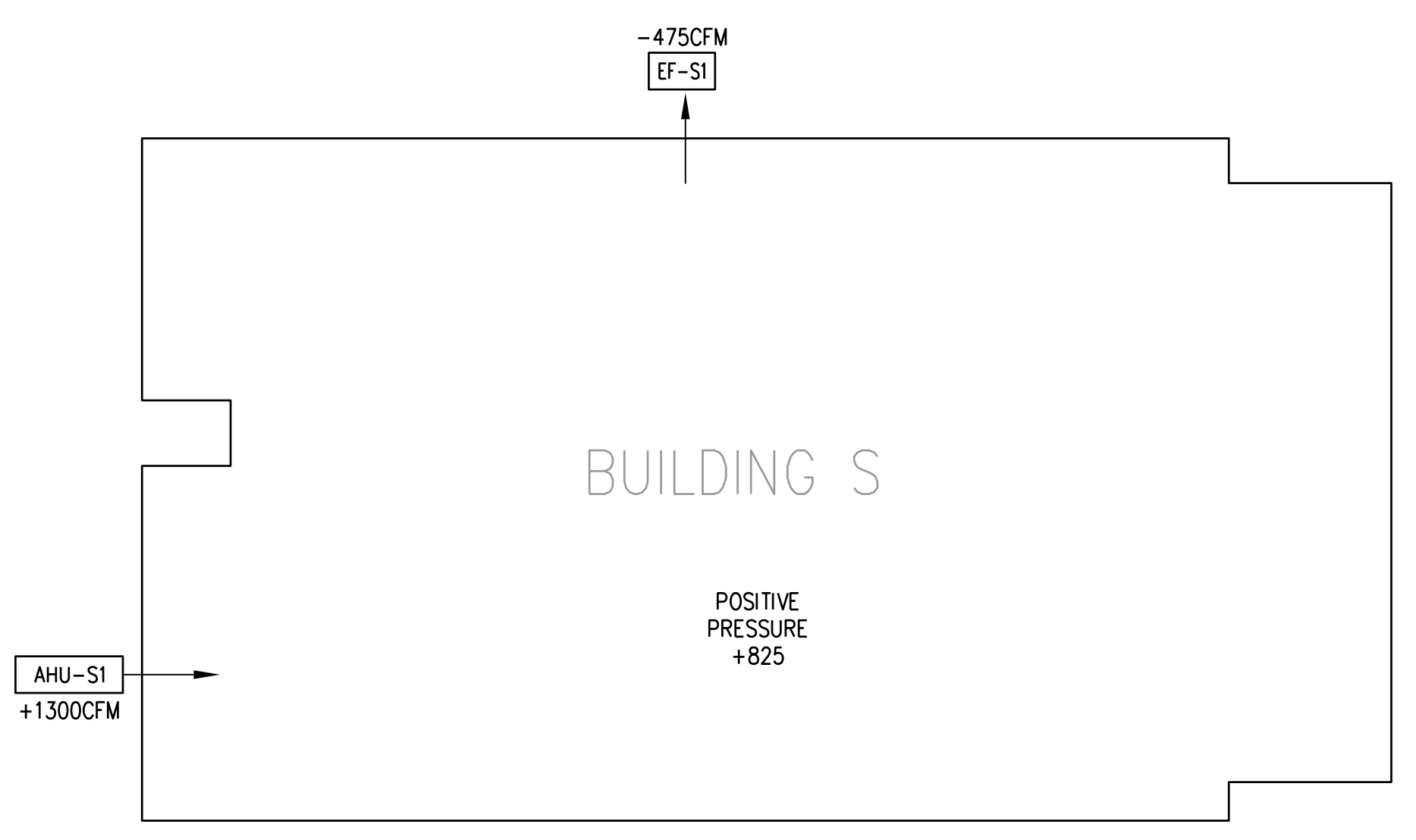


1 MO.1 AIR BALANCE DIAGRAM - H.V.A.C.



H.V.A.C. LEGEND	
SYMBOL	DESCRIPTION
12/10	DUCT SIZE, WIDTH/DEPTH
[Symbol]	FLEXIBLE DUCT
[Symbol]	MANUAL SPLITTER DAMPER
[Symbol]	SUPPLY DUCT (TURNED UP)
[Symbol]	SUPPLY DUCT (TURNED DOWN)
[Symbol]	RETURN DUCT (TURNED UP)
[Symbol]	RETURN DUCT (TURNED DOWN)
[Symbol]	MANUAL VOLUME DAMPER
[Symbol]	MOTORIZED VOLUME DAMPER
[Symbol]	BACK DRAFT DAMPER
[Symbol]	ACCESS DOOR
[Symbol]	INCLINED RISE (R) OR DROP (D), ARROW IN DIRECTION OF FLOW
[Symbol]	TRANSITION
[Symbol]	TURNING VANES
[Symbol]	FLEXIBLE CONNECTION
[Symbol]	FIRE DAMPER
[Symbol]	FIRE SMOKE DAMPER
[Symbol]	SUPPLY DIFFUSER, SEE GRILLE REGISTER AND DIFFUSER SCHEDULE FOR DESCRIPTION THRU DIRECTION INDICATED ON PLANS
[Symbol]	RETURN REGISTER, SEE GRILLE REGISTER AND DIFFUSER SCHEDULE FOR DESCRIPTION
[Symbol]	EXHAUST DIFFUSER, SEE GRILLE REGISTER AND DIFFUSER SCHEDULE FOR DESCRIPTION
[Symbol]	THERMOSTAT/TEMP SENSOR
[Symbol]	HUMIDISTAT/HUMIDITY SENSOR
[Symbol]	SMOKE DETECTOR
[Symbol]	CONDENSATE DRAIN LINE
[Symbol]	REFRIGERANT LINES
[Symbol]	DOOR UNDERCUT

DESIGN CONDITIONS:	
SUMMER DESIGN CONDITION	
A. INDOOR CONDITION	1. 75° / 50% RH
B. OUTDOOR CONDITION	1. 95° DB / 78° F WB
WINTER DESIGN CONDITION	
A. INDOOR CONDITION	1. 70° / 50% RH
B. OUTDOOR CONDITION	1. 29° F DB

- GENERAL NOTES:**
- COORDINATE LOCATION OF ALL CEILING MOUNTED AIR DISTRIBUTION DEVICES WITH ARCHITECTURAL REFLECTED CEILING PLAN AND WORK OF ALL OTHER TRADES.
 - READ SPECIFICATIONS.
 - ALL EQUIPMENT SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. VERIFY ALL REQUIREMENTS WITH EQUIPMENT SUPPLIER.
 - ALL EXTERIOR MECHANICAL EQUIPMENT AND THEIR FRAMES, APPURTENANCES, COMPONENTS, SUPPORTS AND ANCHORING DEVICES SHALL BE ANCHORED TO RESIST THE FORCES DUE TO WIND PRESSURE AS NOTED IN FLORIDA BUILDING CODE.
 - FLEXIBLE DUCT CONNECTORS AND RIGID DUCT RUNOUTS SERVING SINGLE DIFFUSER SHALL BE THE SAME SIZE AS DIFFUSER NECK.
 - FLEXIBLE DUCT CONNECTORS FOR VAV BOXES AND FAN TERMINAL UNIT SHALL BE THE SAME SIZE AS UNIT INLET. VERIFY ACTUAL DIMENSIONS WITH EQUIPMENT SUPPLIER.
 - PAINT INTERNAL DUCTWORK VISIBLE THROUGH DIFFUSERS, GRILLE OR LOUVER FACE FLAT BLACK.
 - DUCTWORK LAYOUTS INDICATED ON PLANS ARE DIAGRAMMATIC AND ARE NOT INTENDED TO BE USED AS DUCT FABRICATION DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR ALL COORDINATION EFFORTS BETWEEN TRADES AS OUTLINED IN THE SPECIFICATIONS.
 - EVERY PIECE OF MECHANICAL EQUIPMENT SHALL BE PROVIDED WITH AN ENGRAVED NAMEPLATE WITH 1" LETTERS INDICATING EQUIPMENT DESIGNATION. ANY EQUIPMENT INSTALLED WHERE CONCEALED ABOVE CEILING SHALL BE NOTED WITH CLEAR ADHESIVE LABEL AT NEAREST T-GRID OR ON ACCESS PANEL.
 - ALL DOORS TO INDIVIDUAL TOILETS AND CLASSROOM STORAGE ARE TO BE UNDERCUT MINIMUM 1/2".
 - ALL MOTOR STARTERS REQUIRED FOR MECHANICAL SYSTEM MOTORS SHALL BE PROVIDED BY THE MECHANICAL CONTRACTOR.
 - ALL MANUAL DAMPERS SHALL BE TAGGED WITH A MINIMUM 12" LONG PIECE OF FLUORESCENT TAPE TO AID IN VISIBILITY.
 - MOUNT SPACE TEMPERATURE, HUMIDITY OR OTHER SENSORS AT 48" TO THE CENTER UNLESS NOTED OTHERWISE.
 - ALL WALL MOUNTED SENSORS LOCATED IN PUBLIC SPACES SHALL BE PROVIDED WITH A LOCKABLE COVER.
 - THE FINISH OF ALL MECHANICAL EQUIPMENT, DUCTWORK, FABRIC DUCT SYSTEMS, GRILLES, LOUVERS, ETC. EXPOSED IN OCCUPIED SPACES OR ON THE EXTERIOR OF THE BUILDINGS SHALL BE CONFIRMED WITH THE ARCHITECT.
 - ALL THREE PHASE MOTORS SHALL HAVE PHASE LOSS / ROTATION MONITORS.
 - PROVIDE ACCESS FOR ALL MECHANICAL EQUIPMENTS LOCATED ABOVE HARD CEILING AREAS.

- GENERAL DEMO NOTES:**
- THE CONTRACTOR SHALL VISIT AND CAREFULLY EXAMINE THOSE PORTIONS OF THE BUILDING AND SITE AFFECTED BY THIS WORK BEFORE SUBMITTING PROPOSAL SO AS TO BECOME FAMILIAR WITH EXISTING WORK. SUBMISSION OF A PROPOSAL WILL BE CONSIDERED AS EVIDENCE THAT SUCH EXAMINATION HAS BEEN MADE AND LATER CLAIMS FOR LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WILL NOT BE RECOGNIZED. IT IS TO BE UNDERSTOOD THAT UNFORESEEN CONDITIONS PROBABLY EXIST AND NEW WORK MAY NOT BE FIELD LOCATED EXACTLY AS SHOWN ON THE DRAWINGS. COOPERATION WITH OTHER TRADES IN EQUIPMENT ROUTING AS DETERMINED DURING CONSTRUCTION AND AS DIRECTED BY THE ARCHITECT/ENGINEER MAY BE NECESSARY AND IT IS INTENDED THAT SUCH DEVIATIONS SHALL BE CONSIDERED AS PART OF THIS CONTRACT. IT IS ALSO UNDERSTOOD THAT THE PLANS ARE NOT COMPLETELY TO SCALE. THIS CONTRACTOR IS TO FIELD VERIFY DIMENSIONS OF ALL EXISTING CONDITIONS, PRIOR TO BID AND INCLUDE ANY DEVIATIONS IN THE CONTRACT.
 - ALL DEVICES AND EQUIPMENT NOT SHOWN AND IN AREAS OUTSIDE OF REMODELING SHALL REMAIN ACTIVE UNLESS OTHERWISE NOTED. INSTALL AS REQUIRED TO MAINTAIN CONTINUITY TO EXISTING DEVICES AND EQUIPMENT THAT REMAIN.
 - ALL PIPING AND DUCTS SHALL BE CONCEALED ABOVE CEILINGS WHERE APPLICABLE. ALL PIPING SHALL BE INSTALLED PARALLEL AND PERPENDICULAR TO THE BUILDING WALLS.
 - ALL EQUIPMENT AND MATERIAL REMOVED AND NOT REUSED SHALL BE TURNED OVER TO THE OWNER OR AT THE OWNER'S REQUEST DISPOSED OF BY THE CONTRACTOR.
 - ALL GRILLES, VAV BOXES, HVAC EQUIPMENT, ETC. THAT ARE REMOVED SHALL BE REMOVED AS DIRECTED BY THE OWNER, AND CEILING OR WALL SHALL BE PATCHED TO MATCH EXISTING OR NEW FINISH. ALL PATCHES OR CEILING PLATES SHALL BE PATCHED OR PAINTED AS DIRECTED BY ARCHITECT.
 - ALL EXISTING HVAC EQUIPMENT IS NOT SHOWN. IT IS THE CONTRACTOR'S RESPONSIBILITY TO BECOME FAMILIAR WITH ALL EXISTING CONDITIONS PRIOR TO BID, AND INCLUDE IN HIS BID THE REMOVAL OF ALL EQUIPMENT, PIPING AND DUCT WORK, ETC. THAT IS NOT BEING REUSED BACK TO ITS SOURCE.
 - ALL CONCRETE, WALL PATCHING, CEILING REPAIR, AND OTHER GENERAL WORK REQUIRED FOR INSTALLING HVAC SYSTEMS AND TO REPAIR TO "LIKE NEW CONDITION" TO BE PROVIDED AND INSTALLED BY MECHANICAL CONTRACTOR. (COORDINATE WITH GENERAL CONTRACTOR).
 - PROVIDE AND INSTALL ANY ADDITIONAL HANGERS/SUPPORTS REQUIRED TO ACCOMMODATE ANY EQUIPMENT OR DUCTWORK RELOCATION.

ABBREVIATIONS	
SYMBOL	DESCRIPTION
AF	ABOVE FINISHED FLOOR
AFMS	AIR FLOW MEASURING STATION
AHU	AIR HANDLING UNIT
AI	ANALOG INPUT (VARIABLE)
ALT	ALTERNATE
AO	ANALOG OUTPUT (VARIABLE)
APPROX	APPROXIMATE
ARCH	ARCHITECT
AVG	AVERAGE
BFF	BELOW FINISHED FLOOR
BFG	BELOW FINISHED GRADE
BFP	BACKFLOW PREVENTER
BHP	BREAK HORSEPOWER
BI	BINARY INPUT (ON-OFF)
BLOG	BUILDING
BMS	BUILDING MANAGEMENT SYSTEM
BS	BINARY OUTPUT (ON-OFF)
BOB	BOTTOM OF DUCT
BO	BOTTOM OF PIPE
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
CL	CENTERLINE
CFM	CUBIC FEET PER MINUTE
CHR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CKT	CIRCUIT
CO	CLEANOUT
CONC	CONCENTRIC
CONT	CONTINUATION
CU FT	CUBIC FEET
CU IN	CUBIC INCH
CU	CONDENSING UNIT
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
DB	DRY BULB TEMPERATURE
DDC	DIRECT DIGITAL CONTROL
DEG	DEGREE
DIA	DIAMETER
DIM	DIMENSION
DIP	DUCTILE IRON PIPE
DN	DOWN
DP	DIFFERENTIAL PRESSURE
DWG	DRAWING
EAT	ENTERING AIR TEMPERATURE
ECC	ECCENTRIC
ECO	EXTERIOR CLEANOUT
EDH	ELECTRIC DUCT HEATER
EFF	EFFICIENCY
EG	EXHAUST GRILLE
EH	EXHAUST HOOD
EL	EXHAUST LOUVER
ELEV	ELEVATION
EMS	ENERGY MANAGEMENT SYSTEM
ENT	ENTERING
EQUIP	EQUIPMENT
ERV	ENERGY RECOVERY WHEEL
EUH	ELECTRIC UNIT HEATER
EW	ELECTRIC WATER COOLER
EW	ELECTRIC WATER HEATER
EW	ENTERING WATER TEMPERATURE
EXH	EXHAUST
EXP	EXPANSION
F	FAHRENHEIT
F/SD	FIRE/SMOKE DAMPER
FA	FIRE ALARM
FCO	FLOOR CLEANOUT
FCU	FAN COIL UNIT
FD	FLOOR DRAIN
FD	FIRE DAMPER
FDC	FLEXIBLE DUCT CONNECTION
FLEX	FLEXIBLE
FLR	FLOOR
FO	FLAT OVAL
FPM	FEET PER MINUTE
FS	FLOOR SINK
FT	FEET
GA	GAUGE
GAL	GALLONS
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GPW	GALLONS PER MINUTE
GWH	GAS WATER HEATER
H	HUMIDITY
HB	HOSE BIBB
HD	HEAD
HOG	HOT DIP GALVANIZED
HL	HIGH LIMIT
HP	HORSEPOWER
HR	HOUR
HT	HEIGHT
HW	HOT WATER
HWRP	HOT WATER RECIRCULATING PUMP
HX	HEAT EXCHANGER
HZ	HERTZ
ID	DIAMETER, INSIDE
IN	INCH
INSUL	INSULATION
INW	INVERT ELEVATION
IW	INDIRECT WASTE
KVA	KILOVOLT AMPERE
KW	KILOWATT
KWH	KILOWATT PER HOUR
LAT	LEAVING AIR TEMPERATURE
LAV	LAVATORY
LF	LINEAR FEET
LL	LOW LIMIT
LR	LONG RADIUS
LVG	LEAVING
LWT	LEAVING WATER TEMPERATURE
M	METER
MAX	MAXIMUM
MBH	BTU PER HOUR, THOUSANDS
MCA	MINIMUM CIRCUIT AMPACITY
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL
MEZZ	MEZZANINE
MFG	MANUFACTURER
MHP	MOTOR HORSEPOWER
MIN	MINIMUM
MISC	MISCELLANEOUS
MOP	MAXIMUM OVERCURRENT PROTECTION
MOT	MOUNTED
MVD	MOTORIZED VOLUME DAMPER

ABBREVIATIONS - (CONT)	
SYMBOL	DESCRIPTION
NA	NOT APPLICABLE
NC	NOISE CRITERIA
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NIC	NOT IN CONTRACT
NO	NUMBER
NO	NORMALLY OPEN
NPCW	NON POTABLE COLD WATER
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OAH	OUTSIDE AIR HOOD
OAI	OUTSIDE AIR INTAKE
OAL	OUTSIDE AIR LOUVER
OD	DIAMETER, OUTSIDE
ODP	OPEN DRIP PROOF
OZ	OUNCE
PCHW	PRIMARY CHILLED WATER
PH	PHASE
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
PSID	POUNDS PER SQUARE INCH DIFFERENTIAL
RA	RETURN AIR
RD	ROOF DRAIN
REF	REFERENCE
RET	RETURN
RH	RELATIVE HUMIDITY
RHC	REHEAT COIL
RM	ROOM
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR
SAN	SANITARY
SCHW	SECONDARY CHILLED WATER
SD	SMOKE DAMPER
SP	STATIC PRESSURE
SPEC	SPECIFICATION
SQ FT	SQUARE FEET
SR	SHORT RADIUS
SS	STAINLESS STEEL
STD	STANDARD
STM	STEAM
SMP	SAFE WORKING PRESSURE
SD	SMOKE DETECTOR
T	TEMPERATURE
T	THERMOSTAT
T & P	TEMPERATURE AND PRESSURE
TA	THROW-AWAY
TEFC	TOTALLY ENCLOSED FAN COOLED
TEMP	TEMPERATURE
TOL	THREAD-O-LET
TYP	TYPICAL
UC	UNDERCUT
UG	UNDERGROUND
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
UR	URINAL
V	VENT
VAV	VARIABLE AIR VOLUME
VD	MANUAL VOLUME DAMPER
VEL	VELOCITY
VFD	VARIABLE FREQUENCY DRIVE
VOL	VOLUME
VTR	VENT THROUGH ROOF
W/O	WITHOUT
W/	WITH
WB	WET BULB TEMPERATURE
WC	WATER CLOSET
WCO	WALL CLEANOUT
WH	WALL HYDRANT
WOL	WELD-O-LET
WT	WEIGHT

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ABBREVIATIONS, NOTES & LEGEND

RENOVATIONS TO BUILDINGS S & V
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ORANGE PARK, FL.

Seal/Signature:

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Altamonte Springs, FL 32711
FL REG. NO.: PE57743

Date: 10/19/2011

Scale: AS NOTED

Drawn: LAH

Job: O5JO3

Sheet: M-0.1

35 Of 61 Sheets

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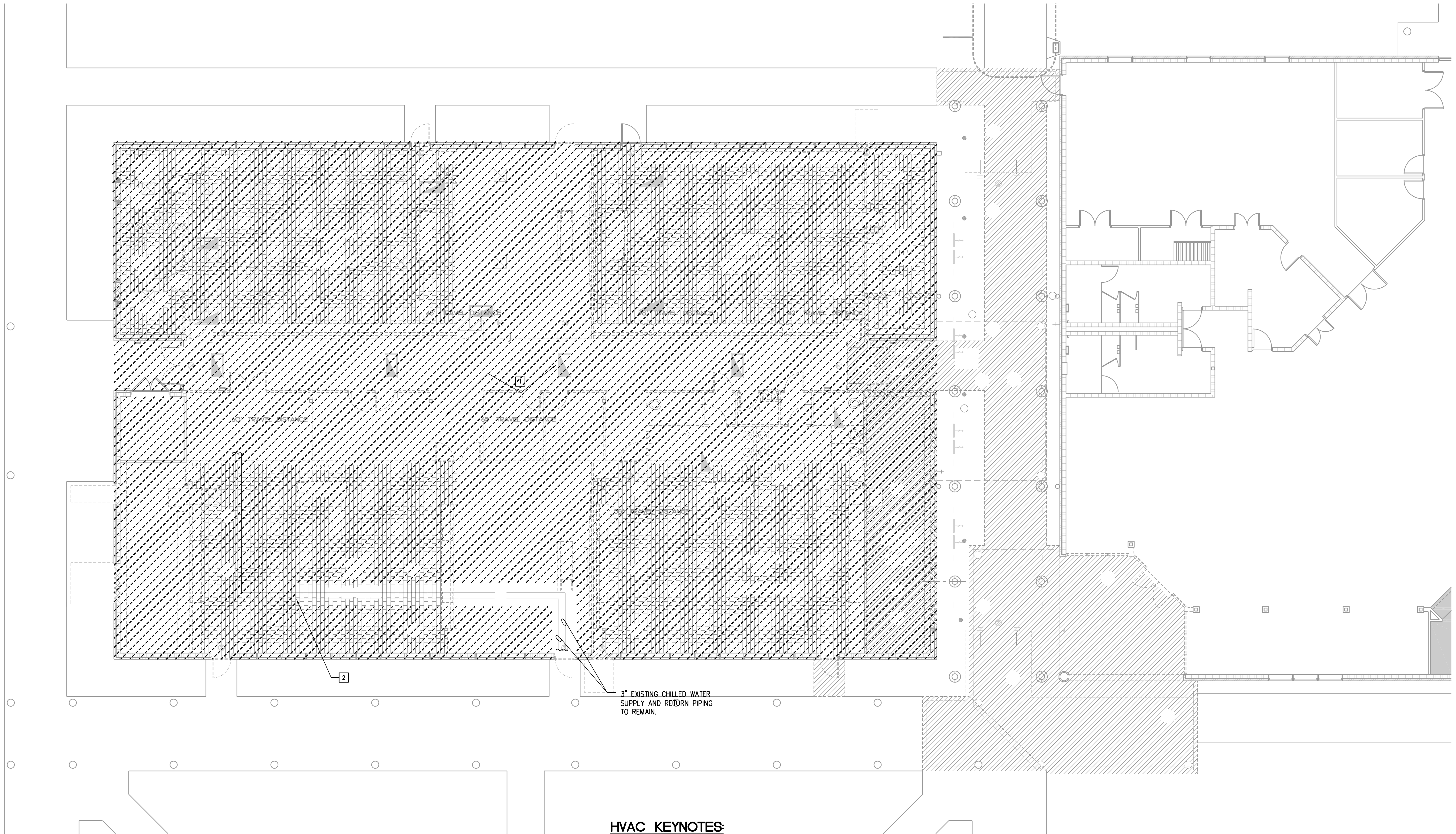
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BUILDING S DEMO
 FLOOR PLAN - H.V.A.C.

