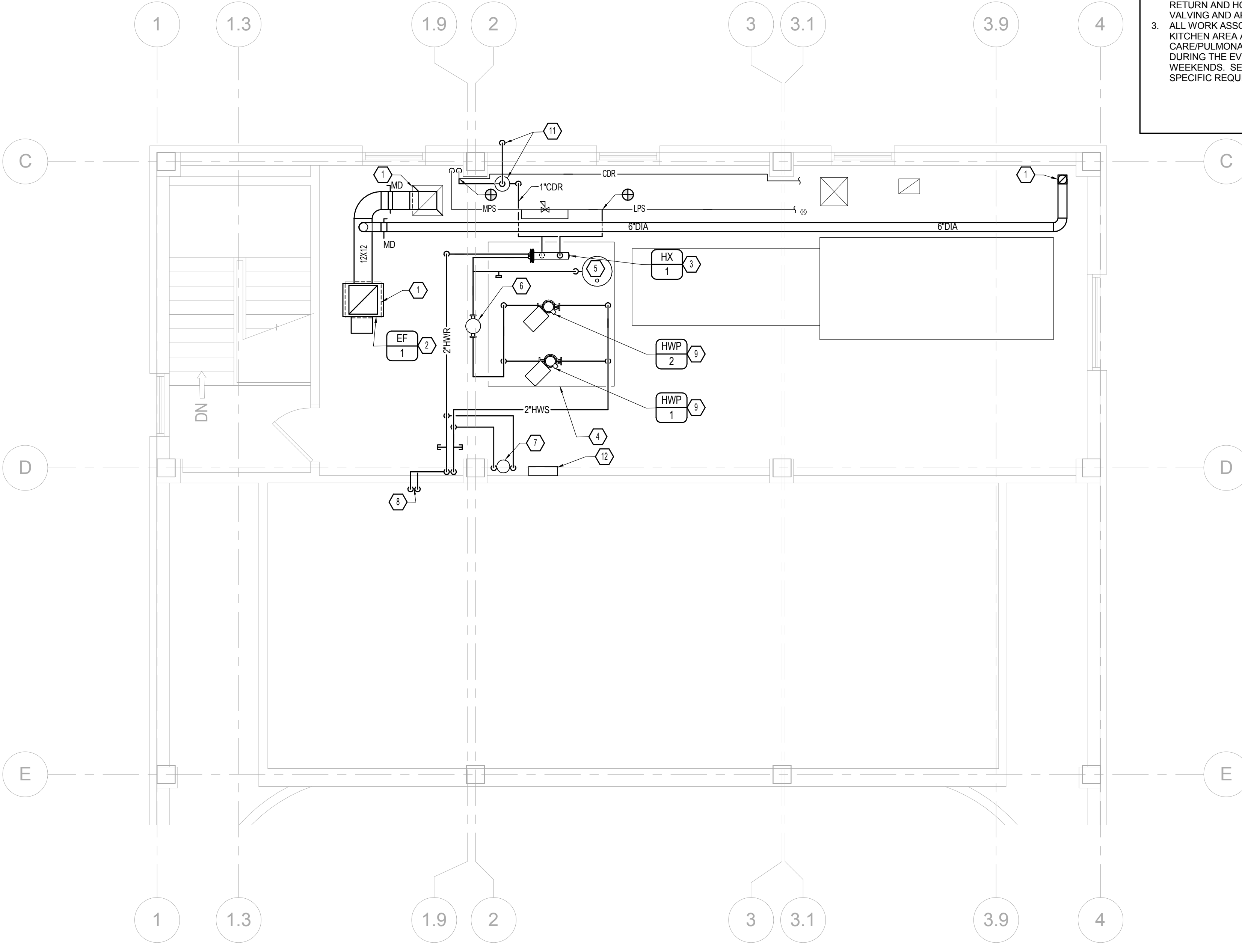
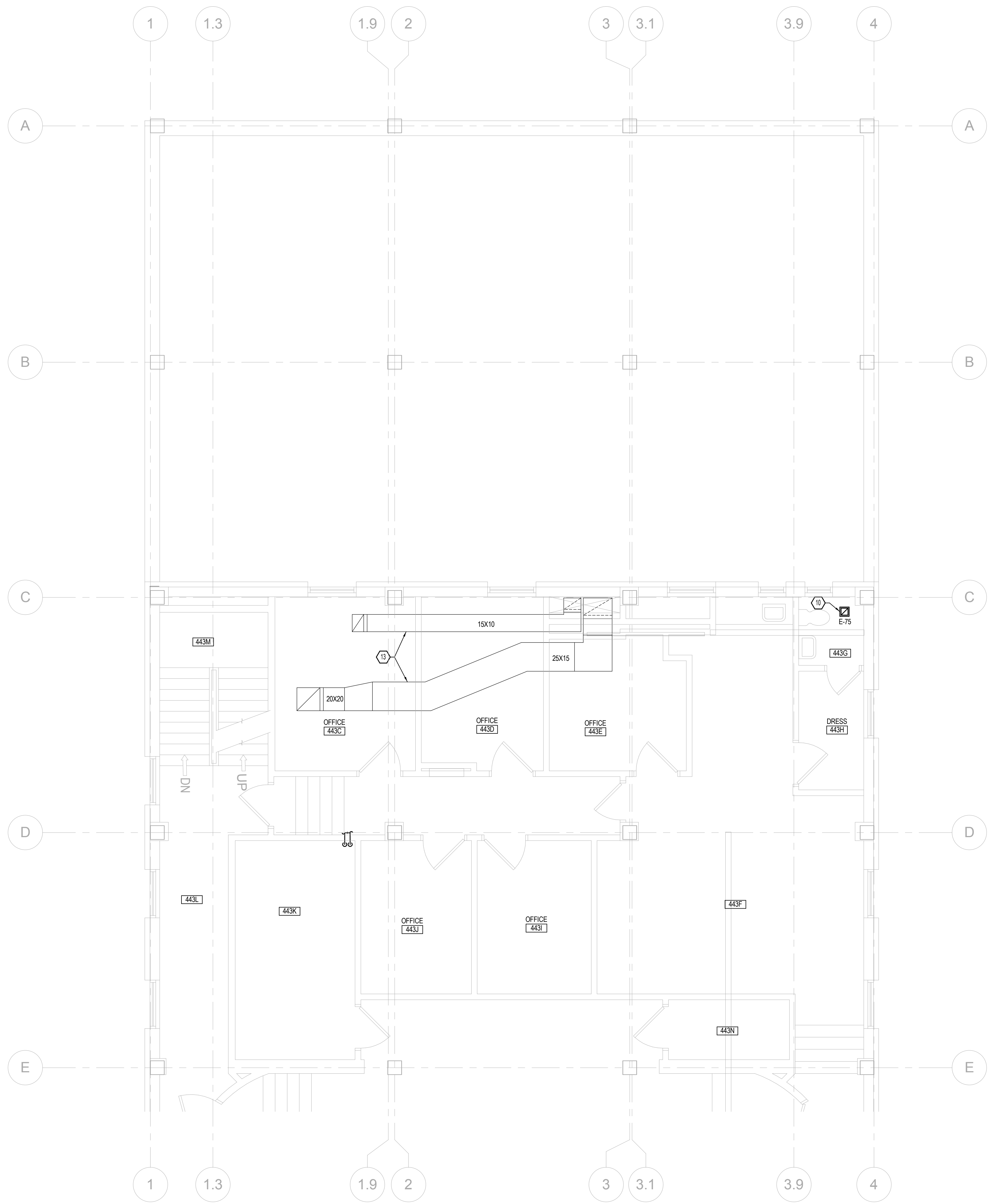


