

HVAC LEGEND

Table listing HVAC symbols and components including Control Damper, Manual Balance Damper, Backdraft Damper, Access Door, Security Bars, Flexible Duct Connection, Rectangular Tee, Round & Rectangular Duct Takeoff, Rise in Respect to Air-Flow, Drop in Respect to Air-Flow, and various duct sections.

PIPE LINE ACCESSORIES

Table listing pipe line accessories such as Gate Valve, Butterfly Valve, Check Valve, 2-Way Valve, 3-Way Valve, Ball Valve, Balancing Valve, Relief Valve, Motorized Control Valve, Hose Gate Drain Valve, Globe Valve, Plug Valve, Spring Return Closed Ball Valve, Angle Valve, Self Contained Pressure Reducing Valve, Automatic Air Vent Assembly, Manual Air Vent Assembly, Flex Connection, and Steam Trap.

MECHANICAL ABBREVIATIONS

Table listing mechanical abbreviations for duct dimensions, air conditioning units, air flow measuring stations, air handling units, pumps, diffusers, thermostats, humidistats, sensors, motors, occupancy sensors, emergency switches, fan control panels, static pressure sensors, differential pressure sensors, breathing air drops, compressed air drops, linear slot diffusers, variable air volume terminal boxes, finned tube radiation, and air flow arrows.

PIPE SYMBOLS

Table listing pipe symbols for pipe elbow, pipe down, pipe up, and pipe continuation.

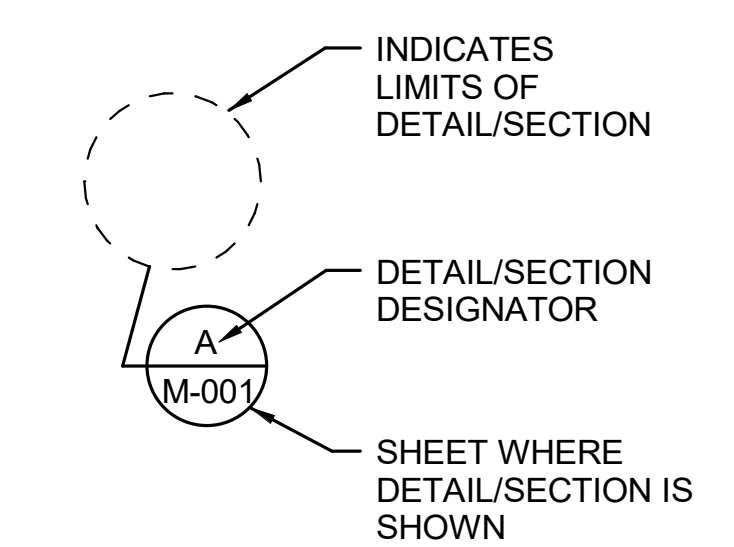
PIPELINE ABBREVIATIONS

Table listing pipeline abbreviations for blowdown, condensate drain, chilled water return, pipe up, condensate pump discharge, condensate pump supply, condensate return pump, chemical treatment, condensate transfer pump discharge, condensate tank pumped discharge, drain, dearator, domestic water, fuel oil return, fuel oil supply, feedwater pump discharge, feedwater pump supply, high pressure return, high pressure steam, liquefied petroleum gas, liquefied petroleum gas ignitor, low pressure return, low pressure steam, medium pressure steam, makeup water, natural gas, natural gas ignitor, overflow, feedwater recirculation, soft water, and vent.

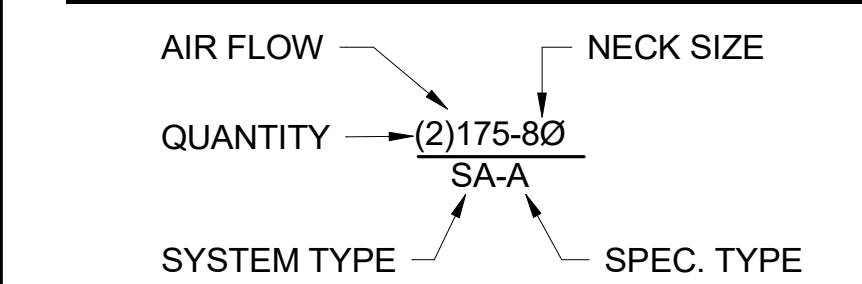
GENERAL NOTES:

- 1. LEGEND IS GENERAL IN NATURE AND MAY INDICATE MORE INFORMATION THAN IS APPLICABLE TO PROJECT. SEE PLANS FOR SPECIFIC SYMBOLS AND ABBREVIATIONS.
2. PROVIDE ALL MATERIALS, VALVES, HANGERS, ETC. AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED, AND AS REQUIRED BY CODE.
3. INSTALL ALL MECHANICAL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
4. COORDINATE CONSTRUCTION OF ALL MECHANICAL WORK WITH STRUCTURAL, CIVIL, ELECTRICAL WORK, ETC., SHOWN ON OTHER CONTRACT DOCUMENT DRAWINGS.
5. UNLESS OTHERWISE INDICATED MAINTAIN A MINIMUM OF 6"-8" CLEARANCE TO UNDERSIDE OF PIPES, CONDUITS, ETC., THROUGHOUT ACCESS ROUTES AND IN MECHANICAL ROOMS.
6. LOCATE ALL MECHANICAL EQUIPMENT FOR UNOBSTRUCTED ACCESS TO UNIT ACCESS PANELS, CONTROLS, AND VALVING.
7. VERIFY DIMENSIONS AND CONNECTION SIZE WITH FURNISHED EQUIPMENT.
8. ALL ELEVATIONS ARE ABOVE FINISHED FLOOR TO BOTTOM OF DUCT, PIPE, OR PIPE INSULATION UNLESS NOTED OTHERWISE.
9. DUCT DIMENSIONS INDICATED REFER TO SHEET METAL DIMENSIONS. SHEET METAL SIZE SHALL BE AIR OPENING DIMENSION PLUS THE THICKNESS OF ACOUSTICAL LINER WHERE LINER IS INSTALLED. WHERE LINER IS NOT INSTALLED, AIR OPENING SIZE AND SHEET METAL SIZE SHALL BE THE SAME.
10. DUCT STATIC PRESSURE CLASSIFICATION: UNLESS OTHERWISE INDICATED, CONSTRUCT DUCTS ON THE DISCHARGE SIDE OF FANS AND VAV BOXES TO HAVE 1.0 IN. W.C. POSITIVE PRESSURE AND DUCTS ON THE INLET SIDE OF EQUIPMENT TO HAVE 1.0 IN. W.C. NEGATIVE PRESSURE CLASSIFICATIONS. DUCTS ON OUTLET SIDE OF AHU'S SHALL HAVE 3.0 INCH POSITIVE PRESSURE CLASS DUCT.
11. LOCATE TRANSFER AIR DUCTS AND OPENINGS 24" ABOVE HIGHEST CEILING ELEVATION UNLESS OTHERWISE NOTED.
12. COORDINATE ALL WALL AND ROOF PENETRATIONS WITH STRUCTURAL AND ARCHITECTURAL PLANS.
13. INSTALL TEMPERATURE CONTROLS AT 48" ABOVE FINISHED FLOOR AND COORDINATE WITH OTHER DEVICES LOCATED ON WALLS. COORDINATE WITH ARCHITECTURAL WALL FINISHES.
14. OCCUPANCY SENSORS SHALL BE PROVIDED BY DIVISION 26. WIRE OCCUPANCY SENSOR BACK TO CORRESPONDING VAV BOX AS SCHEDULED FOR VENTILATION CONTROL. WIRE CO2 SENSORS SHALL BE PROVIDED BY DIVISION 23. CO2 SENSOR BACK TO EMCS PANEL FOR ALARM.
15. PROVIDE STRUCTURAL EQUIPMENT PADS IN ACCORDANCE WITH STRUCTURAL DRAWINGS AND SPECIFICATIONS.
16. CONTRACTOR SHALL AIR BALANCE ALL GRILLES TO CFM'S SHOWN ON PLANS.
17. MOUNT ALL OVERHEAD MECHANICAL EQUIPMENT AND FIXTURES WEIGHING 31 POUNDS OR MORE TO SUPPORTS THAT SHALL RESIST FORCES OF 0.5 TIMES THE EQUIPMENT WEIGHT IN ANY HORIZONTAL DIRECTION AND 1.5 TIMES THE EQUIPMENT WEIGHT IN THE DOWNWARD DIRECTION.
18. FLOW METERS SHOWN SHALL BE LOCATED IN AN ACCESSIBLE LOCATION SO THE OPERATOR CAN TAKE DAILY READINGS. REFER TO SPECIFICATION 251010 FOR EXACT DETAILS OF METER TYPES TO BE INSTALLED ON EACH SYSTEM.

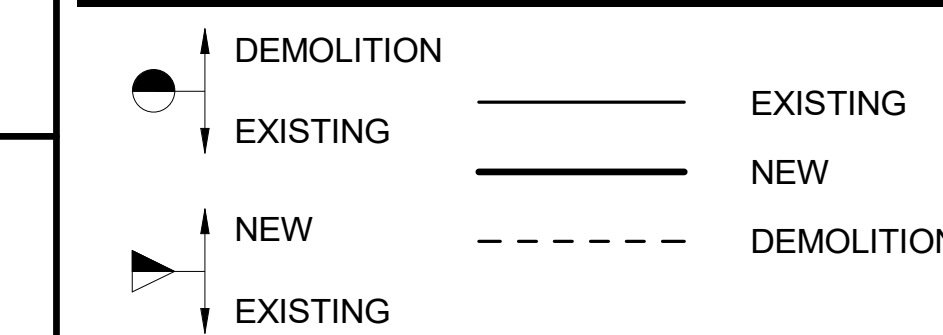
DETAIL / ENLARGED CALLOUT SYMBOL



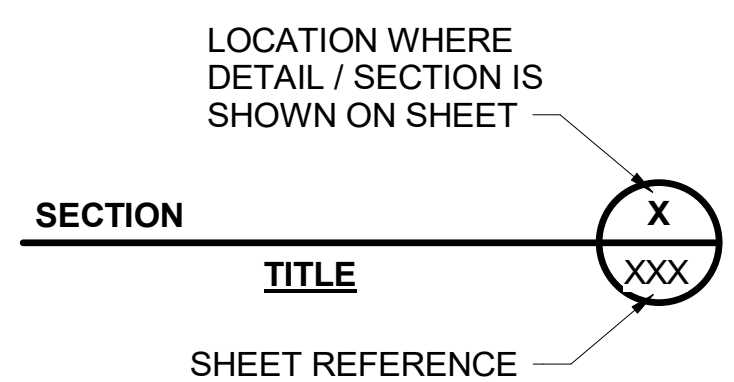
AIR DISTRIBUTION DEVICE IDENTIFICATION



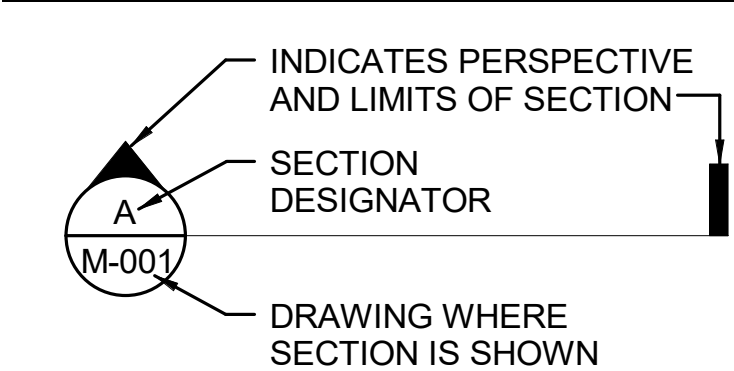
CONSTRUCTION INTERFACE



CALLOUT TITLE



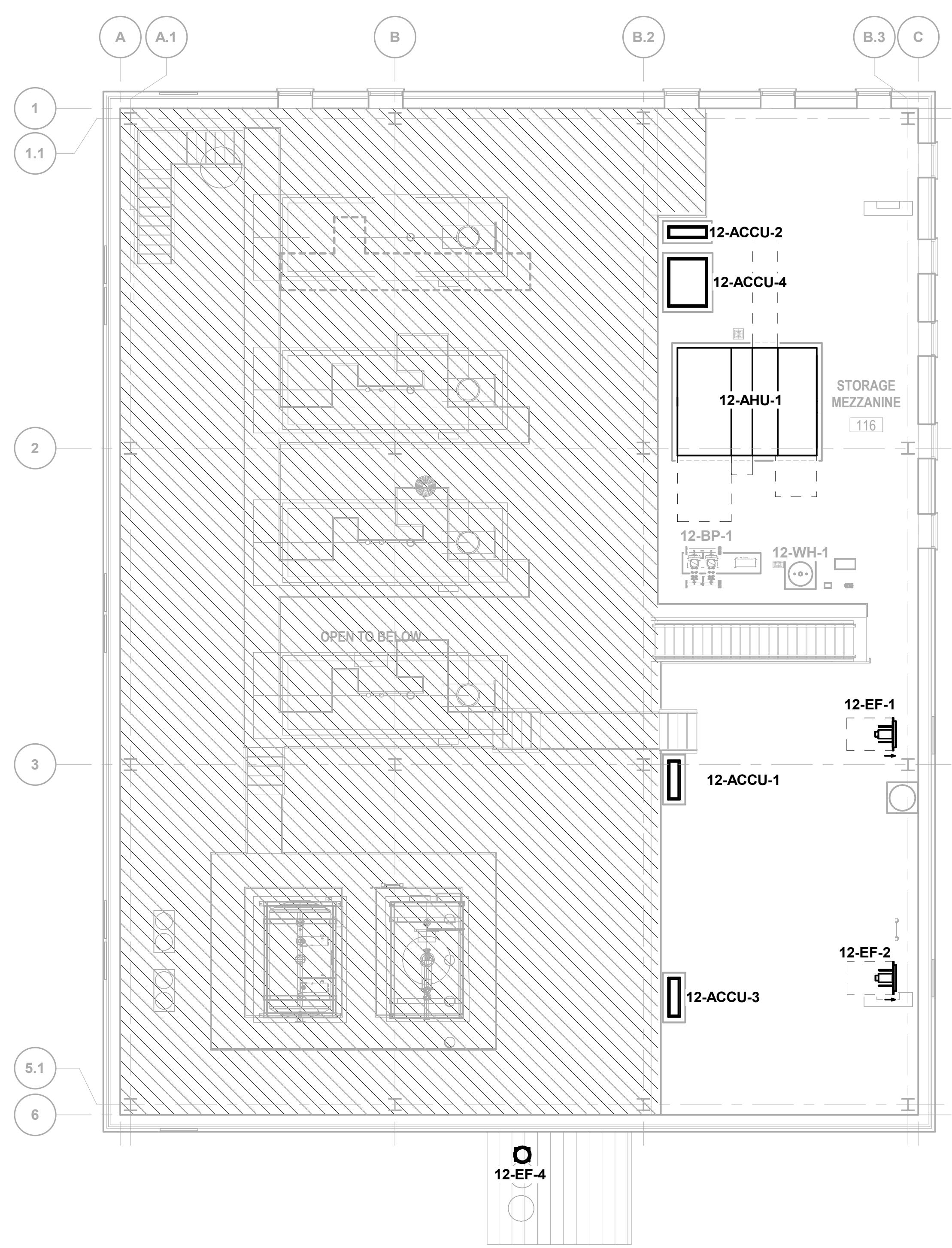
SECTION CUT SYMBOL



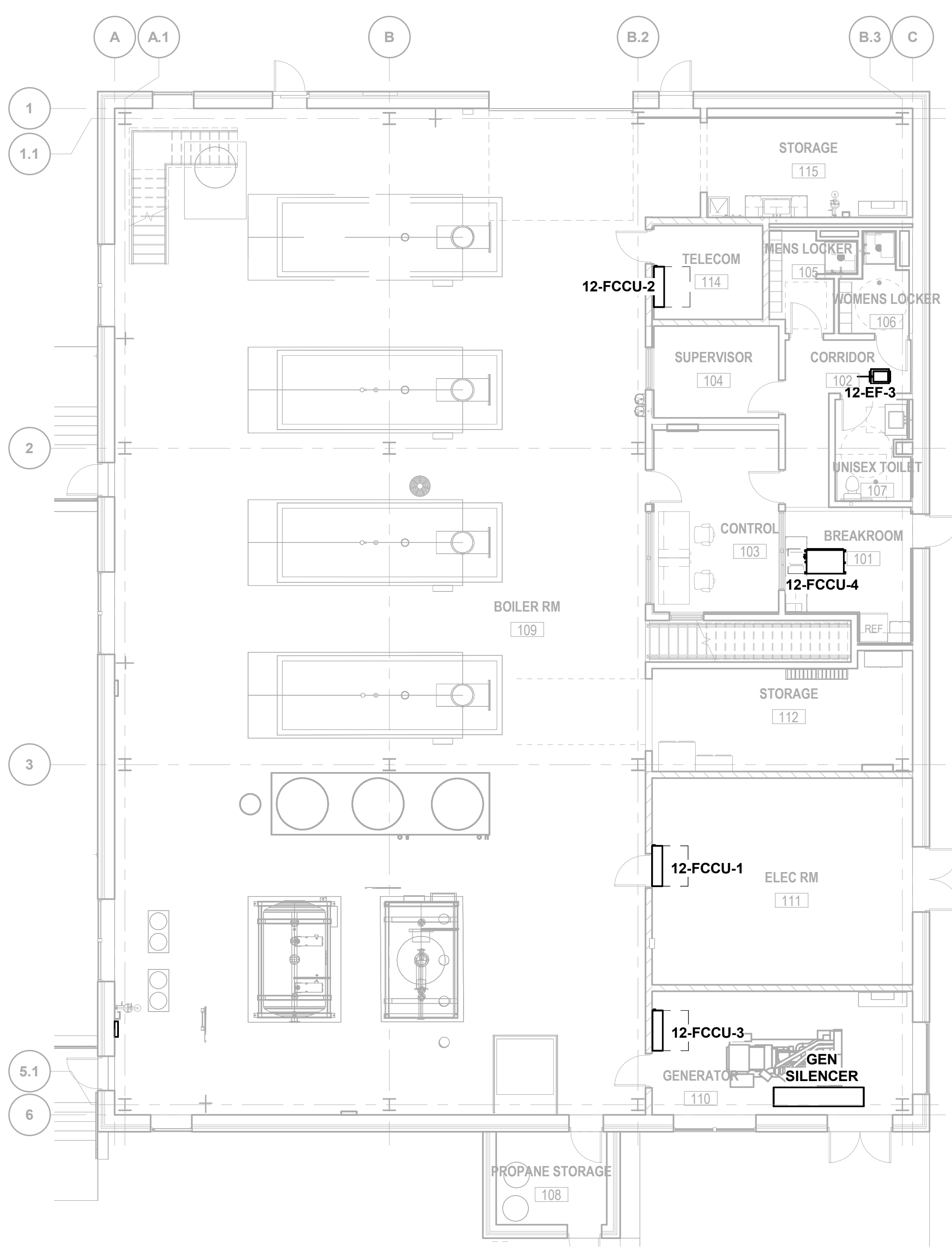
Project information table including Consultant (Burns & McDonnell), Architect/Engineer of Record (paradigm), Office of Construction and Facilities Management, Drawing Title (MECHANICAL GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS), Phase (100% CONSTRUCTION DOCUMENTS), Project Title (SIOUX FALLS BOILER PLANT), Project Number (438-22-900), Building Number (12), Location (VAMC-Sioux Falls: 2501 W 22nd St, Sioux Falls, SD 57105), Issue Date (06/25/2024), Checked (S. FISCHBACH), Drawn (J. YOUNG), and Drawing Number (M-000).

- NOTES:**
- FOR GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS SEE DRAWING M-000.
 - ALL ITEMS THAT REQUIRE ACCESS, SUCH AS FOR OPERATING, CLEANING, SERVICING, MAINTENANCE, AND CALIBRATION, SHALL BE EASILY AND SAFELY ACCESSIBLE BY PERSONS STANDING AT FLOOR LEVEL, OR STANDING ON PERMANENT PLATFORMS, WITHOUT THE USE OF PORTABLE LADDERS. EXAMPLES OF THESE ITEMS INCLUDE, BUT ARE NOT LIMITED TO: ALL TYPES OF VALVES, FILTERS AND STRAINERS, TRANSMITTERS, CONTROL DEVICES. PRIOR TO COMMENCING INSTALLATION WORK, REFER CONFLICTS BETWEEN THIS REQUIREMENT AND CONTRACT DOCUMENTS TO THE COR FOR RESOLUTION. FAILURE OF THE CONTRACTOR TO RESOLVE, OR POINT OUT ANY ISSUES WILL RESULT IN THE CONTRACTOR CORRECTING AT NO ADDITIONAL COST OR TIME TO THE GOVERNMENT.

- KEYED NOTES: #**
- XXX.

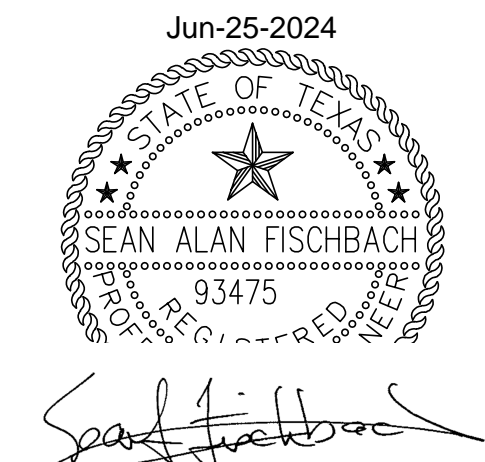


(E2) MECHANICAL HVAC EQUIPMENT PLAN - MEZZANINE
1/8" = 1'-0"



(E5) MECHANICAL HVAC EQUIPMENT PLAN - 1ST FLOOR
1/8" = 1'-0"

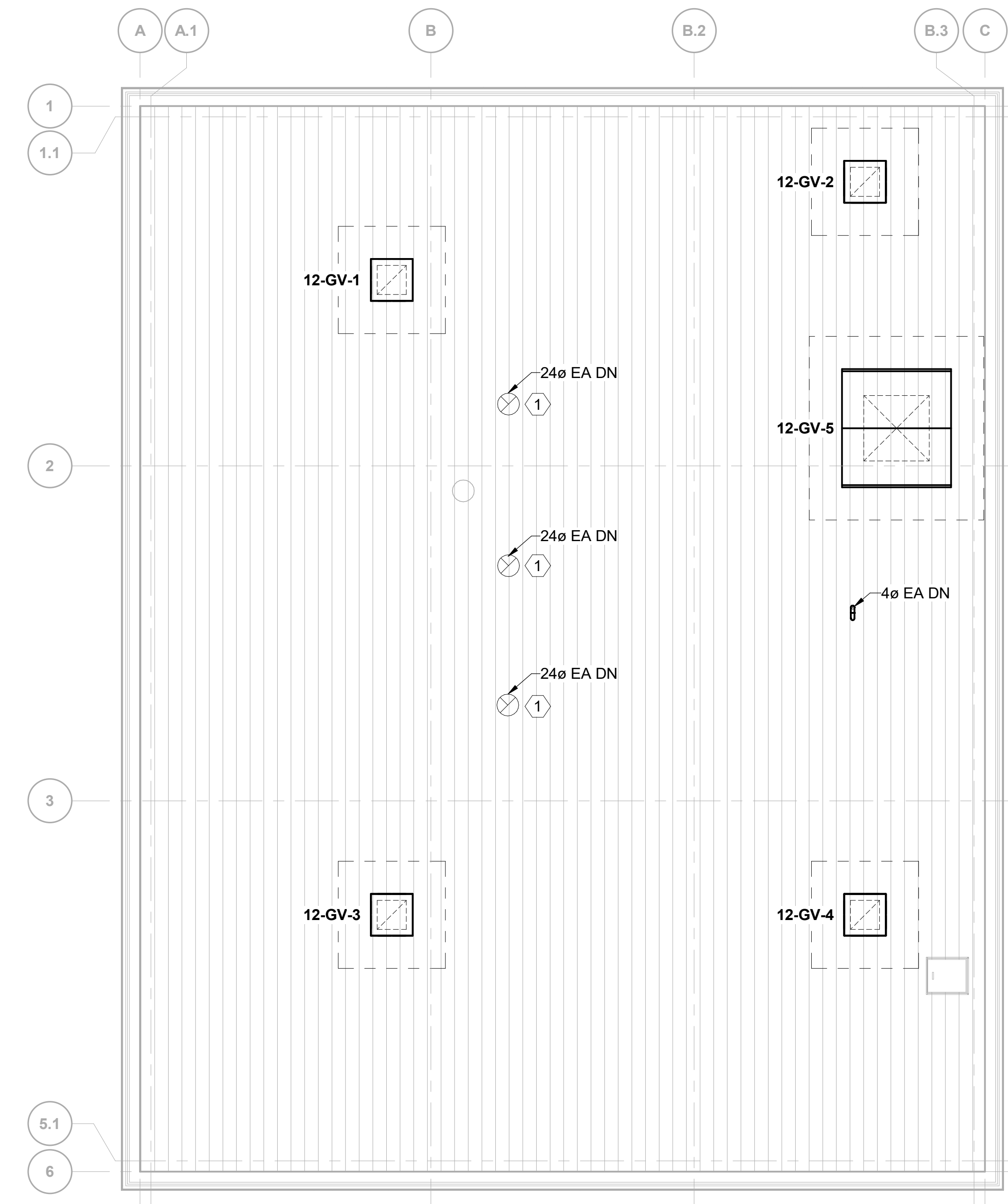
| FIRE RESISTIVE LEGEND | |
|--|--|
| FIRE RESISTIVE WALL OR SHAFT - SEE LIFE SAFETY PLANS | |
| [Symbol: Hatched box] | |



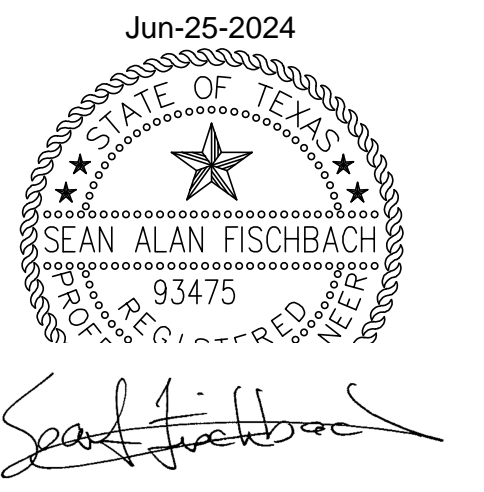
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| Revisions: | CONSULTANT | ARCHITECT/ENGINEER OF RECORD | STAMP | Office of Construction and Facilities Management | Drawing Title | Phase | Project Title | Project Number |
| | | BURNS & McDONNELL Burns & McDonnell Engineering Company, Inc. 9450 WARD PARKWAY, KANSAS CITY, MO | paradigm Architecture Engineering Design-Build 200 Envoy Circle, Suite 201, Louisville, KY 40299 www.paradigmusa.com | | MECHANICAL HVAC PLANS | 100% CONSTRUCTION DOCUMENTS | SIoux FALLS BOILER PLANT | 438-22-900 |
| Date: | | | | U.S. Department of Veterans Affairs | Approved: Project Director | FULLY SPRINKLERED | Location | Building Number |
| | | | | | | | VAMC-Sioux Falls: 2501 W 22nd St, Sioux Falls, SD 57105 | 12 |
| | | | | | | | Issue Date | Drawing Number |
| | | | | | | | 06/25/2024 | MH101 |
| | | | | | | | Checked | |
| | | | | | | | S. FISCHBACH | |
| | | | | | | | Drawn | |
| | | | | | | | J. YOUNG | |

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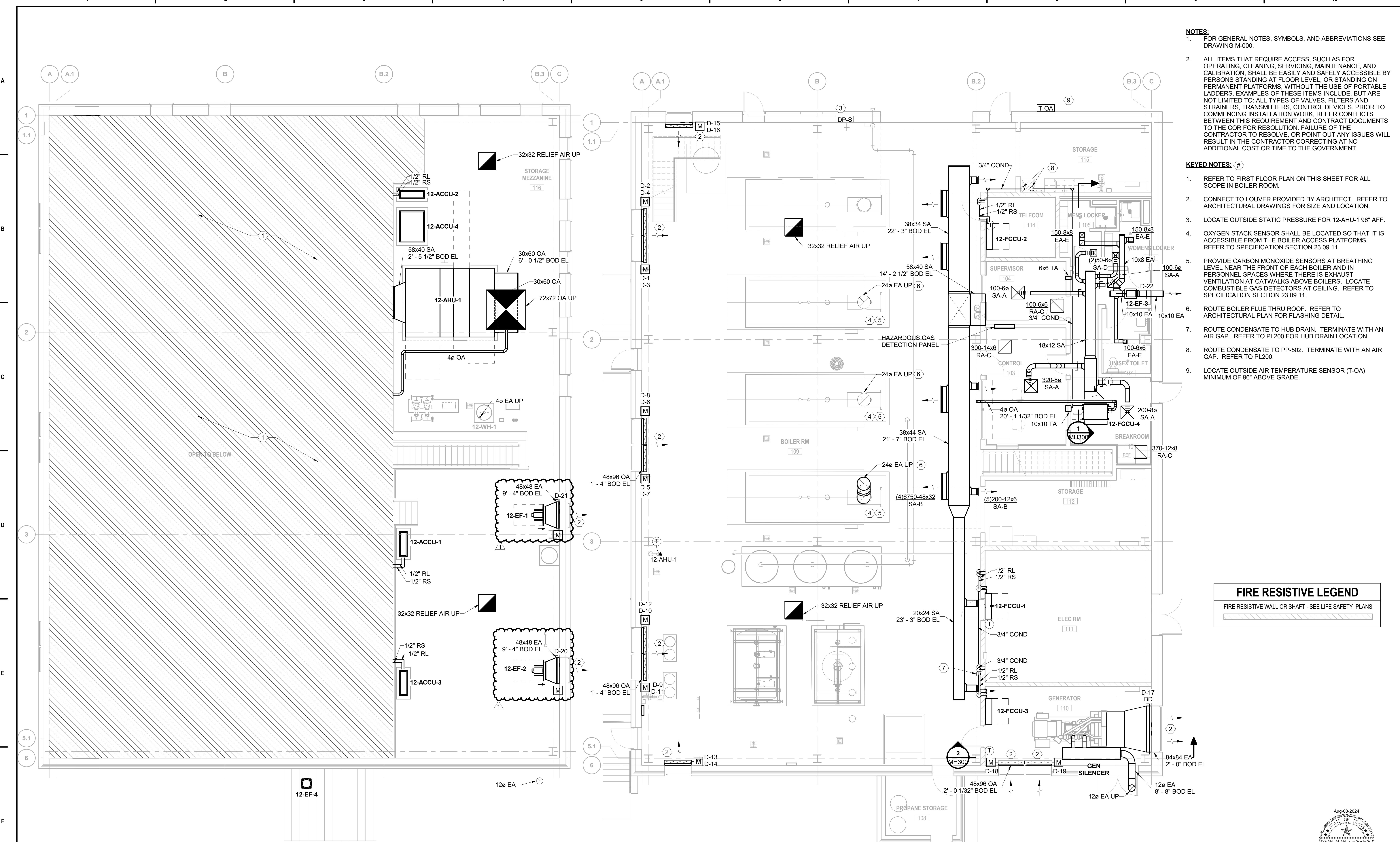
- KEYED NOTES: (#)**
- ROUTE BOILER FLUE THRU ROOF. STACK SHALL BE A MINIMUM OF 10'-0" ABOVE ROOF. REFER TO PROJECT SPECIFICATIONS 23 52 39 FIRE TUBE BOILERS AND 23 51 00 BREECHINGS, CHIMNEYS AND STACKS. REFER TO ARCHITECTURAL PLAN FOR FLASHING DETAIL.



(E5) MECHANICAL HVAC PLAN - ROOF
1/8" = 1'-0"



| | | | | | | | | | |
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| Revisions: | Date: | CONSULTANT | ARCHITECT/ENGINEER OF RECORD | STAMP | Drawing Title | Phase | Project Title | Project Number | |
| | | | | | MECHANICAL HVAC PLAN - ROOF | 100% CONSTRUCTION DOCUMENTS | SIoux FALLS BOILER PLANT | 438-22-900 | |
| | | | Architecture Engineering Design-Build 200 Envoy Circle, Suite 201, Louisville, KY 40299 www.paradigmusa.com | | Approved: Project Director | FULLY SPRINKLERED | Location | Building Number | |
| | | | | | | | VAMC-Sioux Falls: 2501 W 22nd St, Sioux Falls, SD 57105 | 12 | |
| | | | | | | | Issue Date | Checked | Drawn |
| | | | | | | | 06/25/2024 | S. FISCHBACH | J. YOUNG |
| | | | | | | | | | Drawing Number |
| | | | | | | | | | MH102 |



NOTES:

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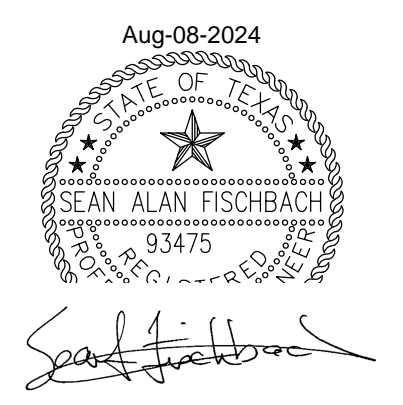
KEYED NOTES: (#)

- REFER TO FIRST FLOOR PLAN ON THIS SHEET FOR ALL SCOPE IN BOILER ROOM.
- CONNECT TO LOUVER PROVIDED BY ARCHITECT. REFER TO ARCHITECTURAL DRAWINGS FOR SIZE AND LOCATION.
- LOCATE OUTSIDE STATIC PRESSURE FOR 12-AHU-1 96" AFF.
- OXYGEN STACK SENSOR SHALL BE LOCATED SO THAT IT IS ACCESSIBLE FROM THE BOILER ACCESS PLATFORMS. REFER TO SPECIFICATION SECTION 23 09 11.
- PROVIDE CARBON MONOXIDE SENSORS AT BREATHING LEVEL NEAR THE FRONT OF EACH BOILER AND IN PERSONNEL SPACES WHERE THERE IS EXHAUST VENTILATION AT CATWALKS ABOVE BOILERS. LOCATE COMBUSTIBLE GAS DETECTORS AT CEILING. REFER TO SPECIFICATION SECTION 23 09 11.
- ROUTE BOILER FLUE THRU ROOF. REFER TO ARCHITECTURAL PLAN FOR FLASHING DETAIL.
- ROUTE CONDENSATE TO HUB DRAIN. TERMINATE WITH AN AIR GAP. REFER TO PL200 FOR HUB DRAIN LOCATION.
- ROUTE CONDENSATE TO PP-502. TERMINATE WITH AN AIR GAP. REFER TO PL200.
- LOCATE OUTSIDE AIR TEMPERATURE SENSOR (T-OA) MINIMUM OF 96" ABOVE GRADE.