RENOVATIONS TO BUILDINGS S & V
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 Date: 10/19/2011
 Scale: AS NOTED
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 Job: O15J03
 Sheet:
M-1.0
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- HVAC KEYNOTES:**
- 1 COMPLETELY REMOVE ALL EXISTING HVAC SYSTEMS/EQUIPMENTS ALONG WITH ALL ASSOCIATED DUCTWORK, COMPONENTS, AIR DISTRIBUTION SYSTEM AND CONTROLS LOCATED WITHIN HATCHED AREA. CONTRACTOR SHALL SEAL ALL UNUSED WALL/ROOF OPENINGS. REFER TO SHEET M2.0 FOR NEW WORK.
 - 2 REMOVE EXISTING CHILLED WATER SUPPLY AND RETURN LINES UP TO LOCATION INDICATED. INSPECT REMAINING CHILLED WATER LINES FOR DAMAGES AND REPAIR OR REPLACE AS REQUIRED. ANY EXISTING TO REMAIN LINES THAT ARE DAMAGED FROM THE DEMOLITION PROCESS SHALL BE REPLACED WITH NEW. REMAINING CHILLED WATER LINES TO BE CONNECTED TO NEW CHILLED WATER LINES SERVING NEW AHU-S1. REFER TO SHEET M2.0 FOR NEW WORK.

BUILDING S DEMO FLOOR PLAN - H.V.A.C.
 SCALE: 1/8" = 1'-0"

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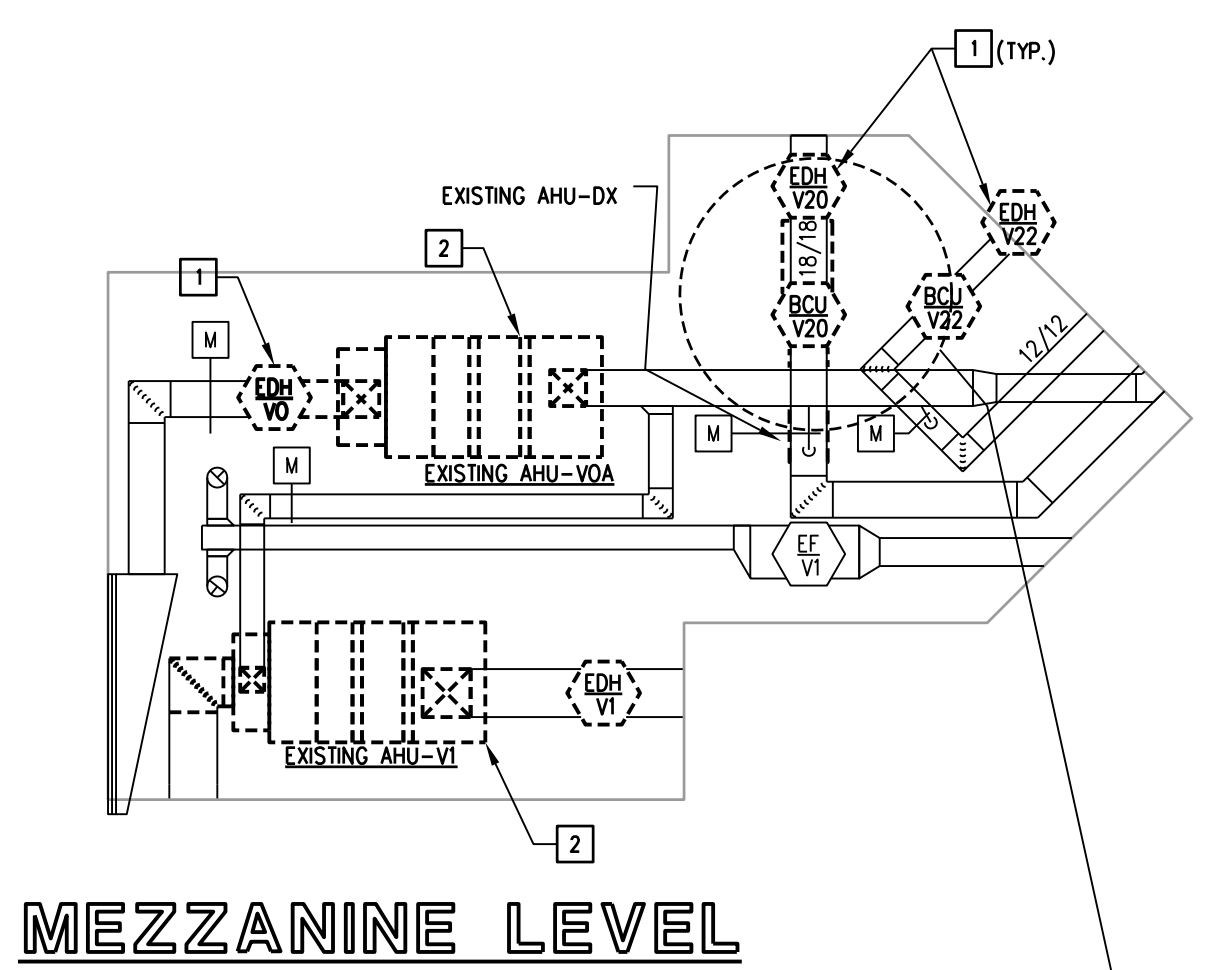
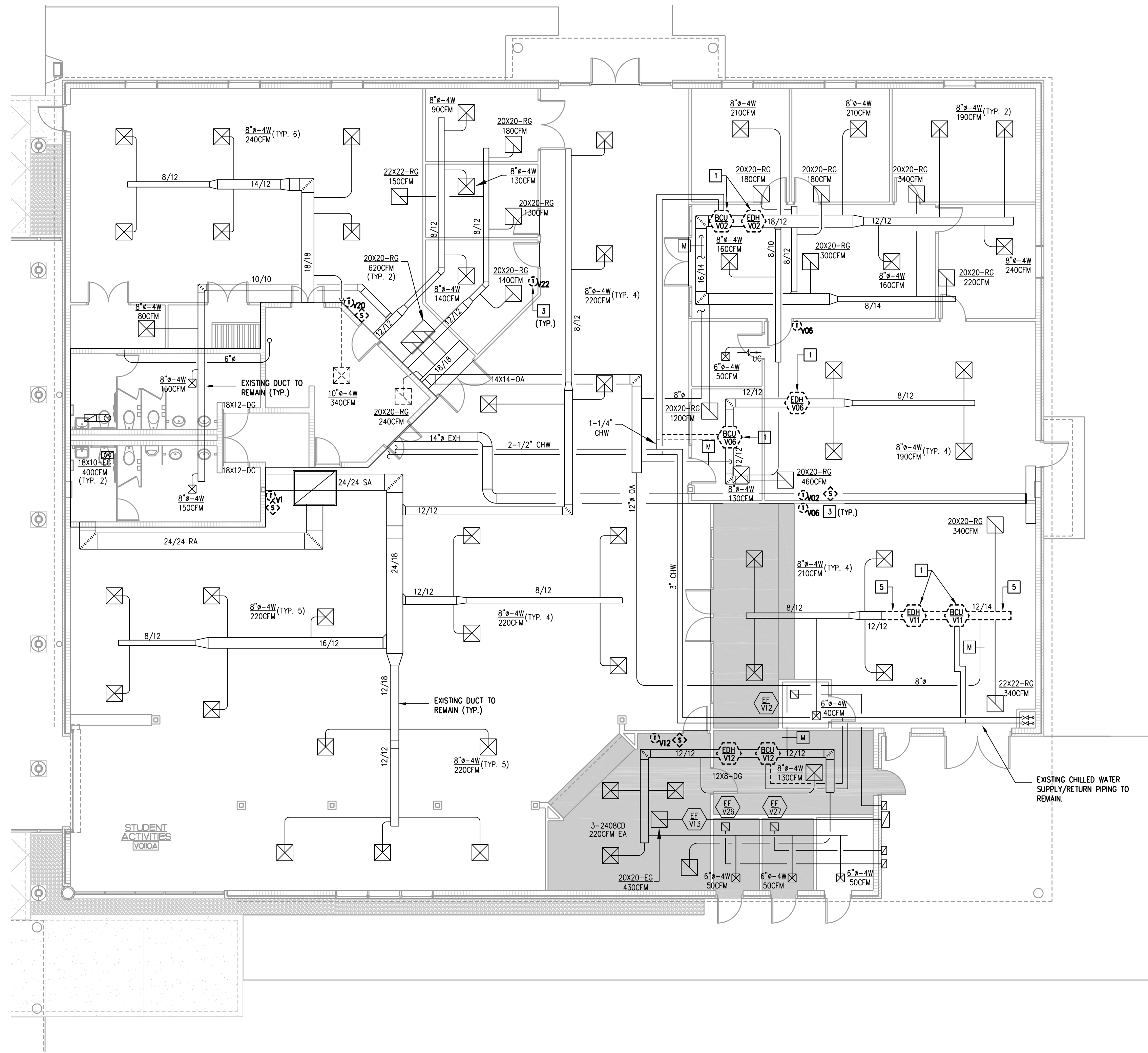
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 Job: O15JO3
 Sheet: **M-1.1**
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GENERAL DEMO NOTES:

1. THE CONTRACTOR SHALL VISIT AND CAREFULLY EXAMINE THOSE PORTIONS OF THE BUILDING AND SITE AFFECTED BY THIS WORK BEFORE SUBMITTING PROPOSAL SO AS TO BECOME FAMILIAR WITH EXISTING WORK. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH EXAMINATION HAS BEEN MADE AND LATER CLAIMS FOR LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WILL NOT BE RECOGNIZED. IT IS TO BE UNDERSTOOD THAT UNFORESEEN CONDITIONS PROBABLY EXIST AND NEW WORK MAY NOT BE FIELD LOCATED EXACTLY AS SHOWN ON THE DRAWINGS. COOPERATION WITH OTHER TRADES IN EQUIPMENT ROUTING AS DETERMINED DURING CONSTRUCTION AND AS DIRECTED BY THE ARCHITECT/ENGINEER MAY BE NECESSARY AND IT IS INTENDED THAT SUCH DEVIATIONS SHALL BE CONSIDERED AS PART OF THIS CONTRACT. IT IS ALSO UNDERSTOOD THAT THE PLANS ARE NOT COMPLETELY TO SCALE. THIS CONTRACTOR IS TO FIELD VERIFY DIMENSIONS OF ALL EXISTING CONDITIONS, PRIOR TO BID AND INCLUDE ANY DEVIATIONS IN THE CONTRACT.
2. ALL DEVICES AND EQUIPMENT NOT SHOWN AND IN AREAS OUTSIDE OF REMODELING SHALL REMAIN ACTIVE UNLESS OTHERWISE NOTED. INSTALL AS REQUIRED TO MAINTAIN CONTINUITY TO EXISTING DEVICES AND EQUIPMENT THAT REMAIN.
3. ALL PIPING AND DUCTS SHALL BE CONCEALED ABOVE CEILINGS WHERE APPLICABLE. ALL PIPING SHALL BE INSTALLED PARALLEL AND PERPENDICULAR TO THE BUILDING WALLS.
4. ALL EQUIPMENT AND MATERIAL REMOVED AND NOT REUSED SHALL BE TURNED OVER TO THE OWNER OR AT THE OWNERS REQUEST DISPOSED OF BY THE CONTRACTOR.
5. ALL GRILLES, VAV BOXES, HVAC EQUIPMENT, ETC. THAT ARE REMOVED SHALL BE REMOVED AS DIRECTED BY THE OWNER, AND CEILING OR WALL SHALL BE PATCHED TO MATCH EXISTING OR NEW FINISH. ALL PATCHES OR CEILING PLATES SHALL BE PATCHED OR PAINTED AS DIRECTED BY ARCHITECT.
6. ALL EXISTING HVAC EQUIPMENT IS NOT SHOWN. IT IS THE CONTRACTORS RESPONSIBILITY TO BECOME FAMILIAR WITH ALL EXISTING CONDITIONS PRIOR TO BID, AND INCLUDE IN HIS BID THE REMOVAL OF ALL EQUIPMENT, PIPING AND DUCT WORK, ETC. THAT IS NOT BEING REUSED BACK TO ITS SOURCE.
7. ALL CONCRETE, WALL PATCHING, CEILING REPAIR, AND OTHER GENERAL WORK REQUIRED FOR INSTALLING HVAC SYSTEMS AND TO REPAIR TO "LIKE NEW CONDITION" TO BE PROVIDED AND INSTALLED BY MECHANICAL CONTRACTOR. (COORDINATE WITH GENERAL CONTRACTOR).
8. PROVIDE AND INSTALL ANY ADDITIONAL HANGERS/SUPPORTS REQUIRED TO ACCOMMODATE ANY EQUIPMENT OR DUCTWORK RELOCATION.
9. UNLESS OTHERWISE NOTED, ALL EXISTING DUCTWORK AIR DISTRIBUTION SYSTEM, AND CHILLED WATER PIPING TO REMAIN. CONTRACTOR SHALL INSPECT PIPING/DUCT/AIR DISTRIBUTION SYSTEM FOR DAMAGES, DIRT AND LEAKS. CLEAN, REPAIR OR REPLACE AS REQUIRED FOR PROPER OPERATION.
10. CONTRACTOR SHALL VERIFY EXISTING HVAC CONTROLS SYSTEM AND INCLUDE A QUOTE FOR A COMPLETE UPGRADE OF THE EXISTING SYSTEM. THE EXISTING HVAC CONTROLS SHALL BE UPGRADED TO THE ANDOVER SYSTEM.

HVAC KEYNOTES:

1. DUCTWORK/EQUIPMENT/COMPONENTS TO BE REMOVED. REFER TO SHEET M2.1 FOR NEW WORK.
2. REPLACE EXISTING UNIT IN ITS ENTIRETY AND REPLACE WITH NEW. REFER TO NEW AHU SCHEDULE FOR NEW UNIT INFORMATION.
3. CONTRACTOR SHALL REPLACE ROOM SENSORS WITH NEW.
4. EXISTING RHEEM (MODEL RBHC 21J11) DX AIR HANDLING UNIT. CONTRACTOR SHALL FIELD VERIFY THE PERFORMANCE (CAPACITY, AIRFLOW, ETC...) OF THE EXISTING DX-SYSTEM SERVING ROOM 120. REPLACE EXISTING DX AHU AND ASSOCIATED CONDENSING UNIT WITH NEW. RECONNECT TO EXISTING DUCTWORK WITH NEW BACKDRAFT DAMPER. EXISTING CONDENSING IS NOT SHOWN. CONTRACTOR SHALL FIELD VERIFY THE EXACT LOCATION OF THE EXISTING CONDENSING UNIT AND AIR HANDLING UNIT. REFER TO SHEET M2.1 FOR NEW UNIT INFORMATION.
5. REMOVE DUCTWORK UP TO LOCATION INDICATED. REFER TO SHEET M2.1 FOR NEW WORK.



EXISTING DX-AHU AND ASSOCIATED CONDENSING UNIT TO BE REPLACED WITH NEW.

BUILDING V DEMO PLAN - H.V.A.C.
 SCALE: 1/8" = 1'-0"

BID ALTERNATE NO. 2

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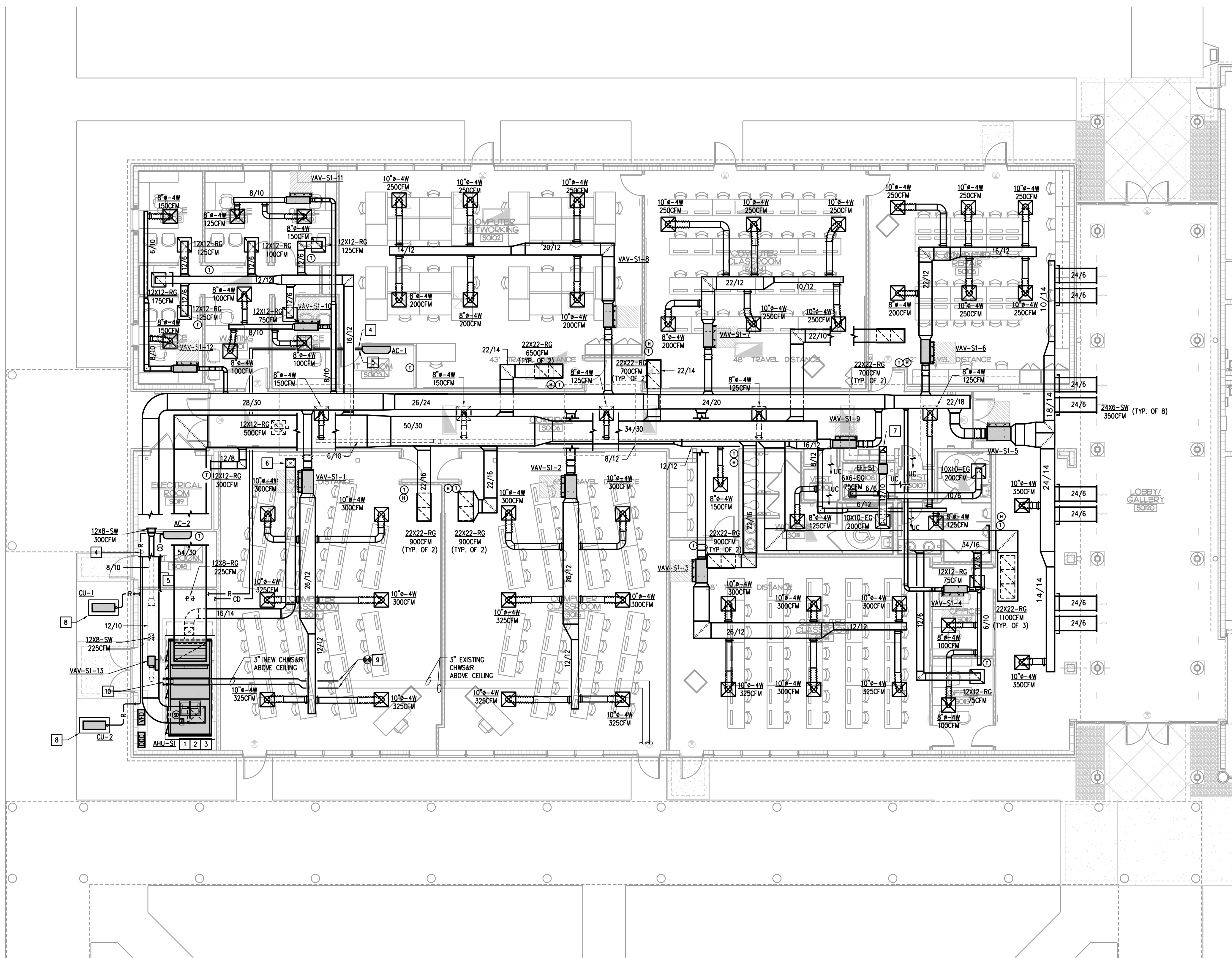
BUILDING S FLOOR
 PLAN H.V.A.C.

RENOVATIONS TO BUILDINGS S & V
 ST. JOHNS RIVER STATE COLLEGE
 ORANGE PARK, FL.

