCKING COVER FOR ALL SENSORS. (TYPICAL)
- 9 SUPPLY & RETURN DUCTWORK FROM RTU-7 & RTU-8. REFER TO SHEET ME3.11/3 FOR ELEVATION VIEWS OF EXTERIOR DUCTWORK.

**ELECTRICAL KEYED NOTES:**

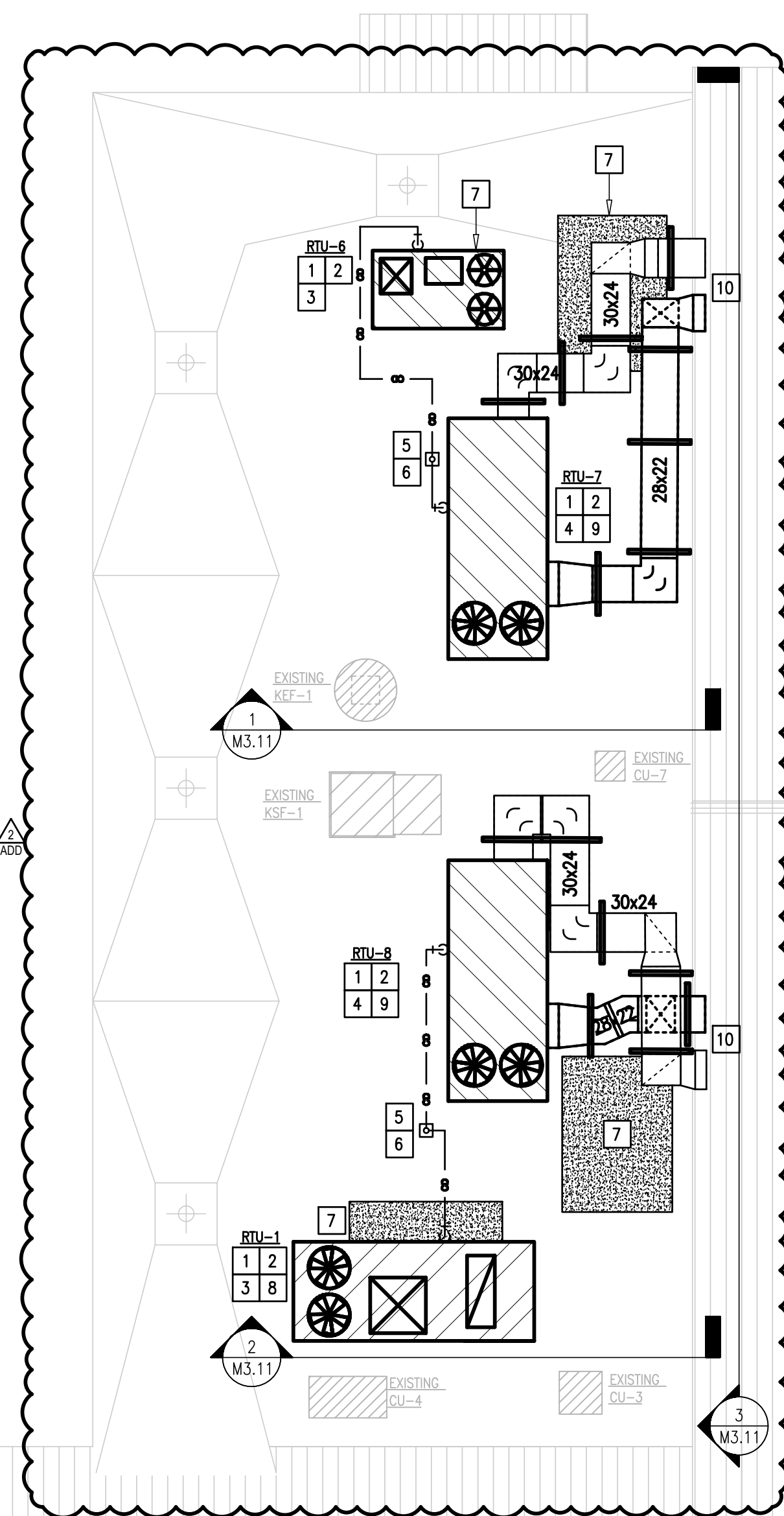
- 1 APPROXIMATE LOCATION OF EXISTING PANELBOARD SERVING HVAC EQUIPMENT.
- 2 CONNECT NEW HVAC EQUIPMENT. SEE EQUIPMENT CONNECTION SCHEDULE.
- 3 CONNECT NEW EF. RETAIN AND REUSE EXISTING BRANCH CIRCUIT.
- 4 APPROXIMATE LOCATION OF EXISTING SILENT KNIGHT 5820XL FIRE ALARM CONTROL PANEL. PRIME CONTRACTORS SHALL CONTACT PRE-APPROVED SUBCONTRACTORS TO WORK ON SUCH SYSTEM AS BUT NOT LIMITED TO: SAFEGUARD FIRE SECURITY (956) 618-1478, SUPERIOR ALARMS (956) 793-9771, TCR THE BEST ALARM COMPANY (956) 330-2733.



IDEA PHARR AREA B  
 01 MECHANICAL & ELECTRICAL FLOOR PLAN  
 SCALE: 1/8" = 1'-0"



PHARR IDEA ACADEMY  
 KEYPLAN



**LEGEND**

	EXISTING EQUIPMENT TO REMAIN
	NEW EQUIPMENT
	PIPING TO BE INSTALLED
	ROOF PATCHING AREA

- MECHANICAL KEYED NOTES:**
- 1 PROVIDE NEW RTU ON NEW ROOF CURB AS SCHEDULED. ORIENT RTU'S TO OPTIMIZE CONNECTION TO EXISTING DUCTWORK. SEAL ALL OPENINGS AND ENSURE THAT INSTALLATION IS WEATHER-TIGHT. PROVIDE COPPER CONDENSATE DRAIN LINES WITH P-TRAPS AND CONNECT TO EXISTING CONDENSATE SYSTEM. PROVIDE PIPING SUPPORTS AS DETAILED. DEMOLISH EXISTING CURB AND PROVIDE NEW ROOF CURB TO INSTALL EQUIPMENT ON ROOF. SECURE EQUIPMENT TO ROOF CURB AND TO ROOF STRUCTURE AS PER DIV. 7 SPECIFICATIONS. ATTACHMENTS SHALL BE CAPABLE OF WITHSTANDING THE LOCAL WIND PRESSURES. PROVIDE NEW DDC CONTROLS FOR RTU AS SCHEDULED. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
  - 2 PROVIDE CONVENIENCE ELECTRICAL OUTLET AT INDICATED RTU. COORDINATE WITH EQUIPMENT MANUFACTURER. COORDINATE WITH ELECTRICAL CONTRACTOR.
  - 3 CONNECT NEW FULL SIZE DUCT WORK FROM CEILING SPACE BELOW TO NEW RTU SA AND RA OPENINGS AS SHOWN ON FLOOR PLAN. TRANSITION AS NECESSARY.
  - 4 PROVIDE EXPOSED EXTERIOR DUCTWORK AS PER SPECIFICATIONS. PROVIDE ROOF SUPPORTS FOR DUCTWORK SUITABLE FOR THIS APPLICATION. ROUTE FULL SIZE DUCTWORK TO EXTERIOR WALL OF GYMNASIUM 122 AND PENETRATE THE EXISTING WALL. ENLARGE THE EXISTING OPENINGS AS REQUIRED TO ACCOMMODATE NEW DUCTWORK. REFER TO MECHANICAL ELEVATIONS FOR DETAILS.
  - 5 ROUTE FULL SIZE COPPER CONDENSATE TO EXISTING ROOF PENETRATION SYSTEM. SEE ASSOCIATED DETAIL. COORDINATE INSTALLATION WITH PLUMBING CONTRACTOR. PROVIDE COPPER CONDENSATE PIPING ON ROOF AND PROVIDE SUPPORTS AS PER DETAIL. REFER TO DETAIL SHEET. (TYPICAL)
  - 6 PIPES SHALL BE TYPE L, DRAWN-TEMPER COPPER TUBING, WROUGHT-COPPER FITTINGS, AND SOLDERED JOINTS. PIPES SHALL BE SIZED TO MATCH EXISTING OR PER HVAC MANUFACTURER'S RECOMMENDATION, WHICHEVER IS LARGER. CONDENSATE AND EQUIPMENT DRAIN WATER INSULATION SHALL BE 3/4 INCH THICK FLEXIBLE ELASTOMERIC TYPE WITH VAPOR RETARDER, AND PAINTED FINISH.
  - 7 PATCH/REPAIR ROOF AS PER SPECIFICATIONS. HATCHED AREA AT THIS APPROXIMATE LOCATION REPRESENTS ROOF PATCHING WORK. FIELD VERIFY EXTENTS OF ROOF PATCHING.
  - 8 PROVIDE 24" TALL CURB FOR RTU-1 FOR DUCTWORK TRANSITION TO KITCHEN CEILING SPACE BELOW TO AVOID CONFLICT WITH STRUCTURAL JOISTS. REFER TO M3.11/3.
  - 9 SLEEVE ALL WALL PENETRATIONS PER SPECIFICATIONS. SEAL RAIN-TIGHT AROUND DUCTS & PIPING AT ALL WALLS AND WALL LOUVER PENETRATIONS WITH FIRE-PROOF CAULKING. PROVIDE ESCUTCHEON PLATES AND FLASHING AROUND PENETRATION, BOTH INSIDE AND OUTSIDE TO PROVIDE A FINISH LOOK. (TYPICAL)
  - 10 CUT AND MODIFY EXISTING INTERIOR WALL FRAMING AND EXTERIOR CMU BLOCK AS NECESSARY TO ACCOMMODATE THE NEW DUCTWORK OPENINGS. FRAME WITH METAL STUDS AROUND OPENINGS AND REPAIR AND PAINT WALL AS REQUIRED.

NO: REVISION: BY:

5/2/2024 ETHOS

5/3/2024 ETHOS

CSP # 24-MRMU-0424

TEXAS

IDEA PUBLIC SCHOOLS

MIDDLE RGV MECHANICAL UPGRADES

PHARR

1128 SOUTH COMMERCE ST.  
HARLINGEN, TX  
PHONE: 361-205-2455  
TEXAS REGISTERED  
ENGINEERING FIRM  
E-15998

DATE: APRIL 29, 2024

CHECKED BY: B.B.

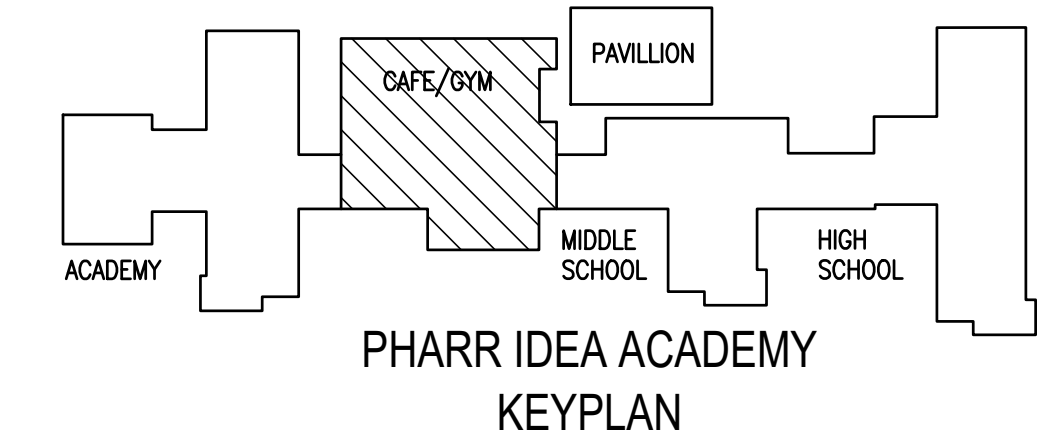
DRAWN BY: D.G.

PROJECT NO.: 23V77

CAD FILE: .

SHEET: ME3.5

**IDEA PHARR AREA B**  
**01 MECHANICAL & ELECTRICAL RENOVATION ROOF PLAN**  
 SCALE: 1/8" = 1'-0"





LEGEND	
	EXISTING EQUIPMENT TO BE DEMOLISHED
	EXISTING DUCTWORK TO BE DEMOLISHED
	EXISTING DUCTWORK TO REMAIN
	EXISTING SUPPLY DIFFUSER TO BE REMAIN
	EXISTING RETURN AIR GRILLE TO REMAIN
	EXISTING EQUIPMENT TO REMAIN
	CEILING REMOVAL

**MECHANICAL KEYED NOTES:**

- 1 DEMOLISH EXISTING ROOF TOP UNIT (RTU) AND ASSOCIATED CURB, CURB ADAPTER AND CONTROLS WIRING INCLUDING SENSORS IN THIS APPROXIMATE LOCATION. REFER TO ELECTRICAL NOTES FOR WORK RELATED TO DISCONNECTS, CONDUITS, WIRING, ETC.
- 2 DEMOLISH EXISTING DUCTWORK, TRANSITIONS, FITTINGS AND FLEX CONNECTORS UNDERNEATH THE EXISTING RTU AND WITHIN THE EXISTING CURB OPENING AS NECESSARY TO ACCOMMODATE NEW UNIT.
- 3 DEMOLISH EXISTING EF IN THIS APPROXIMATE LOCATION. COORDINATE WITH CONTROLS CONTRACTOR PRIOR TO DEMOLITION.
- 4 DEMOLISH ALL EXISTING PIPING ASSOCIATED WITH THE ROOFTOP UNITS. SEE RENOVATION ROOF PLAN. (TYPICAL)

**ELECTRICAL KEYED NOTES:**

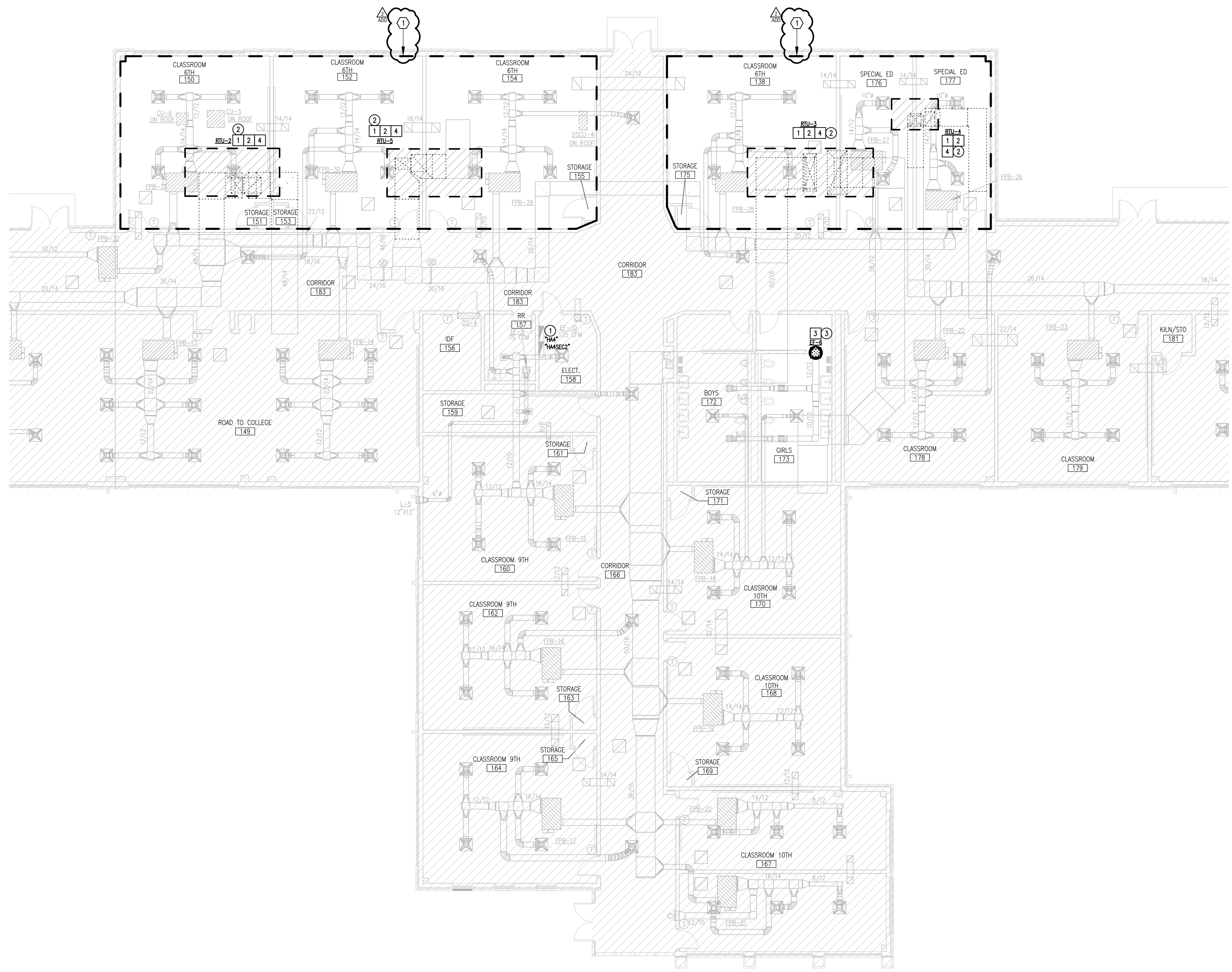
- 1 APPROXIMATE LOCATION OF EXISTING PANELBOARD SERVING HVAC EQUIPMENT.
- 2 DISCONNECT EXISTING HVAC EQUIPMENT FOR REPLACEMENT. SEE EQUIPMENT CONNECTION SCHEDULE.
- 3 TEMPORARILY DISCONNECT EXISTING EF FOR INSTALLATION OF A NEW EF. RETAIN AND REUSE EXISTING BRANCH CIRCUIT.