FIRE RESISTIVE LEGEND
 FIRE RESISTIVE WALL OR SHAFT - SEE LIFE SAFETY PLANS

(F1) MECHANICAL HVAC PLAN - MEZZANINE
 TRUE PLAN 3/16" = 1'-0"

(F5) MECHANICAL HVAC PLAN - 1ST FLOOR
 TRUE PLAN 3/16" = 1'-0"



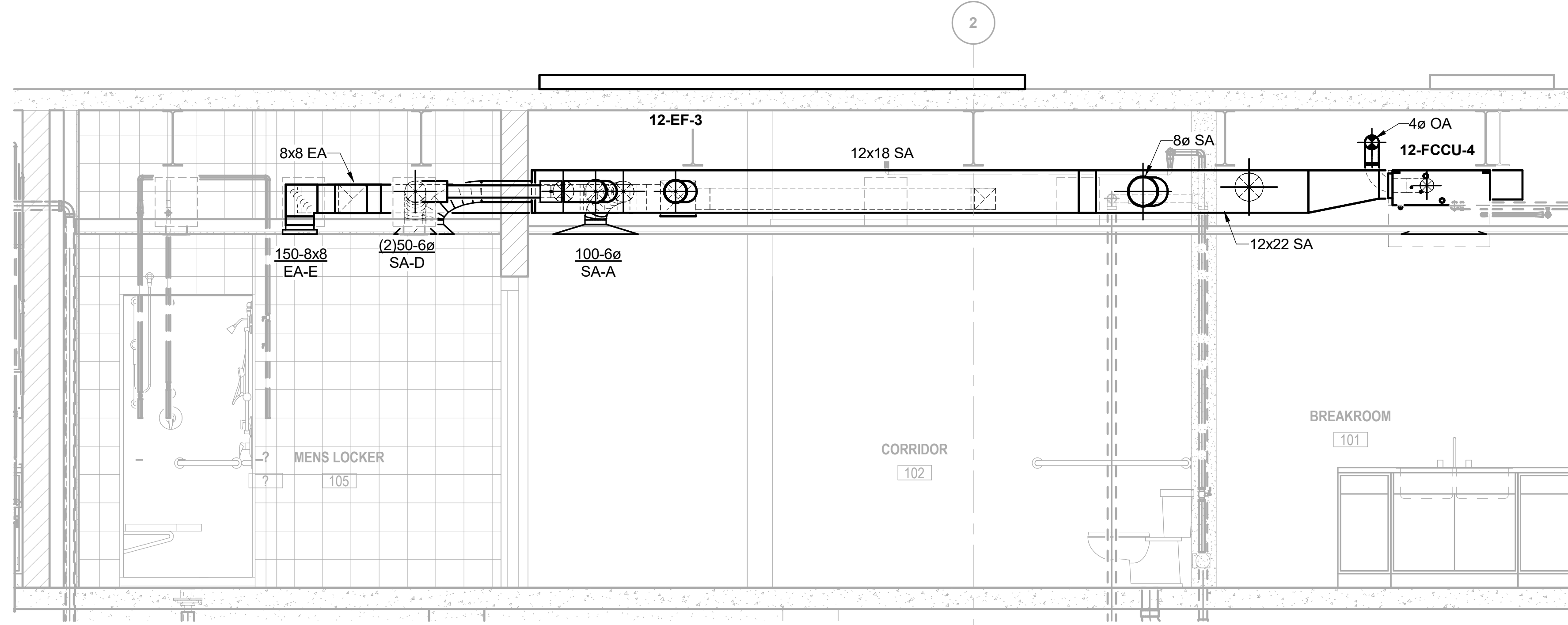
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| Addendum 1 08-09-2024 CONSULTANT BURNS & MCDONNELL Burns & McDonnell Engineering Company, Inc. 9450 WARD PARKWAY, KANSAS CITY, MO | ARCHITECT/ENGINEER OF RECORD paradigm Architecture Engineering Design-Build 200 Envoy Circle, Suite 201, Louisville, KY 40299 www.paradigmusa.com | Office of Construction and Facilities Management U.S. Department of Veterans Affairs | Drawing Title MECHANICAL HVAC PLANS | Phase 100% CONSTRUCTION DOCUMENTS | Project Title SIOUX FALLS BOILER PLANT | Project Number 438-22-900 |
| | | | Approved: Project Director | FULLY SPRINKLERED | Location VAMC-Sioux Falls: 2501 W 22nd St, Sioux Falls, SD 57105 | Building Number 12 |
| Revisions: | Date: | Issue Date 06/25/2024 | Checked S. FISCHBACH | Drawn J. YOUNG | | |

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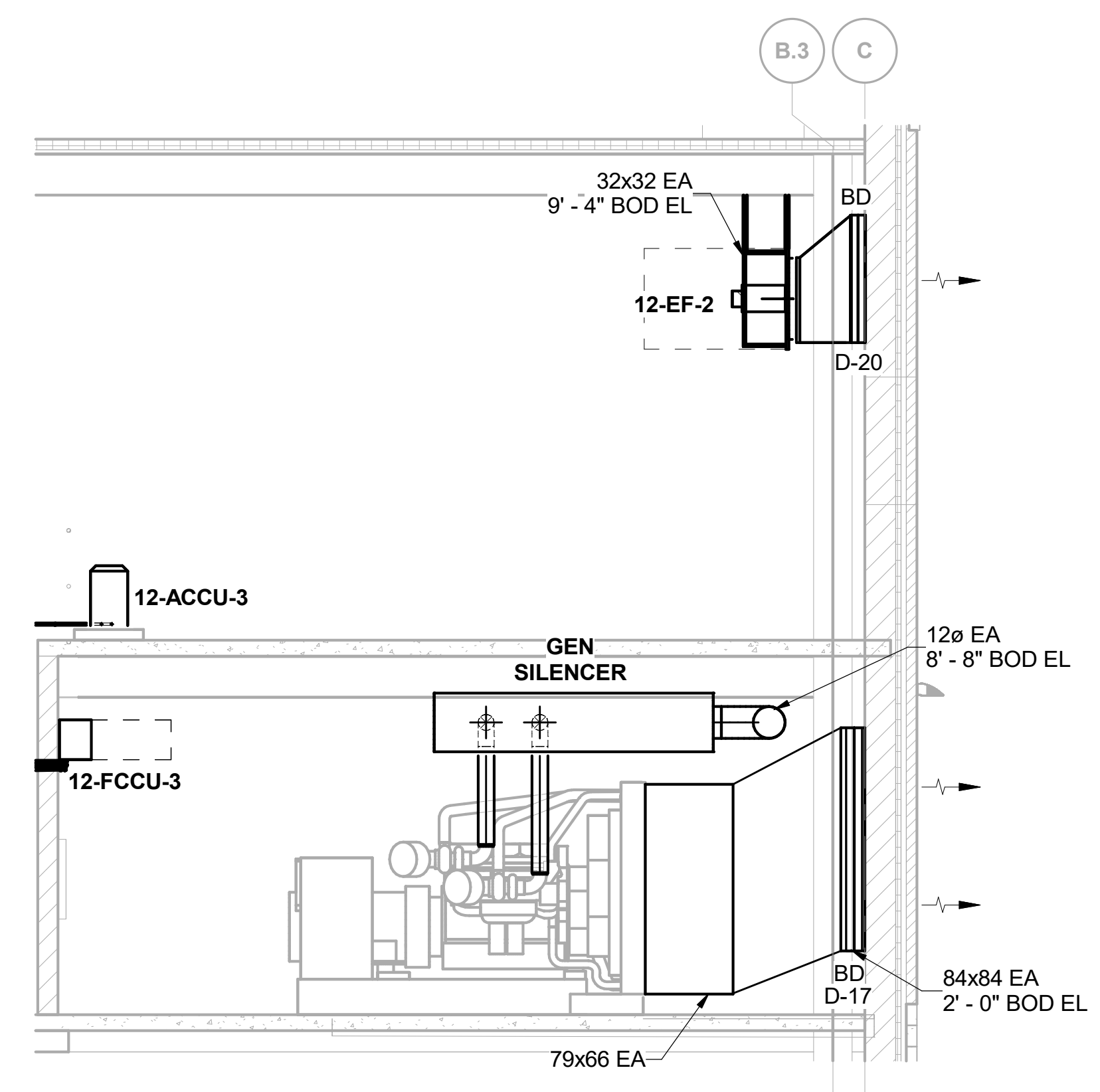
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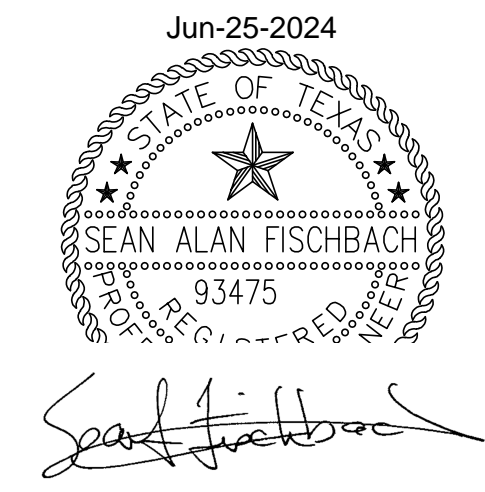
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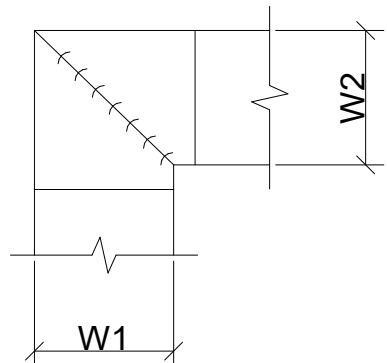
SECTION 1
BREAK ROOM SECTION
 MH200
 SCALE IN FEET



SECTION 2
GENERATOR SECTION
 MH200
 SCALE IN FEET



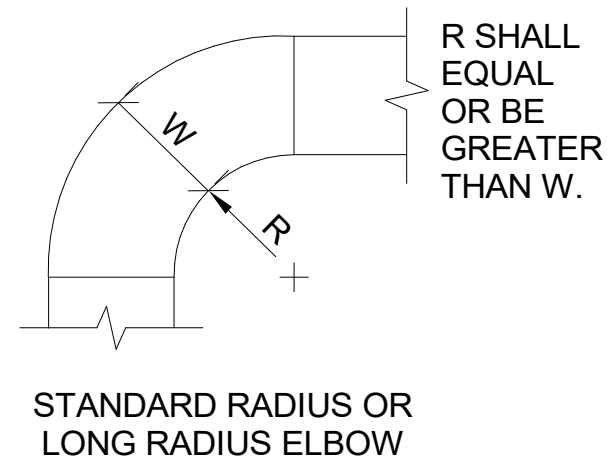
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| Revisions: Date: | CONSULTANT Burns & McDonnell Engineering Company, Inc. 9450 WARD PARKWAY, KANSAS CITY, MO | ARCHITECT/ENGINEER OF RECORD Architecture Engineering Design-Build 200 Envoy Circle, Suite 201, Louisville, KY 40299 www.paradigmusa.com | STAMP Office of Construction and Facilities Management U.S. Department of Veterans Affairs | Drawing Title MECHANICAL HVAC SECTIONS | Phase 100% CONSTRUCTION DOCUMENTS | Project Title SIOUX FALLS BOILER PLANT | Project Number 438-22-900 |
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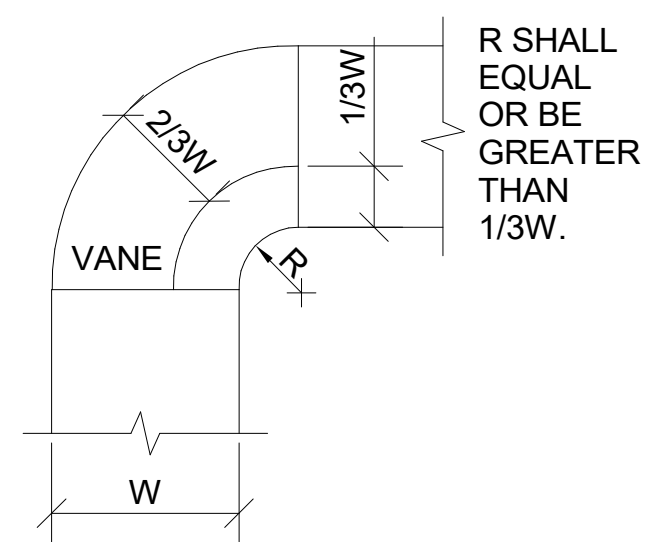
NOTE:

1. ALL VANE ELBOWS SHALL BE CONSTRUCTED AND INSTALLED AS DETAILED BY SMACNA.
2. WHEN W1 DOES NOT EQUAL W2, VANE SHALL BE SINGLE THICKNESS VANE TYPE REGARDLESS OF W DIMENSION.
3. ALL SINGLE THICKNESS VANES SHALL HAVE A 2" [50mm] RADIUS, 1 1/2" [40mm] MAXIMUM SPACE BETWEEN VANES AND A 3/4" [20mm] TRAILING EDGE.
4. WHEN W EQUALS W2 AND W1 IS GREATER THAN 20" [500mm] VANES SHALL BE DOUBLE VANE TYPE.

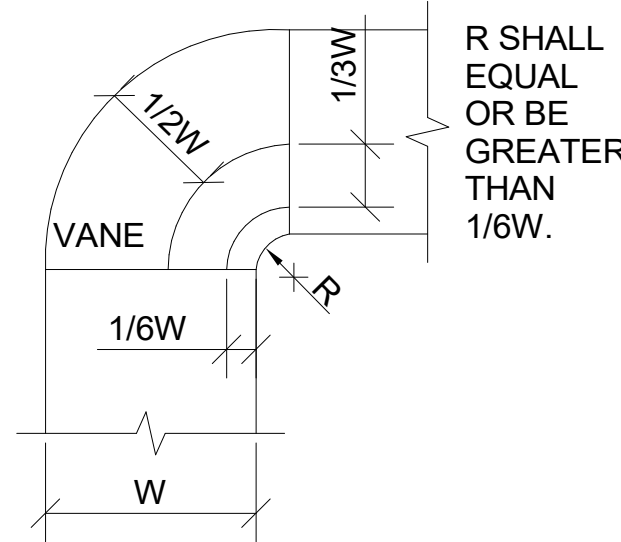
1 DUCTWORK SQUARE VANE ELBOWS
NTS



STANDARD RADIUS OR LONG RADIUS ELBOW



SHORT RADIUS ELBOW WITH ONE VANE

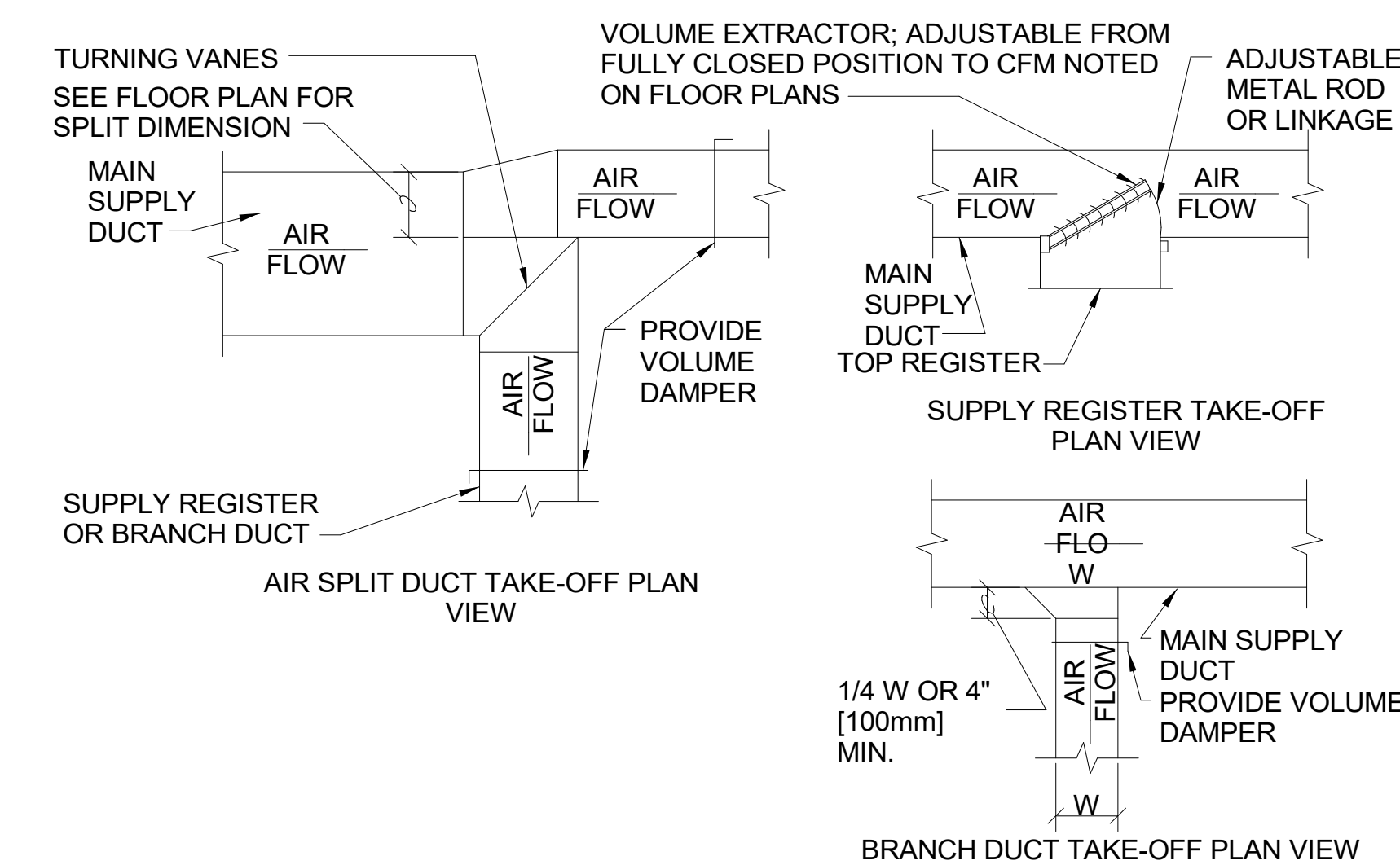


SHORT RADIUS ELBOW WITH TWO VANES

NOTE:

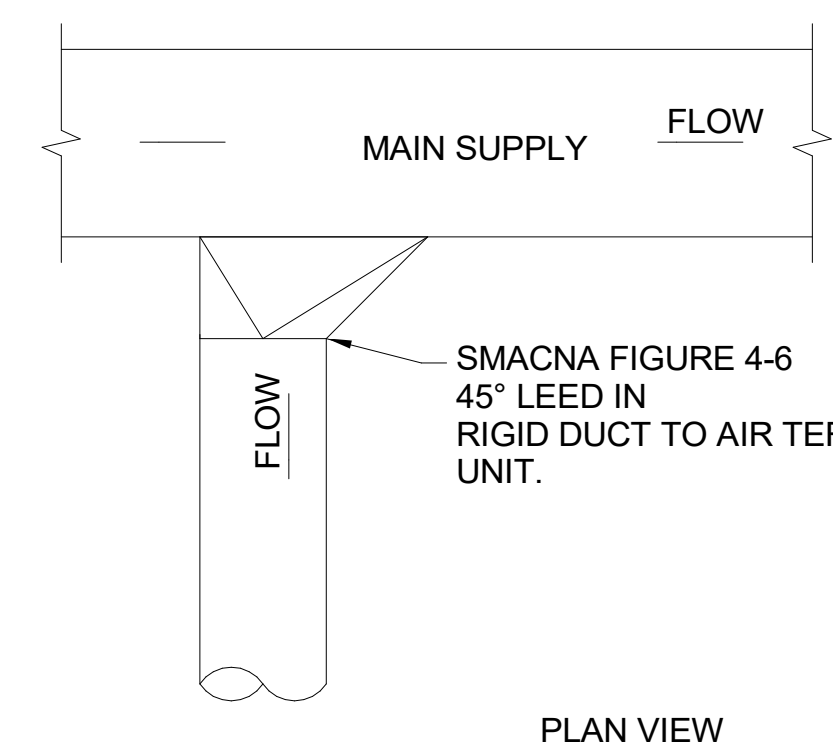
1. THE INTERIOR SURFACE OF ALL RADIUS ELBOWS SHALL BE MADE ROUND.
2. ALL STANDARD RADIUS ELBOWS CAN BE SUBSTITUTED WITH SHORT RADIUS ELBOWS. ALL SHORT RADIUS ELBOWS SHALL HAVE VANES. VANES SHALL BE CONSTRUCTED, SUPPORTED AND FASTENED AS RECOMMENDED BY SMACNA.

2 DUCTWORK RADIUS ELBOWS
NTS

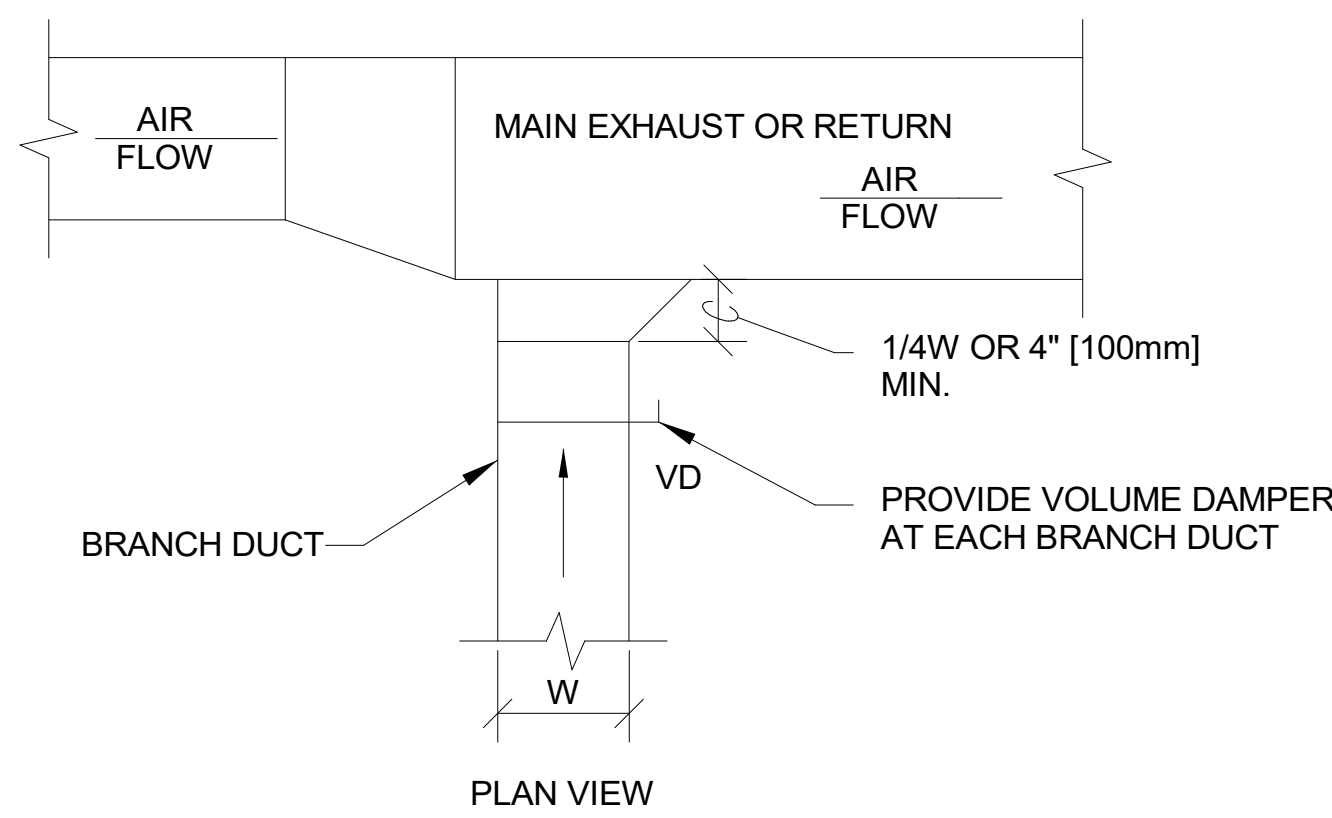


3 SUPPLY DUCTWORK TAKE-OFFS
NTS

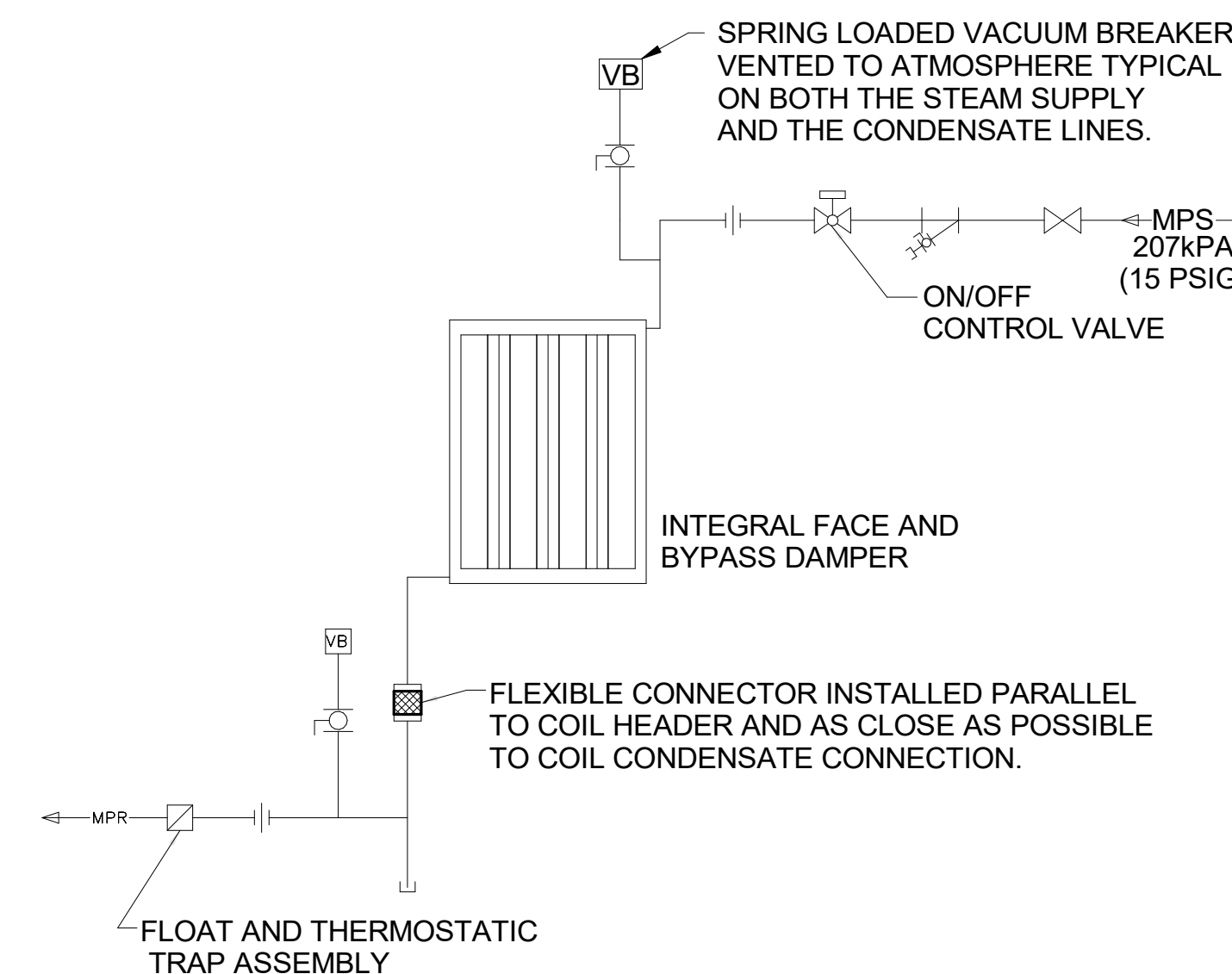
- DESIGNER'S NOTES:
1. THE SUPPLY REGISTER TAKE-OFF MAY BE USED FOR UP TO 25% OF THE MAIN DUCT CFM. THE BRANCH DUCT TAKE-OFF MAY BE USED FOR UP TO 15% OF THE MAIN DUCT CFM ANYTIME AND UP TO 40% WHEN THE MAIN DUCT VELOCITY IS 1000 FPM (5.1 M/S) OR LESS. THE AIR SPLIT DUCT TAKE-OFF SHALL BE USED IN ALL OTHER CASES AND MAY BE USED AT ANYTIME.
 2. SHOW ALL VOLUME DAMPERS ON FLOOR PLANS.



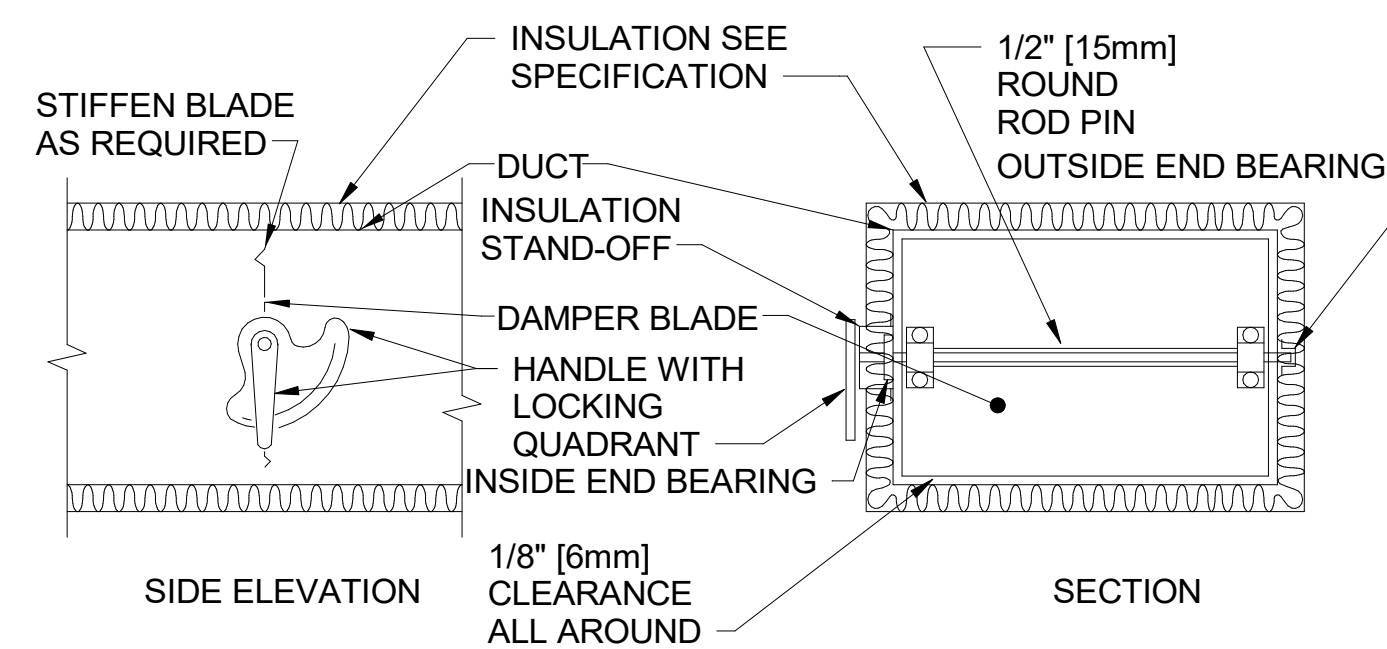
4 ALTERNATE SUPPLY DUCT TAKEOFF - AIR TERMINAL UNITS
NTS



5 EXHAUST OR RETURN BRANCH DUCTWORK
NTS

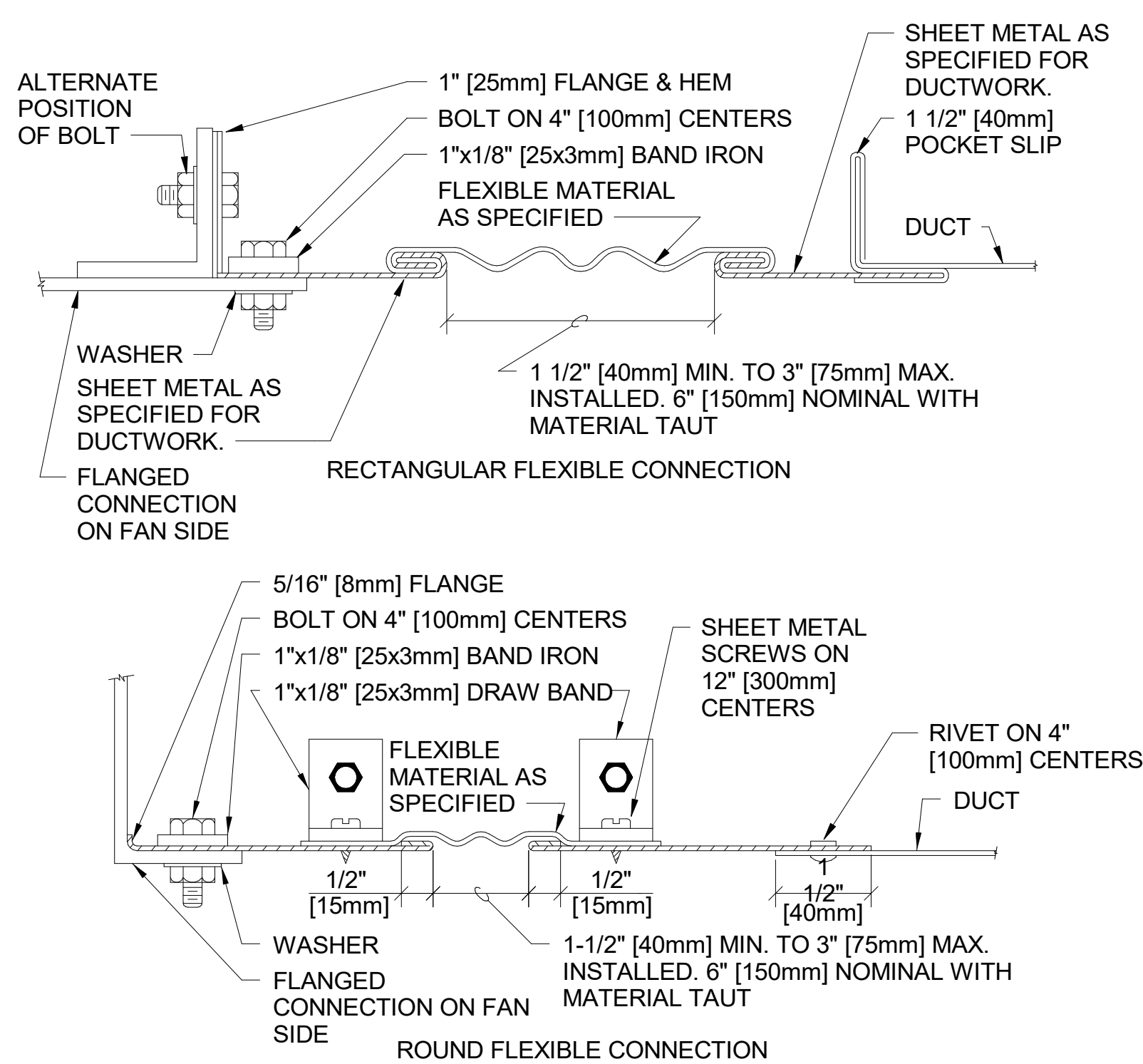


6 INTEGRAL FACE AND BYPASS STEAM COIL DETAIL
NTS

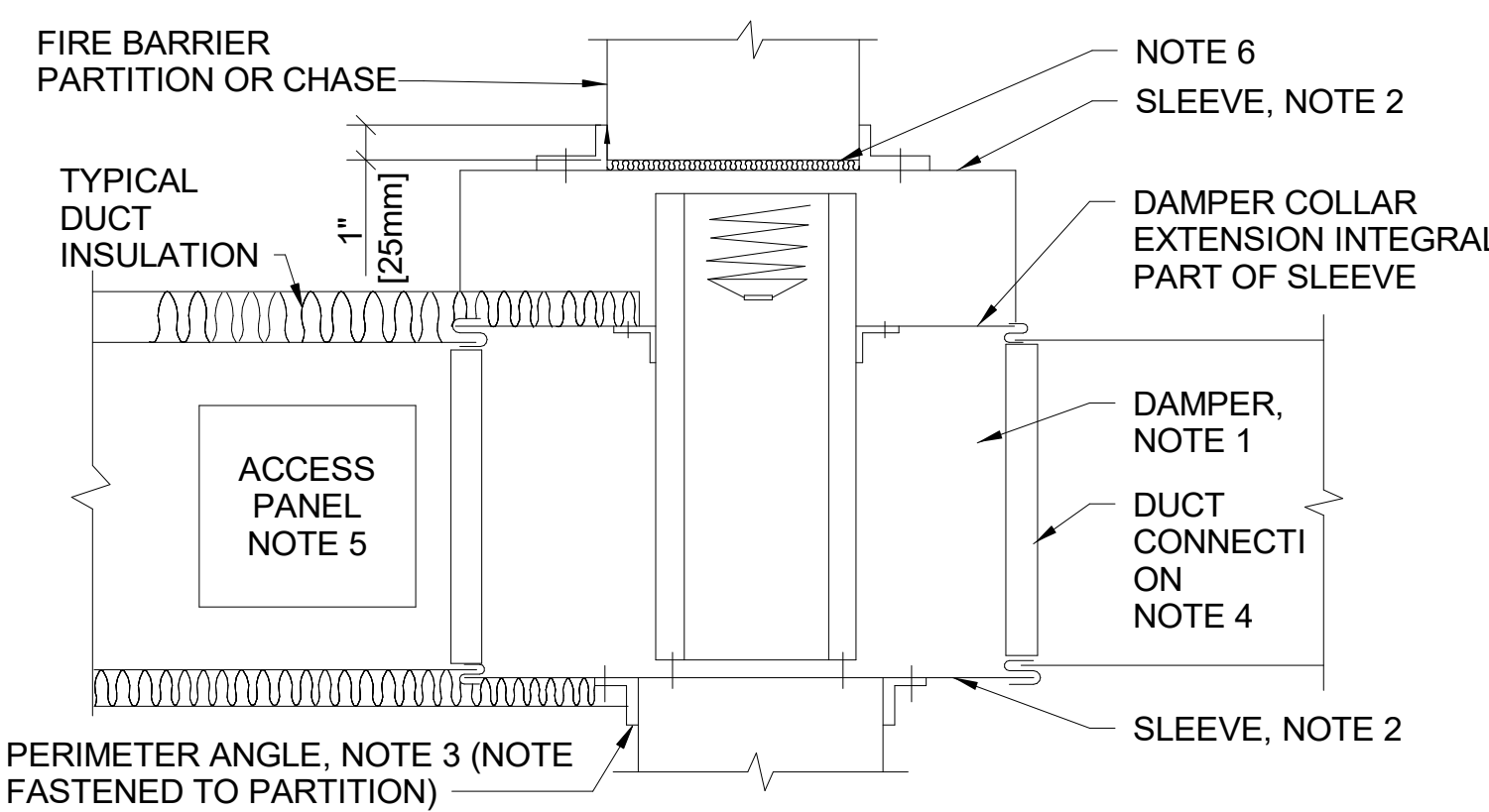


- NOTE:
1. DELETE INSULATION STAND-OFF ON DUCTWORK WITHOUT EXTERIOR INSULATION.
 2. DETAIL SHOWS SINGLE BLADE DAMPER. DAMPER INSTALLATION SHALL BE SIMILAR FOR MULTI-BLADE DAMPERS & ROUND DAMPERS.