Seal/Signature:

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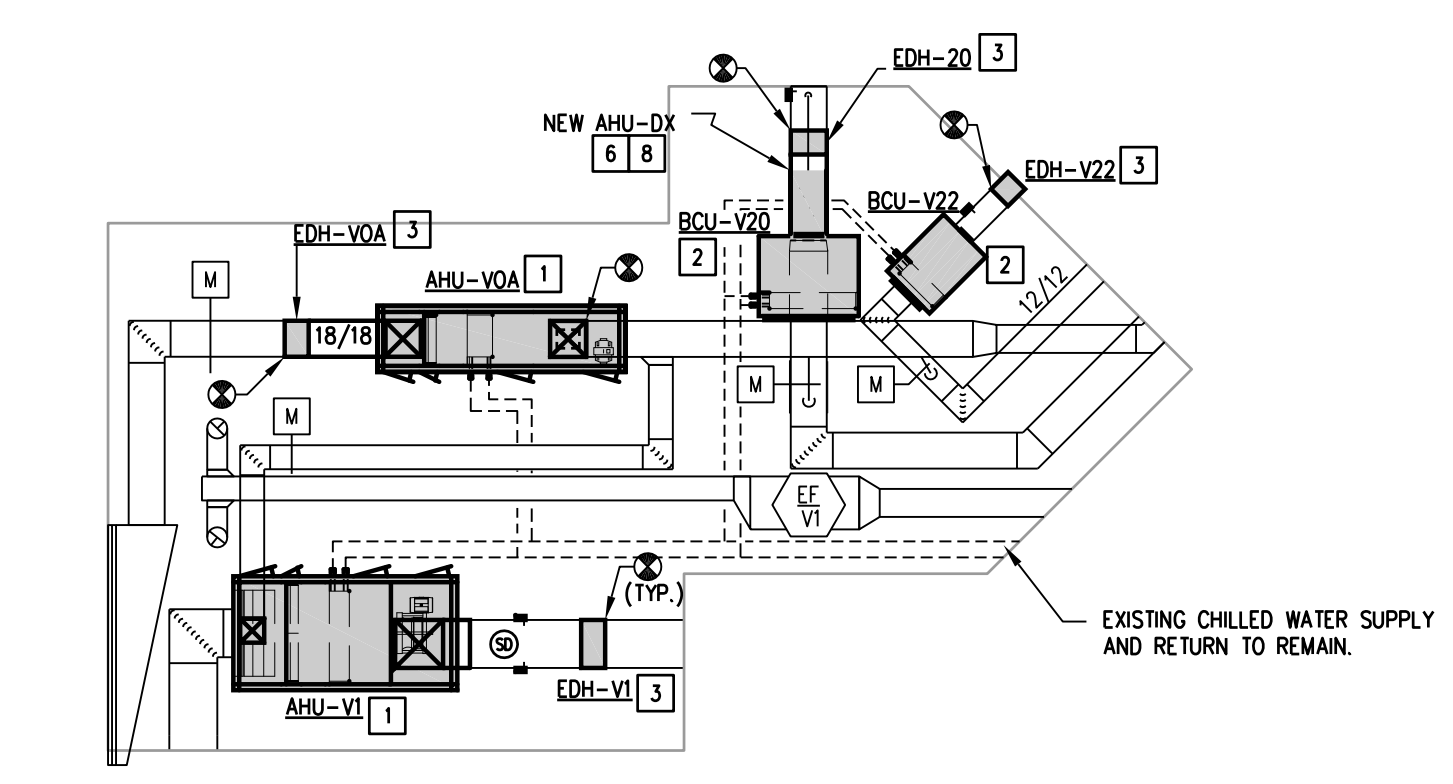
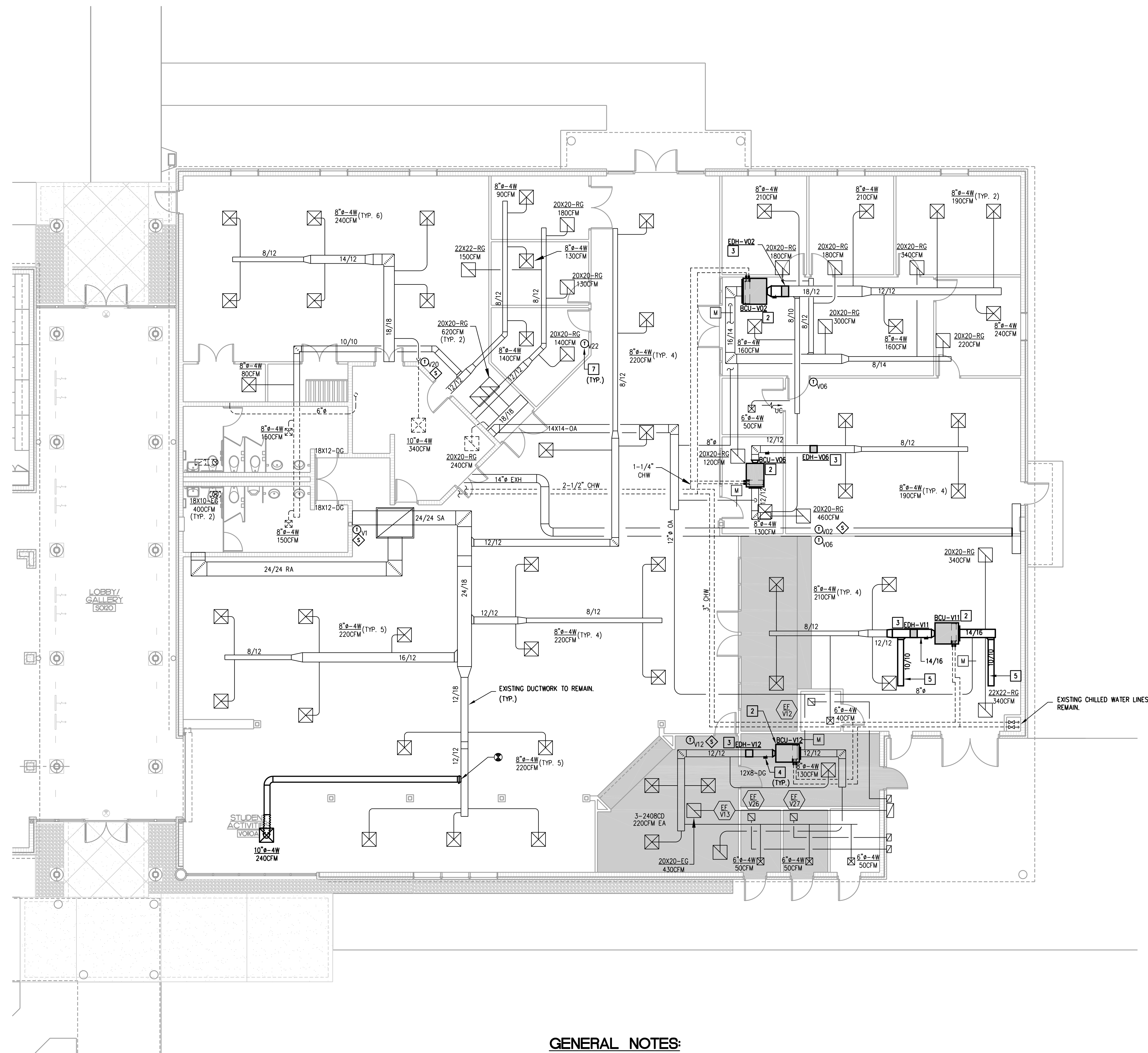


HVAC KEYNOTES:

- 1 VERIFY AND MAINTAIN REQUIRED CLEARANCES AROUND EQUIPMENT FOR MAINTENANCE.
- 2 PROVIDE 6" THICK CONCRETE HOUSEKEEPING PAD UNDER AIR HANDLING UNIT. PAD SHALL EXTEND A MINIMUM OF 4" BEYOND UNIT ON ALL SIDES. VERIFY PAD DIMENSIONS WITH EQUIPMENT SUPPLIED.
- 3 ROUTE INSULATED FULL SIZE CONDENSATE DRAIN LINE WITH P-TRAP FROM AHU COIL CONNECTION AND TERMINATE AT MECHANICAL ROOM HUB DRAIN. COORDINATE LOCATION OF HUB DRAINS WITH PLUMBING CONTRACTOR PRIOR TO THE ROUGH-IN.
- 4 ROUTE REFRIGERANT LINE FROM AHU TO CONDENSING ASSOCIATED CONDENSING UNIT. PROVIDE PVC CHASE WHERE LINES ARE ROUTED UNDERGROUND. SIZE AND INSULATE LINES PER MANUFACTURER'S RECOMMENDATIONS.
- 5 CONDENSATE DRAIN LINE. ROUTE CONDENSATE DRAIN LINE FROM AHU WITH P-TRAP TO MECHANICAL ROOM HUB DRAIN WITH A SEALED CONNECTION.
- 6 ROUTE OUTSIDE AIR DUCT TO EXISTING CUPOLA LOUVER. FIELD VERIFY THE EXACT DIMENSION AND LOCATION OF EXISTING LOUVERS. OUTSIDE AIR FLOW SHOWN. REQUIRES A LOUVER DIMENSION OF APPROXIMATELY 42X24. CONTRACTOR SHALL BLANK OF ALL UNUSED LOUVER OPENINGS.
- 7 ROUTE EXHAUST AIR DUCT TO EXISTING CUPOLA LOUVER. FIELD VERIFY THE EXACT DIMENSION AND LOCATION OF EXISTING LOUVERS. EXHAUST AIR FLOW SHOWN. REQUIRES A LOUVER DIMENSION OF APPROXIMATELY 24X16. CONTRACTOR SHALL BLANK OF ALL UNUSED LOUVER OPENINGS.
- 8 PROVIDE 6" THICK CONCRETE HOUSEKEEPING PAD FOR CONDENSING UNIT. PAD SHALL EXTEND A MINIMUM OF 6" BEYOND UNIT ON ALL SIDES. PAD SHALL BE SIZED LARGE ENOUGH TO ACCOMMODATE PVC REFRIGERANT CHASE LOCATION. PLACE CONDENSING UNIT AWAY FROM ROOF DRIP LINE. PROVIDE MANUFACTURER'S RECOMMENDED CLEARANCES. COORDINATE CONDENSING UNIT AND PAD LOCATION WITH ARCHITECTURAL AND LANDSCAPE ARCHITECTURAL DRAWINGS. MAXIMUM LENGTH OF REFRIGERANT PIPING SHALL NOT EXCEED 75 FEET OR MANUFACTURER'S RECOMMENDATIONS. SECURE CONDENSING UNIT TO PAD WITH #14 SCREWS WITH GASKETED WASHERS LOCATED 12 INCHES ON CENTER MAXIMUM AROUND CONDENSING UNIT.
- 9 CONNECT NEW 3" CHILLED WATER SUPPLY AND RETURN LINES TO EXISTING 3" CHILLED WATER SUPPLY AND RETURN LINES. CONTRACTOR TO FIELD VERIFY THE EXACT LOCATION AND DIMENSION OF EXISTING CHILLED WATER LINES. INSPECT EXISTING CHILLED WATER LINES AND ASSOCIATED COMPONENTS FOR DAMAGES AND REPAIR OR REPLACE AS REQUIRED FOR PROPER OPERATION. VERIFY THE LOCATION AND CONDITION OF THE EXISTING CHILLED WATER SHUT-OFF VALVE. REPAIR OR REPLACE AS REQUIRED. PROVIDE WATER FLOW METER AND SUPPLY AND RETURN WATER TEMPERATURE SENSORS AS REQUIRED.
- 10 ROUTE NEW 3" CHILLED WATER SUPPLY AND RETURN LINES TO AHU COIL CONNECTIONS. PIPING SHALL BE INSTALLED SUCH THAT IT DOES NOT OBSTRUCT ACCESS PANELS OR EQUIPMENT REQUIRING SERVICE. BALANCE SYSTEM TO PROVIDE WATER FLOW RATE AND CAPACITY INDICATED ON AHU SCHEDULE ON SHEET M6.0.

BUILDING S FLOOR PLAN - H.V.A.C.
 SCALE: 1/8" = 1'-0"

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MEZZANINE LEVEL

HVAC KEYNOTES:

- 1 NEW AHU TO REPLACE EXISTING. REPLACE EXISTING AHU WITH NEW AHU SHOWN AND SCHEDULED. CONTRACTOR SHALL RECONNECT NEW UNIT TO EXISTING DUCTWORK. EXTEND EXISTING CHILLED WATER SUPPLY AND RETURN AND RECONNECT TO NEW AHU COIL CONNECTION. ROUTE CONDENSATE PIPING FROM AHU WITH P-TRAP AND CONNECT TO EXISTING DRAIN. FIELD VERIFY THE LOCATION OF ALL EXISTING COMPONENTS.
- 2 REPLACE EXISTING BLOWER COIL UNITS WITH NEW UNITS SHOWN AND SCHEDULED. CONTRACTOR SHALL RECONNECT NEW UNIT TO EXISTING DUCTWORK. TRANSITION AS REQUIRED FOR DUCT CONNECTION. EXTEND EXISTING CHILLED WATER SUPPLY AND RETURN AND RECONNECT TO NEW BCU COIL CONNECTION. ROUTE CONDENSATE PIPING WITH P-TRAP FROM BCU AND CONNECT TO EXISTING DRAIN. FIELD VERIFY THE EXACT LOCATION OF ALL EXISTING COMPONENTS.
- 3 REPLACE EXISTING DUCT HEATER WITH NEW. RECONNECT TO EXISTING DUCTWORK. TRANSITION AS NECESSARY FOR HEATER CONNECTION. FIELD VERIFY THE EXACT LOCATION OF EXISTING DUCT HEATERS.
- 4 PROVIDE BI-POLAR IONIZATION SYSTEM IN SUPPLY DUCT NEAR BCU DISCHARGE(TYP. FOR ALL BCU AND AHU-VI). COORDINATE ALL REQUIREMENTS WITH MANUFACTURER.
- 5 NEW DUCTWORK TO ACCOMMODATE FUTURE BOOKSTORE EXPANSION.
- 6 CONTRACTOR SHALL PROVIDE NEW DX AIR HANDLING UNIT EQUAL TO RHEEM RBHP-21J00N12 WITH 7.5 KW HEATER MODEL RBHP-21J1154. CONTRACTOR SHALL ALSO VERIFY THE EXACT LOCATION AND CAPACITY OF THE ASSOCIATED CONDENSING UNIT AND REPLACE WITH NEW UNIT EQUAL RHEEM MODEL RHPM. NEW MODELS ARE SELECTED TO CLOSELY MATCH THE ELECTRICAL REQUIREMENTS OF THE EXISTING MODEL. COORDINATE ALL REQUIREMENTS WITH MANUFACTURER AND ELECTRICAL CONTRACTOR TO ENSURE PROPER OPERATION. PROVIDE NEW REFRIGERANT AND CONDENSATE PIPING AS NECESSARY.
- 7 REPLACE ALL EXISTING ROOM SENSORS ASSOCIATED WITH THE EXISTING HVAC SYSTEM WITH NEW. FIELD VERIFY THE EXACT LOCATION OF SENSORS. EXISTING WIRING MAY BE RE-USED. VERIFY THE CONDITION AND REPLACE AS NECESSARY.
- 8 RECONNECT SUPPLY/RETURN DUCT FROM NEW DX AIR HANDLING UNIT TO EXISTING SUPPLY/RETURN DUCTWORK. PROVIDE NEW BACKDRAFT DAMPERS.

GENERAL NOTES:

1. UNLESS OTHERWISE NOTED, ALL EXISTING DUCTWORK AND AIR DISTRIBUTION SYSTEM TO REMAIN. CONTRACTOR SHALL INSPECT DUCT/AIR DISTRIBUTION SYSTEM FOR DAMAGES, DIRT AND LEAKS. CLEAN, REPAIR OR REPLACE AS REQUIRED FOR PROPER OPERATION. VERIFY THE OPERATION OF ALL MOTORIZED DAMPERS AND REPAIR OR REPLACE AS NECESSARY FOR PROPER OPERATION.
2. PROVIDE AUXILIARY DRAIN PANS UNDER ALL UNITS ABOVE FINISHED CEILINGS. PAN SHALL EXTEND 6 INCHES BEYOND THE UNIT ON ALL SIDES. PROVIDE FLOAT SWITCH TO INTERRUPT POWER TO UNIT IN CASE THE PRIMARY DRAIN OVERFLOWS. PROVIDE DRAIN PIPE WITH BALL VALVE AND HOSE CONNECTION FOR AUXILIARY DRAIN PAN.
3. EXISTING CONTROLS FOR THE HVAC SYSTEM SHALL BE UPGRADED TO THE NEW AND OVER SYSTEM. CONTROLS CONTRACTOR SHALL EVALUATE INFRASTRUCTURE OF EXISTING CONTROLS SYSTEM AND PROVIDE A SEPARATE QUOTE FOR A COMPLETE SYSTEM UPGRADE.

BUILDING V FLOOR PLAN - H.V.A.C.

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

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BUILDING V FLOOR
 PLAN H.V.A.C.

RENOVATIONS TO BUILDINGS S & V
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 ORANGE PARK, FL.

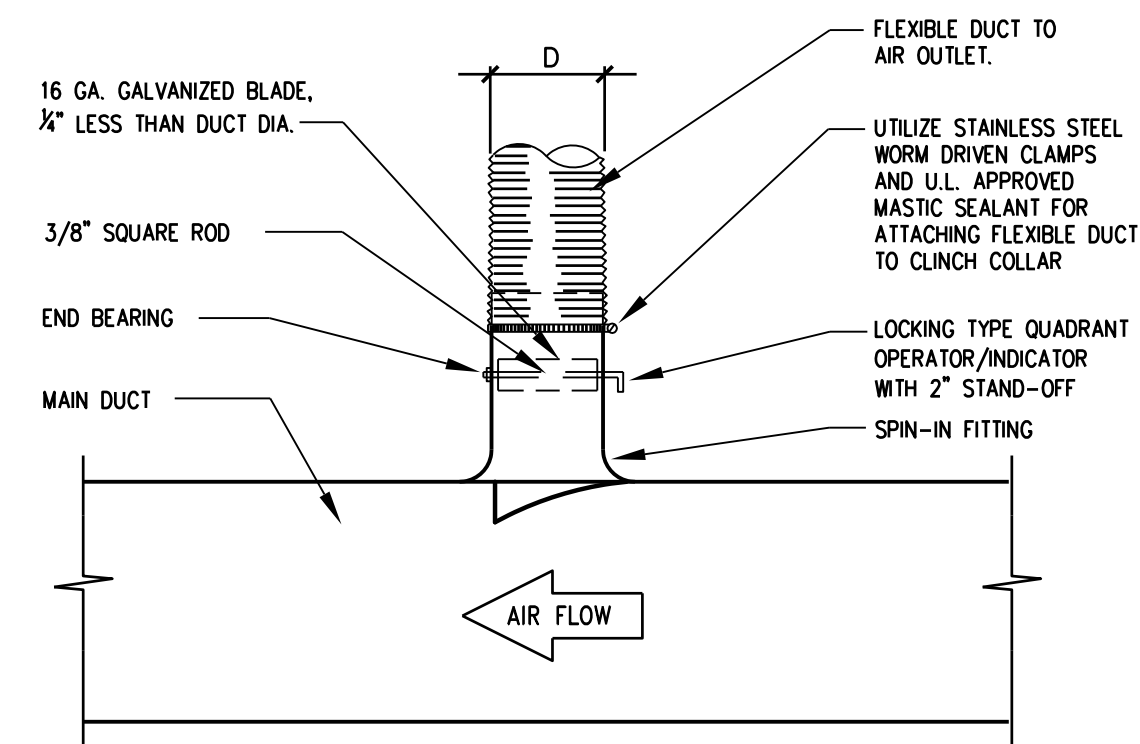
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BID ALTERNATE NO. 2

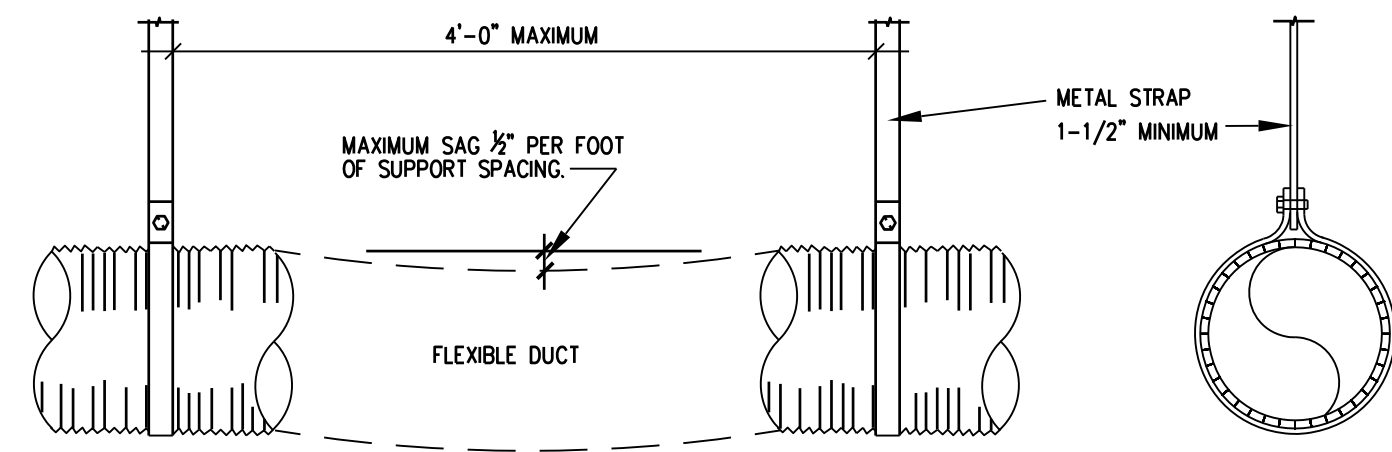
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JASON L. SMITH, P.E.
 427 CENTERPOINTE CIR., SUITE 1825
 ALTAMONTE SPRINGS, FL 32701
 FL REG. NO.: PE57743

Date: 10/19/2011
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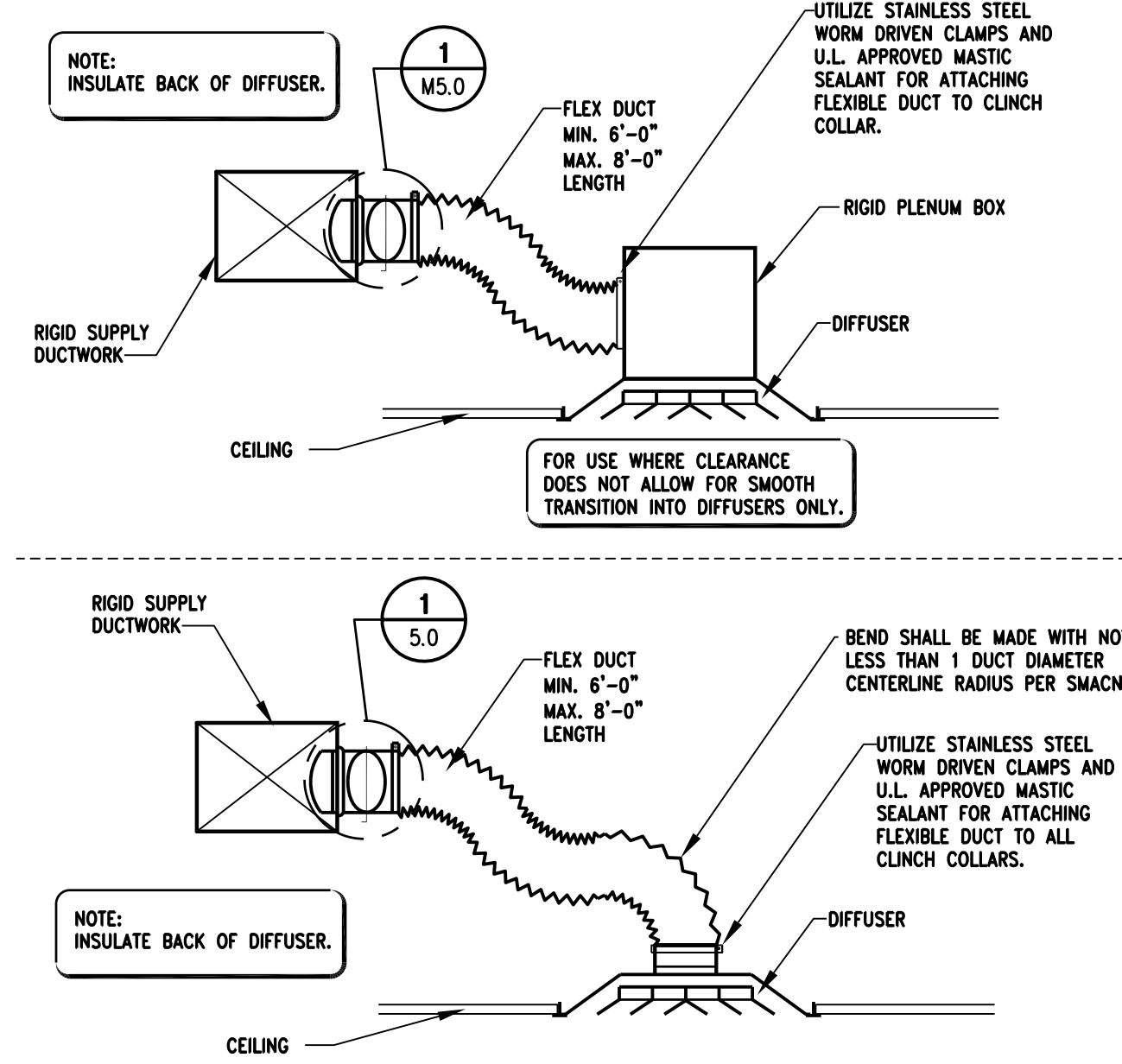


