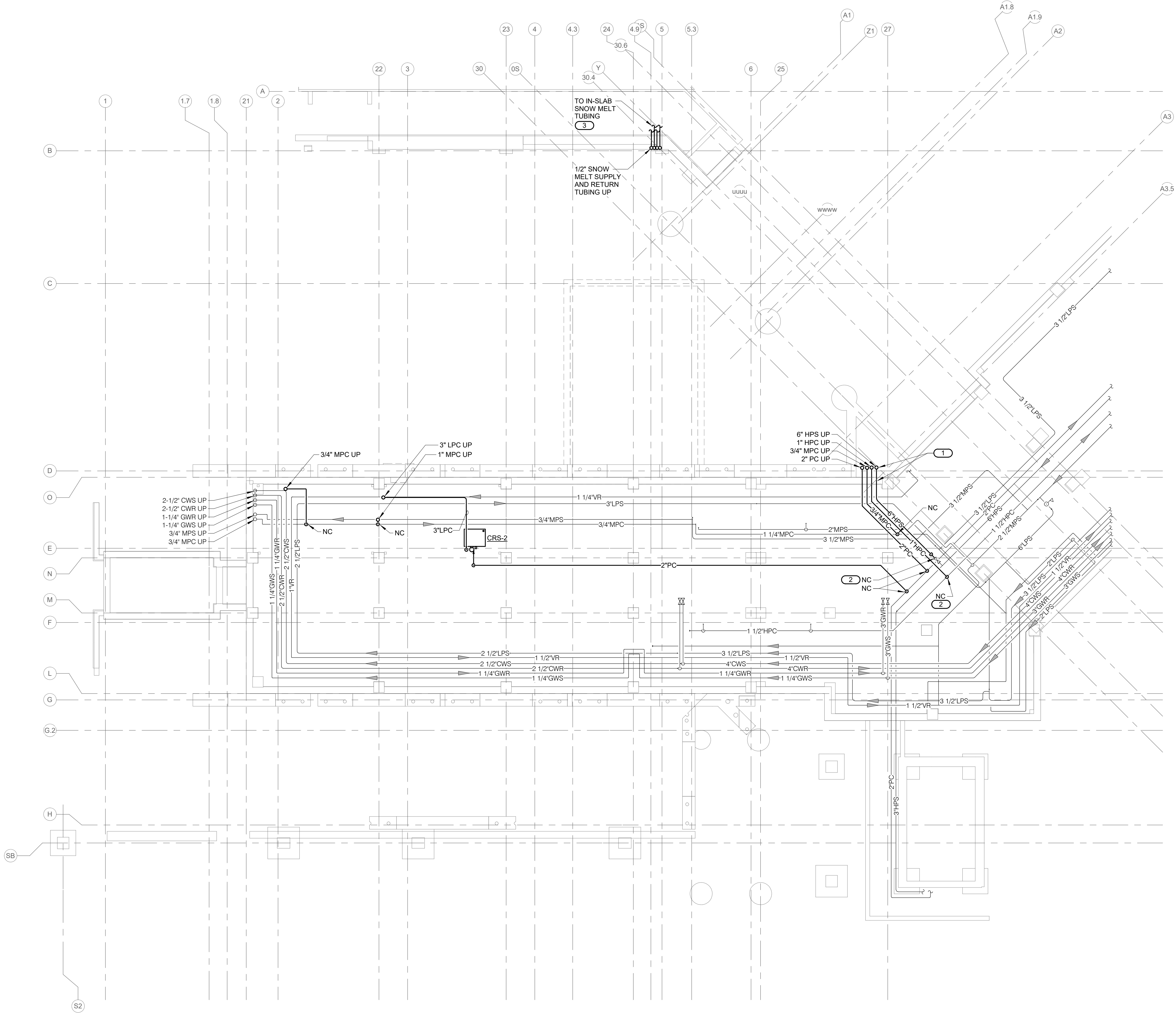


- GENERAL MECHANICAL NOTES:**
1. REFERENCE MP000 - PIPING COVERSHEET FOR VENTILATION SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES.
 2. COORDINATE AND CONFIRM ALL ARCHITECTURALLY EXPOSED DEVICE LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN OR INSTALLATION.
 3. REFERENCE MP500 FOR STEAM FLOW DIAGRAM.
 4. REFERENCE MP501 FOR HEATING WATER FLOW DIAGRAM.
 5. REFERENCE MP502 FOR CHILLED WATER FLOW DIAGRAM.
 6. REFERENCE MP600 FOR PIPING SCHEDULES.
 7. COMPLETE LAYOUT DRAWINGS SHALL BE REQUIRED BY SPECIFICATION SECTION 23 05 11. CONSTRUCTION WORK SHALL NOT BEGIN UNTIL SYSTEM LAYOUT DRAWINGS HAVE BEEN APPROVED BY THE C.O.R.
 8. ALL PIPING, OF ANY KIND, ABOVE SOLID LID CEILING SHALL BE CONSTRUCTED OF AS FEW PIECES AS POSSIBLE AND SHALL ONLY UTILIZE WELDED OR SWEATED JOINTS AND CONNECTIONS.
 9. REFERENCE 1/MP400 FOR PIPE HANGERS AND SUPPORTS DETAIL.
 10. REFERENCE 2/MP400 FOR FIRE RATED FLOOR/WALL PENETRATION DETAIL.
 11. REFERENCE 3/MP400 FOR NON-FIRE RATED WALL PENETRATION DETAIL.
- KEYNOTES: (#)**
1. PROVIDE CORROSION RESISTANT MECHANICAL LINK SEAL DEVICE FOR ALL PIPING PENETRATIONS OF FOUNDATION WALLS AND FLOOR SLABS.
 2. PROVIDE HIGH PRESSURE STEAM DRIP TRAP ASSEMBLY IN PIPE BASEMENT DOWNSTREAM OF CONNECTION TO EXISTING ISOLATION VALVE. REFERENCE 1/MP401 FOR HIGH PRESSURE STEAM MAIN DRIP DETAIL.
 3. REFERENCE 1/MP401 FOR SNOW MELT TUBING DETAIL.



1 PIPE BASEMENT FLOOR PLAN - PIPING
1/8" = 1'-0"

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Revisions:	Date:

CONSULTANT

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PROJECT # 19004249.04

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REFERENCE SCALE IN INCHES
0 1 2 3

ARCHITECT/ENGINEER OF RECORD

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STAMP

Professional Engineer
DELLAN J. LLEWELLYN
27052
IOWA

Office of
Construction
and Facilities
Management

VA U.S. Department
of Veterans
Affairs

Drawing Title
PIPE BASEMENT FLOOR PLAN - PIPING

Approved:

Phase
BID DOCUMENTS

FULLY SPRINKLERED

Project Title
CONSTRUCT NEW SPS

Location
Sioux Falls, SD.

Issue Date
02/14/2025

Checked
DAVING

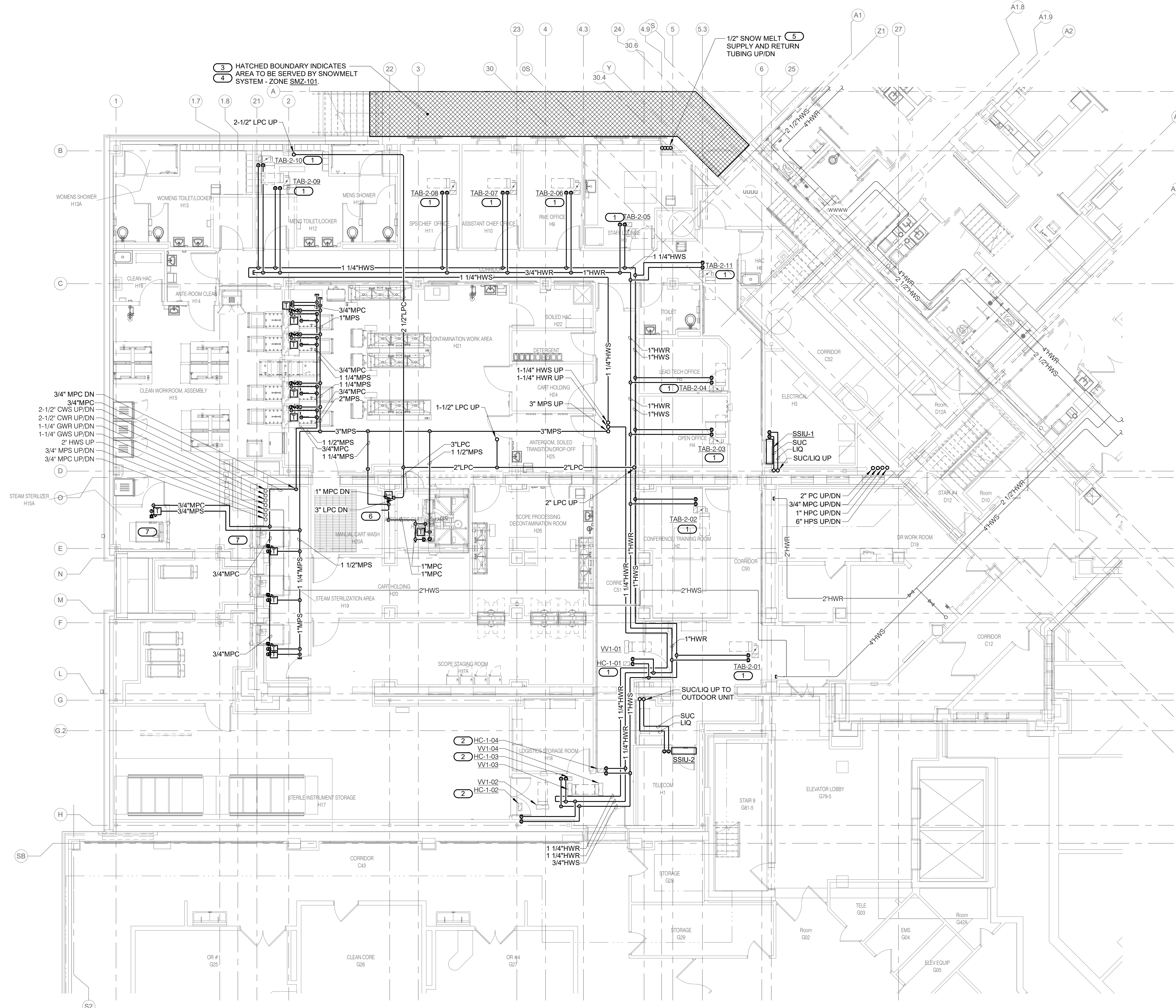
Drawn
DELLE

Project Number
438-460

Building Number
5

Drawing Number
MP091

- GENERAL MECHANICAL NOTES:**
1. REFERENCE MP000 - PIPING COVERSHEET FOR VENTILATION SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES.
 2. COORDINATE AND CONFIRM ALL ARCHITECTURALLY EXPOSED DEVICE LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN OR INSTALLATION.
 3. REFERENCE MP500 FOR STEAM FLOW DIAGRAM.
 4. REFERENCE MP501 FOR HEATING WATER FLOW DIAGRAM.
 5. REFERENCE MP502 FOR CHILLED WATER FLOW DIAGRAM.
 6. REFERENCE MP800 FOR PIPING SCHEDULES.
 7. COMPLETE LAYOUT DRAWINGS SHALL BE REQUIRED BY SPECIFICATION SECTION 23 05 11. CONSTRUCTION WORK SHALL NOT BEGIN UNTIL SYSTEM LAYOUT DRAWINGS HAVE BEEN APPROVED BY THE C.O.R.
 8. ALL PIPING, OF ANY KIND, ABOVE SLOID LID CEILING SHALL BE CONSTRUCTED OF AS FEW PIECES AS POSSIBLE AND SHALL ONLY UTILIZE WELDED OR SWEATED JOINTS AND CONNECTIONS.
 9. REFERENCE 1/MP400 FOR PIPE HANGERS AND SUPPORTS DETAIL.
 10. REFERENCE 2/MP400 FOR FIRE RATED FLOOR/WALL PENETRATION DETAIL.
 11. REFERENCE 3/MP400 FOR NON-FIRE RATED WALL PENETRATION DETAIL.
- KEYNOTES: (#)**
1. REFERENCE 7/MP401 FOR HEATING WATER COIL PIPING DIAGRAM WITH 2-WAY VALVE.
 2. REFERENCE 8/MP401 FOR HEATING WATER COIL PIPING DIAGRAM WITH 3-WAY VALVE.
 3. MECHANICAL CONTRACTOR SHALL PROVIDE SNOW MELT TUBING IMBEDDED IN CONCRETE WALKWAY. REFERENCE RADIATION ZONE SCHEDULE ON MP600 FOR PERFORMANCE CRITERIA. REFERENCE 11/MP401 FOR SNOW MELT TUBING DETAIL.
 4. SNOW MELT MANUFACTURER SHALL PROVIDE SNOW AND ICE SENSOR FOR INSTALLATION BY MECHANICAL CONTRACTOR. REFERENCE 12/MP401 FOR RADIANT SLAB SENSOR DETAIL.
 5. CONCEAL SNOWMELT TUBING IN CHASE SHIELD WITH SHEET METAL PLATING FROM FLOOR TO CEILING TO PREVENT FUTURE INCIDENTAL PUNCTURES.
 6. PROVIDE MEDIUM PRESSURE STEAM HOSE HOSE STATION PIPED WITH SOFT COLD WATER. COORDINATE EXACT LOCATION WITH ARCHITECT AND PLUMBING CONTRACTOR. PIPING CONTRACTOR TO PROVIDE MIXING VALVE AND SHIELDED HOSE.
 7. STERILIZER WILL BE RELOCATED BY THE EQUIPMENT VENDOR FROM AN EXISTING LOCATION IN THE FACILITY TOWARDS THE END OF THIS PROJECT. ALL PIPING SHALL BE ROUGHED IN PRIOR TO RELOCATION TO MINIMIZE DOWNTIME OF THE EQUIPMENT. COORDINATE WITH C.O.R. FOR RELOCATION EFFORT.



1 GROUND LEVEL FLOOR PLAN - PIPING
1/8" = 1'-0"

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Revisions:	Date:

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PROJECT # 19004249.04

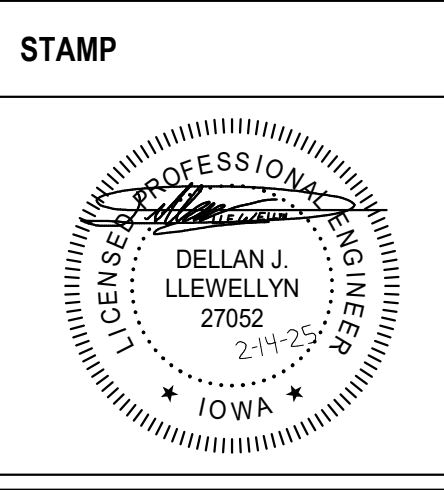
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Anderson Engineering of Minnesota, LLC | Proj # 16684



Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	GROUND LEVEL FLOOR PLAN - PIPING
Approved:	

Phase	BID DOCUMENTS
	FULLY SPRINKLERED

Project Title	CONSTRUCT NEW SPS		
Location	Sioux Falls, SD.		
Issue Date	02/14/2025	Checked	DAVING
		Drawn	DELLE

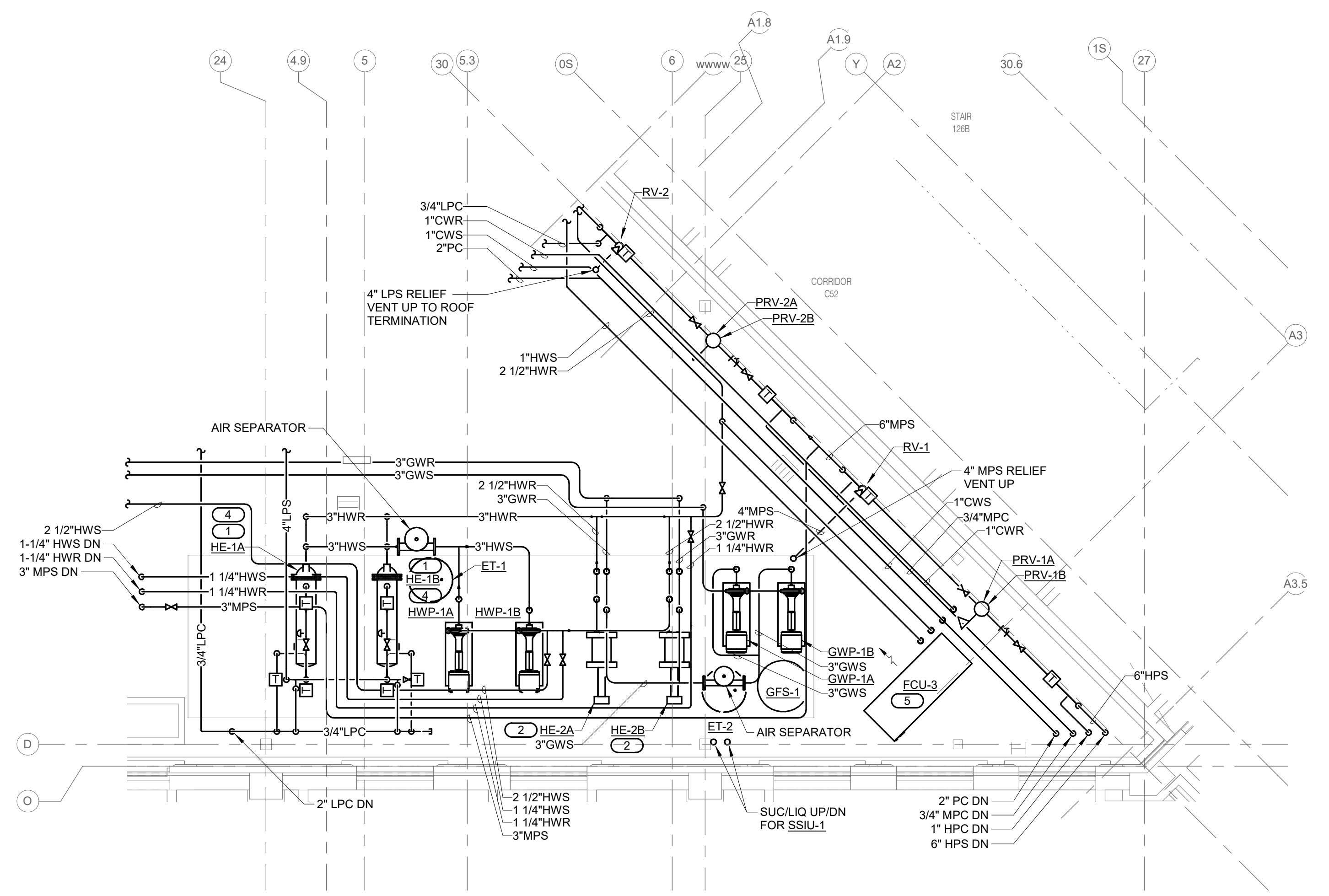
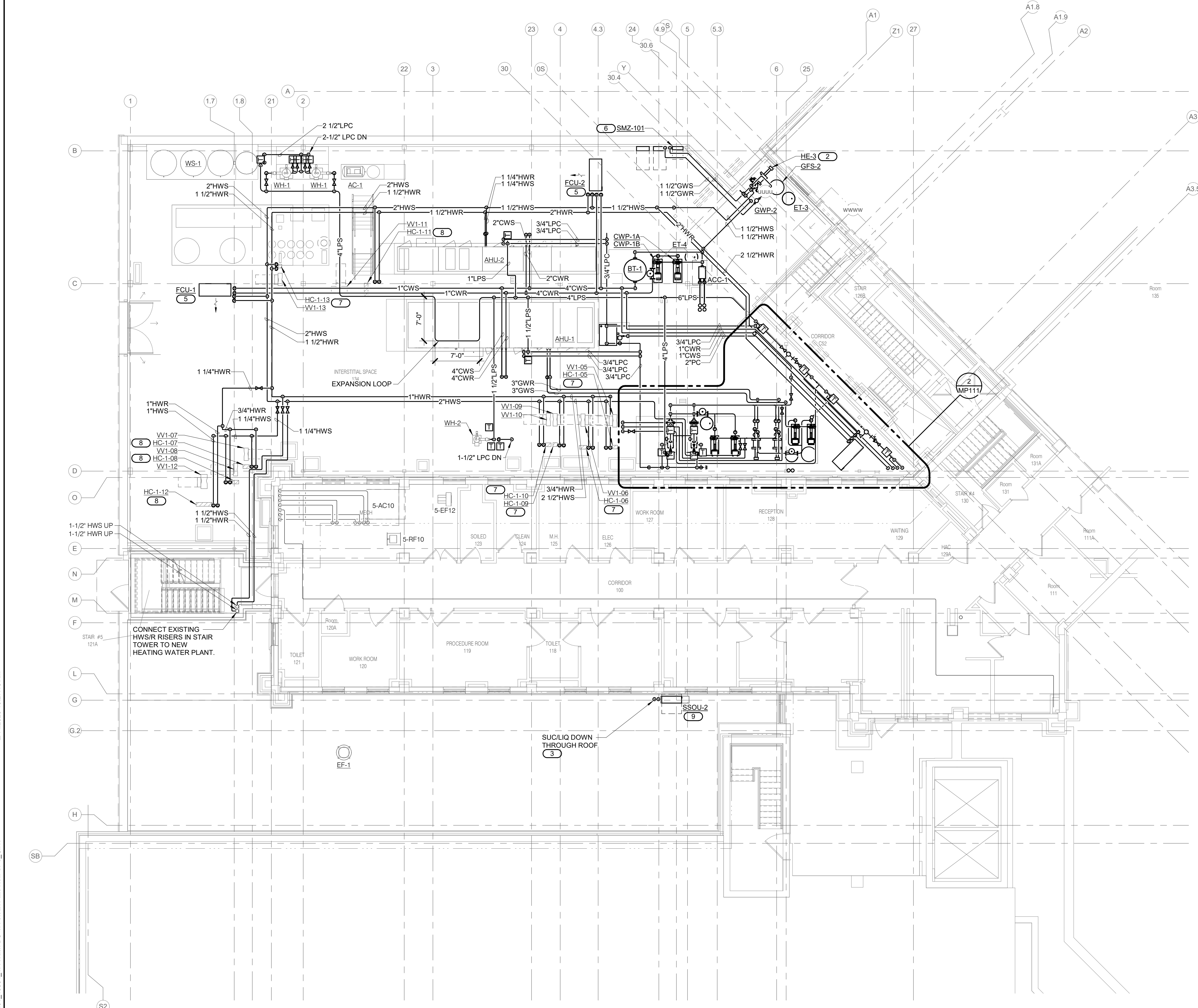
Project Number	438-460
Building Number	5
Drawing Number	MP101

GENERAL MECHANICAL NOTES:

1. REFERENCE MP000 - PIPING COVERSHEET FOR VENTILATION SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES.
2. COORDINATE AND CONFIRM ALL ARCHITECTURALLY EXPOSED DEVICE LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN OR INSTALLATION.
3. REFERENCE MP500 FOR STEAM FLOW DIAGRAM.
4. REFERENCE MP501 FOR HEATING WATER FLOW DIAGRAM.
5. REFERENCE MP502 FOR CHILLED WATER FLOW DIAGRAM.
6. REFERENCE MP800 FOR PIPING SCHEDULES.
7. COMPLETE LAYOUT DRAWINGS SHALL BE REQUIRED BY SPECIFICATION SECTION 23 05 11. CONSTRUCTION WORK SHALL NOT BEGIN UNTIL SYSTEM LAYOUT DRAWINGS HAVE BEEN APPROVED BY THE C.O.R.
8. ALL PIPING, OF ANY KIND, ABOVE SOUD LID CEILING SHALL BE CONSTRUCTED OF AS FEW PIECES AS POSSIBLE AND SHALL ONLY UTILIZE WELDED OR SWEATED JOINTS AND CONNECTIONS.
9. REFERENCE 1/MP400 FOR PIPE HANGERS AND SUPPORTS DETAIL.
10. REFERENCE 2/MP400 FOR FIRE RATED FLOOR/WALL PENETRATION DETAIL.
11. REFERENCE 3/MP400 FOR NON-FIRE RATED WALL PENETRATION DETAIL.

KEYNOTES: (#)

1. REFERENCE 6/MP401 FOR SHELL & TUBE HEAT EXCHANGER PIPING DETAIL.
2. REFERENCE 6/MP401 FOR PLATE & FRAME HEAT EXCHANGER PIPING DETAIL.
3. REFERENCE 5/MP400 FOR INSULATED PIPE HOUSING ROOF PENETRATION DETAIL.
4. REFERENCE 6/MP400 FOR HEAT EXCHANGER SUPPORT DETAIL.
5. REFERENCE 5/MP401 FOR 4-PIPE FAN COIL UNIT PIPING DIAGRAM.
6. REFERENCE 10/MP401 FOR SNOW MELT MANIFOLD PIPING DETAIL.
7. REFERENCE 7/MP401 FOR HEATING WATER COIL PIPING DIAGRAM WITH 2-WAY VALVE.
8. REFERENCE 8/MP401 FOR HEATING WATER COIL PIPING DIAGRAM WITH 3-WAY VALVE.
9. PROVIDE SPLIT SYSTEM OUTDOOR UNIT WITH WALL HANGING MOUNTING BRACKET. MOUNT APPROXIMATELY 24" ABOVE TOP OF ROOF INSULATION.

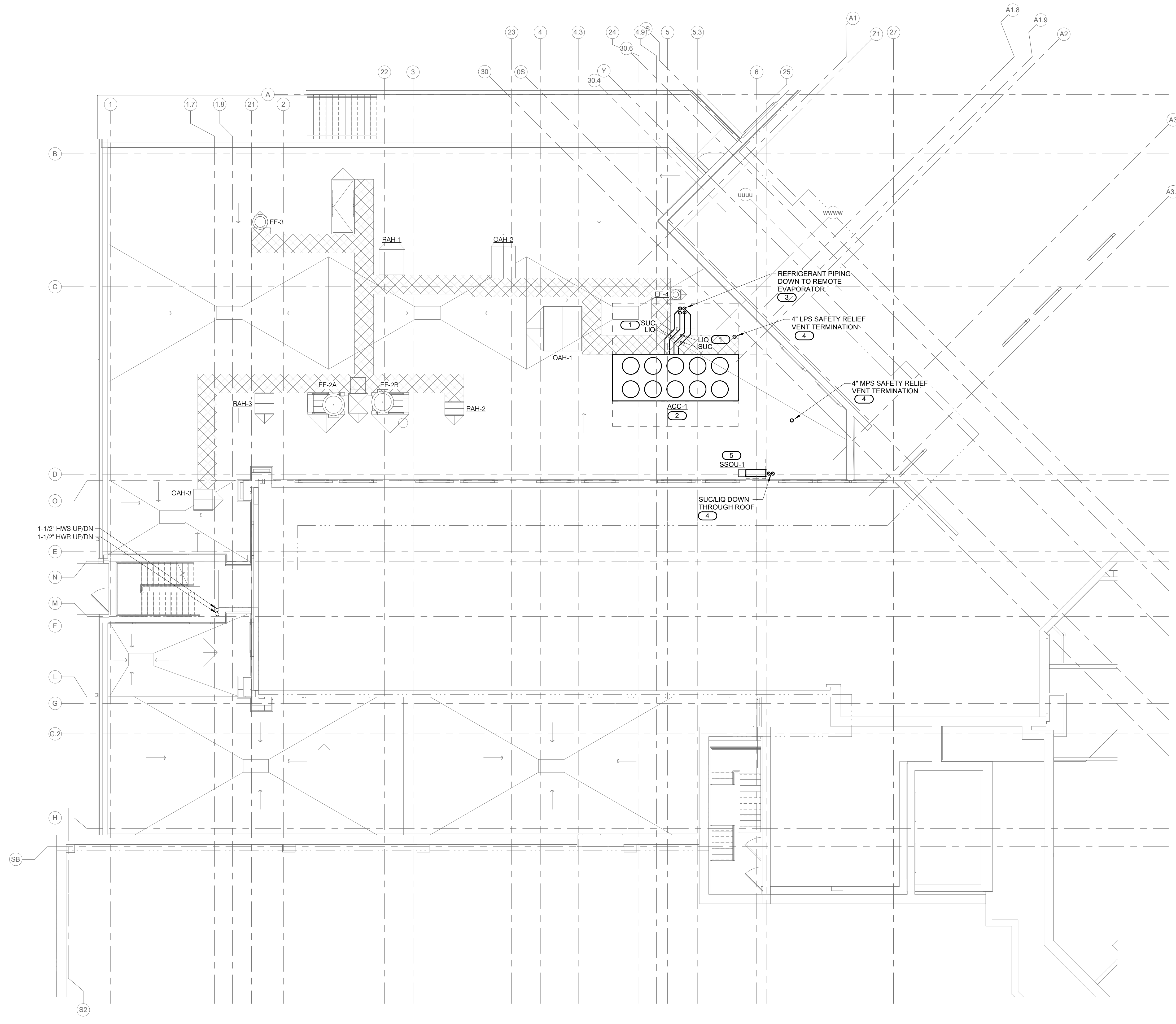


1 INTERSTITIAL/FIRST LEVEL FLOOR PLAN - PIPING
1/8" = 1'-0"

2 ENLARGED INTERSTITIAL/FIRST LEVEL FLOOR PLAN - PIPING
1/4" = 1'-0"

Revisions: Date:	CONSULTANT IMEG 2692 100TH STREET DES MOINES, IA 50325 515.334.9900 FAX: 515.334.9908 WWW.IMEG-CORP.COM PROJECT # 19004249.04 <small>IMEG CORP. RESERVES PROPRIETARY RIGHTS, INCLUDING COPYRIGHTS, TO THIS DRAWING AND THE DATA SHOWN THEREON. THIS DRAWING AND/OR DATA ARE THE EXCLUSIVE PROPERTY OF IMEG CORP. AND SHALL NOT BE USED OR REPRODUCED FOR ANY OTHER PROJECT WITHOUT THE EXPRESS WRITTEN APPROVAL AND PARTICIPATION OF IMEG CORP. © 2025 IMEG CORP.</small> REFERENCE SCALE IN INCHES 0 1 2 3	ARCHITECT/ENGINEER OF RECORD ANDERSON 13605 1st Ave. N. #100 Plymouth, MN 55441 P 763.412.4000 F 763.412.4090 ae-mn.com Anderson Engineering of Minnesota, LLC Proj # 16584	STAMP 	Office of Construction and Facilities Management VA U.S. Department of Veterans Affairs	Drawing Title INTERSTITIAL/FIRST LEVEL FLOOR PLAN - PIPING Approved:	Phase BID DOCUMENTS FULLY SPRINKLERED	Project Title CONSTRUCT NEW SPS Location Sioux Falls, SD. Issue Date 02/14/2025 Checked DAVING Drawn DELLE	Project Number 438-460 Building Number 5 Drawing Number MP111
	VA FORM 08 - 6231							

- GENERAL MECHANICAL NOTES:**
1. REFERENCE MP000 - PIPING COVERSHEET FOR VENTILATION SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES.
 2. COORDINATE AND CONFIRM ALL ARCHITECTURALLY EXPOSED DEVICE LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN OR INSTALLATION.
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 10. REFERENCE 2/MP400 FOR FIRE RATED FLOOR/WALL PENETRATION DETAIL.
 11. REFERENCE 3/MP400 FOR NON-FIRE RATED WALL PENETRATION DETAIL.
- KEYNOTES: (#)**
1. ROUTE REFRIGERANT PIPING ACROSS ROOF. FOLLOW CHILLER MANUFACTURER'S REQUIREMENTS FOR REFRIGERANT PIPE ROUTING AND SIZING. EXTERIOR REFRIGERANT PIPING SHALL BE INSULATED AND WRAPPED WITH ALUMINUM JACKETING. REFERENCE 4/MP400 FOR EXTERIOR PIPING ROOF SUPPORT DETAIL.
 2. REFERENCE 7/MP400 FOR AIR COOLED CHILLER ROOF SUPPORT DETAIL.
 3. REFERENCE 5/MP400 FOR INSULATED PIPE HOUSING ROOF PENETRATION DETAIL.
 4. REFERENCE 3/MP401 FOR SAFETY VALVE DISCHARGE PIPING DETAIL.
 5. PROVIDE SPLIT SYSTEM OUTDOOR UNIT WITH WALL HANGING MOUNTING BRACKET. MOUNT APPROXIMATELY 24" ABOVE TOP OF ROOF INSULATION.



1 ROOF PLAN - PIPING
1/8" = 1'-0"

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Revisions:	Date:

CONSULTANT

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Anderson Engineering of Minnesota, LLC | Proj # 16684

STAMP

Professional Engineer
Dellan J. Llewellyn
27052
IOWA

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title
ROOF PLAN - PIPING

Approved:

Phase
BID DOCUMENTS

FULLY SPRINKLERED

Project Title
CONSTRUCT NEW SPS

Location
Sioux Falls, SD.

Issue Date
02/14/2025

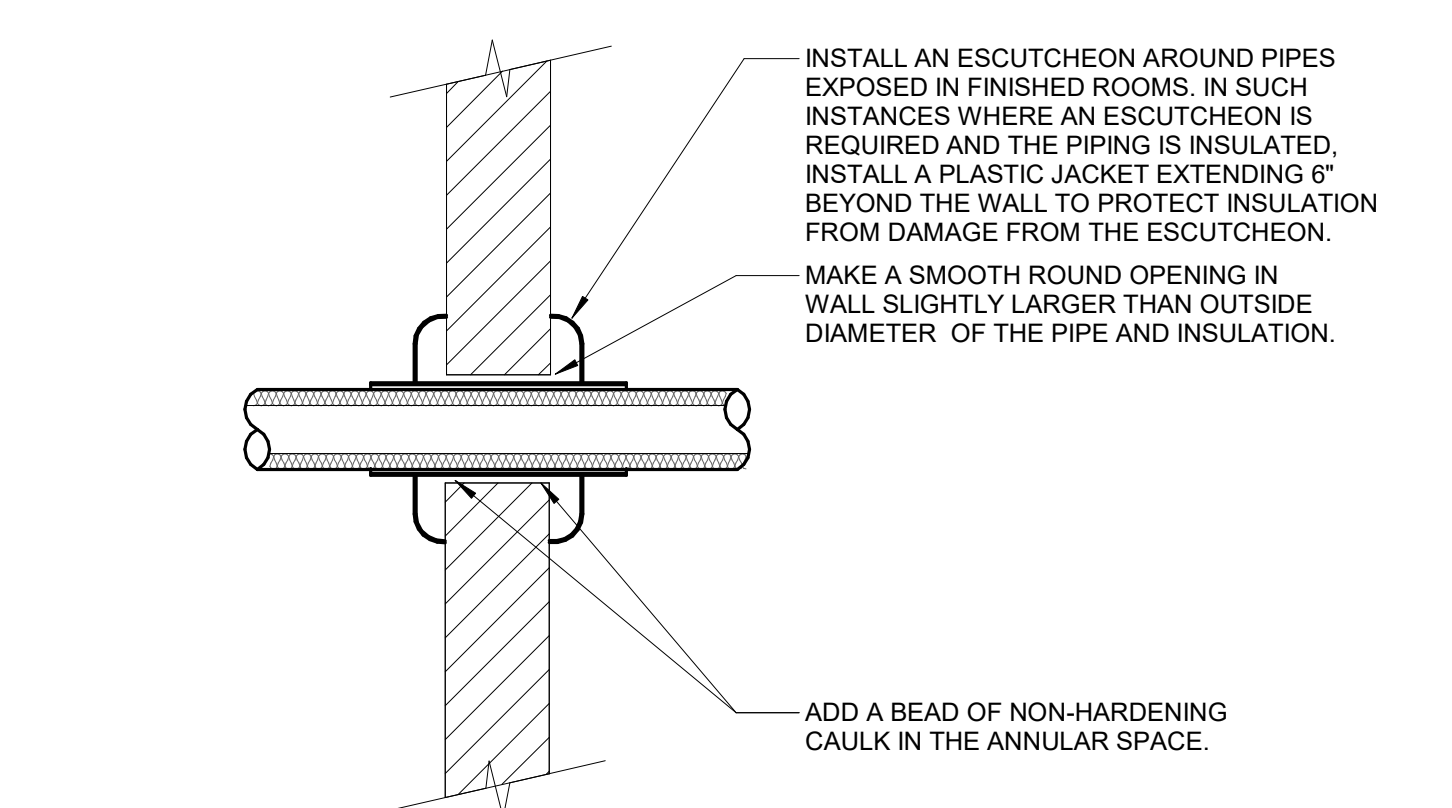
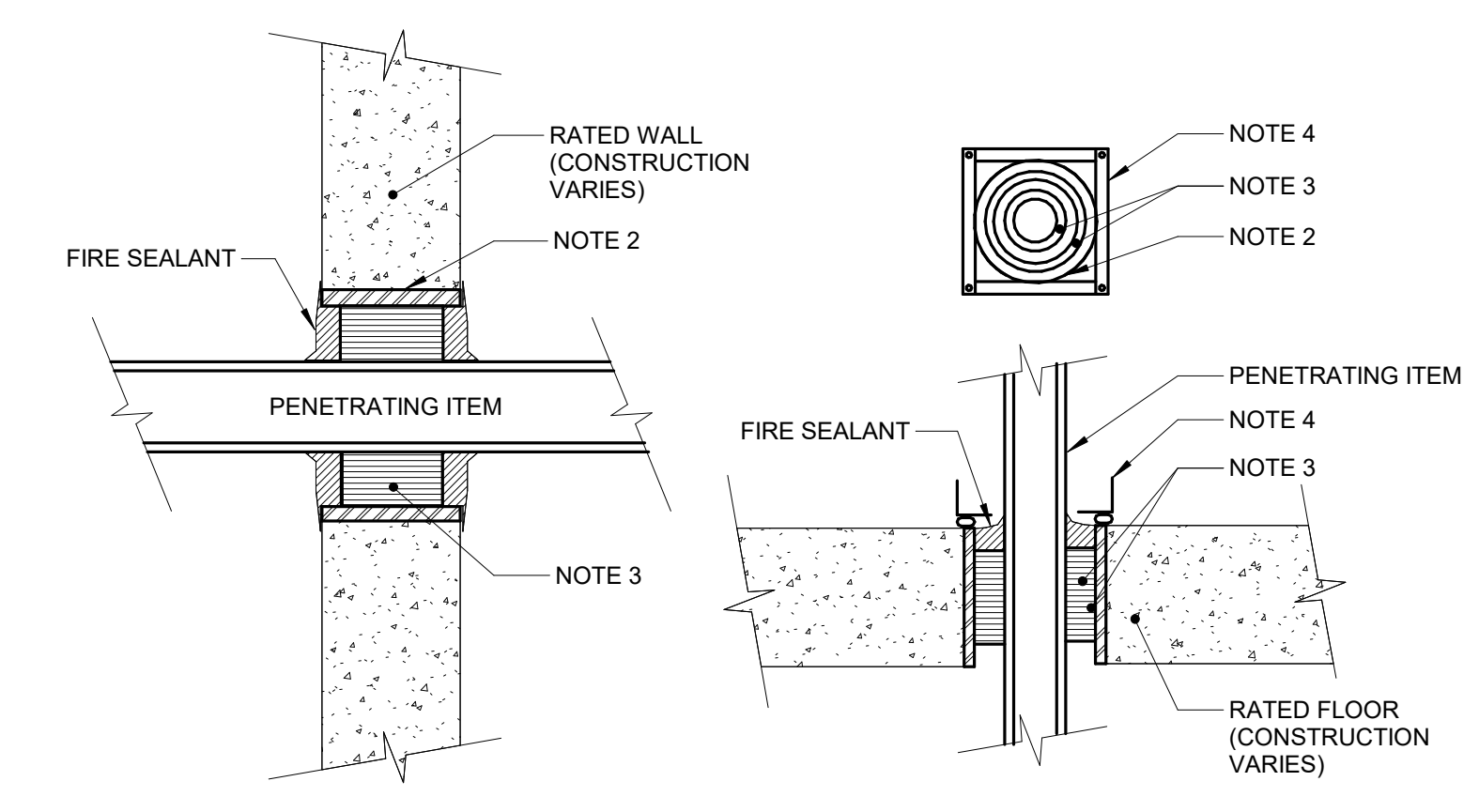
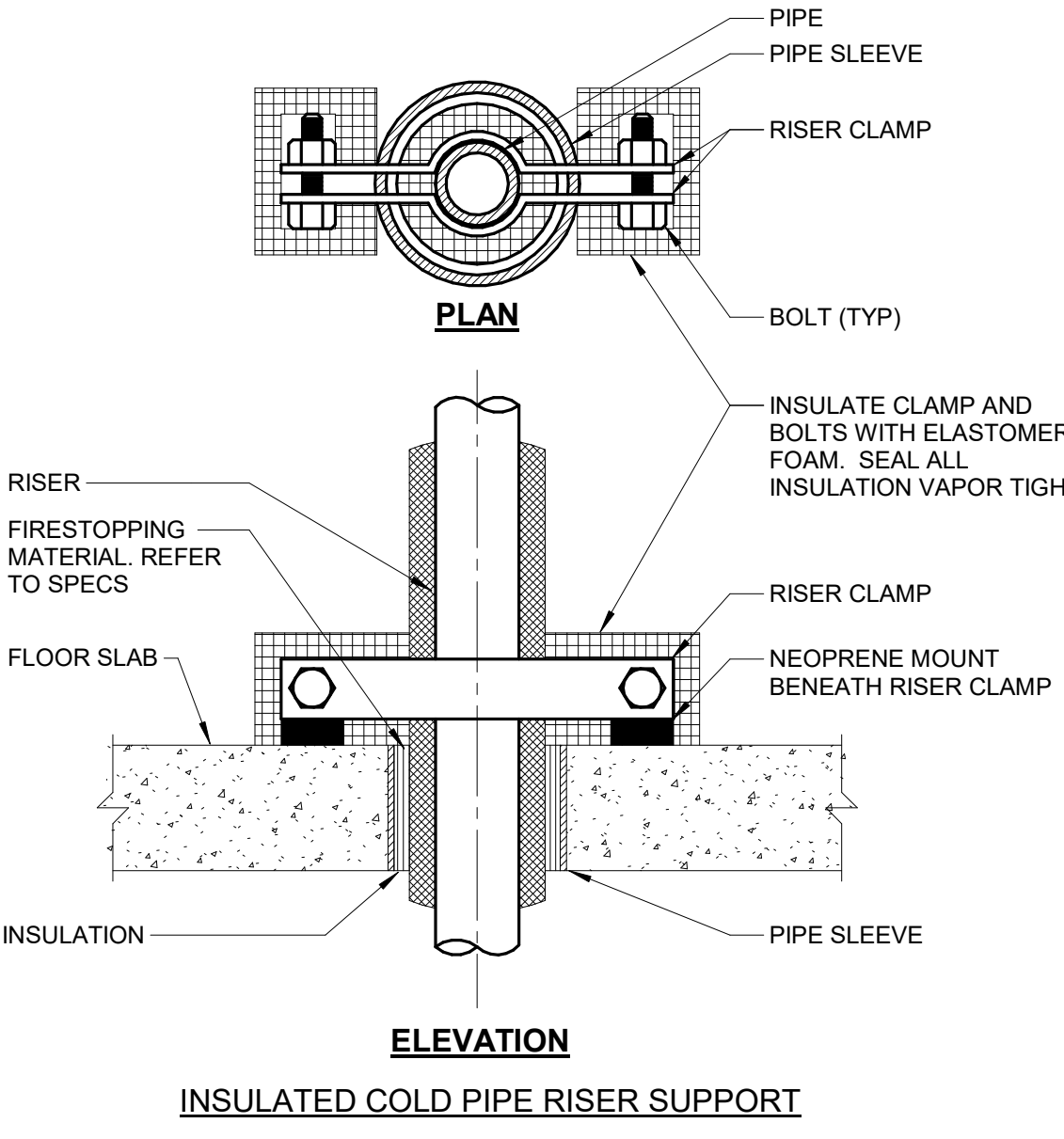
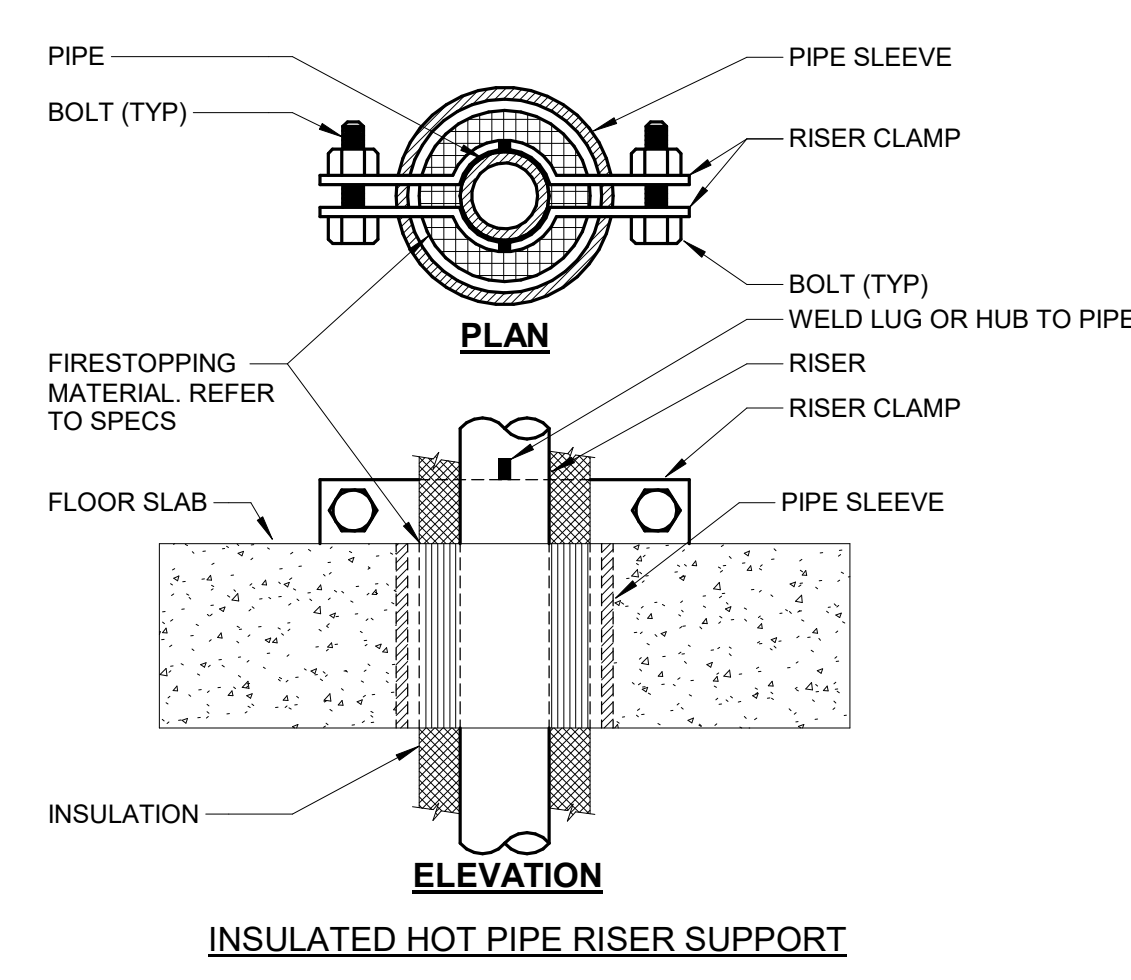
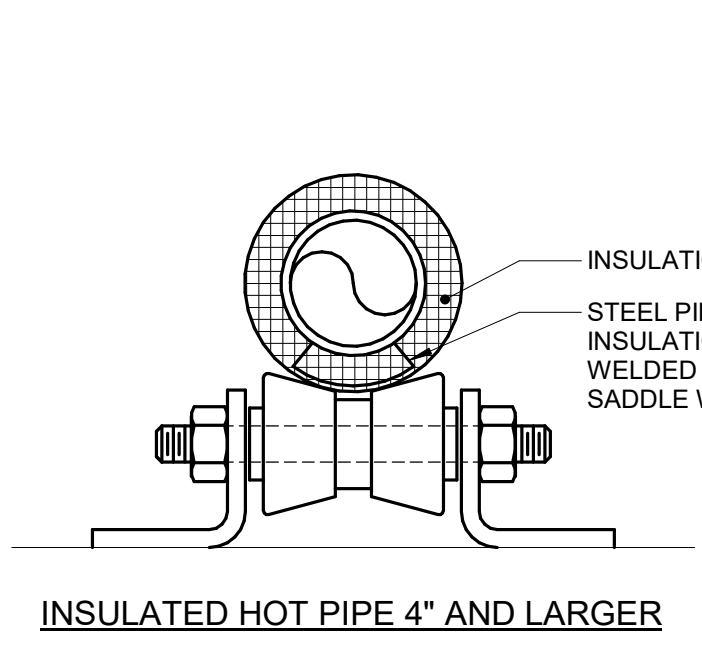
Checked
DAVING

