

AIR HANDLER UNIT
REPLACEMENT
RUSSELL HOUSE
COLUMBIA, SC
PROJECT NUMBER H27-Z416/50003394-2

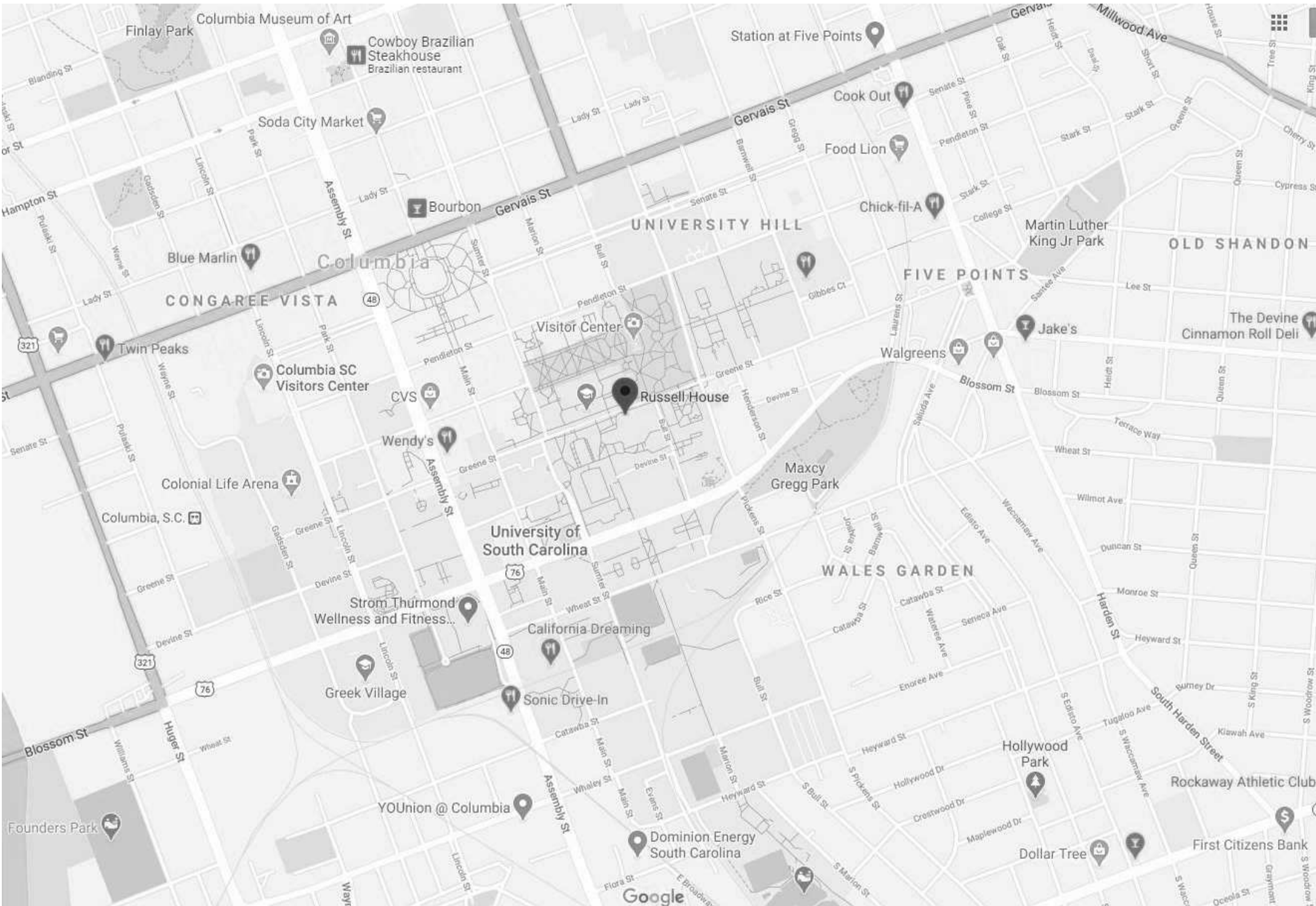
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CAMPUS PLANNING
AND CONSTRUCTION
COLUMBIA, SC 29208

BUILDING	DRAWING	DATE	DRAWN BY	DEM DATE	CHECKED BY		WCL		SEAL
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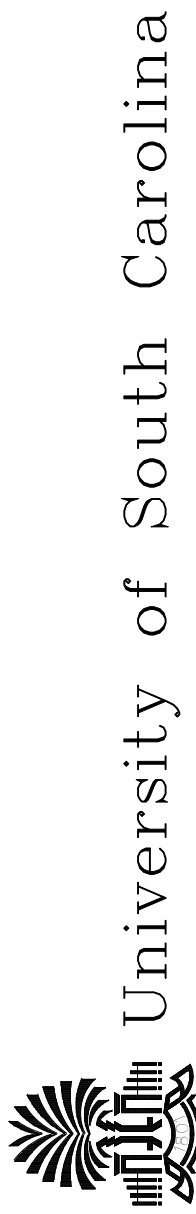
LOCATION MAP



DESIGN CODES AND STANDARDS

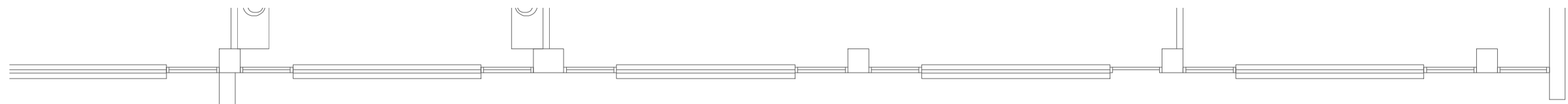
- PROJECT DESIGNED IN ACCORDANCE WITH:
1. INTERNATIONAL BUILDING CODE 2018 EDITION
 2. INTERNATIONAL MECHANICAL CODE 2018 EDITION
 3. NATIONAL ELECTRICAL CODE, NFPA 70 2017 EDITION
 4. STATE FIRE MARSHALL, LATEST EDITION
 5. INTERNATIONAL FIRE CODE 2018 EDITION
 6. ASHRAE/IESNA 90.1 ENERGY STANDARD FOR BUILDINGS EXCEPT LOW-RISE RESIDENTIAL BUILDINGS, 2007 EDITION