1 SPIN-IN BRANCH CONNECTION TO SINGLE AIR OUTLET
M5.0 NTS

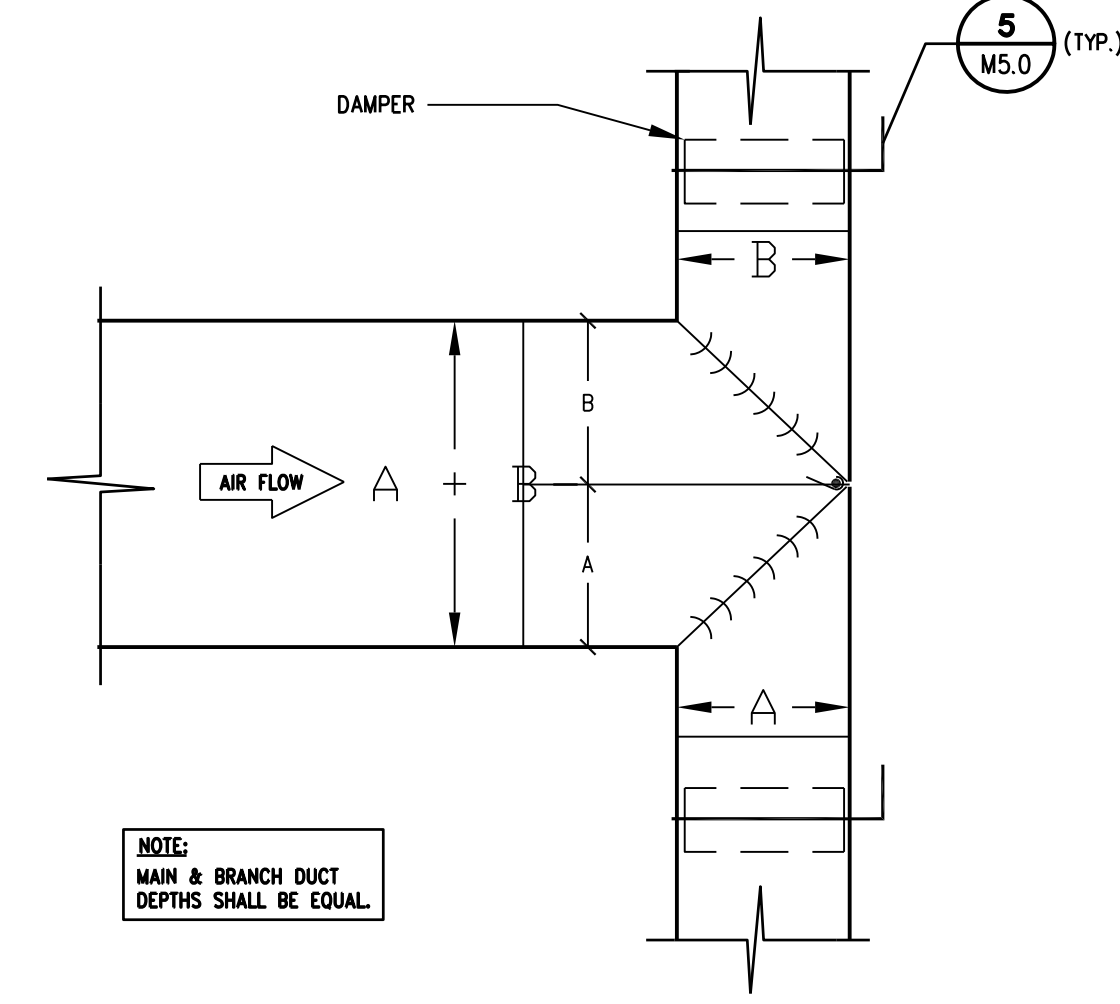


- NOTES:
1. DUCT SHOULD EXTEND STRAIGHT FOR SEVERAL INCHES FROM A CONNECTION BEFORE BENDING.
 2. SUPPORT SYSTEM MUST NOT DAMAGE DUCT OR CAUSE OUT OF ROUND SHAPE.

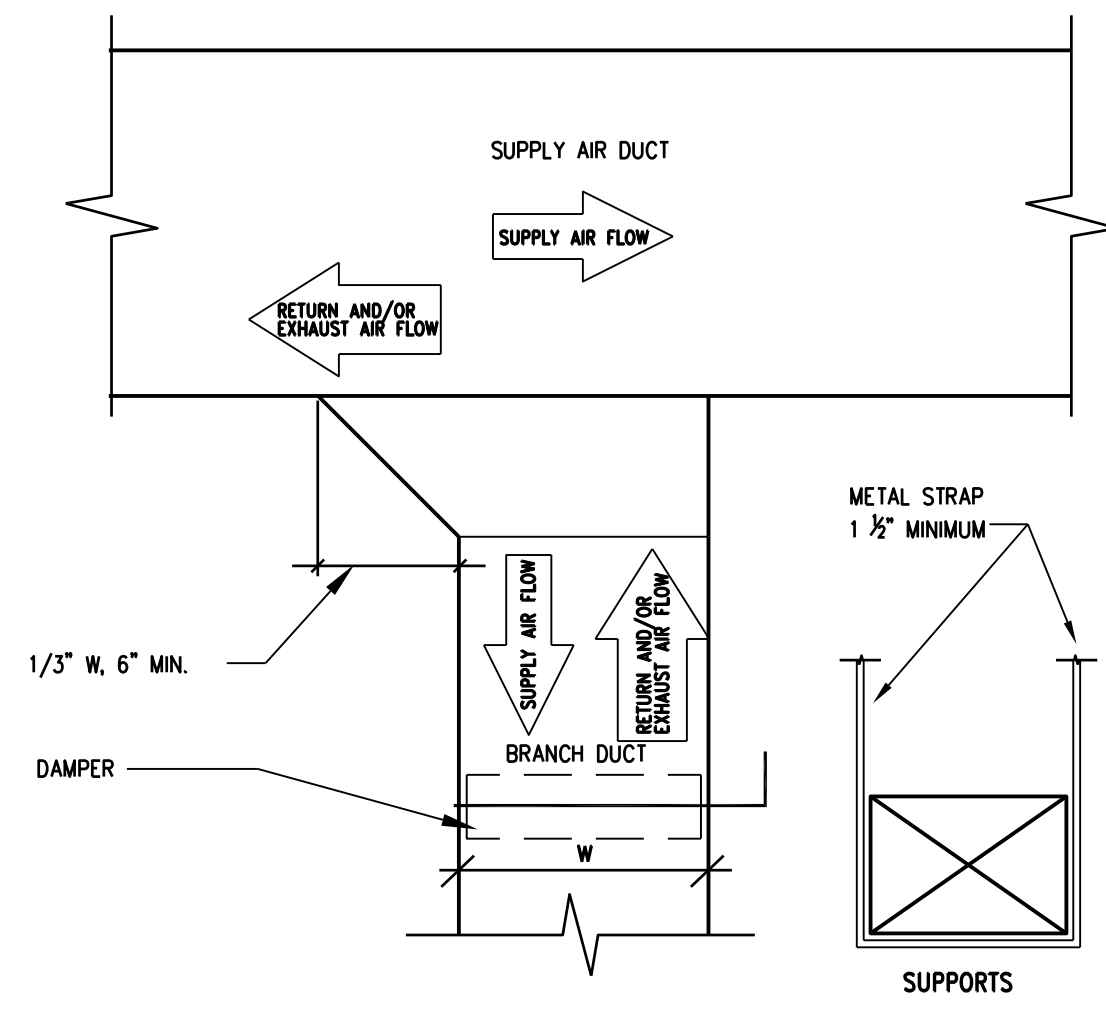
2 FLEX DUCT SUPPORT
M5.0 NTS



3 DIFFUSER AND FLEX DUCT DETAIL
M5.0 NTS

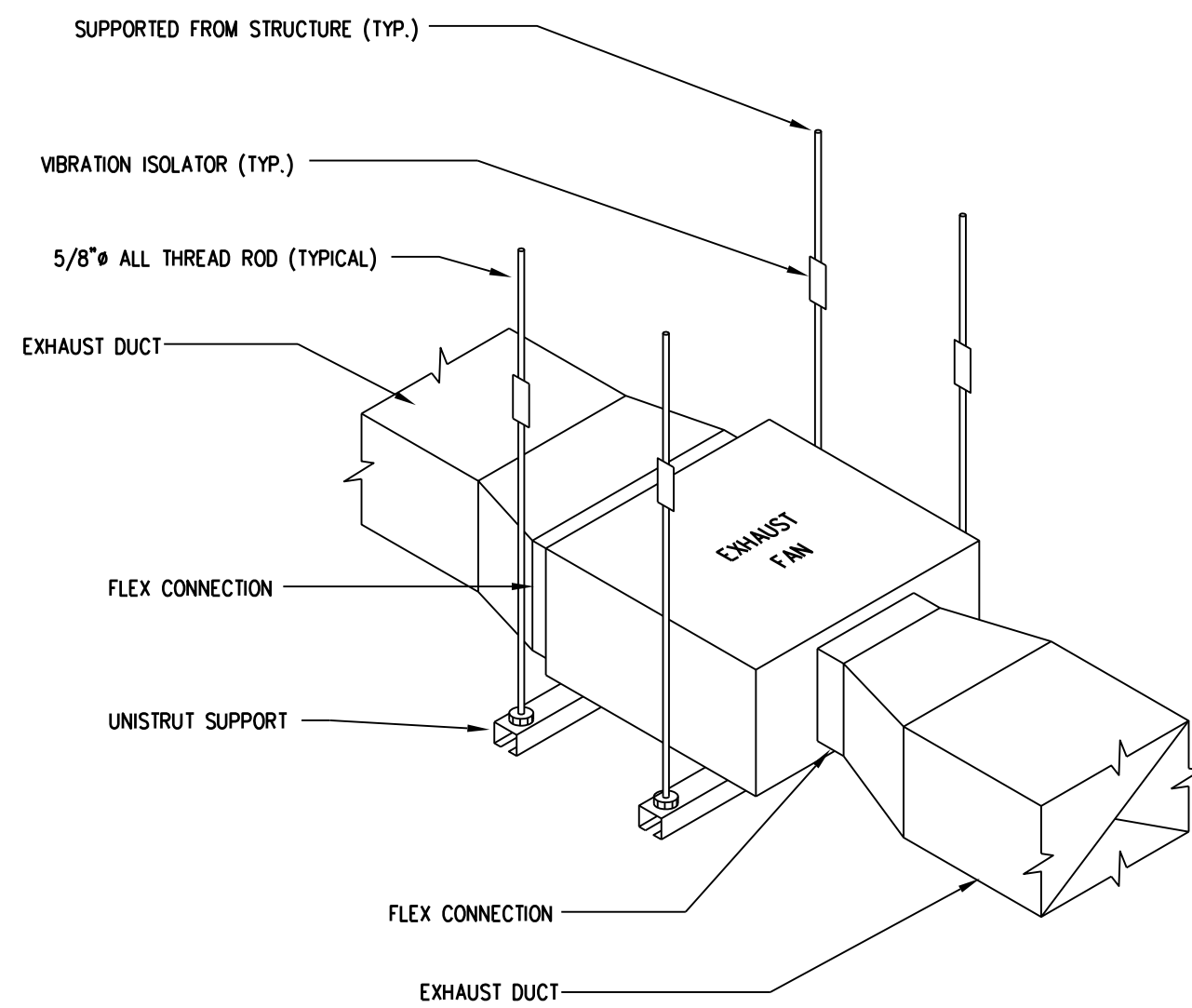


4 SUPPLY DUCT WITH SPLITTER DAMPER
M5.0 NTS

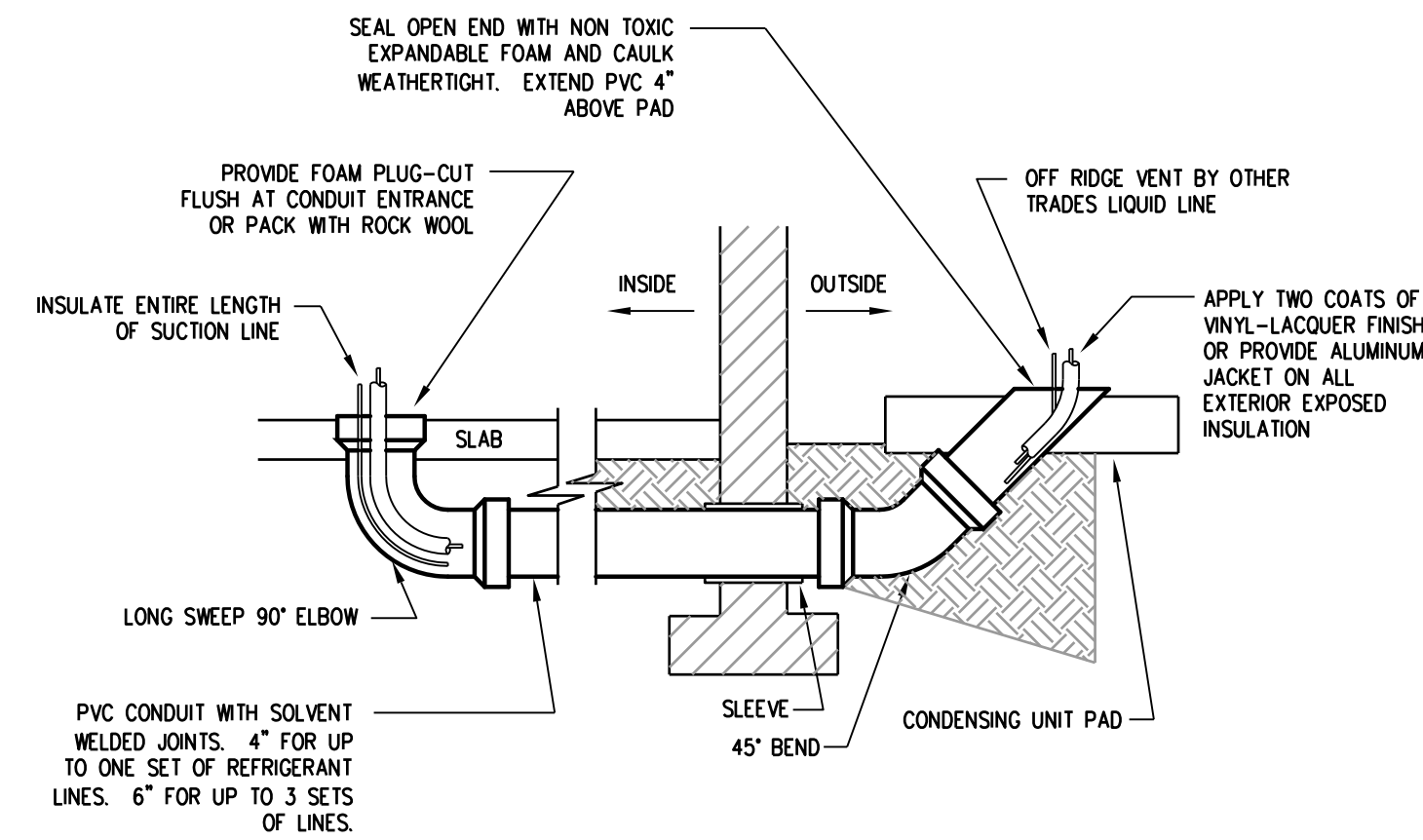


NOTE: EVERY BRANCH DUCT SHALL BE PROVIDED WITH VOLUME DAMPER.