Drawn
DELLE

Project Number
438-460

Building Number
5

Drawing Number
MP121

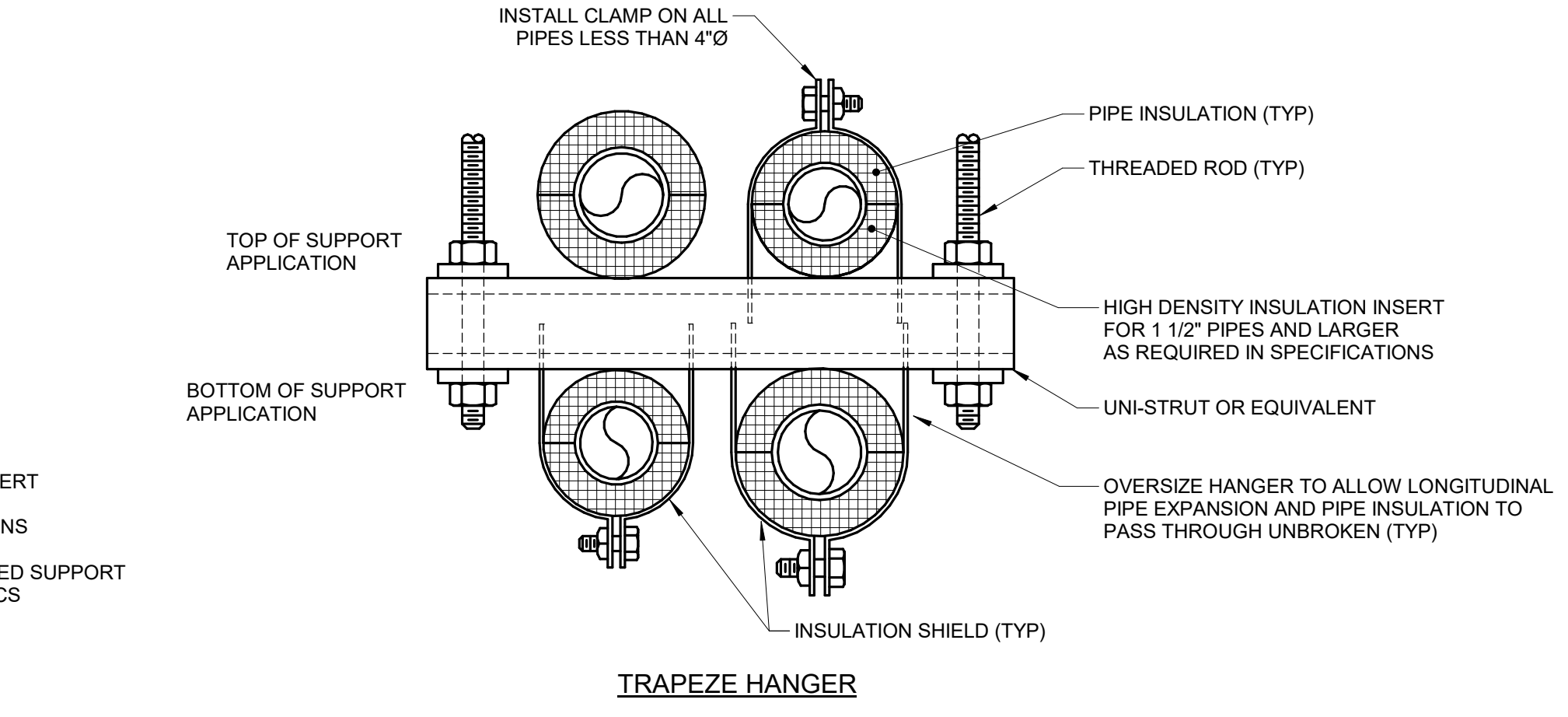
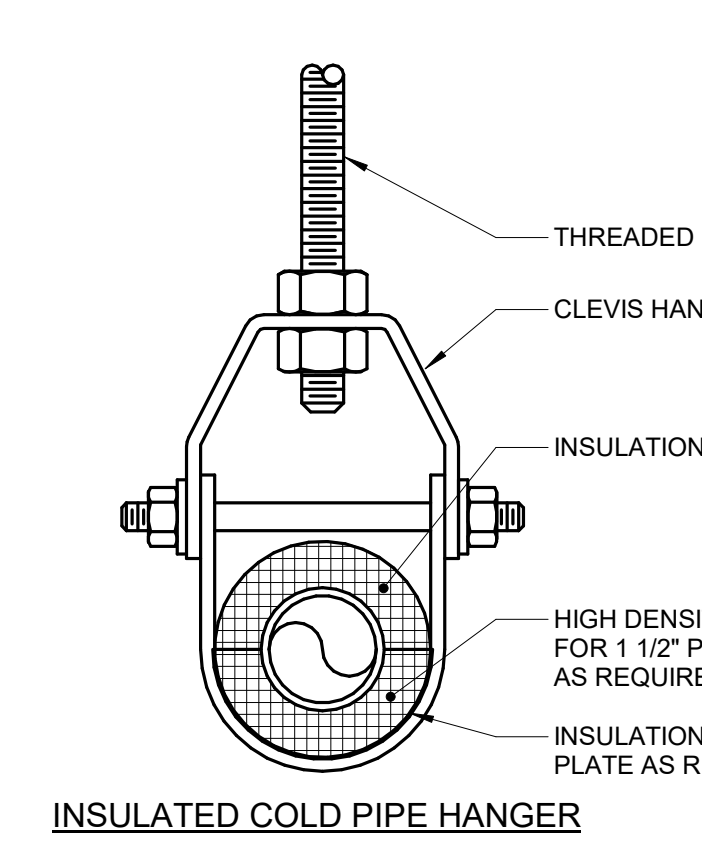


2 FIRE RATED FLOOR/WALL PENETRATION DETAIL
NO SCALE

- NOTES:**
1. THIS GENERAL DETAIL APPLIES TO ALL ITEMS PENETRATING FIRE RATED WALLS OR FLOORS. THE INTENT IS TO MAINTAIN THE FIRE RATING AND TO ALLOW LONGITUDINAL MOVEMENT. REFER TO SPECIFICATION SECTION 23 05 03 FOR SELECTION OF THROUGH PENETRATION FIRE STOPPING.
 2. SCHEDULE 5 PIPE SLEEVE EMBEDDED IN WALL OR FLOOR OR SMOOTH CORE DRILL. EACH CONTRACTOR FURNISHES SLEEVE TO G.C. COORDINATES SLEEVE LOCATIONS AND DEBURRS SLEEVE. G.C. BUILDS SLEEVE INTO WALL OR FLOOR ALLOWING NO GAP AROUND SLEEVE. IF SLEEVE IS NOT PROVIDED WHEN WALL OR FLOOR IS BUILT, CONTRACTOR SHALL INSTALL SLEEVE. SLEEVE SIZE SHALL ALLOW ANNUAL SPACE REQUIRED BY THE SELECTED FIRE STOP SYSTEM.
 3. INSTALL BACKING MATERIAL, SUCH AS MINERAL WOOL SAFING, AS REQUIRED FOR FIRE STOP SYSTEM. INSTALL IN ACCORDANCE WITH FIRE STOP SYSTEM APPLICATION LISTING. SECURE TO WALL OR FLOOR TO ALLOW LONGITUDINAL MOVEMENT OF PENETRATING ITEM WITHOUT MOVEMENT OF FIRE BARRIER.
 4. WATERTIGHT WELDED 1"x1" 20 GAUGE MINIMUM GALVANIZED SHEET METAL ANGLE FRAME, BY CONTRACTOR IN EQUIPMENT ROOMS FOR WATER STOP. PLACE A BEAD OF WATERPROOF SEALANT BETWEEN FLOOR AND BOTTOM OF ANGLE FRAME. SECURE TO FLOOR WITH MASONRY ANCHORS IN CORNERS AND ON 12" MAXIMUM CENTERS. MULTIPLE PENETRATING ITEMS MAY BE ENCLOSED IN ONE FRAME.

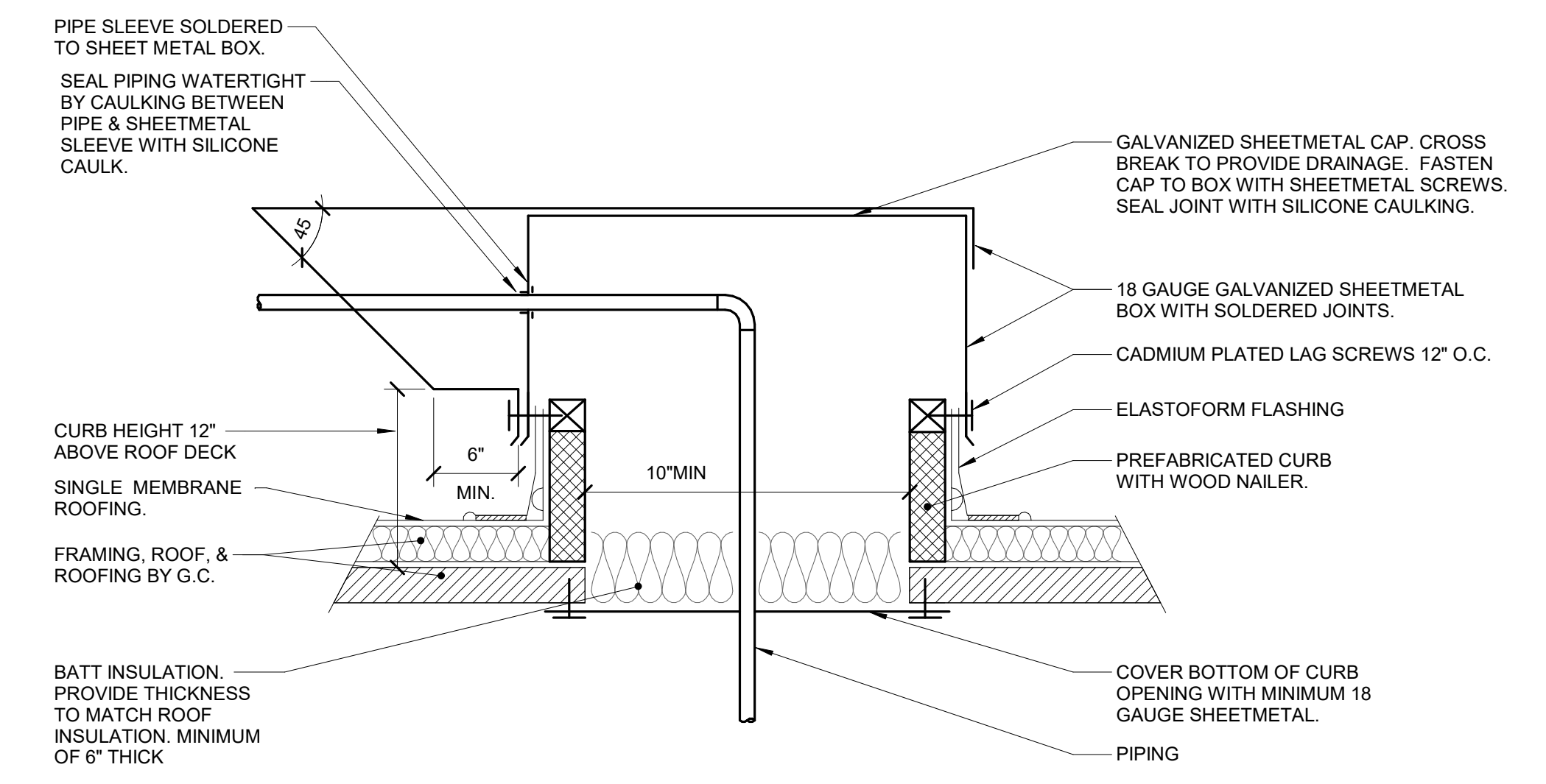
3 NON-FIRE RATED WALL PENETRATION DETAIL
NO SCALE

- NOTES:**
1. THIS DETAIL APPLIES TO ALL PIPES. THE INTENTION IS TO CONTINUE THE INSULATION AND VAPOR BARRIER THROUGH ALL PENETRATIONS. PERMIT THERMAL EXPANSION WITHOUT DAMAGING INSULATION, AND TO SEAL AIRTIGHT AROUND INSULATED AND UNINSULATED PIPES FOR NOISE TRANSMISSION CONTROL.
 2. SEE SPECIFICATION SECTION 23 05 29 FOR ADDITIONAL INFORMATION.
 3. FLOOR OPENINGS ARE SIMILAR. SEE SPECIFICATION SECTION 23 05 29 FOR DIFFERENCES BETWEEN FLOOR AND WALL PENETRATIONS.

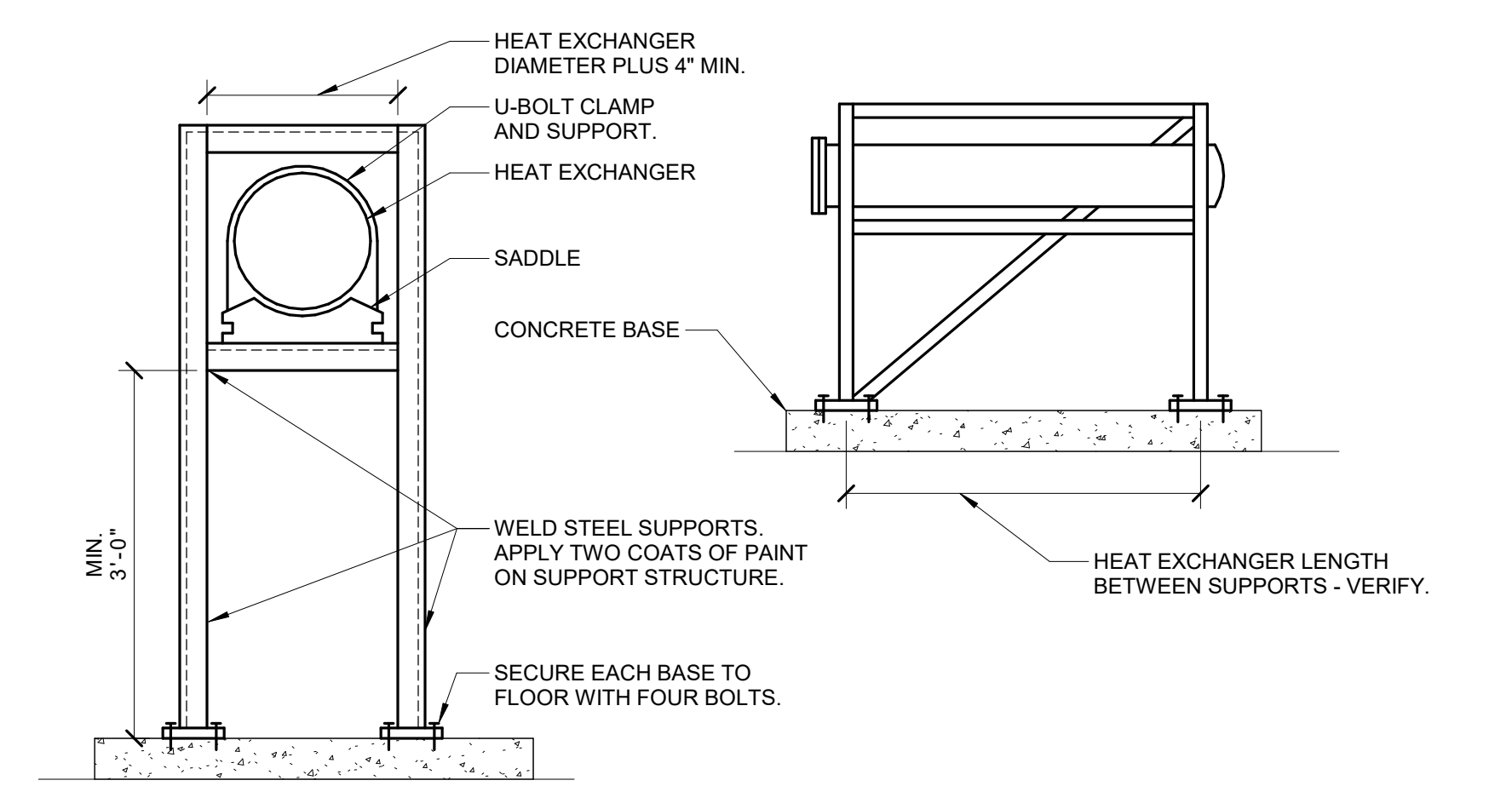


1 PIPE - HANGERS AND SUPPORTS
NO SCALE

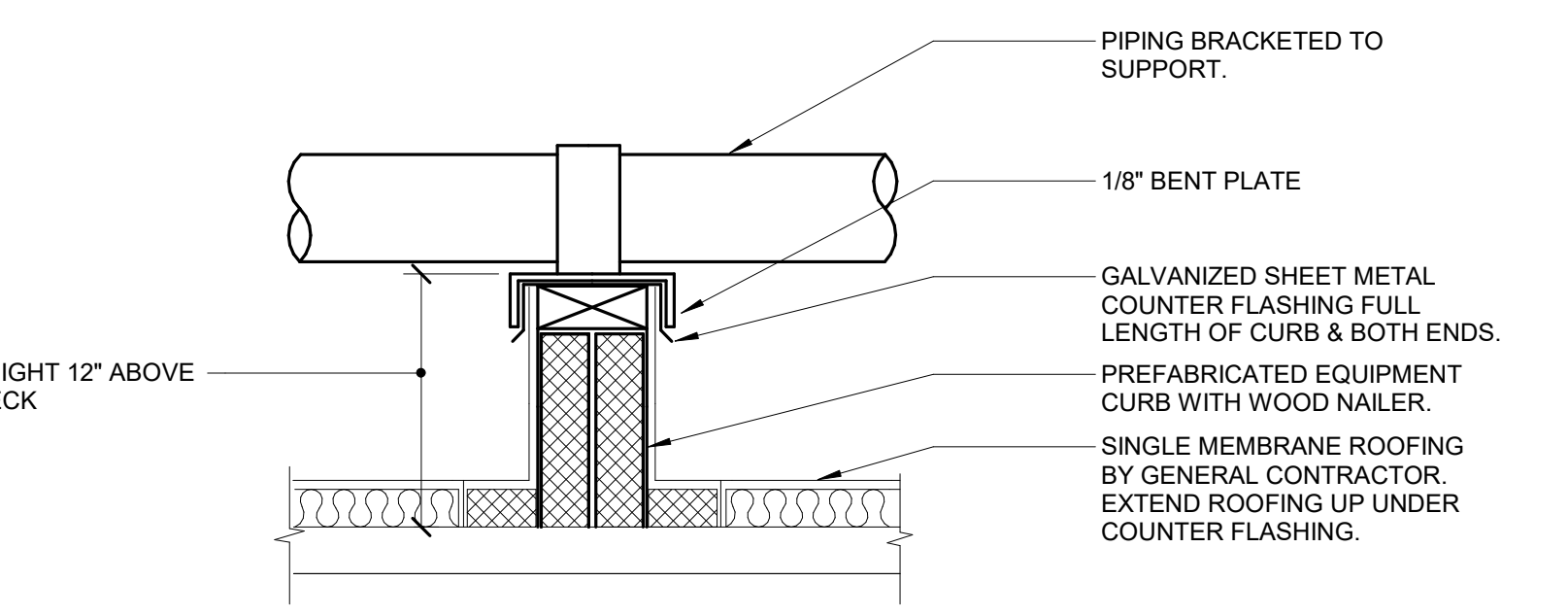
- NOTES:**
1. REFER TO SPECIFICATION SECTION 23 05 29 & SECTION 23 07 19.



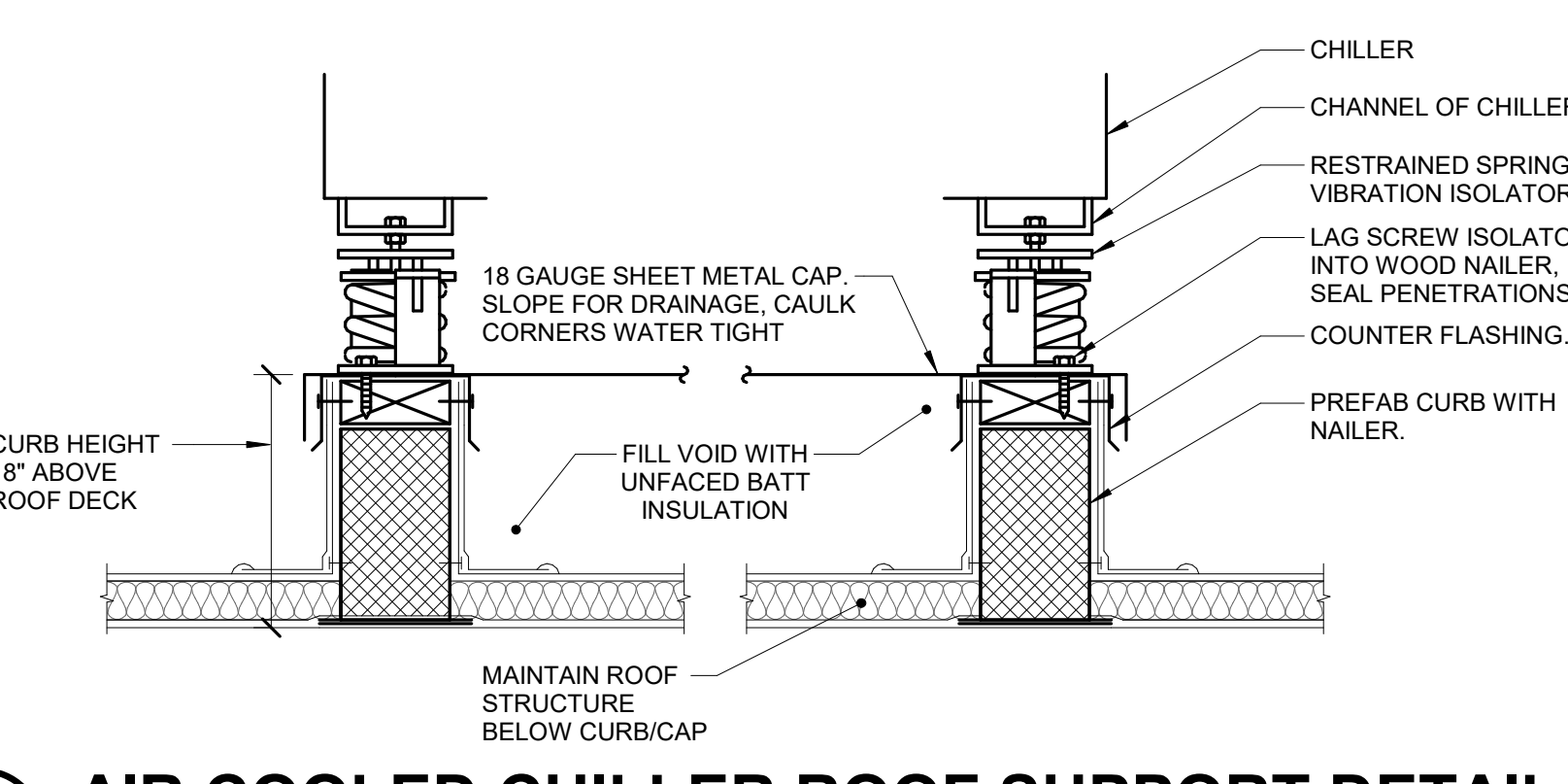
5 INSULATED PIPE HOUSING ROOF PENETRATION DETAIL
NO SCALE



6 HEAT EXCHANGER SUPPORT - FLOOR FRAME
NO SCALE



4 EXTERIOR PIPING ROOF SUPPORT DETAIL
NO SCALE



7 AIR COOLED CHILLER ROOF SUPPORT DETAIL
NO SCALE

- NOTES:**
1. PROVIDE FULL PERIMETER CURB WITH SHEET METAL CAP AND SEAL WATER-TIGHT.

Revisions:	Date:

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ARCHITECT/ENGINEER OF RECORD

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Anderson Engineering of Minnesota, LLC | Proj # 16584

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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: **PIPING DETAILS**

Phase: **BID DOCUMENTS**

Approved:

Project Title: **CONSTRUCT NEW SPS**

Project Number: **438-460**

Building Number: **5**

Location: **Sioux Falls, SD.**

Issue Date: **02/14/2025**

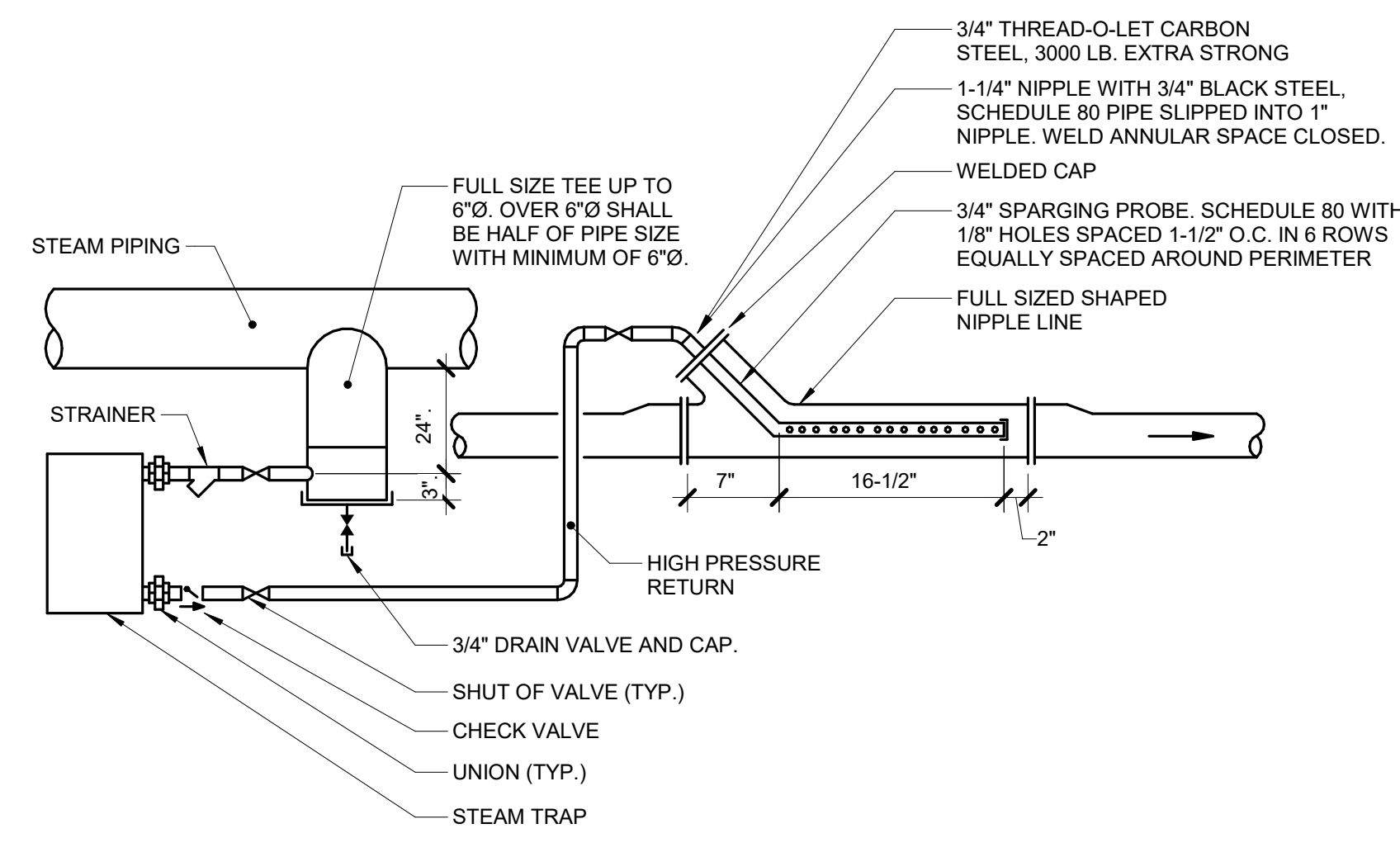
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Drawn: **DELLE**

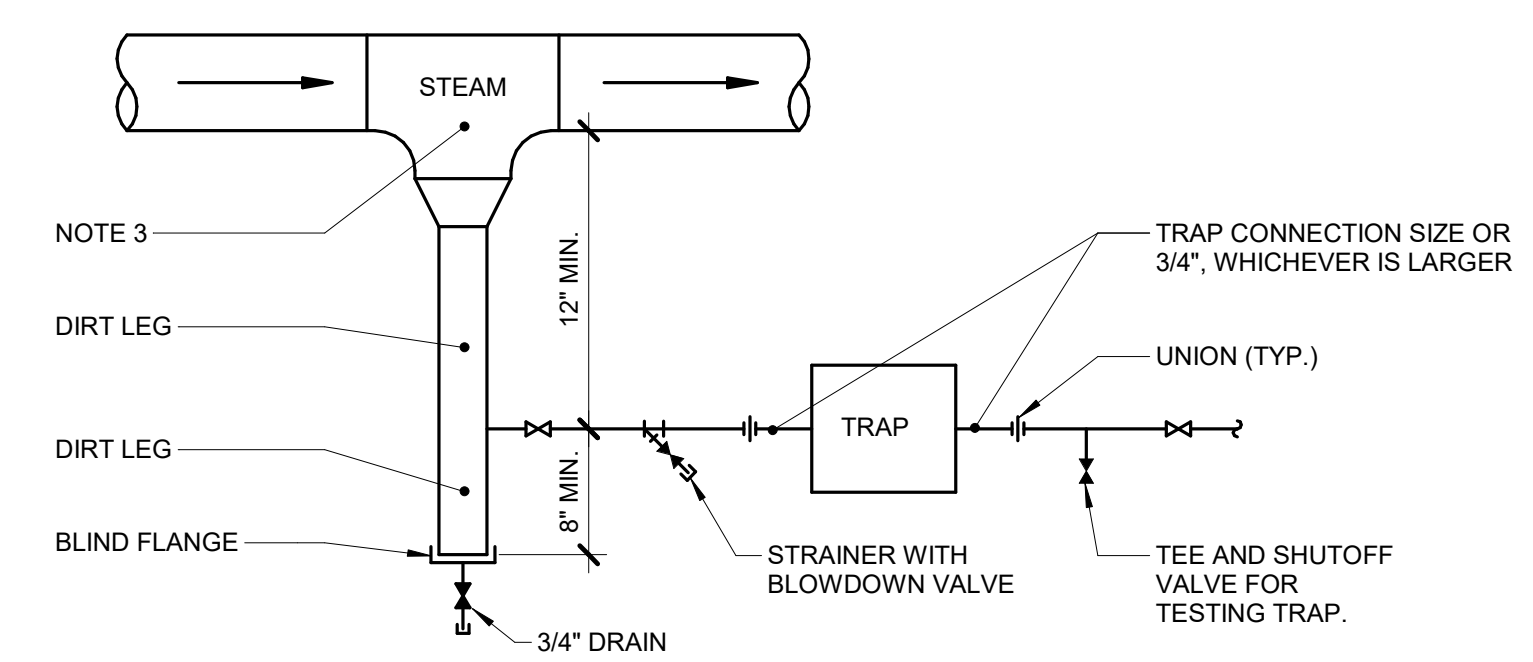
Drawing Number: **MP400**

Phase: **FULLY SPRINKLERED**

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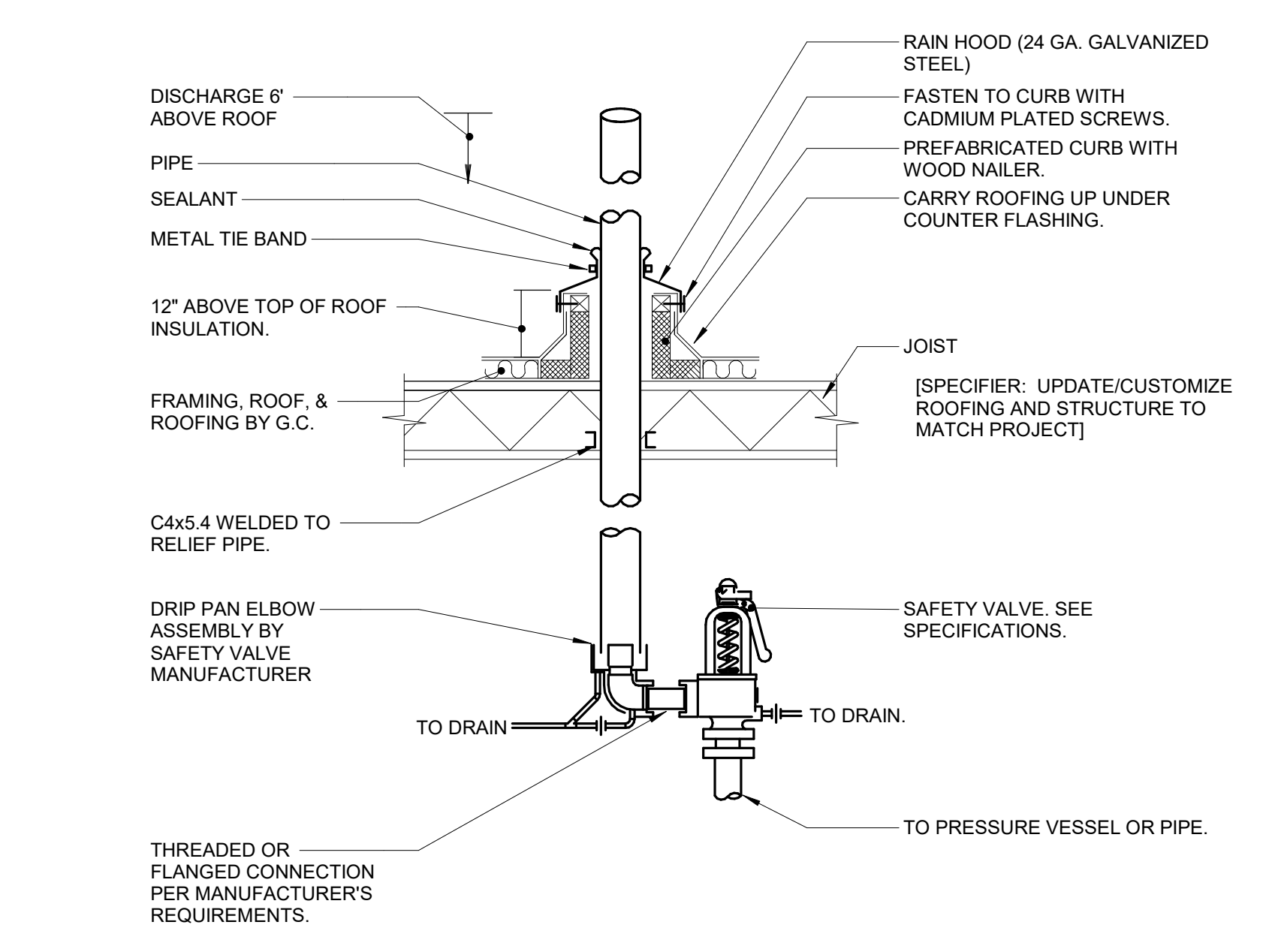


1 HIGH PRESSURE STEAM MAIN DRIP
NO SCALE

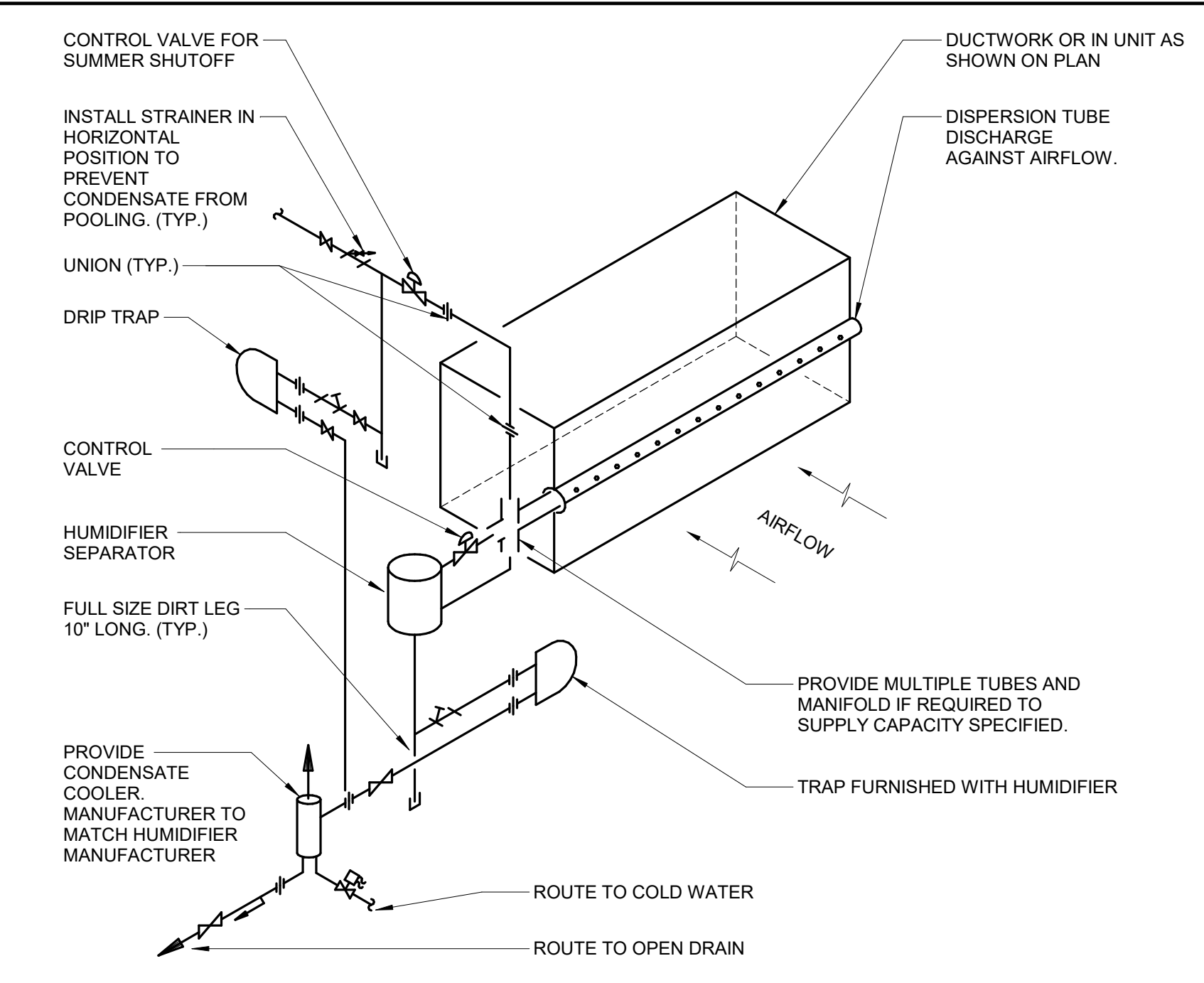


2 STEAM MAIN DRIP CONNECTION
NO SCALE

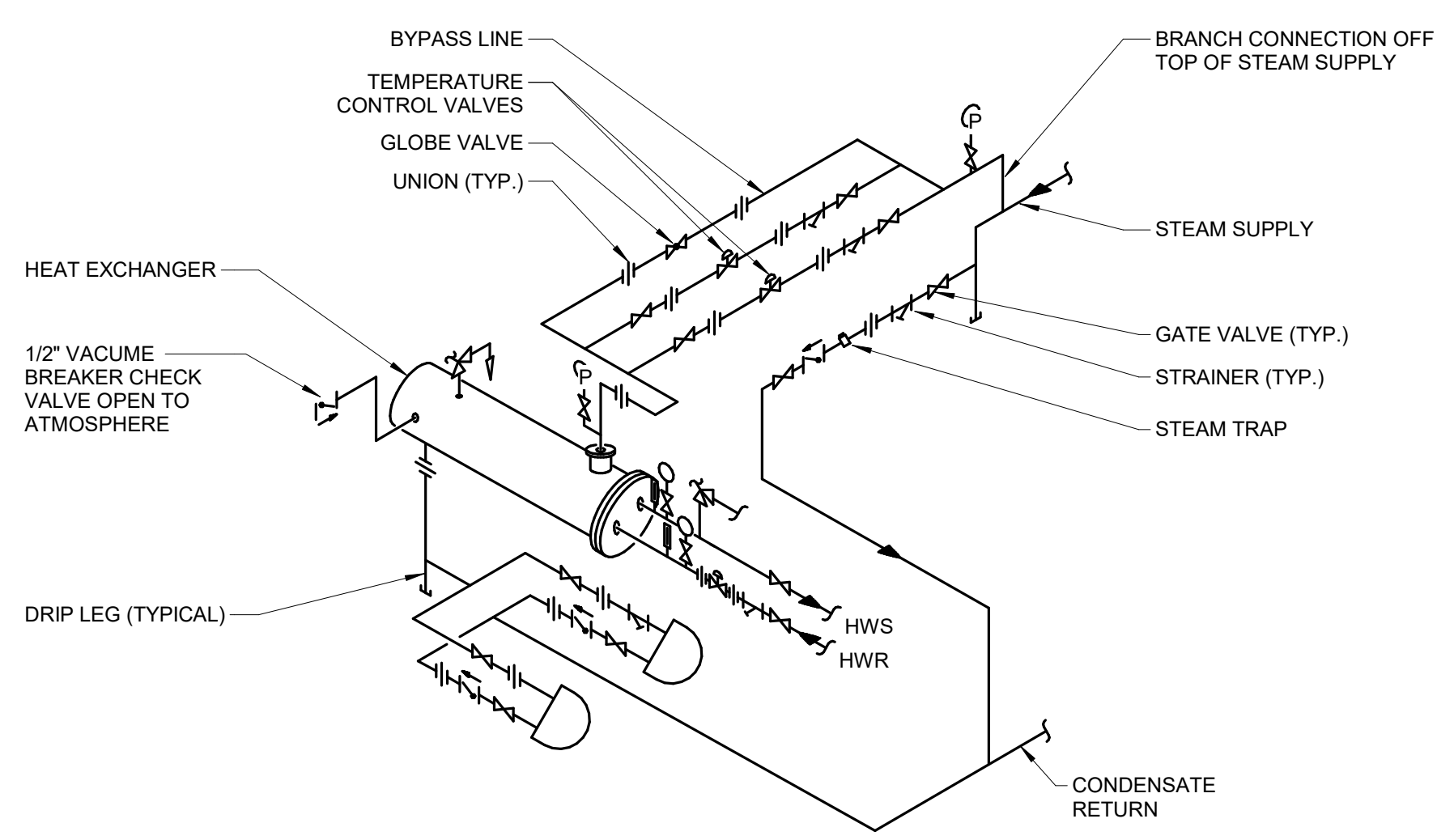
- NOTES:
1. DRIP AND DIRT LEGS SHALL BE AT LEAST TWICE THE DIAMETER OF THE TRAP INLET.
 2. INSTALL LEGS OF STRAINERS IN HORIZONTAL POSITION TO MINIMIZE CONDENSATE HOLDING.
 3. TEE SHALL BE FULL SIZE FOR 4" AND SMALLER MAINS. 4" FOR 5" AND 6" MAINS AND 1/2 OF MAIN DIAMETER FOR LARGER MAINS.
 4. LOCATE DRIP TRAPS AT 300 FOOT MAXIMUM INTERVALS AND UPSTREAM OF ALL EXPANSION DEVICES, BRANCH CONNECTIONS OR CONTROL VALVES.



