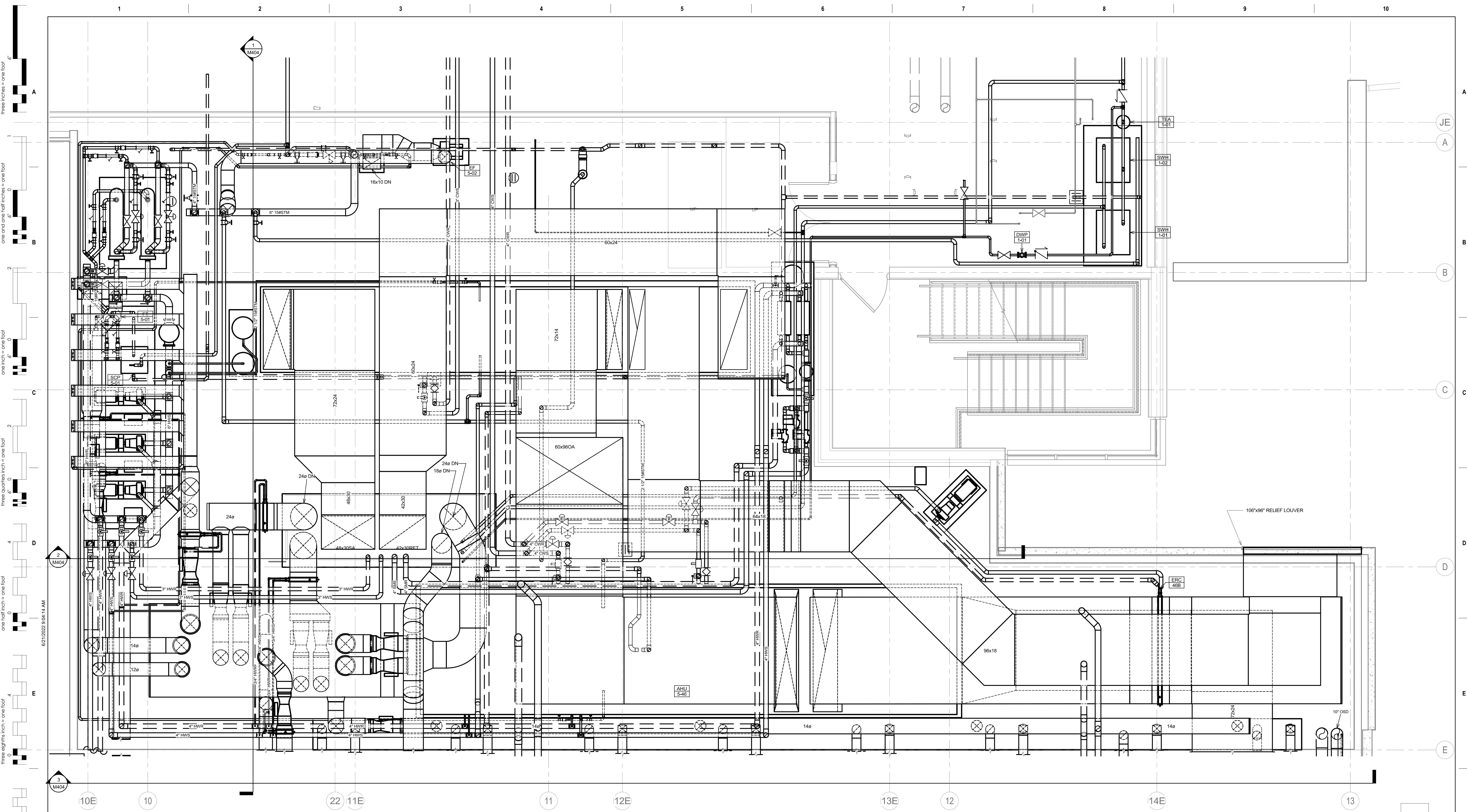
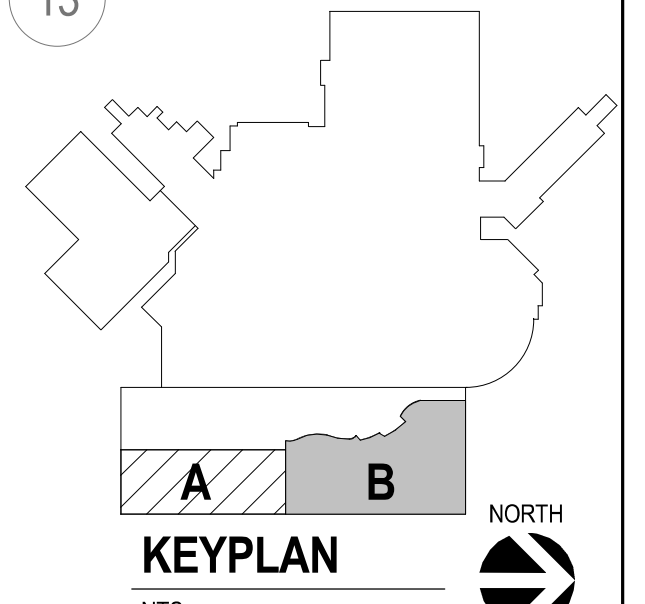


CONSULTANTS ARCHITECTURAL: B W B STRUCTURAL: ERA MEP: DUNHAM CIVIL: EVS LANDSCAPE: CONFLUENCE		ARCHITECT OF RECORD A/E: Stone Group Architects 600 E 7th Street Sioux Falls, SD 57103 605-271-1144		Office of Construction and Facilities Management U.S. Department of Veterans Affairs	
Project Title NEW FRONT LOBBY AND PRIMARY CARE ADDITION		Project Number VA #438-480 SGA #201909		Drawing Number M300	
Location SIOUX FALLS, SOUTH DAKOTA		Issue Date 06/22/2022		Checked JRG	
Issue Date 06/22/2022		Drawn TNH		Phase CONSTRUCTION DOCUMENTS	



1 ENLARGED INTERSTITIAL MECHANICAL ROOM - COMBINED SERVICES PLAN FOR COORDINATION PURPOSES
3/8" = 1'-0"



Revision#	Description	Date:

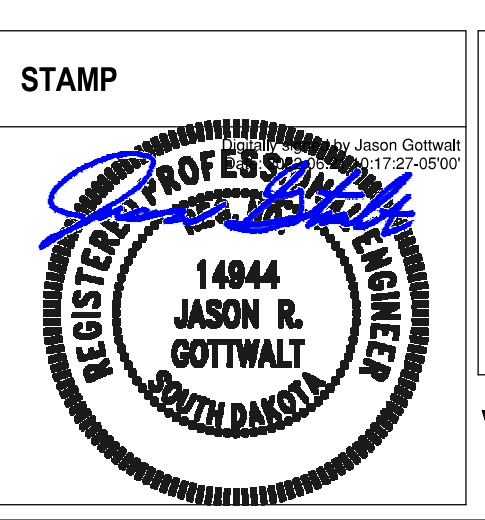
CONSULTANTS

ARCHITECTURAL: BWBR 380 St. Peter St Suite 600 St. Paul, MN 55102 Phone: 651-223-3701	STRUCTURAL: ERA ERICKSEN ROAD ASSOCIATES 2250 University Ave W Suite 423-S St. Paul, MN 55402 Phone: 651-251-1770	MEP: DUNHAM DUNHAM ASSOCIATES, INC. 50 South Sixth St Suite 1100 Minneapolis, MN 55402 Phone: 612-646-7550 0421959-002-00	CIVIL: EVS EVS 10025 Valley View Rd Suite 140 Eden Prairie, MN 55344 Phone: 952-646-4236	LANDSCAPE: CONFLUENCE CONFLUENCE 524 N Main Ave Suite 201 Sioux Falls, SD 57104 Phone: 605-338-1205
--	---	--	--	---

ARCHITECT OF RECORD

A/E:
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600 E 7th Street
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605-271-1144

STONE GROUP ARCHITECTS



Office of Construction and Facilities Management
VA U.S. Department of Veterans Affairs

Drawing Title
ENLARGED FIRST FLOOR MECHANICAL ROOM PLAN

Approved:

Phase
CONSTRUCTION DOCUMENTS

Project Title
NEW FRONT LOBBY AND PRIMARY CARE ADDITION

Location
SIoux FALLS, SOUTH DAKOTA

Issue Date
06/22/2022

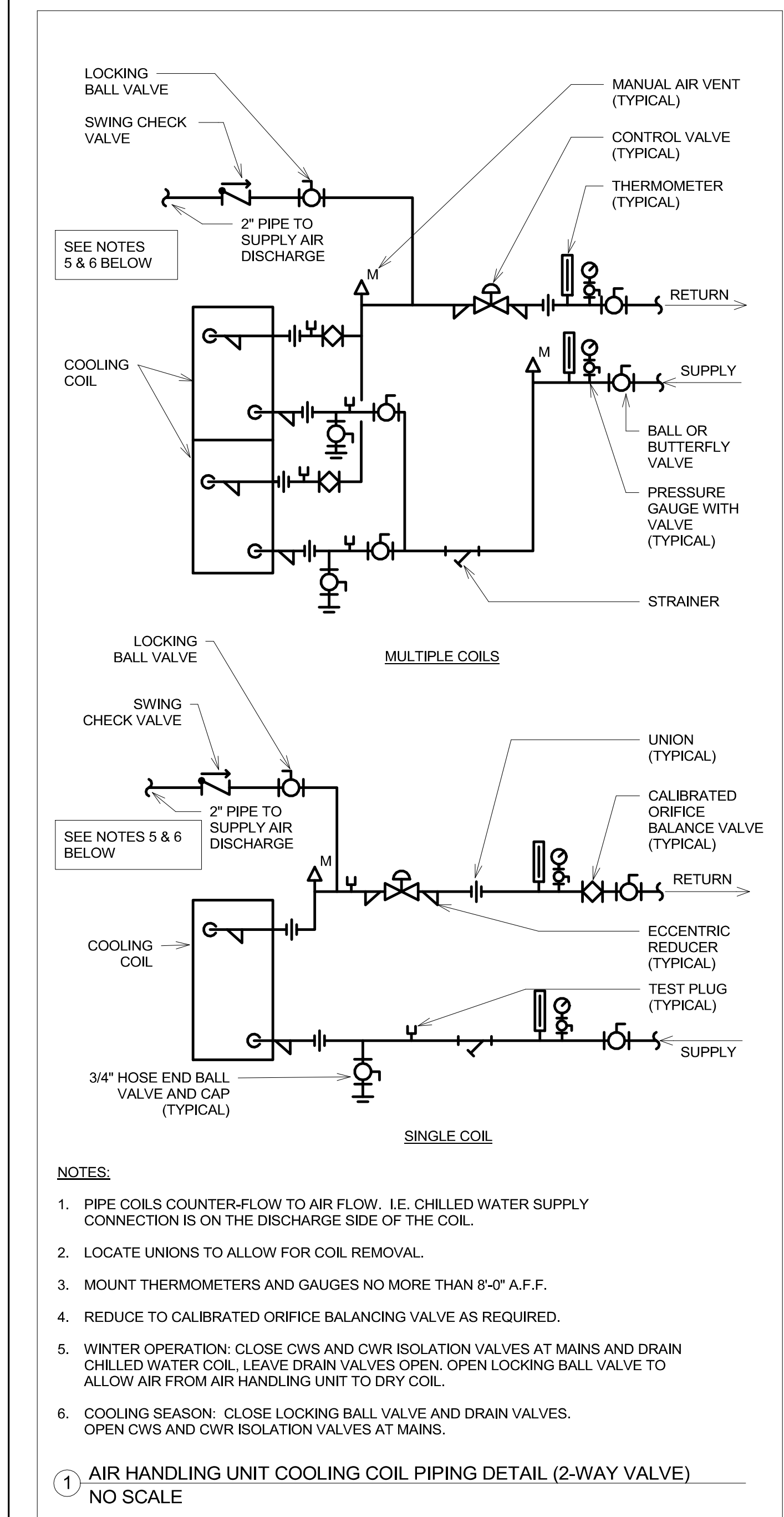
Checked
JRG

Drawn
TNH

Project Number
VA #438-480
SGA #201909

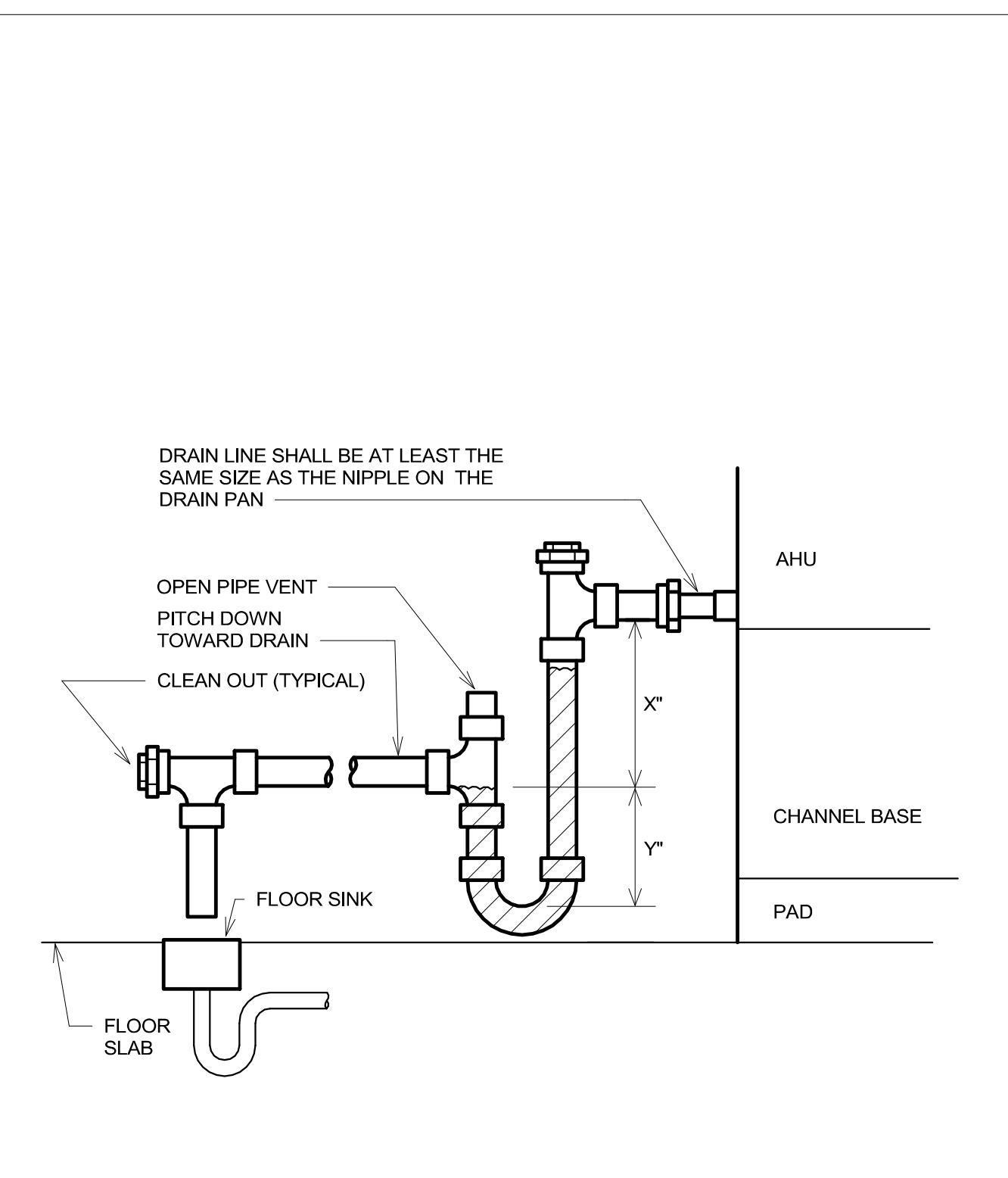
Building Number
5

Drawing Number
M301



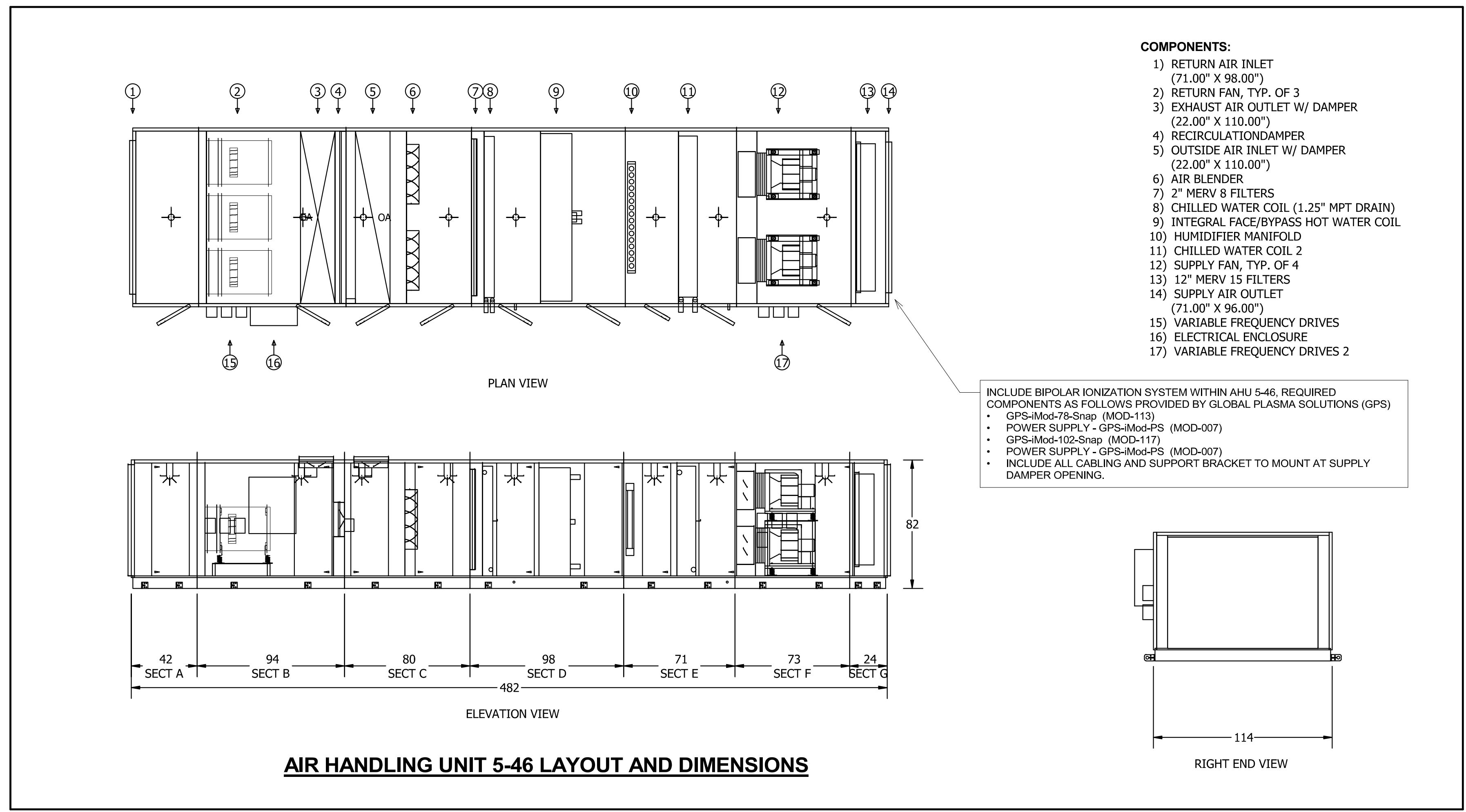
- NOTES:**
- PIPE COILS COUNTER-FLOW TO AIR FLOW. I.E. CHILLED WATER SUPPLY CONNECTION IS ON THE DISCHARGE SIDE OF THE COIL.
 - LOCATE UNIONS TO ALLOW FOR COIL REMOVAL.
 - MOUNT THERMOMETERS AND GAUGES NO MORE THAN 8'-0" A.F.F.
 - REDUCE TO CALIBRATED ORIFICE BALANCING VALVE AS REQUIRED.
 - WINTER OPERATION: CLOSE CWS AND CWR ISOLATION VALVES AT MAINS AND DRAIN CHILLED WATER COIL. LEAVE DRAIN VALVES OPEN. OPEN LOCKING BALL VALVE TO ALLOW AIR FROM AIR HANDLING UNIT TO DRY COIL.
 - COOLING SEASON: CLOSE LOCKING BALL VALVE AND DRAIN VALVES. OPEN CWS AND CWR ISOLATION VALVES AT MAINS.

1 AIR HANDLING UNIT COOLING COIL PIPING DETAIL (2-WAY VALVE) NO SCALE

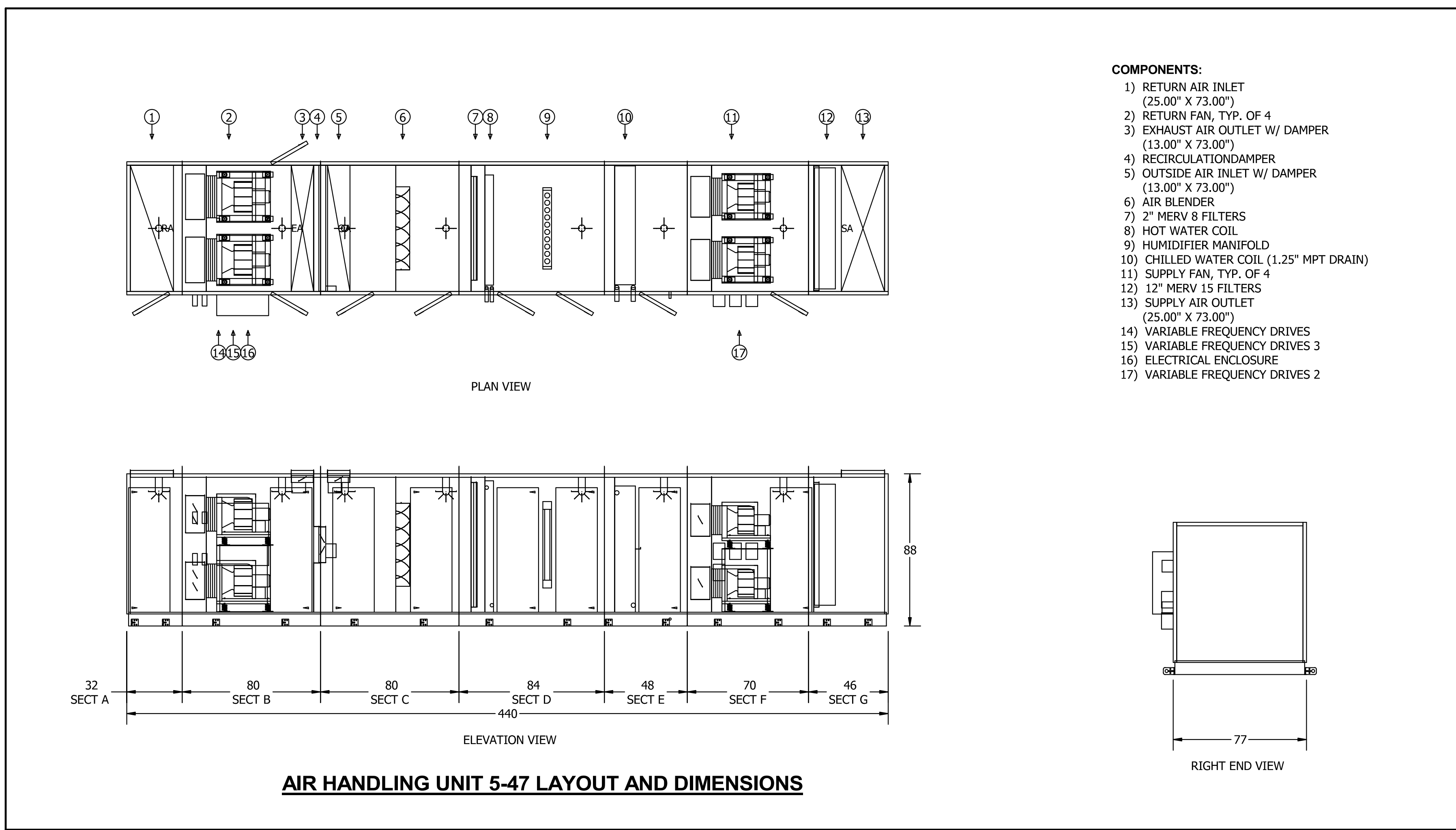


- NOTES:**
- PITCH DRAIN PAN AT 1/4" PER FOOT MINIMUM SLOPE TO DRAIN.
 - PROVIDE SHOP DRAWING FOR DRAIN PAN AND CONDENSATE PIPING FOR REVIEW WITH AIR HANDLING UNIT SUBMITTAL.
 - DRAIN LINE SHALL BE AT LEAST THE SAME SIZE AS THE NIPPLE ON THE DRAIN PAN.