7 VOLUME DAMPER DETAIL
NTS

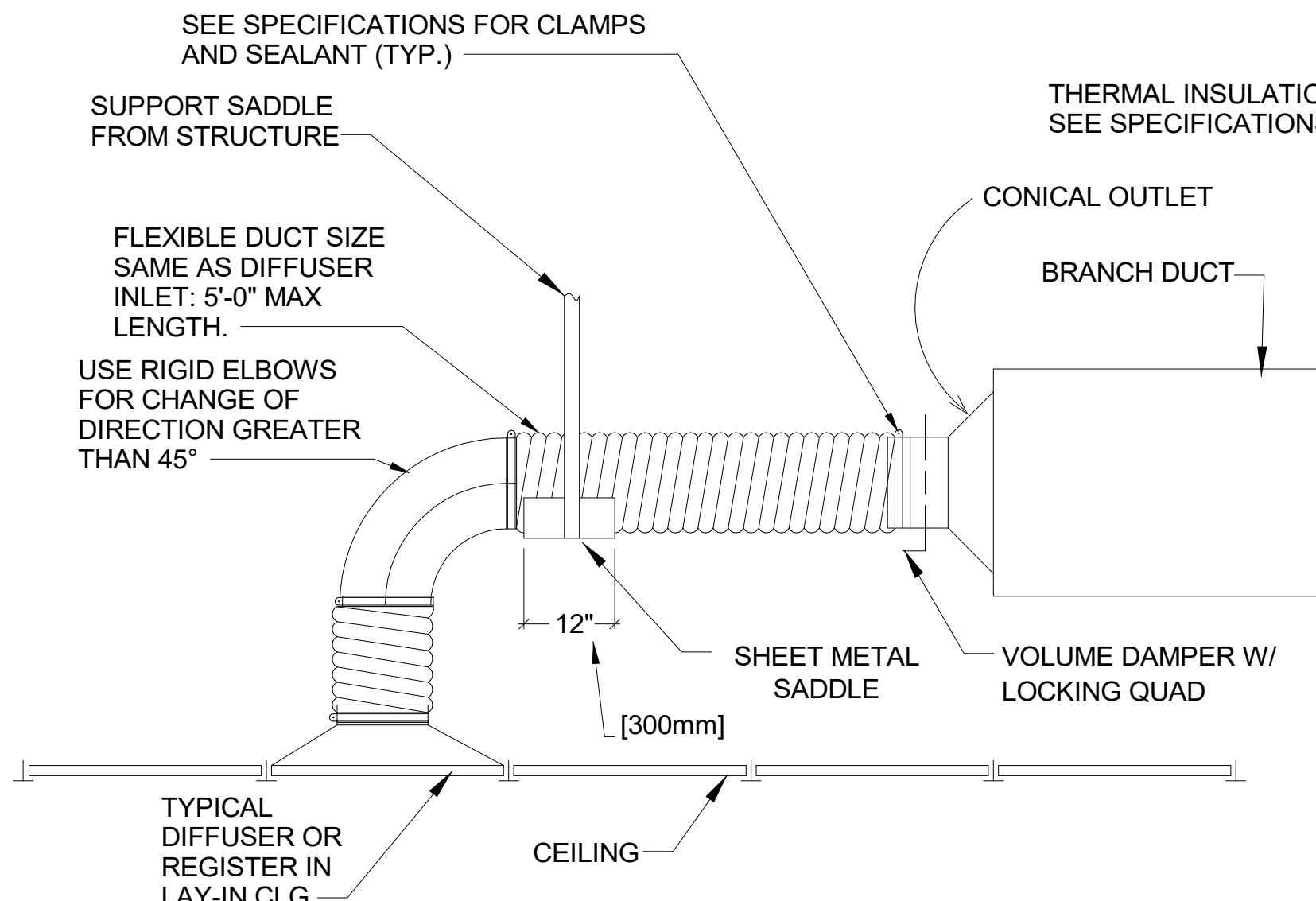


8 FLEXIBLE DUCT CONNECTIONS
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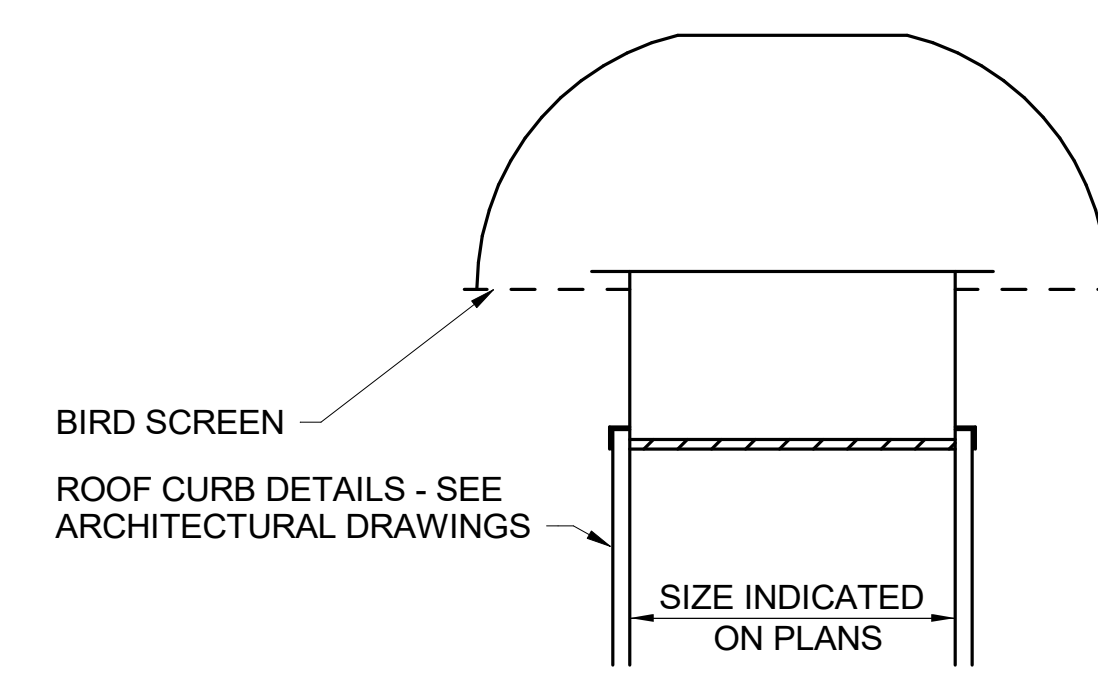
- NOTE:
1. A VERTICAL DAMPER IS SHOWN. HORIZONTAL DAMPER INSTALLATION, IS SIMILAR. FOLLOW DAMPER MANUFACTURER'S INSTRUCTIONS, INCLUDING FASTENER OPTIONS AND GAGES FOR SLEEVE AND PERIMETER ANGLES. FIRE DAMPERS MUST BE INSTALLED IN THE PARTITION OR FLOOR AND NOT OUTSIDE THE PENETRATION.
 2. GALVANIZED SLEEVE: GAGE NOT LESS THAN CONNECTING DUCT. FASTEN SLEEVE TO DAMPER FRAME AND TO PERIMETER ANGLES.
 3. PERIMETER ANGLES: GALVANIZED STEEL, NOT LESS THAN 1 1/2"x1 1/2" [40x40mm], 14 GAGE, TO PROVIDE 1" [25mm] MINIMUM OVERLAP OF OPENING ON ALL 4 SIDES.
 4. BREAKAWAY DUCT CONNECTION: CONTRACTOR'S OPTION OF TYPES SHOWN IN SMACNA. ACCESS PANELS: SIZE AND LOCATION TO PERMIT SERVICING THE FUSIBLE LINK OR LINKS.
 5. PROVIDE 1/4" TO 1/2" [6 TO 15mm] CLEARANCE ON HEIGHT AND WIDTH. FILL OPEN SPACE WITH ROCK WOOL FIRESTOP FIBER.
 6. ALL DUCT WORK RISERS WHICH ARE RUN EXPOSED, SUCH AS THRU ATTIC FLOORS AND MECHANICAL ROOM FLOORS, SHALL BE PROVIDED WITH 3" [75mm] HIGH CONCRETE CURB AROUND OPENING FOR DUCT.

9 SECTION THRU FIRE DAMPER INSTALLATION
NTS

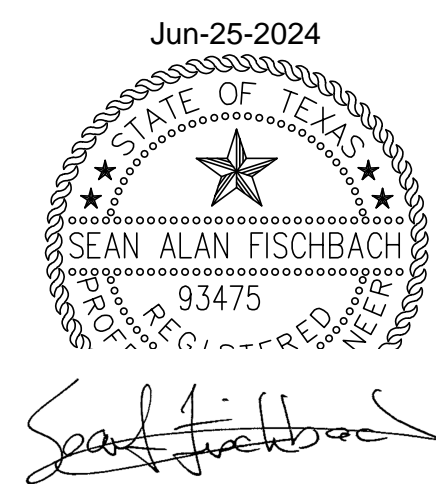


- NOTE:
- THE USE OF FLEXIBLE AIR DUCT CONNECTORS ARE NOT PERMITTED FOR THE DEDICATED AHU SERVING THE SURGICAL SUITE.

10 FLEXIBLE AIR DUCT CONNECTOR
NTS



11 RELIEF HOOD DETAIL
NTS



| | | | | | | | | | |
|------------|-------|------------|------------------------------|-------|----------------------------|-------------------------|---|--------------------------|------------|
| Revisions: | Date: | CONSULTANT | ARCHITECT/ENGINEER OF RECORD | STAMP | Drawing Title | Phase | Project Title | Project Number | |
| | | | | | | MECHANICAL HVAC DETAILS | 100% CONSTRUCTION DOCUMENTS | SIoux FALLS BOILER PLANT | 438-22-900 |
| | | | | | Approved: Project Director | | Location | Building Number | |
| | | | | | | | VAMC-Sioux Falls: 2501 W 22nd St, Sioux Falls, SD 57105 | 12 | |
| | | | | | | | Issue Date | Checked | Drawn |
| | | | | | | | 06/25/2024 | S. FISCHBACH | J. YOUNG |
| | | | | | | | | Drawing Number | |
| | | | | | | | FULLY SPRINKLERED | MH500 | |

GENERAL NOTES:

ALL ITEMS THAT REQUIRE ACCESS, SUCH AS FOR OPERATING, CLEANING, SERVICING, MAINTENANCE, AND CALIBRATION, SHALL BE EASILY AND SAFELY ACCESSIBLE BY PERSONS STANDING AT FLOOR LEVEL, OR STANDING ON PERMANENT PLATFORMS, WITHOUT THE USE OF PORTABLE LADDERS. EXAMPLES OF THESE ITEMS INCLUDE, BUT ARE NOT LIMITED TO: ALL TYPES OF VALVES, FILTERS AND STRAINERS, TRANSMITTERS, CONTROL DEVICES, PRIOR TO COMMENCING INSTALLATION WORK, REFER CONFLICTS BETWEEN THIS REQUIREMENT AND CONTRACT DOCUMENTS TO THE COR FOR RESOLUTION. FAILURE OF THE CONTRACTOR TO RESOLVE, OR POINT OUT ANY ISSUES WILL RESULT IN THE CONTRACTOR CORRECTING AT NO ADDITIONAL COST OR TIME TO THE GOVERNMENT.

2. MOTORS SHALL NOT BE ALLOWED TO RUN ABOVE 60 HZ

AIR HANDLING UNIT SCHEDULE (AHU) 1/2 table with columns for TAG NO., SERVICE, LOCATION, ALTITUDE, MAX. AIRFLOW, RETURN AIRFLOW, OUTSIDE AIRFLOW, EXTERNAL STATIC PRESSURE, INTERNAL STATIC PRESSURE, TOTAL STATIC PRESSURE, MAX BHP, FAN RPM, TYPE, VOLUME CONTROL, MIN. MOTOR HP / MIN. VFD, MOTOR RPM, MOTOR TYPE, VOLTS, PHASE, NOTES.

AIR HANDLING UNIT SCHEDULE (AHU) 2/2 table with columns for TAG NO., HEATING COIL TYPE, HEATING COIL AIRFLOW, EAT, LAT, TOTAL CAPACITY, COIL FACE VELOCITY, STEAM, MIN. ROWS / MAX. FPI, AIR PRESSURE DROP, MIN. EFF., TYPE, PRESSURE DROP, DIRTY FILTER PRESSURE DROP, APPROX. UNIT WEIGHT.

NOTES:

- 1. PROVIDE WITH MANUFACTURER'S DISCONNECT, VFD, AND SINGLE POINT POWER CONNECTION IN ACCORDANCE WITH DIVISION 26 SPECIFICATIONS.
2. PRESSURE DROPS ASSOCIATED WITH DIRTY FILTERS, COILS, ETC. SHALL BE INCLUDED IN THE TOTAL INTERNAL STATIC CALCULATION BY THE UNIT MANUFACTURER. (NOT INCLUDED IN EXTERNAL STATIC PRESSURE SCHEDULED.)
3. PROVIDE AHU WITH INTEGRAL OUTSIDE AIR DAMPERS.
4. PROVIDE AHU WITH MANUFACTURER'S 6" HIGH BASE FRAME.
5. PROVIDE MERV 8 PLEATED FILTERS UPSTREAM OF COILS.
6. VFD TO BE SUPPLIED WITH BYPASS CONTACTOR.

FAN SCHEDULE table with columns for TAG, AREA SERVED, BASIS OF DESIGN, SERVICE USED FOR, FAN TYPE, ALTITUDE, AIRFLOW, MAX. OUTLET VELOCITY, FAN SPEED, SPEED CONTROL, EXTERNAL STATIC PRESSURE, SOUND LEVEL, MOTOR, STARTER / DISCONNECT, DRIVE TYPE, WEIGHT, NOTES.

NOTES:

- 1. PROVIDE WITH MANUFACTURER'S DISCONNECT.
2. PROVIDE FAN WITH BACKDRAFT DAMPER.

HVAC DESIGN DATA table with columns for DESIGN CONDITIONS, SUMMER, WINTER, LOWEST AVERAGE ANNUAL DEWPOINT.

- 1. USE LOWEST AVERAGE DEWPOINT PER NOAA FOR SIZING HUMIDIFIERS
2. SEE CHAPTER 7, HVAC DESIGN MANUAL.

DAMPER SCHEDULE table with columns for TAG, SIZE, BASIS OF DESIGN, MFR, MODEL #, TYPE, INTERLOCK, VOLTAGE, NOTES.

- 1. DAMPER FOR GENERATOR RADIATOR EXHAUST FAN.
2. INTERLOCK WITH GENERATOR START/STOP. TIE GENERATOR CONTROL PANEL TO INLET DAMPER.
3. DAMPER SUPPLIED WITH EXHAUST FANS.

DIFFUSER, REGISTER, & GRILLE SCHEDULE (DRG) table with columns for TAG NO., DESCRIPTION, SYSTEM NAME, THROW PATTERN, DAMPER, MOUNTING, BLADE SPACING, NOTES.

NOTES:

- 1. WHERE NOT NOTED, BRANCH DUCT SIZE SHALL BE THE SAME AS THE DIFFUSER NECK SIZE.
2. PROVIDE WITH 24" X 24" LAY-IN MODULE.
3. PROVIDE WITH 24" X 12" LAY-IN MODULE.
4. PROVIDE WITH INTEGRAL [OPPOSED BLADE] DAMPER.
5. PROVIDE WITH 24" X 24" LAY-IN MODULE AND [22" X 22"] [22" X 10"] RETURN AIR BOOT.
6. PROVIDE WITH CONTINUOUS INSULATED PLENUM WITH [TOP] [BACK] INLET CONNECTION.
7. PROVIDE WITH PAINTABLE MILL FINISH.

GRAVITY VENTILATOR SCHEDULE table with columns for TAG, SIZE, BASIS OF DESIGN, MFR, MODEL #, TYPE, FLOW, PRESS, THROAT VEL, WEIGHT, NOTES.

- 1. INCLUDE 20" ALL ROOF CURB

DUCTLESS SPLIT SYSTEM SCHEDULE (FCCU) table with columns for TAG NO., LOCATION, BASIS OF DESIGN, SYSTEM TYPE, ASSOCIATED OUTDOOR UNIT, REFRIGERANT, MAX AIRFLOW, TOTAL COOLING CAPACITY, MINIMUM SEER, V/HZ/PH, UNIT MCA, MOPP, NOTES.

NOTES:

- 1. PROVIDE WITH MANUFACTURER'S PLENUM RATED CONDENSATE LIFT PUMP.

CONDENSING UNIT SCHEDULE table with columns for TAG NO., SERVICE, BASIS OF DESIGN, COOLING CAPACITY, COMPRESSOR TYPE, EFFICIENCY, RATED OUTDOOR DB, REFRIGERANT, ELECTRICAL, WEIGHT, SIZE, NOTES.

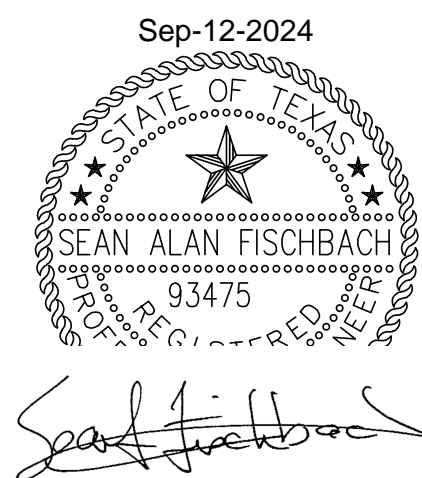
NOTES:

- 1. PROVIDE WITH MANUFACTURER'S DISCONNECT AND SINGLE POINT POWER CONNECTION IN ACCORDANCE WITH DIVISION 26 SPECIFICATIONS.

FAN COIL UNIT SCHEDULE (FCCU) table with columns for TAG, AREA SERVED, BASIS OF DESIGN, TOTAL AIRFLOW, OUTSIDE AIRFLOW, EXT. STATIC PRESSURE, MOTOR, COOLING COIL, HEATING COIL, FILTER, WEIGHT, NOTES.

NOTES:

- 1. NOT USED
2. PROVIDE WITH SINGLE POINT POWER CONNECTION.
3. PROVIDE WITH REAR OPEN RETURN.
4. PROVIDE WITH MANUFACTURER'S PLENUM RATED CONDENSATE LIFT PUMP.
5. PROVIDE WITH CONDENSATE DRAIN PAN OVERFLOW SWITCH.



Signature of Sean Alan Fischbach

Revisions table with columns for Revisions, Date.

CONSULTANT logo for Burns & McDonnell.

ARCHITECT/ENGINEER OF RECORD logo for paradigm.

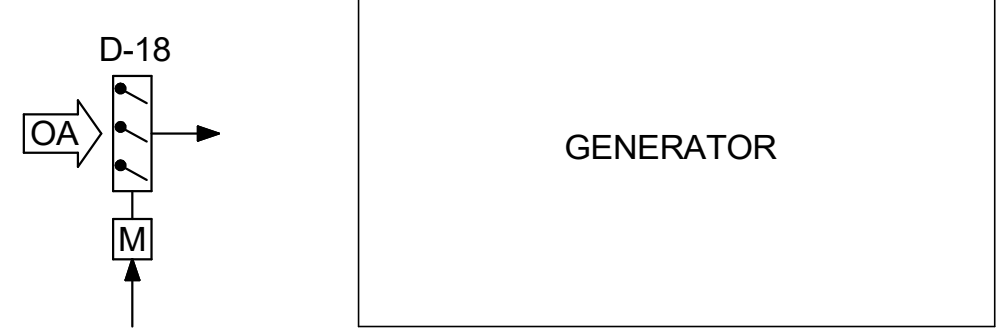
Office of Construction and Facilities Management logo.

U.S. Department of Veterans Affairs logo.

Drawing Title: HVAC SCHEDULES, Phase: 100% CONSTRUCTION DOCUMENTS.

Project Title: SIOUX FALLS BOILER PLANT, Location: VAMC-Sioux Falls: 2501 W 22nd St, Sioux Falls, SD 57105.

Project Number: 438-22-900, Building Number: 12, Drawing Number: MH600.

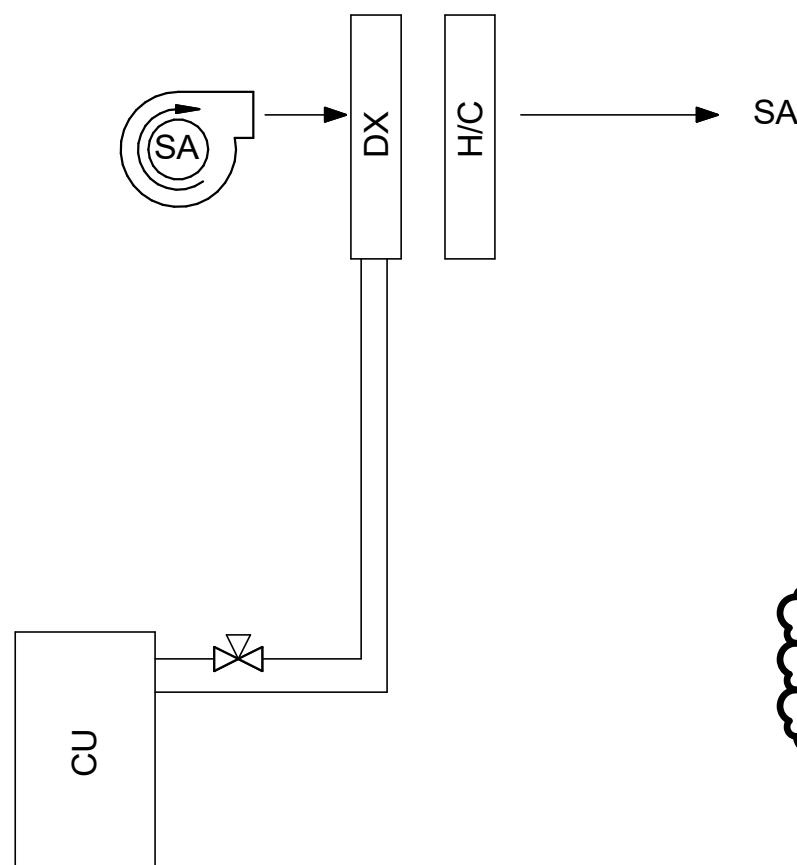


GENERATOR COMBUSTION AIR SEQUENCE ON A SIGNAL FROM THE GENERATOR. THE O/A DAMPER D-18 SHALL OPEN. IF THE DAMPER FAILS TO OPEN AN ALARM SIGNAL SHALL BE SENT TO THE BAS.

Table with columns: POINT MARK, POINT DESCRIPTION, INPUT (DIGITAL, ANALOG), OUTPUT (DIGITAL, ANALOG), ALARMS (DIGITAL, ANALOG), FUNCTION. Includes rows for D-OA and GEN.

GENERATOR NOT TO SCALE

GENERATOR COMBUSTION AIR NOT TO SCALE



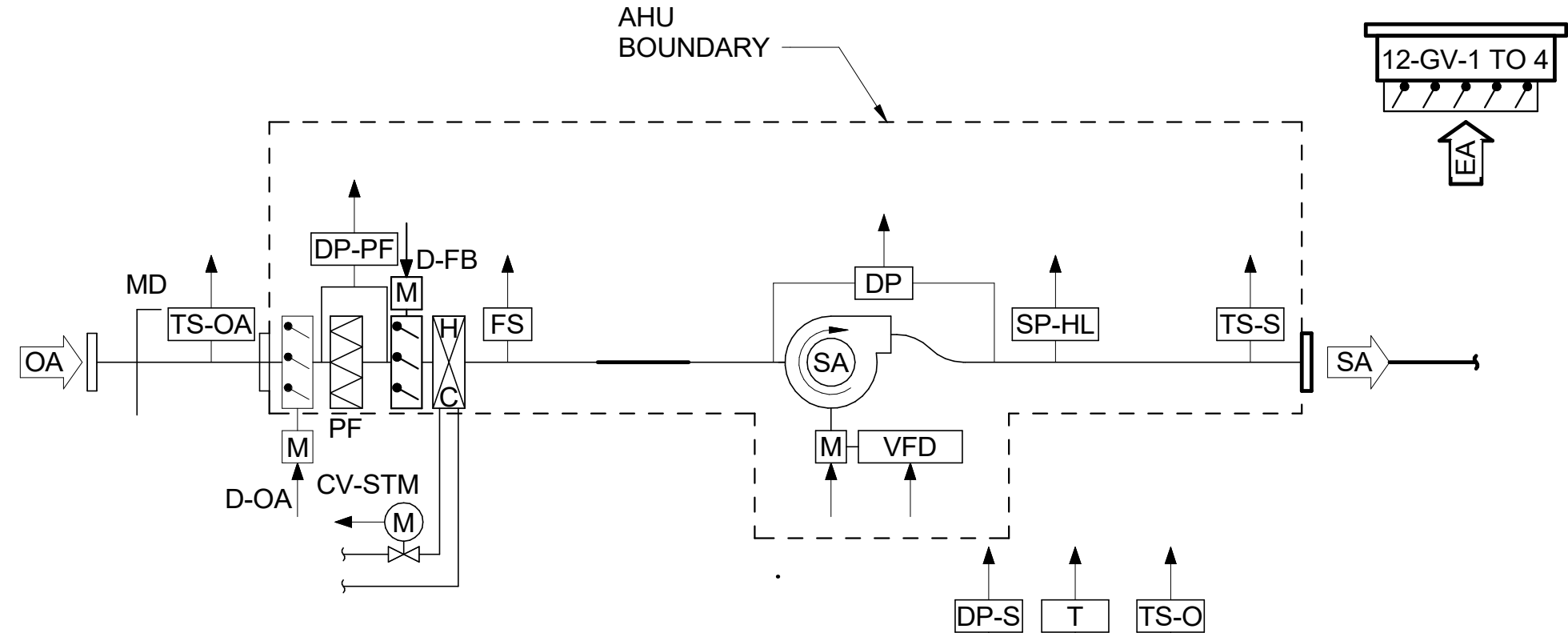
SPLIT SYSTEM FCU NOT TO SCALE

SEQUENCE OF OPERATION

- 1. CONTROLS SHALL BE DIRECT DIGITAL BASED (DDC)
2. WHEN THE THERMOSTAT IS IN THE AUTO POSITION, THE UNIT SHALL RUN THE SUPPLY FAN TO SUPPLY AIR TO THE SPACE WHEN COOLING OR HEATING (WHERE SUPPLIED) IS CALLED FOR
3. WHEN THE THERMOSTAT (T) IS IN THE COOLING POSITION, ON A RISE IN SPACE TEMPERATURE ABOVE THE THERMOSTAT SET POINT, THE UNIT SHALL CALL FOR COOLING...

Table with columns: POINT MARK, POINT DESCRIPTION, INPUT (DIGITAL, ANALOG), OUTPUT (DIGITAL, ANALOG), ALARMS (DIGITAL, ANALOG), FUNCTION. Includes rows for CU, SA, DX, H/C, T, T/H.

Table with columns: POINT MARK, POINT DESCRIPTION, INPUT (DIGITAL, ANALOG), OUTPUT (DIGITAL, ANALOG), ALARMS (DIGITAL, ANALOG), FUNCTION. Includes rows for CU, SA, DX, H/C, T, T/H.



SET POINTS (ADJ)

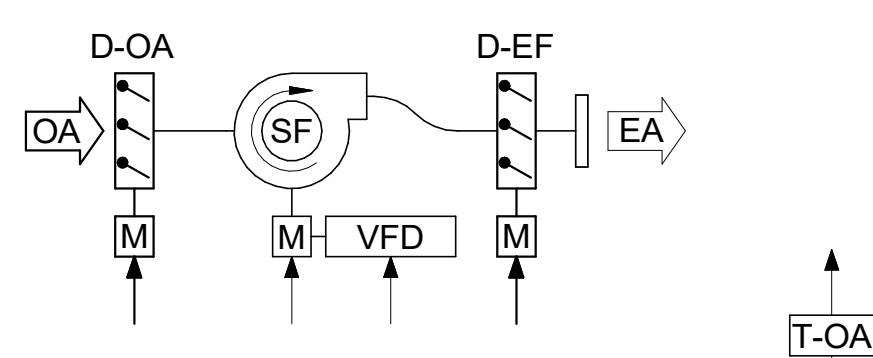
ROOM THERMOSTAT (T).....50 DEG. F
SUPPLY TEMPERATURE SETPOINT (TS-S).....50 DEG. F (MIN)
STATIC PRESSURE SENSOR (S).....0.25 IN. W.G.
FREEZESTAT (FS).....36 DEG. F
PRE-FILTER MAXIMUM PRESSURE DROP (DP-PF).....0.5 IN. W.G.

SEQUENCE OF OPERATION

- 1. CONTROLS SHALL BE DIRECT DIGITAL BASED (DDC).
2. AIR HANDLING UNIT SHALL BE USED FOR BOILER COMBUSTION AIR AND PLANT VENTILATION FOR COLD WEATHER OPERATIONS.
3. ALL CONTROLS SHALL BE ENERGIZED ON A SIGNAL FOR SUPPLY FAN (SA-VFD) START.

SEQUENCE OF OPERATION

- 1. CONTROLS SHALL BE DIRECT DIGITAL BASED (DDC).
2. WITH THE H-O-A SWITCH (EF-HOA) IN THE 'HAND' POSITION, COMMAND ALL OUTSIDE AIR (D-OA) DAMPERS D-1 THRU D-16 AND EXHAUST DAMPERS (D-EF) D-20 AND 21 TO OPEN.
3. WITH THE H-O-A SWITCH (EF-HOA) IN THE 'OFF' POSITION, THE EXHAUST FANS EF-1 AND EF-2 ARE DE-ENERGIZED AND OUTSIDE AIR (D-OA) D-1 THRU D-16 AND EXHAUST DAMPERS (D-EF) D-20 AND 21 SHALL CLOSE.



EXHAUST FAN CONTROLS

Table with columns: POINT MARK, POINT DESCRIPTION, INPUT (DIGITAL, ANALOG), OUTPUT (DIGITAL, ANALOG), ALARMS (DIGITAL, ANALOG), FUNCTION. Includes rows for D-OA, EF-HOA, T-OA, D-EF.

12AHU-1 BOILER MAKE UP AIR

NOT TO SCALE

Table with columns: POINT MARK, POINT DESCRIPTION, INPUT (DIGITAL, ANALOG), OUTPUT (DIGITAL, ANALOG), ALARMS (DIGITAL, ANALOG), FUNCTION. Includes rows for DP-PF, CV-STM, FS, SA-VFD, DP, SP-HL, TS-S, D-OA, T-OA, D-FB, DP-S, T.

12-EF-1/2 SEQUENCE OF OPERATION

Table with columns: Addendum, Date, Revisions, Date.

CONSULTANT logo for Burns & McDonnell.

ARCHITECT/ENGINEER OF RECORD logo for paradigm.

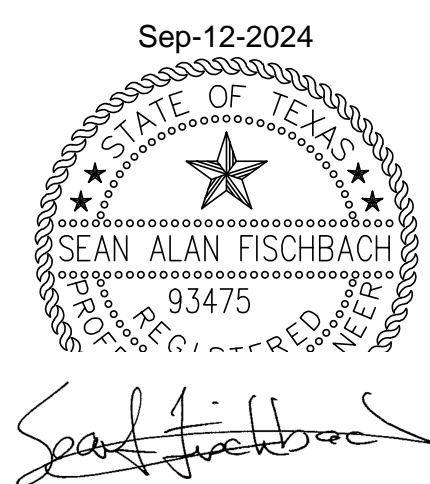
STAMP area.

Office of Construction and Facilities Management logo.

Drawing Title: MECHANICAL CONTROLS. Approved: Project Director.

Phase: 100% CONSTRUCTION DOCUMENTS. Location: VAMC-Sioux Falls.