PROJECT TITLE: AIR HANDLER UNIT REPLACEMENT
RUSSELL HOUSE




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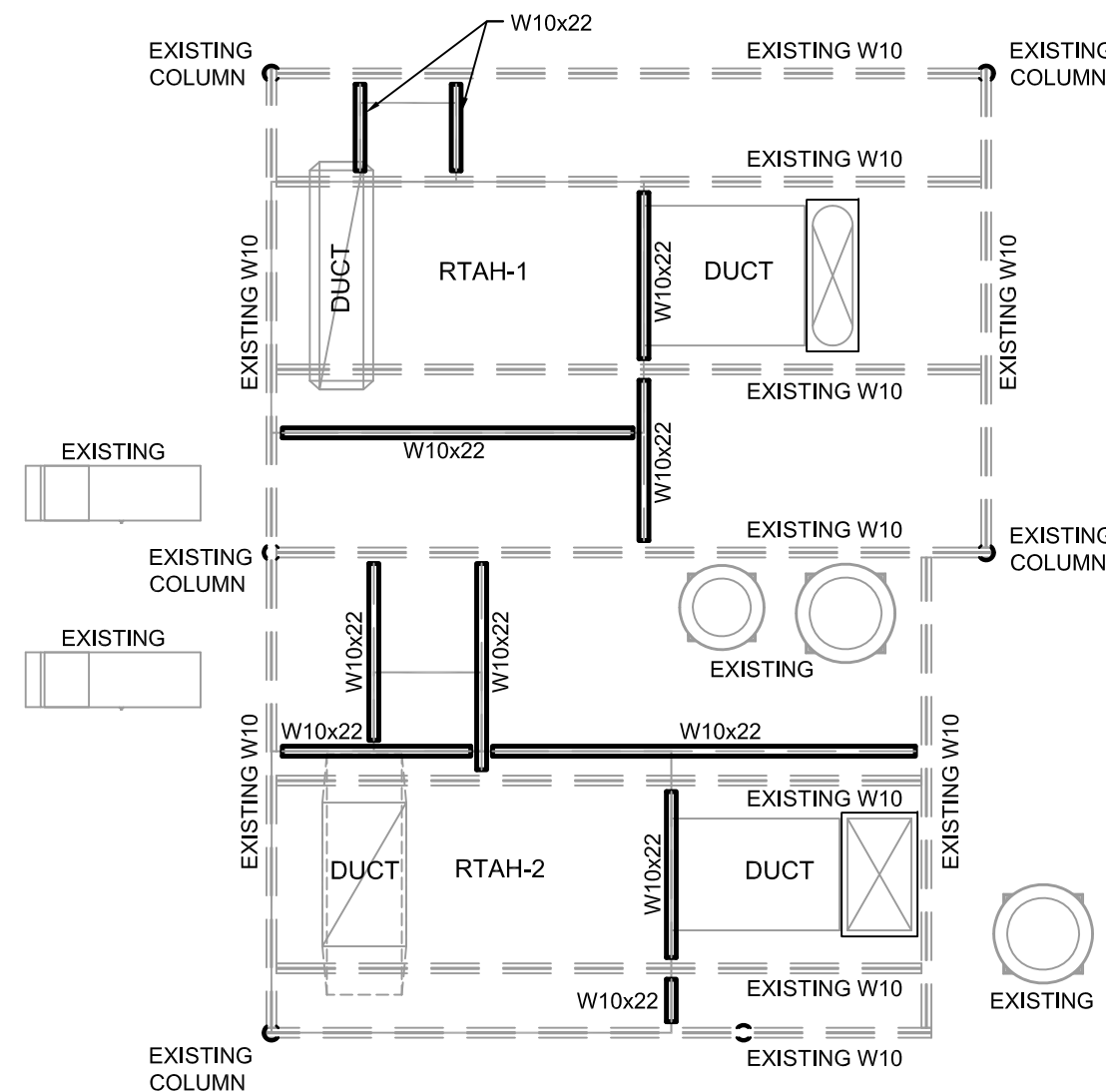
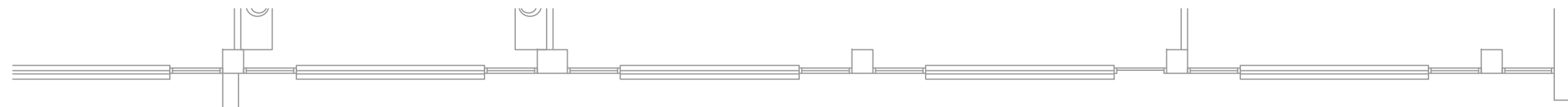


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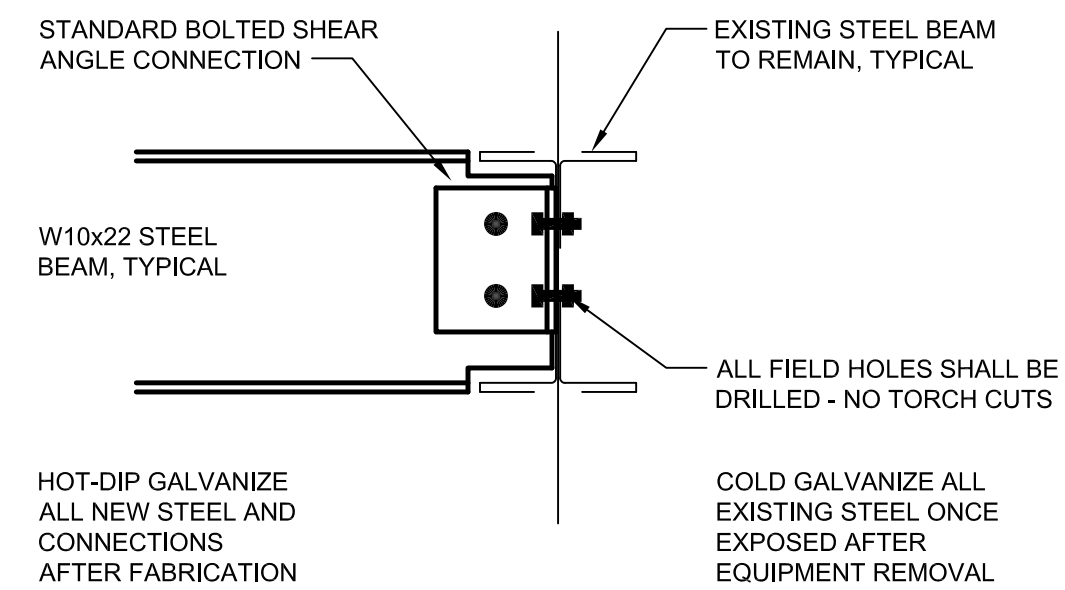
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- * ALL EXISTING STEEL BEAMS AND COLUMNS TO REMAIN
- * PAINT ALL EXISTING STEEL WITH TOUCH UP GALVANIZE ZINC RICH PAINT
- * ALL NEW STEEL TO INCLUDE ALL CONNECTIONS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION
- * PROVIDE DOUBLE ANGLE SHEAR CONNECTIONS WITH (2) 3/4"Ø BOLTS AT EACH BEAM CONNECTION. ALL FIELD HOLES SHALL BE DRILLED - NO TORCH CUTS
- * EXISTING ROOF OPENINGS TO BE REUSED. SEE MECH. DRAWINGS FOR CURBING REQUIREMENTS