**KEYED NOTES**

1. PROVIDE FIRE DAMPERS IN EXHAUST DUCTWORK AT FLOOR PENETRATIONS.
2. INLINE EXHAUST FAN SUSPENDED FROM STRUCTURE INSTALLED IN VERTICAL POSITION TO DISCHARGE THROUGH EXTERIOR ROOF HOOD. PROVIDE 8"X8" DUCT UPSTREAM AND DOWNSTREAM OF FAN IN VERTICAL.
3. PROVIDE WELDED STEEL ANGLE HEAT EXCHANGER SUPPORT STAND WITH BASEPLATES FOR MOUNTING TO THE FLOOR. PRIME AND PAINT ENTIRE ASSEMBLY.
4. PROVIDE 4" THICK CONCRETE PAD FOR HEAT EXCHANGER, PUMPS, AND EXPANSION TANK.
5. EXPANSION TANK.
6. AIR SEPARATOR.
7. POT FEEDER.
8. 1.5" HWR THRU WALL NEAR SPRINKLER LINES EXTENDING INTO ADJACENT STORAGE ROOM NEAR STAGE ON FOURTH FLOOR.
9. SUPPORT STAND FOR INLINE PUMPS TO BE PROVIDED BY PUMP MANUFACTURER.
10. 6"X6" EXHAUST DUCT ABOVE CEILING EXTENDED THRU FLOOR ABOVE INTO MECHANICAL ROOM.
11. CONDENSATE RETURN FLASH TANK. PIPE VENT THROUGH EXTERIOR WALL TO OUTDOORS.
12. RELOCATED DDC PANEL FOR THIRD FLOOR VAV TERMINALS. PROVIDE ADDITIONAL PANELS FOR HOT WATER SYSTEM AS NECESSARY.
13. CLEAN EXISTING DUCTWORK AND GRILLES ASSOCIATED WITH EXHAUST SYSTEM (EF-1).

**GENERAL NOTES**

1. PROVIDE MANUAL BALANCING DAMPERS IN RUNOUTS TO ALL DIFFUSERS OR GRILLES UNLESS LOCATED ABOVE A HARD CEILING. IN WHICH CASE, OPPOSED BLADE BALANCING DAMPERS ARE PROVIDED AT THE DIFFUSER OR GRILLE AND INDICATED ON THE AIR DEVICE SCHEDULE.
2. SEE MECHANICAL PIPING AND CONTROL DIAGRAMS ON M701 AND M702 FOR STEAM, CONDENSATE RETURN AND HOT WATER BRANCH PIPE SIZES, VALVING AND APPURTENANCES.
3. ALL WORK ASSOCIATED WITH THE SECOND FLOOR KITCHEN AREA AND THIRD FLOOR RESPIRATORY CARE/PLUMINARY AREA MUST BE COMPLETED DURING THE EVENING, NIGHTS OR ON THE WEEKENDS. SEE DIV 1 SPECIFICATIONS FOR SPECIFIC REQUIREMENTS.



1 ENLARGED MECHANICAL HVAC AND PIPING FOURTH FLOOR PLAN  
 M401 1/4" = 1'-0" 0 2' 4' 8'

2 ENLARGED MECHANICAL HVAC AND PIPING FIFTH FLOOR PLAN  
 M401 1/4" = 1'-0" 0 2' 4' 8'

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Drawing Title  
**ENLARGED MECHANICAL  
 FOURTH & FIFTH FLR. PLANS**

Approved: Project Director  
 Approver

Project Title  
**VA HEALTH CARE SYSTEM**

Project Number  
 438-16-104 2016.052

Building Number  
 5

Drawing Number  
**M401**

Location  
 VAS 438-16-104 BLDG. 5 CHAPEL  
 SIOUX FALLS, SD 57105

Date  
 2017.03.13

Checked  
 AWS

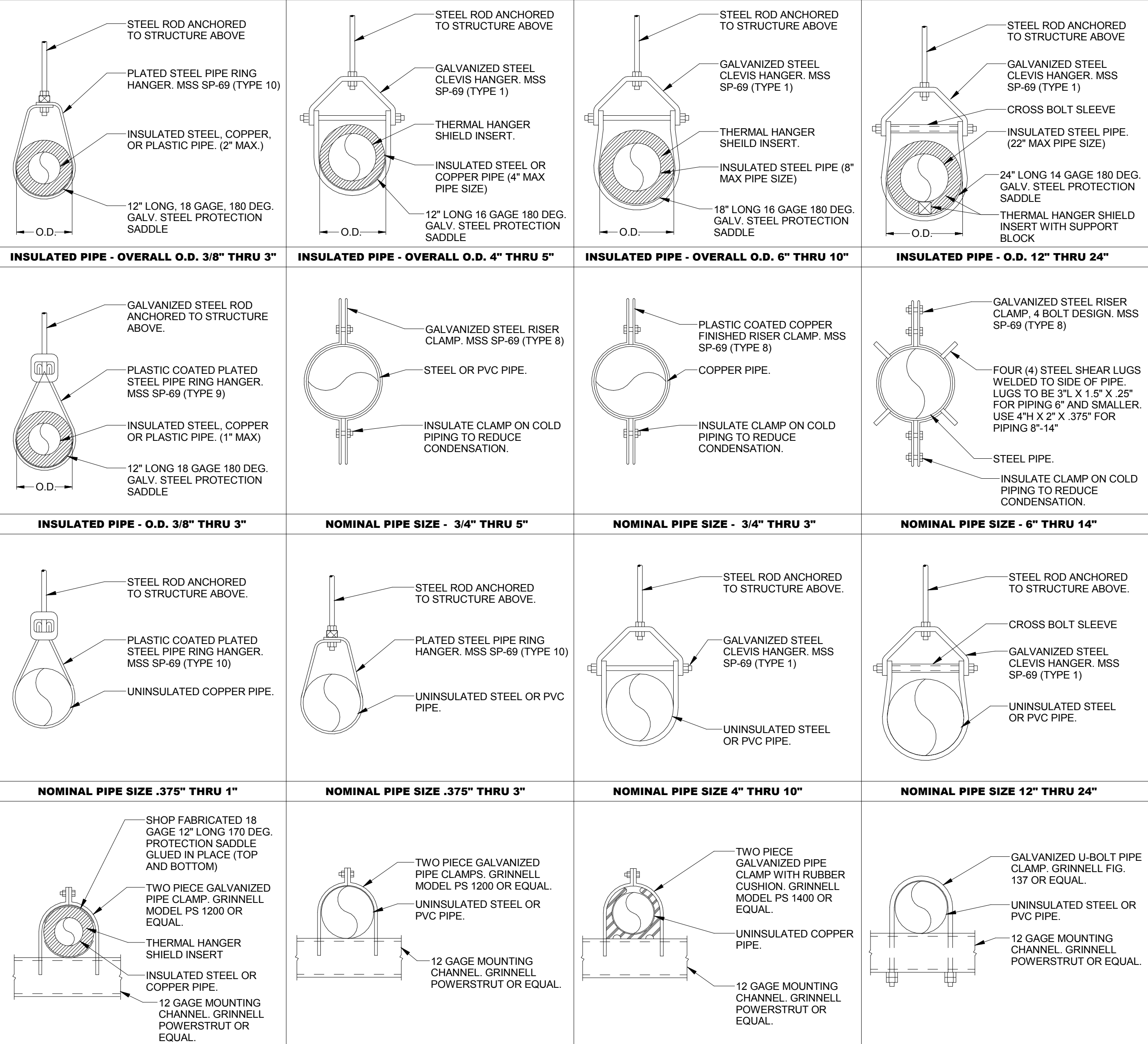
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Scale: As indicated

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**PIPE HANGERS AND PIPE CLAMP DETAILS AND NOTES**



**VERTICAL PIPING ALL TYPES AND SIZES**

PIPE SIZE	SUPPORT SPACING
3/8"	4'
1/2"-3/4"	6'
1" - 1-1/2"	8'
2" - 2-1/2"	10'
3"	12'
4" - 24"	15'

**HORIZONTAL SCHEDULE 40 AND 80 STEEL PIPING**

PIPE SIZE	HANGER SPACING	HANGER ROD DIAMETER
3/8"	6'	1/4"
1/2"	7'	3/8"
5/8"	7'	3/8"
3/4"	7'	3/8"
1"	7'	3/8"
1-1/4"	8'	3/8"
1-1/2"	9'	3/8"
2"	10'	3/8"
2-1/2"	11'	1/2"
3"	12'	1/2"
4"-5"	12'	1/2" OR 5/8"
6"-8"	12'	3/4"
10"-12"	12'	7/8"
14"-18"	12'	1"

