

1 MECHANICAL: FIRST FLOOR PLAN  
1/8" = 1'-0"

No.	REVISION/SUBMISSION	DATE

Mechanical/Electrical/Plumbing Engineer

**GERARD ASSOCIATES**  
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GA21063

Structural Engineer

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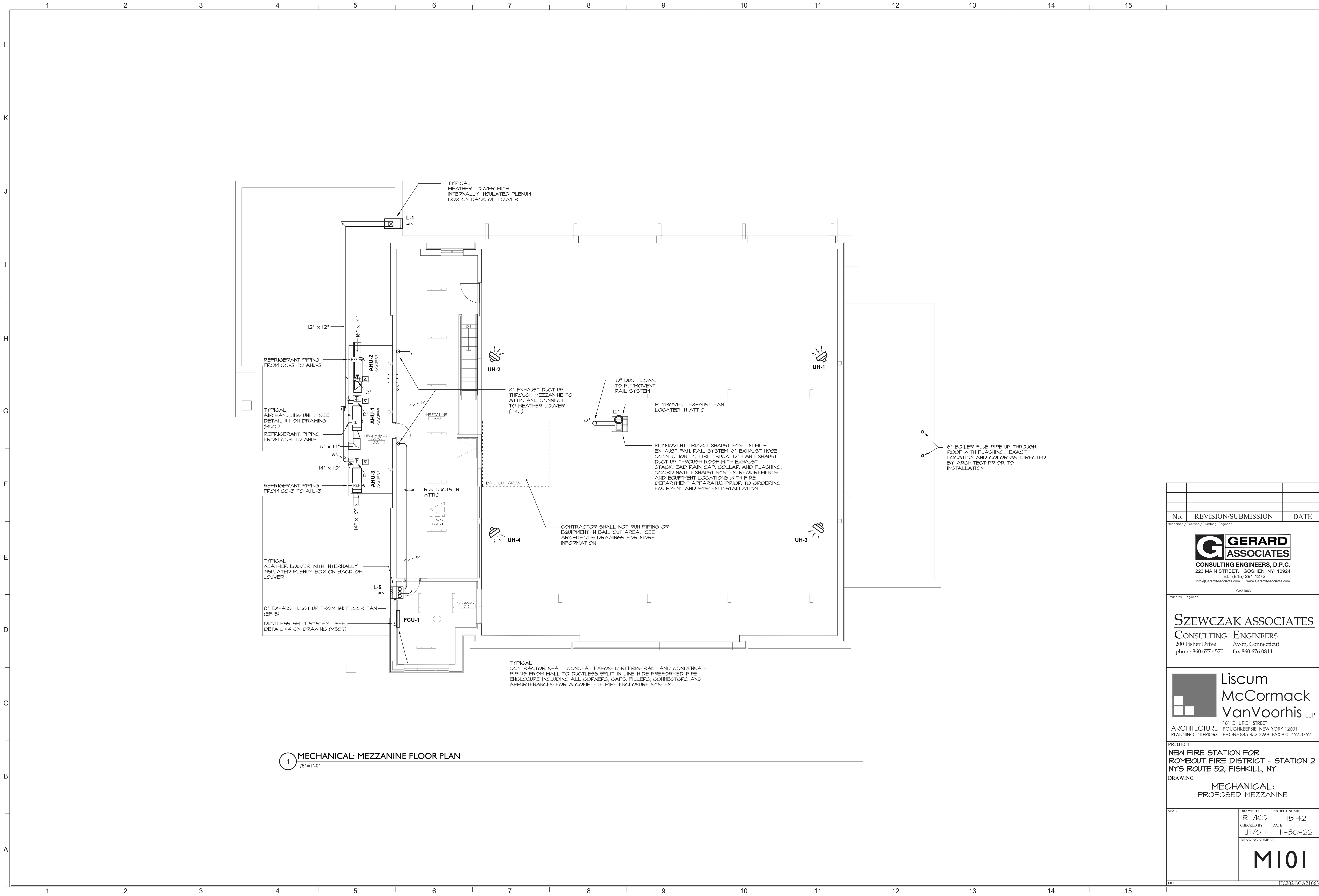
**Liscum McCormack VanVoorhis LLP**  
181 CHURCH STREET  
POUGHKEEPSIE, NEW YORK 12601  
ARCHITECTURE PLANNING INTERIORS PHONE 845-452-2268 FAX 845-452-3752

PROJECT  
NEW FIRE STATION FOR  
ROMBOUT FIRE DISTRICT - STATION 2  
NYS ROUTE 52, FISHKILL, NY

DRAWING  
MECHANICAL:  
PROPOSED FIRST FLOOR PLAN

SEAL	DRAWN BY RL/KC	PROJECT NUMBER 18142
	CHECKED BY JT/GH	DATE 11-30-22
	DRAWING NUMBER <b>M100</b>	

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1 MECHANICAL: MEZZANINE FLOOR PLAN  
1/8" = 1'-0"

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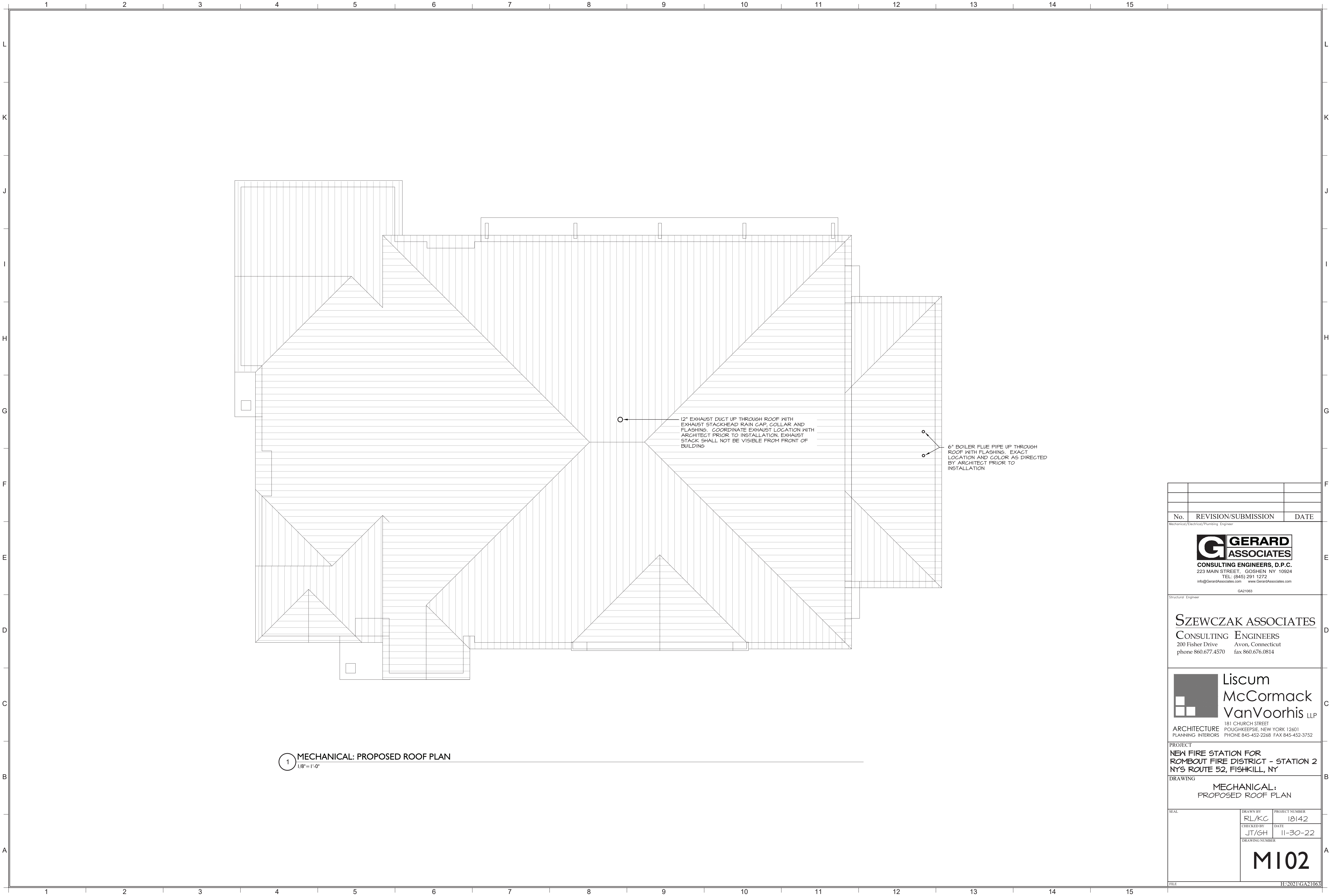
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PROJECT  
NEW FIRE STATION FOR  
ROMBOUT FIRE DISTRICT - STATION 2  
NYS ROUTE 52, FISHKILL, NY

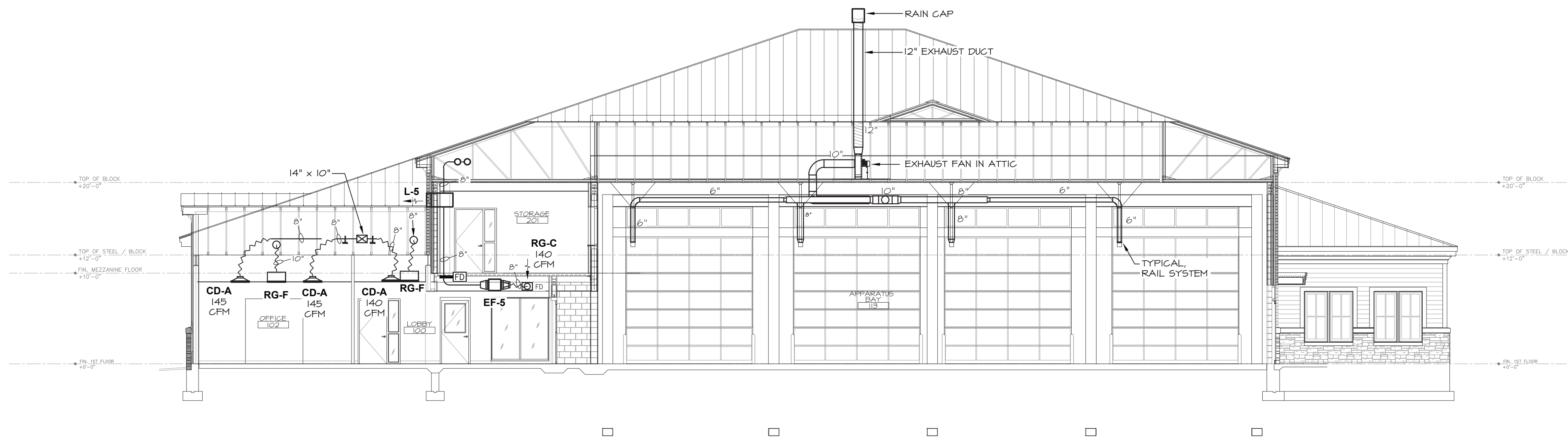
DRAWING  
MECHANICAL:  
PROPOSED MEZZANINE

SEAL	DRAWN BY RL/KC	PROJECT NUMBER 18142
	CHECKED BY JT/GH <th>DATE 11-30-22</th>	DATE 11-30-22
	DRAWING NUMBER <b>M101</b>	

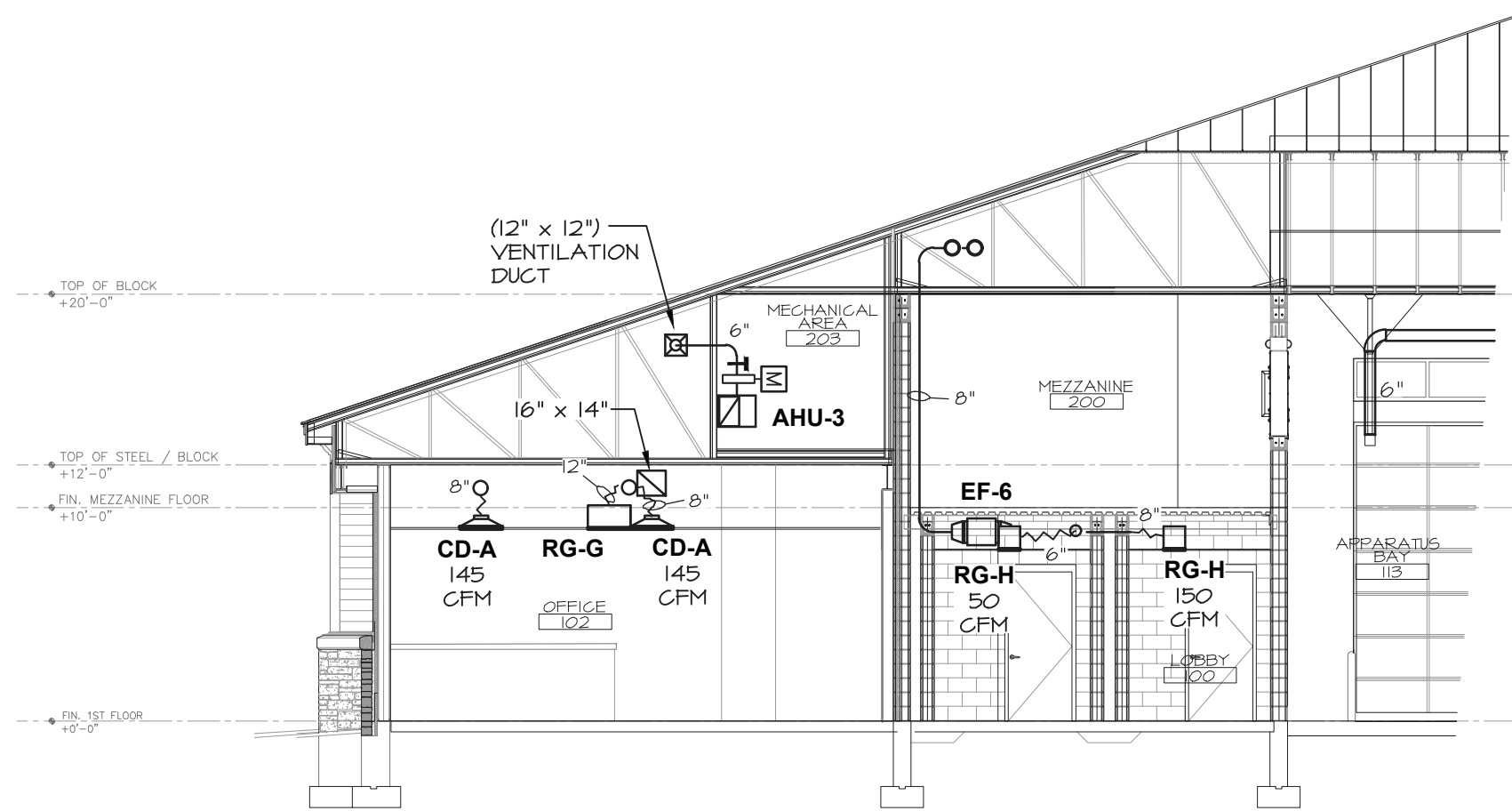
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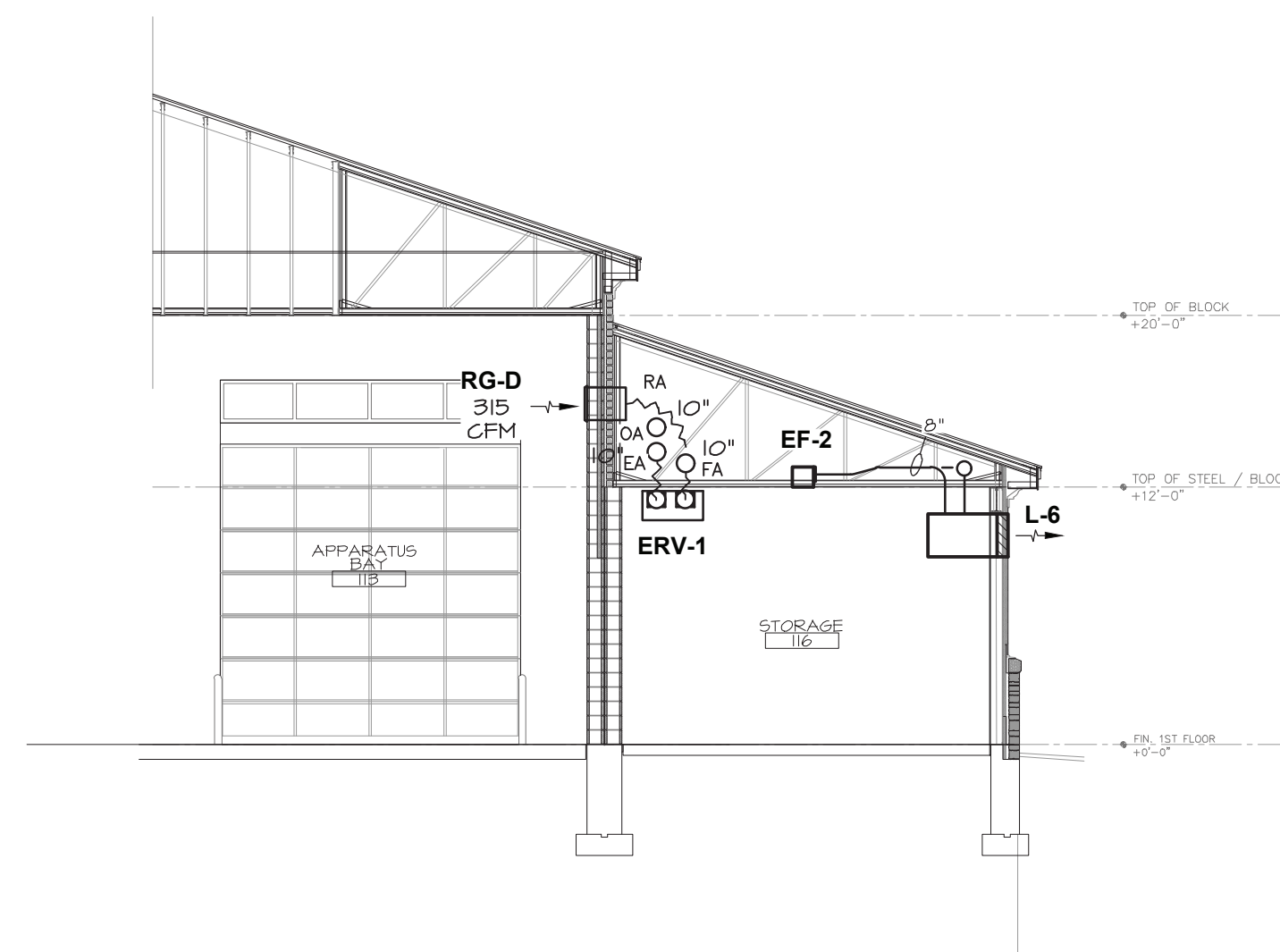
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<small>Mechanical/Electrical/Plumbing Engineer</small>		
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<small>Structural Engineer</small>		
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PROJECT NEW FIRE STATION FOR ROMBOUT FIRE DISTRICT - STATION 2 NYS ROUTE 52, FISHKILL, NY		
DRAWING MECHANICAL: PROPOSED ROOF PLAN		
SEAL	DRAWN BY RL/KC CHECKED BY JT/GH DRAWING NUMBER	PROJECT NUMBER 18142 DATE 11-30-22
M102		
FILE	H:\2021\GA21063	



1 MECHANICAL: SECTION A  
1/8" = 1'-0"

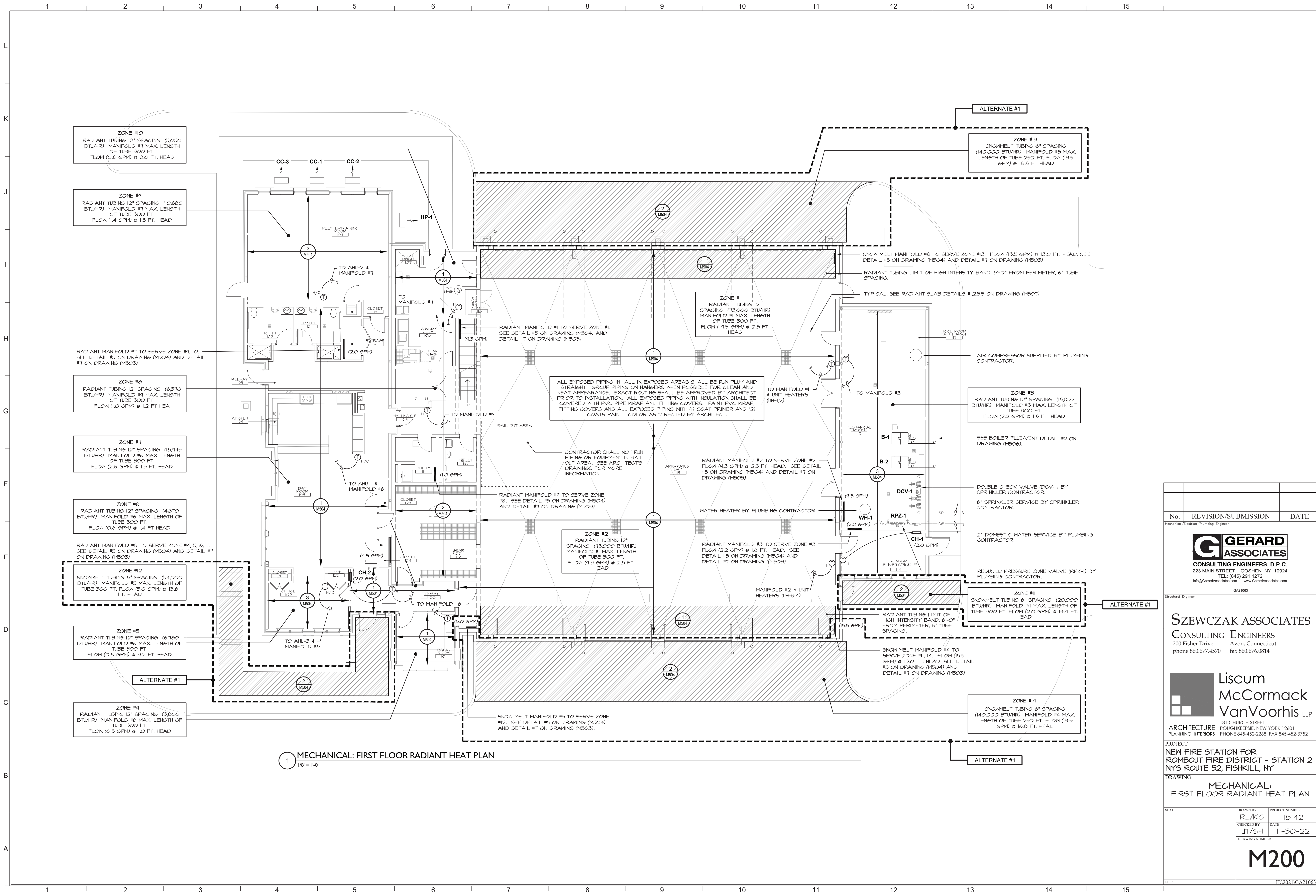


2 MECHANICAL: SECTION B  
2/8" = 1'-0"



3 MECHANICAL: SECTION C  
3/8" = 1'-0"

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PROJECT <b>NEW FIRE STATION FOR            ROMBOUT FIRE DISTRICT - STATION 2            NYS ROUTE 52, FISHKILL, NY</b>		
DRAWING <b>MECHANICAL:            PROPOSED SECTIONS</b>		
SEAL	DRAWN BY RL/KC CHECKED BY JT/GH DRAWING NUMBER <b>M103</b>	PROJECT NUMBER 18142 DATE 11-30-22
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1 MECHANICAL: FIRST FLOOR RADIANT HEAT PLAN  
1/8" = 1'-0"

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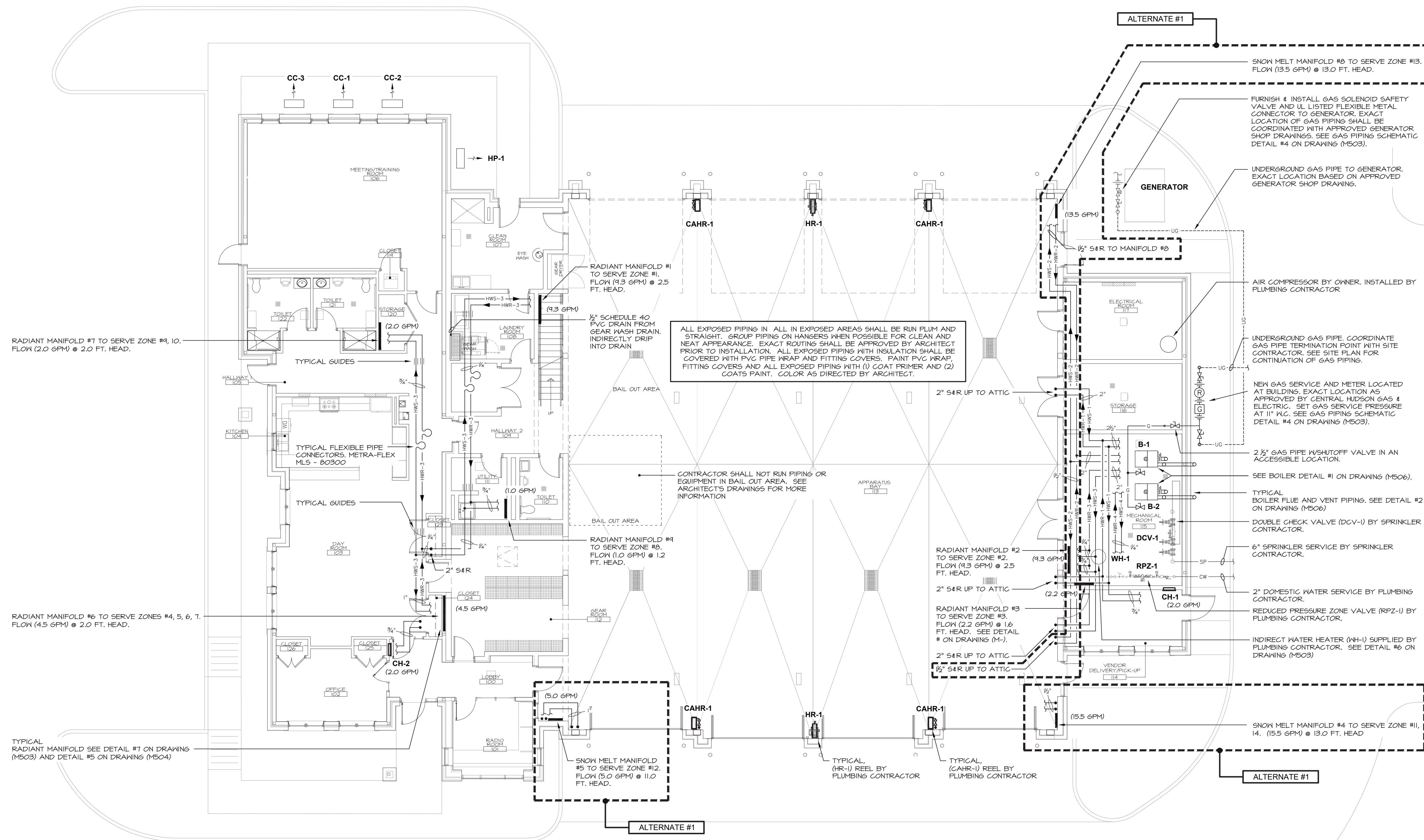
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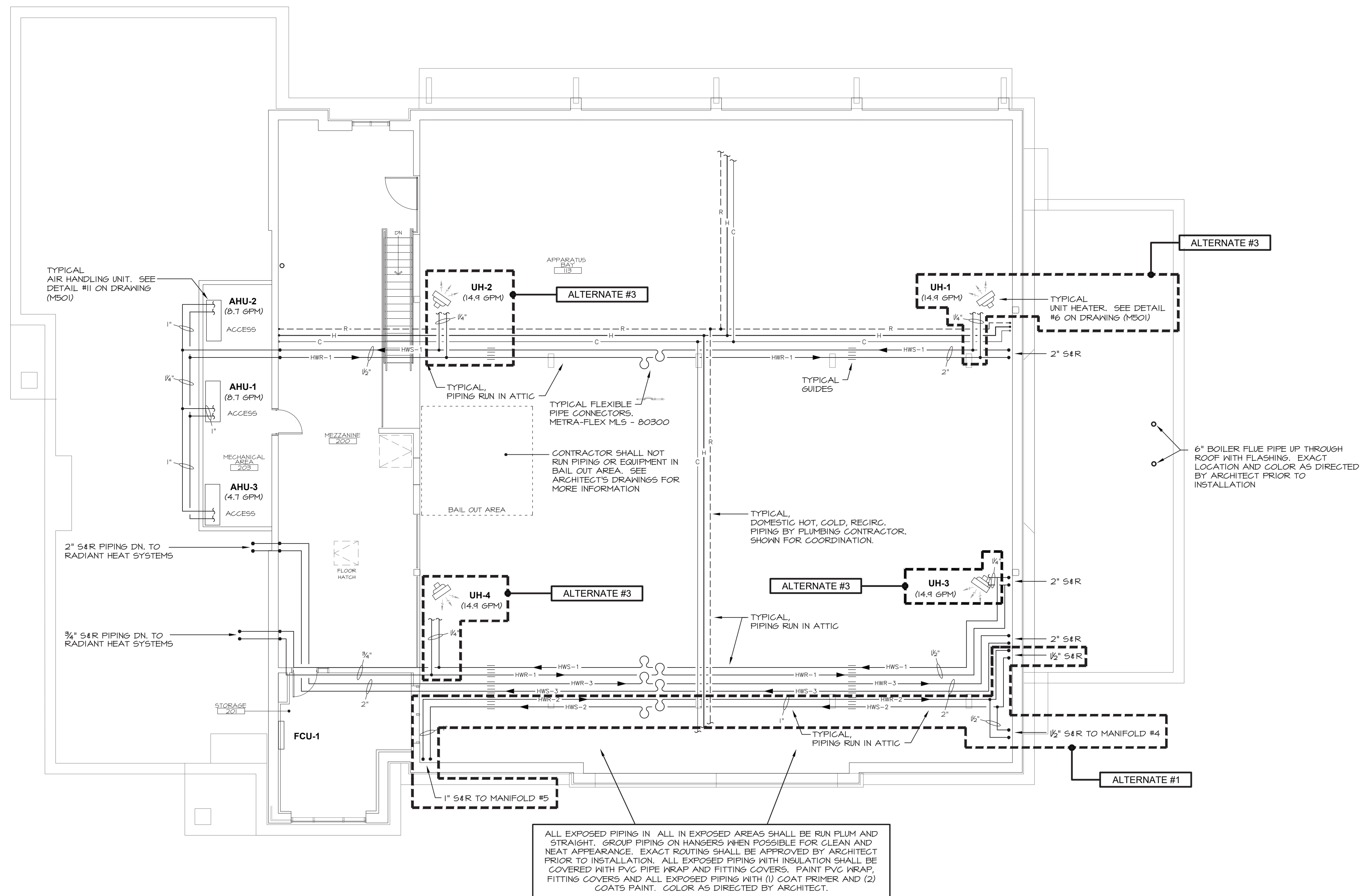
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PROJECT  
NEW FIRE STATION FOR  
ROMBOUT FIRE DISTRICT - STATION 2  
NYS ROUTE 52, FISHKILL, NY