GENERAL NOTES:

- LOADS:
 - SEISMIC DESIGN CATEGORY D
 - DEAD LOADS: ACTUAL WEIGHTS OF MATERIALS, EQUIPMENT, AND ETC.
- BUILDING CODE - INTERNATIONAL BUILDING CODE 2018
- VERIFY ALL ELEVATIONS AND DIMENSIONS WITH EXISTING CONDITIONS.
- SEE MECHANICAL DRAWINGS FOR MISCELLANEOUS DETAILS NOT SHOWN ON STRUCTURAL DRAWINGS
- PROVIDE AND INSTALL ALL TEMPORARY BRACING AS REQUIRED FOR SAFETY/STABILITY OF THE STRUCTURE UNTIL STRUCTURE IS COMPLETE.
- CONTRACTOR SHALL VISIT SITE TO BECOME THOROUGHLY FAMILIAR WITH ALL EXISTING CONDITIONS AND SHALL FIELD VERIFY ALL EXISTING DIMENSIONS, FRAMING CONDITIONS, AND CONNECTIONS BEFORE BEGINNING CONSTRUCTION OR ANY FABRICATION.
- WHERE DETAIL IS SHOWN ON STRUCTURAL DRAWINGS FOR ONE CONDITION, IT SHALL APPLY TO ALL SIMILAR OR LIKE CONDITIONS, UNLESS NOTED OR SHOWN OTHERWISE ON PLANS.
- STRUCTURAL STEEL:
 - STEEL SHALL CONFORM TO THE FOLLOWING ASTM SPECIFICATIONS, UNLESS NOTED OTHERWISE ON PLANS:
 - ALL ROLLED ANGLES, CHANNELS, PLATES, BARS, ETC A36 (Fy=36ksi).
 - STRUCTURAL STEEL W-SECTIONS ----- A992 (Fy=50ksi)
 - WELDED CONNECTIONS:
 - ALL SHOP AND FIELD WELDING SHALL CONFORM TO AWS STRUCTURAL WELDING CODE-STEEL, ANSI/AWS - D1.1
 - MINIMUM WELD = 3/16" THICK THROAT
 - BOLTED CONNECTIONS:
 - ALL BOLTED CONNECTIONS SHALL BE MADE WITH 3/4" DIAMETER A-325X OR A-490X BOLTS.
 - OVERSIZE OR LONG SLOTTED HOLES ARE NOT ALLOWED UNLESS SHOWN ON STRUCTURAL PLANS.
 - THE SHOP DRAWINGS SHALL CLEARLY INDICATE THE TYPE OF BOLTS USED IN EACH CONNECTION AND THE ALLOWABLE VALUES USED FOR THE VARIOUS BOLT TYPES.
 - BEAM CONNECTIONS:
 - DESIGN CONNECTIONS FOR NON COMPOSITE BEAM TO BEAM AND/OR BEAM TO COLUMN TO SUPPORT 60% PERCENT OF THE UNIFORM CAPACITY SHOWN IN AISC "TABLES FOR ALLOWABLE LOADS ON BEAMS" FOR THE GIVEN SECTION AND SPAN UNLESS NOTED OTHERWISE OR REQUIRED.
 - GALVANIZING: HOT-DIP GALVANIZE AFTER FABRICATION ALL STRUCTURAL ITEMS AND THEIR CONNECTIONS.
 - GALVANIZING: COLD GALVANIZE ALL EXISTING FRAMING AFTER EQUIPMENT AND ROOFING HAS BEEN REMOVED TO EXPOSE ALL EXISTING STEEL.



TYPICAL BEAM TO BEAM CONNECTION

SCALE: 1 1/2" = 1'-0"

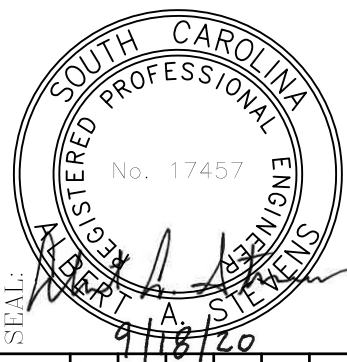


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PLATFORM FRAMING PLAN

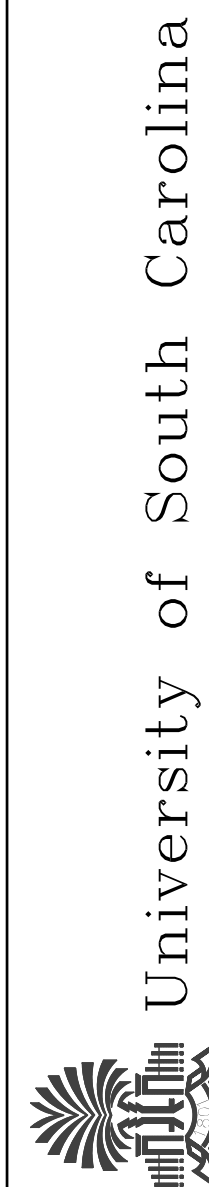
1/8" = 1'-0"

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ORIG. BY		DATE	
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BUILDING:		DESCRIPTION	
REV:			