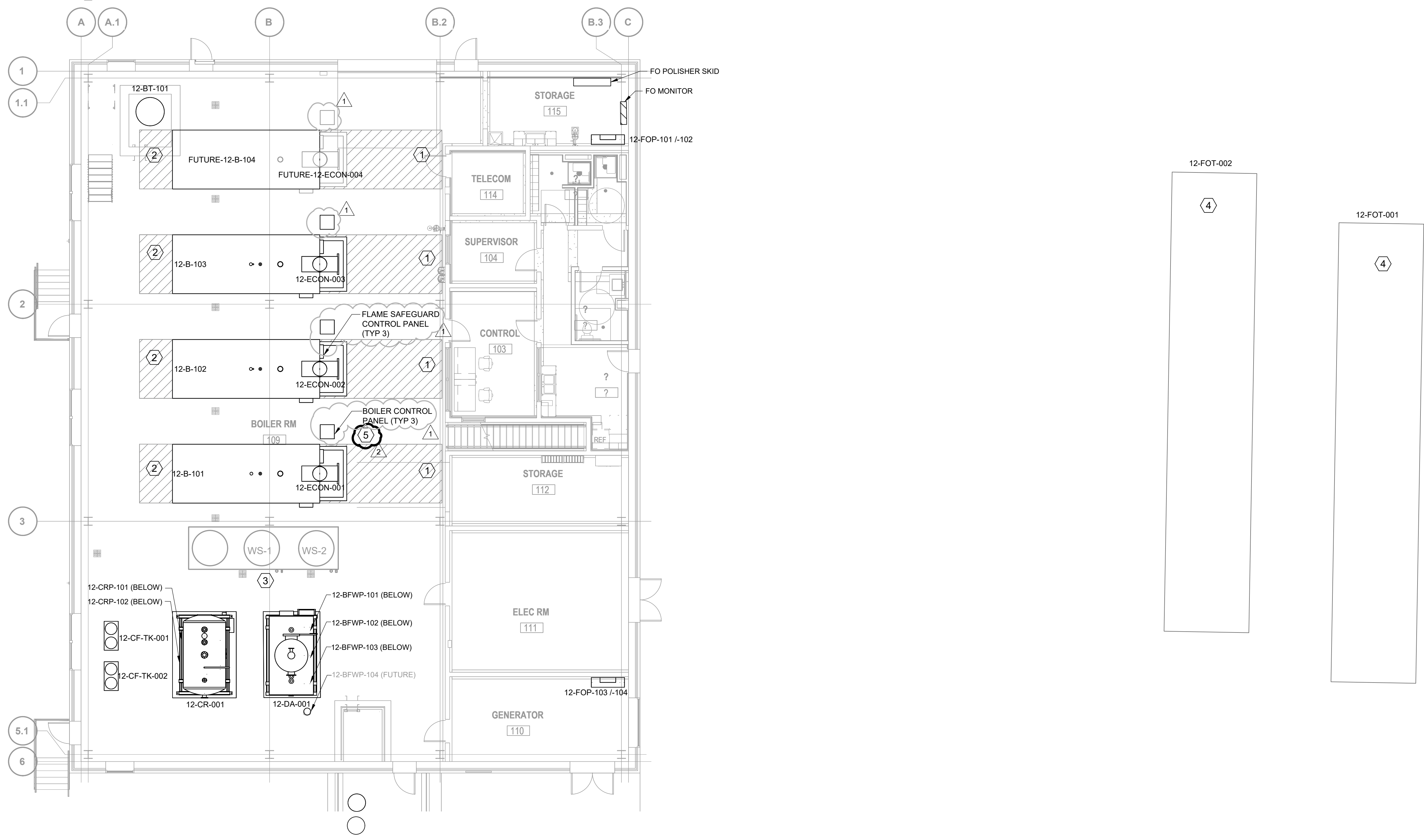
Project Title: SIOUX FALLS BOILER PLANT. Project Number: 438-22-900. Building Number: 12. Drawing Number: MI700.



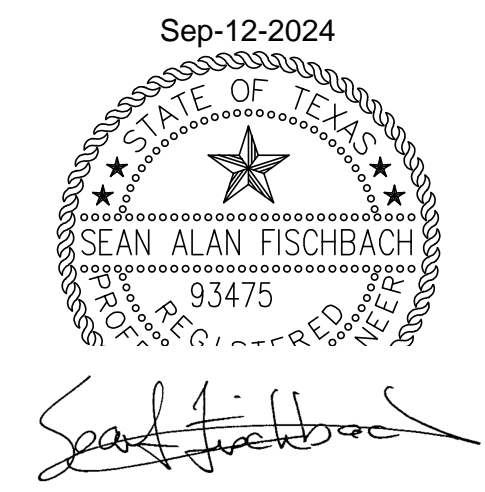
NOTES:
 1. FOR GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS SEE DRAWING M-000.

KEYED NOTES:
 1. BOILER TUBE PULL CLEARANCE.
 2. BOILER DOOR SWING CLEARANCE.
 3. REFER TO PLUMBING PLAN, PL101 FOR PLUMBING EQUIPMENT PLAN.
 4. REFER TO CIVIL DRAWINGS FOR BELOW GRADE FUEL OIL STORAGE TANK DETAILS.

5. LOCATE BOILER CONTROL PANEL SO IT CAN BE SEEN FROM THE CONTROL ROOM. COORDINATE THE EXACT LOCATION OF THE CONTROL PANEL WITH VA SIOUX FALLS BOILER ROOM OPERATORS AND DESIGN MANAGER.



MECHANICAL STEAM EQUIPMENT PLAN
 FIRST FLOOR
 TRUE PLAN E5 1/8" = 1' 0"



| | |
|--------------|------------|
| △ Addendum 1 | 08-09-2024 |
| △ Addendum 2 | 09-12-2024 |
| | |
| | |
| | |
| | |
| | |
| Revisions: | Date: |

CONSULTANT

BURNS & McDONNELL
 Burns & McDonnell Engineering Company, Inc.
 9450 WARD PARKWAY, KANSAS CITY, MO

ARCHITECT/ENGINEER OF RECORD

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 www.paradigmusa.com

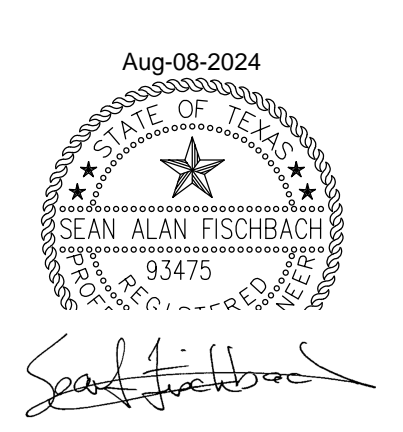
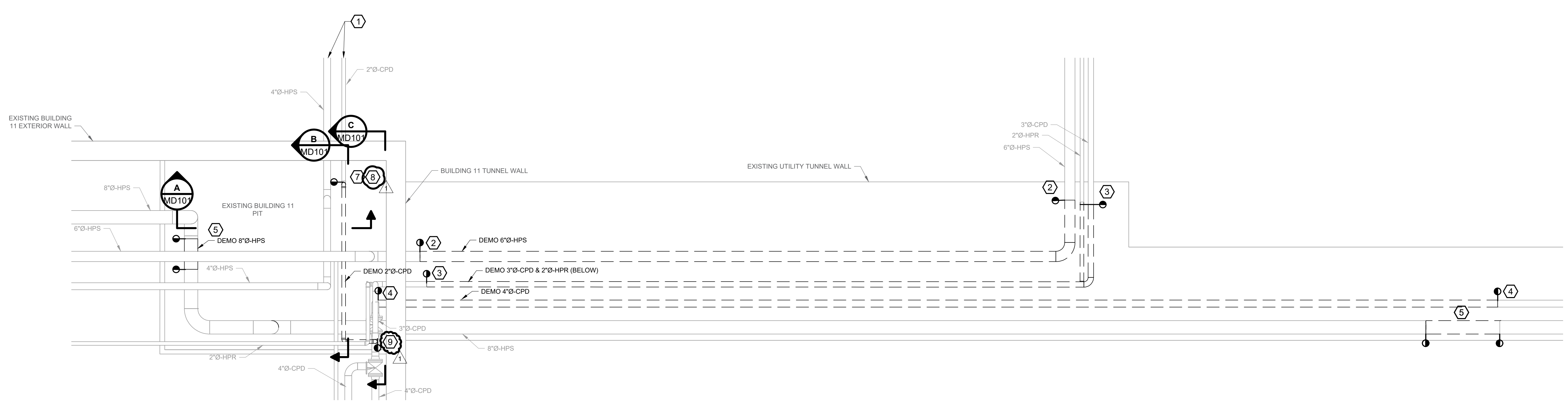
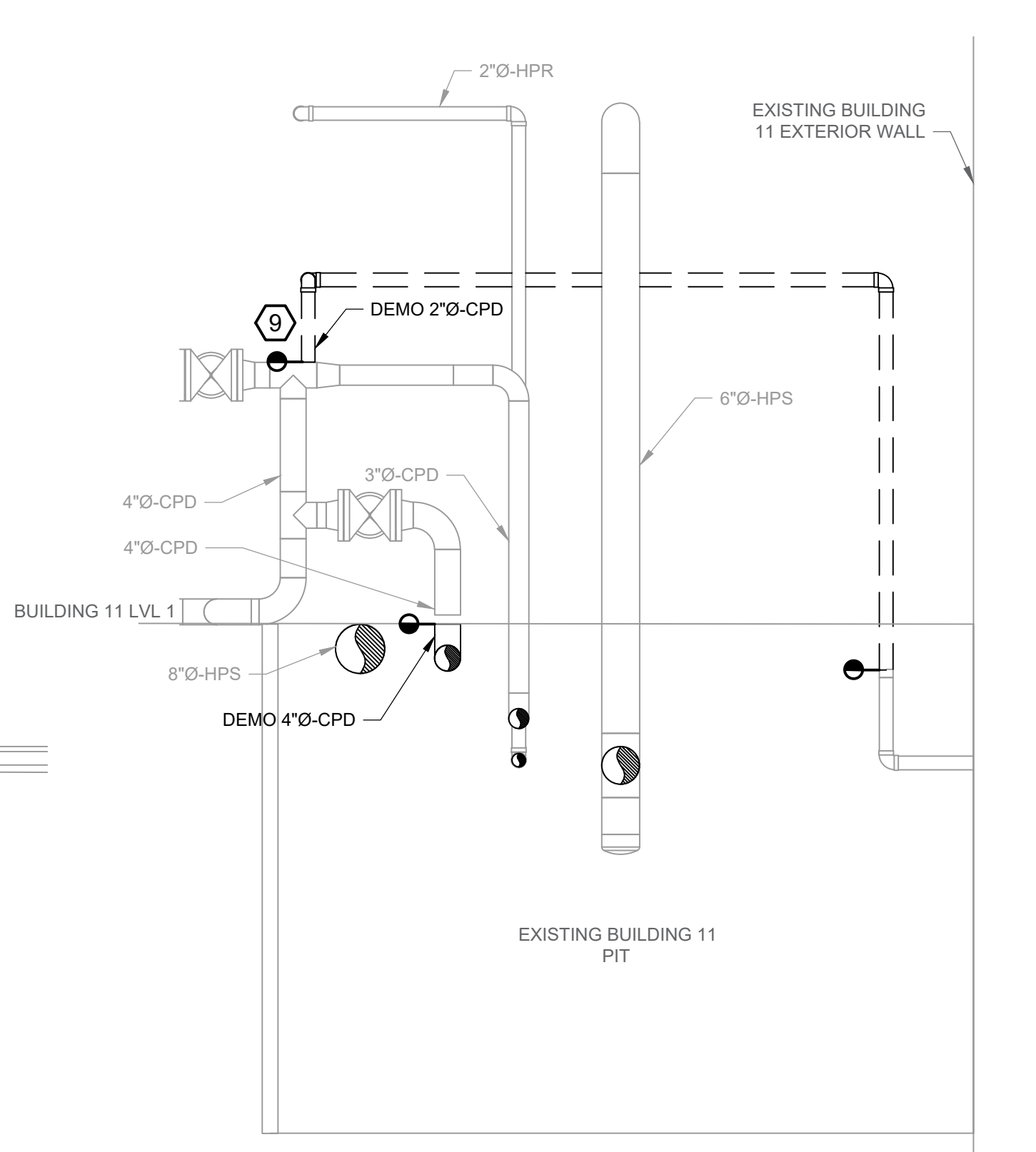
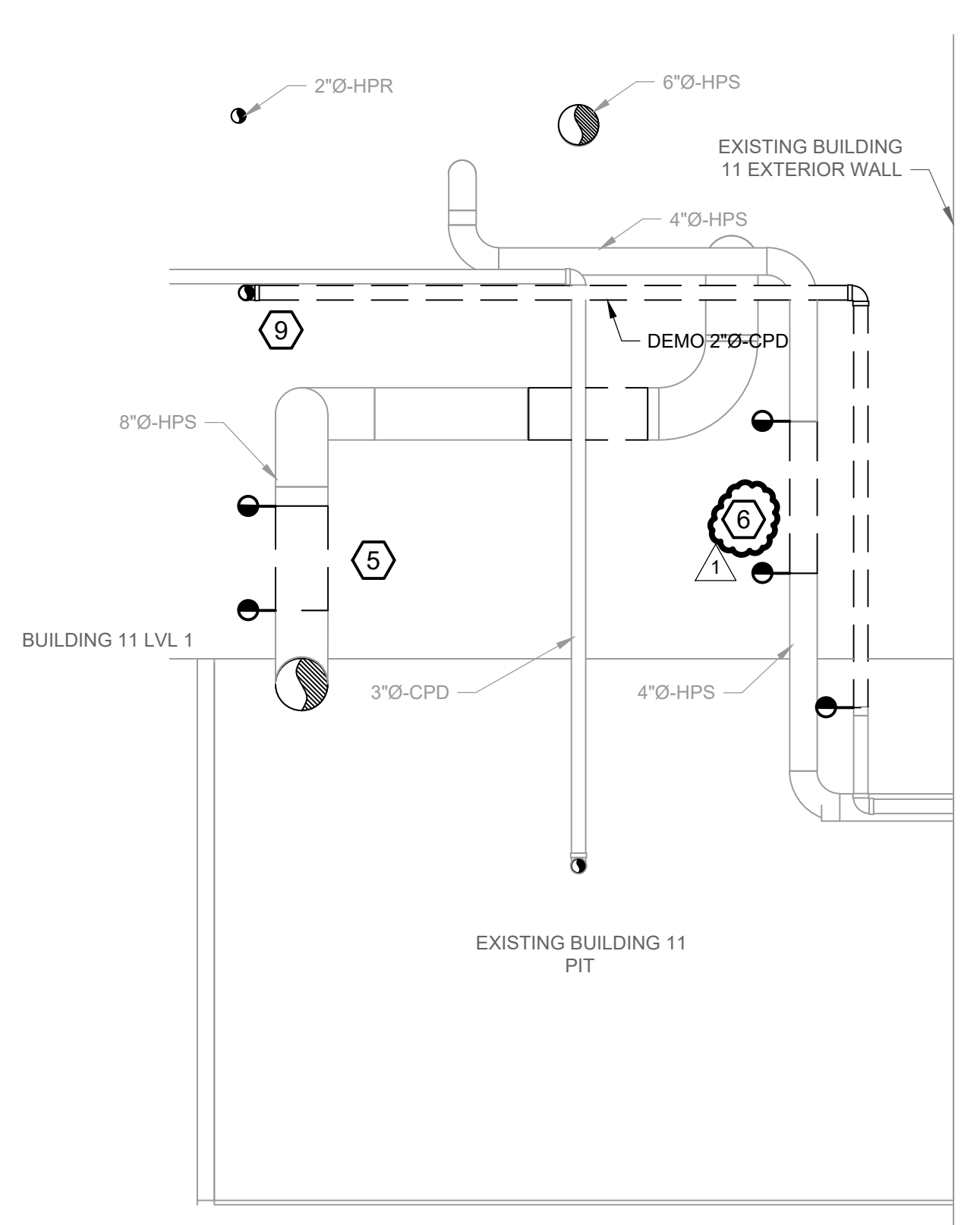
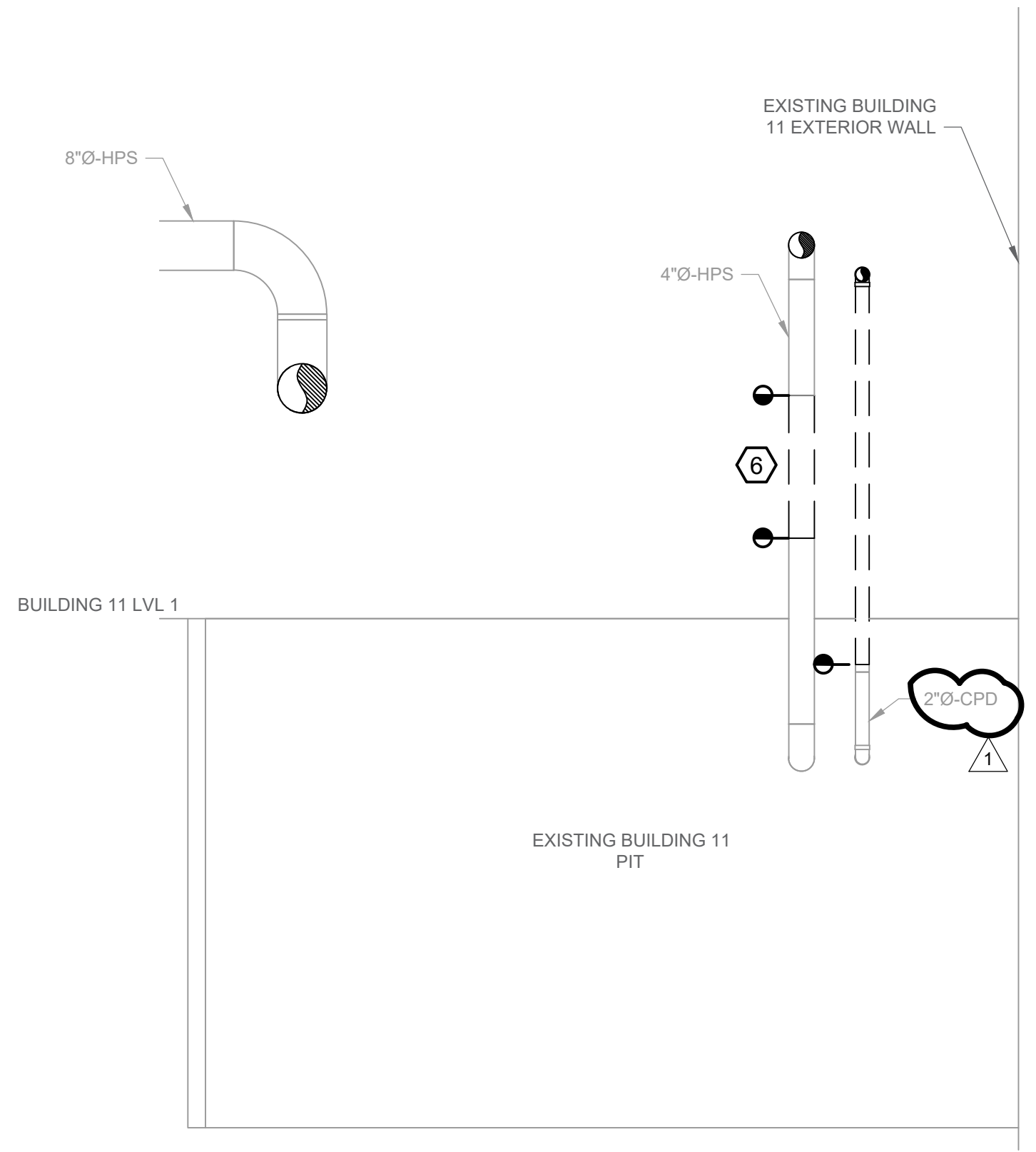
Office of Construction and Facilities Management

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|---------------|---------------------------|
| Drawing Title | MECHANICAL EQUIPMENT PLAN |
| Approved: | |

| | |
|-----------------|-----------------------------|
| Phase | 100% CONSTRUCTION DOCUMENTS |
| Project Title | SIOUX FALLS BOILER PLANT |
| Project Number | 438-22-900 |
| Building Number | 12 |
| Issue Date | 06/25/2024 |
| Checked | BDI |
| Drawn | MFM |

| | |
|-----------------|---|
| Location | VAMC-Sioux Falls: 2501 W 22nd St, Sioux Falls, SD 57105 |
| Project Number | 438-22-900 |
| Building Number | 12 |
| Drawing Number | MO100 |

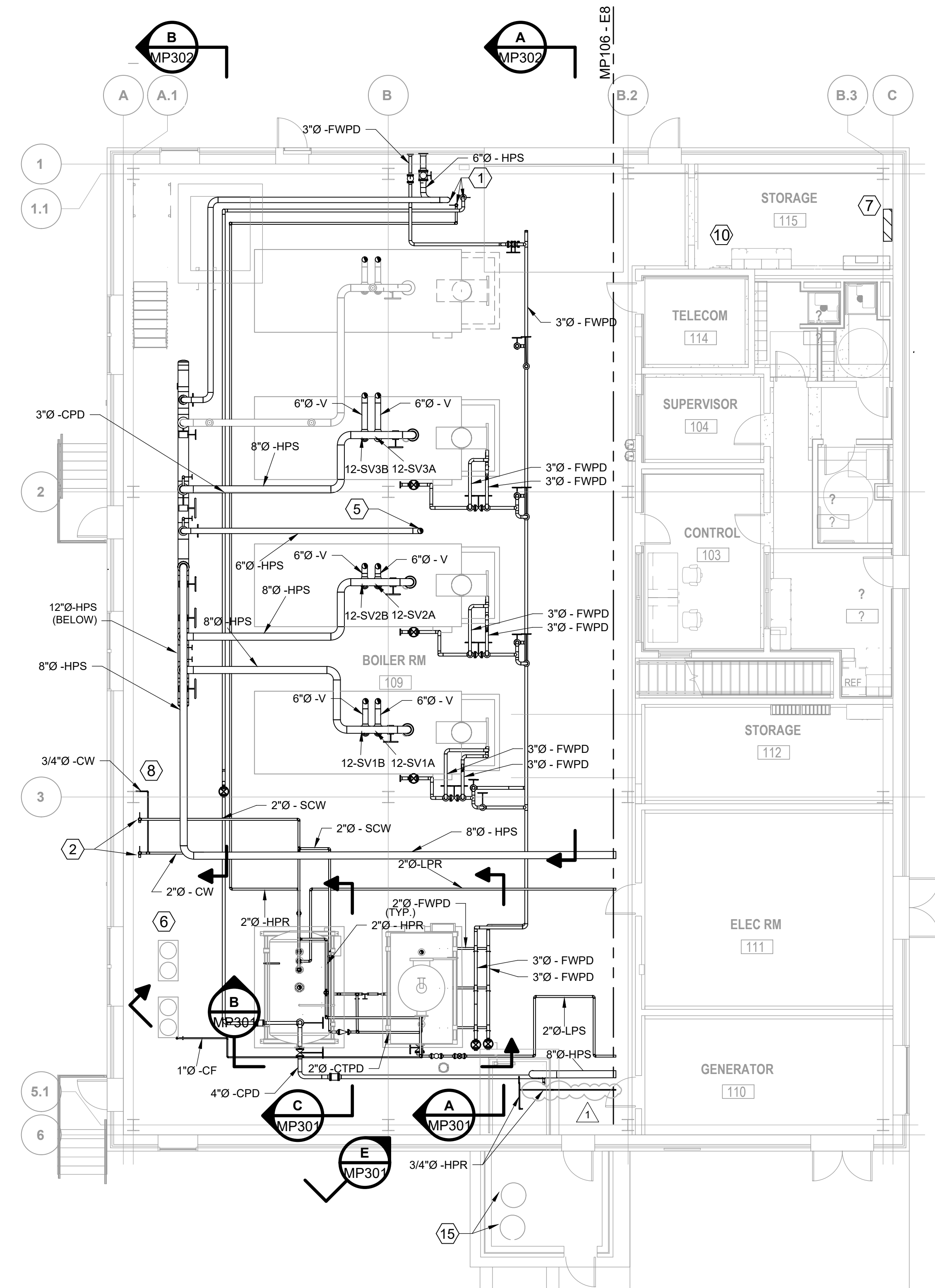
- NOTES:**
- FOR GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS SEE DRAWING M-000.
- KEYED NOTES:**
- REFER TO CIVIL AND STRUCTURAL DRAWINGS.
 - CUT SECTIONS OF EXISTING 6" HPS AND PREPARE FOR NEW ISOLATION VALVE. REFER TO F3/MP102. DEMO PIPING BACK TO TUNNEL WALL PENETRATION AND CAP ONCE NEW BOILER IS ONLINE. SEAL BUILDING 11 WALL PENETRATION. REFER TO STRUCTURAL.
 - CUT SECTIONS OF EXISTING 3" CPD AND 2" HPR AND PREPARE FOR NEW ISOLATION VALVE. REFER TO F3/MP102. DEMO PIPING BACK TO TUNNEL WALL PENETRATION AND CAP ONCE NEW BOILER PLANT IS ONLINE. SEAL BUILDING 11 WALL PENETRATION. REFER TO STRUCTURAL.
 - CUT SECTIONS OF EXISTING 4" CPD AND PREPARE FOR NEW ISOLATION VALVE. DEMO PIPING ONCE NEW BOILER PLANT IS ONLINE. REFER TO F3/MP102.
 - CUT SECTIONS OF EXISTING 8" HPS AND PREPARE FOR NEW 8" ISOLATION VALVE AND TEE FOR TIE INTO NEW BOILER PLANT PIPING. REFER TO F3/MP102.
 - CUT SECTIONS OF EXISTING 4" HPS AND PREPARE FOR NEW ISOLATION VALVE. REFER TO DETAIL A/MP102 AND F3/MP102 FOR CONNECTIONS TO NEW WORK.
 - PREPARE 2" CPD FOR VALVE AND TEE TO ROUTE TO NEW BOILER PLANT. REFER TO DETAIL B/MP102 AND F3/MP102 FOR CONNECTIONS TO NEW WORK.
 - REFER TO C/MD101 FOR CONTINUATION OF DEMO SCOPE FOR 2" CPD LINE.
 - DEMO 2" CPD LINE BACK TO THE CPD HEADER AND CAP THE LINE.



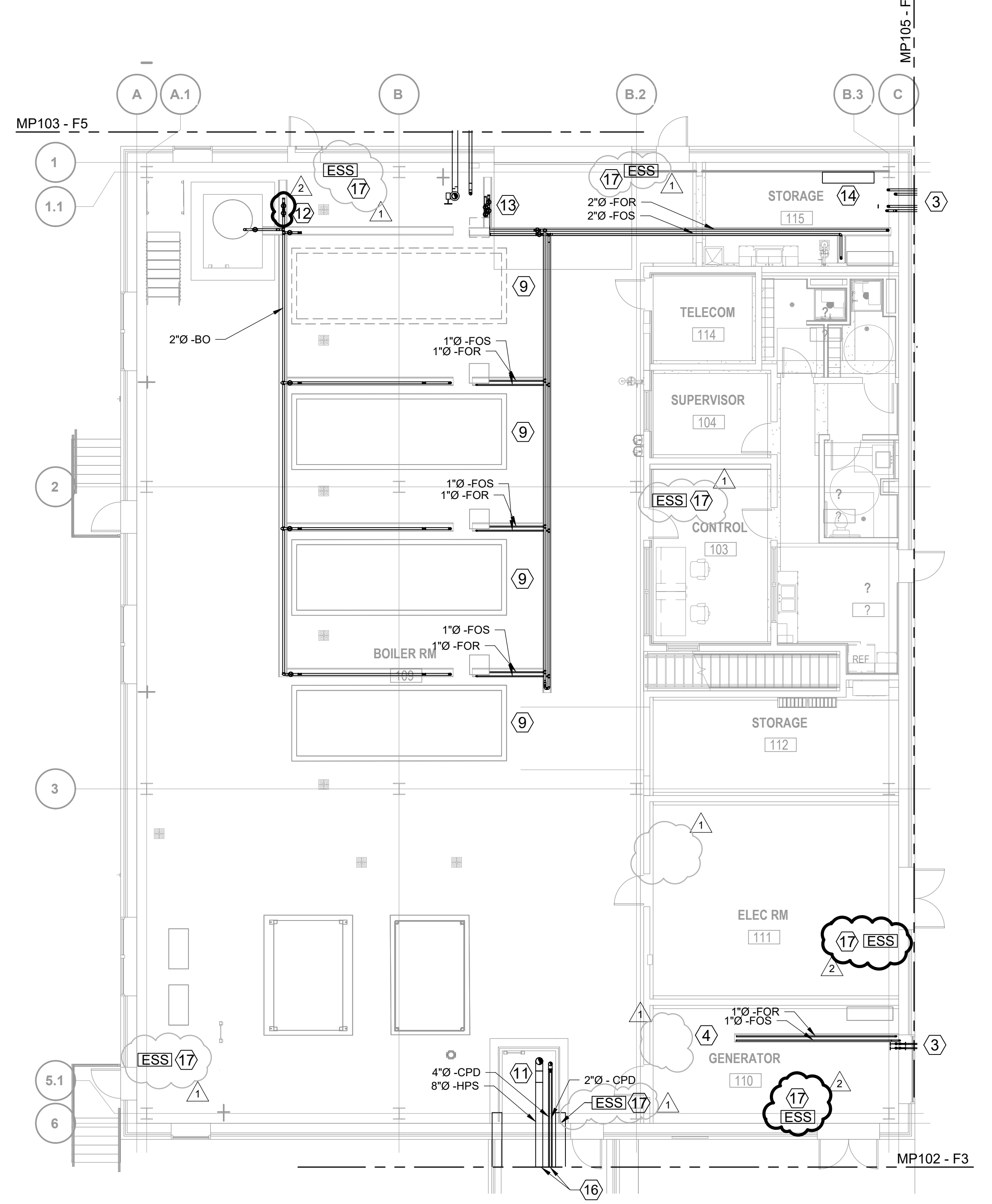
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|---|---|--|--|--------------------------------------|---|------------------------------|
| Addendum 1 08-09-2024 CONSULTANT Burns & McDonnell Engineering Company, Inc. 9450 WARD PARKWAY, KANSAS CITY, MO | ARCHITECT/ENGINEER OF RECORD Architecture Engineering Design-Build 200 Envoy Circle, Suite 201, Louisville, KY 40299 www.paradigmusa.com | OFFICE OF CONSTRUCTION AND FACILITIES MANAGEMENT | Drawing Title STEAM DISTRIBUTION DEMOLITION PIPING PLAN | Phase 100% CONSTRUCTION DOCUMENTS | Project Title SIOUX FALLS BOILER PLANT | Project Number 438-22-900 |
| | | | Approved: | FULLY SPRINKLERED | Location VAMC-Sioux Falls: 2501 W 22nd St, Sioux Falls, SD 57105 | Building Number 12 |
| Revisions: | Date: | | Issue Date 06/25/2024 | Checked BDI | Drawn MFM | Drawing Number MD101 |

- NOTES:
- FOR GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS SEE DRAWING M-000.
 - FUEL OIL AND BLOWDOWN PIPING TO BE INSTALLED IN TRENCHES. REFER TO 6/MP500 FOR DETAIL.

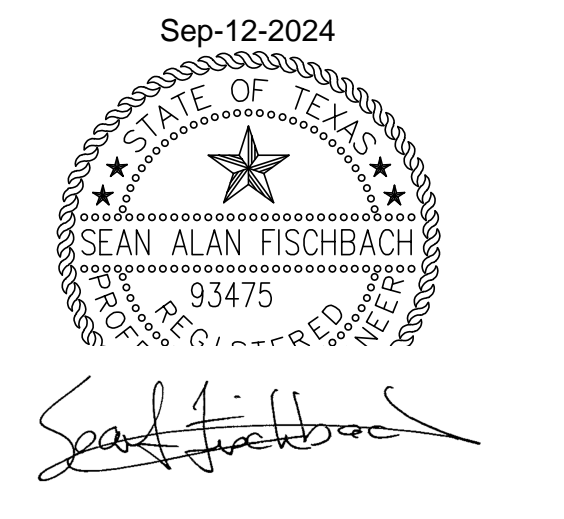
- KEYED NOTES:
- REFER TO MP103 AND CIVIL DRAWINGS FOR PIPING CONTINUATION.
 - EMERGENCY MAKEUP FOR DA/CONDENSATE TANK. REFER TO PL200 FOR PIPING CONTINUATION.
 - REFER TO MP105 AND CIVIL DRAWINGS FOR PIPING CONTINUATION AND PROFILE.
 - FIELD ROUTE FUEL OIL RETURN PIPING TO RETURN PUMPS AT GENERATOR BELLY TANKS.
 - CONNECT TO STEAM SILENCER ABOVE.
 - CHEMICAL FEED TANKS AND DOSING PUMPS. REFER TO DETAIL 2 ON MP503 AND SPECIFICATION SECTION 23.
 - VEEDER ROOT ATG SYSTEM AT APPROXIMATE LOCATION. CONNECT VENDER ROOT PANEL TO NEAREST BAS PANEL.
 - CW TO SAMPLE COOLER. ROUTE DA TANK (MP501) AND BOILER'S SAMPLE LINES TO SAMPLE COOLER. REFER TO MP503 FOR CONNECTION DETAILS.
 - REFER TO STRUCTURAL DRAWINGS FOR BOILER HOUSEKEEPING PAD. REFER TO 1/MP500 FOR CONCRETE EQUIPMENT BASES. FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS.
 - BOILER FEEDWATER SAMPLE COOLING AND TESTING STATION. REFER TO DETAIL 3/MP503.
 - ADD NEW DRIP LEG AND TRAP TO HPS LINE. DISCHARGE TAP TO 4" CPD LINE. REFER TO DETAIL 4/MP506.
 - BLOW DOWN CONNECTION FOR TEMPORARY BOILER TO BE PIPED UP TO INTERIOR BUILDING WALL. SUPPLY TWO ISOLATION VALVES AND CAP.
 - BACKUP FUEL OIL SUPPLY AND RETURN CONNECTIONS FOR TEMPORARY BOILER TO BE PIPED UP TO INTERIOR BUILDING WALL.
 - FUEL OIL POLISHING SYSTEM. REFER TO PROJECT SPECIFICATIONS 23 10 00.
 - PROPANE FUEL OIL IGNITER TANKS. FIELD ROUTE 25MM (1") PROPANE PIPING TO BOILER BURNERS. REFER TO DETAIL 3/MP504 AND SPECIFICATIONS SECTION 23 52 39 FIRE TUBE BOILERS.
 - REFER TO MP102 AND CIVIL DRAWINGS FOR PIPING CONTINUATION.
 - EMERGENCY STOP SWITCH. SWITCH SHALL SHUT OFF NG VALVE (REFER TO PL200) AND SHUT OFF POWER TO FUEL OIL PUMPS. REFER TO PROJECT SPECIFICATIONS 23 11 23 FACILITY NATURAL GAS PIPING AND 23 10 00 FACILITY FUEL OIL PIPING.