**CEILING DEMO GENERAL NOTES**

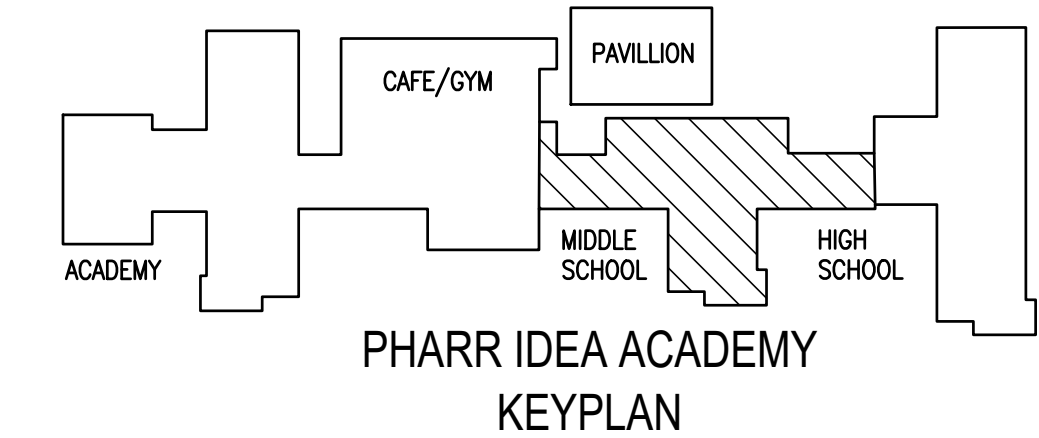
1. PRIOR TO DEMOLITION, IN CEILINGS SCHEDULED TO BE REMOVED, PREPARE REFLECTED CEILING PLAN SKETCH SHOWING LOCATIONS OF ALL CEILING COMPONENTS AND DEVICES TO BE RE-USED INCLUDING BUT NOT LIMITED TO: EXISTING LIGHT FIXTURES, SPEAKERS, FIRE ALARM DEVICES, EMERGENCY LIGHTING, ETC. IF ANY OF THE ABOVE ITEMS ARE IN NON-WORKING CONDITION, SUBMIT A WRITTEN REPORT TO OWNER/ENGINEER.
2. CONTRACTOR TO EVALUATE CEILING GRID PRIOR TO DEMOLITION AND DOCUMENT ALL BROKEN, CRACKED, MISSING TILES, ETC. AND PROVIDE REPORT TO OWNER AND ENGINEER.

**CEILING DEMO KEYNOTES:**

- 1 TEMPORARILY REMOVE EXISTING CEILING TILES/GRID, LIGHT FIXTURES, FIRE ALARM DEVICES, SENSORS, ETC. AS NECESSARY FOR DEMOLITION AND PROVISION OF NEW RTU'S AND ASSOCIATED MEP SYSTEMS (DUCTWORK, FIRE DAMPERS, WATER PIPING, ELECTRICAL CONDUITS, ETC.) AND RE-INSTALL AFTER WORK ABOVE CEILING HAS BEEN COMPLETED.



01 IDEA PHARR AREA C  
 MECHANICAL & ELECTRICAL DEMOLITION FLOOR PLAN  
 SCALE: 1/8" = 1'-0"



PHARR IDEA ACADEMY  
 KEYPLAN



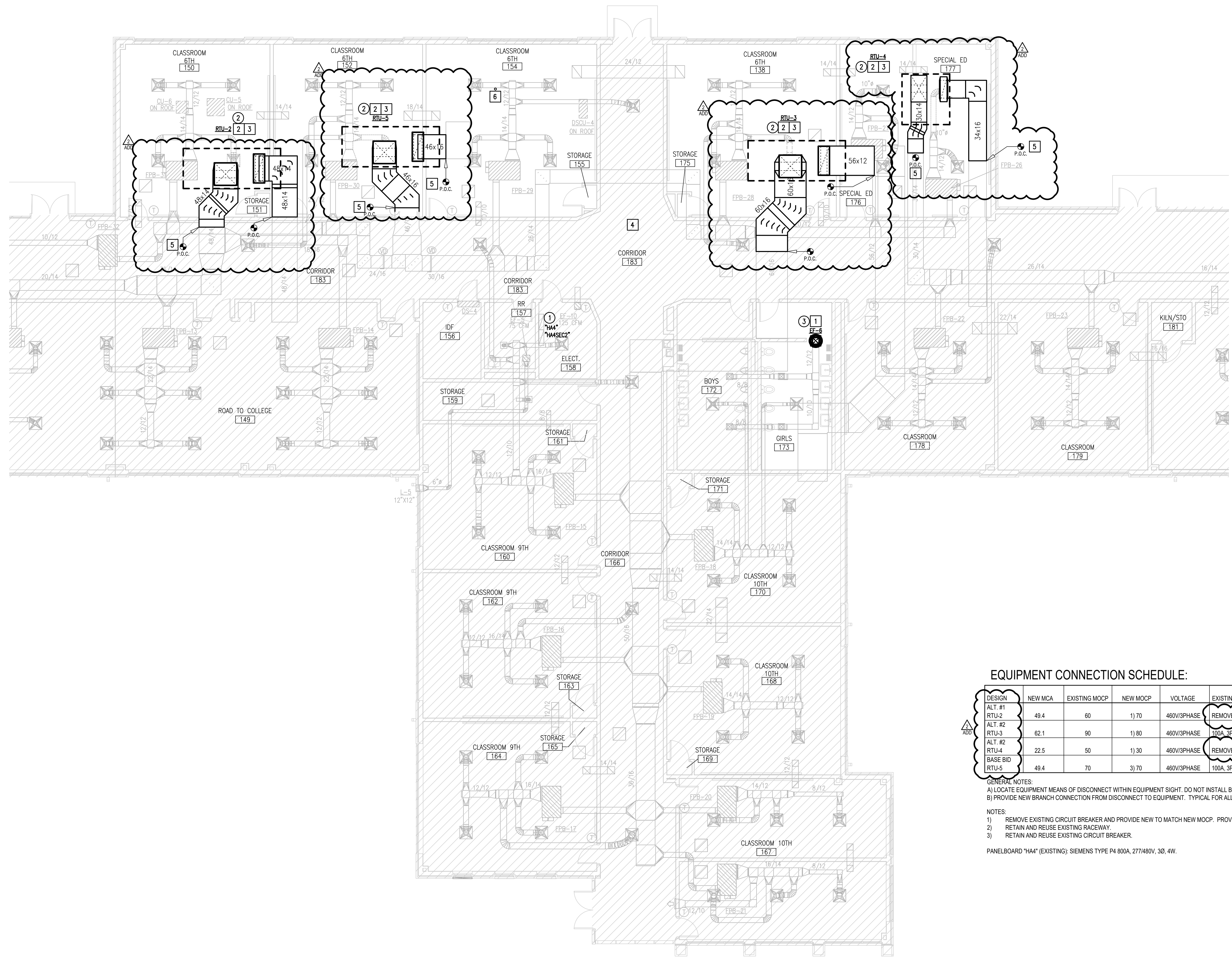
LEGEND	
	NEW EQUIPMENT TO BE INSTALLED
	NEW ROOF EQUIPMENT TO BE INSTALLED
	EXISTING DUCTWORK TO REMAIN
	EXISTING SUPPLY DIFFUSER TO BE REMAIN
	EXISTING RETURN AIR GRILLE TO REMAIN
	EXISTING EQUIPMENT TO REMAIN
	PIPING TO BE INSTALLED
	NEW DUCTWORK

**MECHANICAL KEYED NOTES:**

- 1 PROVIDE NEW EXHAUST FAN AT THIS APPROXIMATE LOCATION. PROVIDE NEW DUCTWORK TRANSITION WHERE NECESSARY. REFER TO PROVIDED SCHEDULE AND TAB SPECIFICATIONS FOR MORE INFORMATION.
- 2 SUPPLY AND RETURN DUCTWORK UP TO RTU'S ABOVE THROUGH EXISTING ROOF OPENINGS. TRANSITION AS NECESSARY.
- 3 CONNECT FULL SIZE DUCT WORK FROM CEILING SPACE BELOW TO NEW RTU SA AND RA OPENINGS. TRANSITION AS NECESSARY.
- 4 DUCTWORK ROUTING SHOWN IS DIAGRAMMATIC IN NATURE. FIELD-VERIFY STRUCTURE AND SPACE AVAILABILITY PRIOR TO SUBMITTING SHOP DRAWINGS. COORDINATE WITH ENGINEER IN CASE OF CONFLICTS. (TYPICAL)
- 5 CONNECT NEW DUCTWORK INTO EXISTING AT THIS APPROXIMATE LOCATION. (TYPICAL)
- 6 ROUTE COPPER CONDENSATE LINES FROM RTU'S ON ROOF TO EXISTING DESIGNATED DRAIN. COORDINATE WITH PLUMBING CONTRACTOR.

**ELECTRICAL KEYED NOTES:**

- 1 APPROXIMATE LOCATION OF EXISTING PANELBOARD SERVING HVAC EQUIPMENT.
- 2 CONNECT NEW HVAC EQUIPMENT. SEE EQUIPMENT CONNECTION SCHEDULE.
- 3 CONNECT NEW EF. RETAIN AND REUSE EXISTING BRANCH CIRCUIT.



**EQUIPMENT CONNECTION SCHEDULE:**

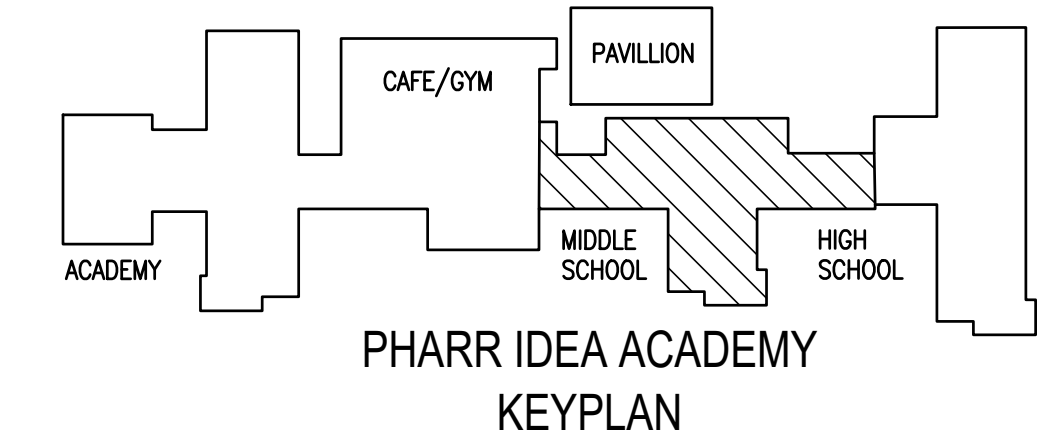
DESIGN	NEW MCA	EXISTING MOCP	NEW MOCP	VOLTAGE	EXISTING MEANS OF DISCONNECT	NEW MEANS OF DISCONNECT	EXISTING BRANCH CIRCUIT (75' COPPER)	NEW BRANCH CIRCUIT (75' COPPER)	EXISTING POWER SOURCE
ALT. #1 RTU-2	49.4	60	1) 70	460V/3PHASE	REMOVE EXISTING	100A, 3PNF, 600V, NEMA 3R	REMOVE EXISTING WIRING.	2) 3/4" - 3#6 & #8G	HA4
ALT. #2 RTU-3	62.1	90	1) 80	460V/3PHASE	100A, 3PNF, 600V, NEMA 3R	RETAIN EXISTING	1" - 3#3 & #8G	RETAIN EXISTING	HA4
ALT. #2 RTU-4	22.5	50	1) 30	460V/3PHASE	REMOVE EXISTING	30A, 3PNF, 600V, NEMA 3R	3/4" - 3#6 & #8G	RETAIN EXISTING	HA4
BASE BID RTU-5	49.4	70	3) 70	460V/3PHASE	100A, 3PNF, 600V, NEMA 3R	RETAIN EXISTING	1" - 3#3 & #8G	RETAIN EXISTING	HA4

GENERAL NOTES:  
 A) LOCATE EQUIPMENT MEANS OF DISCONNECT WITHIN EQUIPMENT SIGHT. DO NOT INSTALL BELOW DUCTWORK OR PLUMBING LINES.  
 B) PROVIDE NEW BRANCH CONNECTION FROM DISCONNECT TO EQUIPMENT. TYPICAL FOR ALL NEW HVAC EQUIPMENT.

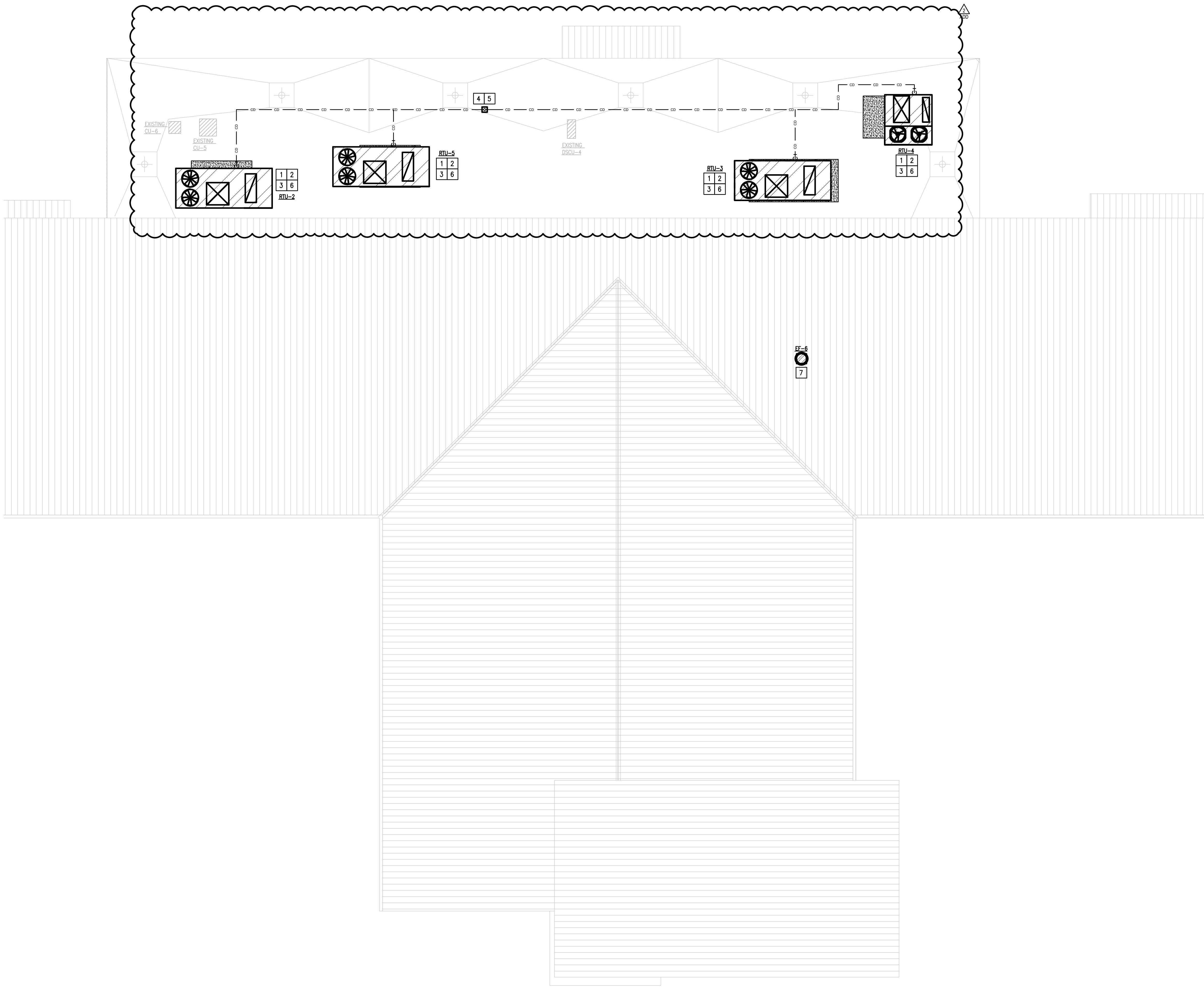
NOTES:  
 1) REMOVE EXISTING CIRCUIT BREAKER AND PROVIDE NEW TO MATCH NEW MOCP. PROVIDE UL LISTED UNIT FROM EXISTING MANUFACTURER (SIEMENS). MATCH EXISTING KAIC.  
 2) RETAIN AND REUSE EXISTING RACEWAY.  
 3) RETAIN AND REUSE EXISTING CIRCUIT BREAKER.

PANELBOARD "HA4" (EXISTING); SIEMENS TYPE P4 800A, 277/480V, 30, 4W.