DRAWING  
MECHANICAL:  
FIRST FLOOR RADIANT HEAT PLAN

SEAL	DRAWN BY RL/KC	PROJECT NUMBER 18142
	CHECKED BY JT/GH	DATE 11-30-22
	DRAWING NUMBER	
	<b>M200</b>	
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1 MECHANICAL: MEZZANINE HYDRONIC PIPING PLAN  
1/8" = 1'-0"

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Mechanical/Electrical/Plumbing Engineer

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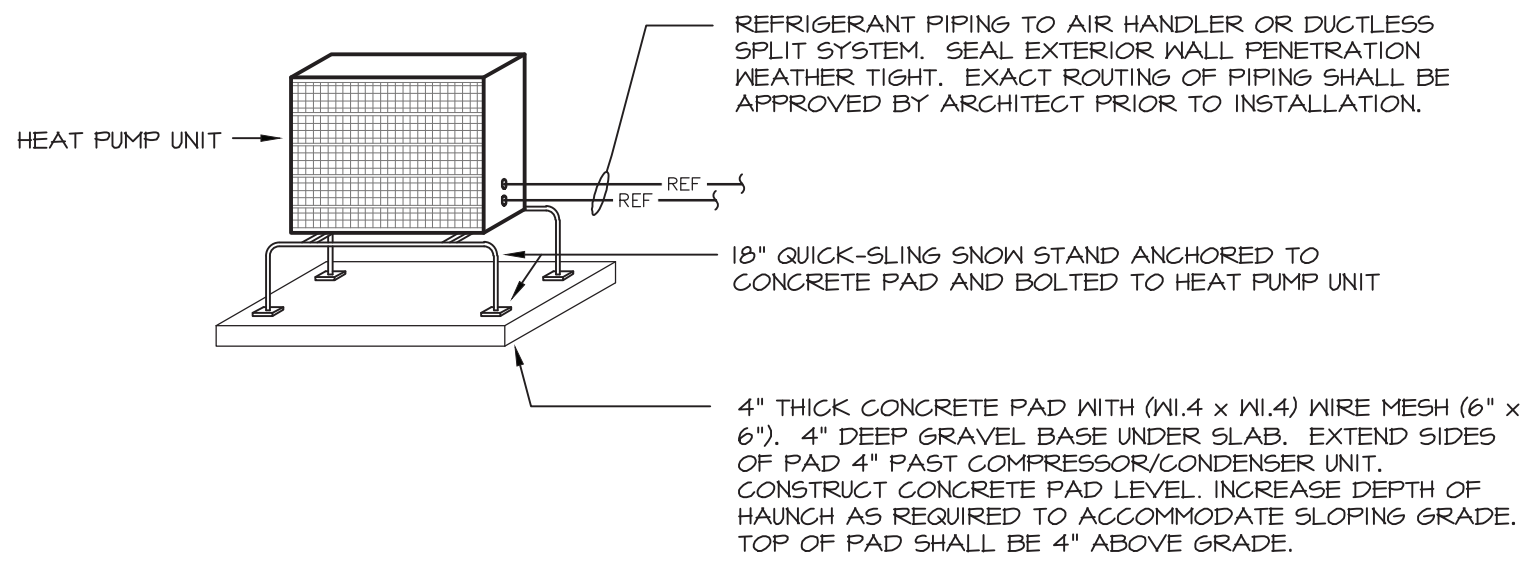
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PROJECT  
NEW FIRE STATION FOR  
ROMBOUT FIRE DISTRICT - STATION 2  
NYS ROUTE 52, FISHKILL, NY

DRAWING  
MECHANICAL:  
MEZZANINE HYDRONIC PIPING PLAN

SEAL	DRAWN BY RL/KC	PROJECT NUMBER 18142
	CHECKED BY JT/GH <td>DATE 11-30-22</td>	DATE 11-30-22
	DRAWING NUMBER M301	

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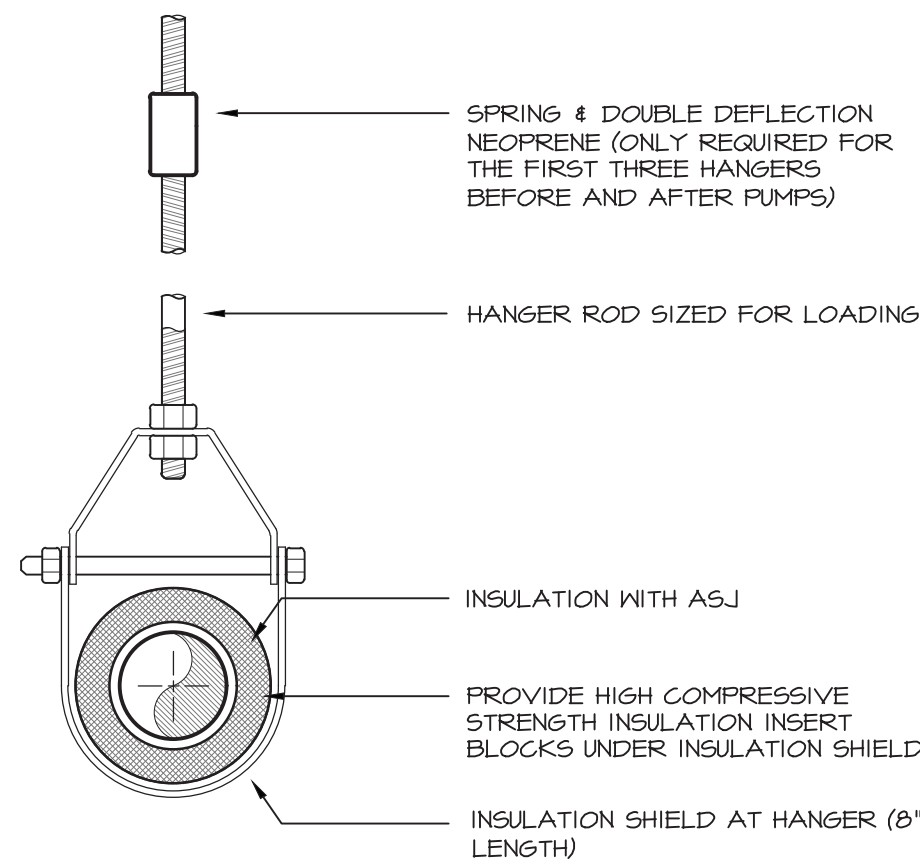


**NOTE:**

REFRIGERANT PIPING SHALL BE COPPER TUBING TYPE ACR HARD DRAWN. WROUGHT COPPER FITTINGS, SILVER BRAZE JOINTS. SIZE REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATIONS BASED ON ELEVATION AND LENGTH. INSULATE SUCTION LINE WITH 1/2" ELASTOMETRIC CELLULAR FOAM. CONCEAL REFRIGERATION PIPING ABOVE CEILING OR IN SOFFITS. SEAL EXTERIOR WALL PENETRATION WEATHER TIGHT. COLOR AS DIRECTED BY ARCHITECT.

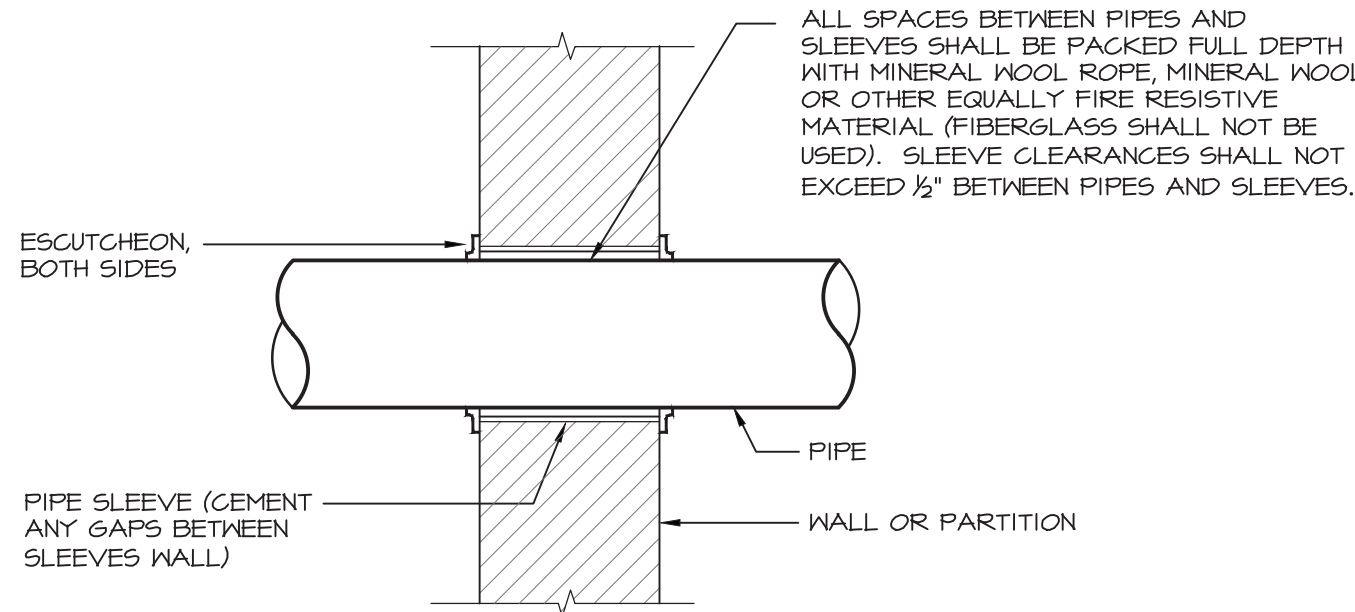
**1 HEAT PUMP UNIT DETAIL - (CC-1, 2, 3 - HP-1)**

NOT TO SCALE



**2 PIPE HANGER DETAIL**

NOT TO SCALE

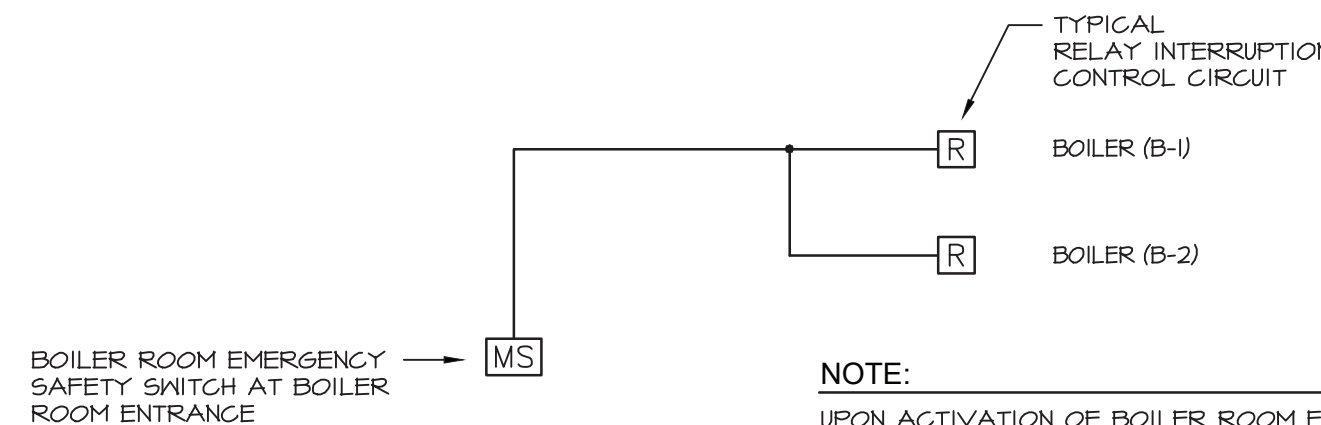


**NOTE:**

THIS DETAIL ALSO APPLICABLE TO INTERIOR NON-WATER PROOF FLOOR CONSTRUCTION. FOR WATER PROOF FLOOR CONSTRUCTION AND OTHER CONSTRUCTION - SEE SPECIFICATIONS.

**3 FIRE RATED PARTITION AND WALL PENETRATION DETAIL**

NOT TO SCALE

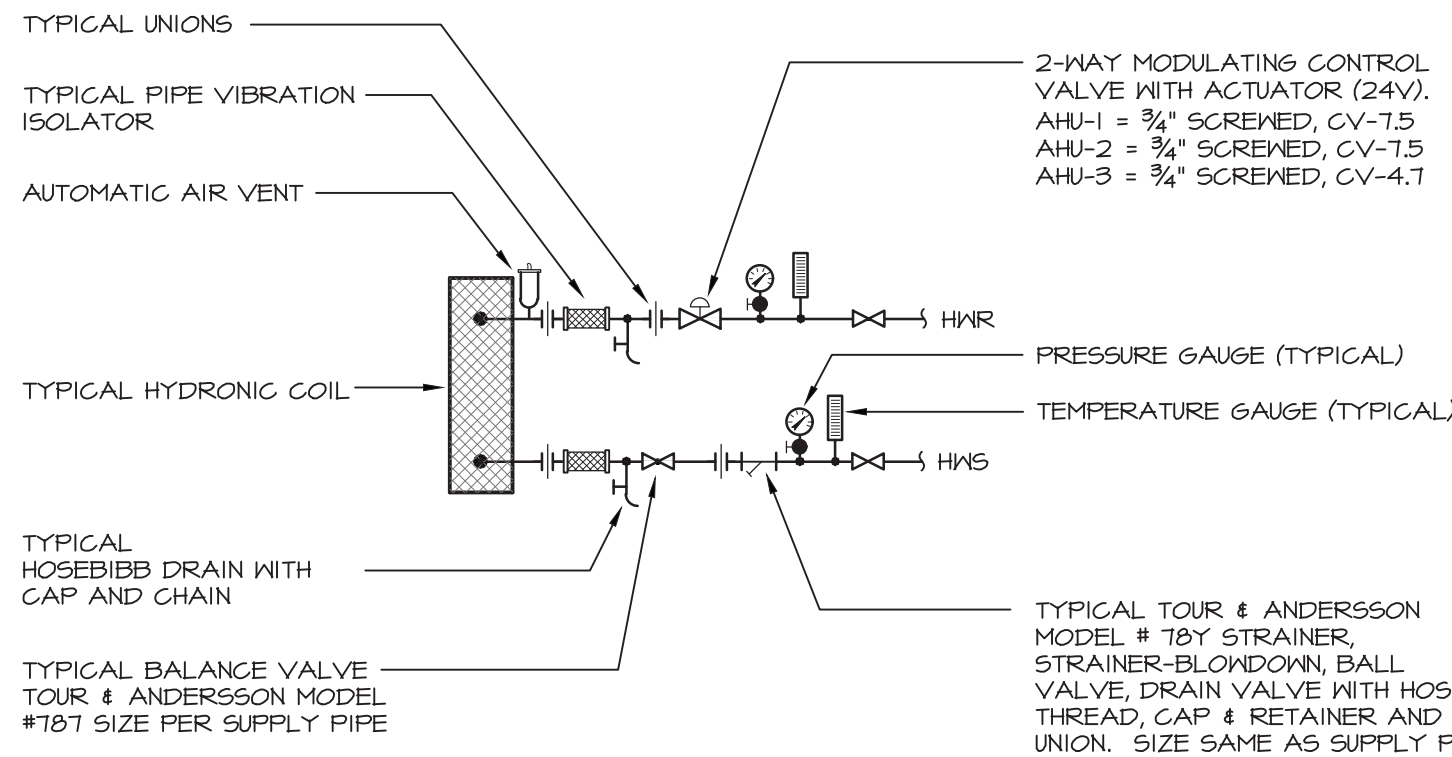


**NOTE:**

UPON ACTIVATION OF BOILER ROOM EMERGENCY SAFETY SWITCH, POWER TO THE CONTROL CIRCUIT RELAY SHALL BE INTERRUPTED, DE-ENERGIZING THE PRIMARY CONTROL CIRCUIT TO THE BOILERS.

**4 BOILER ROOM EMERGENCY SHUTDOWN STATION SCHEMATIC**

NOT TO SCALE

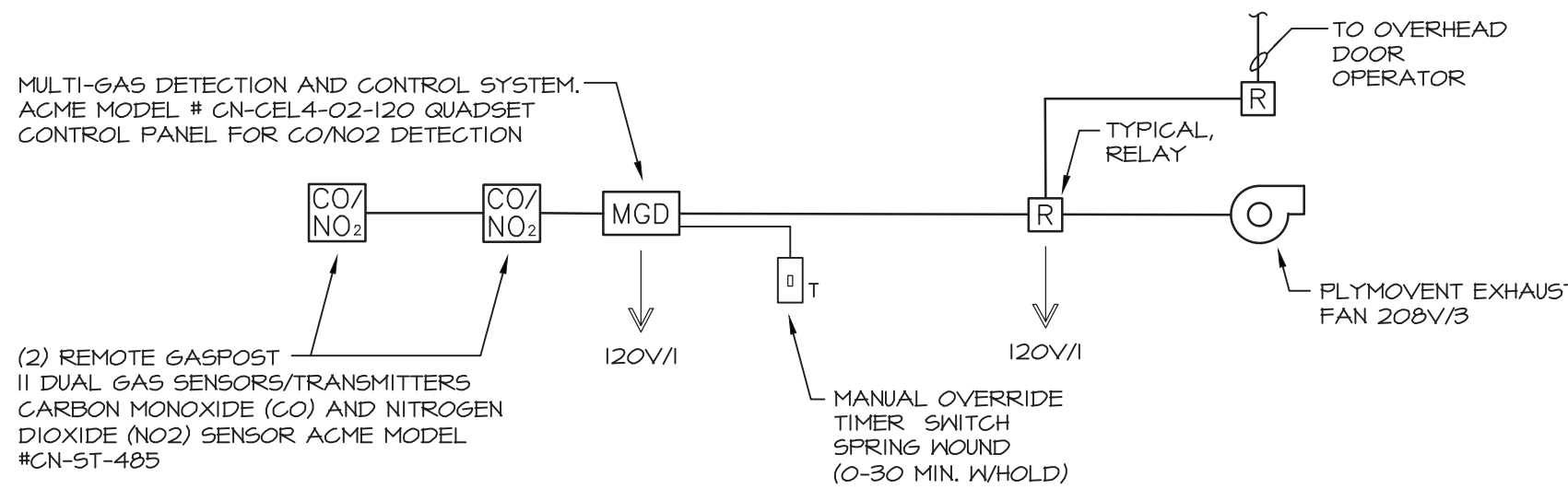


**NOTES:**

1. LOCATE ALL COIL UNIONS CLOSE TO, AND CLEAR OF, COIL. ARRANGE PIPING SO AS NOT TO NOT INTERFERE WITH COIL REMOVAL.
2. DETAIL IS TYPICAL FOR AIR HANDLING UNITS.
3. PROVIDE FLEXIBLE CONNECTION FOR THOSE COILS MOUNTED IN UNITS ON VIBRATION ISOLATORS.

**5 AIR HANDLER HYDRONIC COIL CONNECTION DETAIL**

NOT TO SCALE

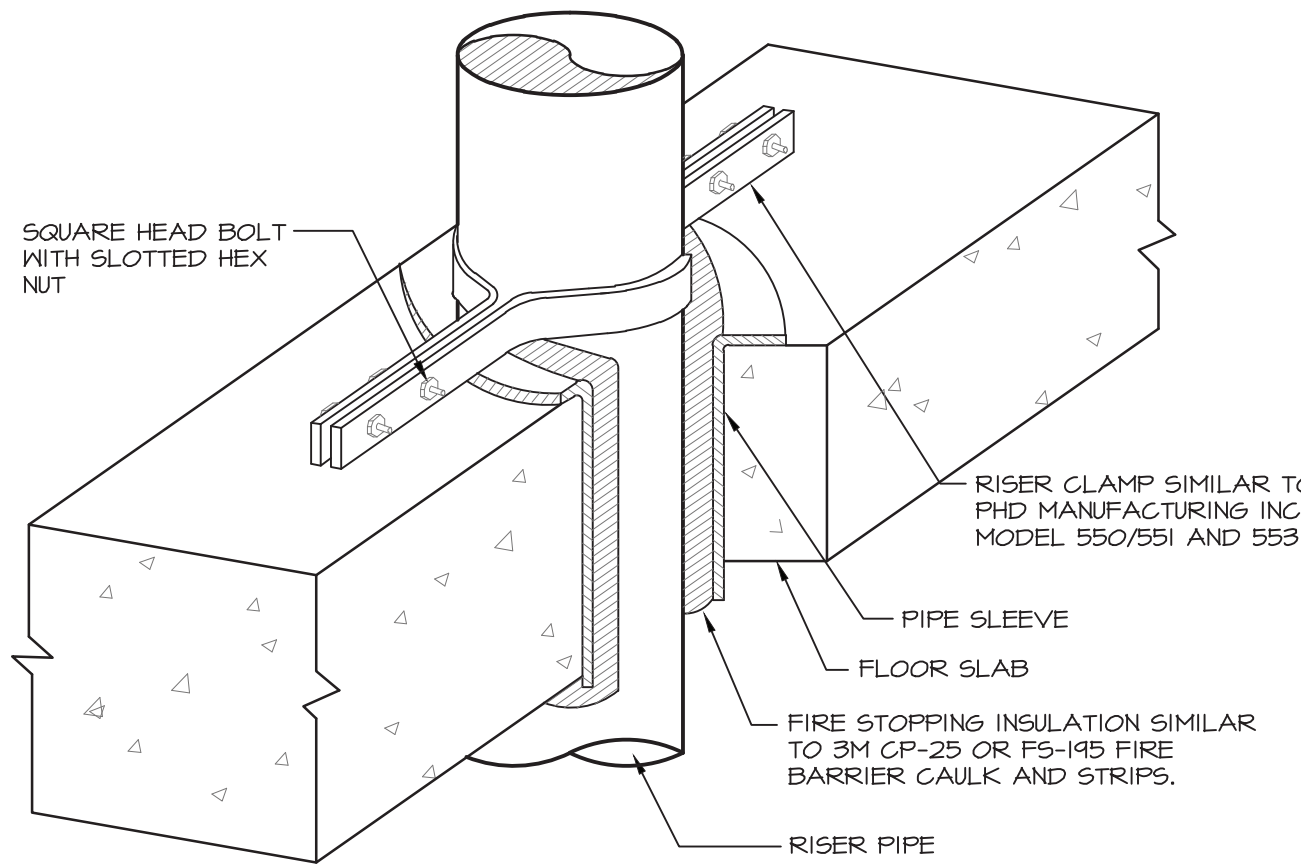


**NOTES:**

1. CONTRACTOR SHALL FURNISH AND INSTALL A MULTI-GAS DETECTION CONTROL SYSTEM WITH REMOTE DUAL GAS SENSORS/TRANSMITTERS CARBON MONOXIDE (CO) AND NITROGEN DIOXIDE (NO2) AND MANUAL OVERRIDE TIMER SWITCH, INCLUDING ALL CONDUITS, CONDUCTORS, RELAYS, JUNCTION BOXES, SENSORS, APPURTENANCES AND ALL NECESSARY EQUIPMENT TO MAKE SYSTEMS COMPLETE AND OPERABLE.
2. CONTRACTOR SHALL HIRE MANUFACTURER'S REPRESENTATIVE TO FURNISH COMPLETE EQUIPMENT, WIRING DIAGRAMS WITH SYSTEM OPERATING DESCRIPTION FOR ENGINEER'S APPROVAL. MANUFACTURER'S REPRESENTATIVE SHALL INSPECT SYSTEM INSTALLATION AND TEST ALL SENSORS AND OPERATION OF SYSTEM. SUBMIT REPORT ON FINDINGS TO ENGINEER FOR REVIEW.
3. ELEVATION OF SENSORS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND GENERALLY ACCEPTED INDUSTRY STANDARDS.

**6 CARBON MONOXIDE (CO)/NITROGEN DIOXIDE (NO2) FUEL DETECTION SYSTEM**

NOT TO SCALE



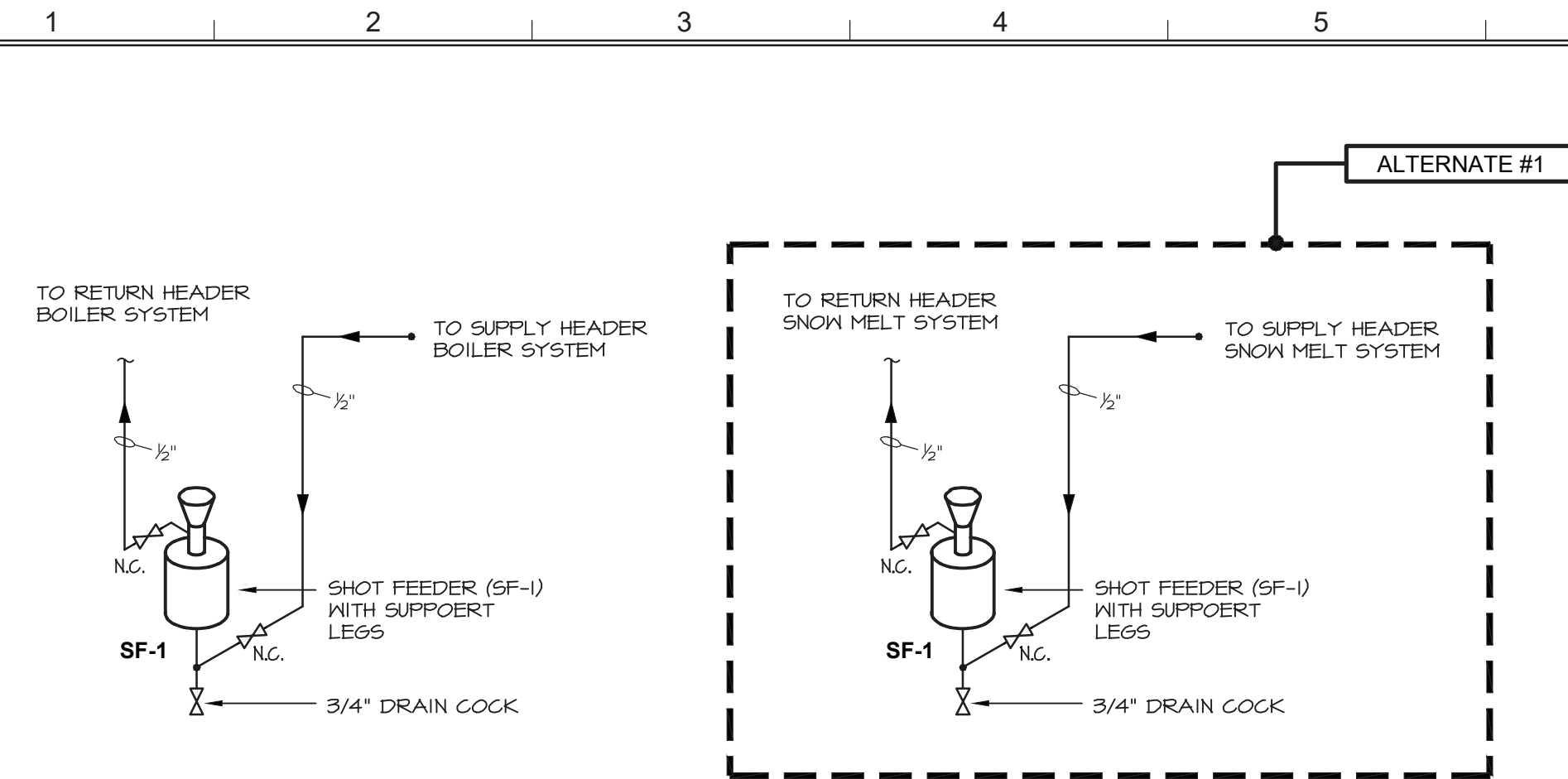
**NOTES:**

- 1) HOLES FOR PENETRATIONS SHALL BE CORE DRILLED.