**HORIZONTAL COPPER PIPING (ALL TYPES)**

PIPE SIZE	HANGER SPACING	HANGER ROD DIAMETER
3/8"	4'	1/4"
1/2"	4'	3/8"
5/8"	4'	3/8"
3/4"	6'	3/8"
1"	6'	3/8"
1-1/4"	6'	3/8"
1-1/2"	8'	3/8"
2"	8'	3/8"
2-1/2"	9'	1/2"
3"	10'	1/2"

**HORIZONTAL SCHEDULE 40 AND 80 PVC OR ABS PIPING**

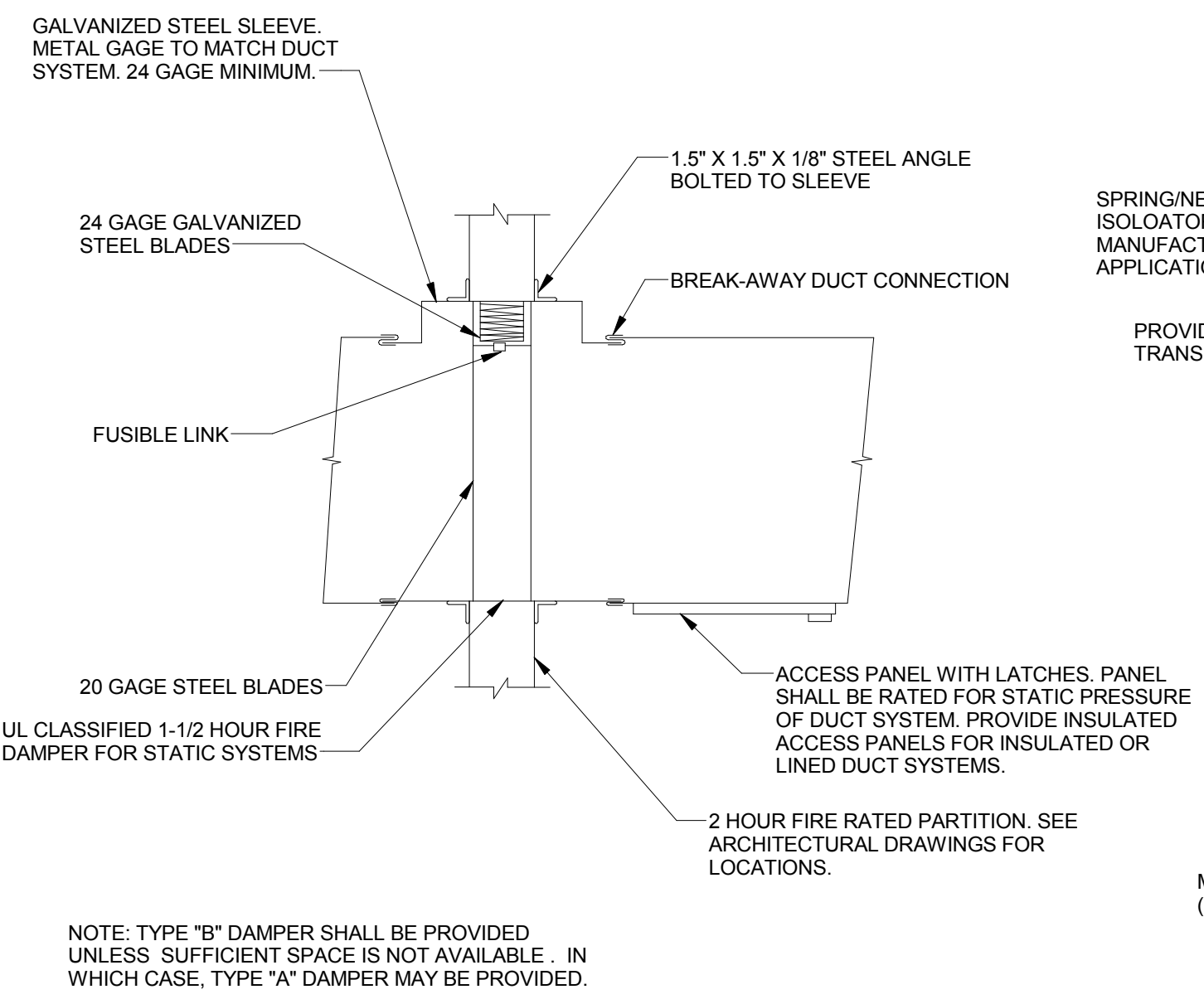
PIPE SIZE	HANGER SPACING	HANGER ROD DIAMETER
1/2"-2"	4'	1/4"
2-1/2"-3"	4'	3/8"
4"	4'	1/2" OR 5/8"
6"-8"	4'	3/4"