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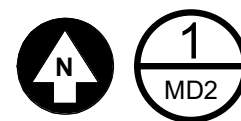
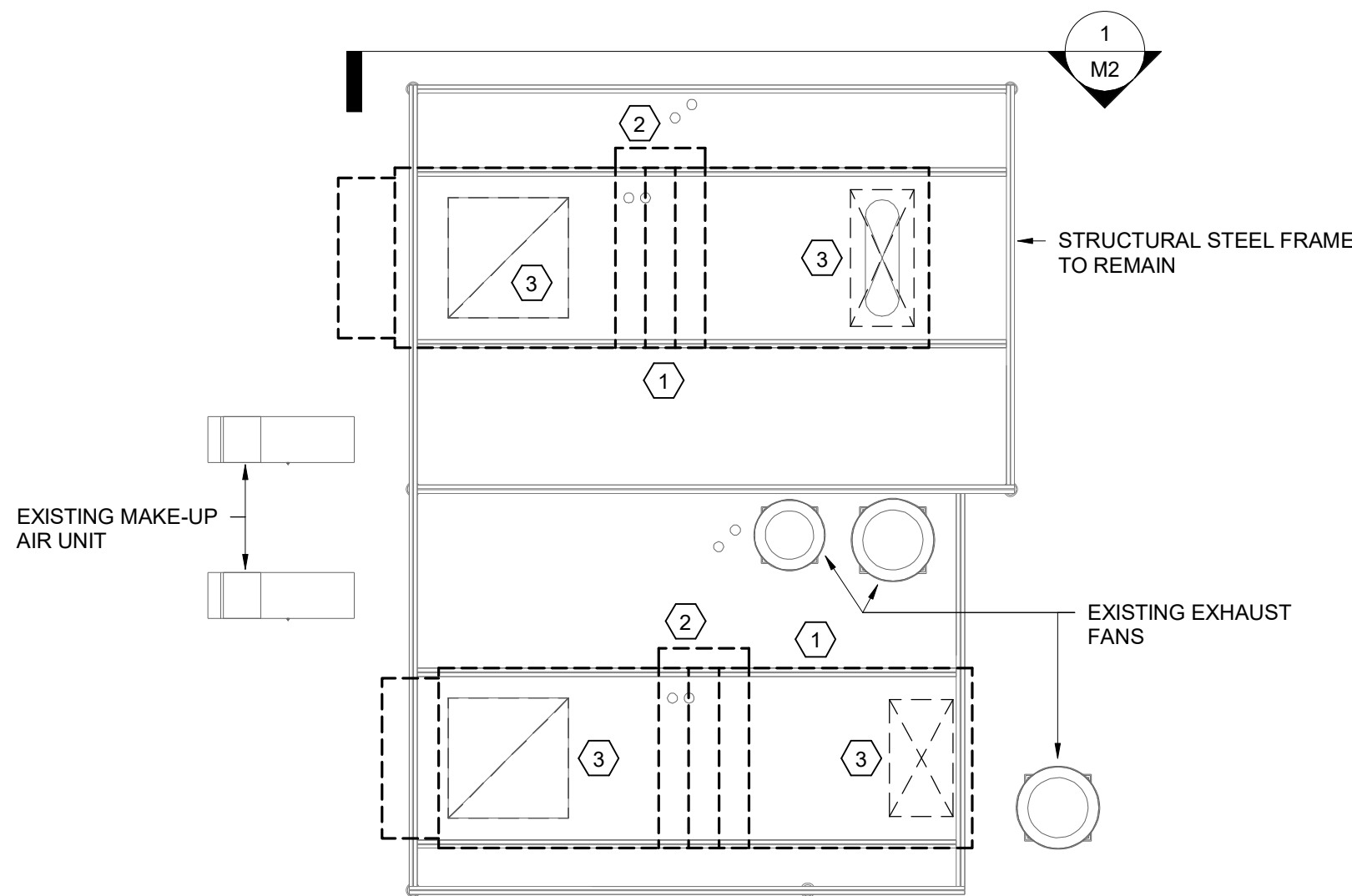
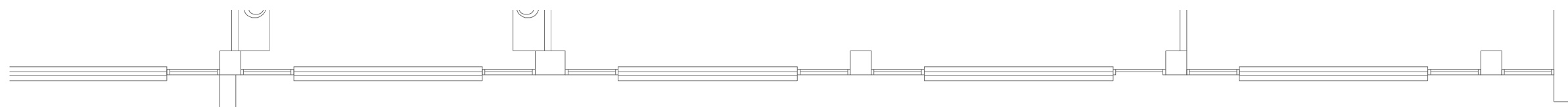


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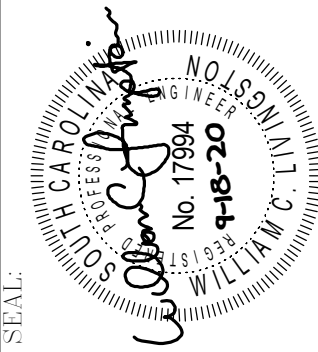
SECOND FLOOR ROOF DEMOLITION PLAN

1/8" = 1'-0"

DEMOLITION NOTES

- 1 REMOVE EXISTING ROOFTOP UNIT COMPLETE INCLUDING UNIT ROOF CURB AND DUCT DOWN TO ROOF PENETRATION.
- 2 REMOVE EXISTING PIPING TO EXISTING UNIT ONLY ABOVE ROOF. PIPE DOWN THROUGH ROOF TO REMAIN.
- 3 REMOVE EXISTING DUCT ABOVE ROOF DECK AS SHOWN. DUCT DOWN THROUGH ROOF TO REMAIN.

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AIR HANDLING UNIT SCHEDULE (FOUR PIPE)															
TAG	TRANE MODEL NO.	TOTAL CFM	OUTDOOR AIR-CFM	ESP IN. WG	BRAKE H.P.	MOTOR H.P. (QTY)	COOLING COIL				STEAM HEATING COIL				REMARKS
							EADB/WB	LADB/WB	GPM	WTR. P.D. FT. WTR.	EADB	LADB	#/HR	STEAM PRESSURE	
RTAH-1	CSAA057	27,500	4300	2.0	29.5	7.5 (4)	77.8/63.8	53.1/53.0	144	4.1	45.0	75.3	940	5.0	1 - 7
RTAH-2	CSAA080	36,500	5700	2.0	37.3	9.5 (4)	78.6/64.3	53.1/53.0	202	1.0	45.0	75.0	1247	5.0	1 - 7