01 IDEA PHARR AREA C  
 MECHANICAL & ELECTRICAL RENOVATION FLOOR PLAN  
 SCALE: 1/8" = 1'-0"



PHARR IDEA ACADEMY  
 KEYPLAN



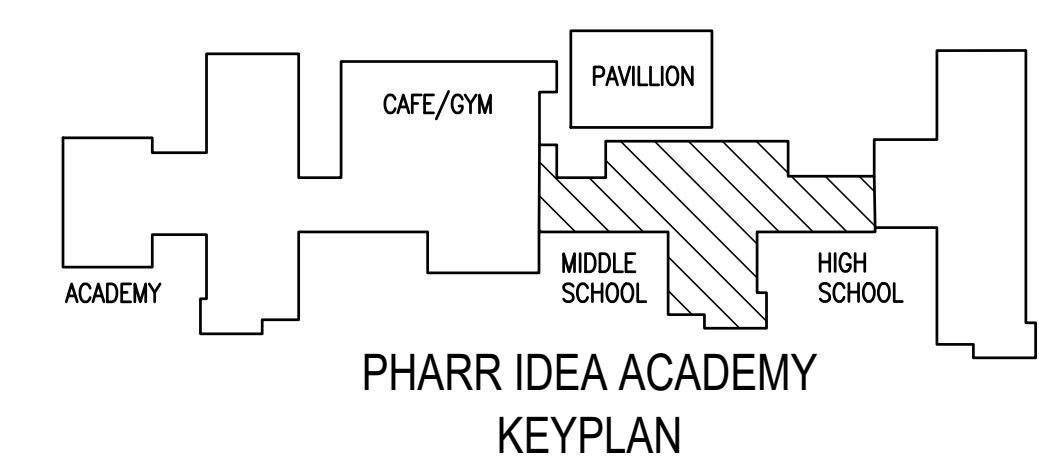
**LEGEND**

	EXISTING EQUIPMENT TO REMAIN
	NEW EQUIPMENT
	PIPING TO BE INSTALLED
	ROOF PATCHING AREA

**MECHANICAL KEYED NOTES:**

- 1 PROVIDE NEW RTU ON NEW ROOF CURB AS SCHEDULED. ORIENT RTU'S TO OPTIMIZE CONNECTION TO EXISTING DUCTWORK. SEAL ALL OPENINGS AND ENSURE THAT INSTALLATION IS WEATHER-TIGHT. PROVIDE COPPER CONDENSATE DRAIN LINES WITH P-TRAPS AND CONNECT TO EXISTING CONDENSATE SYSTEM. PROVIDE PIPING SUPPORTS AS DETAILED. DEMOLISH EXISTING CURB AND PROVIDE NEW ROOF CURB TO INSTALL EQUIPMENT ON ROOF. SECURE EQUIPMENT TO ROOF CURB AND TO ROOF STRUCTURE AS PER DIV. 7 SPECIFICATIONS. ATTACHMENTS SHALL BE CAPABLE OF WITHSTANDING THE LOCAL WIND PRESSURES. PROVIDE NEW DDC CONTROLS FOR RTU AS SCHEDULED. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
- 2 PROVIDE CONVENIENCE ELECTRICAL OUTLET AT INDICATED RTU. COORDINATE WITH EQUIPMENT MANUFACTURER. COORDINATE WITH ELECTRICAL CONTRACTOR.
- 3 CONNECT EXISTING FULL SIZE DUCT WORK FROM CEILING SPACE BELOW TO NEW RTU SA AND RA OPENINGS. TRANSITION AS NECESSARY.
- 4 ROUTE FULL SIZE CONDENSATE TO EXISTING ROOF PENETRATION SYSTEM. SEE ASSOCIATED DETAIL. COORDINATE INSTALLATION WITH PLUMBING CONTRACTOR. PROVIDE COPPER CONDENSATE PIPING ON ROOF AND PROVIDE SUPPORTS AS PER DETAIL. REFER TO DETAIL SHEET. (TYPICAL)
- 5 PIPES SHALL BE TYPE L, DRAWN-TEMPER COPPER TUBING, WROUGHT-COPPER FITTINGS, AND SOLDERED JOINTS. PIPES SHALL BE SIZED TO MATCH EXISTING OR PER HVAC MANUFACTURER'S RECOMMENDATION, WHICHEVER IS LARGER. CONDENSATE AND EQUIPMENT DRAIN WATER INSULATION SHALL BE 3/4 INCH THICK FLEXIBLE ELASTOMERIC TYPE WITH VAPOR RETARDER, AND PAINTED FINISH.
- 6 PATCH/REPAIR ROOF AS PER SPECIFICATIONS. HATCHED AREA AT THIS APPROXIMATE LOCATION REPRESENTS ROOF PATCHING WORK. FIELD VERIFY EXTENTS OF ROOF PATCHING. PATCH/REPAIR ROOF UPON DEMOLITION OF EXISTING RTU AND ADJUSTMENT OF OPENING FOR NEW RTU.
- 7 PROVIDE NEW EXHAUST FAN ON NEW ROOF CURB AS SCHEDULED. REFER TO STRUCTURAL FOR STRUCTURAL REINFORCEMENT INFORMATION. ATTACHMENTS SHALL BE CAPABLE OF WITHSTANDING THE LOCAL WIND PRESSURES. CONNECT AND EXTEND AS NEEDED NEW EXHAUST DUCTWORK BELOW TO NEW EXHAUST FAN. PROVIDE WINDSTORM CERTIFICATION OF EXHAUST FAN INSTALLATION. SEE SCHEDULES AND DETAILS FOR MORE INFORMATION. REFER TO DIV 23 FOR TIE-IN TO EXISTING BAS.

**01 IDEA PHARR AREA C  
MECHANICAL & ELECTRICAL RENOVATION ROOF PLAN**  
SCALE: 1/8" = 1'-0"



NO: REVISION: BY:

	5/2/2024	ETHOS
	5/3/2024	ETHOS

CSP # 24-MRMU-0424

TEXAS  
IDEA PUBLIC SCHOOLS  
MIDDLE RGV MECHANICAL UPGRADES

PHARR

1126 SOUTH COMMERCE ST.  
HARLINGEN, TX  
PHONE: 361-205-2435  
TEXAS REGISTERED  
ENGINEERING FIRM  
E-15998

DATE: APRIL 29, 2024  
CHECKED BY: B.B.  
DRAWN BY: D.G.  
PROJECT NO.: 23V77  
CAD FILE:  
SHEET: **ME3.8**



LEGEND	
	EXISTING EQUIPMENT TO BE DEMOLISHED
	EXISTING DUCTWORK TO BE DEMOLISHED
	EXISTING DUCTWORK TO REMAIN
	EXISTING SUPPLY DIFFUSER TO BE REMAIN
	EXISTING RETURN AIR GRILLE TO REMAIN
	EXISTING EQUIPMENT TO REMAIN
	CEILING REMOVAL

**MECHANICAL KEYED NOTES:**

- 1 DEMOLISH EXISTING EF AND CONTROLS IN THIS APPROXIMATE LOCATION. COORDINATE WITH CONTROLS CONTRACTOR PRIOR TO DEMOLITION.
- 2 TEMPORARILY REMOVE THE CEILING AROUND THE AREA WHERE THE EXISTING EXHAUST FAN IS TO BE REPLACED. RESTORE THE CEILING BACK TO ITS ORIGINAL CONDITION AFTER REPLACEMENT OF EXHAUST FAN.
- 3 DEMOLISH EXISTING AIR COOLED CONDENSING UNIT ALONG WITH ITS ASSOCIATED REFRIGERANT PIPING, PIPING INSULATION, AND REFRIGERANT LINE SUPPORTS.
- 4 DEMOLISH PORTION OF EXISTING DUCTWORK AS SHOWN AT THIS APPROXIMATE LOCATION. PREPARE FOR INSTALLATION OF NEW MOTORIZED DAMPERS AND MANUAL DAMPERS, REFER TO NEW PLAN FOR MORE INFORMATION.
- 5 PRIOR TO DEMOLITION OF OUTSIDE AIR DUCT, DOCUMENT EXISTING CONDITION AND SUBMIT REPORT TO EOR (ENGINEER OF RECORD) FOR ANALYSIS. AWAIT RESPONSE FROM ENGINEER BEFORE PROCEEDING WITH DEMOLITION WORK.

**ELECTRICAL KEYED NOTES:**

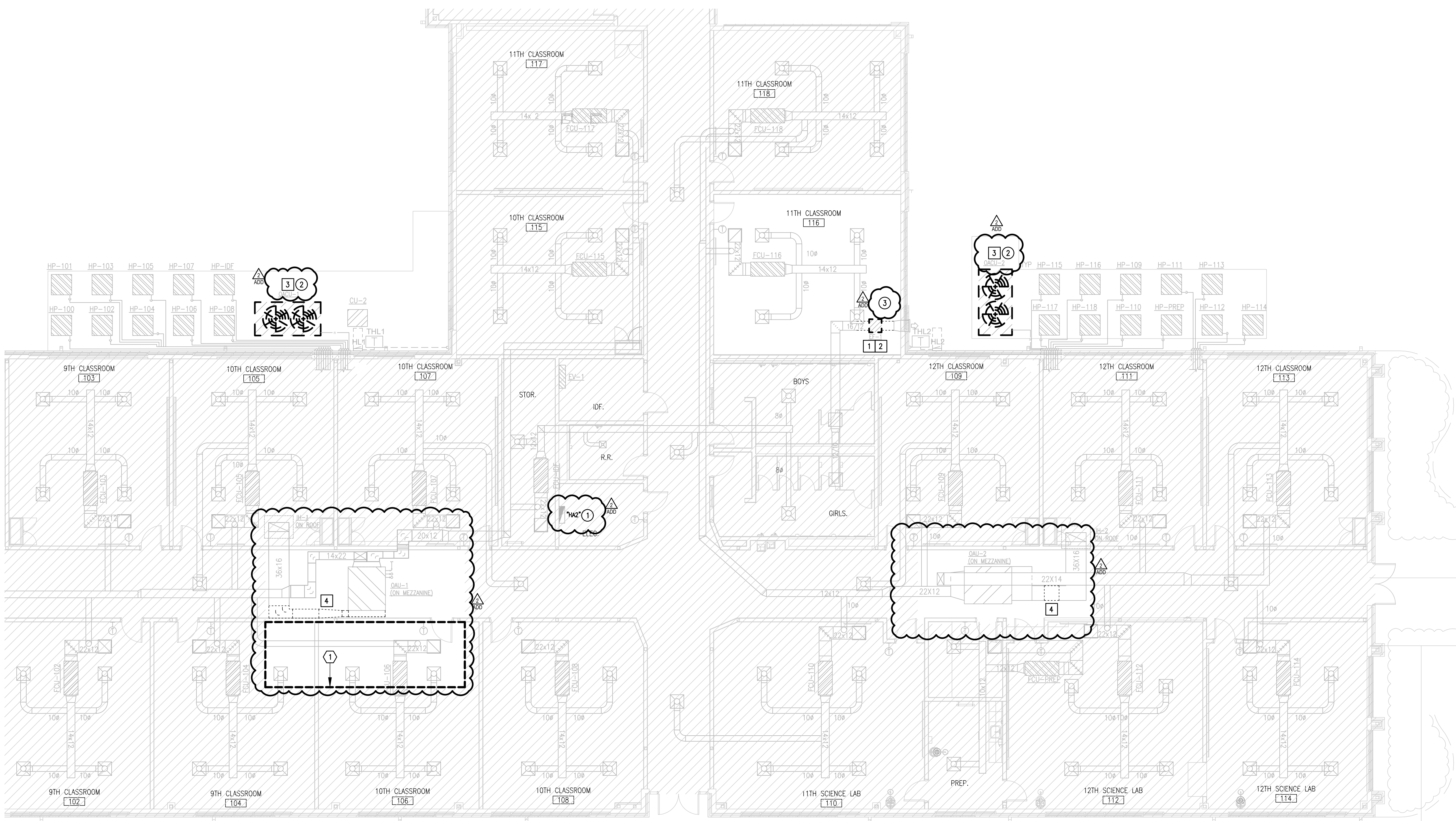
- 1 APPROXIMATE LOCATION OF EXISTING PANELBOARD SERVING HVAC EQUIPMENT.
- 2 DISCONNECT EXISTING HVAC EQUIPMENT FOR REPLACEMENT. SEE EQUIPMENT CONNECTION SCHEDULE.
- 3 TEMPORARILY DISCONNECT EXISTING EF FOR INSTALLATION OF A NEW EF. RETAIN AND REUSE EXISTING BRANCH CIRCUIT.

**CEILING DEMO GENERAL NOTES**

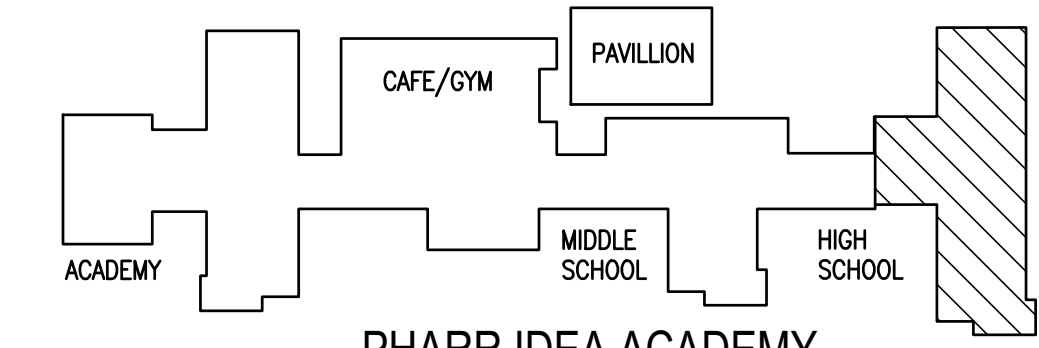
1. PRIOR TO DEMOLITION, IN CEILINGS SCHEDULED TO BE REMOVED, PREPARE REFLECTED CEILING PLAN SKETCH SHOWING LOCATIONS OF ALL CEILING COMPONENTS AND DEVICES TO BE RE-USED INCLUDING BUT NOT LIMITED TO: EXISTING LIGHT FIXTURES, SPEAKERS, FIRE ALARM DEVICES, EMERGENCY LIGHTING, ETC. IF ANY OF THE ABOVE ITEMS ARE IN NON-WORKING CONDITION, SUBMIT A WRITTEN REPORT TO OWNER/ENGINEER.
2. CONTRACTOR TO EVALUATE CEILING GRID PRIOR TO DEMOLITION AND DOCUMENT ALL BROKEN, CRACKED, MISSING TILES, ETC. AND PROVIDE REPORT TO OWNER AND ENGINEER.

**CEILING DEMO KEYNOTES:**

- 1 TEMPORARILY REMOVE EXISTING CEILING TILES/GRID, LIGHT FIXTURES, FIRE ALARM DEVICES, SENSORS, ETC. AS NECESSARY FOR DEMOLITION AND PROVISION OF NEW DUCTWORK ASSOCIATED WITH OAU-1 AND OTHER MEP SYSTEMS (FIRE DAMPERS, WATER PIPING, ELECTRICAL CONDUITS, ETC.) AND RE-INSTALL AFTER WORK ABOVE CEILING HAS BEEN COMPLETED.



IDEA PHARR AREA D  
 01 MECHANICAL & ELECTRICAL DEMOLITION FLOOR PLAN  
 SCALE: 1/8" = 1'-0"



PHARR IDEA ACADEMY  
 KEYPLAN



EQUIPMENT CONNECTION SCHEDULE:

DESIGN	NEW MCA	EXISTING MOCP	NEW MOCP	VOLTAGE	EXISTING MEANS OF DISCONNECT	NEW MEANS OF DISCONNECT	EXISTING BRANCH CIRCUIT (75' COPPER)	NEW BRANCH CIRCUIT (75' COPPER)	EXISTING POWER SOURCE
BASE BID OACU-3	59	90	1) 80	480V/3PHASE	100A, 3P3F, 600V, NEMA 3R	2) RETAIN EXISTING	1" - 3#4 & #6G	RETAIN EXISTING	HA2
BASE BID OACU-4	59	90	1) 80	480V/3PHASE	100A, 3P3F, 600V, NEMA 3R	2) RETAIN EXISTING	1" - 3#4 & #6G	RETAIN EXISTING	HA2

GENERAL NOTES:  
 A) LOCATE EQUIPMENT MEANS OF DISCONNECT WITHIN EQUIPMENT SIGHT. DO NOT INSTALL BELOW DUCTWORK OR PLUMBING LINES.  
 B) PROVIDE NEW BRANCH CONNECTION FROM DISCONNECT TO EQUIPMENT. TYPICAL FOR ALL NEW HVAC EQUIPMENT.

NOTES:  
 1) RETAIN AND REUSE EXISTING CIRCUIT BREAKER.  
 2) REMOVE EXISTING FUSUS AND PROVIDE NEW 80A FUSES.

PANELBOARD "HA2" (EXISTING): SIEMENS TYPE P4 800A, 277/480V, 30, 4W.