**PIPE HANGER AND SUPPORT NOTES**

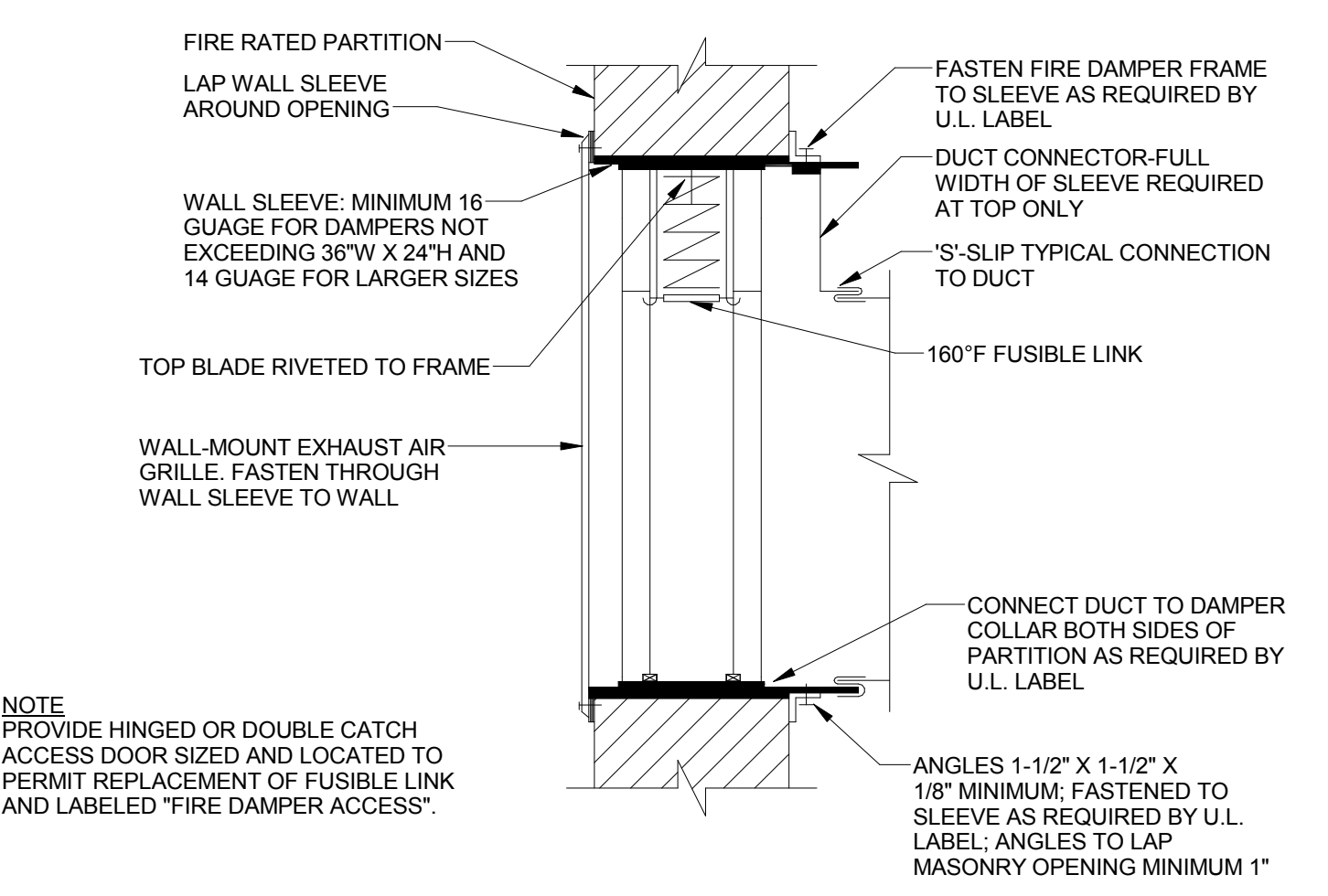
- PIPE HANGERS, SUPPORTS AND COMPONENTS SHALL BE MSS SP-58, FACTORY FABRICATED COMPONENTS.
- ALL THREADED ROD SHALL BE LIMITED TO 30" IN LENGTH. USE SOLID ROD WITH THREADED ENDS FOR ALL OTHER APPLICATIONS. ROD SHALL BE PLATED FOR INTERIOR APPLICATIONS AND GALVANIZED OR STAINLESS STEEL FOR EXTERIOR APPLICATIONS.
- POWDER-ACTUATED DRIVE-PIN FASTENERS SHALL HAVE PULL-OUT AND SHEAR CAPACITIES APPROPRIATE FOR THE SUPPORTED LOADS AND BUILDING MATERIALS WHERE USED.
- MECHANICAL ANCHOR FASTENERS SHALL BE INSERT-TYPE WITH PULL-OUT AND SHEAR CAPACITIES APPROPRIATE FOR THE SUPPORTED LOADS AND BUILDING MATERIALS WHERE USED.
- STRUCTURAL STEEL CROSS MEMBERS, SUPPORTS AND BRACING SHALL BE ASTM A36/A 38M, STEEL PLATES, SHAPES, AND BARS. STEEL MEMBERS SHALL BE PAINTED OR GALVANIZED.
- CHANNEL SUPPORT SYSTEMS SHALL BE FIMM-2, FACTORY-FABRICATED COMPONENTS FOR FIELD ASSEMBLY AS MANUFACTURED BY GRINNELL. BLINE OR EQUAL. CHANNEL SHALL BE PAINTED FOR INTERIOR APPLICATIONS, GALVANIZED FOR ROOF OR GRADE LEVEL EXTERIOR APPLICATIONS AND STAINLESS STEEL FOR EXTERIOR WALL MOUNTED APPLICATIONS.
- TOP BEAM C-CLAMPS SHALL BE MSS TYPE 19.
- SIDE BEAM OR CHANNEL CLAMPS SHALL BE MSS TYPE 20.
- CENTER-BEAM CLAMPS SHALL BE MSS TYPE 21.
- C-CLAMPS SHALL BE MSS-23.
- WELDED STEEL BRACKETS SHALL BE MSS TYPE 31 FOR UP TO 750 LB LOADS, MSS TYPE 32 FOR UP TO 1500 LBS AND MSS TYPE 33 FOR LOADS UP TO 3000 LBS.
- PSIDE-BEAM BRACKETS SHALL BE MSS TYPE 34.
- LATE LUSS SHALL BE MSS TYPE 57.
- ALL RIGID RODS HANGERS SHALL HAVE A MEANS FOR VERTICAL ADJUSTMENT AFTER ERECTION.
- HANGER INSPECTIONS SHALL BE PERFORMED IN ACCORDANCE WITH MSS-SP99 (SECTION 7.7) AND ASME B31.1 (APPENDIX V).
- WHERE INDICATED AS ACCEPTABLE, GROOVED PIPING SYSTEM HANGERS AND SUPPORTS SHALL BE DESIGNED BY THE GROOVED PIPE SYSTEM MANUFACTURER. DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO INSTALLATION.
- CUT OFF EXCESS THREADED ROD AFTER HANGER ADJUSTMENTS HAVE BEEN MADE. EXCESS ROD SHALL NOT EXCEED 1" IN LENGTH.
- EQUIPMENT SHALL NOT BE USED AS A MEANS OF SUPPORT OF THE PIPING SYSTEM. GAS VALVES, PRESSURE RELIEF VALVES, EQUIPMENT CONNECTIONS, ETC. SHALL NOT BEAR THE WEIGHT OF THE PIPING SYSTEM.
- THE DESIGN OF SEISMIC RESTRAINT SYSTEMS FOR PIPING, DUCTWORK AND EQUIPMENT SHALL BE PROVIDED BY A PROFESSIONAL ENGINEER HIRED DIRECTLY BY THE MECHANICAL CONTRACTOR.
- INSULATION PROTECTION SADDLES SHALL BE USED ON ALL INSULATED PIPING. VERIFY SADDLE LENGTH WITH THE INSULATION MANUFACTURER.
- REFER TO SPECIFICATIONS FOR HANGER TYPES NOT SHOWN ABOVE.