2 DRAW THROUGH AHU CONDENSATE TRAP DETAIL NO SCALE



AIR HANDLING UNIT 5-46 LAYOUT AND DIMENSIONS



AIR HANDLING UNIT 5-47 LAYOUT AND DIMENSIONS

Revision#	Description	Date:

CONSULTANTS

ARCHITECTURAL: BWB BWB 390 St. Peter St Suite 600 St. Paul, MN 55102 Phone: 651-223-3701	STRUCTURAL: ERA ERICKSEN ROAD ASSOCIATES 2250 University Ave W Suite 423-S St. Paul, MN 55402 Phone: 651-251-1770	MEP: DUNHAM DUNHAM ASSOCIATES, INC. 50 South Sixth St Suite 1100 Minneapolis, MN 55402 Phone: 612-465-7550 0421950-002-00	CIVIL: EVS EVS 10025 Valley View Rd Suite 140 Eden Prairie, MN 55444 Phone: 952-646-0299	LANDSCAPE: CONFLUENCE CONFLUENCE 524 N Main Ave Suite 201 Sioux Falls, SD 57104 Phone: 605-339-1205
--	---	--	--	---

ARCHITECT OF RECORD

A/E:
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600 E 7th Street
Sioux Falls, SD 57103
605-271-1144

STAMP

Office of Construction and Facilities Management
U.S. Department of Veterans Affairs

Drawing Title
AIR HANDLING UNIT DETAILS

Phase
CONSTRUCTION DOCUMENTS

Project Title
NEW FRONT LOBBY AND PRIMARY CARE ADDITION

Location
SIOUX FALLS, SOUTH DAKOTA

Issue Date
06/22/2022

Checked
JRG

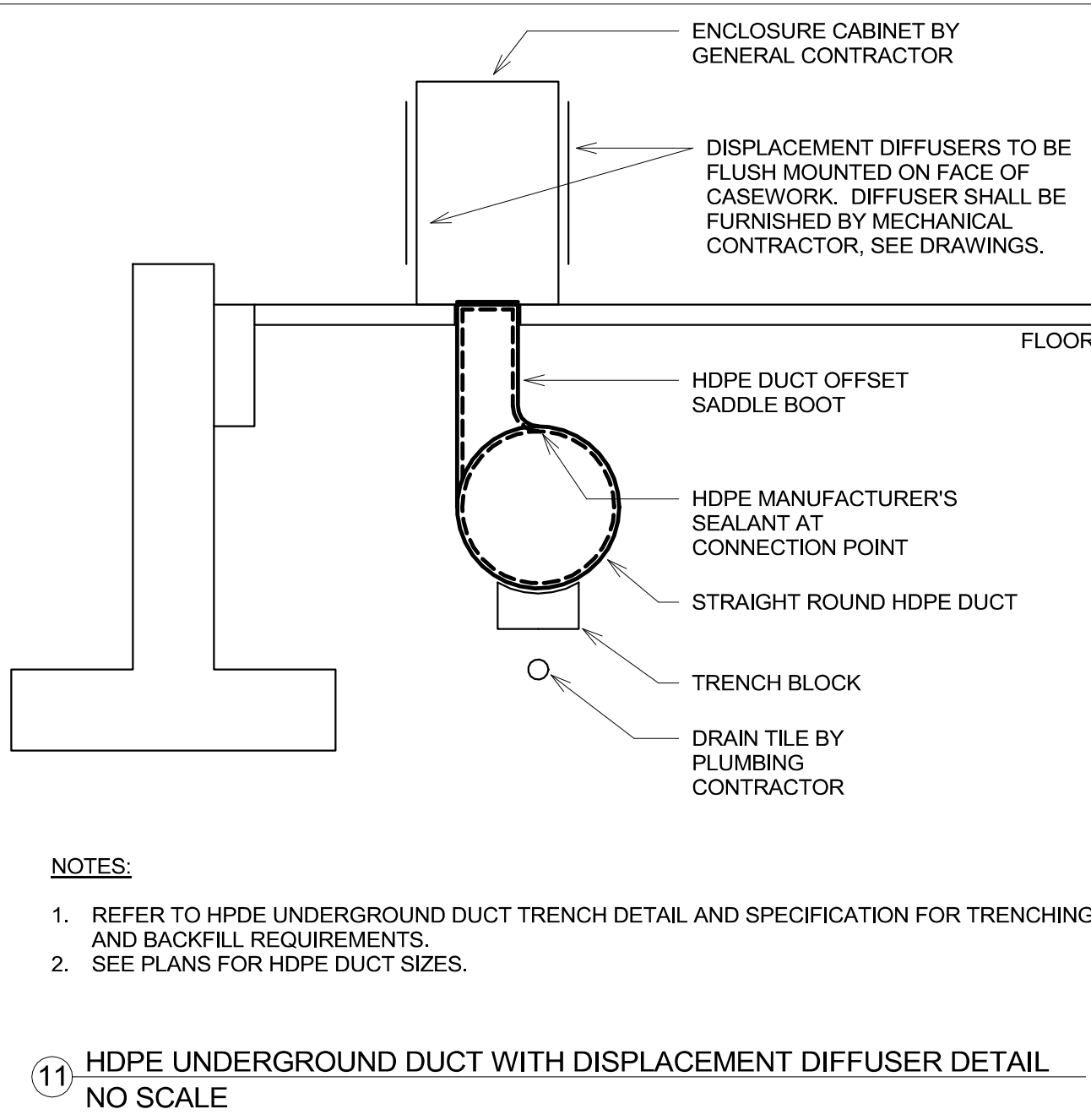
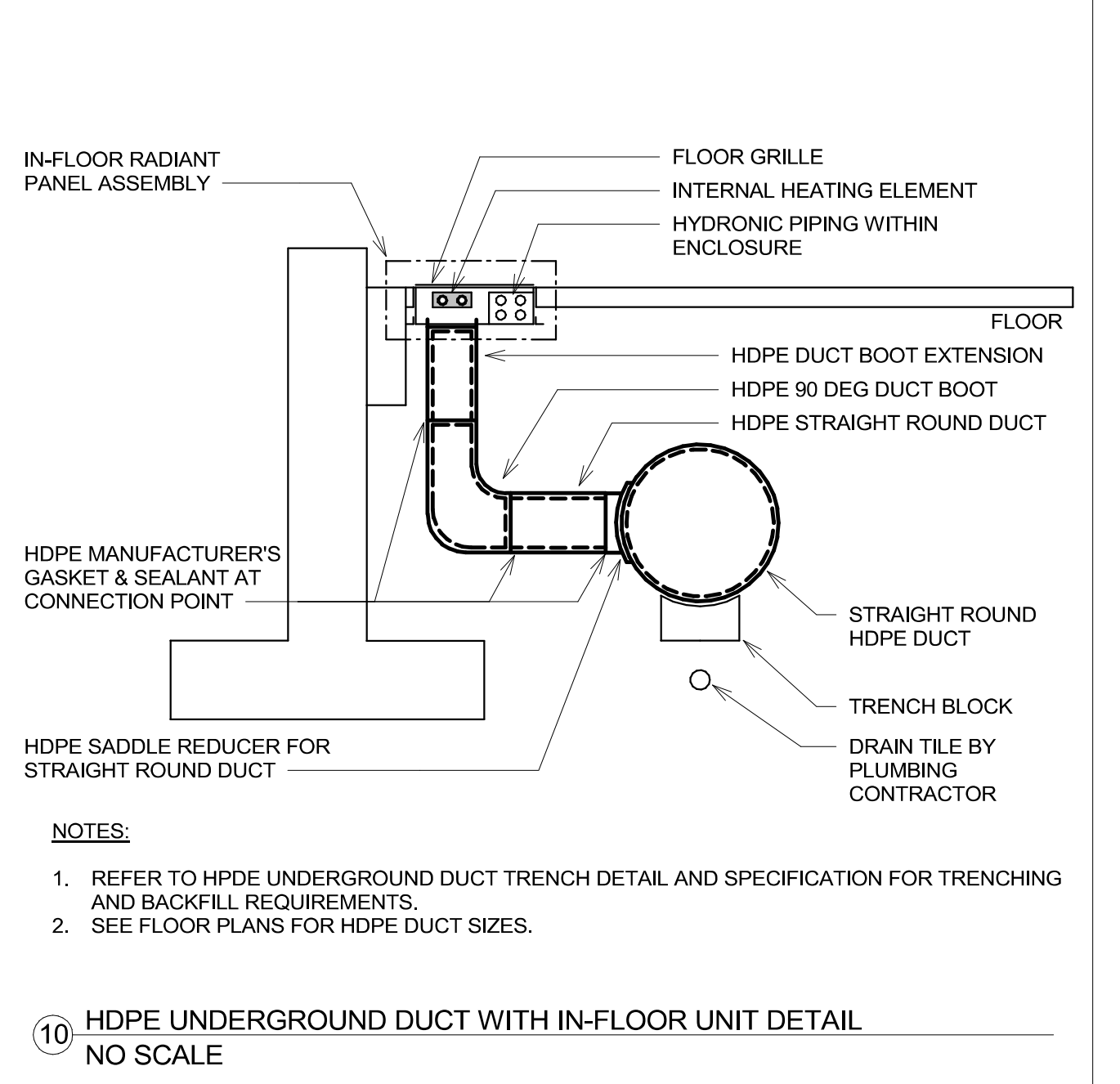
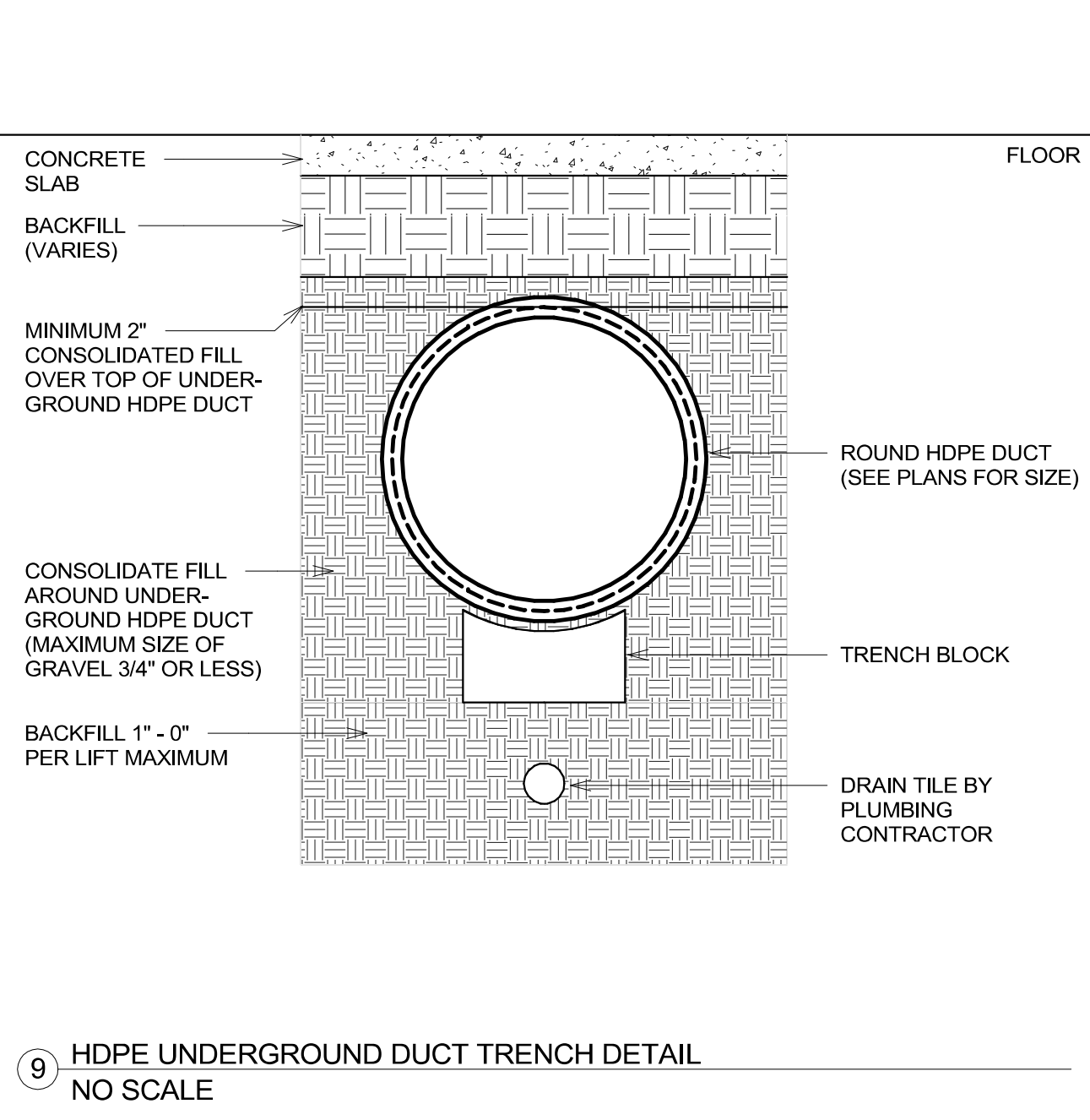
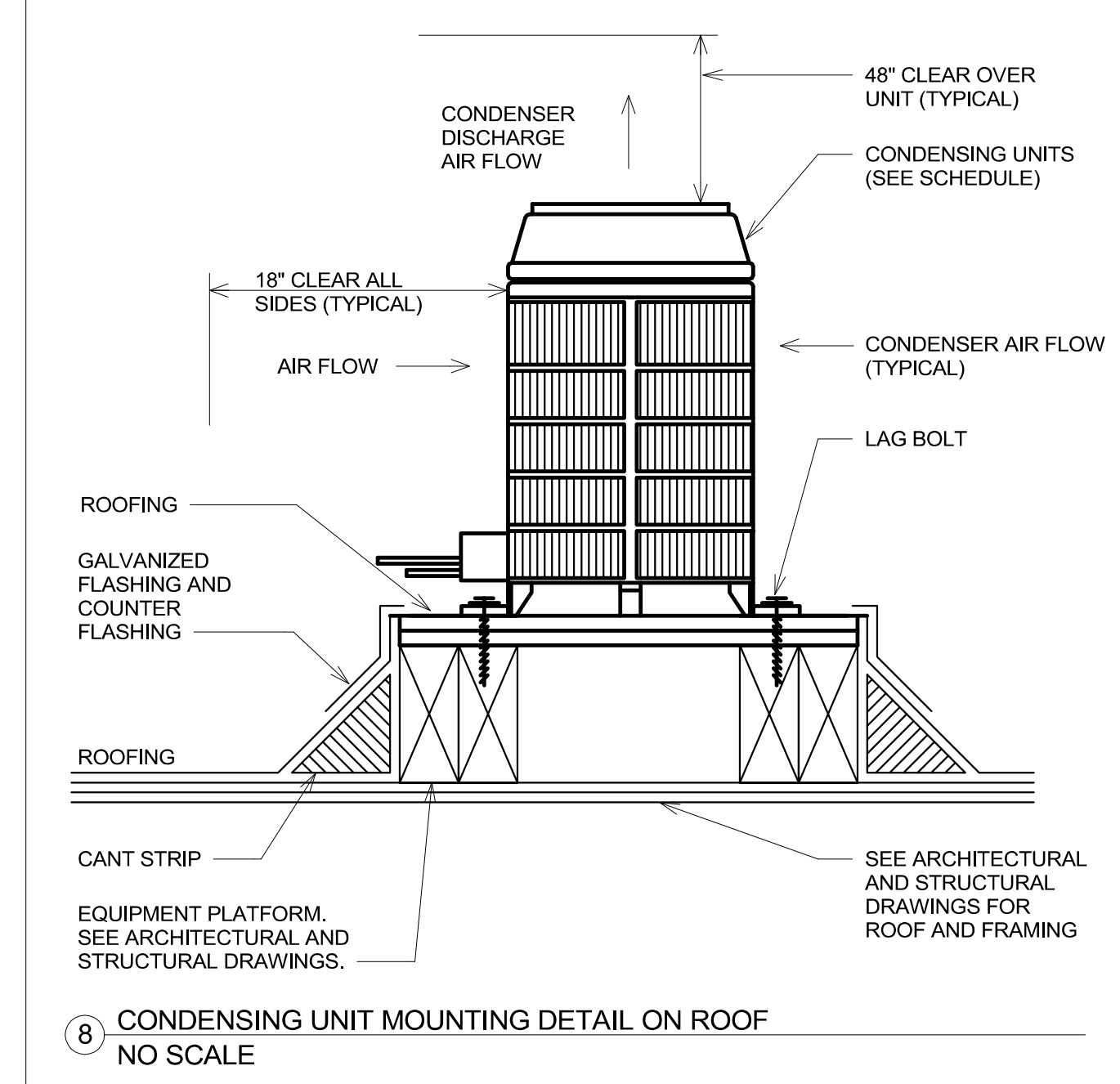
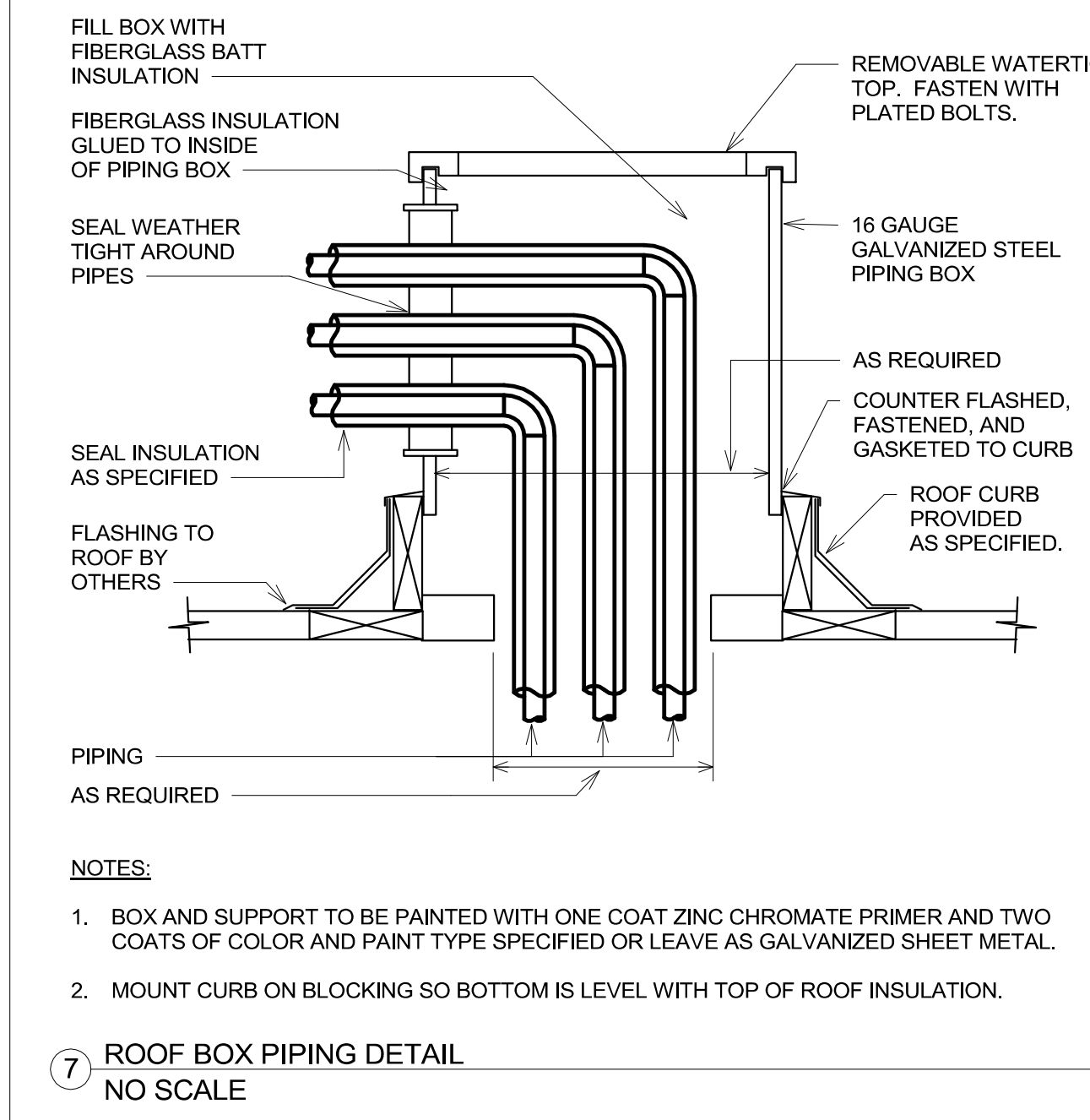
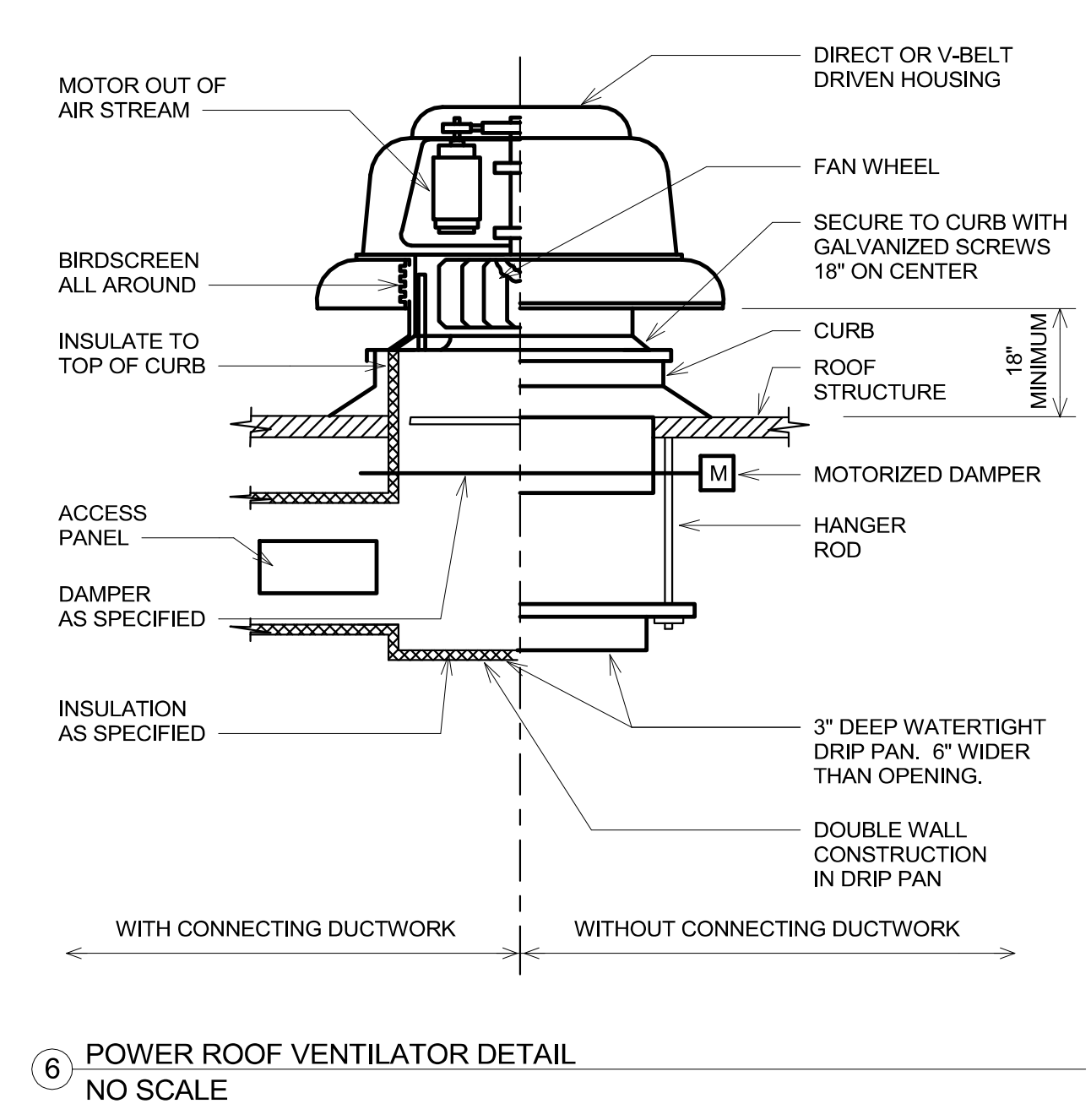
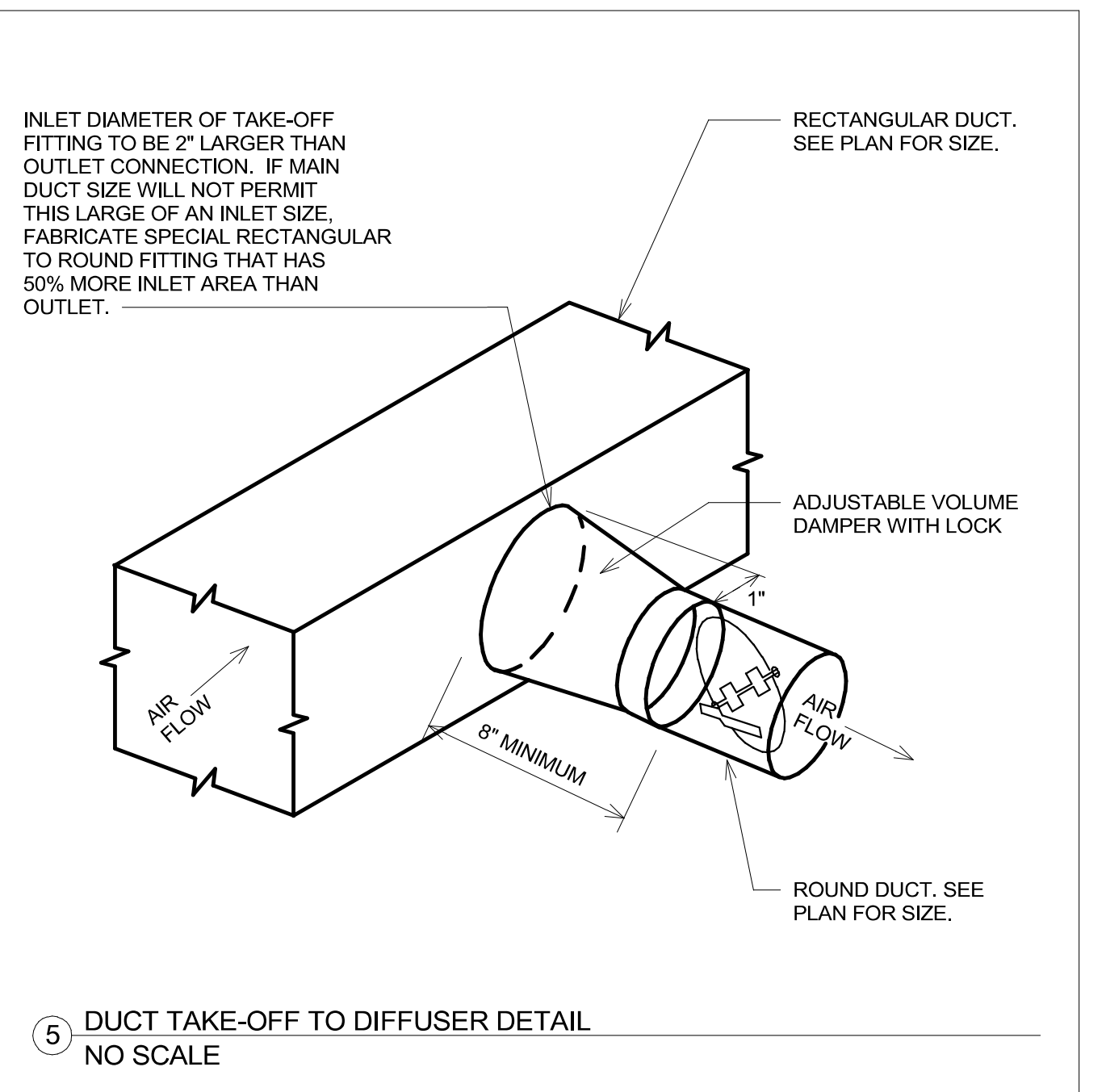
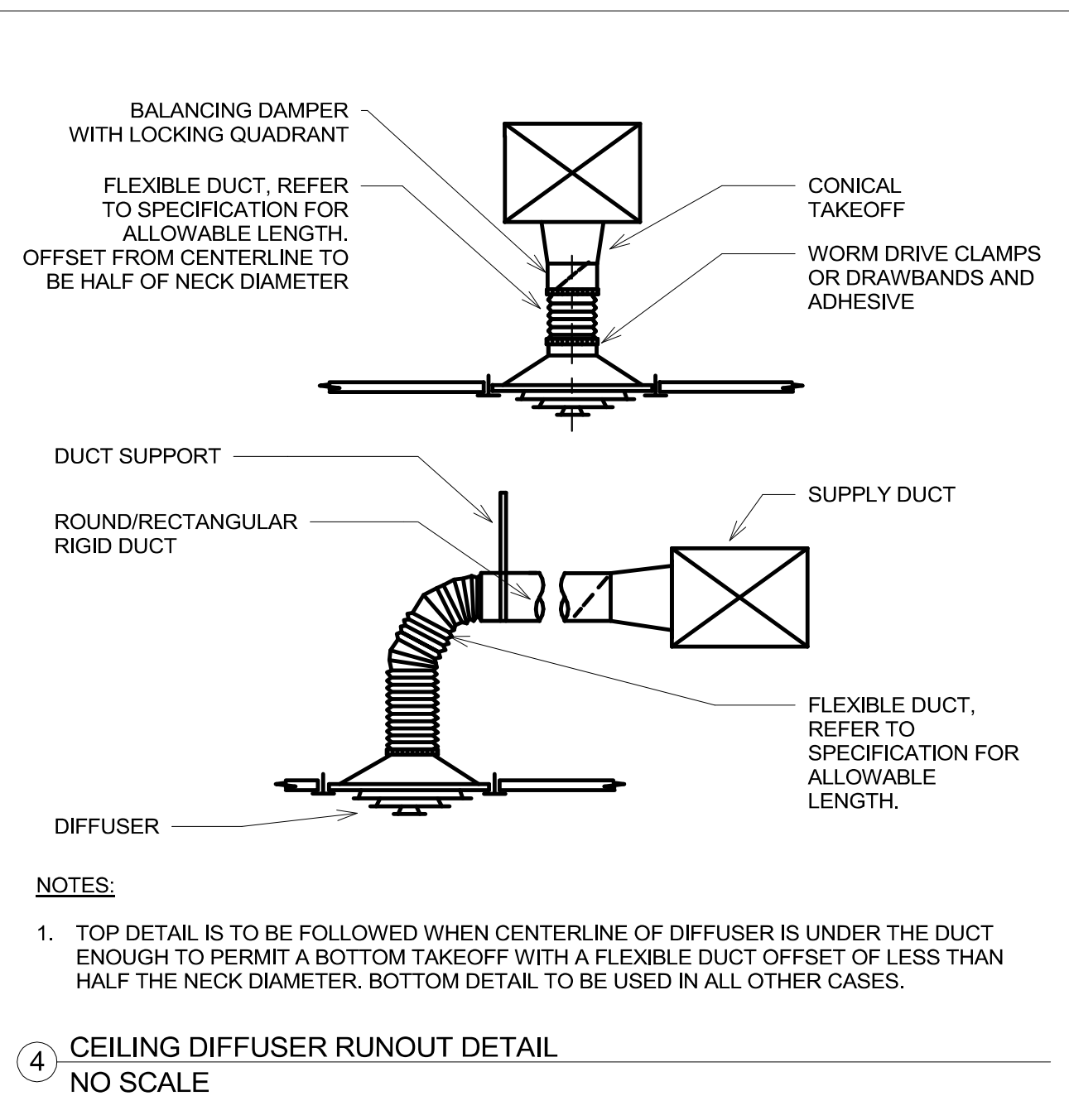
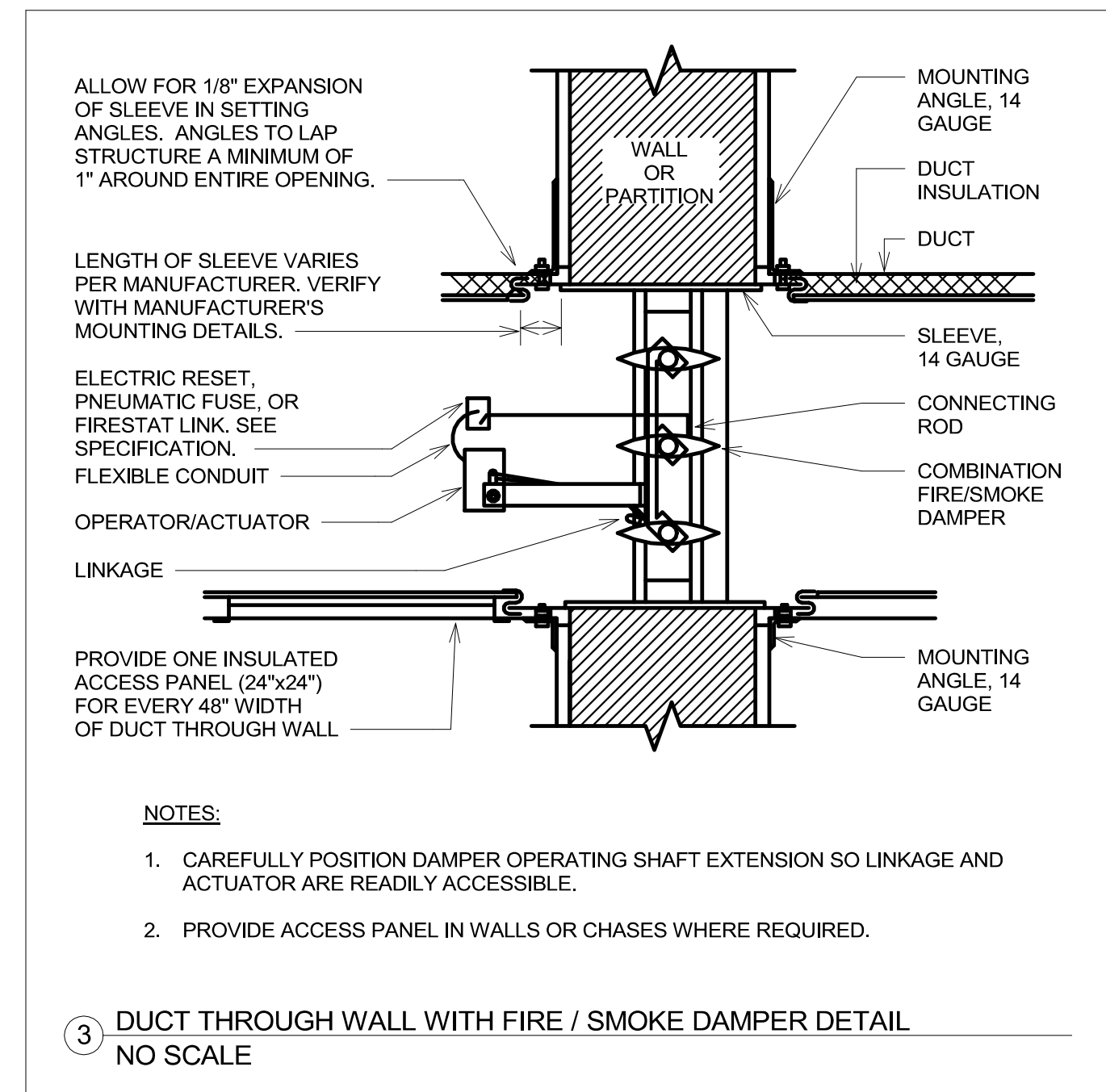
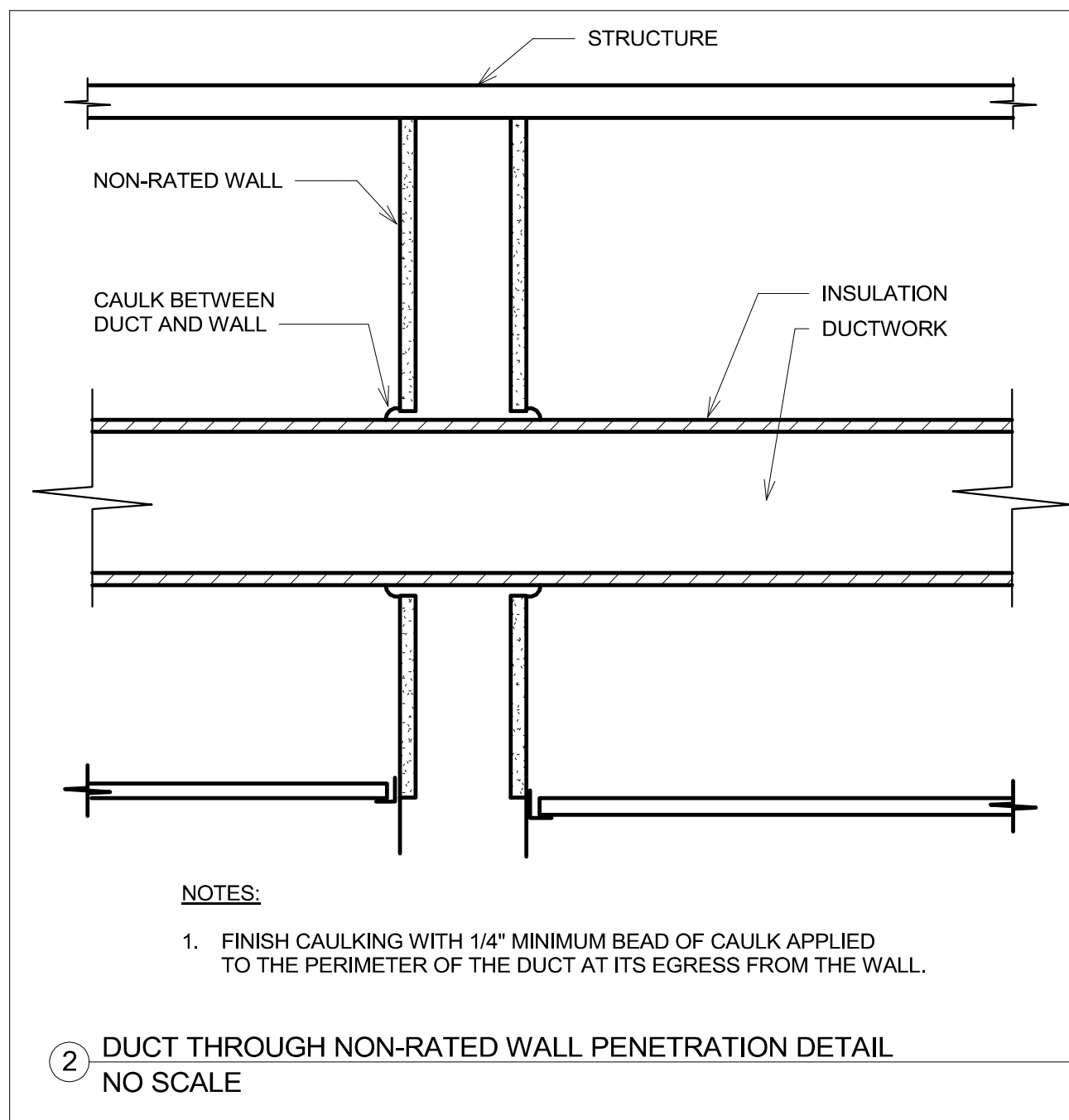
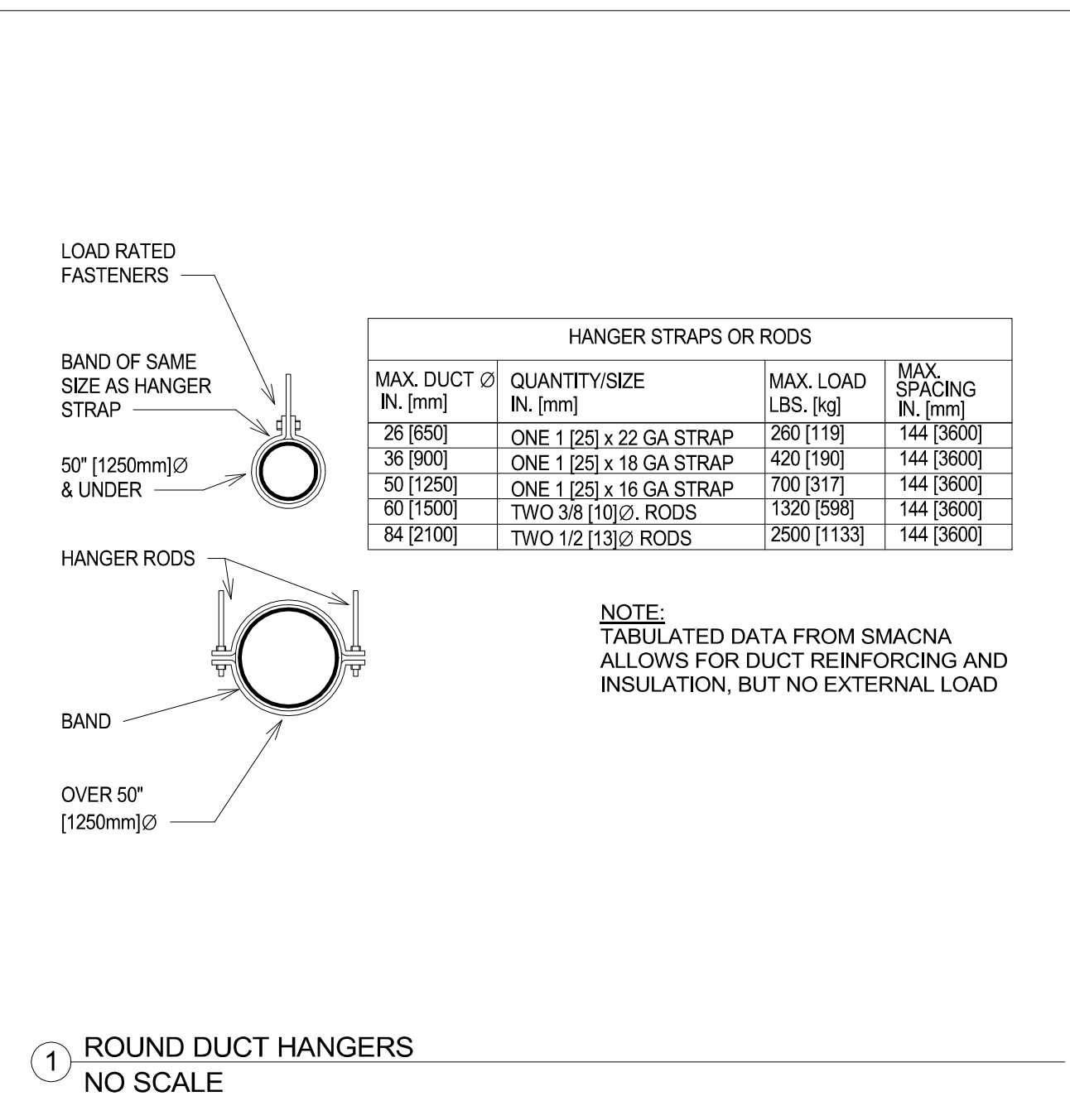
Drawn
TNH