LEGEND

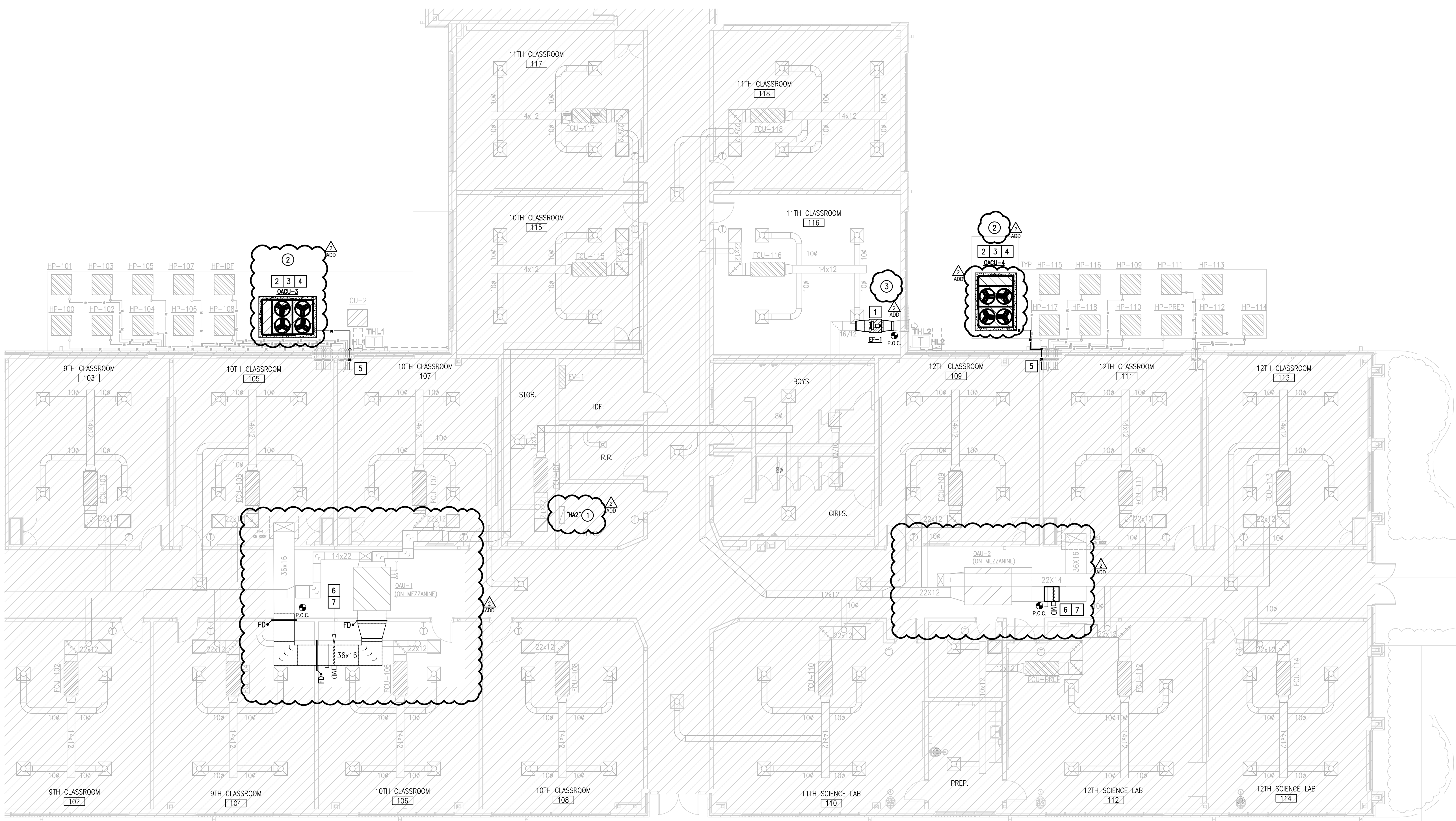
	NEW EQUIPMENT TO BE INSTALLED
	NEW DUCTWORK TO BE INSTALLED
	EXISTING DUCTWORK TO REMAIN
	EXISTING SUPPLY DIFFUSER TO BE REMAIN
	EXISTING RETURN AIR GRILLE TO REMAIN
	EXISTING EQUIPMENT TO REMAIN
	PIPING TO BE INSTALLED

MECHANICAL KEYED NOTES:

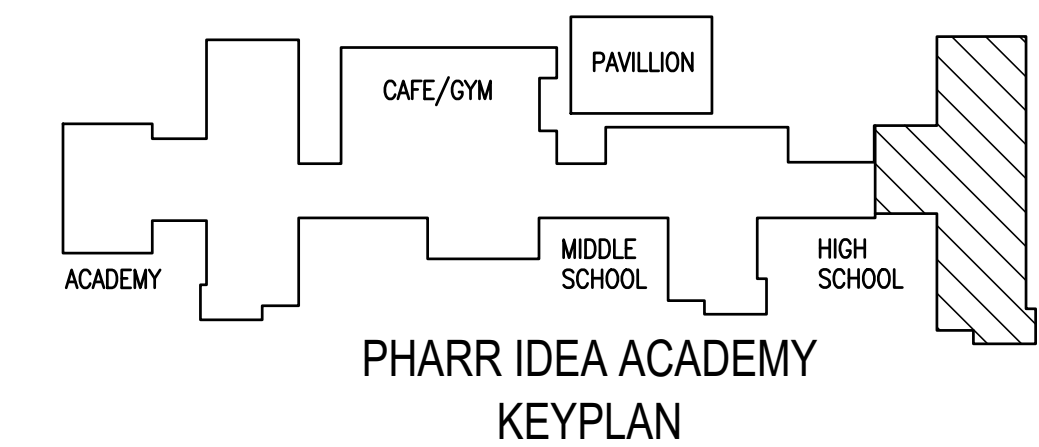
- 1 PROVIDE NEW EXHAUST FAN AT THIS APPROXIMATE LOCATION. PROVIDE NEW DUCTWORK TRANSITION AS SHOWN. REFER TO PROVIDED SCHEDULE AND TAB SPECIFICATIONS FOR MORE INFORMATION.
- 2 PROVIDE NEW AIR COOLED CONDENSING UNIT AND INSULATED REFRIGERANT PIPING PER SPECIFICATIONS. MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCES AND PROVIDE NEW 4" HIGH HOUSEKEEPING CONCRETE PAD FOR NEW EQUIPMENT. PAD SHALL BE MINIMUM 6" LARGER THAN EQUIPMENT FOOTPRINT ON ALL SIDES. REFRIGERANT PIPING SHOWN IS STRICTLY SCHEMATIC. VERIFY NUMBER OF CIRCUITS AND PIPE SIZES WITH MANUFACTURER'S DATA. BOLT EQUIPMENT DOWN TO CONCRETE SLAB. ATTACHMENT SHALL BE CAPABLE OF WITHSTANDING THE LOCAL WIND PRESSURES.
- 3 PROVIDE NEW REFRIGERANT LINE SUPPORTS. SEE ASSOCIATED DETAIL (TYPICAL).
- 4 PROVIDE NEW 1" INSULATION ON ALL REFRIGERANT LINES BOTH NEW AND EXISTING. PROVIDE ALUMINUM JACKET ON EXPOSED REFRIGERANT LINES. SEE SPECIFICATIONS. PROVIDE REFRIGERANT LINE SUPPORTS PER SPECIFICATIONS. SEE ASSOCIATED DETAIL.
- 5 RETAIN EXISTING SLEEVE AT ALL PENETRATIONS PER SPECIFICATIONS WHERE POSSIBLE. SEAL AROUND NEW PIPING WITH FIRE PROOF CAULKING. PROVIDE NEW ESCUTCHEON PLATES AND FLASHING AROUND PENETRATION BOTH INSIDE AND OUTSIDE TO PROVIDE FINISHED LOOK WHERE NECESSARY.
- 6 PROVIDE MANUAL VOLUME DAMPER AND MOTORIZED DAMPER AT OUTSIDE AIR DUCT AS SHOWN, REFER TO SEQUENCE OF OPERATIONS FOR MORE INFORMATION. COORDINATE WITH ELECTRICAL AND GENERAL CONTRACTOR.
- 7 CONNECT NEW DUCTWORK INTO EXISTING DUCTWORK AT THIS APPROXIMATE LOCATION.

ELECTRICAL KEYED NOTES:

- 1 APPROXIMATE LOCATION OF EXISTING PANELBOARD SERVING HVAC EQUIPMENT.
- 2 CONNECT NEW HVAC EQUIPMENT. SEE EQUIPMENT CONNECTION SCHEDULE.
- 3 CONNECT NEW EF. RETAIN AND REUSE EXISTING BRANCH CIRCUIT.



IDEA PHARR AREA D  
 01 MECHANICAL & ELECTRICAL RENOVATION FLOOR PLAN  
 SCALE: 1/8" = 1'-0"



PHARR IDEA ACADEMY  
 KEYPLAN



**MECHANICAL KEYED NOTES:**

- ① DUCTWORK ROUTING SHOWN IS DIAGRAMMATIC IN NATURE. FIELD-VERIFY STRUCTURE AND SPACE AVAILABILITY PRIOR TO SUBMITTING SHOP DRAWINGS. COORDINATE WITH ARCHITECT AND ENGINEER IN CASE OF CONFLICTS. (TYPICAL)
- ② PROVIDE ALL SUPPLY AND RETURN AIR DUCTWORK LOCATED EXPOSED OUTDOORS AS PER SPECIFICATIONS.
- ③ SECURE EXPOSED VERTICAL DUCTWORK TO EXTERIOR WALL. OUTDOORS SUPPORTS AND ATTACHMENTS SHALL BE CAPABLE OF WITHSTANDING THE LOCAL WIND PRESSURES.
- ④ ROUTE RETURN DUCTWORK TRANSITION FROM RTU-1 TO KITCHEN CEILING SPACE BELOW AS SHOWN TO AVOID CONFLICT WITH EXISTING STRUCTURAL JOIST.



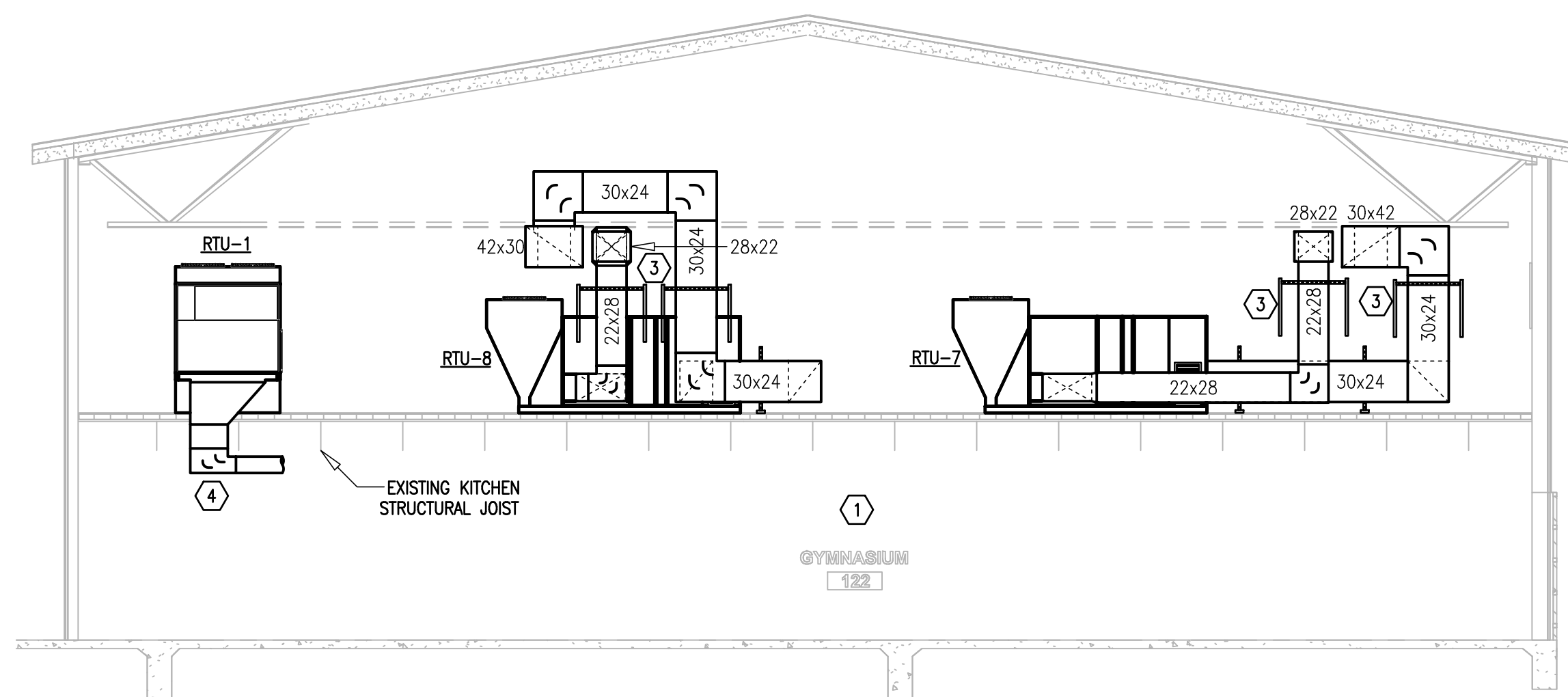
**01 GYM RTU-7 ELEVATION**

SCALE: 1/8" = 1'-0"



**02 KITCHEN RTU-1 & GYM RTU-8 ELEVATION**

SCALE: 1/8" = 1'-0"



**03 GYM & KITCHEN RTU'S ELEVATION**

SCALE: 1/8" = 1'-0"





**IDEA SAN JUAN - EXISTING AIR HANDLING UNIT SCHEDULE**

MARK	UNIT	EXISTING MANUFACTURER	EXISTING MODEL NUMBER	EXISTING	EXISTING	ESP	FAN	EXISTING MOTOR HP	ELECTRICAL	STING COOLING				WEIGHT	NOTES
										TOTAL BTUH	SENS. BTUH	EAT DBWB (F)	LAT DBWB (F)		
AHU-1	HORIZONTAL DX SPLIT	YORK	XTI-051X090-FALA146A	11,200	3,975	1.75	-	15	460-3-60	488,123	284,014	74.8/68.97	55/55	1700	ALL

NOTES:  
 1. ALL MODEL NUMBERS HAVE BEEN FIELD VERIFIED AT THE TIME THESE CONSTRUCTION DOCUMENTS WERE COMPILED. ANY CHANGES MADE IN THE FIELD AFTER RELEASE OF THESE DOCUMENTS AND PRIOR TO CONSTRUCTION NEED TO BE REPORTED TO THE ENGINEER OF RECORD PRIOR TO ANY WORK BEING DONE FOR ASSOCIATED CHANGE.

**IDEA SAN JUAN MINI-SPLIT INDOOR UNIT SCHEDULE (BASE BID)**

MARK	SERVED BY	LOCATION	MIN CFM	MAX CFM	ELECTRICAL V-PH-HZ	COOLING		WEIGHT (LBS)	NOTES	MANUFACTURER	MODEL NUMBER
						TOTAL (BTU/H)	EAT DBWB				
WAC-1	ACCU-WAC-1	IDF-B109	265	385	208-1-60	12,000	80/67	28	ALL	TRANE	TPKA0A0121LA10A

NOTES:  
 1. MANUFACTURER AND MODEL NUMBER LISTED ARE "OR APPROVED EQUAL". SEE SPECIFICATIONS FOR APPROVED MANUFACTURERS AND SUBSTITUTION PROCEDURES.  
 2. PROVIDE INVERTER DRIVEN COMPRESSOR FOR IMPROVED HUMIDITY CONTROL.  
 3. PROVIDE MOUNTING BRACKET.  
 4. PROVIDE WALL MOUNTED AND WIRED 7-DAY PROGRAMMABLE T-STAT IN LIEU OF WIRELESS REMOTE.  
 5. ELECTRICAL CONTRACTOR TO PROVIDE SINGLE CIRCUIT POWER FROM SERVICE TO OUTDOOR UNIT AND WIRE TO INDOOR UNIT.

**IDEA SAN JUAN MINI-SPLIT CONDENSER SCHEDULE (BASE BID)**

MARK	SERVING	TOTAL COOLING (BTU/H)	COND DB	ELECTRICAL V-PH-HZ	SEER ARI CONDITIONS	COMPR TYPE	MCA	MOCP	WEIGHT (LBS)	NOTES	MANUFACTURER	MODEL NUMBER

NOTES:  
 1. ELECTRICAL CONTRACTOR TO PROVIDE SINGLE CIRCUIT POWER FROM SERVICE TO OUTDOOR UNIT AND WIRE TO INDOOR UNIT.  
 2. PROVIDE CONDENSER COIL CORROSION PROTECTION.  
 3. CONTRACTOR TO PROVIDE FRAMING STRUCTURE FOR MOUNTING CONDENSING UNIT. REFER TO STRUCTURAL.  
 4. PROVIDE INSULATION FOR BOTH LIQUID AND SUCTION LINES.  
 5. INSTALL PER MANUFACTURERS INSTRUCTIONS AND PIPING RECOMMENDATIONS.  
 6. 1 YEAR PARTS WARRANTY AND 10 YEAR COMPRESSOR PARTS LIMITED WARRANTY.