NOTE: OVERALL OUTSIDE DIAMETER INCLUDES PIPE, INSULATION, AND JACKET

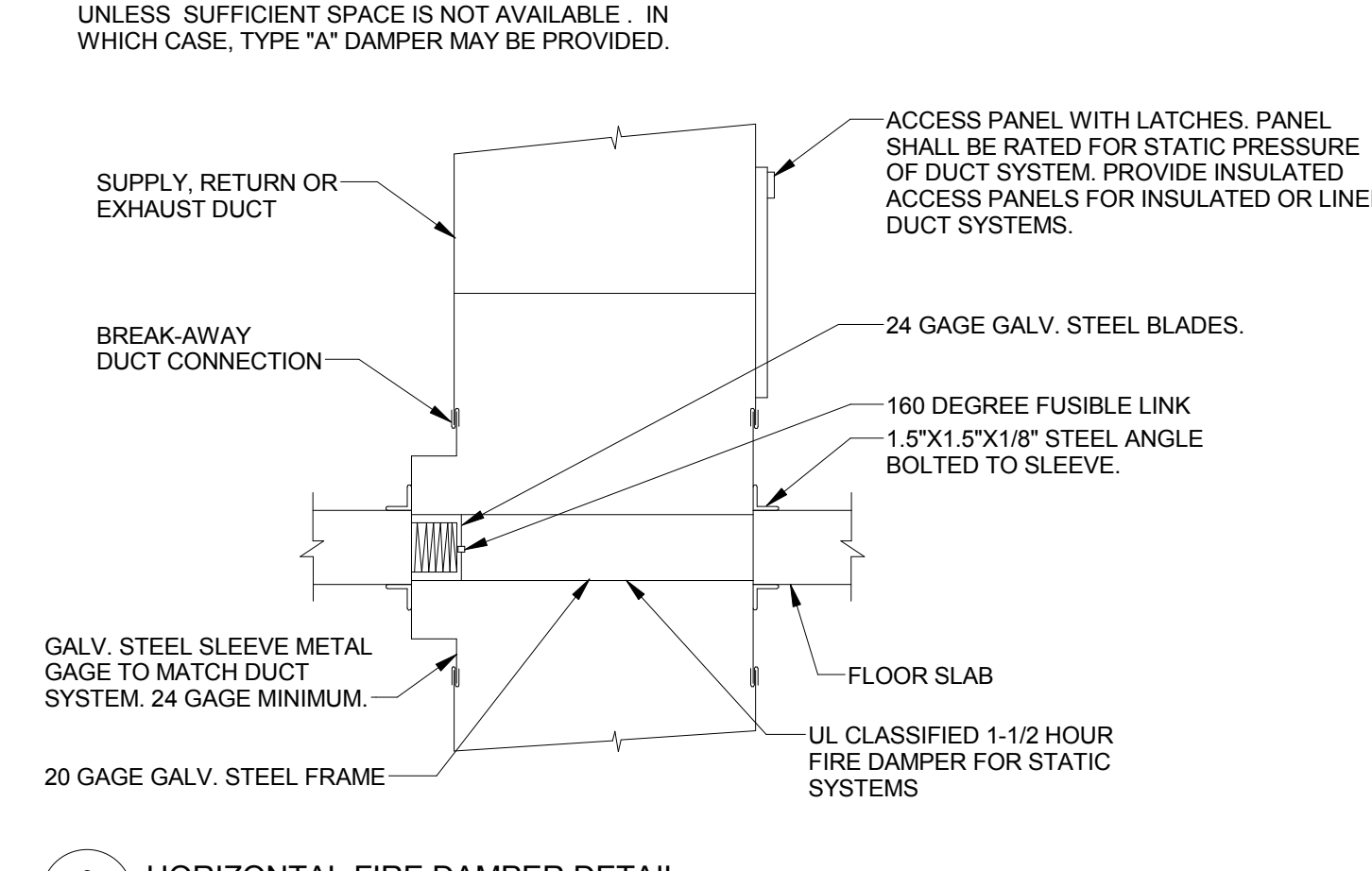
11 PIPE HANGERS AND PIPE CLAMP DETAILS AND NOTES1 NO SCALE



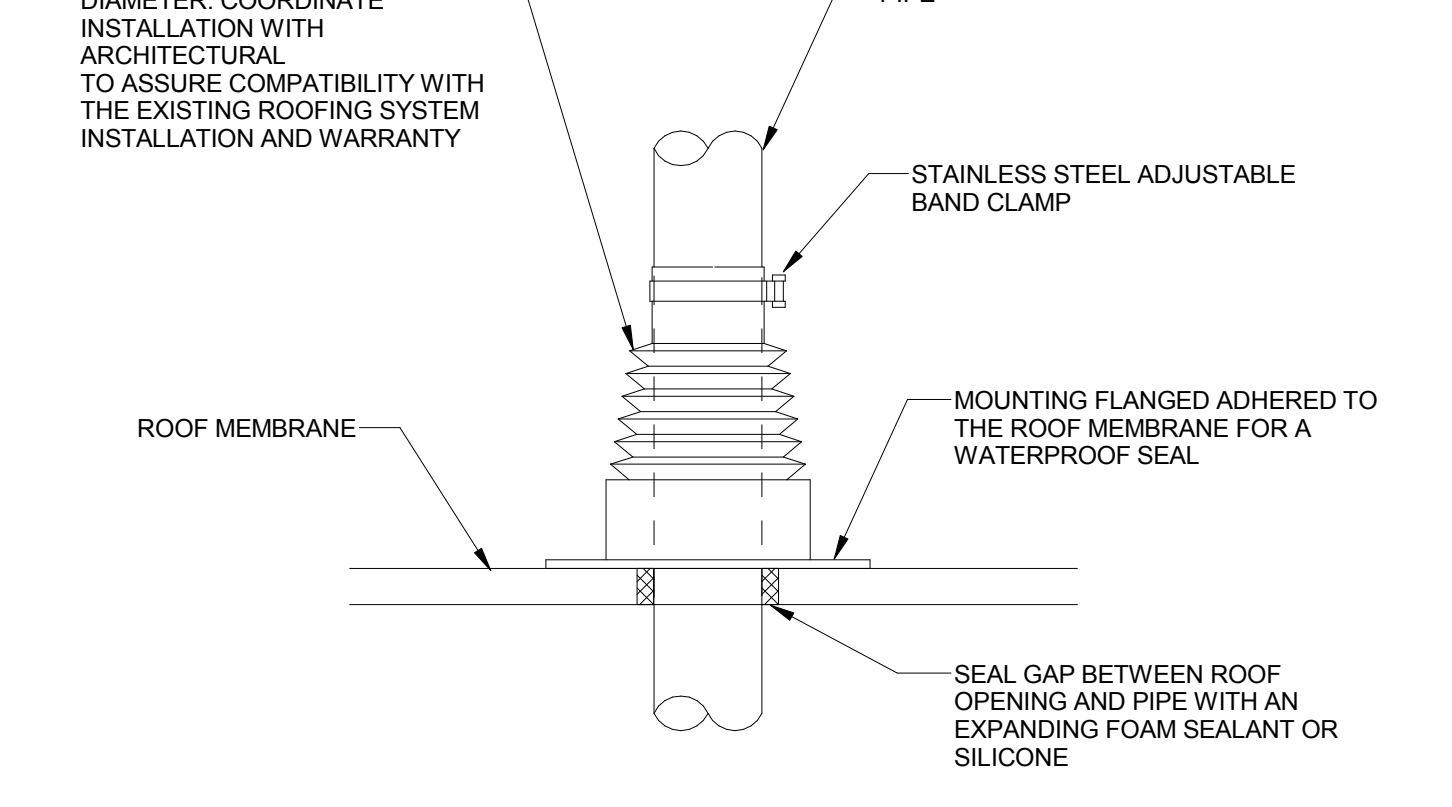
7 TYPE B VERTICAL FIRE DAMPER DETAIL NO SCALE



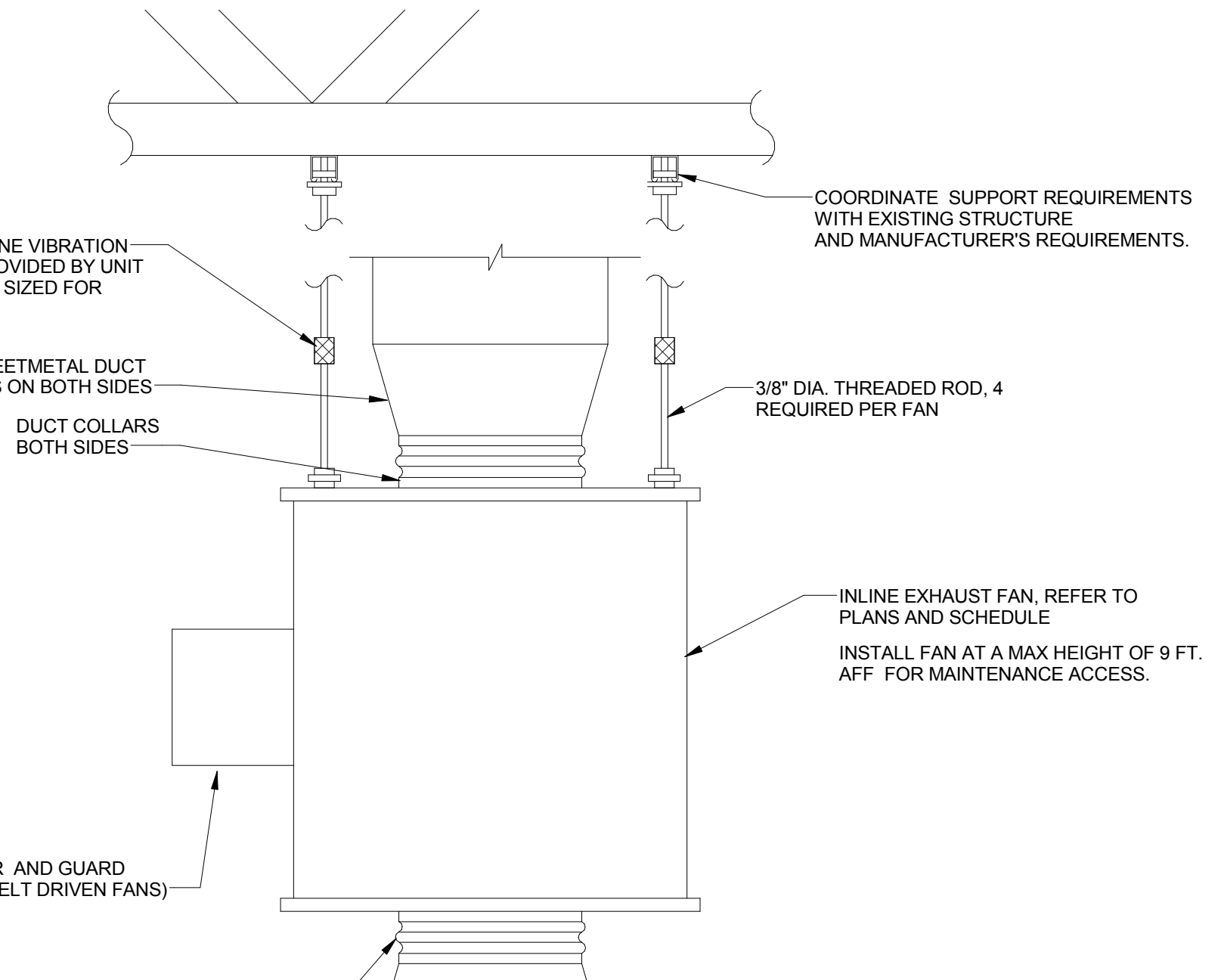
8 FIRE DAMPER/WALL GRILLE DETAIL NO SCALE