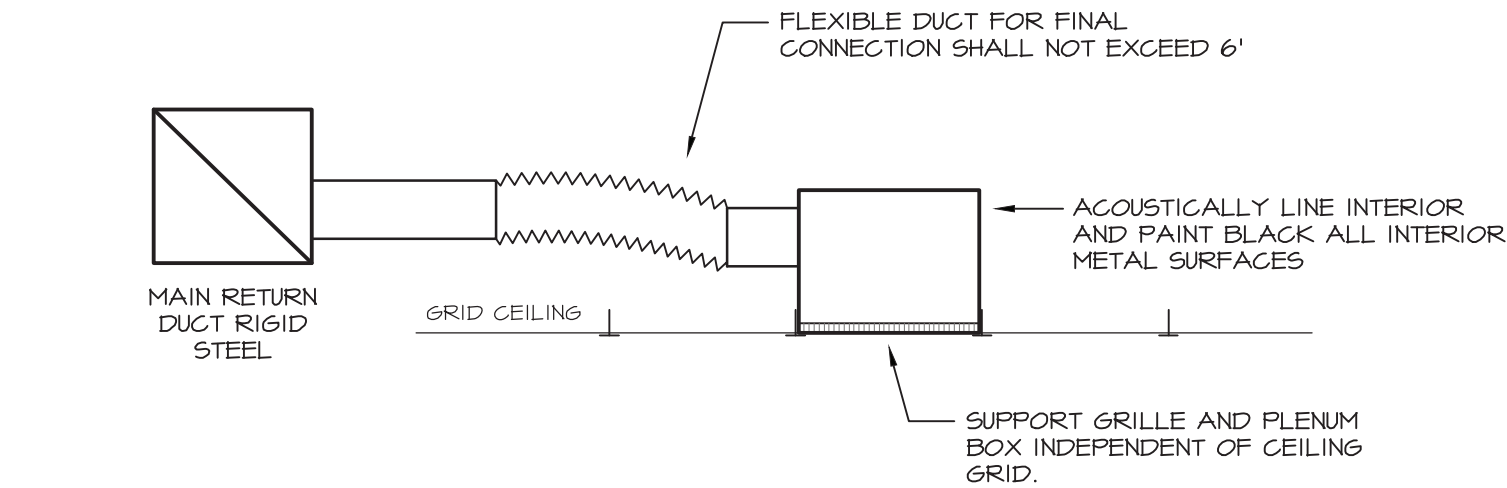
**7 VERTICAL PIPE SUPPORT DETAIL**

NOT TO SCALE

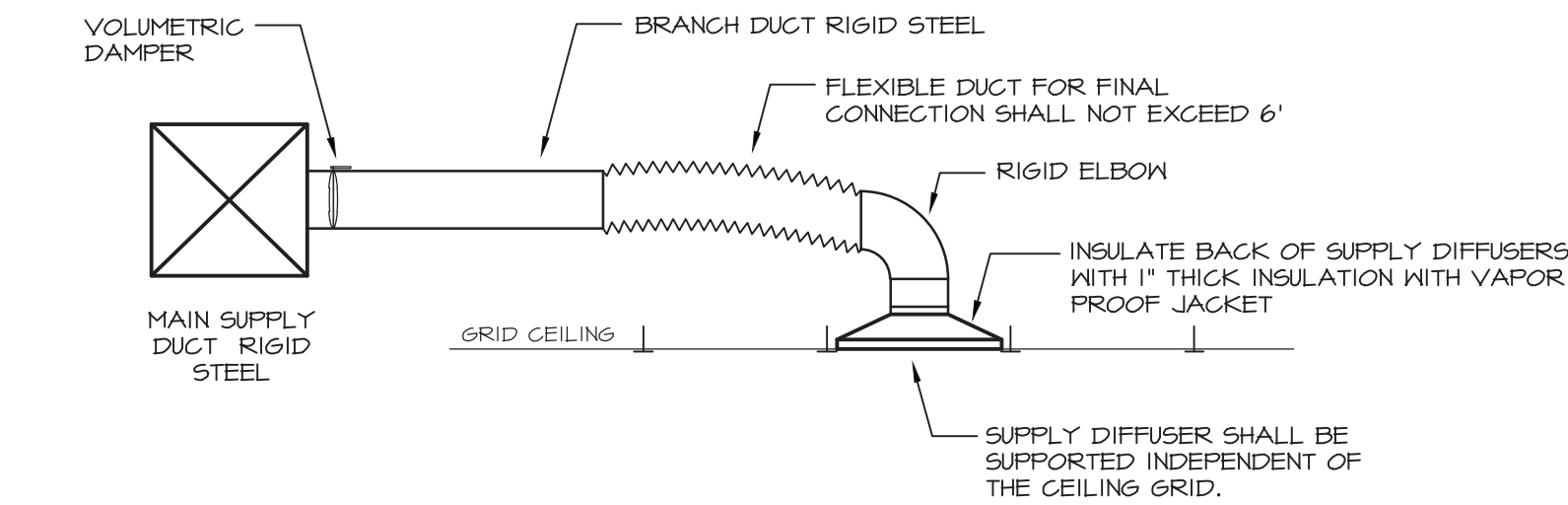
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PROJECT <b>NEW FIRE STATION FOR ROMBOUT FIRE DISTRICT - STATION 2</b> <b>NYS ROUTE 52, FISHKILL, NY</b>		
DRAWING <b>MECHANICAL: DETAILS</b>		
SEAL	DRAWN BY RL/KC CHECKED BY JT/GH DRAWING NUMBER	PROJECT NUMBER 18142 DATE 11-30-22
<b>M500</b>		
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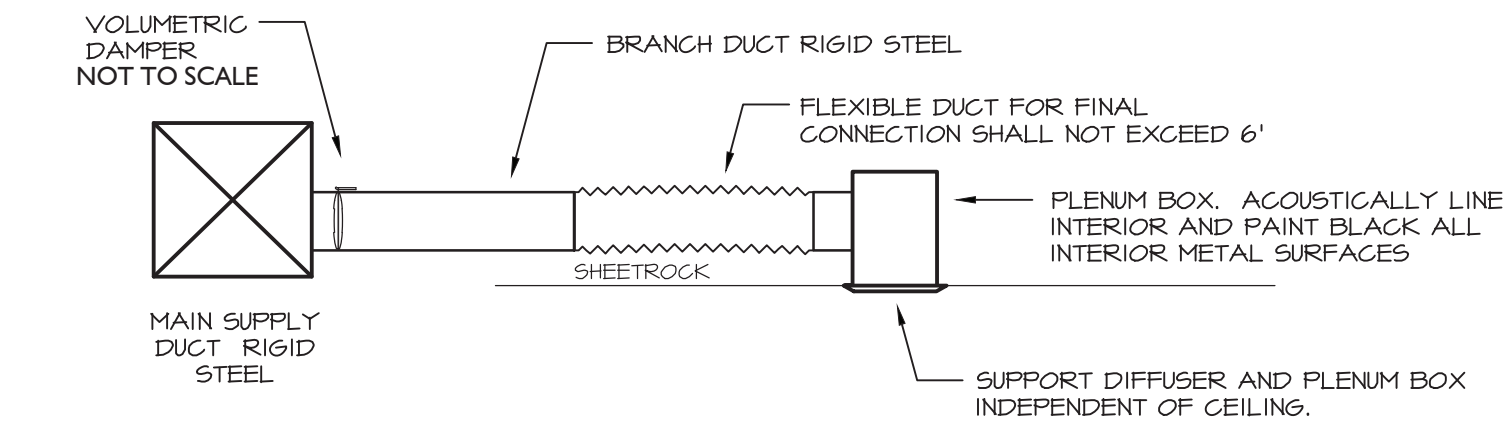
1 SHOT FEEDER (SF-1) PIPING DETAIL  
NOT TO SCALE



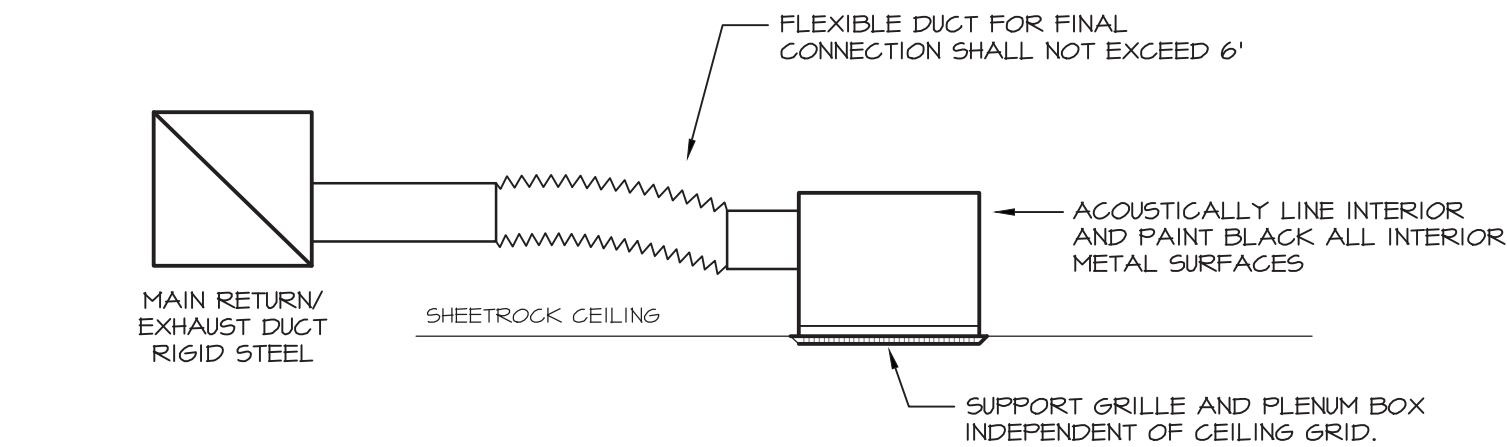
2 RETURN GRILLE LAY-IN DETAIL  
NOT TO SCALE



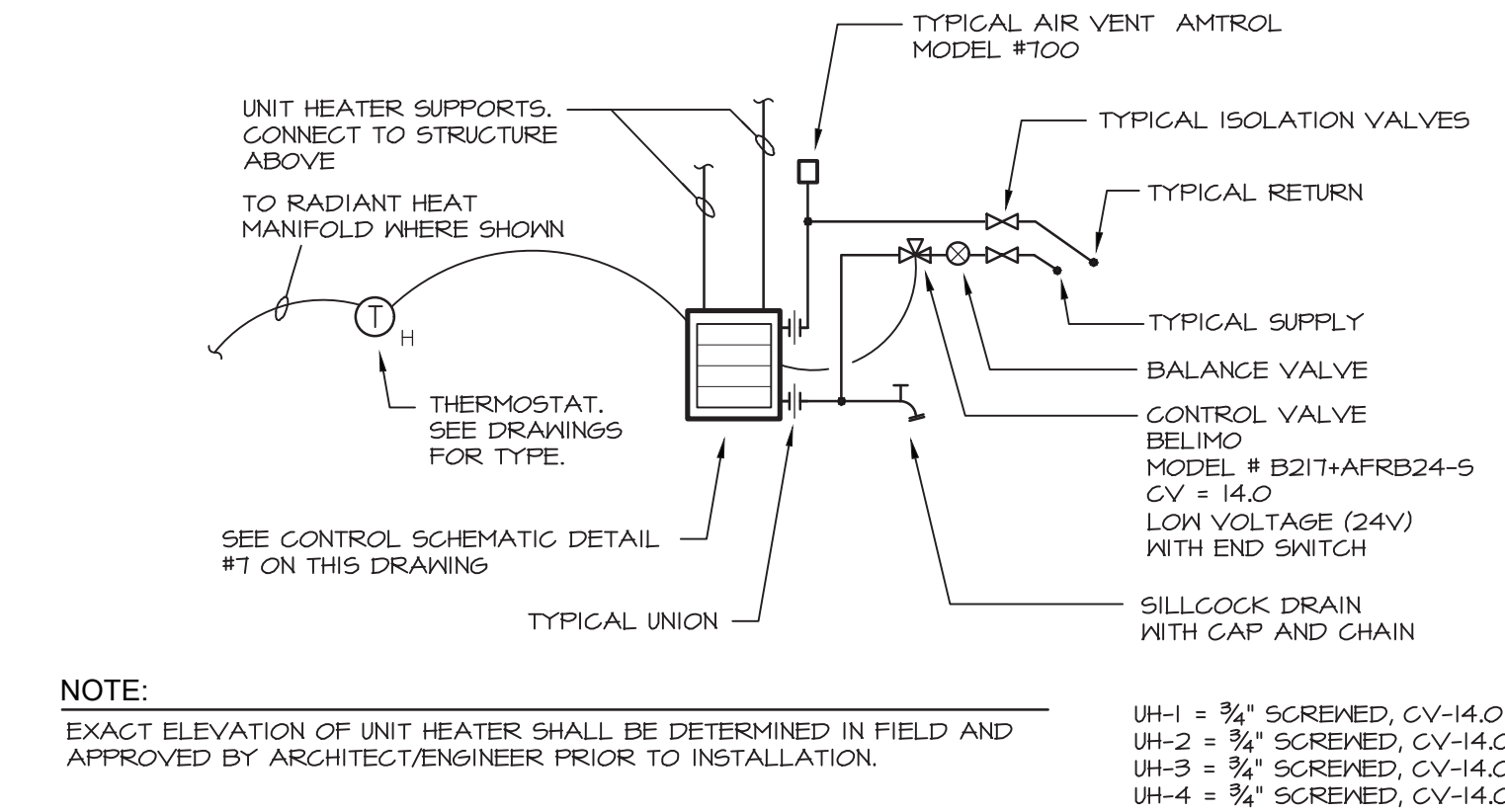
3 SUPPLY DIFFUSER LAY-IN DETAIL  
NOT TO SCALE



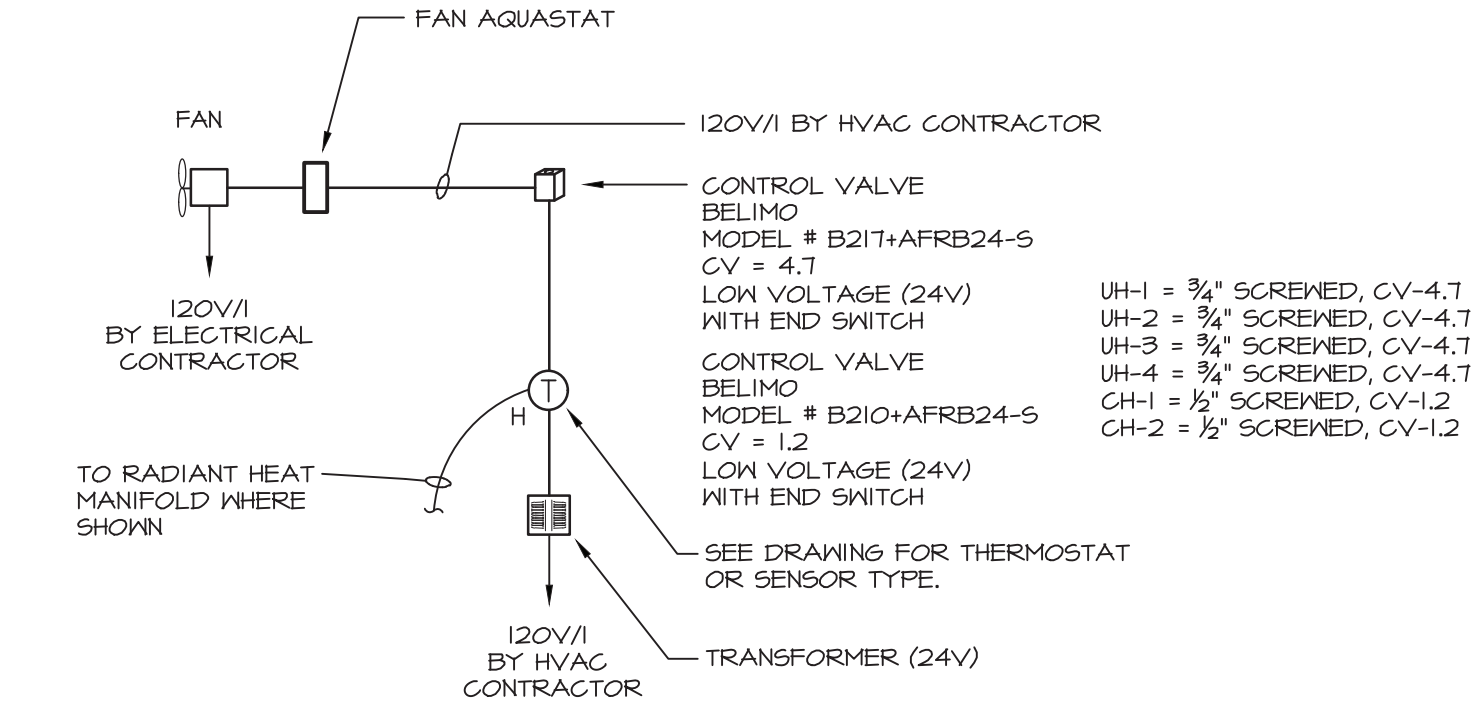
4 SUPPLY DIFFUSER SURFACE MOUNT DETAIL  
NOT TO SCALE



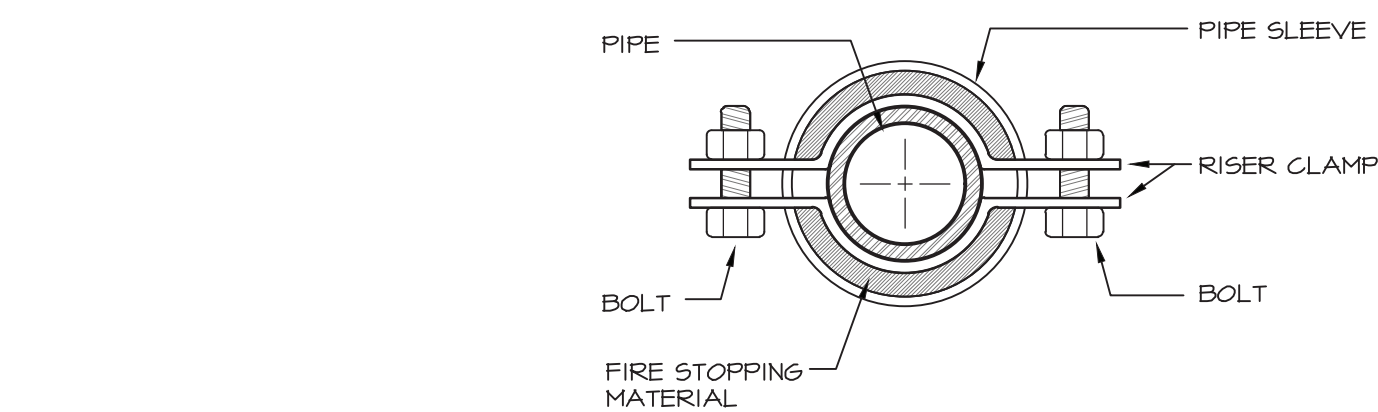
5 RETURN GRILLE SURFACE MOUNT DETAIL  
NOT TO SCALE



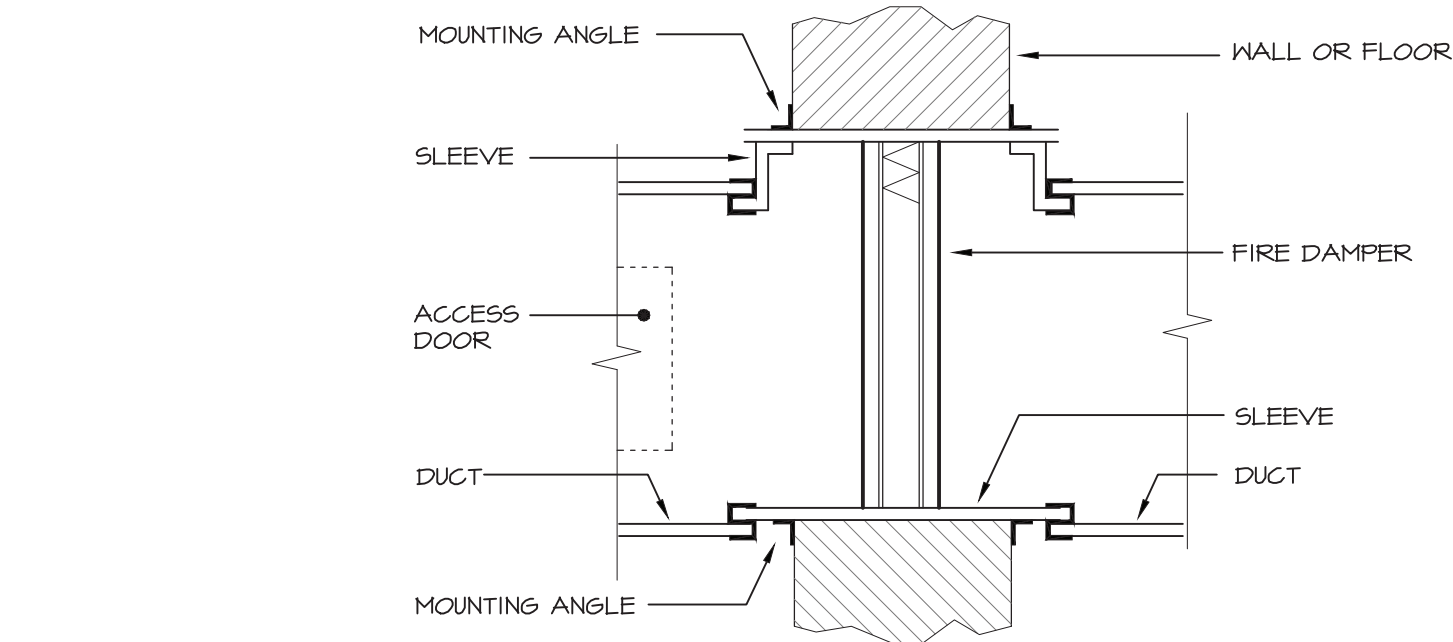
6 UNIT HEATER DETAIL  
NOT TO SCALE



7 CABINET/UNIT HEATER CONTROL SCHEMATIC  
NOT TO SCALE



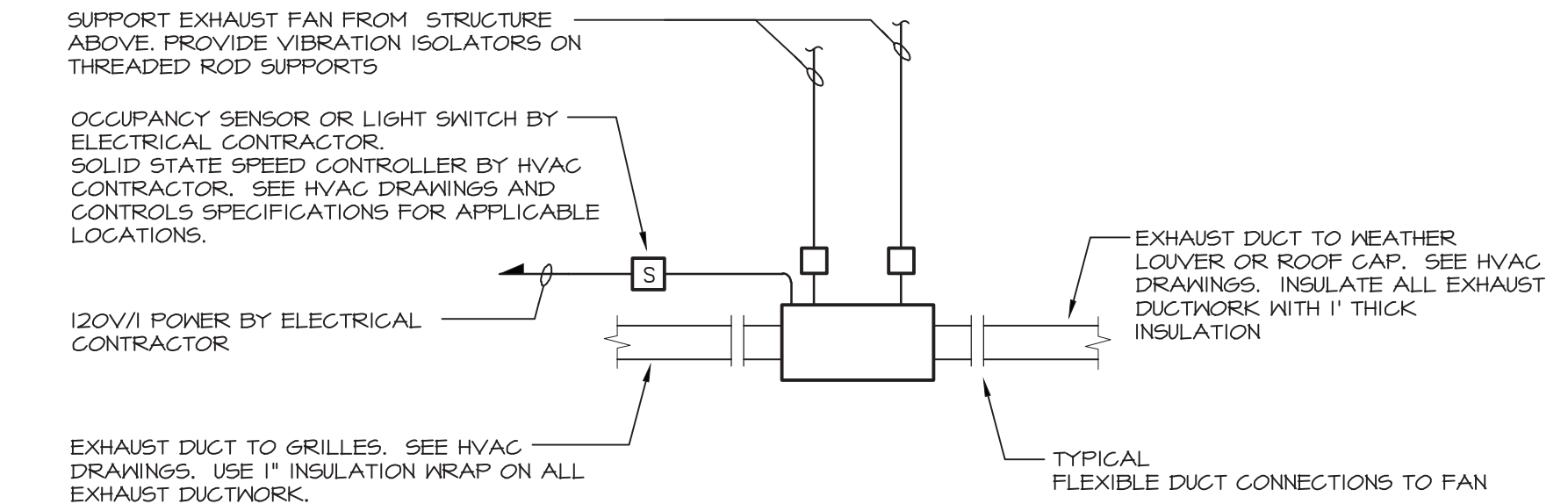
8 SUPPORT ANCHOR PIPE RISERS  
NOT TO SCALE



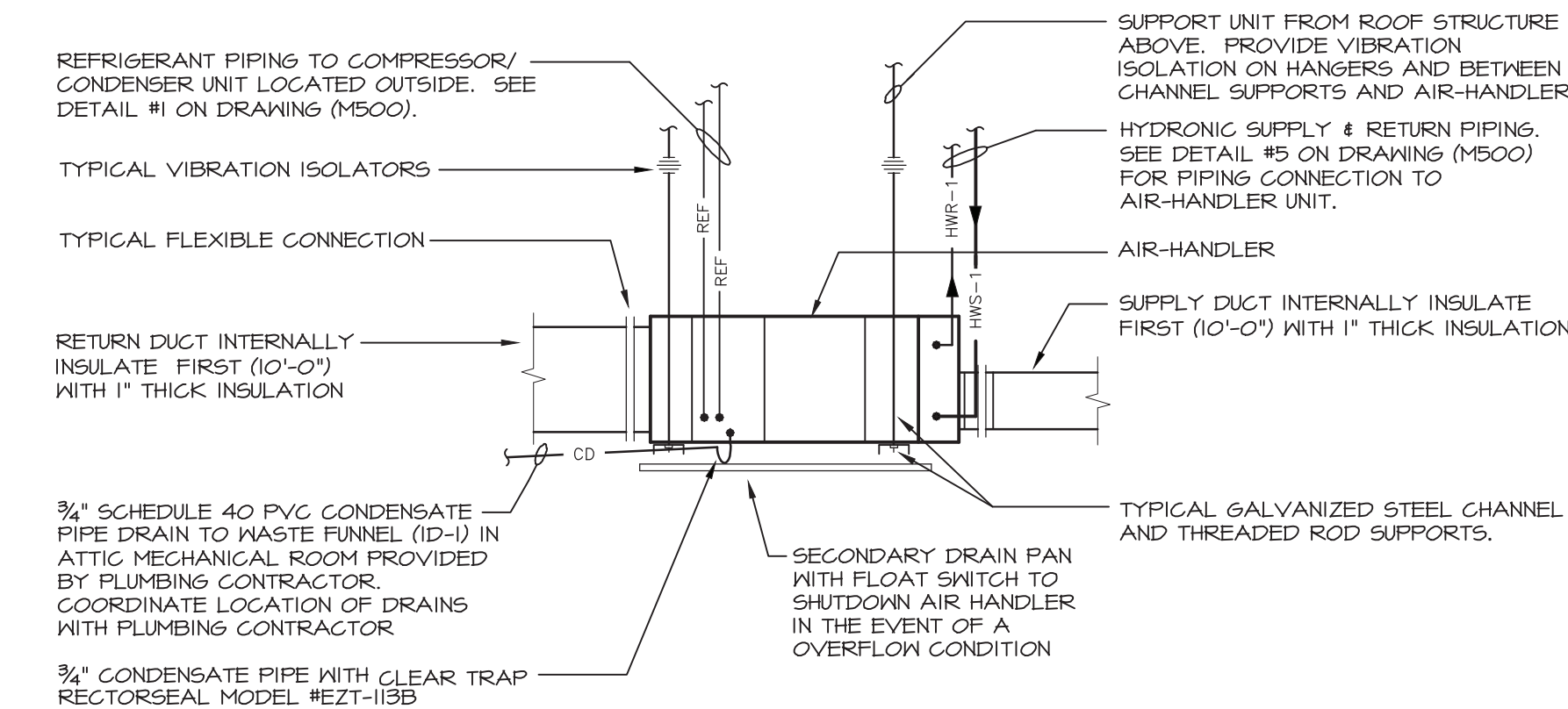
#### INSTALLATION REQUIREMENTS

- REQUIREMENTS FOR AN APPROVED INSTALLATION INCLUDE THE FOLLOWING: OPENINGS IN THE FLOOR OR WALL SHALL BE 1/8" PER FOOT LARGER THAN DAMPER DIMENSIONS (3/16" LARGER PER FOOT FOR STAINLESS). MINIMUM CLEARANCE OF 1/4" REQUIRED FOR ANY INSTALLATION.
- SLEEVE GAGE SHALL BE AT LEAST EQUAL TO THE GAGE OF THE DUCT AS DEFINED BY THE APPROPRIATE SMACNA DUCT CONSTRUCTION STANDARD, AS DESCRIBED IN NFPA90A. WHEN ONE OR MORE OF THE FOLLOWING DUCT CONNECTIONS ARE USED, PLAIN S SLIP, HEMMED S SLIP, STANDING S SLIP, REINFORCED STANDING S SLIP, INSIDE SLIP JOINT, OR DOUBLE S SLIP.
- IF ANY OTHER DUCT SLEEVE CONNECTIONS ARE USED, THE SLEEVE SHALL BE MINIMUM 16 GAGE FOR DAMPERS UP TO 36" (W) X 24" (H) AND 14 GAGE IF WIDTH EXCEEDS 36" OR HEIGHT EXCEEDS 24".
- MOUNTING ANGLES SHALL BE MINIMUM OF 1/2" X 1/2" X 1/4" GAGE AND BOLTED. TACK WELDED PR SCREWED TO SLEEVE AT MAXIMUM SPACING OF 12" AND WITH MINIMUM OF TWO CONNECTIONS IN EACH SIDE, TOP AND BOTTOM. MOUNTING ANGLES SHALL OVERLAP WALL A MINIMUM OF ONE INCH ON ALL FOUR SIDES.
- DAMPER SHALL BE BOLTED, TACK WELDED, OR SCREWED TO SLEEVE ON SAME SPACING AS ANGLES. SLEEVES SHALL NOT EXTEND MORE THAN 6" OUTSIDE OF WALL.
- IF GAP BETWEEN DUCT/SLEEVE AND CONSTRUCTION IS 1" OR LESS, PACK SPACE WITH FIREPROOF FIBROUS MATERIAL AND SEAL BOTH SIDES WITH NON-HARDENING FIREPROOF SEALER. IF GAP EXCEEDS 1", WRAP DUCT WITH 1" THICK FIREPROOF FIBROUS MATERIAL AND FILL REMAINING SPACE WITH GROUT.

9 FIRE DAMPER DETAIL  
NOT TO SCALE



10 INLINE EXHAUST FAN DETAIL  
NOT TO SCALE

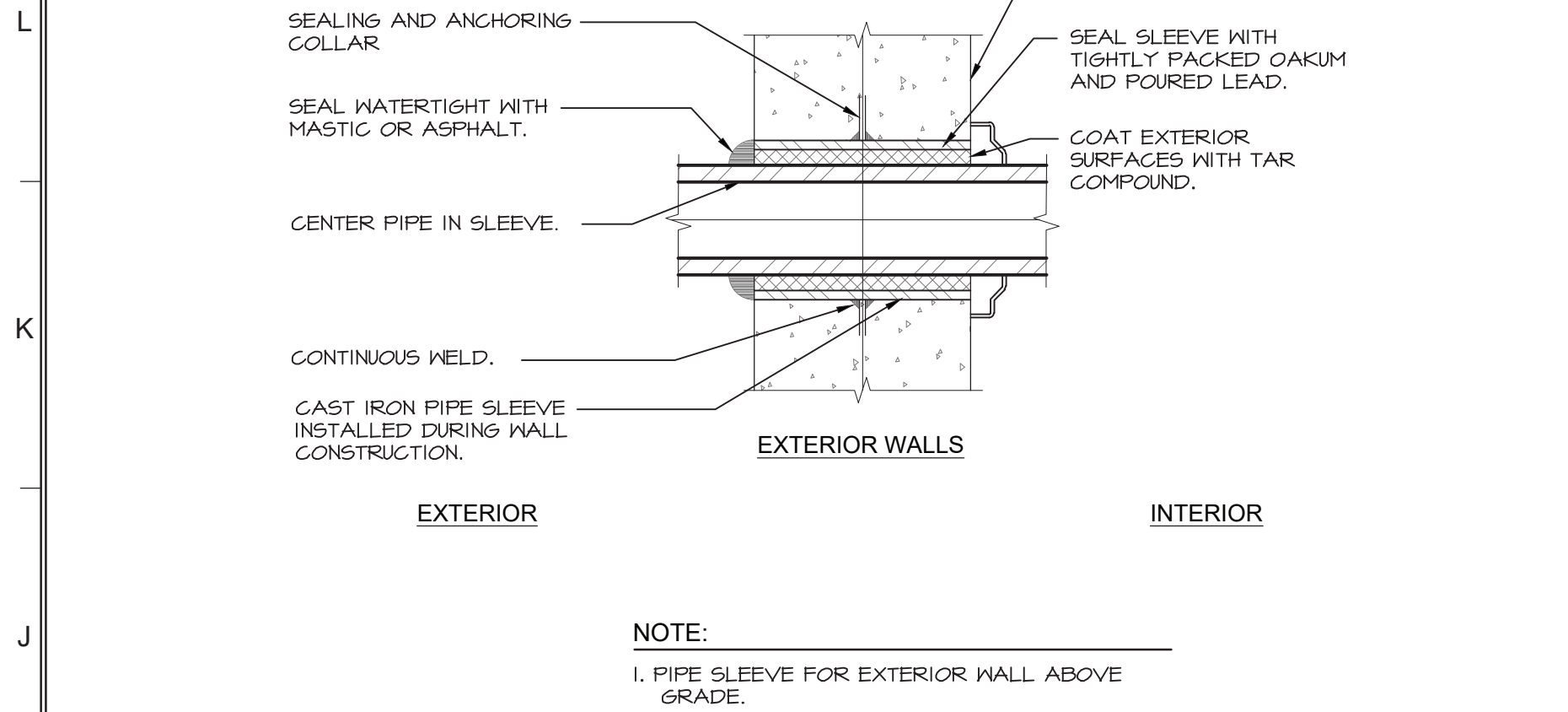


NOTE:  
THIS DETAIL CONTAINS THE BASIC ELEMENTS AND EQUIPMENT FOR HORIZONTAL AIR-HANDLER UNITS. THE CONFIGURATION OF DUCTS AND CONNECTIONS TO AIR-HANDLER UNITS WILL VARY. SEE HVAC DRAWINGS.