MECHANICAL STEAM PLAN - FIRST FLOOR
TRUE PLAN
E2
1/8" = 1' 0"

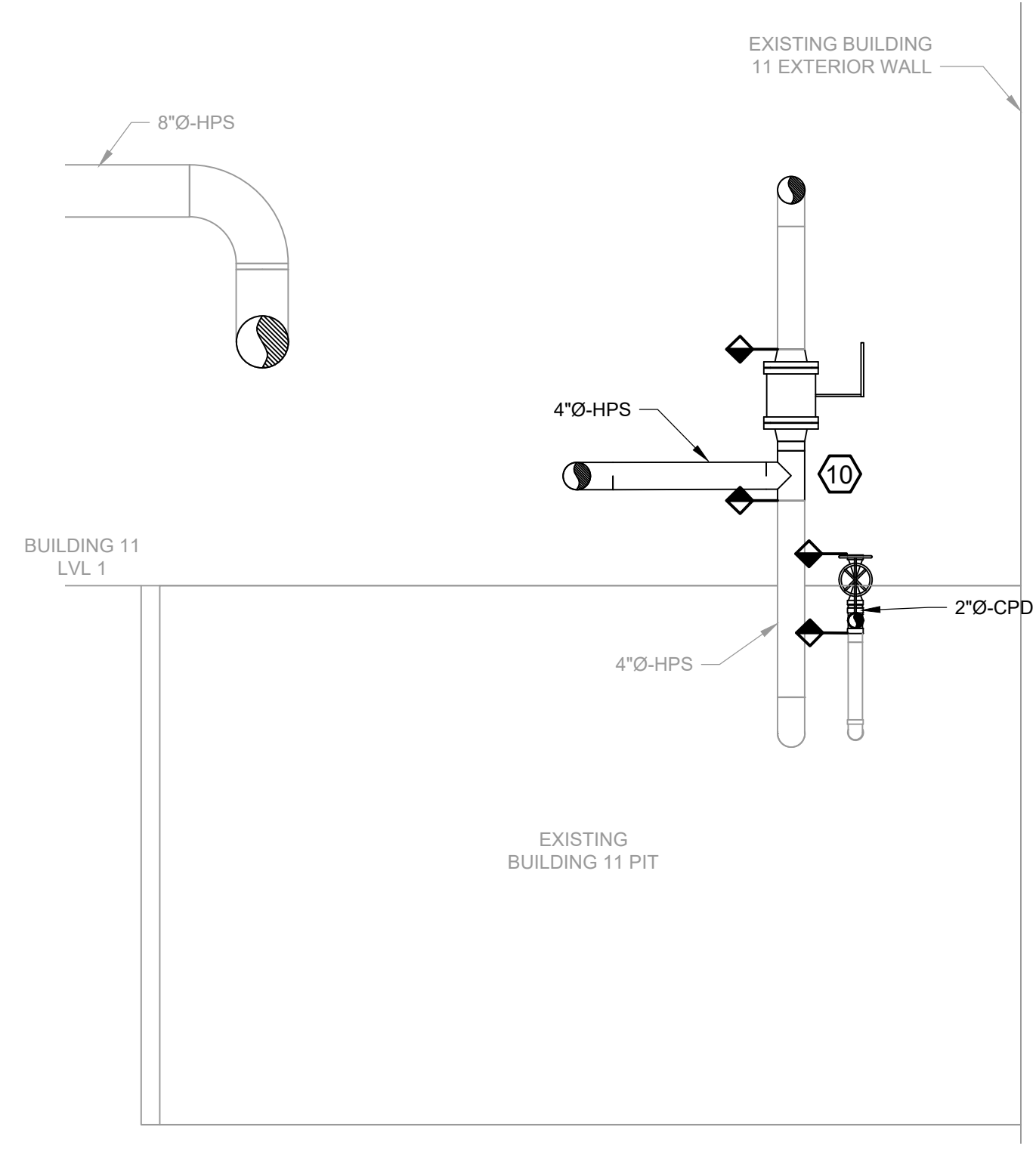


MECHANICAL PIPING PLAN - FIRST FLOOR PIPING IN TRENCHES
TRUE PLAN
E6
1/8" = 1' 0"

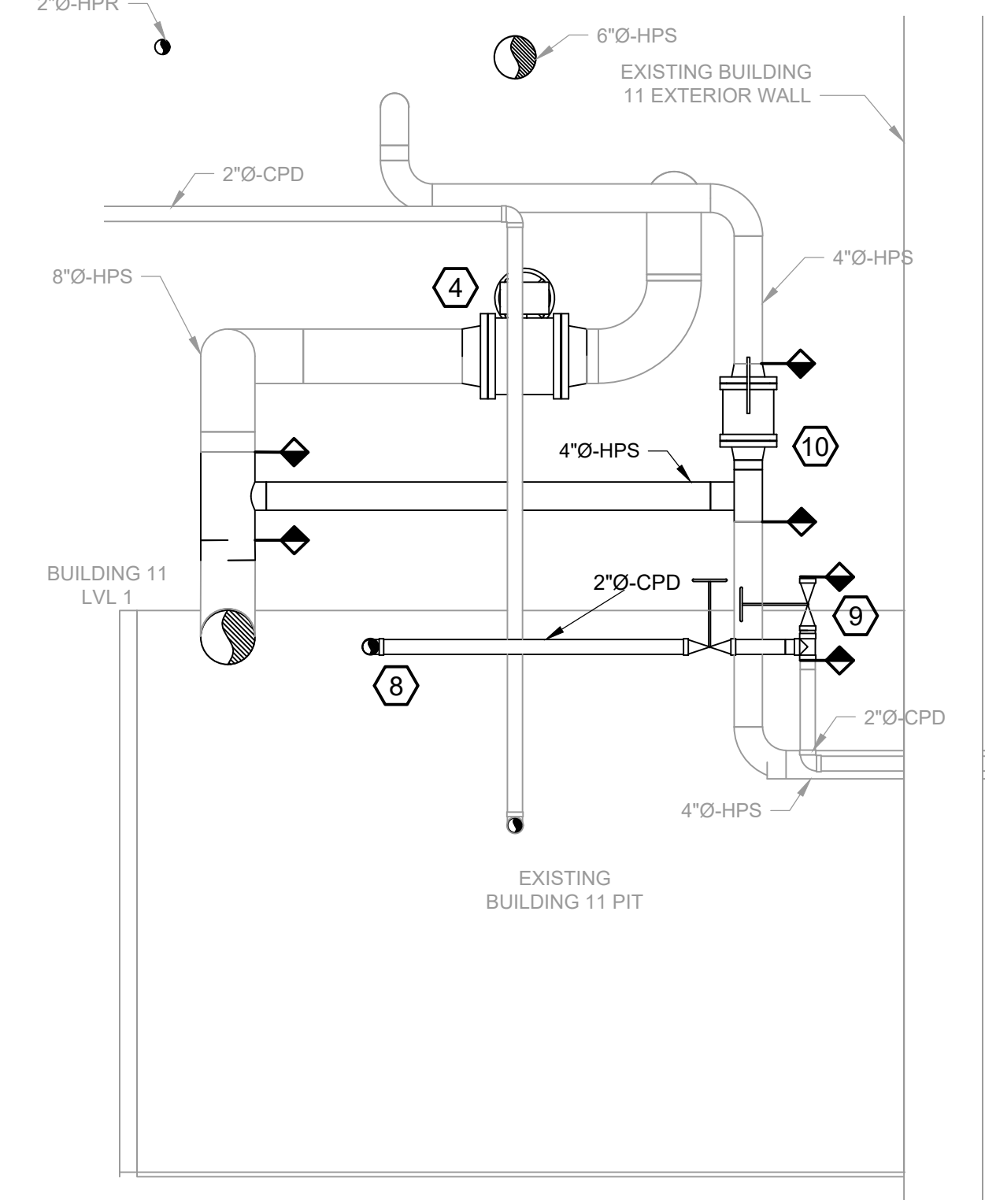


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|--|--------------------------|---|---|---|--|--------------------------------------|---|------------------------------|
| Addendum 1 Addendum 2 Revisions: | 08-09-2024 09-12-2024 | CONSULTANT Burns & McDonnell Engineering Company, Inc. 9450 WARD PARKWAY, KANSAS CITY, MO | ARCHITECT/ENGINEER OF RECORD paradigm Architecture Engineering Design-Build 200 Envoy Circle, Suite 201, Louisville, KY 40299 www.paradigmusa.com | STAMP Office of Construction and Facilities Management | Drawing Title PIPING PLAN FIRST FLOOR | Phase 100% CONSTRUCTION DOCUMENTS | Project Title SIOUX FALLS BOILER PLANT | Project Number 438-22-900 |
| | Date: | | | | Approved: | Fully Sprinklered | Location VAMC-Sioux Falls: 2501 W 22nd St. Sioux Falls, SD 57105 | Building Number 12 |

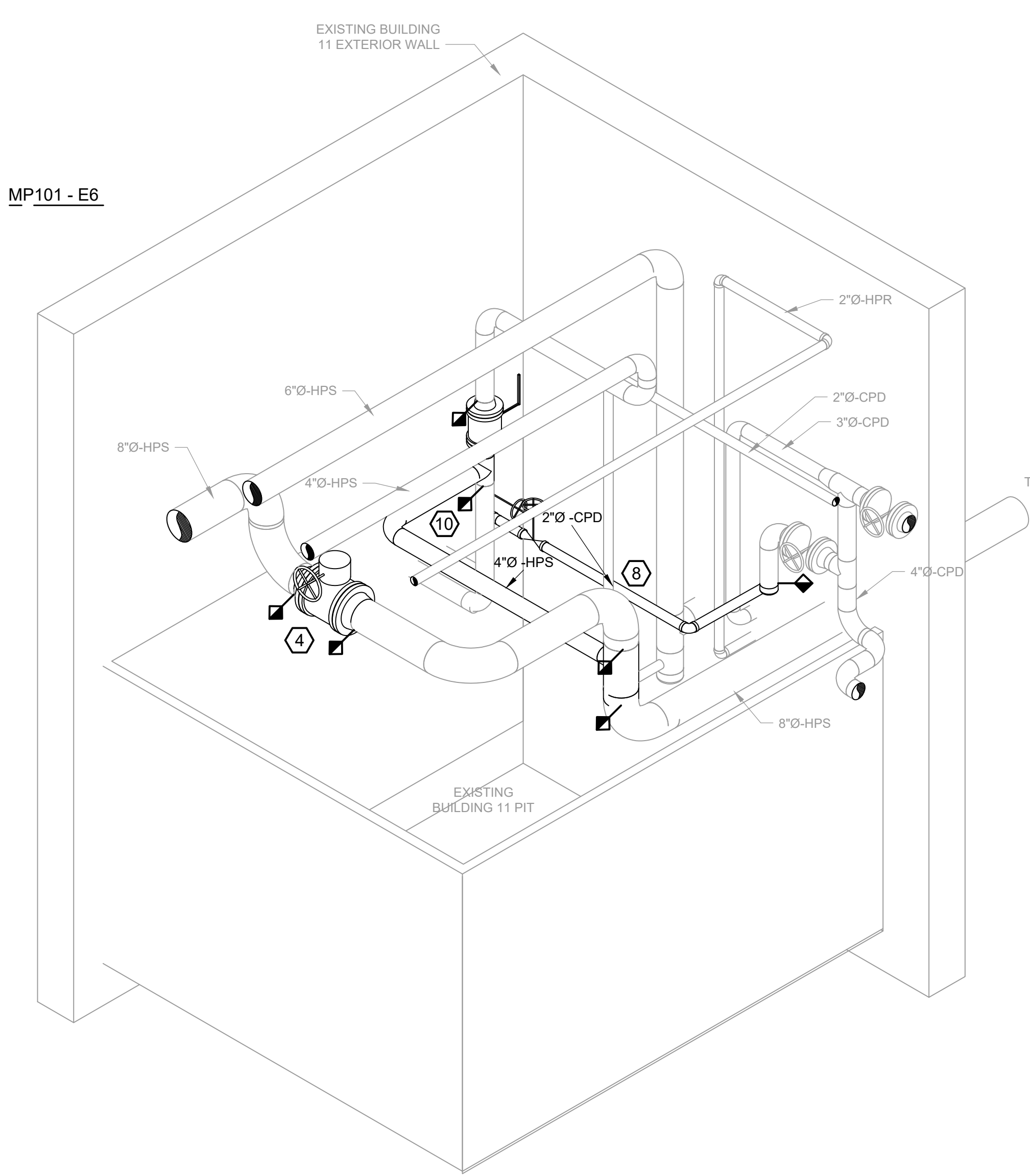
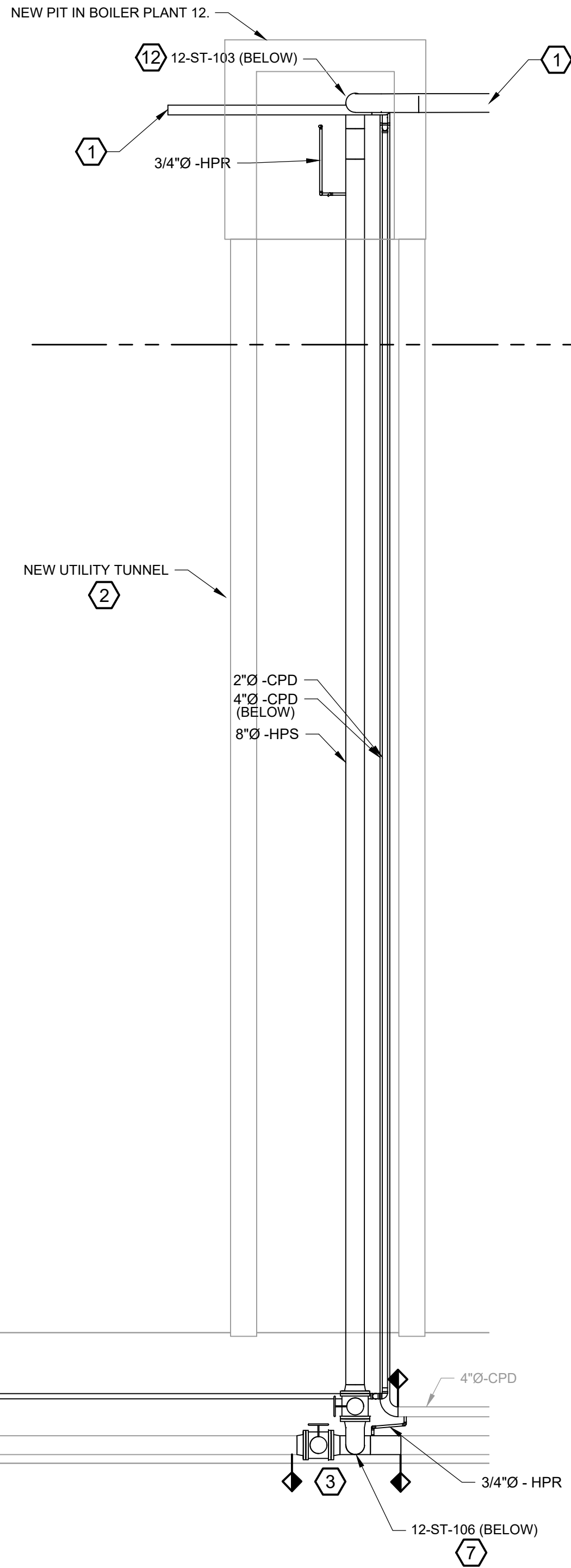
- NOTES:
- FOR GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS SEE DRAWING M-000.
- KEYED NOTES:
- REFER TO MP101 FOR PIPING CONTINUATION.
 - REFER TO CIVIL AND STRUCTURAL DRAWINGS.
 - INSTALL NEW TEE AND ISOLATION VALVES IN TUNNEL IN EXISTING HPS LINE FROM BUILDING 11 FOR FUTURE TIE-IN TO NEW BOILER PLANT 8" HPS. REFER TO MD101.
 - INSTALL NEW ISOLATION VALVE IN EXISTING 8" STEAM LINE IN BUILDING 11.
 - INSTALL NEW ISOLATION VALVE IN EXISTING 6" HPS LINE. BLIND FLANGE VALVE AND REMOVE PIPING ONCE NEW BOILER PLANT IS ONLINE. REFER TO MD101.
 - INSTALL NEW ISOLATION VALVE IN EXISTING 6" HPS LINE. CLOSE VALVE ONCE NEW BOILER PLANT IS ONLINE. UNDERGROUND LINE TO BE ABANDONED IN PLACE. REFER TO MD101.
 - ADD NEW DRIP LEG AND TRAP TO EXISTING HPS LINE. DISCHARGE TRAP TO 4" CPD LINE. REFER TO DETAIL 4/MP506.
 - ROUTE NEW 2" CPD FROM BUILDING 11 TO NEW BOILER PLANT BUILDING 12.
 - INSTALL NEW TEE AND ISOLATION VALVES INSIDE BUILDING 11 ON 2" CPD FROM BUILDING 8.
 - REFER TO DETAIL E4/MD101. INSTALL NEW ISOLATION VALVE. TIE IN NEW HPS SERVICE TO EXISTING 4" HPS LINE TO FEED BUILDING 8.
 - CAP EXISTING 6" HPS, 3" CPD, AND 2" HPR AT WALL. UNDERGROUND LINES TO BE ABANDONED IN PLACE. REFER TO MD101.
 - DISCHARGE HPS TRAP TO 4" CPD LINE. REFER TO DETAIL 4/MP506.



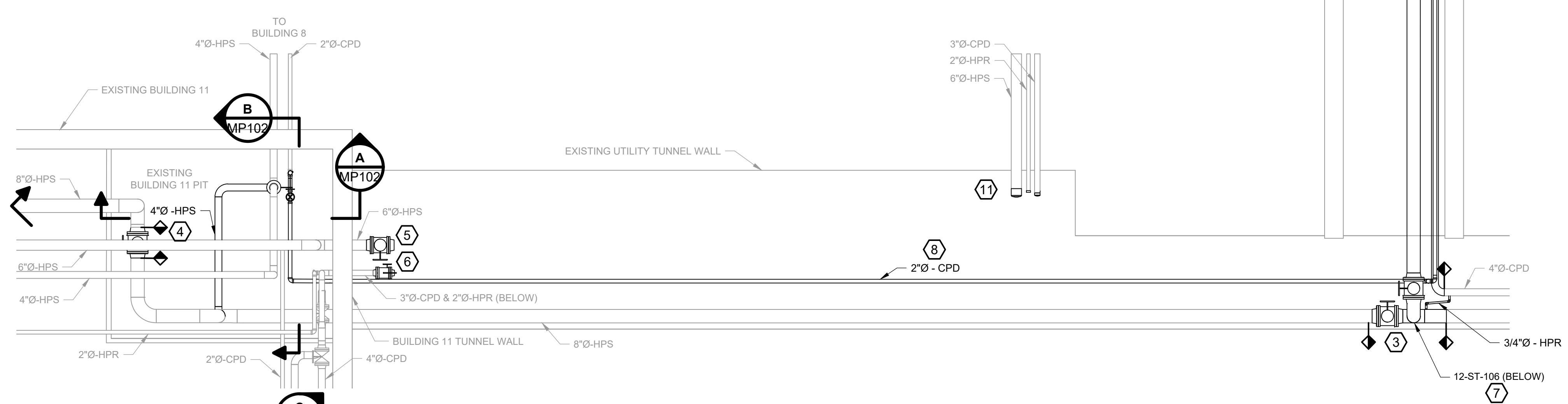
MECHANICAL SECTION LOOKING NORTH
1/2" = 1' 0"



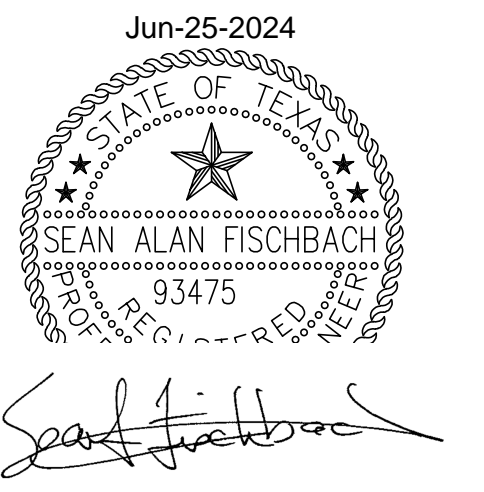
MECHANICAL SECTION LOOKING WEST
1/2" = 1' 0"



MECHANICAL BUILDING 11 PIT ISOMETRIC SECTION LOOKING NORTHEAST
1/2" = 1' 0"



STEAM DISTRIBUTION PIPING PLAN - SOUTH TIE-IN TO UTILITY TUNNEL
1/4" = 1' 0"

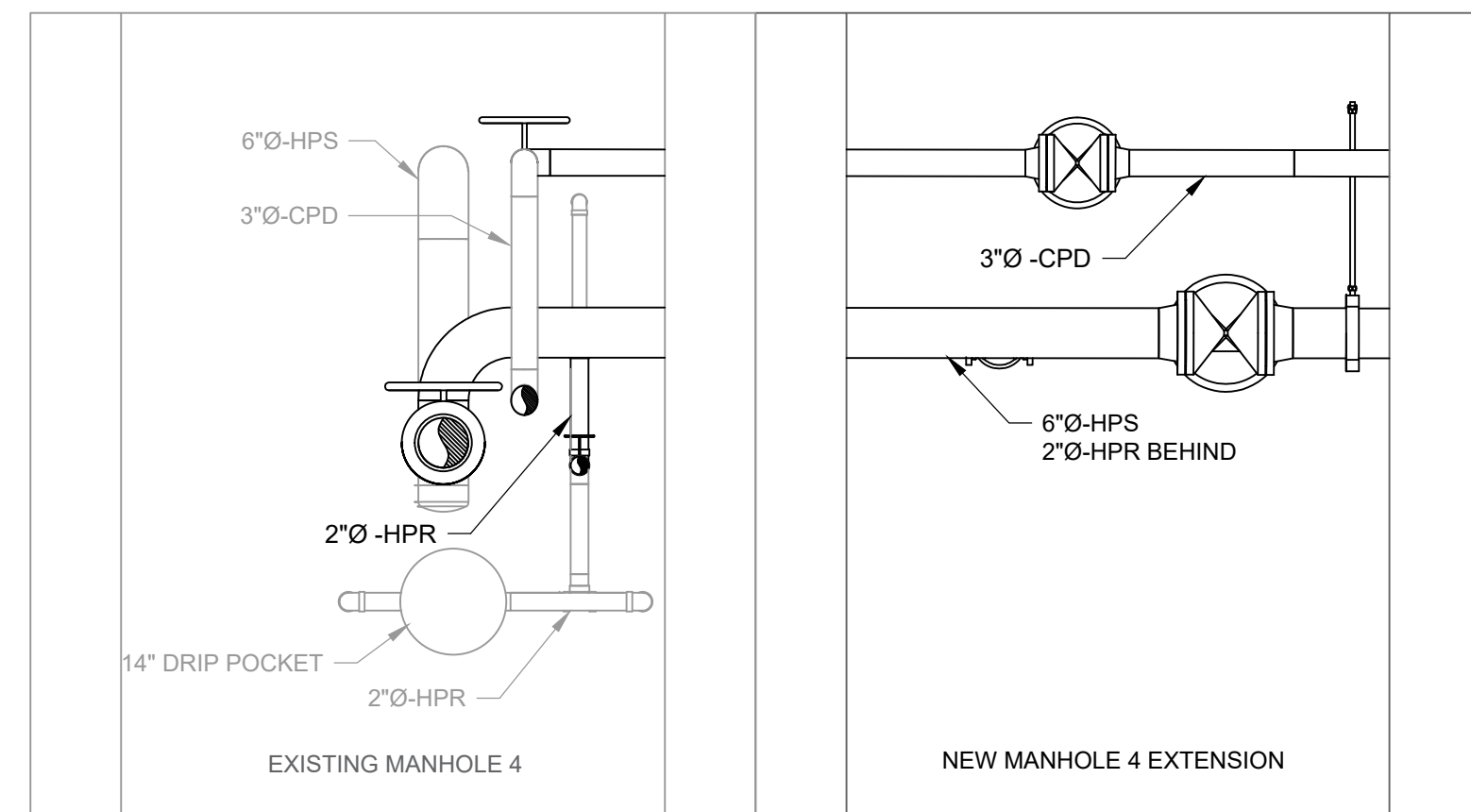


Jun-25-2024
SEAN ALAN FISCHBACH
93475

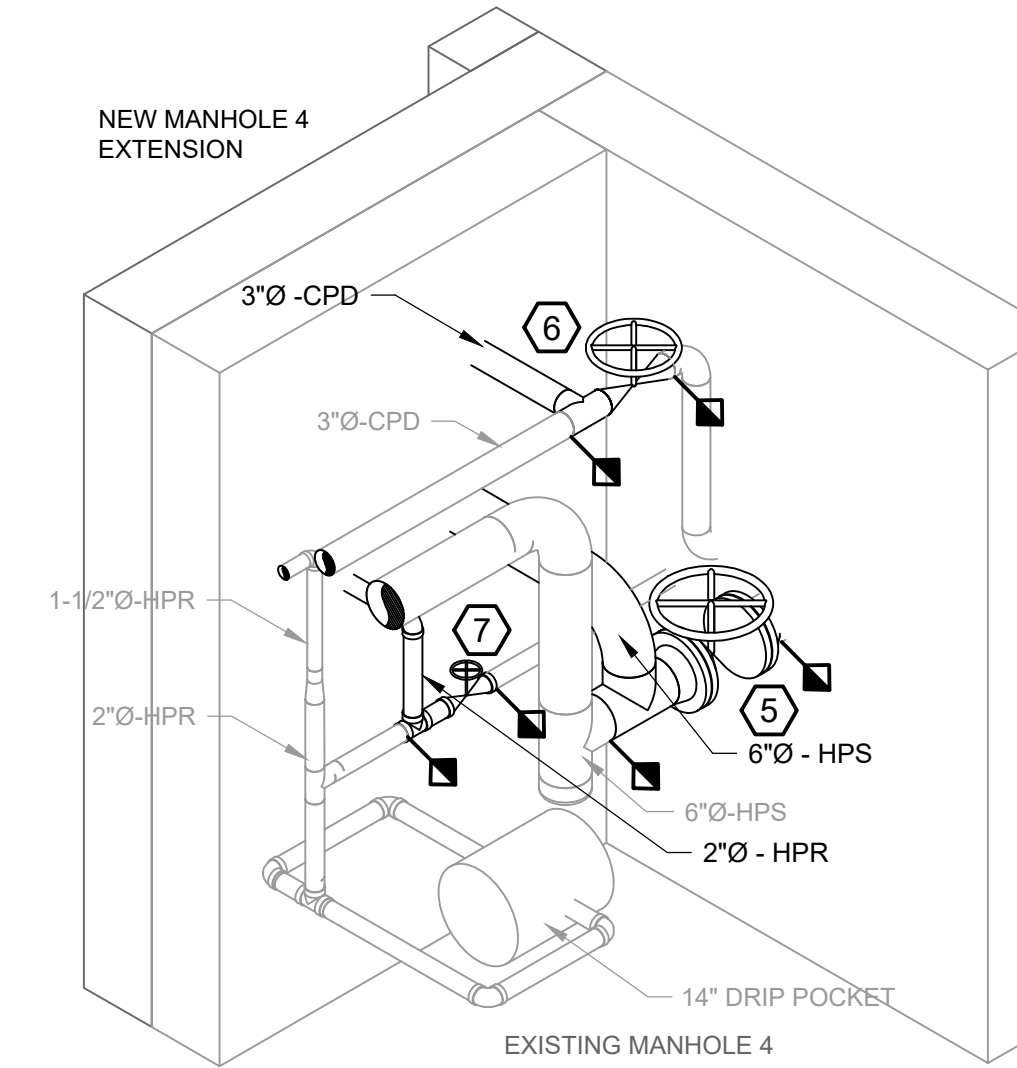
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|---|--|---|--|-----------|--|---|--------------------------------------|---|------------------------------|
| CONSULTANT Burns & McDonnell Engineering Company, Inc. 9450 WARD PARKWAY, KANSAS CITY, MO | | ARCHITECT/ENGINEER OF RECORD Architecture Engineering Design-Build 200 Envoy Circle, Suite 201, Louisville, KY 40299 www.paradigmusa.com | | STAMP | Office of Construction and Facilities Management | Drawing Title STEAM DISTRIBUTION PIPING PLAN | Phase 100% CONSTRUCTION DOCUMENTS | Project Title SIOUX FALLS BOILER PLANT | Project Number 438-22-900 |
| Revisions: | | Date: | | Approved: | | FULLY SPRINKLERED | | Location VAMC-Sioux Falls: 2501 W 22nd St, Sioux Falls, SD 57105 | Building Number 12 |
| | | | | | | | | Issue Date 06/25/2024 | Drawing Number MPI02 |
| | | | | | | | | Checked BDI | Drawn MFM |

NOTES:
 1. FOR GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS SEE DRAWING M-000.

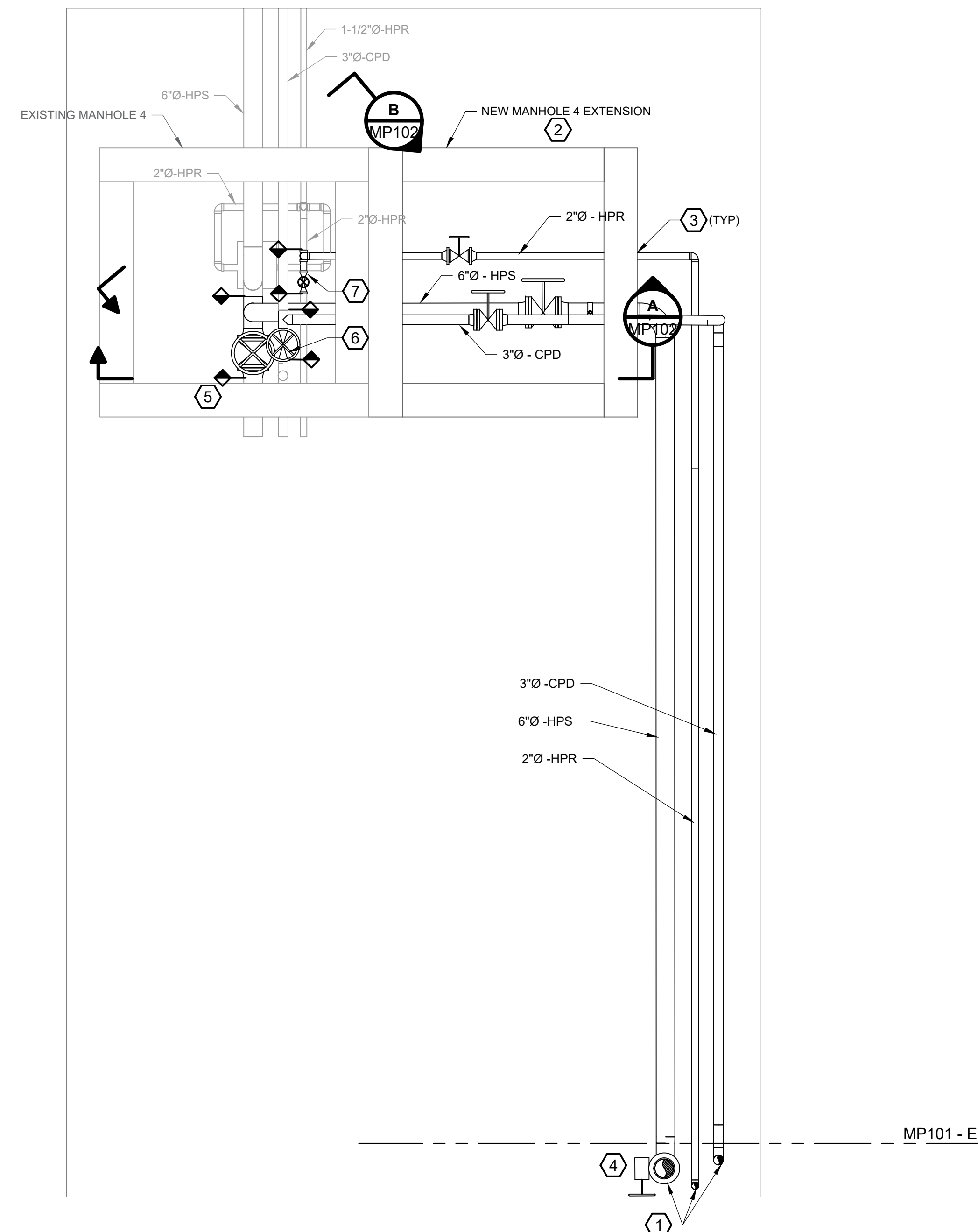
- KEYED NOTES:
 1. REFER TO MP101 FOR PIPING CONTINUATION.
 2. REFER TO CIVIL AND STRUCTURAL DRAWINGS.
 3. REFER TO WATERSHED THRU WALL PENETRATION DETAIL 1/MP504.
 4. REFER TO WATERSHED THRU FLOOR PENETRATION DETAIL 2/MP504.
 5. INSTALL NEW ISOLATION VALVE IN EXISTING 6" HPS LINE. CLOSE VALVE ONCE NEW BOILER PLANT IS ONLINE. UNDERGROUND LINE TO BE ABANDONED IN PLACE. REFER TO MD101.
 6. INSTALL NEW ISOLATION VALVE IN EXISTING 3" CPD. CLOSE VALVE ONCE NEW BOILER PLANT IS ONLINE. UNDERGROUND LINE TO BE ABANDONED IN PLACE. REFER TO MD101.
 7. INSTALL NEW ISOLATION VALVE IN EXISTING 2" HPR. CLOSE VALVE ONCE NEW BOILER PLANT IS ONLINE. UNDERGROUND LINE TO BE ABANDONED IN PLACE. REFER TO MD101.