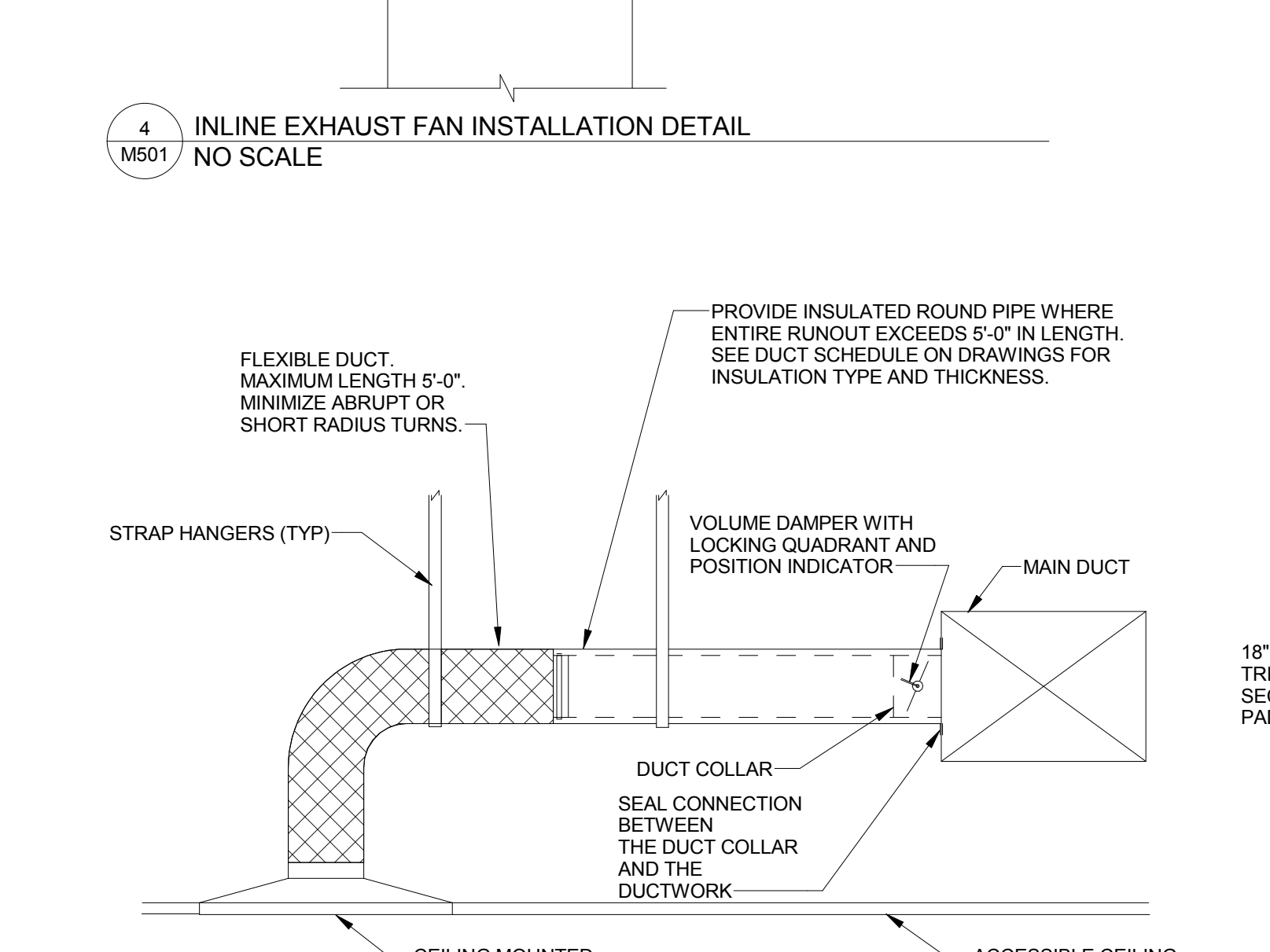
9 HORIZONTAL FIRE DAMPER DETAIL NO SCALE



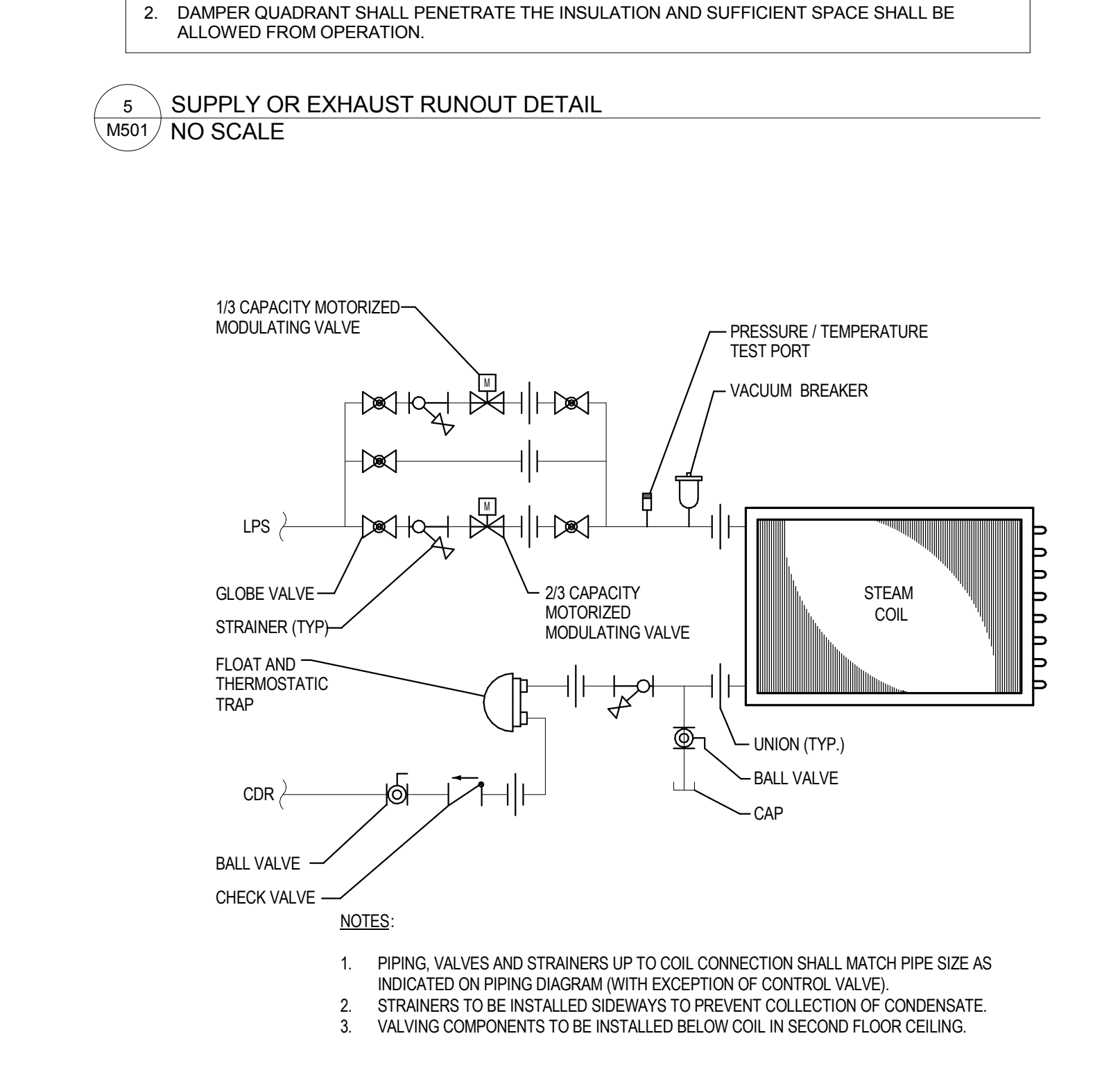
10 PIPE BOOT FOR ROOF PENETRATION NO SCALE



