

094-PTA & 097-PTB PARKING & TRANSPORTATION SERVICES HVAC REPLACEMENT


THE UNIVERSITY OF SOUTH FLORIDA - TAMPA CAMPUS

13311 USF PLUM DRIVE
TAMPA, FLORIDA 33620

USF UNIVERSITY OF
SOUTH FLORIDA

USF PROJECT NO. PD147019470202

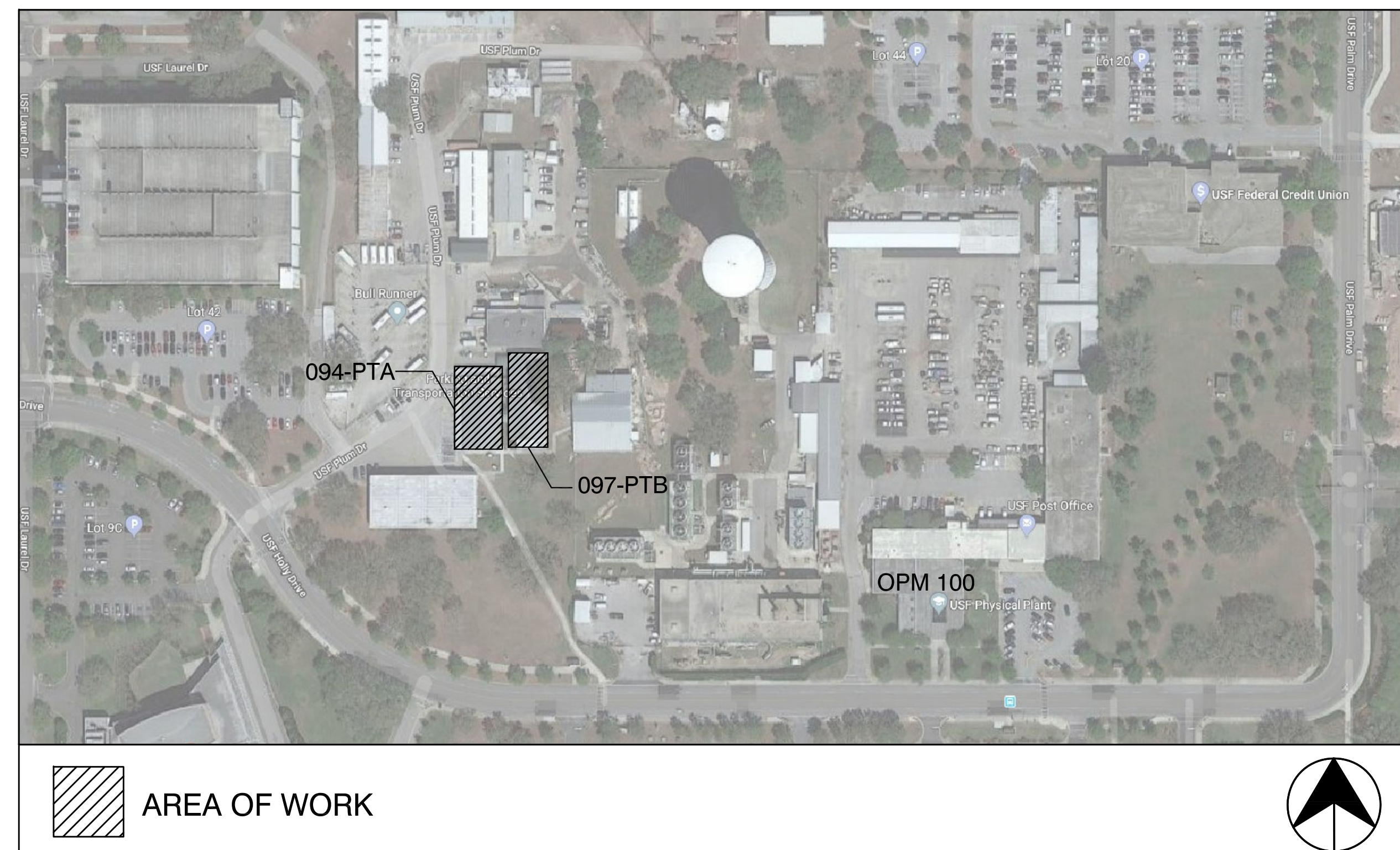
PROJECT ENGINEER

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CONSULTANT'S PROJECT NO. 1811

ELECTRICAL ENGINEER

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INDEX OF DRAWINGS

M-01	NOTES AND LEGEND
M-11	MOBILIZATION/PHASING PLAN
M-12	CEILING PLAN - DEMOLITION
M-13	CEILING PLAN - INSTALLATION
M-14	MECHANICAL FLOOR PLAN - DEMOLITION
M-15	MECHANICAL FLOOR PLAN - INSTALLATION
M-41	ENLARGED MECHANICAL ROOM PLANS
M-51	MECHANICAL DETAILS
M-61	MECHANICAL EQUIPMENT SCHEDULES
M-71	CONTROLS DIAGRAMS & SEQUENCE OF OPERATION
E-01	SYMBOLS, DETAILS, SCHEDULES & RISER
E-11	ELECTRICAL DEMOLITION PLAN
E-12	HVAC POWER PLAN

ISSUED FOR: 100% CONSTRUCTION DOCUMENTS
ISSUE DATE: 01/14/2019

MECHANICAL LEGEND	
SYMBOL	DESCRIPTION
	NEW DUCTWORK, PIPING, OR EQUIPMENT
	FLEXIBLE DUCT
	EXISTING DUCTWORK TO REMAIN.
	EXISTING DUCTWORK/EQUIPMENT TO BE REMOVED.
	DUCTWORK TRANSITIONS
	RADIUS ELBOW
	MITERED ELBOW
	MITERED ELBOW WITH TURNING VANES
	ROUND CUT
	MOTORIZED DAMPER
	MANUAL VOLUME DAMPER
	SUPPLY AIR DEVICE. ARROWS INDICATE AIR FLOW PATTERN
	RETURN OR EXHAUST AIR DEVICE
	EXISTING RETURN OR EXHAUST AIR DEVICE
	SUPPLY OR OUTSIDE AIR DUCT SECTION
	EXISTING SUPPLY OR OUTSIDE AIR DUCT SECTION
	RETURN OR EXHAUST DUCT SECTION
	EXISTING RETURN OR EXHAUST DUCT SECTION
	AIR FLOW ARROW
	UNDERCUT DOOR 3/4"
	WALL MOUNTED TEMPERATURE SENSOR 48" A.F.F.
	WALL MOUNTED THERMOSTAT 48" A.F.F.
	TEMPERATURE SENSOR
	STATIC PRESSURE SENSOR
	HUMIDISTAT 48" A.F.F.
	SMOKE DETECTOR
	CONDENSATE DRAIN LINE
	POINT OF CONNECTION BETWEEN NEW & EXISTING.
	POINT OF DEMOLITION.
	CHILLED WATER SUPPLY
	CHILLED WATER RETURN
	SUPPLY AIR
	RETURN AIR
	OUTSIDE AIR
	BOTTOM OF PIPE
	BOTTOM OF DUCT
	ABOVE FINISHED FLOOR
	CEILING DIFFUSER # = THROAT SIZE (10") XXX = CFM FLOW RATE
	RETURN GRILLE # = THROAT SIZE (10") XXX = CFM FLOW RATE

- GENERAL MECHANICAL NOTES
- DUCT CONSTRUCTION: MEDIUM PRESSURE SUPPLY DUCTWORK SHALL BE 22 GAUGE; LOW PRESSURE SUPPLY AND OUTSIDE AIR DUCTWORK SHALL BE 24 GAUGE. NOTE: EACH TYPE OF DUCT SHALL HAVE LABEL WITH DUCT CONSTRUCTION CLASS, THICKNESS, AND MATERIAL. DUCTWORK SHALL BE FASTENED TO THE STRUCTURE ABOVE. UNDER NO CIRCUMSTANCES SHALL THE DUCT REST ON ANY PIPING OR WALLS. DUCTWORK FABRICATION AND INSTALLATION SHALL BE IN COMPLIANCE WITH SMACNA SECOND EDITION 2005. THE DUCT DISTRIBUTION NETWORK SHALL CONTAIN SPLITTER AND VOLUME DAMPERS, AND DOUBLE THICKNESS TURNING VANES AT ELBOWS AT ALL LOCATIONS REQUIRED. (EVEN IF NOT SHOWN ON PLANS) SHOP DRAWINGS SHALL INDICATE THE LOCATION OF ALL DUCTWORK, DAMPERS, ACTUATORS, SENSORS, AND RELATED ELECTRICAL AND CONTROL COMPONENTS.
 - ALL EXPOSED SUPPLY AND RETURN DUCTS IN BREAKROOM OF 097-PTB SHALL BE DOUBLE WALL, 24G, ROUND DUCT
 - VERIFY ALL CLEARANCES AVAILABLE BEFORE PURCHASING AND FABRICATING DUCTWORK OR ANY OTHER SPECIFIED EQUIPMENT, DEVICES, AND MATERIALS.
 - IN GENERAL, PLANS AND DIAGRAMS ARE SCHEMATIC ONLY AND SHOULD NOT BE SCALED. CONTRACTOR SHALL VERIFY ALL BUILDING DIMENSIONS, COORDINATE WITH CEILING, MECHANICAL, AND ELECTRICAL WORK AT SITE SO AS NOT TO CONFLICT IN LOCATION WITH OTHER WORK UNDER THE CONTRACT OR OTHER EXISTING TRADES ALREADY IN PLACE.
 - PLEASE REFER TO SECTION 012600 OF THE SPECIFICATIONS FOR THE PROCESSES GOVERNING CHANGES AND CLARIFICATIONS.
 - WORK CONSISTS OF FURNISHING ALL MATERIALS, DEVICE, AND SERVICES REQUIRED FOR A COMPLETE AIR CONDITIONING AND VENTILATING SYSTEM.
 - EQUIPMENT AND DEVICES SHALL BE FURNISHED PER DRAWING AND/OR SCHEDULES, AND INSTALLED IN MANNER SHOWN.
 - IF CONFLICTS, AMBIGUITIES, OR PROBLEMS DEVELOP WHICH WOULD PREVENT THE INSTALLATION IN MANNER SHOWN ON THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE PROJECT COORDINATOR AND ENGINEER.
 - AIR CONDITIONING AND VENTILATION CONTRACTOR SHALL INSTALL ALL HVAC COMPONENTS/ DEVICES PER DESIGN CRITERIA.
 - ALL WORK TO COMPLY WITH FLORIDA BUILDING CODE 2017 6TH EDITION, LOCAL AND MUNICIPAL, NATIONAL ELECTRIC CODE AND NFPA, AS WELL AS ALL REQUIREMENTS OF THE UNIVERSITY OF SOUTH FLORIDA.
 - MECHANICAL AND ELECTRICAL CONTRACTOR SHALL REFER TO THEIR RESPECTIVE TRADE FOR ALL RELATED ELECTROMECHANICAL AND CONTROL SYSTEMS.
 - IT IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR TO PROVIDE SHOP DRAWINGS ON SYSTEM LAYOUT ALONG WITH SUBMITTALS.
 - CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE PROJECT ENGINEER WITH RED-LINED AS-BUILT FIELD DRAWINGS IN .PDF FORMAT. REFER TO SPECIFICATIONS FOR CLOSE-OUT DOCUMENT REQUIREMENTS INCLUDING FIELD REDLINED DRAWINGS AS PART OF CLOSE OUT DOCUMENTS.
 - ALL HVAC WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE UNIVERSITY OF SOUTH FLORIDA GUIDELINES DIVISION 23.
 - EXAMINE THE CONTRACT DOCUMENTS AND IMMEDIATELY REPORT ANY ERROR, DISCREPANCY, OR OMISSION. THE ENGINEER WILL DETERMINE WHICH INTERPRETATION SHALL TAKE PRECEDENCE WHERE TWO OR MORE CONFLICTING STATEMENTS OCCUR. THE CONTRACTOR IS RESPONSIBLE FOR MORE STRINGENT INTERPRETATION.
 - CONTRACTOR SHALL REVIEW THE ENTIRE BID DOCUMENT AND SET OF DRAWINGS FOR COORDINATION WITH MECHANICAL, ARCHITECTURAL, AND ELECTRICAL PLANS.
 - TEST AND BALANCE SHALL BE PERFORMED BY A USF CONTINUING SERVICE TEST AND BALANCE CONTRACTOR. MECHANICAL CONTRACTOR SHALL PROVIDE TEST AND BALANCE AGENT AND COORDINATE/ IMPLEMENT ALL RELATED SYSTEM DEFICIENCIES AND PUNCH LIST ITEMS ALL MECHANICAL SYSTEMS SHALL BE TESTED AND BALANCED IN ACCORDANCE WITH THE NEBB AND AABC GUIDELINES.
 - OBTAIN AND PAY ALL PERMIT, INSPECTION AND TEST FEES, AS REQUIRED FOR THIS PORTION OF THE WORK.
 - IN THE EVENT THAT ASBESTOS IS PRESENT, MECHANICAL CONTRACTOR SHALL WORK AND COORDINATE WITH THE OWNER'S ASBESTOS ABATEMENT CONTRACTOR. OWNER WILL OBTAIN THE SERVICES OF THE ASBESTOS ABATEMENT CONTRACTOR FOR ABATEMENT WITHIN THE STIPULATED TIME SPECIFIED IN THE BID PACKAGE FOR THE COMPLETION OF CONSTRUCTION.
 - NEW CHILLED WATER PIPES SHALL BE SCHEDULE 40 STEEL PIPE, EPOXY COATING (2 LAYERS) AND INSULATED WITH 2" FOAMGLASS. PIPE SHALL ONLY BE INSULATED UPON SUCCESSFUL PRESSURE TESTING. PIPE SHALL BE DRAINED AND DRIED BEFORE INSULATING. ALL EXTERIOR EXPOSED PIPING SHALL BE PROTECTED WITH ALUMINUM JACKETING.
 - INCLUDE DOUBLE THICKNESS TURNING VANES IN ALL NEW 90° AND DIRECTIONAL VANES IN ACCORDANCE WITH SMACNA, IN ALL 45° & 90° ELBOWS ON THE SUPPLY AND RETURN DUCTWORK.
 - ALL 90° PIPE ELBOWS SHALL BE LONG RADIUS ELBOWS.
 - ALL EXPOSED DUCTWORK IN SIDE MECHANICAL ROOMS SHALL BE INSULATED WITH 1½" RIGID DUCTBOARD.
 - CONTRACTOR SHALL SUBMIT A DUCT LEAKAGE TEST REPORT FOR REVIEW BY THE EOR PRIOR TO INSULATING.
 - ALL THE DUCT JOINTS AND SEAMS SHALL BE APPLIED WITH CLASS "A" SEALANT AND SHALL BE LEAK TESTED.
 - DUCT PRESSURE IS CLASSIFIED AS CLASS "B" (3" W.G.).
 - DUCT FABRICATION AND INSTALLATION ALONG WITH SUPPORTS SHALL CONFIRM TO THE SMACNA DUCT CONSTRUCTION STANDARDS, 2005 3RD EDITION.
 - CONDENSATE PIPE CONSTRUCTION SHALL BE TYPE "L" COPPER. TRAP TO BE PRIMED AFTER COMPLETION AND PRIOR TO START-UP. STRUT SHALL BE USED AS PIPE SUPPORT. ALL CONDENSATE PIPING SHALL BE INSULATED WITH MINIMUM ¾" ARMAFLEX, AND SHALL HAVE REMOVABLE COVER FOR TRAP CLEANOUT.

- SPECIAL NOTES
- IN GENERAL, ALL DEMOLISHED ITEMS SHALL BE REMOVED FROM THE PROPERTY AND DISPOSED OF BY THE CONTRACTOR IN COMPLIANCE WITH ALL FEDERAL, STATE, AND LOCAL LAWS AND ORDINANCES AND REQUIREMENTS OF USE, UNLESS NOTED OTHERWISE.
 - ALL DEMOLITION WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE APPROVED CONTRACTOR SCHEDULE AND ALL PHASING REQUIREMENTS AS PROVIDED IN THE SUMMARY OF WORK IN THE PROJECT MANUAL.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR IMMEDIATE DISPOSAL OF ANY UNUSED AND/OR REMOVED MATERIALS FROM THE JOB SITE, AND SHALL ALSO BE RESPONSIBLE FOR ANY DAMAGE TO EQUIPMENT, DEVICES, AND BUILDING DAMAGE CAUSED DURING THE PROCESS OF DOING THIS WORK.
 - ANY REMOVED ITEM WHICH IS SAID TO BE DELIVERED TO THE OWNER SHALL BE KEPT IN A DRY, CLEAN PLACE AND SHALL BE DELIVERED TO THE OWNER'S DESIGNATED LOCATION.
 - CONTRACTOR SHALL PROVIDE TWO SCHEDULES: A DEMOLITION SCHEDULE, AND A SCHEDULE FOR COMPLETION OF NEW WORK. ONLY UPON APPROVAL OF THE SCHEDULES BY THE OWNER AND THE PROJECT ENGINEER, SHALL THE CONTRACTOR COMMENCE WORK. A COPY OF EACH SCHEDULE SHALL BE SUBMITTED AS PART OF THE EQUIPMENT SUBMITTAL PACKAGE.
 - CONTRACTOR SHALL PROVIDE SUBMITTALS ON ALL NEW EQUIPMENT, DEVICES, AND MATERIAL TO BE INSTALLED, ALONG WITH SHOP DRAWINGS. ONLY UPON THE REVIEW OF SUBMITTALS AND SHOP DRAWINGS SHALL THE CONTRACTOR PURCHASE, FABRICATE, AND INSTALL THE NEW EQUIPMENT, DEVICES, ETC. ONE COPY OF THE SUBMITTAL AND SHOP DRAWINGS, ALONG WITH ORIGINAL BID DOCUMENTS AND ANY ADDENDUM(S), SHALL BE KEPT AT THE PROJECT SITE THROUGHOUT THE CONSTRUCTION.
 - THE CONTRACTOR AND THERE SUB-CONTRACTOR(S) ARE REQUIRED TO COOPERATE WITH THE TEST AND BALANCE CONTRACTOR ON ANY SYSTEM-RELATED DEFICIENCY WHICH PREVENTS THE TEST AND BALANCE OF THE SYSTEM.
 - IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN AND PAY FOR PERMIT, CALL FOR INSPECTIONS, PAY FOR ALL FEES, AND OBTAIN FINAL INSPECTION. CONTRACTOR'S CLOSE OUT DOCUMENTS SHALL INCLUDE A COPY OF ALL INSPECTIONS REQUESTS AND REPORTS.
 - CONTRACTOR MAY SELF-PERFORM ANY WORK THAT THEY ARE EXPERIENCED, CAPABLE, AND LICENSED TO PERFORM, EXCEPT FOR TEST AND BALANCE. OTHERWISE CONTRACTOR SHALL PROCURE THE SERVICES OF LICENSED SUB-CONTRACTORS FOR EACH DISCIPLINE REQUIRED.
 - DEMOLISHED CHILLED WATER CONTROL VALVES AND ASSOCIATED CONTROLS SHALL BE SALVAGED AND TURNED OVER TO THE OWNER. COORDINATE WITH OWNER DURING PRE-CONSTRUCTION.
 - PER USF GUIDELINES, THE CONTRACTOR IS TO TAKE APPROPRIATE MEASURES TO AVOID MOLD/MILDEW IN THE CONSTRUCTION AREA. CONTRACTOR IS REQUIRED TO MAINTAIN THE HUMIDITY LEVEL IN THE CONSTRUCTION AREA AT 55% RH TO PREVENT MOLD AND MILDEW. IN THE EVENT THAT MOLD/MILDEW OCCURS, ALL COSTS ASSOCIATED WITH TESTING AND REMEDIATION WILL BE BORNE BY THE CONTRACTOR

CONTRACTOR IS RESPONSIBLE FOR ADHERING TO ALL REQUIREMENTS OF USF AS DESCRIBED AT [HTTPS://WWW.USF.EDU/ADMINISTRATIVE-SERVICES/FACILITIES/DESIGN-CONSTRUCTION/GUIDELINES-STANDARDS.ASPX](https://www.usf.edu/administrative-services/facilities/design-construction/guidelines-standards.aspx)

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Project Title:
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NOTES AND LEGEND