3 SAFETY VALVE DISCHARGE PIPING DETAIL
NO SCALE

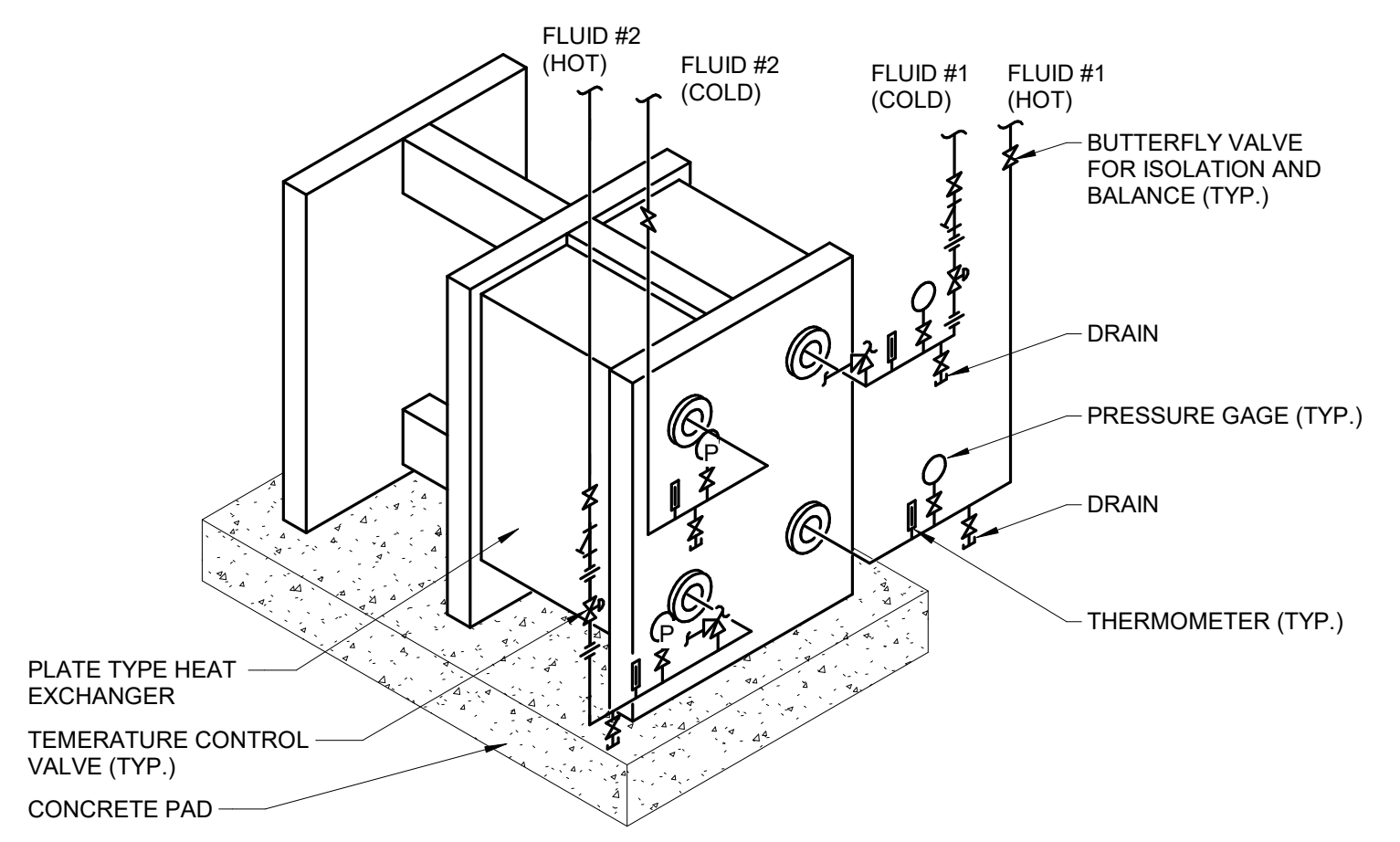


4 DIRECT INJECTION HUMIDIFIER PIPING
NO SCALE



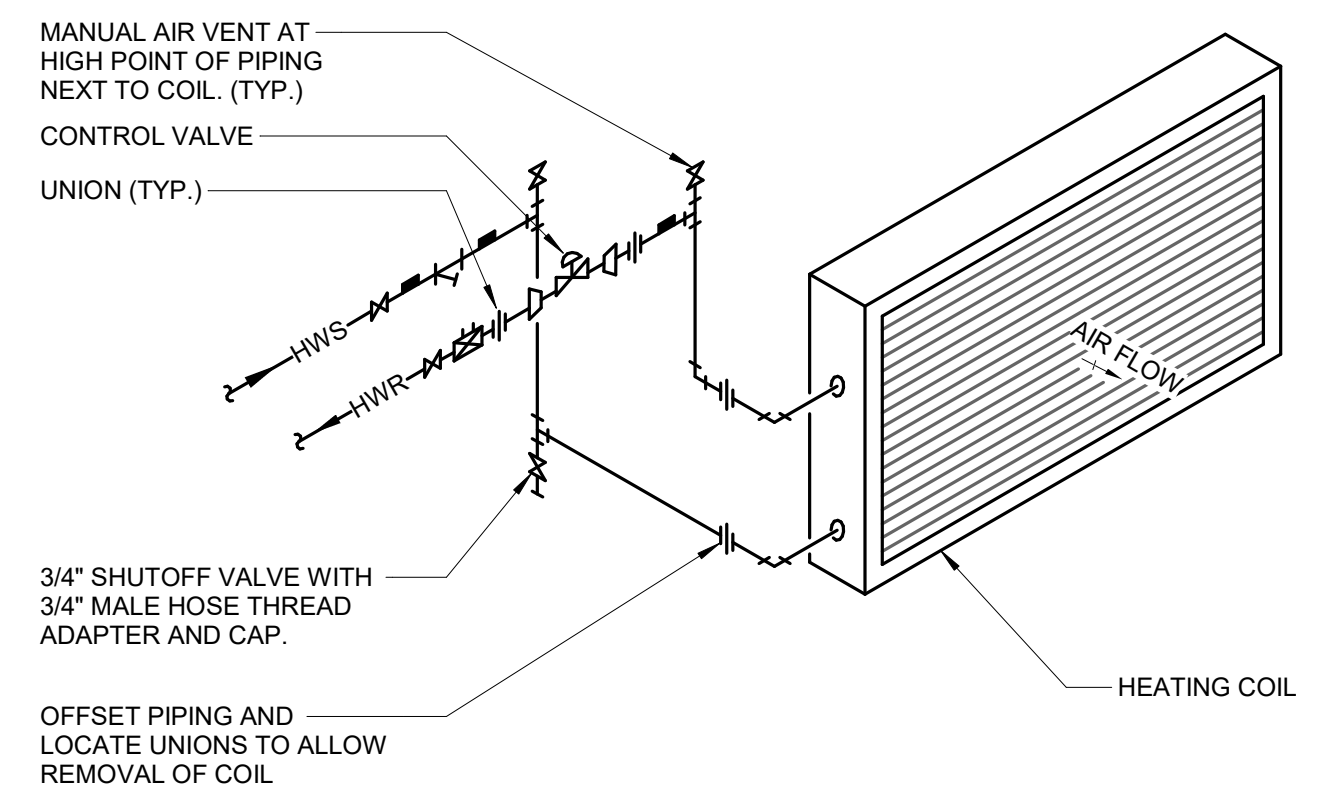
5 SHELL & TUBE HEAT EXCHANGER PIPING DETAIL
NO SCALE

- NOTES:
1. 1/3 - 2/3 VALVES ARE REQUIRED WHEN THE STEAM FLOW IS LARGER THAN THE CAPABILITY OF A 1 1/4" VALVE. AT THE PRESCRIBED PRESSURE DROP.
 2. INSTALL A 1" INLET/OUTLET ASME "U" RELIEF VALVE SET AT 125 PSIG. PIPE TO A FLOOR DRAIN WITH AIR GAP. RELIEF VALVE TO BE ON EXCHANGER SIDE OF SHUT-OFF VALVE.
 3. BALL VALVE IN PIPING 2" AND SMALLER. BUTTERFLY VALVE IN PIPING ABOVE 2" (TYPICAL).
 4. GLOBE VALVE TO BE ONE HALF THE SIZE OF LARGER TEMPERATURE CONTROL VALVE.
 5. LINE SIZE TWO-POSITION MOTORIZED VALVE FOR ISOLATION AND BALANCING.
 6. CONTRACTOR MUST VERIFY NUMBER OF HEAT EXCHANGERS AND APPLY THIS DETAIL TO EACH HEAT EXCHANGER.



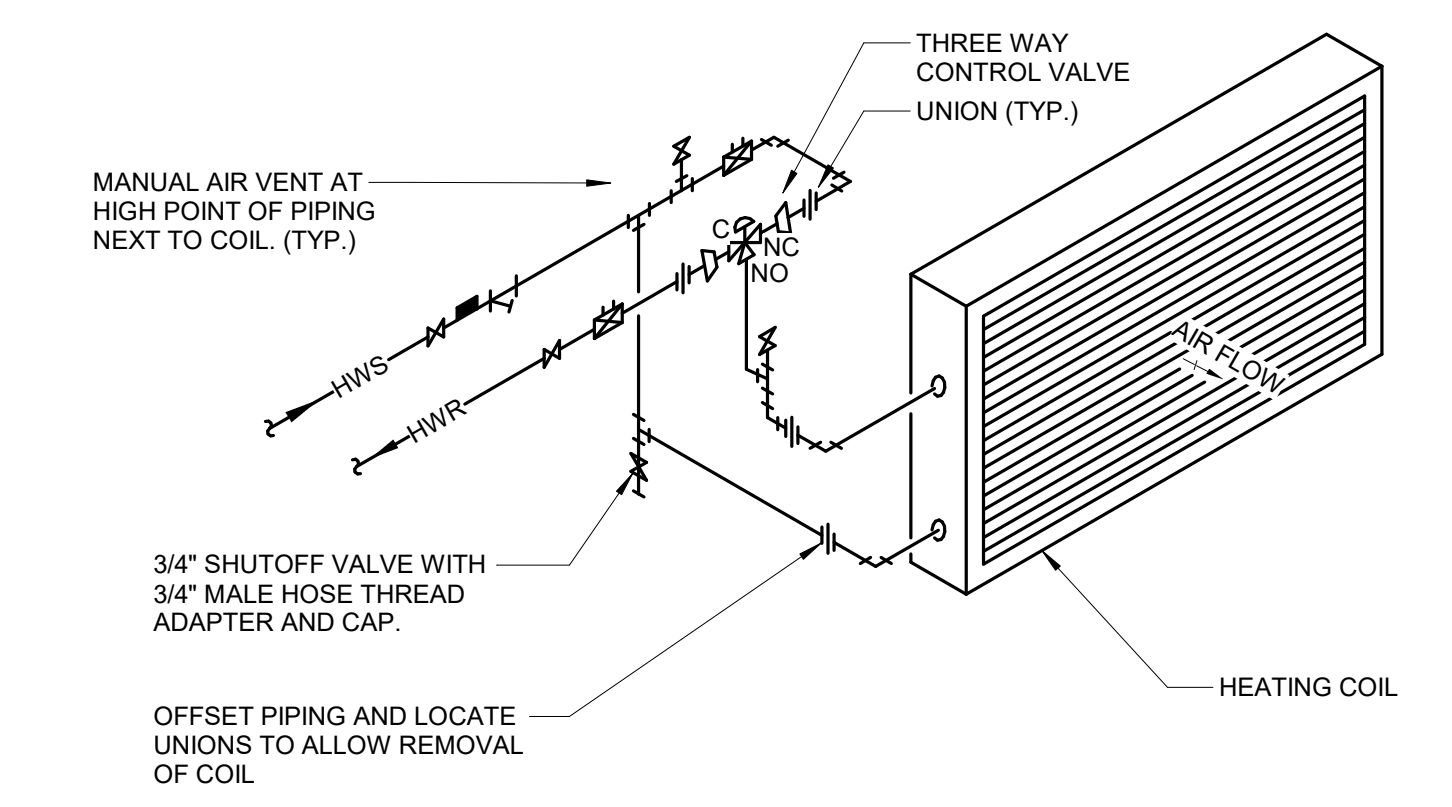
6 PLATE & FRAME HEAT EXCHANGER PIPING DETAIL
NO SCALE

- NOTES:
1. COMBINATION DRAIN/BACKWASH VALVE. LINE SIZE-UP TO MAXIMUM OF 2".
 2. SEE MANUFACTURERS SHOP DRAWINGS FOR EXACT NOZZEL ORIENTATIONS.
 3. INSTALL A 1" INLET/OUTLET ASME "U" RELIEF VALVE SET AT 125 PSIG. PIPE TO A FLOOR DRAIN WITH AIR GAP. RELIEF VALVE TO BE ON EXCHANGER SIDE OF SHUT-OFF VALVE.



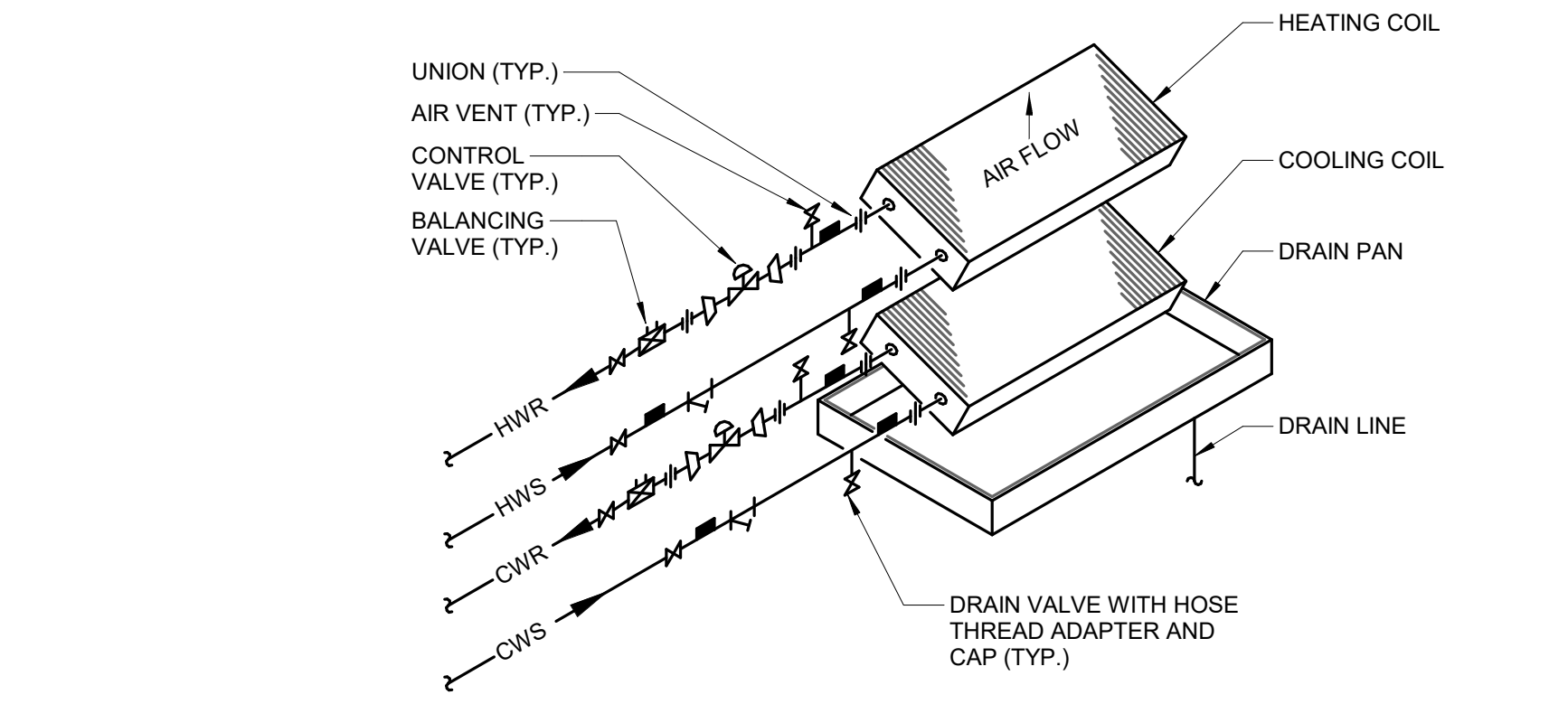
7 HEATING WATER COIL PIPING DIAGRAM W/2-WAY VALVE
NO SCALE

- NOTES:
1. SEE SPECIFICATION SECTION 23 21 00 FOR BALANCE VALVE SIZING REQUIREMENTS.

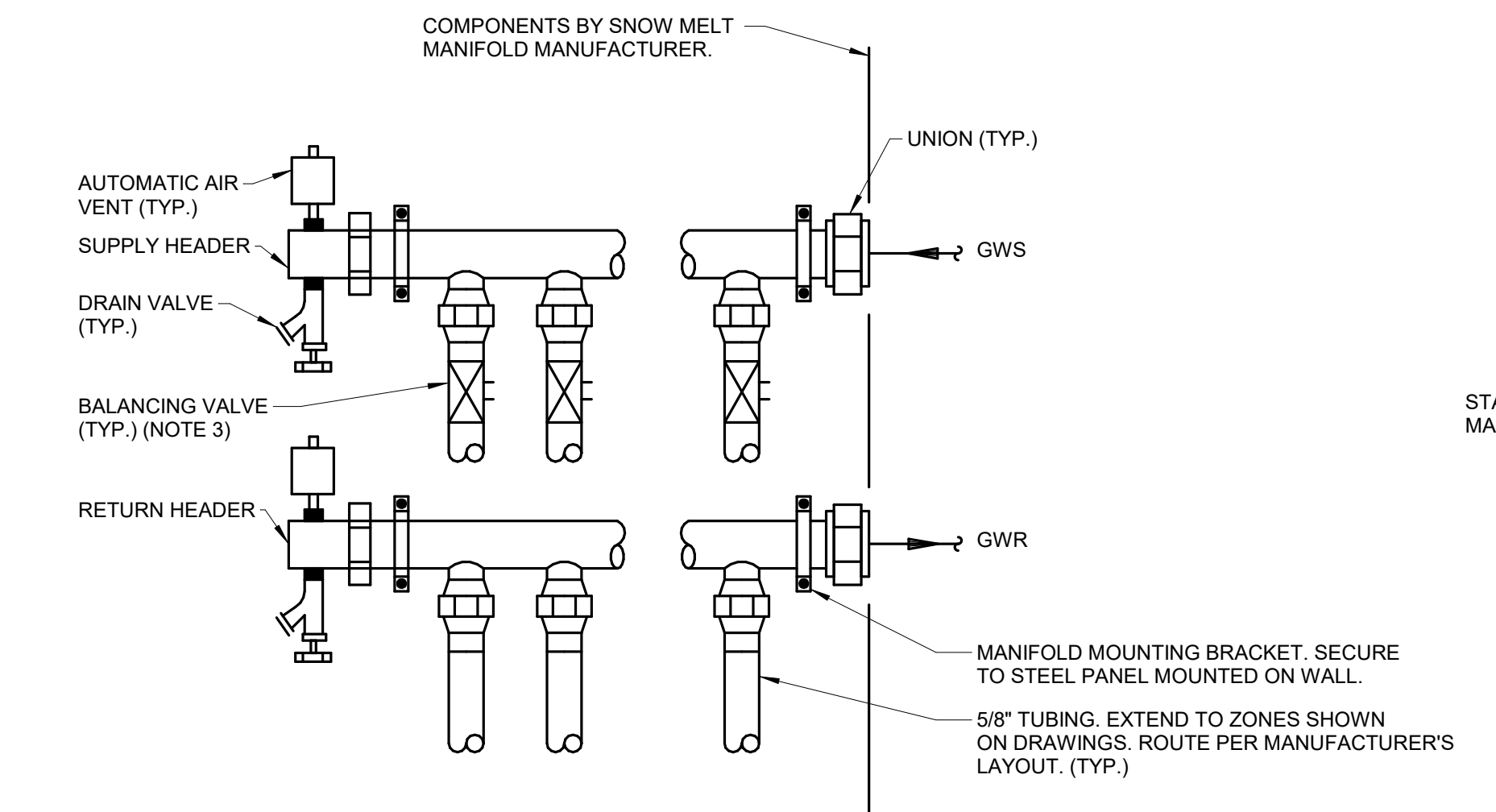


8 HEATING WATER COIL PIPING DIAGRAM W/3-WAY VALVE
NO SCALE

- NOTES:
1. SEE SPECIFICATION SECTION 23 21 00 - HYDRONIC PIPING FOR BALANCE VALVE SIZING REQUIREMENTS.

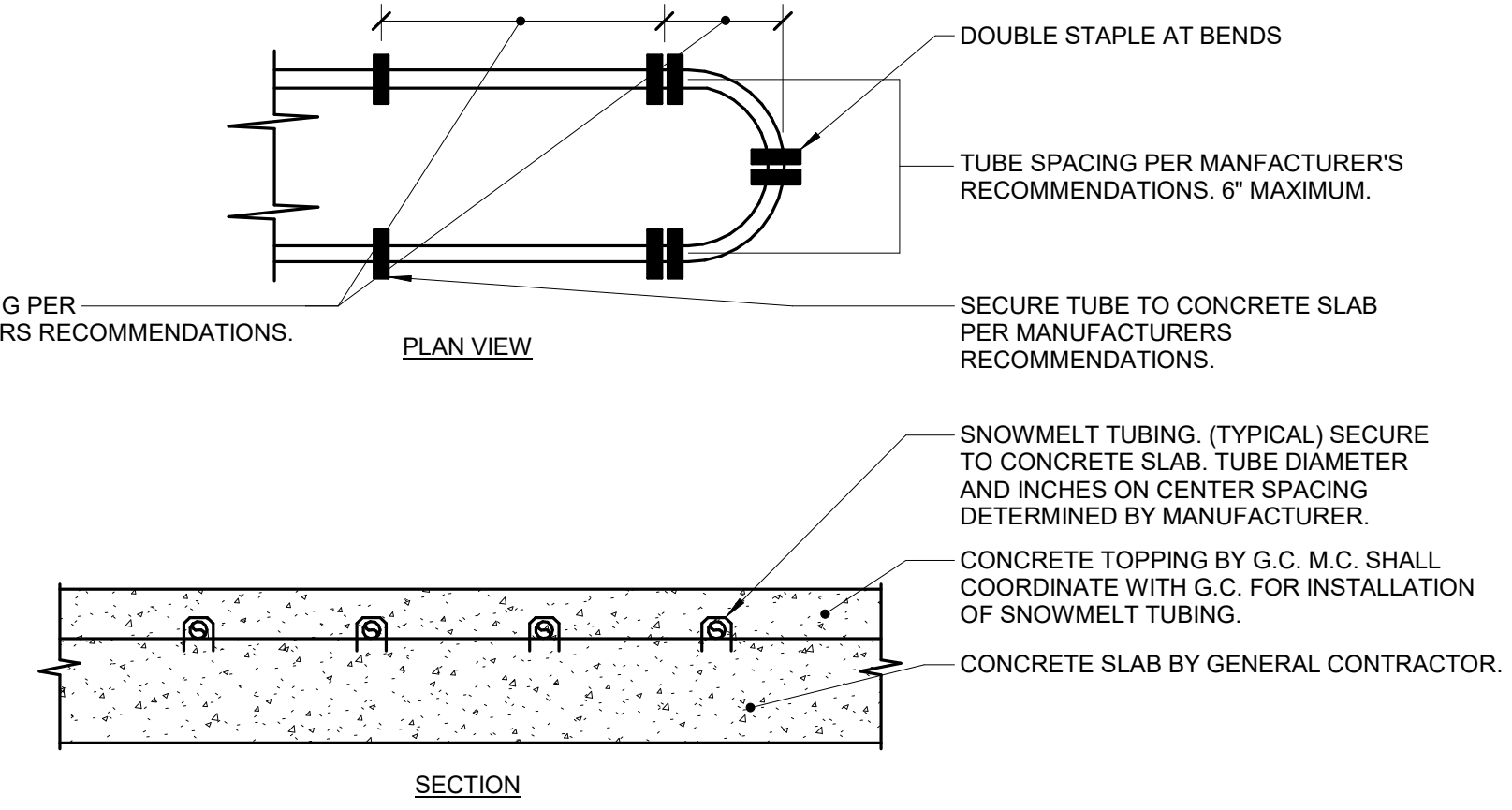


9 FAN COIL UNIT - 4-PIPE PIPING DIAGRAM
NO SCALE

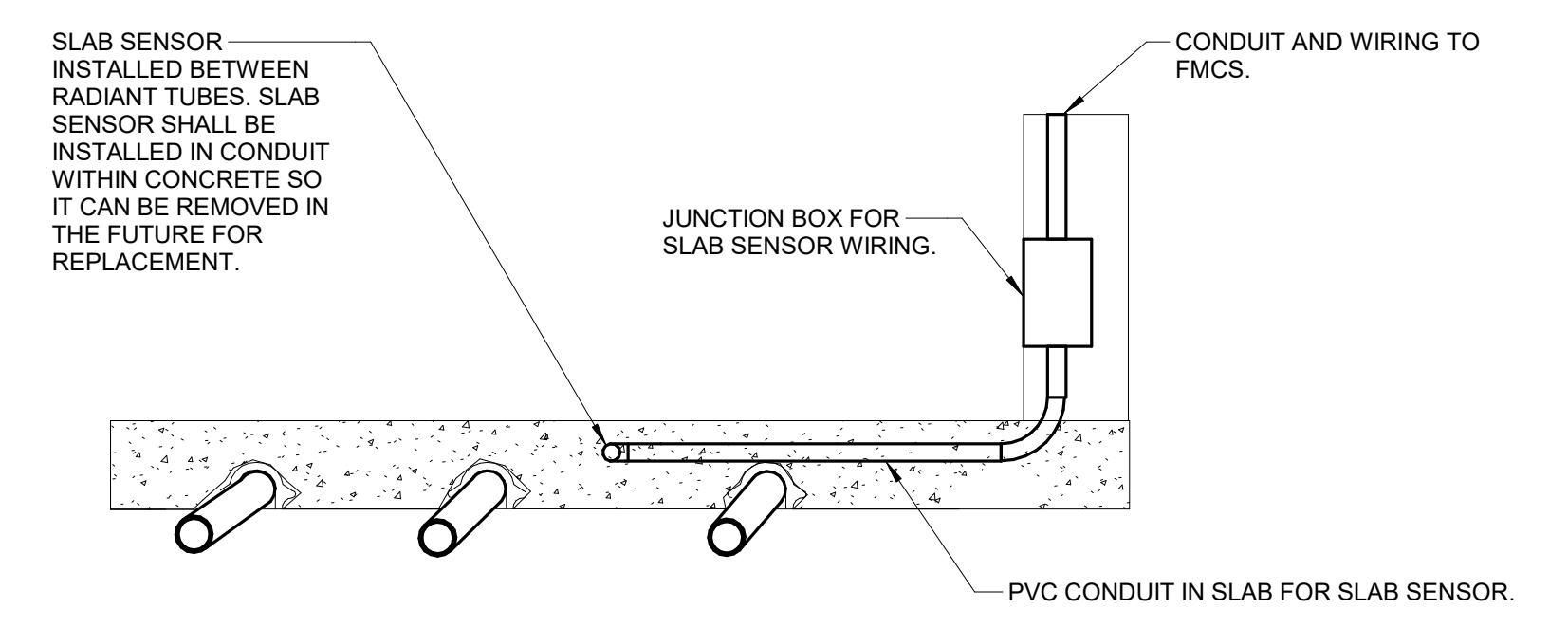


10 SNOW MELT MANIFOLD PIPING DETAIL
NO SCALE

- NOTES:
1. VERIFY MANIFOLD PIPING REQUIREMENTS WITH MANUFACTURER.
 2. TYPICAL FOR EACH MANIFOLD. VERIFY NUMBER OF MANIFOLDS REQUIRED WITH MANUFACTURER.
 3. BALANCING VALVE NOT REQUIRED IF SYSTEM IS SELF BALANCING. FOLLOW MANUFACTURER'S RECOMMENDATIONS.



11 SNOW MELT TUBING DETAIL
NO SCALE



12 RADIANT SLAB SENSOR DETAIL
NO SCALE

- NOTES:
1. INSTALLATION SHALL COMPLY WITH RADIANT MANUFACTURER'S INSTALLATION REQUIREMENTS.
 2. REFER TO 23 09 00 SPECIFICATIONS FOR CONDUIT TYPE ABOVE SLAB.
 3. ONE TEMPERATURE SENSOR REQUIRED PER MANIFOLD/ZONE TO CONTROL TEMPERATURE LIMITS OF CONCRETE. REFER TO CONTROL DIAGRAMS FOR ADDITIONAL INFORMATION (TO BE ISSUED IN TI PACKAGE).

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Revisions:	Date:

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Anderson Engineering of Minnesota, LLC | Proj # 16684

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PROFESSIONAL ENGINEER
DELAN J. LLEWELLYN
27052
IOWA

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

Drawing Title
PIPING DETAILS

Approved:

Phase
BID DOCUMENTS

FULLY SPRINKLERED

Project Title
CONSTRUCT NEW SPS

Location
Sioux Falls, SD.

Issue Date
02/14/2025

Checked
DAVING

Drawn
DELLE

Project Number
438-460

Building Number
5

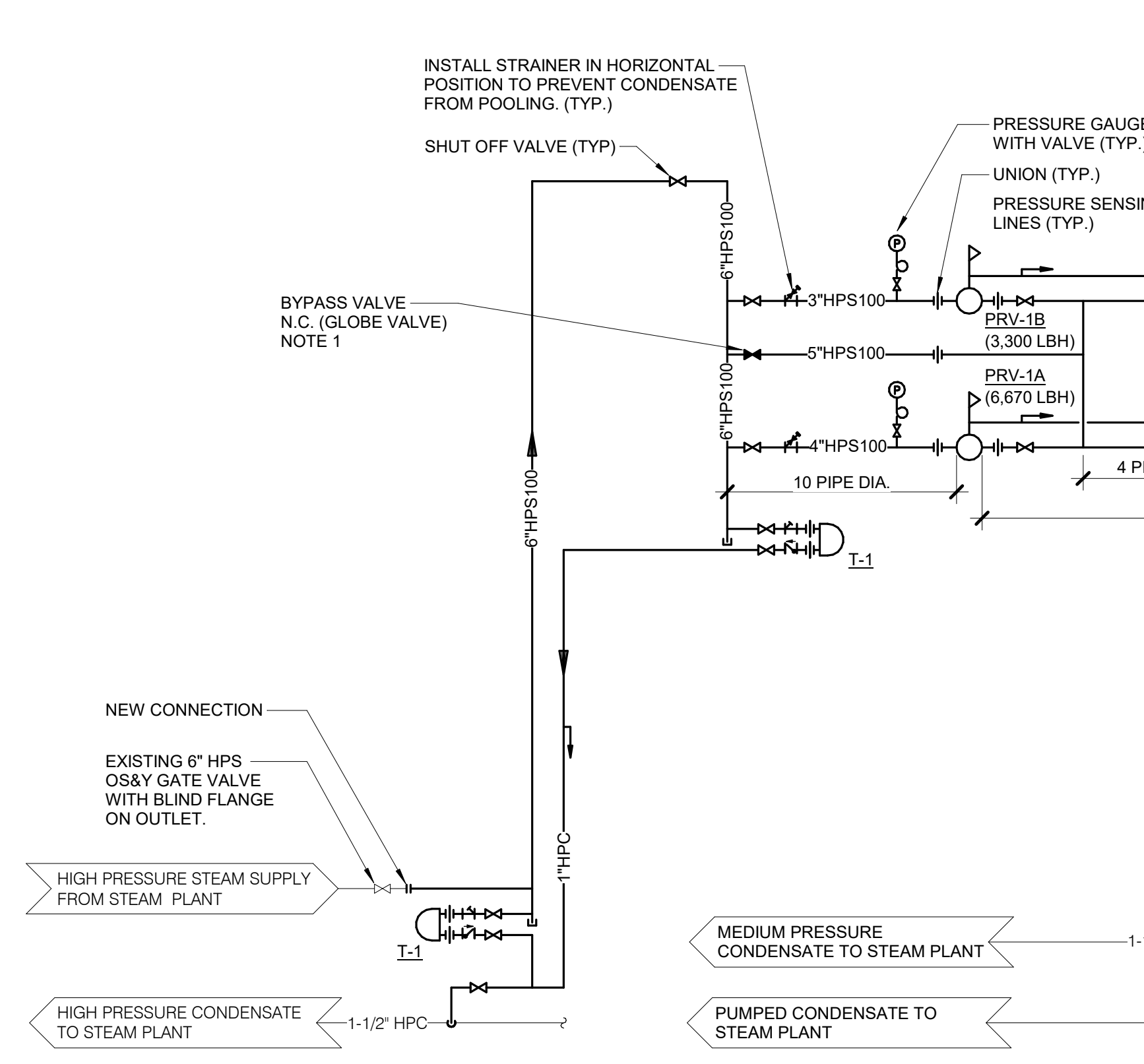
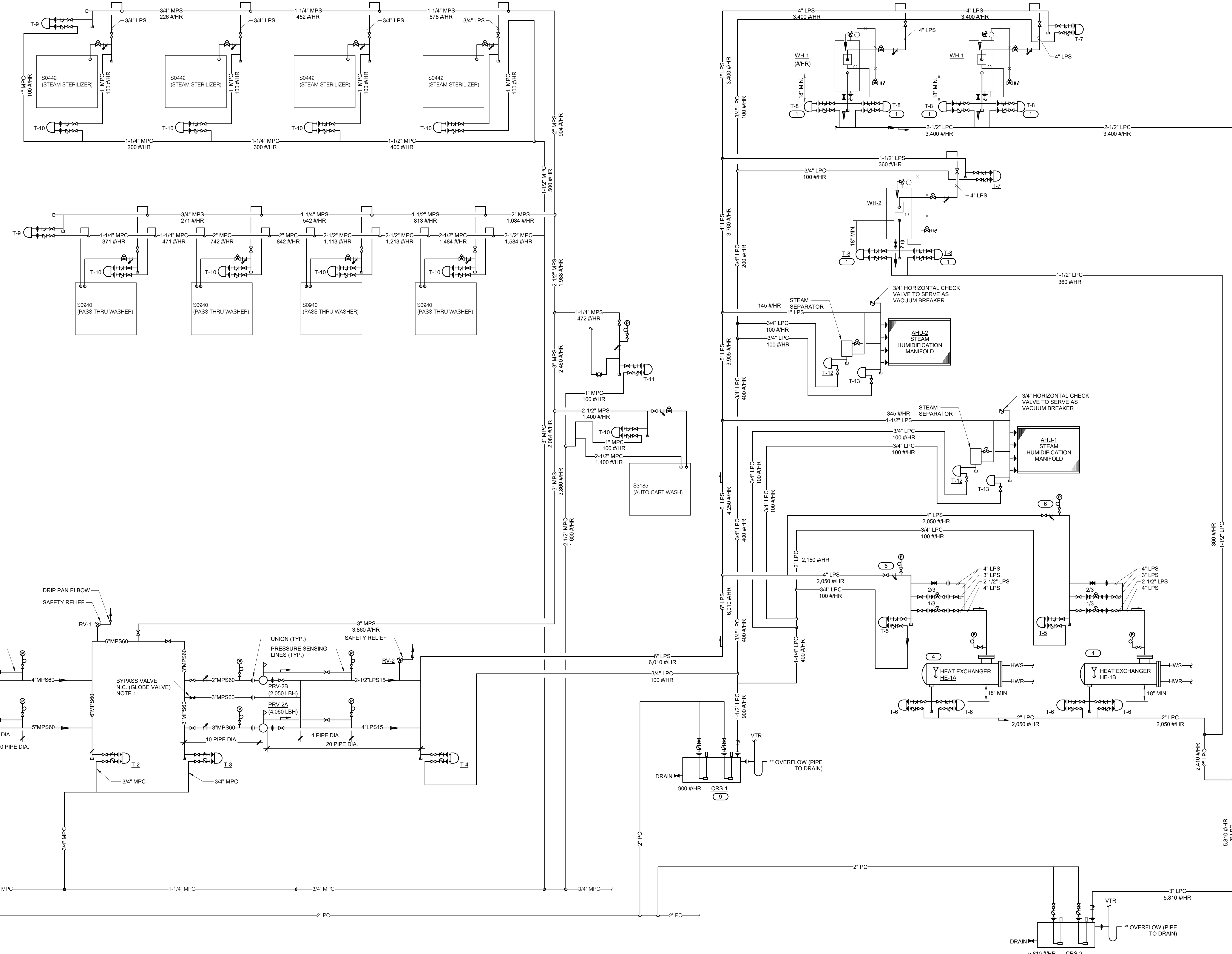
Drawing Number
MP401

GENERAL NOTES:

1. MAKE ALL TAPS FOR STEAM DISTRIBUTION PIPING FROM TOP (OR WITHIN 45°) OF PIPE.
2. PITCH ALL STEAM AND CONDENSATE LINES 1" PER 40'-0" MINIMUM IN THE DIRECTION OF FLOW.
3. ON STEAM PIPING INSTALL STRAINERS ON HORIZONTAL PIPES WITH STRAINER WYE AT SIDE OF PIPE, NOT BOTTOM. BLOW DOWN CONNECTION SHALL BE AT LOWEST POINT OF STRAINER SCREEN (FLANGED STRAINER). FOR LARGE STRAINERS OR WHERE THE STRAINER WYE IS NOT HORIZONTAL THE BLOWDOWN SHOULD HAVE STEAM TRAP TO REMOVE ACCUMULATING CONDENSATE.

KEYNOTES:

1. F&T TRAPS TO BE FURNISHED LOOSE BY WATER HEATER MANUFACTURER AND INSTALLED BY M.C.



1 STEAM FLOW DIAGRAM

NO SCALE
 NOTES:
 1. CV OF BYPASS VALVE SHALL NOT BE GREATER THAN CV OF LARGEST PRV.
 2. PRVS ARE DESIGNED TO REDUCE 1/3 AND 2/3 OF THE TOTAL STEAM LOAD. THE 2/3 PRV SHALL BE SET 2-3 PSI BELOW THE 1/3 CAPACITY PRV.

Revisions:	Date:

CONSULTANT

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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title
 STEAM FLOW DIAGRAM

Approved: _____

Phase
 BID DOCUMENTS

FULLY SPRINKLERED

Project Title
 CONSTRUCT NEW SPS

Project Number
 438-460

Building Number
 5

Drawing Number
 MP500

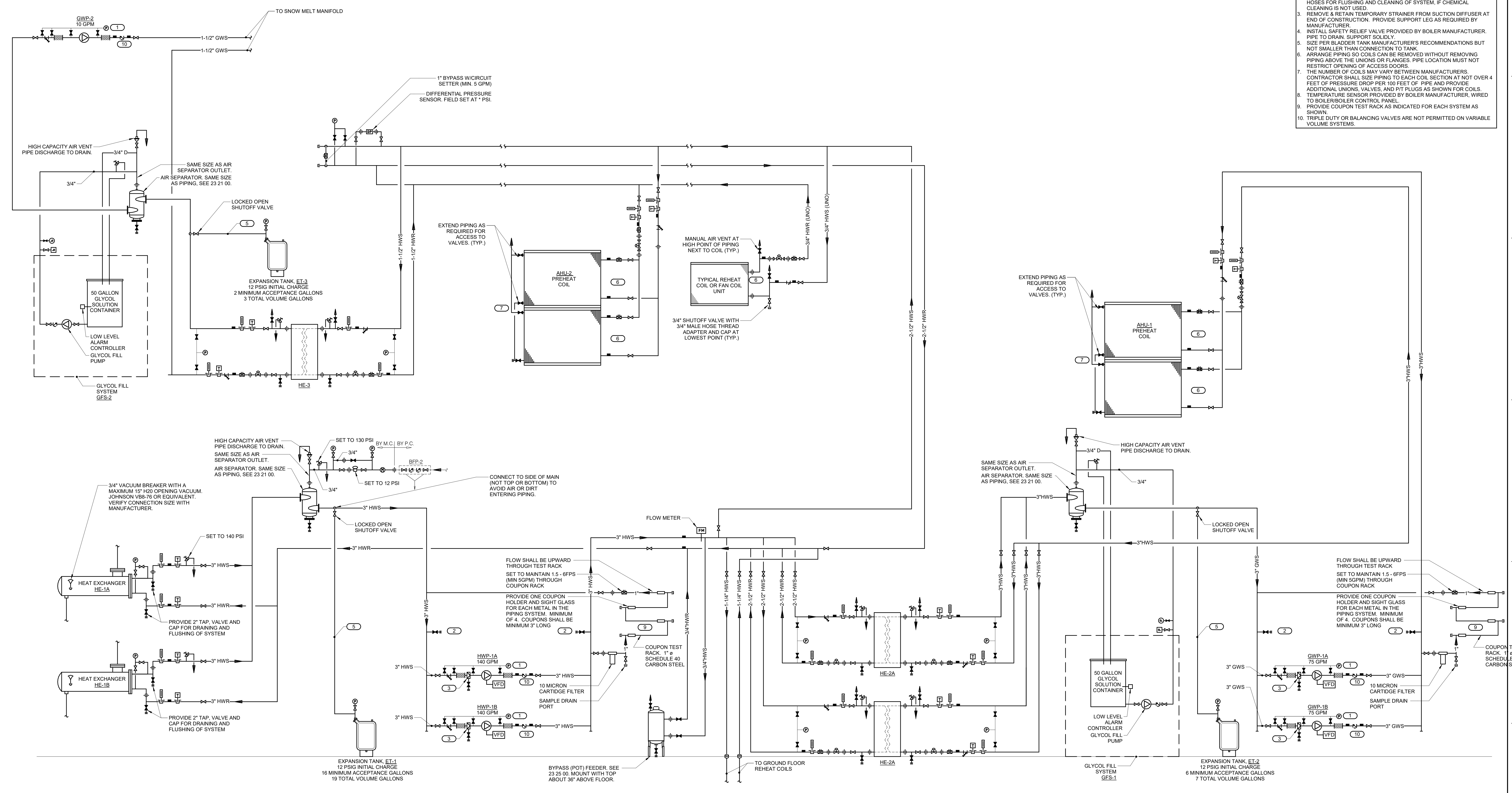
Location
 Sioux Falls, SD.

Issue Date
 02/14/2025

Checked
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Drawn
 DELLE

- KEYNOTES: (#)**
- PRESSURE GAUGE WITH SNUBBER PER SECTION 23 09 13. INSTALL WITH MOUNTING ON WALL, STAND, OR VIBRATION-FREE PIPE ABOVE PUMP FLEXIBLE CONNECTOR. INSTALL FLEXIBLE COPPER TUBING TO PIPING CONNECTIONS TO AVOID VIBRATION DAMAGE TO THE GAUGE. PREFERRED CONNECTION LOCATIONS ARE: (a) JUST UPSTREAM OF STRAINER, (b) GAUGE PORT ON SUCTION DIFFUSER OR BETWEEN STRAINER AND PUMP INLET (c) GAUGE TAPPING ON PUMP INLET FLANGE, (d) GAUGE TAPPING ON PUMP OUTLET FLANGE.
 - PROVIDE 2 1/2" OR LARGER CONNECTIONS FOR CONNECTION OF FIRE HOSES FOR FLUSHING AND CLEANING OF SYSTEM, IF CHEMICAL CLEANING IS NOT USED.
 - REMOVE & RETAIN TEMPORARY STRAINER FROM SUCTION DIFFUSER AT END OF CONSTRUCTION. PROVIDE SUPPORT LEGS AS REQUIRED BY MANUFACTURER.
 - INSTALL SAFETY RELIEF VALVE PROVIDED BY BOILER MANUFACTURER. PIPE TO DRAIN, SUPPORT SOLIDLY.
 - SIZE PER BLADDER TANK MANUFACTURER'S RECOMMENDATIONS BUT NOT SMALLER THAN CONNECTION TO TANK.
 - ARRANGE PIPING SO COILS CAN BE REMOVED WITHOUT REMOVING PIPING ABOVE THE UNIONS OR FLANGES. PIPE LOCATION MUST NOT RESTRICT OPENING OF ACCESS DOORS.
 - THE NUMBER OF COILS MAY VARY BETWEEN MANUFACTURERS. CONTRACTOR SHALL SIZE PIPING TO EACH COIL SECTION AT NOT OVER 4 FEET OF PRESSURE DROP PER 100 FEET OF PIPE AND PROVIDE ADDITIONAL UNIONS, VALVES, AND FIT FLUGS AS SHOWN FOR COILS.
 - TEMPERATURE SENSOR PROVIDED BY BOILER MANUFACTURER, WIRED TO BOILER/BOILER CONTROL PANEL.
 - PROVIDE COUPON TEST RACK AS INDICATED FOR EACH SYSTEM AS SHOWN.
 - TRIPLE DUTY OR BALANCING VALVES ARE NOT PERMITTED ON VARIABLE VOLUME SYSTEMS.