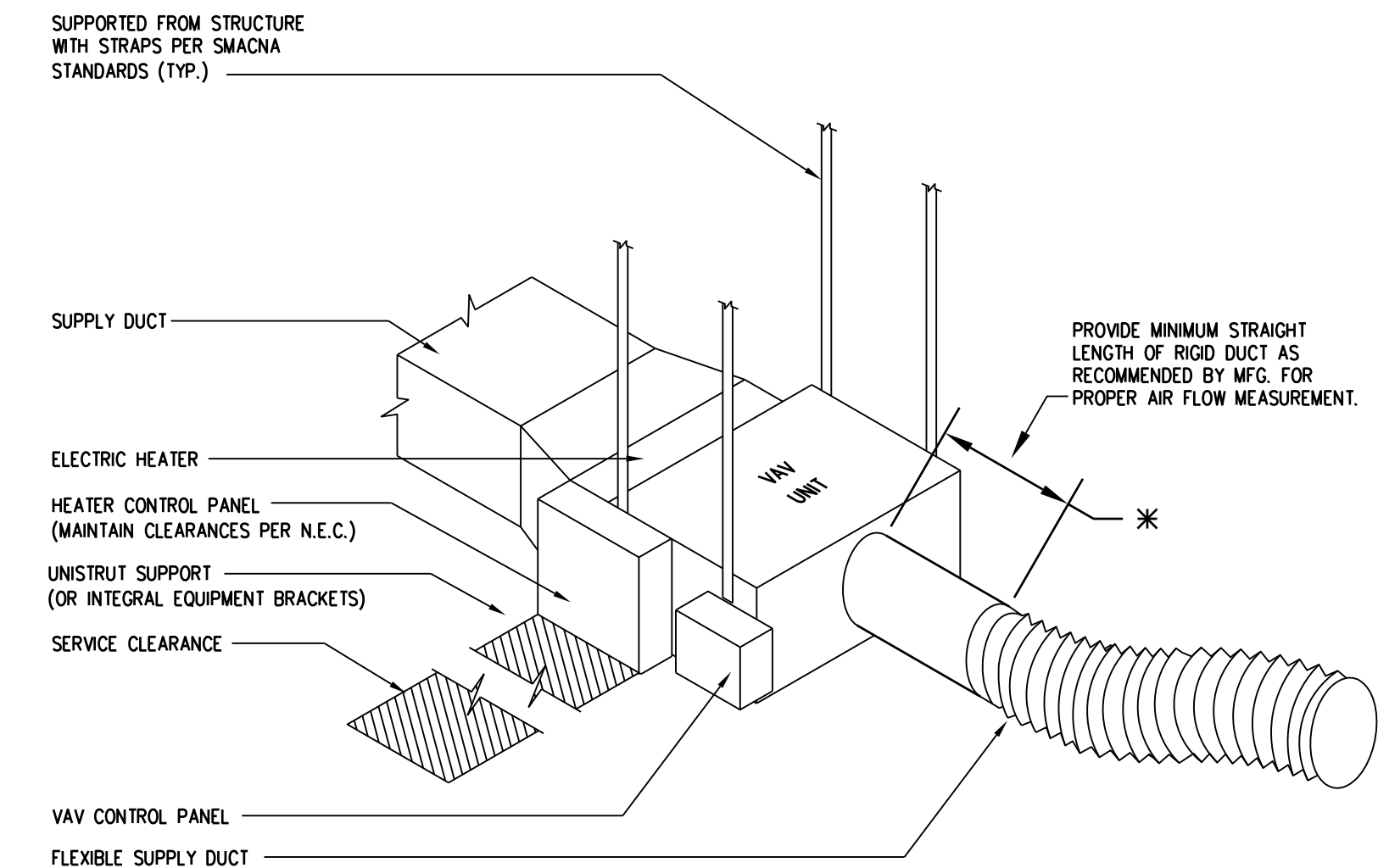
5 DAMPER AT DUCT BRANCH
M5.0 NTS



6 IN-LINE EXHAUST FAN DETAIL
M5.0 NTS

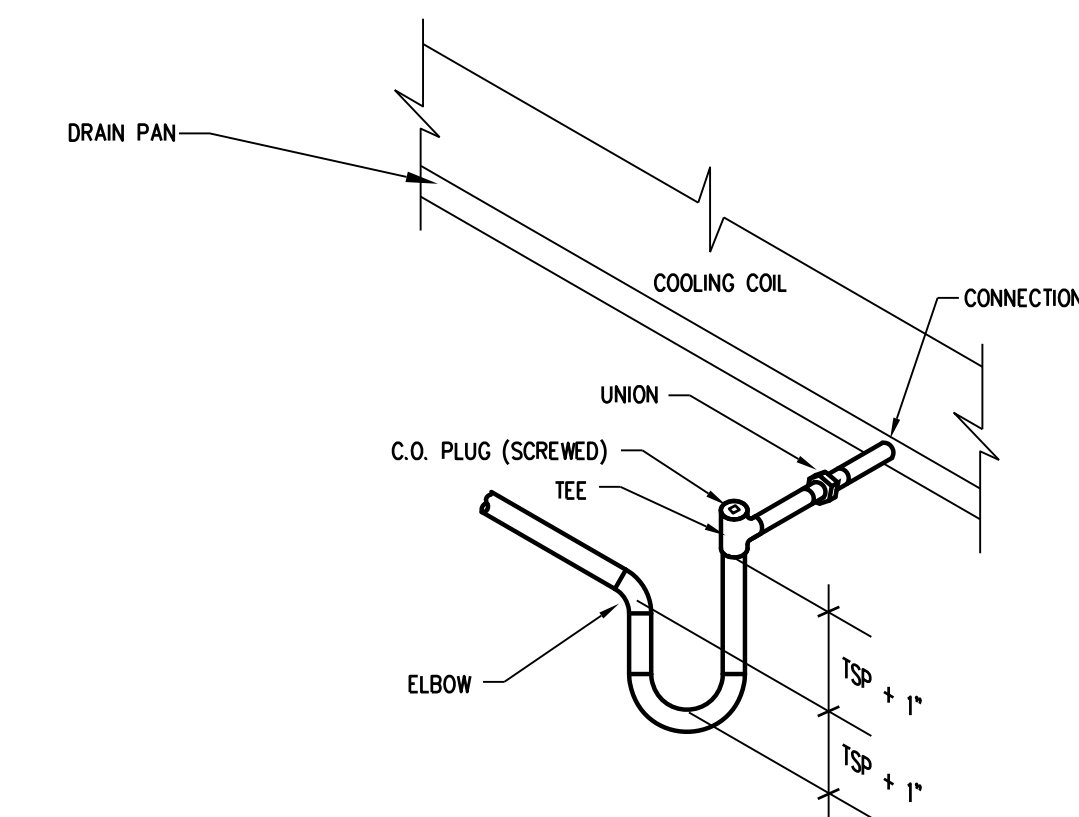


7 REFRIGERANT PIPING
M5.0 NTS

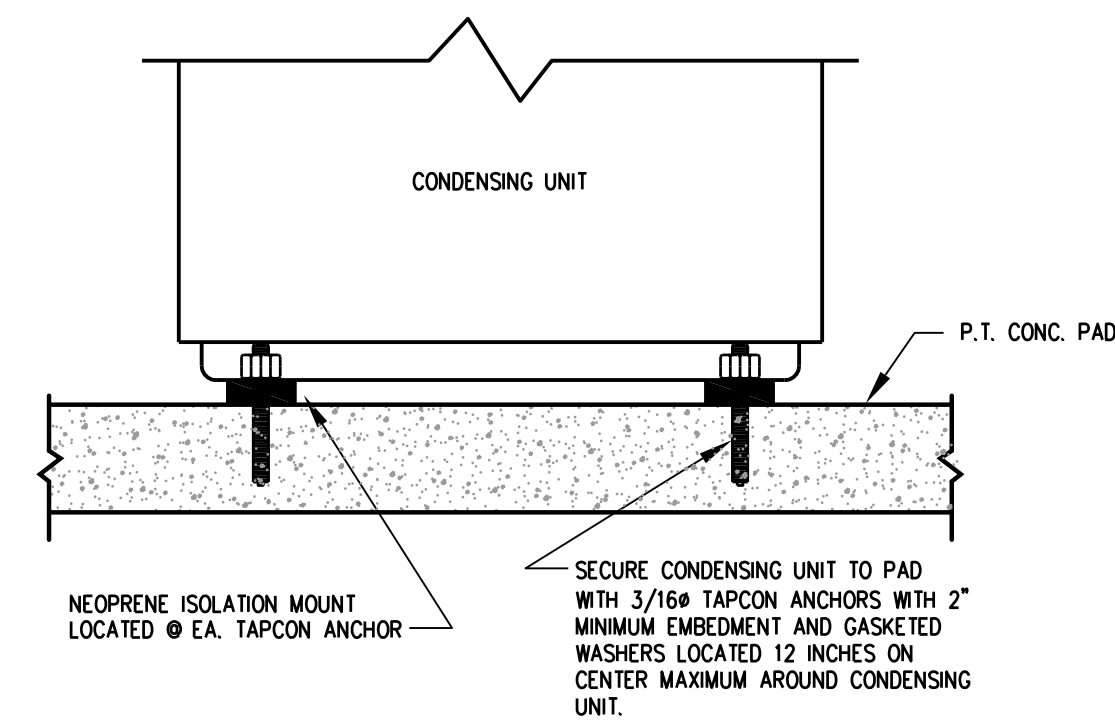


NOTE: VERIFY RIGHT OR LEFT HAND CLEARANCE REQUIREMENTS WITH PLANS.

8 VAV UNIT INSTALLATION DETAIL
M5.0 NTS

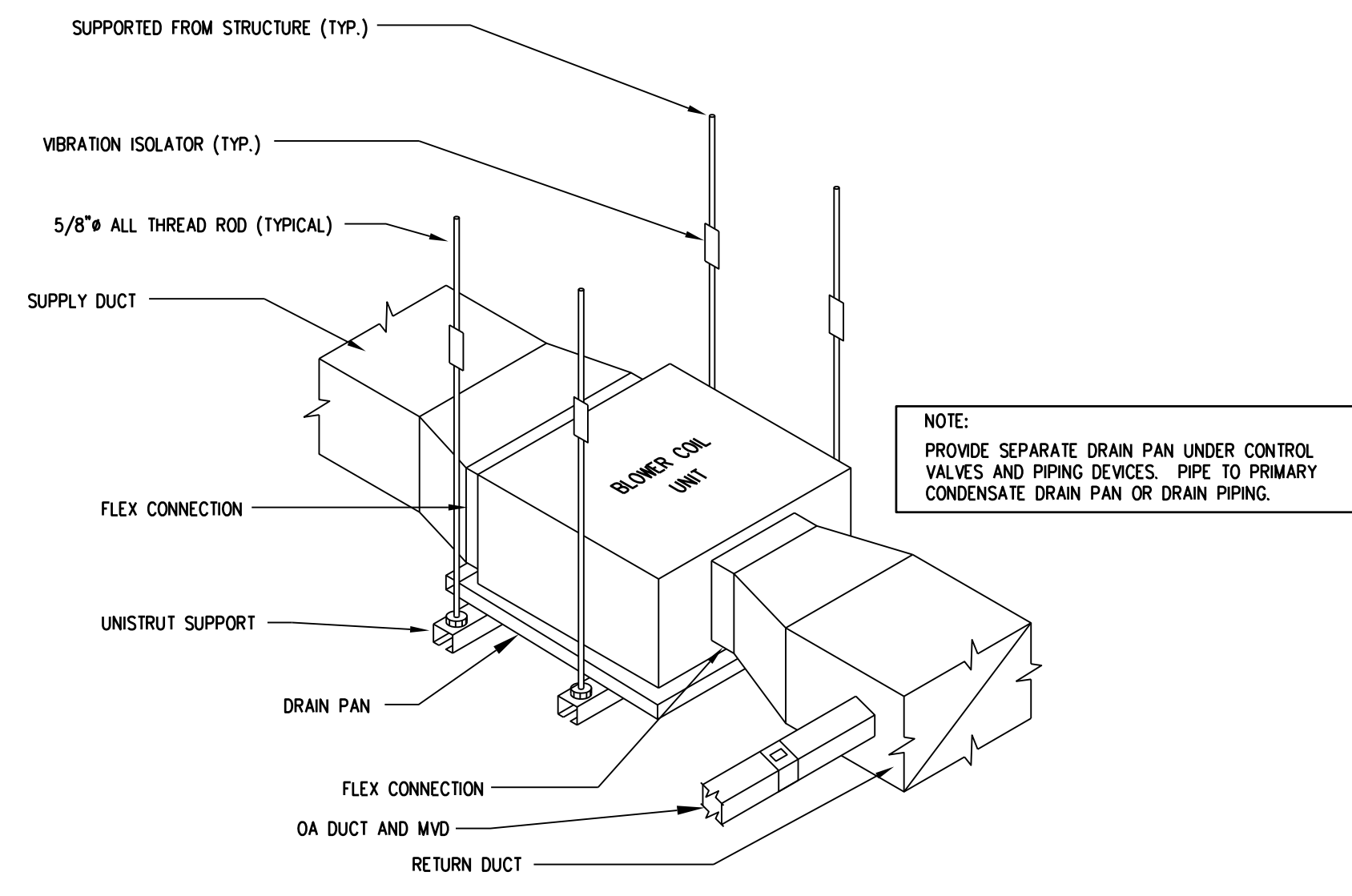


9 CONDENSATE DRAIN DETAIL
M5.0 NTS



NOTE: MEANS OF ATTACHING CONDENSING UNIT MUST SATISFY LOCAL WIND LOAD REQUIREMENTS OF 120MPH PER FBCL.

10 CONDENSING UNIT AT PAD DETAIL
M5.0 NTS



NOTE: PROVIDE SEPARATE DRAIN PAN UNDER CONTROL VALVES AND PIPING DEVICES. PIPE TO PRIMARY CONDENSATE DRAIN PAN OR DRAIN PIPING.

11 BLOWER COIL UNIT INSTALLATION DETAIL
M5.0 NTS
PART OF BID ALTERNATE NO. 2 ONLY

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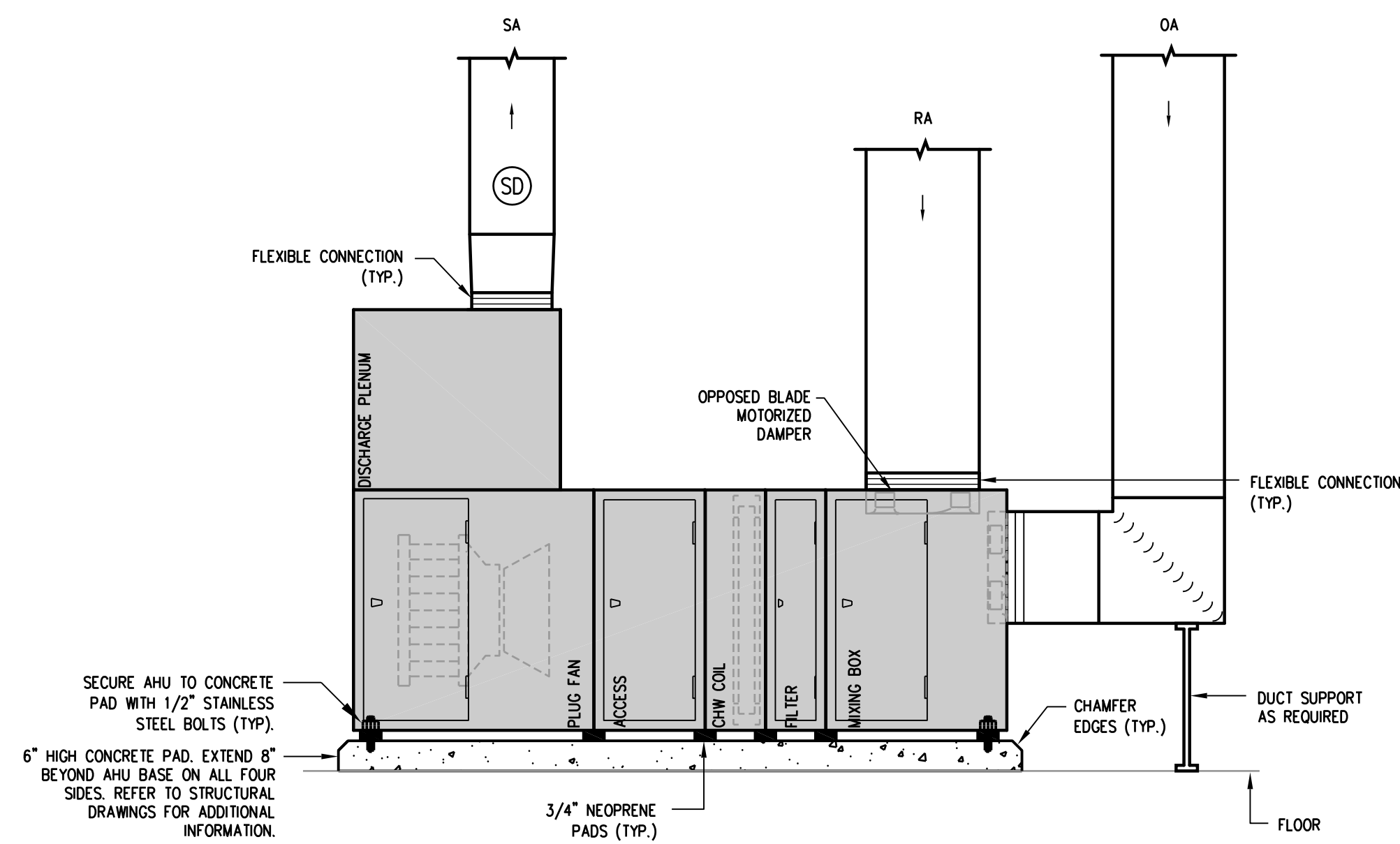
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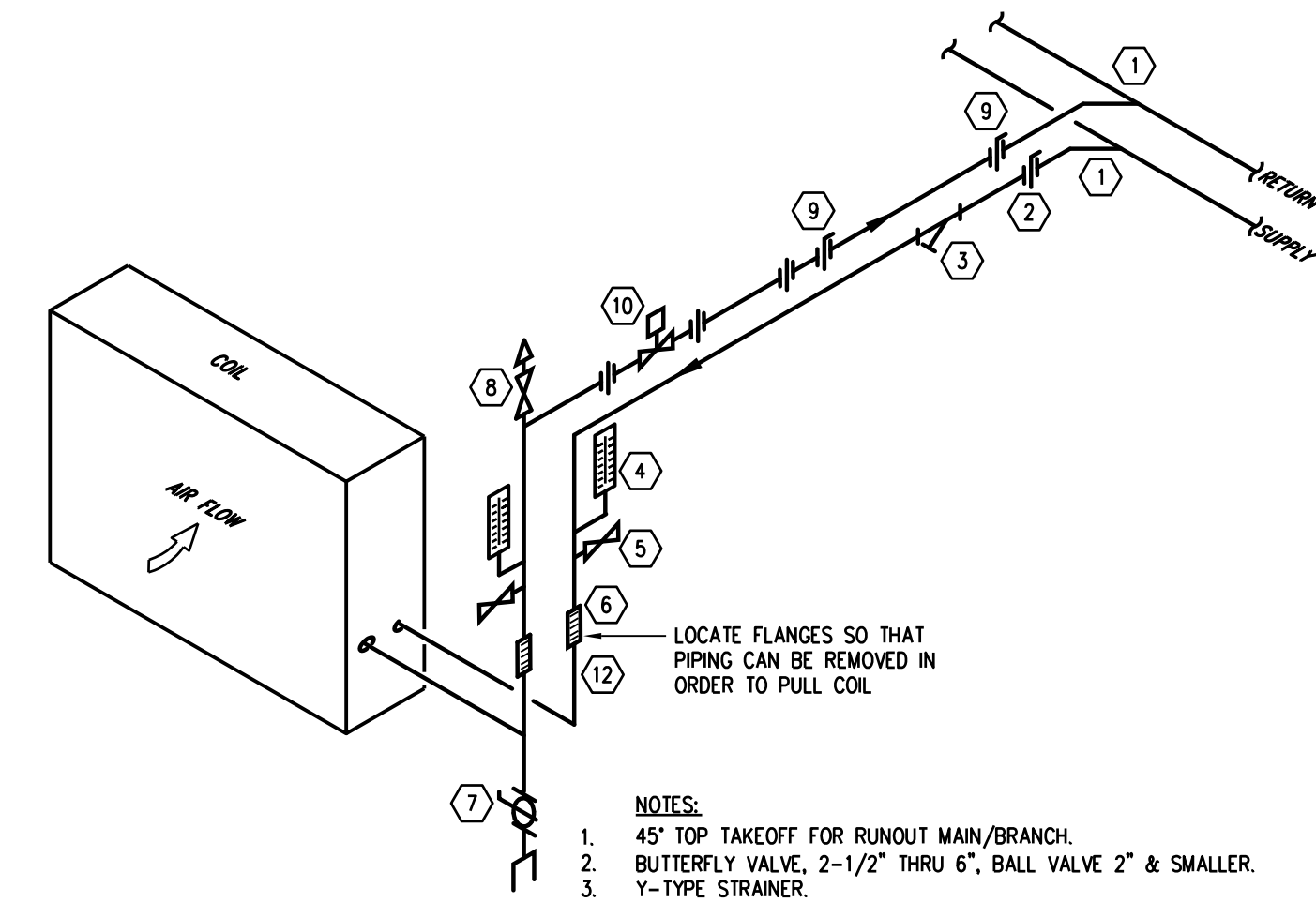
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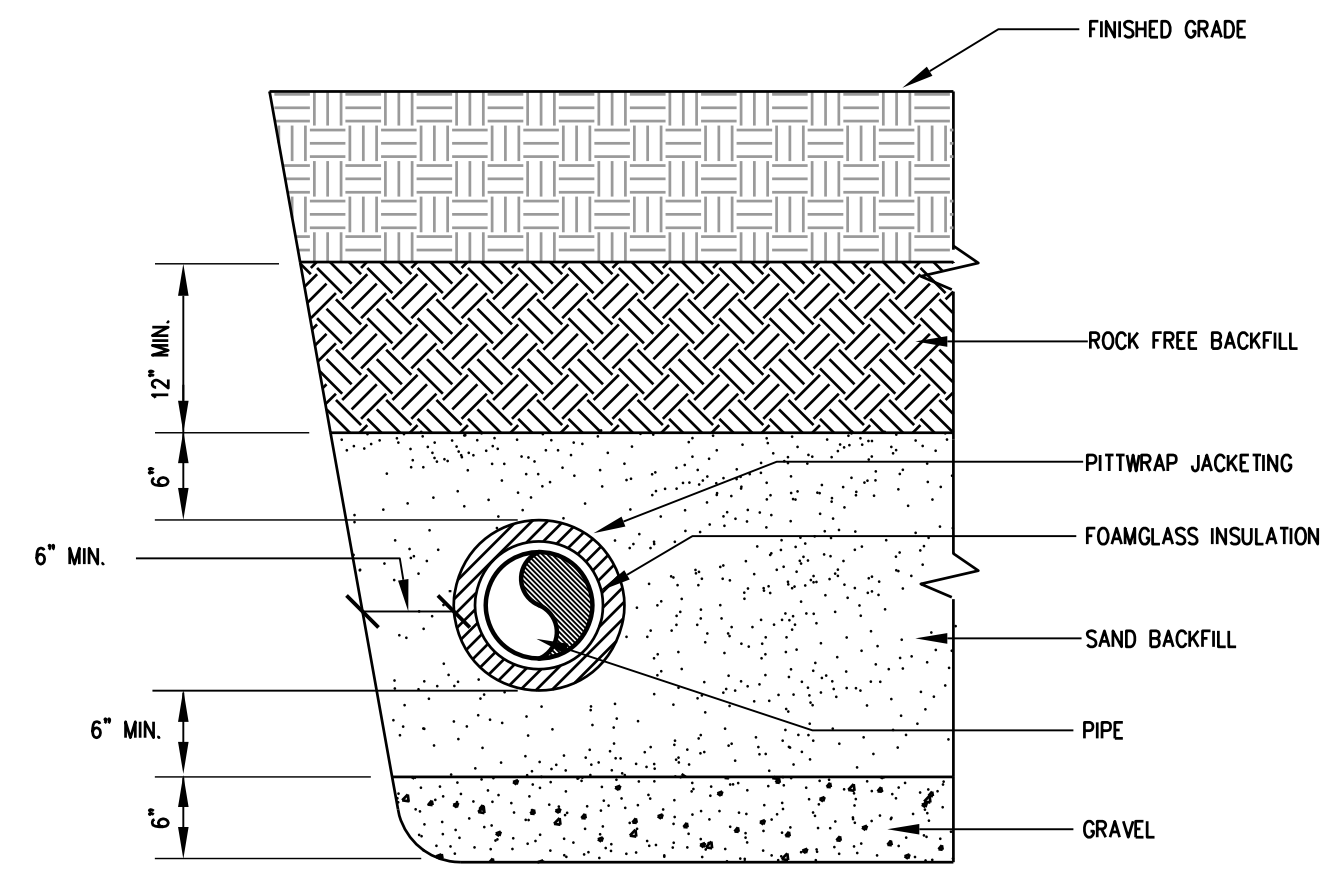
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1 TYPICAL VAV AHU DETAIL NTS



2 2-WAY PICCV CONTROL VALVE DETAIL NTS



3 UNDERGROUND CHILLED WATER PIPING INSTALLATION DETAIL NTS

System No. C-AJ-2002 (Formerly System No. 64-B)
F Rating—2 Hr
T Ratings—0 and 2 Hr
L Rating at Ambient—7 CFM/sq ft
L Rating at 400 F—Less than 1 CFM/sq ft (See Item 3C)

1. Floor or Wall Assembly—Min 2-1/2 in. thick lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Block*. Max diam of circular opening is 4-1/2 in. See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. Nonmetallic Pipe or Conduit—Nom 4 in. diam (or smaller) Schedule 40 polyvinyl chloride (PVC) pipe or Rigid Nonmetallic Conduit* or chlorinated polyvinyl chloride (CPVC) pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. A max of one pipe or conduit is permitted in the firestop system. Except as noted in Item 5, the pipe or conduit shall be contained in the through opening. Pipe or conduit to be rigidly supported on both sides of floor or wall assembly.
3. Firestop System—The hourly T Ratings for the firestop system are dependent upon the firestop system used, the size of the nonmetallic pipe or conduit, and the floor thickness, as tabulated below.