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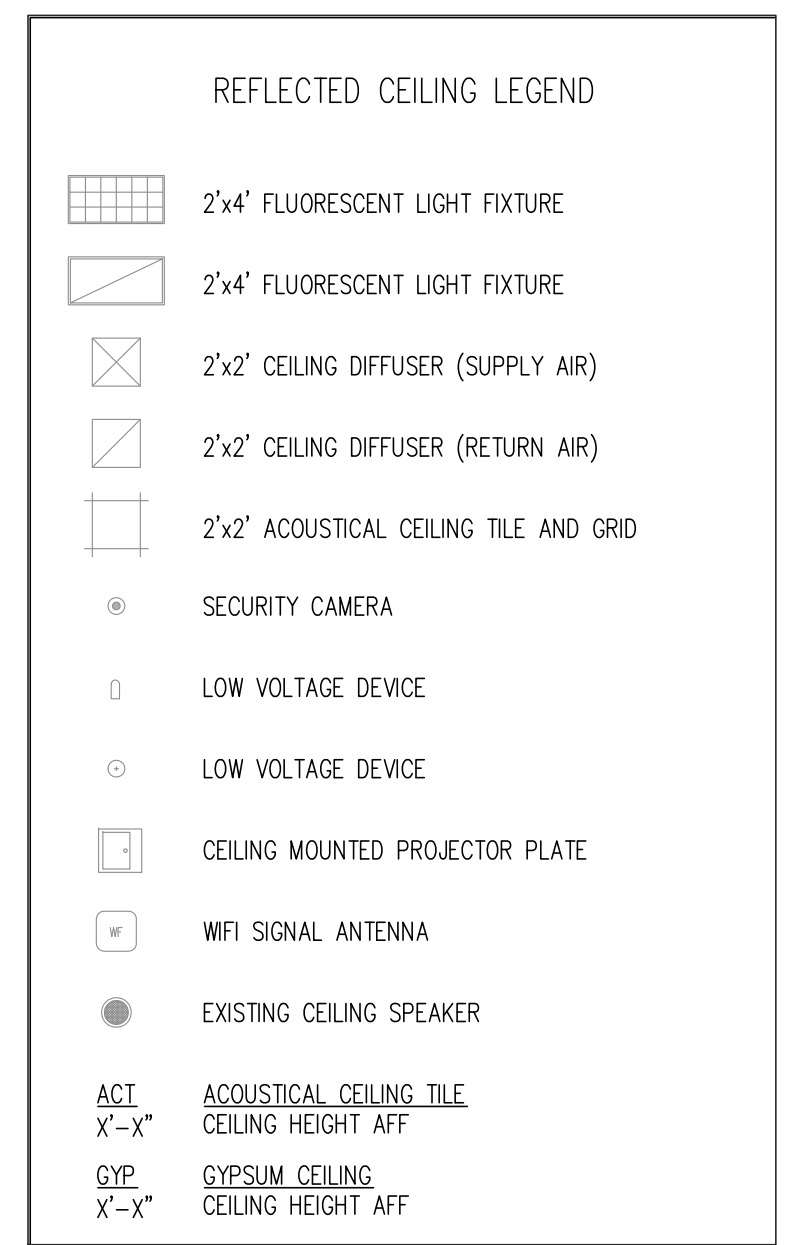
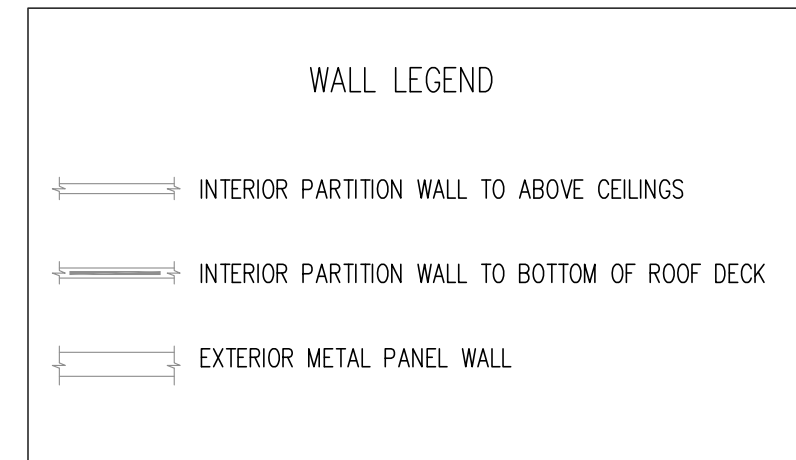
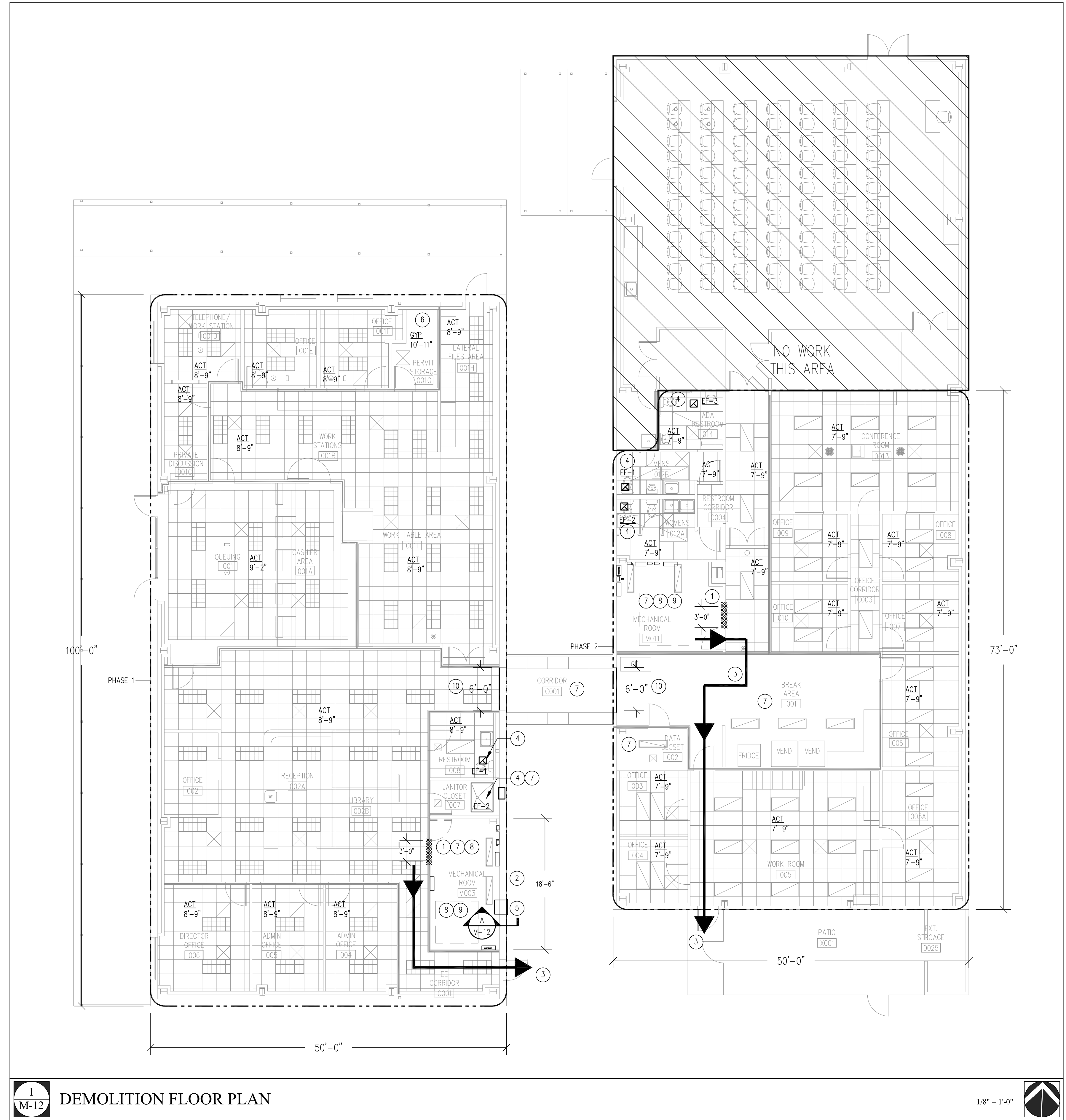
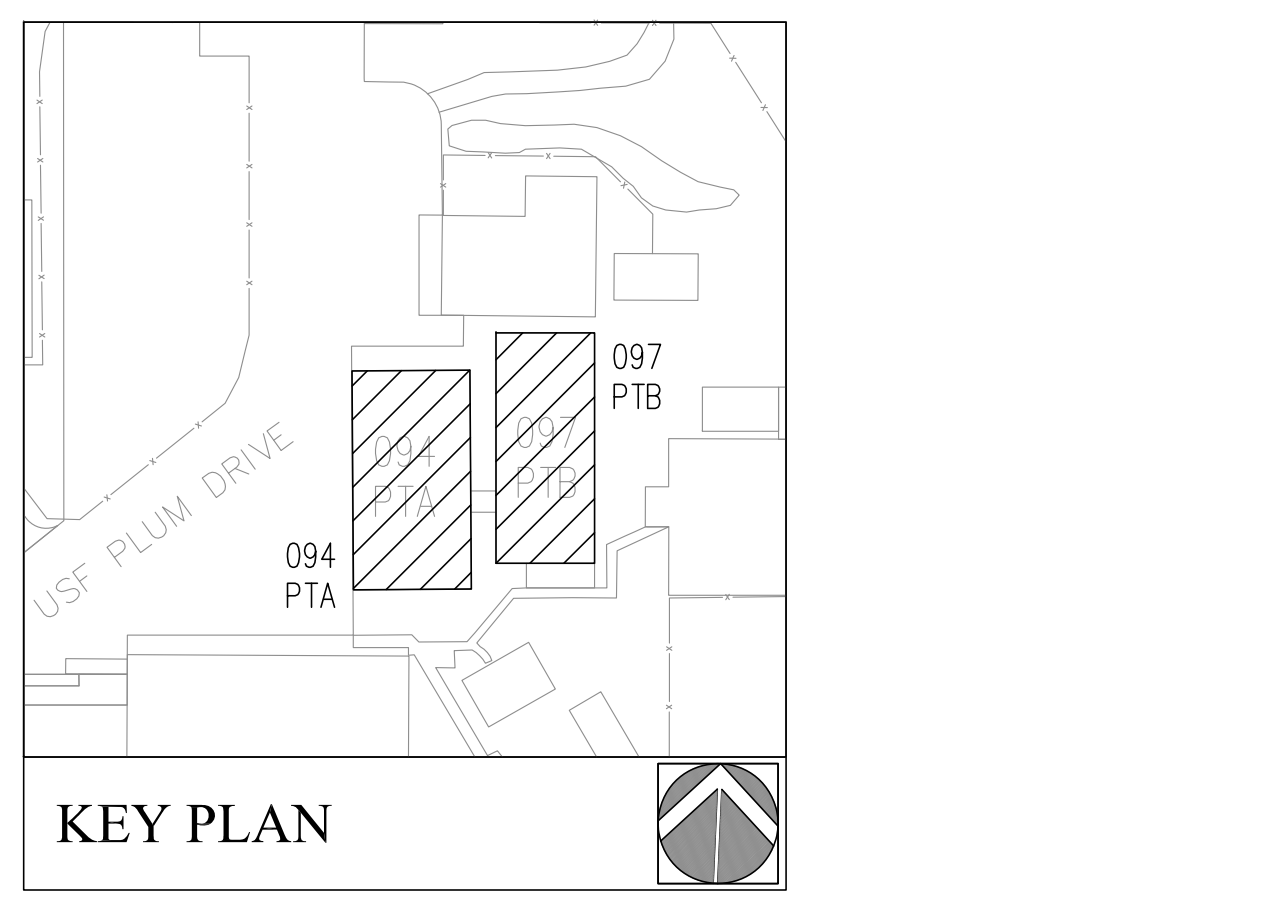
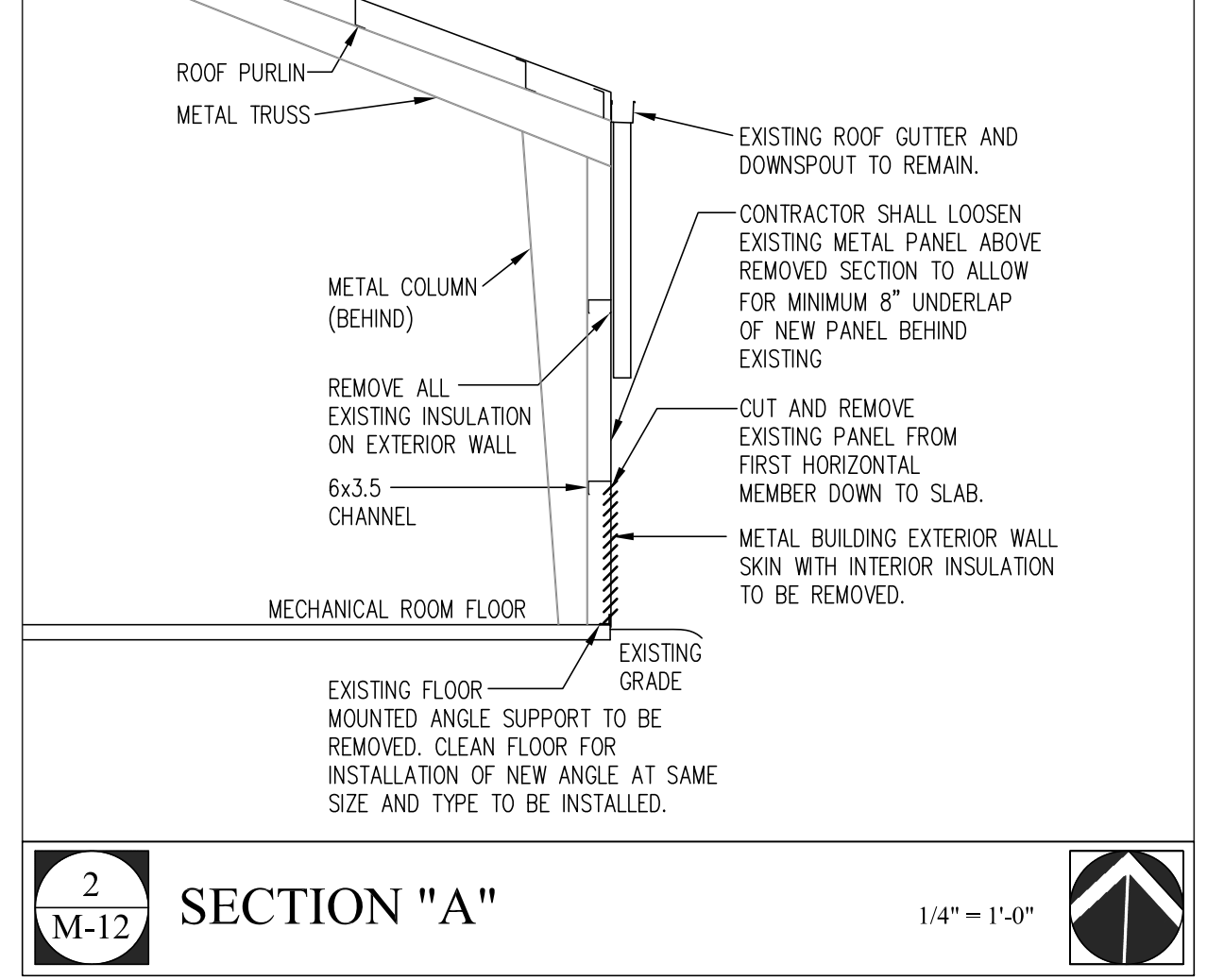
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Scale	1/8" = 1'-0"
Graphic Scale	0' 2' 4' 8' 12'
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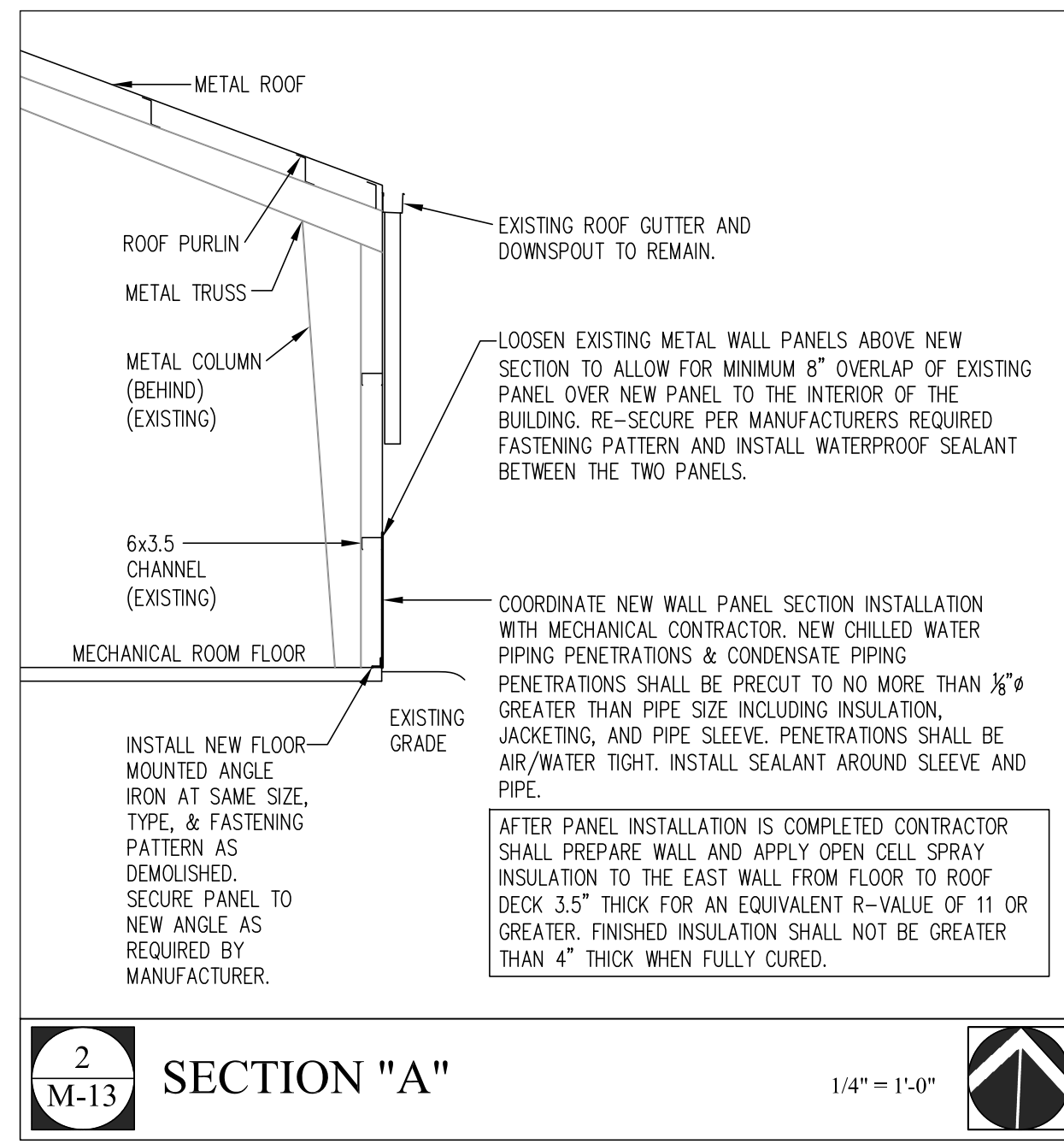
- GENERAL DEMOLITION NOTES**
- ANY ITEMS NOTED TO BE SALVAGED SHALL BE STORED BY THE CONTRACTOR IN A SAFE, DRY SPACE.
 - ANY ITEMS NOTED TO BE REMOVED SHALL BE DISPOSED OF AND REMOVED FROM THE PROJECT SITE, DAILY.
 - ALL FINISHED SURFACES, FURNITURE, EQUIPMENT, PERSONAL ITEMS, COPIERS, COMPUTERS, OTHER ELECTRONICS, CABINETS, APPLIANCES, VENDING MACHINES SHALL BE PROTECTED THROUGHOUT CONSTRUCTION. FLOORS SHALL BE PROTECTED WITH A MINIMUM OF 0.115" THICK HARDBOARD TAPED TO FLOOR WITH ADHESIVE PLASTIC FILM SECURED TO BOARD ON ALL CARPETED SURFACES. CONTRACTOR SHALL ENSURE NO ADHESIVE RESIDUE WILL REMAIN ON SURFACES UPON COMPLETION OF PROJECT. COVER AND PROTECT ALL LOW VOLTAGE DEVICES INCLUDING FIRE ALARM DEVICES AND PANELS, CAMERAS, WIRELESS ACCESS POINTS, OCCUPANCY SENSORS, RADIO COMPONENTS, ETC.
 - ALL CEILING MOUNTED FIXTURES AND DEVICES ARE CURRENTLY OPERATIONAL AND ARE TO BE RETURNED TO OPERATION AT THE COMPLETION OF THE PROJECT.
 - ALL ACOUSTICAL CEILINGS TO BE REMOVED AND SALVAGED. CONTRACTOR SHALL SALVAGE ACOUSTICAL TILES FOR RE-INSTALLATION IN NEW CEILING GRID. CONTRACTOR SHALL BE RESPONSIBLE TO REPLACE ALL BROKEN OR DAMAGED TILES TO MATCH EXISTING.
 - ALL CEILING MOUNTED LIGHT FIXTURES ARE EXISTING TO REMAIN IN PLACE. CONTRACTOR SHALL PROTECT DURING CONSTRUCTION AND RE-INSTALL LIGHT FIXTURES IN NEW CEILING GRID TO MATCH EXISTING LIGHTING LAYOUT.

- DEMOLITION KEYED NOTES**
- REMOVE MECHANICAL ROOM DOOR, HARDWARE, AND FRAME AND DEMOLISH. PREPARE OPENING FOR INSTALLATION OF NEW 6'-0"x7'-0" DOOR. REFER TO SCHEDULE AND DETAILS ON M-13.
 - REMOVE EXISTING INSULATION OFF OF INTERIOR OF WALL. REMOVE AND DISPOSE OF THE BOTTOM SECTION OF EXTERIOR METAL PANEL WALL. EXISTING PLUMBING AND ELECTRICAL UTILITIES TO REMAIN AND BE PROTECTED DURING WORK. PREPARE WALL FOR INSTALLATION OF NEW BOTTOM PANEL OF SAME MATERIAL, GAUGE, PATTERN, AND FINISH.
 - CONTRACTOR SHALL UTILIZE PATH FOR REMOVAL OF HVAC EQUIPMENT SECTIONS. ENTIRE PATH SHALL BE PROTECTED FROM DAMAGE INCLUDING FLOORS, WALLS, AND DOORS.
 - EXISTING RESTROOM EXHAUST FANS TO BE REMOVED. EXISTING DUCTWORK AND WALL CAPS TO REMAIN. REFER TO MECHANICAL DRAWINGS.
 - EXISTING OUTSIDE AIR LOUVER TO BE REMOVED. CUT OPENING FOR NEW 24x20 OUTSIDE AIR LOUVER IN EXISTING METAL PANEL WALL. REFER TO MECHANICAL DETAILS FOR FRAMING.
 - EXISTING GYPSUM HARD CEILING TO REMAIN.
 - NO CEILING IN THIS SPACE. EXPOSED ROOF DECK.
 - TEMPORARILY REMOVE EXISTING ELECTRICAL PANELS AND DISCONNECTS FOR INSTALLATION OF NEW SPRAY INSULATION ON EXTERIOR WALL. REFER TO ELECTRICAL DRAWINGS FOR MODIFICATIONS TO EXISTING PANELS AND DISCONNECTS.
 - REMOVE EXISTING VCT FLOORING WHERE NEW PAD EXTENSION IS TO BE POURED. MECHANICALLY REMOVE ALL ADHESIVE PRIOR TO CONCRETE INSTALLATION.
 - CONTRACTOR SHALL PROVIDE AND INSTALL CONSTRUCTION BARRICADE FOR EACH PHASE, TO BE CONSTRUCTED OF 2x4 FRAMING AND GYPSUM BOARD, LARGE ENOUGH TO BLOCK ACCESS INTO THE CONSTRUCTION AREA, TO BE PLACED ON THE WORKING SIDE OF C001-CORRIDOR. BARRICADE TO READ "CONSTRUCTION AREA - NO ENTRANCE" IN LARGE LETTERING FACING THE OCCUPIED SPACE. BARRICADE SHALL BE MOVED TO THE SECOND PHASE UPON COMMENCEMENT.



- GENERAL INSTALLATION NOTES**
- CONTRACTOR SHALL PROVIDE SUBMITTALS AND SHOP DRAWINGS FOR ALL INSTALLATIONS ON THIS SHEET. PROVIDE MATERIALS AND INSTALLATIONS FOR REVIEW PRIOR TO ORDERING.
 - CONTRACTOR TO INSTALL NEW CEILING GRID SYSTEM IN THE SAME ARRANGEMENT AS EXISTING. CONTRACTOR TO INSTALL SALVAGED CEILING TILES IN NEW GRID. EXISTING CEILING TILES ARE LIKE NEW CONDITION AND SHALL BE RE-INSTALLED AS SUCH. CONTRACTOR SHALL REPLACE ANY MISSING OR DAMAGED TILES TO MATCH EXISTING. EXISTING TILE ARE 2'x2' TEGULAR-EDGE TILES.
 - NEW SUSPENDED CEILING GRID SHALL BE OF THE FOLLOWING CONSTRUCTION:
 - HOT DIPPED GALVANIZED STEEL
 - 1/4" FACE PROFILE
 - WHITE FINISH
 - NEW CEILING GRID SYSTEM SHALL MATCH EXISTING COLOR AND LAYOUT.
 - REFER TO SHEET M-11 FOR CONTRACTOR EGRESS PATH TO AND FROM PTA AND PTB.
 - CLEAN AND WAX VCT FLOORS AND VACUUM CARPETS UPON COMPLETION OF THE WORK. DAMAGED MATERIALS ARE TO BE REPLACED IN KIND AT CONTRACTORS EXPENSE.

- KEYED INSTALLATION NOTES**
- INSTALL NEW DOUBLE DOORS TO MECHANICAL ROOMS. REFER TO DOOR AND HARDWARE SCHEDULES AND INSTALLATION DETAILS.
 - INSTALL NEW EXTERIOR METAL BUILDING PANEL. SPRAY ICYNENE INSULATION ON ENTIRE WALL SURFACE 3.5" THICK FOR A MINIMUM R-VALUE OF R-11. INSTALL PER MANUFACTURERS RECOMMENDATIONS AND REQUIREMENTS. PERFORM PRIOR TO NEW UNIT INSTALLATION. PROTECT ALL SURFACES.
 - FORM AND POUR AIR HANDLING UNIT HOUSEKEEPING PAD EXTENSION AS REQUIRED BASED ON SELECTED EQUIPMENT. FINISHED PAD SHALL EXTEND 4' BEYOND AIR HANDLING UNIT FOOTPRINT ON ALL SIDES. CONCRETE SHALL BE MINIMUM 2500 PSI. CONTRACTOR SHALL INSTALL #5 BAR 8" INTO EXISTING PAD, WITH 8" EXPOSED INTO NEW POUR. EPOXY SET WITH HILTI RE 500 EPOXY OR APPROVED EQUAL EVERY 12". PAD SHALL NOT BE INCREASED TOWARDS MECHANICAL ROOM WALLS.
 - NEW AND RE-LOCATED ELECTRICAL AND LOW VOLTAGE PANELS. REFER TO G-12 AND ELECTRICAL DRAWINGS.
 - CONTRACTOR SHALL UTILIZE EXISTING DOUBLE DOORS ON NORTH SIDE OF 097-PTB TRAINING ROOM FOR EGRESS OF NEW AIR HANDLING UNIT SECTIONS INTO THE BUILDING FOR EACH PHASE. ALL REQUIREMENTS OF THE CONTRACTOR TO PROTECT SURFACES AND EQUIPMENT SHALL APPLY TO THIS PATH INCLUDING AREAS NOT UNDER CONSTRUCTION.



DOOR, FRAME, AND HARDWARE NOTES:

SOLID CORE WOOD DOOR SPECIFICATION: TO BE NEW 5-PLY SOLID CORE WOOD WITH SPECIES, CUT, AND FINISH TO MATCH EXISTING ADJACENT DOORS. THE DOOR SUBCONTRACTOR IS TO VISIT THE SITE AND VERIFY THE SPECIES AND CUT. FOR BIDDING PURPOSES THE DOORS ARE TO BE PLAIN SIZED SELECT RED OAK VENEERS, BOOK MATCHED.

HOLLOW METAL FRAME SPECIFICATION: SHALL BE ONE-PIECE, WELDED FRAMES OF NOT LESS THAN TO BE SIXTEEN (16) GAUGE METAL. MITERED AND WELDED CORNERS. FRAMES IN INTERIOR WALLS THROUGH EIGHT (8) INCH THICKNESS SHALL BE FULL WIDTH OF THE WALL.

HARDWARE TYPE:

- 1 MORTISE LOCKSET, SARGENT 8204-LL-26D ON THE ACTIVE LEAF (-04 AT END OF NUMBER DENOTES STORAGE FUNCTION). CENTRO-NJ TRIM, LN ROSE.
- 1 PAIR FLUSH BOLTS, DELTANA 6FBR26D, 6" HEAVY DUTY FLUSH BOLT, DEPTH: 1-1/4", WIDTH: 3/4", US26D
- 1 JOHNSONITE VINYL REDUCER STRIP (VCT TO CARPET). SIZE AND COLOR TO MATCH EXISTING (APPEARS TO BE BLACK).

PAINTING NOTES:

HOLLOW METAL DOORS AND FRAMES (OVER SHOP COAT)

FIRST COAT: SHERWIN WILLIAMS "PRO INDUSTRIAL" HIGH PERFORMANCE ACRYLIC, SEMI-GLOSS.

TOP COAT: SHERWIN WILLIAMS, "PRO INDUSTRIAL" HIGH PERFORMANCE ACRYLIC, SEMI-GLOSS.

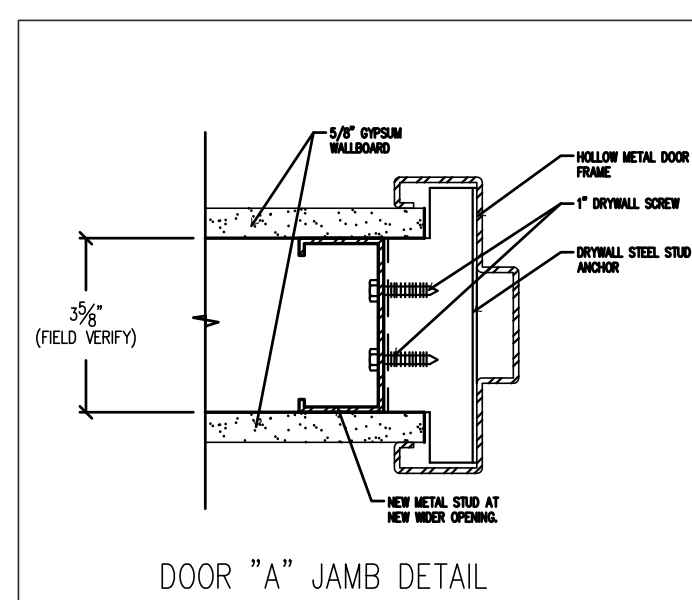
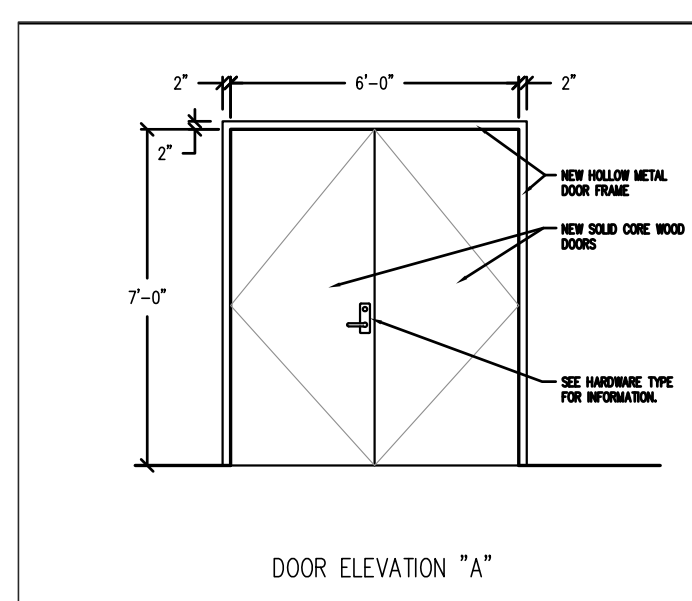
WOOD STAIN:

FIRST COAT: SHERWIN WILLIAMS "WOOD CLASSICS" FAST DRY VARNISH HAND RUBBED SATIN CLEAR

TOP COAT: SHERWIN WILLIAMS "WOOD CLASSICS" FAST DRY VARNISH HAND RUBBED SATIN CLEAR

NOTES:

- TOPS AND BOTTOMS OF WOOD DOORS SHALL BE SANDED AND SEALED AFTER FITTING.
- THE PAINTER IS TO VISIT THE SITE AND VERIFY AND MATCH THE EXISTING DOOR FINISH.