Project Number
VA #438-480
SGA #201909

Building Number
5

Drawing Number
M400

Three inches = one foot
 one and one half inches = one foot
 one inch = one foot
 three quarters inch = one foot
 one half inch = one foot
 one quarter inch = one foot
 three eighths inch = one foot
 one eighth inch = one foot
 one sixteenth inch = one foot



6/21/2025 9:04:18 AM
 C:\Rev\Projects\M - Lobby Central_R201_jason.gottwalt\27.rvt

Revision#	Description	Date:

CONSULTANTS

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 0421959-002-00

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LANDSCAPE: **CONFLUENCE**
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 605-271-1144

STAMP
 REGISTERED PROFESSIONAL ARCHITECT
 14844
 JASON R. GOTTWALT
 SOUTH DAKOTA

STONE GROUP ARCHITECTS

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title
MECHANICAL DETAILS

Approved: _____

Phase
CONSTRUCTION DOCUMENTS

Project Title
NEW FRONT LOBBY AND PRIMARY CARE ADDITION

Location
SIoux FALLS, SOUTH DAKOTA

Issue Date
 06/22/2022

Checked
 JRG

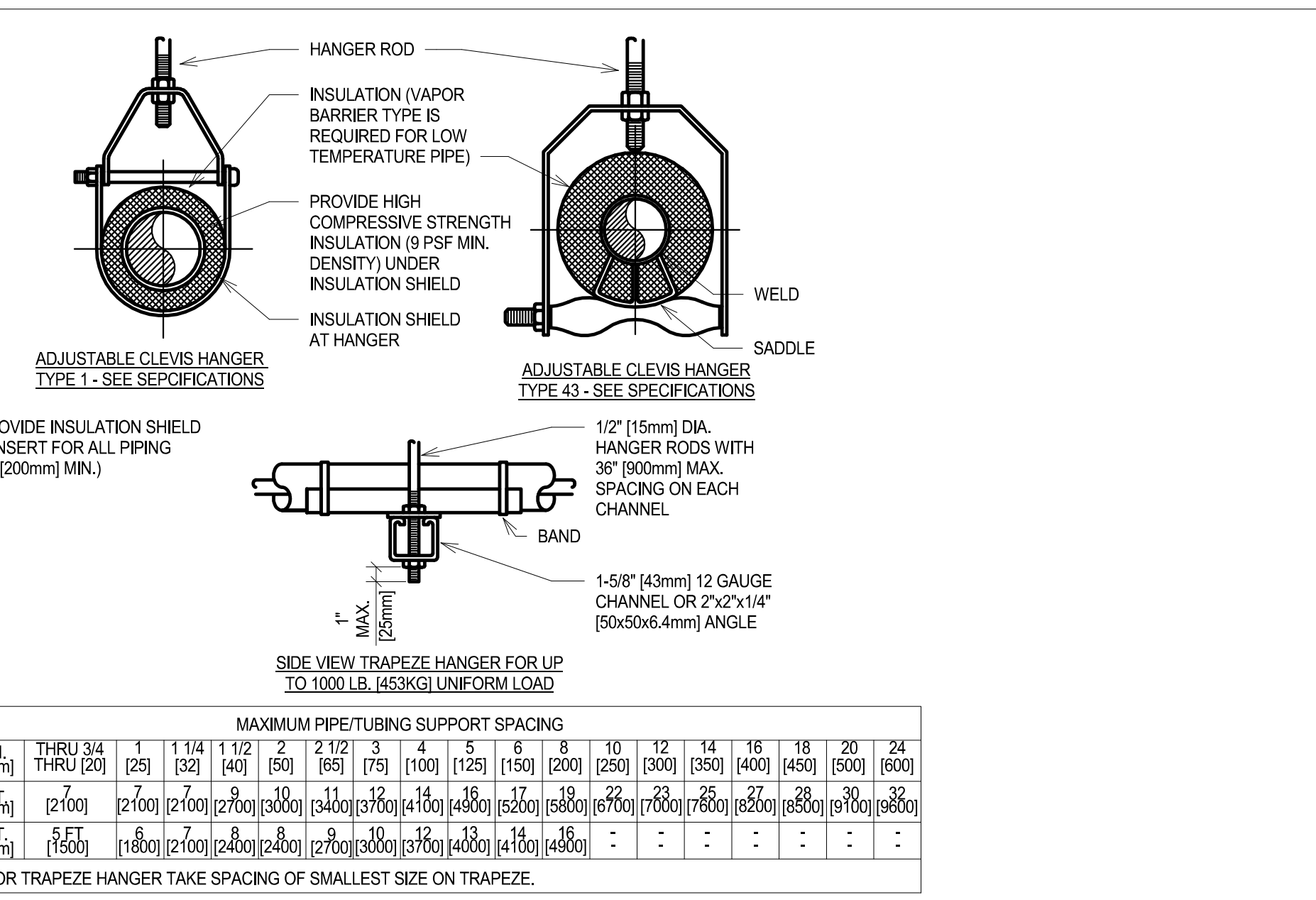
Drawn
 TNH

Project Number
 VA #438-480
 SGA #201909

Building Number
 5

Drawing Number
M401

Three inches = one foot
 one and one half inches = one foot
 one inch = one foot
 three quarters inch = one foot
 one half inch = one foot
 three eighths inch = one foot
 one quarter inch = one foot
 one eighth inch = one foot