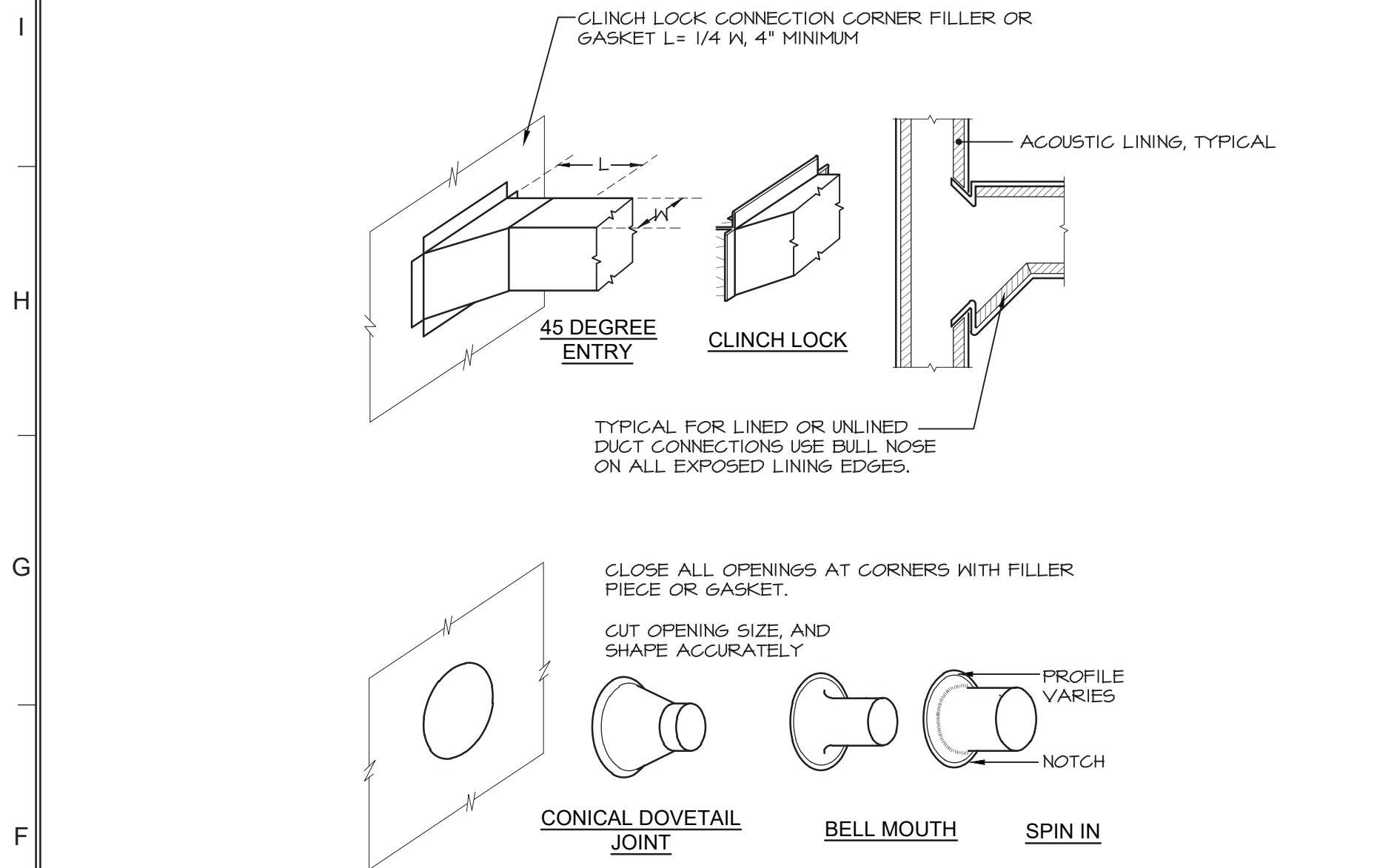
VENTILATION SCHEDULE	
AIR HANDLER	VENTILATION CFM
AHU-1	120
AHU-2	410
AHU-3	60

11 HORIZONTAL AIR HANDLING UNIT DETAIL  
NOT TO SCALE

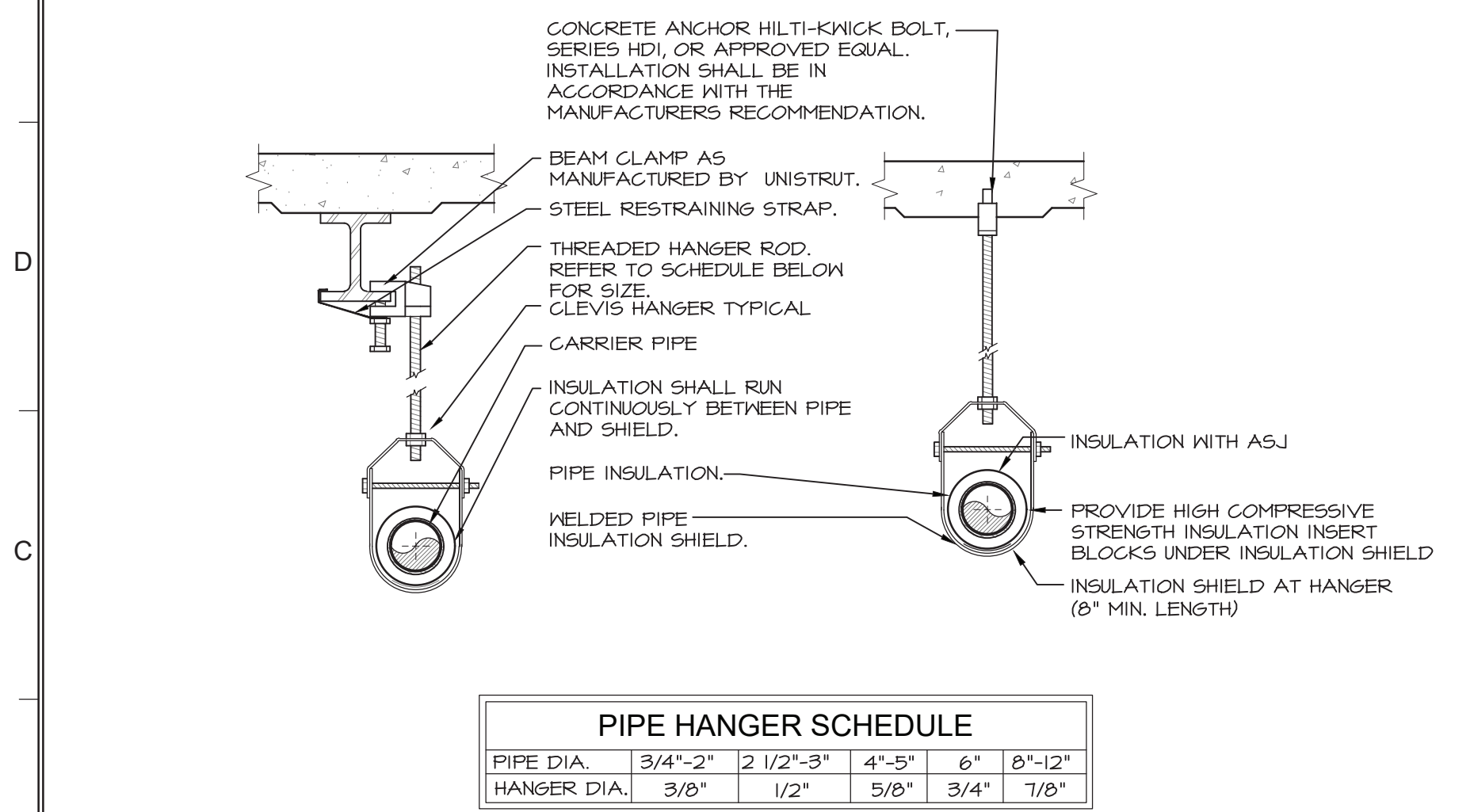
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DRAWING MECHANICAL: DETAILS		
SEAL	DRAWN BY RL/KC CHECKED BY JT/GH DATE 11-30-22 DRAWING NUMBER <b>M501</b>	PROJECT NUMBER 18142
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1 EXTERIOR WALL PIPE PENETRATION DETAIL  
NOT TO SCALE

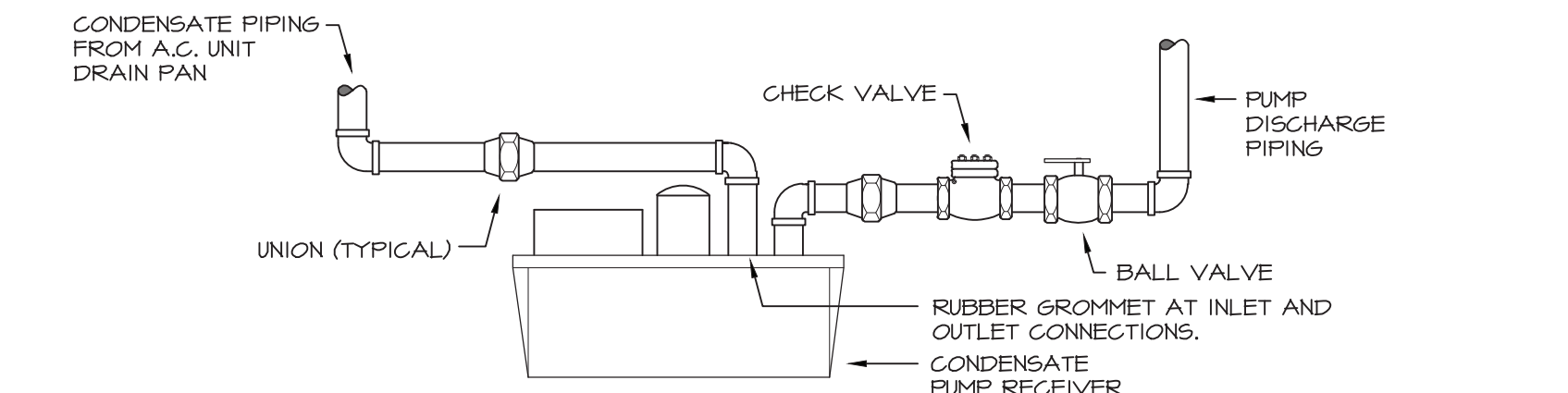


2 DUCT BRANCH CONNECTION DETAIL  
NOT TO SCALE

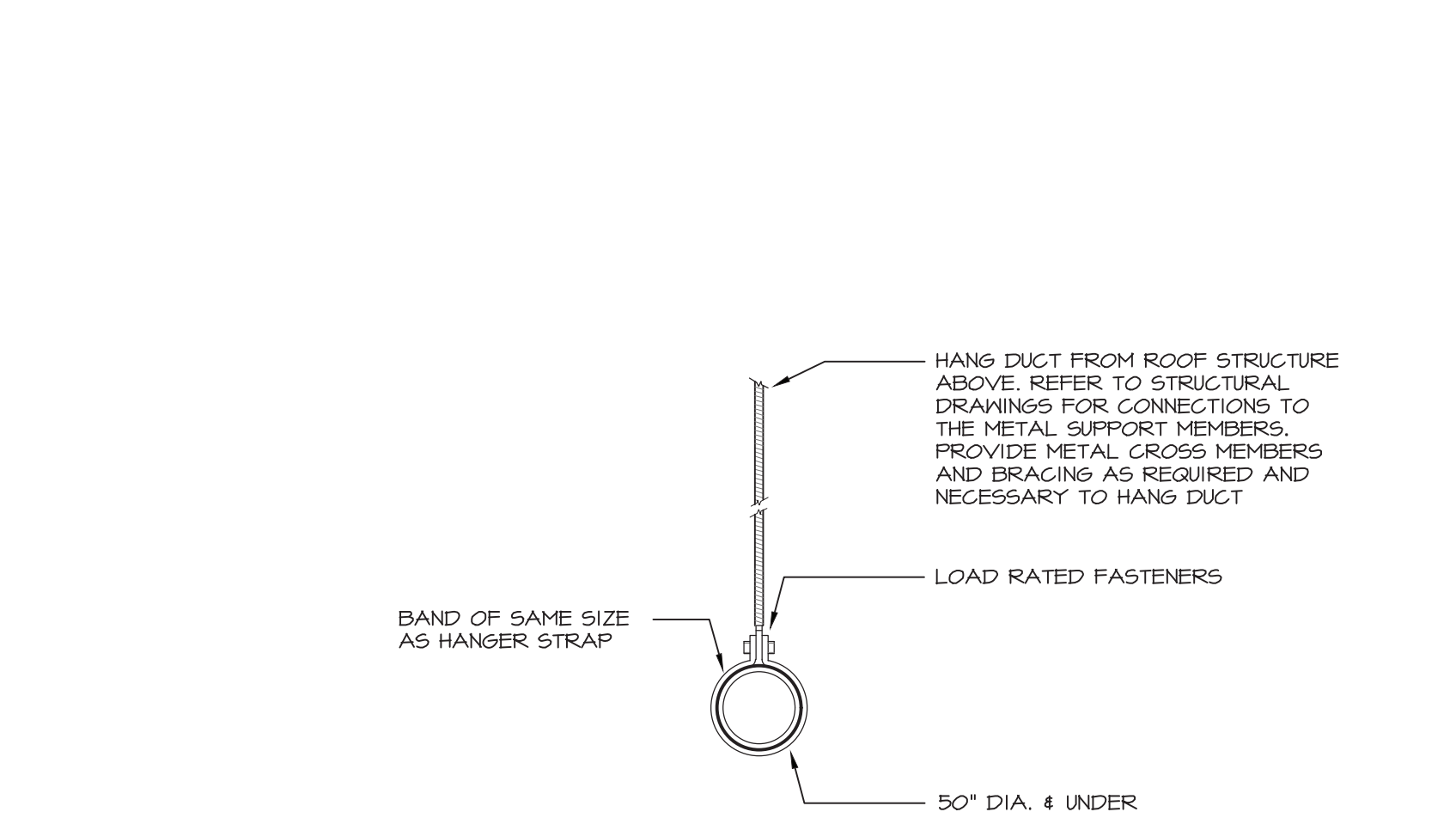


- NOTES:
1. CLEVIS HANGERS WITH WELDED INSULATION SHIELDS SIMILAR TO RAUCH FIG. 100SH ON ALL PIPES LARGER THAN 1".
  2. FOR PIPES 1" OR SMALLER, A BAND HANGER WITH INSULATION SHIELD MAY BE USED SIMILAR TO RAUCH FIG. NO. 1ASH.
  3. FOR NON-INSULATED PIPE, INSULATION SHIELDS MAY BE OMITTED.
  4. ALL PIPE HANGERS SHALL BE GALVANIZED STEEL OR FACTORY PAINTED BLACK WITH ENAMEL.
  5. FOR NON FERROUS PIPING WITHOUT INSULATION, ALL HANGERS SHALL BE COPPER PLATED OR FURNISHED WITH A DI-ELECTRIC BETWEEN PIPE AND HANGERS.
  6. WHERE EXISTING BUILDING STRUCTURAL COMPONENTS HAVE FIREPROOF MATERIAL, ANY AREA THAT IS DISTURBED OR DAMAGED AS A RESULT OF HANGER INSTALLATION SHALL BE PATCHED WITH UL AND FM APPROVED FIREPROOFING TO MATCH EXISTING.

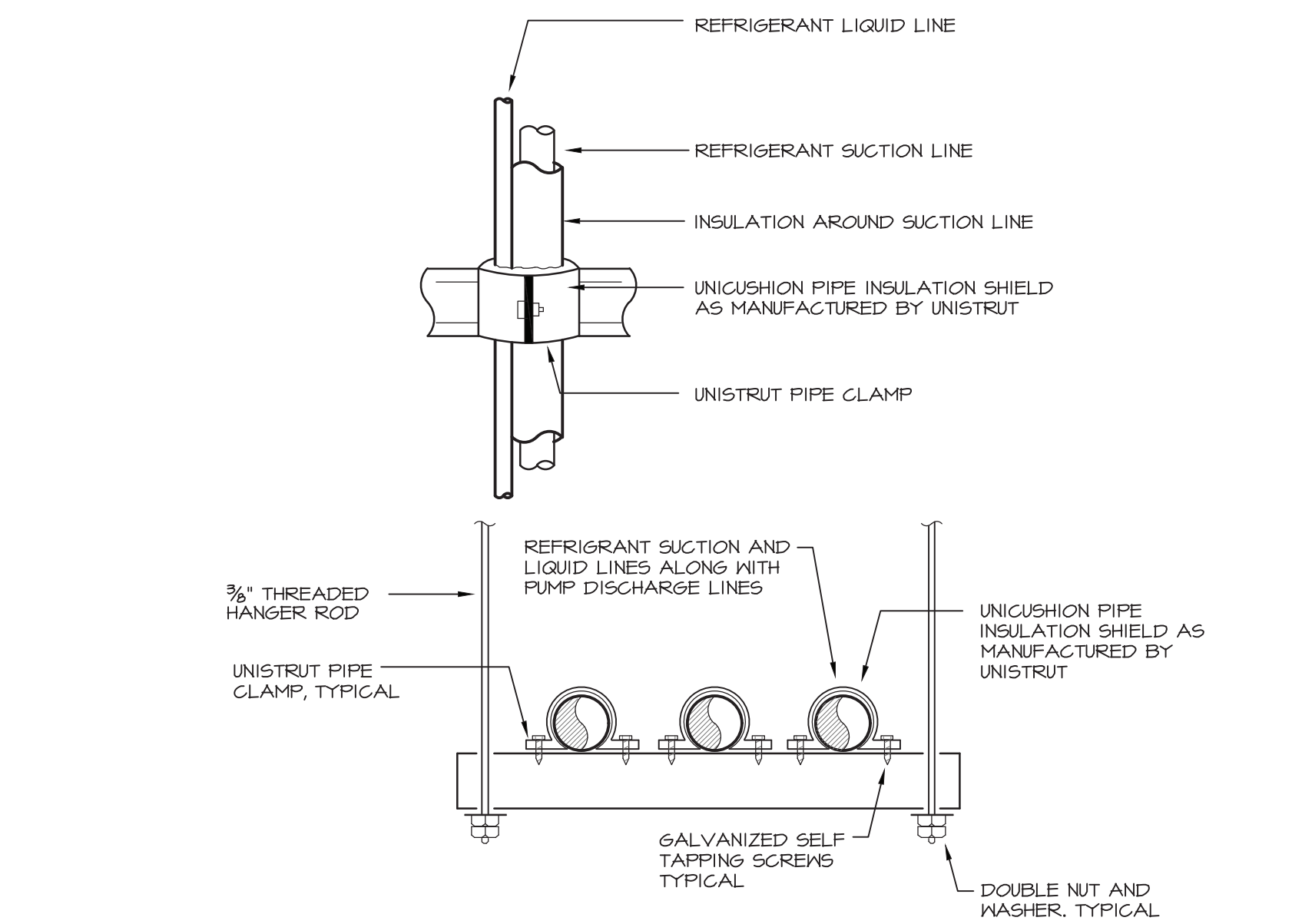
3 PIPE HANGER DETAIL  
NOT TO SCALE



4 CONDENSATE PUMP PIPING SCHEMATIC  
NOT TO SCALE

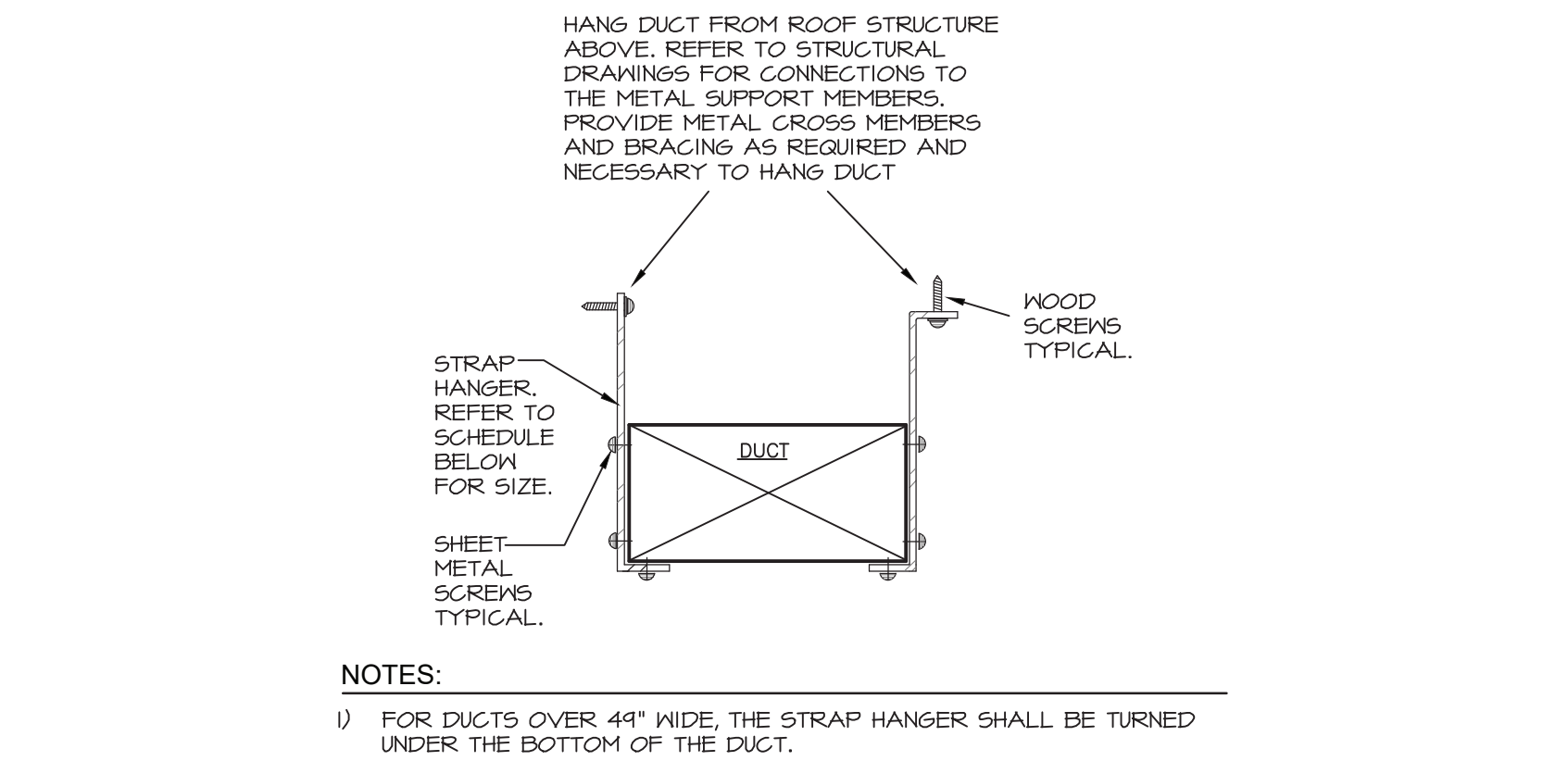


5 CONCEALED ROUND DUCT HANGER DETAIL  
NOT TO SCALE

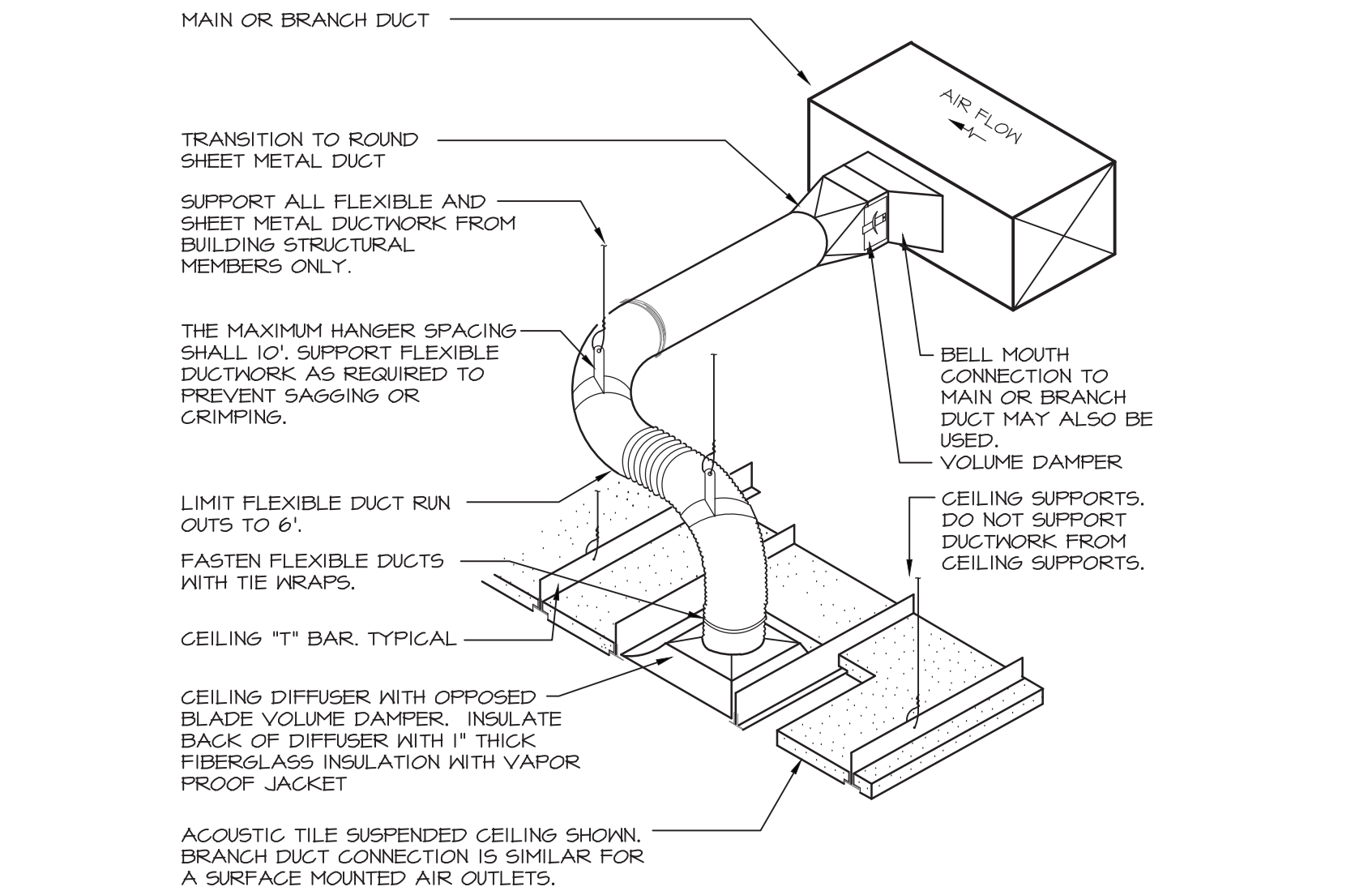


- NOTES:
1. LIQUID AND SUCTION LINES MAY BE ROUTED TOGETHER FOR CONVENIENCE, BUT MUST BE COMPLETELY INSULATED FROM EACH OTHER. DO NOT SOLDER LIQUID AND SUCTION LINES TOGETHER. DO NOT ALLOW METAL TO METAL CONTACT.
  2. LINES SHOULD BE INSTALLED WITH AS FEW BENDS AS POSSIBLE, ALLOWING SERVICE ACCESS TO THE INDOOR COIL.
  3. USE LONG RADIUS ELBOWS WHEREVER POSSIBLE, EXCEPT IN OIL RETURN TRAPS, WHERE SHORT RADIUS ELBOWS SHOULD BE USED.
  4. SLOPE HORIZONTAL SUCTION LINES 1 INCH EVERY 20 FEET TOWARD THE OUTDOOR UNIT.