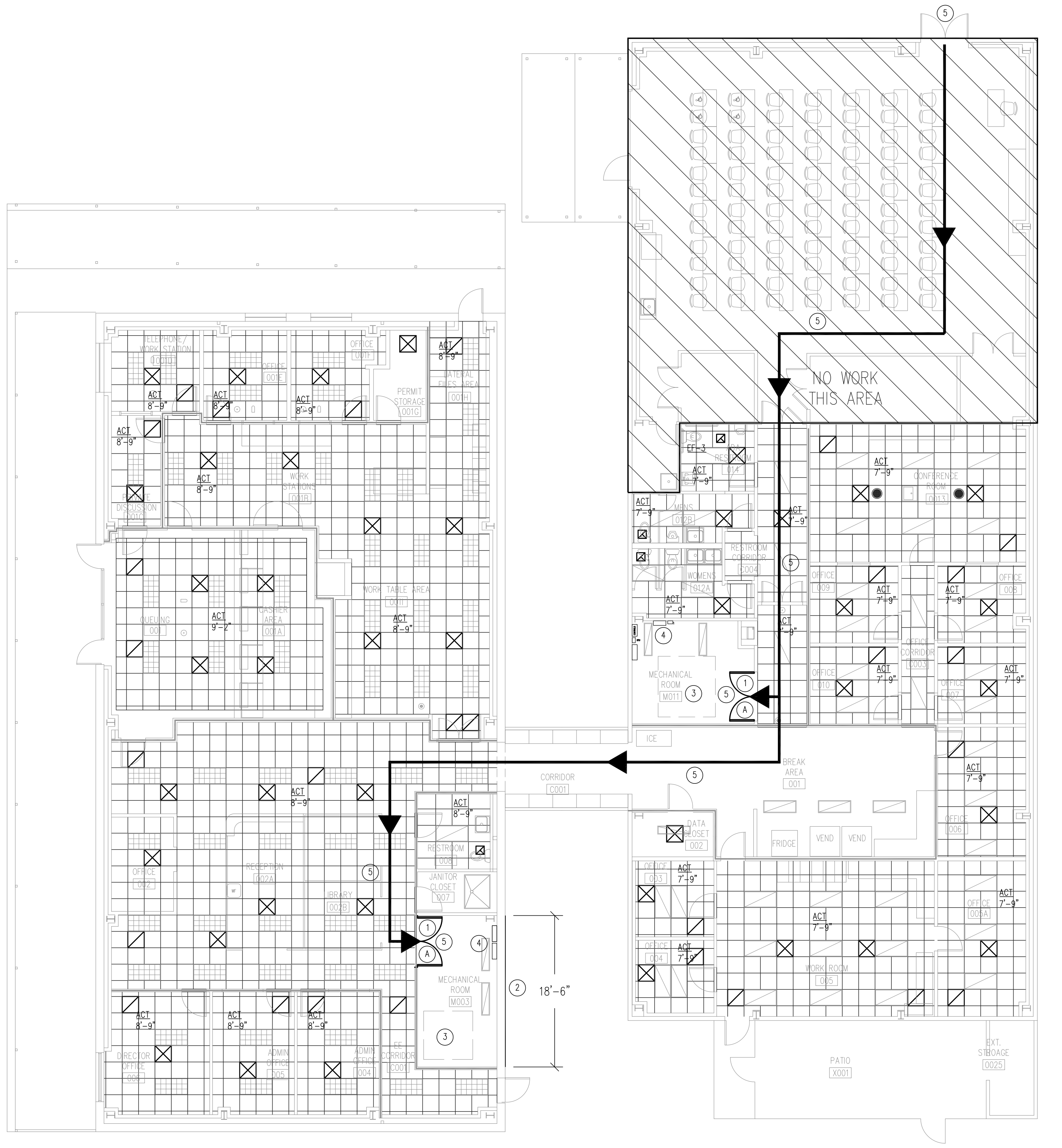


1 M-13 INSTALLATION FLOOR PLAN 1/8" = 1'-0"

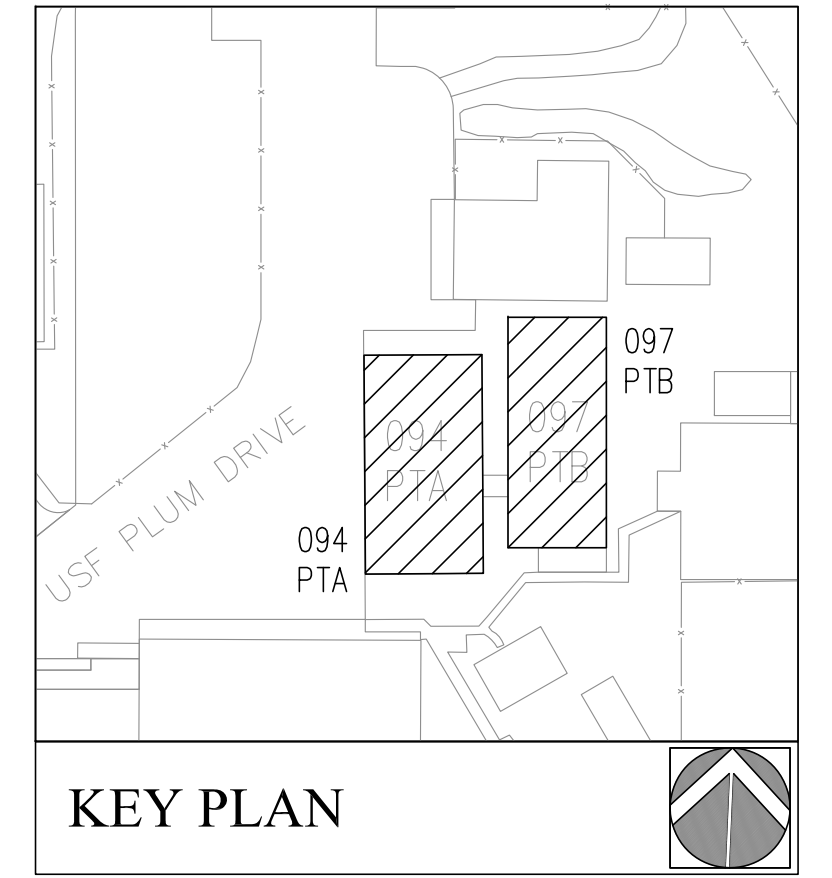
DOOR AND FRAME SCHEDULE

DOOR NO.	SIZE			TYPE	MAT.	FINISH	LABEL RATING	FRAME			DETAIL			HARDWARE SET	
	WIDTH	HT	THICK					TYPE	MAT.	FINISH	LABEL RATING	HEAD	JAMB		THRESHOLD
A	6'-0"	7'-0"	1 1/2"	A	WOOD	CLEAR	STANDARD	INTERIOR	METAL	PRIMED/PAINTED	STANDARD	DOOR "A" JAMB DETAIL	DOOR "A" JAMB DETAIL	PEMCO V2322 094-PTA ONLY	SEE BELOW

CONTRACTOR SHALL REPLACE EXISTING MECHANICAL ROOM DOOR AND HARDWARE. PAINT SHALL BE EQUAL TO:
 SHERWIN WILLIAMS PROMAR 200, EGG-SHELL FOR WALLS (IF NEEDED)
 SHERWIN WILLIAMS PRO-INDUSTRIAL HIGH PERFORMANCE ACRYLIC SEMI-GLOSS FOR DOOR FRAMES.
 CLEAR DOOR FINISH TO MATCH EXISTING
 ADD AN INACTIVE 3'-0" LEAF WITH A FLUSH BOLT AT THE BOTTOM TO SECURE IT.
 PROVIDE SARGENT 8204-LL-26D MORTISE TYPE LOCKSET ON THE ACTIVE LEAF.



- WALL LEGEND**
- INTERIOR WALL
 - INTERIOR WALL TO BOTTOM OF ROOF DECK
 - EXTERIOR METAL PANEL WALL
- REFLECTED CEILING LEGEND**
- EXISTING 2'x4' FLUORESCENT LIGHT FIXTURE
 - EXISTING 2'x4' FLUORESCENT LIGHT FIXTURE
 - NEW 2'x2' CEILING DIFFUSER (SUPPLY AIR)
 - NEW 2'x2' CEILING DIFFUSER (RETURN AIR)
 - NEW CEILING MOUNTED EXHAUST FAN
 - NEW 2'x2' ACOUSTICAL CEILING TILE AND GRID
 - EXISTING SECURITY CAMERA
 - EXISTING LOW VOLTAGE DEVICE
 - EXISTING LOW VOLTAGE DEVICE
 - EXISTING CEILING MOUNTED PROJECTOR PLATE
 - EXISTING WIFI SIGNAL ANTENNA
 - EXISTING CEILING SPEAKER
- ACT X'-X" ACOUSTICAL CEILING TILE CEILING HEIGHT AFF
 GYP X'-X" GYPSUM CEILING CEILING HEIGHT AFF



Consultant:

094-PTA & 097-PTB PARKING AND TRANSPORTATION SERVICES HVAC REPLACEMENT
 Project Location: 13311 USF PLUM DRIVE TAMPA, FLORIDA 33620
 Sheet Title: 094-PTA & 097-PTB GENERAL FLOOR PLAN - INSTALLATION

Revisions:

No.	Date:	By:	Description:

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

Graphic Scale: 0' 2' 4' 8' 12'

USF Number: PD147019470202

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Date Issued: 1/14/2019

Sheet Number: **M-13**

GENERAL DEMOLITION NOTES

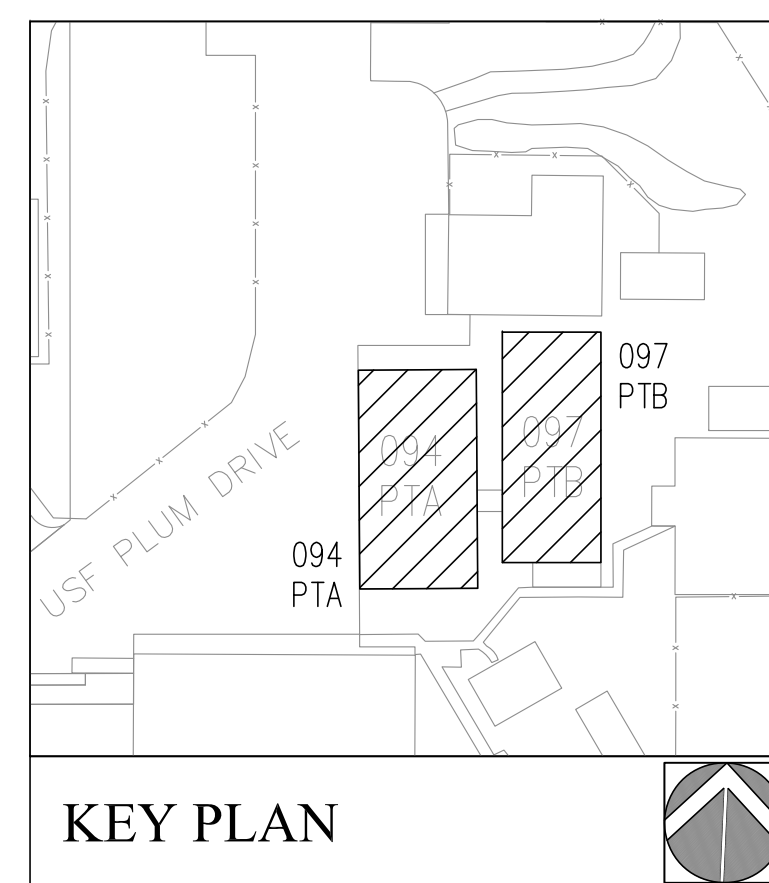
- A. ANY ITEMS NOTED TO BE SALVAGED SHALL BE STORED BY THE CONTRACTOR IN A LOCKED, DRY SPACE PROVIDED BY THE CONTRACTOR. USE OF BUILDING SPACES IS NOT PERMITTED FOR SALVAGED STORAGE.
- B. ANY ITEMS NOTED TO BE REMOVED SHALL BE DISPOSED OF AND REMOVED FROM THE PROJECT SITE, DAILY.
- C. ALL ONSITE MATERIAL STORAGE SHALL BE CONFINED TO THE LAY DOWN AREA AS IDENTIFIED ON G-11 DRAWING.
- D. THE CONTRACTOR SHALL PHOTOGRAPHICALLY DOCUMENT ALL EXISTING CONDITIONS OF FINISHED SURFACES, EQUIPMENT, FURNITURE, ETC. AND PROVIDE WRITTEN DESCRIPTION OF DAMAGE OR DEFECTIVE ITEMS PRIOR TO CONSTRUCTION. FAILURE TO DOCUMENT THESE ITEMS WILL RESULT IN CONTRACTOR PROVIDED IN KIND REPLACEMENT OR REPAIR AT NO COST TO THE OWNER.
- E. ALL DEMOLITION WORK SHALL COMPLY WITH UNIVERSITY OF SOUTH FLORIDA REQUIREMENTS.
- F. ALL EXHAUST DUCTWORK AND WALL CAPS ARE EXISTING TO REMAIN.
- G. ALL SUPPLY, RETURN, AND OUTSIDE AIR DUCTWORK IS TO BE DEMOLISHED.
- H. ALL EXISTING CEILING DIFFUSERS AND TRANSFER GRILLES ARE TO BE DEMOLISHED.
- I. UPON COMPLETION OF DEMOLITION SCOPE CONTRACTOR SHALL CLEAN THE FACILITY OF ANY TRASH OR MATERIAL PRIOR TO STARTING INSTALLATION WORK.

094-PTA - MECHANICAL DEMOLITION NOTES
PHASE-1

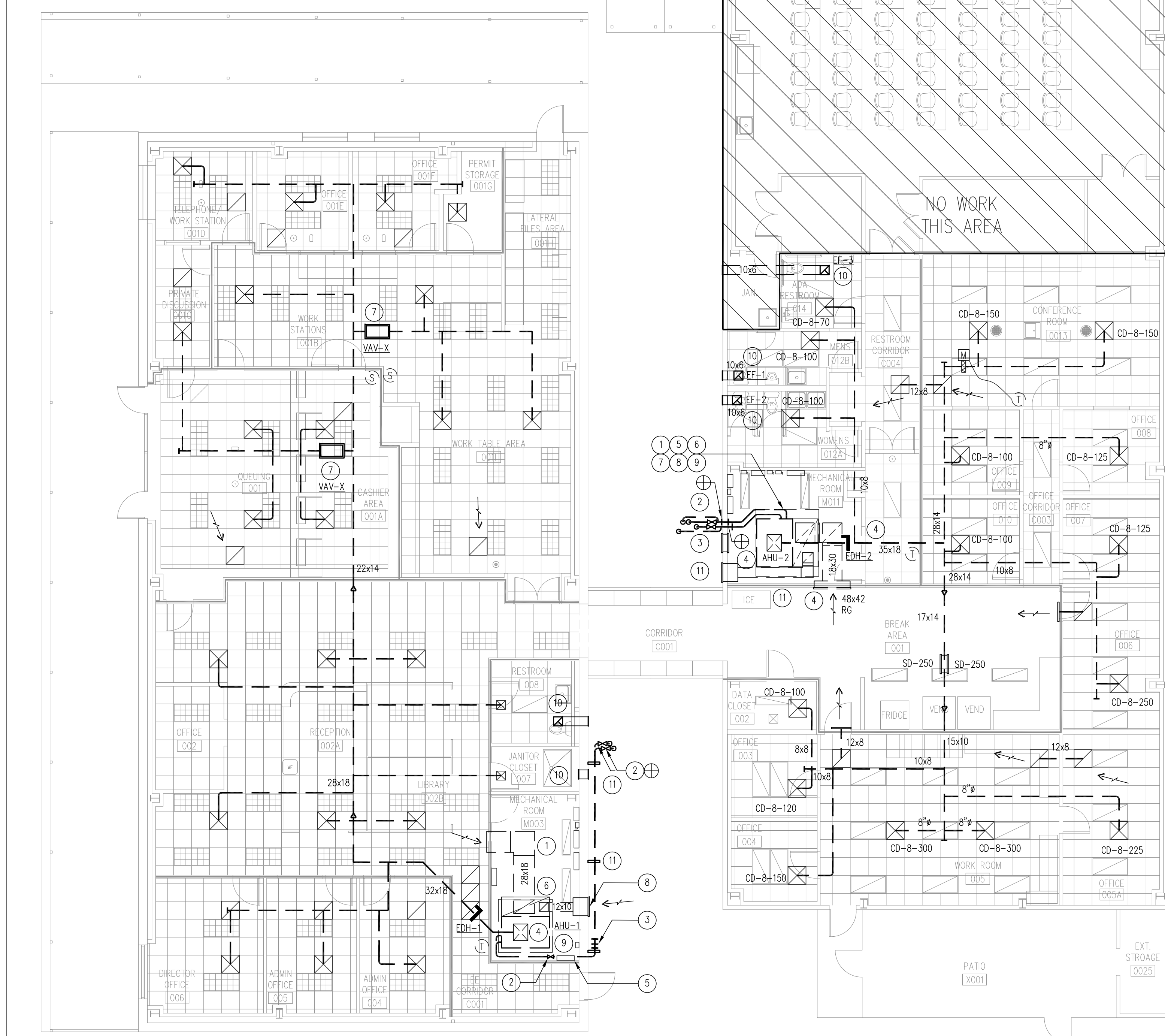
- 1 DE-ENERGIZE THE AIR HANDLER AHU-1 AND ASSOCIATED DUCT HEATER EDH-1.
- 2 ISOLATE THE CHILLED WATER SUPPLY AND RETURN PIPING BY UTILIZING THE EXISTING GATE VALVES ON THE EXTERIOR OF THE BUILDING. DRAIN PIPE TO THE EXTERIOR OF THE BUILDING. DISCONNECT 2-WAY CONTROL VALVE FROM THE CHILLED WATER RETURN PIPING. DEMOLISH CHILLED WATER PIPING BACK TO EXISTING VALVES. EXISTING ABOVE GROUND PIPING TO BE STRIPPED OF INSULATION. PREPARE PIPE FOR NEW INSULATION.
- 3 SALVAGE THE EXISTING BTU METER, FLOW, TEMPERATURE SENSORS, COMMUNICATION WIRING, AND DISPLAY PANEL FOR INSTALLATION IN NEW PIPING.
- 4 DISCONNECT SUPPLY/RETURN/OUTSIDE AIR DUCTWORK FROM THE AIR HANDLING UNIT. DISCONNECT ALL DE-ENERGIZED ELECTRICAL WIRING AND LOW VOLTAGE WIRING. DEMOLISH UNIT AND REMOVE AHU-1 FROM THE MECHANICAL ROOM THROUGH NEWLY CREATED OPENING FOR NEW DOUBLE DOOR. REFER TO GENERAL SHEETS FOR CONSTRUCTION EGRESS THROUGH THE BUILDING.
- 5 REMOVE AND DISPOSE OF ALL AMERICAN AUTOMATRIX CONTROLS INCLUDING SENSORS, WIRING, ETC. CABINET AND 120V POWER TO REMAIN FOR NEW CONTROLS. REFER TO INSTALLATION DRAWINGS FOR NEW LOCATION OF EXISTING CABINET.
- 6 REFER TO ELECTRICAL DRAWINGS FOR RELATED ELECTRICAL DEMOLITION WORK.
- 7 DE-ENERGIZE AND DISCONNECT THE (2) VAV BOXES, WALL SENSORS, POWER, AND CONTROL WIRING AND DEMOLISH.
- 8 REMOVE AND DISPOSE OF THE EXISTING OUTSIDE AIR INTAKE LOUVER. ENLARGE OPENING FOR INSTALLATION OF NEW LOUVER. REFER TO DETAILS AND GENERAL SHEETS FOR MORE INFORMATION.
- 9 REMOVE AND DISPOSE OF EXISTING CONDENSATE PIPING FROM AHU-1 TO FINAL TERMINATION IN YARD.
- 10 EXISTING EXHAUST FAN TO BE REMOVED. DUCT AND LOUVER ARE EXISTING TO REMAIN. PREPARE FOR CONNECTION TO NEW EXHAUST FAN.
- 11 EXISTING WALL MOUNTED CLEVIS PIPE HANGERS ON EXTERIOR WALL TO BE REMOVED. PATCH AND SEAL HOLES WITH EXTERIOR GRADE CAULKING TO MATCH EXISTING BUILDING COLOR.

097-PTB - MECHANICAL DEMOLITION NOTES
PHASE-2

- 1 DE-ENERGIZE THE AIR HANDLER AHU-2 AND ASSOCIATED DUCT HEATER EDH-2.
- 2 ISOLATE THE CHILLED WATER SUPPLY AND RETURN PIPING BY UTILIZING THE EXISTING GATE VALVES ON THE EXTERIOR OF THE BUILDING. DRAIN PIPE AND SALVAGE THE EXISTING BTU METER FLOW AND TEMPERATURE SENSORS, COMMUNICATION WIRING, AND DISPLAY PANEL FOR INSTALLATION IN NEW PIPING.
- 3 DISCONNECT CHILLED WATER PIPES FROM UNIT. REMOVE THE EXISTING CHILLED WATER CONTROL VALVE AND SCRAP. DISCONNECT CHILLED WATER PIPING WHERE INDICATED AND DISPOSE. DISCONNECT AND SCRAP CONDENSATE PIPING. CONDENSATE PIPING FROM ICE MACHINE IN ADJACENT CORRIDOR SHALL REMAIN. PROVIDE TEMPORARY CPVC DRAIN PIPING TO THE EXTERIOR OF THE BUILDING AT SAME SIZE FOR DURATION OF WORK. ALL EXISTING PIPING PENETRATIONS TO REMAIN FOR USE IN NEW WORK.
- 4 DISCONNECT SUPPLY/RETURN/OUTSIDE AIR DUCTWORK FROM THE AIR HANDLING UNIT. DISCONNECT ALL DE-ENERGIZED ELECTRICAL WIRING AND LOW VOLTAGE WIRING. DEMOLISH UNIT AND REMOVE FROM THE MECHANICAL ROOM THROUGH NEWLY CREATED OPENING FOR NEW DOUBLE DOOR. REFER TO GENERAL SHEETS FOR CONSTRUCTION EGRESS THROUGH THE BUILDING.
- 5 REMOVE AND DISPOSE OF ALL AMERICAN AUTOMATRIX CONTROLS INCLUDING SENSORS, WIRING, ETC. EXISTING CABINET AND 120V POWER TO REMAIN FOR NEW CONTROLS.
- 6 REFER TO ELECTRICAL DRAWINGS FOR RELATED ELECTRICAL DEMOLITION WORK.
- 7 REMOVE AND DISPOSE EXISTING OUTSIDE AIR DUCTWORK. EXISTING LOUVER TO REMAIN.
- 8 REMOVE AND SCRAP EXISTING ELECTRIC DUCT HEATER.
- 9 REMOVE AND DISPOSE EXISTING 48x42 WALL MOUNTED RETURN GRILLE. OPENING SHALL BE UTILIZED FOR NEW EXPOSED DOUBLE WALL SPIRAL RETURN DUCTWORK. CONTRACTOR SHALL FRAME AND FINISH OPENING TO MATCH EXISTING AROUND NEW DUCT. REFER TO M-43 FOR NEW RETURN DUCT SIZE AND MOUNTING HEIGHT.
- 10 DE-ENERGIZE, DISCONNECT, AND REMOVE EXISTING CEILING MOUNTED RESTROOM EXHAUST FAN AND ASSOCIATED SPEED CONTROLLER ABOVE CEILING. EXISTING EXHAUST DUCT AND WALL CAP TO REMAIN FOR REUSE. PREPARE DUCT FOR NEW CONNECTION TO NEW CEILING MOUNTED EXHAUST FANS. REFER TO SHEET M-12.
- 11 REMOVE AND DISPOSE OF EXISTING CONDENSATE PIPING FROM AHU-2 TO FINAL TERMINATION IN YARD. EXISTING ICE MACHINE CONDENSATE TO BE KEPT IN PLACE AND TEMPORARY CONDENSATE DRAIN PIPING SHALL BE INSTALLED BY THE CONTRACTOR TO DISCHARGE TO BLDG EXTERIOR UNTILL INSTALLATION OF NEW CONDENSATE PIPING.