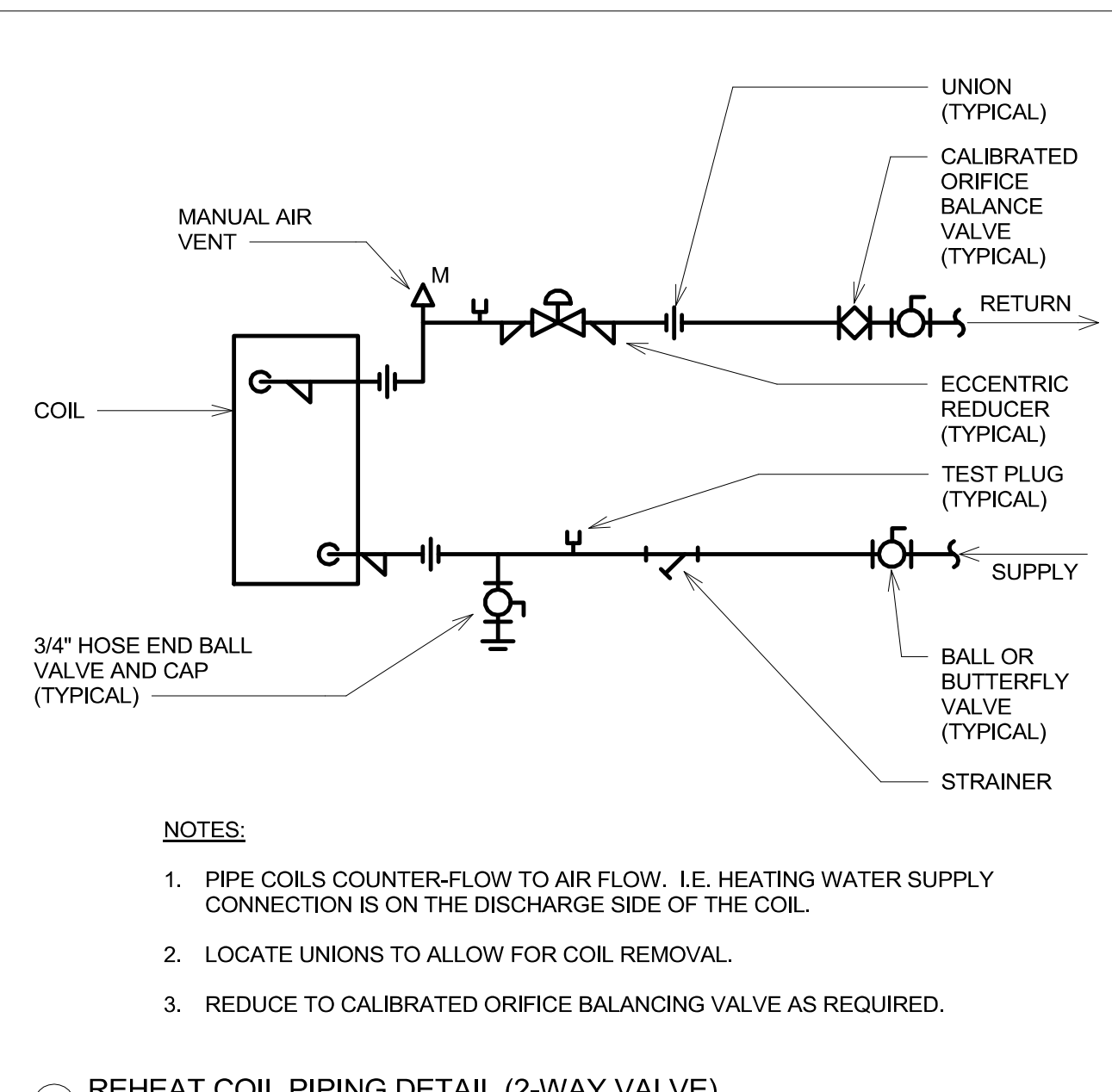


MAXIMUM PIPE/TUBING SUPPORT SPACING

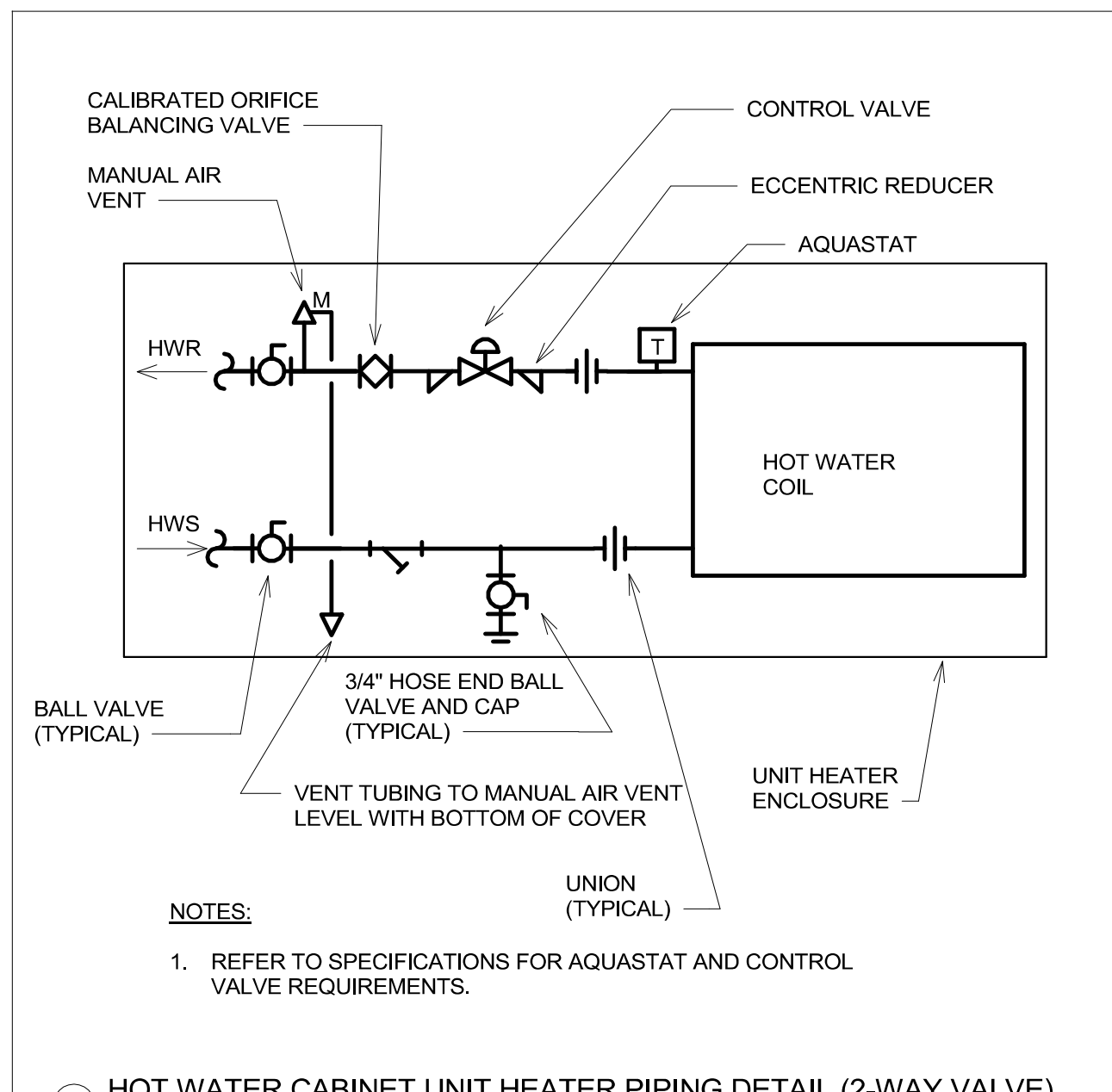
NOM. SIZE	IN (mm)	THRU	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24
PIPE	FT (mm)	2' (00)	2' (00)	2' (00)	2' (00)	2' (00)	3' (00)	3' (00)	3' (00)	3' (00)	4' (00)	4' (00)	4' (00)	5' (00)	5' (00)	6' (00)	6' (00)	6' (00)	6' (00)	6' (00)
TUBING	FT (mm)	1' (00)	1' (00)	1' (00)	1' (00)	1' (00)	1' (00)	1' (00)	1' (00)	1' (00)	1' (00)	1' (00)	1' (00)	1' (00)	1' (00)	1' (00)	1' (00)	1' (00)	1' (00)	1' (00)

NOTE: FOR TRAPEZOID HANGER TAKE SPACING OF SMALLEST SIZE ON TRAPEZOID.

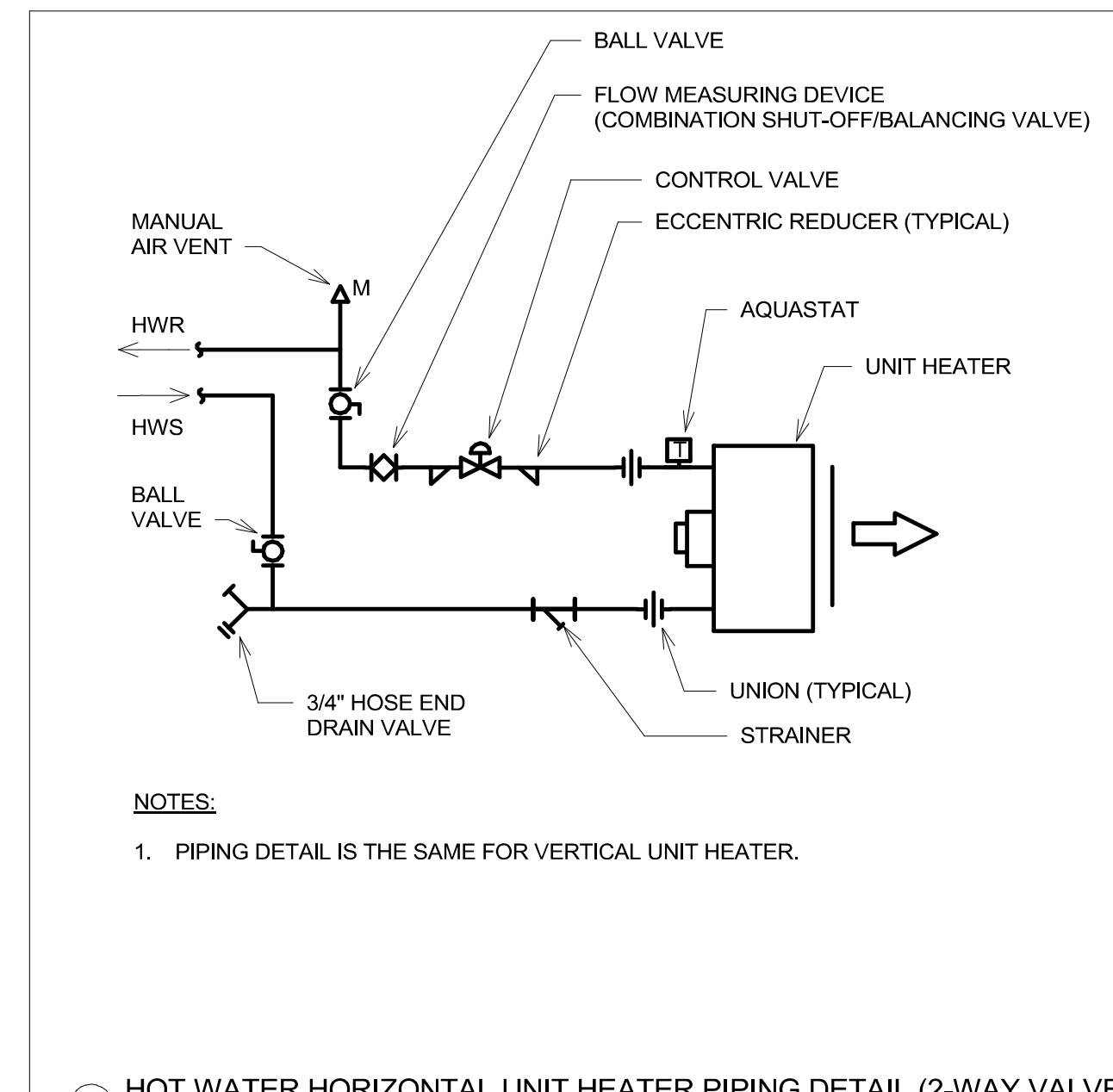
1 PIPE HANGERS DETAIL
NO SCALE



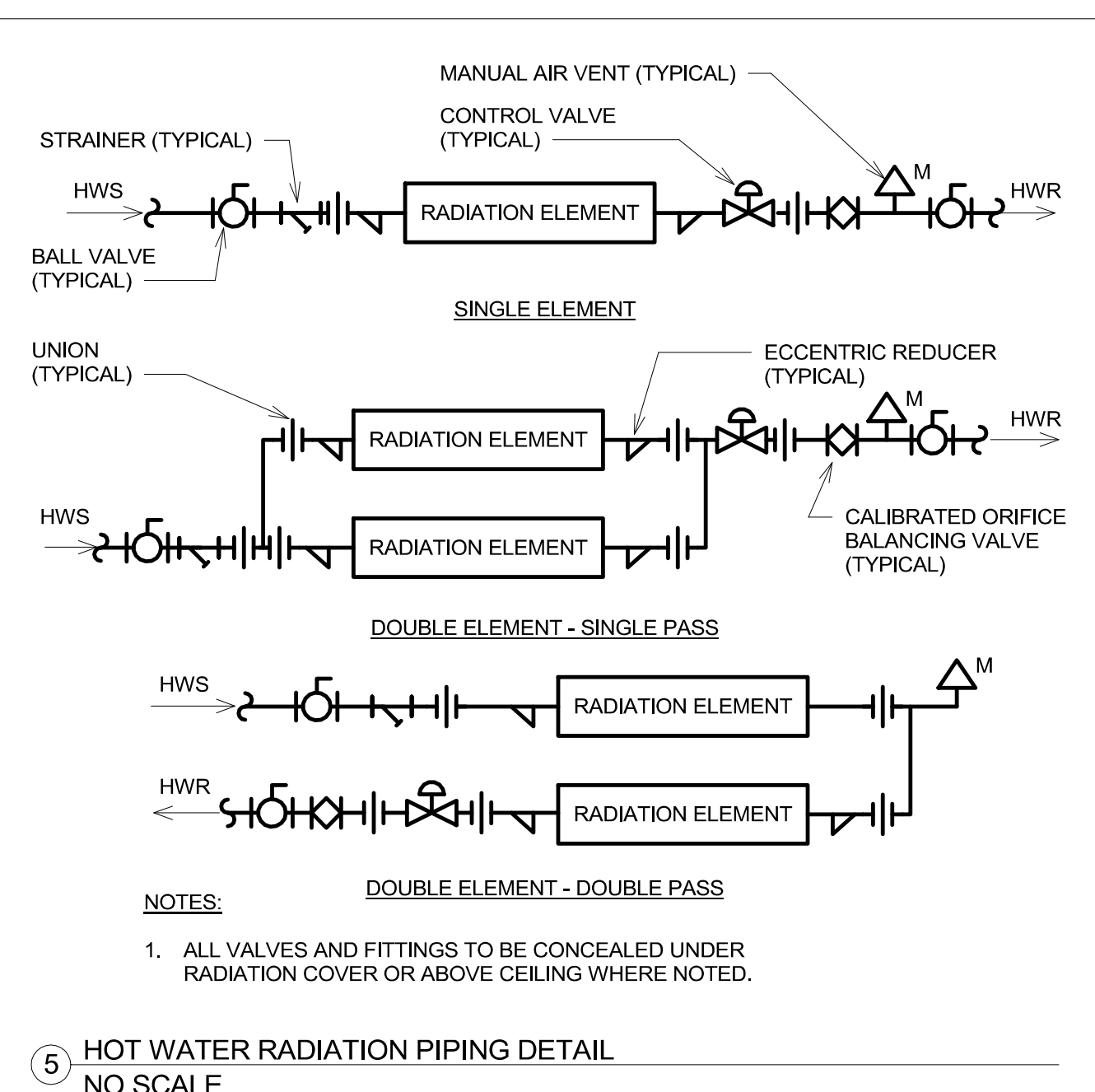
2 REHEAT COIL PIPING DETAIL (2-WAY VALVE)
NO SCALE



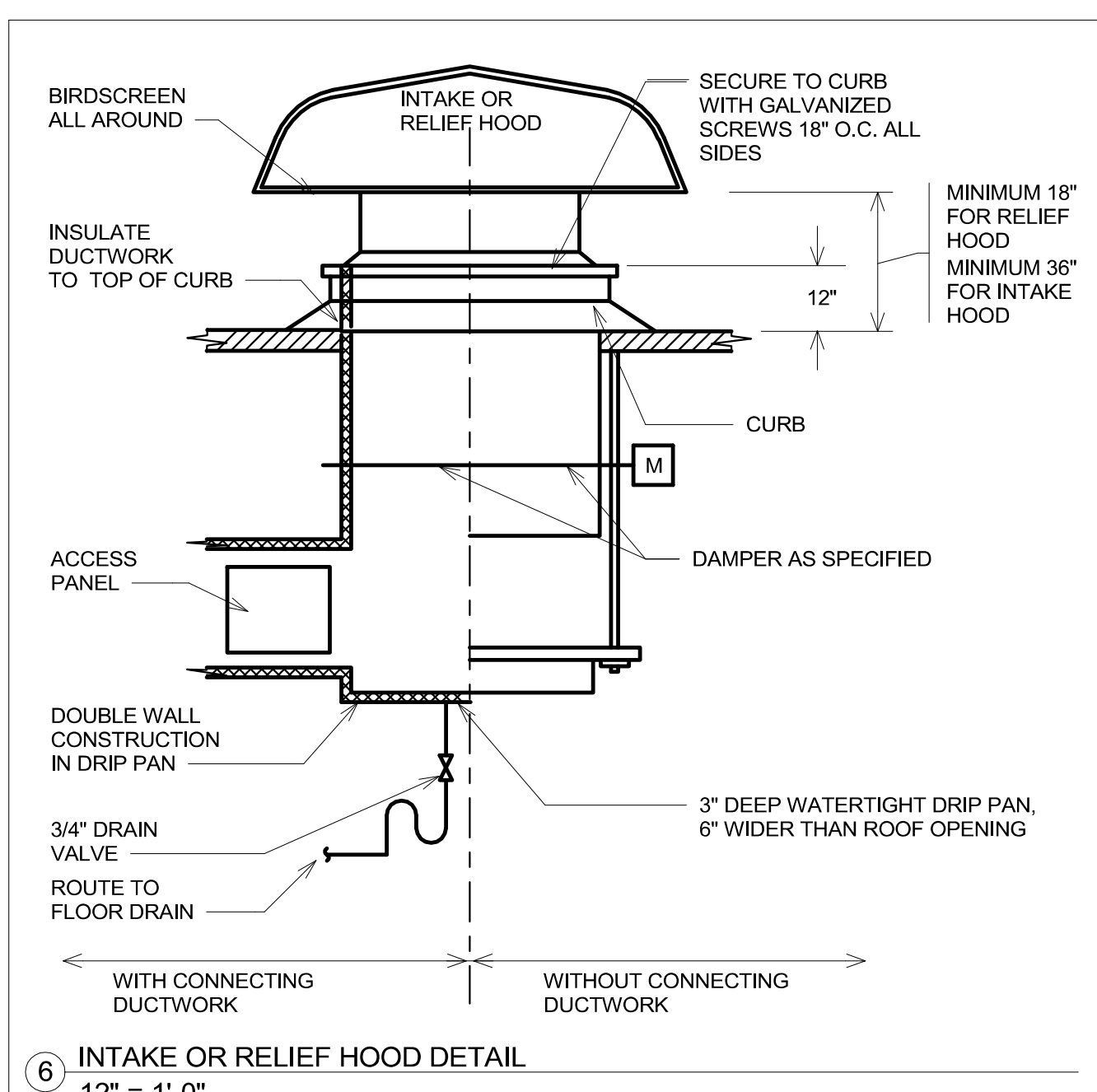
3 HOT WATER CABINET UNIT HEATER PIPING DETAIL (2-WAY VALVE)
NO SCALE



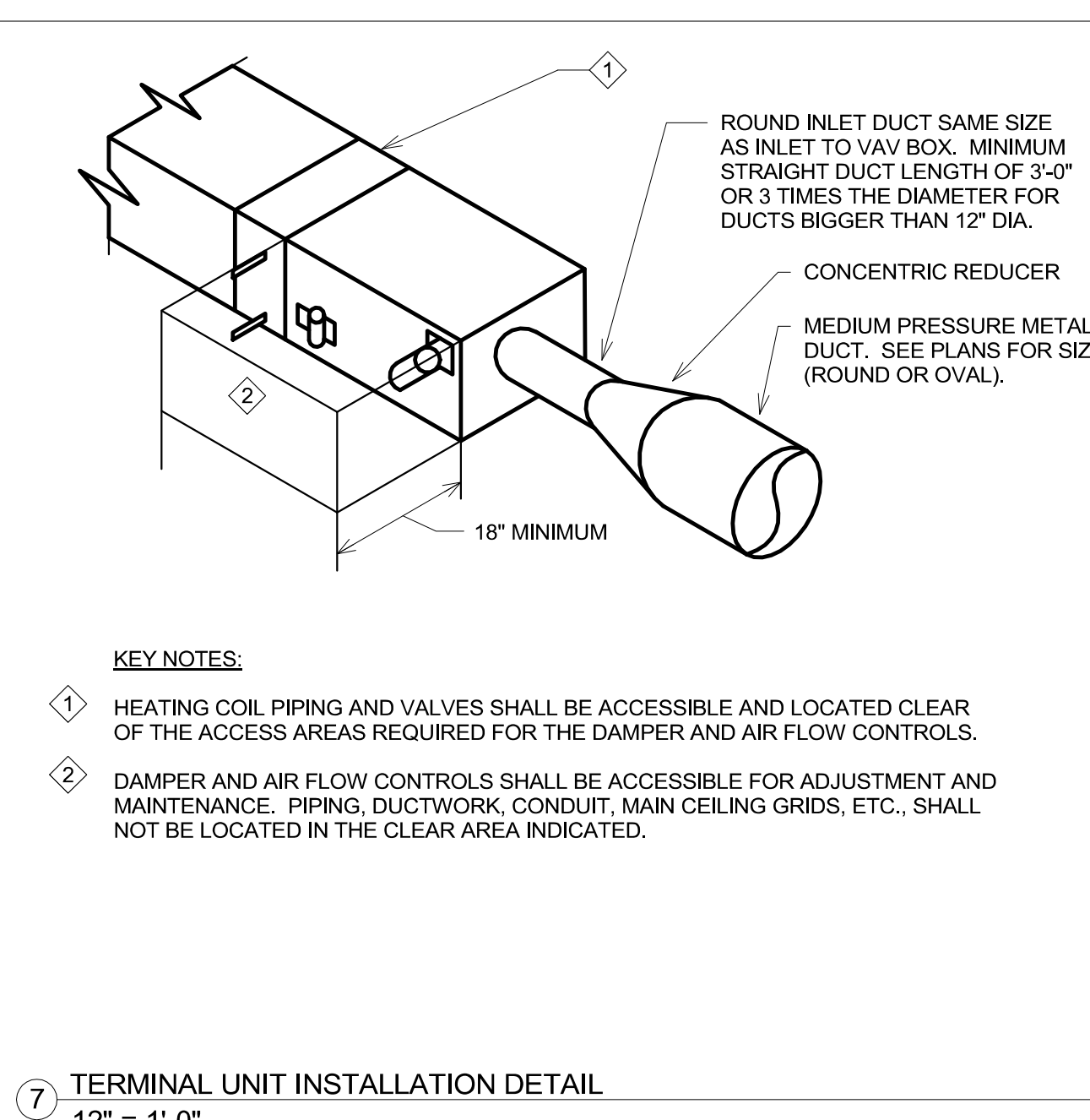
4 HOT WATER HORIZONTAL UNIT HEATER PIPING DETAIL (2-WAY VALVE)
NO SCALE



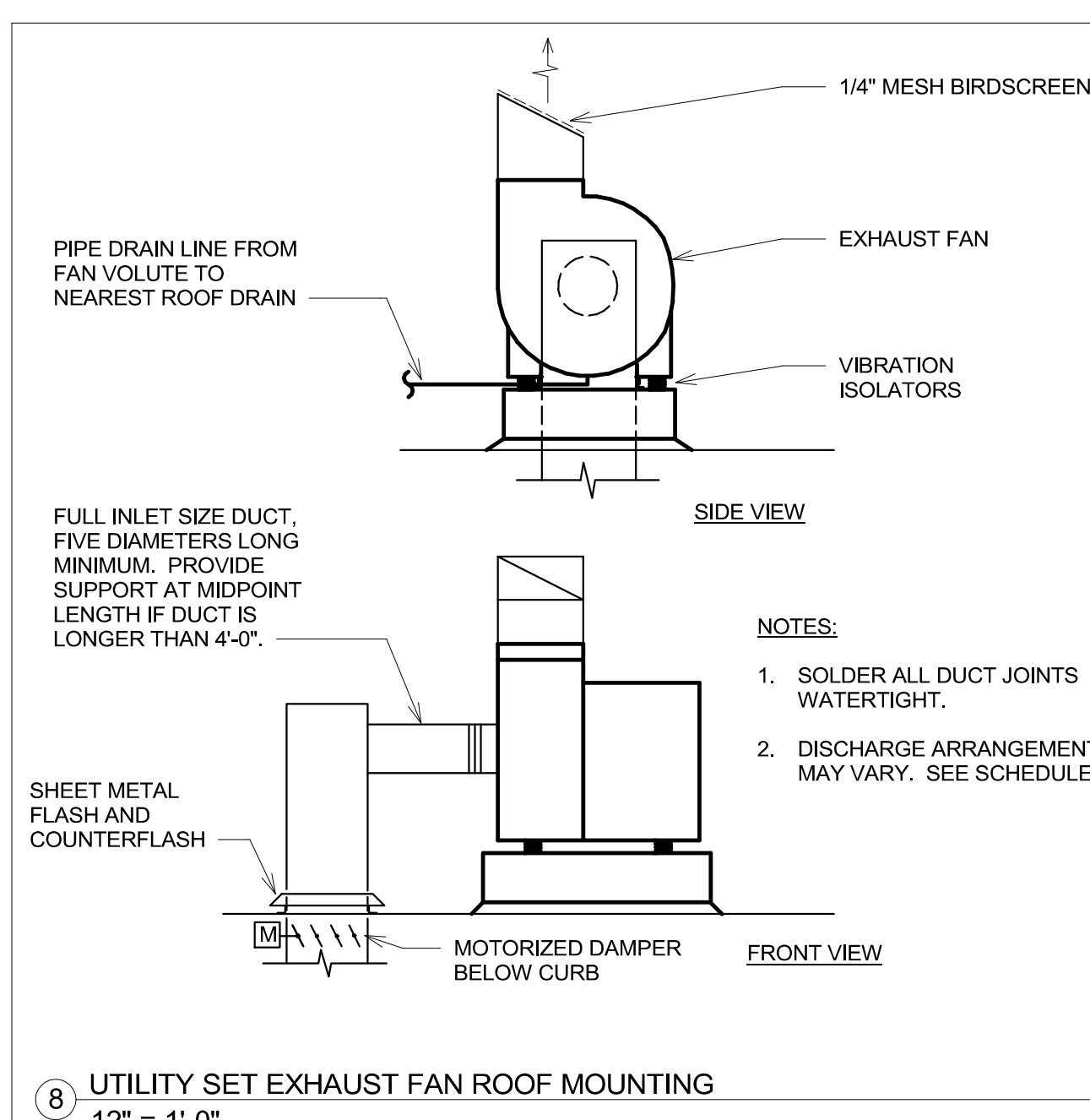
5 HOT WATER RADIATION PIPING DETAIL
NO SCALE