6 REFRIGERANT PIPE SUPPORT DETAIL  
NOT TO SCALE



7 DUCT HANGER DETAIL  
NOT TO SCALE



8 FLEXIBLE DUCT CONNECTION DETAIL  
NOT TO SCALE

No.	REVISION/SUBMISSION	DATE

Mechanical/Electrical/Plumbing Engineer

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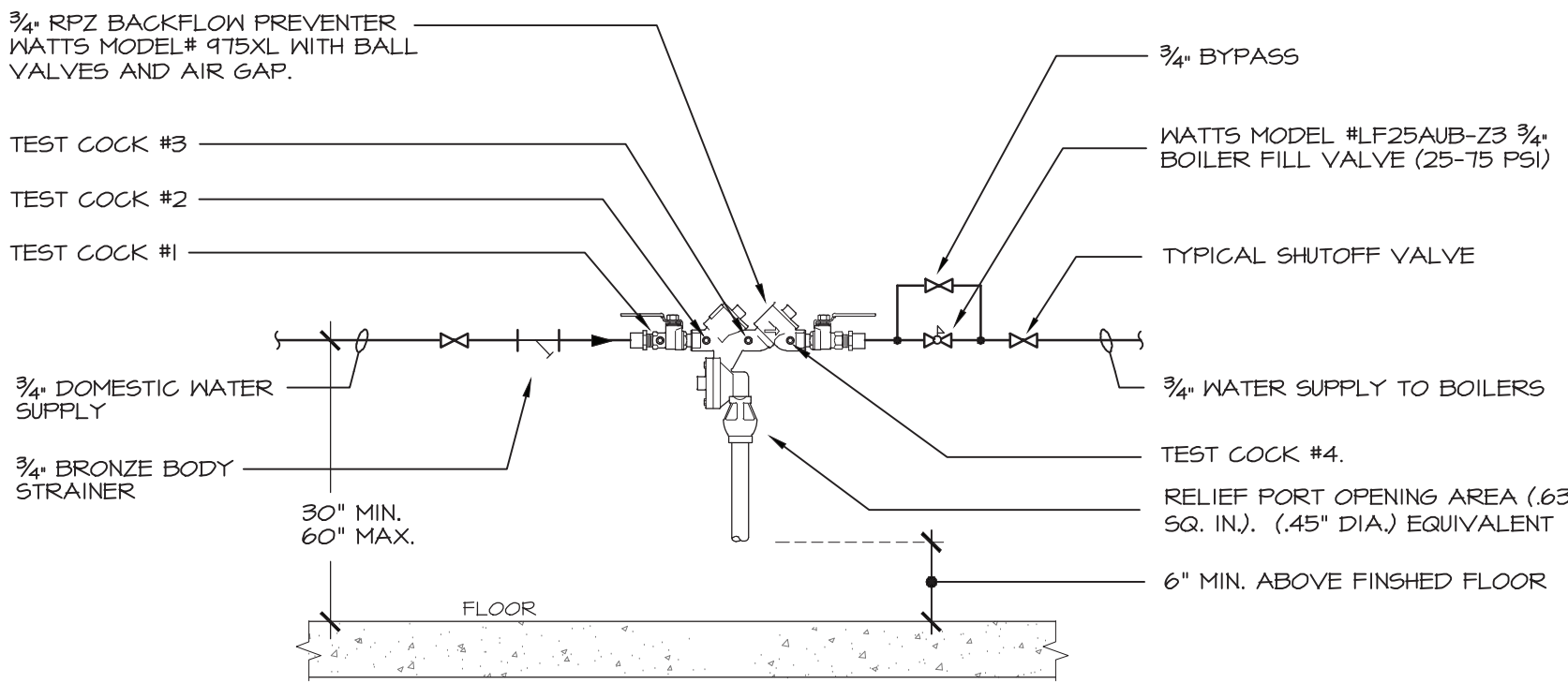
**Liscum McCormack VanVoorhis LLP**  
181 CHURCH STREET  
POUGHKEEPSIE, NEW YORK 12601  
ARCHITECTURE PLANNING INTERIORS PHONE 845-452-2268 FAX 845-452-3752

PROJECT  
NEW FIRE STATION FOR  
ROMBOUT FIRE DISTRICT - STATION 2  
NYS ROUTE 52, FISHKILL, NY

DRAWING  
MECHANICAL:  
DETAILS

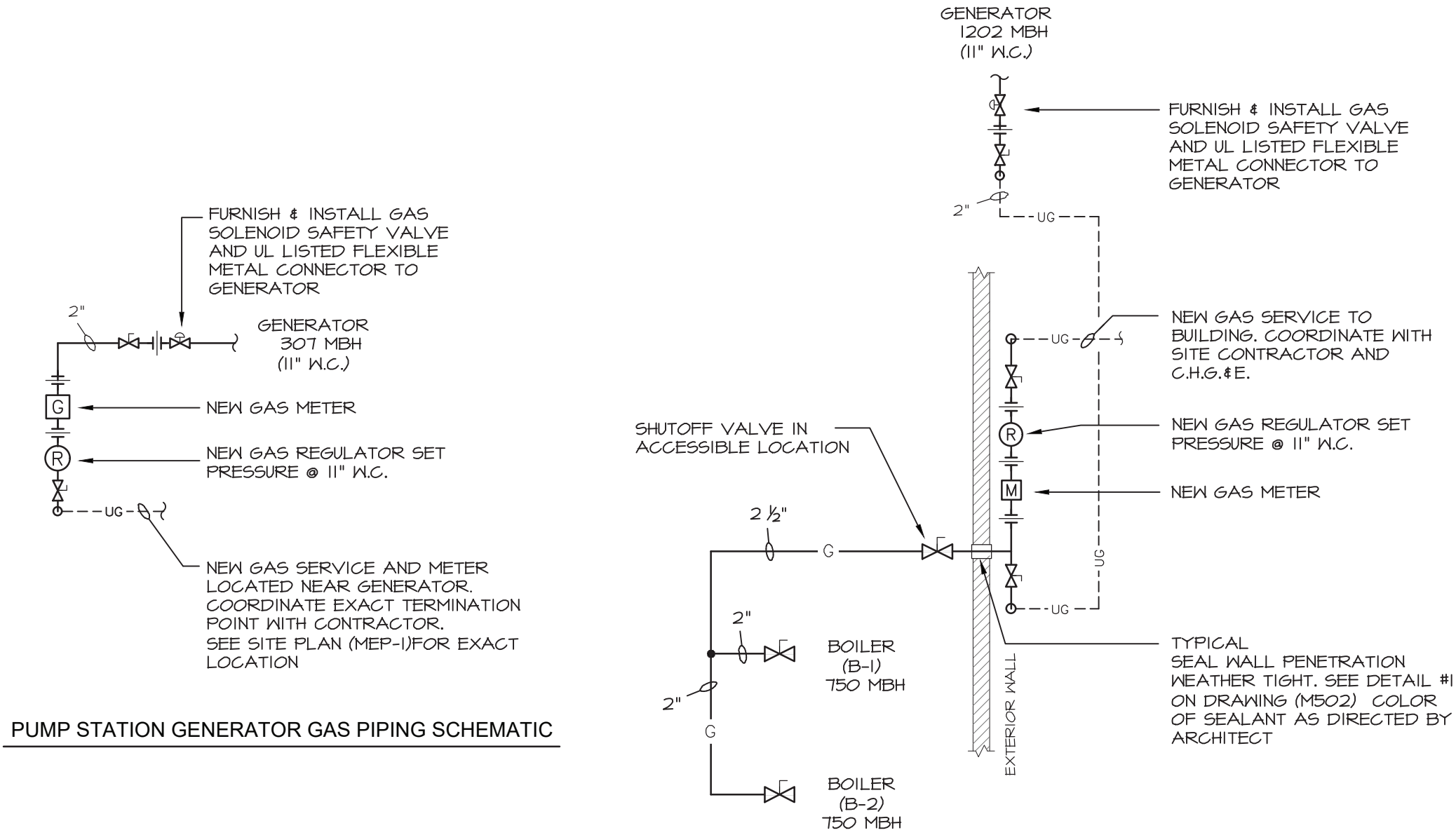
SEAL	DRAWN BY RL/KC	PROJECT NUMBER 18142
	CHECKED BY JT/GH <td>DATE 11-30-22</td>	DATE 11-30-22
	DRAWING NUMBER <b>M502</b>	
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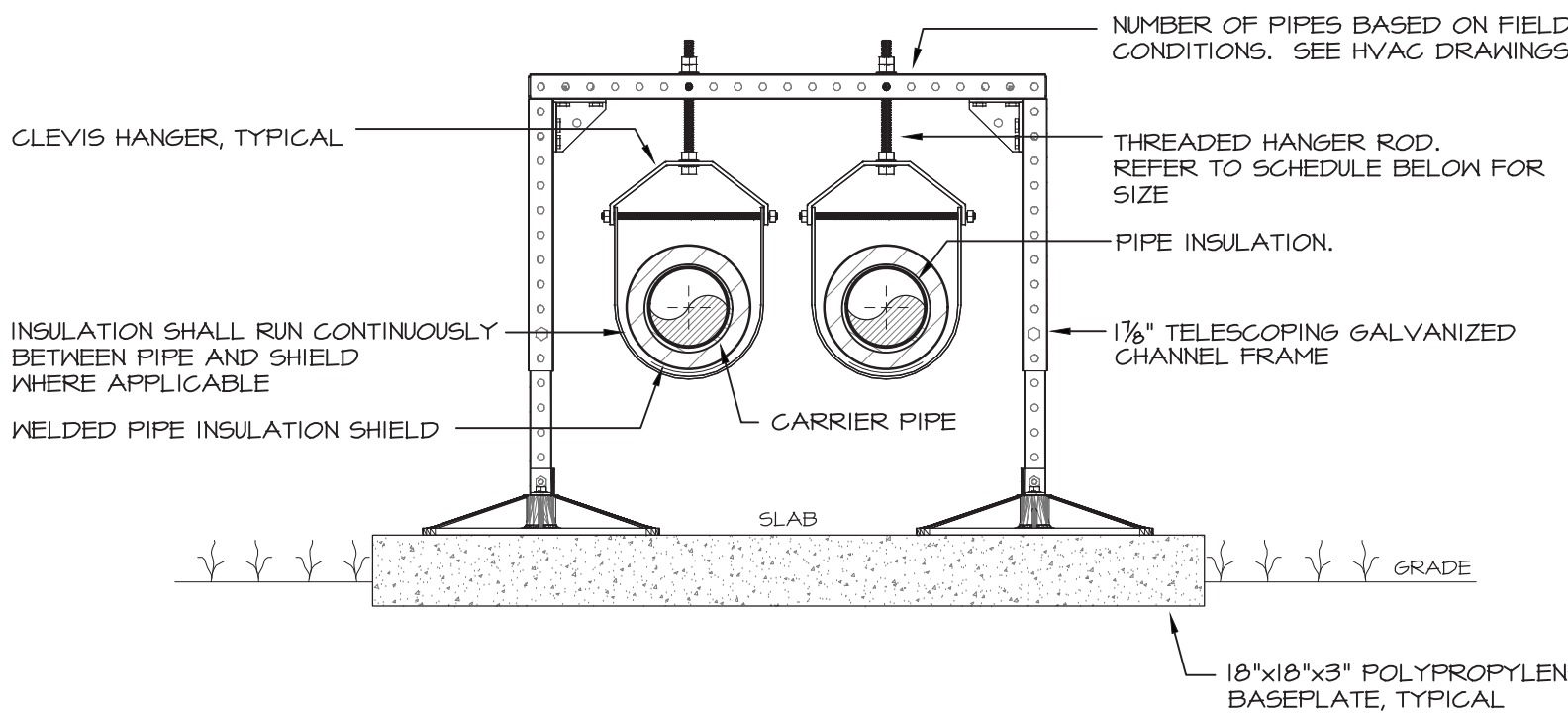
- REQUIRED CLEARANCES (RPZ)**
1. FRONT OF RPZ (2'-6") MINIMUM
  2. BEHIND RPZ (0") MINIMUM
  3. DISCHARGE PORT (1'-6") MINIMUM ABOVE FINISHED FLOOR
  4. BACKFLOW PREVENTER MINIMUM (2'-6") ABOVE FINISHED FLOOR
  5. BACKFLOW PREVENTER MAXIMUM (5'-0") ABOVE FINISHED FLOOR
  6. CLEAR SPACE ABOVE BACKFLOW PREVENTER MINIMUM (2'-0")

**1 BOILER WATER FEEDER DETAIL**  
NOT TO SCALE



- GAS PIPING SCHEMATICS NOTES:**
1. ALL GAS PIPING SHALL BE INSTALLED IN ACCORDANCE WITH 2020 MECHANICAL, BUILDING, FIRE, PLUMBING, FUEL GAS AND ENERGY CONSERVATION CODE OF NEW YORK STATE, NFPA 54, ALL LOCAL CODES AND GENERALLY ACCEPTED STANDARDS. CENTRAL HUDSON GAS & ELECTRIC STANDARDS (C.H.G.#E).
  2. CONTRACTOR SHALL PAINT ALL GAS PIPING. CLEAN PIPING AND APPLY (1) COAT RUST INHIBITING PRIMER AND (2) COATS EXTERIOR PAINT. COLOR AS DIRECTED BY ARCHITECT. SEE ARCHITECT'S DRAWINGS AND SPECIFICATIONS FOR APPROVED MATERIALS AND METHODS OF INSTALLATION.
  3. CONTRACTOR SHALL INSTALL GAS SERVICE @ 11" W.C. TO SERVE BUILDING AND GAS SERVICE @11" W.C. TO SERVE PUMP STATION GENERATOR. GAS METER BY CENTRAL HUDSON GAS & ELECTRIC STANDARDS (C.H.G.#E). COORDINATE EXACT LOCATION OF METERS WITH CENTRAL HUDSON GAS & ELECTRIC PRIOR TO INSTALLATION OF ANY GAS PIPING.
  4. CONTRACTOR SHALL PAY ALL FEES ASSOCIATED WITH NEW GAS SERVICE. OWNERS REPRESENTATIVE SHALL APPLY FOR GAS SERVICE AND SCHEDULE INSTALLATION.
  5. CONTRACTOR SHALL PAY FOR ALL GAS PIPING AND EQUIPMENT.
  6. CONTRACTOR IS RESPONSIBLE FOR ALL GAS PIPING EXCAVATION, BEDDING, BACKFILL, COMPACTION AND RESURFACING TO MATCH EXISTING FOR NEW GAS SERVICE.
  7. ENTIRE INSTALLATION SHALL BE IN ACCORDANCE WITH CENTRAL HUDSON GAS & ELECTRIC STANDARDS (C.H.G.#E). ROAD AND SIDEWALK PATCHING/RESURFACING SHALL BE IN ACCORDANCE WITH LOCAL MUNICIPALITY AND NYS STATE REQUIREMENTS.
  8. GAS PIPE TESTING:  
A. TEST MEDIUM SHALL BE AIR, NITROGEN, CARBON DIOXIDE, OR AN INERT GAS. OXYGEN SHALL NOT BE USED.  
B. ABOVE GROUND PIPING SYSTEMS WITH A WORKING PRESSURE OF 2 PSIG SHALL BE TESTED AT A PRESSURE OF 5 PSIG FOR A DURATION OF 1/2 HOUR FOR EACH 500 CUBIC FEET OF PIPE VOLUME BUT SHALL NOT BE LESS THAN 30 MINUTES.

**4 GAS PIPING SCHEMATICS**  
NOT TO SCALE

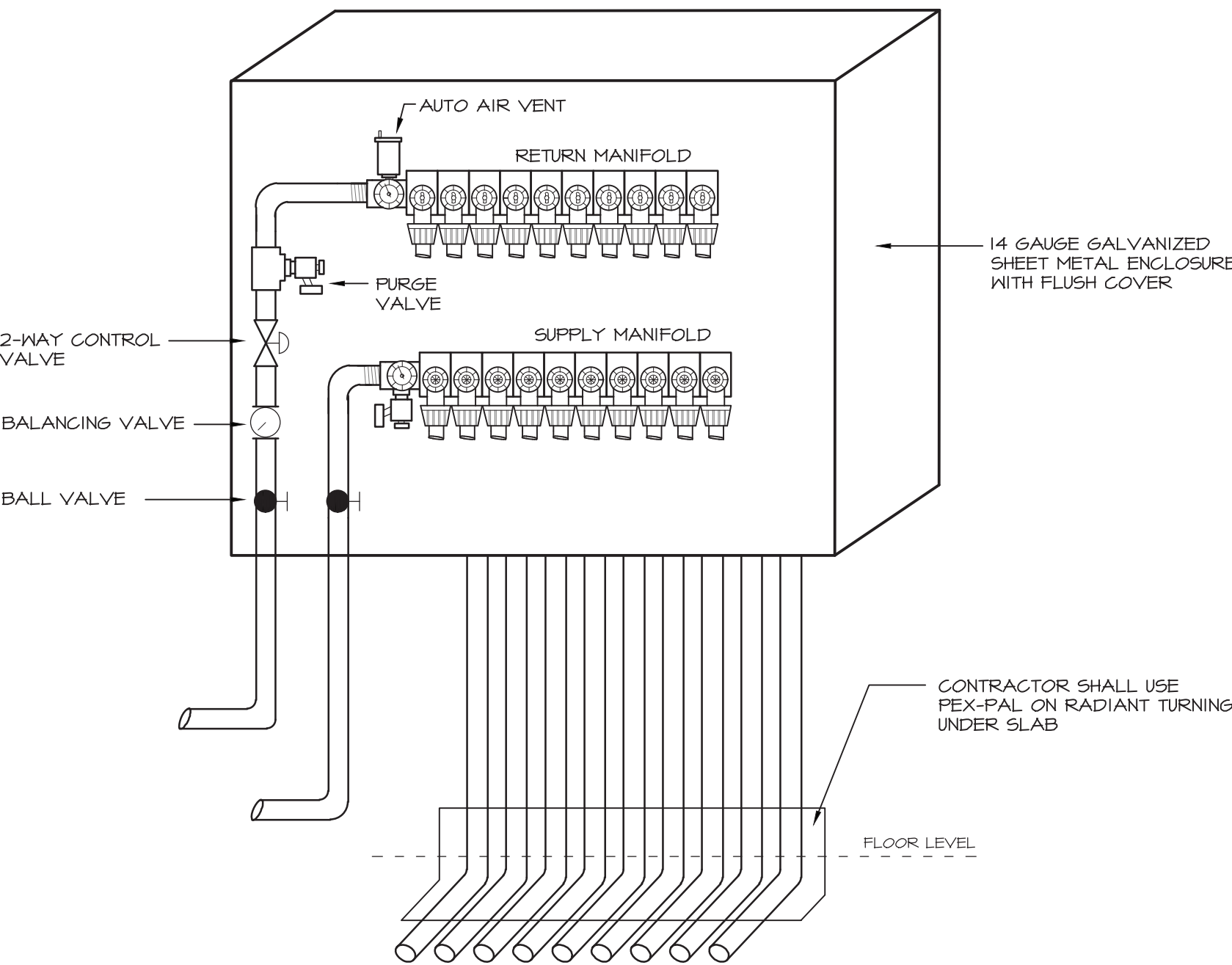


PIPE HANGER SCHEDULE				
PIPE DIA.	1/2"-1"	1 1/4"-3"	4"-5"	6"
HANGER DIA.	3/8"	1/2"	5/8"	3/4"
			1 1/8"	1 1/2"

- NOTES:**
1. PIPE SUPPORT SYSTEM SHALL BE BASED ON PHP SYSTEMS/DESIGN MODEL NUMBER PSE-CUSTOM OR PSE-2-2 DEPENDING ON NUMBER OF PIPES SUPPORTED.
  2. CLEVIS HANGERS WITH WELDED INSULATION SHIELDS SIMILAR TO RAUGH FIG. 100SH ON ALL PIPES R4 LARGER THAN 1".
  3. BOTTOM OF PIPE ELEVATION SHALL BE MIN. OF 2'-0" ABOVE GRADE. PIPING SHALL BE INSTALLED AS TO ELIMINATE ANY UNNECESSARY OFFSETS UP OR DOWN.
  4. FOR PIPES 1" OR SMALLER, A BAND HANGER WITH INSULATION SHIELD MAY BE USED SIMILAR TO RAUGH FIG. NO. 1ASH.
  5. FOR NON-INSULATED PIPE, INSULATION SHIELDS MAY BE OMITTED. FOR NON FERROUS PIPING WITHOUT INSULATION, ALL HANGERS SHALL BE COPPER PLATED OR FURNISHED WITH A DI-ELECTRIC BETWEEN PIPE AND HANGERS.
  6. ALL PIPE SUPPORT COMPONENTS SHALL BE GALVANIZED STEEL OR FACTORY PAINTED BLACK WITH ENAMEL.
  7. THIS CONTRACTOR SHALL VERIFY SIZE AND NUMBER OF PIPES TO BE SUPPORTED BASED ON FINAL LAYOUT.

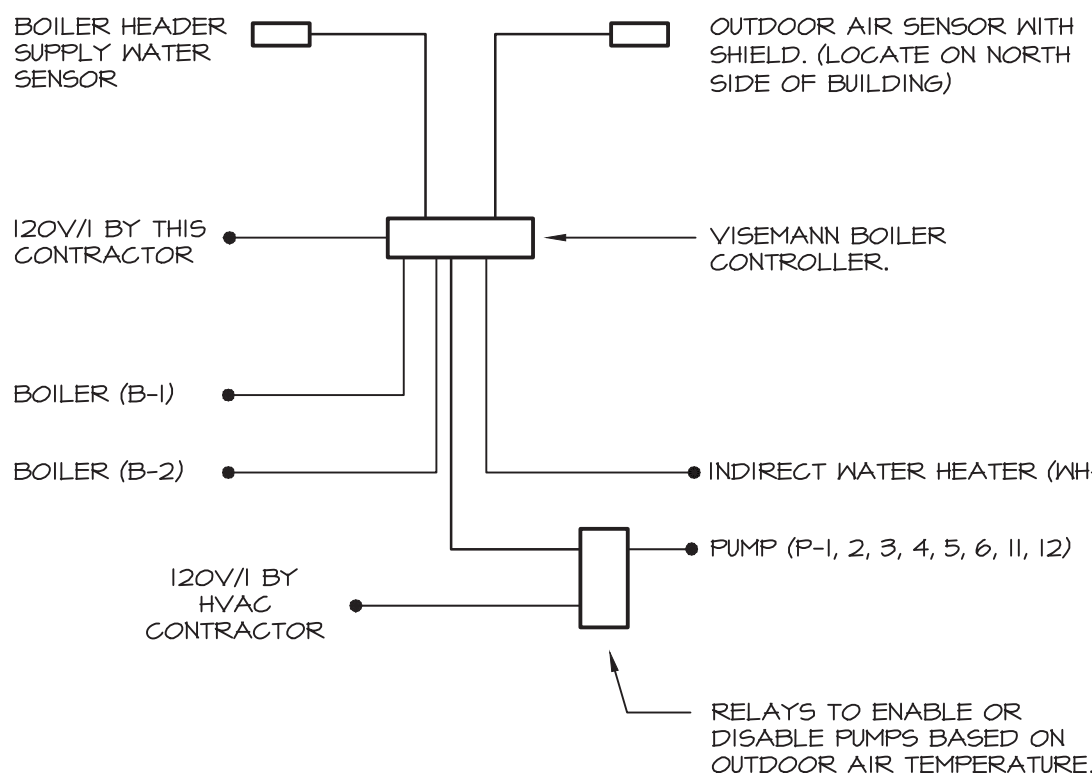
**5 PIPE SUPPORT AT GRADE DETAIL**  
NOT TO SCALE

**6 WATER HEATER (WH-1) DETAIL**  
NOT TO SCALE



- NOTES:**
1. HVAC CONTRACTOR SHALL SUBMIT SHOP DRAWINGS ON RADIANT PIPING LAYOUT PREPARED BY RADIANT TUBING MANUFACTURER AND EQUIPMENT FOR ENGINEER'S REVIEW.
  2. HVAC CONTRACTOR SHALL INSTALL ALL RADIANT HEAT PIPING AND EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
  3. EXACT LOCATIONS OF RADIANT PIPE MANIFOLDS SHALL BE APPROVED BY ARCHITECT IN FIELD PRIOR TO INSTALLATION. COORDINATE INSTALLATION OF ALL RADIANT PIPING THROUGH WALLS AND INSTALLED IN SLABS WITH GENERAL CONTRACTOR.
  4. CONTRACTOR SHALL SUBMIT AS-BUILT DRAWINGS SHOWING EXACT LOCATIONS OF RADIANT PIPE AND MANIFOLDS.
  5. FURNISH AND INSTALL ACCESS DOORS FOR MANIFOLD SERVICING. PAINT ACCESS DOORS WITH (1) COAT PRIMER, (2) COATS FINISH PAINT. COLOR AS DIRECTED BY ARCHITECT. MATCH ACCESS DOOR RATINGS TO WALL CONSTRUCTION.
  6. RADIANT TUBING SHALL BE 3/8" hd-PEX CROSS-LINKED POLYETHYLENE TUBING WITH AN OXYGEN DIFFUSION BARRIER. MAXIMUM OPERATING TEMPERATURE 180°F AS MANUFACTURED BY UPONOR OR EQUAL.
  7. CONTRACTOR SHALL SLEEVE RADIANT PIPING THAT PENETRATES OR COMES IN CONTACT WITH SHARP EDGES, ABRASIVE SURFACES AND THROUGH WALLS.
  8. SEE DETAIL #4 ON DRAWING (M504) AND DRAWING (M507) FOR RADIANT PIPE INSTALLATION DETAILS.

**7 RADIANT MANIFOLD PIPING SCHEMATIC**  
NOT TO SCALE



**3 BOILER CONTROLLER SCHEMATIC**  
NOT TO SCALE

**NOTE:**  
HVAC CONTRACTOR SHALL RUN HYDRONIC PIPING FROM BOILER TO (5'-0" TO INDIRECT WATER HEATER). PLUMBING CONTRACTOR SHALL MAKE FINAL HYDRONIC PIPING CONNECTIONS TO INDIRECT HEATER. COORDINATE HYDRONIC PIPING TERMINATION POINT WITH HVAC CONTRACTOR.

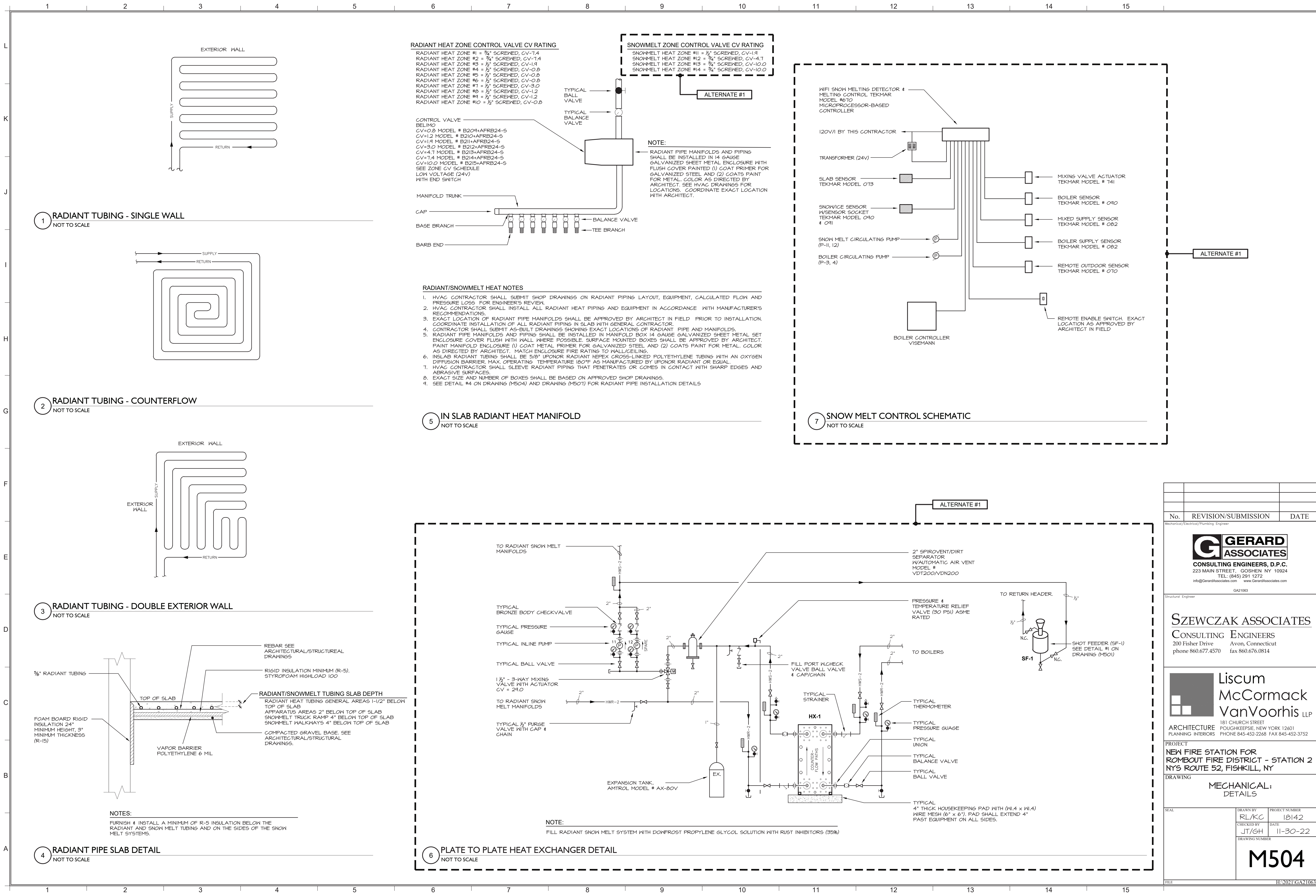
HYDRONIC PIPING TERMINATED WITHIN (5'-0") OF INDIRECT WATER HEATER BY HVAC CONTRACTOR. FINAL CONNECTION TO INDIRECT WATER HEATER BY PLUMBING CONTRACTOR

1 1/4" HYDRONIC SUPPLY FROM BOILER BY HVAC CONTRACTOR

1 1/4" HYDRONIC RETURN TO BOILER BY HVAC CONTRACTOR

HYDRONIC PIPING TERMINATION POINT

No.	REVISION/SUBMISSION	DATE
Mechanical/Electrical/Plumbing Engineer		
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Structural Engineer		
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PROJECT <b>NEW FIRE STATION FOR ROMBOUT FIRE DISTRICT - STATION 2 NYS ROUTE 52, FISHKILL, NY</b>		
DRAWING <b>MECHANICAL: DETAILS</b>		
SEAL	DRAWN BY RL/KC CHECKED BY JT/GH DRAWING NUMBER	PROJECT NUMBER 18142 DATE 11-30-22
<b>M503</b>		
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1 RADIANT TUBING - SINGLE WALL  
NOT TO SCALE

2 RADIANT TUBING - COUNTERFLOW  
NOT TO SCALE

3 RADIANT TUBING - DOUBLE EXTERIOR WALL  
NOT TO SCALE

4 RADIANT PIPE SLAB DETAIL  
NOT TO SCALE

RADIANT HEAT ZONE CONTROL VALVE CV RATING

RADIANT HEAT ZONE #1 = 3/4" SCREWED, CV-1.4  
RADIANT HEAT ZONE #2 = 3/4" SCREWED, CV-1.4  
RADIANT HEAT ZONE #3 = 1/2" SCREWED, CV-1.9  
RADIANT HEAT ZONE #4 = 1/2" SCREWED, CV-0.8  
RADIANT HEAT ZONE #5 = 1/2" SCREWED, CV-0.8  
RADIANT HEAT ZONE #6 = 1/2" SCREWED, CV-0.8  
RADIANT HEAT ZONE #7 = 1/2" SCREWED, CV-3.0  
RADIANT HEAT ZONE #8 = 1/2" SCREWED, CV-1.2  
RADIANT HEAT ZONE #9 = 1/2" SCREWED, CV-1.2  
RADIANT HEAT ZONE #10 = 1/2" SCREWED, CV-0.8

CONTROL VALVE  
BELIMO  
CV=0.8 MODEL # B204+AFRB24-5  
CV=1.2 MODEL # B210+AFRB24-5  
CV=1.9 MODEL # B211+AFRB24-5  
CV=3.0 MODEL # B212+AFRB24-5  
CV=4.7 MODEL # B213+AFRB24-5  
CV=1.4 MODEL # B214+AFRB24-5  
CV=10.0 MODEL # B215+AFRB24-5  
SEE ZONE CV SCHEDULE  
LOW VOLTAGE (24V)  
WITH END SWITCH

MANIFOLD TRUNK  
CAP  
BASE BRANCH  
BARB END  
TYPICAL BALL VALVE  
TYPICAL BALANCE VALVE  
BALANCE VALVE  
TEE BRANCH

RADIANT/SNOWMELT HEAT NOTES

1. HVAC CONTRACTOR SHALL SUBMIT SHOP DRAWINGS ON RADIANT PIPING LAYOUT, EQUIPMENT, CALCULATED FLOW AND PRESSURE LOSS FOR ENGINEER'S REVIEW.
2. HVAC CONTRACTOR SHALL INSTALL ALL RADIANT HEAT PIPING AND EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
3. EXACT LOCATION OF RADIANT PIPE MANIFOLDS SHALL BE APPROVED BY ARCHITECT IN FIELD PRIOR TO INSTALLATION. COORDINATE INSTALLATION OF ALL RADIANT PIPING IN SLAB WITH GENERAL CONTRACTOR.
4. CONTRACTOR SHALL SUBMIT AS-BUILT DRAWINGS SHOWING EXACT LOCATIONS OF RADIANT PIPE AND MANIFOLDS.
5. RADIANT PIPE MANIFOLDS AND PIPING SHALL BE INSTALLED IN MANIFOLD BOX 14 GAUGE GALVANIZED SHEET METAL SET ENCLOSURE COVER FLUSH WITH WALL WHERE POSSIBLE. SURFACE MOUNTED BOXES SHALL BE APPROVED BY ARCHITECT. PAINT MANIFOLD ENCLOSURE (1) COAT METAL PRIMER FOR GALVANIZED STEEL AND (2) COATS PAINT FOR METAL COLOR AS DIRECTED BY ARCHITECT. MATCH ENCLOSURE FIRE RATING TO WALL/CEILING.
6. INSLAB RADIANT TUBING SHALL BE 5/8" UPONOR RADIANT HEPEX CROSS-LINKED POLYETHYLENE TUBING WITH AN OXYGEN DIFFUSION BARRIER. MAX. OPERATING TEMPERATURE 180°F AS MANUFACTURED BY UPONOR RADIANT OR EQUAL.
7. HVAC CONTRACTOR SHALL SLEEVE RADIANT PIPING THAT PENETRATES OR COMES IN CONTACT WITH SHARP EDGES AND ABRASIVE SURFACES.
8. EXACT SIZE AND NUMBER OF BOXES SHALL BE BASED ON APPROVED SHOP DRAWINGS.
9. SEE DETAIL #4 ON DRAWING (M504) AND DRAWING (M507) FOR RADIANT PIPE INSTALLATION DETAILS

5 IN SLAB RADIANT HEAT MANIFOLD  
NOT TO SCALE

SNOWMELT ZONE CONTROL VALVE CV RATING

SNOWMELT HEAT ZONE #11 = 1/2" SCREWED, CV-1.9  
SNOWMELT HEAT ZONE #12 = 3/4" SCREWED, CV-4.7  
SNOWMELT HEAT ZONE #13 = 3/4" SCREWED, CV-10.0  
SNOWMELT HEAT ZONE #14 = 3/4" SCREWED, CV-10.0

ALTERNATE #1

NOTE:

RADIANT PIPE MANIFOLDS AND PIPING SHALL BE INSTALLED IN 14 GAUGE GALVANIZED SHEET METAL ENCLOSURE WITH FLUSH COVER PAINTED (1) COAT PRIMER FOR GALVANIZED STEEL AND (2) COATS PAINT FOR METAL COLOR AS DIRECTED BY ARCHITECT. SEE HVAC DRAWINGS FOR LOCATIONS. COORDINATE EXACT LOCATION WITH ARCHITECT.