**IDEA SAN JUAN - EXHAUST FAN SCHEDULE (BASE BID)**

MARK	SERVING	TYPE	ELECTRICAL V-PH-HZ	DRIVE	CFM	INPUT WATTS	MOTOR HP	RPM	E.S.P. IN. H2O	SOUND IN SONES	WEIGHT (LBS)	CONTROL NOTES	NOTES	MANUFACTURER	MODEL NUMBER

NOTES:  
 1. PROVIDE FACTORY MOUNTED DISCONNECT.  
 2. MANUFACTURER AND MODEL NUMBER LISTED ARE "OR APPROVED EQUAL." REFER TO SPECIFICATIONS.  
 3. PROVIDE OSHA MOTOR AND BELT GUARD.  
 4. PROVIDE AUTOMATIC BELT TENSIONER.  
 5. PROVIDE INSULATED HOUSING FOR SOUND ATTENUATION.  
 6. PROVIDE ALL ALUMINUM BACKDRAFT DAMPER AND SPRING TYPE VIBRATION ISOLATORS FOR SUSPENDED INLINE TYPE FANS.  
 7. PROVIDE FIELD INSTALLED FAN SPEED CONTROLLER. COORDINATE INSTLALATION WITH ELECTRICAL CONTRACTOR.

CONTROL NOTES:  
 A. FAN OPERATION SHALL BE INTERLOCKED WITH FUME HOOD LIGHT SWITCH. COORDIANTE WITH ELECTRICAL CONTRACTOR.

**IDEA SAN JUAN - FUME HOOD SCHEDULE (BASE BID)**

MARK	SUPER STRUCTURE	HOOD OPENING	STATUS	ELECTRICAL V-PH-HZ	DRIVE	CFM	INPUT WATTS	MOTOR HP	RPM	E.S.P. IN. H2O	SOUND IN SONES	WEIGHT (LBS)	NOTES	MANUFACTURER	MODEL NUMBER

NOTES:  
 1. MANUFACTURER AND MODEL NUMBER LISTED ARE "OR APPROVED EQUAL." REFER TO SPECIFICATIONS.  
 2. FUME HOOD EXHAUST DUCT TO BE PROVIDED BY DIV. 23.

**IDEA PHARR - DX ROOF TOP UNIT SCHEDULE**

MARK	NOMINAL TONS	CONFIG.	EXISTING MANUFACTURER & MODEL NUMBER	SUPPLY CFM	OA CFM	ESP (INCHES)	MIN. HP	MCA	MOCP	ELECTRICAL V-PH-HZ	AIR ON COND.	COOLING				HEATING		CONVENIENCE OUTLETS	MIN. EER/SEER	WEIGHT (LBS.)	NOTES	MANUFACTURER	MODEL NUMBER
												TOTAL BTUH	SENSIBLE BTUH	EAT DBWB	LAT DBWB	KW	STG.						
RTU-1 (BASE BID)	18.5	MZ WITH FPVAV	TRANE THD180F4R0A00H0C50 006A106A00000000000000	4500	1500	1.5	3	38	60	460-3-60	100	194,984	109,257	77.6/68.9	55.4/55.4	AT VAV BOXES	AT VAV BOXES	FACTORY INSTALLED & UNIT POWERED	20.2 IEER	3500	ALL	DAIKIN	DPS018
RTU-2 (ALTERNATE #1)	20	MZ WITH FPVAV	TRANE THD210F4R0A00H0C50 006A106A00000000000000	5800	1350	1.5	5	49.4	70	460-3-60	100	245,040	148,528	76.8/67.1	53.4/53.4	AT VAV BOXES	AT VAV BOXES	FACTORY INSTALLED & UNIT POWERED	19.7 IEER	3500	ALL	DAIKIN	DPS020
RTU-3 (ALTERNATE #2)	28	MZ WITH FPVAV	TRANE TCD380B40K1A1CE5000 0000HH500.0000	7500	2100	1.5	7.5	62.1	80	460-3-60	100	321,519	188,464	77.1/67.8	54.1/54.1	AT VAV BOXES	AT VAV BOXES	FACTORY INSTALLED & UNIT POWERED	17.9 IEER	3900	ALL	DAIKIN	DPS028
RTU-4 (ALTERNATE #2)	12.5	MZ WITH FPVAV	TRANE THD150F4R0A00H0C50 006A106A00000000000000	3250	1235	1.5	4	22.5	30	460-3-60	100	145,375	79,020	77.8/69.4	55.6/55.6	AT VAV BOXES	AT VAV BOXES	FACTORY INSTALLED & UNIT POWERED	18.0 IEER	2300	ALL	DAIKIN	DPS012
RTU-5 (BASE BID)	20	MZ WITH FPVAV	TRANE THD300F4R0A00H3C50 006A106A00000000000000	6000	1875	1.5	5	49.4	70	460-3-60	100	252,379	145,700	77.4/68.4	55.2/55.2	AT VAV BOXES	AT VAV BOXES	FACTORY INSTALLED & UNIT POWERED	19.7 IEER	3500	ALL	DAIKIN	DPS020
RTU-6 (ALTERNATE #1)	12.5	SINGLE ZONE VAV	TRANE THC120E4RGA0DC6C30 06B002A00E0000000000	4000	650	1	3.75	40	40	460-3-60	100	134,700	83,000	77.1/66.7	57.1/55.4	22.5	2	FACTORY INSTALLED & UNIT POWERED	14.6 IEER	1200	ALL	LENNOX	LCT150
RTU-7 (BASE BID)	20	SINGLE ZONE VAV	TRANE THD150F4R0A00H6C50 006B106A00000000000000	5750	2000	1.25	5	56.4	80	460-3-60	100	252,290	140,380	77.4/68.8	55.1/55.0	30	4	FACTORY INSTALLED & UNIT POWERED	19.4 IEER	3700	ALL	DAIKIN	DPS020
RTU-8 (BASE BID)	20	SINGLE ZONE VAV	TRANE THD150F4R0A00H6C50 006B106A00000000000000	5750	1900	1.25	5	56.4	80	460-3-60	100	251,378	141,087	77.3/68.6	54.9/54.8	30	4	FACTORY INSTALLED & UNIT POWERED	19.4 IEER	3700	ALL	DAIKIN	DPS020

NOTES:  
 1. PROVIDE COPPER CONDENSATE TRAP, TXV, HOT GAS REHEAT FOR SZVAV UNITS, AND FREEZE-STAT OPTIONS. PROVIDE NEW ROOF CURB WITH WINDSTORM CERTIFICATION.  
 2. HOODED/LOUVERED HAIL GUARDS, ECOATED CONDENSER COILS, MOTORIZED OA AND RA DAMPERS WITH ECONOMIZER CONTROL, INVERTER COMPRESSOR FOR MODULATING COOLING AND PRECISE DISCHARGE AIR TEMPERATURE CONTROL.  
 3. FOR LENNOX UNITS, PROVIDE SINGLE WALL CONSTRUCTION, POLYMER DRAIN PANS, 2" MERV 8 GALVANIZED PRE-FILTER FRAMES, AND HINGED ACCESS DOORS.  
 4. FOR DAIKIN UNITS, PROVIDE DOUBLE WALL CONSTRUCTION, SS DRAIN PAN, 2" MERV 8 GALVANIZED PRE-FILTER FRAMES, AND HINGED ACCESS DOORS. DO NOT PROVIDE EXHAUST OR RELIEF AIR OPENINGS.  
 5. PROVIDE FACTORY UNITARY CONTROLLERS AND BACNET INTERFACE. REFER TO EQUIPMENT SPECIFICATIONS AND CONTROLS SEQUENCE OF OPERATIONS FOR MORE INFORMATION.  
 6. EQUIPMENT MANUFACTURER, MECH. CONTRACTOR AND HVAC CONTROLS CONTRACTOR SHALL COORDINATE THE PROVISION AND INSTALLATION OF SENSORS TO ENSURE THESE ARE ALL PROVIDED PROPERLY ON THE PROJECT.  
 7. PROVIDE LOW AMBIENT CONTROLS TO MIN. 40-DEG. F.  
 8. HEATING KW IN RTU SCHEDULE IS RATED HEATING CAPACITY, NOT NOMINAL KW. FAN HP SHALL BE PER MFR'S RECOMMENDATION.  
 9. PROVIDE NON-FUSED DISCONNECT.  
 10. FOR RTUS 1-5: TRUE VAV OPERATION TO MODULATE FAN SPEED BASED ON DUCT STATIC PRESSURE SENSOR, CO2 BASED DCV USING RETURN DUCT MOUNTED CO2 SENSOR.  
 11. FOR RTUS 6: VAV OPERATION TO MODULATE FAN SPEED BASED ON SPACE T AND RH SENSORS, HOT GAS REHEAT COILS WITH TEMPERATURE CONTROL FOR DEHUMIDIFICATION, CO2 BASED DCV NOT REQUIRED.  
 12. FOR RTUS 7-8: VAV OPERATION TO MODULATE FAN SPEED BASED ON SPACE T AND RH SENSORS, MODULATING HOT GAS REHEAT COILS WITH TEMPERATURE CONTROL FOR DEHUMIDIFICATION, CO2 BASED DCV REQUIRED. PROVIDE SIDE DISCHARGE UNIT.  
 13. FACTORY MOUNTED VARIABLE SPEED DRIVE AND MOTOR, SHAFT GROUNDING RINGS FOR MZVAV UNITS ONLY.  
 14. PROVIDE FACTORY-INSTALLED FACTORY-POWERED CONVENIENCE ELECTRICAL OUTLETS ON INDICATED RTUS. SEE MECHANICAL ROOF PLANS FOR LOCATIONS. COORDINATE WITH ELECTRICAL CONTRACTOR.  
 15. PROVIDE UNIT MOUNTED SUPPLY AIR SMOKE DETECTORS IN UNITS LARGER THAN 2000 CFM.  
 16. PROVIDE INVERTER COMPRESSORS FOR DAIKIN UNITS. IF DIGITAL SCROLL OR STAGED UNITS ARE ALLOWED TO BID, PROVIDE 2" SPRING ISOLATION CURBS.  
 17. PROVIDE IBC COMPLIANT CURB AND ATTACHMENTS FROM UNIT TO CURB AND CURB TO STRUCTURE. EQUIPMENT OR CURB MANUFACTURER IS RESPONSIBLE FOR PROVIDING ENGINEERED DETAIL ANALYSIS OF:  
 1) ATTACHMENT OF EQUIPMENT TO CURB OR PAD.  
 2) CURB TO STRUCTURE.  
 3) CURB AND ATTACHMENT HARDWARE STRENGTH.  
 REFER TO STRUCTURAL DRAWINGS FOR ROOF SUBSTRATE DETAILS.  
 EQUIPMENT OR CURB MANUFACTURER IS ALSO RESPONSIBLE FOR PROVIDING ENGINEERED INSTALLATION DRAWINGS FOR ITEMS 1 AND 2 LISTED ABOVE.  
 BOTH, THE ENGINEERED ANALYSIS AND THE ENGINEERED INSTALLATION DRAWINGS SHALL BE PERFORMED SPECIFICALLY FOR THIS BUILDING AND PROJECT SITE AND STAMPED.

**IDEA PHARR AREA A - EXHAUST FAN SCHEDULE (BASE BID)**

MARK	SERVING	TYPE	ELECTRICAL V-PH-HZ	DRIVE	CFM	INPUT WATTS	MOTOR HP	RPM	E.S.P. IN. H2O	SOUND IN SONES	WEIGHT (LBS)	CONTROL NOTES	NOTES	MANUFACTURER	MODEL NUMBER
EF-2	RR 195 & 196	ROOF MOUNTED	115-1-60	BELT	750	-	1/4	1272	0.5	6.3	67.0	A	ALL	GREENHECK	GB-100

NOTES:  
 1. PROVIDE FACTORY MOUNTED DISCONNECT.  
 2. MANUFACTURER AND MODEL NUMBER LISTED ARE "OR APPROVED EQUAL." REFER TO SPECIFICATIONS.  
 3. PROVIDE OSHA MOTOR AND BELT GUARD.  
 4. PROVIDE AUTOMATIC BELT TENSIONER.  
 5. PROVIDE INSULATED HOUSING FOR SOUND ATTENUATION.  
 6. PROVIDE ALL ALUMINUM BACKDRAFT DAMPER AND SPRING TYPE VIBRATION ISOLATORS FOR SUSPENDED INLINE TYPE FANS.  
 7. PROVIDE FIELD INSTALLED FAN SPEED CONTROLLER. COORDINATE INSTLALATION WITH ELECTRICAL CONTRACTOR.

CONTROL NOTES:  
 A. CONNECT TO EXISTING DDC SYSTEM. RECREATE EXISTING CONTROL POINTS AND SCHEDULING WITH NEW EQUIPMENT.

**IDEA PUBLIC SCHOOLS  
 MIDDLE RGV MECHANICAL UPGRADES**



1128 SOUTH COMMERCE ST.  
 HARLINGEN, TX  
 PHONE: 361-205-3435  
 TEXAS REGISTERED  
 ENGINEERING FIRM  
 E-15998

DATE: APRIL 29, 2024

CHECKED BY: B.B.

DRAWN BY: D.G.

PROJECT NO.: 23V77

CAD FILE: .

SHEET:

**ME4.1**



**IDEA PHARR AREA B - EXHAUST FAN SCHEDULE (BASE BID)**

MARK	SERVING	TYPE	ELECTRICAL V-PH-HZ	DRIVE	CFM	INPUT WATTS	MOTOR HP	RPM	IN. H2O	SOUND IN SONES	WEIGHT (LBS)	CONTROL NOTES	NOTES	MANUFACTURER	MODEL NUMBER
EF - 3	RR 117 & 118	SUSPENDED IN-LINE	120-1-60	DIRECT	150	-	1/10	1120	0.26	4.3	49.0	A	ALL	GREENHECK	SQ-80-VG
EF - 4	RR 104	CEILING MOUNTED	120-1-60	DIRECT	75	17	-	950	0.3	0.9	17.0	A	ALL	GREENHECK	SP-A110
EF - 7	126 & 126A	SUSPENDED IN-LINE	120-1-60	DIRECT	465	-	1/4	991	0.41	7.4	50.0	A	ALL	GREENHECK	SQ-130HP-VG
EF - 8	RR 131 & 132	SUSPENDED IN-LINE	120-1-60	DIRECT	690	-	1-2	919	0.39	7.3	81.0	A	ALL	GREENHECK	SQ-140HP-VG

NOTES:

1. PROVIDE FACTORY MOUNTED DISCONNECT.
2. MANUFACTURER AND MODEL NUMBER LISTED ARE "OR APPROVED EQUAL." REFER TO SPECIFICATIONS.
3. PROVIDE OSHA MOTOR AND BELT GUARD.
4. PROVIDE AUTOMATIC BELT TENSIONER.
5. PROVIDE INSULATED HOUSING FOR SOUND ATTENUATION.
6. PROVIDE ALL ALUMINUM BACKDRAFT DAMPER AND SPRING TYPE VIBRATION ISOLATORS FOR SUSPENDED IN-LINE TYPE FANS.
7. PROVIDE FIELD INSTALLED FAN SPEED CONTROLLER. COORDINATE INSTALLATION WITH ELECTRICAL CONTRACTOR.

CONTROL NOTES:

- A. CONNECT TO EXISTING DDC SYSTEM. RECREATE EXISTING CONTROL POINTS AND SCHEDULING WITH NEW EQUIPMENT.

**IDEA PHARR AREA C - EXHAUST FAN SCHEDULE (BASE BID)**

MARK	SERVING	TYPE	ELECTRICAL V-PH-HZ	DRIVE	CFM	INPUT WATTS	MOTOR HP	RPM	IN. H2O	SOUND IN SONES	WEIGHT (LBS)	CONTROL NOTES	NOTES	MANUFACTURER	MODEL NUMBER
EF-6	RR 172 & 173	ROOF MOUNTED	115-1-60	BELT	750	-	1/4	1272	0.5	6.3	67.0	A	ALL	GREENHECK	GB-100

NOTES:

1. PROVIDE FACTORY MOUNTED DISCONNECT.
2. MANUFACTURER AND MODEL NUMBER LISTED ARE "OR APPROVED EQUAL." REFER TO SPECIFICATIONS.
3. PROVIDE OSHA MOTOR AND BELT GUARD.
4. PROVIDE AUTOMATIC BELT TENSIONER.
5. PROVIDE INSULATED HOUSING FOR SOUND ATTENUATION.
6. PROVIDE ALL ALUMINUM BACKDRAFT DAMPER AND SPRING TYPE VIBRATION ISOLATORS FOR SUSPENDED IN-LINE TYPE FANS.
7. PROVIDE FIELD INSTALLED FAN SPEED CONTROLLER. COORDINATE INSTALLATION WITH ELECTRICAL CONTRACTOR.

CONTROL NOTES:

- A. CONNECT TO EXISTING DDC SYSTEM. RECREATE EXISTING CONTROL POINTS AND SCHEDULING WITH NEW EQUIPMENT.

**IDEA PHARR AREA D - EXHAUST FAN SCHEDULE (BASE BID)**

MARK	SERVING	TYPE	ELECTRICAL V-PH-HZ	DRIVE	CFM	INPUT WATTS	MOTOR HP	RPM	IN. H2O	SOUND IN SONES	WEIGHT (LBS)	CONTROL NOTES	NOTES	MANUFACTURER	MODEL NUMBER
EF-1	BOYS & GIRLS RR	IN-LINE	115-1-60	BELT	750	-	1/3	1038	0.51	8.2	106.0	A	ALL	GREENHECK	BSQ-140HP

NOTES:

1. PROVIDE FACTORY MOUNTED DISCONNECT.
2. MANUFACTURER AND MODEL NUMBER LISTED ARE "OR APPROVED EQUAL." REFER TO SPECIFICATIONS.
3. PROVIDE OSHA MOTOR AND BELT GUARD.
4. PROVIDE AUTOMATIC BELT TENSIONER.
5. PROVIDE INSULATED HOUSING FOR SOUND ATTENUATION.
6. PROVIDE ALL ALUMINUM BACKDRAFT DAMPER AND SPRING TYPE VIBRATION ISOLATORS FOR SUSPENDED IN-LINE TYPE FANS.
7. PROVIDE FIELD INSTALLED FAN SPEED CONTROLLER. COORDINATE INSTALLATION WITH ELECTRICAL CONTRACTOR.