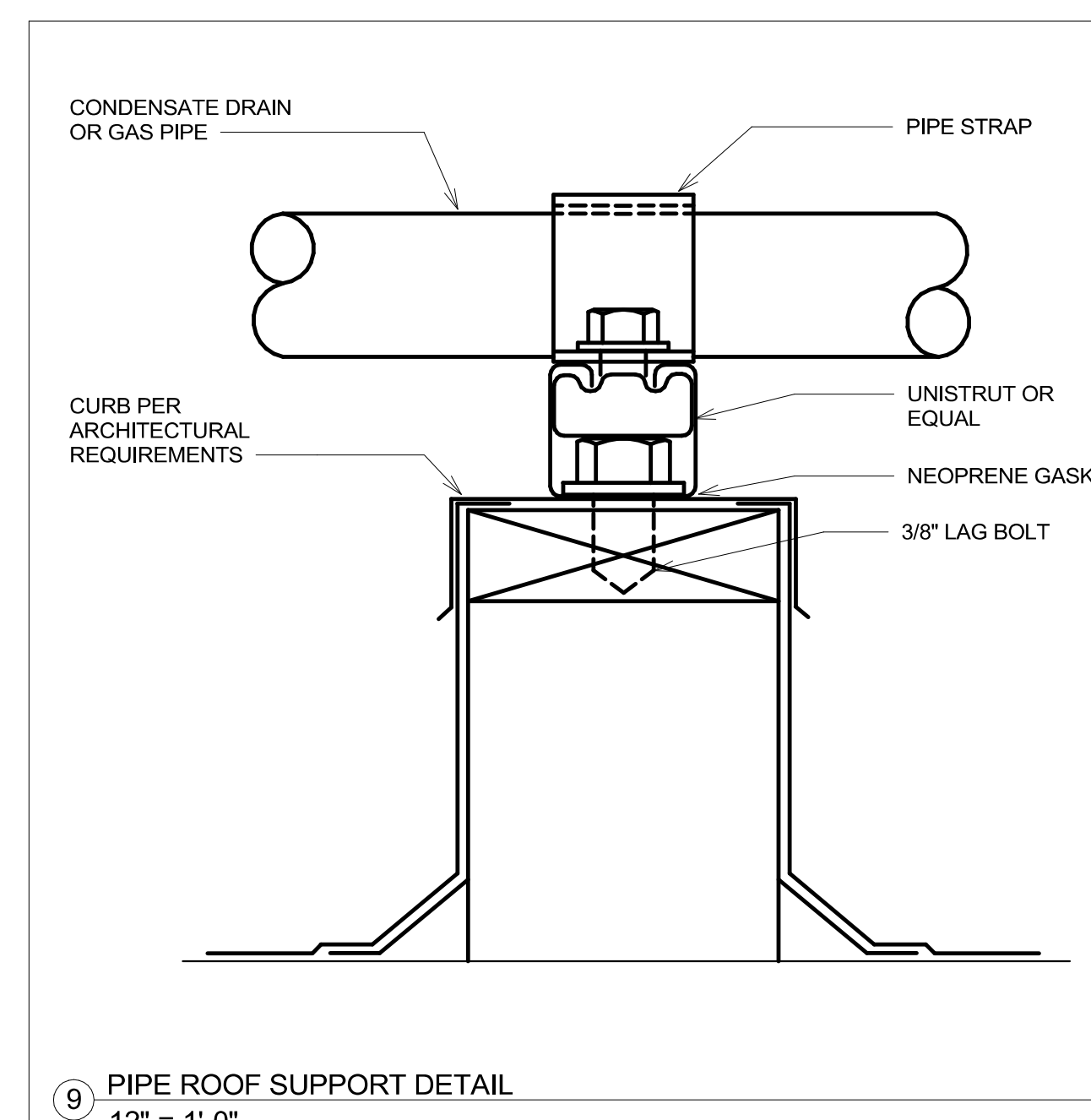
6 INTAKE OR RELIEF HOOD DETAIL
12" = 1'-0"



7 TERMINAL UNIT INSTALLATION DETAIL
12" = 1'-0"



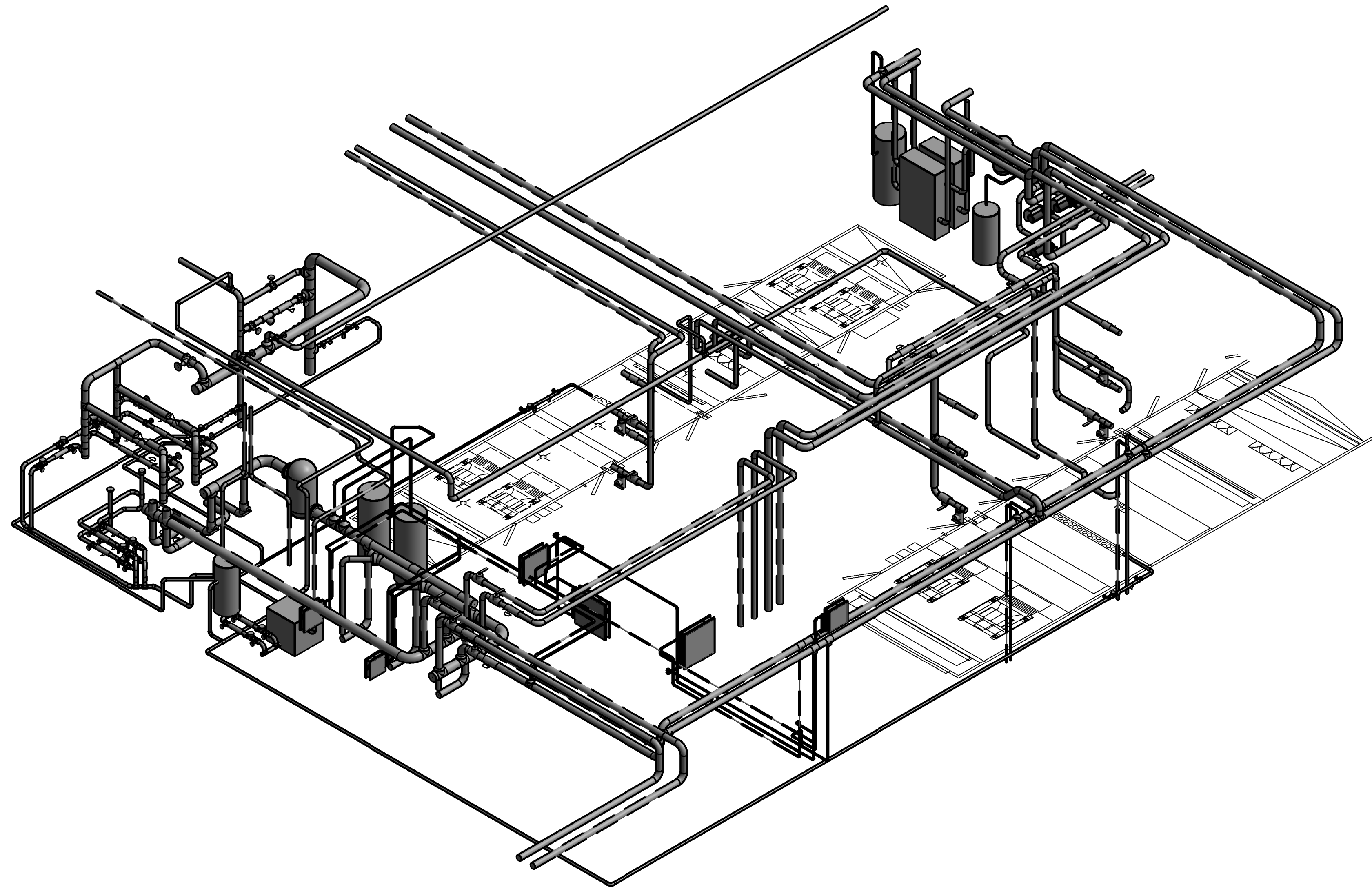
8 UTILITY SET EXHAUST FAN ROOF MOUNTING
12" = 1'-0"



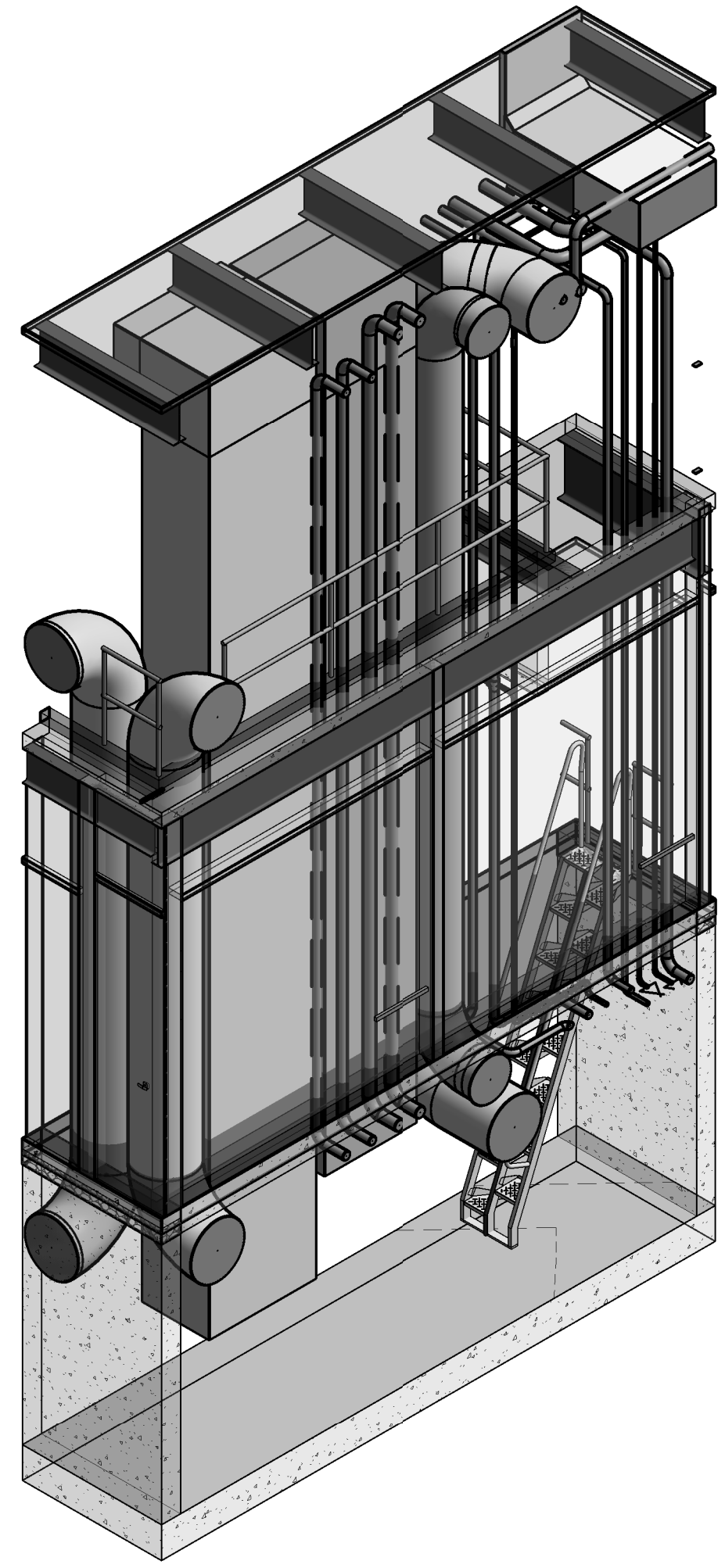
9 PIPE ROOF SUPPORT DETAIL
12" = 1'-0"

CONSULTANTS ARCHITECTURAL: B W B STRUCTURAL: ERA MEP: DUNHAM CIVIL: EVS LANDSCAPE: CONFLUENCE		ARCHITECT OF RECORD A/E: Stone Group Architects 600 E 7th Street Sioux Falls, SD 57103 605-271-1144		STAMP REGISTERED PROFESSIONAL ARCHITECT 14844 JASON R. GOTTWALT SOUTH DAKOTA		Office of Construction and Facilities Management VA U.S. Department of Veterans Affairs		Drawing Title: MECHANICAL DETAILS Approved:		Phase: CONSTRUCTION DOCUMENTS		Project Title: NEW FRONT LOBBY AND PRIMARY CARE ADDITION Project Number: VA #438-480 SGA #201909 Building Number: 5		Location: SIOUX FALLS, SOUTH DAKOTA Issue Date: 06/22/2022 Checked: JRG Drawn: TNH		Drawing Number: M402	
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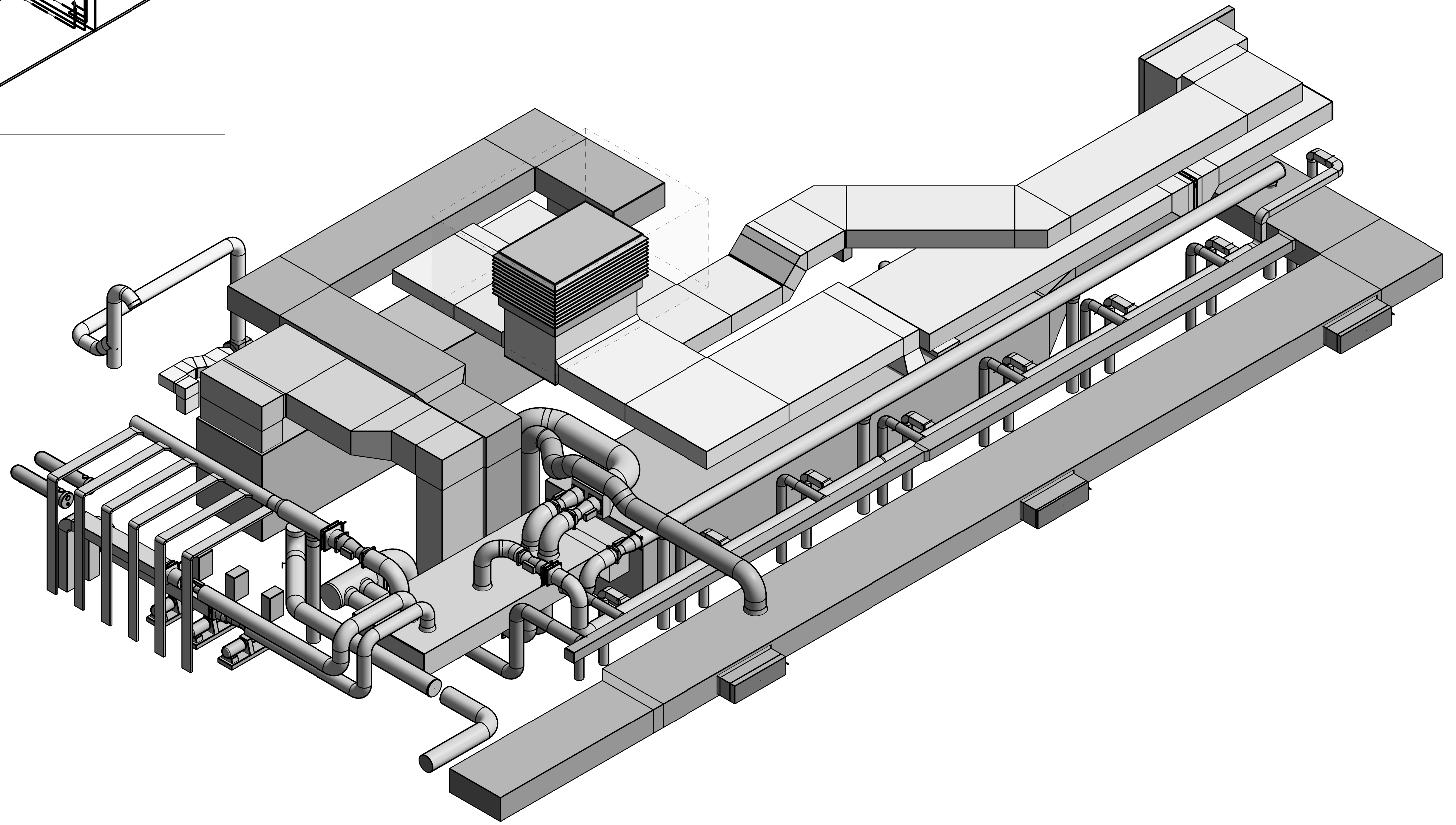
one eighth inch = one foot
 one quarter inch = one foot
 three eighths inch = one foot
 one half inch = one foot
 one inch = one foot
 one and one half inches = one foot
 three inches = one foot



1 MECHANICAL ROOM PIPING



3 MECHANICAL SHAFT CROSS SECTION VIEW



2 MECHANICAL ROOM HVAC DUCTWORK

Revision#	Description	Date:

CONSULTANTS

ARCHITECTURAL: B|W|B R

STRUCTURAL: ERA

MEP: DUNHAM

CIVIL: EVS

LANDSCAPE: CONFLUENCE

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St. Paul, MN 55402
Phone: 612-465-7550
0421950-002-00

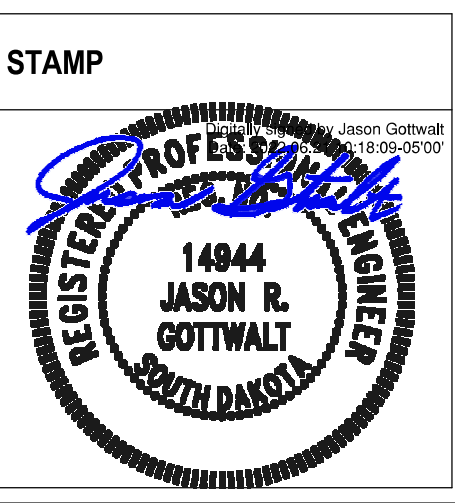
EVS
10025 Valley View Rd
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Phone: 952-646-0299

CONFLUENCE
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Phone: 605-339-1205

ARCHITECT OF RECORD

A/E/C
Stone Group Architects
600 E 7th Street
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605-271-1144

STONE GROUP ARCHITECTS



Office of Construction and Facilities Management

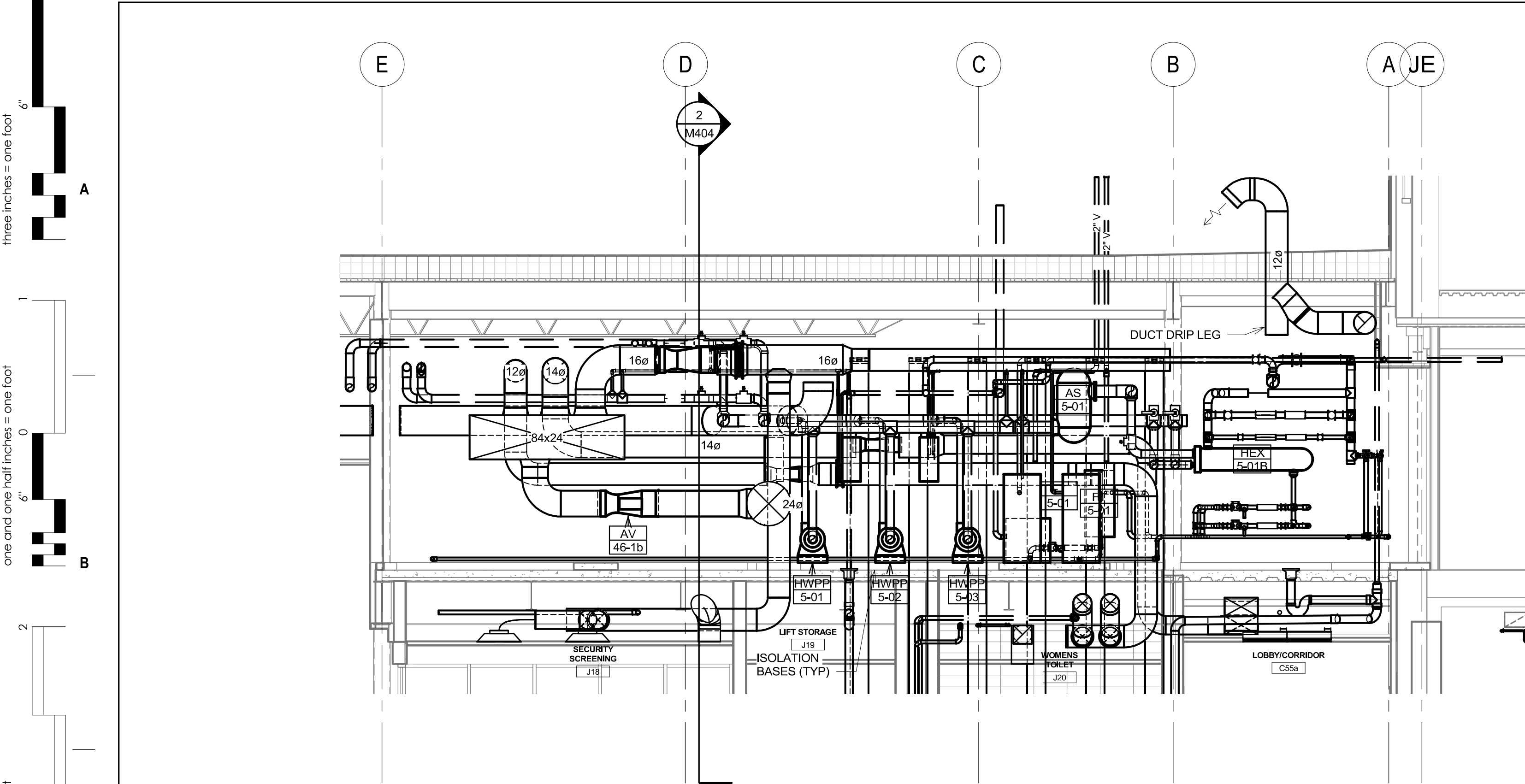
VA U.S. Department of Veterans Affairs

Drawing Title MECHANICAL 3D VIEWS
Approved:

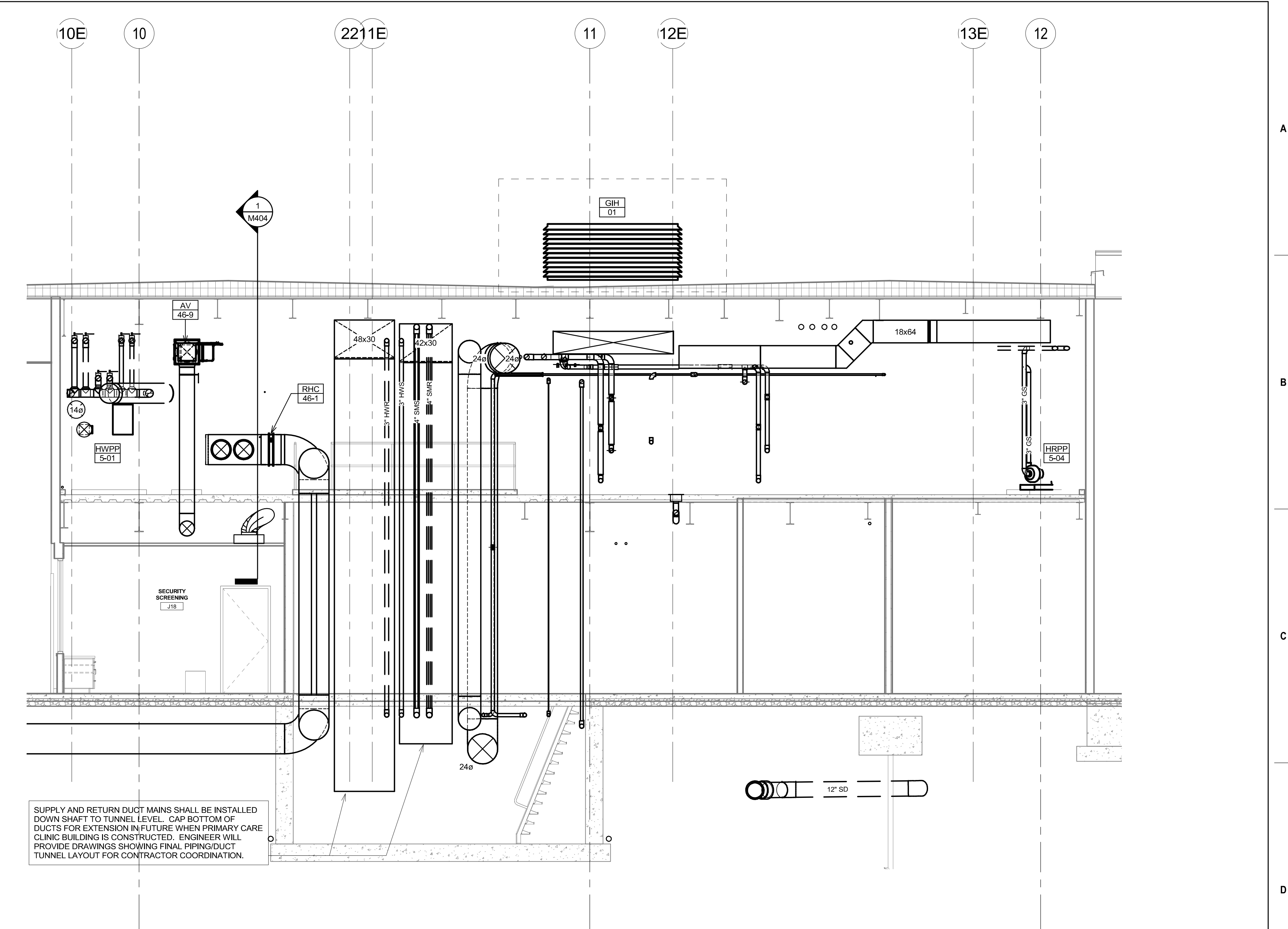
Phase CONSTRUCTION DOCUMENTS
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Project Title NEW FRONT LOBBY AND PRIMARY CARE ADDITION
Location SIoux FALLS, SOUTH DAKOTA
Issue Date 06/22/2022
Checked JRG
Drawn TNH

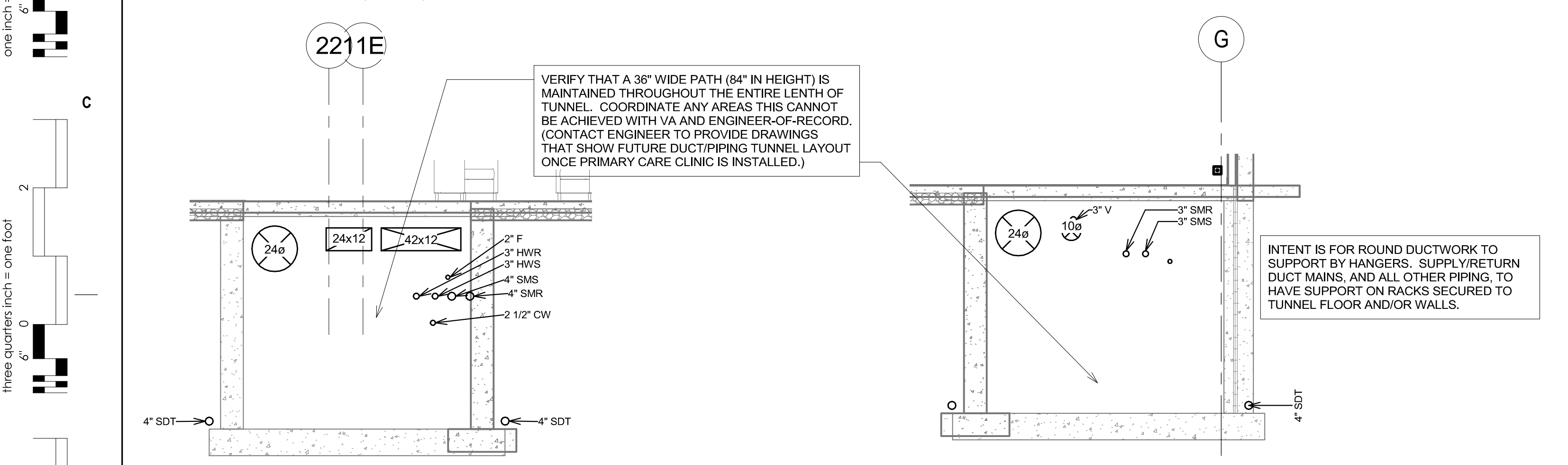
Project Number VA #438-480 SGA #201909
Building Number 5
Drawing Number M403