1 M-14 MECHANICAL DEMOLITION PLAN



1/8" = 1'-0"

Consultant:

Project Title: 094-PTA & 097-PTB PARKING AND TRANSPORTATION SERVICES
HVAC REPLACEMENT
Project Location: 13311 USF PLUM DRIVE
TAMPA, FLORIDA 33620
Sheet Title: 094-PTA & 097-PTB MECHANICAL FLOOR PLAN - DEMOLITION

Revisions:

No.	Date:	By:	Description:

Scale	1/8" = 1'-0"
Graphic Scale	0' 2' 4' 8' 12'
USF Number	PD147019470202
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Consultant:

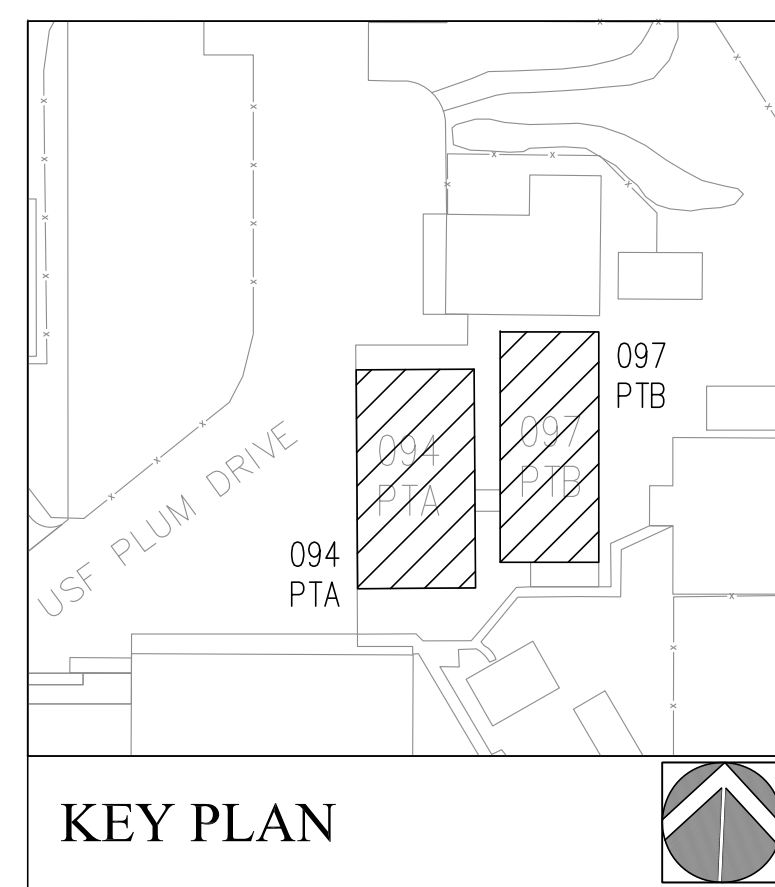
Revisions:

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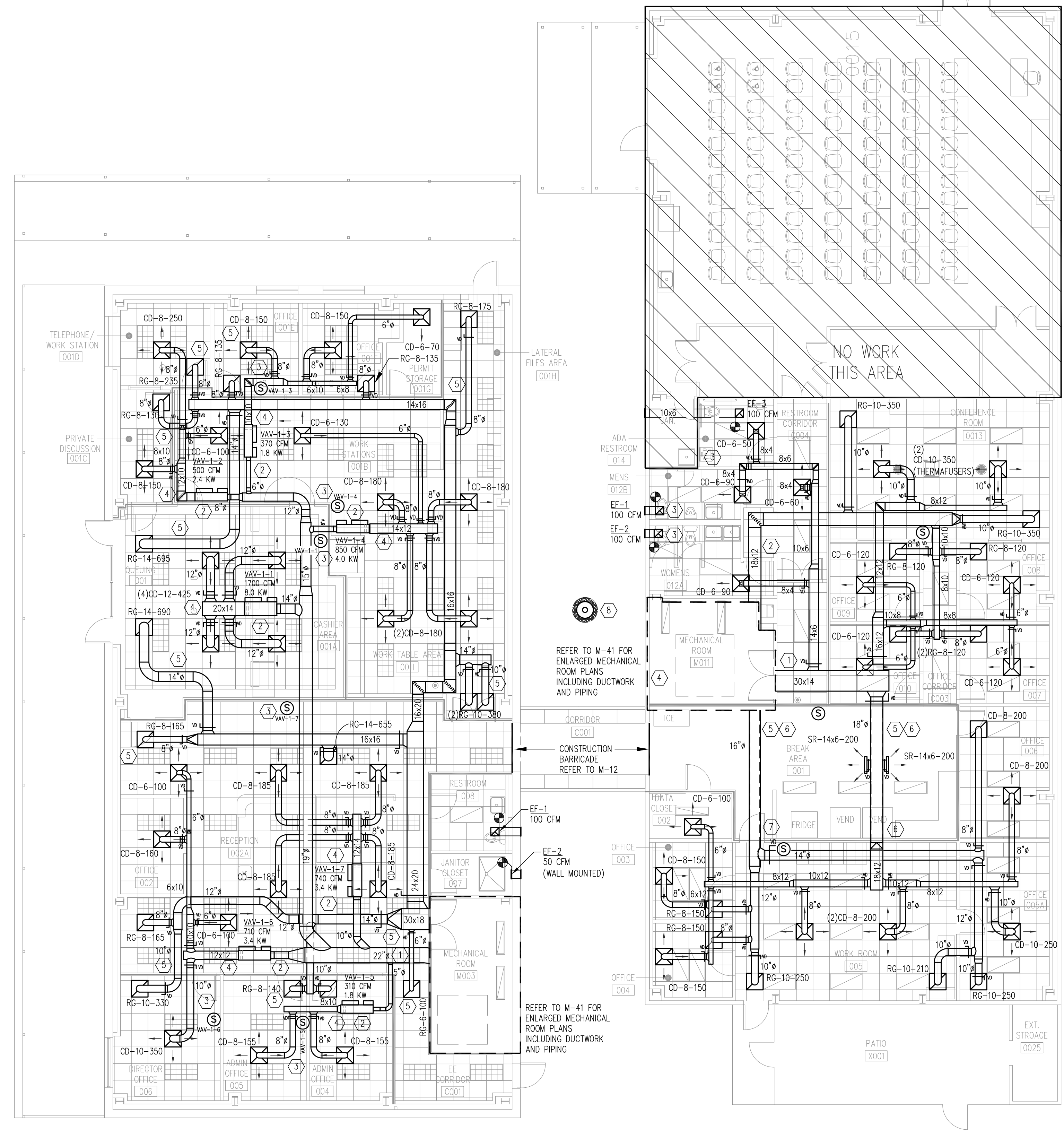
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Graphic Scale	0' 2' 4' 8' 12'
USF Number	PD147019470202
Issued For	100% CD'S
Date Issued	1/14/2019
Sheet Number	M-15

- 094-PTA – MECHANICAL INSTALLATION NOTES
 PHASE-1
- FABRICATE AND INSTALL NEW MEDIUM PRESSURE 20 GA. SHEET METAL SUPPLY DUCT.
 - LOCATE AND INSTALL NEW VAV BOXES WITH ELECTRIC HEAT THROUGH OUT THE SPACE AS SHOWN. VAV BOXES SHALL BE INSTALLED TO ALLOW FOR REQUIRED SERVICE AND SAFETY SETBACKS AND SHALL BE LOCATED IN AN ACCESSIBLE LOCATION. PROVIDE MECHANICAL IDENTIFICATION ON CEILING GRID T-BAR FOR EACH VAV BOX.
 - INSTALL NEW NET SENSOR ASSOCIATED WITH EACH VAV BOX AS INDICATED ON THE PLANS. EACH SENSOR TO BE INSTALL AT 5'-6" AFF. ALL CONTROL WIRING TO BE CONCEALED BEHIND WALLS. NO WIRE MOLD WILL BE ACCEPTED.
 NOTE:
 2 VAV BOXES WILL REQUIRE 120v TRANSFORMERS FOR DISTRIBUTION OF LOW VOLTAGE CONTROL WIRING.
 - FABRICATE AND INSTALL NEW 24 GA. SHEET METAL SUPPLY DUCT ON THE DISCHARGE SIDE OF THE VAV BOX AT THE SIZES INDICATED. REFER TO AIR DEVICES SCHEDULE FOR CEILING DIFFUSER TYPE AND SIZES.
 - FABRICATE AND INSTALL NEW 24 GA. SHEET METAL RETURN DUCT AT THE SIZES INDICATED. REFER TO AIR DEVICES SCHEDULE FOR CEILING DIFFUSER TYPE AND SIZES.

- 097-PTB – MECHANICAL INSTALLATION NOTES
 PHASE 2
- FABRICATE AND INSTALL NEW 24 GA. SHEET METAL SUPPLY DUCT AT THE SIZES INDICATED. REFER TO AIR DEVICES SCHEDULE FOR CEILING DIFFUSER TYPE AND SIZES.
 - FABRICATE AND INSTALL NEW 24 GA. SHEET METAL RETURN DUCT AT THE SIZES INDICATED. REFER TO AIR DEVICES SCHEDULE FOR CEILING DIFFUSER TYPE AND SIZES.
 - INSTALL NEW CEILING MOUNTED EXHAUST FANS, SUPPORTED FROM STRUCTURE ABOVE. CONNECT TO EXISTING EXHAUST DUCTWORK.
 - CAP EXISTING LOUVER LOW TO FLOOR IN MECHANICAL ROOM. REFER TO M-41.
 - NEW DOUBLE WALL RIGID ROUND DUCT. REFER TO SPECIFICATIONS FOR MATERIAL CONSTRUCTION TYPE.
 - ROUTE NEW EXPOSED ROUND DUCT THROUGH EXISTING WALL PENETRATIONS. PATCH, SEAL, AND PAINT PENETRATION AROUND NEW DUCT TO MATCH EXISTING.
 - ROUTE NEW EXPOSED ROUND DUCT THROUGH NEW WALL PENETRATION. PATCH, SEAL, AND PAINT PENETRATION AROUND NEW DUCT TO MATCH EXISTING.
 - NEW CONDENSATE DRYWELL. REFER TO ENLARGED MECHANICAL PLANS AND DETAILS



M-15 MECHANICAL INSTALLATION PLAN



Consultant:

Revisions:

No.	Date:	By:	Description:

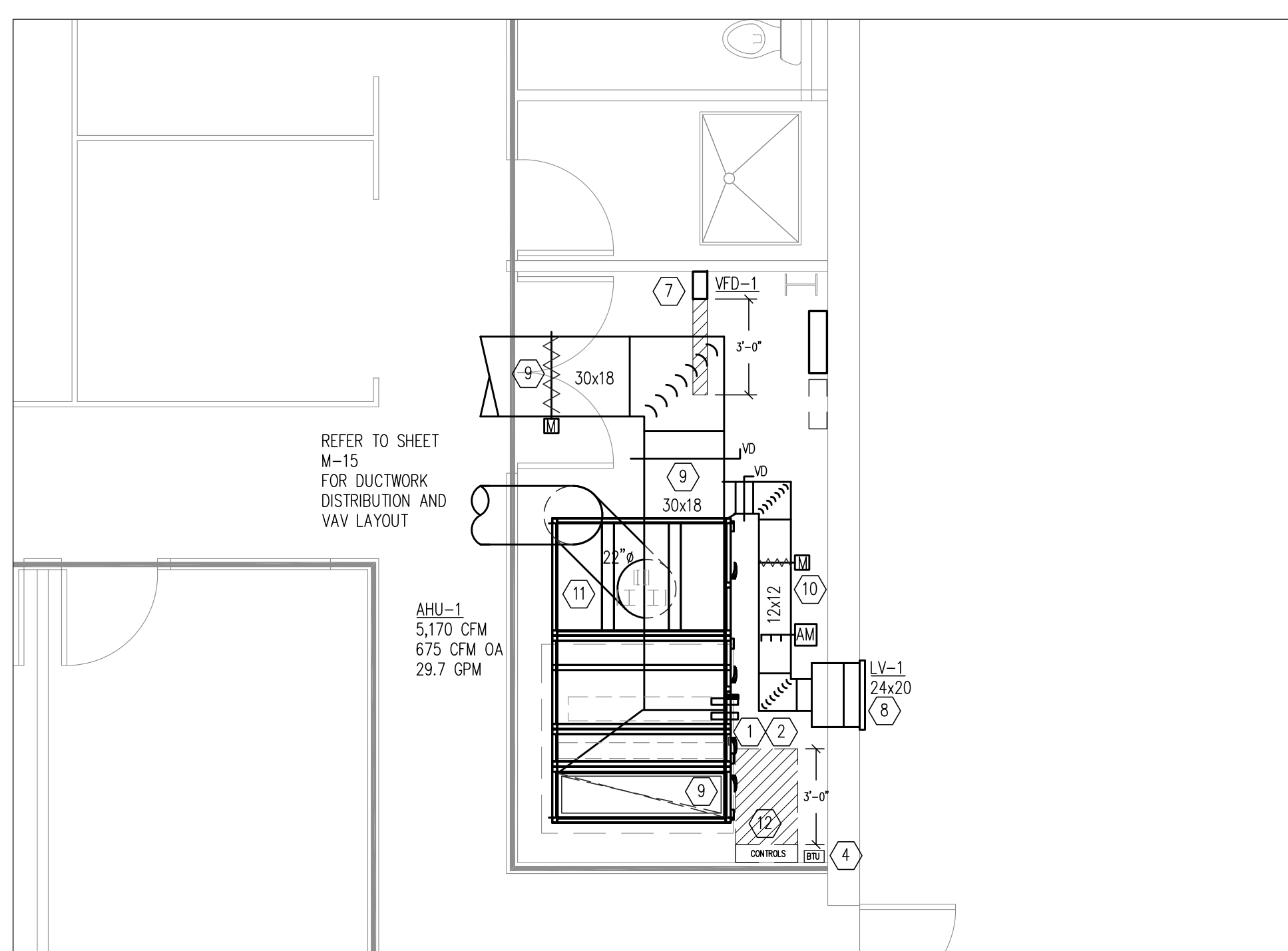
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Graphic Scale	
USF Number	PD147019470202
Issued For	100% CD'S
Date Issued	1/14/2019
Sheet Number	M-41

○ 094-PTA INSTALLATION NOTES PHASE 1

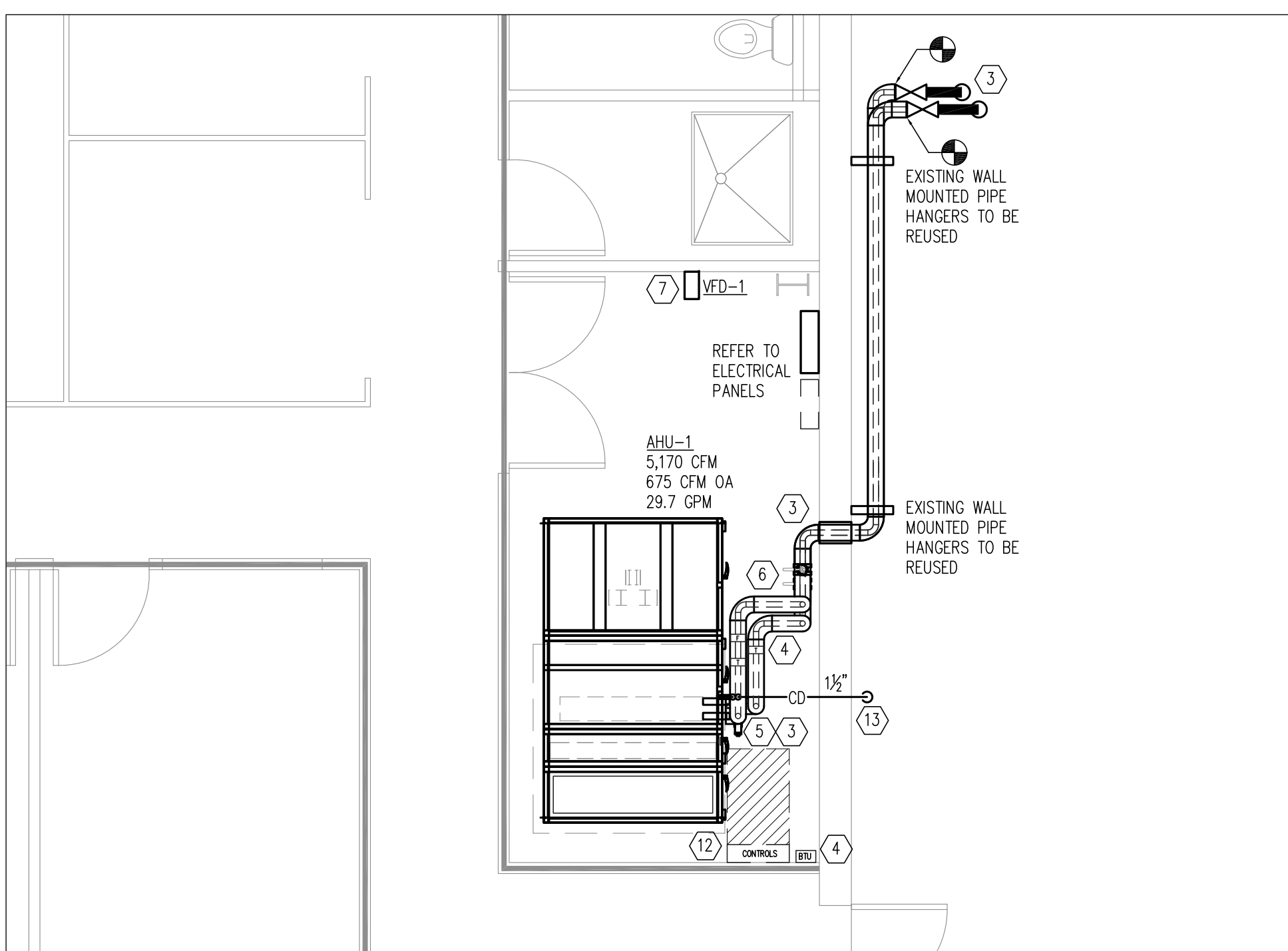
- FORM AND POUR MECHANICAL HOUSEKEEPING PAD EXTENSION IN ACCORDANCE WITH NOTES ON G DRAWINGS AND APPROVED EQUIPMENT SUBMITTALS AND SHOP DRAWINGS.
- POSITION AND CONNECT THE SECTIONS OF THE NEW AIR HANDLING UNIT AHU-1 ON THE MODIFIED CONCRETE HOUSEKEEPING PAD. FINAL UNIT ASSEMBLY SHALL BE LEAK AND VIBRATION FREE.
- CONNECT AND EXTEND 2"CHWS&R PIPING FROM THE EXISTING GATE VALVES USED TO ISOLATE THE SYSTEM AT THE EXTERIOR OF THE BUILDING TO AHU-1 CHILLED WATER COIL CONNECTIONS. NEW PIPES SHALL ENTER THE MECHANICAL ROOM THROUGH NEW PENETRATIONS THROUGH THE NEW METAL WALL PANEL. NEW PENETRATIONS SHALL BE NO GREATER THAN 1/4" DIA. OF PIPE INCLUDING INSULATION AND JACKETING. FOAM AND SEAL PENETRATION. ROUTE TO CHILLED WATER COIL CONNECTIONS ALONG INTERIOR OF THE WALL. SUPPORT PIPE WITH FLOOR MOUNTED PIPE SUPPORTS AT ENTRANCE OF MECHANICAL ROOM. REFER TO DETAILS.
- INSTALL NEW SYSTEM 10 BTU SENSORS & METER TO BE PROVIDED BY USF ENERGY MANAGEMENT IN NEW CHILLED WATER PIPING INSIDE THE MECHANICAL ROOM. REFER TO DETAILS FOR SENSOR INSTALLATION REQUIREMENTS. MOUNT NEW BTU METER ON UNISTRUT SUPPORTED FROM EXTERIOR WALL GIRTS. CONTRACTOR SHALL COORDINATE EXACT LOCATION OF SENSOR AND PANEL ON SHOP DRAWINGS WITH ENERGY MANAGEMENT PERSONNEL TO BE DESIGNATED DURING PRE-CONSTRUCTION. CONTRACTOR SHALL PROVIDE TAPS AND INSTALL DEVICES, DEVICES TO BE CALIBRATED BY USF ENERGY MANAGEMENT.
- INSTALL NEW 2-WAY MODULATING CONTROL VALVE IN NEW CHILLED WATER RETURN PIPING. REFER TO DETAILS AND CONTROL DRAWINGS FOR INSTALLATION REQUIREMENTS.
- INSTALL NEW ISOLATION VALVES IN NEW CHILLED WATER SUPPLY AND RETURN PIPING. VALVE SHALL BE FLANGED, BUTTERFLY TYPE.
- INSTALL NEW VED-1 INSIDE MECHANICAL ROOM. MOUNT ON UNISTRUT SUPPORT MOUNTED TO EXISTING FRAMING.
- INSTALL NEW OUTSIDE AIR INTAKE LOUVER LV-1 IN NEW OPENING IN WALL. REFER TO DETAILS FOR INSTALLATION REQUIREMENTS.
- INSTALL NEW RETURN AIR DUCT AND CONNECT TO TOP OF MIXING BOX OPENING. INSTALL MODULATING RETURN AIR DAMPER AND MANUAL VOLUME DAMPER. REFER TO DETAILS AND CONTROLS DRAWINGS.
- ROUTE NEW 12x12 OUTSIDE AIR DUCT TO NEW LOUVER LV-1. INSTALL NEW AIR MONITOR STATION, MODULATING DAMPER, AND MANUAL DAMPER AS INDICATED ON ENLARGED MECHANICAL ROOM PLANS. INSTALL PER MANUFACTURERS REQUIREMENTS.
- FABRICATE AND INSTALL NEW MEDIUM PRESSURE 20 GA. SHEET METAL SUPPLY DUCT.
- INSTALL NEW KMC CONTROLLER IN EXISTING ABANDONED CONTROL CABINET PER CONTROLS POINT LIST.
- ROUTE FULLY TRAPPED, INSULATED COPPER CONDENSATE DRAIN PIPING AT THE SIZE INDICATED TO THE EXTERIOR OF THE BUILDING. ROUTE THROUGH NEW PIPING OPENING IN EXTERIOR WALL. DISCHARGE TO GRADE MINIMUM 12" FROM STRUCTURE. REFER TO DETAILS FOR TRAP CONSTRUCTION.
- CONDUCT TEST AND BALANCE ON THE NEW SYSTEM INCLUDING ALL POINTS OF MEASURE AS INDICATED IN THE T&B SPECIFICATIONS. CONTRACTOR SHALL COORDINATE WITH THE ENGINEER OF RECORD, MECHANICAL CONTRACTOR, CONTROLS CONTRACTOR, AND T&B AGENT TO BE PRESENT FOR SYSTEM STARTUP.

○ 097-PTB INSTALLATION NOTES

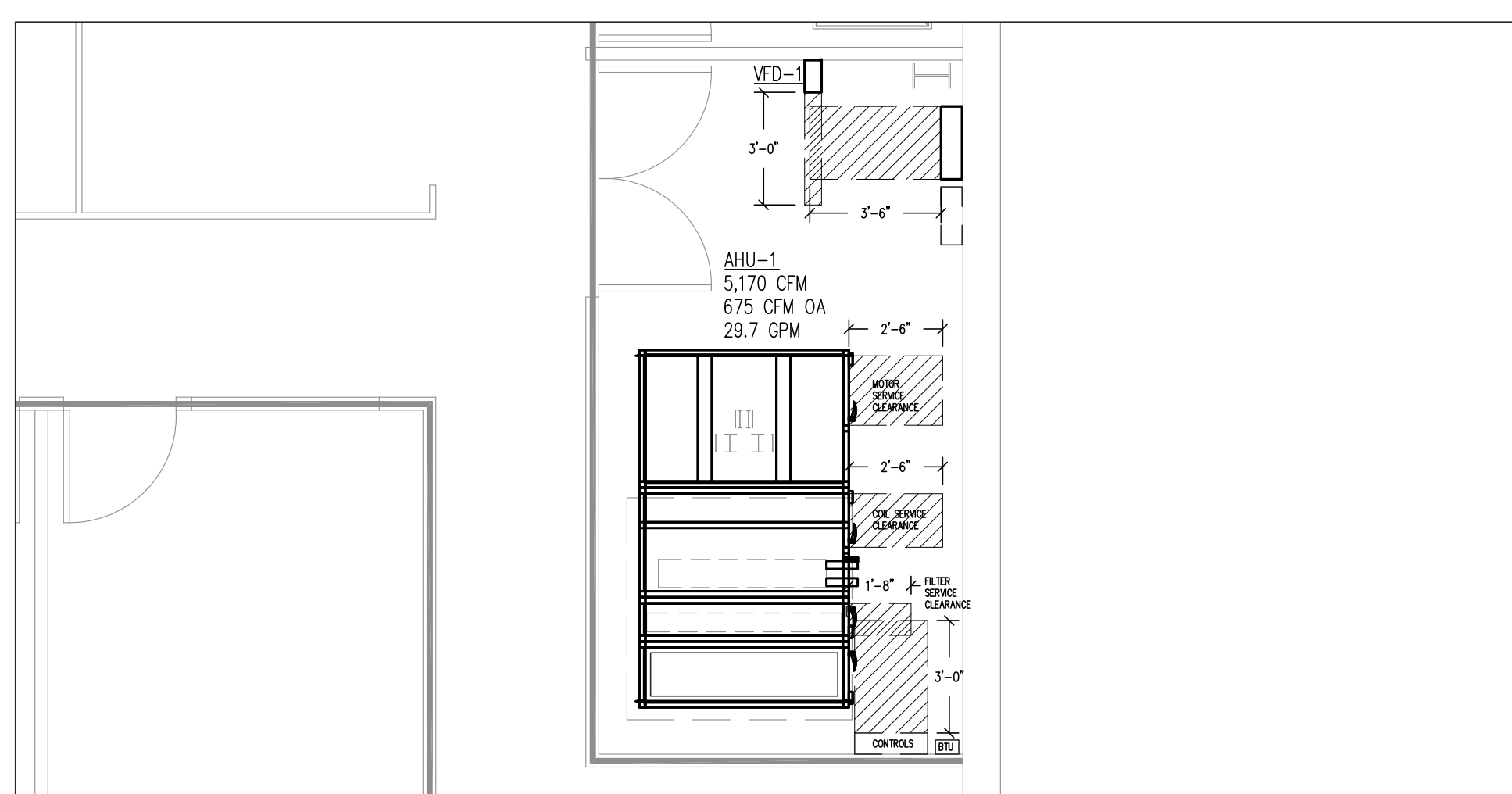
- FORM AND POUR MECHANICAL HOUSEKEEPING PAD EXTENSION IN ACCORDANCE WITH NOTES ON G DRAWINGS AND APPROVED EQUIPMENT SUBMITTALS AND SHOP DRAWINGS.
- POSITION AND CONNECT THE SECTIONS OF THE NEW AIR HANDLING UNIT AHU-2 ON THE MODIFIED CONCRETE HOUSEKEEPING PAD. FINAL UNIT ASSEMBLY SHALL BE LEAK AND VIBRATION FREE.
- CONNECT AND EXTEND 2"CHWS&R PIPING FROM THE POINT OF DEMOLITION TO AHU-2 CHILLED WATER COIL CONNECTIONS. NEW PIPES SHALL ENTER THE MECHANICAL ROOM THROUGH EXISTING WALL PENETRATIONS. FOAM AND SEAL PIPING PENETRATIONS AROUND NEW PIPES. ROUTE TO CHILLED WATER COIL CONNECTIONS WITH NO HORIZONTAL OR VERTICAL OFFSET. SUPPORT PIPE WITH FLOOR MOUNTED PIPE SUPPORTS AT ENTRANCE OF MECHANICAL ROOM. REFER TO DETAILS.
- INSTALL NEW SYSTEM 10 BTU SENSORS & METER TO BE PROVIDED BY USF ENERGY MANAGEMENT IN NEW CHILLED WATER PIPING INSIDE THE MECHANICAL ROOM. REFER TO DETAILS FOR SENSOR INSTALLATION REQUIREMENTS. MOUNT NEW BTU METER ON UNISTRUT SUPPORTED FROM EXTERIOR WALL GIRTS. CONTRACTOR SHALL COORDINATE EXACT LOCATION OF SENSOR AND PANEL ON SHOP DRAWINGS WITH ENERGY MANAGEMENT PERSONNEL TO BE DESIGNATED DURING PRE-CONSTRUCTION. CONTRACTOR SHALL PROVIDE TAPS AND INSTALL DEVICES, DEVICES TO BE CALIBRATED BY USF ENERGY MANAGEMENT.
- INSTALL NEW 2-WAY MODULATING CONTROL VALVE IN NEW CHILLED WATER RETURN PIPING. REFER TO DETAILS AND CONTROL DRAWINGS FOR INSTALLATION REQUIREMENTS.
- INSTALL NEW ISOLATION VALVES IN NEW CHILLED WATER SUPPLY AND RETURN PIPING. VALVE SHALL BE FLANGED, BUTTERFLY TYPE.
- INSTALL NEW VED-1 INSIDE MECHANICAL ROOM. MOUNT ON UNISTRUT SUPPORT MOUNTED TO EXISTING FRAMING.
- INSTALL NEW RETURN AIR DUCT AND CONNECT TO TOP OF MIXING BOX OPENING. INSTALL MANUAL VOLUME DAMPER. REFER TO DETAILS AND CONTROLS DRAWINGS.
- ROUTE NEW 10x10 OUTSIDE AIR DUCT TO EXISTING LOUVER ON LOUVER. INSTALL NEW AIR MONITOR STATION, MODULATING DAMPER, AND MANUAL DAMPER AS INDICATED. INSTALL PER MANUFACTURERS REQUIREMENTS.
- FABRICATE AND INSTALL NEW 24 GA. SHEET METAL SUPPLY DUCT.
- FURNISH AND INSTALL NEW 20.0 KW ELECTRIC DUCT HEATER EDH-2 IN AHU-2 SUPPLY DUCT INSIDE MECHANICAL ROOM. INSTALLATION SHALL PROVIDE REQUIRED OFFSETS AND SETBACK CLEARANCES FOR SERVICE AND SAFETY.
- INSTALL NEW KMC CONTROLLER IN EXISTING ABANDONED CONTROL CABINET PER CONTROLS POINT LIST.
- ROUTE NEW TRAPPED, FULLY INSULATED COPPER CONDENSATE DRAIN PIPING AT THE SIZE INDICATED TO THE EXTERIOR OF THE BUILDING. ROUTE THROUGH EXISTING PIPING PENETRATION IN EXTERIOR WALL. DISCHARGE TO NEW DRYWELL BELOW GRADE. REFER TO SCHEDULE AND DETAILS.
- MODIFY EXISTING ICE MACHINE CONDENSATE LINE AS NECESSARY TO DISCHARGE TO NEW AHU-2 CONDENSATE. PROVIDE CLEANOUT AT POINT OF CONNECTION.
- CONDUCT TEST AND BALANCE ON THE NEW SYSTEM INCLUDING ALL POINTS OF MEASURE AS INDICATED IN THE T&B SPECIFICATIONS. CONTRACTOR SHALL COORDINATE WITH THE ENGINEER OF RECORD, MECHANICAL CONTRACTOR, CONTROLS CONTRACTOR, AND T&B AGENT TO BE PRESENT FOR SYSTEM STARTUP.