CONTROL NOTES:

- A. CONNECT TO EXISTING DDC SYSTEM. RECREATE EXISTING CONTROL POINTS AND SCHEDULING WITH NEW EQUIPMENT.

**IDEA PHARR - AREA D OUTSIDE AIR CONDENSING UNIT SCHEDULE (BASE BID)**

MARK	SERVING	EXISTING AHU MODEL NUMBER	REQUIRED AHU CFM	EXISTING AHU SERIAL NUMBER	TOTAL METUH	SUCTION F	COND DB	ELECTRIC V-PH-HZ	EER AT ARI	CAPACITY SCROLLS	MCA	MOCP	COMPRESSOR AMPS (RLA)	CONDENSER FAN MOTOR AMPS (FLA)	WEIGHT (LBS)	NOTES	MANUFACTURER MODEL NUMBER
ACCU-OA3	EXISTING OAU-1	AAON H3-DRA-3-0-162A	3575	201107-CJCD00467	299.4	45	100	460/3/60	11.3	2 Digital Scrolls	59	80	23.1 (ea)	1.8	1,542	ALL	AAON CFA-030
ACCU-OA4	EXISTING OAU-2	AAON H3-DLA-3-0-162A	3575	201107-CJCD00466	299.4	45	100	460/3/60	11.3	2 Digital Scrolls	59	80	23.1 (ea)	1.8	1,542	ALL	AAON CFA-030

NOTES:

1. MANUFACTURER AND MODEL NUMBER LISTED ARE "OR APPROVED EQUAL." SEE SPECIFICATIONS FOR APPROVED MANUFACTURERS AND SUBSTITUTION PROCEDURES.
2. PROVIDE LOUVER HAIL GUARD, LOW AMBIENT KIT, SIGHT GLASS, SERVICE VALVES, FILTER DRYER, SOLENOID VALVES, NEW OEM TXVS, ANTI-SHORT CYCLE TIMER, E-COATED CONDENSER COIL.
3. PROVIDE EVAPORATOR DEFROST CONTROLLER FOR MINIMUM CIRCUIT.
4. PROVIDE DIGITAL COMPRESSORS ON BOTH CIRCUITS, AND ELECTRIC UNLOADERS AND LIQUID LINE RECEIVERS, TO MATCH EXISTING DESIGN.
5. PROVIDE CONDENSER FAN VFD OPERATION FOR LOW AMBIENT TO (35F) AMBIENT.
6. EER SHALL EXCEED IECC MINIMUM EFFICIENCY AT DESIGN CONDITIONS.
7. INSTALL NEW REFRIGERANT LINES, INSULATE REFRIGERANT LINES AS PER SPECIFICATIONS. PROVIDE ALUMINUM METAL JACKETING AROUND INSULATION FOR ALL EXTERIOR EXPOSED LINES.
8. MOUNT ON EXISTING CONCRETE HOUSEKEEPING PAD AND MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCES.
9. PROVIDE NEW FACTORY OEM CONTROL SYSTEM WITH BACNET INTERFACE AND NEW CONTROL SENSORS.

**AIR DEVICE & DIFFUSER SCHEDULE**

SUPPLY AIR GRILLE (SD-1) DUCT MOUNTED				
PRICE HCD NC < 20	DESCRIPTION: ALUMINUM HIGH CAPACITY DRUM LOUVER SPIRAL DUCT MOUNTED & ADJUSTABLE BLADES AND VOLUME DAMPER			
CFM RANGE	NOMINAL DUCT SIZE INCHES (INLET)	FACE SIZE INCHES (INCLUDING FRAME)	DIFFUSER DIFFUSION PATTERN & CFM	NOTES
0 - 1200	24 X 12	INLET SIZE PLUS 1-3/4"	SD1-CFM	ALL

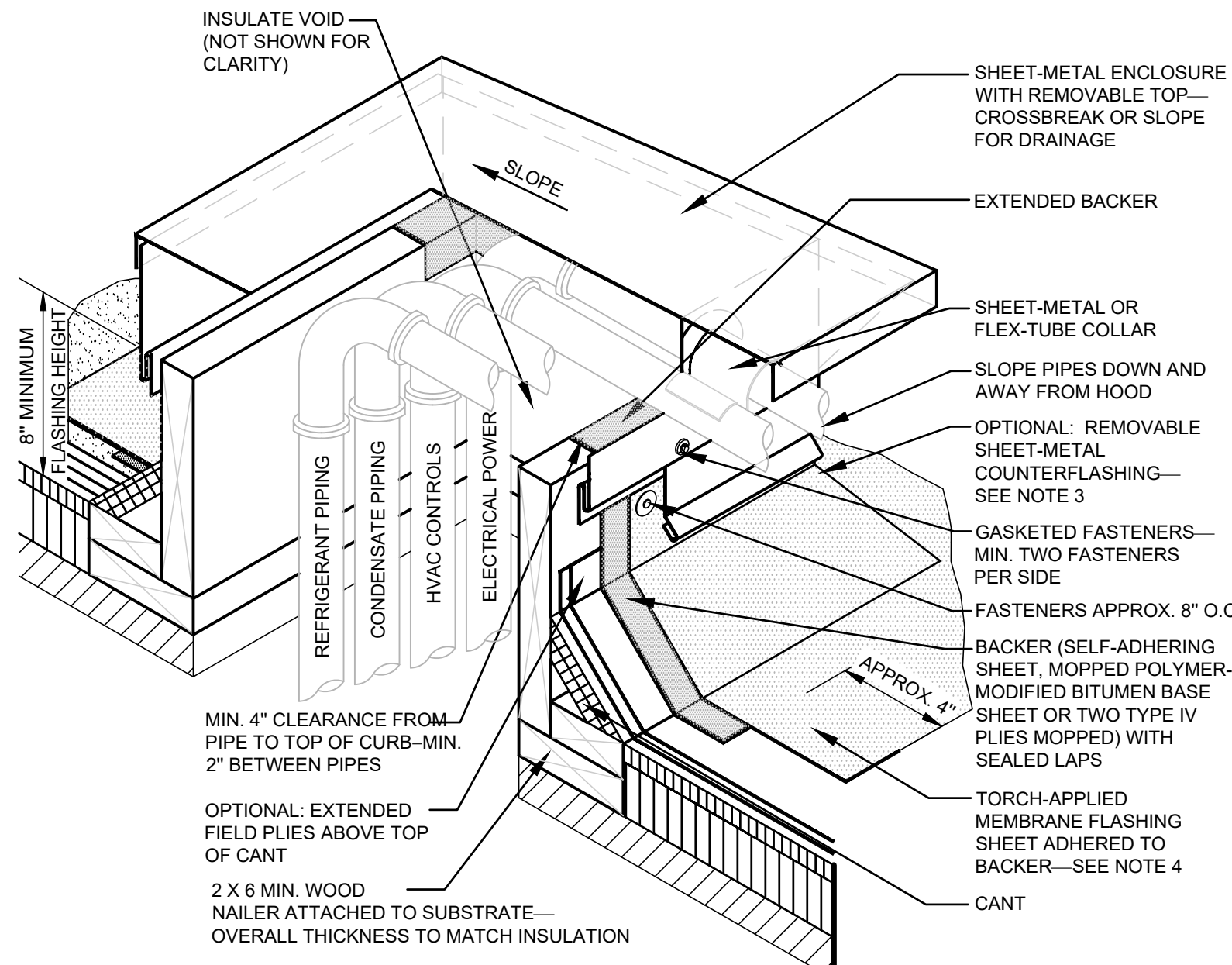
  

RETURN AIR GRILLE (RG-1) SIDE WALL				
TITUS 30RL NC < 20	DESCRIPTION: ALUMINUM GRID EGGCRATE RETURN GRILLE BORDER TYPE F (SURFACE MOUNT).			
CFM RANGE	FACE SIZE (INCHES) LENGTH X WIDTH	DIFFUSER DIFFUSION PATTERN & CFM	NOTES	
0-6000	42 X 30	RG1-CFM	1,4,5	

NOTES:

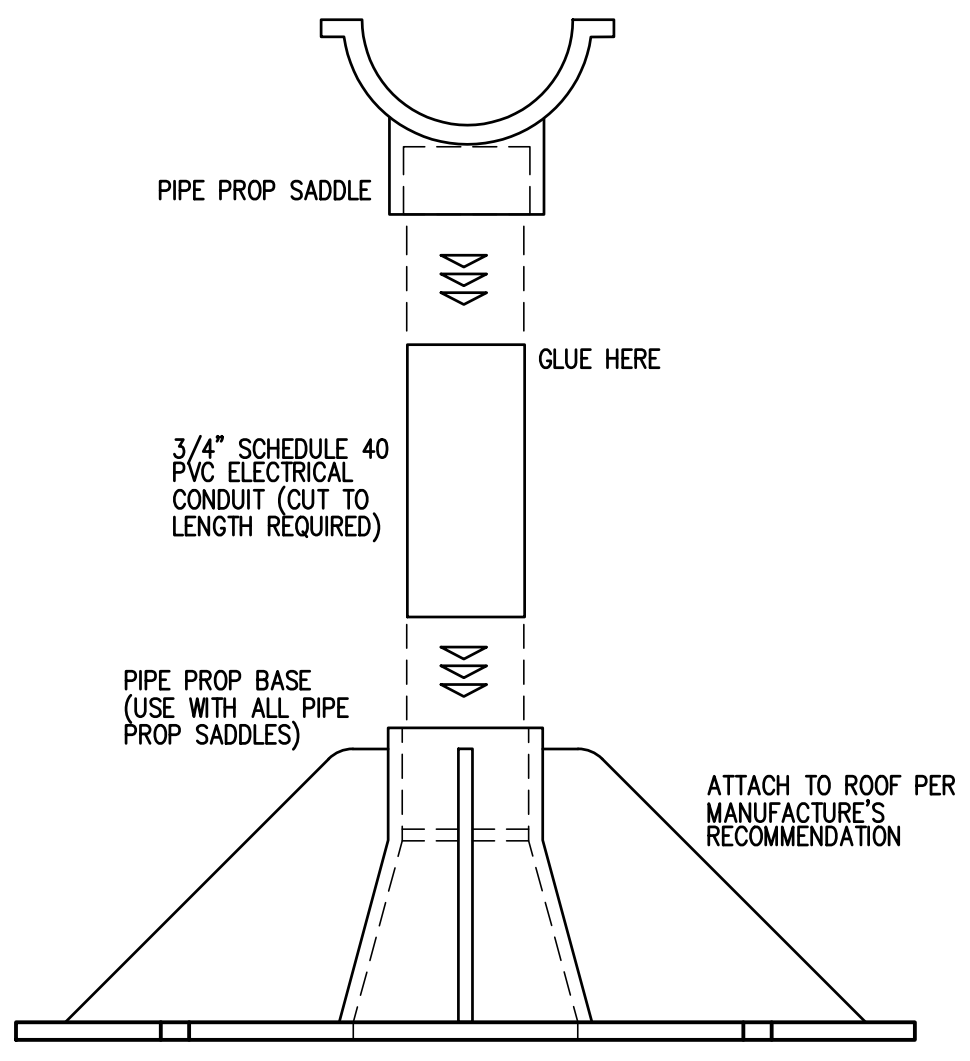
1. PROVIDE MANUFACTURER'S STANDARD BAKED WHITE ENAMEL FINISH.
2. PROVIDE FULL SIZE BACK PAN WITH DUCT ADAPTER.
3. INSULATE BACK PAN ON ALL SUPPLY AIR DIFFUSERS AND GRILLES.
4. PROVIDE MOUNTING FRAME TYPE COMPATIBLE WITH SCHEDULED CEILING OR WALL (SURFACE OR LAY-IN).
5. AIR DEVICES SHALL MATCH ARCHITECTURAL FINISH. COORDINATE COLOR WITH ARCHITECT.
6. PROVIDE GRILLE MOUNTED VOLUME DAMPER.



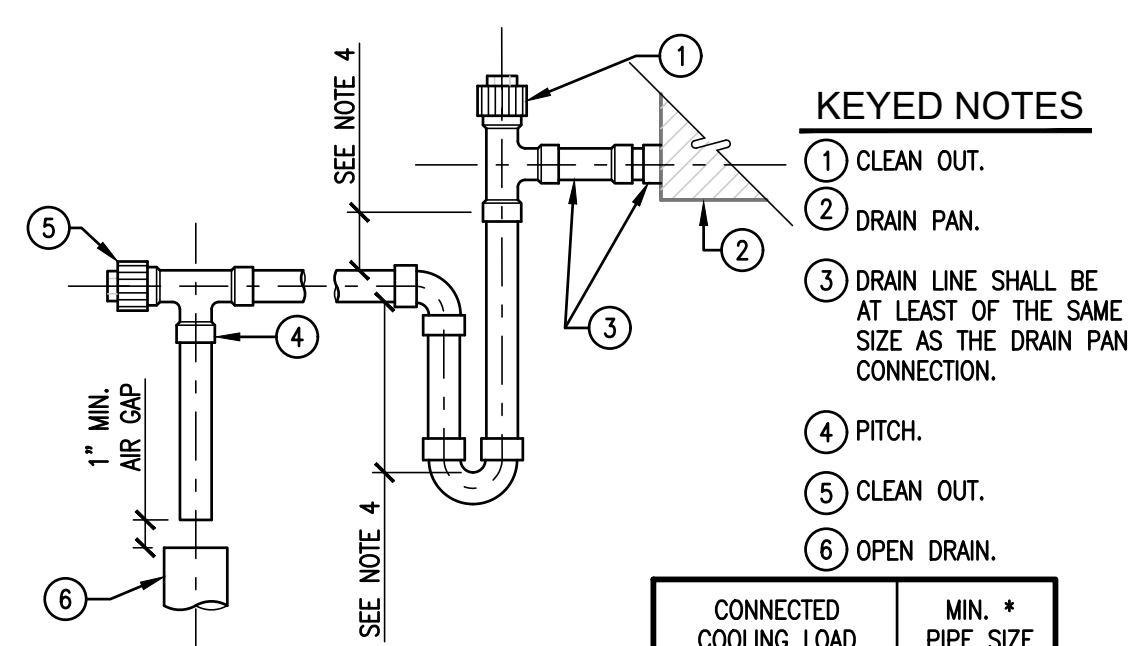


**NOTES:**  
 1. THIS DETAIL ILLUSTRATES ANOTHER METHOD OF ELIMINATING PITCH POCKETS AND AN OPTIONAL METHOD OF GROUPING PIPING THAT MUST PENETRATE THE ROOF.  
 2. MANY MANUFACTURERS OFFER PREFABRICATED BOOTS AND OTHER MATERIALS FOR THIS PURPOSE. SPECIFICS ABOUT THESE PROPRIETARY DESIGNS VARY GREATLY, AND INDIVIDUAL MANUFACTURERS' SPECIFICATIONS SHOULD BE CONSULTED FOR THEIR USE.  
 3. WHERE THE SHEET-METAL ENCLOSURE OVERLAPS THE BASE FLASHING AT LEAST 3 INCHES, THE REMOVABLE SHEET-METAL COUNTERFLASHING IS NOT REQUIRED.  
 4. WHEN POTENTIAL FIRE HAZARDS CAN BE MITIGATED, NRCA CONSIDERS IT ACCEPTABLE TO INSTALL TORCH-APPLIED POLYMER-MODIFIED BITUMEN SHEET OVER THE SPECIFIED BACKER FLASHING USING THE DIRECT TORCHING METHOD PROVIDED LOW OUTPUT (50,000 BTU OUTPUT OR LESS) TORCHING EQUIPMENT IS USED. WHEN POTENTIAL FIRE HAZARDS CANNOT BE ADEQUATELY MITIGATED, TORCH-APPLIED POLYMER-MODIFIED BITUMEN SHEET SHALL BE INSTALLED USING INDIRECT TORCHING METHODS, SUCH AS THE TORCH-AND-FLOP APPLICATION METHOD.  
 5. FOR ROOF SYSTEMS WITH FACTORY-APPLIED GRANULE SURFACING, PROPERLY PREPARE CAP SHEET TO RECEIVE FLASHING.  
 6. REFER TO THE INTRODUCTION OF THE CONSTRUCTION DETAILS CHAPTER FOR ADDITIONAL INFORMATION.