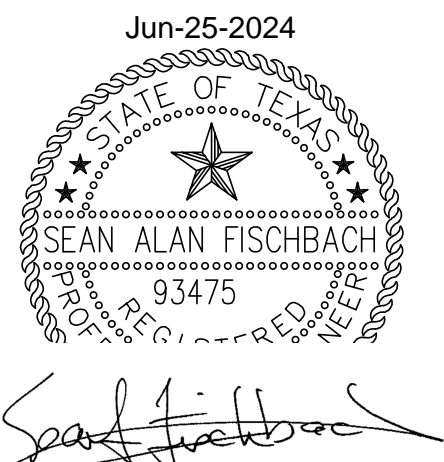
MECHANICAL SECTION LOOKING NORTH
 1/2" = 1' 0" (A) MP102



MECHANICAL MANHOLE 4 ISOMETRIC SECTION LOOKING SOUTHEAST (B) MP102
 1/2" = 1' 0"



STEAM DISTRIBUTION PIPING PLAN - NORTH TIE-IN TO MANHOLE 4
 3/8" = 1' 0" (F5) TRUE PLAN



| | |
|------------|-------|
| Revisions: | Date: |
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| | |

CONSULTANT

Burns & McDonnell Engineering Company, Inc.
 9450 WARD PARKWAY, KANSAS CITY, MO

ARCHITECT/ENGINEER OF RECORD

Architecture | Engineering | Design-Build
 200 Envoy Circle, Suite 201, Louisville, KY 40299
 www.paradigmusa.com

STAMP

Office of Construction and Facilities Management
 VA

Drawing Title
 STEAM DISTRIBUTION PIPING PLAN - NORTH

Approved:

Phase
 100% CONSTRUCTION DOCUMENTS

FULLY SPRINKLERED

Project Title
 SIOUX FALLS BOILER PLANT

Location
 VAMC-Sioux Falls: 2501 W 22nd St, Sioux Falls, SD 57105

Issue Date
 06/25/2024

Checked
 BDI

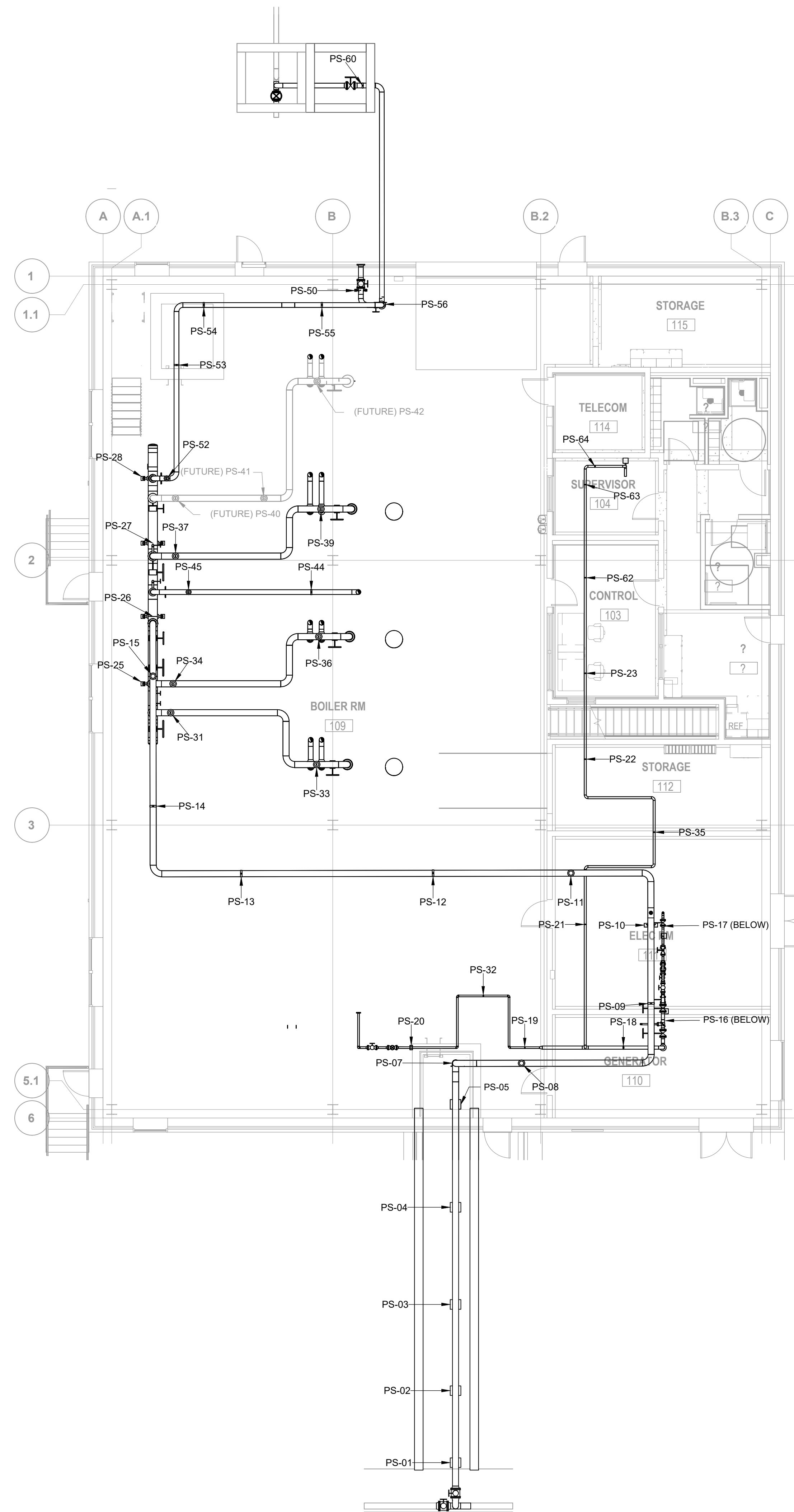
Drawn
 MFM

Project Number
 438-22-900

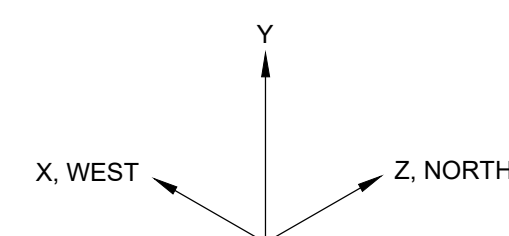
Building Number
 12

Drawing Number
 MP103

NOTES:
1. FOR GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS SEE DRAWING M-000.



| PIPE SUPPORT SCHEDULE | | | | | | | | | | |
|-----------------------|-----------------|--------|---------------|---------------|---------------|---------------|----------------------------------|---------------------------------|-------------------------------|---|
| SUPPORT DATA | | | HYRDO | MAX LOAD | MAX LOAD | MAX LOAD | SUPPORT TYPE | SUPPORT BASIS OF DESIGN (ANVIL) | MOVEMENT (+UP, -DOWN, INCHES) | NOTES |
| TAG NO. | PIPE SIZE (NPS) | SYSTEM | (Y AXIS, LBS) | (X AXIS, LBS) | (Y AXIS, LBS) | (Z AXIS, LBS) | | | | |
| PS-01 | 8 | STM | -531 | 285 | -556 | -145 | TUNNEL SUPPORT | | - | |
| PS-02 | 8 | STM | -418 | -89 | -419 | -248 | TUNNEL SUPPORT | | - | |
| PS-03 | 8 | STM | -628 | -226 | -627 | -379 | TUNNEL SUPPORT | | - | |
| PS-04 | 8 | STM | -293 | -37 | -360 | 209 | TUNNEL SUPPORT | | - | |
| PS-05 | 8 | STM | -2040 | 153 | -2040 | 956 | TUNNEL SUPPORT | | - | |
| PS-07 | 8 | STM | 0 | 0 | 0 | 0 | LATERAL GUIDE | FIG 256 | - | |
| PS-08 | 8 | STM | -752 | 0 | -823 | 0 | SPRING HANGER | FIG 82 Size 7 | 0.45 | SPRING RATE 224 LB/IN; COLD LOAD 660 LBF |
| PS-09 | 8 | STM | -1109 | 44 | -1044 | -137 | PIPE ROLL HANGER | FIG 181 | - | |
| PS-10 | 8 | STM | 0 | -633 | 106 | 159 | AXIAL GUIDE | FIG 256 | - | |
| PS-11 | 8 | STM | -1028 | 0 | -928 | 0 | SPRING HANGER | FIG 82 Size 8 | 0.18 | SPRING RATE 300 LB/IN; COLD LOAD 706 LBF |
| PS-12 | 8 | STM | -832 | -284 | -882 | 24 | PIPE ROLL HANGER | FIG 181 | - | |
| PS-13 | 8 | STM | -1085 | 278 | -1100 | -181 | PIPE ROLL HANGER | FIG 181 | - | |
| PS-14 | 8 | STM | -811 | 58 | -816 | -34 | PIPE ROLL HANGER | FIG 181 | - | |
| PS-15 | 8 | STM | -567 | 0 | -611 | 0 | SPRING HANGER | FIG 82 Size 6 | 0.395 | SPRING RATE 168 LB/IN; COLD LOAD 479 LBF |
| PS-16 | 4 | STM | -871 | -72 | -1104 | -330 | PIPE STANCHION | FIG 63 | - | |
| PS-17 | 2.5 | STM | -955 | -7 | -1122 | 309 | PIPE STANCHION | FIG 63 | - | |
| PS-18 | 6 | STM | -262 | -66 | -439 | -21 | PIPE ROLL HANGER | FIG 181 | - | |
| PS-19 | 2 | STM | -100 | 30 | -119 | -21 | PIPE ROLL HANGER AND AXIAL GUIDE | FIG 181 AND 256 | - | |
| PS-20 | 2 | STM | -219 | -98 | -584 | -131 | PIPE ROLL HANGER AND AXIAL GUIDE | FIG 181 AND 256 | - | |
| PS-21 | 2.5 | STM | -138 | 4 | -138 | 34 | PIPE ROLL HANGER AND AXIAL GUIDE | FIG 181 AND 256 | - | |
| PS-22 | 2.5 | STM | -91 | 6 | -97 | -29 | PIPE ROLL HANGER AND AXIAL GUIDE | FIG 181 AND 256 | - | |
| PS-23 | 2.5 | STM | -322 | 17 | -323 | -46 | PIPE ROLL HANGER | FIG 181 | - | |
| PS-25 | 12 | STM | -2477 | 0 | -2477 | 0 | PIPE ROLLER STAND | FIG 271 | - | |
| PS-26 | 12 | STM | -2190 | 0 | -3412 | 0 | PIPE ROLLER STAND | FIG 271 | - | |
| PS-27 | 12 | STM | -2514 | 634 | -2514 | -622 | PIPE ROLLER STAND | FIG 271 | - | |
| PS-28 | 12 | STM | -2363 | -54 | -2363 | 629 | PIPE ROLLER STAND | FIG 271 | - | |
| PS-31 | 8 | STM | -1847 | 0 | -1847 | 0 | SPRING HANGER | FIG 82 Size 11 | 0.45 | SPRING RATE 680 LB/IN; COLD LOAD 1648 LBF |
| PS-32 | 2 | STM | -56 | -3 | -56 | 13 | PIPE ROLL HANGER | FIG 181 | - | |
| PS-33 | 8 | STM | -982 | 0 | -982 | 0 | SPRING HANGER | FIG 82 Size 8 | 0.302 | SPRING RATE 300 LB/IN; COLD LOAD 773 LBF |
| PS-34 | 8 | STM | -1953 | 0 | -2046 | 0 | SPRING HANGER | FIG 82 Size 11 | 0.452 | SPRING RATE 680 LB/IN; COLD LOAD 1729 LBF |
| PS-35 | 2.5 | STM | -123 | -32 | -123 | -6 | PIPE ROLL HANGER | FIG 181 | - | |
| PS-36 | 8 | STM | -946 | 0 | -953 | 0 | SPRING HANGER | FIG 82 Size 8 | 0.29 | SPRING RATE 300 LB/IN; COLD LOAD 746 LBF |
| PS-37 | 8 | STM | -1647 | 0 | -1742 | 0 | SPRING HANGER | FIG 82 Size 10 | 0.451 | SPRING RATE 520 LB/IN; COLD LOAD 1444 LBF |
| PS-39 | 8 | STM | -1025 | 0 | -1035 | 0 | SPRING HANGER | FIG 82 Size 8 | 0.297 | SPRING RATE 300 LB/IN; COLD LOAD 805 LBF |
| PS-40 | 8 | STM | -1846 | 0 | -1904 | 0 | SPRING HANGER | FIG 82 Size 11 | 0.484 | SPRING RATE 680 LB/IN; COLD LOAD 1639 LBF |
| PS-41 | 8 | STM | -755 | 0 | -755 | 0 | SPRING HANGER | FIG 82 Size 5 | 0.446 | SPRING RATE 126 LB/IN; COLD LOAD 317 LBF |
| PS-42 | 8 | STM | -795 | 0 | -806 | 0 | SPRING HANGER | FIG 82 Size 7 | 0.335 | SPRING RATE 224 LB/IN; COLD LOAD 632 LBF |
| PS-44 | 6 | STM | -378 | 225 | -789 | -36 | PIPE ROLL HANGER | FIG 181 | - | |
| PS-45 | 6 | STM | -289 | 0 | -305 | 0 | SPRING HANGER | FIG 82 Size 4 | 0.146 | SPRING RATE 94 LB/IN; COLD LOAD 248 LBF |
| PS-50 | 6 | STM | -1662 | -165 | -2020 | -132 | PIPE STANCHION | FIG 63 | - | |
| PS-52 | 6 | STM | 0 | 0 | -48 | 0 | PIPE ROLL HANGER | FIG 181 | - | |
| PS-53 | 6 | STM | -349 | 0 | -354 | 0 | PIPE ROLL HANGER | FIG 181 | - | |
| PS-54 | 6 | STM | -219 | 119 | -483 | 504 | PIPE ROLL HANGER | FIG 181 | - | |
| PS-55 | 6 | STM | -1344 | -65 | -1353 | 1 | PIPE ROLL HANGER | FIG 181 | - | |
| PS-56 | 6 | STM | 0 | 0 | 0 | 0 | LATERAL GUIDE | FIG 256 | - | |
| PS-60 | 6 | STM | -772 | -104 | -772 | 158 | PIPE ROLL HANGER | FIG 181 | - | |
| PS-62 | 2.5 | STM | -85 | 14 | -85 | 13 | PIPE ROLL HANGER | FIG 181 | - | |
| PS-63 | 2.5 | STM | -39 | 5 | -45 | 13 | PIPE ROLL HANGER | FIG 181 | - | |
| PS-64 | 2.5 | STM | -87 | -2 | -89 | 2 | PIPE ROLL HANGER | FIG 181 | - | |

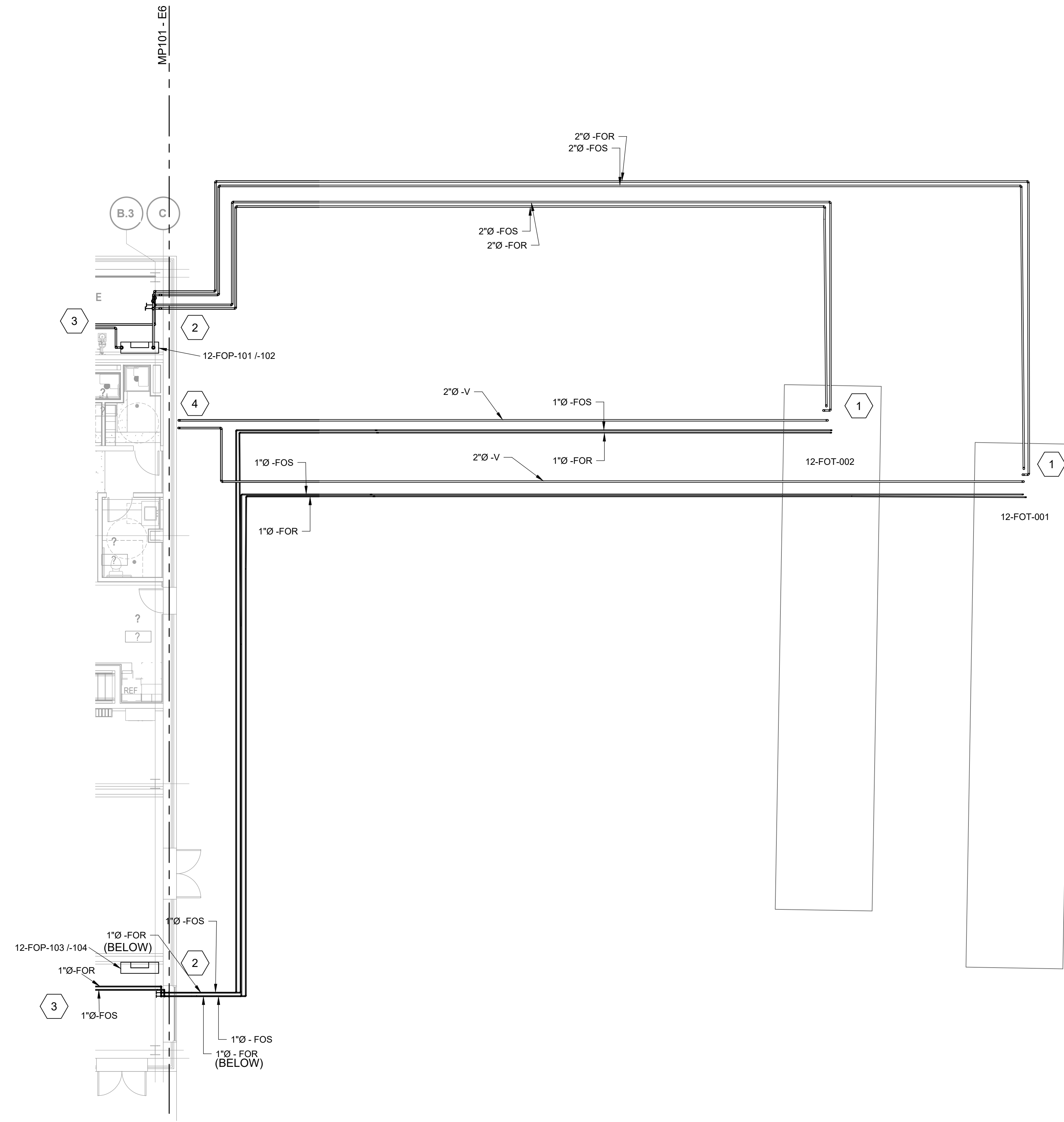


E4 MECHANICAL STEAM PIPING SUPPORT PLAN
1/8" = 1' 0"



Sean Fischbach

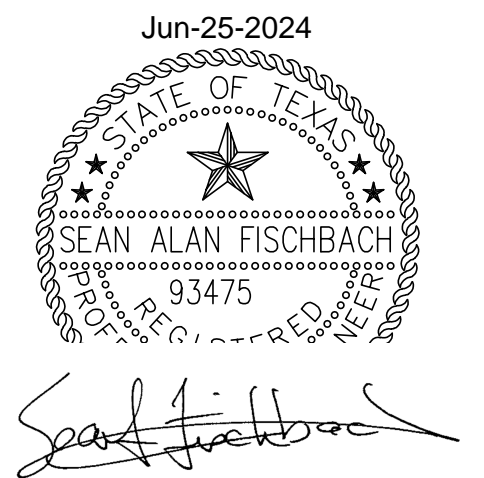
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| Revisions: | CONSULTANT | ARCHITECT/ENGINEER OF RECORD | STAMP | Drawing Title | Phase | Project Title | Project Number |
| | BURNS & MCDONNELL Burns & McDonnell Engineering Company, Inc. 9450 WARD PARKWAY, KANSAS CITY, MO | paradigm Architecture Engineering Design-Build 200 Envoy Circle, Suite 201, Louisville, KY 40299 www.paradigmusa.com | | Office of Construction and Facilities Management VA | PIPING SUPPORT PLAN | 100% CONSTRUCTION DOCUMENTS | SIoux FALLS BOILER PLANT |
| Date: | | | | Approved: | FULLY SPRINKLERED | Location | Building Number |
| | | | | | | VAMC-Sioux Falls: 2501 W 22nd St, Sioux Falls, SD 57105 | 12 |
| | | | | | | Issue Date | Drawing Number |
| | | | | | | 06/25/2024 | MP104 |
| | | | | | | Checked | Drawn |
| | | | | | | BDI | MFM |



- GENERAL NOTES:**
1. PROVIDE ALL MATERIALS, VALVES, HANGERS, AND EQUIPMENT TO PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED, AND AS REQUIRED BY CODE.
 2. INSTALL ALL MECHANICAL PIPING, EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
 3. CONTRACTOR SHALL FIELD VERIFY ALL TIE IN LOCATIONS AND EXISTING CONDITIONS.
 4. CONTRACTOR SHALL FIELD VERIFY ALL DEMO LOCATIONS AND PREPARE DEMO POINTS FOR FUTURE CONNECTIONS AS NEEDED.
 5. VISUALLY INSPECT ALL PIPING TO BE RE-USED. CONFIRM PIPE AND WELDS ARE VISUALLY ACCEPTABLE FOR RE-USE.
 6. ALL EXISTING TO REMAIN VALVES SHALL BE TESTED FOR PROPER OPERATION. ANY DEFICIENCIES FOUND SHOULD BE REPORTED TO MU PROJECT ENGINEERS.
 7. ALL PIPE TO SLOPE TO TANK WITH .2% SLOPE.

- KEYED NOTES**
1. REFER TO CIVIL PACKAGE FOR EXACT TANK LOCATION AND EXCAVATION DETAILS OF EARTH RETENTION SYSTEM. REFER TO SECTION MP505/A AND SPECIFICATION 23 10 00 FACILITY FUEL OIL SYSTEMS. FOR FUEL OIL TANK PIPING REQUIREMENTS. REFER TO CIVIL DRAWING CD101 FOR REMOTE FILL AND ALARM STATION.
 2. PIPE SLEEVE THROUGH CONCRETE WALL. SEE DETAIL ON 6/MP505.
 3. REFER TO MP101 FOR CONTINUATION OF PIPING IN TRENCHES.
 4. ROUTE 2" VAPOR VENT FROM FUEL OIL TANKS TO BUILDING WALL. ROUTE 2'-0" ABOVE ROOF AND SUPPORT FROM BUILDING STRUCTURE. INCLUDE RAIN CAP ON VENT LINE.

MECHANICAL FUEL OIL DISTRIBUTION PIPING PLAN
 TRUE PLAN (F5) 1/8" = 1' 0"



Sean Fischbach

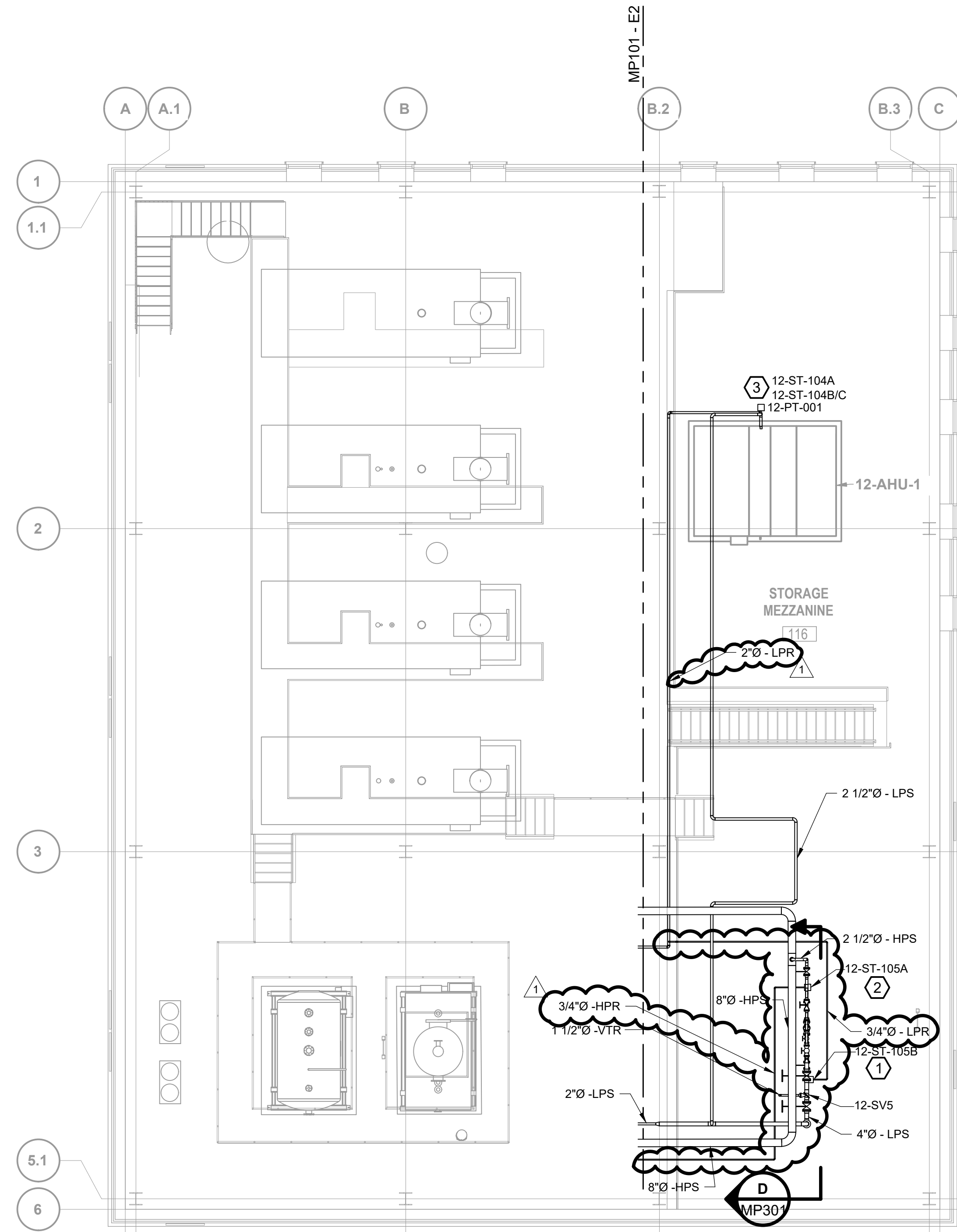
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|------------|-------|--|--|---------------|---|--|--------------------------------------|---|------------------------------|
| Revisions: | Date: | CONSULTANT Burns & McDonnell Engineering Company, Inc. 9450 WARD PARKWAY, KANSAS CITY, MO | ARCHITECT/ENGINEER OF RECORD Architecture Engineering Design-Build 200 Envoy Circle, Suite 201, Louisville, KY 40299 www.paradigmusa.com | STAMP | Office of Construction and Facilities Management | Drawing Title FUEL OIL DISTRIBUTION PIPING PLAN | Phase 100% CONSTRUCTION DOCUMENTS | Project Title SIOUX FALLS BOILER PLANT | Project Number 438-22-900 |
| | | | | | | Approved: | FULLY SPRINKLERED | Location VAMC-Sioux Falls: 2501 W 22nd St, Sioux Falls, SD 57105 | Building Number 12 |

NOTES:
 1. FOR GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS SEE DRAWING M-000.

- KEYED NOTES:**
- ROUTE 3/4" LPR FROM PRV TRAP TO 2" LPR ON THIS SHEET. INSTALL CHECK VALVE AND CONNECTIONS FOR BOTH 2" AND 3/4" LINES. REFER TO MP700.
 - ROUTE 3/4" HPR FROM PRV TRAP TO HPR. INSTALL CHECK VALVE AT CONNECTIONS FOR BOTH 2" AND 3/4" LINES. REFER TO MP700.
 - REFER TO DETAIL 3/MP506 FOR THE HEATING COIL PUMP TRAP ASSEMBLY.



E3 MECHANICAL STEAM PLAN ROOF
 1/8" = 1' 0"



E8 MECHANICAL STEAM PLAN MEZZANINE FLOOR
 1/8" = 1' 0"



Signature of Sean Alan Fischbach

| | |
|------------|------------|
| Addendum 1 | 08-09-2024 |
| | |
| | |
| | |
| | |
| Revisions: | Date: |

CONSULTANT

BURNS & MCDONNELL
 Burns & McDonnell Engineering Company, Inc.
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 www.paradigmusa.com

STAMP

Office of Construction and Facilities Management

VA

Drawing Title
 PIPING PLAN MEZZANINE FLOOR

Approved:

Phase
 100% CONSTRUCTION DOCUMENTS

FULLY SPRINKLERED

Project Title
 SIOUX FALLS BOILER PLANT

Location
 VAMC-Sioux Falls: 2501 W 22nd St, Sioux Falls, SD 57105

Issue Date
 06/25/2024

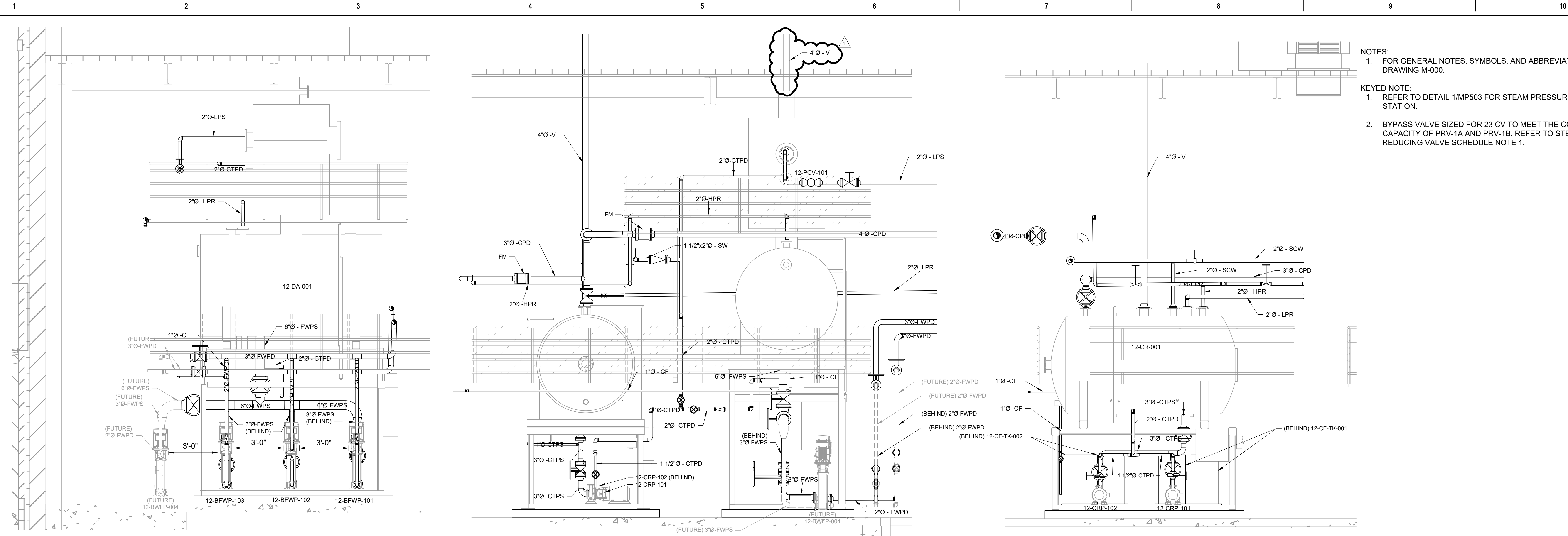
Checked
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Drawn
 MFM

Project Number
 438-22-900

Building Number
 12

Drawing Number
MP106

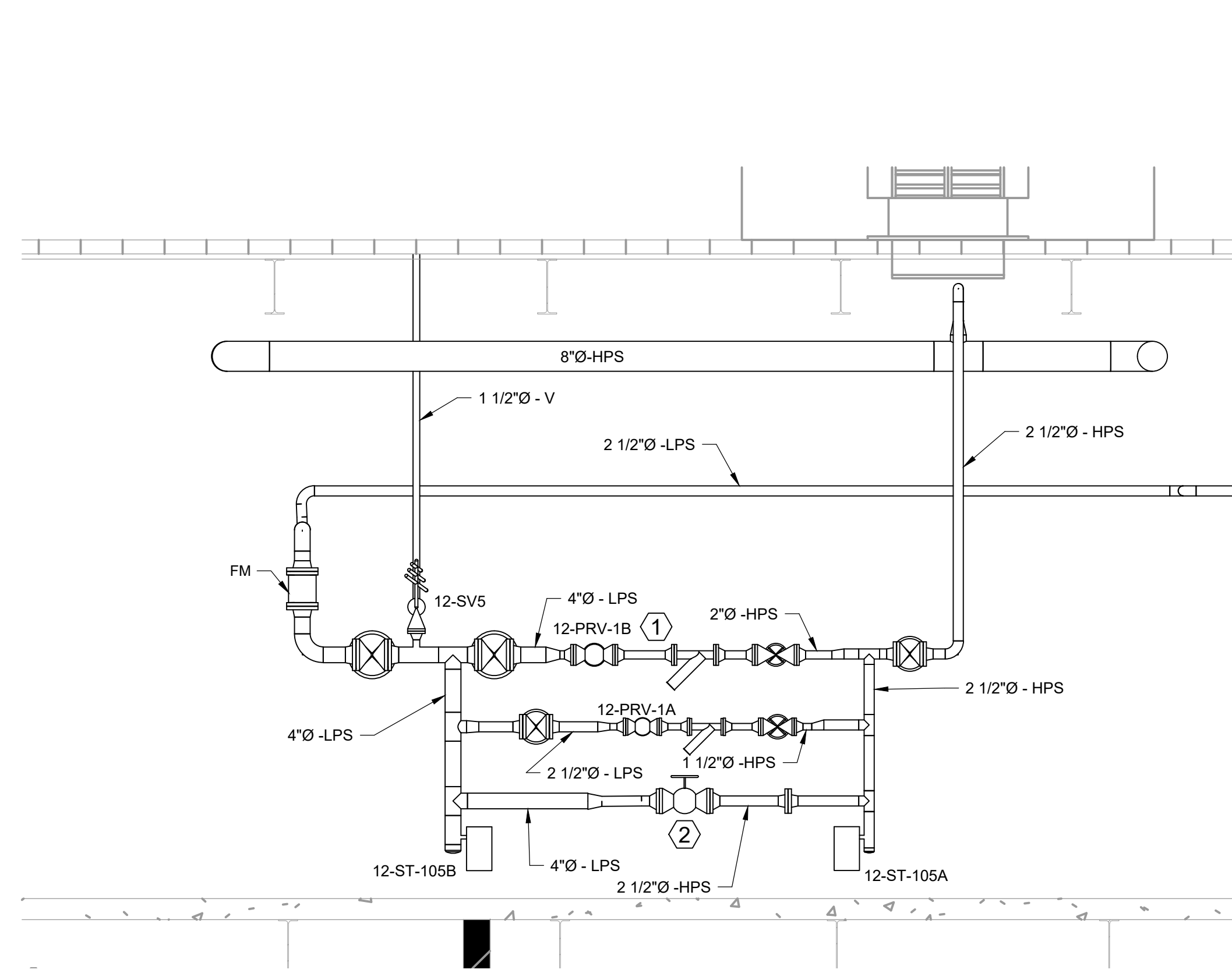


NOTES:
 1. FOR GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS SEE DRAWING M-000.
KEYED NOTE:
 1. REFER TO DETAIL 1/MP503 FOR STEAM PRESSURE REDUCING STATION.
 2. BYPASS VALVE SIZED FOR 23 CV TO MEET THE COMBINED CAPACITY OF PRV-1A AND PRV-1B. REFER TO STEAM PRESSURE REDUCING VALVE SCHEDULE NOTE 1.