1. ENTERING CHILLED WATER TEMPERATURE SHALL BE 45°F AND THE WATER TEMPERATURE RISE SHALL BE 10°F.

2. STEAM PRESSURE SHALL BE 5.0 PSI.

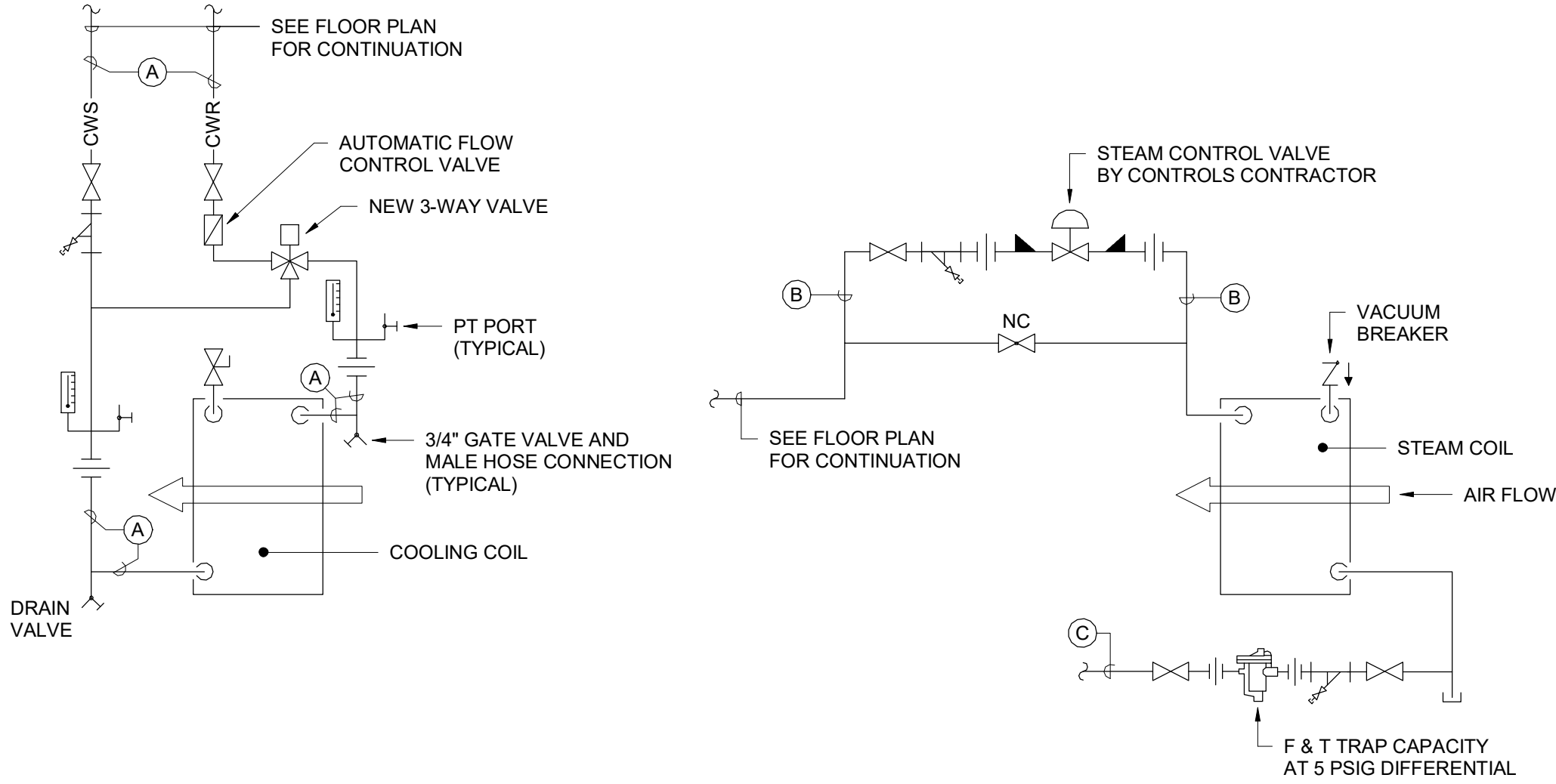
3. PROVIDE MIXING BOX AND FILTER SECTION WITH TWO INCH MERV 13 FILTERS, 2 EXTRA SETS OF FILTERS, AND WITH TRAQ DAMPER MEASURING STATIONS FOR RETURN AND OUTSIDE AIR.

4. STEAM COIL SHALL BE IN THE PREHEAT POSITION.

5. FAN SECTION TO BE INTERNALLY ISOLATED WITH DIRECT DRIVE PLENUM FANS AND EXTENDED LUBE LINES.

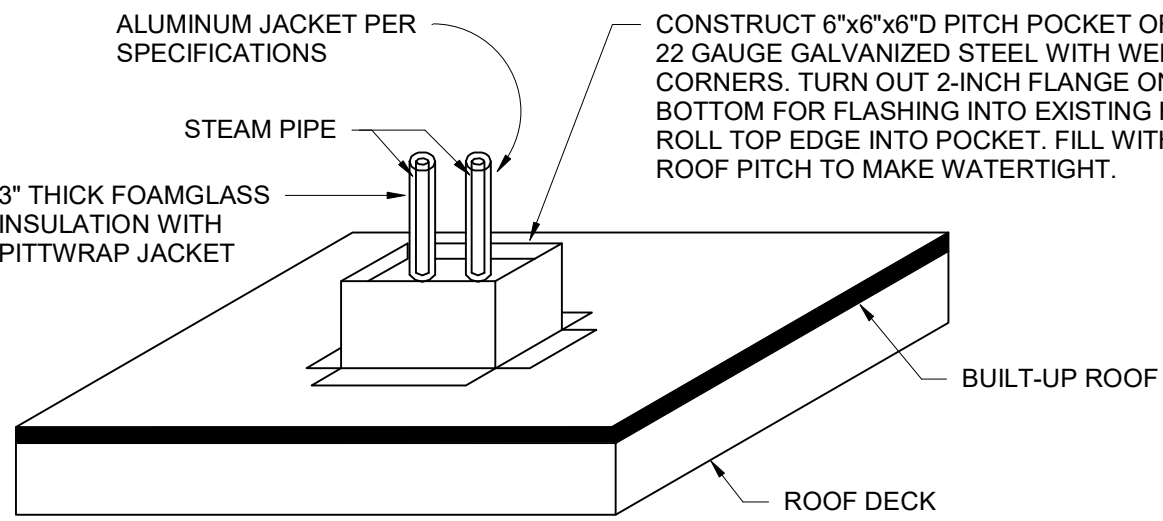
6. FURNISH HAND/OFF/AUTO VARIABLE FREQUENCY DRIVE AND UNIT MOUNTED DISCONNECTS FOR SINGLE POINT CONNECTIONS.