7 SNOW MELT CONTROL SCHEMATIC  
NOT TO SCALE

No.	REVISION/SUBMISSION	DATE

Mechanical/Electrical/Plumbing Engineer

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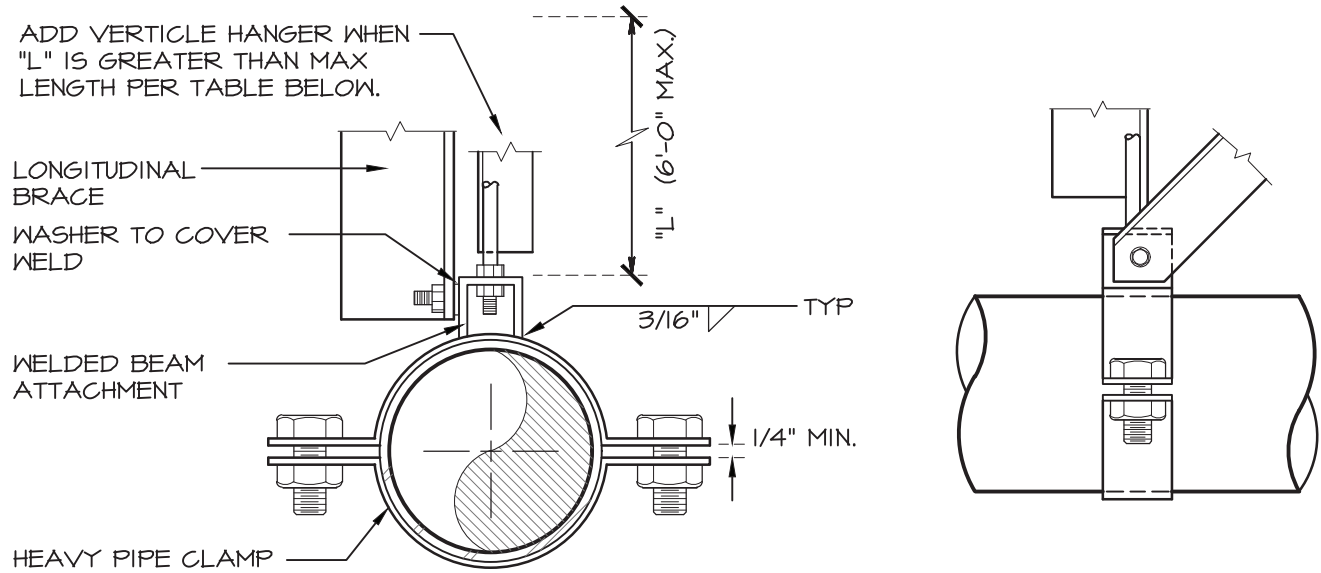
PROJECT  
NEW FIRE STATION FOR  
ROMBOUT FIRE DISTRICT - STATION 2  
NYS ROUTE 52, FISHKILL, NY

DRAWING  
MECHANICAL:  
DETAILS

SEAL	DRAWN BY RL/KC	PROJECT NUMBER 18142
	CHECKED BY JT/GH <td>DATE 11-30-22</td>	DATE 11-30-22
	DRAWING NUMBER	

**M504**

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BRACE SPACING	PIPE	ROD	MAX. ROD LENGTH	VERT. HANGERS	TRANSVERSE HANGERS	BOLT
80'	2½"	½"	25"	2 x 2 x 16ga	2½" x 2½ x 16ga	¾"
80'	3"	½"	25"	2 x 2 x 16ga	2½" x 2½ x 16ga	¾"
80'	4"	¾"	31"	2 x 2 x 16ga	2½" x 2½ x 16ga	¾"
80'	6"	¾"	37"	2 x 2 x 16ga	2½" x 2½ x 16ga	¾"
80'	8"	1"	43"	2 x 2 x 16ga	2½" x 2½ x 16ga	¾"

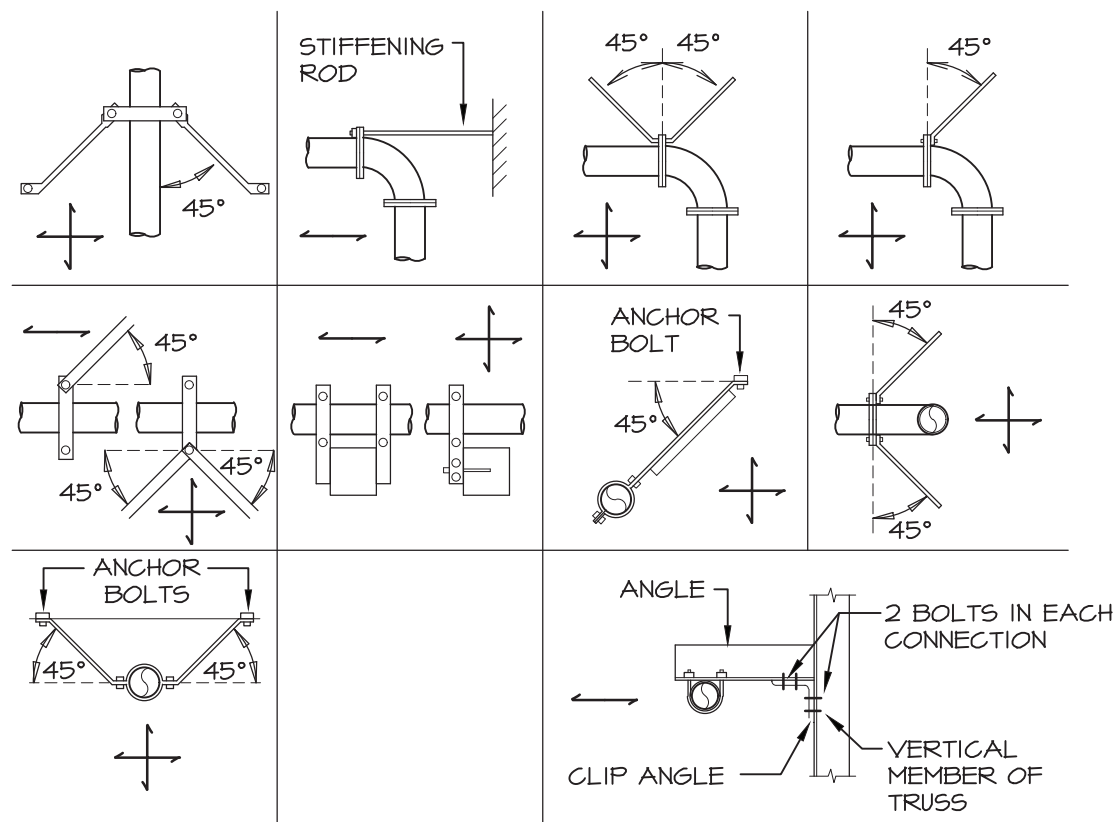
#### SEISMIC EQUIPMENT, DUCTWORK AND PIPE HANGER DESIGN

THE HVAC SYSTEM SHALL COMPLY WITH THE NEW YORK STATE UNIFORM FIRE PROTECTION AND BUILDING CODE SECTION 1613 AND APPLICABLE PROVISIONS OF ASCE 7 (ARCHITECTURAL, MECHANICAL AND ELECTRICAL COMPONENT SEISMIC DESIGN REQUIREMENTS).  
HVAC CONTRACTOR SHALL HIRE NYS LICENSED PROFESSIONAL ENGINEER TO DESIGN AND PREPARE SHOP DRAWINGS WITH CALCULATIONS FOR EACH EQUIPMENT SUPPORT, CONDUIT SUPPORT, MULTIPLE PIPE SUPPORT, TRAPEZE AND SEISMIC RESTRAINT. SUBMIT SHOP DRAWINGS WITH CALCULATIONS TO ENGINEER FOR RECORD AND TO LOCAL AUTHORITY HAVING JURISDICTION FOR APPROVAL.

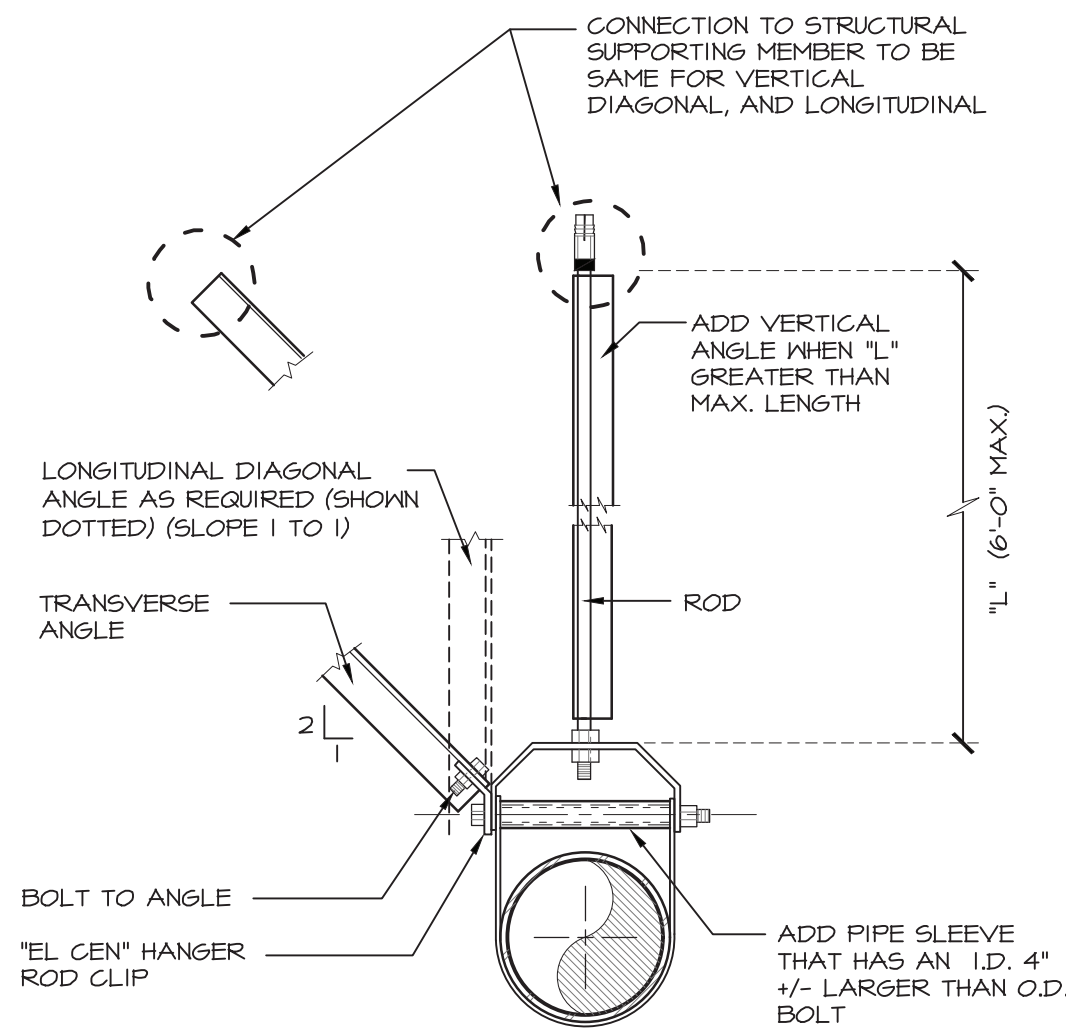
SEISMIC REQUIREMENTS:  
BUILDING USE CATEGORY - IV  
SEISMIC DESIGN CATEGORY - C

#### 1 LONGITUDINAL SEISMIC BRACING

NOT TO SCALE



INDICATES DIRECTION OF RESTRAINT



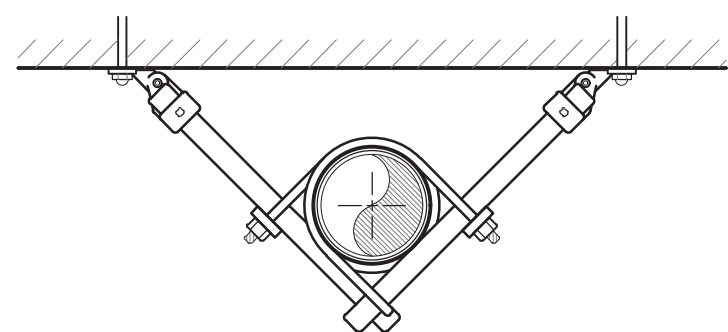
BRACE SPACING	PIPE	ROD	MAX. ROD LENGTH	VERT. HANGERS	TRANSVERSE HANGERS	BOLT
40'	2½"	½"	25"	2 x 2 x 16ga	2½" x 2½ x 16ga	¾"
40'	3"	½"	25"	2 x 2 x 16ga	2½" x 2½ x 16ga	¾"
40'	4"	¾"	31"	2 x 2 x 16ga	2½" x 2½ x 16ga	¾"
40'	6"	¾"	37"	2 x 2 x 16ga	2½" x 2½ x 16ga	¾"
40'	8"	1"	43"	2 x 2 x 16ga	2½" x 2½ x 16ga	¾"

#### 2 SEISMIC SWAY BRACING (GENERAL)

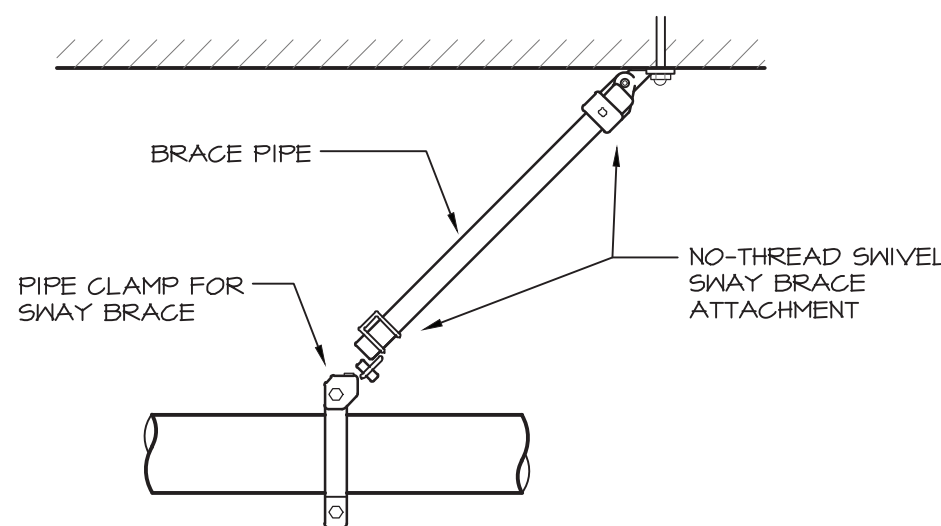
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#### 4 TRANSVERSE SEISMIC PIPE BRACING

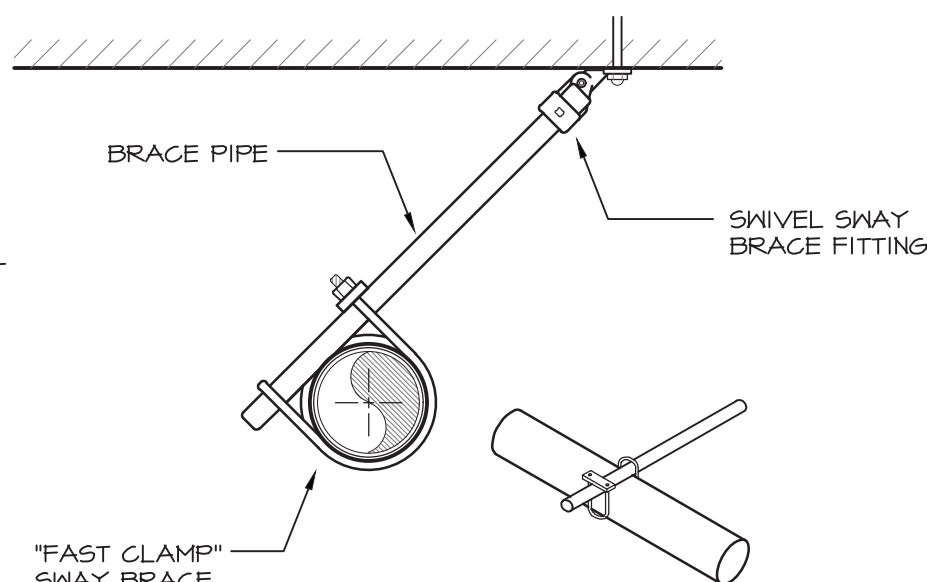
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LONGITUDINAL AND LATERAL BRACE LOCATION  
LATERAL BRACE LOCATION



LONGITUDINAL EARTHQUAKE BRACE  
NON-THREADED BRACE PIPE



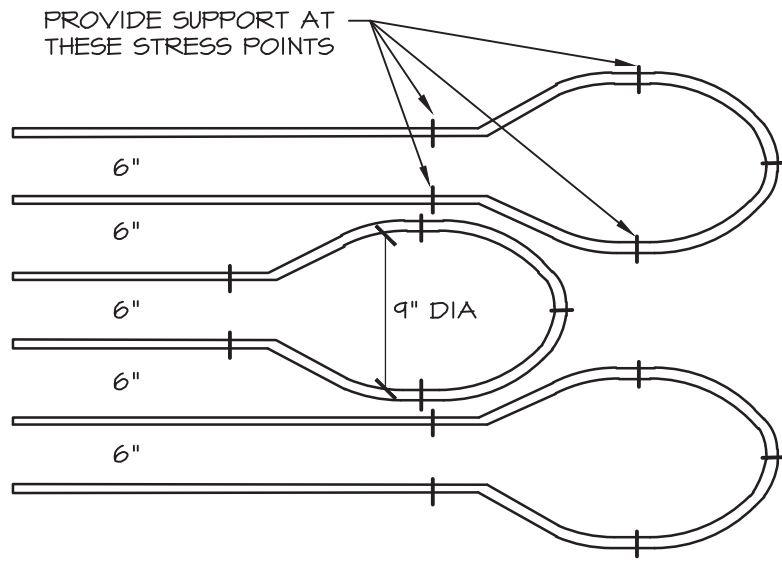
LATERAL EARTHQUAKE BRACE  
NON-THREADED BRACE PIPE

#### 3 SEISMIC HANGER DETAILS

NOT TO SCALE

No.	REVISION/SUBMISSION	DATE
Mechanical/Electrical/Plumbing Engineer		
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Structural Engineer		
<b>SZEWCZAK ASSOCIATES</b> CONSULTING ENGINEERS 200 Fisher Drive Avon, Connecticut phone 860.677.4570 fax 860.676.0814		
<b>Liscum McCormack VanVoorhis LLP</b> 181 CHURCH STREET ARCHITECTURE Poughkeepsie, New York 12601 PLANNING INTERIORS PHONE 845-452-2268 FAX 845-452-3752		
PROJECT <b>NEW FIRE STATION FOR ROMBOUT FIRE DISTRICT - STATION 2</b> <b>NYS ROUTE 52, FISHKILL, NY</b>		
DRAWING <b>MECHANICAL: DETAILS</b>		
SEAL	DRAWN BY <b>RL/KC</b> CHECKED BY <b>JT/GH</b> DRAWING NUMBER <b>M505</b>	PROJECT NUMBER <b>18142</b> DATE <b>11-30-22</b>
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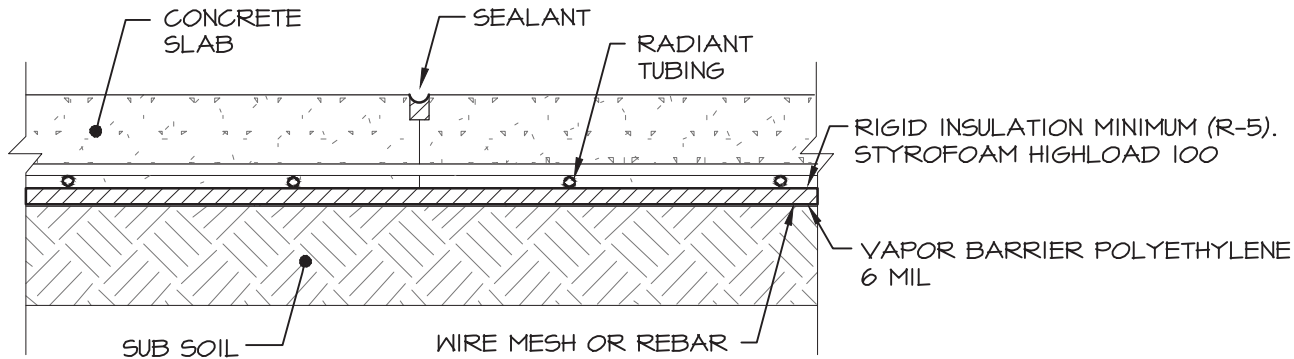




NOTE:  
TUBING MAY BE 'TEAR DROPPED' AT RETURN BENDS AS SHOWN TO AVOID KINKING AND TOUCHING

### 1 RADIANT PIPE SLAB DETAIL

NOT TO SCALE



#### NOTES:

1. TUBING MUST BE PLACED DEEP ENOUGH IN THE SLAB TO BE SAFE FROM THE CONTROL JOINT (SAW BLADE).
2. TUBING MUST BE SECURED TIGHTLY TO PREVENT IT FROM FLOATING UP INTO THE SLAB.
3. TUBING MAY BE WRAPPED WITH INSULATION OR PIPE SLEEVE FOR 3" ON BOTH SIDES OF THE CONTROL JOINT.

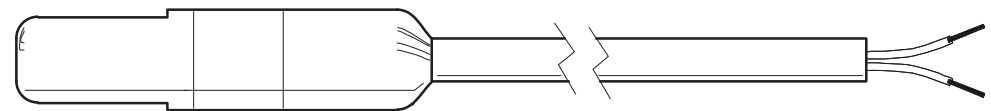
EXPANSION JOINTS - SOMETIMES CALLED ISOLATION JOINTS, THESE JOINTS ARE INTENDED TO ABSORB HORIZONTAL MOVEMENT CAUSED BY DRYING SHRINKAGE AND THE THERMAL EXPANSION AND CONTRACTION OF THE SLAB. RADIANT HEATING SYSTEMS GENERALLY REDUCE THE SEVERITY OF EXPANSION AND CONTRACTION BECAUSE THEY LIMIT THE TEMPERATURE RANGE THE SLAB EXPERIENCES.

THE COEFFICIENT OF LINEAR EXPANSION FOR CONCRETE IS APPROXIMATELY 0.0000055 INCH PER INCH PER DEGREE FAHRENHEIT. THIS MEANS, ROUGHLY, THAT FOR EVERY 10°F TEMPERATURE RISE, A 100 FOOT SPAN OF CONCRETE IS EXPECTED TO EXPAND ABOUT 1/2".

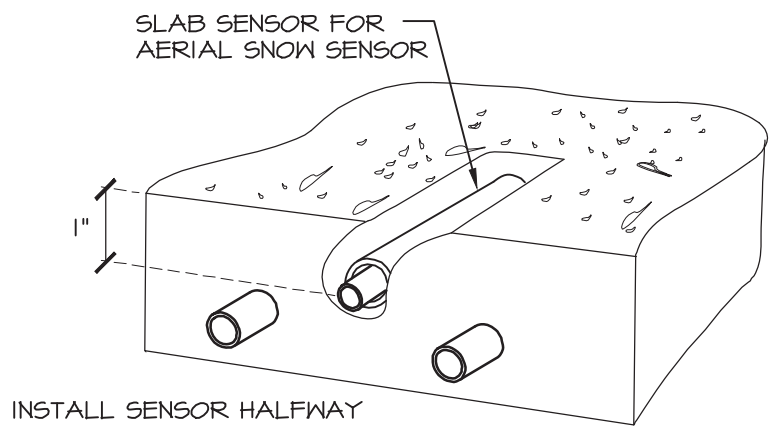
WHEN FOAM INSULATION IS USED TO ACCOMMODATE MINOR SHEAR ACTION, CARE MUST BE TAKEN TO PREVENT FLOATING DURING THE POUR. ALSO, MINIMUM COVER MUST BE COMPUTED ON THE BASIS OF THE OUTSIDE SURFACE OF THE FOAM.

### 2 CONTROL JOINT SAWED OR FORMED DETAIL

NOT TO SCALE



THE UPONOR SLAB SENSOR FOR AERIAL SNOW SENSOR (A3040073) FEATURES A BLACK, HIGH-DENSITY POLYETHYLENE HEAD AND IS IDEAL FOR USE IN SOIL OR CONCRETE. THE SENSOR COMES WITH 40 FT. (12M) OF 2-CONDUCTOR CABLE.



INSTALL SENSOR HALFWAY BETWEEN THE PIPES OR CABLES INSIDE CONDUIT.

#### INSTALLING THE SENSOR

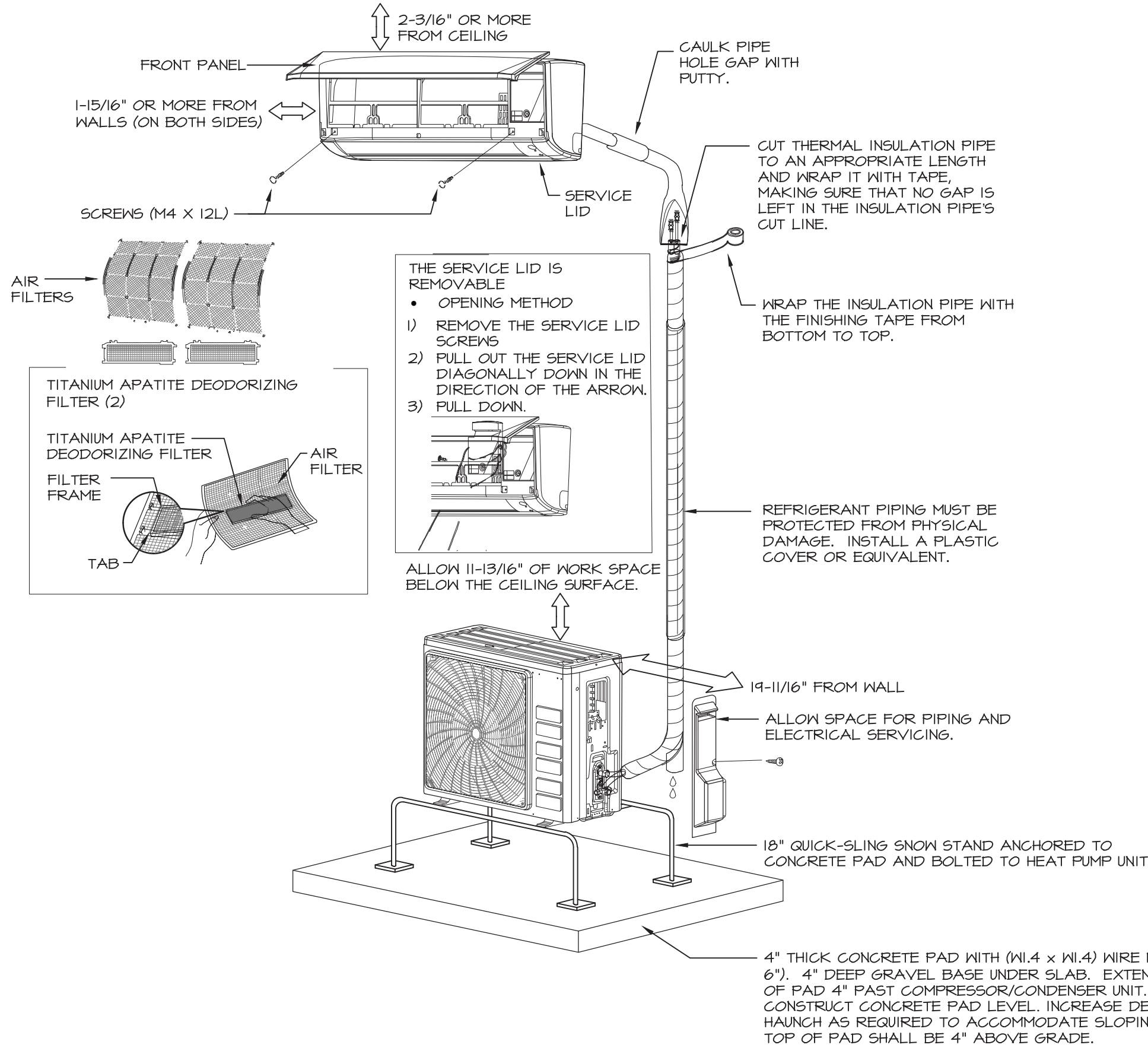
NOTE: PROPER SENSOR PLACEMENT IS CRITICAL FOR CORRECT CONTROL OPERATION. THOUGH SENSORS ARE DESIGNED FOR DIRECT EMBEDDING IN SLAB MATERIAL, UPONOR RECOMMENDS INSTALLING THEM IN A METAL OR PLASTIC SLEEVE. THIS ALLOWS FOR EASY REPLACEMENT IF THE SENSOR SHOULD EVER FAIL OR HAVE TO BE RELOCATED. THE SENSOR SHOULD BE PLACED 1" (25MM) BELOW THE SLAB SURFACE AND HALFWAY BETWEEN THE PIPES OR ELECTRIC CABLES.

#### SENSOR WIRING

CAUTION: DO NOT RUN SENSOR WIRES PARALLEL TO TELEPHONE OR POWER CABLES. IF SENSOR WIRES ARE LOCATED IN AN AREA WITH STRONG SOURCES OF ELECTROMAGNETIC INTERFERENCE, USE SHIELDED CABLE OR TWISTED PAIR. ALTERNATELY, THE WIRES CAN BE RUN IN A METAL CONDUIT THAT IS GROUNDED TO THE COMMON SENSOR TERMINAL ON THE CONTROL AND NOT TO EARTH GROUND. SENSOR WIRING CAN EXTEND UP TO 500 FT. USING 18 AWG WIRE. WIRE SPLICES SHOULD BE PROPERLY SOLDERED AND PROTECTED IN AN ACCESSIBLE, WATERPROOF JUNCTION BOX.