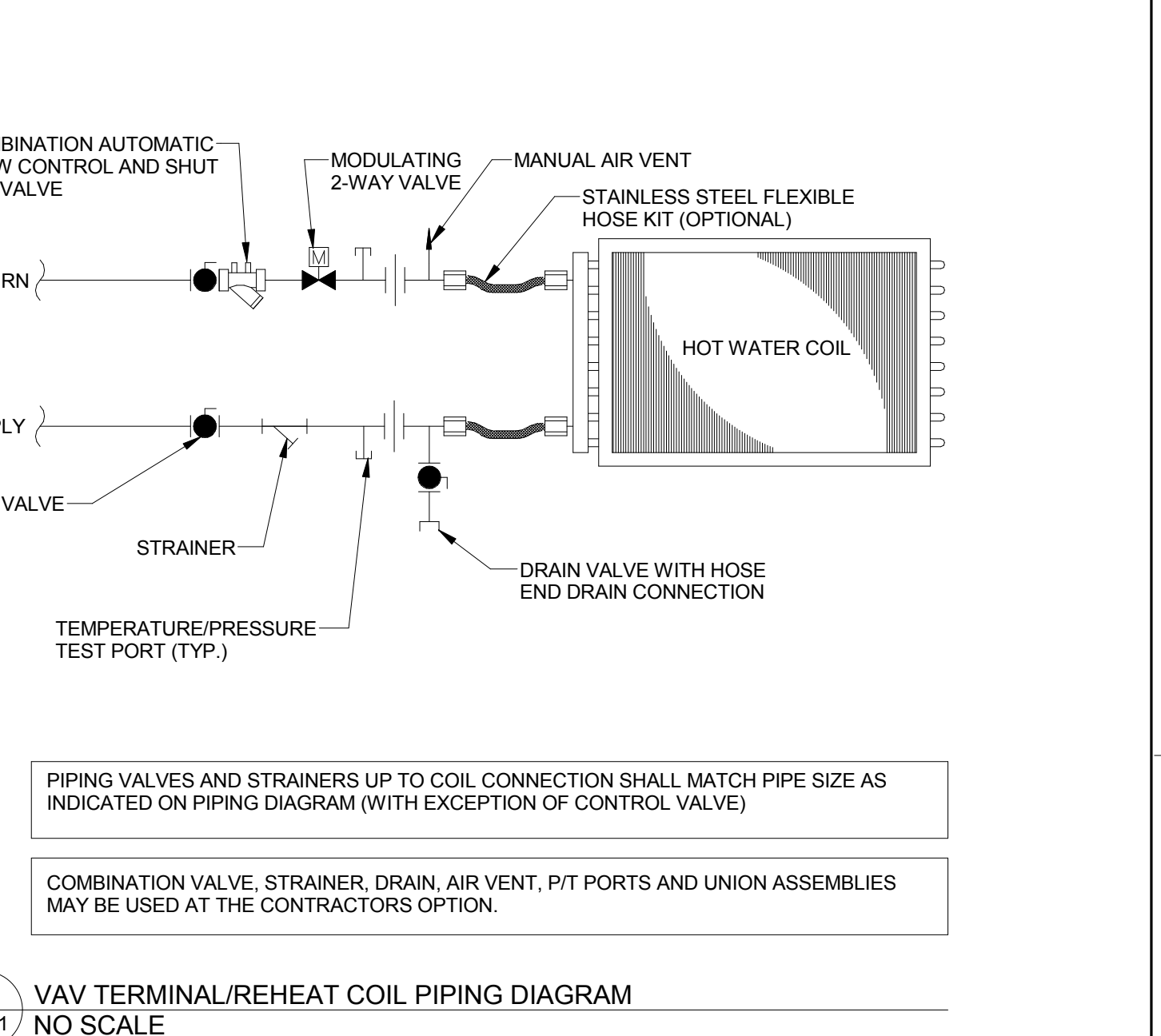
4 INLINE EXHAUST FAN INSTALLATION DETAIL NO SCALE



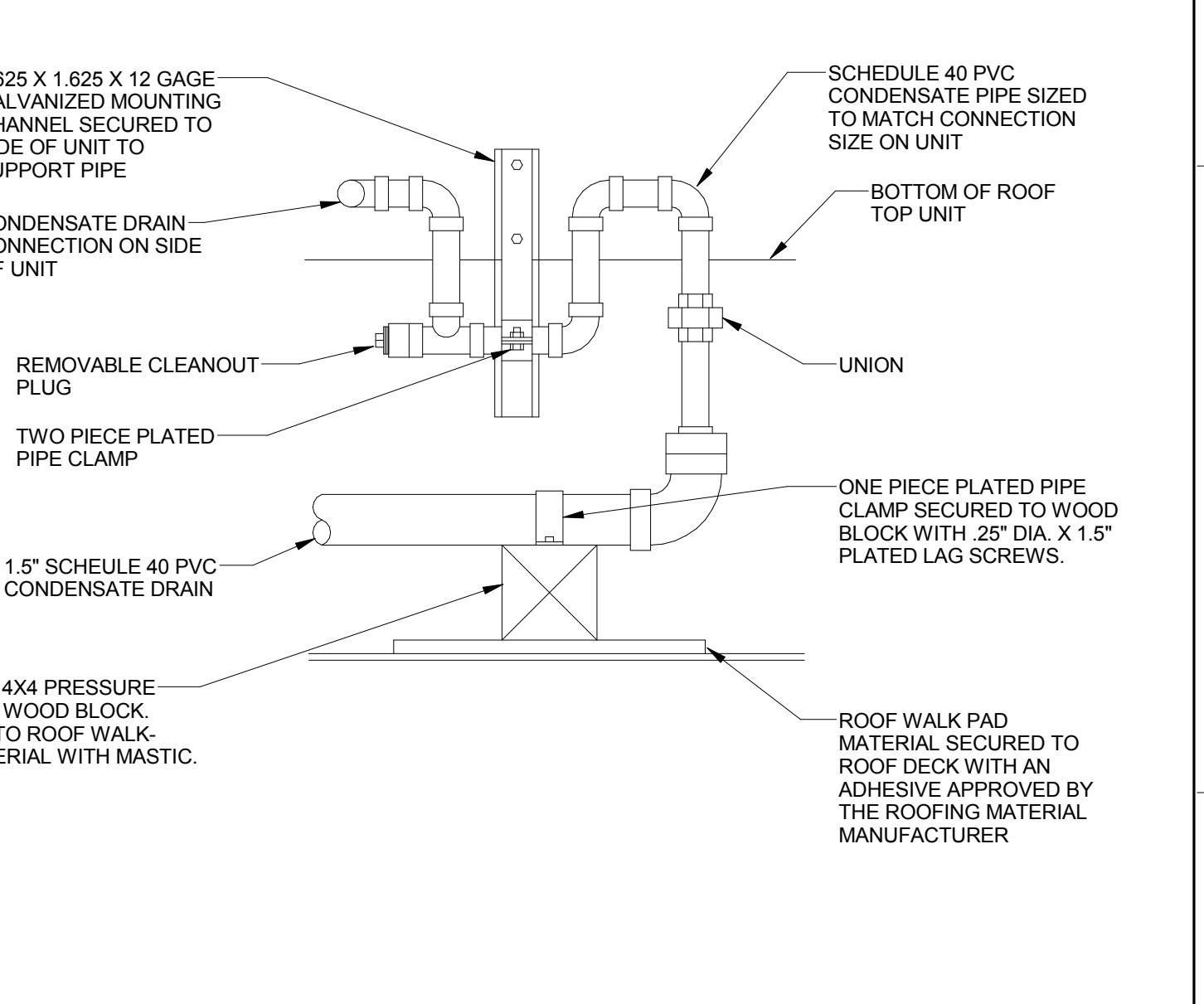
5 SUPPLY OR EXHAUST RUNOUT DETAIL NO SCALE