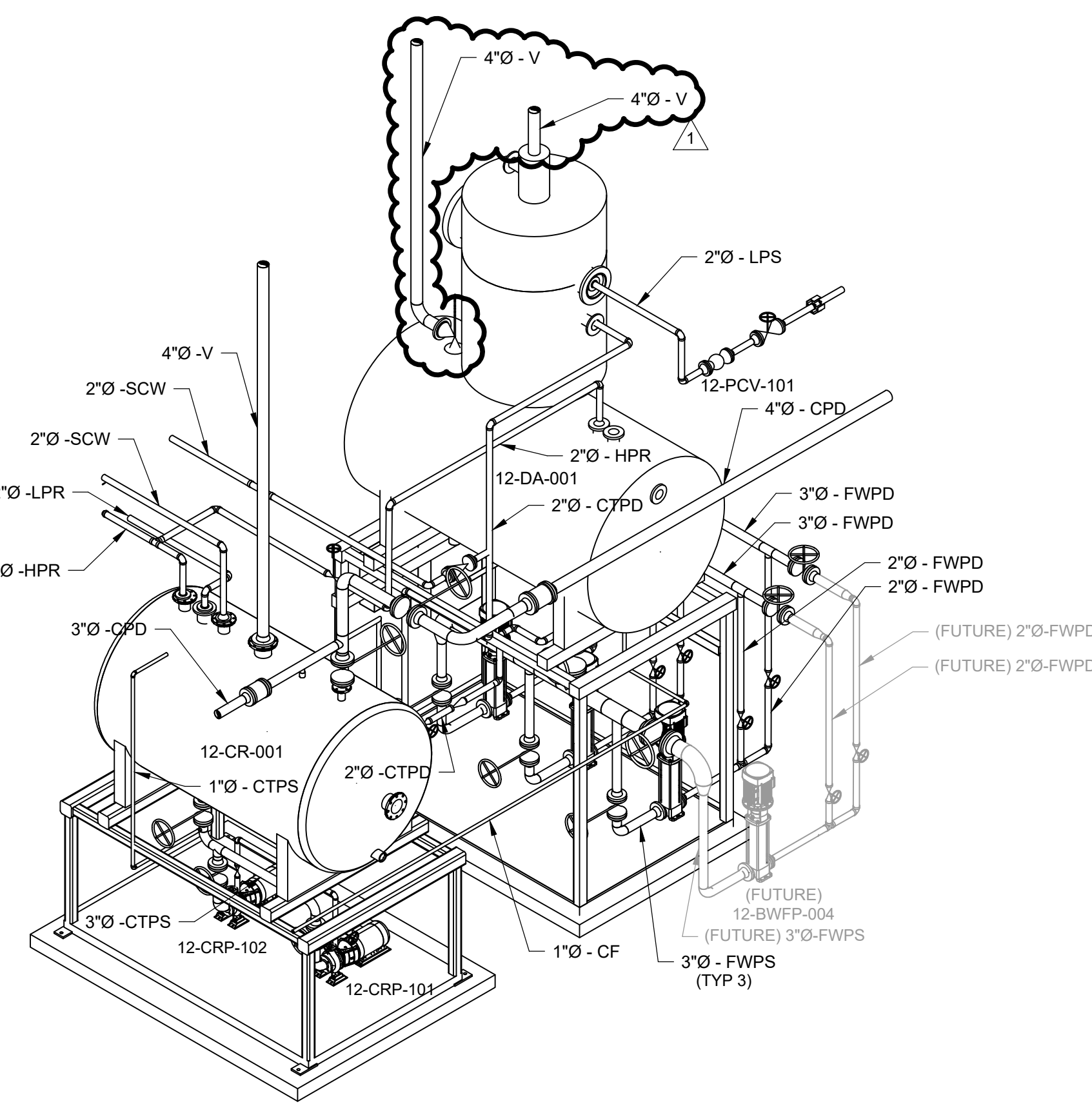
DEAERATOR SECTION LOOKING WEST
 3/8" = 1' 0" **A**

MECHANICAL SECTION LOOKING NORTH
 3/8" = 1' 0" **B**

CONDENSATE SURGE TANK LOOKING WEST
 3/8" = 1' 0" **C**



STEAM PRV SECTION LOOKING WEST
 3/8" = 1' 0" **D**



CONDENSATE AND DA TANK ISOMETRIC VIEW
 1/4" = 1' 0" **E**



| | |
|------------|------------|
| Addendum 1 | 08-09-2024 |
| Revisions: | Date: |

CONSULTANT

Burns & McDonnell Engineering Company, Inc.
 9450 WARD PARKWAY, KANSAS CITY, MO

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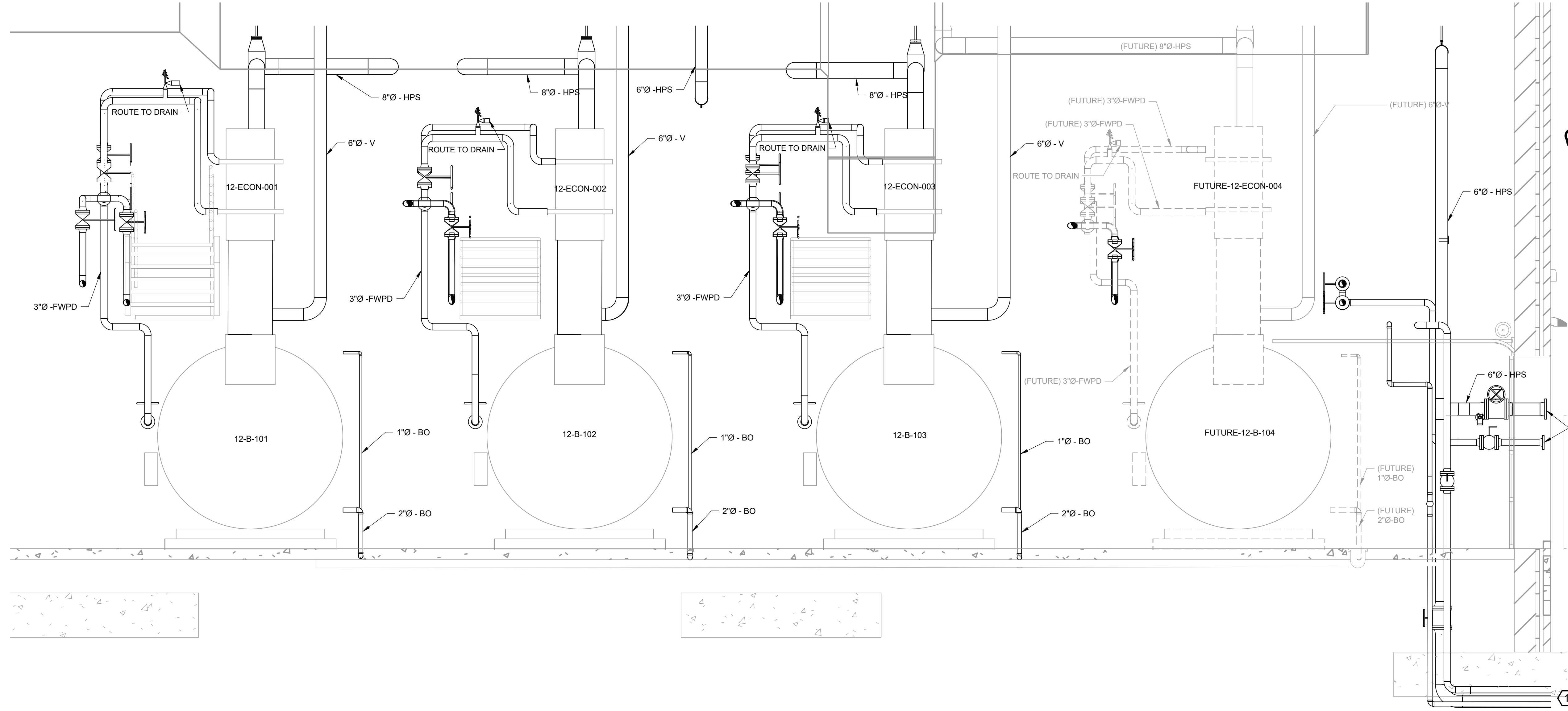
STAMP

Office of Construction and Facilities Management
 VA

Drawing Title: PIPING PLAN SECTIONS
 Approved: _____

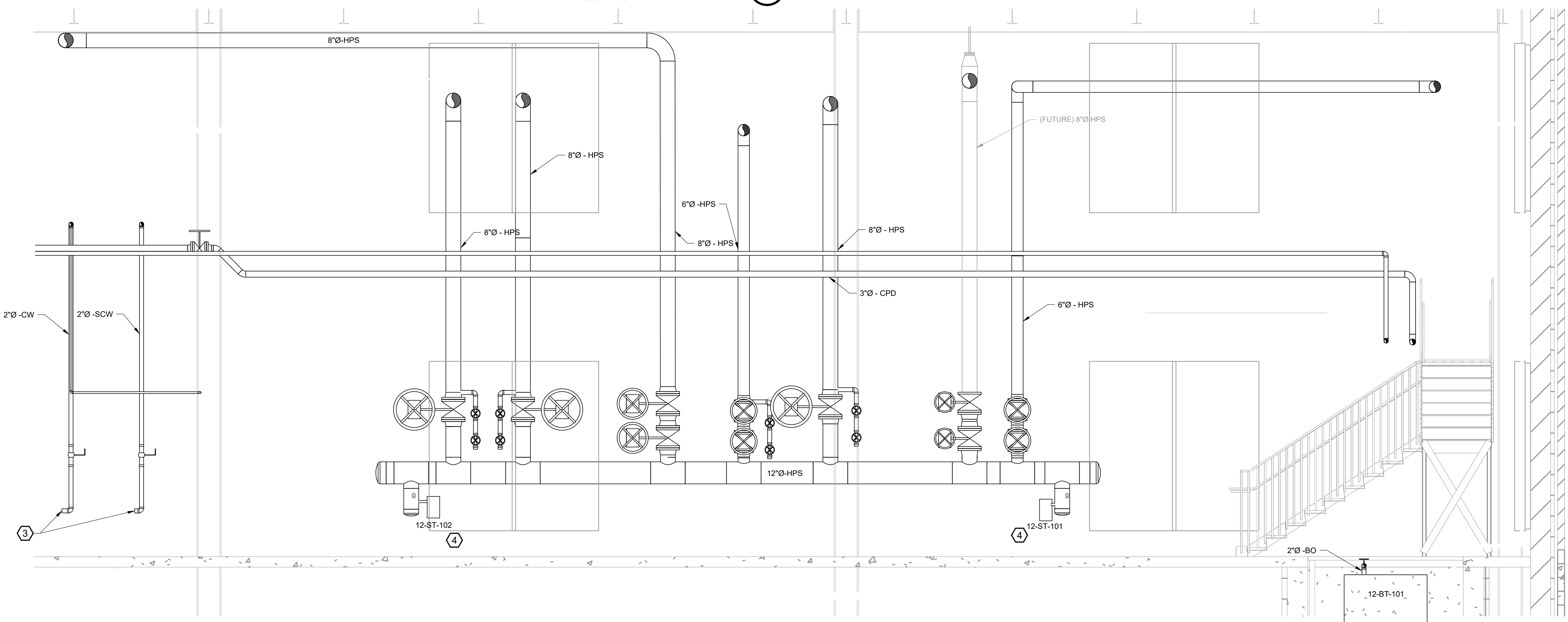
Phase: 100% CONSTRUCTION DOCUMENTS
 FULLY SPRINKLERED

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| Project Title: SIOUX FALLS BOILER PLANT | | Project Number: 438-22-900 |
| Location: VAMC-Sioux Falls: 2501 W 22nd St, Sioux Falls, SD 57105 | | Building Number: 12 |
| Issue Date: 06/25/2024 | Checked: BDI | Drawn: MFM |
| Drawing Number: MP301 | | |

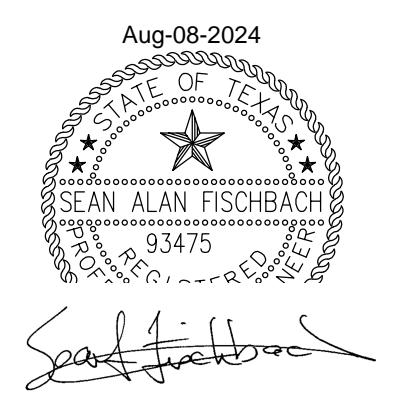


- NOTES:
 1. FOR GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS SEE DRAWING M-000.
 KEYED NOTES:
 1. TO NEW MANHOLE 4, REFER TO MP103 AND CIVIL DRAWINGS.
 2. TEMPORARY BOILER CONNECTION. REFER TO DETAIL 1/MP504 FOR WALL PENETRATION DETAIL.
 3. REFER TO PL200 FOR PIPE CONTINUATION.
 4. REFER TO MP700

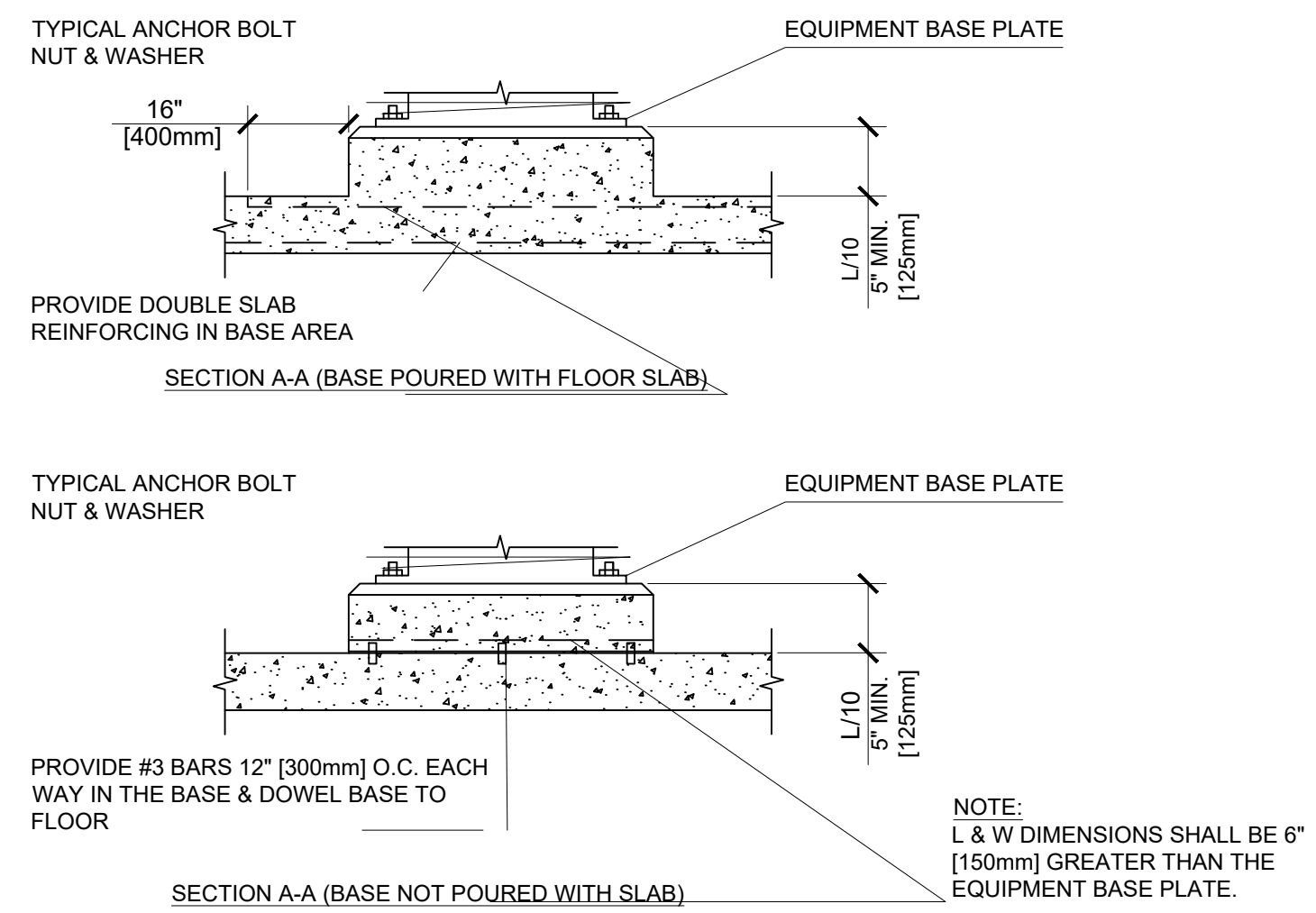
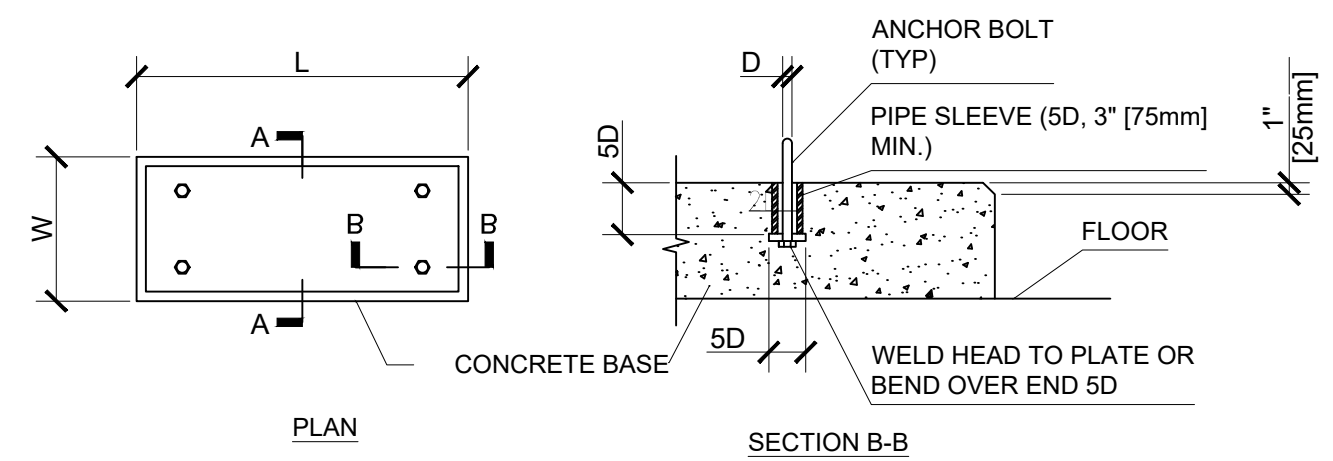
MECHANICAL SECTION LOOKING WEST
 WEST
 3/8" = 1' 0" A



MECHANICAL SECTION LOOKING WEST
 WEST
 3/8" = 1' 0" B



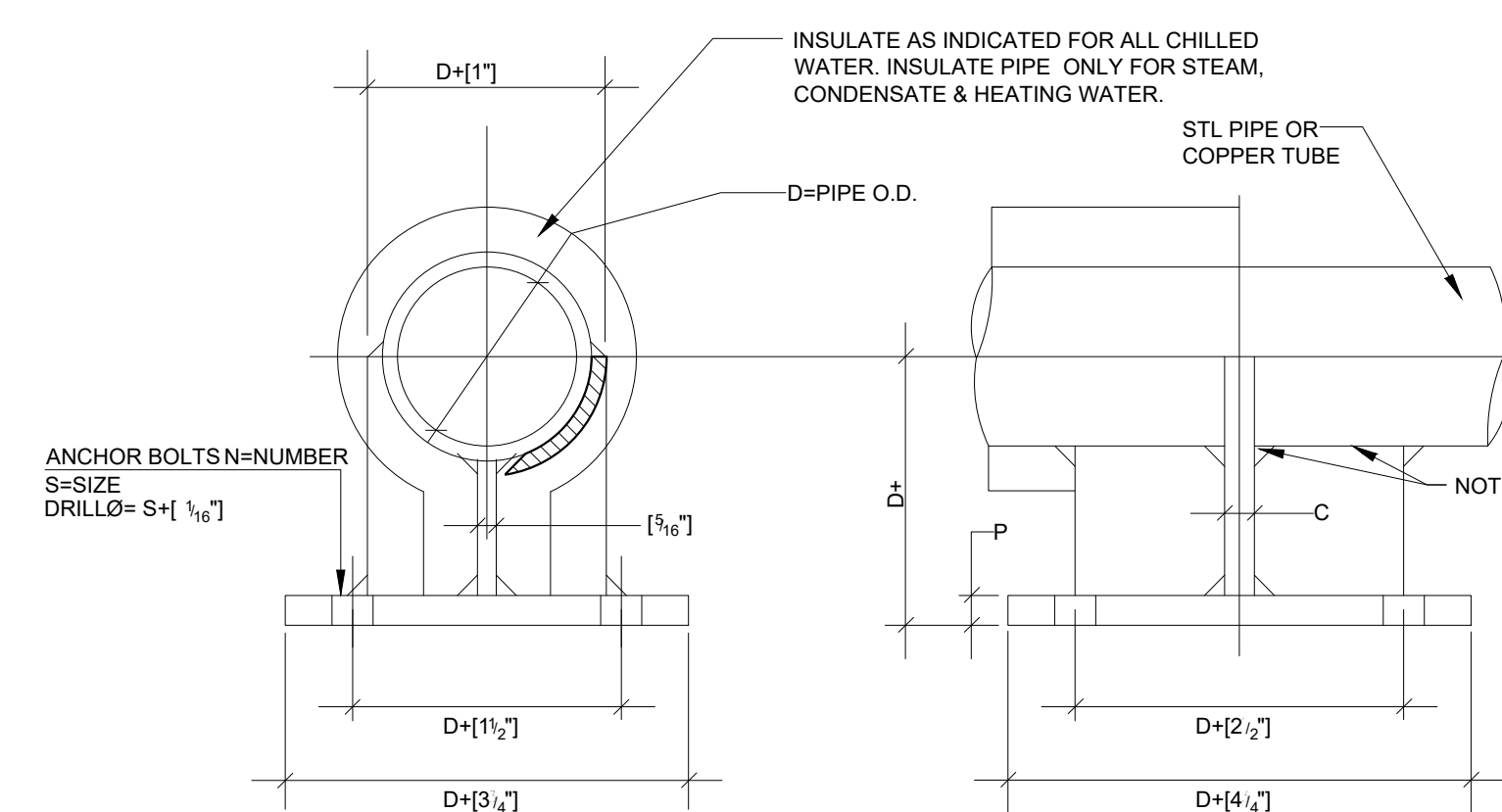
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| Addendum 1 08-09-2024 CONSULTANT Burns & McDonnell Engineering Company, Inc. 9450 WARD PARKWAY, KANSAS CITY, MO | ARCHITECT/ENGINEER OF RECORD Architecture Engineering Design-Build 200 Envoy Circle, Suite 201, Louisville, KY 40299 www.paradigmusa.com | STAMP Office of Construction and Facilities Management | Drawing Title PIPING PLAN SECTIONS | Phase 100% CONSTRUCTION DOCUMENTS | Project Title SIOUX FALLS BOILER PLANT | Project Number 438-22-900 |
| | | | Approved: | FULLY SPRINKLERED | Location VAMC-Sioux Falls: 2501 W 22nd St, Sioux Falls, SD 57105 | Building Number 12 |
| Revisions: | Date: | | Issue Date 06/25/2024 | Checked BDI | Drawn MFM | Drawing Number MP302 |



1 CONCRETE EQUIPMENT BASES
NTS

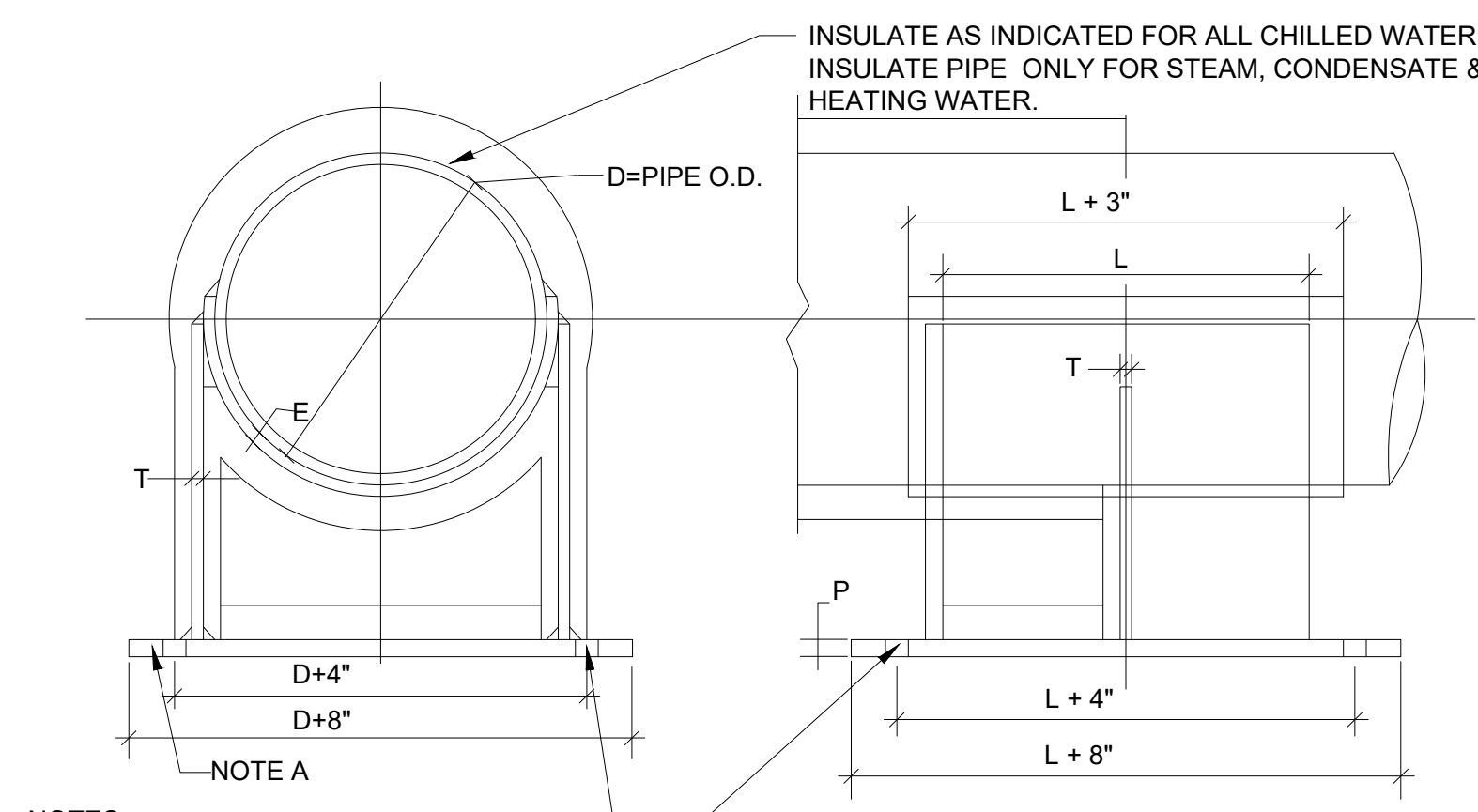
| PIPE ANCHOR SCHEDULE | | | | | BOLT PATTERN |
|----------------------|-----|-----|----|------|--------------|
| D | P | C | N | S | |
| in | in | in | in | in | |
| 4 | 5/8 | 3/4 | 4 | 3/4 | |
| 3 | 1/2 | 1/2 | 4 | 3/8 | |
| 2 1/2 | 3/8 | 3/8 | 4 | 3/8 | |
| 2 | 3/8 | 3/8 | 4 | 3/8 | |
| 1 1/2 | 3/8 | 1/4 | 4 | 1/2" | |

| PIPE ANCHOR SCHEDULE | | | | | | | | | | BOLT PATTERN |
|----------------------|-------|-------|-------|-------|----|-----|--|--|--|--------------|
| D | L | P | T | E | N | S | | | | |
| in | in | in | in | in | in | in | | | | |
| 6 | 8 1/2 | 1 1/2 | 1 1/2 | 1 1/2 | 4 | 3/8 | | | | |
| 8 | 10 | 1 1/2 | 1 1/2 | 1 1/2 | 4 | 3/8 | | | | |
| 10 | 12 | 1 1/2 | 1 1/2 | 1 1/2 | 4 | 3/8 | | | | |
| 12 | 14 | 1 1/2 | 1 1/2 | 1 1/2 | 4 | 3/8 | | | | |
| 14 | 16 | 1 1/2 | 1 1/2 | 1 1/2 | 4 | 3/8 | | | | |
| 16 | 18 | 1 1/2 | 1 1/2 | 1 1/2 | 4 | 3/8 | | | | |
| 18 | 20 | 1 1/2 | 1 1/2 | 1 1/2 | 4 | 3/8 | | | | |



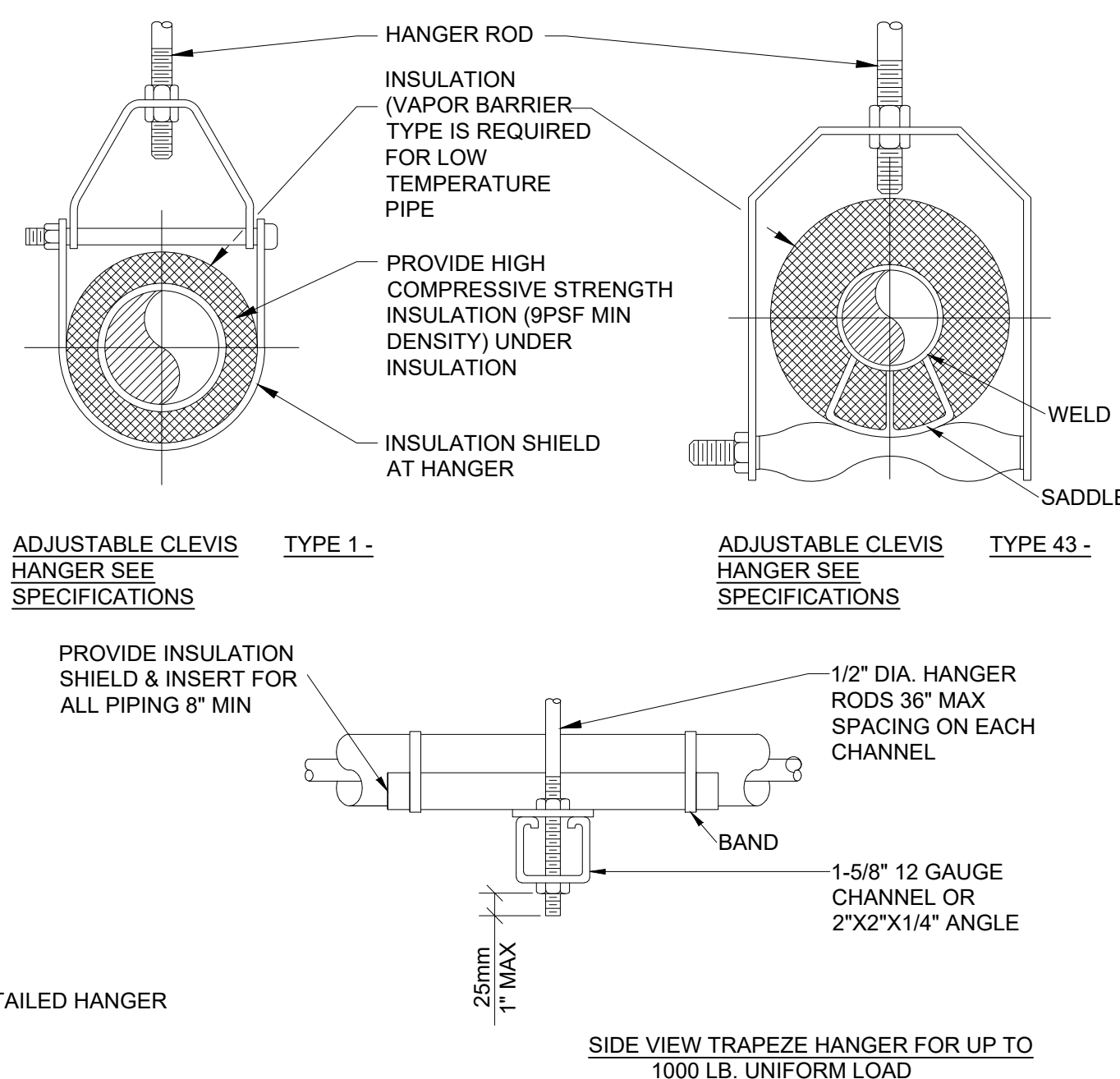
NOTE: WHERE USED FOR COPPER TUBE OR PIPE, BRAZE TO FABRICATED STEEL ANCHOR

2 SMALL PIPE ANCHOR 1 1/2" - 4"
NTS



NOTES:
A. INSTALL WALL PLATE FIRST THEN WELD ON REMAINING ASSEMBLY. ONE WALL PLATE FOR BOTH CHILLED WATER S.&R. IS OPTIONAL.

3 LARGE PIPE ANCHOR 6" - 8"
NTS

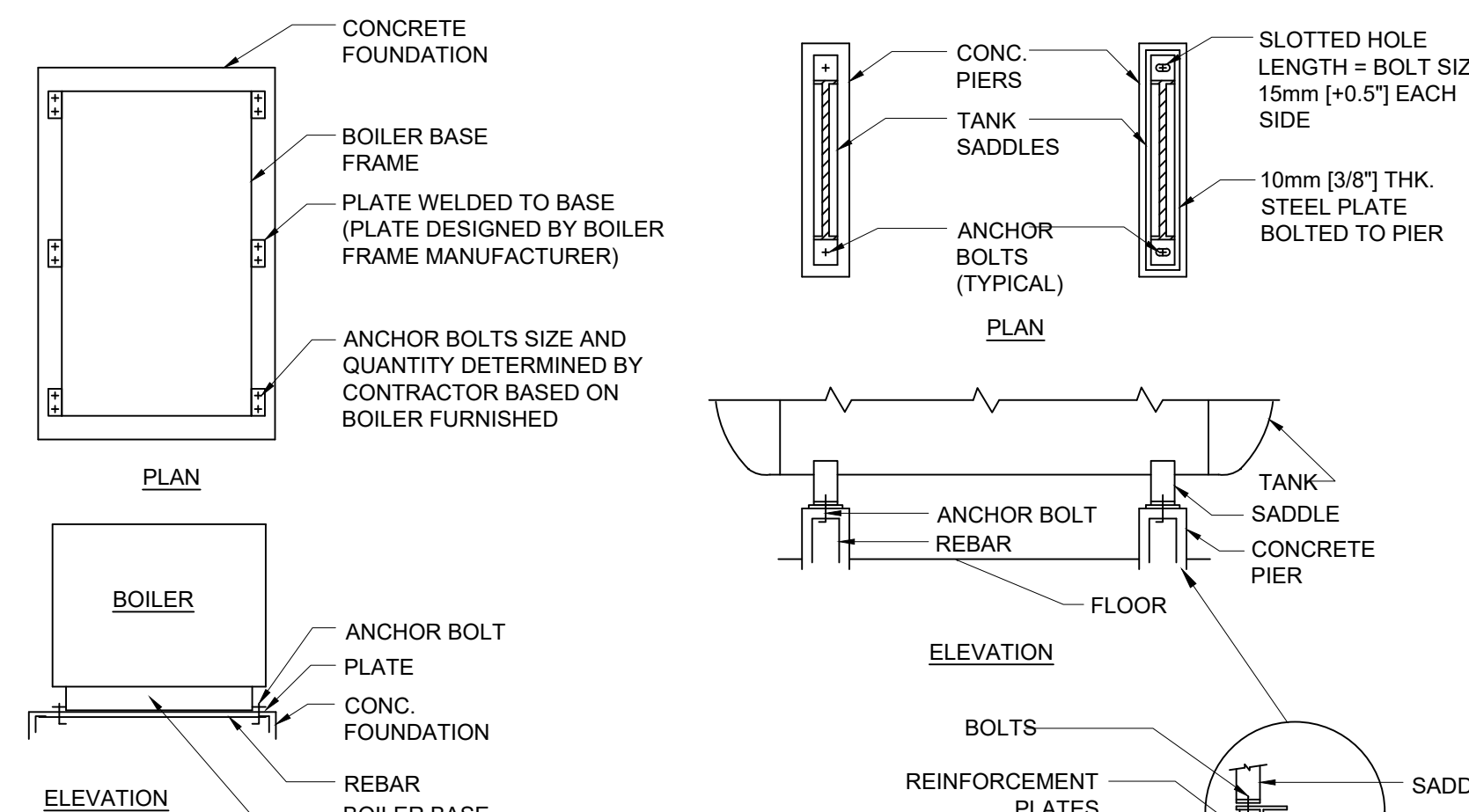


NOTE: SEE SPECIFICATIONS FOR DETAILED HANGER REQUIREMENTS

| MAXIMUM PIPE/TUBING SUPPORT SPACING | | | | | | | | | | | | | | | | | | | |
|-------------------------------------|--------|-----|---------|---------|------|---------|------|------|------|------|------|------|------|------|------|------|------|------|---|
| NOM. SIZE IN | [THRU] | [1] | [1 1/4] | [1 1/2] | [2] | [2 1/2] | [3] | [4] | [5] | [6] | [8] | [10] | [12] | [14] | [16] | [18] | [20] | [24] | |
| PIPE [FT] | [7] | [7] | [7] | [9] | [10] | [11] | [12] | [14] | [16] | [17] | [19] | [22] | [23] | [25] | [27] | [28] | [30] | [32] | |
| TUBING [FT] | [5] | [6] | [7] | [8] | [8] | [9] | [10] | [12] | [13] | [14] | [16] | - | - | - | - | - | - | - | - |

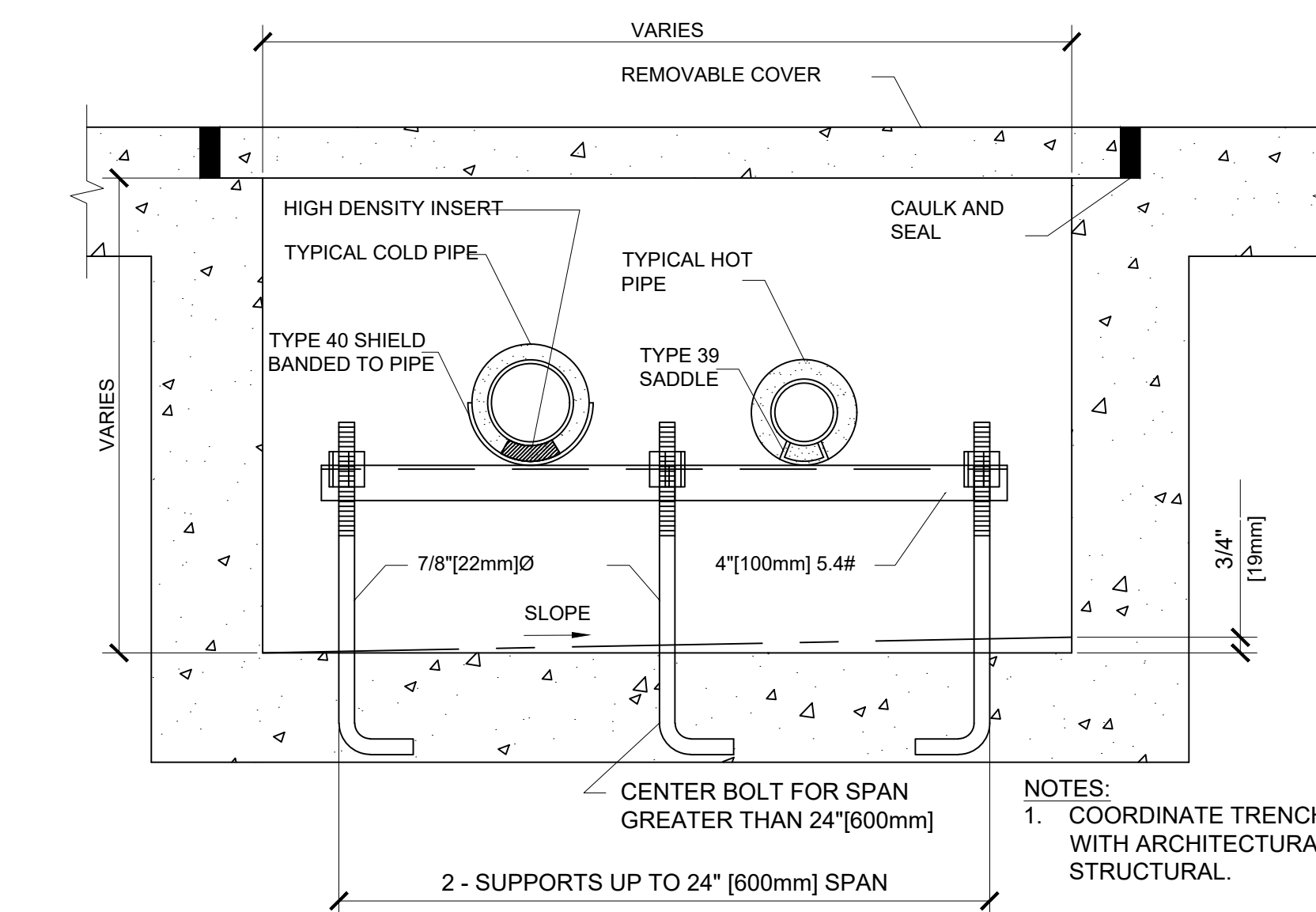
NOTE: FOR TRAPEZE HANGER TAKE SPACING OF SMALLEST SIZE ON TRAPEZE.