1 INTERSTITIAL MECHANICAL ROOM SECTION (INCLUDING CEILING PLENUM ON FLOOR BELOW)
1/4" = 1'-0"



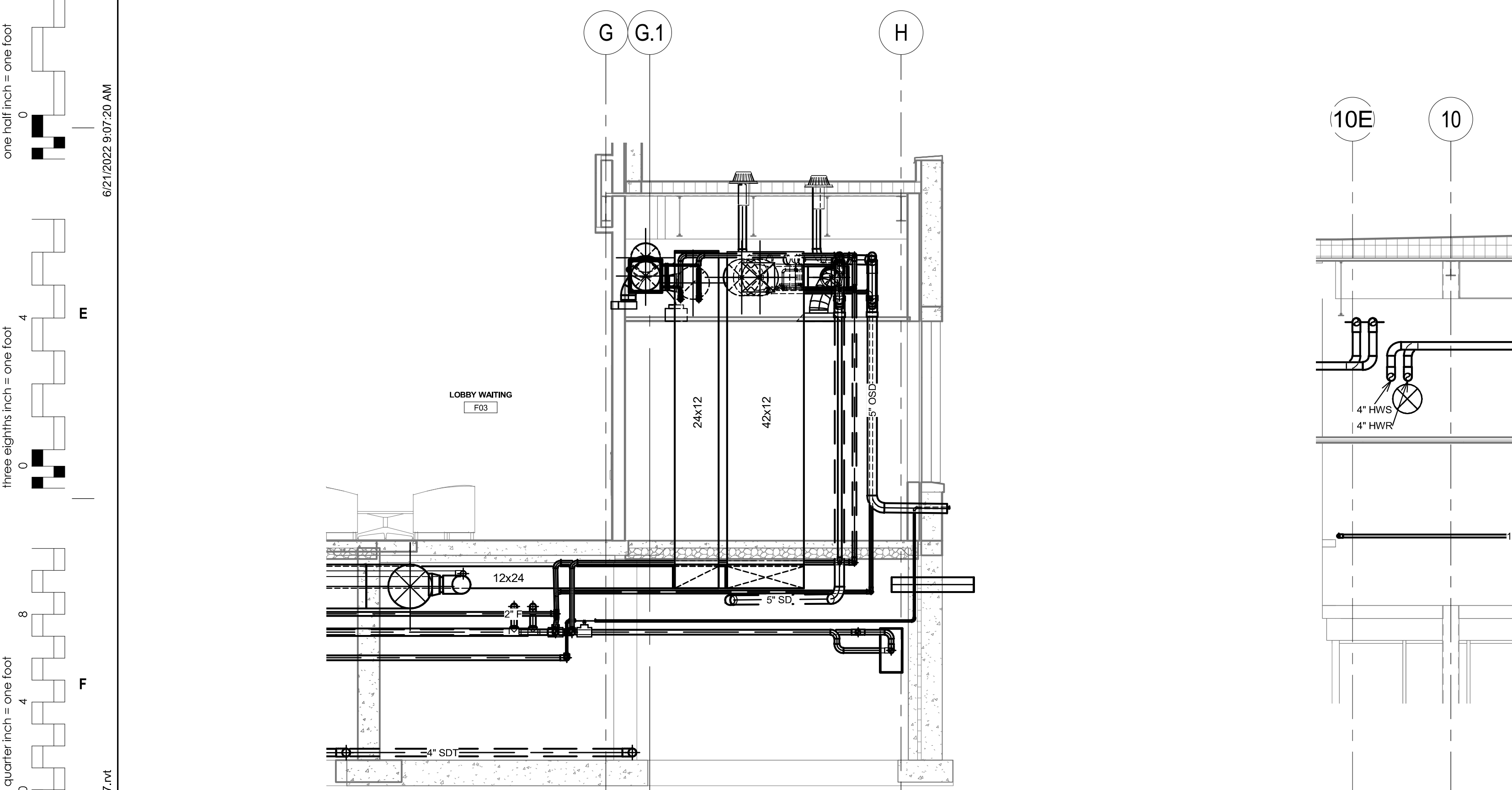
2 SHAFT CONNECTING INTERSTITIAL MECHANICAL ROOM TO UNDERGROUND SERVICE TUNNEL
1/4" = 1'-0"



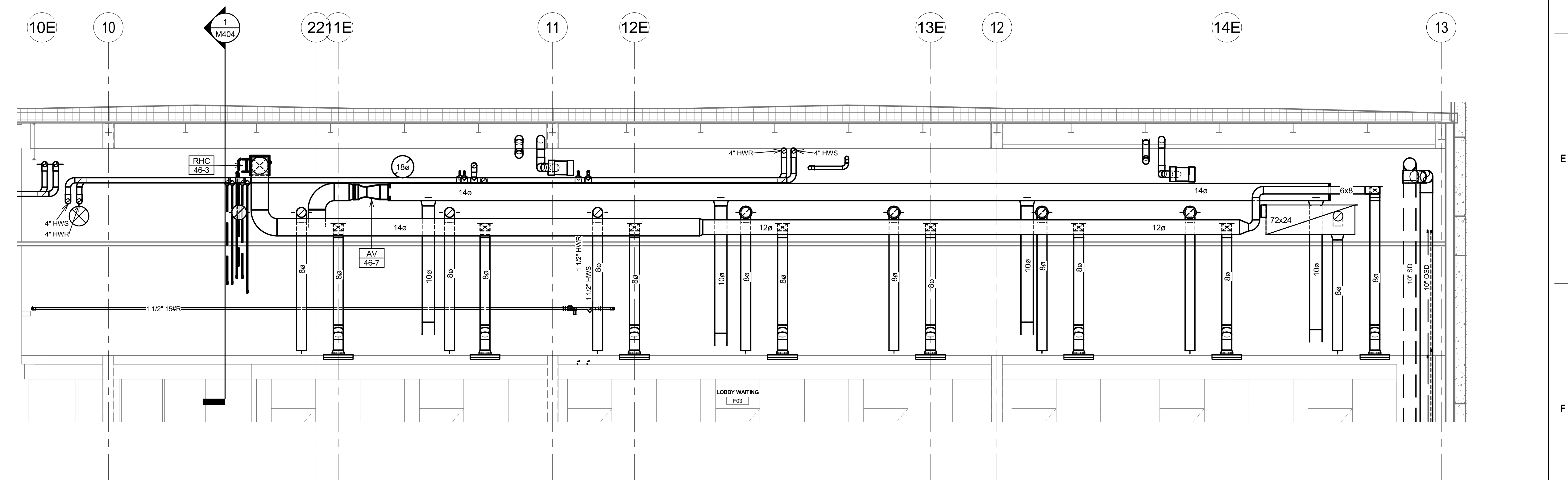
4 UNDERGROUND TUNNEL SECTION (FACING WEST)
1/4" = 1'-0"



6 UNDERGROUND TUNNEL SECTION (FACING NORTH)
1/4" = 1'-0"



5 UNDERGROUND TUNNEL SECTION (AND VESTIBULE ABOVE)
1/4" = 1'-0"



3 INTERSTITIAL MECHANICAL ROOM SECTION (INCLUDING CEILING PLENUM ON FLOOR BELOW)
1/4" = 1'-0"

Vertical scale markers on the left side of the drawing, including 'three inches = one foot', 'one and one half inches = one foot', 'one inch = one foot', 'three quarters inch = one foot', 'one half inch = one foot', 'one quarter inch = one foot', 'one eighth inch = one foot', and 'one sixteenth inch = one foot'.

Vertical text on the left side: '6/21/2025 9:07:20 AM' and 'C:\Rev\Projects\MM - Lobby Central_R201_jason.gottwalt\S27.rvt'.

CONSULTANTS

ARCHITECTURAL: BWB 380 St. Peter St Suite 600 St. Paul, MN 55102 Phone: 651-223-3701	STRUCTURAL: ERA 2250 University Ave W Suite 423-S St. Paul, MN 55402 Phone: 651-251-1770	MEP: DUNHAM 50 South Sixth St Suite 1100 Minneapolis, MN 55342 Phone: 952-646-7550 0421959-002-00	CIVIL: EVS 10025 Valley View Rd Suite 140 Eden Prairie, MN 55344 Phone: 952-646-0269	LANDSCAPE: CONFLUENCE 524 N Main Ave Suite 201 Sioux Falls, SD 57104 Phone: 605-339-1205
--	--	--	--	--

ARCHITECT OF RECORD

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Sioux Falls, SD 57103
605-271-1144

STONE GROUP ARCHITECTS

STAMP

REGISTERED PROFESSIONAL ENGINEER
14844
JASON R. GOTTWALT
SOUTH DAKOTA

Office of Construction and Facilities Management
VA U.S. Department of Veterans Affairs

Drawing Title
MECHANICAL SECTIONS

Approved:

Phase
CONSTRUCTION DOCUMENTS

Project Title
NEW FRONT LOBBY AND PRIMARY CARE ADDITION

Location
SIoux FALLS, SOUTH DAKOTA

Issue Date
06/22/2022

Checked
JRG

Drawn
TNH

Project Number
VA #438-480
SGA #201909

Building Number
5

Drawing Number
M404

VARIABLE AIR VOLUME BOX SCHEDULE - HEATING WATER

MECHANICAL (233600) EQUIPMENT TAG UNIT SERVED INLET SIZE (IN) MAXIMUM CFM MINIMUM CFM MAXIMUM APD (IN W.C.) HEATING COIL HEATING CFM EAT (F) LAT (F) CAPACITY (MBH) EWT (F) LWT (F) GPM GLYCOL TYPE GLYCOL % MAXIMUM WPD (FT) COIL ROWS MANUFACTURER MODEL NUMBER MECHANICAL NOTES

REHEAT COIL SCHEDULE - HEATING WATER

MECHANICAL (238216) EQUIPMENT TAG UNIT SERVED AREA SERVED COIL CFM DUCT WIDTH (IN) DUCT HEIGHT (IN) ROWS AIR EAT (F) LAT (F) APD (IN W.C.) EWT (F) LWT (F) GPM GLYCOL TYPE GLYCOL % WPD (FT) CAPACITY (MBH) MECHANICAL NOTES

SHELL AND TUBE STEAM-TO-WATER HEAT EXCHANGER SCHEDULE

MECHANICAL (235700) EQUIPMENT TAG APPLICATION EWT (F) LWT (F) GPM VELOCITY (FPS) NUMBER OF PASSES MINIMUM SURFACE AREA (SQ FT) WPD (FT) GLYCOL TYPE GLYCOL % INLET STEAM PRESSURE (PSIG) STEAM CAPACITY (LBS/HR) LENGTH (FT) CAPACITY (MBH) MANUFACTURER MODEL NUMBER MECHANICAL NOTES

BRAZED PLATE WATER-TO-WATER HEAT EXCHANGER SCHEDULE

MECHANICAL (235700) EQUIPMENT TAG APPLICATION EWT (F) LWT (F) GPM WPD (FT) GLYCOL TYPE GLYCOL % COLD SIDE HOT SIDE EWT (F) LWT (F) GPM WPD (FT) GLYCOL TYPE GLYCOL % CAPACITY (MBH) MANUFACTURER MODEL NUMBER MECHANICAL NOTES

FINNED TUBE RADIATION SCHEDULE - HEATING WATER

MECHANICAL (238233) EQUIPMENT TAG TYPE NUMBER OF ROWS FIN SIZE (INxIN) FINS/FT FIN MATERIAL PIPE MATERIAL PIPE SIZE (IN) ENCLOSURE GAUGE ENCLOSURE HEIGHT (IN) EAT DB (F) EWT (F) LWT (F) GLYCOL TYPE GLYCOL % CAPACITY PER LINEAR FT (BTU/H) MANUFACTURER MODEL NUMBER MECHANICAL NOTES

GRILLES, REGISTERS, AND DIFFUSERS SCHEDULE

MECHANICAL (233713) EQUIPMENT TAG APPLICATION MOUNTING TYPE DESCRIPTION MATERIAL ACCESSORIES FINISH MANUFACTURER MODEL NUMBER MECHANICAL NOTES

EXPANSION TANK SCHEDULE

MECHANICAL (232113) EQUIPMENT TAG APPLICATION TYPE TANK VOLUME (GAL) ACCEPTANCE VOLUME (GAL) PRECHARGE PRESSURE (PSIG) ASME CERTIFIED (YES/NO) DIAMETER (IN) HEIGHT (IN) MANUFACTURER MODEL NUMBER MECHANICAL NOTES

AIR SEPARATOR SCHEDULE

MECHANICAL (232113) EQUIPMENT TAG APPLICATION GPM WATER CONNECTION SIZE (IN) WPD (FT) STRAINER (YES/NO) MANUFACTURER MODEL NUMBER MECHANICAL NOTES

AIR VALVE SCHEDULE

MECHANICAL (233600) EQUIPMENT TAG APPLICATION AREA SERVED NECK SIZE CONTROL TYPE MAXIMUM CFM MINIMUM CFM AIR PRESSURE DROP (IN W.C.) COATING MANUFACTURER MODEL NUMBER MECHANICAL NOTES

LOUVER SCHEDULE - EXTERIOR WALL

MECHANICAL (233723) EQUIPMENT TAG APPLICATION TYPE WIDTH (IN) HEIGHT (IN) CFM VELOCITY (FPM) MAXIMUM APD (IN W.C.) ACCESSORIES MANUFACTURER MODEL NUMBER MECHANICAL NOTES

GRAVITY INTAKE HOOD SCHEDULE

MECHANICAL (233723) EQUIPMENT TAG APPLICATION TYPE CURB SIZE WIDTH (IN) HEIGHT (IN) CFM VELOCITY (FPM) MAXIMUM APD (IN W.C.) ACCESSORIES MANUFACTURER MODEL NUMBER MECHANICAL NOTES

STEAM CONDENSATE PUMP SCHEDULE (PRESSURE DRIVEN)

MECHANICAL (232223) EQUIPMENT TAG APPLICATION TYPE STEAM PRESSURE (PSIG) MOTIVE TYPE MOTIVE PRESSURE (PSIG) INSTALLATION HEAD (INCHES) BACK PRESSURE (PSI) PUMPING CAPACITY (LBS/HR) MANUFACTURER MODEL NUMBER MECHANICAL NOTES

FLASH TANK SCHEDULE

MECHANICAL (232216) EQUIPMENT TAG APPLICATION DISCHARGE STEAM PRESSURE (PSIG) TANK SIZE DIAMETER (IN) HEIGHT (IN) STEAM CAPACITY (LBS/HR) ACCESSORIES MANUFACTURER MODEL NUMBER MECHANICAL NOTES

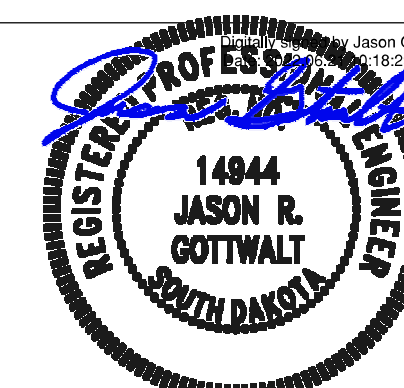
CONSULTANTS

ARCHITECTURAL: B|W|B|R STRUCTURAL: ERA ENGINEERING MEP: DUNHAM CIVIL: EVS LANDSCAPE: CONFLUENCE

ARCHITECT OF RECORD

A/E: Stone Group Architects 600 E 7th Street Sioux Falls, SD 57103 605-271-1144

STAMP



Office of Construction and Facilities Management U.S. Department of Veterans Affairs

Drawing Title: MECHANICAL SCHEDULES Approved: [Signature]

Phase: CONSTRUCTION DOCUMENTS

Project Title: NEW FRONT LOBBY AND PRIMARY CARE ADDITION Location: SIOUX FALLS, SOUTH DAKOTA Issue Date: 06/22/2022 Checked: JRJ Drawn: TNH Project Number: VA #438-480 SGA #201909 Building Number: 5 Drawing Number: M500

AIR HANDLING UNIT SCHEDULE

MECHANICAL (237313, 237316, 237333, 237339)

Table with columns: EQUIPMENT TAG, APPLICATION, FACE & BYPASS DAMPERS (YES/NO), MINING BOX (YES/NO), MINIMUM OUTDOOR AIR CFM, COOLING COIL, HEATING COIL, HEAT RECOVERY COIL, AIR PRE-FILTER, AIR FINAL-FILTER, HUMIDIFIER, AIR BLENDER, UNIT MOUNTED SOUND ATTENUATOR, SUPPLY FAN, RETURN FAN, MANUFACTURER, MODEL NUMBER, MECHANICAL NOTES.

GENERAL MECHANICAL NOTES:

A. REFER TO ELECTRICAL SECTION BELOW FOR CALCULATED SHORT-CIRCUIT CURRENT AT EQUIPMENT.

MECHANICAL NOTES:

- 1. ALL AIR HANDLERS TO BE PROVIDED WITH 4" CONCRETE EQUIPMENT PAD TO ENSURE LEVEL FLOOR. AHU MANUFACTURER TO PROVIDE BASE RAILS HIGH ENOUGH TO ALLOW FOR CONDENSATE DRAIN TRAPS TO BE INSTALLED ABOVE SLAB ON GRADE FLOOR LEVEL.
2. ALL FANS TO ALL HAVE DEDICATED VFD'S WITH COMPONENTS LISTED IN FAN SECTIONS AND SPECIFICATIONS. FANS SHALL BE ABLE TO BE INDIVIDUALLY ISOLATED WITHOUT IMPACTING OVERALL OPERATION OF AHU.
3. APPROVED EQUAL MANUFACTURERS SHALL BE IDENTIFIED ON DRAWINGS AND ATTEMPT TO MATCH THOSE DIMENSIONS AS CLOSE AS POSSIBLE. CONTRACTOR TO VERIFY DIMENSIONS FOR ALL COMPONENTS PRIOR TO RELEASING ORDER.
4. BALANCING CONTRACTOR TO VERIFY FAN SPEED TRACKING REQUIRED TO MAINTAIN MINIMUM OUTDOOR AIR FLOW RATE AT BOTH MAXIMUM AND MINIMUM VAV AIRFLOW VOLUMES. REFER TO SEQUENCE OF OPERATION FOR ADDITIONAL INFORMATION.
5. AHU MANUFACTURER TO PROVIDE INSULATED BLADE DAMPERS AT EACH POINT OF DUCT CONNECTION (SUPPLY/RETURN). DAMPERS TO BE TAMCO 8000 SERIES OR EQUAL. CONTRACTOR TO PROVIDE ACTUATORS FOR ALL DAMPERS.
6. CONTRACTOR TO COORDINATE LARGEST DIMENSION OF COMPONENT SECTIONS TO BE TRANSPORTED INTO INTERSTITIAL SPACE DURING CONSTRUCTION SCHEDULE. AHU MANUFACTURER TO COMPLY WITH THESE MAXIMUM DIMENSIONS ALLOWABLE FOR TRANSPORT TO PROJECT SITE.
7. PROVIDE LOBBY AHU WITH BI-POLAR IONIZATION SYSTEM INSTALLED DOWNSTREAM OF FINAL FILTERS. REFER TO AHU SECTIONS AND KEY NOTES ON DRAWING M400 FOR ADDITIONAL INFORMATION.

ELECTRICAL

Table with columns: EQUIPMENT TAG, HP/LOAD, VOLTAGE, PHASE, CALCULATED AFC, TYPE, FURNISHED BY/ INSTALLED BY, LOCATION, CTRL WIRE BY, AMPS/TYP, FUSE SIZE (AMPS), NEMA TYPE, FURNISHED BY/ INSTALLED BY, LOCATION, PANEL, CIRCUIT NUMBER, CONDUIT/FEEDER SIZE, ELECTRICAL NOTES.

GENERAL ELECTRICAL NOTES:

- A. WHEN THE CONTROLLER TYPE IS A VFD OR MAGNETIC STARTER, REFER TO THE VARIABLE FREQUENCY DRIVE CONTROLLER SCHEDULE OR THE MAGNETIC STARTER SCHEDULE FOR MORE INFORMATION.
B. MECHANICAL EQUIPMENT AND CORRESPONDING ELECTRICAL DISCONNECTS/CONTROLLERS SHALL HAVE A STANDARD SHORT-CIRCUIT CURRENT RATING HIGHER THAN THE CALCULATED VALUE SHOWN IN THIS SCHEDULE, DETAILED BY THE 'CALCULATED AFC' COLUMN.

ELECTRICAL NOTES:

- 1. EC TO COORDINATE EXTENSION OF POWER FROM AIR HANDLING UNIT ELECTRICAL ENCLOSURE TO INDIVIDUAL SUPPLY AND RETURN FANS. PROVIDE SEPARATE CONTROL, OVERCURRENT PROTECTION AND CONNECTION TO INDIVIDUAL FANS.
2. PROVIDE 120V POWER TO UNIT LIGHTING AND CONVENIENCE RECEPTACLES. EXTEND FROM LOCAL 120V POWER SOURCE.

AIR HANDLING UNIT - PREFILTER SCHEDULE

MECHANICAL (234100)

Table with columns: EQUIPMENT TAG, SERVED, TYPE, CFM, NUMBER OF MODULES, SIZE PER MODULE (HxLxD), EFFICIENCY (%), MERV RATING, APD CLEAN (IN W.C.), APD AT 50% LOADING (IN W.C.), MANUFACTURER, MODEL NUMBER, MECHANICAL NOTES.

MECHANICAL NOTES:

- 1. COORDINATE WITH AIR HANDLING UNIT SUPPLIER FOR MAXIMUM FACE VELOCITY OF 500 FPM.
2. PROVIDE THREE(3) SET OF FILTERS. FIRST TO BE USED DURING PROJECT PHASING WITH A SECOND SET TO BE INSTALLED JUST PRIOR TO OCCUPANCY. THIRD SET WILL BE TURNED OVER TO VA FOR STORAGE.
3. PROVIDE BOTH LOCAL MAGNETIC GAUGES AROUND EACH FILTER BANK, AND DIFFERENTIAL PRESSURE SENSORS WIRED INTO BAS FOR REMOTE MONITORING.

AIR HANDLING UNIT - FINAL FILTER SCHEDULE

MECHANICAL (234133)

Table with columns: EQUIPMENT TAG, SERVED, TYPE, CFM, NUMBER OF MODULES, SIZE PER MODULE (HxLxD), EFFICIENCY (%), MERV RATING, APD CLEAN (IN W.C.), APD AT 50% LOADING (IN W.C.), MANUFACTURER, MODEL NUMBER, MECHANICAL NOTES.

MECHANICAL NOTES:

- 1. COORDINATE WITH AIR HANDLING UNIT SUPPLIER FOR MAXIMUM FACE VELOCITY OF 500 FPM.
2. PROVIDE THREE(3) SET OF FILTERS. FIRST TO BE USED DURING PROJECT PHASING WITH A SECOND SET TO BE INSTALLED JUST PRIOR TO OCCUPANCY. THIRD SET WILL BE TURNED OVER TO VA FOR STORAGE.
3. PROVIDE FILTER RACK WITH GASKETED SEAL EDGES WITH HEAVY DUTY CLAMP DOWN ASSEMBLIES (NO SPRING CLIPS). TAB CONTRACTOR TO TEST LEAKAGE AROUND PERIMETER OF FILTER SEALS.
4. PROVIDE BOTH LOCAL MAGNETIC GAUGES AROUND EACH FILTER BANK, AND DIFFERENTIAL PRESSURE SENSORS WIRED INTO BAS FOR REMOTE MONITORING.

AIR HANDLING UNIT - RETURN FAN SCHEDULE

MECHANICAL (233416)

Table with columns: EQUIPMENT TAG, AHU SERVED, NUMBER OF FANS, TYPE, CFM PER FAN, TOTAL CFM (DESIGN/ACTUAL), ESP (IN W.C.), TOTAL SP (IN W.C.), WHEEL DIAMETER (IN), VFD (YES/NO), FAN RPM, BHP, DRIVE TYPE (BELT/DIRECT), MANUFACTURER, MODEL NUMBER, MECHANICAL NOTES.