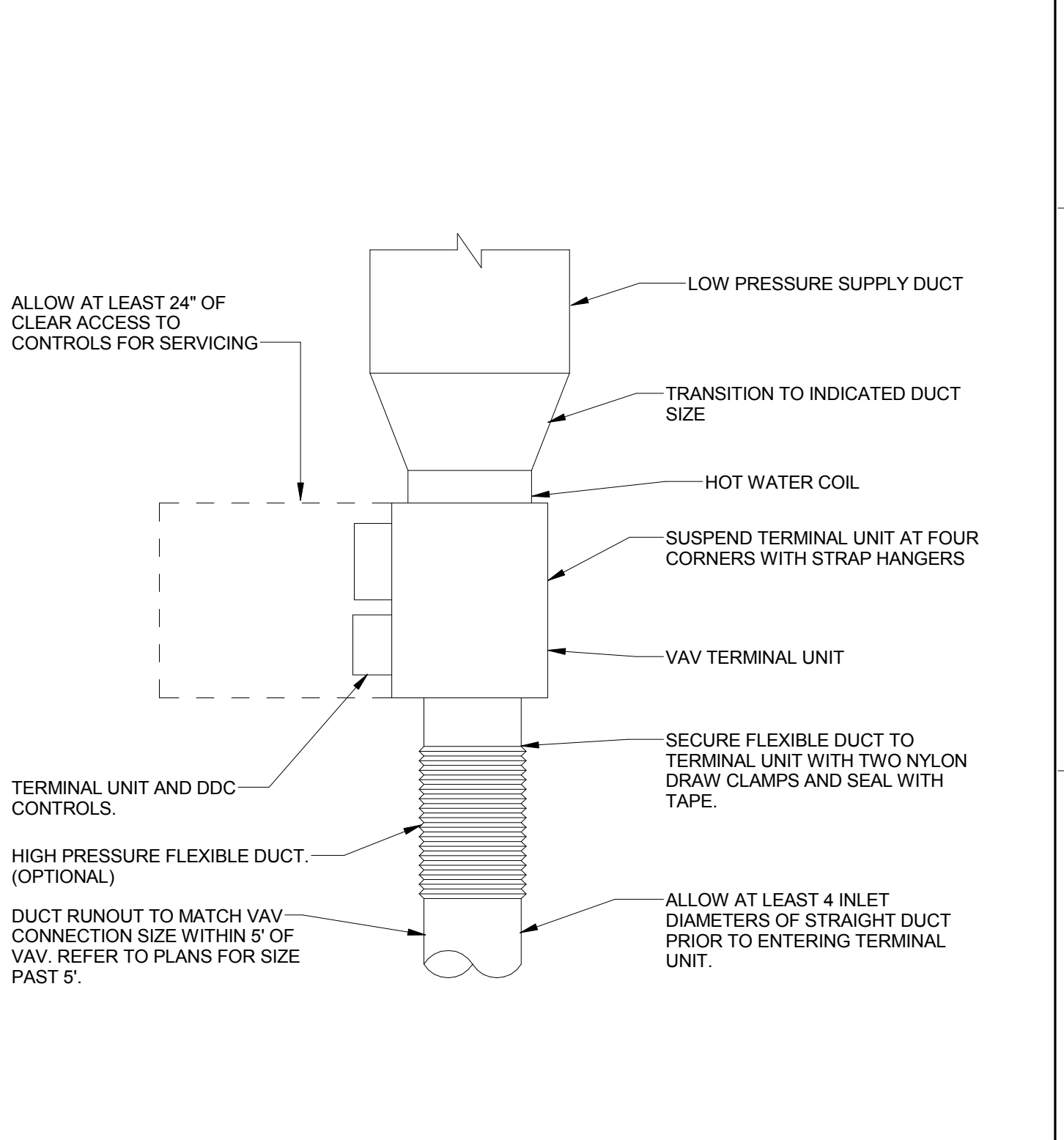
6 ROOFTOP UNIT STEAM PIPING DIAGRAM NO SCALE



1 VAV TERMINAL/REHEAT COIL PIPING DIAGRAM NO SCALE



2 RTU P-TRAP DRAIN DETAIL NO SCALE



3 VAV REHEAT TERMINAL UNIT DETAIL NO SCALE

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SEAL: MICHELLE C. BERTRAM, ARCHITECT, STATE OF MISSOURI, 3/15/17

**Drawing Title**  
**MECHANICAL DETAILS**

Approved: Project Director  
Approver:

**Project Title**  
VA HEALTH CARE SYSTEM

**Project Number**  
438-16-104 2016.052

**Building Number**  
5

**Drawing Number**  
M501

**Location**  
VAUX 438-16-104 BLDG. 5 CHAPEL  
SIOUX FALLS, SD 57105

**Date**  
2017.03.13

**Checked**  
AWS

**Drawn**  
MCB

**OWNER**

Scale: 12" = 1'-0"

Revisions:

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VA FORM 08-6231

HEAT EXCHANGER SCHEDULE MARK NO: HX
Table with columns: MARK, SERVING, MFR, MODEL, WATER (GPM, EWT, LWT, PD FT, FOULING FACTOR, MAX VEL, MBH), STEAM (PSIG, LBS/HR), CONTROL VOLTAGE, NOTES. Includes notes on U-tube design and materials.

ROOFTOP UNIT SCHEDULE MARK NO: RTU
Table with columns: PLAN MARK, AREA SERVED, MFR, MODEL, SUPPLY FAN (CFM, ESP), RETURN FAN (CFM, ESP), UNIT TSP, OUTDOOR AIR (CFM, DB, WB, SENS, TOTAL), DX COOLING COIL CAPACITIES, STEAM HEATING COIL CAPACITIES, ELECTRICAL, OFFER WEIGHT, NOTES.

FAN SOUND DATA SCHEDULE
Table with columns: PLAN MARK, SOUND LEVELS (dB) at various distances (5, 10, 15, 20, 25, 30, 35, 40, 45, 50 ft), NOTES.

EXHAUST FAN SCHEDULE MARK NO: EF
Table with columns: PLAN MARK, AREA SERVED, MFR, MODEL, TYPE, CFM, RPM, DRIVE, SONES, ELECTRICAL (HP, VOLTS/SPH/PHZ, FLA, I/A), OPER WEIGHT, NOTES.

VARIABLE AIR VOLUME TERMINAL UNIT SCHEDULE MARK NO: VAV
Table with columns: PLAN MARK, SERVING, MFR, MODEL, TYPE, INLET SIZE, VALVE AIRFLOW (CFM), HOT WATER COIL, ELECTRICAL, NOTES AND ACCESSORIES.

AIR DEVICE SCHEDULE
Table with columns: PLAN MARK, MFR, MODEL, NECK SIZE, FUNCTION, LOCATION, THROW, MATERIAL, SLOTS (LENGTH, QTY), NOTES AND ACCESSORIES.

HYDRONIC COIL SCHEDULE MARK NO: HC
Table with columns: PLAN MARK, AREA OR SYSTEM SERVED, FUNCTION, MFR, DIMENSIONS (WIDTH, HEIGHT, MIN ROWS), AIR FLOW (CFM, MAX APD, MAX FACE), COOLING COIL DATA, HEATING COIL DATA, NOTES AND ACCESSORIES.

STEAM RADIATOR SCHEDULE MARK NO: R
Table with columns: MARK PLAN, MANUFACTURER, MODEL, DEPTH, FRONT OUTLET LINEAR HEIGHT, FIN TUBE LENGTH, OUTPUT MBH, STEAM RATINGS, TUBE SIZE, NOTES.

HUMIDIFIER SCHEDULE MARK NO: H
Table with columns: PLAN MARK, AREA SERVED, MFR, MODEL, REQ. CAP. (LBS/HR), UNIT CAP. (LBS/HR), STEAM (PSIG), DIMENSIONS / DUCT SIZE (WIDTH, HEIGHT), NON-WETTING DISTANCE, AIRFLOW (CFM), NOTES.

STEAM TRAP SCHEDULE
Table with columns: EQUIPMENT SERVED, TRAP TYPE, MANUFACTURER, MODEL NUMBER, SIZE, DESIGN LOAD (LBS/HR), SAFETY FACTOR, REQUIRED CAPACITY (LBS/HR), NOTES.

H.V.A.C PUMP SCHEDULE MARK NO: CHP, CWP, HWP
Table with columns: PLAN MARK, AREA SERVED, MFR, MODEL, ARRANGEMENT, SERVICE, GPM, HEAD IN FT, MIN % EFF, PUMP RPM, ELECTRICAL, OPER WEIGHT, NOTES AND ACCESSORIES.

Vertical scale on the left margin with labels: three inches = one foot, one and one half inches = one foot, one inch = one foot, three quarters inch = one foot, one quarter inch = one foot, one eighth inch = one foot.

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Drawing Title: MECHANICAL SCHEDULES. Drawing Number: M601. Date: 2017.03.13. Approved: Project Director. Checked: AWS. Drawn: MCB.

Project Title: VA HEALTH CARE SYSTEM. Project Number: 438-16-104. Building Number: 5. Location: VAS 438-16-104 BLDG. 5 CHAPEL SIOUX FALLS, SD 57105. Drawing Number: M601. OWNER: VA.