7. AIR HANDLER TO BE HORIZONTAL DRAW THRU. CONFIGURATION SHALL BE MIXING & FILTER/STEAM COIL/ACCESS/CW COIL/ACCESS/FAN.

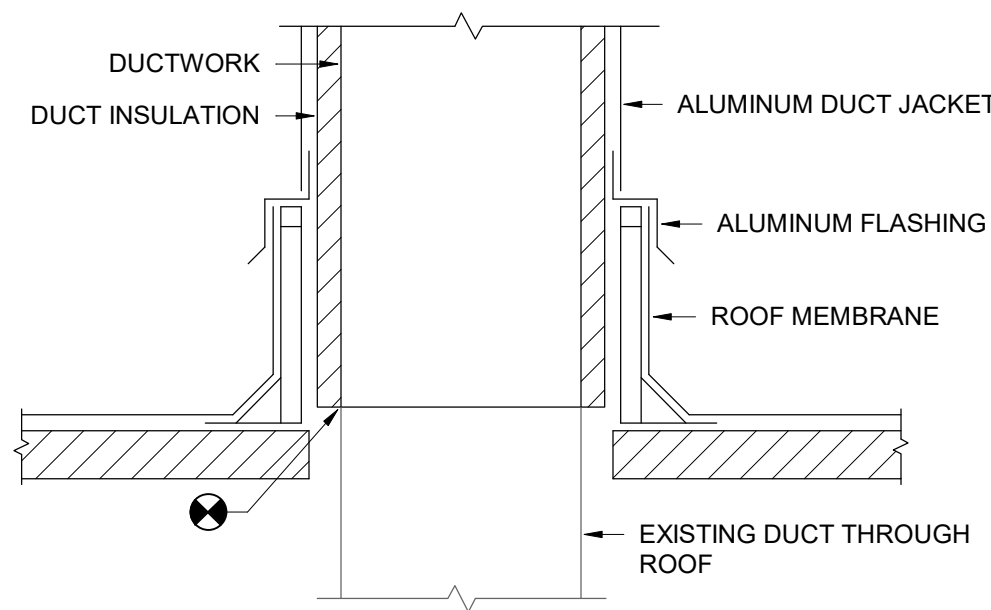


UNIT NO.	SIZES	
	COOLING COIL	STEAM COIL
	(A)	(B) (C)
RTAH-1	2"	1"
RTAH-2	3"	1 1/4"

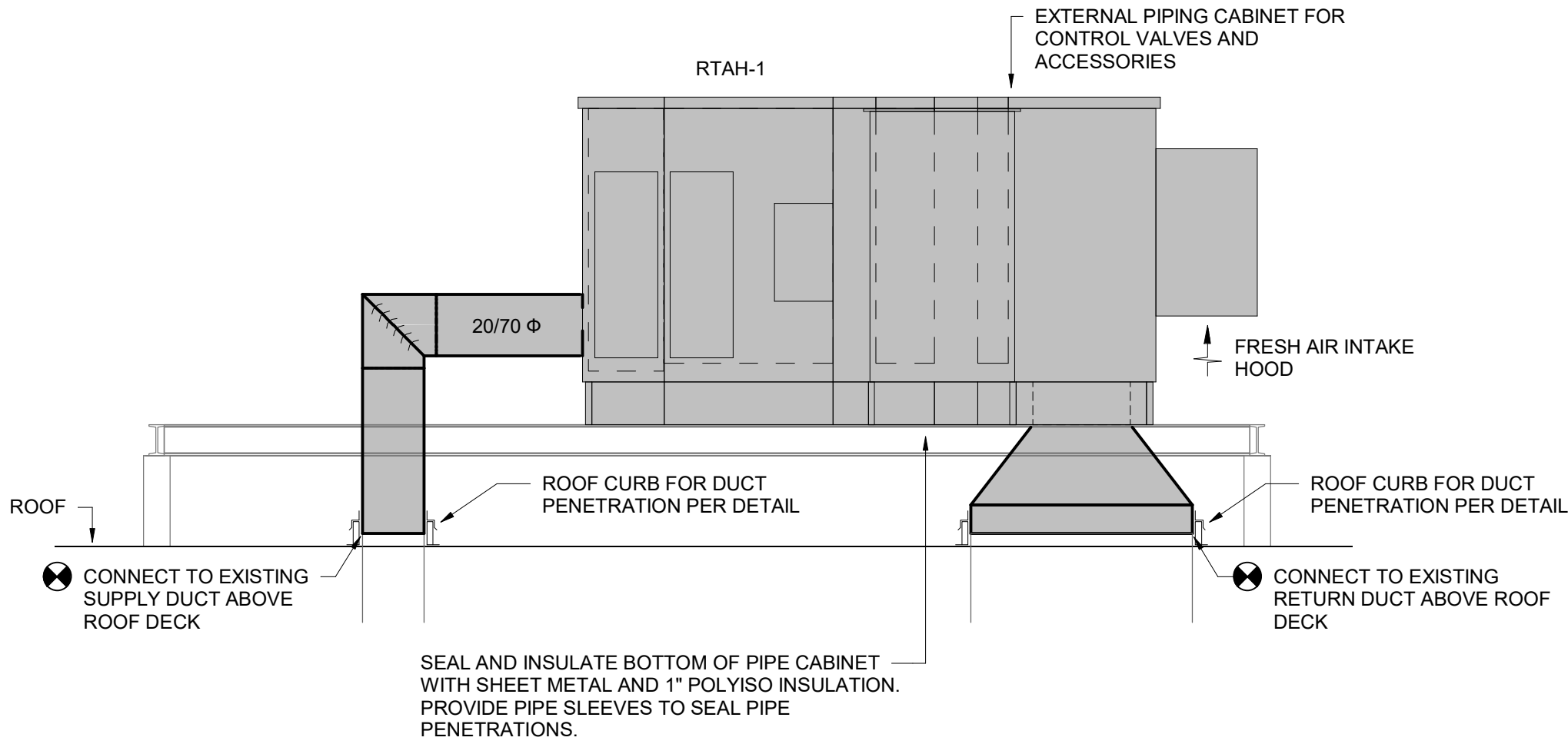
COIL PIPING DETAILS
NO SCALE



ROOF PENETRATION DETAIL
NO SCALE



DUCT CURB DETAIL
NO SCALE



SECTION 1
M2 1/4" = 1'-0"