Orientation	Nom Pipe or Conduit, In.	Annular Space, In.	F Rating, Hr	T Rating, Hr
(a)	3/2-2	1/4-1	2	0
(b)	2-1/2-3	1/2-1	2	0
(c)	2-1/2-3	1/2-1	2	0
(d)	3-1/2-4	3/4-1	2	2

(a) Min concrete floor thickness is 2-1/2 in.
The details of the firestop system shall be as follows:
A. Steel Support Clips—Nom 1 in. wide by non 0.019 in. thick (28 gauge) galv steel strips field-formed into "Z" shape with height of Z-shape equal to the floor thickness and with width of bottom leg of sufficient length to span annular space, top leg (as installed) of sufficient length to span annular space, top leg (as installed) of sufficient length to span annular space, top leg (as installed) of sufficient length to span annular space. A min of one layer of wrap strip is required for non 1/2 in. to 2 in. diam pipes. A min of two layers of wrap strip is required for non 2-1/2 in. and 3 in. diam pipes. A min of three layers of wrap strip is required for non 3-1/2 in. and 4 in. diam pipes. Each layer of wrap strip to be installed with buttled seams in successive layers staggered. Wrap strip layers secured bound with steel wire or aluminum fiber tape and slid into through opening such that the bottom edges are flush with the bottom plane of the floor and are resting on the steel support clips legs. When non 2 in. to 4 in. diam PVC pipe is used in min 1/2 in. thick concrete floor, the pipe may be installed eccentrically in the through opening (min zero clearance at point contact location) provided that (1) the inside diam of the through opening is 1.1 to 1.5 times larger than the outside diam of the pipe, (2) the annular space between the pipe and the sides of the opening is 1/4 in. or less through opening is completely filled with wrap strip layers installed following the contour of the pipe and (3) the bottom edges of the wrap strip layers are reliably supported by "Z"-shaped steel support clips anchored to the top surface of the concrete floor. In wall assemblies, the wrap strip layers on the nonmetallic pipe are to be installed in the same manner used for floor assemblies, but shall be installed symmetrically on both sides of the wall with the exposed edges of the wrap strip layers flush with the wall surfaces.
Minnesota Mining & Mfg. Co.—FS-195+
C. FILL, Void or Cavity Materials—Caulk—Min 1/4 in. diam continuous bead applied to inside wall of through opening prior to installation of steel support clips and/or wrap strip. Caulk bead to be recessed 1 in. from the bottom plane or floor. In wall assemblies, caulk bead to be recessed 1 in. from wall surface on both sides of wall. In floor assemblies, a min 1/2 in. thick coating of caulk is to be applied to the top edges of the wrap strip layers and to fill all gaps at the wrap strip/concrete interface. In wall assemblies, the exposed edges of the wrap strip layers and all gaps at the wrap strip/concrete interface on both sides of the wall to be coated with thin layer of caulk.
Minnesota Mining & Mfg. Co.—CF-25WB+
*Bearing the UL Classification Marking
+Bearing UL Listing Mark

System No. C-AJ-2031 (Formerly System No. 477)
F Rating—2 Hr
T Ratings—0 and 2 Hr (See Item 3B)
L Rating at Ambient—Less than 1 CFM/sq ft
L Rating at 400 F—Less than 1 CFM/sq ft

1. Floor or Wall Assembly—Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Floor may also be constructed of any min 6 in. thick UL Classified hollow-core Precast Concrete Units*. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 4 in.
2. Through Penetrants—One nonmetallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The pipe, conduit or tubing to be rigidly supported on both sides of floor or wall. The following types and sizes of pipes, conduits or tubing may be used:
A. Polyvinyl Chloride (PVC) Pipe—Nom 2 in. diam (or smaller) Schedule 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. The annular space shall be a min of 5/16 in. to a max of 13/16 in.
B. Rigid Nonmetallic Conduit (RNC)—Nom 2 in. diam (or smaller) Schedule 10 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA No. 70). A non annular space of 5/8 in. is required within the firestop system.
C. Chlorinated Polyvinyl Chloride (CPVC) Pipe—Nom 2 in. diam (or smaller) SDR17 CPVC pipe for use in closed (process or supply) systems. A non annular space of 5/8 in. is required within the firestop system.
D. Electrical Nonmetallic Tubing (ENT)—Nom 2 in. diam (or smaller) PVC tubing installed in accordance with Article 331 of the National Electrical Code (NFPA No. 70). The annular space within the firestop system shall be a min 1/4 in. to a max 1-3/8 in.
E. Cross Linked Polyethylene (PEX) Tubing—Nom 1 in. diam (or smaller) SDR 9 PEX tubing for use in closed (process or supply) piping systems. The annular space within the firestop system shall be a min 1/4 in. to a max 5/8 in.
F. Optical Fiber Raceway (OFR)—Nom 1 in. diam (or smaller) optical fiber raceway formed from polyethylene glycol (PEG) or PVC. The annular space within the firestop system shall be a min 1/4 in. to a max 1 in. Raceway to be installed in accordance with Article No. 730 of the National Electrical Code. See Optical Fiber Raceway (OFR) category in the Electrical Construction Materials Directory for names of manufacturers.
3. Firestop System—The firestop system shall consist of the following:
A. Packing Material—(Not Shown)—Min 1 in. thickness of min 4 pcf mineral wool (MW) batt insulation, min 3/4 pcf fiberglass (FG) insulation or non 1 in. diam polyurethane backer rod (BR) firmly packed into opening as a form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of fill material. The type and use of packing material within the firestop system is dependent upon the type and diam of the through penetrant and type of piping system used as tabulated in Item 3B. Where packing material is required and the floor is constructed of hollow-core precast concrete unit, packing material, fill material to be installed symmetrically on both sides of floor to accommodate the required thickness of fill material.
B. FILL, Void or Cavity Materials—Sealant—Fill material applied within the annulus, flush with top surface of concrete floor or both sides of surface of wall. When installed in concrete floor or wall, fill material to be installed symmetrically on both sides of the opening. Fill material to be installed symmetrically on both sides of the opening, flush with top surface of concrete floor or both sides of surface of wall. In wall assemblies, the exposed edges of the wrap strip layers and all gaps at the wrap strip/concrete interface on both sides of the wall to be coated with thin layer of caulk.
Minnesota Mining & Mfg. Co.—CF-25WB+
*Bearing the UL Classification Marking
+Bearing UL Listing Mark

System No. C-AJ-1044 (Formerly System No. 315)
F Ratings—2, 3, and 4 Hr (See Items 2A and 4)
T Rating—0 Hr
L Rating at Ambient—Less than 1 CFM/sq ft
L Rating at 400 F—Less than 1 CFM/sq ft

1. Floor or Wall Assembly—Lightweight or normal weight (100-150 pcf) concrete. Except as noted in table under Item 4, min thickness of solid concrete floor or wall assembly is 4-1/2 in. Floor may also be constructed of any min 6 in. thick UL Classified hollow-core Precast Concrete Units*. When floor is constructed of hollow-core precast concrete units, packing material (Item 3) and caulk fill material (Item 4) to be installed symmetrically on both sides of floor, flush with floor surface. Wall assembly may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is in solid lightweight or normal weight concrete. Floor is 32 in. Max diam of opening in floor constructed of hollow-core precast concrete units is 7 in.
2. Through Penetrants—One nonmetallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. Max annular space between pipe, conduit or tubing and edge of through opening or sleeve is dependent on the parameters shown in Item 4. Min annular space between pipe or conduit and edge of through opening is zero in. (point contact). Pipe conduit or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
A. Steel Pipe—Nom 30 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
B. Iron Pipe—Nom 30 in. diam (or smaller) cast or ductile iron pipe.
C. Conduit—Nom 6 in. diam (or smaller) rigid steel conduit.
D. Conduit—Nom 4 in. diam (or smaller) steel electrical metallic tubing.
E. Copper Tubing—Nom 6 in. diam (or smaller) Type L (or heavier) copper pipe.
F. Copper Pipe—Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.
3. Packing Material—Polyethylene backer rod or non 1 in. thickness of tightly-packed mineral wool batt or glass fiber insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of fill material.
4. FILL, Void or Cavity Materials—Caulk—Applied to fill the annular space flush with top surface of concrete floor or both sides of surface of wall. In wall assemblies, the exposed edges of the wrap strip layers and all gaps at the wrap strip/concrete interface on both sides of the wall to be coated with thin layer of caulk.
Minnesota Mining & Mfg. Co.—CF-25WB+
*Bearing the UL Classification Marking

System No. C-AJ-5001 (Formerly System No. 91)
F Ratings—0, 1/2, 3/4 and 1 Hr (See Items 4A and 4)
L Rating at Ambient—2 CFM per sq ft
L Rating at 400 F—Less than 1 CFM per sq ft

1. Floor or Wall Assembly—Min 2-1/2 in. thick reinforced lightweight or normal weight (100-150) pcf concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 18 in.
2. Through Penetrants—One nonmetallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. Max annular space between pipe, conduit or tubing and edge of through opening or sleeve is dependent on the parameters shown in Item 4. Min annular space between pipe or conduit and edge of through opening is zero in. (point contact). Pipe conduit or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
A. Steel Pipe—Nom 30 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
B. Iron Pipe—Nom 30 in. diam (or smaller) cast or ductile iron pipe.
C. Conduit—Nom 6 in. diam (or smaller) rigid steel conduit.
D. Conduit—Nom 4 in. diam (or smaller) steel electrical metallic tubing.
E. Copper Tubing—Nom 6 in. diam (or smaller) Type L (or heavier) copper pipe.
F. Copper Pipe—Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.
3. Packing Material—Polyethylene backer rod or non 1 in. thickness of tightly-packed mineral wool batt or glass fiber insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of fill material.
4. FILL, Void or Cavity Materials—Caulk—Applied to fill the annular space flush with top surface of concrete floor or both sides of surface of wall. In wall assemblies, the exposed edges of the wrap strip layers and all gaps at the wrap strip/concrete interface on both sides of the wall to be coated with thin layer of caulk.
Minnesota Mining & Mfg. Co.—CF-25WB+
*Bearing the UL Classification Marking

4 CHILLED WATER PIPING PENETRATION DETAIL NTS

1. Floor or Wall Assembly—Min 2-1/2 in. thick reinforced lightweight or normal weight (100-150) pcf concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 18 in.
2. Through Penetrants—One nonmetallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. Max annular space between pipe, conduit or tubing and edge of through opening or sleeve is dependent on the parameters shown in Item 4. Min annular space between pipe or conduit and edge of through opening is zero in. (point contact). Pipe conduit or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
A. Steel Pipe—Nom 30 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
B. Iron Pipe—Nom 30 in. diam (or smaller) cast or ductile iron pipe.
C. Conduit—Nom 6 in. diam (or smaller) rigid steel conduit.
D. Conduit—Nom 4 in. diam (or smaller) steel electrical metallic tubing.
E. Copper Tubing—Nom 6 in. diam (or smaller) Type L (or heavier) copper pipe.
F. Copper Pipe—Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.
3. Packing Material—Polyethylene backer rod or non 1 in. thickness of tightly-packed mineral wool batt or glass fiber insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of fill material.
4. FILL, Void or Cavity Materials—Caulk—Applied to fill the annular space flush with top surface of concrete floor or both sides of surface of wall. In wall assemblies, the exposed edges of the wrap strip layers and all gaps at the wrap strip/concrete interface on both sides of the wall to be coated with thin layer of caulk.
Minnesota Mining & Mfg. Co.—CF-25WB+
*Bearing the UL Classification Marking

5 PIPE HANGER / SUPPORT DETAIL NTS

1. Floor or Wall Assembly—Min 2-1/2 in. thick reinforced lightweight or normal weight (100-150) pcf concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 18 in.
2. Through Penetrants—One nonmetallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. Max annular space between pipe, conduit or tubing and edge of through opening or sleeve is dependent on the parameters shown in Item 4. Min annular space between pipe or conduit and edge of through opening is zero in. (point contact). Pipe conduit or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
A. Steel Pipe—Nom 30 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
B. Iron Pipe—Nom 30 in. diam (or smaller) cast or ductile iron pipe.
C. Conduit—Nom 6 in. diam (or smaller) rigid steel conduit.
D. Conduit—Nom 4 in. diam (or smaller) steel electrical metallic tubing.
E. Copper Tubing—Nom 6 in. diam (or smaller) Type L (or heavier) copper pipe.
F. Copper Pipe—Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.
3. Packing Material—Polyethylene backer rod or non 1 in. thickness of tightly-packed mineral wool batt or glass fiber insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of fill material.
4. FILL, Void or Cavity Materials—Caulk—Applied to fill the annular space flush with top surface of concrete floor or both sides of surface of wall. In wall assemblies, the exposed edges of the wrap strip layers and all gaps at the wrap strip/concrete interface on both sides of the wall to be coated with thin layer of caulk.
Minnesota Mining & Mfg. Co.—CF-25WB+
*Bearing the UL Classification Marking

7 TRAPEZE PIPE SUPPORT DETAIL NTS

1. Floor or Wall Assembly—Min 2-1/2 in. thick reinforced lightweight or normal weight (100-150) pcf concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 18 in.
2. Through Penetrants—One nonmetallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. Max annular space between pipe, conduit or tubing and edge of through opening or sleeve is dependent on the parameters shown in Item 4. Min annular space between pipe or conduit and edge of through opening is zero in. (point contact). Pipe conduit or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
A. Steel Pipe—Nom 30 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
B. Iron Pipe—Nom 30 in. diam (or smaller) cast or ductile iron pipe.
C. Conduit—Nom 6 in. diam (or smaller) rigid steel conduit.
D. Conduit—Nom 4 in. diam (or smaller) steel electrical metallic tubing.
E. Copper Tubing—Nom 6 in. diam (or smaller) Type L (or heavier) copper pipe.
F. Copper Pipe—Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.
3. Packing Material—Polyethylene backer rod or non 1 in. thickness of tightly-packed mineral wool batt or glass fiber insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of fill material.
4. FILL, Void or Cavity Materials—Caulk—Applied to fill the annular space flush with top surface of concrete floor or both sides of surface of wall. In wall assemblies, the exposed edges of the wrap strip layers and all gaps at the wrap strip/concrete interface on both sides of the wall to be coated with thin layer of caulk.
Minnesota Mining & Mfg. Co.—CF-25WB+
*Bearing the UL Classification Marking

6 PIPE PENETRATION DETAILS NTS

1. Floor or Wall Assembly—Min 2-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 4 in.
2. Through Penetrants—One nonmetallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The pipe, conduit or tubing to be rigidly supported on both sides of floor or wall. The following types and sizes of pipes, conduits or tubing may be used:
A. Polyvinyl Chloride (PVC) Pipe—Nom 2 in. diam (or smaller) Schedule 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. The annular space shall be a min of 5/16 in. to a max of 13/16 in.
B. Rigid Nonmetallic Conduit (RNC)—Nom 2 in. diam (or smaller) Schedule 10 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA No. 70). A non annular space of 5/8 in. is required within the firestop system.
C. Chlorinated Polyvinyl Chloride (CPVC) Pipe—Nom 2 in. diam (or smaller) SDR17 CPVC pipe for use in closed (process or supply) systems. A non annular space of 5/8 in. is required within the firestop system.
D. Electrical Nonmetallic Tubing (ENT)—Nom 2 in. diam (or smaller) PVC tubing installed in accordance with Article 331 of the National Electrical Code (NFPA No. 70). The annular space within the firestop system shall be a min 1/4 in. to a max 1-3/8 in.
E. Cross Linked Polyethylene (PEX) Tubing—Nom 1 in. diam (or smaller) SDR 9 PEX tubing for use in closed (process or supply) piping systems. The annular space within the firestop system shall be a min 1/4 in. to a max 5/8 in.
F. Optical Fiber Raceway (OFR)—Nom 1 in. diam (or smaller) optical fiber raceway formed from polyethylene glycol (PEG) or PVC. The annular space within the firestop system shall be a min 1/4 in. to a max 1 in. Raceway to be installed in accordance with Article No. 730 of the National Electrical Code. See Optical Fiber Raceway (OFR) category in the Electrical Construction Materials Directory for names of manufacturers.
3. Firestop System—The firestop system shall consist of the following:
A. Packing Material—(Not Shown)—Min 1 in. thickness of min 4 pcf mineral wool (MW) batt insulation, min 3/4 pcf fiberglass (FG) insulation or non 1 in. diam polyurethane backer rod (BR) firmly packed into opening as a form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of fill material. The type and use of packing material within the firestop system is dependent upon the type and diam of the through penetrant and type of piping system used as tabulated in Item 3B. Where packing material is required and the floor is constructed of hollow-core precast concrete unit, packing material, fill material to be installed symmetrically on both sides of floor to accommodate the required thickness of fill material.
B. FILL, Void or Cavity Materials—Sealant—Fill material applied within the annulus, flush with top surface of concrete floor or both sides of surface of wall. When installed in concrete floor or wall, fill material to be installed symmetrically on both sides of the opening. Fill material to be installed symmetrically on both sides of the opening, flush with top surface of concrete floor or both sides of surface of wall. In wall assemblies, the exposed edges of the wrap strip layers and all gaps at the wrap strip/concrete interface on both sides of the wall to be coated with thin layer of caulk.
Minnesota Mining & Mfg. Co.—CF-25WB+
*Bearing the UL Classification Marking
+Bearing UL Listing Mark

REVISION BY

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DETAILS H.V.A.C.

RENOVATIONS TO BUILDINGS S & V
ST. JOHNS RIVER STATE COLLEGE
ORANGE PARK, FL.

Seal/Signature:

DATE: 10/19/2010
Scale: AS NOTED
Drawn: LAH
Job: OJ5J03
Sheet: M-5.1
41 Of 61 Sheets

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CERTIFICATE OF AUTHORIZATION #6261

SPLIT SYSTEM AIR CONDITIONING UNIT SCHEDULE																															
MARK	AREA SERVED	INDOOR UNIT										COOLING CAPACITY								OUTDOOR UNIT				EQUAL TO							
		FAN					ELECTRIC HEATER					CONDENSER FAN(S)				COMPRESSOR(S)				MCA	MOCP	WEIGHT (LBS.)	EER (SEER)	MFG.	MODEL	NOTES					
		CFM	O/A	E.S.P. (IN.)	HP [WATT]	V/φ	FLA	KW	# OF STEPS	V/φ	MCA	MOCP	WEIGHT (LBS.)	EAT (DB/WB)	LAT (DB/WB)	TC (MBH)	SC (MBH)	QTY.	V/φ								FLA (EA.)	QTY.	V/φ	RLA (EA.)	LRA (EA.)
AC-1/CU-1	IDF	425	-	-	[30]	208/1	0.33	-	-	-	1	15	50	(80/67)	-	18.0	-	1	208/1	0.35	1	208/1	12.0	14.0	13	20	175	[15.3]	DAIKIN	PKA-A24/PUY-A24	(1)(2)(3)
AC-2/CU-2	IDF	425	-	-	[30]	208/1	0.33	-	-	-	1	15	50	(80/67)	-	18.0	-	1	208/1	0.35	1	208/1	12.0	14.0	13	20	175	[15.3]	DAIKIN	PKA-A24/PUY-A24	(1)(2)(3)

NOTES: (1) PROVIDE WITH WALL MOUNTED THERMOSTAT.
(2) COORDINATE REFRIGERANT PIPING LENGTH WITH MANUFACTURER.
(3) PROVIDE WITH ALL REQUIRED ACCESSORIES.

FAN SCHEDULE											
MARK	SERVICE	TYPE	FAN DATA				MOTOR DATA		MFG.	MODEL	NOTES
			CFM	ESP (IN.)	DRIVE	RPM	HP [WATTS]	V/PH			
EF-S1	RESTROOMS/JAN.	INLINE	475	0.5	DIRECT	1550	1/8	120/1	GREENHECK	SQ-95-D	(1)(2)(3)(4)

NOTES:
(1) PROVIDE DISCONNECT SWITCH MOUNTED AT THE UNIT.
(2) PROVIDE WITH BACKDRAFT DAMPER.
(3) PROVIDE WITH SOLID STATE VARIABLE SPEED CONTROLLER MOUNTED AT THE UNIT.
(4) FAN SHALL BE CONTROLLED BY THE BAS TO OPERATE DURING OCCUPIED MODE.

VAV UNIT SCHEDULE													
MARK	MANUFACTURER	MODEL NO.	INLET SIZE	PRIMARY AIR CFM		ΔP	ELECTRIC HEATING COIL			NOTES			
				MAX	MIN		CFM	KW	V/PH		NO. STEPS		
VAV-S1-1	TITUS	DESV	14	1875	500	0.18	950	11	208/3	3	(1)(2)(3)		
VAV-S1-2	TITUS	DESV	14	1875	500	0.18	950	11	208/3	3	(1)(2)(3)		
VAV-S1-3	TITUS	DESV	14	1850	500	0.18	950	11	208/3	3	(1)(2)(3)		
VAV-S1-4	TITUS	DESV	05	200	75	0.18	100	1.5	277/1	1	(1)(2)(3)		
VAV-S1-5	TITUS	DESV	16	3500	875	0.18	1075	12	208/3	3	(1)(2)(3)		
VAV-S1-6	TITUS	DESV	12	1450	300	0.18	750	9	208/3	2	(1)(2)(3)		
VAV-S1-7	TITUS	DESV	12	1450	375	0.18	750	9	208/3	2	(1)(2)(3)		
VAV-S1-8	TITUS	DESV	12	1350	350	0.18	700	8	208/3	2	(1)(2)(3)		
VAV-S1-9	TITUS	DESV	10	1075	275	0.18	525	6	208/3	2	(1)(2)(3)		
VAV-S1-10	TITUS	DESV	06	300	75	0.18	150	2	277/1	1	(1)(2)(3)		
VAV-S1-11	TITUS	DESV	06	250	75	0.18	125	1.5	277/1	1	(1)(2)(3)		
VAV-S1-12	TITUS	DESV	06	300	75	0.18	150	2	277/1	1	(1)(2)(3)		
VAV-S1-13	TITUS	DESV	08	525	0	0.18	-	-	-	-	(1)(2)(3)		

NOTES:
(1) PROVIDE WITH INTEGRAL STEP DOWN TRANSFORMER FOR CONTROL POWER. COORDINATE VOLTAGE WITH ELECTRICAL CONTRACTOR.
(2) PROVIDE WITH INTEGRAL DISCONNECT SWITCH.
(3) PROVIDE WITH OPTIONAL FUSES.