GENERAL MECHANICAL NOTES:

A. REFER TO ELECTRICAL SECTION BELOW FOR CALCULATED SHORT-CIRCUIT CURRENT AT EQUIPMENT.

MECHANICAL NOTES:

- 1. PROVIDE EACH FAN WITH DEDICATED VFD WITHIN A FULLY VENTILATED ENCLOSURE. VFD CONTROL PANEL SHALL BE REMOTELY MOUNTED ON OUTSIDE OF ENCLOSURE TO ALLOW VERIFICATION AND ADJUSTMENT WITHOUT OPENING ENCLOSURE.
2. PROVIDE EACH FAN WITH BACKDRAFT DAMPER TO ALLOW TO REMOVAL FROM SERVICE WITHOUT AFFECTING ADJACENT FANS. EACH FAN MOTOR SHALL ALSO HAVE A DEDICATED TOUCH-SAFE DISCONNECT SWITCH.
3. CHECK FAN ALIGNMENT AND VIBRATION ON START UP. FAN ARRAY IS NOT ANTICIPATED TO REQUIRE VIBRATION ISOLATION. SEE SPECIFICATION FOR ACCEPTABLE VIBRATION LIMITS.
4. COORDINATE WIRING CONNECTIONS BETWEEN VFD ENCLOSURE AND EACH INDIVIDUAL FAN MOTOR WITH ELECTRICAL CONTRACTOR TO ENSURE SCOPE OF WORK IS COVERED WITHIN BID.
5. ALL RETURN FANS SHALL BE SIZED WITH 'N+1' REDUNDANCY TO PROVIDE FULL DESIGN FLOW WITH LOSS OF ONE FAN WITHIN THE ARRAY. REFER TO SPECIFICATION AND SEQUENCE FOR ISOLATION OF FAN THAT IS OUT OF SERVICE.
6. RETURN FANS WITHIN AHU-46 SHALL BE UL 705 LISTED FOR SMOKE PURGE AT 1000 DEGREES FOR 30 MINUTES (OR 500 DEGREES FOR 6 HOURS). REFER TO SEQUENCE OF OPERATION.

ELECTRICAL

Table with columns: EQUIPMENT TAG, HP/LOAD, VOLTAGE, PHASE, TYPE, FURNISHED BY/ INSTALLED BY, LOCATION, CTRL WIRE BY, AMPS/TYP, FUSE SIZE (AMPS), NEMA TYPE, FURNISHED BY/ INSTALLED BY, LOCATION, CONDUIT/FEEDER SIZE, ELECTRICAL NOTES.

GENERAL ELECTRICAL NOTES:

- A. WHEN THE CONTROLLER TYPE IS A VFD OR MAGNETIC STARTER, REFER TO THE VARIABLE FREQUENCY DRIVE CONTROLLER SCHEDULE OR THE MAGNETIC STARTER SCHEDULE FOR MORE INFORMATION.
B. MECHANICAL EQUIPMENT AND CORRESPONDING ELECTRICAL DISCONNECTS/CONTROLLERS SHALL HAVE A STANDARD SHORT-CIRCUIT CURRENT RATING HIGHER THAN THE CALCULATED VALUE SHOWN IN THIS SCHEDULE, DETAILED BY THE 'CALCULATED AFC' COLUMN.

ELECTRICAL NOTES:

- 1. EC TO COORDINATE EXTENSION OF POWER FROM AIR HANDLING UNIT ELECTRICAL ENCLOSURE TO INDIVIDUAL RETURN FANS. PROVIDE SEPARATE CONTROL, OVERCURRENT PROTECTION AND CONNECTION TO INDIVIDUAL FANS.
2. TYPICAL OF THREE FANS
3. TYPICAL OF FOUR FANS

AIR HANDLING UNIT - HEAT RECOVERY COIL SCHEDULE

MECHANICAL (238216)

Table with columns: EQUIPMENT TAG, AHU SERVED, CFM, NUMBER OF COILS, EACH COIL SIZE (WxHxD), ROWS, FINS PER INCH, EAT (F), LAT (F), FACE VELOCITY (FPM), APD (IN W.C.), EWT (F), LWT (F), GPM, GLYCOL TYPE, GLYCOL %, WPD (FT), TOTAL CAPACITY (MBH), MANUFACTURER, MODEL NUMBER, MECHANICAL NOTES.

MECHANICAL NOTES:

- 1. REFER TO PIPING DIAGRAM ON DRAWING M300 FOR CONTROL VALVES ASSOCIATED WITH SWITCHING THIS COIL BETWEEN A WINTER HEAT RECOVERY, AND A SUMMER MODE AUXILIARY COOL COIL (ONLY NEEDED IN 100% O.A. OPERATION).
2. SINCE THIS COIL WILL SERVE DUAL PURPOSE: A DUAL SLOPED DRAIN PAN CONTRACTED OF 316 STAINLESS STEEL SHALL BE PROVIDED TO ACCOMMODATE ANY CONDENSATE DRAINING FROM COIL FACE.
3. PROVIDE COIL WITH 3/4" STAINLESS STEEL CASING TO PREVENT POTENTIAL CORROSION.
4. WHEN THIS COIL IS UTILIZED AS PRE-COOLING DURING 100% OUTDOOR AIR MODE IT WILL HAVE 92 DB74 WB ENTERING AIR WITH 71 DB46.5 WB LEAVING AIR CONDITIONS. CHILLED WATER BALANCE AT 57 GPM TO PRODUCE THAT 530 MBH OF PRE-COOLING.
5. REFER TO SEQUENCE OF OPERATION FOR AUTOMATION OF CONTROL VALVE TO SWITCH THIS COIL BETWEEN HEAT RECOVERY, AND 100% OUTDOOR AIR PRE-COOLING MODES OF OPERATION.

RELIEF/EXHAUST - HEAT RECOVERY COIL SCHEDULE

MECHANICAL (238216)

Table with columns: EQUIPMENT TAG, AHU SERVED, CFM, NUMBER OF COILS, EACH COIL SIZE (WxHxD), ROWS, FINS PER INCH, EAT (F), LAT (F), FACE VELOCITY (FPM), APD (IN W.C.), EWT (F), LWT (F), GPM, GLYCOL TYPE, GLYCOL %, WPD (FT), TOTAL CAPACITY (MBH), MANUFACTURER, MODEL NUMBER, MECHANICAL NOTES.

MECHANICAL NOTES:

- 1. REFER TO DRAWING M300 FOR PIPING DIAGRAM SHOWING PUMP AND CONNECTIONS FOR WINTER MODE HEAT RECOVERY. SEE SEQUENCE OF OPERATION.
2. INCLUDE SECTION OF 316 STAINLESS STEEL DUCT TO HEAT RECOVERY COIL (MINIMUM 45' ON BOTH SIDES). INCLUDE SLOPED BOTTOM TO 1" DRAIN ROUTED TO NEAREST FLOOR DRAIN FOR WATER INFILTRATION.
3. SUPPORT COIL AS REQUIRED FROM STRUCTURE AND PROVIDE ACCESS PANELS ON DUCTWORK TO BOTH SIDE OF COIL FOR CLEANING AND INSPECTION PURPOSES.

AIR HANDLING UNIT - COOLING COIL SCHEDULE - CHILLED WATER

MECHANICAL (238216)

Table with columns: EQUIPMENT TAG, AHU SERVED, CFM, NUMBER OF COILS, EACH COIL SIZE (WxHxD), ROWS, FINS PER INCH, EAT (F), LAT (F), FACE VELOCITY (FPM), APD (IN W.C.), EWT (F), LWT (F), GPM, GLYCOL TYPE, GLYCOL %, WPD (FT), SENSIBLE CAPACITY (MBH), TOTAL CAPACITY (MBH), MANUFACTURER, MODEL NUMBER, MECHANICAL NOTES.

MECHANICAL NOTES:

- 1. PROVIDE ALL COOLING COILS WITH STAINLESS STEEL CASING, ALONG WITH STAINLESS STEEL CONSTRUCTION OF ALL SUPPORT RACKS.
2. PROVIDE DOUBLE SLOPED DRAIN PAN, AND INTERMEDIATE DRAIN PAN, CONSTRUCTED OF 316 STAINLESS STEEL. VERIFY CONDENSATE DRAIN CONNECTION ELEVATION WITH TRAP HEIGHT REQUIREMENTS.
3. REFER TO DETAIL 44M300. VA WILL REQUIRE AN OVERSIZED 2" DRAIN WITH THREADED CAP ON EACH COIL TO HELP ACCELERATE THE DRAIN DOWN PROCESS (TYPICAL OF ALL LARGE COILS).
4. COIL CAPACITY BASED ON ENERGY RECOVERY COIL FAILURE. MANUFACTURER TO PROVIDE OPERATING CONDITIONS FOR BOTH NORMAL OPERATION AND RECOVERY COIL FAILURE.
5. COIL CAPACITIES SHOWN ABOVE ARE FOR TWO DIFFERENT OPERATING CONDITIONS. FIRST LISTING IS FOR NORMAL OPERATION AT MINIMUM O.A. MODE. SECOND LISTING IS FOR 100% OUTDOOR AIR MODE WITH PRE-COOLING FROM HEAT RECOVERY COIL.
6. REFER TO SEQUENCE OF OPERATION FOR SWITCHING BETWEEN MODES OF OPERATION BETWEEN MINIMUM OUTDOOR AIR MODE, AND 100% OUTDOOR AIR PURGE MODE. APPLIES TO AHU-46 ONLY.

AIR HANDLING UNIT - HEATING COIL SCHEDULE - HEATING WATER

MECHANICAL (238216)

Table with columns: EQUIPMENT TAG, AHU SERVED, CFM, NUMBER OF COILS, EACH COIL SIZE (WxHxD), ROWS, FINS PER INCH, EAT (F), LAT (F), FACE VELOCITY (FPM), APD (IN W.C.), EWT (F), LWT (F), GPM, GLYCOL TYPE, GLYCOL %, WPD (FT), CAPACITY (MBH), MANUFACTURER, MODEL NUMBER, MECHANICAL NOTES.

MECHANICAL NOTES:

- 1. REFER TO DETAIL 44M300 FOR ALL REQUIRED PIPING COMPONENTS AND LAYOUT FOR CONTROLS AND MAINTENANCE.

AIR HANDLING UNIT - HUMIDIFIER SCHEDULE

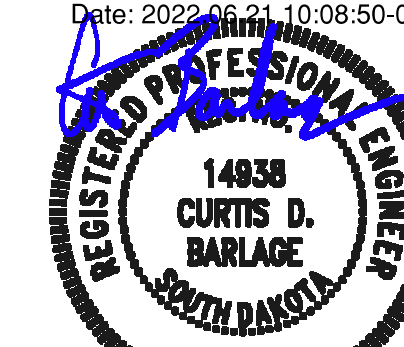
MECHANICAL (238413)

Table with columns: EQUIPMENT TAG, AHU SERVED, TYPE, CFM, EAT DB (F), EAT WB (F), STEAM CAPACITY (LBS/HR), INLET STEAM PRESSURE (PSIG), NUMBER OF MANIFOLDS, MANIFOLD LENGTH (IN), TUBE SPACING (IN), ABSORPTION DISTANCE (FT), MANUFACTURER, MODEL NUMBER, MECHANICAL NOTES.

MECHANICAL NOTES:

- 1. O.A. CONDITIONS - 20F DRY AIR. TEMPERATURE AT HUMIDIFIER IS SHOWN ON SCHEDULE. SPACE DESIGN CONDITIONS: 75F AT 30% RH.
2. PROVIDE ALL HUMIDIFIERS WITH PRESSURIZED CONDENSATE PANS TO RE-EVAPORIZE CONDENSATE AND ALLOW FOR PRESSURIZED RETURN IF REQUIRED FOR LIFE.
3. INCLUDE HIGH LIMIT RH DISCHARGE SENSOR AND PROOF OF AIRFLOW SAFETIES. REFER TO SEQUENCE OF OPERATION.
4. HUMIDIFIERS THAT ARE POSITIONED ABOVE COOLING COIL. DRAIN PANS SHALL HAVE THOSE PANS EXTENDED PAST MANUFACTURER ABSORPTION DISTANCES.
5. ENTERING AIR CONDITIONS ARE SHOWN FOR BOTH MINIMUM OUTSIDE AIR MODE, AND DURING 100% OUTDOOR AIR INTAKE. OVERALL CAPACITY INCREASED TO SATISFY DEMANDS ON 100% OUTDOOR AIR.

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Table with columns: Revision#, Description, Date.

CONSULTANTS section listing architectural, structural, MEP, civil, and landscape firms including BWR, ERA, Dunham Associates, EVS, and Confluence.

ARCHITECT OF RECORD section listing Stone Group Architects, 600 E 7th Street, Sioux Falls, SD 57103, 605-271-1144.

Office of Construction and Facilities Management, U.S. Department of Veterans Affairs.

Drawing Title: MECHANICAL/ ELECTRICAL AHU SCHEDULES. Approved: [Signature]

Phase: CONSTRUCTION DOCUMENTS.

Project Title: NEW FRONT LOBBY AND PRIMARY CARE ADDITION. Location: SIOUX FALLS, SOUTH DAKOTA. Issue Date: 06/22/2022. Checked: JRG, Drawn: TNH. Drawing Number: M501.

FAN SCHEDULE

MECHANICAL (233413, 233416, 233423)
EQUIPMENT TAG, APPLICATION, TYPE, CFM, ESP (IN W.C.), BHP, FAN RPM, DRIVE TYPE, SONES, VFD (YES/NO), MANUFACTURER, MODEL NUMBER, MECHANICAL NOTES

AIR CURTAIN SCHEDULE - HEATING WATER

MECHANICAL (233433)
EQUIPMENT TAG, APPLICATION, TYPE, NOZZLE WIDTH (IN), FAN MOTOR HP, TOTAL CFM, EAT (F), LAT (F), EWT (F), LWT (F), GPM, HEATING COIL GLYCOL TYPE, GLYCOL %, MAXIMUM WPD, CAPACITY (MBH), MANUFACTURER, MODEL NUMBER, MECHANICAL NOTES

CHILLER SCHEDULE - AIR COOLED

MECHANICAL (236423 & 236426)
EQUIPMENT TAG, APPLICATION, TYPE, RATING POINT CAPACITY (TONS), POWER (KW), GPM, EVAPORATOR (WATER SIDE) GLYCOL TYPE, FOULING FACTOR, CONDENSER (AIR SIDE) NUMBER OF FANS, COMPRESSOR NUMBER OF COMPRESSORS, SOUND POWER, REFRIGERANT TYPE, VFD (YES/NO), MANUFACTURER, MODEL NUMBER, MECHANICAL NOTES

UNIT HEATER SCHEDULE - HEATING WATER

MECHANICAL (238239)
EQUIPMENT TAG, APPLICATION, TYPE, FAN CFM, MOTOR HP, EAT (F), COIL ROWS, EWT (F), LWT (F), GPM, COIL GLYCOL TYPE, GLYCOL %, WPD (FT), CAPACITY (MBH), MANUFACTURER, MODEL NUMBER, MECHANICAL NOTES

UNIT HEATER SCHEDULE - ELECTRIC

MECHANICAL (238239)
EQUIPMENT TAG, APPLICATION, TYPE, FAN CFM, MOTOR HP, EAT (F), KW, NUMBER OF CONTROL STEPS, MANUFACTURER, MODEL NUMBER, MECHANICAL NOTES

Revision table with columns: Revision#, Description, Date

CONSULTANTS
ARCHITECTURAL: B|W|B|R
STRUCTURAL: ERA
MEP: DUNHAM
CIVIL: EVS
LANDSCAPE: CONFLUENCE

ARCHITECT OF RECORD
A/E: Stone Group Architects
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Sioux Falls, SD 57103
605-271-1144

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Office of Construction and Facilities Management
VA U.S. Department of Veterans Affairs

Drawing Title: MECHANICAL/ ELECTRICAL SCHEDULES
Phase: CONSTRUCTION DOCUMENTS
Approved: [Signature]

Project Title: NEW FRONT LOBBY AND PRIMARY CARE ADDITION
Location: SIOUX FALLS, SOUTH DAKOTA
Issue Date: 06/22/2022
Checked: JRG
Drawn: TNH
Project Number: VA #438-480 SGA #201909
Building Number: 5
Drawing Number: M502

HYDRONIC PUMP SCHEDULE

MECHANICAL (232123)
EQUIPMENT TAG, APPLICATION, TYPE, GPM, DISCHARGE HEAD (FT), GLYCOL TYPE, GLYCOL %, NPSHR (FT), RPM, BHP, SUCTION SIZE (IN), DISCHARGE SIZE (IN), TRIPLE DUTY VALVE, SUCTION DIFFUSER, VFD (YES/NO), MANUFACTURER, MODEL NUMBER, MECHANICAL NOTES

GENERAL MECHANICAL NOTES:
A. REFER TO ELECTRICAL SECTION BELOW FOR CALCULATED SHORT-CIRCUIT CURRENT AT EQUIPMENT.
MECHANICAL NOTES:
1. PROVIDE A 4" EQUIPMENT PAD FOR ALL FLOOR MOUNTED PUMPS...

ELECTRICAL
EQUIPMENT TAG, HP/LOAD, VOLTAGE, PHASE, CALCULATED AFC, CONTROLLER, DISCONNECT AT MOTOR, ELECTRICAL NOTES

GENERAL ELECTRICAL NOTES:
A. WHEN THE CONTROLLER TYPE IS A VFD OR MAGNETIC STARTER, REFER TO THE VARIABLE FREQUENCY DRIVE CONTROLLER SCHEDULE OR THE MAGNETIC STARTER SCHEDULE FOR MORE INFORMATION.

VARIABLE FREQUENCY MOTOR CONTROLLER SCHEDULE

MECHANICAL/ELECTRICAL (230923)
EQUIPMENT TAG, VOLTAGE, PHASE, ENCLOSURE TYPE, ENCL. PLENUM RATED, SEISMIC BRACING, VARIABLE TORQUE/CONSTANT TORQUE, HARMONIC CONTROL, VFD BYPASS, MOTOR STARTING IN, MULTIPLE MOTOR CONTROL, DAMPER CONTROL, ESSENTIAL SERVICE/FIRE FIGHTER MODE, LEED REQUIREMENTS, NOTES

GENERAL NOTES:
A. FOR VFD'S WITH BYPASS PROVISIONS, SEPARATE MOTOR OVERLOAD PROTECTION REQUIRED FOR EACH MOTOR...
NOTES:
1. TYPICAL OF THREE FANS
2. TYPICAL OF FOUR FANS

GLYCOL FILL STATION SCHEDULE

MECHANICAL (232113)
EQUIPMENT TAG, APPLICATION, NUMBER OF PUMPS, GPM, DISCHARGE HEAD (FT), MOTOR HP, RPM, VOLTAGE/PHASE, TANK CAPACITY (GAL), MANUFACTURER, MODEL NUMBER, MECHANICAL NOTES

GENERAL MECHANICAL NOTES:
A. REFER TO ELECTRICAL SECTION BELOW FOR CALCULATED SHORT-CIRCUIT CURRENT AT EQUIPMENT.
MECHANICAL NOTES:
1. PROVIDE 4" CONCRETE EQUIPMENT PAD AND NEARBY FLOOR DRAIN...

ELECTRICAL
EQUIPMENT TAG, HP/LOAD, VOLTAGE, PHASE, CALCULATED AFC, CONTROLLER, DISCONNECT AT MOTOR, ELECTRICAL NOTES

GENERAL ELECTRICAL NOTES:
A. WHEN THE CONTROLLER TYPE IS A VFD OR MAGNETIC STARTER, REFER TO THE VARIABLE FREQUENCY DRIVE CONTROLLER SCHEDULE OR THE MAGNETIC STARTER SCHEDULE FOR MORE INFORMATION.

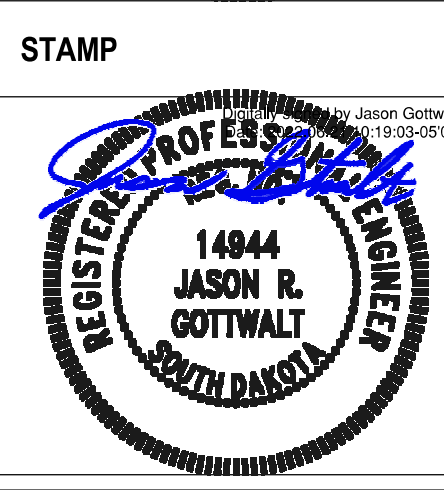
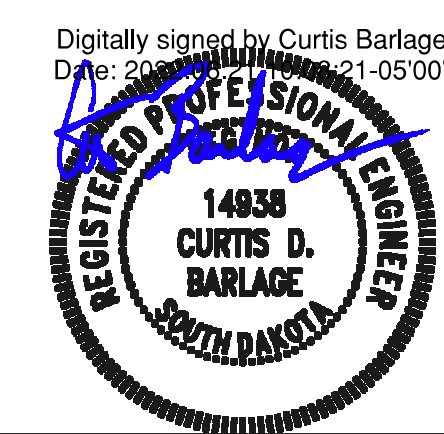
DX SPLIT SYSTEM SCHEDULE

MECHANICAL (238126)
EQUIPMENT TAG, APPLICATION, SUPPLY FAN, COOLING COIL, HEATING COIL, CONDENSING UNIT, FILTER, MANUFACTURER, MODEL NUMBER, MECHANICAL NOTES

GENERAL MECHANICAL NOTES:
A. REFER TO ELECTRICAL SECTION BELOW FOR CALCULATED SHORT-CIRCUIT CURRENT AT EQUIPMENT.
MECHANICAL NOTES:
1. INCLUDE ALL WALL MOUNTING BRACKETS AND HARDWARE FOR INSTALLATION WITHIN BUS SHELTER EXTERIOR WALL...

ELECTRICAL
EQUIPMENT TAG, HP/LOAD, VOLTAGE, PHASE, CALCULATED AFC, CONTROLLER, DISCONNECT AT MOTOR, ELECTRICAL NOTES

GENERAL ELECTRICAL NOTES:
A. WHEN THE CONTROLLER TYPE IS A VFD OR MAGNETIC STARTER, REFER TO THE VARIABLE FREQUENCY DRIVE CONTROLLER SCHEDULE OR THE MAGNETIC STARTER SCHEDULE FOR MORE INFORMATION.



CONSULTANTS
ARCHITECTURAL: B|W|B
STRUCTURAL: ERA
MEP: DUNHAM
CIVIL: EVS
LANDSCAPE: CONFLUENCE

ARCHITECT OF RECORD
A/E: Stone Group Architects
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Sioux Falls, SD 57103
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U.S. Department of Veterans Affairs

Drawing Title: MECHANICAL/ ELECTRICAL SCHEDULES
Phase: CONSTRUCTION DOCUMENTS
Approved: [Signature]

Project Title: NEW FRONT LOBBY AND PRIMARY CARE ADDITION
Location: SIOUX FALLS, SOUTH DAKOTA
Issue Date: 06/22/2022
Checked: JRG
Drawn: TNH
Project Number: VA #438-480 SGA #201909
Drawing Number: M503

SEQUENCES OF OPERATION
1.01 GENERAL
A. FAN & PUMP MOTOR CONTROL
1. PHASE MOTORS START/STOP CONTROL
a. WITH MAGNETIC STARTERS: CONTROL RELAY CONTACTS WIRED THROUGH 'AUTO' LEG OF HAND-OFF-AUTO SWITCH IN CONTROL CIRCUIT OF MAGNETIC STARTER FURNISHED UNDER DIVISION 16 OR WITH EQUIPMENT.

A. MODE INDEXING
1. OCCUPIED/UNOCCUPIED: THE OCCUPANCY MODE (OCCUPIED OR UNOCCUPIED) SHALL BE DETERMINED THROUGH A USER-ADJUSTABLE, GRAPHICAL, SEVEN-DAY SCHEDULE WITH A HOLIDAY SCHEDULE. THE START TIME SHALL BE ADJUSTED BY AN OPTIMUM START ROUTINE SUCH THAT THE UNIT IS STARTED AT THE LATEST POSSIBLE TIME TO ALLOW THE SPACE TEMPERATURES TO BE AT THE OCCUPIED SET POINT AT THE TIME OF OCCUPANCY.