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2018 INTERNATIONAL MECHANICAL CODE, 2009 INTERNATIONAL ENERGY CONSERVATION CODE, AND 2006 SMACNA HVAC DUCT CONSTRUCTION STANDARD. ALL LOCAL CODES OR REQUIREMENTS STILL APPLY.
2. VISIT SITE PRIOR TO BIDDING. THIS CONTRACTOR SHALL DETERMINE DIFFICULTY OF INSTALLATION AND REFLECT THIS IN HIS BIDDING.
3. DO NOT SCALE DRAWINGS. SEE ARCHITECTURAL DRAWINGS AND REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF DOORS, WINDOWS, AIR DISTRIBUTION, ETC.
4. DO NOT SCALE DRAWINGS. THIS CONTRACTOR SHALL VERIFY ALL EXISTING ITEMS AND LOCATIONS IN THE FIELD.
5. ALL PIPING AND DUCTWORK LOCATIONS SHALL BE COORDINATED WITH WORK UNDER OTHER DIVISIONS OF THE SPECIFICATIONS TO AVOID INTERFERENCE.
6. THIS CONTRACTOR SHALL COORDINATE STEEL OPENINGS AND EQUIPMENT SUPPORT WITH STEEL SHOP DRAWINGS TO CONFIRM DIMENSIONS MATCH WITH EQUIPMENT SUPPLIED.
7. ALL DUCTWORK INSULATION SHALL BE RUN CONTINUOUSLY THROUGH FLOORS, ROOFS AND PARTITIONS.
8. ALL MECHANICAL ITEMS EXTENDING THROUGH WALLS AND ROOF SHALL BE FLASHED AND COUNTERFLASHED. COORDINATE WITH ROOFING CONTRACTOR.
9. EXTEND ALL DRAIN LINES TO NEAREST ROOF DRAIN OR GUTTER OR AS INDICATED - SO ROUTED AS TO AVOID INTERFERENCE WITH PASSAGEWAYS AND MAINTENANCE. DRAINS FROM AIR HANDLING UNITS SHALL BE TRAPPED PER STATIC PRESSURE REQUIREMENTS.
10. MINIMUM PIPE SIZE SHALL BE 3/4-INCH UNLESS INDICATED OTHERWISE.
11. ALL PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE SPECIFICATIONS AND FURTHER SUPPORTS OR HANGERS SHALL BE PROVIDED TO PREVENT WEIGHT OF PIPING BEING PLACED ON EQUIPMENT.
12. ALL DUCTWORK SPECIFIED TO BE LINED SHALL BE INCREASED IN SIZE TO ALLOW FOR LINER.
13. FABRIC DUCT SHALL BE HUNG WITH THE THREE POINT SUSPENSION SYSTEM TO KEEP DUCTS INFLATED WHEN UNITS ARE NOT IN OPERATION.
14. TURNING VANES SHALL BE PROVIDED AT ALL DUCTWORK ELBOWS AND CHANGES OF DIRECTION TO PROVIDE EVEN FLOW THROUGH DUCT SYSTEM.
15. SPACE ABOVE CEILING TO BE USED AS RETURN AIR PLENUM WHERE DUCT IS NOT INDICATED ABOVE RETURN AIR GRILLES.
16. ALL OPEN END DUCTS SHALL HAVE 1/4-INCH MESH GALVANIZED SCREEN IN REMOVABLE FRAME.
17. PROVIDE FOR ACCESS TO ALL EQUIPMENT REQUIRING CLEANING OR ADJUSTMENT PER MANUFACTURER'S INSTRUCTIONS. PROVIDE FULL SPACE FOR COIL REMOVAL AND REPLACEMENT FOR ALL HOT WATER AND CHILLED WATER AIR HANDLING UNITS.
18. INSTALL ALL VAV BOXES WITHIN 24" OF CEILING TO ALLOW FOR SERVICE ACCESS.
19. THIS CONTRACTOR SHALL PROVIDE ALL ITEMS OF MISCELLANEOUS STEEL AS REQUIRED FOR INSTALLATION OF ALL MECHANICAL ITEMS.
20. THIS CONTRACTOR SHALL DO ALL CONTROL WIRING. DIVISION 26 WILL DO ALL POWER WIRING. ALL WIRING SHALL BE IN ACCORDANCE WITH NATIONAL ELECTRIC CODE. CONTROL WIRING SHALL BE CONCEALED WITHIN WALL AND ALL CONTROL WIRING SHALL BE ROUTED IN EMT CONDUIT. DUCT DETECTORS PROVIDED BY DIVISION 26 SHALL BE INSTALLED BY DIVISION 23. POWER WIRING AND FIRE ALARM CONNECTIONS SHALL BE BY DIVISION 26. CONTROL WIRING FOR UNIT SHUTDOWN AND SMOKE DAMPER CONTROL SHALL BE BY DIVISION 23.
21. LOCATE ALL SPACE CONTROL INSTRUMENTS 4'-0" ABOVE FINISHED FLOOR. COORDINATE LOCATIONS WITH ARCHITECTURAL ELEVATIONS TO AVOID ITEMS INCLUDING BUT NOT LIMITED TO CUSTOM FINISHES, FIXED CASEWORK, FURNITURE, AND DOOR SWINGS. IN THE EVENT OF CONFLICTS IN THE FIELD, THE CONTRACTOR SHALL BRING THIS TO THE ATTENTION OF THE A/E FOR FINAL APPROVAL OF LOCATION.
22. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR ANY NECESSARY DISMANTLING OF EQUIPMENT TO BE REMOVED.
23. ITEMS REMOVED UNDER THIS CONTRACT SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF PROPERLY.
24. THE HVAC SYSTEMS SHALL NOT BE OPERATED DURING HEAVY CONSTRUCTION OPERATIONS INCLUDING MASONRY, GYPSUM BOARD SANDING, HEAVY CLEANUP ACTIVITIES, OR OTHER ACTIVITIES THAT CREATE AIRBORNE PARTICLES OR DEBRIS. ALL SYSTEMS SHALL BE CLEAN OF CONSTRUCTION DEBRIS, DUST AND DIRT AT FINAL COMPLETION. DUCT CLEANING AND UNIT/COIL CLEANING SHALL BE PERFORMED IF REQUIRED. IF EQUIPMENT OPERATES DURING CONSTRUCTION PROVIDE FILTER MEDIA OVER ALL RETURN GRILLES AND RETURN DUCT OPENINGS TO PROTECT DUCTS AND EQUIPMENT.

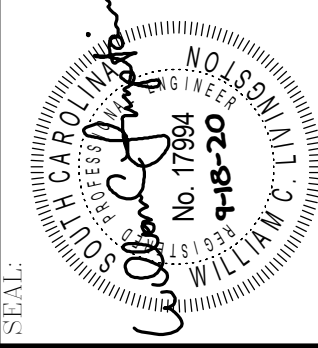
LEGEND

SYMBOL	DESCRIPTION
↔-CHWS↔	CHILLED WATER SUPPLY LINE
↔-CHWR↔	CHILLED WATER RETURN LINE
↔-HWS↔	HOT WATER SUPPLY LINE
↔-HWR↔	HOT WATER RETURN LINE
↔-MPS↔	MEDIUM PRESSURE STEAM LINE
↔-CR↔	CONDENSATE RETURN LINE
↔-O-↔	PIPE TURNS TO, AWAY
⊠	RECTANGULAR SUPPLY DUCTWORK
⊞	OVAL SUPPLY DUCTWORK
⊡	RETURN AND FRESH AIR DUCTWORK
48x24	48"x24" RECTANGULAR DUCT
48/24	48"x24" OVAL DUCT
AFF	ABOVE FINISHED FLOOR
⊙	CONNECTION POINT OF NEW TO EXISTING