1 HEATING WATER FLOW DIAGRAM - HEAT EXCHANGER VARIABLE/PRIMARY
NO SCALE

Revisions:	Date:

CONSULTANT

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PROJECT # 19004249.04

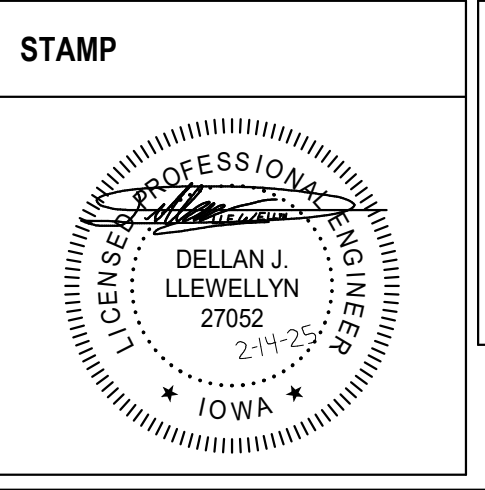
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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title
HEATING WATER FLOW DIAGRAM

Approved:

Phase
BID DOCUMENTS

FULLY SPRINKLERED

Project Title
CONSTRUCT NEW SPS

Location
Sioux Falls, SD.

Issue Date
02/14/2025

Checked
DAVING

Drawn
DELLE

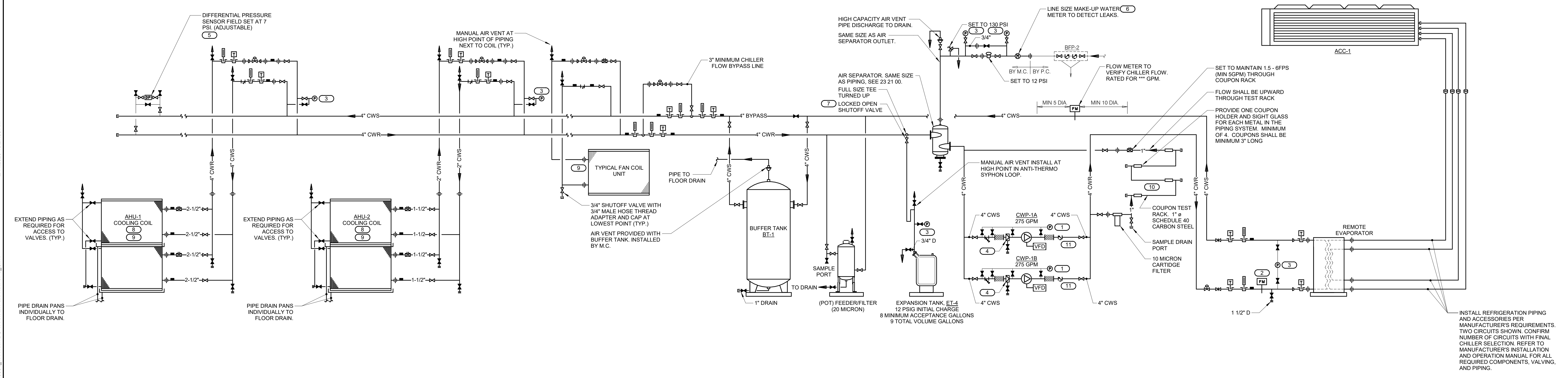
Project Number
438-460

Building Number
5

Drawing Number
MP501

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- KEYNOTES: (#)**
- PRESSURE GAUGE WITH SNUBBER PER SPECIFICATIONS. MOUNT ON WALL, STAND, OR VIBRATION-FREE PIPE BRACKET ABOVE PUMP. INSTALL FLEXIBLE COPPER TUBING TO PIPING CONNECTIONS TO AVOID VIBRATION DAMAGE TO THE GAUGE. GAUGE SHALL BE GLYCERIN FILLED. PREFERRED CONNECTION LOCATIONS ARE: (a) JUST UPSTREAM OF STRAINER, (b) GAUGE PORT ON SUCTION DIFFUSER OR BETWEEN STRAINER & PUMP INLET, (c) GAUGE TAPPING ON PUMP INLET FLANGE, (d) GAUGE TAPPING ON PUMP OUTLET FLANGE.
 - DIFFERENTIAL PRESSURE FLOW SWITCH FURNISHED BY CHILLER MANUFACTURER. FIELD INSTALLED.
 - PRESSURE GAUGES SHALL BE GLYCERIN FILLED.
 - REMOVE & RETAIN TEMPORARY STRAINER FROM SUCTION DIFFUSER AT END OF CONSTRUCTION. PROVIDE SUPPORT LEG AS REQUIRED BY MANUFACTURER.
 - DIFFERENTIAL PRESSURE SENSOR USED TO CONTROL VFD'S. PIPE PER MANUFACTURER'S RECOMMENDATIONS. VERIFY FINAL LOCATION WITH ENGINEER.
 - CHILLED WATER MAKE-UP WATER METER, MONITORED BY BUILDING AUTOMATION SYSTEM.
 - PROVIDE SIGN "DO NOT SHUT DURING SYSTEM OPERATION".
 - THE NUMBER OF COILS MAY VARY BETWEEN MANUFACTURERS. CONTRACTOR SHALL SIZE PIPING TO EACH COIL SECTION AT NOT OVER 4 FEET OF PRESSURE DROP PER 100 FEET OF PIPE AND PROVIDE ADDITIONAL UNIONS, VALVES, AND P/T PLUGS AS SHOWN FOR COILS.
 - ARRANGE PIPING SO COILS CAN BE REMOVED WITHOUT REMOVING PIPING ABOVE THE UNIONS OR FLANGES. PIPE LOCATION MUST NOT RESTRICT OPENING OF ACCESS DOORS.
 - PROVIDE COUPON TEST RACK AS INDICATED FOR EACH SYSTEM AS SHOWN.
 - TRIPLE DUTY OR BALANCING VALVES ARE NOT PERMITTED ON VARIABLE FLOW SYSTEMS. USE VENTURI FOR PUMP FLOW TESTING.



1 AIR COOLED CHILLER FLOW DIAGRAM - VARIABLE PRIMARY
NO SCALE

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Revisions:	Date:

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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title
CHILLED WATER FLOW DIAGRAM

Approved:

Phase
BID DOCUMENTS

FULLY SPRINKLERED

Project Title
CONSTRUCT NEW SPS

Location
Sioux Falls, SD.

Issue Date
02/14/2025

Checked
DAVING

Drawn
DELLE

Project Number
438-460

Building Number
5

Drawing Number
MP502

RELIEF VALVE SCHEDULE

Table with columns: TAG NAME, SERVICE, CAPACITY LB/HR, SET POINT PSIG, INLET SIZE (IN.), OUTLET SIZE (IN.), ORIFICE (IN.), MANUFACTURER, MODEL, NOTES. Includes entries for RV-1 and RV-2.

PRESSURE REDUCING VALVE SCHEDULE

Table with columns: TAG NAME, SERVICE, LB/HR, INLET PRESSURE PSI, OUTLET PRESSURE PSI, VALVE SIZE, MANUFACTURER, MODEL, NOTES. Includes entries for PRV-1A, PRV-1B, PRV-2A, and PRV-2B.

HEAT EXCHANGER SCHEDULE - STEAM TO WATER

Table with columns: TAG NAME, SERVICE, GPM, W.P.D. FT. HEAD, EWT °F, LWT °F, STEAM (NOTE 1) PSIG, LB/HR, HEATING SURFACE FT², FOULING FACTOR, MAX. DIMENSIONS LENGTH, DIAMETER, DRY, MANUFACTURER, MODEL, NOTES. Includes entries for HE-1A and HE-1B.

HEAT EXCHANGER SCHEDULE - PLATE AND FRAME

Table with columns: TAG NAME, SERVICE, GPM, W.P.D. FT. HEAD, EWT °F, LWT °F, HOT SIDE, COLD SIDE, HEATING SURFACE FT², HEIGHT, WIDTH, # OF PLATES, MANUFACTURER, MODEL, NOTES. Includes entries for HE-2A, HE-2B, and HE-3.

CONDENSATE RETURN STATION SCHEDULE

Table with columns: TAG NAME, SERVICE, CONFIGURATION, LB/HR (NOTE 1), CONDENSATE TEMPERATURE °F, GPM TOTAL, RECEIVER CAPACITY GALLONS, DISCHARGE PRESSURE (PSI), NO. OF PUMPS, HP, EA, NO. OF POWER CONNECTIONS, VOLTAGE, PHASES, DISCONNECT BY TYPE, CONTROLLER/STARTER BY TYPE, SCRR, MANUFACTURER, MODEL, NOTES. Includes entries for CRS-1 and CRS-2.

AIR COOLED CHILLER SCHEDULE

Table with columns: TAG NAME, SERVICE, REFRIGERANT, DESIGN TONS, STAGES OF UNLOADING, CAPACITY PERFORMANCE, MIN. EER AT % LOAD, EVAPORATOR PERFORMANCE, MAX. PRESSURE DROP, FOULING FACTOR, NUMBER OF COMPRESSORS, COMPRESSOR TYPE, NO. OF POWER CONNECTIONS, VOLTAGE, PHASES, MCA, MOCP, DISCONNECT BY TYPE, CONTROLLER/STARTER BY TYPE, SCRR, LENGTH, WIDTH, HEIGHT, DRY OPERATING TYPE, DEFLECT, MANUFACTURER, MODEL, NOTES. Includes entry for ACC-1.

GLYCOL FEED SYSTEM

Table with columns: TAG NAME, SERVICE, TANK VOLUME, PUMP HEAD PSI, MHP, VOLTAGE, PHASES, DISCONNECT BY TYPE, CONTROLLER/STARTER BY TYPE, MANUFACTURER, MODEL, NOTES. Includes entries for GFS-1 and GFS-2.

PUMP SCHEDULE

Table with columns: TAG NAME, SERVICE, GPM, PUMP FT. HEAD AT DESIGN, MINIMUM EFFICIENCY, INLET SIZE, IMPELLER SIZE, BHP (NOTE E), HP (NOTE E), RPM, VOLTAGE, PHASES, DISCONNECT BY TYPE, CONTROLLER/STARTER BY TYPE, LENGTH, WIDTH, HEIGHT, WEIGHT, TYPE, DEFLECT, MANUFACTURER, MODEL, NOTES. Includes entries for CWP-1A, CWP-1B, GWP-1A, GWP-1B, GWP-2, HWP-1A, and HWP-1B.

PIPE INSULATION SCHEDULE (HYDRONIC)

Table with columns: PIPE SYSTEM, INSULATION TYPE AND THICKNESS PER NOMINAL PIPE OR TUBE SIZE, INSULATION TYPE AND THICKNESS PER NOMINAL PIPE OR TUBE SIZE (DIRECT BURIED), NOTES. Lists various pipe systems and their corresponding insulation requirements.

FAN COIL UNIT SCHEDULE - HYDRONIC

Table with columns: TAG NAME, AREA SERVED, CFM, EXT. S.P. IN, DB °F, WB °F, TOTAL MBH, SENSIBLE MBH, GPM, EWT °F, LWT °F, W.P.D. FT. HD, TOTAL MBH, EWT °F, LWT °F, W.P.D. FT. HD, HP, RPM, VOLTAGE, PHASES, DISCONNECT BY TYPE, CONTROLLER/STARTER BY TYPE, LENGTH, WIDTH, HEIGHT, MANUFACTURER, MODEL, NOTES. Includes entries for FCU-1, FCU-2, and FCU-3.

SPLIT SYSTEM UNIT SCHEDULE

Table with columns: TAG NAME, AREA SERVED, CFM, COOLING MBH, HEATING MBH, LENGTH, WIDTH, HEIGHT, WEIGHT, MODEL, SEER, MCA, MOCP, VOLTAGE, PHASES, HEIGHT, LENGTH, WIDTH, WEIGHT, MODEL, DISCONNECT BY TYPE, CONTROLLER/STARTER BY TYPE, MANUFACTURER, NOTES. Includes entries for SSIU-1 and SSIU-2.

RADIATION ZONE SCHEDULE

Table with columns: TAG NAME, AREA SERVED, AREA, CONSTRUCTION, TUBE TYPE, SPACING, MAX. TUBE LENGTH, MAX. LOOP LENGTH, NUMBER OF LOOPS, TOTAL MBH, LOAD PER SQ. FT., SURFACE TEMPERATURE, EWT, LWT, GPM, WPD, NOTES. Includes entry for SMZ-101.

PIPING SCHEDULE GENERAL NOTES

A. DISCONNECT AND CONTROLLER STARTER FURNISHED AND INSTALLED BY: MFR = MANUFACTURER, EC = ELECTRICAL CONTRACTOR. B. DISCONNECT TYPE: F = FUSED, NF = NOT USED. C. CONTROLLER STARTER TYPE: PV = FULL VOLTAGE, WYE = WYE-DELTA, SS = SOLID STATE (SOFT START), VFD = VARIABLE FREQUENCY DRIVE, VFD/B = VARIABLE FREQUENCY DRIVE WITH BYPASS. D. NO EQUIPMENT SHALL BE SELECTED ABOVE 90% OF MOTOR NAME PLATE RATING. E. MUST BE WITHIN +/- 10% OF SCHEDULED RPM.

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STAMP: Professional Engineer seal for Delian J. Lewellyn.

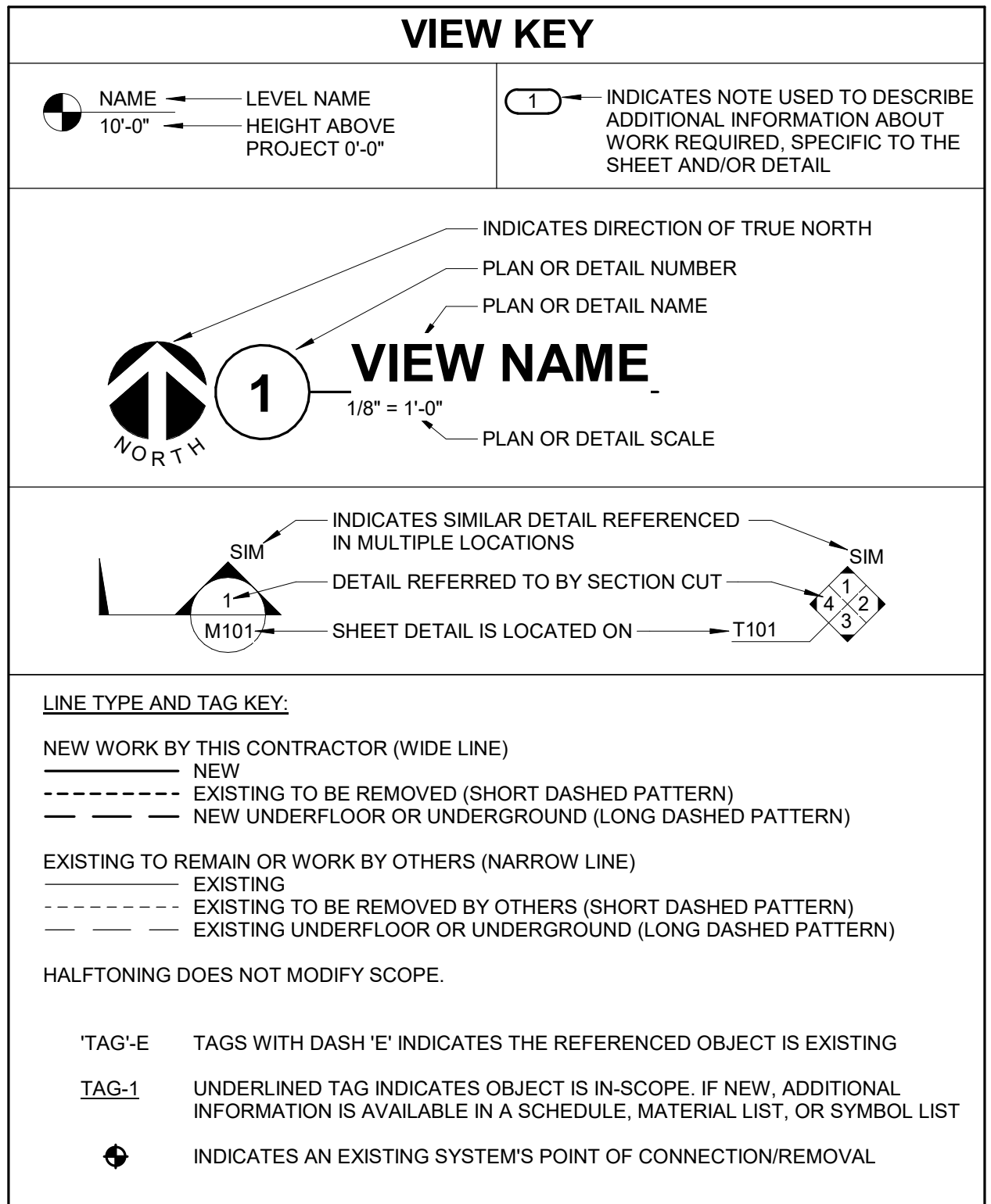
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Drawing Title: PIPING SCHEDULES. Approved: [Signature]

Phase: FULLY SPRINKLERED

Project Title: CONSTRUCT NEW SPS. Project Number: 438-460. Building Number: 5. Drawing Number: MP600. Location: Sioux Falls, SD. Issue Date: 02/14/2025. Checked: DAVING, Drawn: DELLE.

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APPLICABLE CODES

CONTRACTOR SHALL COMPLY WITH APPLICABLE CODES AND LOCAL AMENDMENTS.

BUILDING CODE:	IBC 2021 EDITION
FIRE CODE:	IFC 2021 EDITION
PLUMBING CODE:	IPC 2021 EDITION
MECHANICAL CODE:	IMC 2021 EDITION
ELECTRICAL CODE:	NFPA 70 (NEC) 2020 EDITION
LIFE SAFETY CODE:	NFPA 101 2021 EDITION
ENERGY CONSERVATION CODE:	IECC 2021
HEALTH DEPARTMENT CODE:	CURRENT EDITION
LOCAL BUILDING CODE:	CURRENT EDITION

CONTRACTOR ABBREVIATION KEY

ABBR:	DESCRIPTION:
A.C.	ASBESTOS ABATEMENT CONTRACTOR
C.C.	CIVIL CONTRACTOR
C.O.R.	CONTRACTING OFFICER'S REPRESENTATIVE
E.C.	ELECTRICAL CONTRACTOR
F.P.C.	FIRE PROTECTION CONTRACTOR
G.C.	GENERAL CONTRACTOR
M.C.	MECHANICAL CONTRACTOR
P.C.	PLUMBING CONTRACTOR
T.C.	TECHNOLOGY CONTRACTOR
T.C.C.	TEMPERATURE CONTROLS CONTRACTOR

CONTACT PERSONS:

DESCRIPTION:	PERSON:
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MECHANICAL	DELLAN J. LLEWELLYN, PE
ELECTRICAL	KRISTEN SPINA, PE
TECHNOLOGY	DAMON M. DEEN

TEMPERATURE CONTROL SHEET INDEX

MC000	CONTROLS COVERSHEET
MC101	GROUND LEVEL FLOOR PLAN - CONTROLS
MC102	FIRST LEVEL FLOOR PLAN - ROOM PRESSURIZATION PLAN
MC111	INTERSTITIAL/FIRST LEVEL FLOOR PLAN - CONTROLS
MC121	ROOF PLAN - CONTROLS
MC400	CONTROL DIAGRAMS
MC401	CONTROL DIAGRAMS
MC402	CONTROL DIAGRAMS
MC403	CONTROL DIAGRAMS
MC404	CONTROL DIAGRAMS
GRAND TOTAL:	10

CONTROL SYMBOL LIST

NOT ALL SYMBOLS MAY APPLY.

SYMBOL:	DESCRIPTION:
CA	COMPRESSED AIR
CW	COLD WATER - POTABLE
CWR	CHILLED WATER RETURN
CWS	CHILLED WATER SUPPLY
DI	DEIONIZED WATER
GWR	GLYCOL WATER RETURN
GWS	GLYCOL WATER SUPPLY
HPC	HIGH PRESSURE CONDENSATE
HPS	HIGH PRESSURE STEAM
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
HW	HOT WATER - POTABLE
HWC	HOT WATER CIRCULATING - POTABLE
HWC140	HOT WATER CIRC. - POTABLE NUMBER INDICATES TEMP
LPC	LOW PRESSURE CONDENSATE
LPS	LOW PRESSURE STEAM
NPW	NON-POTABLE COLD WATER
NHW	NON-POTABLE HOT WATER
OXY	OXYGEN
PC	PUMPED CONDENSATE
RC	REVERSE OSMOSIS WATER
SCW	SOFT COLD WATER
W	SERVICE WATER - POTABLE
CV	CONTROL VALVE (THREE-WAY)
CV2	CONTROL VALVE (TWO-WAY)
SV	SOLENOID VALVE
CHKV	CHECK VALVE
TS	THERMOSTAT
TSHEV	THERMOSTAT/SENSOR WITH HEAVY DUTY ENCLOSURE
TSMT	TEMPERATURE SENSOR (DUCT MOUNTED)
TSW	TEMPERATURE SENSOR WITH WELL
TSMTW	THERMOMETER WITH WELL (DIAL TYPE)
TSMTFW	THERMOMETER WITH WELL (FILLED TYPE)
ATS	AVERAGING TEMPERATURE SENSOR
LS	LOW LIMIT TEMPERATURE SWITCH
PTS	PROBE TEMPERATURE SENSOR
PS	PRESSURE SENSOR (FURNISHED WITH BALL VALVE)
PG	PRESSURE GAUGE (FURNISHED WITH BALL VALVE)
PPS	DIFFERENTIAL PRESSURE SENSOR
PSD	PRESSURE SENSOR (DUCT MOUNTED)
SP	STATIC SWITCH

CONTROL SYMBOL LIST (CONT.)

NOT ALL SYMBOLS MAY APPLY.

SYMBOL:	DESCRIPTION:
AI	ANALOG INPUT
AO	ANALOG OUTPUT
FM	FLOW METER
FS	FLOW SWITCH
AFS	AIR FLOW SWITCH
DFM	DUCT FLOW METER
H	HUMIDISTAT
HS	HUMIDISTAT / SENSOR
HM	HUMIDITY SENSOR (DUCT MOUNTED)
F	FILTER
TAB	TERMINAL AIR BOX
TABR	TERMINAL AIR BOX W/ REHEAT
OS	OCCUPANCY SENSOR
ACT	ACTUATOR
DS	DOOR SWITCH
DP	DIFFERENTIAL PRESSURE SWITCH
CS	CURRENT SWITCH
VS	VIBRATION SWITCH
NCS	NORMALLY CLOSED CONTACT
NOS	NORMALLY OPEN CONTACT
OB	OPPOSED BLADE DAMPER
PS	PARALLEL BLADE DAMPER
AB	AIR BLENDER
FAN	FAN
MTR	MOTOR
CON	CONTACTOR
P	PUMP

TEMPERATURE CONTROLS ABBREVIATION KEY

ABBR:	DESCRIPTION:
EA	EXHAUST/RELIEF AIR
MA	MIXED AIR
MV	MIXING VALVE
N.C.	NORMALLY CLOSED
NIC	NOT IN CONTACT
N.O.	NORMALLY OPEN
OA	OUTSIDE AIR
TYP	TYPICAL
RA	RETURN AIR
SA	SUPPLY AIR
UON	UNLESS OTHERWISE NOTED

MECHANICAL GENERAL NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, FIRE PROTECTION, PLUMBING, VENTILATION, PIPING AND TEMPERATURE CONTROL.

- DRAWINGS SHOWING LOCATIONS OF EQUIPMENT, DUCTWORK, PIPING, ETC. ARE DIAGRAMMATIC AND MAY NOT ALWAYS REFLECT EXACT INSTALLATION CONDITIONS. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF DUCTWORK, PIPING, EQUIPMENT, ETC. AND MAY NOT INCLUDE ALL OFFSETS AND FITTINGS REQUIRED FOR COMPLETE INSTALLATION. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND THE WORK OF OTHERS WILL PERMIT.
- COORDINATE ALL WORK WITH ALL OTHER TRADES PRIOR TO INSTALLATION TO PROVIDE CLEARANCES REQUIRED FOR OPERATION, MAINTENANCE, CODE COMPLIANCE, AND TO VERIFY NON-INTERFERENCE WITH OTHER WORK. DO NOT FABRICATE PRIOR TO VERIFICATION OF NECESSARY CLEARANCES FOR ALL TRADES. BRING ANY INTERFERENCES OR CONFLICTS TO THE ATTENTION OF THE ARCHITECT/ENGINEER BEFORE PROCEEDING WITH FABRICATION OR EQUIPMENT ORDERS.
- REVIEW SPACE REQUIREMENTS OF EQUIPMENT SPECIFIED OR SUBSTITUTED AND MAKE REASONABLE ACCOMMODATIONS IN LAYOUT AND POSITIONING TO PROVIDE PROPER ACCESS.
- ANY CHANGES REQUIRED TO ELIMINATE CONFLICTS OR THAT RESULT FROM A FAILURE TO COORDINATE SHALL BE MADE BY THE CONTRACTOR WITHOUT ADDITIONAL COST OR EXPENSE TO OTHERS.
- EACH CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ELECTRICAL CHANGES REQUIRED FOR EQUIPMENT PROPOSED THAT DIFFERS FROM THE BASIS OF DESIGN.
- REFER TO ARCHITECTURAL REFLECTED CEILING PLAN, ELECTRICAL, TECHNOLOGY AUDIOVISUAL, AND OTHER MECHANICAL PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED DEVICES, OTHER THAN SPRINKLERS.
- EACH CONTRACTOR IS RESPONSIBLE FOR DAMAGE CAUSED BY THEIR ACTIONS TO WALLS, FLOORS, CEILINGS, AND ROOFS. THE CONTRACTOR WHOSE WORK CAUSES DAMAGE IS RESPONSIBLE FOR PATCHING TO MATCH ORIGINAL CONSTRUCTION, FIRE RATING, AND FINISH.
- IN AREAS WITH DRYWALL CEILING COORDINATE LOCATIONS OF ACCESS PANELS WITH THE GC FOR ACCESS TO VALVES, DUCTWORK ACCESSORIES, DAMPERS, ETC. COORDINATE PANEL TYPE AND COIL WITH ARCHITECT. NOTIFY THE GC OF THE REQUIRED ACCESS PANELS PRIOR TO BIDDING.
- SEAL ALL FLOOR, WALL, AND ROOF PENETRATIONS AIRTIGHT WHERE CONDUITS, PIPING, AND DUCTS PENETRATE. PENETRATIONS THROUGH EXTERIOR WALLS AND ROOF SHALL BE SEALED AIRTIGHT WITH WATERPROOFING MATERIALS RECOMMENDED BY MANUFACTURER FOR OUTDOOR USE.
- CAULK ALL PIPE AND DUCT PENETRATIONS OF FULL HEIGHT NON-FIRE RATED WALL, PARTITION, FLOOR, AND ROOF ASSEMBLIES. THIS IS ESSENTIAL TO PREVENT NOISE TRANSMISSION FROM ONE ROOM TO ANOTHER AND TO PROVIDE THE DESIRED NC LEVELS WITHIN ROOMS.
- WHERE PIPES AND DUCTS ARE SHOWN TO PENETRATE FLOORS, PROVIDE SLEEVED OPENINGS WITH THE TOP EDGE RAISED ABOVE FLOOR SURFACE IN ACCORDANCE WITH ALL RELEVANT SPEC. SECTION. SEAL SLEEVE PERIMETER TO BE WATERTIGHT.
- EQUIPMENT SIZES AND SERVICE CLEARANCE REQUIREMENTS VARY AMONG DIFFERENT MANUFACTURERS. CONSULT APPROVED SHOP DRAWINGS FOR EQUIPMENT SIZES AND REQUIRED SERVICE CLEARANCES. COORDINATE WITH LAYOUT OF EQUIPMENT PADS, PIPING, DUCTWORK, ETC.
- DO NOT BLOCK TUBE PULL OR EQUIPMENT SERVICE CLEARANCES.
- MAINTAIN A MINIMUM WORKING CLEARANCE OF 3' IN FRONT OF ALL ELECTRICAL EQUIPMENT REQUIRING MAINTENANCE, INSPECTION, AND TESTING INCLUDING BUT NOT LIMITED TO PANELS, DISTRIBUTION PANELS, SWITCHBOARDS, MOTOR CONTROL CENTERS, TRANSFORMERS, EQUIPMENT STARTERS.
- MAINTAIN THE DEDICATED ELECTRICAL EQUIPMENT SPACE DEFINED BY THE WIDTH / DEPTH OF ELECTRICAL EQUIPMENT MEASURED FROM THE FLOOR TO A HEIGHT 6'-0" ABOVE THE EQUIPMENT OR THE STRUCTURAL CEILING, WHICHEVER IS LOWER. SYSTEMS FOREIGN TO THE ELECTRICAL DISTRIBUTION SYSTEM ARE NOT ALLOWED IN THE DEDICATED ELECTRICAL SPACE INCLUDING: DUCTWORK, PIPING, ETC.
- PROVIDE CONCRETE EQUIPMENT PAD FOR ALL FLOOR MOUNTED EQUIPMENT. PAD SHALL EXTEND MINIMUM 6" BEYOND ALL SIDES OF EQUIPMENT.
- DO NOT SUPPORT EQUIPMENT, PIPING, OR DUCTWORK FROM METAL DECKING OR OTHER NON-STRUCTURAL BUILDING ELEMENTS. ANCHORS EMBEDDED IN CONCRETE SHALL BE CRACKED CONCRETE APPROVED IN ACCORDANCE WITH SPECIFICATIONS.

MECHANICAL RENOVATION NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, FIRE PROTECTION, PLUMBING, VENTILATION, PIPING AND TEMPERATURE CONTROL.

- EXISTING CONDITIONS ARE SHOWN BASED ON INFORMATION OBTAINED FROM FIELD SURVEYS, EXISTING BUILDING DOCUMENTS, AND STAFF. VERIFY EXISTING CONDITIONS AND REPORT ANY CONFLICTS BEFORE PROCEEDING.
- NOT ALL EXISTING DUCTWORK AND PIPING IS SHOWN. VERIFY EXISTING CONDITIONS BEFORE STARTING WORK. NOTIFY ENGINEER OF ANY CONFLICTS WITH NEW WORK.
- FIELD VERIFY THE AVAILABLE CLEARANCES FOR DUCTWORK AND PIPING BEFORE FABRICATION. RISES AND DROPS MAY BE NECESSARY BECAUSE OF EXISTING FIELD CONDITIONS.
- EACH CONTRACTOR SHALL FIELD VERIFY ACCESSIBILITY TO THE AREA OF THEIR WORK AND SHALL NOTIFY THE GENERAL CONTRACTOR PRIOR TO BIDDING IF OTHER UTILITIES ARE REQUIRED TO BE REMOVED OR RELOCATED TO ALLOW ACCESS TO THEIR AREA OF WORK. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CUTTING, REMOVAL AND PATCHING OF ROOFS, WALLS, AND FLOORS ASSOCIATED WITH WORK BY ALL CONTRACTORS. CONTRACTORS SHALL NOTIFY THE GC OF AFFECTED AREAS PRIOR TO BIDDING.
- THE GENERAL CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND REPLACEMENT OF CEILINGS, CEILING TILES, AND CEILING GRIDS ASSOCIATED WITH AREAS OF WORK BY ALL CONTRACTORS. NOTIFY THE GENERAL CONTRACTOR OF AFFECTED AREAS PRIOR TO BIDDING.
- WHERE EXISTING MECHANICAL SYSTEMS ARE LOCATED IN AREAS THAT CONFLICT WITH NEW EQUIPMENT, PIPING, OR DUCTWORK TO BE INSTALLED, EACH CONTRACTOR SHALL EITHER ARRANGE NEW EQUIPMENT, PIPING, OR DUCTWORK IN SUCH A FASHION THAT IT DOES NOT CONFLICT WITH EXISTING SYSTEMS, OR REMOVE EXISTING MECHANICAL SYSTEMS TO ALLOW FOR INSTALLATION OF NEW EQUIPMENT, PIPING, OR DUCTWORK.
- PROVIDE TEMPORARY CONNECTIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING CONSTRUCTION. MAINTAIN ACCESS TO EXISTING MECHANICAL INSTALLATIONS THAT REMAIN ACTIVE.
- OBTAIN PERMISSION FROM OWNER BEFORE SHUTTING DOWN ANY SYSTEM FOR ANY REASON. MAINTAIN SERVICE TO ALL COMPONENTS THAT ARE TO REMAIN UNTIL NEW SYSTEMS ARE INSTALLED.
- MAINTAIN EXISTING SYSTEM IN SERVICE UNTIL NEW SYSTEM IS COMPLETE AND READY FOR THE AND SWITCHOVER. DRAIN SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. OBTAIN PERMISSION FROM OWNER BEFORE PARTIALLY OR COMPLETELY DRAINING SYSTEM. MAKE CHANGEOVER TO NEW SYSTEMS WITH MINIMUM OUTAGE.
- DISCONNECT AND REMOVE MECHANICAL DEVICES AND EQUIPMENT SERVING EQUIPMENT THAT HAS BEEN REMOVED.

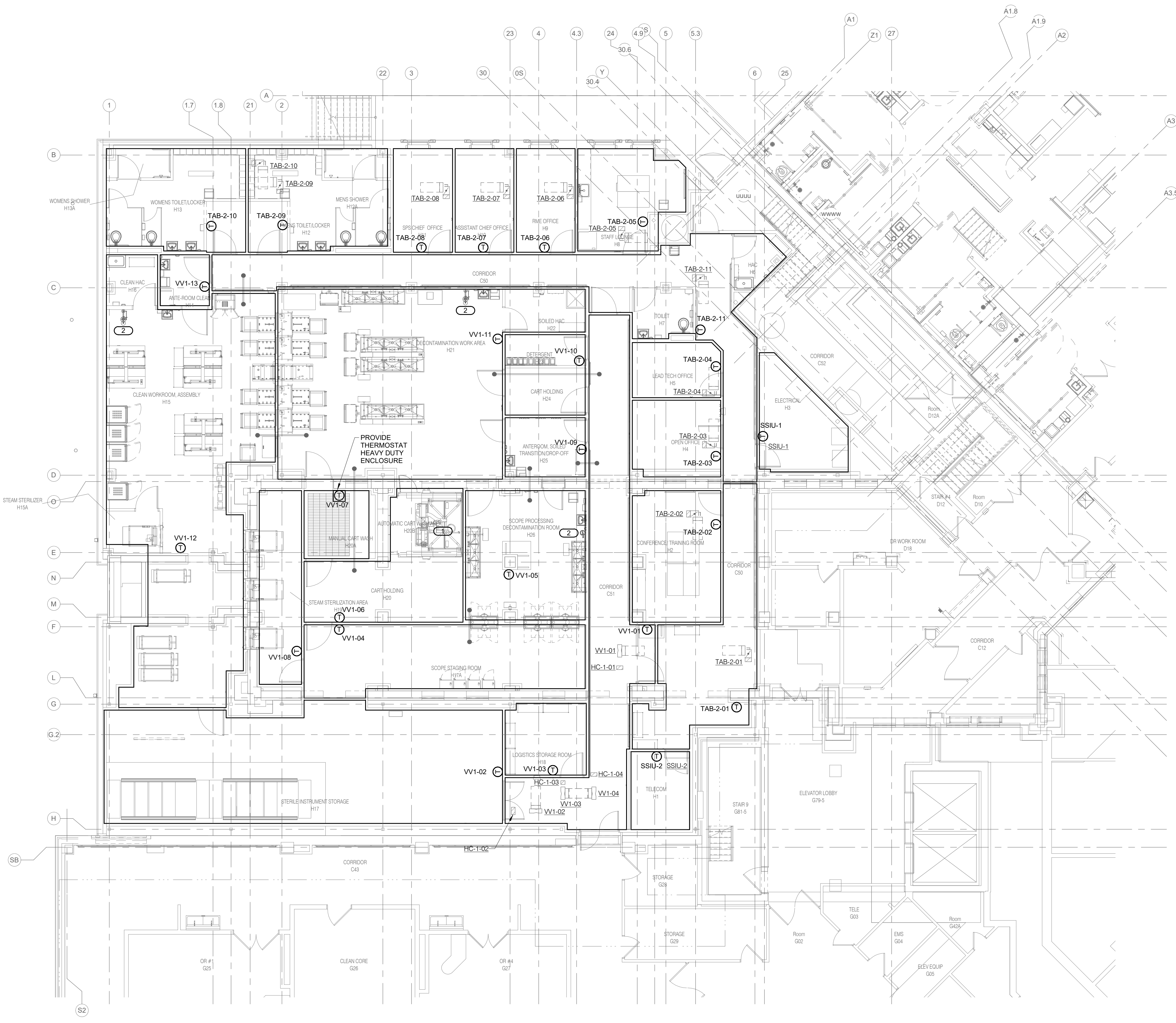
TEMPERATURE CONTROL GENERAL NOTES:

- REFER TO EQUIPMENT SCHEDULES TO CROSS REFERENCE WHICH CONTROL DIAGRAMS APPLY TO WHICH ITEMS OF EQUIPMENT. REFER TO TERMINAL AIR BOX (TAB) SCHEDULES FOR TEMP SENSOR REQUIREMENTS FOR EACH TAB.
- EACH D.I., D.O., A.I. AND A.O. POINT SHOWN FOR ALL CONTROL DIAGRAMS SHALL BE DISCRETE FROM ALL OTHER POINTS EXCEPT AS SPECIFICALLY NOTED.
- WIRING, CONTROL COMPONENTS, DEVICES AND PROGRAMMING SHOWN ON THESE CONTROL DRAWINGS SHALL BE PROVIDED BY THE TCC UNLESS SPECIFICALLY NOTED OTHERWISE.
- TEMPERATURE CONTROL CABLING, CONDUIT, BOXES, IDENTIFICATION: REFER TO THE SPECIFICATIONS FOR A COMPLETE LIST OF REQUIREMENTS. THE FOLLOWING SCHEDULE IS PROVIDED AS A CONVENIENCE. REFER TO SECTION 23 09 00 AND DIV 26 FOR ADDITIONAL DETAILED REQUIREMENTS.
 - CABLEWIRE JACKET COLOR: GREY
 - CONDUIT BOX COLOR ABOVE FINISHED CEILINGS AND UNFINISHED SPACES WITHOUT CEILINGS: GREY
 - CONDUIT BOX COLOR IN SPACES WITH EXPOSED FINISHED STRUCTURE: GREY
 - CABLEWIRE INSTALLATION: IN CONDUIT
- ALL ACTUATORS SHALL BE OF THE ELECTRICAL TYPE FOR THIS PROJECT UNLESS AN ACTUATOR IS SPECIFICALLY INDICATED ON THE DRAWINGS OR SPECIFICATIONS TO BE PNEUMATIC.
- CLOSED ARE NOT ACCEPTABLE.
- MODULATING SIGNALS SHALL BE DISPLAYED AS % OPEN (SIGNALS DISPLAYED AS % OPEN ARE NOT ACCEPTABLE).
- PRESSURE TRANSMITTERS WHOSE SIGNAL IS UTILIZED FOR MAINTAINING DUCT STATIC PRESSURE SHALL BE WIRED DIRECTLY TO THE CONTROLLER THAT MODULATES FAN AIR HANDLING UNIT. REFER TO ELECTRICAL DRAWINGS FOR LOCATIONS. TCC SHALL EXTEND AND TERMINATE WIRING AS REQUIRED FOR EQUIPMENT SHUTDOWN.
- TCC SHALL PROVIDE POWER SUPPLIES FOR ALL 24VAC POWER REQUIREMENTS TO INCLUDE, BUT NOT LIMITED TO, APPLICATION SPECIFIC CONTROLLERS, DAMPER AND VALVE ACTUATORS, BUILDING PRESSURE SENSORS, AND OTHER CONTROL COMPONENTS AND DEVICES. REFER TO CONTROLS SPECIFICATIONS FOR POWER SUPPLY REQUIREMENTS. REFER TO TEMPERATURE CONTROL HEATING FLOOR PLANS FOR POWER SUPPLY LOCATIONS. PROVIDE LOW VOLTAGE WIRING FROM POWER SUPPLIES TO ALL CONTROLLERS, MONITORS, COMPONENTS AND DEVICES REQUIRING 24 VAC POWER. ADDITIONAL POWER SUPPLIES NOT SHOWN AND REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM SHALL BE PROVIDED BY THE TEMPERATURE CONTROL CONTRACTOR. THE TEMPERATURE CONTROL CONTRACTOR SHALL PROVIDE FINANCIAL PROVISIONS WITHIN THEIR BID FOR THE ELECTRICAL CONTRACTOR TO PROVIDE BRANCH POWER TO THE ADDITIONAL POWER SUPPLIES. COORDINATE THE LOCATION OF ADDITIONAL POWER SUPPLY CABINET WITH THE ELECTRICAL CONTRACTOR.
- TCC SHALL PROVIDE POWER SUPPLIES FOR ALL 120VAC POWER REQUIREMENTS TO INCLUDE, BUT NOT LIMITED TO, APPLICATION SPECIFIC CONTROLLERS, DAMPER AND VALVE ACTUATORS, BUILDING PRESSURE SENSORS, AND OTHER CONTROL COMPONENTS AND DEVICES. REFER TO TEMPERATURE CONTROL HEATING FLOOR PLANS FOR POWER SUPPLY LOCATIONS. ADDITIONAL CIRCUITS NOT SHOWN AND REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM SHALL BE PROVIDED BY THE TEMPERATURE CONTROL CONTRACTOR. THE TEMPERATURE CONTROL CONTRACTOR SHALL PROVIDE FINANCIAL PROVISIONS WITHIN THEIR BID FOR THE ELECTRICAL CONTRACTOR TO PROVIDE BRANCH POWER TO THE ADDITIONAL POWER SUPPLIES. COORDINATE THE LOCATION OF ADDITIONAL POWER SUPPLY CABINET WITH THE ELECTRICAL CONTRACTOR.
- ELEMENT LENGTHS FOR BOTH MIXED AIR TEMP SENSORS AND LOW LIMIT TEMP SWITCHES SHALL BE MINIMUM 1 LINEAR FOOT PER SQUARE FOOT OF COIL SURFACE AREA. PROVIDE MULTIPLE SENSORS AND SWITCHES AS NEEDED TO ACHIEVE REQUIRED ELEMENT LENGTHS. LOCATE RESET SWITCHES MAX. 6'-6" ABOVE ADJACENT STANDING SURFACE (E.G. ROOF, PLATFORM OR FLOOR) SO THE RESET SWITCH CAN BE CYCLED WITHOUT THE NEED FOR A LADDER.
- TO PREVENT GENERATOR OVERLOADING, TCC SHALL PROGRAM A STAGGERED START TIME FOR ALL MECHANICAL EQUIPMENT THAT IS CONTROLLED BY FMCS TO INCLUDE, BUT NOT LIMITED TO, AIR HANDLERS, PUMPS, EXHAUST FANS, AND CHILLERS. THE FIRST EQUIPMENT SHALL START 2 MINUTES (ADJ.) FROM THE TIME THE FMCS RECEIVES THE SIGNAL THAT THE TRANSFER SWITCH CHANGED TO EMERGENCY POWER SOURCE WITH ALL EQUIPMENT BEING ENERGIZED WITHIN A 20 MINUTE (ADJ.) TIME SPAN. COORDINATE ORDER OF EQUIPMENT STAGING WITH OWNER'S REPRESENTATIVE.
- CONTROL DIAGRAMS ARE SCHEMATIC IN NATURE AND DO NOT SHOW ALL REQUIRED CONTROL DEVICES AND COMPONENTS. REFER TO FLOOR PLANS, FLOW DIAGRAMS AND DETAILS FOR ADDITIONAL CONTROL DEVICES, COMPONENTS AND REQUIREMENTS NOT SHOWN ON THESE CONTROL DRAWINGS.
- TCC SHALL PROVIDE ALL CONTROL COMPONENTS AND ACCESSORIES AS REQUIRED FOR EQUIPMENT TO BE CONTROLLED AS DESCRIBED IN THE SEQUENCE OF OPERATION REGARDLESS OF WHETHER ALL CONTROL COMPONENTS OR POINTS ARE SHOWN IN THE ASSOCIATED CONTROL DIAGRAM.
- COORDINATE DDC CONTROL PANEL EMERGENCY POWER SUPPLY REQUIREMENT WITH ELECTRICAL CONTRACTOR. ALL CONTROLS ASSOCIATED WITH MECHANICAL SYSTEM REQUIRING EMERGENCY POWER SHALL BE CONNECTED TO THE EMERGENCY POWER SYSTEM.