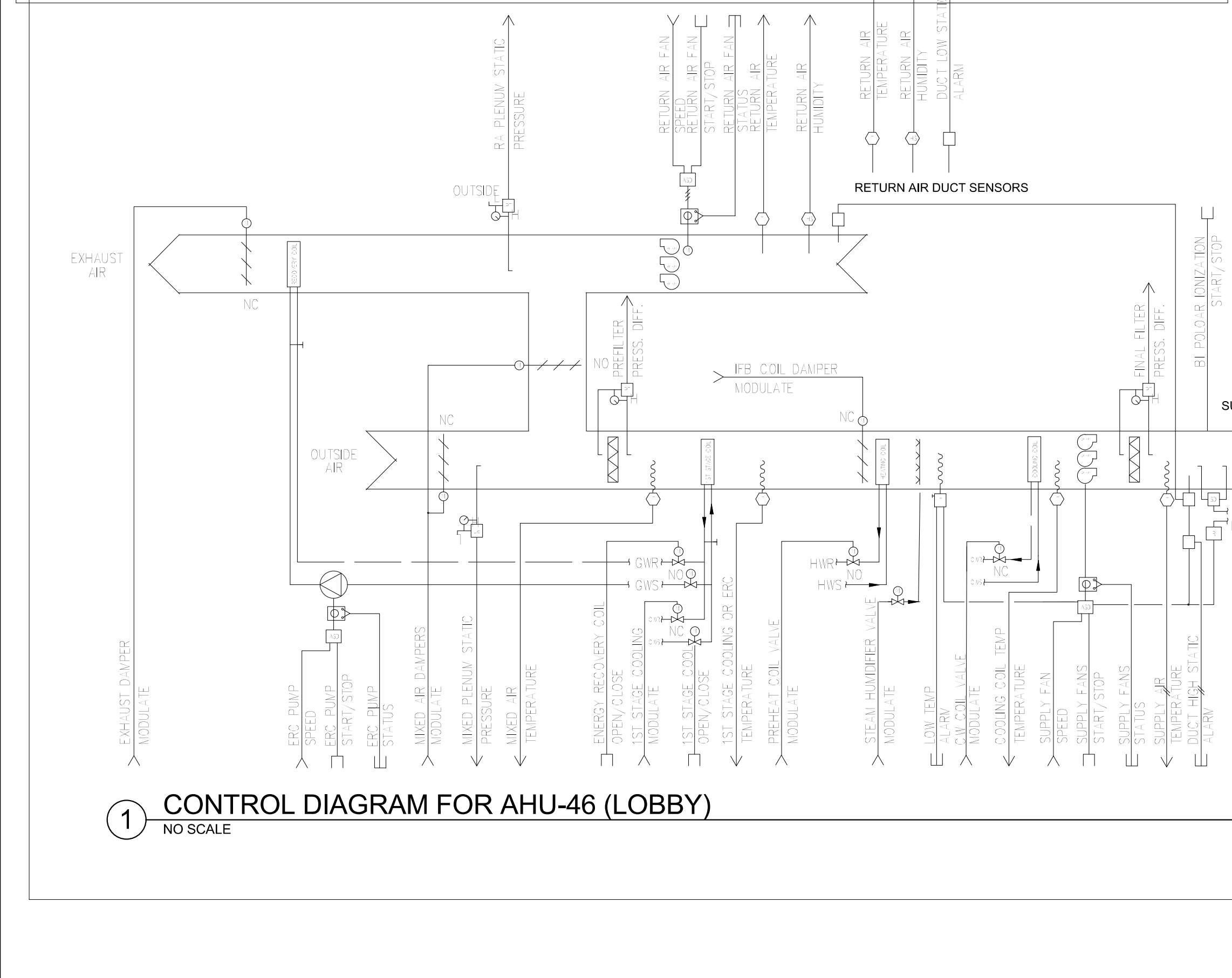
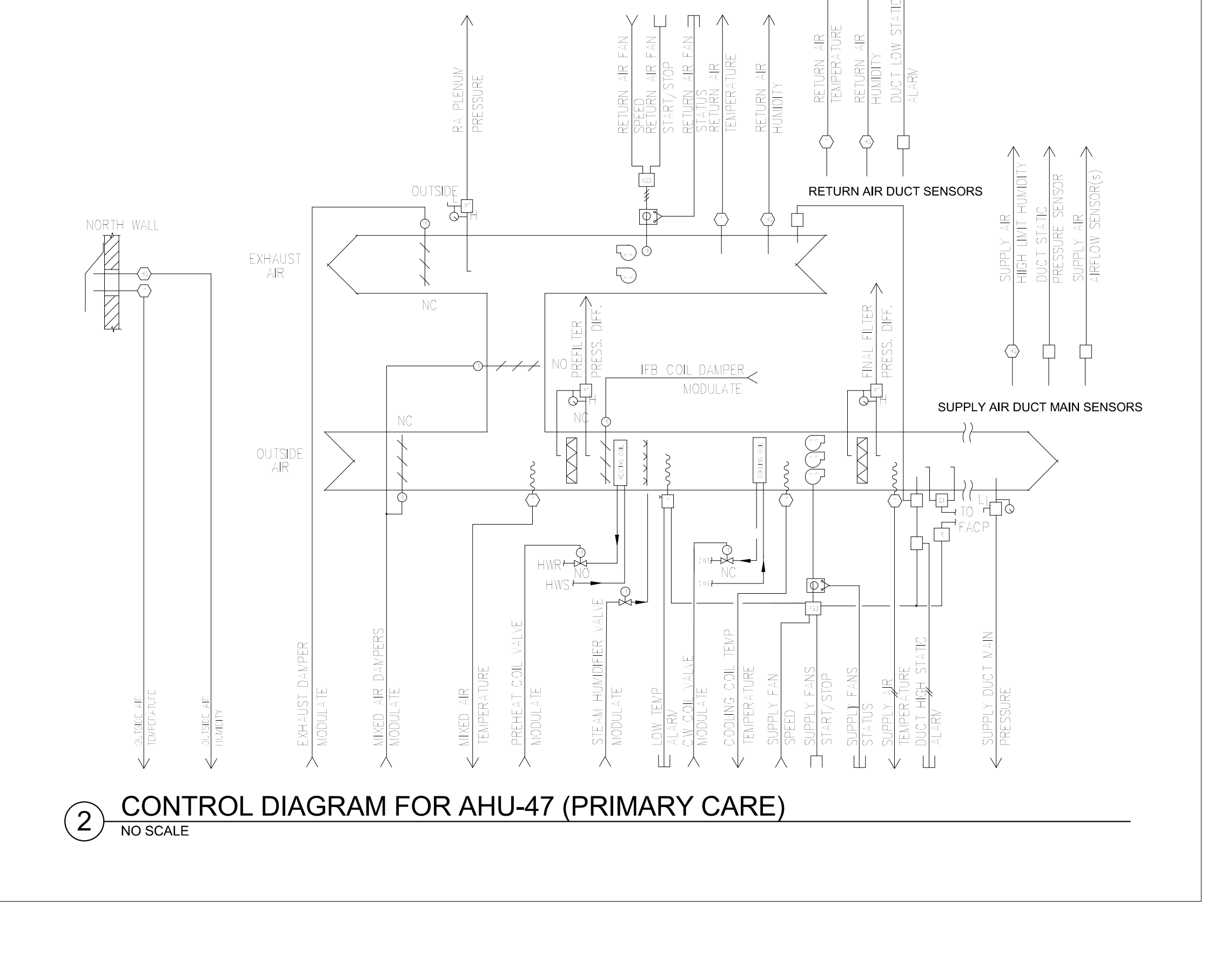


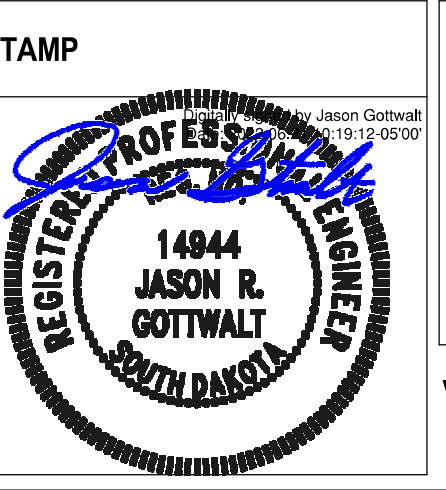
Table with columns: SYSTEM COMPONENT, POINT TYPE, ADDRESS/NOTATION, and REMARKS. Lists various sensors and actuators like RETURN AIR TEMPERATURE, HUMIDITY, FAN STATUS, and COOLING COIL VALVE.



Revision table with columns: Revision#, Description, Date.

CONSULTANTS: ARCHITECTURAL: BWR; STRUCTURAL: ERA; MEP: DUNHAM; CIVIL: EVS; LANDSCAPE: CONFLUENCE.

ARCHITECT OF RECORD: Stone Group Architects, 600 E 7th Street, Sioux Falls, SD 57103.



Office of Construction and Facilities Management, U.S. Department of Veterans Affairs.

Drawing Title: SEQUENCES OF OPERATION. Approved: [Signature]

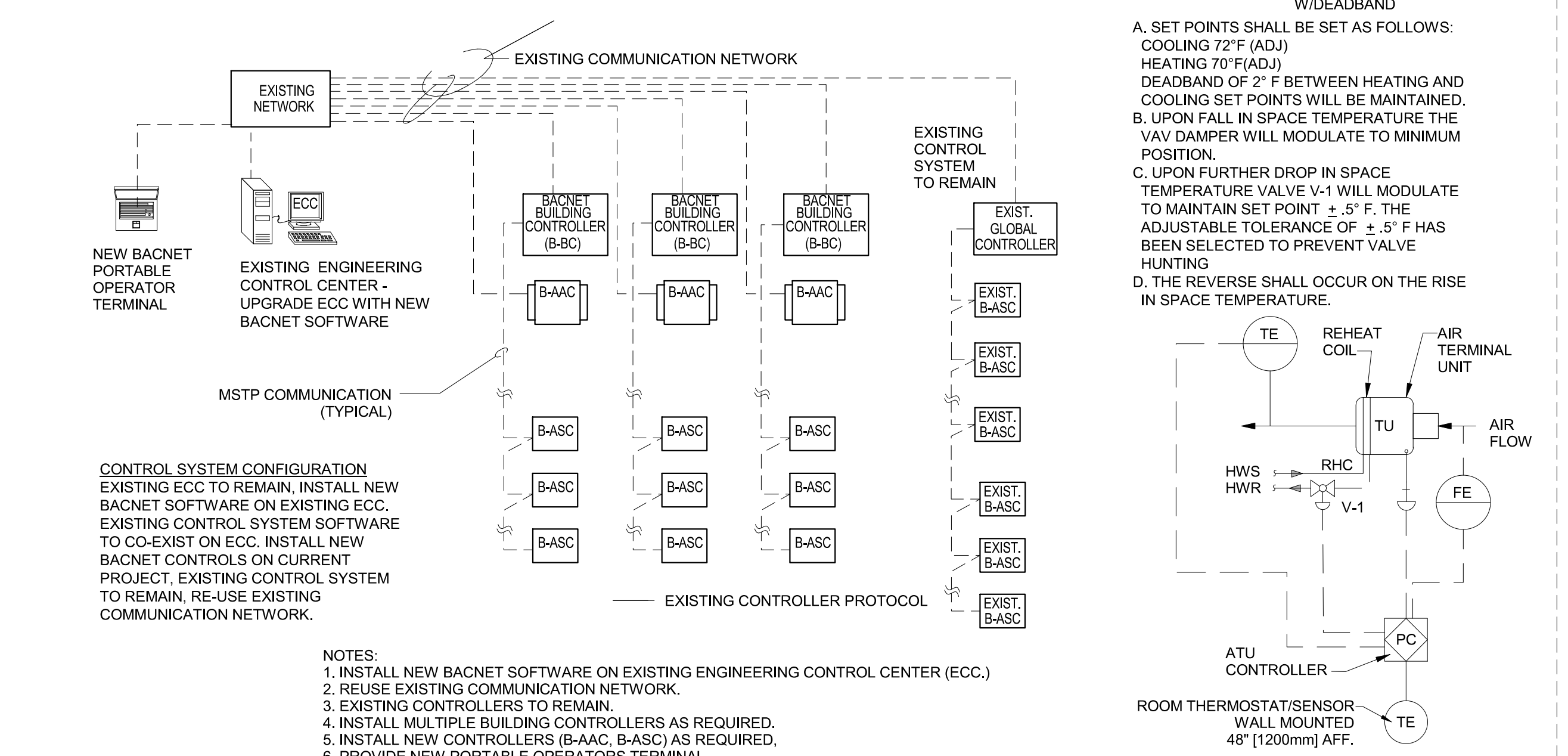
Phase: CONSTRUCTION DOCUMENTS.

Project Title: NEW FRONT LOBBY AND PRIMARY CARE ADDITION. Location: SIOUX FALLS, SOUTH DAKOTA.

Project Number: VA #438-480 SGA #201909. Building Number: 5. Drawing Number: M600.

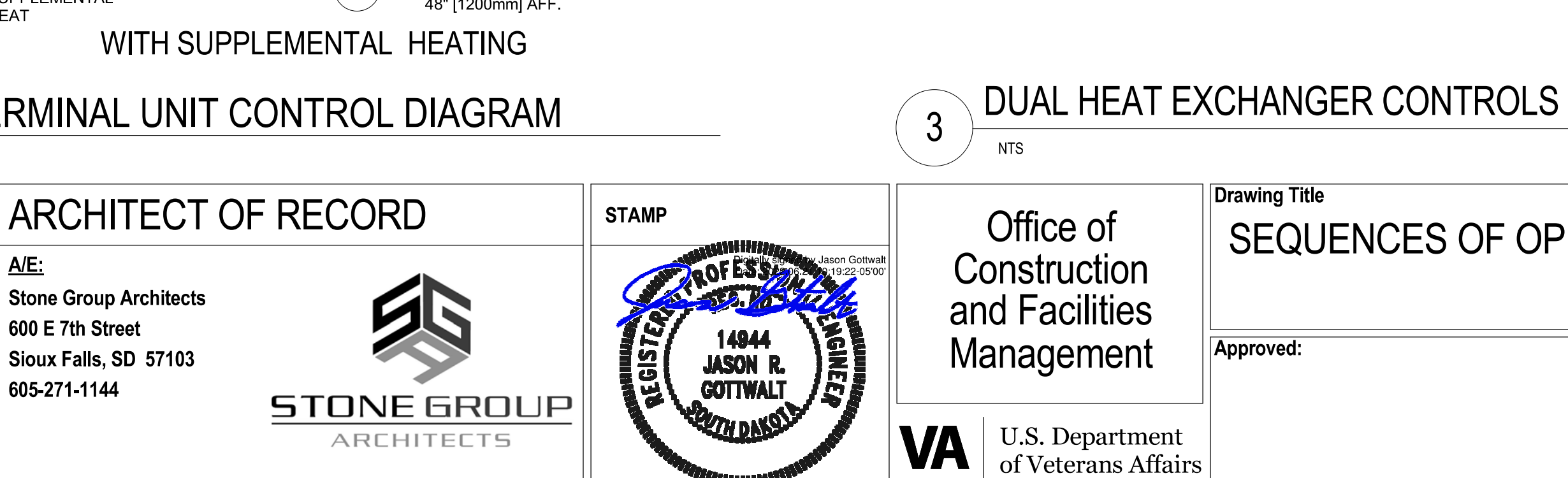
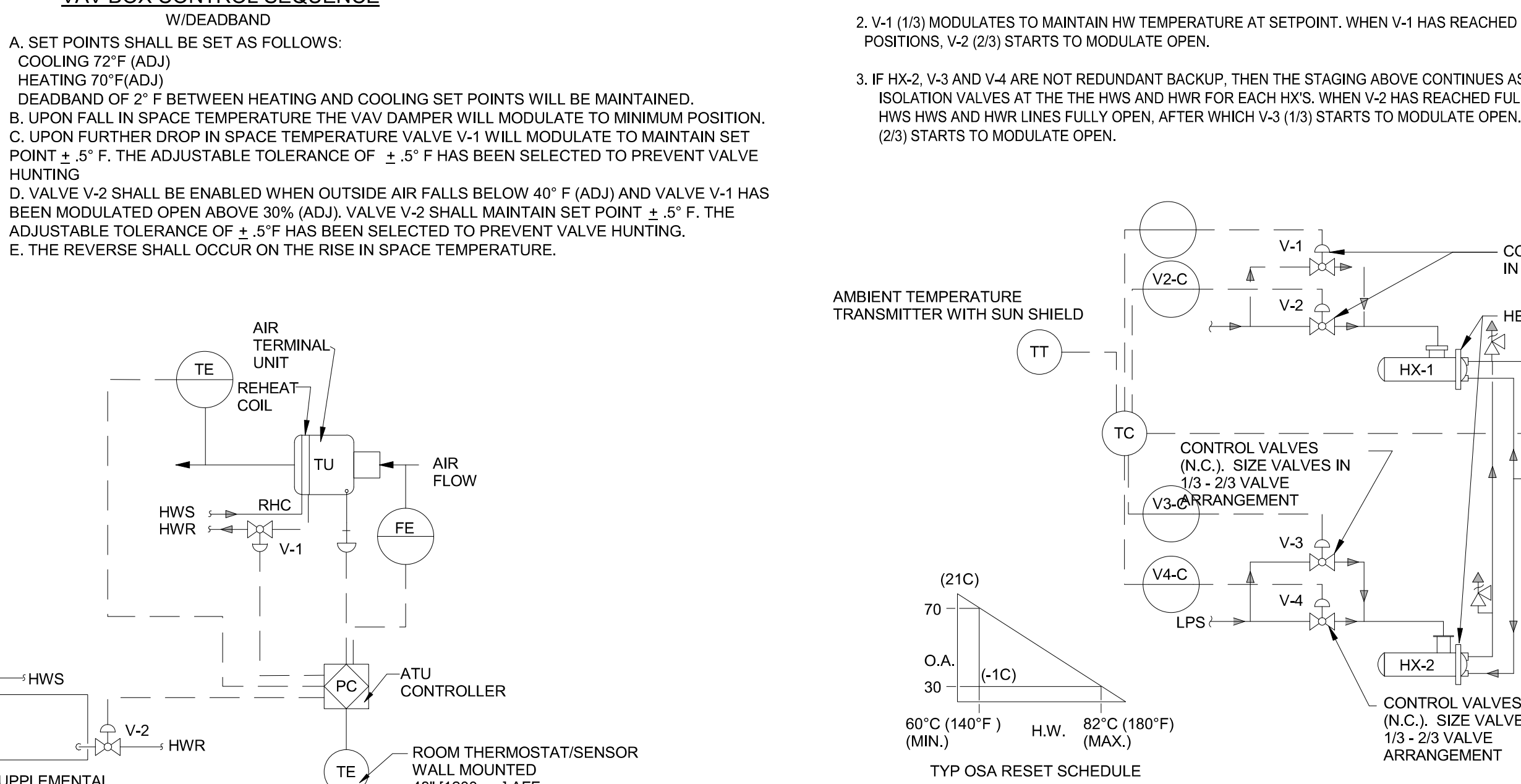
2.02 HEATING WATER FINNED-TUBE RADIATION, UNIT HEATERS, AND IN-FLOOR HEATING OPERATING SEQUENCES (+HW RECIRC)
A. GENERAL: MOST SECTIONS OF FINNED-TUBE RADIATION ARE PAIRED AS SECOND STAGE HEATING WITH A CORRESPONDING VAV REHEAT COIL ZONE. CONTROL VALVES FOR BOTH REHEAT COIL AND FTR SHALL BE INDEPENDENTLY CONTROLLED AND LOCATED OUTSIDE OF PATIENT CARE AREAS (IDEALLY BOTH ACCESS POINTS), UNIT HEATERS, AND ABOVE CEILING FTR ARE GENERALLY USED FOR HEATING UNOCCUPIED/MECHANICAL ROOM AREAS WITH EXPOSURE TO EXTERIOR WALL. DEDICATED THERMOSTATS SHALL MODULATE THESE UNIT HEATERS TO HOLD ROOM TEMPERATURE SETPOINT.
B. OCCUPIED/UNOCCUPIED MODE INDEXING: BY MASTER CONTROL UNIT, WITH TIMED OVERRIDE OF UNOCCUPIED CYCLE INITIATED BY MANUAL SWITCH AT SPACE TEMPERATURE SENSOR.
C. UNOCCUPIED HEATING: REHEAT WATER CONTROL VALVE SHALL MODULATE TO MAINTAIN THE UNOCCUPIED SET POINT IN EACH ZONE AS DETERMINED BY THE OPERATOR.
D. UNOCCUPIED COOLING: CONTROL VALVE TO FULLY SHUT.
E. OPERATION: DIRECT ACTING CONTROL VALVE WITH ADJUSTABLE DEAD BAND BETWEEN HEATING AND COOLING SET POINTS.
F. SPACE TEMPERATURE: COMPARED TO SET POINTS.
G. HEATING VALVE(S): MODULATE 2-WAY VALVES TO MAINTAIN SPACE TEMPERATURE HEATING SET POINT AS FOLLOWS:
1. FINNED-TUBE RADIATION ASSOCIATED WITH VAV REHEAT COIL SHALL ACT AS SECOND STAGE HEAT AFTER VAV HAS ACHIEVED A 30% VALVE POSITION. AFTER THAT 30% VALVE POSITION IS REACHED THE FTR CONTROL VALVE SHALL OPERATE IN UNISON WITH VAV REHEAT COIL CONTROL VALVE.
2. UNIT HEATERS IN MECHANICAL ROOM SHALL MODULATE CONTROL VALVE TO MAINTAIN THERMOSTAT SETPOINT. ENABLE FAN TO RUN CONTINUOUSLY WHILE IN HEATING MODE OF OPERATION.
H. SET POINTS:
I. SPACE TEMPERATURE COOLING:
1. OCCUPIED/UNOCCUPIED: DISABLE FIRST STAGE HEATING FTR AND IN-FLOOR RADIANT SPACE TEMPERATURE HEATING (BOTH FTR AND UNIT HEATERS).
2. OCCUPIED: COOLING SET POINT MINUS DEAD BAND.
3. UNOCCUPIED: 64°F
4. SPACE TEMPERATURE DEAD BAND: 2°F
5. MECHANICAL ROOM UNIT HEATERS: 60 DEGREES
6. CONTROL VALVE:
1. PATTERN: 2-WAY FOR FTR AND UNIT HEATERS (3-WAY ON IN-FLOOR)
2. ACTION: NORMALLY OPEN.
J. CONTROLS CONTRACTOR TO PROGRAM ADJUSTABLE HIGH AND LOW LIMITS FOR EACH TEMPERATURE ZONE.
K. ALARM NOTIFICATION: MECHANICAL ROOM UNIT HEATERS SHALL SEND URGENT ALARM NOTIFICATION WHENEVER TEMPERATURE FALLS BELOW 10 DEGREES OF SETPOINT, OR UNDER 52 DEGREES, WHICHEVER APPLIES FIRST (ADJ).
L. DDC MINIMUM POINTS SUMMARY (PER CONNECTOR/RADIANT PANEL UNIT):

DESCRIPTION	QUANTITY	TYPE	FIELD INTERFACE
SPACE TEMPERATURE	1/ZONE	ANALOG INPUT	SPACE CONTROL MODULE
SUPPLY AIR FLOW RATE	1/BOX	ANALOG INPUT	VAV BOX AIR FLOW SENSOR
SUPPLY DISCHARGE AIR TEMP	1/BOX	ANALOG INPUT	VAV BOX DUCT TEMP SENSOR
VAV BOX AIR DAMPER	1/BOX	ANALOG OUTPUT	VAV BOX DAMPER ACTUATOR
SPACE TEMPERATURE SET POINT	1/ZONE	ANALOG INPUT	SPACE CONTROL MODULE
HEATING VALVE(S)	1/BOX	ANALOG OUTPUT	VALVE ACTUATOR(S)



2.04 EXHAUST FAN CONTROL SEQUENCE
A. EXHAUST FAN, EF 501 AND EF 502
1. IS A UTILITY SET OR DOWNBLAST PRV TYPE FAN SERVING GENERAL EXHAUST REQUIREMENTS.
2. SHALL BE OPERATED CONTINUOUSLY AND OFF ONLY FOR MAINTENANCE AND REPAIR ONLY.
3. INCLUDE DIRECT DRIVE MOTOR WITH SPEED CONTROL TO BE INTERLOCKED WITH FAN OPERATION.
4. BAS SHALL ALARM ON FAILURE OF EXHAUST FAN.
5. BAS SHALL INDICATE STATUS AND REMOTE ENABLE/DISABLE FUNCTIONALITY.
6. INCLUDE AN ACTUATOR FOR ISOLATION DAMPER TO BE INTERLOCKED WITH FAN OPERATION.
7. INCLUDE A DAMPER END SWITCHES TO PROVE OPEN BEFORE ALLOWING FAN TO START, AND PROVE CLOSED ON SHUT-DOWN.
B. DDC MINIMUM POINTS SUMMARY (EACH FAN AS REQUIRED):

DESCRIPTION	QUANTITY	TYPE	FIELD INTERFACE
PRIMARY HIGH/WHIRL TEMPS	ANALOG INPUT (2)	PIPE WELL MOUNT TEMP SENSORS	
PUMP STATUS (X3)	DIGITAL INPUT	AMP DRAW SENSOR	
PUMP SPEED (X3)	ANALOG INPUT	VFD CONTROLLER	
PUMP ENABLE (X3)	DIGITAL OUTPUT	VFD CONTROLLER	
DIFFERENTIAL PRESSURE SENSORS (X3)	ANALOG INPUT	DIFF PRESSURE SENSOR	
STEAM PRESSURE (IN/OUT)	ANALOG INPUT	PRESSURE SENSOR	
STEAM FLOW/ENERGY METER	ANALOG INPUT	FLOW METER	
STEAM TRAP MONITORS (MULTIPLE)	DIGITAL INPUT	TRAP MONITORS	
CHILLED WATER FLOW (MAIN LOOP)	ANALOG INPUT	FLOW METER	
CHILLED WATER EWT/LWT(X4)	ANALOG INPUT	TEMPERATURE SENSORS	



2.06 DOMESTIC WATER HEATERS AND RECIRCULATION PUMPS
A. GENERAL: THE DOMESTIC HOT WATER SYSTEM HEATING SYSTEM CONSISTS OF SEMI-INSTANTANEOUS HEAT EXCHANGER PACKAGES AND RECIRCULATING HOT WATER PUMPS IN A FULLY REDUNDANT CONFIGURATION.
1. DURING NORMAL OPERATION, THE LEAD HEAT EXCHANGER TO MAINTAIN DISCHARGE WATER TEMPERATURE WHILE THE BACKUP HEAT EXCHANGER IS AVAILABLE IN CASE OF EMERGENCY OR MAINTENANCE.
B. HEAT EXCHANGER START SEQUENCE:
1. PACKAGED CONTROLLER SHALL MODULATE STEAM INPUT TO MAINTAIN A 132 DEGREE OUTPUT TEMPERATURE (TO BE TEMPERED DOWN FOR SCALD PROTECTION AT EACH FUTURE USE MIXING VALVES).
C. RECIRCULATION PUMP START/STOP SEQUENCE:
1. RECIRCULATION PUMP TO RUN CONTINUOUSLY 24/7 OPERATION. INCLUDE AN AMP SENSOR FOR PUMP FAULT ALARM.
D. DDC POINTS SUMMARY:

DESCRIPTION	QUANTITY	TYPE	FIELD INTERFACE
RECIRCULATING WATER TEMPERATURE	1	ANALOG INPUT	TEMPERATURE TRANSMITTER
HOT WATER SUPPLY TEMPERATURE	1	ANALOG INPUT	TEMPERATURE TRANSMITTER
STEAM VALVE MODULATION	2	ANALOG OUTPUT	VALVE ACTUATOR
HX ISOLATION VALVE OPEN/CLOSE	2	DIGITAL OUTPUT	VALVE ACTUATOR
RECIRC PUMP START/STOP	1	DIGITAL OUTPUT	PUMP CONTROLLER