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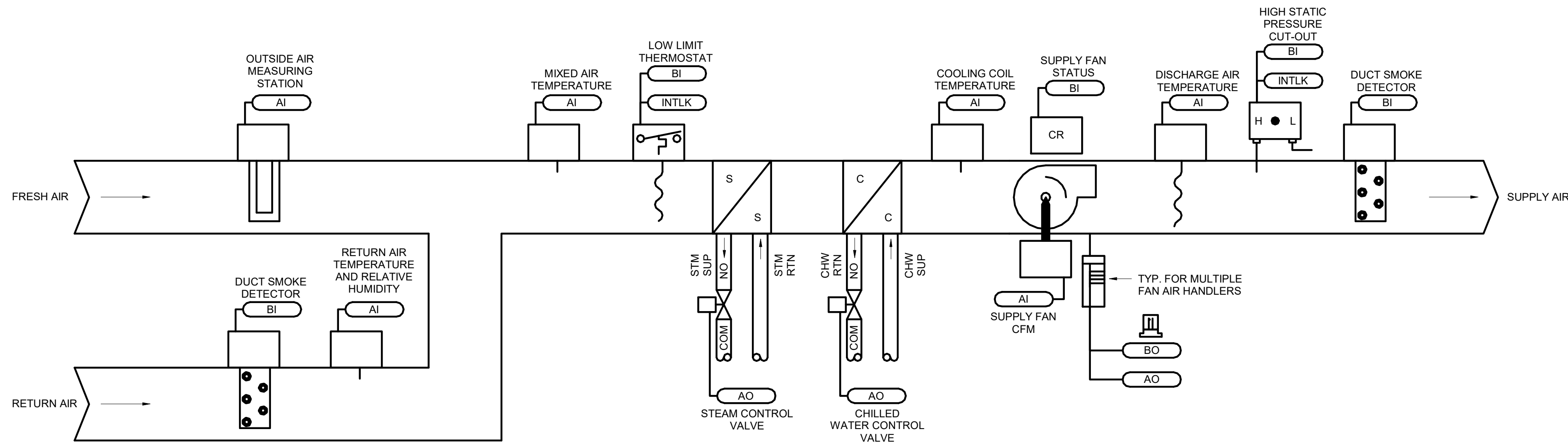
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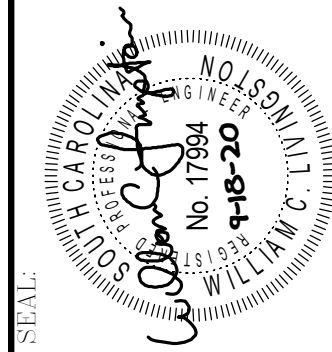
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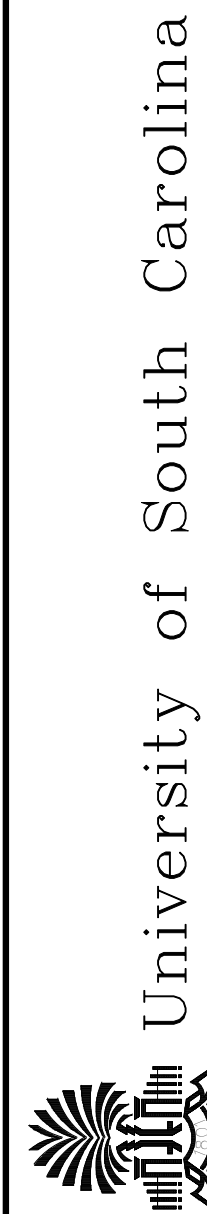
VAV AIR HANDLER CONTROL DIAGRAM
NO SCALE

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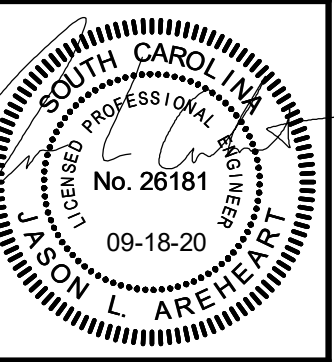
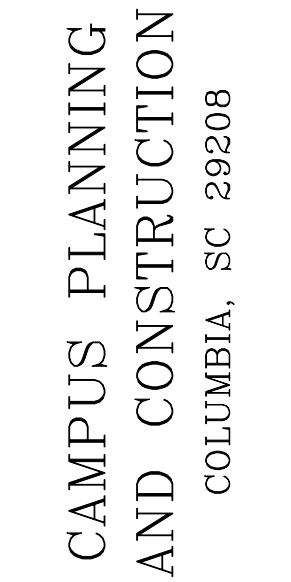
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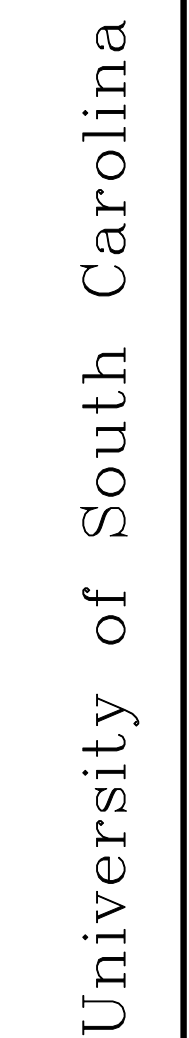
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- 1 DISCONNECT EXISTING 480V CIRCUITS FROM EXISTING ROOF TOP AIR HANDLERS (RTHP). EXISTING BREAKERS IN EXISTING PANEL "DP4", EXISTING TRANSFORMERS #1 & #2, EXISTING 70 AMP ENCLOSED CIRCUIT BREAKERS AND EXISTING ASSOCIATED CONDUCTORS/CONDUITS SHALL BE REUSED.
- 2 REMOVE EXISTING 100 AMP DISCONNECT SWITCHES ON ROOF AND REPLACE WITH 50 AMP, 3 POLE (480V) ENCLOSED CIRCUIT BREAKERS IN NEMA 3R ENCLOSURE. COORDINATE LOCATION AND CONNECTION TO HVAC UNITS WITH MECHANICAL CONTRACTOR. PROVIDE ADDITIONAL CONDUCTORS/CONDUITS FOR FINAL CONNECTIONS. ENCLOSED CIRCUIT BREAKERS SHALL BE GE, SQUARE D, OR EATON; AND HAVE LOCK OUT CAPABILITY.
- 3 DUCT TYPE SMOKE DETECTORS—ELECTRICAL CONTRACTOR SHALL FURNISH; MECHANICAL CONTRACTOR SHALL INSTALL AND WIRE FOR FAN SHUTDOWN; AND ELECTRICAL CONTRACTOR SHALL CONNECT TO EXISTING FIRE ALARM CONTROL PANEL. COORDINATE EXACT LOCATION WITH MECHANICAL CONTRACTOR.

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AIR HANDLER UNIT REPLACEMENT
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