### 3 SLAB SENSOR DETAIL

NOT TO SCALE

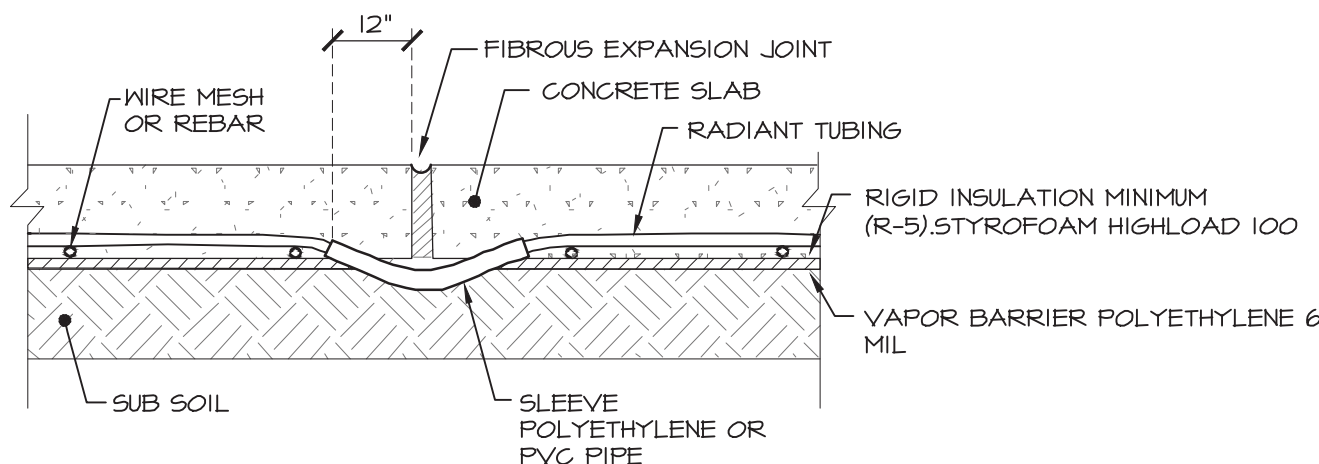


#### NOTES:

- \* BE SURE TO ADD THE PROPER AMOUNT OF ADDITIONAL REFRIGERANT. FAILURE TO DO SO MAY RESULT IN REDUCED PERFORMANCE.
- \*\* THE SUGGESTED SHORTEST PIPE LENGTH IS 10FT (3M), IN ORDER TO AVOID NOISE FROM THE OUTDOOR UNIT AND VIBRATION. (MECHANICAL NOISE AND VIBRATION MAY OCCUR DEPENDING ON HOW THE UNIT IS INSTALLED AND THE ENVIRONMENT IN WHICH IT IS USED.)

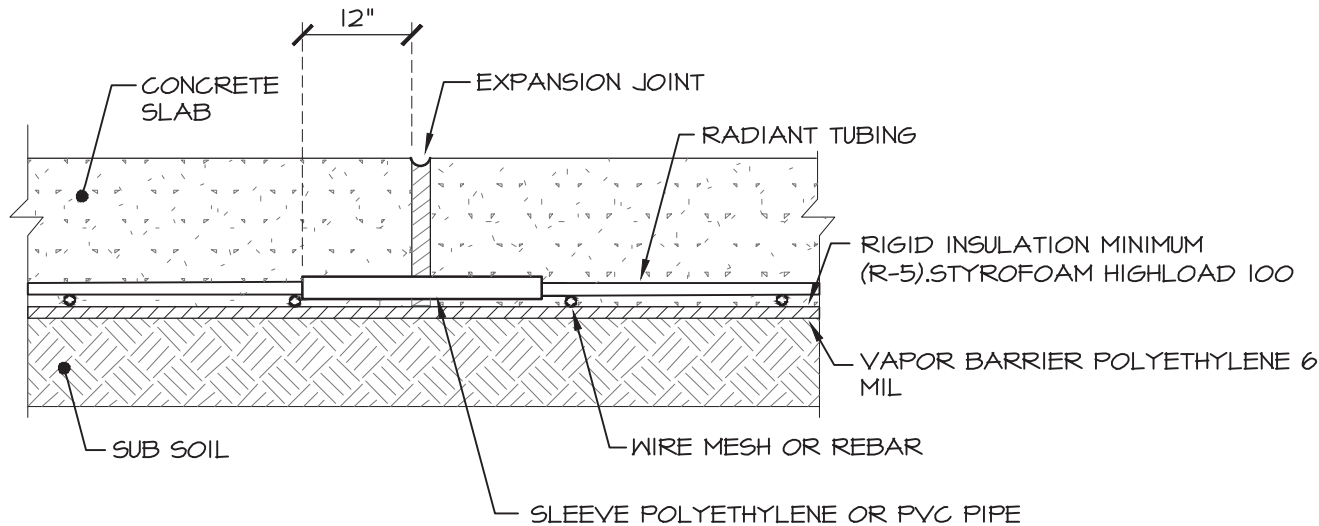
### 4 INDOOR/OUTDOOR UNIT INSTALLATION DETAIL

NOT TO SCALE



#### NOTE:

1. DIP TUBING BELOW SLAB INTO SUBSOIL.

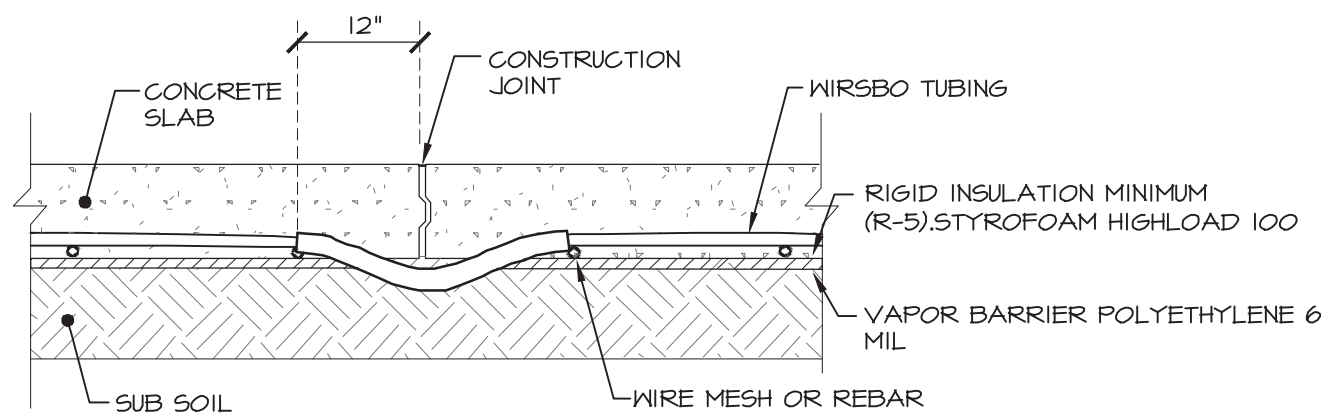


#### NOTE:

IF THE TUBING MUST REMAIN IN THE SLAB, WRAP THE TUBING WITH A PIPE SLEEVE OR A LARGER DIAMETER TUBING FOR 6" ON BOTH SIDES OF THE EXPANSION JOINT.

### 5 EXPANSION JOINT DETAILS

NOT TO SCALE



#### NOTE:

1. DIP TUBING BELOW SLAB INTO SUBSOIL.

JOINTS IN CONCRETE - CONCRETE SLABS OFTEN REQUIRE CONSTRUCTION JOINTS, CONTROL JOINTS OR EXPANSION JOINTS. DETAILS FOR THESE JOINTS MUST BE SPECIFIED ON THE PLAN. PROVISIONS MUST BE MADE TO CONTROL SHEAR FORCES AT THE JOINTS AND ELIMINATE DAMAGE TO THE TUBING.

CONSTRUCTION JOINTS - CONSTRUCTION JOINTS SEPARATE TWO POURS OF A SLAB COMPLETED AT DIFFERENT TIMES. BECAUSE IT IS DIFFICULT TO CONSTRUCT A LARGE SLAB IN ONE POUR, A BULKHEAD IS INSTALLED TO CONTAIN SECTIONS OF THE SLAB UNTIL THE NEXT PHASE IS POURED. IT MAY BE CONVENIENT TO INSTALL THE TUBING IN AN AREA JUST BEFORE THE SLAB IS POURED. THAT MAKES IT EASIER TO MOVE CONCRETE EQUIPMENT

FROM PLACE TO PLACE AND REDUCES THE CHANCES THAT THE TUBING WILL BE DAMAGED DURING INSTALLATION. TYPICALLY, THE TUBING IS DROPPED BELOW THE CONTROL JOINT.

CONTROL JOINTS, SOMETIMES CALLED CONTRACTION JOINTS, ARE PLACES WHERE THE CONCRETE SURFACE IS SCORED TO CONTROL CRACKING AND RELIEVE THE STRESS CREATED WHEN CONCRETE SHRINKS DURING THE CURING PROCESS. THESE JOINTS ELIMINATE THE RANDOM CRACKS THAT WOULD OTHERWISE OCCUR. BECAUSE CONTROL JOINTS ARE OFTEN CUT INTO THE SLAB AFTER IT HAS SET, THE TUBING MUST BE PLACED DEEP ENOUGH IN THE SLAB TO AVOID THE BLADE USED TO SCORE THE CONCRETE.

No.	REVISION/SUBMISSION	DATE
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<b>SZEWCZAK ASSOCIATES</b> CONSULTING ENGINEERS 200 Fisher Drive Avon, Connecticut phone 860.677.4570 fax 860.676.0814		
<b>Liscum McCormack VanVoorhis LLP</b> ARCHITECTURE 181 CHURCH STREET POUGHKEEPSIE, NEW YORK 12601 PLANNING INTERIORS PHONE 845-452-2268 FAX 845-452-3752		
PROJECT NEW FIRE STATION FOR ROMBOUT FIRE DISTRICT - STATION 2 NYS ROUTE 52, FISHKILL, NY		
DRAWING MECHANICAL: DETAILS		
SEAL	DRAWN BY RL/KC	PROJECT NUMBER 18142
	CHECKED BY JT/GH	DATE 11-30-22
	DRAWING NUMBER <b>M507</b>	
FILE	H:\2021\GA21063	

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MINIMUM HANGER SIZES FOR RECTANGULAR DUCT								
MINIMUM HALF OF DUCT PERIMETER	PAIR AT 10FI SPACING		PAIR AT 8FI SPACING		PAIR AT 5FI SPACING		PAIR AT 4FI SPACING	
	STRAP	ROD	STRAP	ROD	STRAP	ROD	STRAP	ROD
P/2 = 30"	1" x 22ga	¼"	1" x 22ga	¼"	1" x 22ga	¼"	1" x 22ga	¼"
P/2 = 72"	1" x 18ga	¾"	1" x 20ga	¼"	1" x 22ga	¼"	1" x 22ga	¼"
P/2 = 96"	1" x 16ga	¾"	1" x 18ga	¾"	1" x 20ga	¾"	1" x 22ga	¾"
P/2 = 120"	½" x 16ga	½"	1" x 16ga	½"	1" x 16ga	¾"	1" x 18ga	¾"
P/2 = 142"	-	-	1" x 16ga	½"	1" x 16ga	¾"	1" x 18ga	¾"
WHEN STRAPS ARE LAP JOINED USE THESE MINIMUM FASTENERS:					SINGLE HANGER MAXIMUM ALLOWABLE LOAD			
					STRAP		ROD (Dia.)	
					1" x 22ga - 26OLbs.		¼" - 27OLbs.	
					1" x 20ga - 32Lbs.		¾" - 68OLbs.	
1" x 18, 20, 22ga	-	ON ¼" BOLT	1" x 18ga - 42OLbs. ½" - 125OLbs.					
1" x 16ga	-	TWO ¼" Dia.	1" x 16ga - 40OLbs. ¾" - 200OLbs.					
1" x 16ga	-	TWO ¾" Dia.	½" x 16ga - 110OLbs. ¾" - 300OLbs.					
PLACE FASTENERS IN SERIES, NOT SIDE BY SIDE.								
NOTES:								
1. DIMENSIONS OTHER THAN GAUGE ARE IN INCHES.								
2. TABLES ALLOW FOR DUCT HEIGHT, 1 LB/SF. INSULATION WEIGHT AND NORMAL REINFORCEMENT AND TRAPEZE HEIGHT, BUT NO EXTERNAL LOADS.								
3. STRAPS ARE GALVANIZED STEEL.								
4. ALLOWABLE LOADS FOR P/2 ASSUME THAT DUCTS ARE 16 GA. MAXIMUM, EXCEPT WHEN MAXIMUM DUCT DIMENSION (W) IS OVER 60" THEN P/2 MAXIMUM IS 125 WL.								

PIPE HANGER SCHEDULE											
PIPE SIZE (INCHES)	MAXIMUM HORIZONTAL SPACING (FEET)				SINGLE STEEL ROD HANGER SIZE (INCHES)		HANGER TYPE STEEL	MAXIMUM VERTICAL SPACING (FEET)			
	COPPER TUBE	CAST IRON	STEEL PIPE	CPVC PIPE	TUBING	PIPING		COPPER TUBE	CAST IRON	STEEL PIPE	CPVC PIPE
½"	6	5	8 (5)	3	¼"	¾"	BAND	10	15	15	10
¾"	6	5	8 (5)	3	¼"	¾"	BAND	10	15	15	10
1"	6	5	8 (5)	3	¼"	¾"	BAND	10	15	15	10
1¼"	6	5	4 (5)	4	¼"	¾"	CLEVIS	10	15	15	10
1½"	6	5	4 (5)	4	¼"	¾"	CLEVIS	10	15	15	10
2"	10	5	10 (5)	4	¼"	¾"	CLEVIS	10	15	15	10
2½"	10	5	12 (5)	4	¾"	½"	CLEVIS	10	15	15	10
3"	10	5	12 (5)	4	¾"	½"	CLEVIS	10	15	15	10
4"	10	5	12 (5)	4	½"	¾"	CLEVIS	10	15	15	10
5"	10	5	12 (5)	4	½"	¾"	CLEVIS	10	15	15	10
6"	10	5	12 (5)	4	½"	¾"	CLEVIS	10	15	15	10
8"	10	5	12 (5)	4	¾"	½"	CLEVIS	10	15	15	10
10"	10	5	12 (5)	4	¾"	½"	CLEVIS	10	15	15	10
12"	10	5	12 (5)	4	¾"	½"	CLEVIS	10	15	15	10
NOTES:											
1. MAXIMUM HORIZONTAL SPACING OF CAST-IRON PIPE HANGERS SHALL BE INCREASED TO 10 FEET WHERE 10 FOOT LENGTHS OF PIPE ARE INSTALLED.											
2. INSTALL HANGER OR SUPPORT CLOSE TO THE POINT OF CHANGE OF DIRECTION IN ALL PIPE RUNS.											
3. INSTALL ADDITIONAL HANGERS ON SUPPORTS AT CONCENTRATED LOADS.											
4. SUPPORT ALL BRANCH PIPING OVER 5'-0" IN LENGTH.											
5. ½" GAS PIPING SHALL BE SUPPORTED EVERY 6'-0". ¾" AND 1" GAS PIPING SHALL BE SUPPORTED EVERY 8'-0". ¼" AND LARGER GAS PIPING SHALL BE SUPPORTED EVERY 10'-0".											
6. SUPPORT VERTICAL PIPING AT EVERY FLOOR.											

HEATING AND COOLING MINIMUM PIPE INSULATION <sup>a</sup> COMMERCIAL				
(THICKNESS IN INCHES)				
FLUID	NOMINAL PIPE DIAMETER			
	< 1.5"	1.5" < 4.0"	4.0" to < 8.0"	≥ 8.0"
HOT WATER (141 - 200 °F)	1.5	2.0	2.0	2.0
CHILLED WATER OR REFRIGERANT	1.5	1.5	1.5	1.5
CONDENSATE	1.0	1.0	1.0	1.5
FOR SI: 1 INCH = 25.4mm, BTU PER INCH/H x FT <sup>2</sup> x °F = W PER 25mm/K x M <sup>2</sup>				
<sup>a</sup> BASED IN INSULATION HAVING A CONDUCTIVITY NOT EXCEEDING 0.21 BTU PER INCH/H x FT <sup>2</sup> x °F				

MINIMUM DUCT INSULATION COMMERCIAL
<p>ALL SUPPLY AND RETURN AIR DUCTS AND PLENUMS SHALL BE INSULATED WITH A MINIMUM OF R-6 INSULATION WHEN LOCATED IN UNCONDITIONED SPACES AND WITH A MINIMUM OF R-12 INSULATION WHEN LOCATED OUTSIDE THE BUILDING ENVELOPE. WHEN LOCATED WITHIN A BUILDING ENVELOPE ASSEMBLY, THE DUCT OR PLENUM SHALL BE SEPARATED FROM THE BUILDING EXTERIOR OR UNCONDITIONED OR EXEMPT SPACES BY A MINIMUM OF R-12 INSULATION.</p> <p>EXCEPTIONS:</p> <p>1. WHEN LOCATED WITHIN EQUIPMENT.</p> <p>2. WHEN THE DESIGN TEMPERATURE DIFFERENCE BETWEEN THE INTERIOR AND EXTERIOR OF THE DUCT OR PLENUM DOES NOT EXCEED 15°F (8°C).</p> <p>ALL JOINTS, LONGITUDINAL AND TRANSVERSE SEAMS, AND CONNECTIONS IN DUCTWORK, SHALL BE SECURELY FASTENED AND SEALED WITH WELDS, GASKETS, MASTICS (ADHESIVES), MASTIC-PLUS-EMBEDDED FABRIC SYSTEMS OR TAPES. TAPES AND MASTICS USED TO SEAL DUCTWORK SHALL BE LISTED AND LABELED IN ACCORDANCE WITH UL 181A OR UL 181B. DUCT CONNECTIONS TO FLANGES OF AIR DISTRIBUTION SYSTEM EQUIPMENT SHALL BE SEALED AND MECHANICALLY FASTENED. UNLISTED DUCT TAPE IS NOT PERMITTED AS A SEALANT ON ANY METAL DUCTS.</p> <p>NOTE: DUCT INSULATION, COVERINGS AND LINING MATERIALS AND ADHESIVES SHALL HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25, AND A SMOKE DEVELOPED INDEX OF NOT MORE THAN 50, IN ACCORDANCE WITH 2020 MC SECTION 604.3.</p>

MINIMUM HANGER SIZES FOR ROUND DUCT				
DIAMETER	MAXIMUM SPACING	WIRE DIAMETER	ROD	STRAP
10" DN.	12'	-	¼"	1" x 22ga.
11" - 18"	12'	-	¼"	1" x 22ga.
19" - 24"	12'	-	¼"	1" x 22ga.
25" - 36"	12'	-	¾"	1" x 22ga.
37" - 50"	12'	-	TWO ¾"	TWO 1" x 20ga.
51" - 60"	12'	-	TWO ¾"	TWO 1" x 18ga.
61" - 84"	12'	-	TWO ¾"	TWO 1" x 16ga.
NOTES:				
1. STRAPS AND RODS ARE GALVANIZED STEEL.				
2. TABLE ALLOWS FOR CONVENTIONAL WALL THICKNESS, AND JOINT SYSTEMS PLUS ONE LB/SF OF INSULATION WEIGHT. IF HEAVIER DUCTS ARE TO BE INSTALLED, ADJUST HANGER SIZES.				

- GENERAL HVAC NOTES
- ALL HVAC WORK SHALL BE INSTALLED IN ACCORDANCE WITH 2020 MECHANICAL CODE, FIRE CODE, PLUMBING CODE, FUEL GAS CODE, BUILDING CODE, AND ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE, ALL LOCAL CODES AND GENERALLY ACCEPTED STANDARDS.
  - HVAC CONTRACTOR SHALL PROVIDE ALL EQUIPMENT, PIPING, VALVES, ACCESS DOORS, HANGERS, FITTINGS AND MISCELLANEOUS COMPONENTS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER THE HVAC SYSTEMS COMPLETE, OPERABLE, AND IN ACCORDANCE WITH APPLICABLE CODES AND GENERALLY ACCEPTED INDUSTRY STANDARDS.
  - HVAC CONTRACTOR SHALL SUBMIT SHOP DRAWINGS ON ALL EQUIPMENT TO ENGINEER FOR APPROVAL. DEMONSTRATE NEW HVAC SYSTEMS TO SCHOOL AND REVIEW MAINTENANCE PROCEDURES.
  - HVAC CONTRACTOR SHALL SEAL AROUND ALL PIPE AND DUCT PENETRATIONS THROUGH FIRE RATED WALLS, FLOORS AND CEILINGS WITH HILTI INTUMESCENT FIRE STOP MATERIALS TO MAINTAIN FIRE AND SMOKE RATINGS. DUCTS PENETRATING FIRE RATED WALLS, FLOORS AND CEILINGS SHALL BE INSTALLED WITH FIRE DAMPER AND ACCESS DOORS WHETHER SPECIFICALLY SHOWN ON THE DRAWINGS OR NOT. PROVIDE FIRE STOP SEALANT ON ALL EXISTING PIPING AND DUCTWORK PENETRATING NEW FIRE RATED WALLS CONSTRUCTED AS PART OF THE PROJECT.
  - HVAC CONTRACTOR SHALL NOT DRILL OR CUT ANY STRUCTURAL MEMBERS WITHOUT PERMISSION OF ARCHITECT.
  - ALL EQUIPMENT SHALL BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS.
  - HVAC CONTRACTOR SHALL FURNISH AND INSTALL ALL CONTROL WIRING (24V) FOR SYSTEMS SHOWN ON HVAC DRAWINGS AND DESCRIBED IN HVAC SPECIFICATIONS, INCLUDING ALL RELAYS, TRANSFORMERS, CONDUIT, JUNCTION BOXES, CONDUCTORS, THERMOSTATS, APPURTENANCES AND ALL NECESSARY EQUIPMENT TO MAKE SYSTEMS COMPLETE AND OPERABLE.
  - HVAC CONTRACTOR SHALL PAY FOR ALL PERMITS AND INSPECTION FEES REQUIRED BY LOCAL AUTHORITY HAVING JURISDICTION.
  - HVAC CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL CUTTING, PATCHING, AND PAINTING ASSOCIATED WITH HVAC WORK WITH THE GENERAL CONTRACTOR, WHO SHALL PERFORM THE WORK AT HVAC CONTRACTORS COST. ALL FLOORS AND WALLS WHERE A PIPE HAS BEEN REMOVED AND NOT REPLACED SHALL BE PATCHED BY THE GENERAL CONTRACTOR, HVAC CONTRACTOR SHALL COORDINATE LOCATION AND PAY ALL COSTS.
  - ALL DUCTWORK SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH SHEET METAL AND AIR CONDITIONING HVAC CONTRACTORS NATIONAL ASSOCIATION (SMACNA) DUCT STANDARDS. PROVIDE RADIUS TURNS OR TURNING VANES ON ALL CHANGES IN DIRECTION IN ACCORDANCE WITH SMACNA STANDARDS.
  - ALL CONTROL WIRING SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (N.E.C.) AND ALL LOCAL CODES. ALL CONDUCTORS SHALL BE COPPER WITH THHN INSULATION IN EMT CONDUIT. 120V/1 - MINIMUM CONDUCTOR SIZE #12, 24V - MINIMUM CONDUCTOR SIZE #18. MINIMUM CONDUIT SIZE SHALL BE ¾". CONDUIT INSTALLED OUTDOORS SHALL BE GALVANIZED.
  - UNLESS OTHERWISE NOTED, ALL DUCTWORK SHALL BE FABRICATED WITH MINIMUM 26 GAGE GALVANIZED STEEL INCLUDING ROUND DUCTS.
  - FINAL LOCATIONS OF ALL THERMOSTATS AND SENSORS SHALL BE APPROVED BY ARCHITECT PRIOR TO INSTALLATION, COORDINATE IN FIELD. THERMOSTATS AND SENSORS SHALL BE LOCATED 4'-0" ABOVE FINISHED FLOOR.
  - HVAC CONTRACTOR SHALL PROVIDE ACCESS DOORS FOR ALL VALVES AND DUCT ACCESSORIES CONCEALED IN WALLS/CEILINGS. ACCESS DOORS SHALL HAVE APPROPRIATE FIRE RATING TO MAINTAIN INTEGRITY OF WALL/CEILING.
  - HVAC CONTRACTOR SHALL COORDINATE FINAL LOCATIONS OF ALL PIPING IN FINISHED AREAS WITH GENERAL CONTRACTOR TO ENSURE CONCEALMENT OF ALL PIPING IN WALLS, FLOORS AND CEILINGS.
  - HVAC CONTRACTOR SHALL FURNISH AND INSTALL VALVE TAGS, PIPE LABELS, DUCT LABELS AND EQUIPMENT LABELS. LOG ALL TAGS AND LABELS IN A 3-RING BINDER WITH LOCATION, DESCRIPTION AND FUNCTION. SEE SPECIFICATIONS FOR MORE INFORMATION.
  - HVAC CONTRACTOR SHALL PROVIDE ALL AIR AND HYDRONIC BALANCING FOR ALL NEW HVAC SYSTEMS. PROVIDE ALL NECESSARY MOTOR, DRIVE, BELT CHANGES AND ETC. SEE SPECIFICATIONS FOR BALANCE PROCEDURES AND ADDITIONAL REQUIREMENTS. HVAC CONTRACTOR SHALL COMFORT BALANCE ALL HVAC SYSTEMS TO THE SATISFACTION OF ENGINEER/ARCHITECT. SUBMIT BALANCE REPORT TO ENGINEER. SEE HVAC SPECIFICATIONS BALANCE REPORT REQUIREMENTS.
  - HVAC CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SUPPLEMENTAL STRUCTURAL STEEL SUPPORT ASSOCIATED WITH NEW HVAC EQUIPMENT HUNG OR SUPPORTED FROM OR ON THE BUILDING STRUCTURE. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO ARCHITECT FOR APPROVAL PRIOR TO STEEL FABRICATION AND INSTALLATION OF EQUIPMENT.
  - HVAC CONTRACTOR SHALL SUBMIT PIPING AND DUCTWORK FULLY COORDINATED SHOP DRAWINGS FOR ENGINEERS REVIEW. SEE GENERAL CONDITIONS FOR NUMBER OF SHOP DRAWINGS.
  - HVAC CONTRACTOR SHALL INSTRUCT FIRE DEPARTMENT AND KEY PERSONNEL ON OPERATION OF ALL HVAC SYSTEMS. SET ALL THERMOSTATS TO TEMPERATURES AND SCHEDULES AS DIRECTED BY FIRE DEPARTMENT.
  - HVAC CONTRACTOR SHALL INCLUDE IN BID ALL MATERIALS, RIGGING AND LABOR REQUIRED FOR THE COMPLETE AND PROPER INSTALLATION OF THE MECHANICAL SYSTEM.
  - HVAC CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO THE BEGINNING OF WORK, AND COORDINATE WORK ALL OTHER TRADES.
  - PROVIDE ALL PIPE OPENINGS THROUGH PARTITIONS WITH PIPE SLEEVES.
  - PROVIDE VOLUME DAMPERS ON ALL SUPPLY, RETURN AND EXHAUST BRANCH DUCTWORK, WHETHER SPECIFICALLY INDICATED ON DRAWINGS OR NOT.
  - ALL MOTOR STARTERS AND DISCONNECT SWITCHES FOR HVAC EQUIPMENT SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR. DISCONNECT SWITCHES FURNISHED BY THE MECHANICAL CONTRACTOR FOR HVAC EQUIPMENT SHALL BE HEAVY DUTY TYPE AND SHALL BE NEMA 3R WHEN LOCATED OUTSIDE.
  - HVAC CONTRACTOR SHALL GUARANTEE ALL WORKMANSHIP AND MATERIAL INSTALLED UNDER THIS CONTRACT FREE FROM DEFECTS FOR A PERIOD OF ONE (1) YEAR FROM DATE OF SUBSTANTIAL COMPLETION AND ACCEPTANCE BY THE OWNER AND AGREES TO REPLACE DEFECTIVE WORK (INCLUDING ALL REQUIRED LABOR AND MATERIAL) AT NO ADDITIONAL COST TO OWNER DURING THE GUARANTEE PERIOD.
  - HVAC CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING START-UP OF ALL NEW EQUIPMENT, CONTROLS, AND ETC. TO ENSURE CORRECT OPERATION OF INSTALLED DEVICES.
  - HVAC CONTRACTOR SHALL PROVIDE OWNER WITH CATALOG DATA, OPERATING INSTRUCTIONS, MAINTENANCE INSTRUCTIONS, AND RECORD (AS-BUILT) DRAWINGS OF ALL COMPLETED WORK.
  - ALL NEW HOLES IN WALLS AND FLOORS SHALL BE CORE DRILLED BY THIS CONTRACTOR. PRIOR TO CORE DRILLING FLOORS, RADAR SCAN FLOOR SLABS. USE CAUTION WHEN CORE DRILLING TO AVOID DAMAGE TO EQUIPMENT, SYSTEMS, STRUCTURE AND ETC. ANY ITEMS DAMAGED AS A RESULT OF CORE DRILLING SHALL BE REPAIRED BY THIS CONTRACTOR AT NO ADDITIONAL COST TO FIRE DEPARTMENT.