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Revisions:	Date:	CONSULTANT	ARCHITECT/ENGINEER OF RECORD	STAMP	Office of Construction and Facilities Management	Drawing Title	Phase	Project Title	Project Number
		IMEG	ANDERSON			CONTROLS COVERSHEET	BID DOCUMENTS	CONSTRUCT NEW SPS	438-460
						Approved:	FULLY SPRINKLERED	Location	Drawing Number
								Sioux Falls, SD.	MC000
								Issue Date	Checked
								02/14/2025	DAVING
								Drawn	DELLE

- GENERAL MECHANICAL NOTES:**
1. REFERENCE MC000 – MECHANICAL CONTROLS COVERSHEET FOR CONTROLS SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES.
 2. COORDINATE AND CONFIRM ALL ARCHITECTURALLY EXPOSED DEVICE LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN OR INSTALLATION.
 3. REFERENCE MV600 FOR VENTILATION EQUIPMENT SCHEDULES.
 4. REFERENCE MP600 FOR PIPING EQUIPMENT SCHEDULES.
 5. REFERENCE 7/MC400 FOR VARIABLE FREQUENCY DRIVE CONTROL DIAGRAM.
 6. REFERENCE 8/MC403 FOR TAB NIGHT SETBACK CONTROL SEQUENCE.
 7. REFERENCE 6/MC403 FOR TERMINAL AIR BOX REPORT GENERATION SEQUENCE.
- KEYNOTES:** (#)
1. REFERENCE 1/MC403 FOR CART WASHER FAN CONTROL DIAGRAM.
 2. REFERENCE 12/MC403 FOR EMERGENCY SHOWER/EYEWASH MONITORING CONTROL DIAGRAM.



1 GROUND LEVEL FLOOR PLAN - CONTROLS
1/8" = 1'-0"

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Revisions:	Date:

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 PROJECT # 19004249.04

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PROFESSIONAL ENGINEER
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 27052
 2/14/25
 IOWA

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title
GROUND LEVEL FLOOR PLAN - CONTROLS

Approved:

Phase
BID DOCUMENTS

FULLY SPRINKLERED

Project Title
CONSTRUCT NEW SPS

Location
Sioux Falls, SD.

Issue Date
02/14/2025

Checked
DAVING

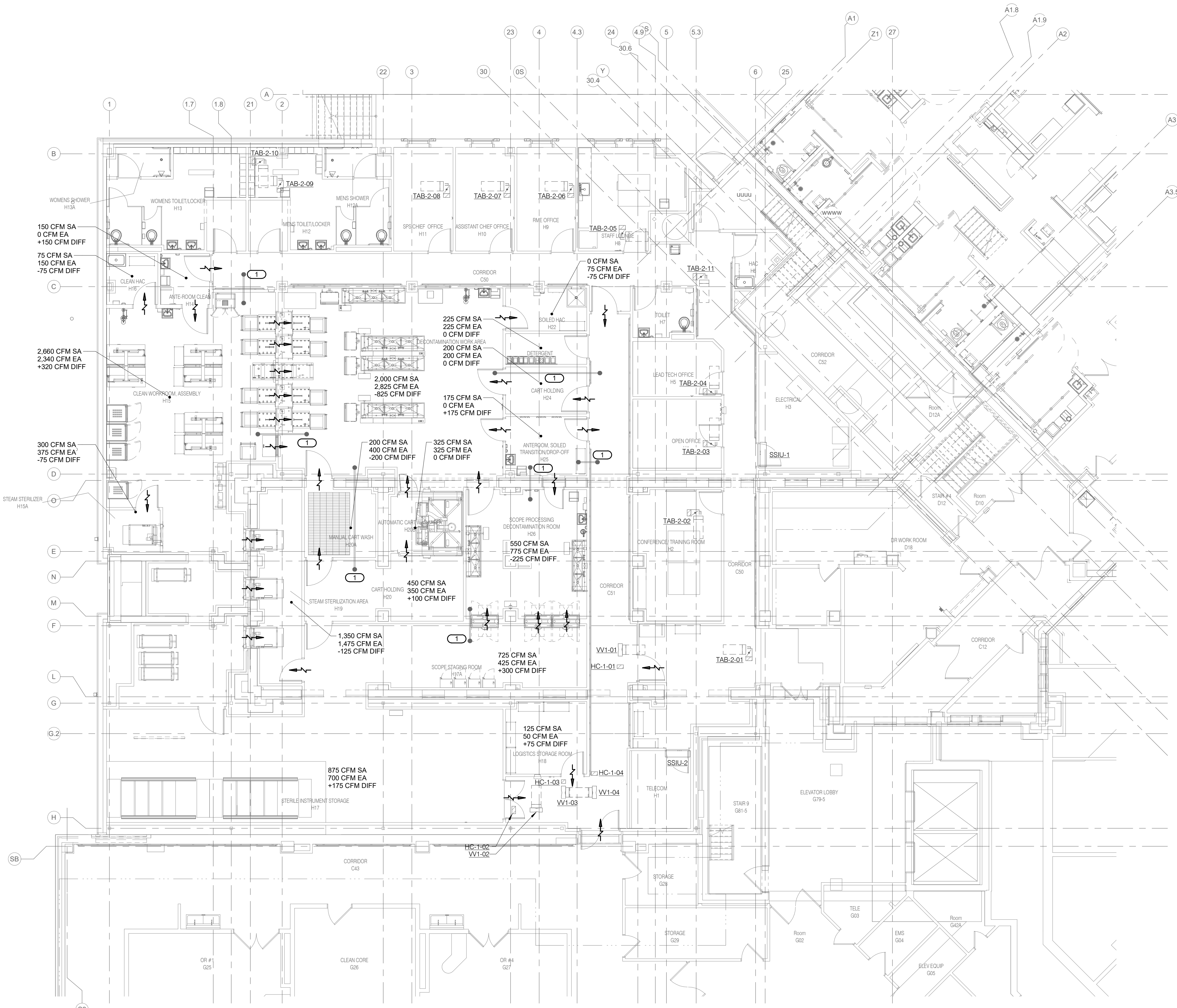
Drawn
DELLE

Project Number
438-460

Building Number
5

Drawing Number
MC101

- GENERAL MECHANICAL NOTES:**
1. REFERENCE MC000 - MECHANICAL CONTROLS COVERSHEET FOR CONTROLS SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES.
 2. COORDINATE AND CONFIRM ALL ARCHITECTURALLY EXPOSED DEVICE LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN OR INSTALLATION.
 3. REFERENCE MV600 FOR VENTILATION EQUIPMENT SCHEDULES.
 4. REFERENCE MP600 FOR PIPING EQUIPMENT SCHEDULES.
 5. REFERENCE 7MC400 FOR VARIABLE FREQUENCY DRIVE CONTROL DIAGRAM.
 6. REFERENCE 8MC403 FOR TAB NIGHT SETBACK CONTROL SEQUENCE.
 7. REFERENCE 6MC403 FOR TERMINAL AIR BOX REPORT GENERATION SEQUENCE.
- KEYNOTES:** (#)
1. PROVIDE DIFFERENTIAL PRESSURE SENSORS AT LOCATIONS INDICATED ON DRAWINGS. DIFFERENTIAL PRESSURE SENSORS ARE INTENDED FOR MONITORING USE ONLY. THEY SHOULD NOT BE USED TO CONTROL EQUIPMENT. A TYPICAL RANGE OF +1.0-5.0" W.C. OR SIMILAR, SHOULD BE PROVIDED.



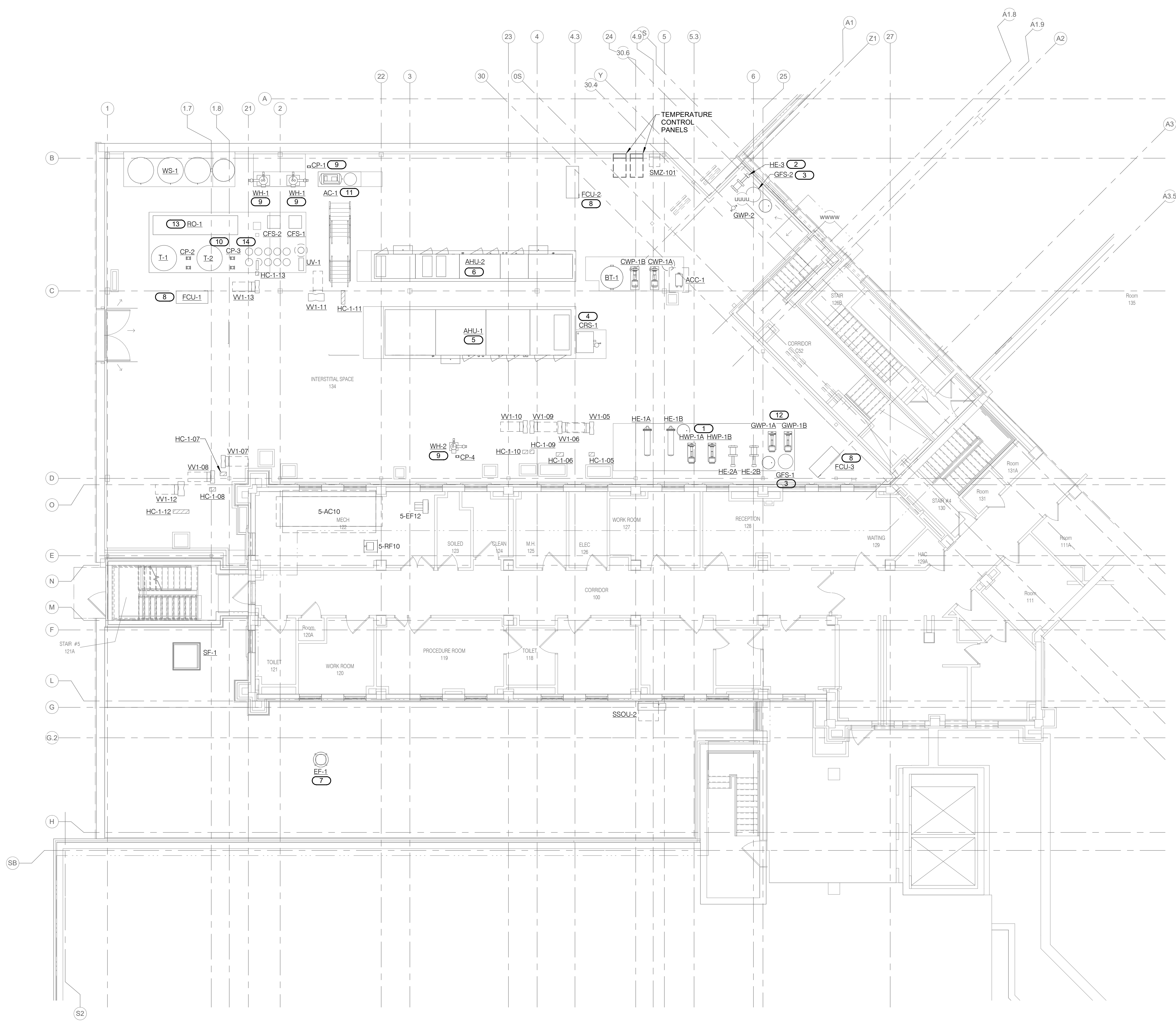
1 GROUND LEVEL FLOOR PLAN - PRESSURIZATION PLAN
 1/8" = 1'-0"

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Revisions:	Date:

CONSULTANT <small>2802 100TH STREET DES MOINES, IA 50325 515.334.9900 FAX: 515.334.9908 www.imegcorp.com PROJECT # 1904249.04</small> <small>IMEG CORP. RESERVES PROPRIETARY RIGHTS, INCLUDING COPYRIGHTS, TO THIS DRAWING AND THE DATA SHOWN THEREON. THIS DRAWING AND/OR DATA ARE THE EXCLUSIVE PROPERTY OF IMEG CORP. AND SHALL NOT BE USED OR REPRODUCED FOR ANY OTHER PROJECT WITHOUT THE EXPRESS WRITTEN APPROVAL AND PARTICIPATION OF IMEG CORP. © 2025 IMEG CORP.</small>	ARCHITECT/ENGINEER OF RECORD <small>13605 1st Ave. N. #100 Plymouth, MN 55441 P 763.412.4000 F 763.412.4090 ae-mn.com Anderson Engineering of Minnesota, LLC Proj # 16684</small>	STAMP DELLAN J. LEWELLYN 27052 IOWA	Office of Construction and Facilities Management U.S. Department of Veterans Affairs	Drawing Title FIRST LEVEL FLOOR PLAN - ROOM PRESSURIZATION PLAN	Phase BID DOCUMENTS	Project Title CONSTRUCT NEW SPS	Project Number 438-460
				Approved:	FULLY SPRINKLERED	Location Sioux Falls, SD.	Building Number 5
				Issue Date 02/14/2025	Checked DAVING	Drawn DELLE	Drawing Number MC102

- GENERAL MECHANICAL NOTES:**
1. REFERENCE MC000 - MECHANICAL CONTROLS COVERSHEET FOR CONTROLS SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES.
 2. COORDINATE AND CONFIRM ALL ARCHITECTURALLY EXPOSED DEVICE LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN OR INSTALLATION.
 3. REFERENCE MV600 FOR VENTILATION EQUIPMENT SCHEDULES.
 4. REFERENCE MP600 FOR PIPING EQUIPMENT SCHEDULES.
 5. REFERENCE 7MC400 FOR VARIABLE FREQUENCY DRIVE CONTROL DIAGRAM.
 6. REFERENCE 5MC403 FOR TAB NIGHT SETBACK CONTROL SEQUENCE.
 7. REFERENCE 6MC403 FOR TERMINAL AIR BOX REPORT GENERATION SEQUENCE.
- KEYNOTES: (#)**
1. REFERENCE 2MC400 FOR HEATING WATER CONTROL DIAGRAM.
 2. REFERENCE 4MC400 FOR SNOW MELT SYSTEM CONTROL DIAGRAM.
 3. REFERENCE 5MC400 FOR GLYCOL FEED STATION CONTROL DIAGRAM.
 4. REFERENCE 6MC400 FOR CONDENSATE RETURN PUMP MONITORING CONTROL DIAGRAM.
 5. REFERENCE 1MC401 FOR AHU-1 AIR HANDLING UNIT CONTROL DIAGRAM.
 6. REFERENCE 1MC401 FOR AHU-2 AIR HANDLING UNIT CONTROL DIAGRAM.
 7. REFERENCE 2MC403 FOR EXHAUST FAN AHU INTERLOCK CONTROL DIAGRAM.
 8. REFERENCE 6MC403 FOR FAN COIL UNIT CONTROL DIAGRAM.
 9. REFERENCE 9MC403 FOR DOMESTIC HOT WATER CONTROL DIAGRAM.
 10. REFERENCE 10MC403 FOR WATER TREATMENT METERING CONTROL DIAGRAM.
 11. REFERENCE 11MC403 FOR AIR COMPRESSOR CONTROL DIAGRAM.
 12. REFERENCE 3MC400 FOR GLYCOL PREHEAT LOOP CONTROL DIAGRAM.
 13. REFERENCE 1MC404 FOR REVERSE OSMOSIS SYSTEM CONTROL DIAGRAM.
 14. REFERENCE 2MC404 FOR DEIONIZED WATER SYSTEM CONTROL DIAGRAM.



1 INTERSTITIAL/FIRST FLOOR PLAN - CONTROLS
1/8" = 1'-0"

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REFERENCE SCALE IN INCHES
 1" = 1'-0"

ARCHITECT/ENGINEER OF RECORD

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 2/14/2025
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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title
INTERSTITIAL/FIRST LEVEL FLOOR PLAN - CONTROLS

Approved:

Phase
BID DOCUMENTS

FULLY SPRINKLERED

Project Title
CONSTRUCT NEW SPS

Location
Sioux Falls, SD.

Issue Date
02/14/2025

Checked
DAVING

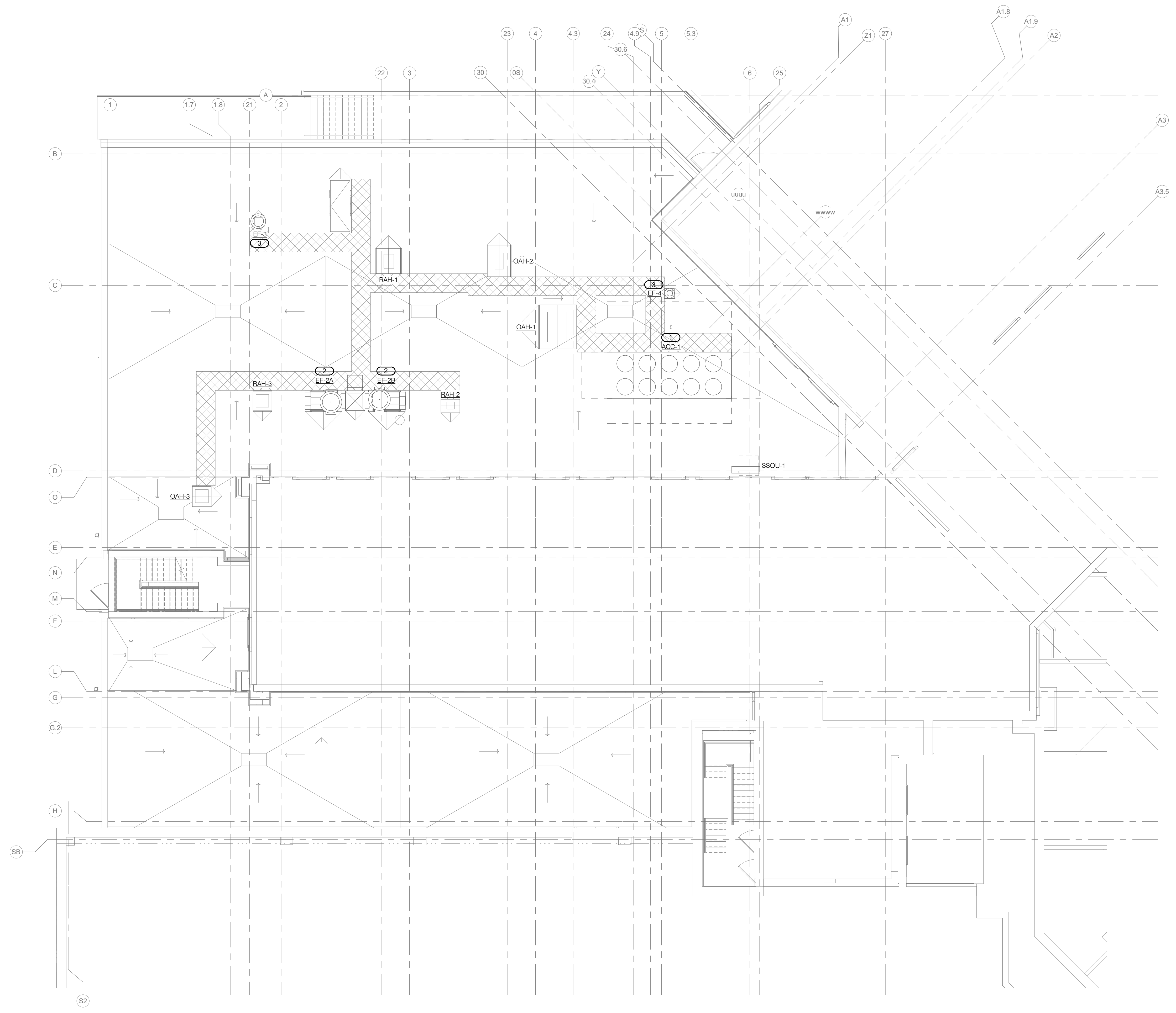
Drawn
DELLE

Project Number
438-460

Building Number
5

Drawing Number
MC111

- GENERAL MECHANICAL NOTES:**
1. REFERENCE MC000 - MECHANICAL CONTROLS COVERSHEET FOR CONTROLS SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES.
 2. COORDINATE AND CONFIRM ALL ARCHITECTURALLY EXPOSED DEVICE LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN OR INSTALLATION.
 3. REFERENCE MV900 FOR VENTILATION EQUIPMENT SCHEDULES.
 4. REFERENCE MP900 FOR PIPING EQUIPMENT SCHEDULES.
 5. REFERENCE 6MC400 FOR VARIABLE FREQUENCY DRIVE CONTROL DIAGRAM.
 6. REFERENCE 6MC403 FOR TAB NIGHT SETBACK CONTROL SEQUENCE.
 7. REFERENCE 6MC403 FOR TERMINAL AIR BOX REPORT GENERATION SEQUENCE.
- KEYNOTES:** (#)
1. REFERENCE 1/MC400 FOR AIR COOLED CHILLER CONTROL DIAGRAM.
 2. REFERENCE 2/MC403 FOR EXHAUST FAN AHU INTERLOCK CONTROL DIAGRAM.
 3. REFERENCE 3/MC403 FOR CONTINUOUS EXHAUST FAN OPERATION CONTROL DIAGRAM.



1 ROOF PLAN - CONTROLS
1/8" = 1'-0"

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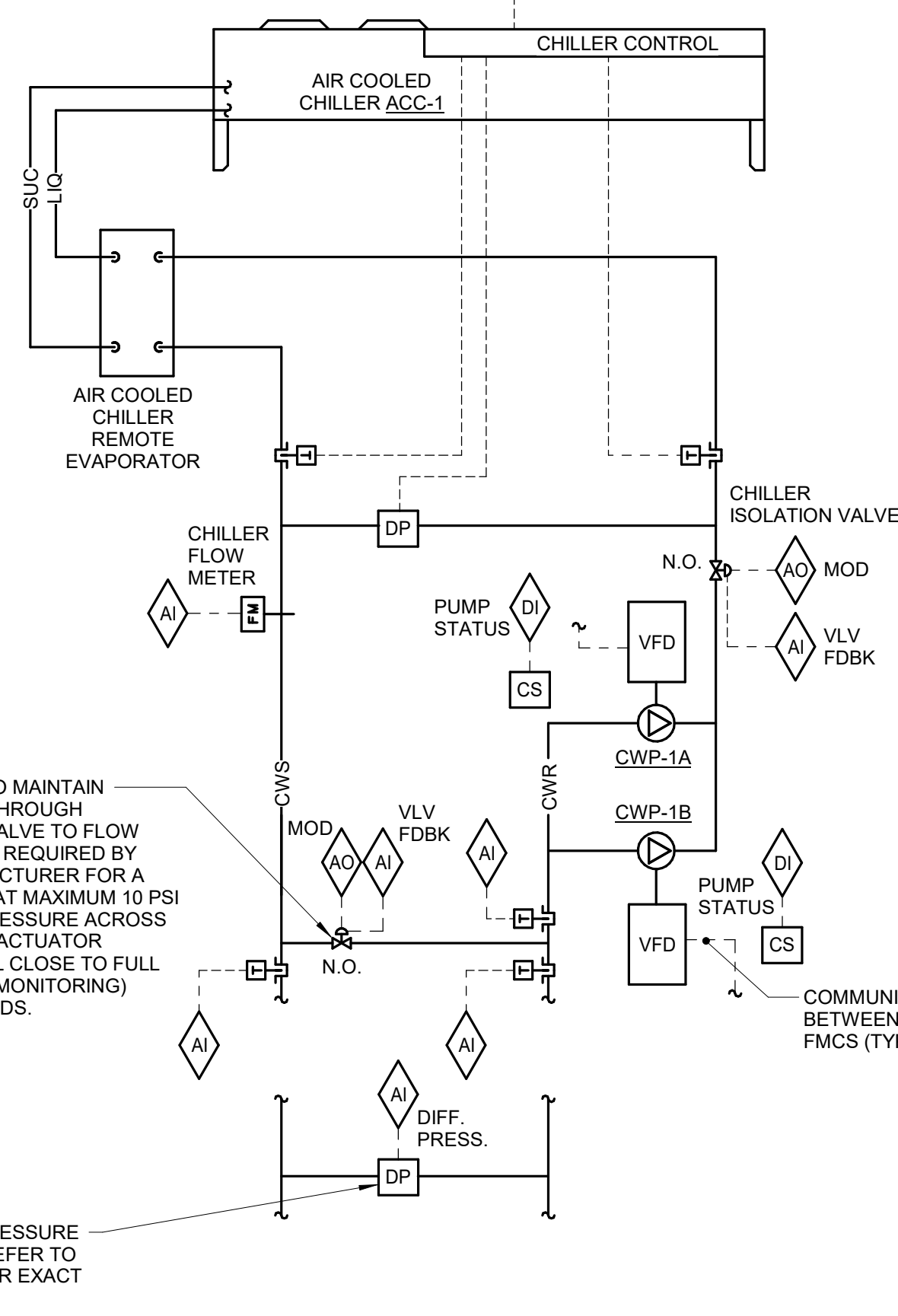
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DELLE

Project Number
438-460

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5

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MC121

- * PUMP REQUIRED (DIGITAL)
- * CHILLER STATUS (DIGITAL)
- * GENERAL ALARM (DIGITAL)
- * CHILLER START/STOP (DIGITAL)
- * CHILLED WATER SET POINT/RESET (F) (ANALOG)
- * CHILLER DP (V.C.) (ANALOG)
- * CHILLED WATER SUPPLY TEMP (F) (ANALOG)
- * CHILLED WATER RETURN TEMP (F) (ANALOG)



SEQUENCE OF OPERATION
 THE CHILLER MANUFACTURER SHALL PROVIDE A FACTORY MOUNTED CHILLER CONTROL PANEL. ALL AVAILABLE DATA PROVIDED/MONITORED BY THE CHILLER CONTROL PANEL SHALL BE AVAILABLE TO AND MONITORED BY THE FMCS SYSTEM.

CHILLER OPERATION SHALL BE CONTROLLED BY THE CHILLER CONTROL PANEL AND SHALL BE ENABLED WHEN THE OUTSIDE AIR TEMPERATURE RISES ABOVE 50°F (ADJ.) FOR 15 MINUTES (ADJ.) WHEN OUTSIDE AIR TEMPERATURE DROPS BELOW 48°F (ADJ.) FOR 15 MINUTES (ADJ.) CHILLER OPERATION SHALL BE DISABLED WHEN THE OUTSIDE AIR TEMPERATURE FALLS BELOW 45°F (ADJ.) FOR 15 MINUTES (ADJ.) CHILLER OPERATION SHALL BE DISABLED WHEN THE OUTSIDE AIR TEMPERATURE RISES ABOVE 49°F (ADJ.) FOR 15 MINUTES (ADJ.)

CHILLER STARTING:
 WHEN THE FMCS INDEXES A CHILLER TO RUN THE FOLLOWING SHALL OCCUR:
 • THE FMCS SHALL TURN ON THE CHILLED WATER PUMP.
 • UPON PROOF OF FLOW IN THE EVAPORATOR BARREL, THE CHILLER CONTROL PANEL SHALL INDEX CHILLER TO START.
 • CHILLER SHALL START AFTER ALL INTERNAL SAFETIES ARE SATISFIED AND SHALL MAINTAIN CHILLED WATER SUPPLY TEMPERATURE OF 40°F (ADJ.) VIA INTERNAL CONTROLS.

CHILLER STOPPING:
 WHEN THE FMCS INDEXES THE CHILLER TO STOP THE FOLLOWING SHALL OCCUR:
 • THE CHILLER CONTROL PANEL SHALL INDEX CHILLER TO STOP.
 • THE CHILLER CONTROL PANEL SHALL SEND A SIGNAL TO THE FMCS TO SHUTDOWN THE CHILLED WATER PUMP.

CHILLED WATER PUMP CONTROL:
 THE FMCS SHALL MODULATE OUTPUT TO THE PUMP VFD AS REQUIRED TO MAINTAIN DP SETPOINT AT THE LOCATION OF THE DP TRANSMITTER. DP TRANSMITTER SIGNAL SHALL BE WIRED DIRECTLY TO THE CONTROLLER SERVING PUMP VFD (SIGNAL SHALL NOT BE TRANSMITTED ACROSS THE FMCS NETWORK). FMCS SHALL RESET THE DP SETPOINT UNTIL ONE MODULATING CONTROL VALVE IS 85% OPEN AS DETERMINED BY THE VALVE FEEDBACK. IN NO CASE SHALL DP SETPOINT EXCEED 10 PSID (ADJ.) OR DROP BELOW 2 PSID (ADJ.).

THE FMCS SHALL ALTERNATE THE LEAD PUMP BASED ON RUN TIME. SWITCH EVERY 400 HOURS (ADJ.). INCLUDE GRAPHIC TOGGLE ON OPERATOR WORKSTATION GRAPHICAL SCREEN TO ALLOW OPERATOR TO MANUALLY SELECT WHICH PUMP IS LEAD AND WHICH IS LAG.

MINIMUM CHILLED WATER FLOW CONTROL:
 FMCS SHALL MODULATE THE CHILLED WATER BYPASS CONTROL VALVE AS REQUIRED TO MAINTAIN MINIMUM FLOW THROUGH CHILLER. TCC SHALL VERIFY THE MINIMUM FLOW LIMIT OF CHILLER WITH EQUIPMENT MANUFACTURER. ADEQUATE FLOW THROUGH EACH CHILLER SHALL BE DETERMINED BY THE FLOW METER. IF MINIMUM FLOW RATE IS MET THE CONTROL VALVE SHALL BE CLOSED.

CHILLER SAFETIES:
 TCC SHALL COORDINATE ALL SAFETY AND INTERLOCK REQUIREMENTS WITH CHILLER MANUFACTURER. TCC SHALL PROVIDE THE INSTALLATION AND WIRING OF CHILLED WATER FLOW SWITCHES, AND OTHER COMPONENTS PROVIDED WITH CHILLER AS REQUIRED FOR PROPER OPERATION.

WATER LOOP LOAD CALCULATION & DISPLAY:
 CALCULATE AND DISPLAY THE CHILLED WATER LOOP TONNAGE ON THE FMCS COMPUTER CHILLER PLANT GRAPHICAL SCREEN USING THE ENTERING AND LEAVING CHILLED WATER TEMPERATURES AND THE FLOW RATE AS DETERMINED BY THE FLOW METER.

FMCS SHALL TOTAL THE KW USED BY THE CHILLER AND CHILLED WATER PUMPS AND DIVIDE BY THE PLANT'S TOTAL TONNAGE AND DISPLAY THE PLANT'S KW/TON ON THE SCREEN.

ALARMS, INTERLOCKS & SAFETIES:
 AN ALARM SHALL BE INDICATED AT THE FMCS WHEN THE FOLLOWING OCCUR:
 • AN ALARM IS INDICATED AT THE CHILLER CONTROL PANEL.
 • IF CHILLED WATER SUPPLY TEMPERATURE IS MORE THAN 5°F (ADJ.) ABOVE OR BELOW SETPOINT FOR MORE THAN 10 MINUTES (ADJ.).
 • SHOULD THE FMCS COMMAND THE PUMP TO OPERATE AND THE PUMP FAILS TO DO SO AS DETERMINED BY THE VFD STATUS, AN ALARM SHALL BE INDICATED AT THE FMCS OPERATOR WORKSTATION AND THE FMCS SHALL START THE LAG PUMP.
 • AN ALARM CONDITION OCCURS AT ANY VFD.
 • IF SYSTEM DIFFERENTIAL PRESSURE IS NOT MAINTAINED FOR MORE THAN 15 MINUTES (ADJ.).

CHILLER PLANT REPORT GENERATION:
 FMCS SHALL MONITOR THE FOLLOWING POINTS ON 10 MINUTE (ADJ.) INTERVALS WITHIN A SINGLE TREND. THE TREND SHALL RUN FOR A 100-DAY (ADJ.) DURATION AT WHICH POINT THE NEWEST VALUES SHALL OVERWRITE THE OLDEST VALUES:
 • DATE
 • TIME
 • GLOBAL OUTSIDE AIR TEMPERATURE (°F)
 • GLOBAL OUTSIDE AIR DEWPOINT (°F)
 • AVERAGE CHILLED WATER SUPPLY TEMPERATURE (°F)
 • AVERAGE CHILLED WATER RETURN TEMPERATURE (°F)
 • TOTAL CHILLED WATER FLOWRATE (GPM)
 • TOTAL CHILLED WATER SYSTEM LOAD (TONS)
 • CURRENT DRAW FROM CHILLER (AMPS)

THIS INFORMATION SHALL BE ACCESSIBLE TO VIEW IN EITHER TABULAR OR GRAPHICAL FORM ON THE FMCS OPERATOR WORKSTATION.

ONCE PER MONTH, THE FMCS SHALL RECORD THE LARGEST CHILLED WATER SYSTEM LOAD (IN TONS) WHICH OCCURRED DURING THAT MONTH. THE DATE, TIME, OUTSIDE AIR TEMPERATURE, OUTSIDE AIR DEWPOINT, CHILLED WATER SUPPLY & RETURN TEMPERATURE AND CHILLED WATER FLOWRATE THAT COINCIDED WITH THAT EVENT SHALL ALSO BE RECORDED. THIS INFORMATION SHALL BE STORED TO A MEMORY LOCATION ON THE FMCS OPERATOR WORKSTATION THAT IS MAINTAINED (NOT AUTOMATICALLY OVERRITTEN).

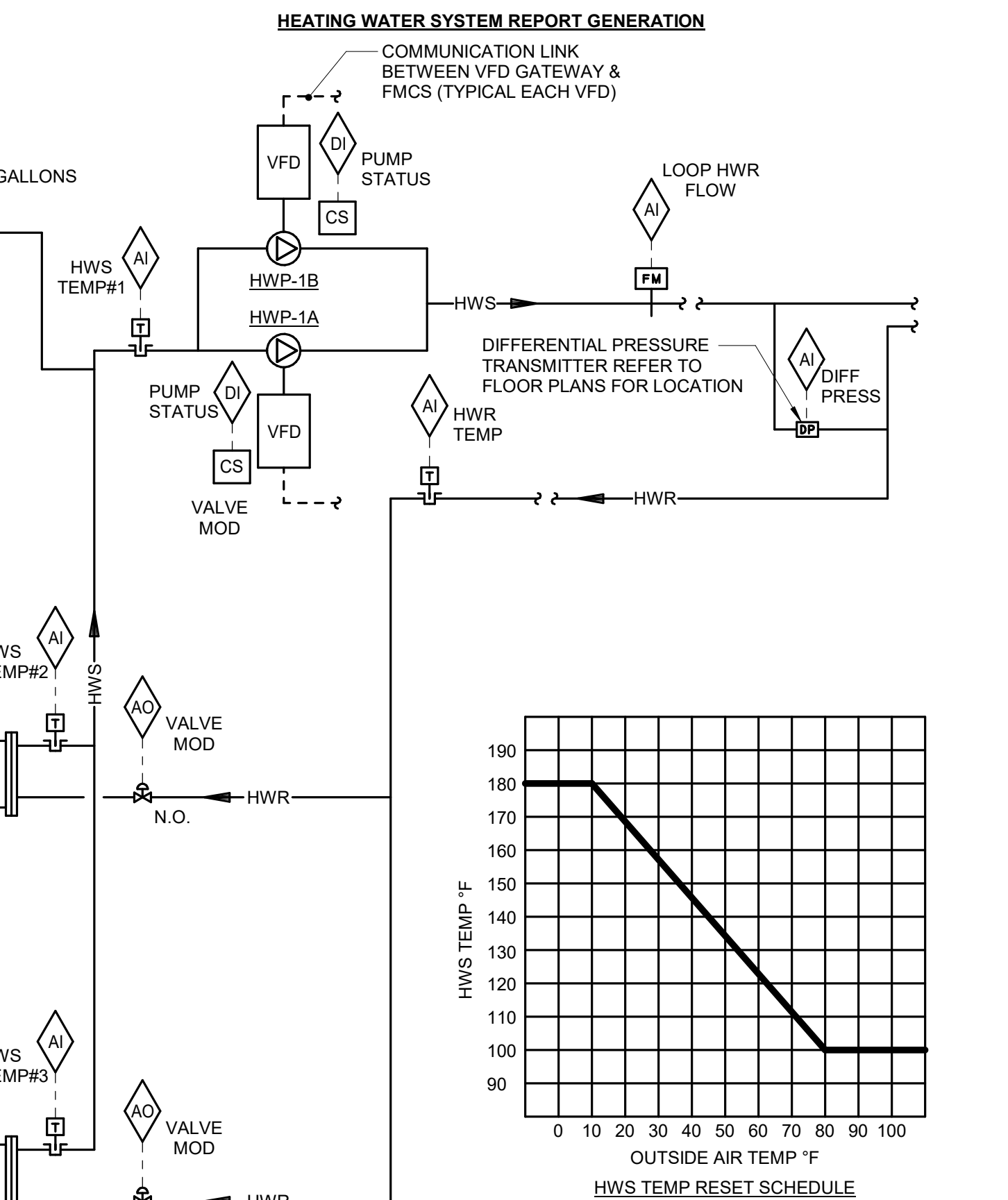
CHILLER PLANT REPORT GENERATION

1 AIR COOLED CHILLER CONTROLS - VARIABLE PRIMARY
 NO SCALE

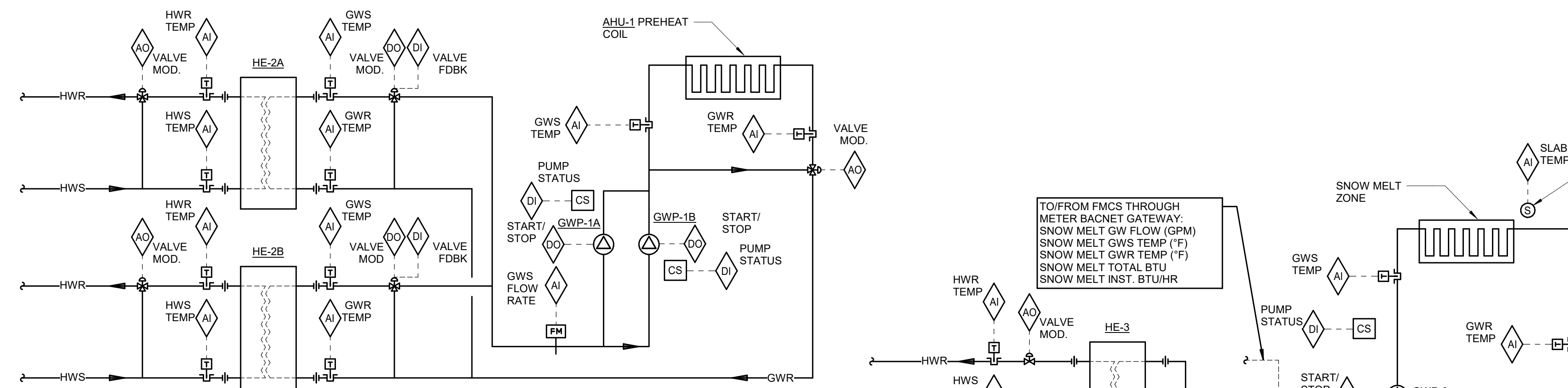
HEATING SYSTEM REPORT GENERATION
 FMCS SHALL MONITOR THE FOLLOWING POINTS ON 5 MINUTE (ADJ.) INTERVALS WITHIN A SINGLE TREND. THE TREND SHALL RUN FOR A 14-DAY (ADJ.) DURATION AT WHICH POINT THE NEWEST VALUES SHALL OVERWRITE THE OLDEST VALUES:
 • DATE
 • TIME
 • GLOBAL OUTSIDE AIR TEMP. (°F)
 • HEATING WATER SUPPLY TEMP. (°F)
 • HEATING WATER RETURN TEMP. (°F)
 • HEATING WATER FLOWRATE (GPM)
 • HEATING SYSTEM LOAD (BTU/HR.)
 • OPERATIONAL STATUS OF EACH HEAT EXCHANGER AND PUMP

THIS INFORMATION SHALL BE ACCESSIBLE TO VIEW IN EITHER TABULAR OR GRAPHICAL FORM ON THE FMCS OPERATOR INTERFACE.

ONCE PER MONTH, THE FMCS SHALL RECORD THE LARGEST HEATING SYSTEM LOAD (IN BTU/HR.) WHICH OCCURRED DURING THAT MONTH. THE DATE, TIME, OUTSIDE AIR TEMPERATURE, SECONDARY HEATING WATER SUPPLY AND RETURN TEMPERATURES AND FLOW RATE THAT COINCIDED WITH THAT EVENT SHALL ALSO BE RECORDED. THIS INFORMATION SHALL BE STORED TO A MEMORY LOCATION ON THE FMCS OPERATOR INTERFACE THAT IS MAINTAINED (NOT AUTOMATICALLY OVERRITTEN).



2 HEATING WATER CONTROL DIAGRAM
 NO SCALE



GENERAL:
 TWO 100% CAPACITY HEAT EXCHANGERS AND TWO 100% CAPACITY GLYCOL WATER PUMPS ARE PROVIDED IN THE SYSTEM (ONE HEAT EXCHANGER AND ONE PUMP ARE REDUNDANT). GLYCOL PREHEAT LOOP SHALL BE ENABLED WHEN THE OUTSIDE AIR TEMPERATURE FALLS BELOW 45°F (ADJ.) FOR 15 MINUTES (ADJ.). WHEN OUTSIDE AIR TEMPERATURE RISES ABOVE 49°F (ADJ.) FOR 15 MINUTES (ADJ.).

PUMP CONTROL:
 WHEN OUTSIDE AIR TEMPERATURE RISES ABOVE 38°F (ADJ.) FOR 10 MINUTES (ADJ.), GLYCOL WATER PUMP SHALL OPERATE ONLY WHEN HEATING IS CALLED FOR (PREHEAT COIL CONTROL VALVE IS COMMANDED TO OPEN). WHEN OUTSIDE AIR TEMPERATURE DROPS BELOW 38°F (ADJ.) GLYCOL WATER PUMP SHALL OPERATE CONTINUOUSLY. ONCE ENERGIZED, GLYCOL WATER PUMP SHALL REMAIN IN OPERATION FOR A MINIMUM OF 5 MINUTES (ADJ.) TO PREVENT SHORT CYCLING.

THE FMCS SHALL ALTERNATE THE LEAD PUMP BASED ON RUN TIME. SWITCH EVERY 400 HOURS (ADJ.). INCLUDE GRAPHIC TOGGLE ON OPERATOR WORK STATION GRAPHICAL SCREEN TO ALLOW OPERATOR TO MANUALLY SELECT WHICH PUMP IS LEAD AND WHICH IS LAG.

HEAT EXCHANGER CONTROL:
 UPON A CALL FOR HEATING BY AHU-1, THE LEAD HEAT EXCHANGER GLYCOL WATER CONTROL VALVE SHALL FULLY OPEN. THE LEAD HEAT EXCHANGER HEATING WATER CONTROL VALVE SHALL MODULATE TO MAINTAIN A GLYCOL WATER SUPPLY TEMPERATURE OF 175°F (ADJ.). FMCS SHALL RESET THE GLYCOL WATER SUPPLY TEMPERATURE IN ACCORDANCE WITH THE HEATING WATER SUPPLY RESET SCHEDULE.

THE FMCS SHALL ALTERNATE THE LEAD HEAT EXCHANGER BASED ON RUN TIME. SWITCH EVERY 400 HOURS (ADJ.). INCLUDE GRAPHIC TOGGLE ON OPERATOR WORKSTATION GRAPHICAL SCREEN TO ALLOW OPERATOR TO MANUALLY SELECT WHICH HEAT EXCHANGER IS LEAD AND WHICH IS LAG.

ALARMS, INTERLOCKS & SAFETIES:
 AN ALARM SHALL BE INDICATED AT THE FMCS WHEN THE FOLLOWING OCCUR:
 • IF THE GWS TEMPERATURE IS MORE THAN 5°F (ADJ.) ABOVE OR BELOW SETPOINT FOR MORE THAN 10 MINUTES (ADJ.).
 • SHOULD THE FMCS COMMAND THE LEAD HW PUMP TO OPERATE AND THE PUMP FAILS TO DO SO AS DETERMINED BY THE VFD STATUS, ALARM SHALL BE INDICATED AT THE FMCS OPERATOR WORKSTATION AND THE LAG PUMP SHALL AUTOMATICALLY START.
 • SHOULD THE FMCS COMMAND THE LEAD HEAT EXCHANGER TO OPERATE AND THE LAG HEAT EXCHANGER VALVE FAILS TO OPEN AS DETERMINED BY THE VALVE FEEDBACK, ALARM SHALL BE INDICATED AT THE FMCS OPERATOR WORKSTATION AND THE LAG HEAT EXCHANGER SHALL AUTOMATICALLY BE INDEXED TO OPERATE.
 • AN ALARM CONDITION OCCUR AT ANY PUMP OR VFD.

3 GLYCOL PREHEAT LOOP CONTROL
 NO SCALE

GENERAL:
 SNOW MELT SYSTEM SHALL BE CONTROLLED VIA THE FMCS. THE FMCS SHALL ENABLE POINT THROUGH THE FMCS WHEN THE OUTDOOR AIR TEMPERATURE IS BELOW 40°F (ADJ.). THE SYSTEM SHALL BE DISABLED WHEN THE OUTSIDE AIR TEMPERATURE IS ABOVE 42°F (ADJ.).

SEQUENCE OF OPERATION:
 THE SYSTEM SHALL OPERATE AS FOLLOWS TO MAINTAIN A SNOW MELT GLYCOL HEATING WATER TEMPERATURE OF 115°F (ADJ.):
 • THE LEAD CIRCULATION PUMP SHALL START. IF THE LEAD PUMP IS COMMANDED TO START BUT FAILS TO START BASED ON A CURRENT STATUS SWITCH, THE LAG PUMP SHALL BE COMMANDED TO START.
 • ONCE THE CIRCULATION PUMP HAS PROVEN OPERATIONAL BY THE CURRENT STATUS SWITCH, THE HEAT EXCHANGER SHALL BE ALLOWED TO ENERGIZE.
 • THE HEATING WATER CONTROL VALVE SHALL BE MODULATED IN ORDER TO MAINTAIN THE GLYCOL WATER SUPPLY TEMPERATURE OF 115°F (ADJ.).
 • THE SYSTEM SHALL BE STOPPED MANUALLY THROUGH THE FMCS OPERATOR WORK STATION.