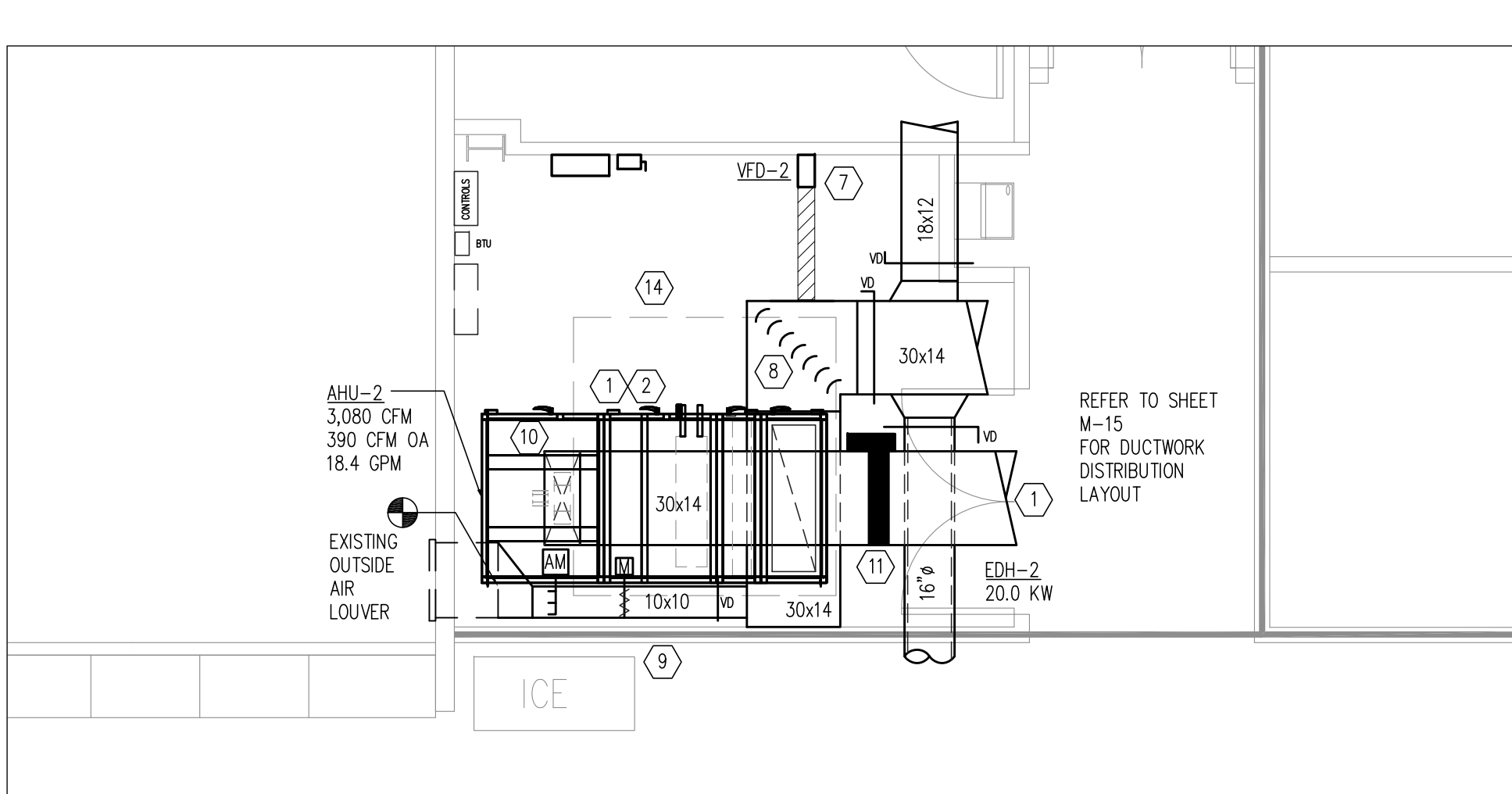
1 M-41 094-PTA ENLARGED MECHANICAL ROOM - HVAC 1/4" = 1'-0"



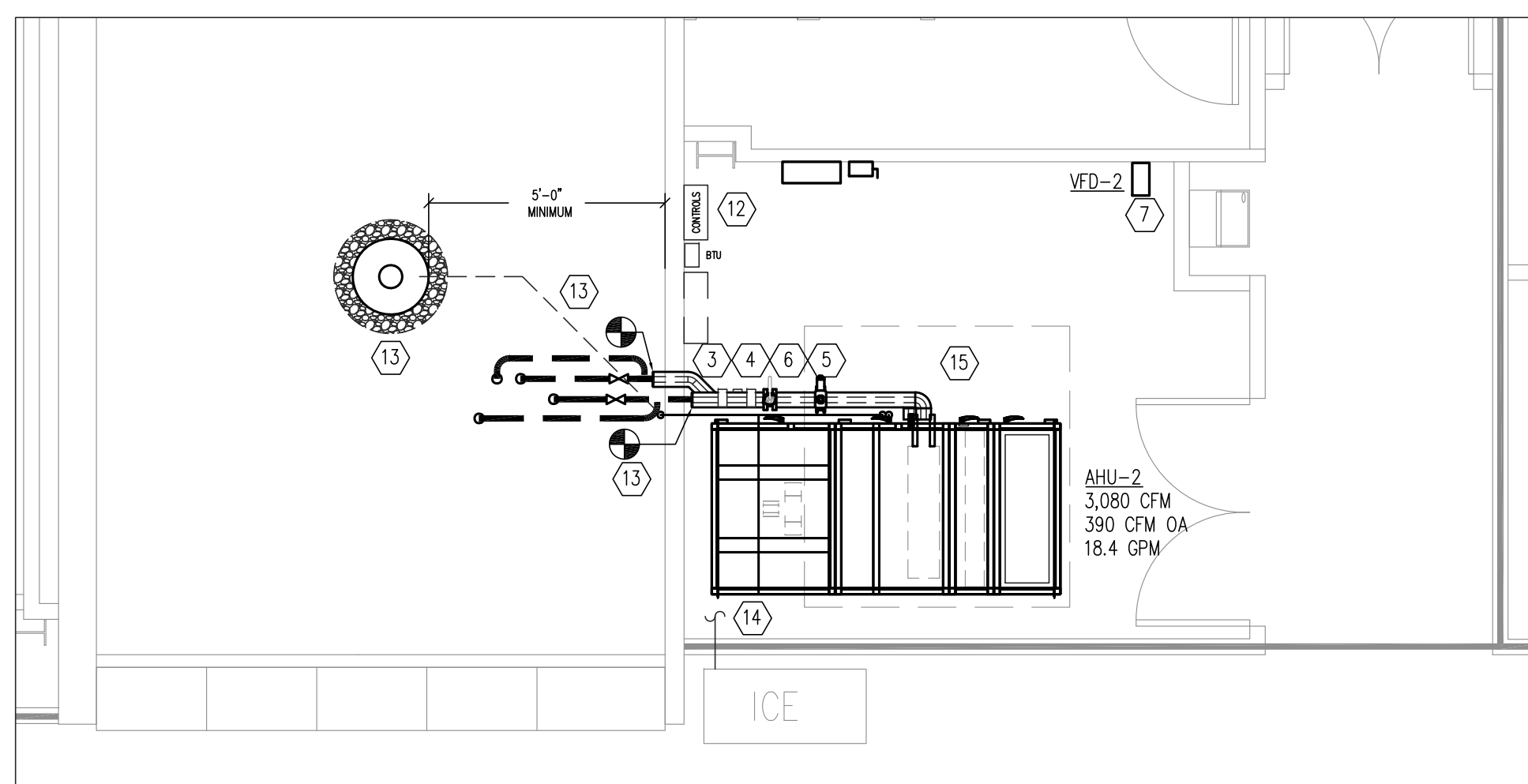
2 M-41 094-PTA ENLARGED MECHANICAL ROOM - PIPING 1/4" = 1'-0"



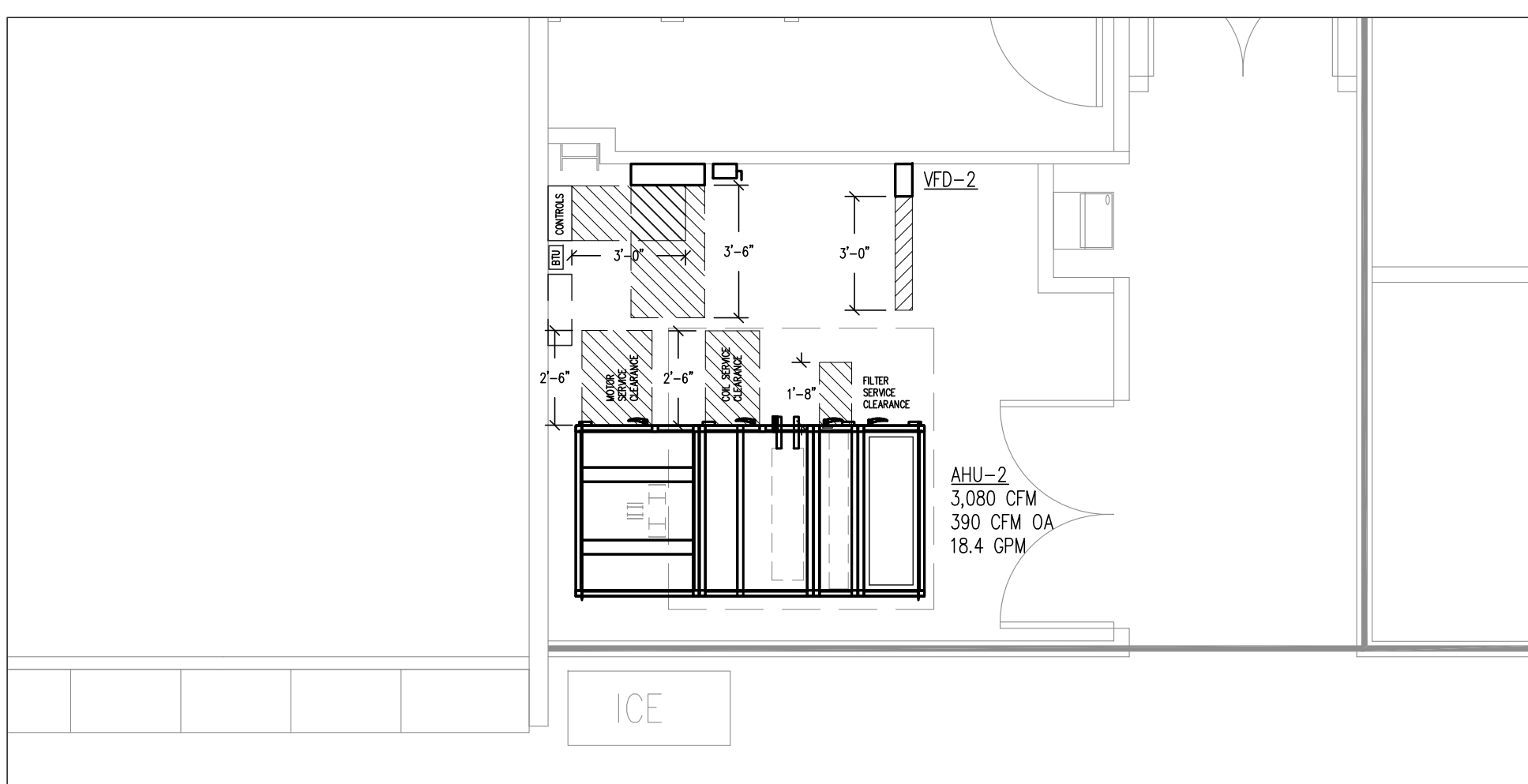
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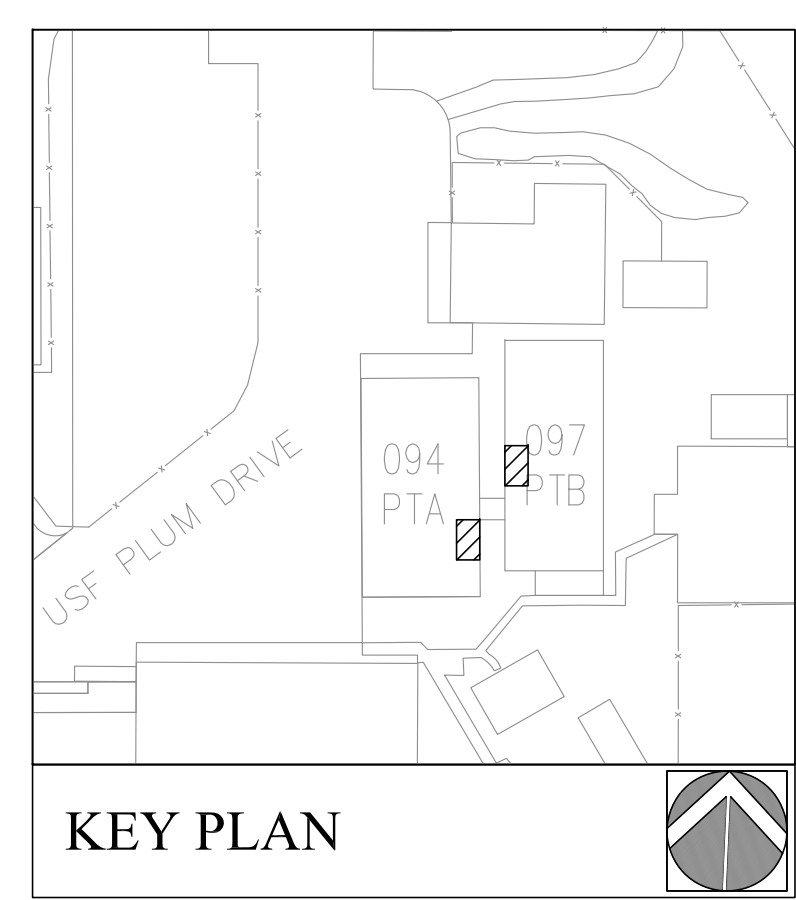
4 M-41 097-PTB ENLARGED MECHANICAL ROOM - HVAC 1/4" = 1'-0"



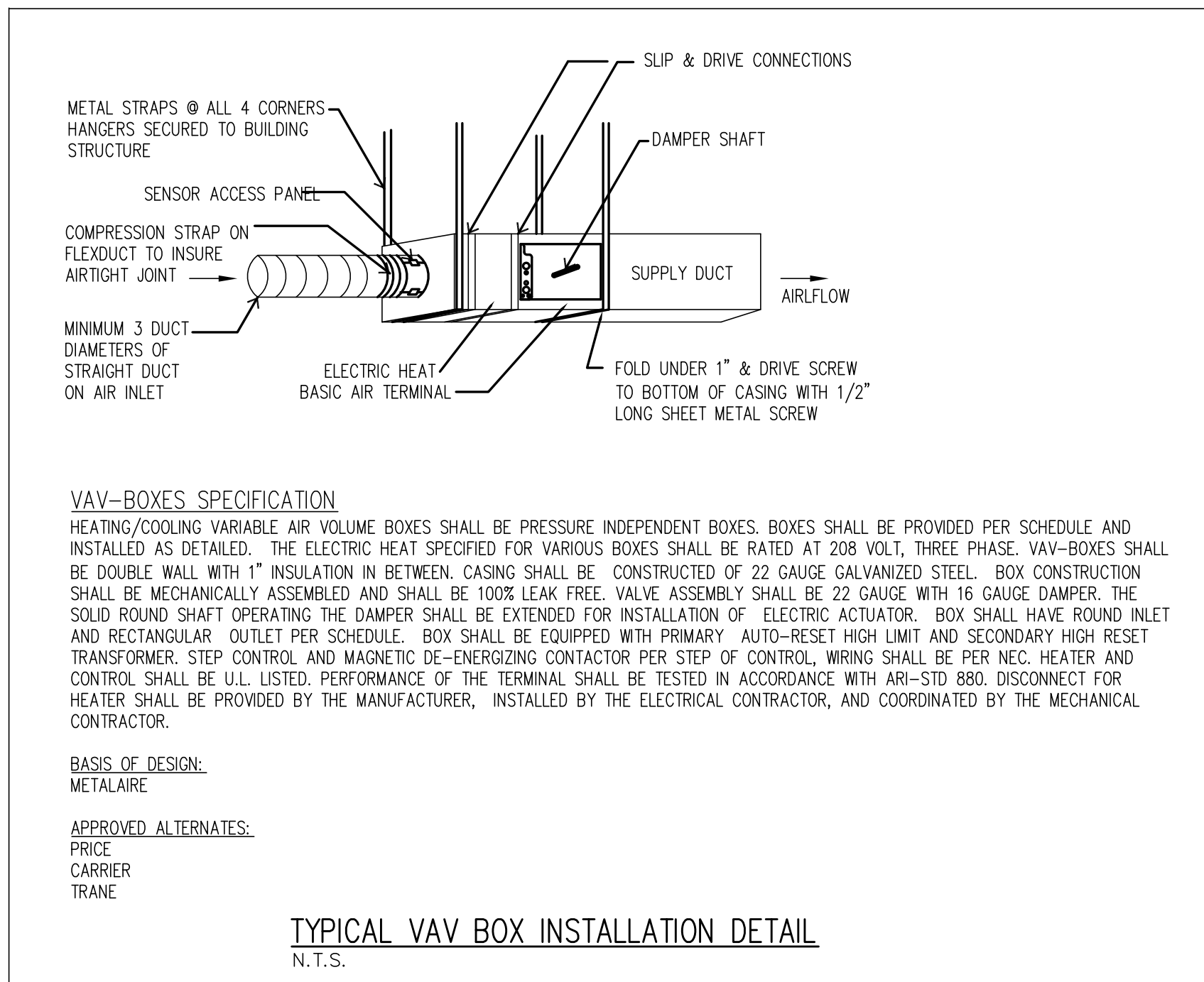
5 M-41 097-PTB ENLARGED MECHANICAL ROOM - PIPING 1/4" = 1'-0"



6 M-41 097-PTB ENLARGED MECHANICAL ROOM - CLEARANCES 1/4" = 1'-0"



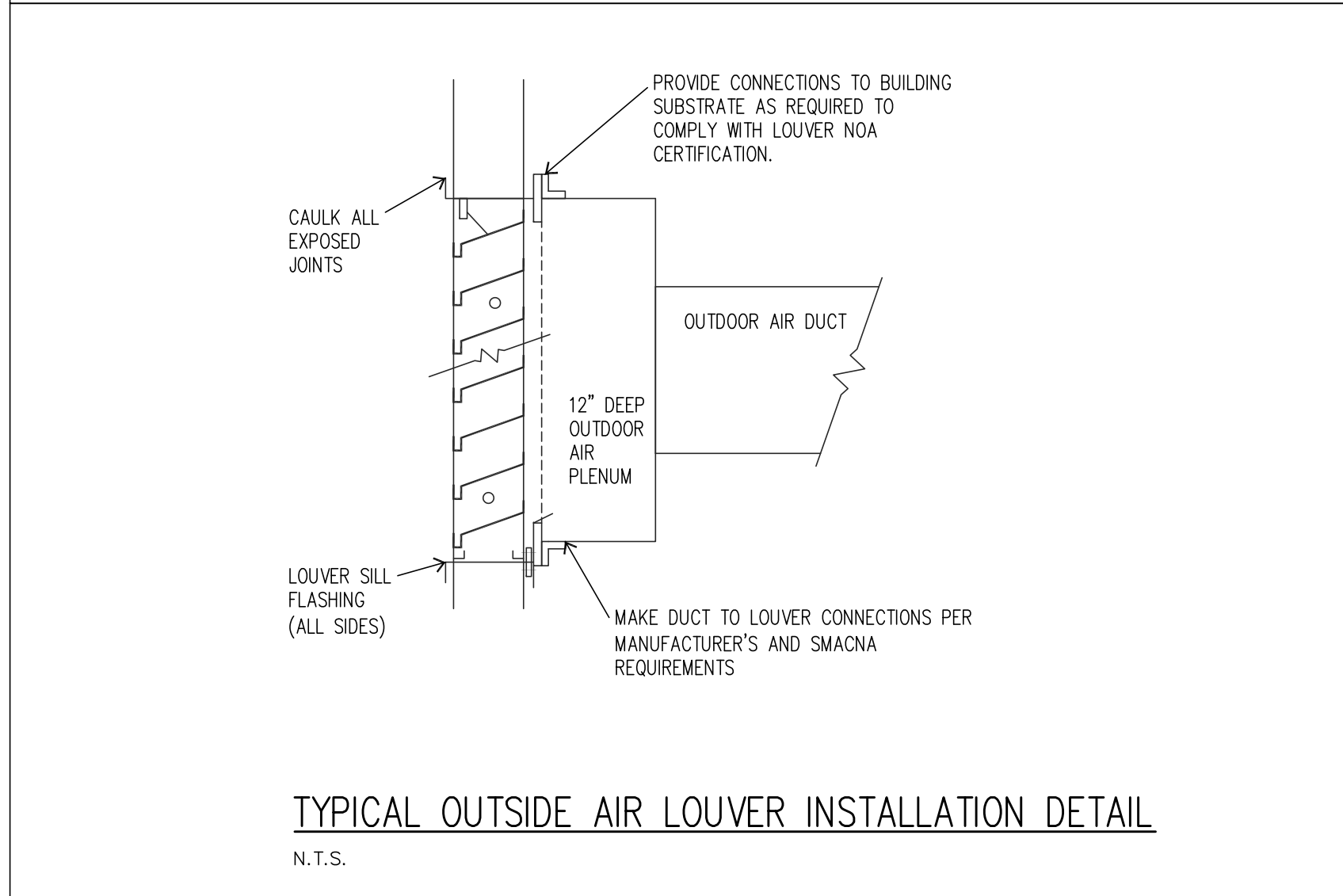
KEY PLAN



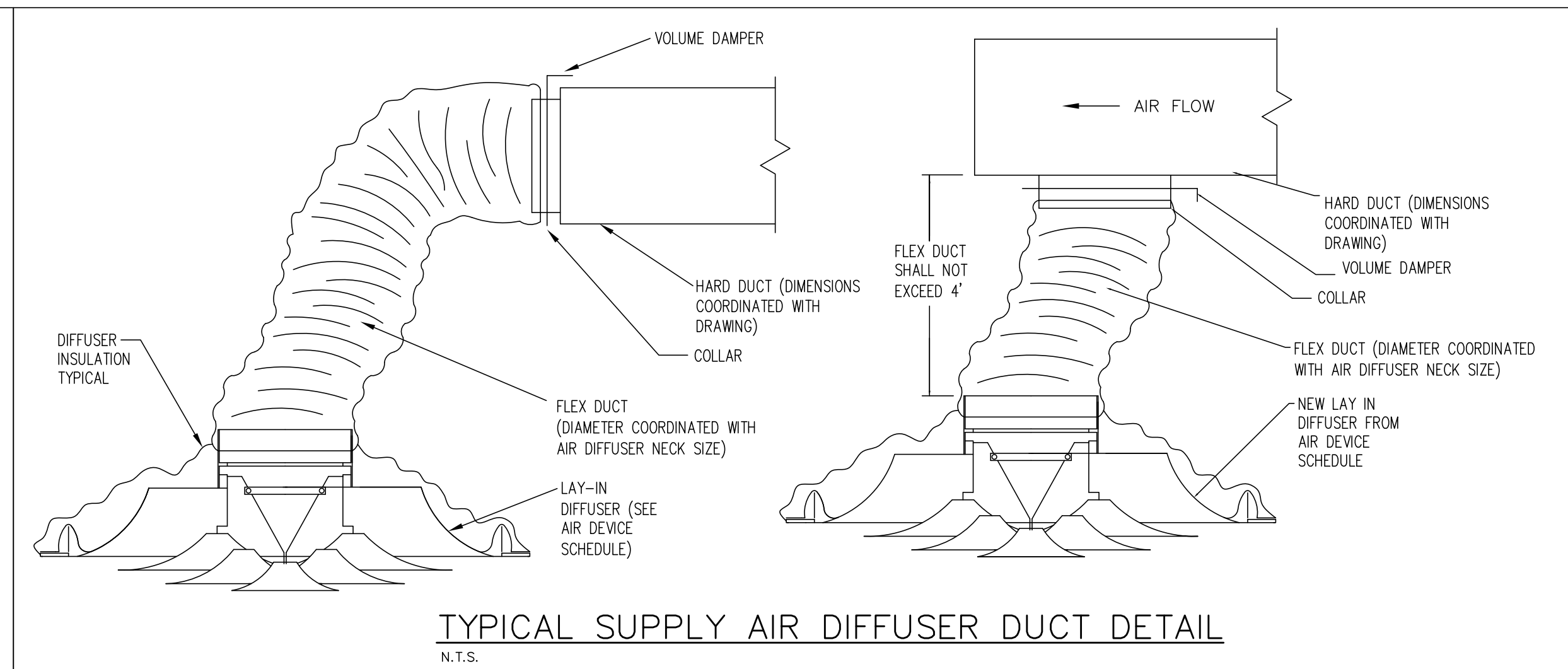
VAV-BOXES SPECIFICATION
 HEATING/Cooling VARIABLE AIR VOLUME BOXES SHALL BE PRESSURE INDEPENDENT BOXES. BOXES SHALL BE PROVIDED PER SCHEDULE AND INSTALLED AS DETAILED. THE ELECTRIC HEAT SPECIFIED FOR VARIOUS BOXES SHALL BE RATED AT 208 VOLT, THREE PHASE. VAV-BOXES SHALL BE DOUBLE WALL WITH 1" INSULATION IN BETWEEN. CASING SHALL BE CONSTRUCTED OF 22 GAUGE GALVANIZED STEEL. BOX CONSTRUCTION SHALL BE MECHANICALLY ASSEMBLED AND SHALL BE 100% LEAK FREE. VALVE ASSEMBLY SHALL BE 22 GAUGE WITH 16 GAUGE DAMPER. THE SOLID ROUND SHAFT OPERATING THE DAMPER SHALL BE EXTENDED FOR INSTALLATION OF ELECTRIC ACTUATOR. BOX SHALL HAVE ROUND INLET AND RECTANGULAR OUTLET PER SCHEDULE. BOX SHALL BE EQUIPPED WITH PRIMARY AUTO-RESET HIGH LIMIT AND SECONDARY HIGH RESET TRANSFORMER. STEP CONTROL AND MAGNETIC DE-ENERGIZING CONTACTOR PER STEP OF CONTROL. WIRING SHALL BE PER NEC. HEATER AND CONTROL SHALL BE U.L. LISTED. PERFORMANCE OF THE TERMINAL SHALL BE TESTED IN ACCORDANCE WITH ARI-STD 880. DISCONNECT FOR HEATER SHALL BE PROVIDED BY THE MANUFACTURER, INSTALLED BY THE ELECTRICAL CONTRACTOR, AND COORDINATED BY THE MECHANICAL CONTRACTOR.