No.	REVISION/SUBMISSION	DATE
Mechanical/Electrical/Plumbing Engineer		
<div> <div>  </div> <div> <b>GERARD ASSOCIATES</b>  CONSULTING ENGINEERS, D.P.C.  223 MAIN STREET, GOSHEN NY 10924  TEL: (845) 291 1272  info@GerardAssociates.com www.GerardAssociates.com </div> </div>		
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<div> <div>  </div> <div> <b>Liscum McCormack VanVoorhis LLP</b>  ARCHITECTURE 181 CHURCH STREET POUGHKEEPSIE, NEW YORK 12601  PLANNING INTERIORS PHONE 845-452-2268 FAX 845-452-3752 </div> </div>		
PROJECT NEW FIRE STATION FOR ROMBOUT FIRE DISTRICT - STATION 2 NYS ROUTE 52, FISHKILL, NY		
DRAWING MECHANICAL: EQUIPMENT SCHEDULES		
SEAL	DRAWN BY RL/KC CHECKED BY JT/GH DRAWING NUMBER	PROJECT NUMBER 18142 DATE 11-30-22
M600		
FILE H:\2021\GA21063		

AIR HANDLING UNIT SCHEDULE			
DESIGNATION	AHU-1	AHU-2	AHU-3
LOCATION	ATTIC MECH. ROOM	ATTIC MECH. ROOM	ATTIC MECH. ROOM
AREA SERVED	DAYROOM	MEETINGS/TRAININGS	OFFICE/RADIO ROOM
MANUFACTURER	DAIKIN	DAIKIN	DAIKIN
MODEL NUMBER	FTQ48TAVJJD	FTQ48TAVJJD	FTQ18TAVJJD
WEIGHT OF UNIT (POUNDS)	150	150	115
UNIT DIMENSIONS LxHxH (IN)	21" x 21" x 53.43"	21" x 21" x 53.43"	21" x 17.5" x 45"
DESIGN DATA:			
SUPPLY AIR (CFM)	1520/1290/1060	1520/1290/1060	600/510/420
OUTDOOR AIR (CFM)	120	470	60
FILTER DATA:			
TYPE/EFFICIENCY	PLEATED/MERV 8	PLEATED/MERV 8	PLEATED/MERV 8
QUANTITY	1	1	1
HOT WATER COIL DATA:			
No. OF ROWS	2	2	2
EAT (°F) DB	65.0	65.0	65.0
LAT (°F) DB	116.16	116.16	130.50
TOTAL CAP. (MBH)	88.2	88.2	44.3
ENT/LWT (°F)	180/160.22	180/160.22	180/161.25
FLUID FLOW RATE (GPM)	8.7	8.7	4.7
FLUID PD (FT)	7.5	7.5	6.07
EVAPORATOR COIL DATA:			
EAT (°F) DB/MB	80.0/67.0	80.0/67.0	80.0/67.0
TOTAL CAPACITY (MBH)	48.0	48.0	18.0
SUPPLY FAN DATA:			
AIRFLOW VOLUME (CFM)	1520/1290/1060	1520/1290/1060	600/510/420
HP	3/4	3/4	1/2
ESP (IN H <sub>2</sub> O)	0.9	0.9	0.9
DISCHARGE LOCATION	TOP	TOP	TOP
VOLTS/Ø/Hz	208/1/60	208/1/60	208/1/60
FLA (AMPS)	6.5	6.5	4.9
MOTOR EFFICIENCY	ECM	ECM	ECM
NOTES: 1. UNITS BASED ON DAIKIN. 2. HVAC CONTRACTOR TO COORDINATE COIL CONNECTION AND ACCESS DOOR SIDE IN FIELD PRIOR TO ORDERING. 3. PROVIDE (1) COMPLETE EXTRA SET OF FILTERS FOR EACH UNIT. 4. REFER TO PLANS AND SECTIONS FOR AIR HANDLING UNIT SECTION ARRANGEMENTS AND DUCTWORK CONNECTION LOCATIONS. 5. ALL MOTORS 1 HP AND LARGER SHALL BE PREMIUM EFFICIENCY. FANS PROVIDED WITH VARIABLE FREQUENCY DRIVES WITH DISCONNECT SWITCHES, SHALL HAVE INVERTER RATED PREMIUM EFFICIENCY MOTORS SUITABLE FOR VARIABLE SPEED AND TORQUE APPLICATIONS. TURN DOWN RATIO OF 10:1. 6. PROVIDE NEMA 1 DISCONNECT SWITCH FOR AIR HANDLERS 7. CASED HEATING COIL DIVERSIFIED HEAT TRANSFER, INC. MODEL: AHCC-2-210, AHCC-2-1T5 8. CO2 SENSOR FOR VENTILATION CONTROL ON AIR HANDLERS (AHU-1, 2, 3)			

BOILER SCHEDULE		
DESIGNATION	B-1	B-2
LOCATION	BOILER ROOM	BOILER ROOM
SERVICE	HOT WATER	HOT WATER
MANUFACTURER	VISEMANN	VISEMANN
MODEL NUMBER	G12 - T50	G12 - T50
OPERATING WEIGHT (LBS)	963	963
WATER CONTENT	50.0 GAL	50.0 GAL
GROSS OUTPUT (MBH)	734	734
FUEL SOURCE	NATURAL GAS	NATURAL GAS
INPUT (MBH)	750	750
BOILER HP	21.9	21.9
MIN/MAX. INLET GAS PRESSURE (IN W.C.)	4.0/14	4.0/14
LWT/ENT (°F)	180/160	180/160
FLOW RATE (GPM)	58	58
WATER P.D. (FT.)	-	-
COMBUSTION EFFICIENCY	96.9%	96.9%
BOILER DESIGN PRESSURE (PSI)		
80		
ELECTRICAL REQUIREMENTS		
VOLTAGE/ Ø / Hz.	120 / 1 / 60	120 / 1 / 60
NOTES: 1. ASME CODE, SECTION IV, MAX PRESSURE= 80 PSIG, MAX TEMP 220°F. 2. ASME CSD-1 BOILER CONTROLS. 3. STAINLESS STEEL HEAT EXCHANGER. 4. INTAKE AIR ADAPTER KIT 5. FULL MODULATION 5:1 ACROSS THE FIRING RANGE. 6. VARIABLE SPEED COMBUSTION AIR BLOWER. 7. COMBUSTION EFFICIENCY TO BE CSA CERTIFIED BASED ON OPERATING CONDITIONS FOR TESTING UNDER ANSI Z21.13/CSA4.4. 8. BOILERS FURNISHED FOR NATURAL GAS. ALL GAS TRAINS AND CONTROLS FURNISHED WITH BOILERS ARE TO BE VENTLESS. 9. ASME LABELED 10. EACH BOILER SHALL BE EQUIPPED WITH A INDEPENDENT LOW WATER CUTOFF AND MANUAL RESET HIGHLIMIT. 11. 10 YEAR WARRANTY ON PRESSURE VESSEL AND 2 YEARS ON BOILER ENCLOSURE, BURNER, CONTROLS AND ACCESSORIES. 12. PROVIDE CONDENSATE TRAP AND ACID NEUTRALIZATION SYSTEM. 13. BOILERS SHALL BE FURNISHED WITH ADAPTORS FOR CPVC VENTING. 14. EM-MI MIXING VALVE EXTENSION MODULE 120V/1 15. COMBUSTION AIR FILTER KIT FOR VITOCROSSAL 200		

DUCTLESS SPLIT SYSTEM EQUIPMENT SCHEDULE			
SYMBOL	MANUFACTURER	CATALOG #	DESCRIPTION
FCU-1	DAIKIN	FTX18UVJ1	INDOOR UNIT-DUCTLESS SPLIT HEAT PUMP, WALL MOUNTED, DISCONNECT SWITCH, FIELD LOCATED WIRED REMOTE CONTROLLER ONE+ WITH EMAIL ALERT CAPABILITY, CONDENSATE PUMP (930-230), COOLING 9,000 BTUH MIN., 21,600 MAX., HEATING 9,000 BTUH MIN., RATED 28,000 BTUH @ 47°F - 208/230V, 1Ø
HP-1	DAIKIN	RXL18UMVJJA	OUTDOOR UNIT-AIR COOLED INVERTER HEAT PUMP UNIT, R-410A, COOLING 9,000 BTUH MIN., 21,600 BTUH MAX., HEATING 9,000 BTUH MIN., RATED 28,000 BTUH @ 47°F, RATED 21,600 BTUH @ 5°F, INVERTER DRIVEN COMPRESSOR, BASE PAN HEATER, EXPANSION VALVE, LOW AMBIENT WIND BAFFLE/AIR ADJUSTMENT GRILLE, NEMA 3R DISCONNECT SWITCH. - SEER 20.3, HSPF 10.3 - MCA 18.7 AMPS, MOP 20.0 AMPS - 208/230V, 1Ø

AIR-COOLED CONDENSING UNIT SCHEDULE			
DESIGNATION	CC-1	CC-2	CC-3
AREA SERVED	DAYROOM	MEETING/TRAINING RM	OFFICE/RADIO RM
UNIT SERVED	AHU-1	AHU-2	AHU-3
MODEL NUMBER	RZQ48TAVJJA	RZQ48TAVJJA	RZQ18TAVJJA
SEER/EER - MAX.	14.8/9.5	14.8/9.5	15.5/12.5
WEIGHT OF UNIT (POUNDS)	225	225	175
CONDENSER DATA:			
AMBIENT TEMPERATURE (°F)	45	45	45
No. OF ROWS/FPI	2/19	2/19	2/19
No. OF FANS	2	2	1
FAN MOTOR (EACH)	70 WATTS	70 WATTS	200 WATTS
AIR FLOW	3741 CFM	3741 CFM	2682 CFM
COMPRESSOR DATA:			
REFRIGERANT TYPE	R-410A	R-410A	R-410A
COMPRESSOR TYPE	SCROLL	SCROLL	SCROLL
REFRIGERATION EFFECT (MBH)	48.0	48.0	18.0
CAPACITY CONTROL	14-100 STEPS	14-100 STEPS	14-100 STEPS
SINGLE POINT POWER CONNECTION ELECTRICAL DATA:			
VOLTS/Ø/Hz	208/1/60	208/1/60	208/1/60
MCA/MOCP (AMPS)	29.1/35	29.1/35	16.5/20
NOTES: 1. UNITS BASED ON DAIKIN SHALL BE COMPLETE WITH THE FOLLOWING: <ul style="list-style-type: none"><li>• NON-FUSED DISCONNECT SWITCH NEMA 3R</li><li>• FACTORY POWERED, 115 VOLT, 6FI, ELECTRICAL OUTLET</li><li>• SUCTION AND DISCHARGE ISOLATION VALVES FOR EACH REFRIGERATION SECTION.</li><li>• 24 VOLT TERMINAL STRIP FOR FIELD SUPPLIED AND INSTALLED CONTROLS.</li><li>• 115 VOLT TRANSFORMER</li><li>• CRANKCASE HEATER</li><li>• LOW AMBIENT COOLING CONTROLS, WINTER START KIT, HARD SHUTOFF TXV, COMPRESSOR START ASSIST - CAPACITOR AND RELAY</li><li>• LOUVERED COIL GUARD, FILTER DRYER</li><li>• LIQUID LINE SOLENOID VALVES</li><li>• REFRIG CIRCU/COMPRESSOR STAGING - VARIABLE SPEED</li></ul>			

VENTILATION SCHEDULE																	
Space Name	Gross Area	Net Area	Ra	Ventilation based on Net Floor Area	Occupant Density	Calculated Occupants (Pz)	People Used	Rp	Ventilation based on People	Total OA Ventilation (Vbz)	Zone Air Distribution Effectiveness (Ez)	Zone OA Required (Voz)	OA Ventilation Provided	Exhaust Airflow Rates	Exhaust Required	Exhaust Provided	
	sqft	sqft	CFM/sqft	CFM	#/1000 sqft			CFM/Person	CFM	CFM		CFM	CFM	CFM	CFM/sqft	CFM	CFM
Lobby 100	152	35	0.06	3	+	30	1.1	1	5	5	=	8	x	0.8	10	-	-
Radio Room 101	126	54	0.06	4	+	5	0.3	1	5	5	=	9	x	0.8	12	15	-
Office 102	213	78	0.06	5	+	5	0.4	1	5	5	=	10	x	0.8	13	15	-
Day Room 103	638	388	0.06	24	+	30	11.6	12	5	60	=	84	x	0.8	105	110	-
Kitchen 104	220	114	0	1	+	0	0.0	1	0	0	=	1	x	0.8	2	60	80
Hallway 105 A	146	46	0.06	3	+	0	0.0	1	0	0	=	3	x	0.8	4	5	-
Hallway 105 B	136	21	0.06	2	+	0	0.0	1	0	0	=	2	x	0.8	3	5	-
Meeting/Training 106	656	460	0.06	28	+	100	46.0	46	7.5	345	=	373	x	0.8	467	470	-
Clean Room 107	184	68	-	-	+	-	-	-	-	-	=	-	x	0.8	-	-	70 PER FIX
Laundry Room 108	234	120	-	-	+	-	-	-	-	-	=	-	x	0.8	-	-	70 PER FIX
Toilet 110	61	14	-	-	+	-	-	-	-	-	=	-	x	0.8	-	-	70 PER FIX
Utility 111	75	19	-	-	+	-	-	-	-	-	=	-	x	0.8	-	-	50
Gear Room 112	344	203	0	1	+	0	0.0	1	0	0	=	1	x	0.8	2	110	102
Apparatus Room 113	6280	5384	0	1	+	0	0.0	1	0	0	=	1	x	0.8	269	315	0.05
Sprinkler Room 115	224	119	0	1	+	0	0.0	1	0	0	=	1	x	0.8	2	110	0.12
Storage 116	147	60	0	1	+	0	0.0	1	0	0	=	1	x	0.8	2	110	0.12
Electric Room 117	200	100	0	1	+	0	0.0	1	0	0	=	1	x	0.8	2	110	0.18
Toilet 121	87	20	-	-	+	-	-	-	-	-	=	-	x	0.8	-	-	70 PER FIX
Toilet 122	87	20	-	-	+	-	-	-	-	-	=	-	x	0.8	-	-	70 PER FIX

LOUVER SCHEDULE			
DESIGNATION	L-1, 3, 4, 6	L-2, 5	
MODEL NUMBER	ESD-435	ESD-435	
LOCATION	ATTIC	122	
DIMENSIONS LxHxD (IN)	24"x24"x4"	30"x18"x4"	
SHAPE	RECTANGLE	RECTANGLE	
MIN. FREE AREA (SQ. FT.)	1.81	1.58	
FREE AREA (%)	45.0	42.1	
BLADE ANGLE	35	35	
MATERIAL	ALUMINUM	ALUMINUM	
NOTES: 1. LOUVERS BASED ON GREENHECK 2. COORDINATE EXACT LOUVER SIZE WITH ARCHITECTURAL PLANS AND WITH WALL OPENINGS IN THE FIELD. 3. ALL LOUVERS SHALL HAVE FACTORY POWDER COAT FINISH, COLOR TO BE SELECTED BY ARCHITECT. SUBMIT COLOR CHART FOR REVIEW. 4. ALL LOUVERS SHALL BE PROVIDED WITH BIRD SCREENS AND EXTENDED SILLS AND FRAMES. 5. LOUVERS SHALL BE PROVIDED BY THE HVAC CONTRACTOR AND INSTALLED BY THE GENERAL CONTRACTOR. 6. LOUVERS SHALL BARE THE AMCA SEAL.			

No. REVISION/SUBMISSION DATE

Mechanical/Electrical/Plumbing Engineer

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PROJECT  
NEW FIRE STATION FOR  
ROMBOUT FIRE DISTRICT - STATION 2  
NYS ROUTE 52, FISHKILL, NY

DRAWING  
MECHANICAL:  
EQUIPMENT SCHEDULES

SEAL

DRAWN BY  
RL/KC  
CHECKED BY  
JT/GH  
DATE  
11-30-22  
DRAWING NUMBER

PROJECT NUMBER  
18142

M601

FILE H:\2021\GA21063

MECHANICAL EQUIPMENT SCHEDULE			
SYMBOL	MANUFACTURER	CATALOG #	DESCRIPTION
— CD —	—	—	CONDENSATE DRAIN PIPING. SCHEDULE 40 PVC
— HWS — — HWR —	—	—	HYDRONIC PIPING, COPPER TYPE 1/2" UP TO 2". ABOVE 2" USE SCHEDULE 40 STEEL WITH SCREWED JOINTS. BOILER HEADER SHALL BE PIPED WITH SCHEDULE 40 STEEL. INSULATE WITH FIBERGLASS PIPE INSULATION WITH VAPOR PROOF JACKET, TAPED JOINTS AND PVC FITTING COVERS. EXPOSED PIPING SHALL BE COVERED WITH PVC PIPE COVER AND PAINTED. SEE THIS DRAWING FOR INSULATION THICKNESS SCHEDULE.
— REF —	—	—	REFRIGERANT PIPING SHALL BE COPPER TUBING TYPE ACR HARD DRAWN. WROUGHT COPPER FITTINGS, SILVER BRAZE JOINTS. SIZE REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATIONS BASED ON ELEVATION AND LENGTH. INSULATE SUCTION LINE WITH 1 1/2" ELASTOMETRIC CELLULAR FOAM. CONCEAL REFRIGERATION PIPING IN EXTERIOR WALL PARTITION AND ABOVE CEILING.
— G —	—	—	NATURAL GAS PIPING, SCHEDULE 40 STEEL WITH SCREWED JOINTS UP TO 3" DIAMETER. WELDED JOINTS ON ALL PIPE SIZES ABOVE 3" DIAMETER.
	—	—	GAS VALVE FULL PORT, AGA APPROVED.
	NIBCO	—	BALL VALVE, BRONZE BODY, FULL PORT.
	NIBCO	—	CHECK VALVE, BRONZE BODY SWING.
	—	—	MOTORIZED DAMPER, SEE SPECIFICATION SECTION 23 33 00 AIR DUCT ACCESSORIES & 23 04 00 INSTRUMENTATION & CONTROL.
	—	—	FIRE DAMPER
	—	—	GAS VALVE FULL PORT, AGA APPROVED.
	—	—	TRAP.
	—	—	TURNING VALVES.
	—	—	DUCTWORK, GALVANIZED STEEL, THICKNESS PER SMACNA STANDARDS. MINIMUM 26 GAUGE
	—	—	VOLUME DAMPER, SEE SPECIFICATION SECTION 23 33 00 AIR DUCT ACCESSORIES & 23 04 00 INSTRUMENTATION & CONTROL.
	FLEXMASTER USA, INC.	TYPE 4M	FLEXIBLE DUCTWORK, MECHANICAL LOCK HELIX, FIBERGLASS INSULATION, FIRE RETARDANT ALUMINUM OUTER JACKET, UL 181 CLASS I AIR DUCT. MAXIMUM LENGTH (6'-0")
ALTERNATE #3	UH-1,2,3,4	BEACON MORRIS HB-204	HORIZONTAL UNIT HEATER, HOT WATER. OUTPUT 115,070 BTU/HR @ 180°F E.N.T., 14.9 GPM, 2400 CFM, WITH DISCONNECT SWITCH, AQUASTAT FAN START, 120V/1.
	CH-1, 2	BEACON MORRIS W120	CABINET HEATER THIN-FLO III RECESSED WALL MOUNT, AQUASTAT FAN START, TAMPER PROOF FASTENERS AND CONTROLS. HEATING CAPACITY 11,755 BTU/HR @ 180°F E.N.T. - 2.0 GPM - 121 CFM - 120V/1.
	EF-1, 3	GREENHECK SP-A240-QD	CABINET EXHAUST FAN, BACKDRAFT DAMPER, DISCONNECT SWITCH, BACKDRAFT DAMPER, ISOLATORS & BRACKETS & SPRING HANGING KIT, FLEXIBLE DUCT CONNECTOR, WALL MOUNTED SPEED SWITCH, 251 CFM @ .25" W.C., - 120V/1
	EF-2	GREENHECK SP-A200-QD	CABINET EXHAUST FAN, BACKDRAFT DAMPER, DISCONNECT SWITCH, BACKDRAFT DAMPER, ISOLATORS & BRACKETS & SPRING HANGING KIT, FLEXIBLE DUCT CONNECTOR, WALL MOUNTED SPEED SWITCH, 224 CFM @ .25" W.C., - 120V/1
	EF-4, 6	GREENHECK SQ-80-VG	INLINE CABINET EXHAUST FAN, BACKDRAFT DAMPER, VARI-GREEN REMOTE DIAL MOUNTED IN ROOM, VARI-GREEN TRANSFORMER FIELD MOUNTED AND WIRED, DISCONNECT SWITCH, BACKDRAFT DAMPER, MOTOR COVER, ISOLATORS & BRACKETS & SPRING HANGING KIT, FLEXIBLE DUCT CONNECTORS, 200 CFM @ .5" W.C., 1/6 HP - 120V/1
	EF-5	GREENHECK SQ-80-VG	INLINE CABINET EXHAUST FAN, BACKDRAFT DAMPER, VARI-GREEN REMOTE DIAL MOUNTED ON FAN, VARI-GREEN TRANSFORMER FIELD MOUNTED AND WIRED, DISCONNECT SWITCH, BACKDRAFT DAMPER, MOTOR COVER, ISOLATORS & BRACKETS & SPRING HANGING KIT, FLEXIBLE DUCT CONNECTORS, 140 CFM @ .4" W.C., 1/6 HP - 120V/1
	EF-7, 8	GREENHECK SQ-80-VG	INLINE CABINET EXHAUST FAN, BACKDRAFT DAMPER, VARI-GREEN REMOTE DIAL MOUNTED ON FAN, VARI-GREEN TRANSFORMER FIELD MOUNTED AND WIRED, DISCONNECT SWITCH, BACKDRAFT DAMPER, MOTOR COVER, ISOLATORS & BRACKETS & SPRING HANGING KIT, FLEXIBLE DUCT CONNECTORS, 170 CFM @ .5" W.C., 1/6 HP - 120V/1
	DF-1	FANTECH DEDPV-705 UL	UL LISTED DRYER EXHAUST FAN. PRESSURE-SENSING SWITCH AUTOMATICALLY TURNS ON THE FAN, ABLE TO EXHAUST UP TO 120'-0" OF 4"Ø GALVANIZED STEEL DUCT, AND WALL MOUNTED OPERATION INDICATOR SIGN. FAN MUST BE INSTALLED 5'-0" FROM DRYER OUTLET, PROVIDE AND INSTALL SECONDARY LINT TRAP (DBLT 4W) BEFORE THE FAN. PROVIDE FC VIBRATION ISOLATION CLAMPS FOR DUCT CONNECTIONS AND MOUNTING BRACKET. INDICATOR SIGN SHALL BE INSTALLED WITHIN LAUNDRY ROOM FAN IS SERVING.
		TAMARACK TECHNOLOGIES CAPE BACKDRAFT	4" DIAMETER CAPE BACKDRAFT ULTIMATE AIRFLOW DAMPER
	ERV-1	RENEWAIRE EV450	ENERGY RECOVERY UNIT, 315 CFM @ .4" W.C. TOTAL EFF % WINTER/SUMMER (75%) WITH TWO POSITION DAMPER MOTORIZED DAMPERS ON INTAKE AND EXHAUST AIR DUCT, SOLID STATE SPEED CONTROLLER MOUNTED NEAR UNIT. (1) - 5 HP ECM MOTOR - 120V/1
	RH-1	FRIGIDAIRE FHWC3640MS	RANGE HOOD 36" UNDER-CABINET STAINLESS STEEL FINISH, BACKDRAFT DAMPER, 7"Ø EXHAUST DUCT CONNECTION - 300 CFM, WITH HANDICAP ACCESSIBLE SWITCHES. LAMPS: (2) HALOGEN 50 WATT - 120V/1
	RC-1	GREENHECK RJ - 10x10	PITCHED ROOF CAP CONSTRUCTED OF STEEL. THROAT (10"W x 10"L) WITH INTEGRAL FLASHING, BUILT-IN BIRDSCREEN AND DAMPER. POWDER COAT PAINT COLOR AS DIRECTED BY ARCHITECT.
ALTERNATE #1	HX-1	BELL & GOSSETT BP423-30	BRAZED PLATE HEAT EXCHANGER. 1 PASS, 24 CHANNELS, PLATE MATERIAL 316L SS, BRAZING MATERIAL COPPER, DESIGN PRESSURE 435 PSI. BOILER SIDE: WATER FLOW 40 GPM, INLET TEMP 180°F, OUTLET TEMP 160°F, PRESSURE DROP 2.35 PSI. . SAWN MELT SIDE: 35% PROPYLENE GLYCOL FLOW 40 GPM, INLET TEMP 130°F, OUTLET TEMP 110°F, PRESSURE DROP 2.07 PSI. TOTAL HEAT EXCHANGED 412,482 BTU/HR WITH FIELD FABRICATED STAND.

MECHANICAL EQUIPMENT SCHEDULE CONT			
SYMBOL	MANUFACTURER	CATALOG #	DESCRIPTION
P-1, 2	GRUNDFOS	TPE3 65-150 S-A-G-A-BQGE -GBB	SINGLE STAGE, CLOSED COUPLE, VOLUTE PUMP INLINE VARIABLE SPEED PUMP WITH WIRELESS REMOTE CONTROL, FACTORY START-UP, AUTO ADAPT, FLOWADAPT, AND FLOW LIMIT. PROPORTIONAL-PRESSURE CONTROL, CONSTANT PRESSURE CONTROL, AND CONSTANT-TEMPERATURE CONTROL. SEALS COMPATIBLE WITH 35% PROPYLENE GLYCOL. MAX. WORKING PRESSURE 174 PSI, MAX. OPERATING TEMPERATURE 230°F. MOTOR STARTER H-O-A W/OVERLOADS. 26 GPM @ 40 FT. HEAD, 1.5 HP - 208V/3
P-3, 4	GRUNDFOS	MAGNA3 40-180 F	MAGNA SERIES INLINE VARIABLE SPEED PUMP WITH WIRELESS REMOTE CONTROL, FACTORY START-UP, AUTO ADAPT, FLOWADAPT, AND FLOW LIMIT. PROPORTIONAL-PRESSURE CONTROL, CONSTANT PRESSURE CONTROL, AND CONSTANT-TEMPERATURE CONTROL. SEALS COMPATIBLE WITH 35% PROPYLENE GLYCOL. MAX. WORKING PRESSURE 174 PSI, MAX. OPERATING TEMPERATURE 230°F. MOTOR STARTER H-O-A W/OVERLOADS. 40 GPM @ 14 FT. HEAD, POWER INPUT 16 - 285 WATTS - 120V/1
P-5, 6	GRUNDFOS	MAGNA3 40-180 F	MAGNA SERIES INLINE VARIABLE SPEED PUMP WITH WIRELESS REMOTE CONTROL, FACTORY START-UP, AUTO ADAPT, FLOWADAPT, AND FLOW LIMIT. PROPORTIONAL-PRESSURE CONTROL, CONSTANT PRESSURE CONTROL, AND CONSTANT-TEMPERATURE CONTROL. SEALS COMPATIBLE WITH 35% PROPYLENE GLYCOL. MAX. WORKING PRESSURE 174 PSI, MAX. OPERATING TEMPERATURE 230°F. MOTOR STARTER H-O-A W/OVERLOADS. 29 GPM @ 30 FT. HEAD, POWER INPUT 16 - 606 WATTS - 120V/1
P-7, 8	GRUNDFOS	MAGNA3 32-120 F	MAGNA SERIES INLINE VARIABLE SPEED PUMP WITH WIRELESS REMOTE CONTROL, FACTORY START-UP, AUTO ADAPT, FLOWADAPT, AND FLOW LIMIT. PROPORTIONAL-PRESSURE CONTROL, CONSTANT PRESSURE CONTROL, AND CONSTANT-TEMPERATURE CONTROL. SEALS COMPATIBLE WITH 35% PROPYLENE GLYCOL. MAX. WORKING PRESSURE 174 PSI, MAX. OPERATING TEMPERATURE 230°F. MOTOR STARTER H-O-A W/OVERLOADS. 14 GPM @ 15 FT. HEAD, POWER INPUT 4.1 - 187 WATTS - 120V/1
P-9, 10	GRUNDFOS	TPE3 40-150 S-A-G-A-BQGE -GBB	SINGLE STAGE, CLOSED COUPLE, VOLUTE PUMP INLINE VARIABLE SPEED PUMP WITH WIRELESS REMOTE CONTROL, FACTORY START-UP, AUTO ADAPT, FLOWADAPT, AND FLOW LIMIT. PROPORTIONAL-PRESSURE CONTROL, CONSTANT PRESSURE CONTROL, AND CONSTANT-TEMPERATURE CONTROL. SEALS COMPATIBLE WITH 35% PROPYLENE GLYCOL. MAX. WORKING PRESSURE 174 PSI, MAX. OPERATING TEMPERATURE 230°F. MOTOR STARTER H-O-A W/OVERLOADS. 19 GPM @ 15 FT. HEAD, 1.5 HP - 208V/3
P-11, 12	GRUNDFOS	TPE 50-240/2 A-G-Z-BUBE -HBB	SINGLE STAGE, CLOSED COUPLE, INLINE VARIABLE SPEED PUMP WITH INTEGRATED FREQUENCY CONVERTER, FACTORY START-UP, AUTO ADAPT, FLOWADAPT, AND FLOW LIMIT. PROPORTIONAL-PRESSURE CONTROL, CONSTANT PRESSURE CONTROL, AND CONSTANT-TEMPERATURE CONTROL. SEALS COMPATIBLE WITH 35% PROPYLENE GLYCOL. MAX. WORKING PRESSURE 174 PSI, MAX. OPERATING TEMPERATURE 230°F. MOTOR STARTER H-O-A W/OVERLOADS. 40 GPM @ 51 FT. HEAD, 2.0 HP - 208V/3
ET-1	AMTROL	500-L	HYDRONIC EXPANSION TANK, HEAVY DUTY BUTYL BLADDER, TANK VOLUME 132 GALLONS
R/C	DAIKIN	BACRC-THOC-POI	ADAPTIVE TOUCH CONTROLLER, BUILT IN TEMPERATURE SENSOR, HUMIDITY SENSOR, CO2 SENSOR AND OCCUPANCY SENSOR PROGRAMMABLE MULTI-STAGE REMOTE SENSING, PROGRAMMABLE FAN, OUTDOOR DAMPER CONTROL, EMERGENCY HEAT SWITCH, LOW VOLTAGE (24V). WITH CLEAR LOCKING COVER UNLESS OTHERWISE NOTED.
H	—	—	RADIANT HEAT THERMOSTAT, NON-PROGRAMMABLE, SLAB SENSOR/ROOM TEMPERATURE ACTIVATION. LOW VOLTAGE (24V). WITH CLEAR LOCKING COVER UNLESS OTHERWISE NOTED.
H	—	—	PROGRAMMABLE MULTI-STAGE THERMOSTAT, HEAT/COOL WITH ON/OFF/AUTO FAN SWITCH, 5-1-1 DAY, PROGRAMMABLE WITH SET BACK CAPABILITIES, LOW VOLTAGE (24V). WITH CLEAR LOCKING COVER UNLESS OTHERWISE NOTED.

ALTERNATE #1

REGISTER/GRILLE SCHEDULE			
SYMBOL	MANUFACTURER	CATALOG #	DESCRIPTION
CD-A	PRICE	SCDA	CEILING DIFFUSER, CONSTRUCTED OF STEEL LAY-IN (24" x 24") COORDINATE WITH CEILING GRID TYPE, ADJUSTABLE AIR PATTERN, ROUND NECK, 4-WAY DEFLECTION, BUTTERFLY DAMPER. WHITE
CD-B	PRICE	SMDA	CEILING DIFFUSER, CONSTRUCTED OF STEEL, SURFACE MOUNTED 2-WAY DEFLECTION, ADJUSTABLE AIR PATTERN AND OPPOSED BLADE DAMPER, LAY-IN CEILING MODULE (24" x 24") COORDINATE WITH CEILING GRID TYPE. WHITE
RG-C	PRICE	535	RETURN GRILLE, CONSTRUCTED OF STEEL, SURFACE MOUNTED 45° DEFLECTION, 1/2" BLADE SPACING (14" x 10"). WHITE
RG-D	PRICE	535	RETURN GRILLE, CONSTRUCTED OF STEEL, SURFACE MOUNTED 45° DEFLECTION, 1/2" BLADE SPACING (18" x 14"). WHITE
SG-E	PRICE	520	SUPPLY REGISTER, CONSTRUCTED OF STEEL, SURFACE MOUNTED DOUBLE DEFLECTION, 3/4" BLADE SPACING (16" x 14"). WHITE
RG-F	PRICE	80	RETURN REGISTER, WALL OR CEILING MOUNTED AS SHOWN, 1/2" EGG CRATE TYPE ALUMINUM CONSTRUCTION, 24" x 12", WHITE.
RG-G	PRICE	80	RETURN REGISTER, WALL OR CEILING MOUNTED AS SHOWN, 1/2" EGG CRATE TYPE ALUMINUM CONSTRUCTION, LAY-IN 24" x 24", WHITE.
RG-H	PRICE	80	RETURN REGISTER, WALL OR CEILING MOUNTED AS SHOWN, 1/2" EGG CRATE TYPE ALUMINUM CONSTRUCTION WITH OPPOSED BLADE DAMPER, 24" x 12", WHITE.
RG-I	PRICE	80	RETURN REGISTER, WALL OR CEILING MOUNTED AS SHOWN, 1/2" EGG CRATE TYPE ALUMINUM CONSTRUCTION WITH OPPOSED BLADE DAMPER, 8" x 8", WHITE.
NOTES: 1. HVAC CONTRACTOR SHALL INSULATE THE BACKS OF ALL DIFFUSERS AND GRILLES WITH 1" THICK FIBERGLASS INSULATION W/VAPOR JACKET TO PREVENT CONDENSATION. 2. HVAC CONTRACTOR SHALL INTERNALLY INSULATE THE INTERIOR OF ALL PLENUM BOXES AND PAINT ALL INTERIOR SURFACES BLACK.			

No.	REVISION/SUBMISSION	DATE
Mechanical/Electrical/Plumbing Engineer		
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PROJECT NEW FIRE STATION FOR ROMBOUT FIRE DISTRICT - STATION 2 NYS ROUTE 52, FISHKILL, NY		
DRAWING MECHANICAL: EQUIPMENT SCHEDULES		
SEAL	DRAWN BY RL/KC CHECKED BY JT/GH DRAWING NUMBER	PROJECT NUMBER 18142 DATE 11-30-22
M602		
FILE	H:\2021\GA21063	