ALARMS, INTERLOCKS & SAFETIES:
 AN ALARM SHALL BE INDICATED AT THE FMCS WHEN THE FOLLOWING OCCUR:
 • GLYCOL HEATING SUPPLY TEMPERATURE GREATER THAN 130°F (ADJ.)
 • SHOULD THE FMCS COMMAND THE LEAD PUMP TO OPERATE AND THE PUMP FAILS TO DO SO AS DETERMINED BY THE VFD STATUS, ALARM SHALL BE INDICATED AT THE FMCS OPERATOR WORK STATION AND THE LAG PUMP SHALL AUTOMATICALLY START.
 • AN ALARM CONDITION OCCUR AT ANY PUMP OR VFD.

4 SNOW MELT SYSTEM CONTROL
 NO SCALE

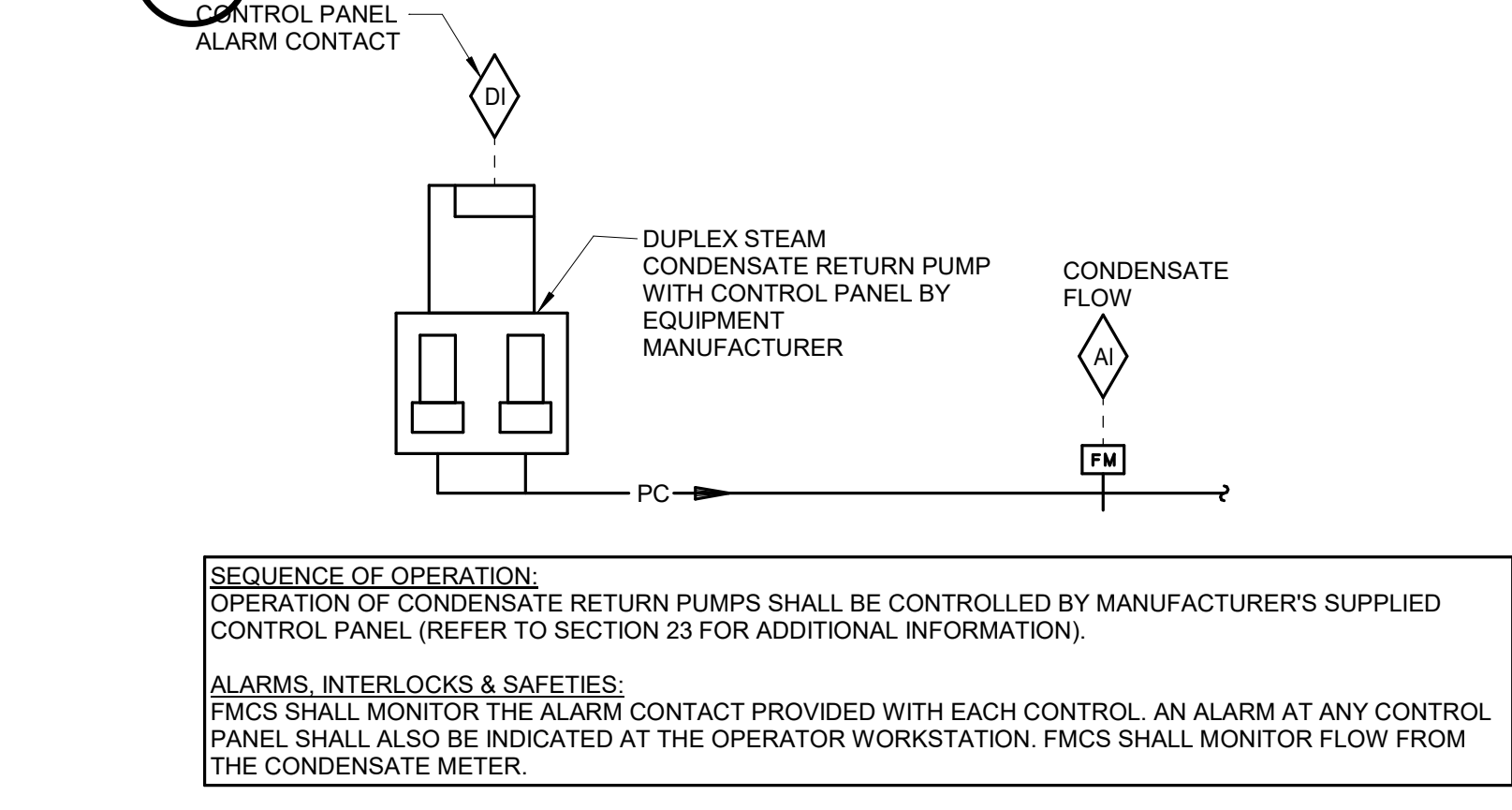
SEQUENCE OF OPERATION:
 THE GLYCOL FEED SYSTEM CONTROLLER SHALL OPERATE THE SYSTEM TO MAINTAIN THE SPECIFIED PRESSURE IN THE WATER SYSTEM.

ALARMS, INTERLOCKS, AND SAFETIES:
 AN ALARM SHALL BE GENERATED AT THE FMCS OPERATOR INTERFACE IF THE GLYCOL CONTROLLER INDICATES AN ALARM.

GENERAL:
 CONDENSATE RETURN PUMPS SHALL BE CONTROLLED BY MANUFACTURER'S SUPPLIED CONTROL PANEL (REFER TO SECTION 23 FOR ADDITIONAL INFORMATION).

ALARMS, INTERLOCKS & SAFETIES:
 FMCS SHALL MONITOR THE ALARM CONTACT PROVIDED WITH EACH CONTROL. AN ALARM AT ANY CONTROL PANEL SHALL ALSO BE INDICATED AT THE OPERATOR WORKSTATION. FMCS SHALL MONITOR FLOW FROM THE CONDENSATE METER.

5 GLYCOL FEED STATION CONTROL DIAGRAM
 NO SCALE



6 CONDENSATE RETURN PUMP MONITORING CONTROL
 NO SCALE

SEQUENCE OF OPERATION:
 FMCS SHALL CONTROL EACH VFD AS DESCRIBED IN THE SEQUENCE OF OPERATION OF THE EQUIPMENT. DRIVE SHALL BE EQUIPPED BY THE VFD MANUFACTURER WITH A COMMUNICATION CARD THAT IS COMPATIBLE WITH THE FMCS CONTROL SYSTEM. TCC SHALL PROVIDE COMMUNICATIONS WIRING AND PROGRAMMING AS REQUIRED FOR THE FMCS TO COMMUNICATE WITH EACH VFD AS DESCRIBED BELOW.

THE FOLLOWING VFD CONTROL PANEL POINTS (TO INCLUDE BUT NOT BE LIMITED TO) SHALL BE CONTROLLED BY THE FMCS AND DISPLAYED ON THE OPERATOR WORKSTATION (OWS) GRAPHICAL SCREEN:
 • SYSTEM STATUS: [ENABLE/DISABLE]
 • SPEED SET ADJUSTMENT: [%]
 • CURRENT LIMIT: [AMPS]

THE FOLLOWING VFD CONTROL PANEL POINTS (TO INCLUDE BUT NOT BE LIMITED TO) SHALL BE MONITORED BY THE FMCS AND DISPLAYED ON THE OPERATOR WORKSTATION (OWS) GRAPHICAL SCREEN:
 • SYSTEM STATUS: [DISABLE/MANUAL OPERATION/REMOTE OPERATION/AUTO/FAULT]
 • INPUT SPEED: [0 - 100%]
 • OUTPUT SPEED: [0 - 100%]
 • CURRENT: [AMPS]
 • POWER: [kW]
 • DRIVE TEMPERATURE: [°F]
 • RUN HOURS: [NUMERICAL]
 • DIAGNOSTIC AND FAULT CODES: [NUMERICAL]
 • BYPASS OPERATION: [ENABLE/DISABLE]

TCC SHALL PROVIDE A CURRENT SENSING RELAY ON ANY VFD EQUIPPED WITH A BYPASS WHERE THE VFD STATUS OUTPUT DOES INDICATE THE MOTOR IS RUNNING WHEN THE VFD IS OPERATING IN BYPASS MODE.

ALARMS, INTERLOCKS & SAFETIES:
 AN ALARM SHALL BE INDICATED TO THE FMCS OPERATOR WORKSTATION IN THE EVENT A FAULT OR ERROR CONDITION OCCURS AT ANY VFD.
 TCC SHALL PROGRAM VFD TO ENSURE MOTOR RPM DOES NOT DROP BELOW MINIMUM REQUIRED BY MOTOR MANUFACTURER.

7 VARIABLE FREQUENCY DRIVE CONTROL
 NO SCALE

CONSULTANT 		ARCHITECT/ENGINEER OF RECORD 		Office of Construction and Facilities Management 		Project Title CONSTRUCT NEW SPS		Project Number 438-460	
Revisions:		DATE:		Approved: 		Phase BID DOCUMENTS		Building Number 5	
Reference Scale in Inches 0 1 2 3		13605 1st Ave. N. #100 Plymouth, MN 55441 P 763.412.4000 F 763.412.4090 ae-mn.com Anderson Engineering of Minnesota, LLC Proj # 16584		U.S. Department of Veterans Affairs		Location Sioux Falls, SD.		Drawing Number MC400	
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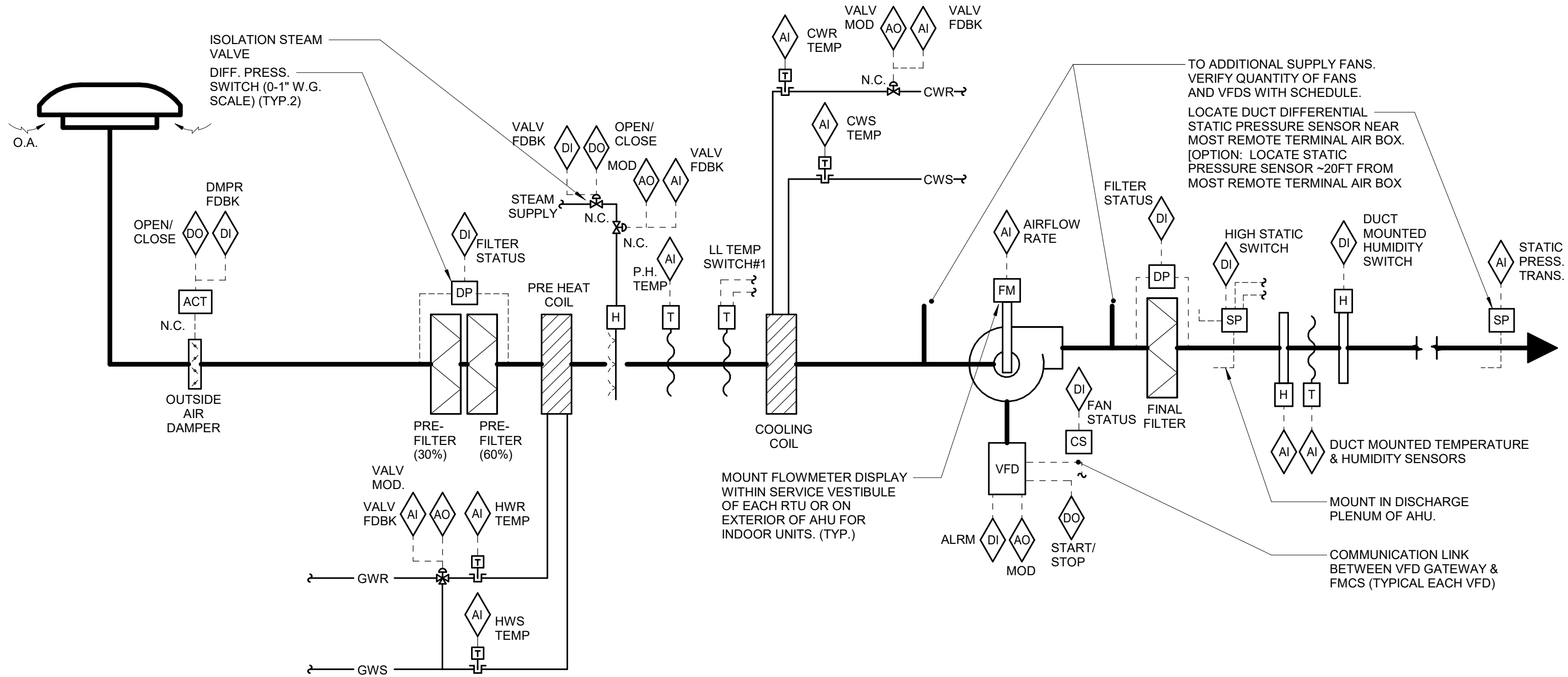
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SEQUENCE OF OPERATION:

WHEN AHU IS INDEXED TO RUN, THE FOLLOWING SHALL OCCUR:

- SMOKE DAMPERS AND COMBINATION FIRE/SMOKE DAMPERS SHALL OPEN.
- AFTER A 30 SECOND DELAY (ADJ.) TO ALLOW FOR OPENING OF SMOKE DAMPERS AND COMBINATION FIRE/SMOKE DAMPERS, SUPPLY FAN SHALL BE ENABLED TO RUN.
- WHEN THE SUPPLY FAN HAS STARTED THE INTERLOCKED EXHAUST FANS SHALL START AS SHOWN IN THE FAN INTERLOCK SCHEDULE.

SUPPLY FAN OPERATION:

FMCS SHALL MODULATE SIGNAL TO SUPPLY FAN VFD TO MAINTAIN DUCT STATIC PRESSURE AS MEASURED BY STATIC PRESSURE TRANSMITTER NEAR THE END OF THE CRITICAL DUCT BANK.

STATIC PRESSURE RESET:

FMCS SHALL RESET SUPPLY DUCT STATIC PRESSURE SETPOINT BELOW THE MAXIMUM SETPOINT AS REQUIRED TO MAINTAIN AT LEAST ONE SUPPLY TAB DAMPER 90% (ADJ.) OPEN. FMCS SHALL MONITOR ALL SUPPLY TERMINAL AIR BOX POSITIONS TO RESET THE SUPPLY DUCT DIFFERENTIAL STATIC PRESSURE.

DISCHARGE AIR TEMPERATURE SETPOINT:

DISCHARGE AIR SET POINT SHALL BE 50°F (ADJ.).

DISCHARGE AIR TEMPERATURE RESET:

RESET DISCHARGE AIR TEMPERATURE BASED ON THE ZONE WITH THE GREATEST CALL FOR COOLING. RESET THE TEMPERATURE AS FOLLOWS:

- WHEN WORST CASE TAB IS LESS THAN 90% (ADJ.) OPEN FOR TEN MINUTES (ADJ.) THEN THE DISCHARGE AIR TEMPERATURE SHALL INCREASE BY 1°F (ADJ.). THIS SHALL CONTINUE UNTIL AHU MAXIMUM DISCHARGE AIR TEMPERATURE OF 60°F (ADJ.) IS ACHIEVED.
- WHEN WORST CASE TAB IS MORE THAN 90% OPEN FOR TEN MINUTES (ADJ.) THEN THE DISCHARGE AIR TEMPERATURE SHALL DROP BY 1°F (ADJ.). THIS SHALL CONTINUE UNTIL AHU MINIMUM DISCHARGE AIR TEMPERATURE OF 50°F (ADJ.) IS ACHIEVED.
- THE MAXIMUM ALLOWABLE SUPPLY AIR DEWPOINT SETPOINT SHALL BE 46.2°F (ADJ.). IF RETURN AIR HUMIDITY IS GREATER THAN SETPOINT, RESET DISCHARGE AIR TEMPERATURE TO 50°F UNTIL SUPPLY AIR DEWPOINT IS 5% LESS THAN MAXIMUM SETPOINT FOR 10 MINUTES (ADJ.).

STATIC PRESSURE AND DISCHARGE AIR TEMPERATURE RESET PRIORITY:

RESET THE DISCHARGE AIR TEMPERATURE PRIOR TO RESETTING THE DUCTWORK STATIC PRESSURE SETPOINT. ONCE THE MAXIMUM SUPPLY TEMPERATURE IS REACHED THEN THE SYSTEM SHALL ENABLE THE STATIC PRESSURE RESET.

VENTILATION AIR CONTROL:

WHENEVER THE AIR HANDLING UNIT IS IN OCCUPIED MODE, THE OUTSIDE AIR DAMPER SHALL BE FULLY OPEN.

COOLING COIL OPERATION:

FMCS SHALL MODULATE CHILLED WATER CONTROL VALVE AS REQUIRED TO MAINTAIN DISCHARGE AIR TEMPERATURE SETPOINT.

PREHEAT COIL OPERATION:

PREHEAT COIL CONTROLS SHALL BE ENABLED WHEN OUTSIDE AIR TEMP DROPS BELOW 45°F (ADJ.). PREHEAT COIL CONTROLS SHALL BE DISABLED WHEN OUTSIDE AIR TEMP RISES ABOVE 49°F (ADJ.).

FMCS SHALL MODULATE HEATING WATER CONTROL VALVE AS REQUIRED TO MAINTAIN DISCHARGE AIR TEMPERATURE SETPOINT.

HUMIDIFIER CONTROLS:

HUMIDIFIER CONTROLS AND ALARMS SHALL BE ENABLED WHEN OUTSIDE AIR TEMPERATURE DROPS BELOW 48°F (ADJ.) AT WHICH POINT THE ISOLATION STEAM VALVE SHALL FULLY OPEN. HUMIDIFIER CONTROLS AND ALARMS SHALL BE DISABLED WHEN OUTSIDE AIR TEMPERATURE RISES ABOVE 48°F (ADJ.) FOR 10 MINUTES (ADJ.) AT WHICH POINT THE ISOLATION STEAM VALVE SHALL FULLY CLOSE.

WHEN HUMIDIFIER CONTROLS ARE ENABLED, FMCS CONTROLLER SHALL MODULATE STEAM VALVE AS REQUIRED TO MAINTAIN 43°F DEWPOINT (ADJ.) IN THE SUPPLY AIR DUCT. DUCT MOUNTED HUMIDITY TRANSMITTER AT FAN DISCHARGE SHALL PREVENT SUPPLY AIR RELATIVE HUMIDITY FROM EXCEEDING 80% (ADJ.).

ALARMS, INTERLOCKS, AND SAFETIES:

WHEN FIRE ALARM CONTROL PANEL INDICATES AN ALARM CONDITION, AHU SHALL BE SHUTDOWN.

THE FOLLOWING CONDITIONS SHALL SHUTDOWN THE AHU AND SHALL INDICATE AN ALARM CONDITION AT THE FMCS WORKSTATION:

- HIGH STATIC PRESSURE SWITCH INDICATES SUPPLY DUCT STATIC PRESSURE GREATER THAN THE SPECIFIED DUCT PRESSURE CLASS.
- SHOULD ANY ONE FOOT SECTION OF THE MANUAL RESET LOW LIMIT TEMPERATURE SWITCH #1 SENSE AIR TEMP <34°F (ADJ.), IF MULTIPLE FREEZE STATS ARE REQUIRED, WIRE ALL TO A COMMON RESET SWITCH.

THE FOLLOWING CONDITIONS SHALL INDICATE AN ALARM AT THE FMCS, HOWEVER AHU SHALL CONTINUE TO OPERATE:

- HEATING COIL CIRCULATION PUMP IS COMMANDED TO RUN AND CURRENT RELAY INDICATES INSUFFICIENT CURRENT FLOW.
- AN ALARM IS INDICATED AT ANY SUPPLY FAN VFD.
- DIFFERENTIAL PRESSURE SWITCH ACROSS PRE-FILTER BANK EXCEEDS 0.8 INCHES W.G. (ADJ.).
- DIFFERENTIAL PRESSURE SWITCH ACROSS FINAL FILTER BANK EXCEEDS 1.0 INCHES W.G. (ADJ.).
- THE TOTAL DIFFERENTIAL PRESSURE ACROSS ALL FILTER BANKS EXCEEDS 2.0 INCHES W.G. (ADJ.).
- RELATIVE HUMIDITY OF SUPPLY AIR EXCEEDS 80% RH (ADJ.) AS MEASURED BY AUTOMATIC RESET HUMIDITY SWITCH. WHEN HUMIDITY SWITCH TRIPS, STEAM CONTROL VALVE SHALL FULLY CLOSE UNTIL ALARM IS RESET AT FMCS WORKSTATION. AN ALARM SHALL NOT INDICATE AT THE FMCS WORKSTATION UNLESS HUMIDIFIER CONTROLS ARE ENABLED.
- WHEN DUCTWORK SUPPLY AIR HUMIDITY EXCEEDS 90% RH A SEPARATE DUCT MOUNTED HUMIDITY SWITCH (MANUAL RESET) SHALL DISABLE HUMIDIFIER CONTROLS AND SHALL FULLY CLOSE STEAM ISOLATION VALVE. AN IDENTIFIABLE ALARM CONDITION SHALL BE DISPLAYED AT THE OPERATOR WORKSTATION.
- SEND AN ALARM TO THE FMCS OPERATOR INTERFACE IF THE DISCHARGE AIR TEMPERATURE IS MORE THAN 5°F (ADJ.) ABOVE OR BELOW SETPOINT.

IN THE EVENT SUPPLY FAN IS NOT RUNNING (AS INDICATED BY THE CURRENT SENSING RELAYS) RETURN AIR FAN SHALL BE DE-ENERGIZED.

WHENEVER AHU IS SHUTDOWN THE FOLLOWING SHALL OCCUR:

- THE OUTSIDE AIR DAMPER EXHAUST AIR DAMPER SHALL FULLY CLOSE.
- RETURN AIR DAMPER SHALL FULLY OPEN.
- PREHEAT COIL HEATING WATER CIRCULATION PUMP AND HEATING WATER CONTROL VALVE SHALL REMAIN UNDER CONTROL OF ITS INPUT SENSOR.
- ALL SMOKE DAMPERS AND COMBINATION FIRE/SMOKE DAMPERS SHALL FULLY CLOSE.
- CHILLED WATER CONTROL VALVE SHALL FULLY CLOSE.
- ISOLATION STEAM VALVE SHALL FULLY CLOSE.
- SUPPLY FAN AND EXHAUST FAN VFDs SHALL BE DE-ENERGIZED.
- INTERLOCKED EXHAUST FANS SHALL BE DE-ENERGIZED.

GRAPHICAL DISPLAY:

DISPLAY THE GLOBAL OUTSIDE AIR TEMPERATURE AND HUMIDITY ON AHU GRAPHIC PAGE.

AHU REPORT GENERATION:

DDC FMCS SHALL MONITOR THE FOLLOWING POINTS ON 10 MINUTE (ADJ.) INTERVALS WITHIN A SINGLE TREND. THE TREND SHALL RUN FOR A 100-DAY (ADJ.) DURATION AT WHICH POINT THE NEWEST VALUES SHALL AUTOMATICALLY OVERWRITE THE OLDEST VALUES.

- DATE
- TIME
- GLOBAL OUTSIDE AIR TEMP [°F]
- GLOBAL OUTSIDE AIR DEWPOINT [°F]
- GLOBAL OUTSIDE AIR HUMIDITY [RH]
- SUPPLY AIRFLOW [CFM]
- SUPPLY AIR TEMP [°F]
- SUPPLY AIR TEMP SETPOINT [°F]
- SUPPLY AIR RELATIVE HUMIDITY [%]
- SUPPLY AIR DEWPOINT [°F]
- SUPPLY AIR DEWPOINT SETPOINT [°F]
- OUTSIDE AIRFLOW [CFM]
- PREHEAT COIL DISCHARGE AIR TEMP [°F]
- PREHEAT COIL DISCHARGE AIR TEMP [°F]
- PRE-FILTER ALARM (STATUS)
- FINAL FILTER ALARM (STATUS)
- GLYCOL HEATING WATER VALVE POSITION [% OPEN]
- GLYCOL HEATING WATER PUMPS [ON/OFF]
- CHILLED WATER VALVE POSITION [% OPEN]
- HUMIDIFIER VALVE POSITION [% OPEN]
- HUMIDIFIER ISOLATION VALVE [OPEN/CLOSED]
- SUPPLY DUCT STATIC PRESSURE [INCHES W.G.]
- SUPPLY DUCT STATIC PRESSURE [INCHES W.G.]
- SUPPLY FAN VFD OUTPUT [% FULL SPEED]
- OUTSIDE AIR DAMPER POSITION [OPEN/CLOSED]

THIS INFORMATION SHALL BE ACCESSIBLE TO VIEW IN GRAPHICAL FORM ON THE FMCS OPERATOR WORKSTATION.

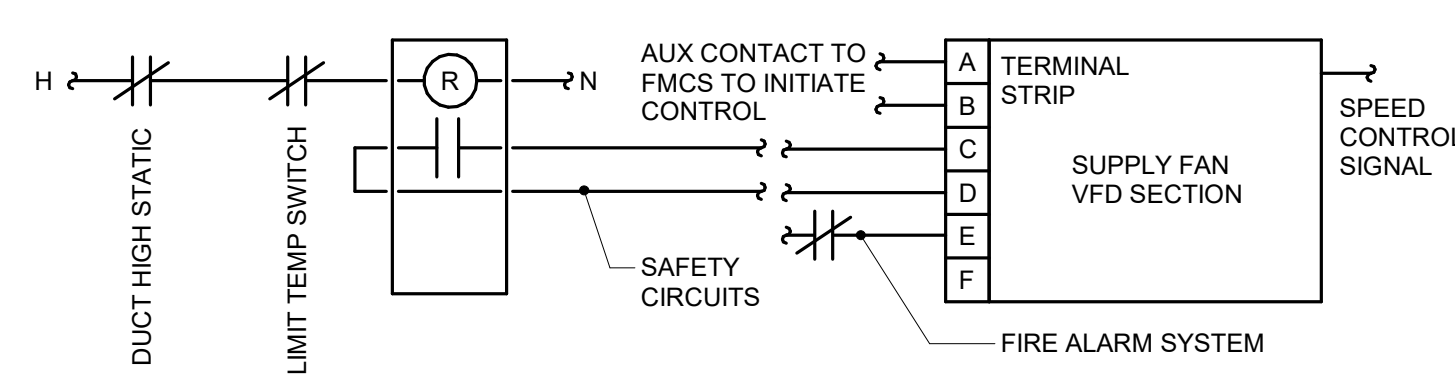
ONCE PER MONTH, THE DDC FMCS SHALL RECORD THE LARGEST AHU AIRFLOW WHICH OCCURRED DURING THAT MONTH, THE DATE, TIME, OUTSIDE AIR TEMP (AND ALL OTHER VALUES LISTED ABOVE) THAT COINCIDED WITH THAT EVENT SHALL ALSO BE RECORDED. THIS INFORMATION SHALL BE STORED TO A MEMORY LOCATION ON THE FMCS OPERATOR WORKSTATION THAT IS MAINTAINED (NOT AUTOMATICALLY OVERWRITTEN).

AIR HANDLER REPORT GENERATION

TYPICAL FOR AHU-1

FAN INTERLOCK SCHEDULE		
SYSTEM	INTERLOCKED EXHAUST FANS	REMARKS
AHU-1	EF-1, EF-2A/B	NOTE 1

- NOTES:**
- INTERLOCK EXHAUST FAN OPERATION THROUGH THE FMCS WITH RESPECTIVE AHU IN ACCORDANCE WITH AHU SEQUENCE OF OPERATION.



SUPPLY FAN VFD CONTROL

CONNECT FIRE ALARM TO AHU START/STOP CIRCUIT SO FIRE ALARM CAN SHUT DOWN AND SO AHU CAN AUTOMATICALLY RESTART AFTER A FIRE ALARM TEST

1 AIR HANDLING UNIT CONTROL - AHU-1
NO SCALE

<p>Revisions:</p>	<p>Date:</p>	<p>CONSULTANT</p> <p>IMEG</p> <p>2802 100TH STREET DES MOINES, IA 50325 515.334.9900 FAX: 515.334.9908 www.imegcorp.com PROJECT # 19004249.04</p> <p>IMEG CORP. RESERVES PROPRIETARY RIGHTS, INCLUDING COPYRIGHTS, TO THIS DRAWING AND THE DATA SHOWN THEREON. THIS DRAWING AND/OR DATA ARE THE EXCLUSIVE PROPERTY OF IMEG CORP. AND SHALL NOT BE USED OR REPRODUCED FOR ANY OTHER PROJECT WITHOUT THE EXPRESS WRITTEN APPROVAL AND PARTICIPATION OF IMEG CORP. © 2023 IMEG CORP.</p> <p>REFERENCE SCALE IN INCHES</p>	<p>ARCHITECT/ENGINEER OF RECORD</p> <p>ANDERSON</p> <p>13605 1st Ave. N. #100 Plymouth, MN 55441 P 763.412.4000 F 763.412.4090 ae-mn.com Anderson Engineering of Minnesota, LLC Proj # 16584</p>	<p>STAMP</p>	<p>Office of Construction and Facilities Management</p> <p>VA U.S. Department of Veterans Affairs</p>	<p>Drawing Title</p> <p>CONTROL DIAGRAMS</p> <p>Approved:</p>	<p>Phase</p> <p>BID DOCUMENTS</p> <p>FULLY SPRINKLERED</p>	<p>Project Title</p> <p>CONSTRUCT NEW SPS</p> <p>Location</p> <p>Sioux Falls, SD.</p> <p>Issue Date</p> <p>02/14/2025</p> <p>Checked</p> <p>DAVING</p> <p>Drawn</p> <p>DELLE</p>	<p>Project Number</p> <p>438-460</p> <p>Building Number</p> <p>5</p> <p>Drawing Number</p> <p>MC401</p>
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A

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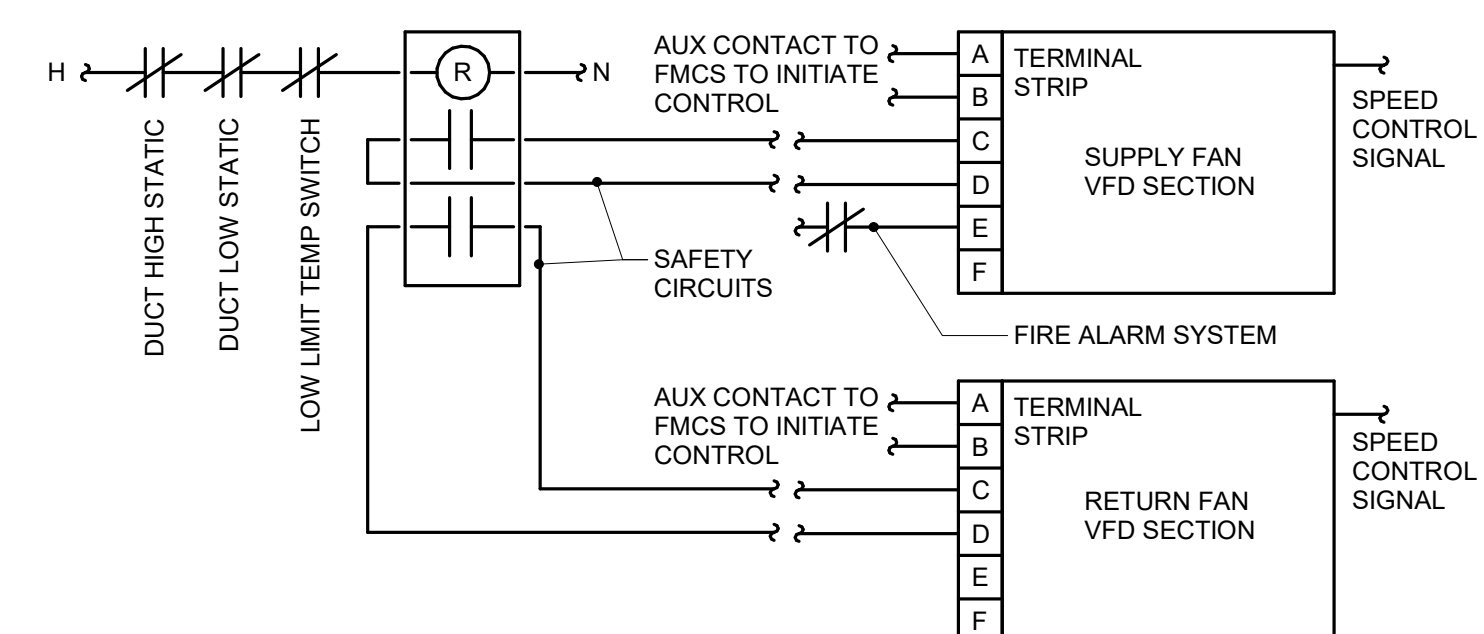
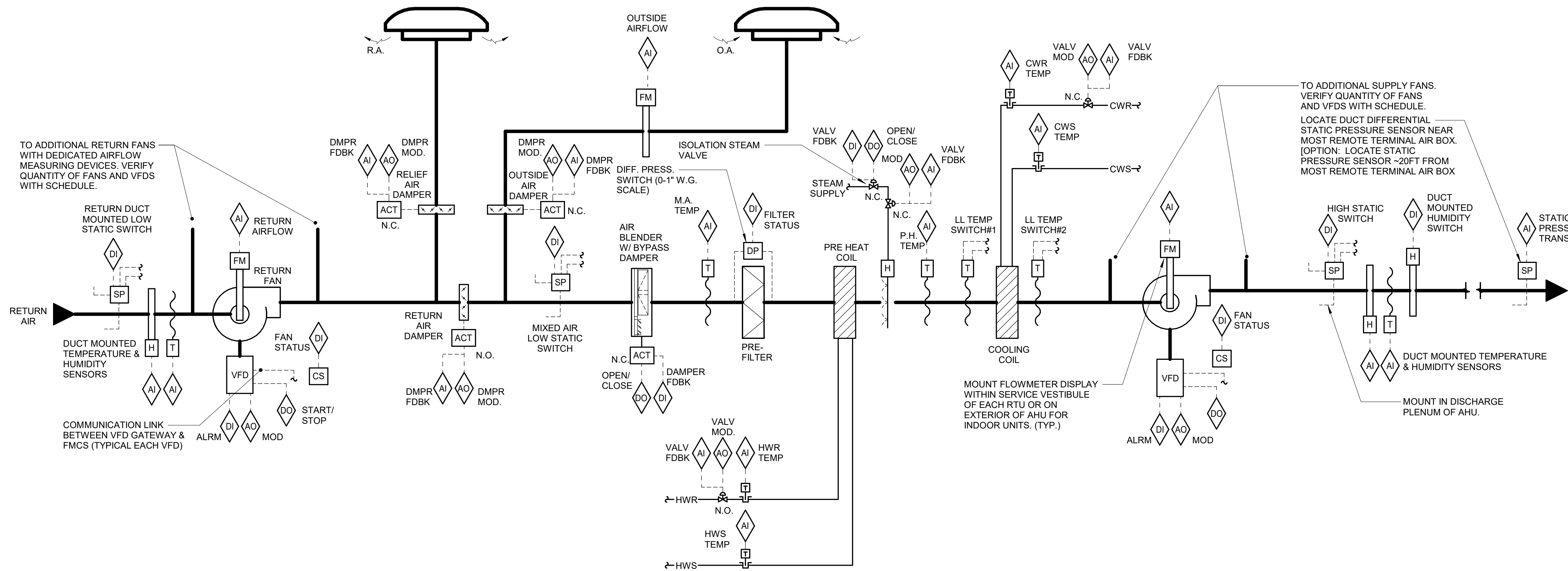
F

RETURN FAN AIRFLOW SCHEDULE				
SYSTEM	SUPPLY CFM	EXHAUST FANS	PRESSURIZATION CFM	REMARKS
AHU-2	5,000	EF-3 & EF-4	250	NOTES 1,2,3

NOTES:
 1. RETURN FAN AIRFLOW SETPOINT SHALL BE THE SUPPLY FAN AIRFLOW (AS MEASURED BY THE AFMS) MINUS THE SUM OF THE EXHAUST FAN AIRFLOWS MINUS THE PRESSURIZATION CFM.
 2. FMCS SHALL DETERMINE THE OPERATIONAL STATUS OF EACH EXHAUST FAN VIA THE CURRENT SENSING RELAY TO DETERMINE WHETHER THE CFM ASSOCIATED WITH THAT FAN SHOULD BE INCLUDED IN THE RETURN FAN AIRFLOW CALCULATION.
 3. EXHAUST FAN AIRFLOWS SHALL NOT BE THE CFM INDICATED ON THE FAN SCHEDULE, BUT SHALL BE THE AIRFLOW INDICATED IN THE FINAL TAB REPORT.

FAN INTERLOCK SCHEDULE		
SYSTEM	INTERLOCKED EXHAUST FANS	REMARKS
AHU-1	EF-3 & EF-4	NOTE 1

NOTES:
 1. INTERLOCK EXHAUST FAN OPERATION THROUGH THE FMCS WITH RESPECTIVE AHU IN ACCORDANCE WITH AHU SEQUENCE OF OPERATION.



SUPPLY & RETURN FAN VFD CONTROL
 CONNECT FIRE ALARM TO AHU START/STOP CIRCUIT SO FIRE ALARM CAN SHUT DOWN AND SO AHU CAN AUTOMATICALLY RESTART AFTER A FIRE ALARM TEST

SEQUENCE OF OPERATION:
 WHEN AHURTU IS INDEXED TO RUN, THE FOLLOWING SHALL OCCUR:
 • SMOKE DAMPERS AND COMBINATION FIRE/SMOKE DAMPERS SHALL OPEN.
 • AFTER A 30 SECOND DELAY (ADJ.) TO ALLOW FOR OPENING OF SMOKE DAMPERS AND COMBINATION FIRE/SMOKE DAMPERS, SUPPLY FAN SHALL BE ENABLED TO RUN.
 • WHEN THE SUPPLY FAN HAS STARTED THE RETURN FAN AND INTERLOCKED EXHAUST FANS SHALL START AS SHOWN IN THE FAN INTERLOCK SCHEDULE.

SUPPLY FAN OPERATION:
 FMCS SHALL MODULATE SIGNAL TO SUPPLY FAN VFD TO MAINTAIN DUCT STATIC PRESSURE AS MEASURED BY STATIC PRESSURE TRANSMITTER NEAR THE END OF THE CRITICAL DUCT BRANCH.

RETURN FAN OPERATION:
 RETURN FAN SHALL BE INDEXED TO RUN WHENEVER THE SUPPLY FAN IS INDEXED TO RUN. FMCS SHALL MODULATE SIGNAL TO RETURN FAN VFD AS REQUIRED TO MAINTAIN THE AIRFLOW OFFSET AS INDICATED IN THE RETURN FAN AIRFLOW SCHEDULE.

STATIC PRESSURE RESET:
 FMCS SHALL RESET SUPPLY DUCT STATIC PRESSURE SETPOINT BELOW THE MAXIMUM SETPOINT AS REQUIRED TO MAINTAIN AT LEAST ONE SUPPLY TAB DAMPER 90% (ADJ.) OPEN. FMCS SHALL MONITOR ALL SUPPLY TERMINAL AIR BOX POSITIONS TO RESET THE SUPPLY DUCT DIFFERENTIAL STATIC PRESSURE.

DISCHARGE AIR TEMPERATURE SET POINT:
 DISCHARGE AIR SET POINT SHALL BE 55°F (ADJ.).

DISCHARGE AIR TEMPERATURE RESET:
 RESET DISCHARGE AIR TEMPERATURE BASED ON THE ZONE WITH THE GREATEST CALL FOR COOLING. RESET THE TEMPERATURE AS FOLLOWS:
 • WHEN WORST CASE TAB IS LESS THAN 90% (ADJ.) OPEN FOR TEN MINUTES (ADJ.) THEN THE DISCHARGE AIR TEMPERATURE SHALL INCREASE BY 1°F (ADJ.). THIS SHALL CONTINUE UNTIL AHU MAXIMUM DISCHARGE AIR TEMPERATURE OF 60°F (ADJ.) IS ACHIEVED.
 • WHEN WORST CASE TAB IS MORE THAN 90% OPEN FOR TEN MINUTES (ADJ.) THEN THE DISCHARGE AIR TEMPERATURE SHALL DROP BY 1°F (ADJ.). THIS SHALL CONTINUE UNTIL AHU MINIMUM DISCHARGE AIR TEMPERATURE OF 55°F (ADJ.) IS ACHIEVED.
 • THE MAXIMUM ALLOWABLE RETURN AIR HUMIDITY SETPOINT SHALL BE 60% (ADJ.). IF RETURN AIR HUMIDITY IS GREATER THAN SETPOINT, RESET DISCHARGE AIR TEMPERATURE TO 55°F UNTIL RETURN AIR HUMIDITY IS 5% LESS THAN MAXIMUM SETPOINT FOR 10 MINUTES (ADJ.).

STATIC PRESSURE AND DISCHARGE AIR TEMPERATURE RESET PRIORITY:
 RESET THE DISCHARGE AIR TEMPERATURE PRIOR TO RESETTING THE DUCTWORK STATIC PRESSURE SETPOINT. ONCE THE MAXIMUM SUPPLY TEMPERATURE IS REACHED THE SYSTEM SHALL ENABLE THE STATIC PRESSURE RESET.

VENTILATION AIR CONTROL:
 WHENEVER THE AIR HANDLING UNIT IS IN OCCUPIED MODE, THE OUTSIDE AIR DAMPER SHALL BE FULLY OPEN. THE RETURN AIR AND RELIEF AIR DAMPER SHALL MODULATE IN OPPOSITION TO MAINTAIN THE MINIMUM OUTSIDE AIR FLOW RATE, OR TO SATISFY THE ECONOMIZER DISCHARGE AIR SEQUENCE.

COOLING COIL OPERATION:
 WHEN IN MINIMUM OUTSIDE AIR MODE, FMCS SHALL MODULATE CHILLED WATER CONTROL VALVE AS REQUIRED TO MAINTAIN DISCHARGE AIR TEMPERATURE SET POINT. WHEN IN ECONOMIZER MODE, FMCS SHALL NOT MODULATE COOLING CONTROL VALVE UNLESS RETURN AIR DAMPER IS 5% (ADJ.) OPEN AND RELIEF AIR DAMPER IS 95% (ADJ.) OPEN.

PREHEAT COIL OPERATION:
 PREHEAT COIL CONTROLS SHALL BE ENABLED WHEN OUTSIDE AIR TEMP DROPS BELOW 50°F (ADJ.). PREHEAT COIL CONTROLS SHALL BE DISABLED WHEN OUTSIDE AIR TEMP RISES ABOVE 54°F (ADJ.).

FMCS SHALL MODULATE HEATING WATER CONTROL VALVE AS REQUIRED TO MAINTAIN DISCHARGE AIR TEMPERATURE SET POINT.

ECONOMIZER OPERATION:
 WHEN THE OUTSIDE AIR DRY BULB TEMPERATURE IS LESS THAN THE RETURN AIR DRY BULB TEMPERATURE THE FMCS SHALL ENABLE ECONOMIZER CONTROLS. WHEN OUTSIDE AIR DRY BULB TEMPERATURE IS GREATER THAN THE RETURN AIR DRY BULB TEMPERATURE FOR 10 MINUTES THE FMCS SHALL DISABLE ECONOMIZER CONTROLS AND SHALL RETURN THE UNIT TO MINIMUM OUTSIDE AIR MODE. ONCE ECONOMIZER CONTROLS HAVE BEEN ENABLED OR DISABLED, THE UNIT SHALL CONTINUE TO OPERATE IN THAT MODE FOR A MINIMUM OF 10 MINUTES (ADJ.) BEFORE BEING ALLOWED TO SWITCH BACK (TO PREVENT SHORT CYCLING).

IN ECONOMIZER MODE THE FMCS SHALL MODULATE THE RETURN AND RELIEF DAMPERS AS REQUIRED TO MAINTAIN DISCHARGE AIR TEMPERATURE SETPOINT.

HUMIDIFIER CONTROLS:
 HUMIDIFIER CONTROLS AND ALARMS SHALL BE ENABLED WHEN OUTSIDE AIR TEMPERATURE DROPS BELOW 48°F (ADJ.) AT WHICH POINT THE ISOLATION STEAM VALVE SHALL FULLY OPEN. HUMIDIFIER CONTROLS AND ALARMS SHALL BE DISABLED WHEN OUTSIDE AIR TEMPERATURE RISES ABOVE 48°F (ADJ.) FOR 10 MINUTES (ADJ.) AT WHICH POINT THE ISOLATION STEAM VALVE SHALL FULLY CLOSE.

WHEN HUMIDIFIER CONTROLS ARE ENABLED, FMCS CONTROLLER SHALL MODULATE STEAM VALVE AS REQUIRED TO MAINTAIN 43°F DEWPOINT (ADJ.) IN THE SUPPLY AIR DUCT. DUCT MOUNTED HUMIDITY TRANSMITTER AT FAN DISCHARGE SHALL PREVENT SUPPLY AIR RELATIVE HUMIDITY FROM EXCEEDING 90% (ADJ.).

SEQUENCE OF OPERATION (CONT.):
 ALARMS, INTERLOCKS, AND SAFETIES:
 WHEN FIRE ALARM CONTROL PANEL INDICATES AN ALARM CONDITION, AHU SHALL BE SHUTDOWN.