**01 HVAC PIPING ROOF PENETRATION DETAIL**  
 SCALE : NOT TO SCALE



**02 CONDENSATE PIPE SUPPORT DETAIL**  
 SCALE : NOT TO SCALE

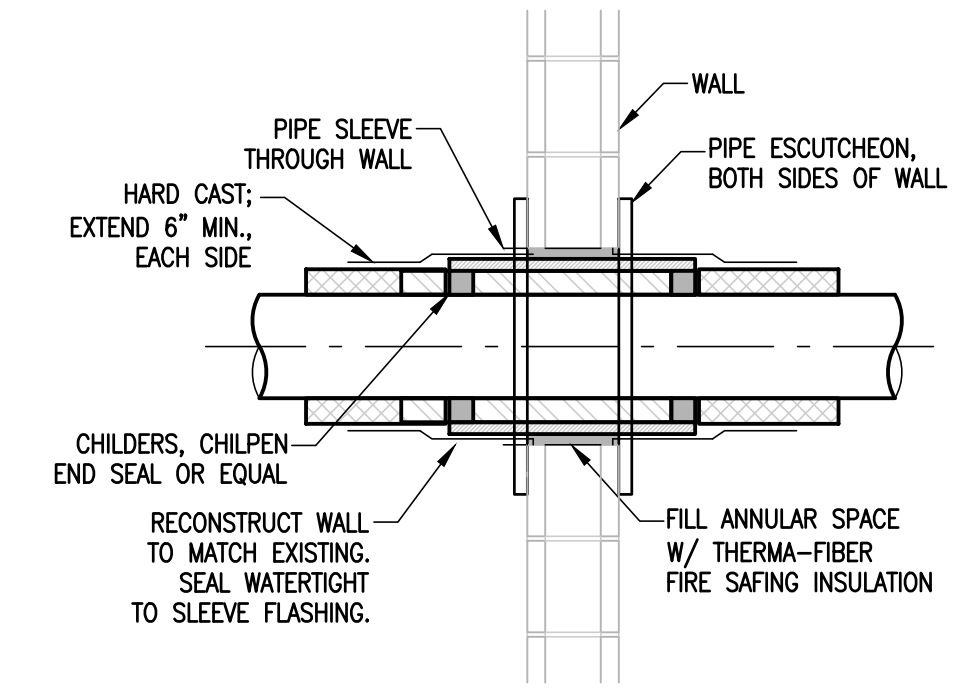


**NOTES:**  
 1. MANUALLY PRIME TRAP BEFORE START UP.  
 2. SUPPORT DRAIN LINES TO PREVENT SAG.  
 3. ALLOW SUFFICIENT SPACE BELOW PAN FOR TRAP AND PITCH TO DRAIN.  
 4. COORDINATE WITH MANUFACTURER OF AHU.

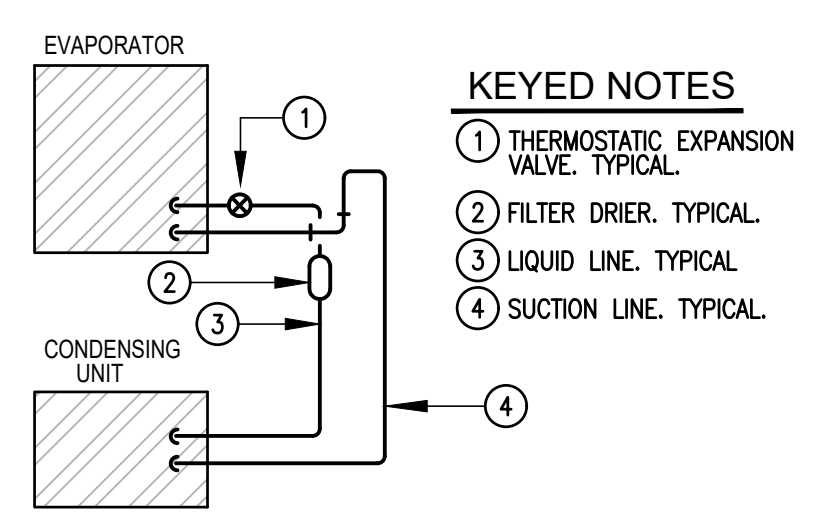
CONNECTED COOLING LOAD	MIN. PIPE SIZE
UP TO 2 TON	3/4"
2-5	1"
5-30	1-1/4"
30-50	1-1/2"
50-160	2"
160-300	3"
300-430	4"

\* NOT SMALLER THAN OUTLET SIZE.

**03 CONDENSATE DRAIN TRAP PIPE**  
 SCALE : NOT TO SCALE

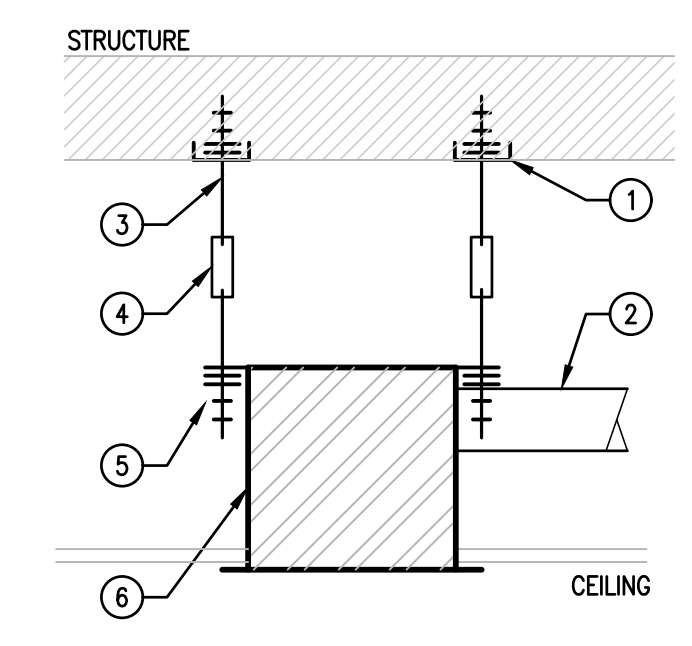


**04 PIPE PENETRATION DETAIL**  
 SCALE : NOT TO SCALE



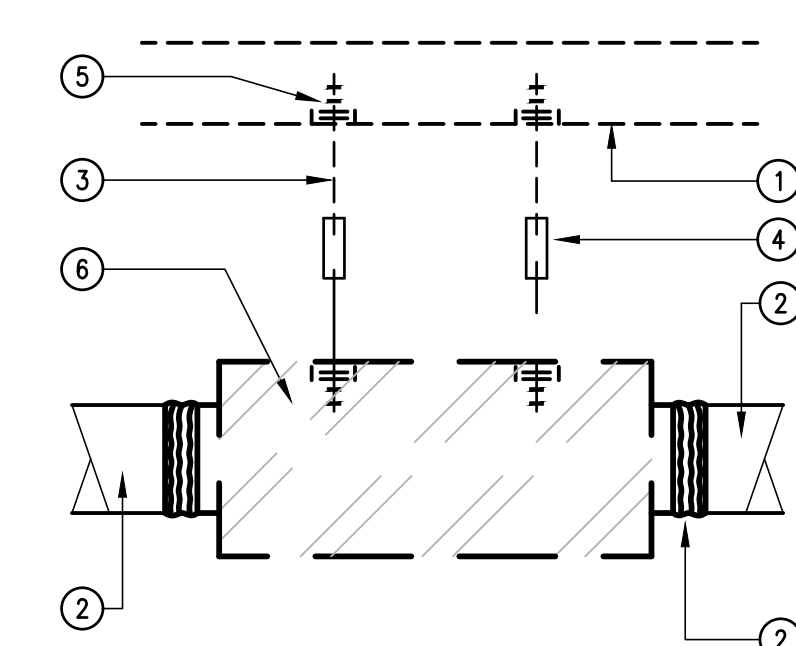
NOTE: SIZE REFRIGERANT PIPING PER MFR. RECOMMENDATION.

**05 REFRIGERANT PIPING DETAIL**  
 SCALE : NOT TO SCALE



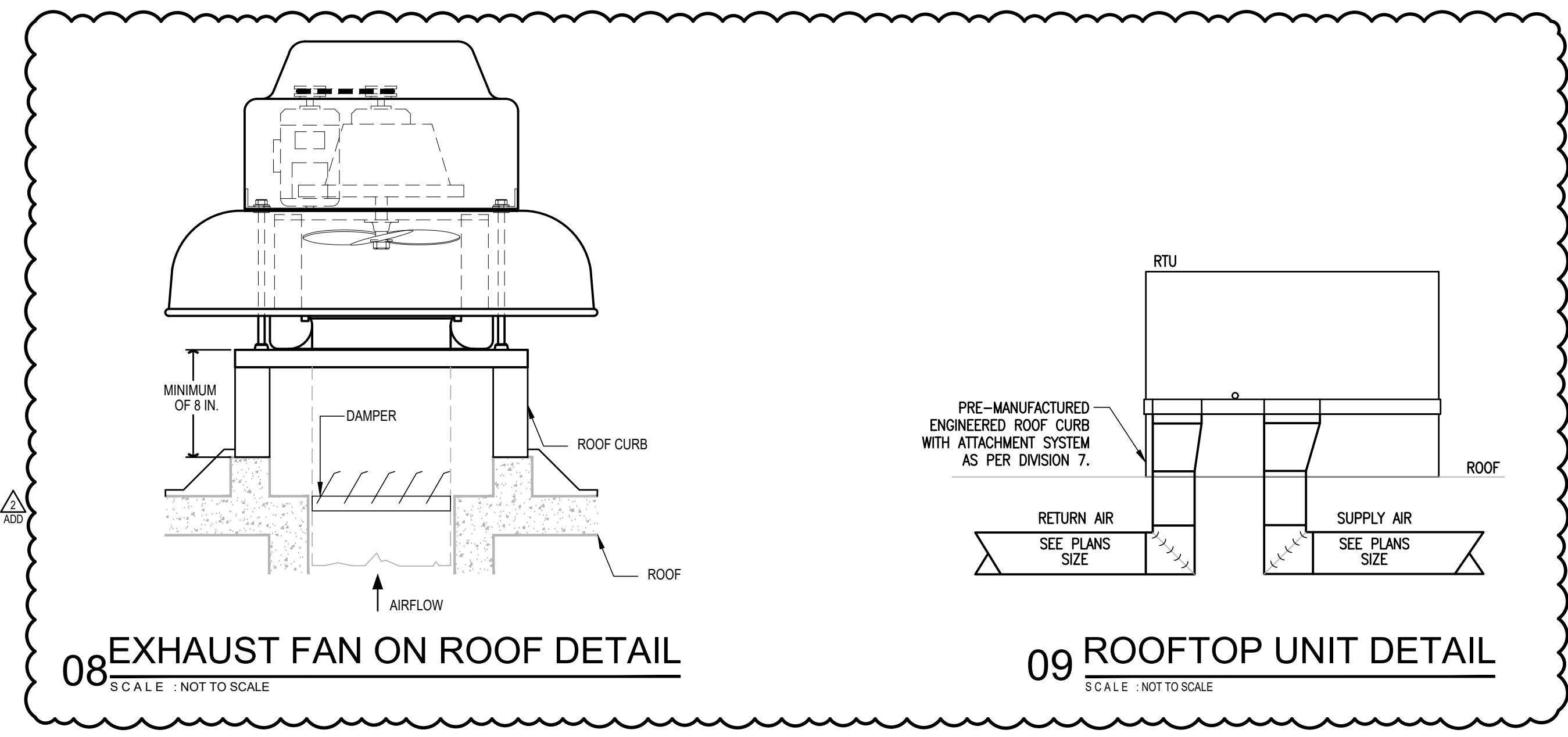
**KEYED NOTES**  
 1. UNISTRUT STRUCTURAL CHANNEL - SECURE TO STRUCTURE.  
 2. EXHAUST DUCT. SEE PLAN.  
 3. GALVANIZED ALL THREADED ROD.  
 4. VIBRATION ISOLATORS.  
 5. HEX NUTS AND WASHERS (TYP.)  
 6. CEILING EXHAUST FAN AS SCHEDULED.

**06 CEILING EXHAUST FAN FAN MOUNTING DETAIL**  
 SCALE : NOT TO SCALE



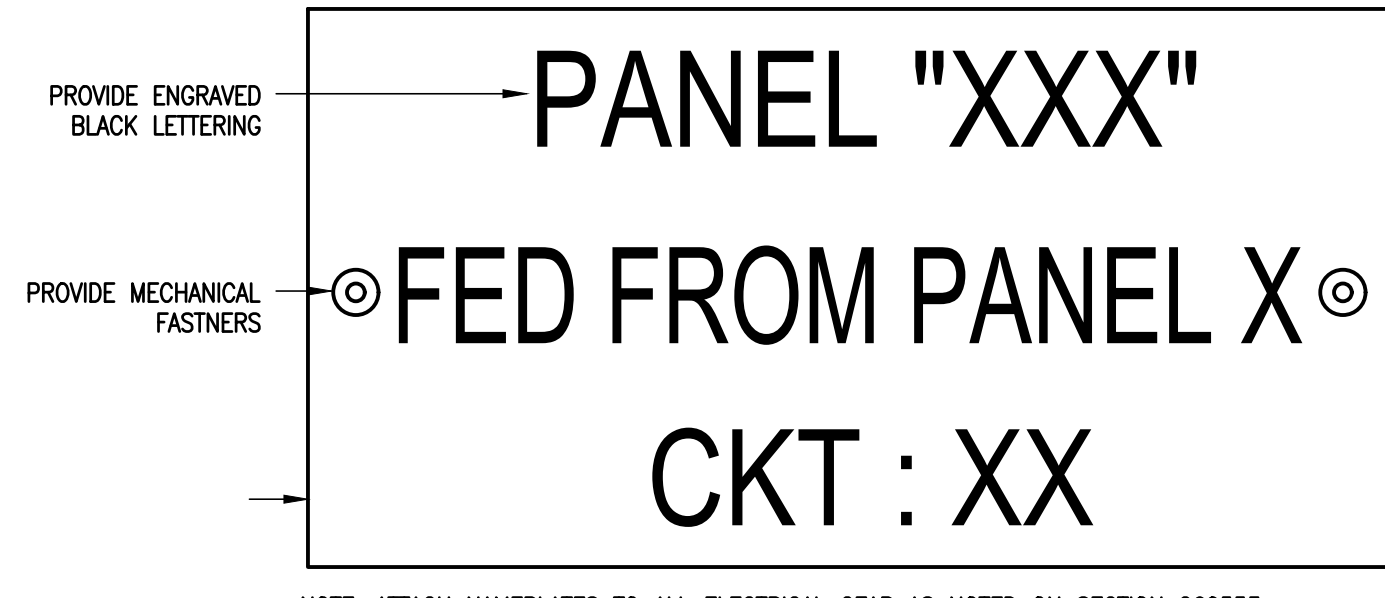
**KEYED NOTES**  
 1. UNISTRUT STRUCTURAL CHANNEL - SECURE TO STRUCTURE.  
 2. EXHAUST DUCT. SEE PLAN.  
 3. GALVANIZED ALL THREADED ROD.  
 4. VIBRATION ISOLATORS.  
 5. HEX NUTS AND WASHERS (TYP.)  
 6. INLINE EXHAUST FAN AS SCHEDULED.  
 7. FLEXIBLE CONNECTION.

**07 INLINE EXHAUST FAN DETAIL**  
 SCALE : NOT TO SCALE



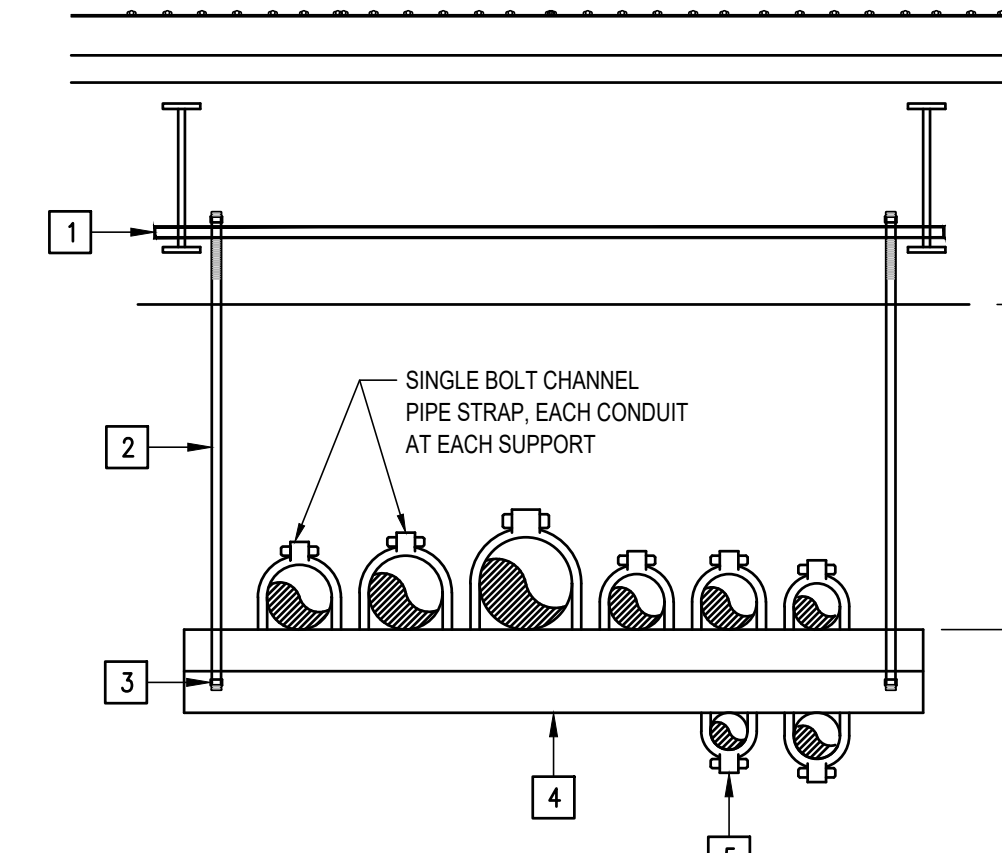
**08 EXHAUST FAN ON ROOF DETAIL**  
 SCALE : NOT TO SCALE

**09 ROOFTOP UNIT DETAIL**  
 SCALE : NOT TO SCALE



NOTE: ATTACH NAMEPLATES TO ALL ELECTRICAL GEAR AS NOTED ON SECTION 260553.