AIR HANDLING UNIT SCHEDULE	
MARK	AHU-S1
AREA SERVED	BUILDING S
AIR FLOW (CFM)	16000
OUTSIDE AIR FLOW (CFM)	1300
AIR FLOW (CFM)	16000
ESP (IN H2O)	2.75
MOTOR HP	25
FAN RPM	1722
VOLTAGE/PHASE	480/3
FAN TYPE	PLENUM
AIR FLOW (CFM)	16000
TOTAL CAP (MBH)	588.1
SENSIBLE CAP (MBH)	429.2
ENTERING AIR DB (°F)	78.5
ENTERING AIR WB (°F)	64.9
LEAVING AIR DB (°F)	52.5
LEAVING AIR WB (°F)	51.9
WATER FLOW (GPM)	79.3
EWV (°F)	45
LWV (°F)	60
MIN. NO. OF ROWS	8
MAX WPD (FT)	10.3
MAX FACE VEL (FPM)	500
MAX APD (IN H2O)	0.67
PRE / FINAL THICKNESS (IN)	2
PRE-FILTER EFFICIENCY	MERV 7
FINAL FILTER EFFICIENCY	MERV 13
FILTER MID-LIFE APD (IN H2O)	
MANUFACTURER	YORK
MODEL	XTI-90X72
WEIGHT	6250
NOTES	(1)(2)(3)(4)(5)(6)(7)

NOTES:
(1) UNIT TO HAVE DISCHARGE PLENUM WITH TOP DISCHARGE OR BOTTOM DISCHARGE AS SHOWN.
(2) REFER TO AHU DETAILS FOR REQUIRED MODULES AND LAYOUTS.
(3) PROVIDE PERFORATED LINING WITH MYLAR SEPARATION IN FAN AND DISCHARGE PLENUM
(4) ALL ACCESS DOORS ARE TO OPEN AGAINST PRESSURE (DISCHARGE PLENUM DOORS OPEN INWARD)
(5) PROVIDE WITH AIRFLOW MONITORING STATION IN OUTSIDE AIR DUCT EQUAL TO EBTRON GOLD SERIES.
(6) PROVIDE VARIABLE FREQUENCY DRIVE.
(7) UNIT WILL BE UTILIZING THE BI-POLAR IONIZATION FILTRATION SYSTEM.
A GPS-IBAR SHALL BE PROVIDED BY GLOBAL PLASMA SOLUTIONS (GPS) AND MOUNTED ON THE AIR ENTERING SIDE OF THE COOLING COIL. IBAR TO BE CUSTOM CUT TO THE WIDTH OF THE COOLING COIL SECTION. PROVIDE 110V CONNECTION. COORDINATE ALL REQUIREMENTS WITH GPS.

Duct Construction Schedule				
Service	SMACNA Pressure Class	Material	Insulation	Notes
Supply Air Ducts				
From AHU connection to 20 feet downstream on supply side for VAV systems or exposed VAV supply beyond 20 feet.	+ 4"	Doublewall round / flat oval or rectangular complete with perforated inner liner and mylar film separating insulation from air stream	1" thick internally lined	(1)
From 20 feet downstream of AHU to terminal unit for VAV systems where duct is concealed above ceilings	+ 4"	Single wall sheet metal round / flat oval or rectangular	Concealed - 2" thick external wrap Exposed - 1-1/2" rigid board	(1)
From AHU connection to 20 feet downstream on supply side for constant volume systems	+ 2"	Doublewall round / flat oval or rectangular complete with perforated inner liner and mylar film separating insulation from air stream	1" thick internally lined	(1)
From 20 feet downstream of AHU to air distribution devices for constant volume systems	+ 2"	Single wall sheet metal	Concealed - 2" thick external wrap Exposed - 1-1/2" rigid board	(1)
Downstream of VAV terminals	+ 2"	Single wall sheet metal	Concealed - 2" thick external wrap Exposed - 1-1/2" rigid board	(1)
All low pressure exposed ductwork in public areas	+ 2"	Doublewall round complete with perforated inner liner and mylar film separating insulation from air stream	1" thick internally lined	(1)
Return Air Ducts				
From AHU connection to 20 feet upstream on return side for all AHUs and all exposed return air ductwork	- 2"	Doublewall rectangular complete with perforated inner liner and mylar film separating insulation from air stream. Provide round or flat oval as shown on the drawings where ductwork is exposed.	1" thick internally lined	(1)
All other return air ductwork	- 2"	Single wall sheet metal	Concealed - 2" thick external wrap Exposed - 1-1/2" rigid board	(1)
Outside Air Ducts				
All outside air ducts	- 2"	Single wall sheet metal	Concealed - 2" thick external wrap Exposed - 1-1/2" rigid board	(1)
Transfer Air Ducts				
All transfer air ducts	+ 1"	Single wall sheet metal	Concealed - 2" thick external wrap Exposed - 1-1/2" rigid board	(1)
Exhaust Air Ducts				
General bathroom exhaust ducts	- 2"	Single wall sheet metal. Spiral round duct where exposed.		(1)

Notes:
(1) All ductwork is to be fabricated, supported and installed per SMACNA standards.

DIFFUSER/GRILLE/LOUVER SCHEDULE				
MARK / LEGEND	TYPE	MFG.	MODEL	NOTES
NECK SIZE → 10" x 14" → THROW AIR QUANTITY → 300CFM	CEILING MOUNTED SQUARE SUPPLY DIFFUSER	TITUS	TMS-AA	(1)(2)(4)(5)(6)(7)
NECK SIZE → 8" x 8" → SW AIR QUANTITY → 200CFM	SIDEWALL MOUNTED RECTANGULAR SUPPLY AIR DIFFUSER	TITUS	300	(1)(6)
NECK SIZE → 8" x 8" → RG AIR QUANTITY → 200CFM	CEILING OR SIDEWALL RETURN AIR GRILLE	TITUS	350	(1)(2)(3)(4)(5)(6)
NECK SIZE → 8" x 8" → EG AIR QUANTITY → 200CFM	CEILING OR SIDEWALL EXHAUST AIR GRILLE	TITUS	350	(1)(5)

NOTES:
(1) PROVIDE WITH OPPOSED BLADE VOLUME DAMPER.
(2) PROVIDE 24X24 FULLY LOUVERED FACE LAYIN MODULE WHERE LOCATED IN LAYIN CEILING.
(3) NECK SIZE IS 22X22 UNLESS NOTED OTHERWISE ON FLOOR PLANS.
(4) PROVIDE SQUARE TO ROUND NECK TRANSITION WHERE APPLICABLE.
(5) COORDINATE BORDER TYPES WITH ARCHITECTURAL FLOOR PLAN AND REFLECTED CEILING PLAN.
(6) COORDINATE FINISH WITH ARCHITECT.
(7) COORDINATE THROW PATTERN WITH FLOOR PLANS.

REVISION	BY

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SCHEDULES
H.V.A.C.

RENOVATIONS TO BUILDINGS S & V
ST. JOHNS RIVER STATE COLLEGE
ORANGE PARK, FL.

Seal/Signature:

Date: 10/19/2011
Scale: AS NOTED

Drawn: LAH

Job: 015J03

Sheet:

M-6.0

42 of 61 Sheets

JASON L. SMITH, P.E.
427 CENTERPOINTE CIRCLE, SUITE 1825
ALTAMONTE SPRINGS, FL 32714
FL REG. NO. PE5743



Unit Quantity Calculations Based on IAQ Supply Air CFM

GPS-RN Units Required 2 (2,400 CFM Nominal)

GPS-RN product specifications including dimensions (5'H x 4'W x 2' D), weight (1 lb), and ETL listing (UL 867).

Air Purification Schedule

Table with 10 columns: Zone Tag, S/A Flow, O/A Flow, GPS Model, GPS Quantity, Pressure Drop, Voltage, Watts, Mounting Location, Notes.

- 1. Basis of Design: Global Plasma Solutions... 2. Mount bi-polar ion generator where indicated on schedule...

Unit Quantity Calculations Based on IAQ Supply Air CFM

GPS-RN Units Required 1 (2,400 CFM Nominal)

GPS-RN product specifications including dimensions (5'H x 4'W x 2' D), weight (1 lb), and ETL listing (UL 867).

Air Purification Schedule

Table with 10 columns: Zone Tag, S/A Flow, O/A Flow, GPS Model, GPS Quantity, Pressure Drop, Voltage, Watts, Mounting Location, Notes.

- 1. Basis of Design: Global Plasma Solutions... 2. Mount bi-polar ion generator where indicated on schedule...

Unit Quantity Calculations Based on IAQ Supply Air CFM

GPS-RN Units Required 1 (2,400 CFM Nominal)

GPS-RN product specifications including dimensions (5'H x 4'W x 2' D), weight (1 lb), and ETL listing (UL 867).

Air Purification Schedule

Table with 10 columns: Zone Tag, S/A Flow, O/A Flow, GPS Model, GPS Quantity, Pressure Drop, Voltage, Watts, Mounting Location, Notes.

- 1. Basis of Design: Global Plasma Solutions... 2. Mount bi-polar ion generator where indicated on schedule...

Unit Quantity Calculations Based on IAQ Supply Air CFM

GPS-RN Units Required 1 (2,400 CFM Nominal)

GPS-RN product specifications including dimensions (5'H x 4'W x 2' D), weight (1 lb), and ETL listing (UL 867).

Air Purification Schedule

Table with 10 columns: Zone Tag, S/A Flow, O/A Flow, GPS Model, GPS Quantity, Pressure Drop, Voltage, Watts, Mounting Location, Notes.

- 1. Basis of Design: Global Plasma Solutions... 2. Mount bi-polar ion generator where indicated on schedule...

Unit Quantity Calculations Based on IAQ Supply Air CFM

GPS-RN Units Required 1 (2,400 CFM Nominal)

GPS-RN product specifications including dimensions (5'H x 4'W x 2' D), weight (1 lb), and ETL listing (UL 867).

Air Purification Schedule

Table with 10 columns: Zone Tag, S/A Flow, O/A Flow, GPS Model, GPS Quantity, Pressure Drop, Voltage, Watts, Mounting Location, Notes.

- 1. Basis of Design: Global Plasma Solutions... 2. Mount bi-polar ion generator where indicated on schedule...

Unit Quantity Calculations Based on IAQ Supply Air CFM

GPS-RN Units Required 1 (2,400 CFM Nominal)

GPS-RN product specifications including dimensions (5'H x 4'W x 2' D), weight (1 lb), and ETL listing (UL 867).

Air Purification Schedule

Table with 10 columns: Zone Tag, S/A Flow, O/A Flow, GPS Model, GPS Quantity, Pressure Drop, Voltage, Watts, Mounting Location, Notes.

- 1. Basis of Design: Global Plasma Solutions... 2. Mount bi-polar ion generator where indicated on schedule...

Unit Quantity Calculations Based on IAQ Supply Air CFM

GPS-RN Units Required 1 (2,400 CFM Nominal)

GPS-RN product specifications including dimensions (5'H x 4'W x 2' D), weight (1 lb), and ETL listing (UL 867).

Air Purification Schedule

Table with 10 columns: Zone Tag, S/A Flow, O/A Flow, GPS Model, GPS Quantity, Pressure Drop, Voltage, Watts, Mounting Location, Notes.

- 1. Basis of Design: Global Plasma Solutions... 2. Mount bi-polar ion generator where indicated on schedule...

DUCT HEATER SCHEDULE

Table with 8 columns: MARK, UNIT SERVED, CFM, DUCT SIZE, KW, # OF STEPS, V/Ø, MFG, NOTES.

- NOTES: (1) PROVIDE WITH REMOTE WALL MOUNTED CONTROL PANEL. (2) COORDINATE LOCATION WITH PLANS.

BLOWER COIL UNIT SCHEDULE

Table with 7 columns: MARK, BCU-V02, BCU-V06, BCU-V011, BCU-V012, BCU-V020, BCU-V022.

- NOTES: (1) NEW BLOWER COIL UNITS TO REPLACE EXISTING. BALANCE UNITS TO PROVIDE AIRFLOW AND CAPACITIES INDICATED.

DIFFUSER/GRILLE/LOUVER SCHEDULE

Table with 5 columns: MARK / LEGEND, TYPE, MFG, MODEL, NOTES.

- NOTES: (1) PROVIDE WITH OPPOSED BLADE VOLUME DAMPER. (2) PROVIDE 24X24 FULLY LOUVERED FACE LAYIN MODULE WHERE LOCATED IN LAYIN CEILING.

AIR HANDLING UNIT SCHEDULE table with columns for MARK, AREA SERVED, AIR FLOW (CFM), and various performance metrics.

- NOTES: (1) REFER TO AHU DETAILS FOR REQUIRED MODULES AND LAYOUTS. (2) PROVIDE WITH AIRFLOW MONITORING STATION IN OUTSIDE AIR DUCT EQUAL TO EBTRON GOLD SERIES.

Duct Construction Schedule

Table with 5 columns: Service, SMACNA Pressure Class, Material, Insulation, Notes.

- Notes: (1) All ductwork is to be fabricated, supported and installed per SMACNA standards.

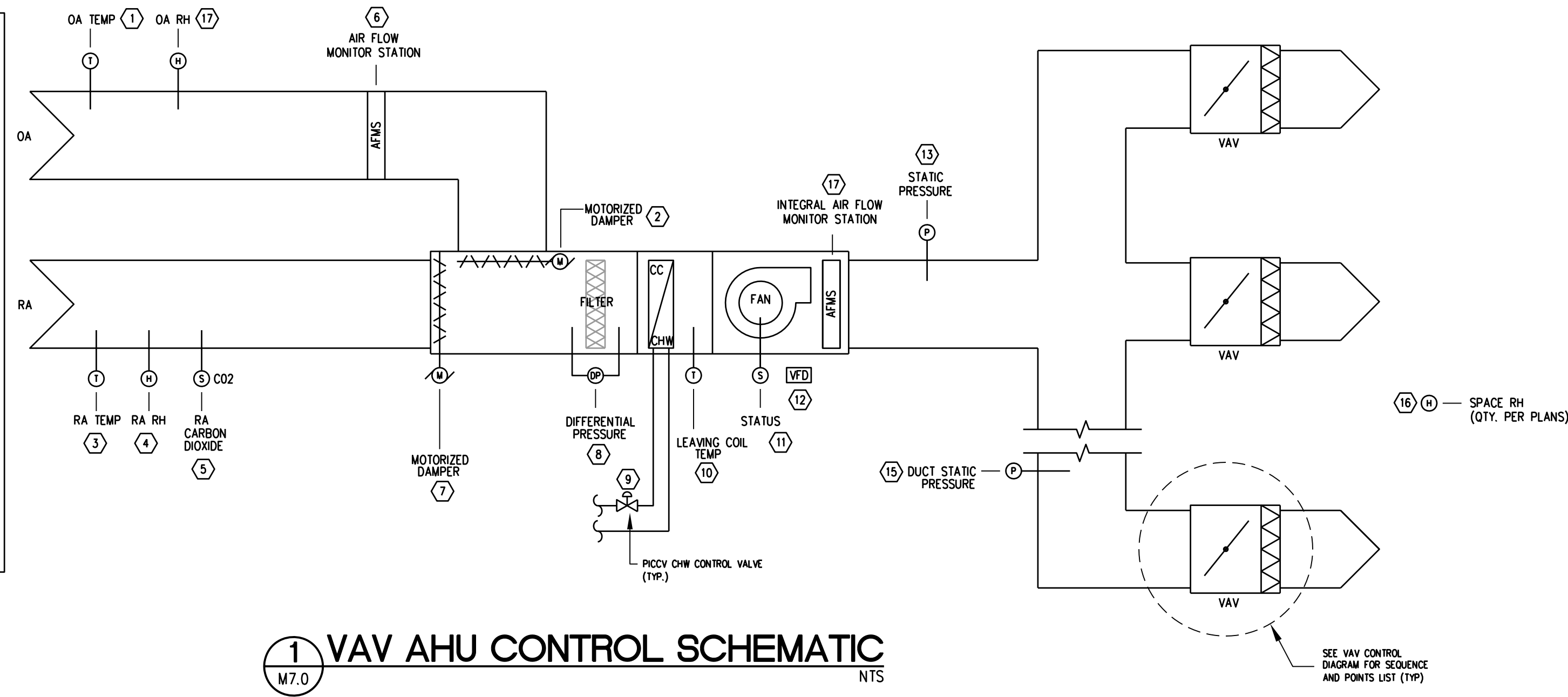
BID ALTERNATE NO. 2

OCI ASSOCIATES, INC. CONSULTING ENGINEERS logo and contact information.

Vertical sidebar containing revision table, project name (SCHEDULES H.V.A.C.), project location (ST. JOHNS RIVER STATE COLLEGE), and contact information for CRC ARCHITECTS/PALATKA, INC.

Bottom right corner containing seal/signature line, scale (AS NOTED), drawing name (LAH), job number (OIS-03), sheet number (M-6.1), and total sheets (43 Of 61 Sheets).

- CONTROL POINTS (X)**
1. OA TEMP
 2. OA DAMPER POSITION
 3. RA TEMP
 4. RA RH
 5. RA CO2 LEVEL
 6. OA AFMS
 7. RA DAMPER POSITION
 8. FILTER DP
 9. CHW VALVE POSITION
 10. COOL LAT
 11. FAN STATUS
 12. VFD
 13. HIGH STATIC LIMIT
 14. SPACE CO2 LEVEL(S)
 15. SA STATIC PRESSURE
 16. SPACE RH
 17. OA RH
 18. SA AFMS
- ALARMS**
1. SA HIGH STATIC
 2. SA FAN FAILED TO START
 3. SPACE RH ABOVE SETPOINT
 4. CO2 LEVEL ABOVE SETPOINT



SUPPLY FAN CONTROL:

THE FAN CAN BE STARTED BASED ON ANY OF THE FOLLOWING CONDITIONS:

1. WHEN THE SYSTEM IS PUT INTO WARM UP / COOL DOWN MODE (THRU THE EMS SYSTEM).
2. WHEN THE SYSTEM IS PUT IN THE OCCUPIED MODE (THRU THE EMS SYSTEM).
3. WHEN THE SYSTEM IS MANUALLY PUT IN AN OVERRIDE MODE (THRU THE EMS SYSTEM).
4. IF THE HAND-OFF-AUTO SWITCH LOCATED ON THE VFD IS PUT IN THE HAND POSITION ONLY THE FAN STARTS.

WHEN THE UNIT IS STARTED BY EITHER 2 OR 3 ABOVE AND PROOF OF AIR FLOW EXISTS BY STATIC PRESSURE THE ASSOCIATED EXHAUST FANS ARE STARTED, OUTDOOR AIR DAMPERS CAN MODULATE (SEE BELOW) AND THE UNIT CONTROL LOOPS ARE ENABLED.

COOLING COIL LEAVING AIR TEMPERATURE CONTROL:

THE MAIN COOLING COIL CONTROL VALVE IS MODULATED TO MAINTAIN THE UNITS DISCHARGE AIR TEMPERATURE SETPOINT AS SCHEDULED (ADJ.) IF ANY SPACE TEMPERATURE IS BELOW THE SPACE TEMPERATURE SETPOINT FOR A PERIOD OF 5 MINUTES (OVERCOOLING), THE LEAVING AIR TEMPERATURE SHALL BE INCREASED BY 1 DEGF. IF ANY SPACE TEMPERATURE IS ABOVE THE SPACE TEMPERATURE SETPOINT FOR A PERIOD OF 5 MINUTES (UNDER COOLING), THE LEAVING AIR TEMPERATURE SETPOINT SHALL BE DECREASED BY 1 DEGF. IF BOTH OVER AND UNDER COOLING OCCUR SIMULTANEOUSLY, THE UNDER COOLING SEQUENCE SHALL TAKE PRECEDENCE. MAXIMUM LEAVING AIR TEMPERATURE TO BE 65 DEGF (ADJ.)

RELATIVE HUMIDITY OVERRIDE CONTROL:

IF THE SPACE RELATIVE HUMIDITY RISES TO 65% (ADJ.) THE LEAVING AIR DISCHARGE SETPOINT IS RESET DOWN TO THE DESIGNED DISCHARGE TEMPERATURE. IF THE CHILLER PLANT IS OFF AND THE RELATIVE HUMIDITY RISES ABOVE 65% AND THE OUTSIDE AIR TEMPERATURE IS ABOVE 60 DEGF THE CHILLER PLANT IS STARTED. (THE PROGRAM ALLOWS FOR MORE THAN ANY ONE SPACE RH SENSOR TO START THE CHILLER PLANT BY THE OPERATOR SELECTING A MINIMUM QUANTITY OF SPACE RH THAT MUST BE ABOVE THE RH SETPOINT.

OCCUPIED OA MODE - RETURN / OA DAMPER CONTROL:

THE OA DAMPER CAN MODULATE OPEN WHEN THE AHU IS ON AND THE OUTSIDE AIR SCHEDULE IS SET TO OCCUPIED MODE. IF THE AHU IS OFF OR THE OUTSIDE AIR SCHEDULE IS SET TO UNOCCUPIED MODE THE OUTSIDE AIR DAMPER IS FULLY CLOSED AND THE RETURN AIR DAMPER IS FULLY OPENED. AIR FLOW MONITORING STATION IS LOCATED IN THE OUTSIDE AIR DUCT. THE RESETTABLE OUTSIDE AIR FLOW SETPOINT IS MAINTAINED BY MODULATING THE OUTSIDE AIR DAMPER OPEN AND WHEN IN FULL OPEN THEN MODULATE THE RETURN AIR DAMPER CLOSED.

EXHAUST AIR FANS SHALL BE INTERLOCKED TO OPERATE WHEN THE OCCUPIED OUTSIDE AIR SEQUENCE IS ACTIVE.

STATIC PRESSURE CONTROL:

WHEN THE SUPPLY FAN PROOF OF FLOW HAS BEEN DETERMINED THE SUPPLY FAN STATIC LOOP IS ALLOWED TO CONTROL. THE SUPPLY FAN SPEED IS RAMPED UP ON FAN START-UP AND THEN MODULATED TO MAINTAIN DISCHARGE STATIC PRESSURE SETPOINT DEPENDING IF IN THE OCCUPIED MODE OR NOT. PROVIDE STATIC PRESSURE SETPOINT RESET IN ACCORD WITH ASHRAE 90.1 SUCH THAT ALL VAV AIR HANDLING SYSTEMS SHALL HAVE THEIR INDIVIDUAL STATIC PRESSURE CONTROLLER SETPOINT RESET BASED ON THE ZONE (I.E., TERMINAL UNIT) REQUIRING THE MOST STATIC PRESSURE IN ORDER TO BE ABLE TO DELIVER ITS PRESCRIBED AIRFLOW AT ANY GIVEN TIME. THE SETPOINT SHALL BE RESET LOWER AT A GRADUATED PACE UNTIL ONE TERMINAL UNIT CONTROL DAMPER IS NEARLY WIDE OPEN.