BASIS OF DESIGN:
 METALAIR
APPROVED ALTERNATES:
 PRICE
 CARRIER
 TRANS

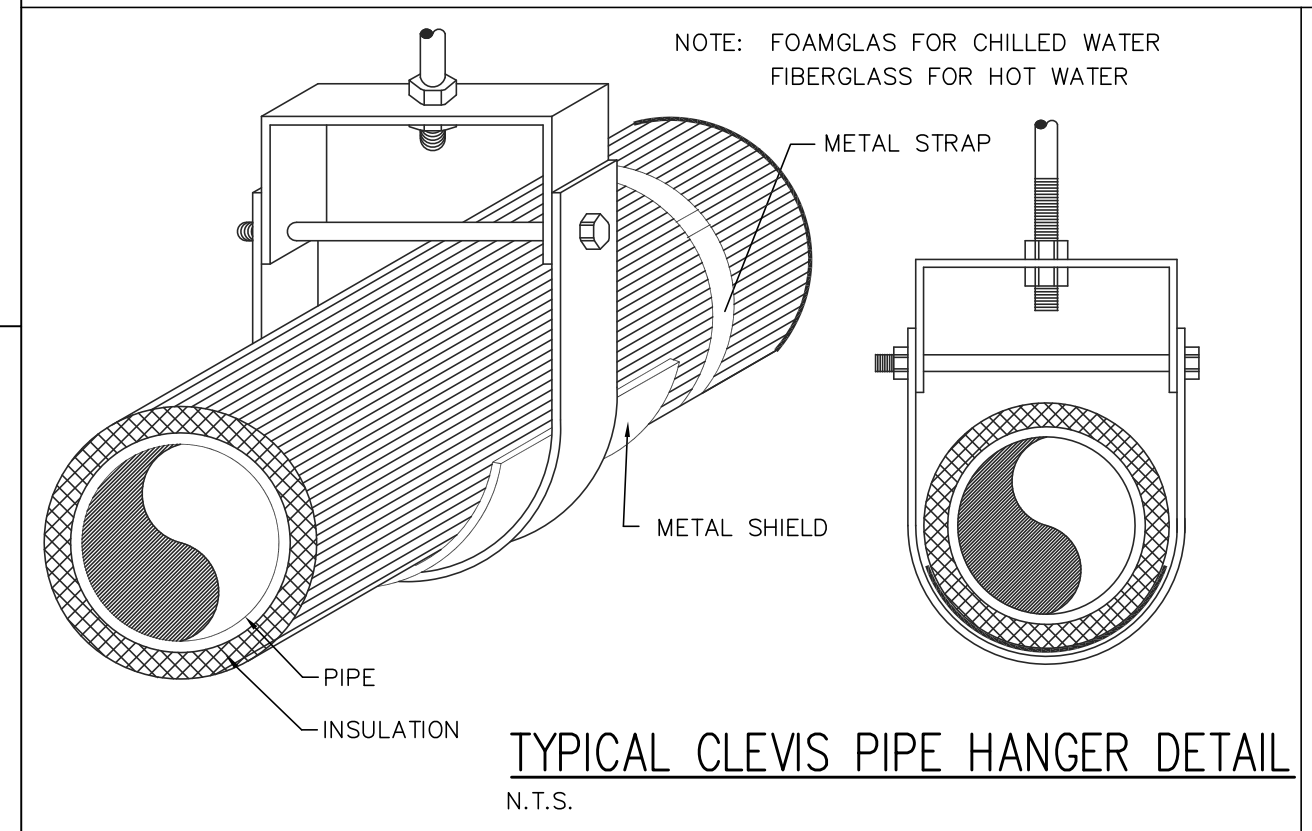
TYPICAL VAV BOX INSTALLATION DETAIL
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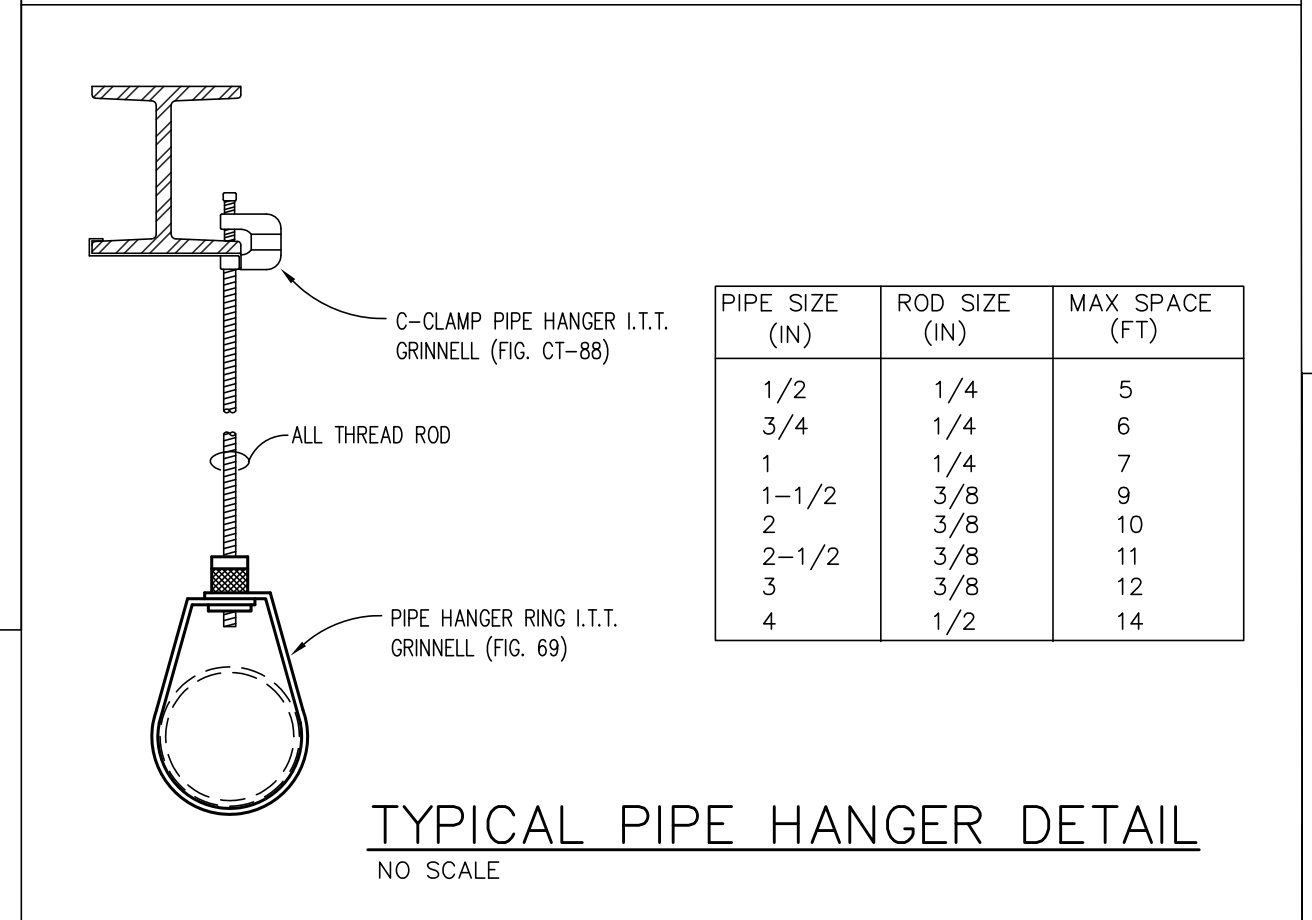
TYPICAL OUTSIDE AIR LOUVER INSTALLATION DETAIL
 N.T.S.



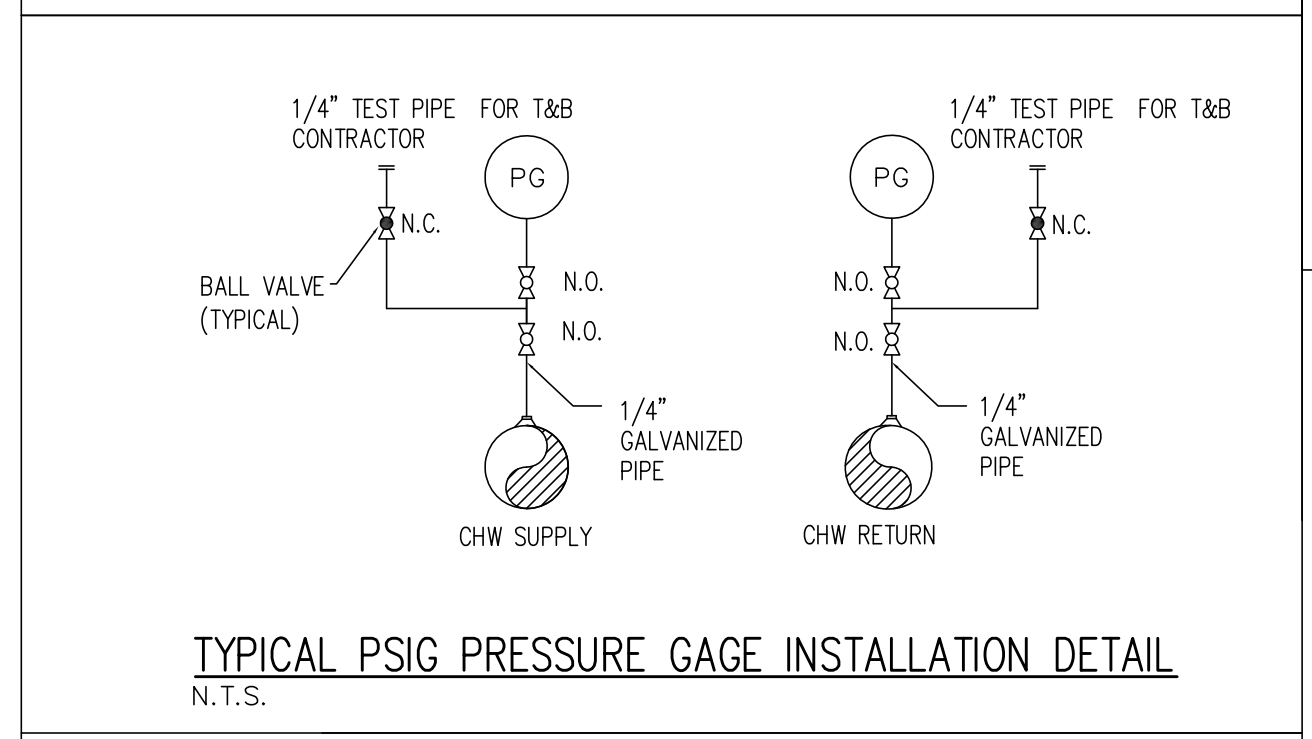
TYPICAL SUPPLY AIR DIFFUSER DUCT DETAIL
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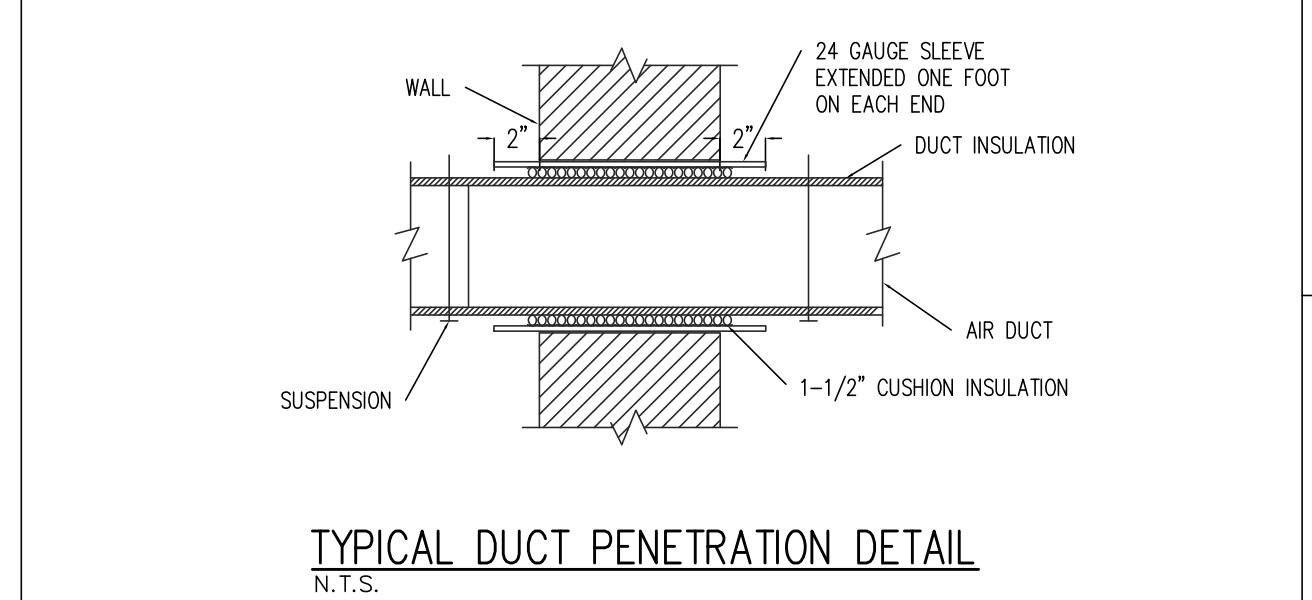
TYPICAL CLEVIS PIPE HANGER DETAIL
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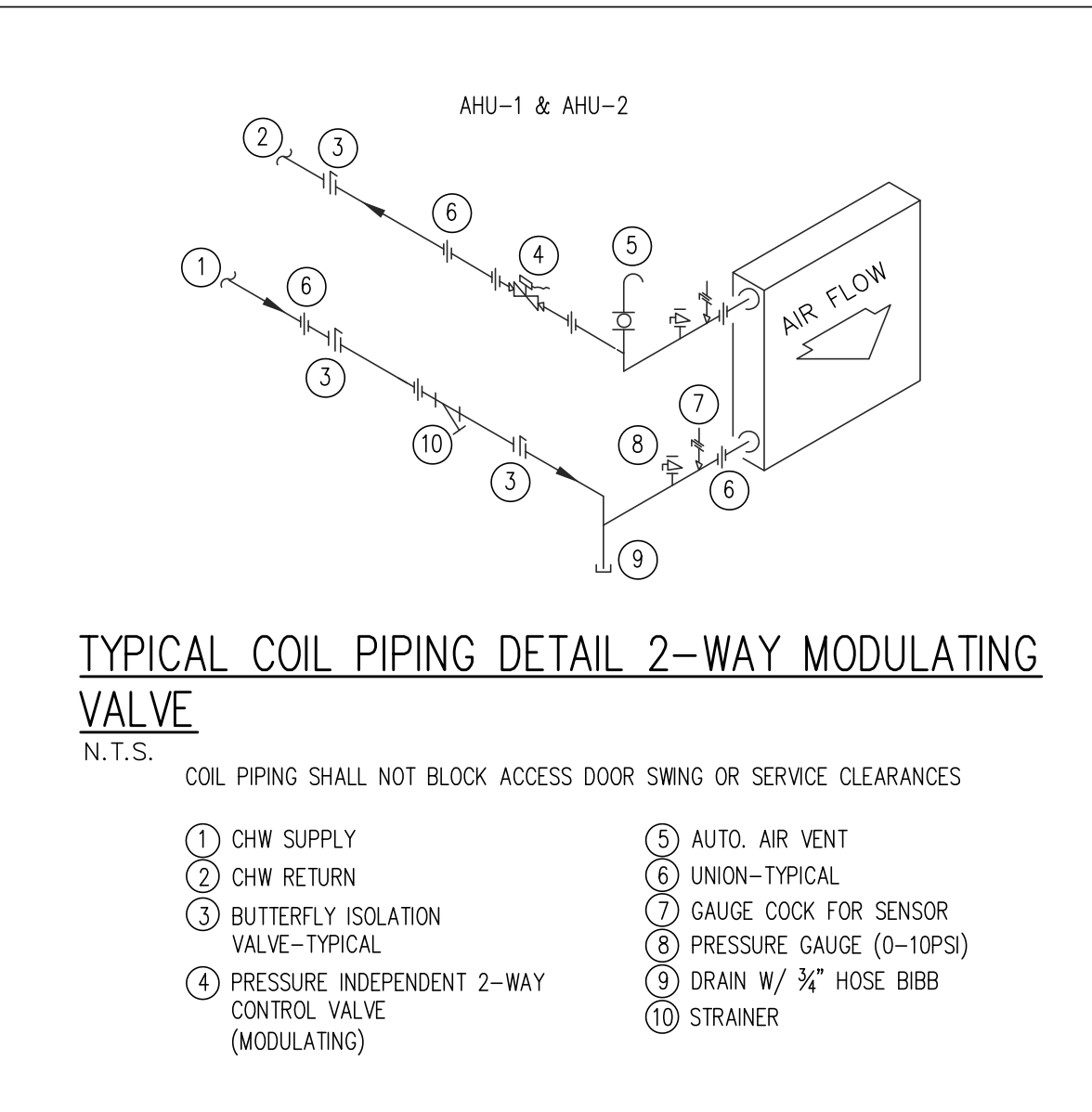
TYPICAL PIPE HANGER DETAIL
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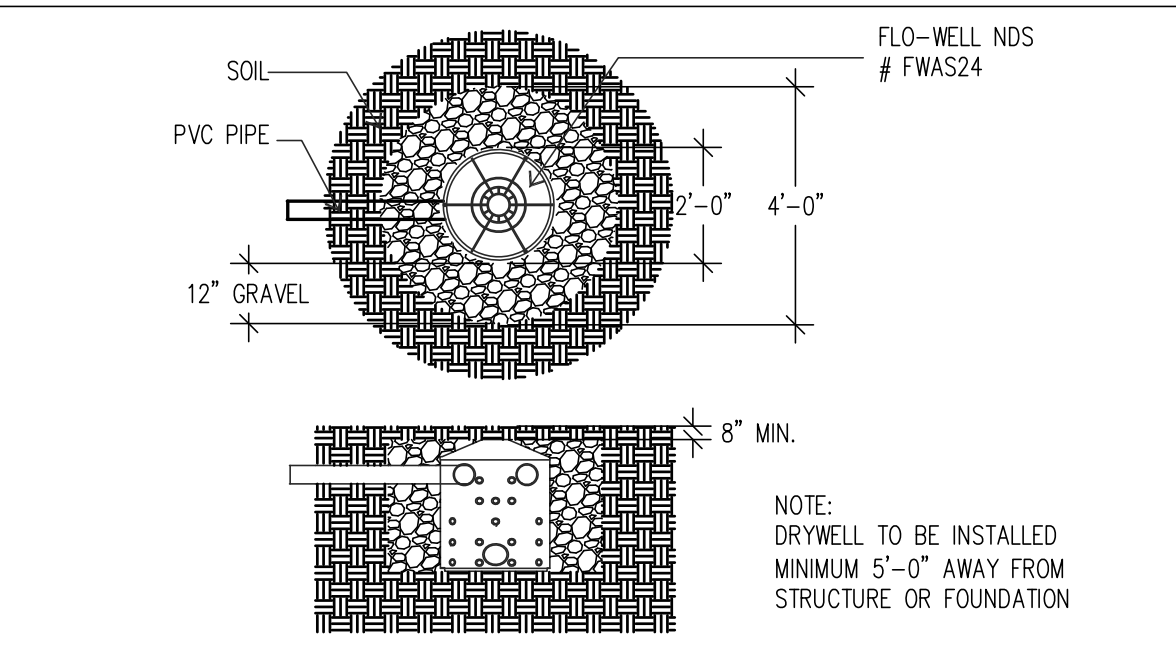
TYPICAL PSIG PRESSURE GAGE INSTALLATION DETAIL
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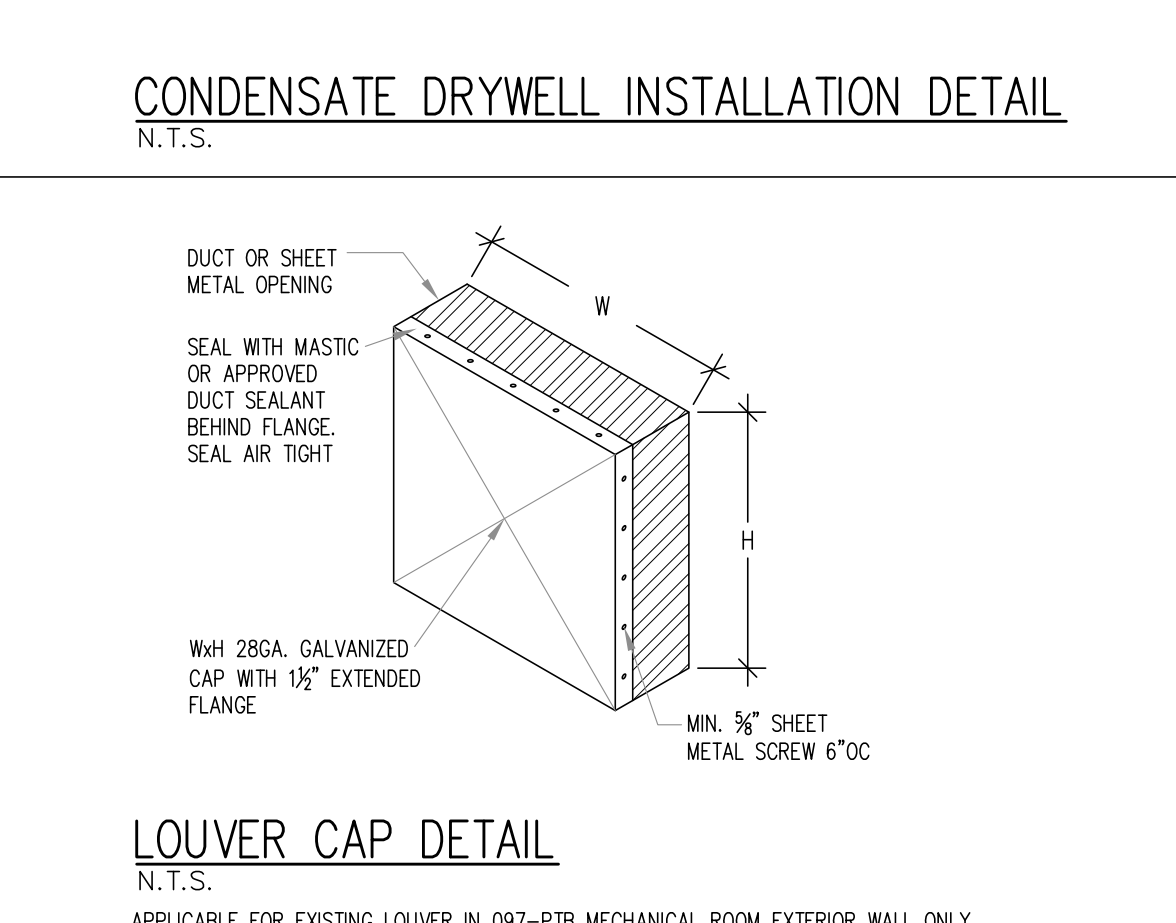
TYPICAL DUCT PENETRATION DETAIL
 N.T.S.



TYPICAL COIL PIPING DETAIL 2-WAY MODULATING VALVE
 N.T.S.