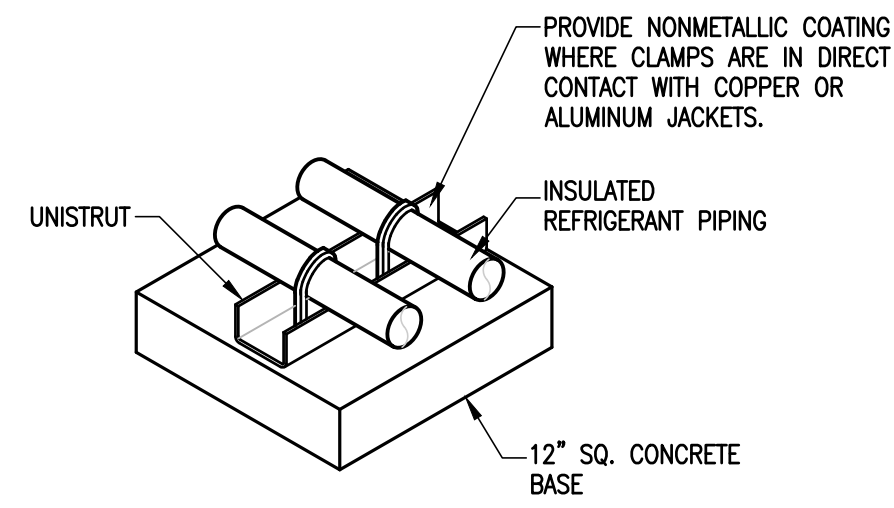
**10 EQUIPMENT IDENTIFICATION LABEL DETAIL**  
 SCALE : NOT TO SCALE



**KEYED NOTES:**  
 1. PROVIDE UNISTRUT STRUCTURAL CHANNEL SECURED TO JOIST AT BOTH ENDS.  
 2. PROVIDE 1/2" GALVANIZED ROD MINIMUM.  
 3. PROVIDE LOCKNUT.  
 4. PROVIDE GALVANIZED UNISTRUT 8"-0" O/C MAXIMUM.  
 5. 0"-1" MAXIMUM SIZE ON BOTTOM OF UNISTRUT.  
 6. VARIES.

**11 HORIZONTAL RACEWAYS SUPPORT DETAIL**  
 SCALE : NOT TO SCALE



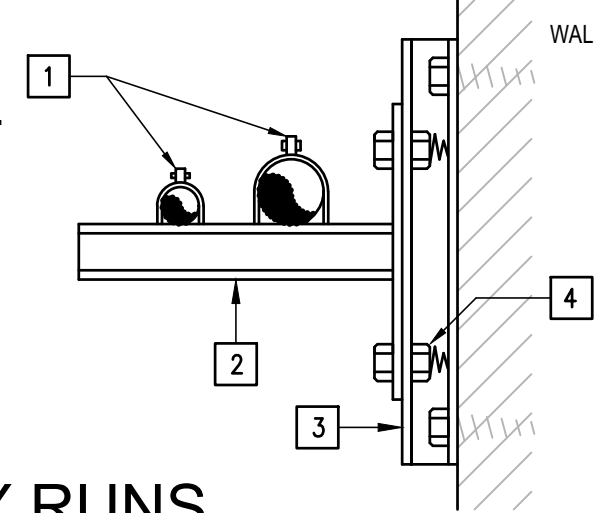


**REFRIGERANT PIPING  
SUPPORT DETAIL**

12 SCALE : NOT TO SCALE

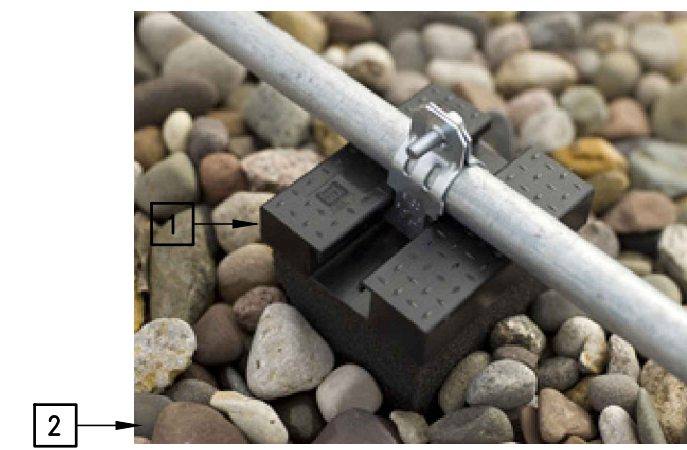
**KEYED NOTES:**

- 1 PROVIDE CONDUIT CLAMPS.
- 2 PROVIDE GALVANIZED UNISTRUT WALL BRACKET.
- 3 PROVIDE RAMSET OR BOLT GALVANIZED UNISTRUT TO WALL.
- 4 PROVIDE SELF HOLDING CLAMPING NUT WITH SPRING.



**RACEWAY RUNS  
SUPPORT DETAIL**

13 SCALE : NOT TO SCALE

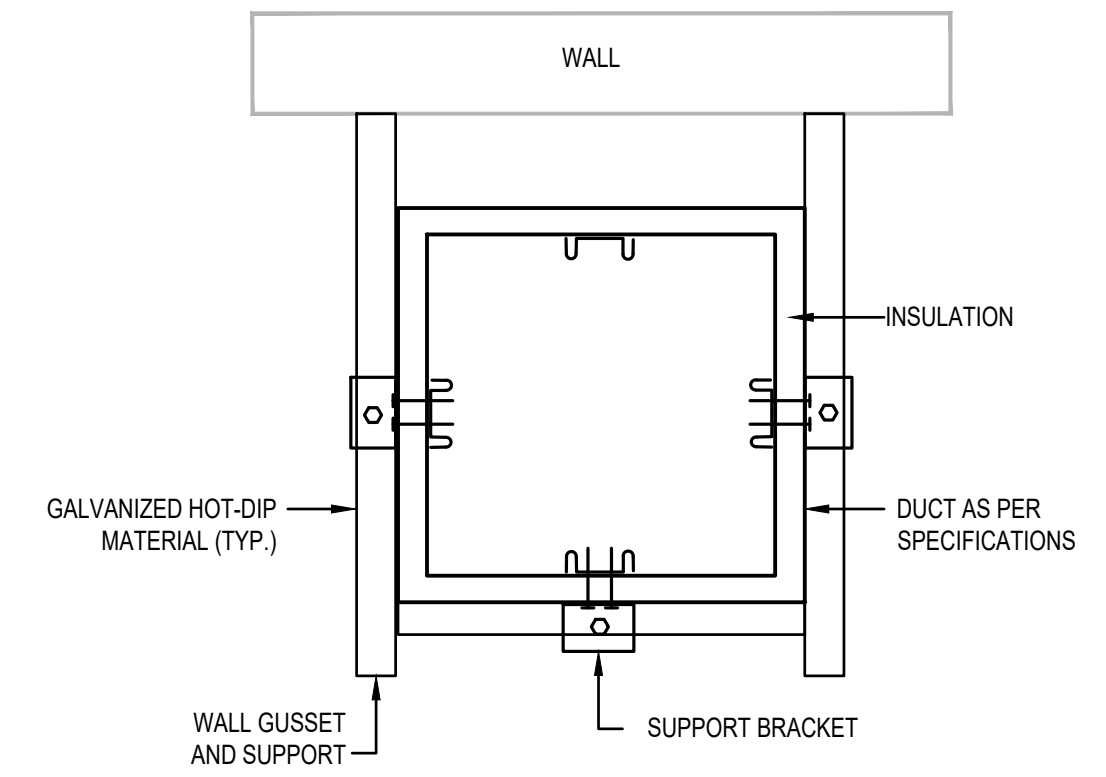


**KEYED NOTES:**

- 1 PROVIDE ROOF SUPPORT BLOCK PIPE PIER MODEL NO. PP30 EVERY 10'-0".
- 2 EXISTING ROOF.
- 3 PROVIDE RACEWAYS AS SPECIFIED.

**ROOF MOUNTED RACEWAYS  
SUPPORT DETAIL**

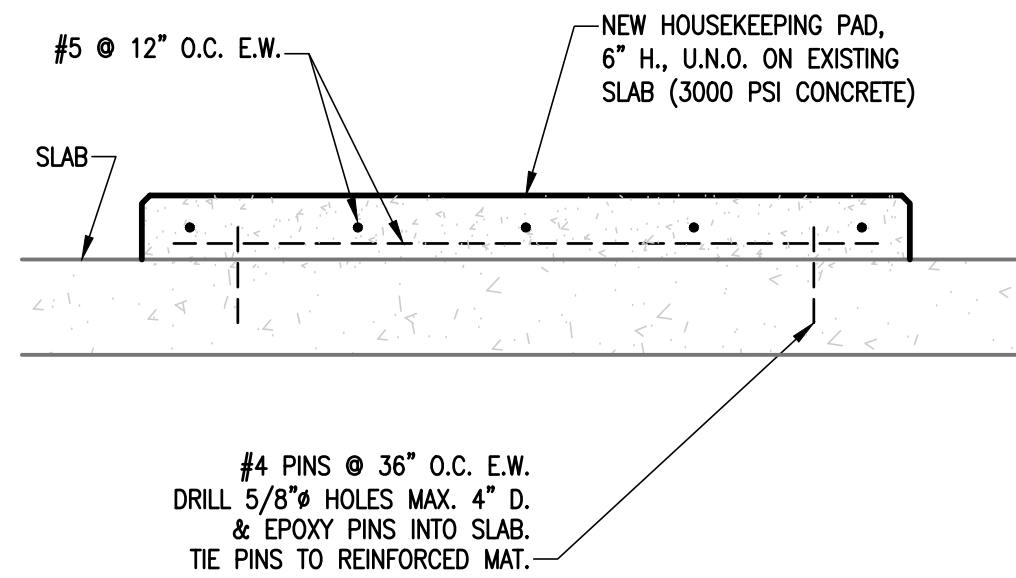
14 SCALE : NOT TO SCALE



**NOTE:**  
ATTACHMENTS SHALL BE CAPABLE OF WITHSTANDING THE LOCAL WIND PRESSURES. COORDINATE WITH WINDSTORM ENGINEER.

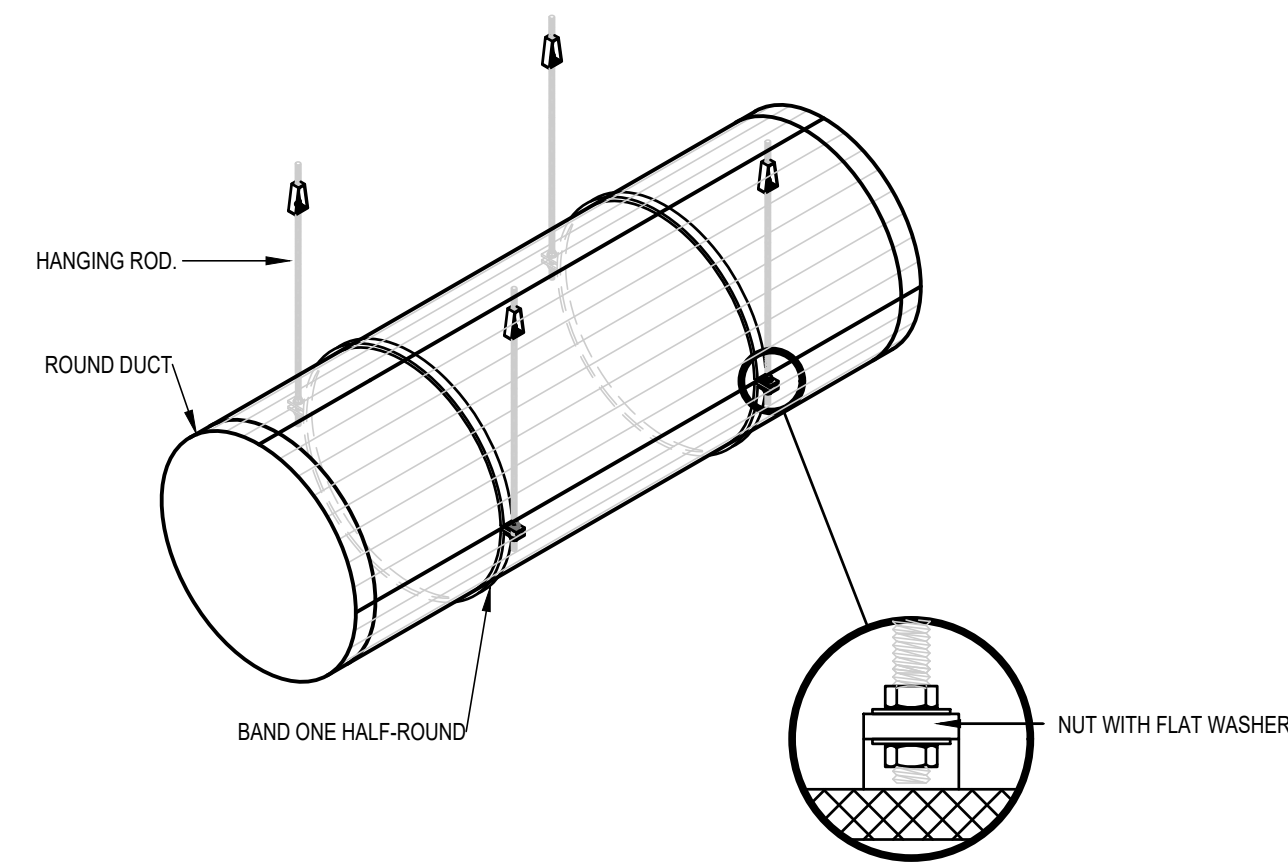
**EXTERIOR DUCT  
SUPPORT DETAIL**

15



**NEW HOUSEKEEPING  
PAD ON EXISTING SLAB**

16 SCALE : NOT TO SCALE

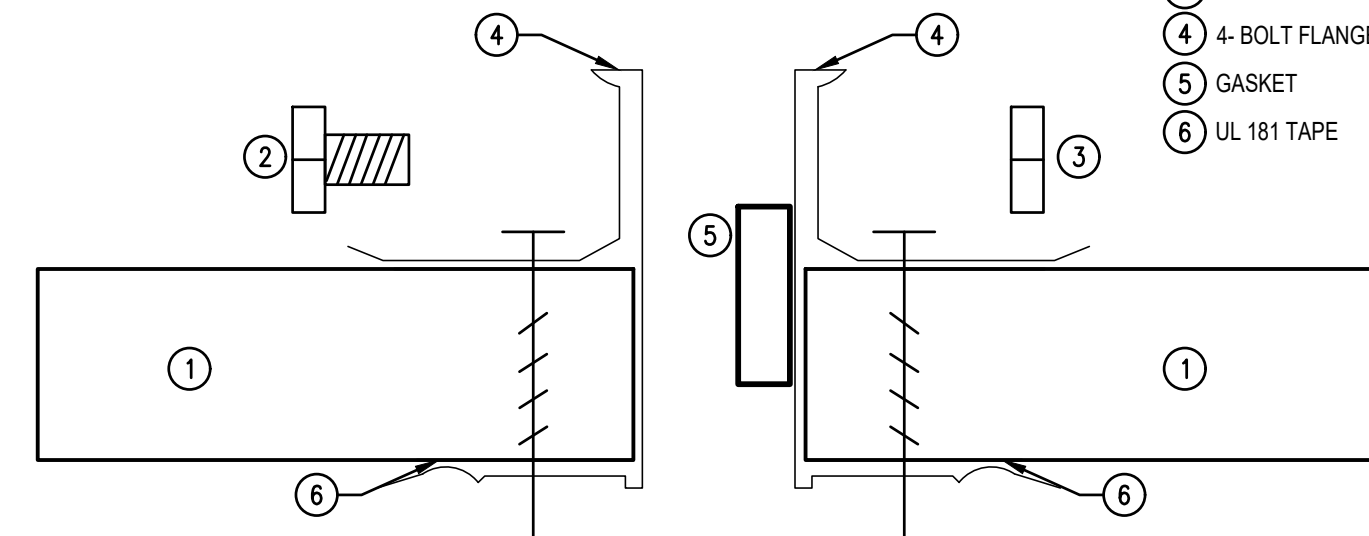


**SUPPORT ROUND DUCT DETAIL**

17 SCALE: NOT TO SCALE

**KEYED NOTES**

- 1 THERMADUCT PANEL
- 2 BOLT
- 3 NUT
- 4 4-BOLT FLANGE
- 5 GASKET
- 6 UL 181 TAPE



**EXTERIOR DUCT FLANGE  
CONNECTION DETAIL**

18 SCALE : NOT TO SCALE



1128 SOUTH COMMERCE ST.  
HARLINGEN, TX  
PHONE: 361-205-2435  
TEXAS REGISTERED  
ENGINEERING FIRM  
E-15998

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