THE FOLLOWING CONDITIONS SHALL SHUTDOWN THE AHU AND SHALL INDICATE AN ALARM CONDITION AT THE FMCS WORKSTATION:
 • LOW STATIC PRESSURE SWITCH INDICATES RETURN DUCT PRESSURE LESS THAN THE SPECIFIED DUCT PRESSURE CLASS.
 • LOW STATIC PRESSURE SWITCH INDICATES MIXED AIR PRESSURE LESS THAN THE SPECIFIED DUCT PRESSURE CLASS OF THE OUTSIDE AIR DUCTWORK.
 • RELATIVE HUMIDITY OF SUPPLY AIR EXCEEDS 80% RH (ADJ.) AS MEASURED BY AUTOMATIC RESET HUMIDITY SWITCH. WHEN HUMIDITY SWITCH TRIPS, STEAM CONTROL VALVE SHALL FULLY CLOSE UNTIL ALARM IS RESET AT FMCS WORKSTATION. AN ALARM SHALL NOT INDICATE AT THE FMCS WORKSTATION UNLESS HUMIDIFIER CONTROLS ARE ENABLED.
 • WHEN DUCTWORK SUPPLY AIR HUMIDITY EXCEEDS 90% RH A SEPARATE DUCT MOUNTED HUMIDITY SWITCH (MANUAL RESET) SHALL DISABLE HUMIDIFIER CONTROLS AND SHALL FULLY CLOSE STEAM ISOLATION VALVE. AN IDENTIFIABLE ALARM CONDITION SHALL BE DISPLAYED AT THE OPERATOR WORKSTATION.
 • SHOULD ANY ONE FOOT SECTION OF THE AUTO RESET LOW LIMIT TEMPERATURE SWITCH #2 SENSE AIR TEMPERATURE <38°F (ADJ.) THE FOLLOWING SHALL OCCUR:
 • THE RETURN AIR DAMPER SHALL FULLY OPEN.
 • THE OUTSIDE AIR AND RELIEF DAMPERS SHALL FULLY CLOSE.
 • THIS ACTION SHALL OCCUR INDEPENDENT OF THE FMCS AHU CONTROLLER. ONCE THE LOW LIMIT TEMPERATURE SWITCH #2 AIR TEMPERATURE RISES ABOVE SET POINT, OPERATION OF THE OUTSIDE AIR, RELIEF AIR, AND RETURN AIR DAMPERS SHALL BE RESTORED. HOWEVER, THE ALARM SHALL CONTINUE UNTIL ACKNOWLEDGED AND MANUALLY RESET BY THE FMCS OPERATOR.
 • SEND AN ALARM TO THE FMCS OPERATOR INTERFACE IF THE DISCHARGE AIR TEMPERATURE IS MORE THAN 5°F (ADJ.) ABOVE OR BELOW SETPOINT.

IN THE EVENT SUPPLY FAN IS NOT RUNNING (AS INDICATED BY THE CURRENT SENSING RELAYS) RETURN AIR FAN SHALL BE DE-ENERGIZED.

WHENEVER AHURTU IS SHUTDOWN THE FOLLOWING SHALL OCCUR:
 • THE OUTSIDE AIR DAMPER AND RELIEF AIR DAMPER SHALL FULLY CLOSE.
 • RETURN AIR DAMPER SHALL FULLY OPEN.
 • PREHEAT COIL, HEATING WATER CIRCULATION PUMP AND HEATING WATER CONTROL VALVE SHALL REMAIN UNDER CONTROL OF ITS INPUT SENSOR.
 • ALL SMOKE DAMPERS AND COMBINATION FIRE/SMOKE DAMPERS SHALL FULLY CLOSE.
 • CHILLED WATER CONTROL VALVE SHALL FULLY CLOSE.
 • ISOLATION STEAM VALVE SHALL FULLY CLOSE.
 • SUPPLY FAN AND RETURN FAN VFDs SHALL BE DE-ENERGIZED.
 • INTERLOCKED EXHAUST FANS SHALL BE DE-ENERGIZED.

UNOCCUPIED MODE:
 PROVIDE TIME OF DAY SCHEDULE TO ALLOW AHU TO ENTER UNOCCUPIED MODE PER SCHEDULE. COORDINATE SCHEDULE WITH OWNER.

• THE SUPPLY AND RETURN FANS SHALL CONTINUE RUNNING. WHEN USING CONSTANT VOLUME OFFSET FOR RETURN AIR FAN CONTROL, THE OFFSET SHALL GO TO ZERO AND THE SUPPLY FAN SHALL BE LIMITED TO THE MAXIMUM RETURN AIR FLOW.
 • THE OUTSIDE AIR AND RELIEF AIR DAMPERS SHALL CLOSE AND THE RETURN AIR DAMPER SHALL OPEN. ECONOMIZER CYCLE SHALL TAKE PRECEDENCE OVER DAMPER POSITION.
 • ALL SPACE TEMPERATURES SHALL BE ALLOWED TO VARY +/- 10°F (ADJ.) FROM OCCUPIED SETPOINT.

HEATING OPTIMUM START-UP:
 • THIS CYCLE SHALL OVERRIDE THE UNOCCUPIED CYCLE. IF THE SYSTEM WAS OPERATING AS A RESULT OF THE UNOCCUPIED CYCLE, THE SYSTEM SHALL CONTINUE TO OPERATE. THE DDC SYSTEM SHALL DETERMINE THE MINIMUM RUNTIME TO WARM THE SPACES TO THEIR SETPOINT WHEN THE COMPUTED START TIME IS REACHED. THE AIR HANDLING UNIT DISCHARGE AIR TEMPERATURE SHALL BE MAINTAINED AT A SETPOINT OF 85°F (ADJ.). THE SYSTEM SHALL CONTINUE TO OPERATE IN THIS MODE UNTIL ALL TEMPERATURES EXCEED A SETPOINT OF 68°F (ADJ.). AT THAT TIME, THE DDC SYSTEM SHALL SWITCH TO OCCUPIED CONTROL.

COOLING OPTIMUM START-UP:
 • THIS CYCLE SHALL OVERRIDE THE UNOCCUPIED CYCLE. IF THE SYSTEM WAS OPERATING AS A RESULT OF THE UNOCCUPIED CYCLE, THE SYSTEM SHALL CONTINUE TO OPERATE. THE DDC SYSTEM SHALL DETERMINE THE MINIMUM RUNTIME TO COOL THE SPACES TO THEIR SETPOINT WHEN THE COMPUTED START TIME IS REACHED. THE AIR HANDLING UNIT DISCHARGE AIR TEMPERATURE SHALL BE MAINTAINED AT A SETPOINT OF 55°F (ADJ.). THE SYSTEM SHALL CONTINUE TO OPERATE IN THIS MODE UNTIL ALL TEMPERATURES ARE LESS THAN A SETPOINT OF 75°F (ADJ.). AT THAT TIME, THE DDC SYSTEM SHALL SWITCH TO OCCUPIED CONTROL.

GRAPHICAL DISPLAY:
 DISPLAY THE GLOBAL OUTSIDE AIR TEMPERATURE AND HUMIDITY ON AHU GRAPHIC PAGE.

AHU REPORT GENERATION:
 DDC FMCS SHALL MONITOR THE FOLLOWING POINTS ON 10 MINUTE (ADJ.) INTERVALS WITHIN A SINGLE TREND. THE TREND SHALL RUN FOR A 100-DAY (ADJ.) DURATION AT WHICH POINT THE NEWEST VALUES SHALL AUTOMATICALLY OVERWRITE THE OLDEST VALUES.

- DATE
- TIME
- GLOBAL OUTSIDE AIR TEMP [°F]
- GLOBAL OUTSIDE AIR DEWPOINT [°F]
- GLOBAL OUTSIDE AIR HUMIDITY [%RH]
- SUPPLY AIRFLOW [CFM]
- SUPPLY AIR TEMP [°F]
- SUPPLY AIR TEMP SETPOINT [°F]
- SUPPLY AIR RELATIVE HUMIDITY [%]
- SUPPLY AIR DEWPOINT [°F]
- RETURN AIRFLOW [CFM]
- RETURN AIR TEMP [°F]
- RETURN AIR RELATIVE HUMIDITY [%]
- OUTSIDE AIRFLOW [CFM]
- MIXED AIR TEMP [°F]
- PREHEAT COIL DISCHARGE AIR TEMP [°F]
- PRE-FILTER ALARM (STATUS)
- HEATING WATER VALVE POSITION [% OPEN]
- HEATING PUMP (ON/OFF)
- CHILLED WATER VALVE POSITION [% OPEN]
- HUMIDIFIER VALVE POSITION [% OPEN]
- HUMIDIFIER ISOLATION VALVE (OPEN/CLOSED)
- SUPPLY DUCT STATIC PRESSURE [INCHES W.G.]
- SUPPLY DUCT STATIC PRESSURE (INCHES W.G.)
- SUPPLY FAN VFD OUTPUT [% FULL SPEED]
- RETURN FAN VFD OUTPUT [% FULL SPEED]
- OUTSIDE AIR DAMPER POSITION [% OPEN]
- RETURN AIR DAMPER POSITION [% OPEN]
- RELIEF AIR DAMPER POSITION [% OPEN]

THIS INFORMATION SHALL BE ACCESSIBLE TO VIEW IN GRAPHICAL FORM ON THE FMCS OPERATOR WORKSTATION.

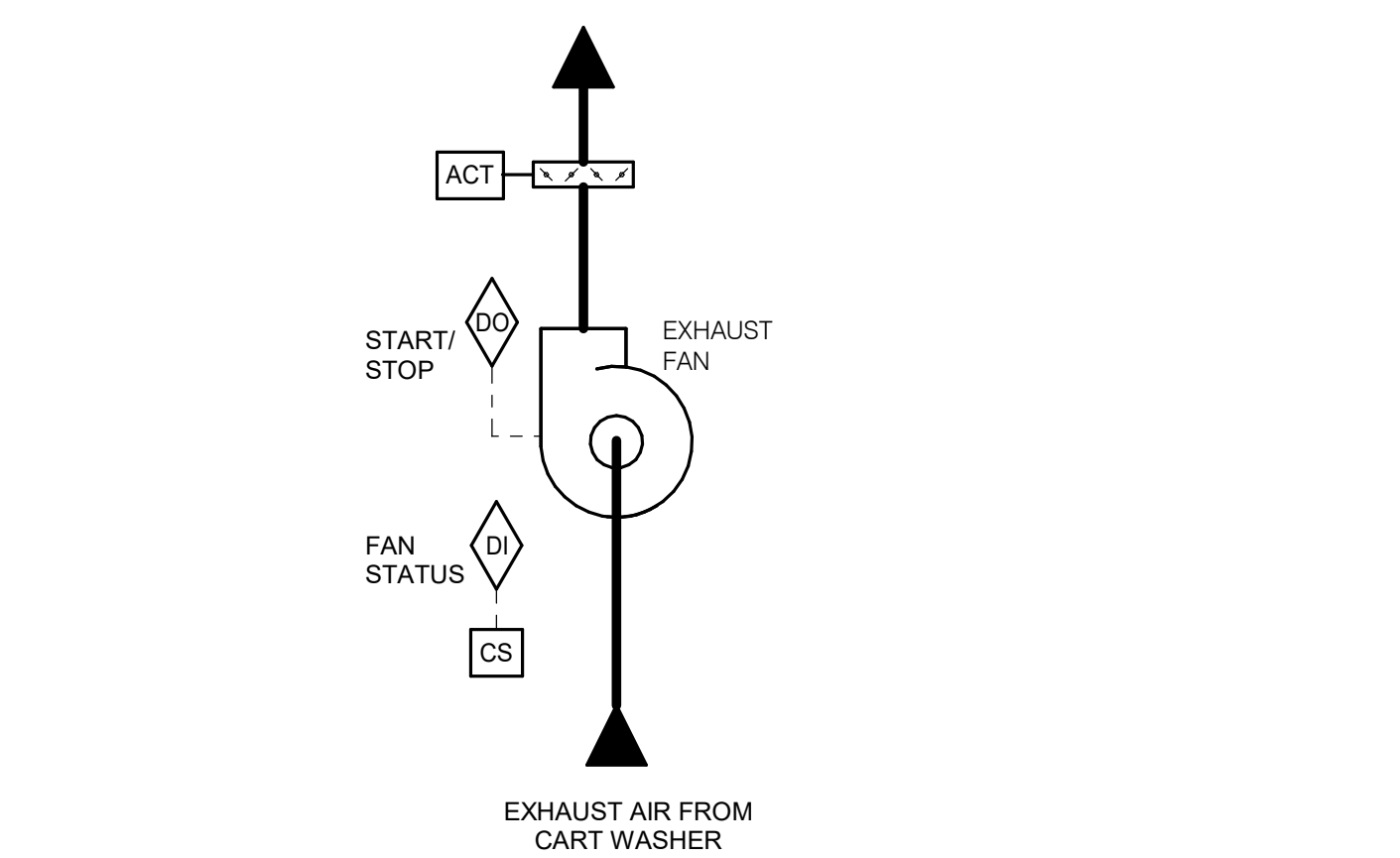
ONCE PER MONTH, THE DDC FMCS SHALL RECORD THE LARGEST AHU AIRFLOW WHICH OCCURRED DURING THAT MONTH, THE DATE, TIME, OUTSIDE AIR TEMP (AND ALL OTHER VALUES LISTED ABOVE) THAT COINCIDED WITH THAT EVENT SHALL ALSO BE RECORDED. THIS INFORMATION SHALL BE STORED TO A MEMORY LOCATION ON THE FMCS OPERATOR WORKSTATION THAT IS MAINTAINED (NOT AUTOMATICALLY OVERRITTEN).

AIR HANDLER REPORT GENERATION
 TYPICAL FOR AHU-2

1 AIR HANDLING UNIT CONTROL - AHU-2
 NO SCALE

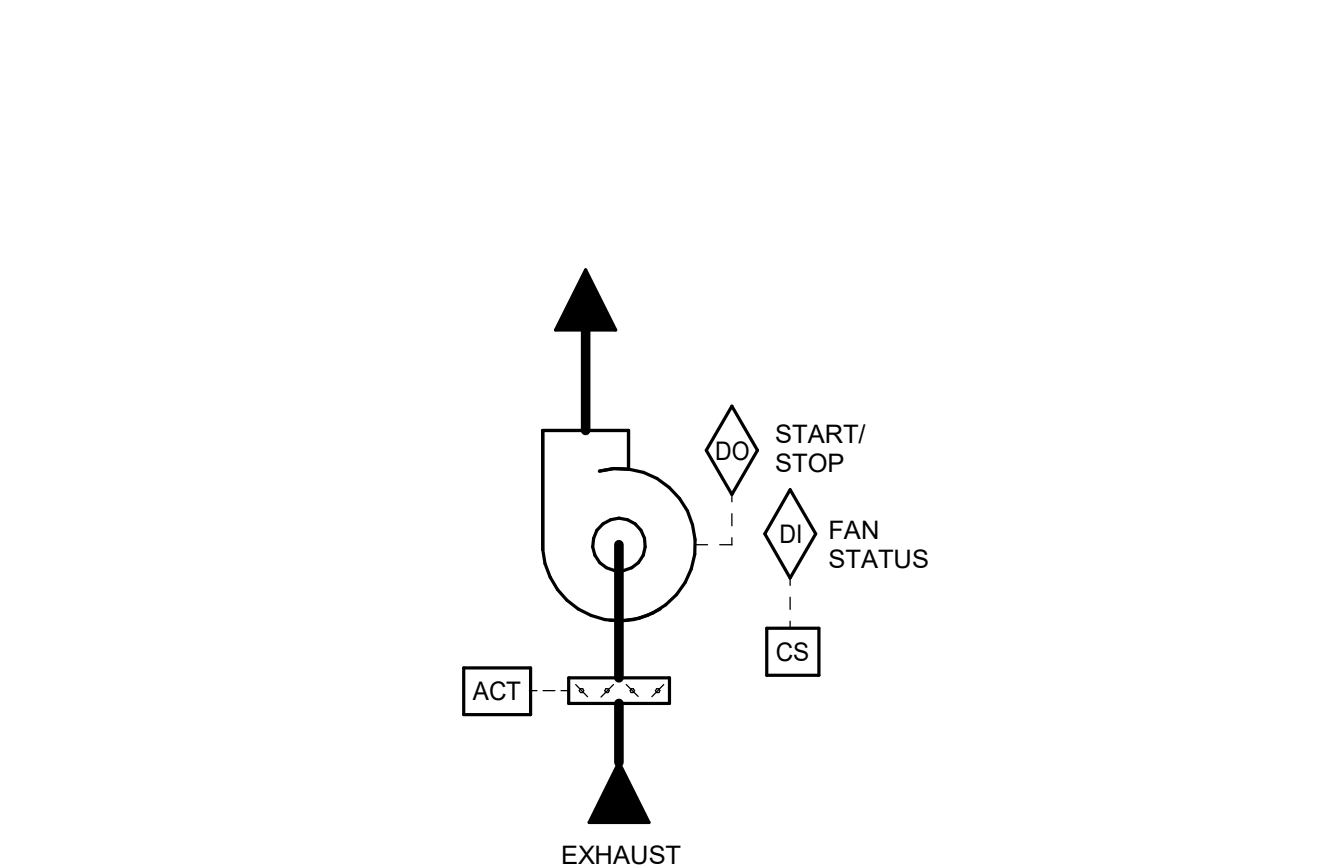
CONSULTANT <p>2802 100TH STREET DES MOINES, IA 50325 515.334.9900 FAX: 515.334.9908 WWW.IMEG.COM PROJECT # 19004249.04</p> <p>IMEG CORP. RESERVES PROPRIETARY RIGHTS, INCLUDING COPYRIGHTS, TO THIS DRAWING AND THE DATA SHOWN THEREON. THIS DRAWING AND/OR DATA ARE THE EXCLUSIVE PROPERTY OF IMEG CORP. AND SHALL NOT BE USED OR REPRODUCED FOR ANY PROJECT WITHOUT THE EXPRESS WRITTEN APPROVAL AND PARTICIPATION OF IMEG CORP. © 2025 IMEG CORP.</p> <p>REFERENCE SCALE IN INCHES 0 1 2 3</p>	ARCHITECT/ENGINEER OF RECORD <p>13605 1st Ave. N. #100 Plymouth, MN 55441 P 763.412.4000 F 763.412.4090 ae-mn.com Anderson Engineering of Minnesota, LLC Proj # 16584</p>	STAMP 	Office of Construction and Facilities Management Approved:	Drawing Title CONTROL DIAGRAMS	Phase BID DOCUMENTS	Project Title CONSTRUCT NEW SPS	Project Number 438-460
			Approved:	Fully Sprinklered	Location Sioux Falls, SD.	Issue Date 02/14/2025	Checked DAVING

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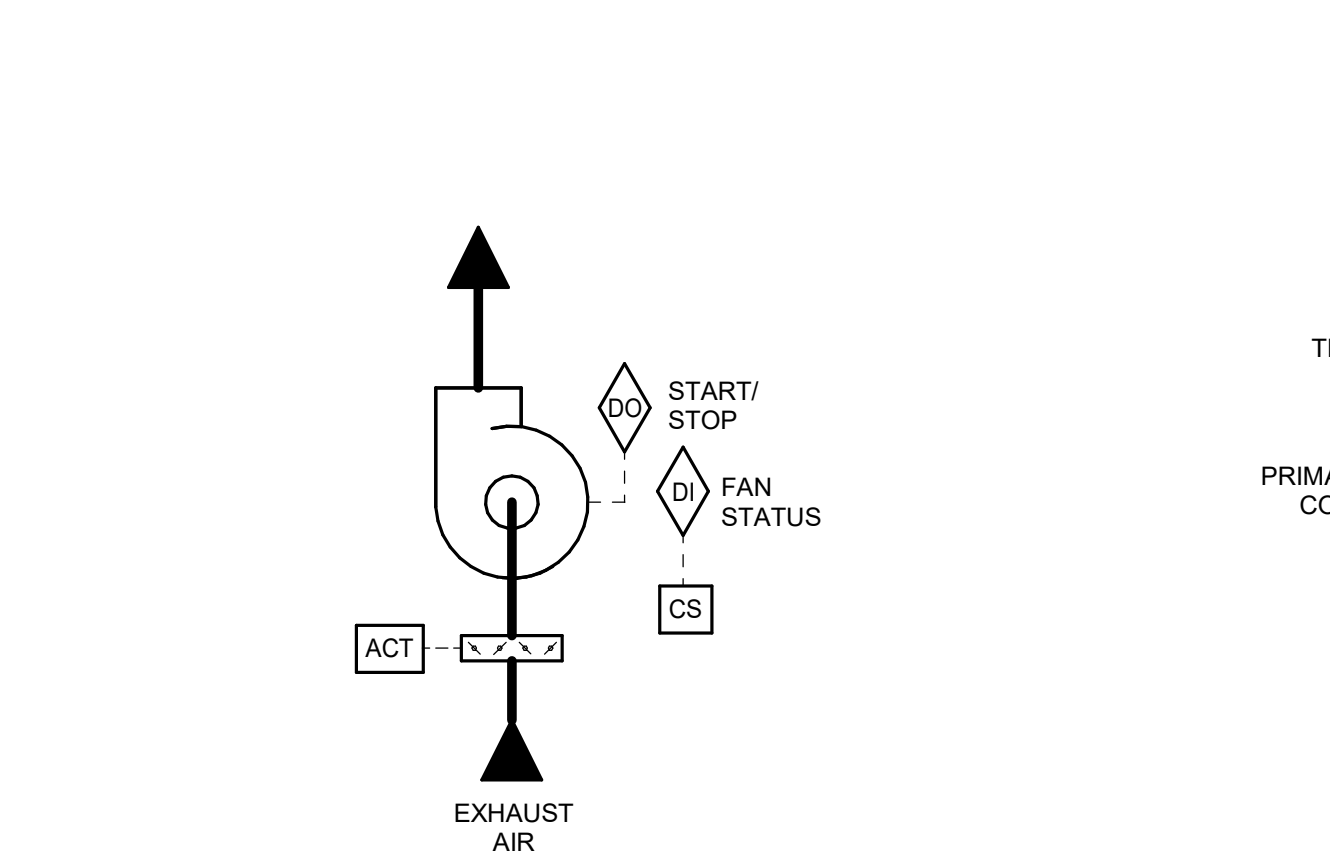
SEQUENCE OF OPERATION: CART WASHER EXHAUST FAN SHALL BE STARTED AND STOPPED BY CART WASHER'S INTEGRAL CONTROLS. FMCS SHALL MONITOR CONTACTS THAT ARE PART OF THE CART WASHER CONTROLS TO DETERMINE WHEN THE CART WASHER CONTROLS ARE COMMANDING INTEGRAL EXHAUST FAN TO ACTIVATE.

1 CART WASHER FAN CONTROL NO SCALE



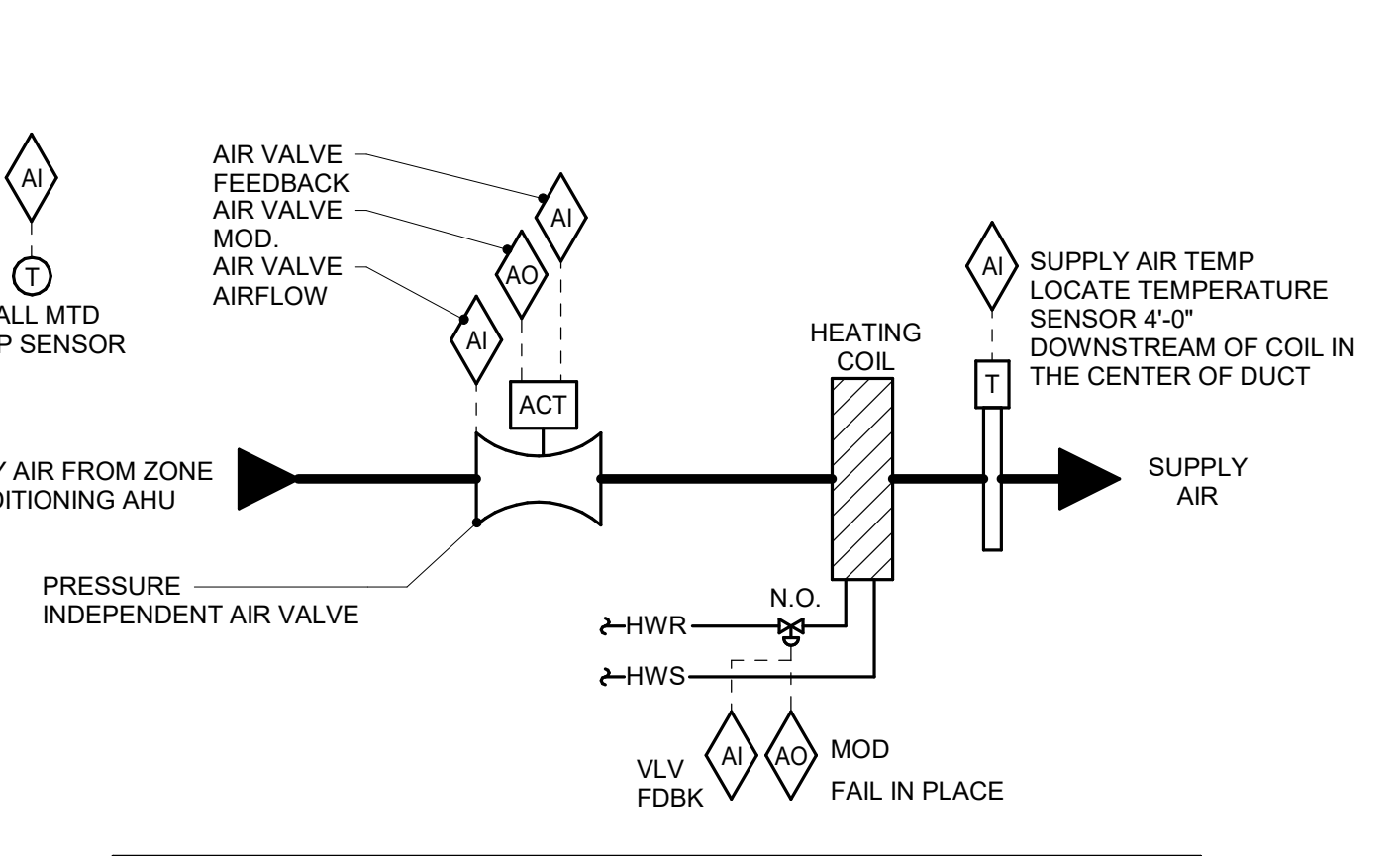
SEQUENCE OF OPERATION: EXHAUST FAN SHALL BE INTERLOCKED TO RUN CONTINUOUSLY WHEN RESPECTIVE AHU IS OPERATING. 2-POSITION DAMPER SHALL FULLY OPEN WHEN FAN IS ENERGIZED.

2 EXHAUST FAN AHU INTERLOCK - EF-1 & EF-2A/B NO SCALE



SEQUENCE OF OPERATION: EXHAUST FAN SHALL BE INTERLOCKED TO RUN CONTINUOUSLY WHEN RESPECTIVE AHU IS OPERATING. 2-POSITION DAMPER SHALL FULLY OPEN WHEN FAN IS ENERGIZED.

3 EXHAUST FAN AHU INTERLOCK - EF-3 & EF-4 NO SCALE



SEQUENCE OF OPERATION: THE FMCS SHALL MODULATE THE SUPPLY AIR VALVE TO MAINTAIN THE VOLUMETRIC OFFSET AS SCHEDULED IN THE DRAWINGS. THE FMCS SHALL MODULATE THE HEATING COIL CONTROL VALVE TO MAINTAIN SPACE TEMPERATURE OF 72°F (ADJ.) WITH A 5°F (ADJ.) DEADBAND.

4 TYPE A - SUPPLY AIR VALVE NO SCALE

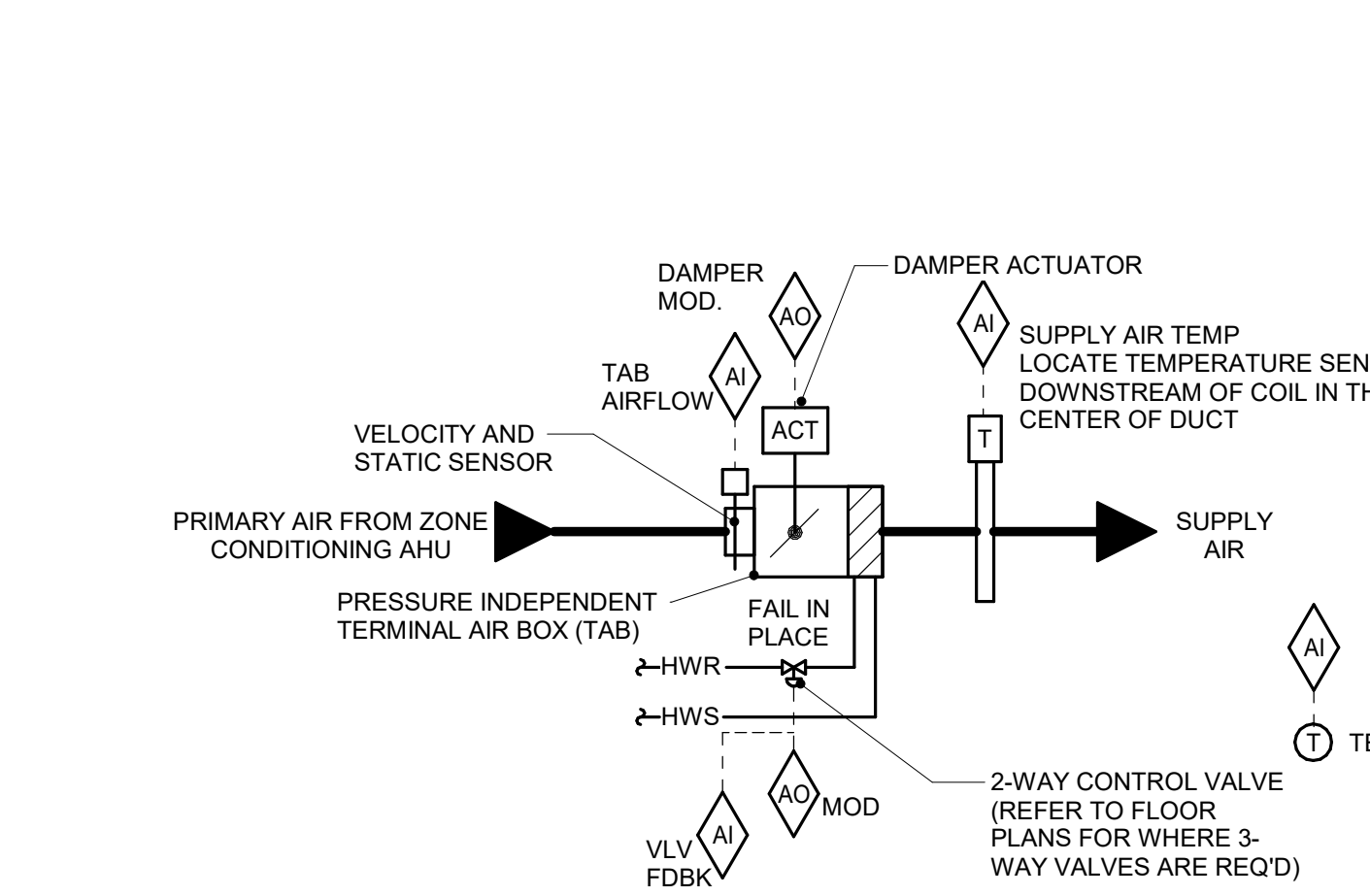
SEQUENCE OF OPERATION: 1. ALL TERMINAL AIR BOXES SHALL INCORPORATE A NIGHT SETBACK SEQUENCE. 2. TAB NIGHT SETBACK SHALL BE INITIATED VIA THE FMCS BASED ON THE FOLLOWING TIME SCHEDULE: OCCUPIED MODE START: 6:00 AM (ADJ.) UNOCCUPIED MODE START: 9:00 PM (ADJ.)

5 TAB NIGHT SETBACK CONTROL NO SCALE

Table with columns: SYMBOL, MAX/ACTUAL/MIN (% OPEN), (% OPEN) (DEG. F), (% OPEN) (DEG. F), (% OPEN) (DEG. F). Rows for TAB COILS, AIRFLOW, DAMPER POS, SUP AIR TEMP, ROOM TEMP, ROOM SETPOINT.

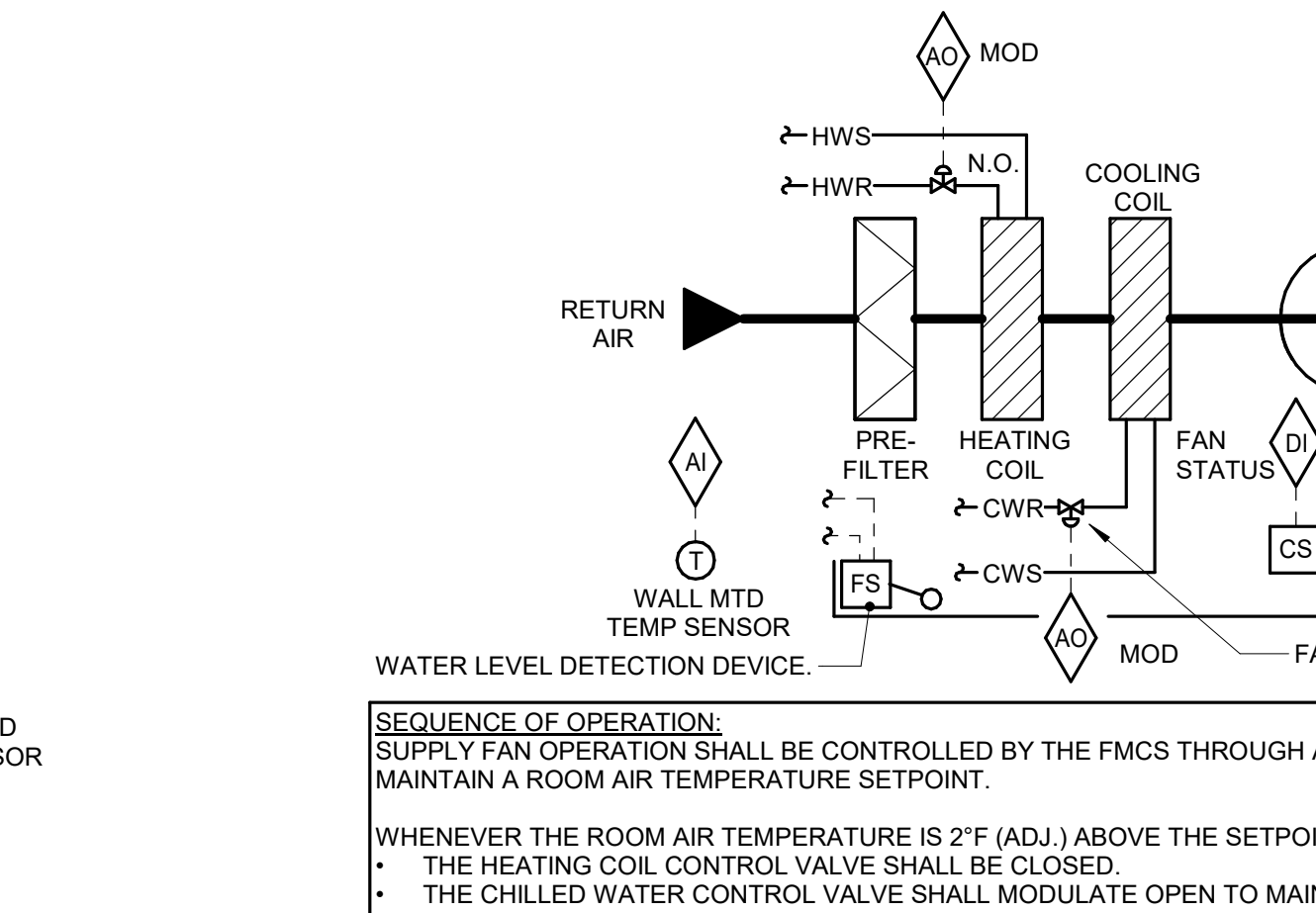
TERMINAL AIR BOX REPORT & DUCT MOUNTED HOT WATER REHEAT COIL GENERATION: DDC FMCS SHALL BE PROGRAMMED TO GENERATE THE FOLLOWING REPORT BASED ON A MANUAL COMMAND FROM THE DDC FMCS WORKSTATION BY CLICKING ON A GRAPHICAL BUTTON.

6 TERMINAL AIR BOX REPORT GENERATION NO SCALE



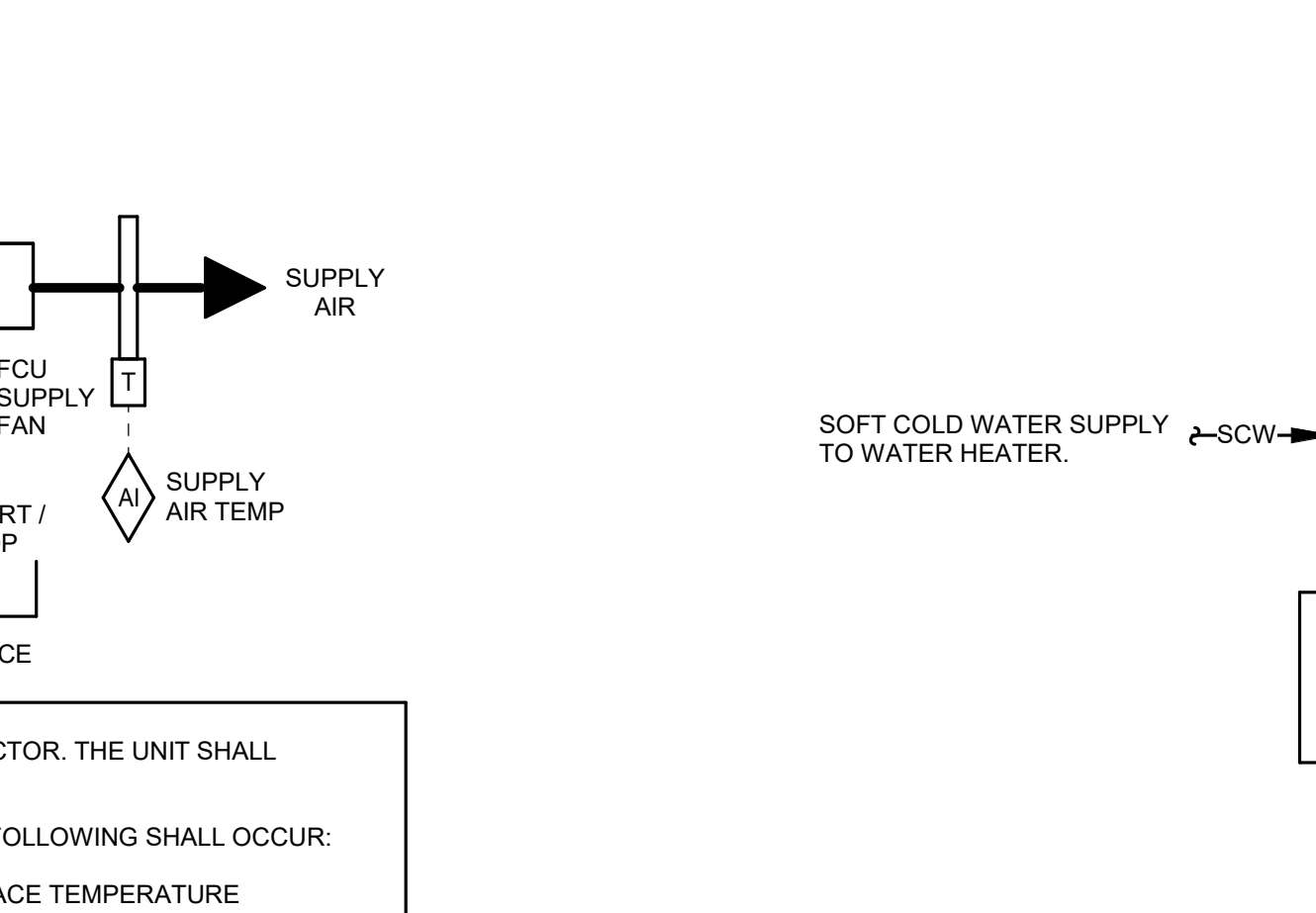
SEQUENCE OF OPERATION: FMCS TAB CONTROLLER SHALL MODULATE THE TAB DAMPER AND TAB HW REHEAT COIL CONTROL VALVE TO MAINTAIN SPACE TEMPERATURE OF 72°F (ADJ.) WITH 5°F (ADJ.) DEAD BAND BASED ON A SIGNAL FROM A WALL MOUNTED TEMPERATURE SENSOR.

7 TYPE B - TAB CONTROL W/ HOT WATER REHEAT NO SCALE



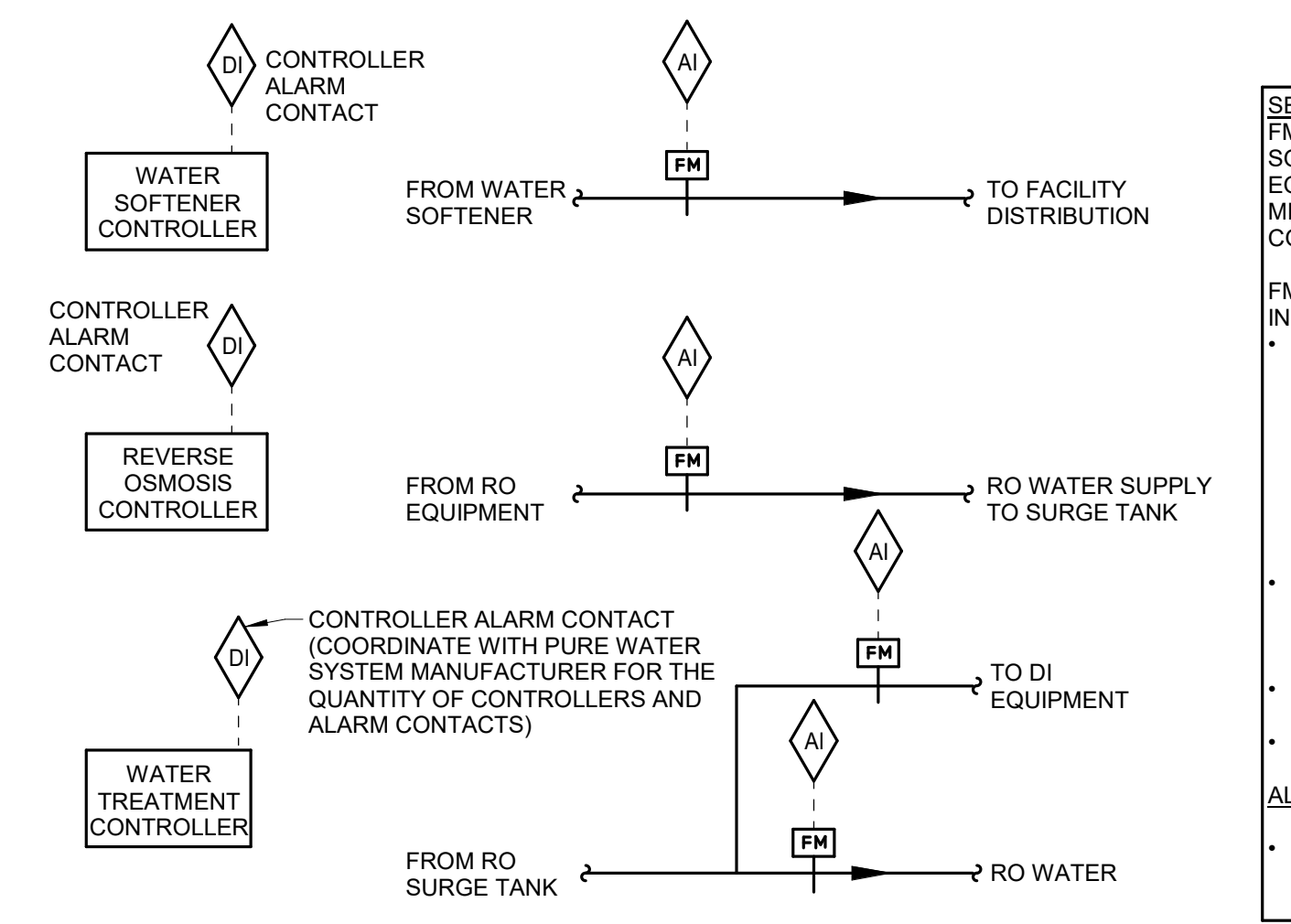
SEQUENCE OF OPERATION: SUPPLY FAN OPERATION SHALL BE CONTROLLED BY THE FMCS THROUGH A CONTACTOR. THE UNIT SHALL MAINTAIN A ROOM AIR TEMPERATURE SETPOINT. WHENEVER THE ROOM AIR TEMPERATURE IS 2°F (ADJ.) ABOVE THE SETPOINT, THE FOLLOWING SHALL OCCUR:

8 FAN COIL UNIT CONTROL NO SCALE

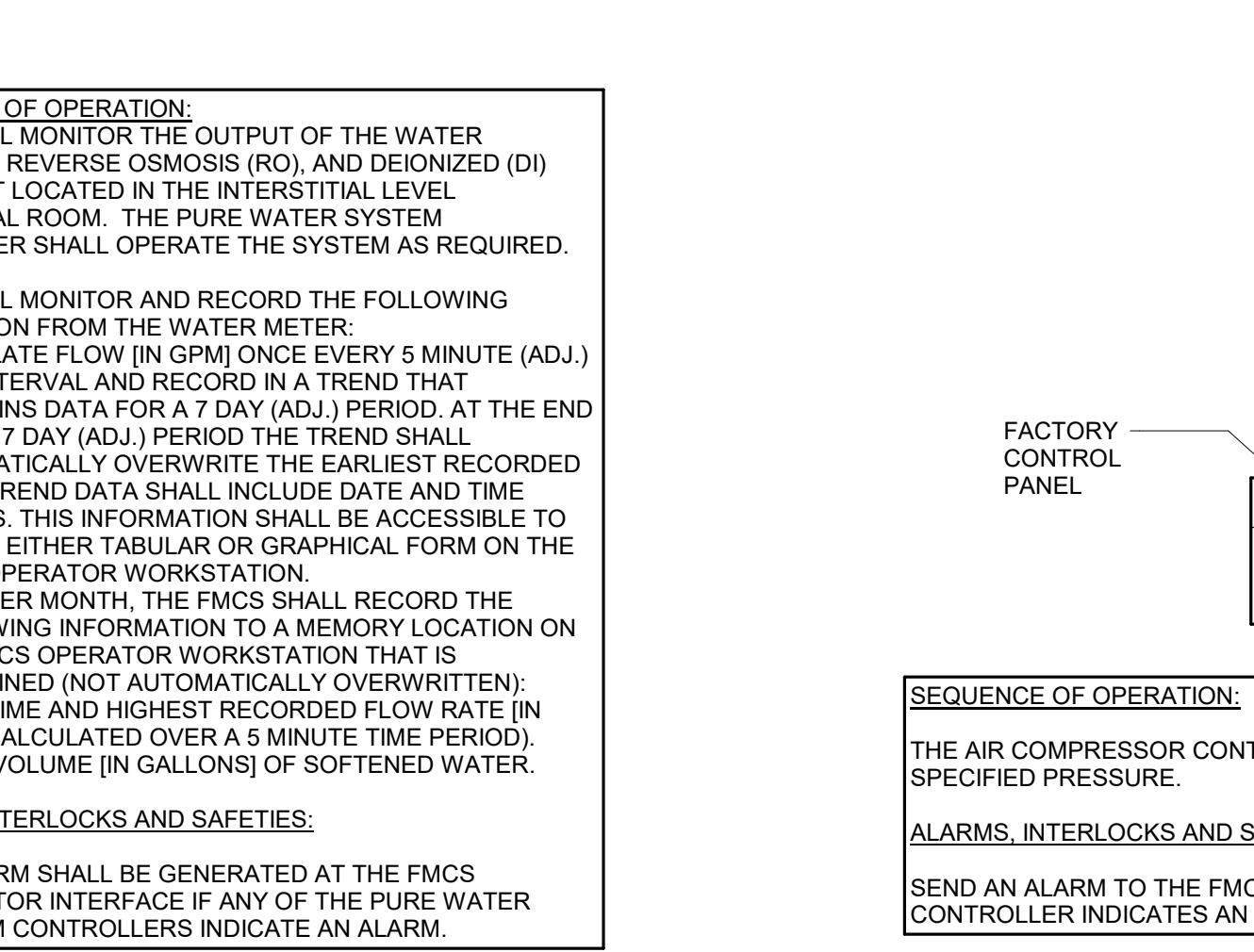


SEQUENCE OF OPERATION: DOMESTIC WATER HEATER CONTROL PANEL (BACNET COMPATIBLE) SHALL MODULATE THE STEAM CONTROL VALVE TO MAINTAIN 140°F (ADJ.) DOMESTIC HOT WATER.