SAFETIES:

THE FOLLOWING SAFETIES SHALL SHUT DOWN THE UNIT UPON ALARM CONDITION:

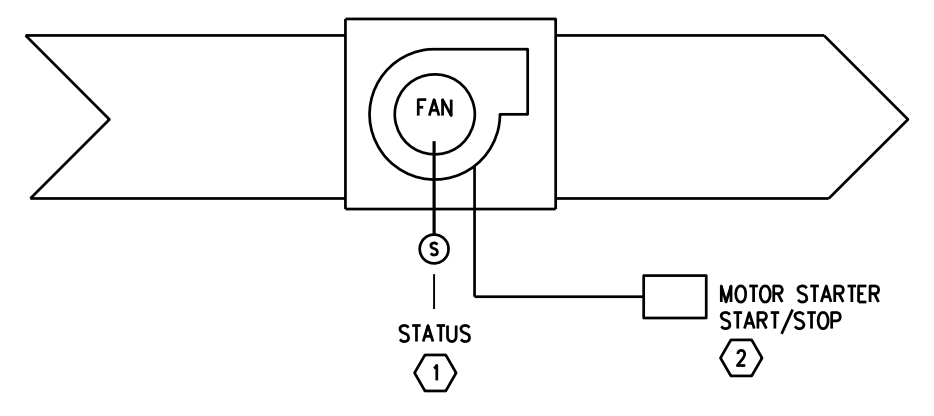
1. A FIRE ALARM CONDITION.
2. THE HIGH DISCHARGE STATIC PRESSURE SWITCH TRIPS (W/ MANUAL RESET) AND AN ALARM IS GENERATED.

SHUTDOWN:

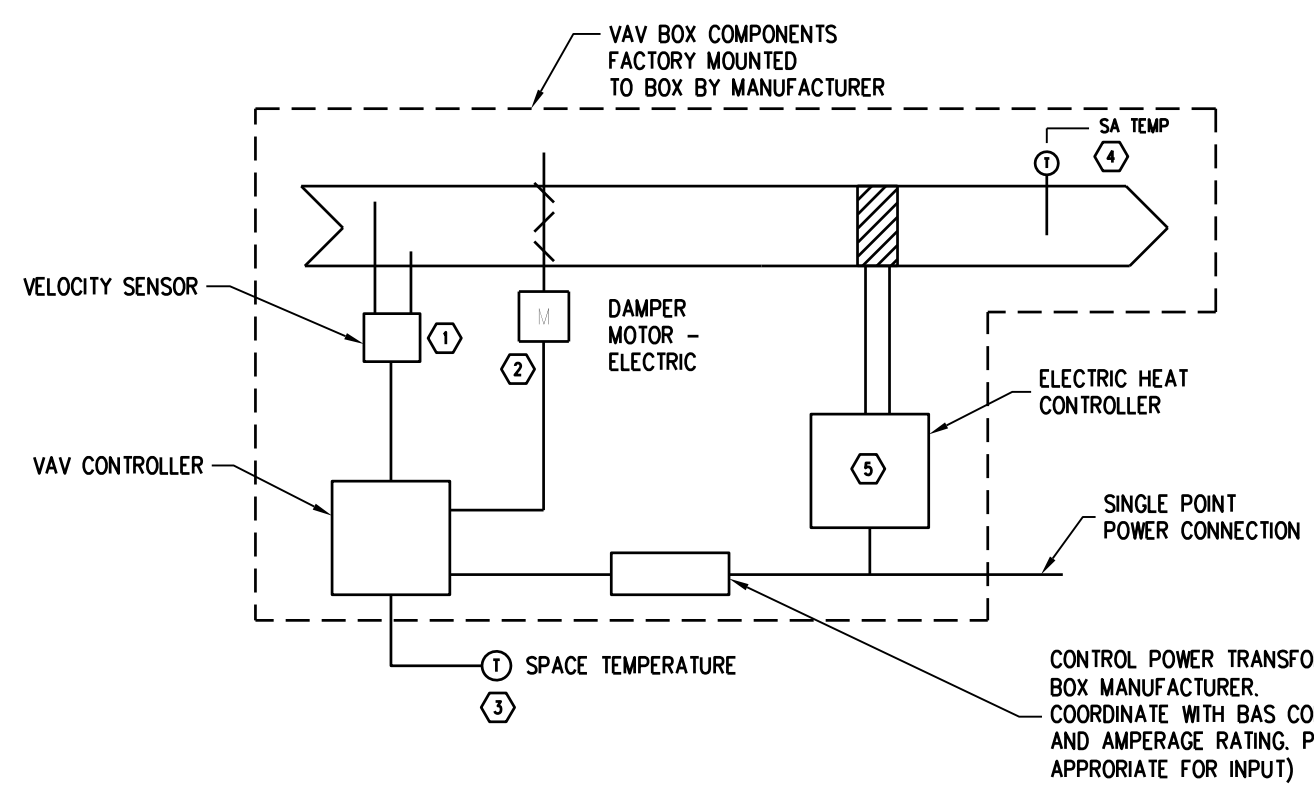
THE FOLLOWING OCCURS WHEN THE AHU FAN IS STOPPED EITHER BY SAFETIES AS NOTED ABOVE OR IF IN ITS UNOCCUPIED MODE:

1. THE OA DAMPER CLOSES AND THE RETURN AIR DAMPER OPENS.
2. THE MAIN CHILLED WATER VALVE CLOSES TO ITS COIL.
3. THE INTERLOCKED EXHAUST FANS PER ITS SCHEDULE ARE STOPPED.

IF THE SUPPLY STATIC PRESSURE FAILS TO INCREASE ABOVE A MINIMUM SETPOINT, THE DDC SYSTEM USES THIS TO CONFIRM THE FAN IS IN THE DESIRED STATE AND GENERATES AND ALARM IF THE STATUS DEVIATES FROM THE DDC START/STOP CONTROL.



WHEN IN OCCUPIED MODE, THE FAN SHALL BE ENERGIZED. WHEN IN UNOCCUPIED MODE THE FAN SHALL BE DE-ENERGIZED.



VAV SEQUENCE:

UPON RISE IN SPACE TEMPERATURE ABOVE SETPOINT, AIR VALVE SHALL OPEN TO INCREASE SUPPLY AIR FLOW. UPON FALL IN SPACE TEMPERATURE THE REVERSE SHALL OCCUR UNTIL THE AIR VALVE REACHES THE MINIMUM SCHEDULED AIRFLOW. IF SPACE TEMPERATURE CONTINUES TO FALL BELOW THE HEATING SETPOINT THE ELECTRIC HEAT SHALL STAGE ON TO RAISE SUPPLY AIR TEMPERATURE.

OCCUPIED / UNOCCUPIED MINIMUM AIRFLOW SETPOINTS FOR LARGE ROOMS SERVED BY SINGLE VAV SHALL BE DETERMINED BY SIGNAL FROM OCCUPANCY SENSOR (BY ELECTRICAL CONTRACTOR). COORDINATE AND PROVIDE ALL REQUIRED CONTROL INTERFACE, RELAYS, WIRING FOR INTERCONNECTION OF OCCUPANCY SENSOR WITH LIGHTING CONTROL / OCCUPANCY SENSOR MANUFACTURER. MINIMUM UNOCCUPIED AIRFLOW SHALL BE AS REQUIRED TO MAINTAIN UNOCCUPIED COOLING/HEATING TEMPERATURE SETPOINTS (SEE OTHER CONTROL REQUIREMENTS) UNLESS OVERRIDDEN BY THE ASSOCIATED AHU TEMPERATURE/HUMIDITY/CO2/FUME HOOD EXHAUST FAN CONTROL SEQUENCES.

3 TYPICAL VAV CONTROL SCHEMATIC
M7.0 NTS

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Seal/Signature:

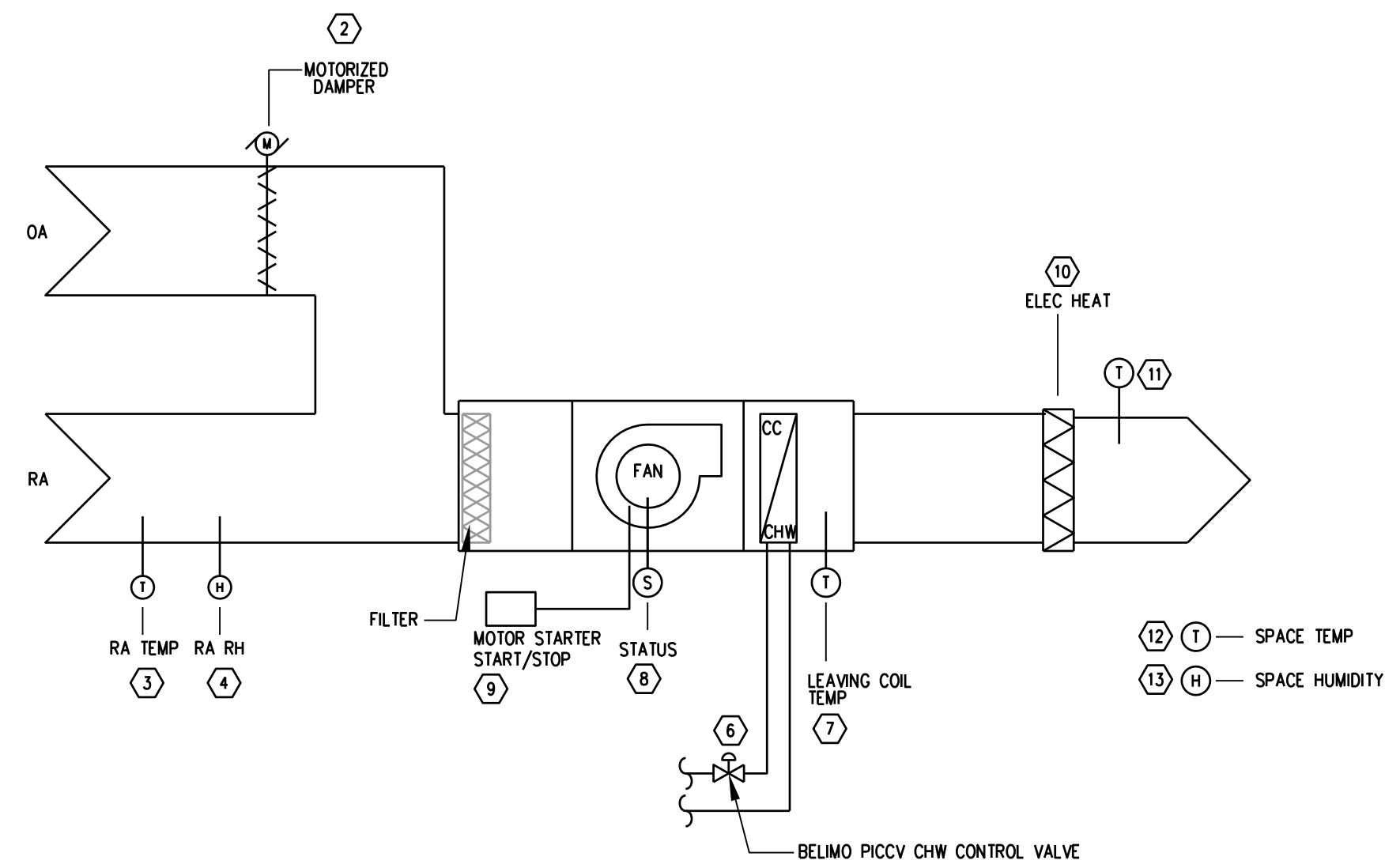
JASON L. SMITH, P.E.
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CERTIFICATE OF AUTHORIZATION #6261

- CONTROL POINTS** (X)
1. OA TEMP
 2. OA DAMPER POSITION (OPEN/CLOSED)
 3. RA TEMP
 4. RA RH
 5. NOT USED
 6. CHW VALVE POSITION
 7. COIL LAT
 8. FAN STATUS
 9. FAN START/STOP
 10. DISCHARGE EDH STAGES
 11. SA LAT
 12. SPACE TEMP
 13. SPACE RH
- ALARMS**
1. SA FAN FAILED TO START
 2. SPACE RH ABOVE SETPOINT
 3. OA DAMPER FAILED
 4. DUCT SMOKE DETECTOR



1 BLOWER COIL UNIT CONTROL SCHEMATIC
(CONTRACTOR TO VERIFY AND ADJUST AS REQUIRED TO MATCH EXISTING BCU CONTROLS SEQUENCE) NTS

SUPPLY FAN CONTROL:

THE FAN CAN BE STARTED BASED ON ANY OF THE FOLLOWING CONDITIONS:

1. WHEN THE SYSTEM IS PUT IN THE OCCUPIED MODE (THRU THE EMCS SYSTEM).
2. WHEN THE SYSTEM IS MANUALLY PUT IN AN OVERRIDE MODE (THRU THE EMCS SYSTEM).

WHEN THE UNIT IS STARTED BY EITHER 1 OR 2 ABOVE AND PROOF OF AIR FLOW EXISTS, THE ASSOCIATED EXHAUST FANS ARE STARTED, OUTDOOR AIR DAMPERS CAN OPEN (SEE BELOW) AND THE UNIT CONTROL LOOPS ARE ENABLED.

BCU COOLING COIL CONTROL:

THE CHW COOLING COIL CONTROL VALVE IS MODULATED TO MAINTAIN THE SPACE TEMPERATURE SETPOINT. UPON A RISE IN SPACE TEMPERATURE ABOVE THE COOLING SETPOINT, THE VALVE SHALL MODULATE OPEN. UPON A DROP IN SPACE TEMPERATURE BELOW THE COOLING SETPOINT, THE VALVE SHALL MODULATE CLOSED. UPON A DROP IN SPACE TEMPERATURE BELOW THE HEATING SETPOINT, THE VALVE SHALL MODULATE FULLY CLOSED.

OUTSIDE AIR OCCUPIED - UNOCCUPIED CONTROL:

WHEN THE BCU OA OCCUPIED SETPOINT IS 'ON' THE OA DAMPER SHALL OPEN. IF THE OCCUPIED SETPOINT IS 'OFF' THE CHILLED WATER VALVE SHALL CLOSE TO MINIMUM SETPOINT AND THE OUTSIDE AIR DAMPER SHALL FULLY CLOSE.

RELATIVE HUMIDITY OVERRIDE CONTROL:

IF THE SPACE RELATIVE HUMIDITY RISES TO 65% (ADJ.) THE OUTSIDE AIR DISCHARGE SETPOINT IS RESET DOWN TO THE DESIGNED DISCHARGE TEMPERATURE. IF THE CHILLER PLANT IS OFF AND THE RELATIVE HUMIDITY RISES ABOVE 65% AND THE OUTSIDE AIR TEMPERATURE IS ABOVE 60 DEG. THE CHILLER PLANT IS STARTED. (THE PROGRAM ALLOWS FOR MORE THAN ANY ONE SPACE RH SENSOR TO START THE CHILLER PLANT BY THE OPERATOR SELECTING A MINIMUM QUANTITY OF SPACE RH THAT MUST BE ABOVE THE RH SETPOINT. THE ELECTRIC HEATER SHALL BE STAGED TO MAINTAIN SPACE TEMPERATURE.

HEATING CONTROL:

IN THE OCCUPIED MODE, THE ELECTRIC DUCT HEATER SHALL ENERGIZE IN STAGES WHEN THE SPACE TEMPERATURE DECREASES BELOW 68°F (ADJUSTABLE).

SAFETIES:

THE FOLLOWING SAFETIES SHALL SHUT DOWN THE UNIT UPON ALARM CONDITION:

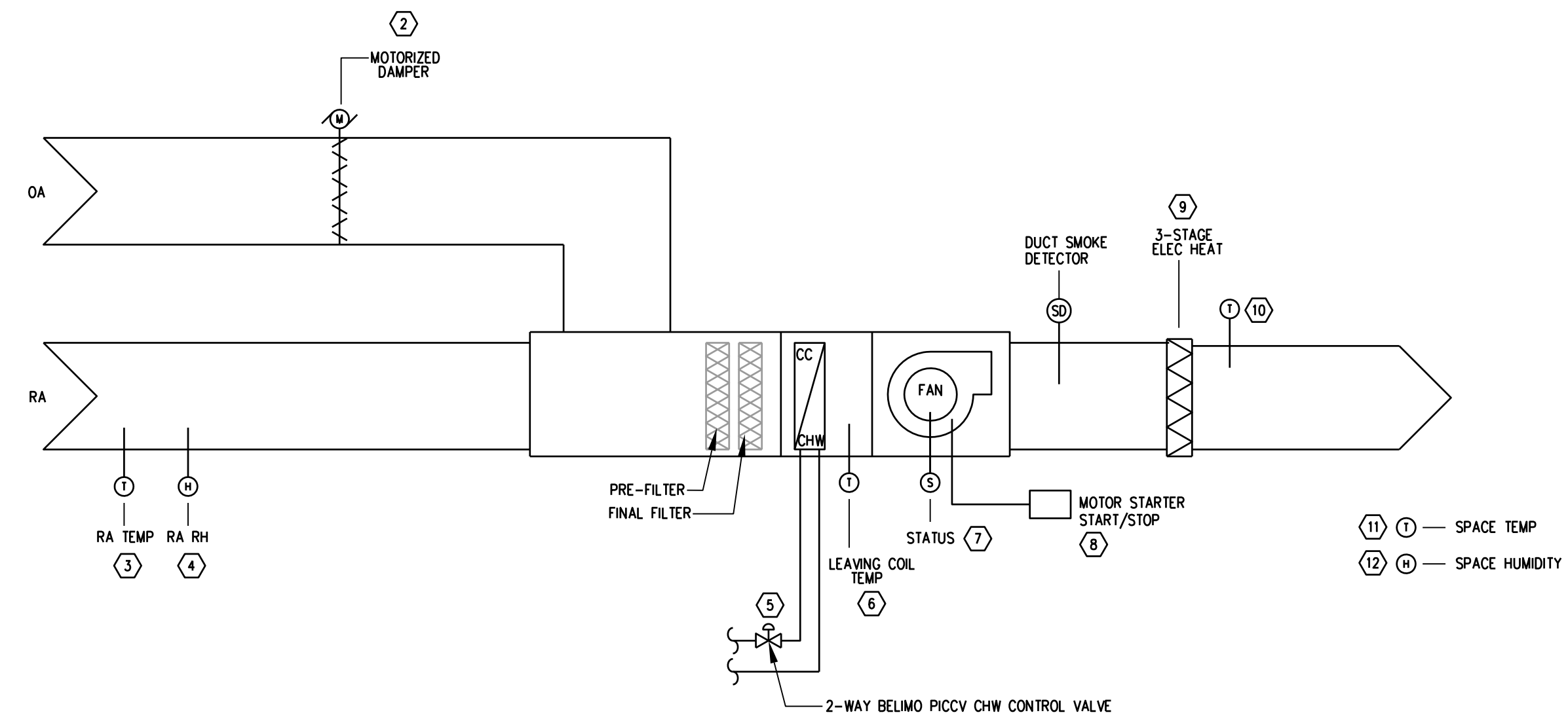
1. A FIRE ALARM CONDITION.

SHUTDOWN:

THE FOLLOWING OCCURS WHEN THE BCU FAN IS STOPPED EITHER BY SAFETIES AS NOTED ABOVE OR IF IN ITS UNOCCUPIED MODE:

1. THE OA DAMPER CLOSES.
2. THE MAIN CHILLED WATER VALVE CLOSES TO ITS COIL AND THE ELECTRIC HEAT IS CYCLED OFF.
3. THE INTERLOCKED EXHAUST FANS (WHERE APPLICABLE) ARE STOPPED.

- CONTROL POINTS** (X)
1. OA TEMP
 2. OA DAMPER POSITION (OPEN/CLOSED)
 3. RA TEMP
 4. RA RH
 5. CHW VALVE POSITION
 6. COIL LAT
 7. FAN STATUS
 8. FAN START/STOP
 9. DISCHARGE EDH STAGES
 10. SA LAT
 11. SPACE TEMP
 12. SPACE RH
- ALARMS**
1. SA FAN FAILED TO START
 2. SPACE RH ABOVE SETPOINT
 3. OA DAMPER FAILED
 4. DUCT SMOKE DETECTOR



2 SINGLE PATH CONSTANT VOLUME AHU CONTROL SCHEMATIC
(CONTRACTOR TO VERIFY AND ADJUST AS REQUIRED TO MATCH EXISTING AHU CONTROLS SEQUENCE) NTS

SUPPLY FAN CONTROL:

THE FAN CAN BE STARTED BASED ON ANY OF THE FOLLOWING CONDITIONS:

1. WHEN THE SYSTEM IS PUT IN THE OCCUPIED MODE (THRU THE EMCS SYSTEM).
2. WHEN THE SYSTEM IS MANUALLY PUT IN AN OVERRIDE MODE (THRU THE EMCS SYSTEM).

WHEN THE UNIT IS STARTED BY EITHER 1 OR 2 ABOVE AND PROOF OF AIR FLOW EXISTS, THE ASSOCIATED EXHAUST FANS ARE STARTED, OUTDOOR AIR DAMPERS CAN OPEN (SEE BELOW) AND THE UNIT CONTROL LOOPS ARE ENABLED.

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OUTSIDE AIR OCCUPIED - UNOCCUPIED CONTROL:

WHEN THE AHU OA OCCUPIED SETPOINT IS 'ON' THE OA DAMPER SHALL OPEN. IF THE OCCUPIED SETPOINT IS 'OFF' THE CHILLED WATER VALVE SHALL CLOSE TO MINIMUM SETPOINT AND THE OUTSIDE AIR DAMPER SHALL FULLY CLOSE.

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HEATING CONTROL:

IN THE OCCUPIED MODE, THE ELECTRIC DUCT HEATER SHALL ENERGIZE IN STAGES WHEN THE SPACE TEMPERATURE DECREASES BELOW 68°F (ADJUSTABLE).

SAFETIES:

THE FOLLOWING SAFETIES SHALL SHUT DOWN THE UNIT UPON ALARM CONDITION:

1. A FIRE ALARM CONDITION.
2. DUCT SMOKE DETECTOR IN THE MAIN SUPPLY AIR STREAM.

SHUTDOWN:

THE FOLLOWING OCCURS WHEN THE AHU FAN IS STOPPED EITHER BY SAFETIES AS NOTED ABOVE OR IF IN ITS UNOCCUPIED MODE:

1. THE OA DAMPER CLOSES.
2. THE MAIN CHILLED WATER VALVE CLOSES TO ITS COIL AND THE ELECTRIC HEAT (WHERE APPLICABLE) IS CYCLED OFF.
3. THE INTERLOCKED EXHAUST FANS (WHERE APPLICABLE) ARE STOPPED.

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