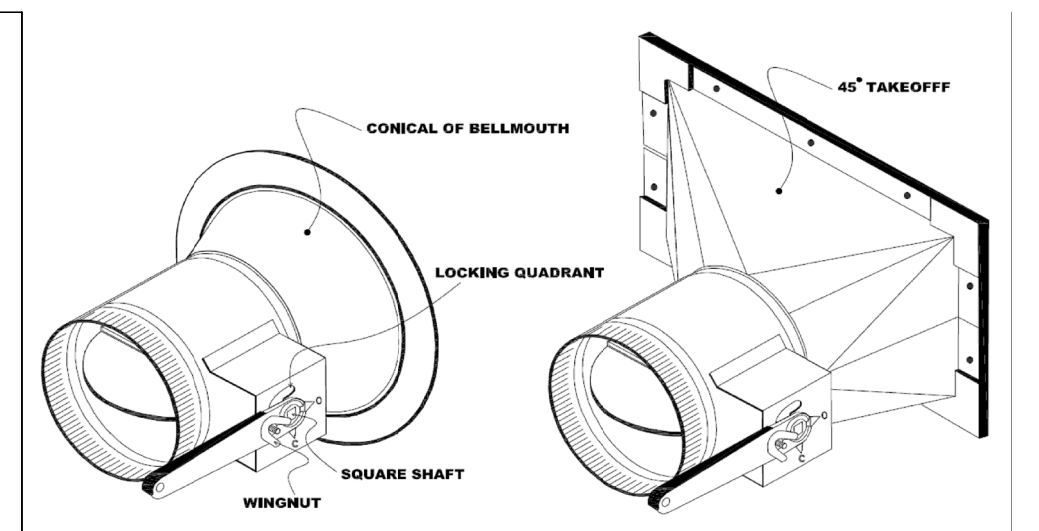


CONDENSATE DRYWELL INSTALLATION DETAIL
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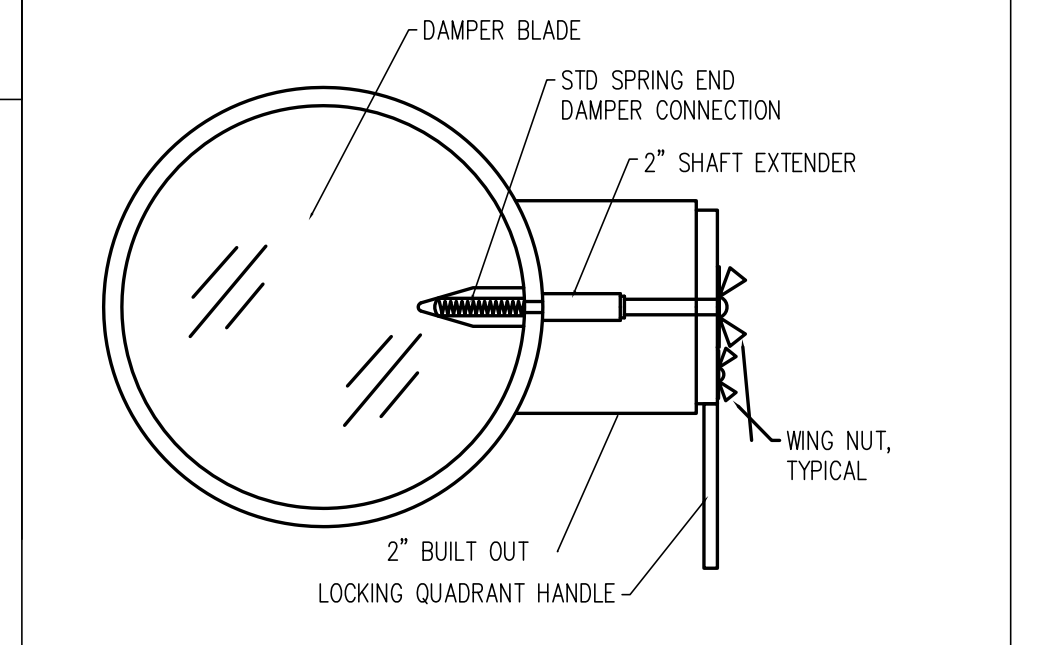


LOUVER CAP DETAIL
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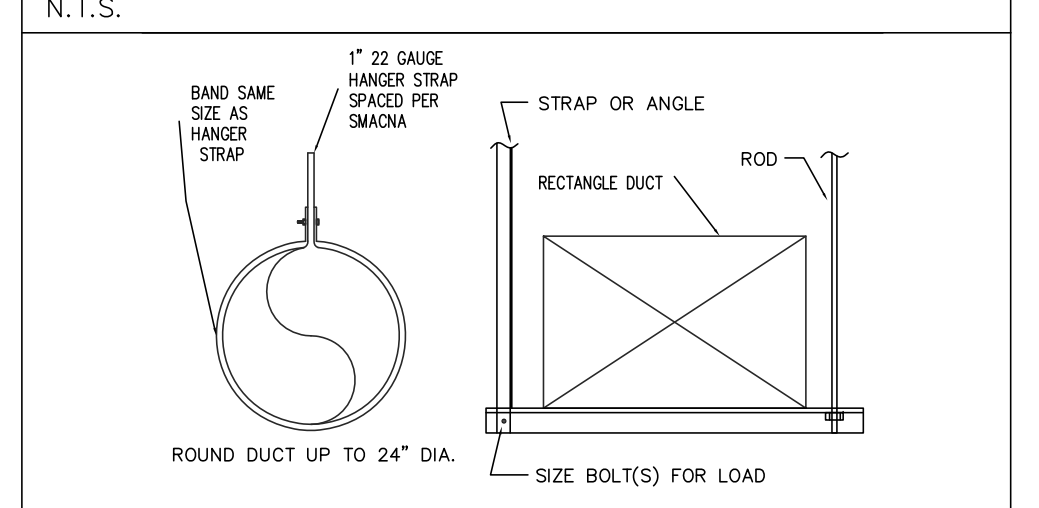
APPLICABLE FOR EXISTING LOUVER IN 097-P7B MECHANICAL ROOM EXTERIOR WALL ONLY



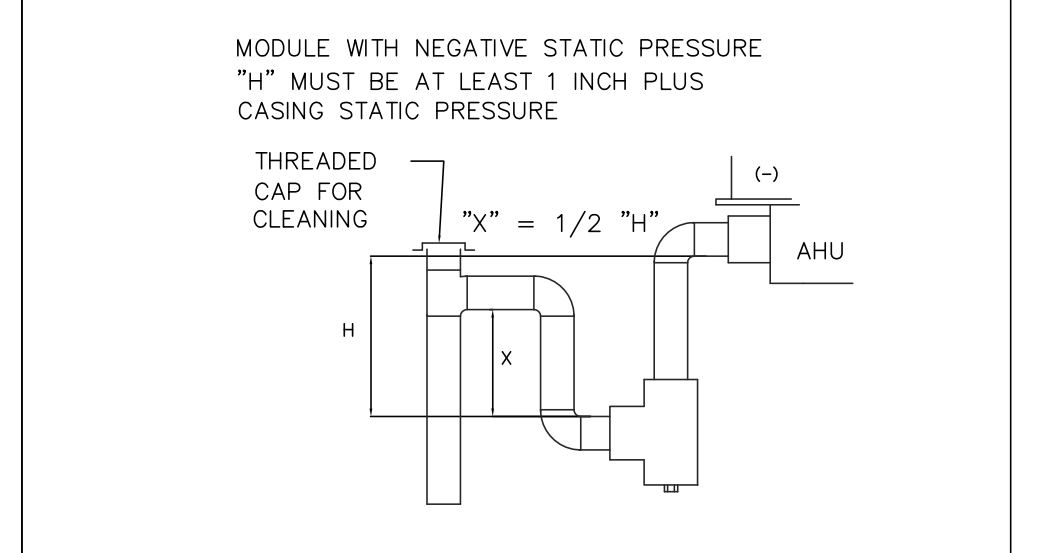
1. CROWN 3210-DS2 OR EQUIVALENT. (3300-DS2 FOR 45° TAKE-OFF)
2. WINGNUT ON SHAFT IS UNACCEPTABLE. WINGNUT MUST RIDE IN LOCKING QUADRANT.
3. GASKET MATERIAL ON OUTBOARD FLANGE.
4. MUST MEET SMACNA GAUGE STANDARDS AND 2" W.G. PRESSURE.
5. CONTINUOUS WELD LONGITUDINAL SEAM FOR NO LEAKAGE AT 2" W.G. STATIC PRESSURE.



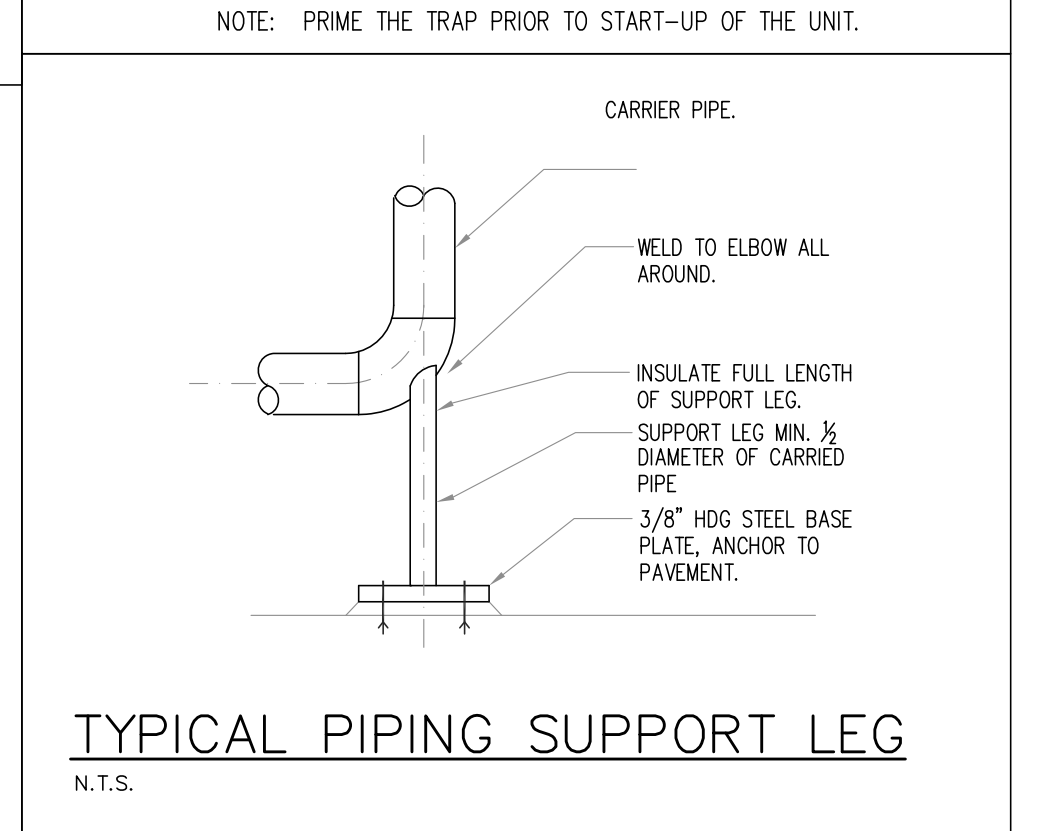
TYPICAL DAMPER BLADE DETAIL
 N.T.S.



TYPICAL DUCT HANGER ATTACHMENTS
 N.T.S.



TYPICAL CONDENSATE TRAP DETAIL
 N.T.S.



TYPICAL PIPING SUPPORT LEG
 N.T.S.

ASR ENGINEERING, INC.
 MECHANICAL-ELECTRICAL-ENERGY CONSULTANTS
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Project Title:
 094-PTA & 097-P7B PARKING AND TRANSPORTATION SERVICES HVAC REPLACEMENT
Project Location:
 13311 USF PLUM DRIVE TAMPA, FLORIDA 33620
Sheet Title:
 MECHANICAL DETAILS

Revisions:

No.	Date:	By:	Description:

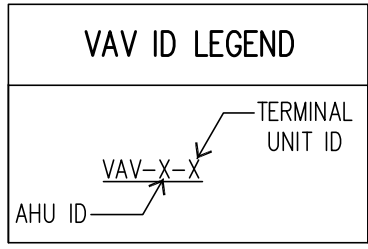
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Date Issued	1/14/2019
Sheet Number	M-51

VARIABLE FREQUENCY DRIVE SCHEDULE				
ITEM NO.	---	VFD-1	VFD-2	
SERVICE	---	AHU-1	AHU-2	
MOTOR / AMP DRAW	H.P. /A.	7.5/24.2	5/16.7	
VOLTAGE	V/PH/Hz	208/3/60	208/3/60	
LOCATION / ENCLOSURE	---	PTA MECH. RM.	PTB MECH. RM.	
WEIGHT	LBS	40	35	
DIMENSIONS	IN. (HxWxD)	44.4x5.4x10.3	40.2x5.4x10.1	
MANUFACTURER	---	ABB	ABB	
MODEL / FRAME SIZE	---	ACH550-VCR-024A-2+F267/R4	ACH550-VCR-017A-2+F267/R4	

NOTES:
 1. BASIS OF DESIGN: ABB.
 2. APPROVED ALTERNATE: TRANE AND FRANKLIN.
 3. REFER TO SPECIFICATION SECTION 230514 FOR ADDITIONAL DETAILS.
 4. DRIVE AMPS SHALL BE RATED PER NEC TABLE 430.250.
 5. PROVIDE 5% INTERNAL LINE REACTOR (OPTIONAL EXTERNAL REACTORS ARE NOT ACCEPTED).
 6. PROVIDE INTERNAL EMI/RFI FILTER. DRIVE INPUT CURRENT SHALL NOT EXCEED DRIVE OUTPUT CURRENT.
 7. PROVIDE DRIVE SERVICE SWITCH TO ISOLATE DRIVE FROM BYPASS FOR SERVICE.
 8. THE VFD SHALL BE RATED FOR 100 KAIC WITHOUT THE NEED FOR INPUT FUSING.
 9. ALL ENCLOSURES SHALL BE UL TYPE APPROVED. (SELF CERTIFIED NEMA ENCLOSURES NOT ACCEPTABLE).
 10. INCLUDE ON SITE FACTORY AUTHORIZED START UP.
 11. LOCATION OF THE DRIVE SHALL ALLOW MINIMUM CLEARANCE OF 3'-0" IN FRONT OF THE DRIVE.
 12. DRIVE SHALL NOT BE MOUNTED BELOW ANY PIPING.
 13. CONNECTION BETWEEN DRIVE AND MOTOR SHALL BE IN ACCORDANCE TO THE NEC.
 14. PROVIDE MANUFACTURER'S FULL, THREE-YEAR PARTS AND LABOR WARRANTY INCLUDING TRAVEL EXPENSES.

VARIABLE AIR VOLUME BOX W/ ELECTRIC HEAT SCHEDULE											
MARK	AIRFLOW (CFM)		INLET SIZE (IN.#)	DIFFERENTIAL SPD (IN. W.G.)	DIMENSIONS (LxWxH) (IN.)	HEATING			ELECTRICAL (V/PH/Hz)	MODEL	NOTES
	MIN.	MAX.				CFM	kW	STEPS			
VAV-1-1	850	1700	14	0.13	46.75x20x17.5	1700	8.0	SCR	208/3/60	TH514	1-14
VAV-1-2	300	500	8	0.11	46.75x12x10	500	2.5	SCR	208/3/60	TH508	1-14
VAV-1-3	200	370	6	0.22	46.75x12x8	370	2.0	SCR	208/3/60	TH506	1-14
VAV-1-4	400	850	8	0.16	46.75x12x10	850	4.0	SCR	208/3/60	TH508	1-14
VAV-1-5	200	310	5	0.18	46.75x12x8	310	2.0	SCR	208/3/60	TH505	1-14
VAV-1-6	300	710	10	0.94	46.75x14x12.5	710	3.5	SCR	208/3/60	TH510	1-14
VAV-1-7	350	740	10	0.93	46.75x14x12.5	730	3.5	SCR	208/3/60	TH510	1-14

NOTES:
 1. BASIS OF DESIGN IS METALARE. APPROVED ALTERNATE MANUFACTURERS ARE: CARRIER, TITUS, & PRICE.
 2. BOX CONSTRUCTION SHALL BE DOUBLE WALL WITH 1/2" INSULATION, 1 1/2" DENSITY.
 3. LENGTH OF UNIT DOES NOT INCLUDE INLET COLLAR.
 4. UNIT SHALL BE UL LISTED.
 5. SINGLE POINT POWER CONNECTION.
 6. PRIMARY AUTO-RESET HIGH LIMIT, SECONDARY HIGH LIMIT AND AIRFLOW SWITCH.
 7. HINGED CONTROL PANEL.
 8. NI-CHROME ELEMENTS.
 9. PRIMARY/SECONDARY POWER TERMINATIONS.
 10. FUSING PER I.E.C.
 11. PROVIDE INTERNAL WIRING DIAGRAM INSIDE OF HINGED COVER.
 12. UL LISTED INTERLOCKING ACCESS DOOR DISCONNECT.
 13. PE SWITCHES.
 14. 24V CONTROL TRANSFORMER.
 15. PROVIDE SCR HEATING CONTROL.



WALL MOUNTED LOUVER SCHEDULE							
MARK	SERVICE	FLOWRATE (CFM)	AIR TYPE	SIZE (NOMINAL)	FREE AREA (SQ.FT.)	BLADE DEPTH (IN.)	MODEL
LV-1	AHU-1	670	O.A.	24x20	1.4	6	ESD-635X

NOTES:
 1. LOUVER MANUFACTURER: GREENHECK
 FEATURE: MIAMI-DADE QUALIFIED WIND-DRIVEN RAIN LOUVER
 OPTION: PROVIDE WITH MANUFACTURER'S FLANGED FRAME
 2. HEAVY GAUGE & EXTRUDED ALUMINUM CONSTRUCTION WITH WELDED MECHANICAL FASTENER.
 3. REFER TO THE DETAILS FOR PROVISION OF METAL FRAMING FOR POSITIONING THE LOUVERS.
 4. LOUVERS SHALL BE EQUIPPED WITH 12" COLLAR FOR CONNECTION TO OUTDOOR AIR DUCT.
 5. MANUFACTURER SHALL PROVIDE INSECT SCREEN IN ALUMINUM FRAME.
 6. CONTRACTOR TO PAINT EXTERIOR OF LOUVER TO MATCH EXISTING BUILDING COLOR.
 7. CONTRACTOR TO PROVIDE DETAILED SHOP DRAWINGS OF INSTALLATION FOR REVIEW AND APPROVAL BY EOR.

EXHAUST FAN SCHEDULE				
MARK	---	EF-1	EF-2	EF-1,2,&3
MANUFACTURER	---	GREENHECK	GREENHECK	GREENHECK
MODEL	---	SP-A90	SP-L80	SP-A90
DRIVE TYPE	---	DIRECT	DIRECT	DIRECT
FLOW RATE	CFM	100	50	100
STATIC PRESSURE EXT./TOTAL	IN.WC	0.14/0.15	0.14/0.35	0.14/0.15
FAN RPM	---	900	850	900
MOTOR POWER	BHP	.01	.01	.01
MOTOR POWER	HP	1/4	1/4	1/4
ENCLOSURE	---	ODP	TEAO	ODP
ELECTRICAL REQUIREMENT	V/ø/Hz	115/1/60	115/1/60	115/1/60
LOCATION	---	094-PTA	094-PTA	097-PTB

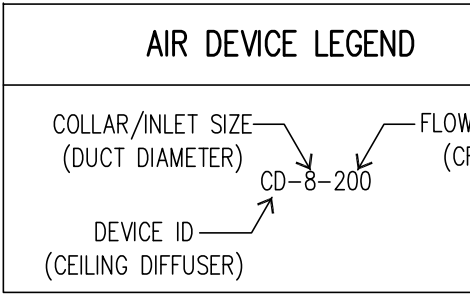
NOTES:
 APPROVED ALTERNATES:
 COOK
 PENNBARRY
 1. PROVIDE WITH MANUFACTURER'S ALUMINUM BACKDRAFT DAMPER
 2. ALUMINUM BIRD SCREEN
 3. PROVIDE FACTORY MOUNTED DISCONNECT
 4. INTERLOCK FAN OPERATION WITH LIGHT SWITCH.
 5. COORDINATE WITH ELECTRICAL AND CONTROLS CONTRACTOR.

CONTROL VALVE SCHEDULE (CHILLED WATER)				
SERVING	PIPE SIZE (IN.)	VALVE SIZE (IN.)	FLOW (GPM)	VALVE MODEL/ACTUATOR MODEL
AHU-1	2"	1 1/2"	27.0	P2150S-273/NRX24-EP-MOD
AHU-2	1 1/2"	1"	17.2	P2100S-182/NRX-EP-MOD

NOTES:
 1. BELIMO VALVE AND ACTUATOR.
 2. ELECTRONIC PRESSURE INDEPENDENT VALVES WITH NO FAIL SAFE ACTUATORS.
 3. 2-WAY VALVE WITH STAINLESS STEEL BALL AND STEM, NPT FEMALE.
 4. VALVE STEMS SHALL BE STRAIGHT UP.
 5. VALVE ACTUATOR TO RECEIVE SIGNAL BY CONTROL CONTRACTOR.
 6. VALVE SUPPLIED BY THE CONTROL CONTRACTOR, INSTALLED BY THE MECHANICAL, ALL LOW VOLTAGE WIRING BY CONTROL CONTRACTOR.

AIR DEVICE SCHEDULE							
MARK	TYPE	FACE SIZE	MATERIAL	FINISH	THROW PATTERN	MODEL	NOTES
CD	CEILING SUPPLY	24x24	ALUMINIUM	WHITE	ADJUSTABLE (SEE PLANS)	ASCD	1,2,3,4,5
SR	SEAWALL REGISTER	SEE PLAN	ALUMINIUM	WHITE	ADJUSTABLE (SEE PLANS)	SDGE	1,2,5
RG	RETURN GRILLE	24x24	ALUMINIUM	WHITE	--	APDN	1,2,3,5

NOTES:
 1. BASIS OF DESIGN IS PRICE. APPROVED ALTERNATE MANUFACTURERS ARE: METALARE & TITUS.
 2. REFER TO DEVICE CALLOUTS FOR COLLAR SIZE AND FLOW RATE.
 3. PROVIDE MANUFACTURERS ROUND COLLAR ADAPTER WHERE INDICATED ON PLANS.
 4. PROVIDE LAY IN FRAME FOR HARD CEILINGS.
 5. PROVIDE WITH OPPOSED BLADE DAMPERS



AIR MEASURING STATION		
SYSTEM	DUCT SIZE	CFM
AHU-1	12x12	670
AHU-2	10x10	390

EQUAL TO:
 EBTRON: GTL108 GOLD SERIES THERMAL DISPERSION AIR FLOW MEASUREMENT WITH TEMPERATURE AND ALARM CAPABILITY.

SENSOR:
 PROVIDE WITH COMBINATION ANALOG AND RS-485 OUTPUT MODELS

NOTES:
 1. PROBE SHALL BE ADJUSTED TO MEET DUCT DIMENSION REQUIREMENTS
 2. INSTALL PER MANUFACTURERS RECOMMENDATIONS
 3. PROVIDE ACCESS PANEL IN DUCTWORK TO ALLOW FOR CLEANING AND INSPECTION.

OUTSIDE AIR CALCULATION SCHEDULE					PER ASHRAE VENTILATION STANDARD 62	
UNIT	OCCUPANCY CLASSIFICATION	OA REQUIRED PER (PEOPLE/SF)	MAX. OCCUPANTS	AREA (SQ. FT.)	REQUIRED O/A	
AHU-1	OFFICE SPACES	5/0.06	70	4842	(5)(70)+(4842)(0.06)=641	
	CORRIDORS	5/0.12	-	160	(5)(0)+(160)(0.06)=19	
					TOTAL OA CFM REQUIRED = 660 CFM	
					TOTAL OA CFM PROVIDED = 660 CFM	
AHU-2	OFFICE SPACES	5/0.06	27	3067	(5)(27)+(3067)(0.06)=320	
	CORRIDORS	5/0.12	-	684	(5)(0)+(684)(0.06)=41	
					TOTAL OA CFM REQUIRED = 361 CFM	
					TOTAL OA CFM PROVIDED = 365 CFM	

THEORETICAL AIR BALANCE					
MARK	SUPPLY CFM	RETURN CFM	OUTSIDE AIR CFM	EXHAUST CFM	PRESSURIZATION
AHU-1	5,170	4,500	660	140	+530
AHU-2	3,080	2,690	365	300	+90

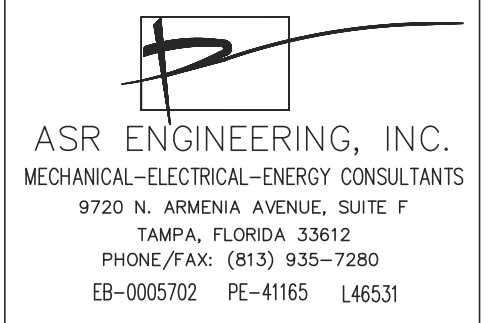
OUTSIDE AIR DAMPER SCHEDULE					
DAMPER SHALL BE: 1. MODULATING TYPE 2. LOW LEAKAGE 3. BLADES AND FRAME SHALL BE EXTRUDED ALUMINUM WITH CLEAR ANODIZED FINISH 4. HARDWARE AND LINKAGES SHALL BE ALUMINUM OR 316 SS 5. SHAFT BEARINGS SHALL BE MAINTENANCE FREE 6. BLADES PROVIDED WITH EPDM SEALS AND SILICONE OR 316SS SIDE SEALS EQUAL TO: TAMCO: MODEL 1500SW RUSKIN: MODEL CD50CE					

CHILLED WATER AIR HANDLING UNIT SCHEDULE					
MARK	MANUFACTURER/MODEL NUMBER	AHU-1		AHU-2	
		CARRIER/39MN12W		CARRIER/39MN08W	
AIR HANDLING UNIT	CONSTRUCTION	R-13 DOUBLEWALL SEALED PANELS		R-13 DOUBLEWALL SEALED PANELS	
	TYPE	HORIZONTAL UPBLAST		HORIZONTAL UPBLAST	
	LENGTH	9'-6"		9'-5"	
	WIDTH	5'-7"		4'-6"	
	HEIGHT	3'-11"		3'-4"	
	OPERATING WEIGHT (LBS)	2012		1608	
	DRIVE TYPE	DIRECT DRIVE		DIRECT DRIVE	
	WHEEL TYPE	PLENUM FAN - APDLA0182		PLENUM FAN - BPDLA0165	
	T.S.P. (IN. W.G.)	2.8		2.8	
	AIRFLOW (CFM)	5170		3080	
FAN DATA	FAN RPM	2133		2101	
	CONTROL	VFD		VFD	
	MOTOR HP	7.5		5	
	FRAME SIZE	213T		184T	
	MOTOR RPM	1800		1800	
	FLA (AMPS)	20.4		14.0	
	MCA (AMPS)	25.5		17.5	
	MOCP (AMPS)	45		30	
	ELECTRICAL (V/PH/Hz)	208/3/60		208/3/60	
	AIRFLOW (CFM)	5170		3080	
CHILLED WATER COIL	OUTSIDE AIR (CFM)	660		365	
	EAT-DB (°F)	79.0		80.0	
	EAT-WB (°F)	65.7		66.4	
	LAT-DB (°F)	51.98		51.78	
	LAT-WB (°F)	51.95		51.75	
	TOTAL MBH	203.1		129.4	
	SENSIBLE MBH	148.4		92.1	
	MAX. FACE VELOCITY (FPM)	409		403	
	FACE AREA (SQ. FT.)	12.64		7.64	
	MAX. AIR PRESSURE DROP (FT. W.G.)	0.83		0.92	
EWT (°F)	45.0		45.0		
LWT (°F)	60.0		60.0		
FLOW RATE (GPM)	27.0		17.2		
MAX. FLUID PRESSURE DROP (FT. W.G.)	12.6		9.0		
FLUID VELOCITY (FT/S)	3.3		2.7		
MIN. ROWS	8		10		
FPI	12		9		
NUMBER OF CIRCUITS	1		1		
PRE FILTER TYPE	MERV-8		MERV-8		
DEPTH	2" PLEATED		2" PLEATED		
EFFICIENCY	30%		30%		
QUANTITY/SIZE (IN.)	6/16x20		3/16x25		
INITIAL A.P.D. (IN. W.G.)	0.13		0.12		
FILTER TYPE	MERV-13		MERV-13		
DEPTH	4" PLEATED		4" PLEATED		
EFFICIENCY	95-99%		95-99%		
QUANTITY/SIZE (IN.)	6/16x20		3/16x25		
INITIAL A.P.D. (IN. W.G.)	0.21		0.20		
MAX. FACE VELOCITY (FPM)	370		370		

NOTES:
 BASIS OF DESIGN: CARRIER
 APPROVED EQUAL: TRANE, YORK, & DAIKIN
 1. COPPER TUBE / ALUMINUM FIN CHILLED WATER COIL WITH STAINLESS STEEL CASING.
 2. CONDENSATE DRAIN PAN SHALL BE INSULATED DOUBLE-WALL STAINLESS STEEL, SLOPED TOWARD DRAIN POINT.
 3. CONTRACTOR (MECHANICAL, ELECTRICAL, CONTROL, AND TEST & BALANCE) SHALL MINIMIZE PENETRATION ON THE EXTERIOR DOUBLE-WALL CABINET OF THE UNIT. PENETRATION SHALL BE CAULKED WITH CLEAR SILICON GEL ON BOTH SIDES.
 4. CONTROL VALVES SHALL BE PROVIDED BY CONTROL CONTRACTOR AND INSTALLED BY THE MECHANICAL CONTRACTOR AND CONTROL WIRING BY THE CONTROL CONTRACTOR.
 5. MOTOR FOR VARIABLE FREQUENCY DRIVE APPLICATION SHALL BE PREMIUM EFFICIENCY EQUIPPED WITH TYPE "F" INSULATION, MOTOR SHALL BE TEFC.
 6. 6" BASE RAIL ON UNIT PROVIDED BY THE MANUFACTURER AS PART OF THE UNIT.
 7. UNIT TO BE MOUNTED ON MODIFIED EXISTING CONCRETE PAD. REFER TO INSTALLATION DRAWINGS SIZE OF PAD AND UNIT ORIENTATION.
 8. POWER BY ELECTRICAL CONTRACTOR.
 9. UNIT SHALL BE DOUBLE WALL INSULATED WITH EXTERIOR CABINET TO BE 16 GAUGE.
 10. INSTALLATION OF ACTUATOR ON THE OUTDOOR AIR DAMPER ON THE AHU BY THE CONTROL CONTRACTOR. DAMPER FURNISHED BY CONTROL CONTRACTOR AND INSTALLED BY MECHANICAL CONTRACTOR.
 11. TUBE SIZE ON THE COILS TO BE 1/2". REFER TO SPECIFICATION SECTION 237313.
 12. UNIT SHALL BE DELIVERED TO THE PROJECT SITE IN (3) SECTIONS AND SHALL BE REASSEMBLED INSIDE THE MECHANICAL ROOM. THE RE-ASSEMBLED UNIT SHALL BE LEAK AND VIBRATION FREE.
 13. REFER TO THE MECHANICAL FLOOR PLAN FOR CONNECTION SIDES ON CHILLED WATER AND CONDENSATE PIPING, AS WELL AS, ACCESS PANELS TO FAN/FILTERS. PROVIDE ONE SET OF SPARE FILTERS FOR EACH FILTER TYPE FOR EACH AIR HANDLER.
 14. SUPPLY DUCT(S) MUST BE GASKETED AND SCREWED DIRECTLY TO THE DISCHARGE PANEL OF THE UNIT.