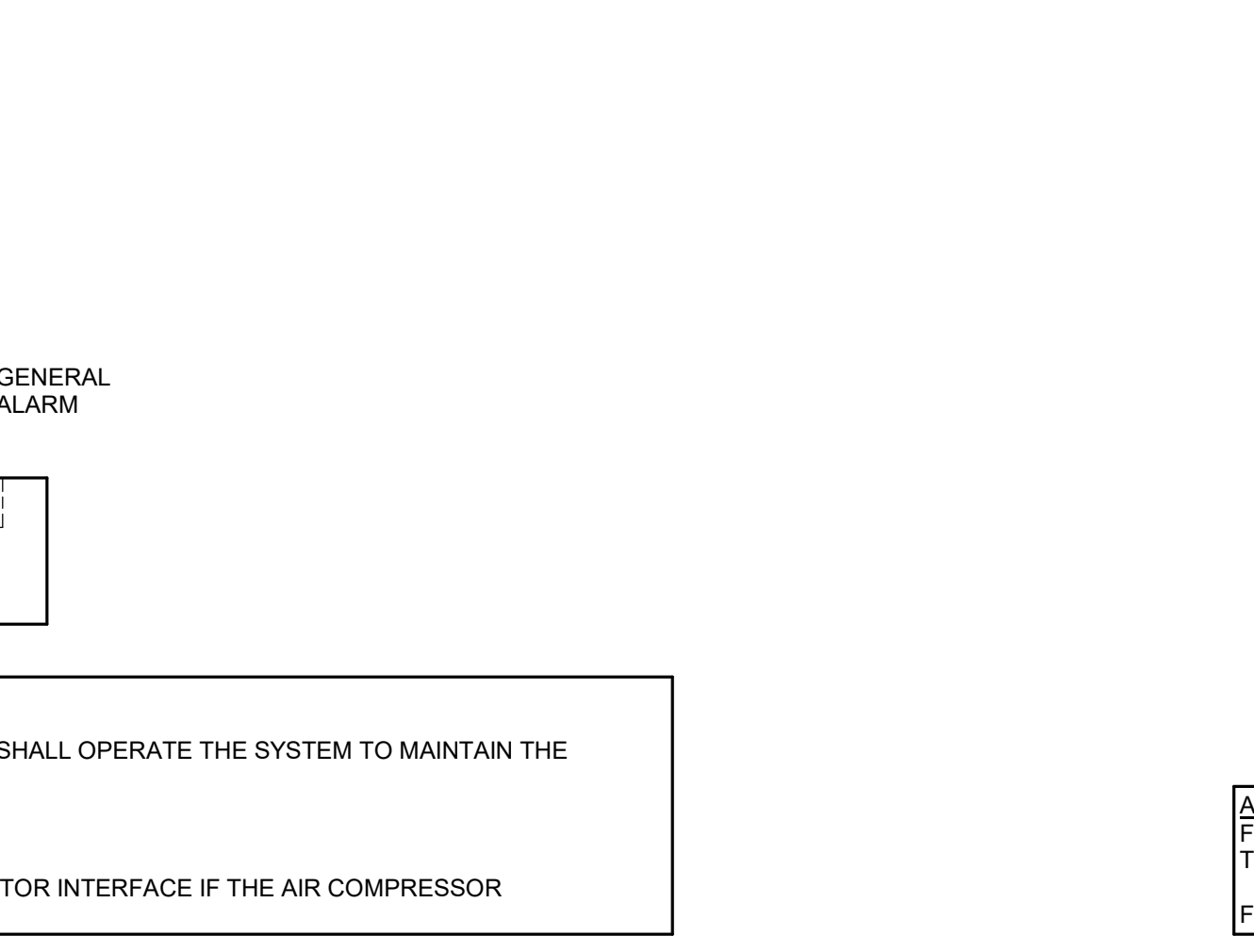
9 DOMESTIC HOT WATER CONTROL NO SCALE



10 WATER TREATMENT METERING CONTROL NO SCALE



11 AIR COMPRESSOR CONTROL DIAGRAM NO SCALE



12 EMERGENCY SHOWER/EYEWASH MONITORING NO SCALE

Project information block including Revisions, Date, CONSULTANT (IMEG), ARCHITECT/ENGINEER OF RECORD (ANDERSON), Office of Construction and Facilities Management, Drawing Title (CONTROL DIAGRAMS), Phase (BID DOCUMENTS), Project Title (CONSTRUCT NEW SPS), Project Number (438-460), Building Number (5), Location (Sioux Falls, SD), Issue Date (02/14/2025), Checked (DAVING), Drawn (DELLE), Drawing Number (MC403).

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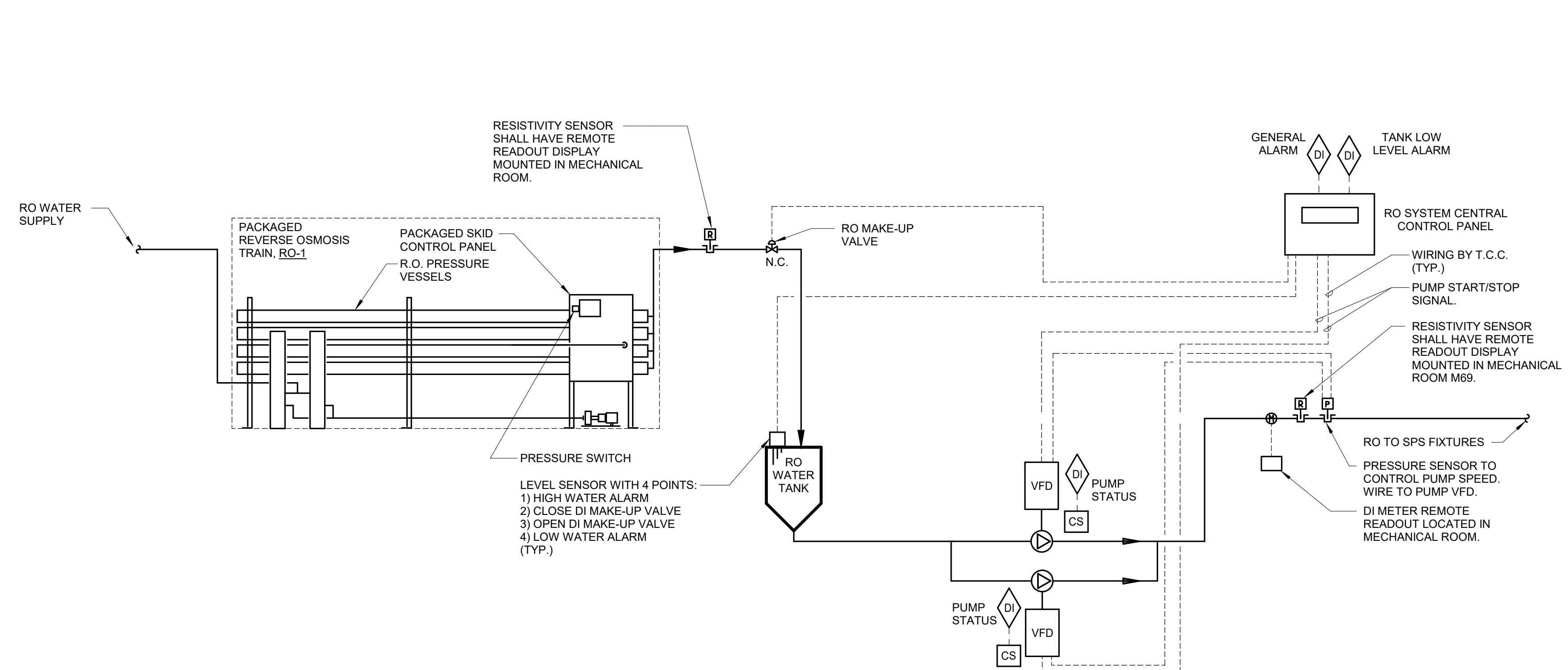
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GENERAL:
THE REVERSE OSMOSIS WATER SYSTEM PUMPS SERVING THE STERILE PROCESSING SERVICE SHALL BE CONTROLLED BY THE RO SYSTEM CENTRAL CONTROL PANEL WHICH IS PROVIDED AS A PART OF THE RO SYSTEM.

PUMP CONTROL:
START/STOP: THE DI SYSTEM CENTRAL CONTROL PANEL SHALL START THE LEAD PUMP VIA THE VFD AND THE PUMP SHALL RUN CONTINUOUSLY. MODULATE THE OUTPUT TO THE VFD AS REQUIRED TO MAINTAIN SYSTEM PRESSURE SETPOINT AT THE LOCATION OF THE PRESSURE SENSOR. CONFIRM REQUIRED PRESSURE SETPOINT DURING TESTING AND BALANCING.

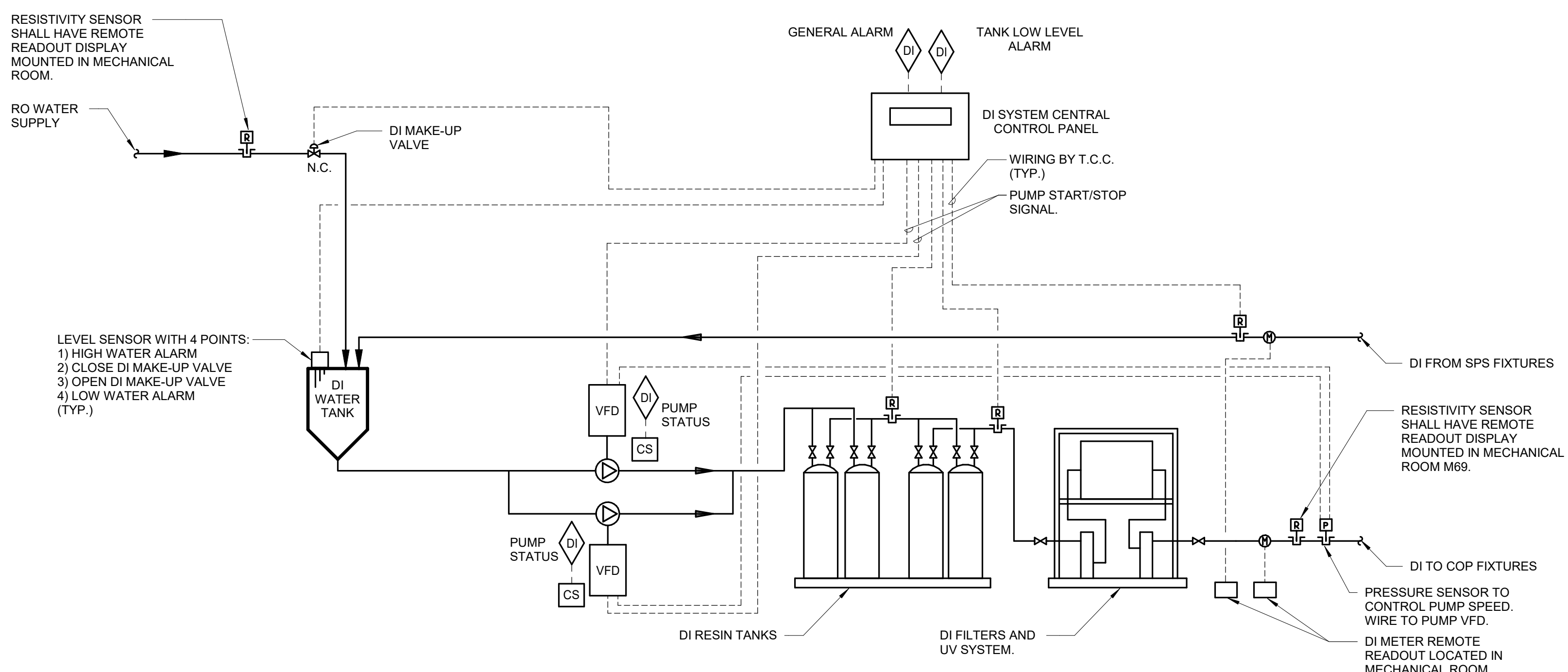
IF THE LEAD PUMP FAILS TO OPERATE OR CANNOT MAINTAIN THE PRESSURE SETPOINT FOR 10 MINUTES (ADJ.) THE OPERATING PUMP SHALL STOP AND THE STANDBY PUMP SHALL START.

THE RO SYSTEM CENTRAL CONTROL PANEL SHALL ROTATE THE LEAD AND STANDBY PUMPS ON A WEEKLY BASIS. INCLUDE A TOGGLE ON THE RO SYSTEM CENTRAL CONTROL PANEL TO ALLOW OPERATOR TO MANUALLY SELECT WHICH PUMP IS LEAD AND STANDBY.

RO TANK CONTROL:
WHEN THE WATER LEVEL IN THE RO WATER TANK IS AT THE "CLOSE RO MAKE-UP VALVE" LEVEL, THE RO MAKE-UP VALVE SHALL BE COMPLETELY CLOSED. ONCE THE WATER LEVEL IN THE RO WATER TANK WITH THE ACTIVE LEVEL SENSOR DROPS TO THE "OPEN RO MAKE-UP VALVE" LEVEL, THE ACTIVE LEVEL SENSOR SHALL SEND A SIGNAL TO OPEN THE RO MAKE-UP VALVE. THE RO SYSTEM CENTRAL CONTROL PANEL SHALL THEN SEND A SIGNAL TO THE RO MAKE-UP VALVE TO COMPLETELY OPEN TO ALLOW RO WATER TO FILL THE TANKS.

ALARMS, INTERLOCKS, AND SAFETIES:
FMCS SHALL INDICATE AN ALARM TO THE FMCS OPERATOR WORKSTATION IN THE EVENT THE FOLLOWING OCCUR:
 • SHOULD NEITHER THE LEAD OR THE STANDBY PUMPS BE OPERATING AT ANY TIME AS DETERMINED BY THE CURRENT SENSORS.
 • AN ALARM CONDITION OCCURS AT THE RO SYSTEM CENTRAL CONTROL PANEL.
 • THE RO SYSTEM CENTRAL CONTROL PANEL INDICATES A RO STORAGE TANK LOW LEVEL ALARM.

1 REVERSE OSMOSIS WATER SYSTEM CONTROL
NO SCALE



GENERAL:
THE DEIONIZED WATER SYSTEM LOOP PUMPS SERVING THE STERILE PROCESSING SERVICE SHALL BE CONTROLLED BY THE DI SYSTEM CENTRAL CONTROL PANEL WHICH IS PROVIDED AS A PART OF THE DI SYSTEM. THE SYSTEM SHALL PRODUCE DI WATER WITH A RESISTIVITY BETWEEN 15 AND 17 MEGA-OHMS.

PUMP CONTROL:
START/STOP: THE DI SYSTEM CENTRAL CONTROL PANEL SHALL START THE LEAD PUMP VIA THE VFD AND THE PUMP SHALL RUN CONTINUOUSLY. MODULATE THE OUTPUT TO THE VFD AS REQUIRED TO MAINTAIN SYSTEM PRESSURE SETPOINT AT THE LOCATION OF THE PRESSURE SENSOR. CONFIRM REQUIRED PRESSURE SETPOINT DURING TESTING AND BALANCING.

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UV SYSTEM CONTROL:
THE DUAL UV SYSTEM SHALL BE MANUALLY ENABLED/DISABLED VIA A WALL SWITCH. BOTH UV LIGHTS ARE INTENDED TO BE ACTIVE DURING NORMAL OPERATION.

ALARMS, INTERLOCKS, AND SAFETIES:
FMCS SHALL INDICATE AN ALARM TO THE FMCS OPERATOR WORKSTATION IN THE EVENT THE FOLLOWING OCCUR:
 • SHOULD NEITHER THE LEAD OR THE STANDBY PUMPS BE OPERATING AT ANY TIME AS DETERMINED BY THE CURRENT SENSORS.
 • AN ALARM CONDITION OCCURS AT THE DI SYSTEM CENTRAL CONTROL PANEL.
 • THE DI SYSTEM CENTRAL CONTROL PANEL INDICATES A DI STORAGE TANK LOW LEVEL ALARM.

2 DEIONIZED WATER SYSTEM CONTROL
NO SCALE

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 2/14/2025 10:25:11 AM
 VA FORM 08 - 6231

Revisions:	Date:

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PROJECT # 1904249-04

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STAMP

Professional Engineer
DELLAN J. LLEWELLYN
27052
IOWA

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

Drawing Title
CONTROL DIAGRAMS

Approved:

Phase
BID DOCUMENTS

FULLY SPRINKLERED

Project Title
CONSTRUCT NEW SPS

Location
Sioux Falls, SD.

Issue Date
02/14/2025

Checked
DAVING

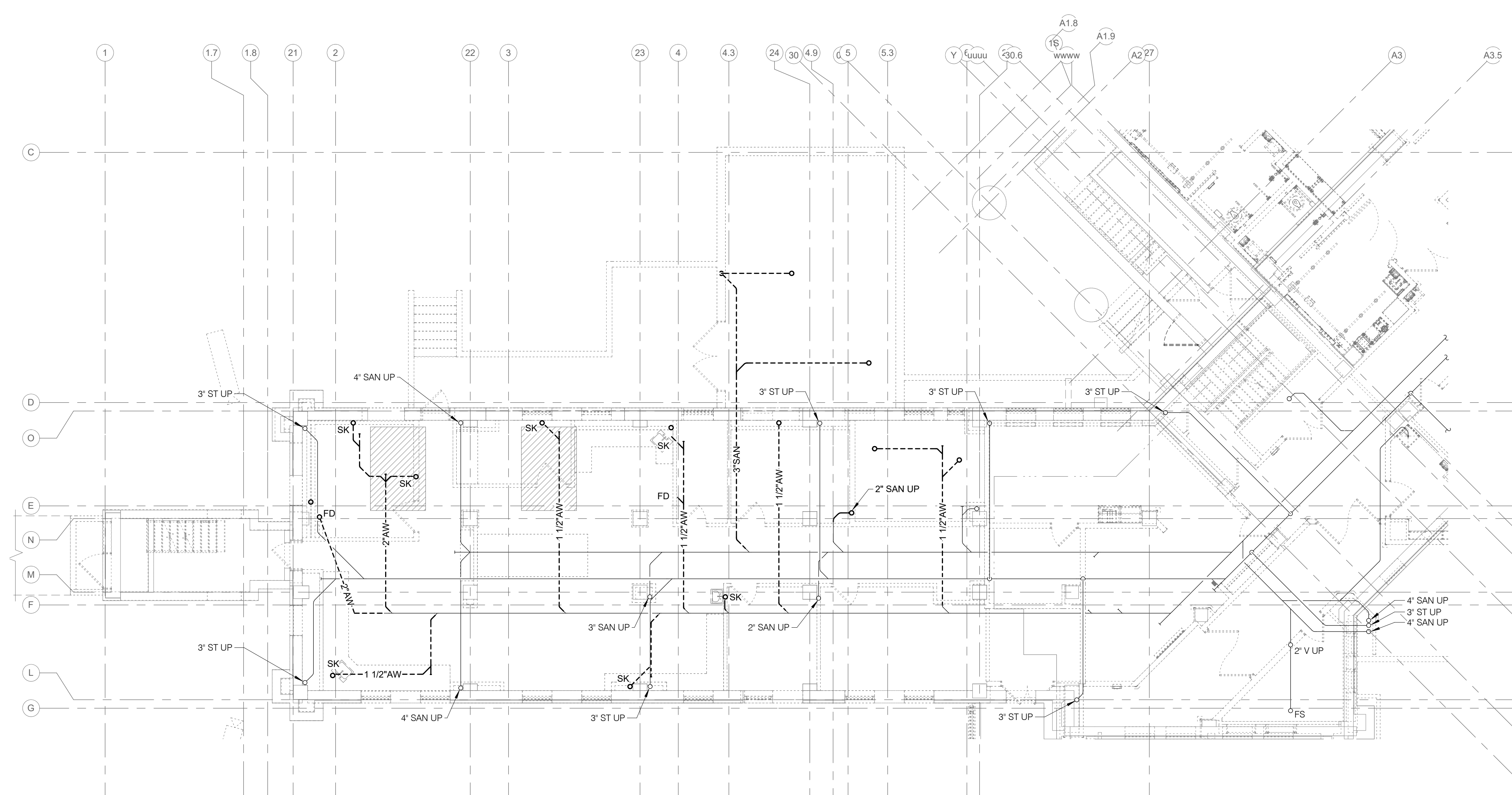
Drawn
DELLE

Project Number
438-460

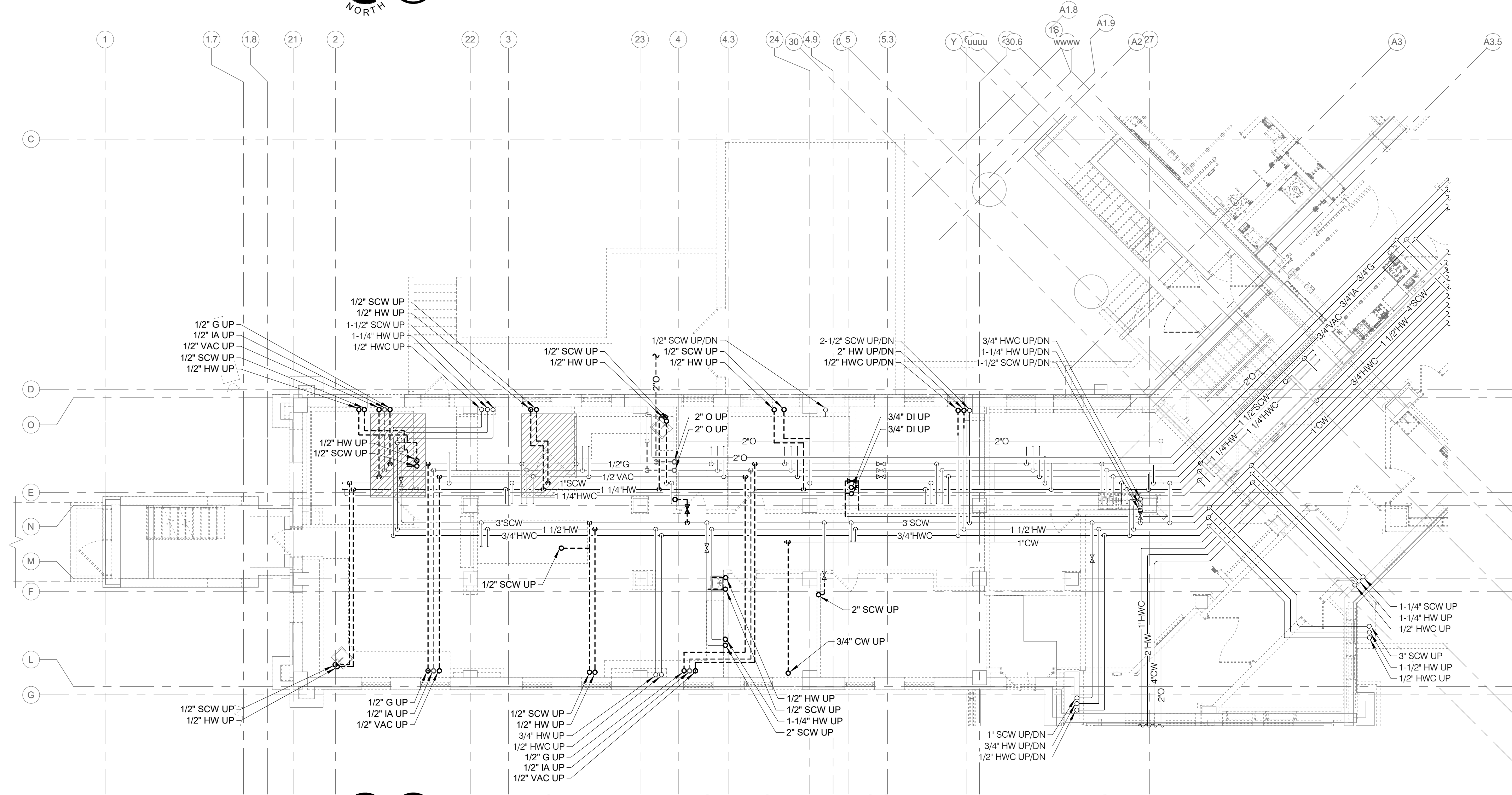
Building Number
5

Drawing Number
MC404

- GENERAL PLUMBING NOTES:**
1. REFERENCE P000 - PLUMBING COVERSHEET FOR PLUMBING SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES.
 2. EXISTING CONDITIONS ARE SHOWN BASED ON INFORMATION OBTAINED FROM FIELD SURVEYS, EXISTING BUILDING DOCUMENTS, AND STAFF. VERIFY EXISTING CONDITIONS AND REPORT ANY CONFLICTS BEFORE PROCEEDING.
 3. G.C. SHALL CUT AND PATCH EXISTING AS REQUIRED FOR NEW WORK. REFERENCE SPECIFICATION SECTION 22 05 05 FOR ADDITIONAL INFORMATION.
 4. COMPLETE LAYOUT DRAWINGS SHALL BE REQUIRED BY SPECIFICATION SECTION 22 05 11. CONSTRUCTION WORK SHALL NOT BEGIN UNTIL SYSTEM LAYOUT DRAWINGS HAVE BEEN APPROVED BY THE C.O.R.
 5. CONTRACTOR SHALL MINIMIZE DOWNTIME OF EXISTING SYSTEMS BY INSTALLING NEW SYSTEMS PRIOR TO TYING INTO EXISTING. NOTIFY C.O.R. A MINIMUM OF 24 HOURS PRIOR TO SYSTEM SHUTDOWN.
 6. DEMOLISH ALL EXISTING HANGERS, INSULATION, VALVES, AND ACCESSORIES ASSOCIATED WITH MECHANICAL EQUIPMENT AND PIPING SHOWN TO BE REMOVED ON THESE PLANS UNLESS OTHERWISE NOTED.
 7. DEMOLISH ALL EXISTING CONTROL DEVICES, WIRING, AND CONDUIT ASSOCIATED WITH MECHANICAL EQUIPMENT SHOWN TO BE REMOVED ON THESE PLANS UNLESS OTHERWISE NOTED.
 8. NOT ALL MECHANICAL DEMOLITION IS EXPLICITLY SHOWN ON THE DRAWING. CONTRACTOR SHALL CONFIRM EXTENT OF DEMOLITION AT THE SITE.



1 PIPE BASEMENT DEMOLITION - GRAVITY PLUMBING
1/8" = 1'-0"



2 PIPE BASEMENT DEMOLITION - PRESSURIZED PLUMBING
1/8" = 1'-0"

BIM 360://1904249.04 - VA-Wash DC-VA Sioux Falls New SPS_C.rvt
 2/14/2025 10:33:03 AM
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Revisions:	Date:

CONSULTANT

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 27052
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Office of Construction and Facilities Management
VA U.S. Department of Veterans Affairs

Drawing Title
PIPE BASEMENT DEMOLITION PLAN - PLUMBING

Approved:

Phase
BID DOCUMENTS

FULLY SPRINKLERED

Project Title
CONSTRUCT NEW SPS

Location
Sioux Falls, SD.

Issue Date
02/14/2025

Checked
NATJAC

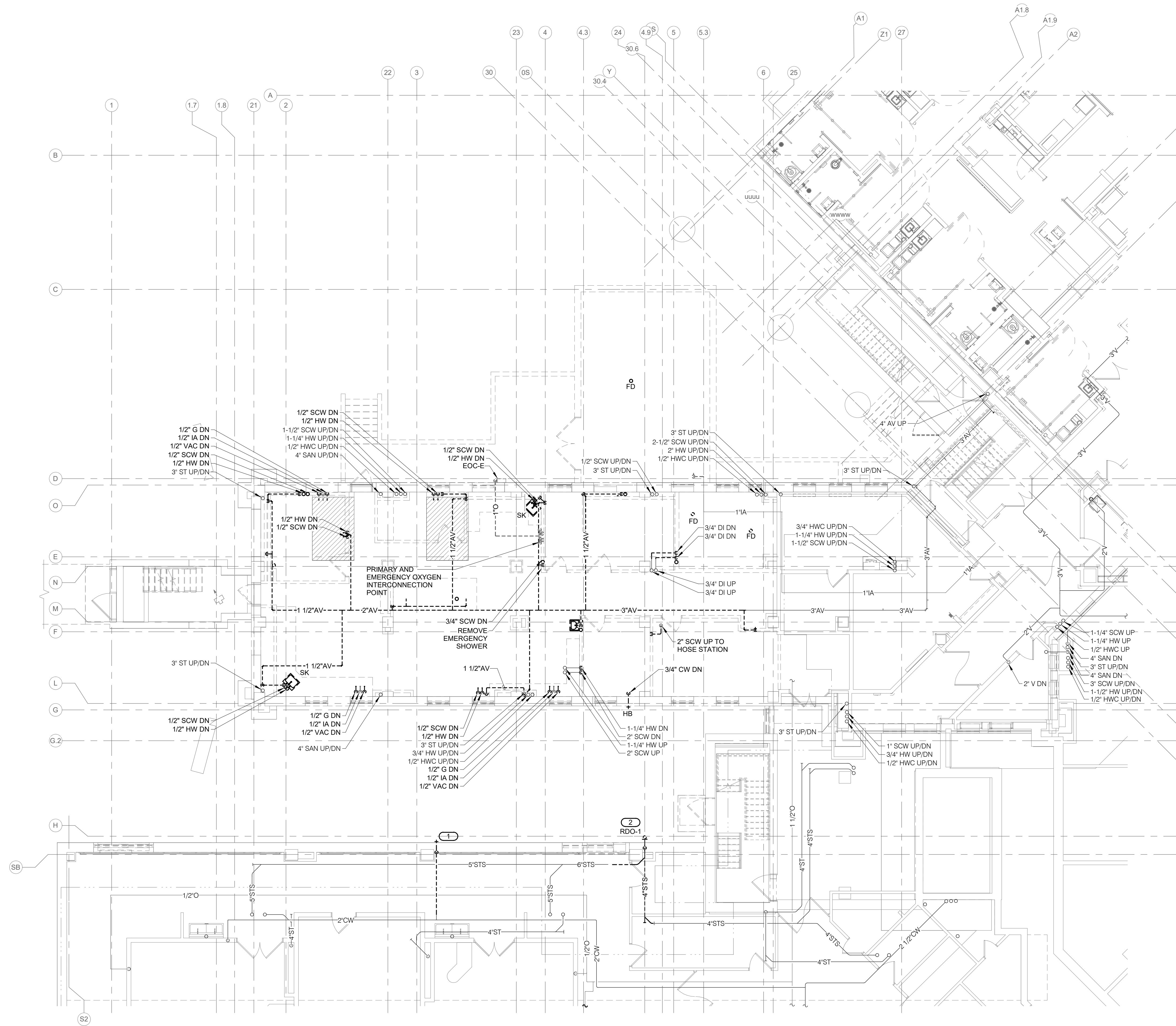
Drawn
DELLE

Project Number
438-460

Building Number
5

Drawing Number
PLD100

- GENERAL PLUMBING NOTES:**
1. REFERENCE P000 - PLUMBING COVERSHEET FOR PLUMBING SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES.
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 7. DEMOLISH ALL EXISTING CONTROL DEVICES, WIRING, AND CONDUIT ASSOCIATED WITH MECHANICAL EQUIPMENT SHOWN TO BE REMOVED ON THESE PLANS UNLESS OTHERWISE NOTED.
 8. NOT ALL MECHANICAL DEMOLITION IS EXPLICITLY SHOWN ON THE DRAWING. CONTRACTOR SHALL CONFIRM EXTENT OF DEMOLITION AT THE SITE.
- KEYNOTES: (#)**
1. REMOVE EXISTING EXTERIOR HOSE BIBB. DEMOLISH ASSOCIATED COLD WATER PIPING BACK TO MAIN AND CAP TO PREVENT PRESENCE OF A DEAD LEG IN THE DOMESTIC WATER SYSTEM.
 2. REMOVE EXISTING SECONDARY STORM DRAIN OUTLET.



1 GROUND LEVEL FLOOR DEMOLITION PLAN - PLUMBING
1/8" = 1'-0"

BIM 360://19004249.04 - VA-Wash DC-VA Sioux Falls New SPS_C.rvt
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CONSULTANT

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PROFESSIONAL ENGINEER
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27052
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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title
GROUND LEVEL FLOOR DEMOLITION PLAN - PLUMBING

Approved:

Phase
BID DOCUMENTS

FULLY SPRINKLERED

Project Title
CONSTRUCT NEW SPS

Location
Sioux Falls, SD.

Issue Date
02/14/2025

Checked
NATJAC

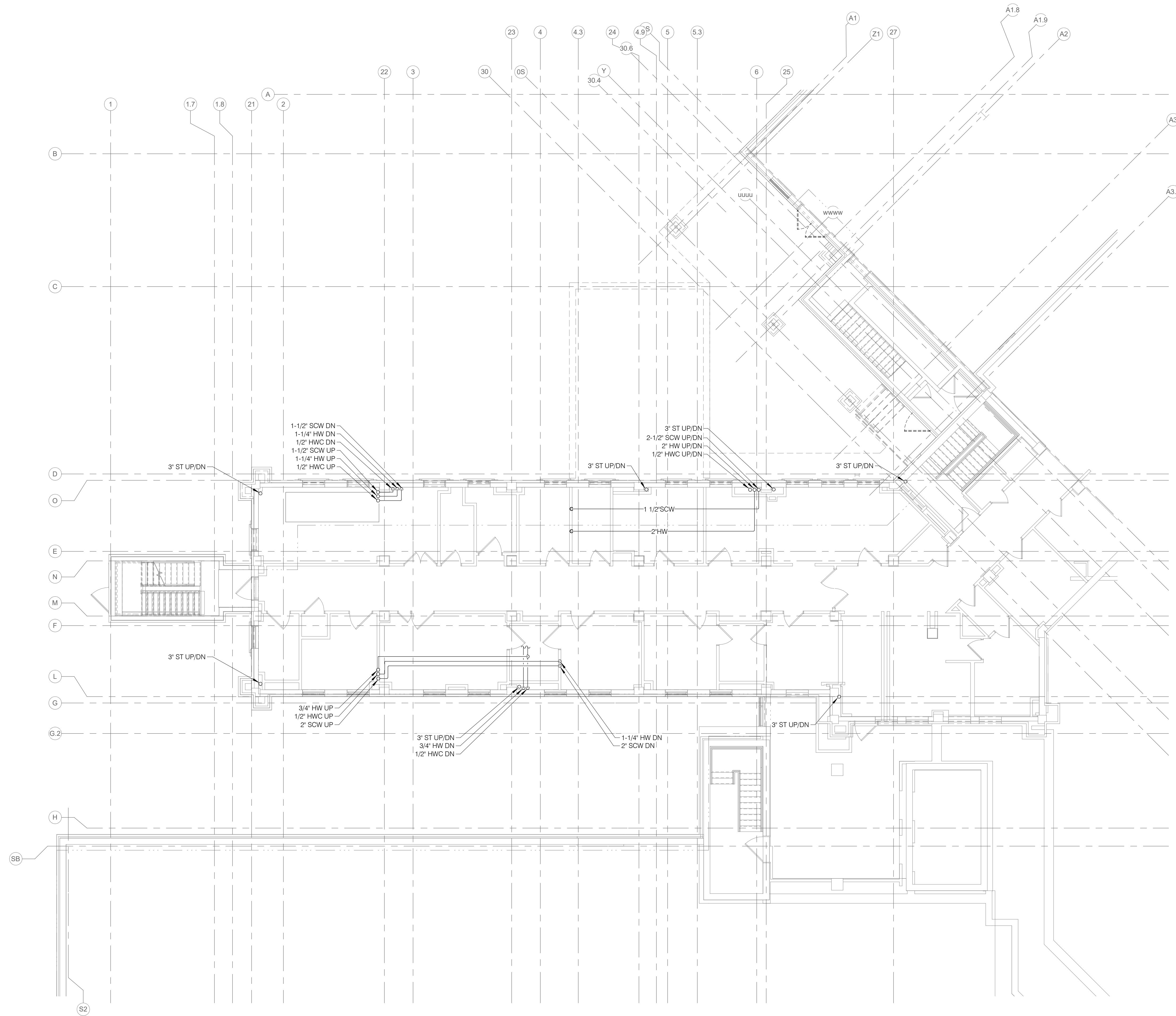
Drawn
DELLE

Project Number
438-460

Building Number
5

Drawing Number
PLD101

- GENERAL PLUMBING NOTES:**
1. REFERENCE P000 - PLUMBING COVERSHEET FOR PLUMBING SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES.
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1 FIRST LEVEL DEMOLITION PLAN - PLUMBING
1/8" = 1'-0"

BIM 360://19004249.04 - VA-Wash DC-VA Sioux Falls New SPS_C.rvt
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Revisions:	Date:

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Anderson Engineering of Minnesota, LLC | Proj # 16584

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DELLAN J. LLEWELLYN
27052
2-14-25
IOWA

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title
FIRST LEVEL DEMOLITION PLAN - PLUMBING

Approved:

Phase
BID DOCUMENTS

FULLY SPRINKLERED

Project Title
CONSTRUCT NEW SPS

Location
Sioux Falls, SD.

Issue Date
02/14/2025

Checked
NATJAC

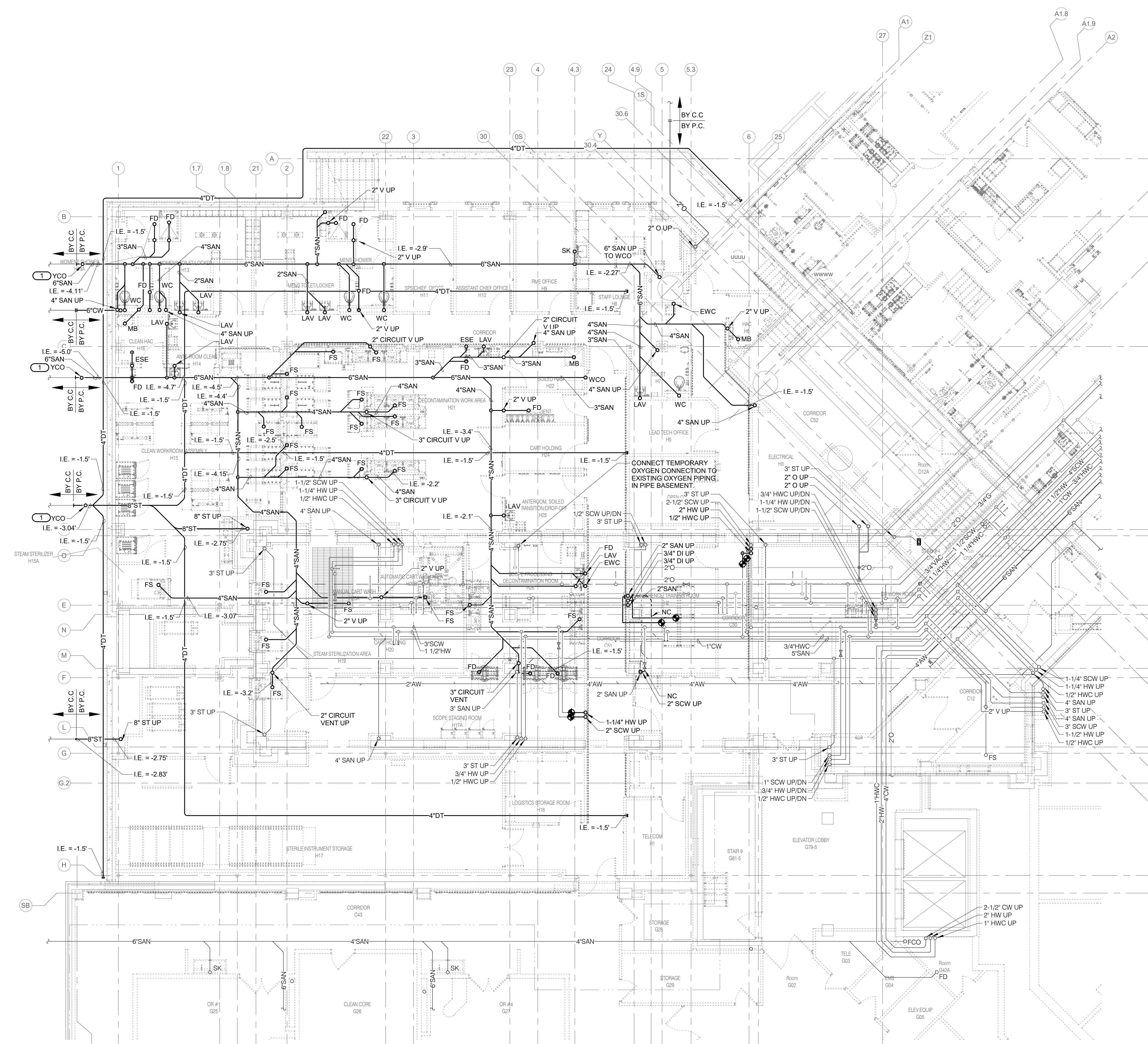
Drawn
DELLE

Project Number
438-460

Building Number
5

Drawing Number
PLD111

- GENERAL PLUMBING NOTES:**
1. REFERENCE P000 - PLUMBING COVERSHEET FOR PLUMBING SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES.
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 6. REFERENCE PL600 FOR PLUMBING FLOW DIAGRAM.
 7. REFERENCE PL600 FOR PLUMBING MATERIAL LIST.
 8. REFERENCE 1/PL400 FOR DRAIN TILE DETAIL.
 9. REFERENCE 2/PL400 FOR PIPE FOUNDATION AND SLEEVE DETAIL.
 10. REFERENCE 3/PL400 FOR PIPE UNDERFLOOR TRENCH DETAIL.
 11. REFERENCE 4/PL400 FOR UNDERGROUND WATER MAIN ANCHORING DETAIL.
- KEYNOTES:** (#)
1. REFERENCE 4/PL400 FOR YARD CLEANOUT DETAIL.



1 UNDERFLOOR - PLUMBING
1/8" = 1'-0"

BIM 360://19004249.04 - VA-Wash DC-VA Sioux Falls New SPS_C.rvt
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Professional Engineer
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Office of Construction and Facilities Management
VA U.S. Department of Veterans Affairs

Drawing Title
PIPE BASEMENT AND UNDERFLOOR - PLUMBING

Approved:

Phase
BID DOCUMENTS

FULLY SPRINKLERED

Project Title
CONSTRUCT NEW SPS

Location
Sioux Falls, SD.

Issue Date
02/14/2025

Checked
NATJAC

Drawn
DELLE

Project Number
438-460

Building Number
5

Drawing Number
PL100