ELECTRIC DUCT HEATER SCHEDULE							
MARK	UNIT	CFM	BTUH	kW	AMPS	V/Ph	STEPS
EDH-2	AHU-2	3,080	68,243	20.0	55.5	208/3	SCR

MANUFACTURER: WARREN TECHNOLOGY MODEL: CBK
 APPROVED ALTERNATE: MARKEL & DELLCORP
 DUCT SIZE: 30x14
 PROVIDED BY: CARRIER
 NOTE: DUCT HEATER SHALL BE INSTALLED WITH MINIMUM 4'-0" STRAIGHT DUCT UPSTREAM OF THE HEATER AND 2'-0" DOWNSTREAM OF THE HEATER



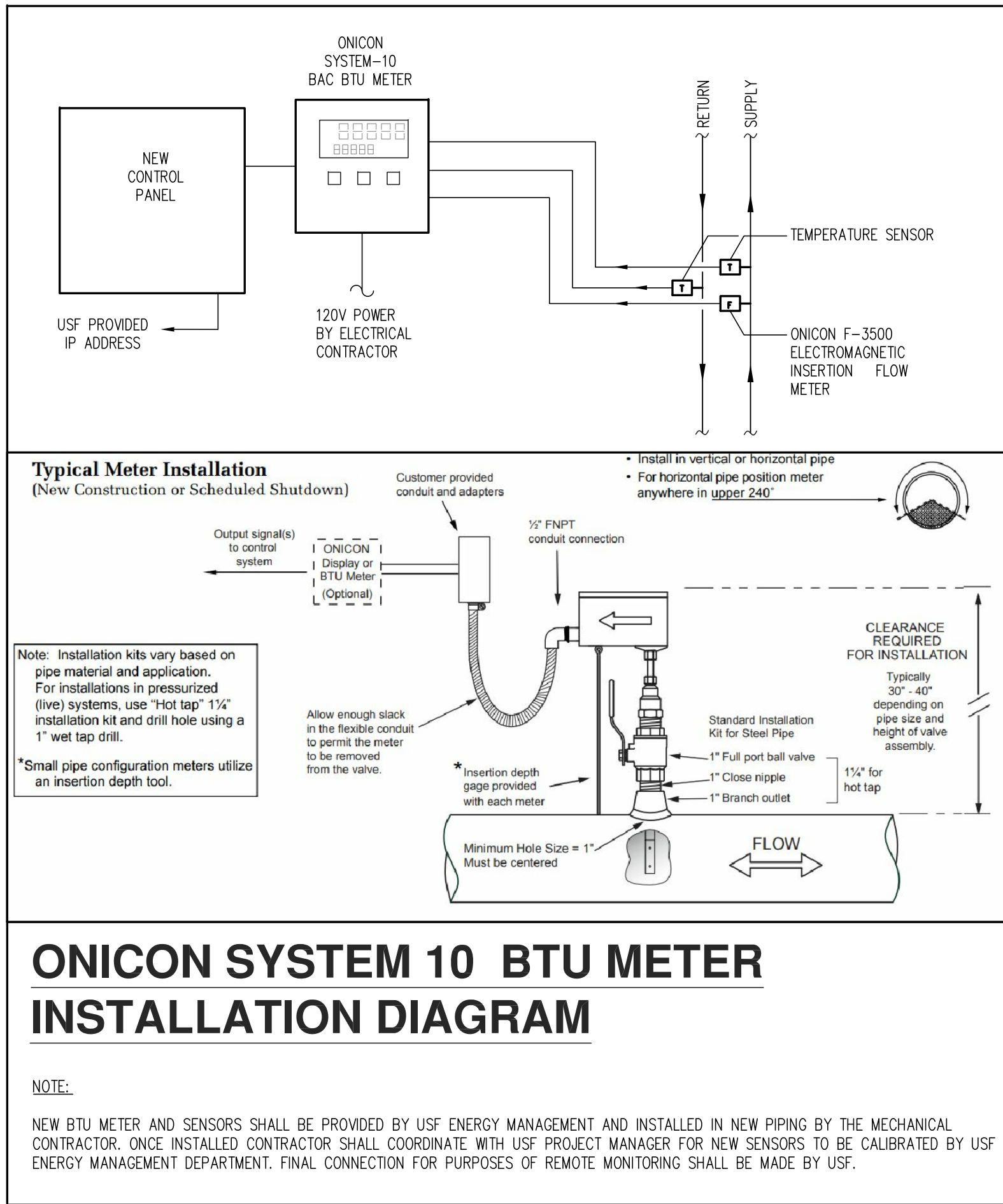
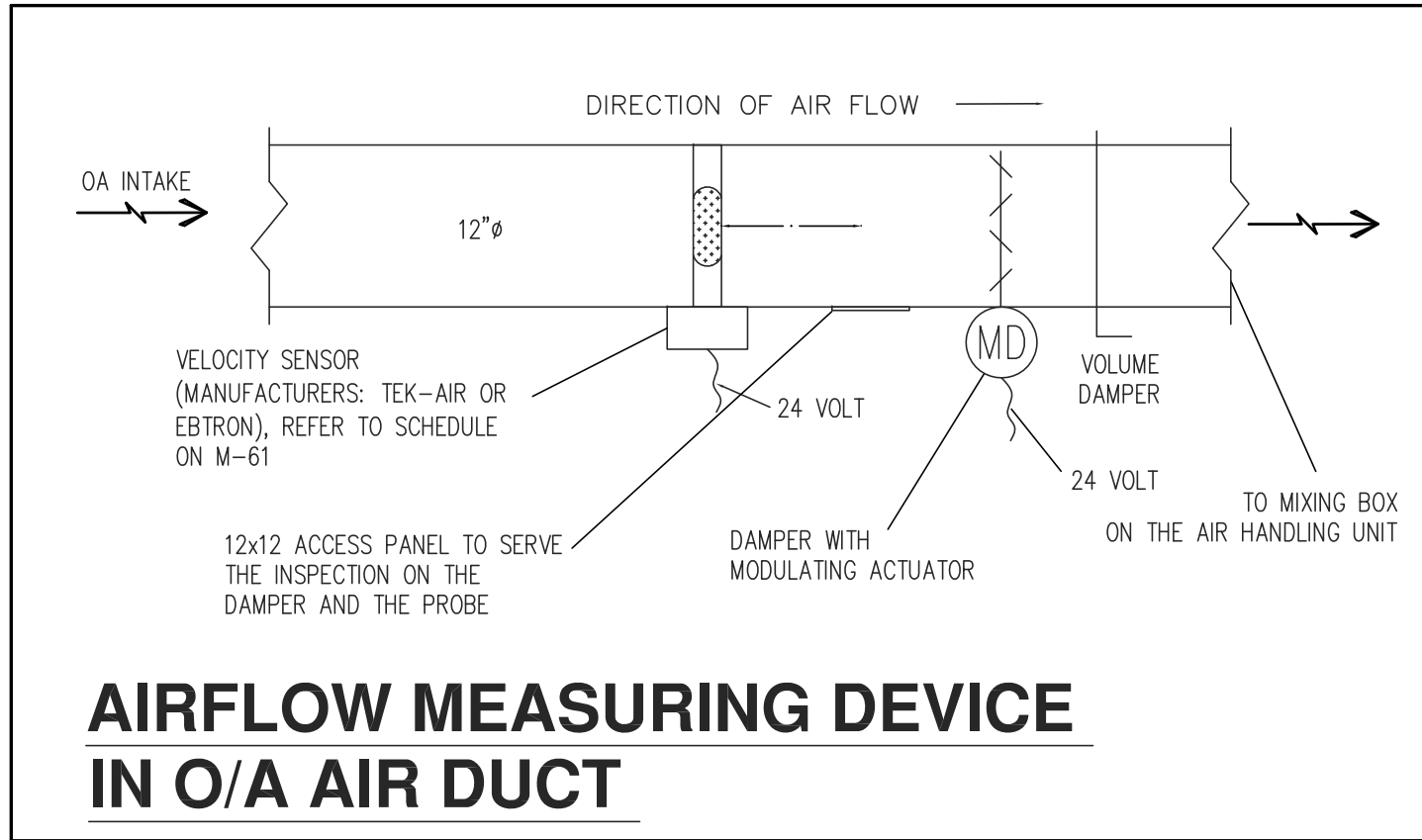
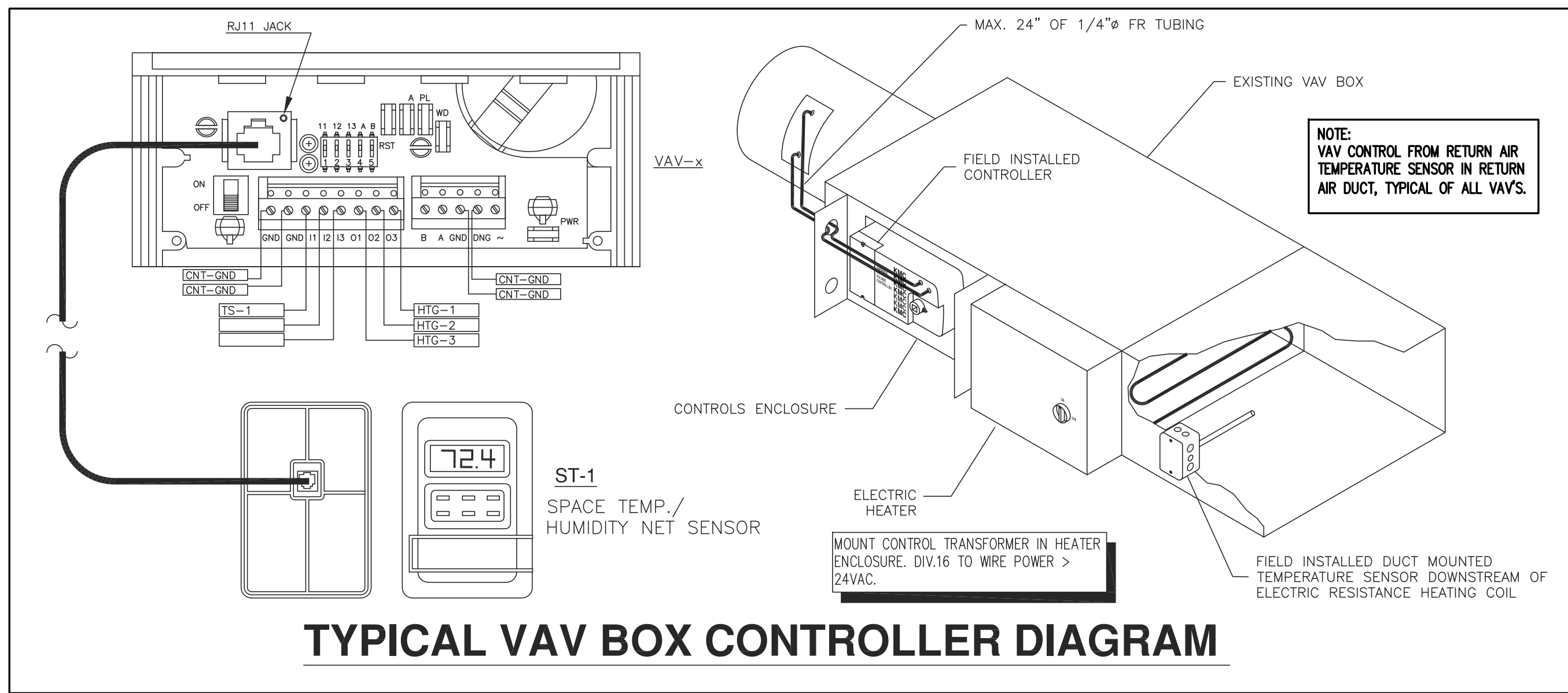
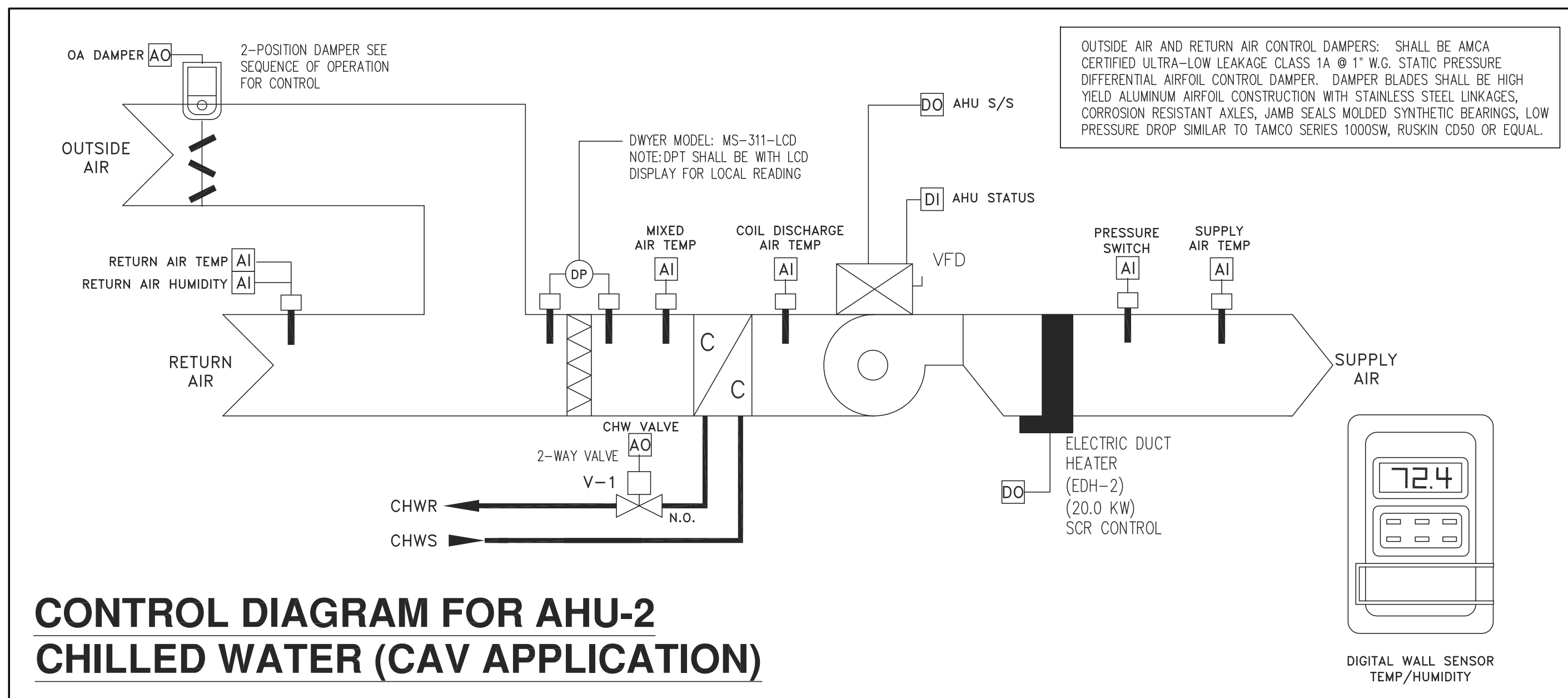
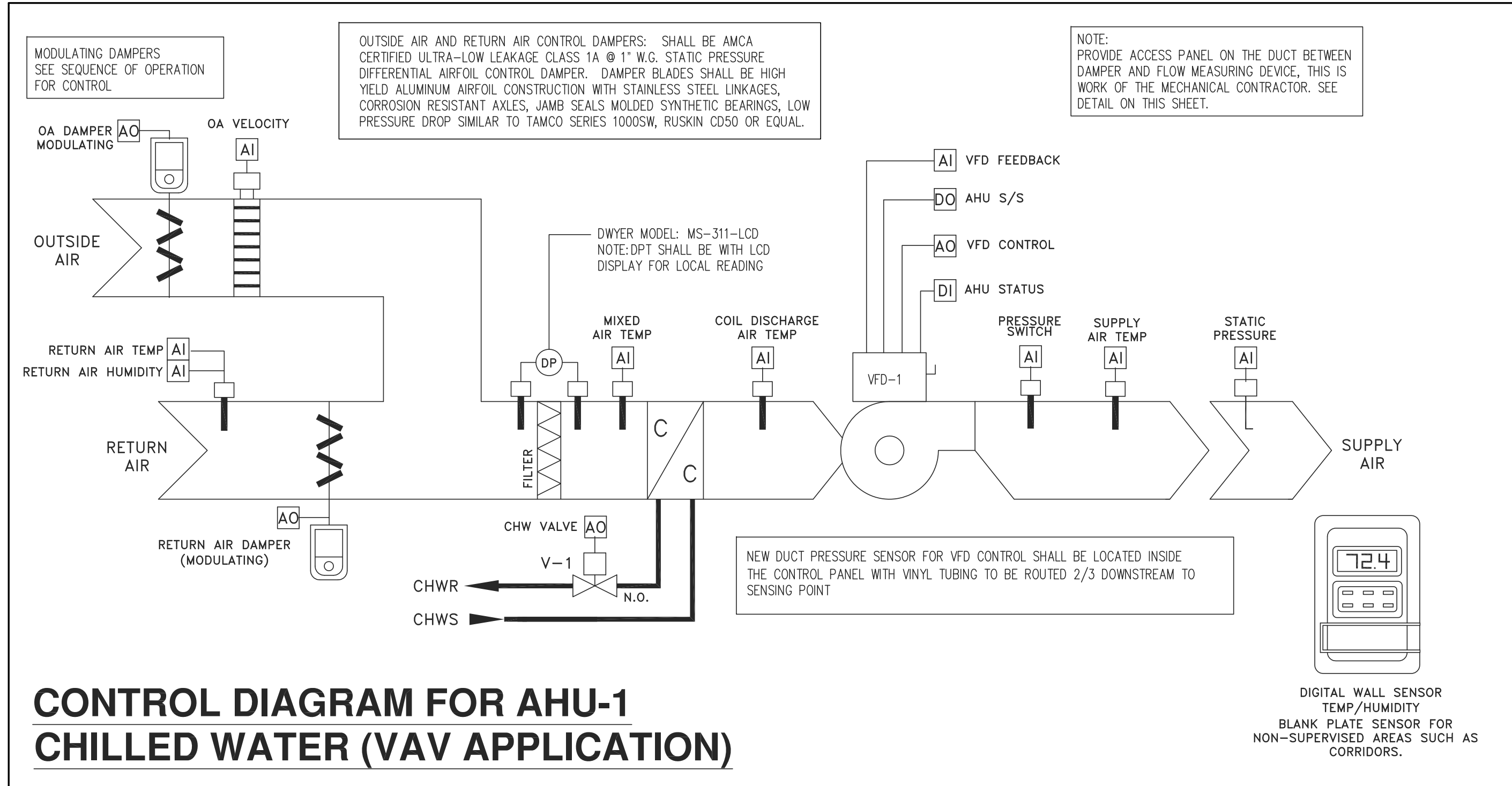
Consultant:



Project Title:
 094-PTA & 097-PTB PARKING AND TRANSPORTATION SERVICES
 HVAC REPLACEMENT
 Project Location:
 13311 USF PLUM DRIVE
 TAMPA, FLORIDA 33620
 Sheet Title:
 MECHANICAL EQUIPMENT SCHEDULES

Revisions:		
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Date Issued	1/14/2019
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SYSTEM POINT LIST

PTA/PTB	DIGITAL FUNCTION	ANALOG FUNCTION	ALARM INDICATOR	SUMMARY REQUEST	FUNCTION
SYSTEM POINT DESCRIPTION					
AHU-1 (VAV)	●	●	●	●	●
AHU-2 (CAV)	●	●	●	●	●
ELECTRIC DUCT HEATER (EDH-2)	●	●	●	●	●
VAV-BOX WITH ELECTRIC HEAT	●	●	●	●	●
VARIABLE FREQUENCY DRIVES (AHU-1 & 2)	●	●	●	●	●
RESTROOM/JANITOR EXHAUST FANS	●	●	●	●	●

NOTES:

1. STEP CONTROL ON SCR OF ALL VAV-BOXES FOR REHEAT AND HEATING APPLICATION.
2. CONTROL CONTRACTOR TO INSTALL NEW COMMUNICATION WIRING.
3. PROVIDE CONTROL TO ALLOW AHU'S TO CYCLE OFF DURING THE POST OCCUPANCY ONCE THE SPACE TEMPERATURE IS MET.
4. ALL RESTROOM EXHAUST FANS SHALL BE CONTROLLED AS FUNCTION OF THE OUTSIDE AIR DAMPER, UNLESS NOTED OTHERWISE.

SEQUENCE OF OPERATIONS

**094-PTA
AHU-1**
SYSTEM TYPE: CHILLED WATER AHU - CENTRAL STATION VAV
VAV BOXES: ELECTRIC HEAT/SCR CONTROL
NUMBER OF ZONES: 7

NORMAL OPERATION (OCCUPIED MODE):
AHU-1 SHALL OPERATE FROM 6:00 AM TO 6:00 PM, MONDAY THROUGH FRIDAY AT FULL LOAD OPERATION WHERE ALL VAV BOXES MAY BE OPEN THE VFD CONTROLS THE FAN AT FULL FREQUENCY TO ACHIEVE MAX DESIGN FLOW RATE. THE CHILLED WATER CONTROL VALVE SHALL MODULATE TO MAINTAIN COIL DISCHARGE SET POINT OF 52F. THE OUTSIDE AIR DAMPER SHALL OPEN TO ALLOW FOR FULL DESIGN AIRFLOW AS VERIFIED BY THE AIR MONITOR STATION.

PART LOAD OPERATION (OCCUPIED MODE):
AS THE LOAD DIMINISHES AND THE VAV BOXES MODULATE TO PARTIALLY CLOSED POSITION, THE DUCT MOUNTED STATIC PRESSURE SENSOR SHALL SEND SIGNAL FOR THE VFD TO MODULATE THE SUPPLY FAN.

DURING COOLING OPERATION THE VAV BOX SHALL NOT BE PERMITTED TO MODULATE BELOW 50% OF MAXIMUM DESIGN FLOW DURING PART LOAD OPERATION.

HUMIDITY CONTROL AND RE-HEAT:
THE ELECTRIC HEAT IN THE VAV BOX MAY BE ENERGIZED WHEN ZONE HUMIDITY LEVELS DEVIATES FROM 55% SET POINT. SCR HEAT SHALL ACTIVATE TO PROVIDE 2F INCREASE FOR RE-HEAT APPLICATION.

HEATING:
ELECTRIC HEAT IN EACH VAV BOX ZONE SHALL BE ENERGIZED TO MAINTAIN SPACE TEMPERATURE SET POINT OF 70F.

**097-PTB
AHU-2**
SYSTEM TYPE: CHILLED WATER AHU - CONSTANT VOLUME
ELECTRIC HEAT: ELECTRIC DUCT HEATER (EDH-2) 20.0KW (SCR CONTROL)

NORMAL OPERATION (OCCUPIED MODE):
AHU-2 SHALL OPERATE FROM 6:00 AM TO 6:00 PM, MONDAY THROUGH FRIDAY. THE 2-WAY CONTROL VALVE SHALL MODULATE TO MAINTAIN COIL DISCHARGE SET POINT OF 52F. CONTROLLER SHALL AVERAGE THE TEMPERATURE READING OF THE (3) NET SENSORS IN THE SPACE TO MODULATE THE CONTROL VALVE TO MAINTAIN SPACE TEMPERATURE SET POINT.

HUMIDITY CONTROL AND REHEAT:
DEHUMIDIFICATION SHALL BE ACCOMPLISHED BY MODULATING THE FAN MOTOR VIA VFD-2 AND ENERGIZE THE ELECTRIC DUCT HEATER EDH-2 TO INCREASE THE SUPPLY TEMPERATURE BY 2F.

HEATING:
ELECTRIC HEAT SHALL BE ENERGIZED TO MAINTAIN SPACE TEMPERATURE SET POINT OF 70F.

UNOCCUPIED HOURS:
SHOULD THE OWNER DIRECT THE SYSTEM TO BE ACTIVE AT ALL TIMES THE OUTDOOR AIR DAMPER SHALL BE CLOSED. DURING UNOCCUPIED HOURS THE COOLING SET POINT SHALL BE RESET TO 78F AND THE HUMIDITY SET POINT SHALL BE RESET TO 58% RH.

NOTE:

1. THE ORIGINAL DUCT STATIC SENSOR SHALL BE SET FOR 1.0" W.C. AND SHALL BE RESET BASED ON FIELD MEASUREMENT (IF REQUIRED)
2. TEST AND BALANCE AGENCY SHALL PROVIDE ALL RELATED SETTINGS IN THE FINAL T&B REPORT
3. SHOULD OWNER DIRECT FOR OVERNIGHT OR WEEKEND SHUTDOWN, PROVIDE PRE-OCCUPIED COOLING MODE FOR START UP WHERE OA DAMPER REMAINS IN CLOSED POSITION FOR A PERIOD OF 1 HOUR PRIOR TO OCCUPIED SCHEDULE.
4. SHOULD OWNER DIRECT FOR WEEKEND SHUTDOWN, PROVIDE PROVISION FOR PRE-OCCUPIED COOLING MODE AS ABOVE BUT INCREASE PRE-COOLING TIME TO 2 HOURS WITH OA DAMPER IN CLOSED POSITION.

Revisions:

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Scale	
Graphic Scale	
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