4 PIPE HANGERS
NTS



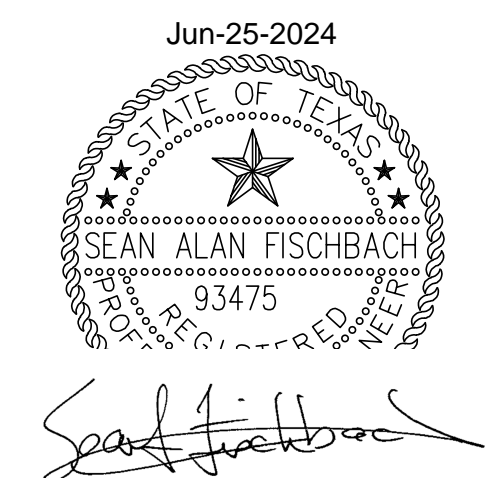
NOTES:
1. REFER TO SYMBOL AND SCHEDULE SHEETS FOR SEISMIC FORCE DESIGN INFORMATION
2. PROVIDE SLOTTED HOLES IN PLATES TO ALLOW THERMAL EXPANSION IF RECOMMENDED BY BOILER MANUFACTURER

5 EQUIPMENT ANCHORING - PACKAGED BOILER AND DEAERATOR AND CONDENSATE STORAGE TANKS
NTS



NOTES:
1. COORDINATE TRENCH DETAIL WITH ARCHITECTURAL & STRUCTURAL.
2. REFER TO SPECIFICATION, SEALING & CAULKING.

6 PIPE TRENCH IN A BUILDING
NTS



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STAMP

Office of Construction and Facilities Management

Drawing Title

PIPING DETAILS

Approved:

Phase

100% CONSTRUCTION DOCUMENTS

FULLY SPRINKLERED

Project Title

SIoux FALLS BOILER PLANT

Location

VAMC-SIoux Falls: 2501 W 22nd St. Sioux Falls, SD 57105

Issue Date

06/25/2024

Checked

BDI

Drawn

MFM

Project Number

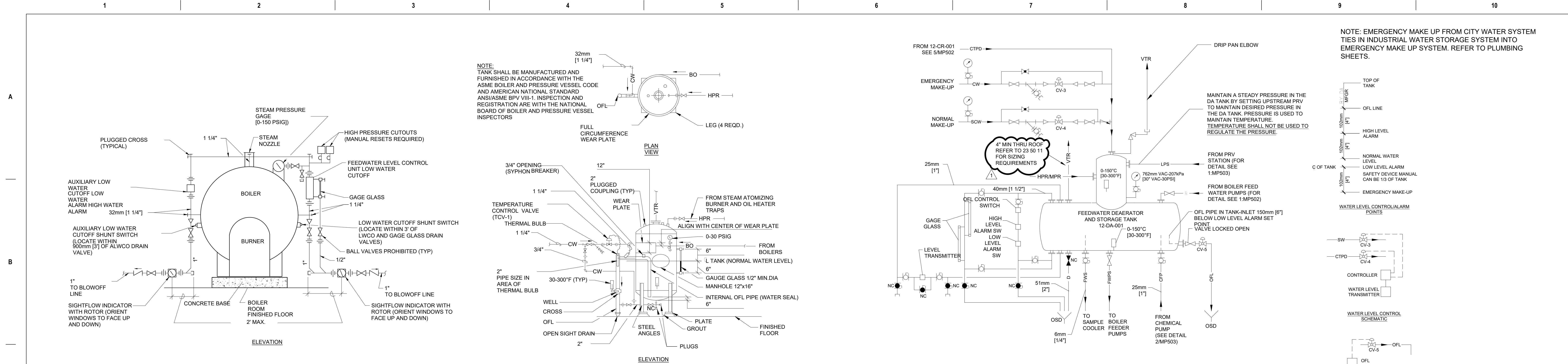
438-22-900

Building Number

12

Drawing Number

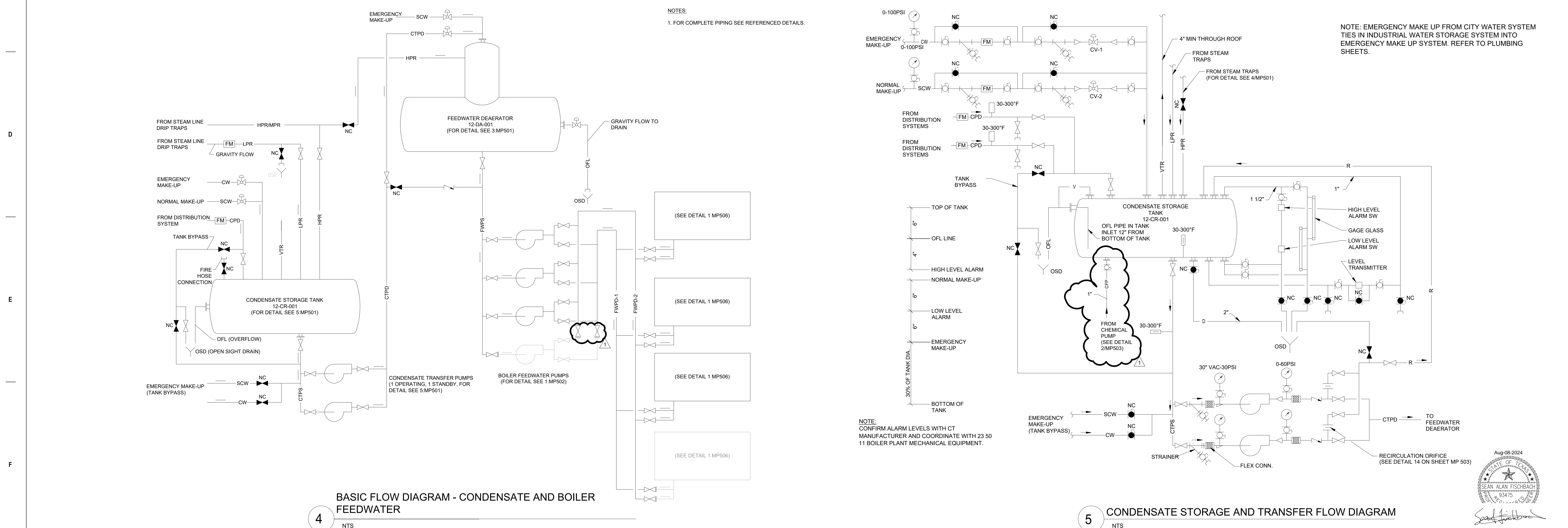
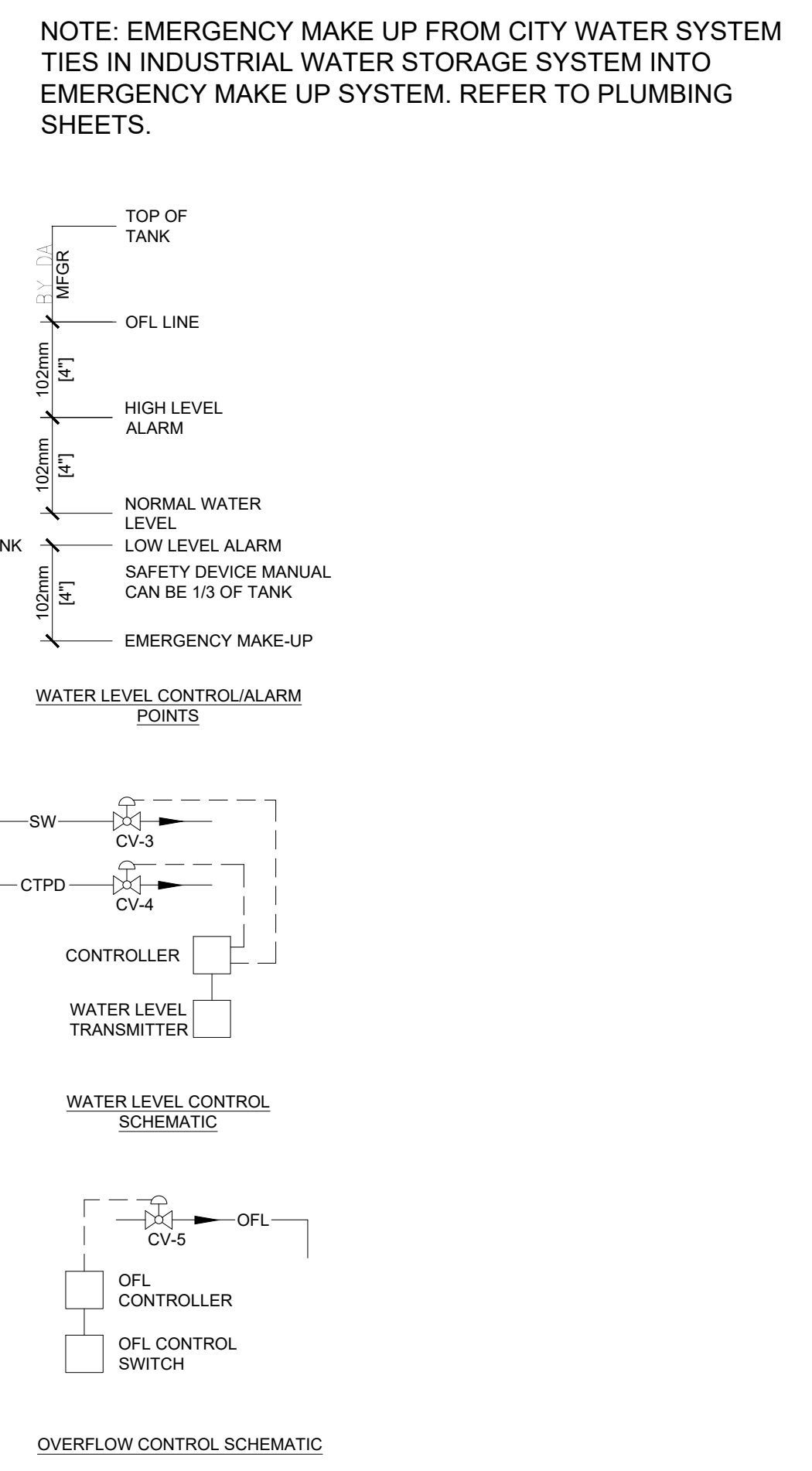
MP500



1 FIRE TUBE BOILER AUXILIARY WATER LEVEL SAFETY PIPING
NTS

2 BOILER BLOWOFF TANK (FOR REFERENCE ONLY)
NTS

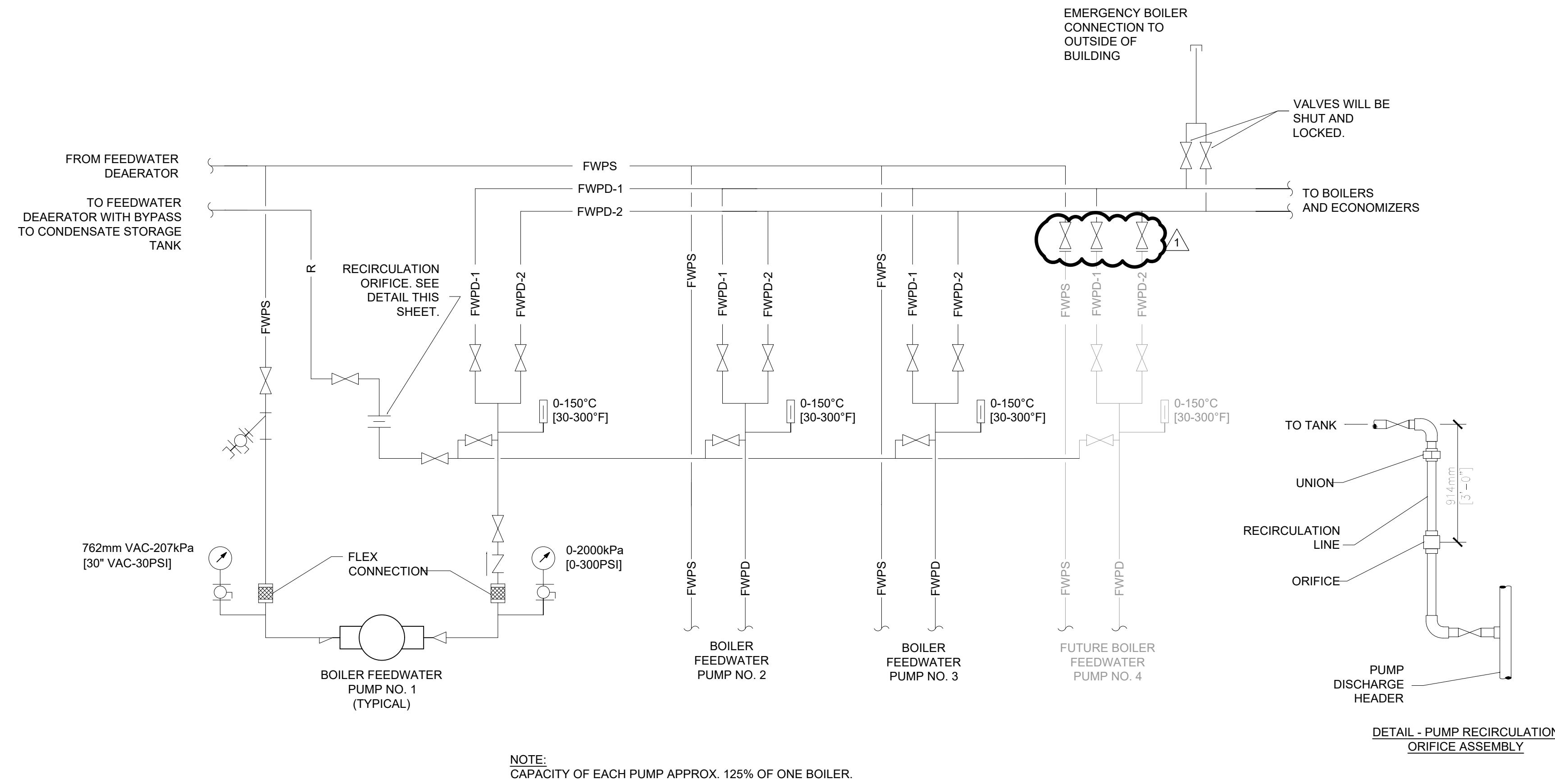
3 FEEDWATER DEAERATOR FLOW DIAGRAM
NTS



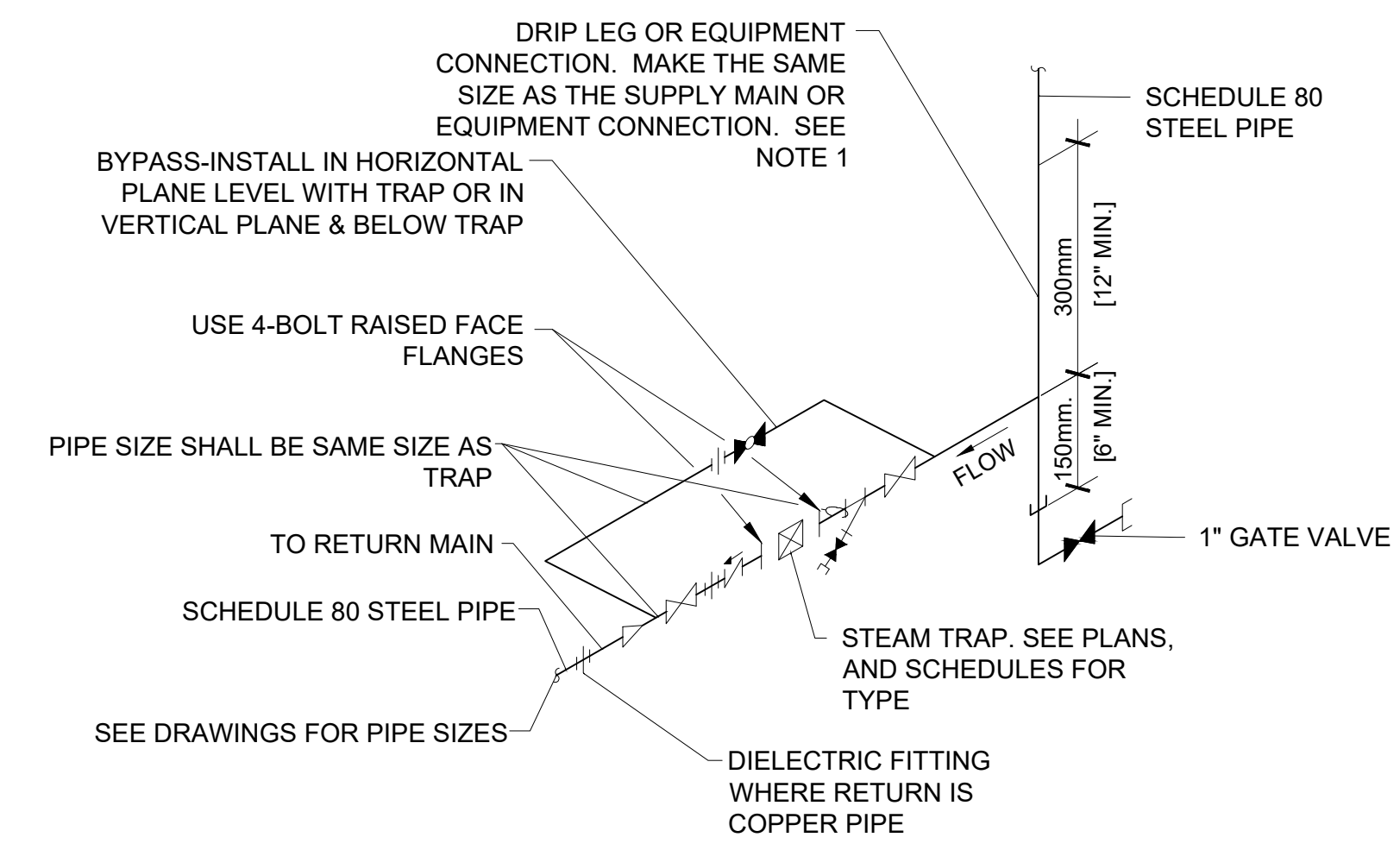
4 BASIC FLOW DIAGRAM - CONDENSATE AND BOILER FEEDWATER
NTS

5 CONDENSATE STORAGE AND TRANSFER FLOW DIAGRAM
NTS

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|--|------------|------------|--|--|--|--|--|--|--|--|------------|-------|--|---|---|---|
| <table border="1"> <tr> <td>Addendum 1</td> <td>08-09-2024</td> </tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr> <td>Revisions:</td> <td>Date:</td> </tr> </table> | Addendum 1 | 08-09-2024 | | | | | | | | | Revisions: | Date: | <p>CONSULTANT</p> <p>Burns & McDonnell Engineering Company, Inc. 9450 WARD PARKWAY, KANSAS CITY, MO</p> | <p>ARCHITECT/ENGINEER OF RECORD</p> <p>Architecture Engineering Design-Build 200 Envoy Circle, Suite 201, Louisville, KY 40299 www.paradigmusa.com</p> | <p>STAMP</p> <p>Office of Construction and Facilities Management VA</p> | <p>Drawing Title</p> <p>PIPING DETAILS</p> <p>Phase</p> <p>100% CONSTRUCTION DOCUMENTS</p> <p>Project Title</p> <p>SIoux FALLS BOILER PLANT</p> <p>Project Number</p> <p>438-22-900</p> <p>Building Number</p> <p>12</p> <p>Drawing Number</p> <p>MP501</p> <p>Location</p> <p>VAMC-Sioux Falls: 2501 W 22nd St. Sioux Falls, SD 57105</p> <p>Issue Date</p> <p>06/25/2024</p> <p>Checked</p> <p>BDI</p> <p>Drawn</p> <p>MFM</p> <p>FULLY SPRINKLERED</p> |
| Addendum 1 | 08-09-2024 | | | | | | | | | | | | | | | |
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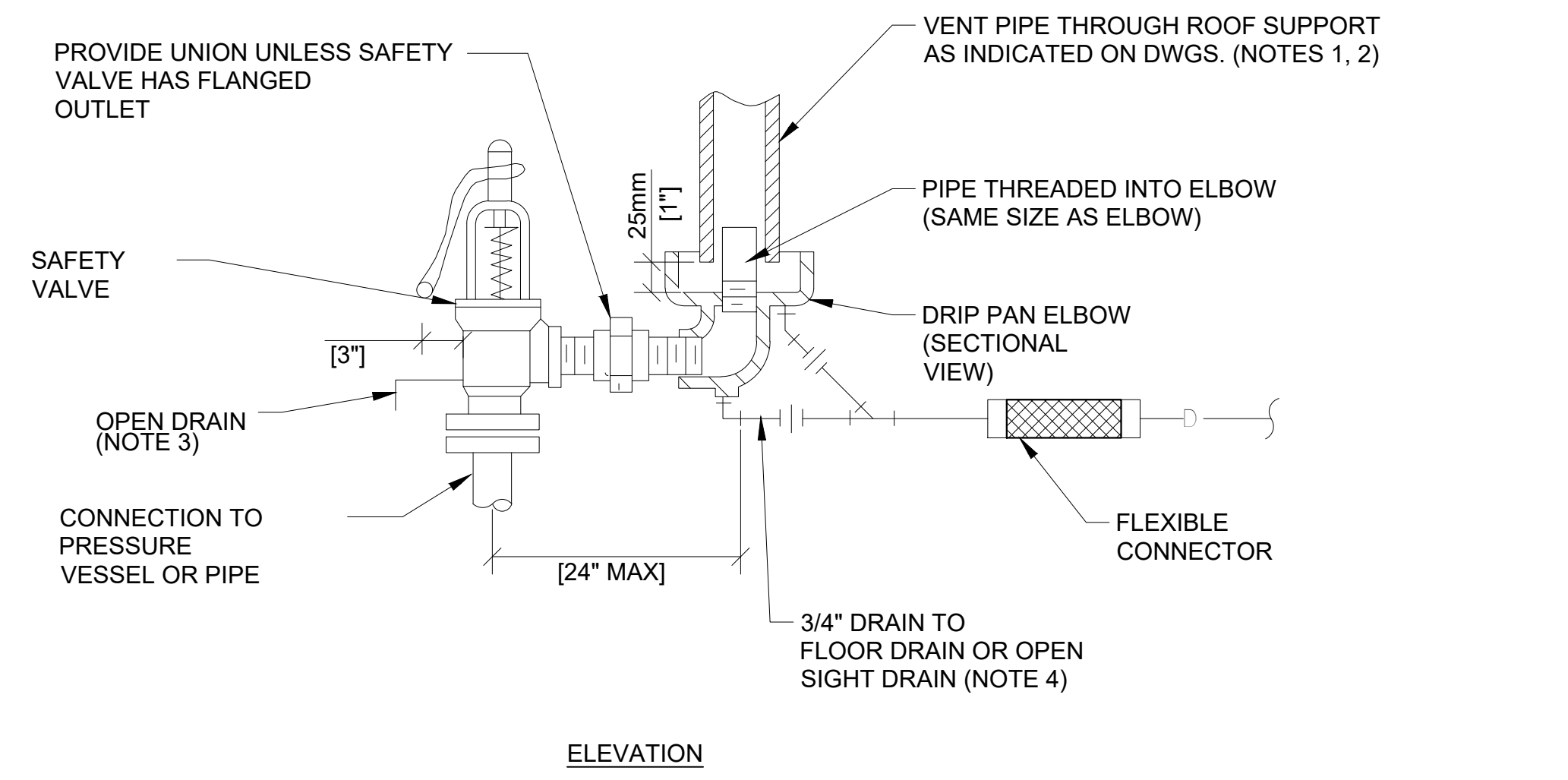


1 BOILER FEEDWATER PUMPS FLOW DIAGRAM
NTS



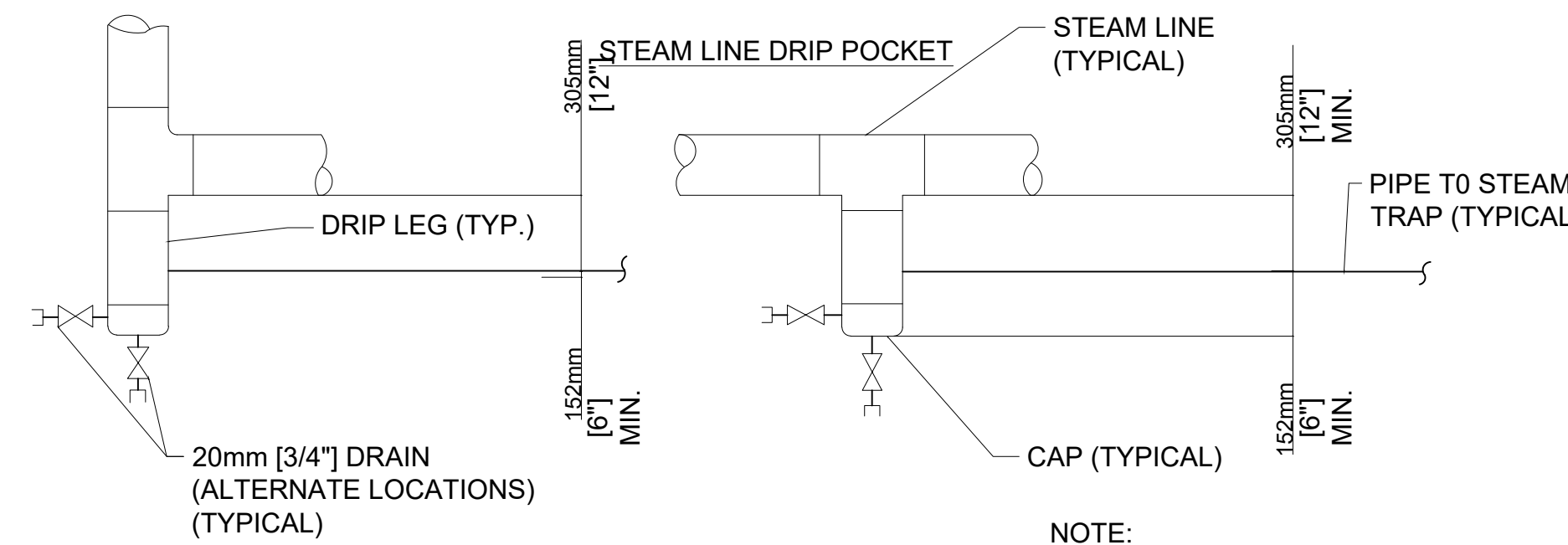
- NOTES:
- ALL DRIP POINTS ON STEAM MAINS SHALL BE PROVIDED WITH A 300mm [12"] MINIMUM HIGH DRIP LEG FROM BOTTOM OF STEAM MAIN TO TRAP INLET. DRIP LEG SHALL HAVE 150mm [6"] SCALE POCKET BELOW TRAP INLET.
 - PROVIDE BYPASS PIPING.

2 STEAM TRAP ASSEMBLY
NTS



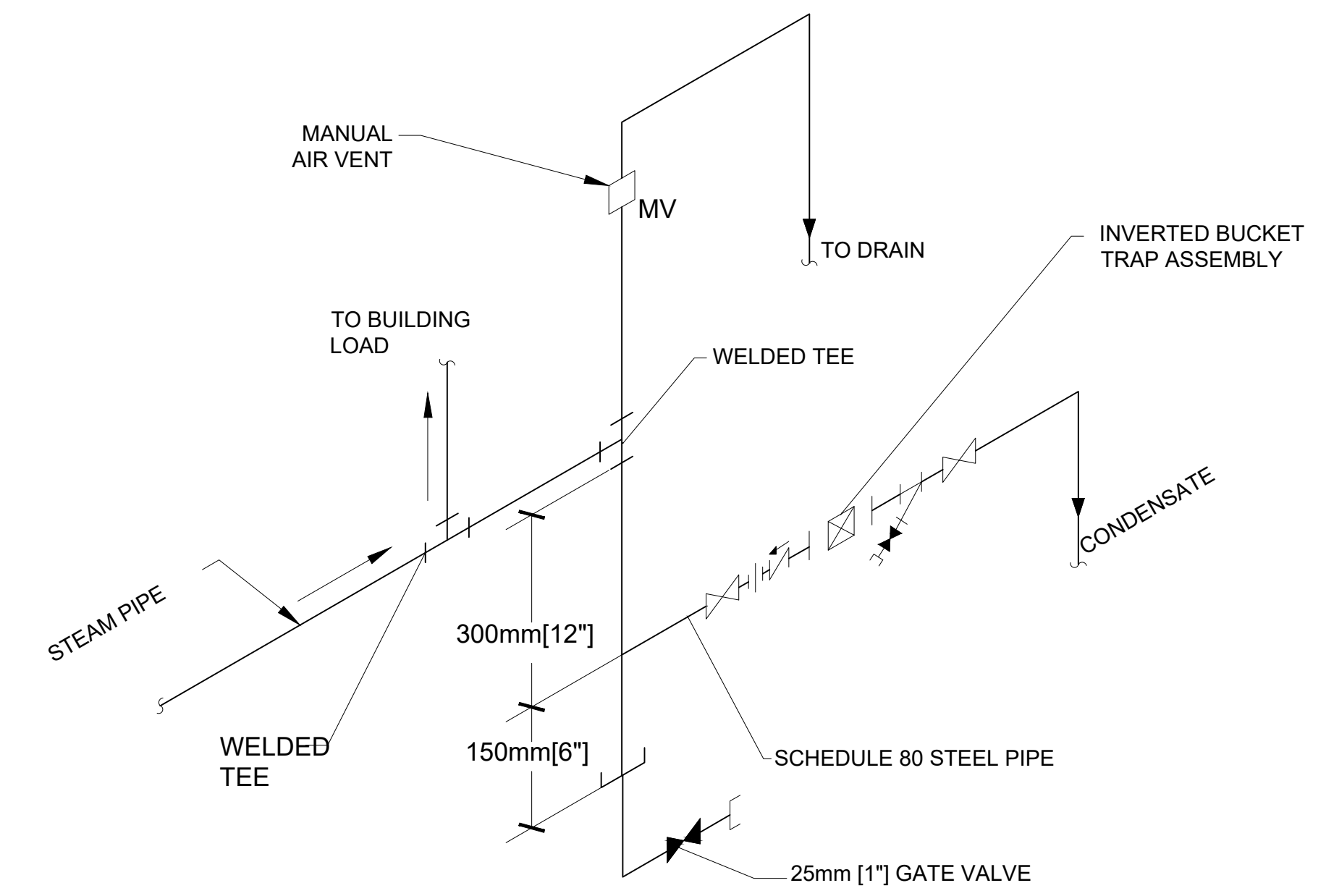
- NOTES:
- UNLESS OTHERWISE SHOWN ON THE DRAWINGS, SIZE THE VENT PIPE SO THAT STEAM IS NOT BLOWN OUT AT THE VENT PIPE ENTRANCE. UTILIZE THE CALCULATION METHOD CONTAINED IN ANSI B31.1. POWER PIPING CODE, APPENDIX II.
 - VENT PIPE SHALL TERMINATE 6' MIN. ABOVE FINISHED ROOF.
 - DISCHARGE OF DRAIN SHALL BE DIRECTED AWAY FROM PLATFORMS OR OTHER AREAS WHICH PERSONNEL MAY OCCUPY.
 - NO OTHER DRAIN SHALL BE CONNECTED TO THE DRIP PAN ELBOW DRAIN PIPE.

3 STEAM SAFETY VALVE
NTS

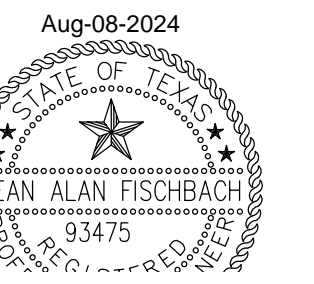


NOTE:
DRIP POCKET PIPE SIZE SAME AS STEAM MAIN UNLESS OTHERWISE NOTED.

4 STEAM LINE DRIP POCKET
NTS



5 END OF STEAM LINE DRIP TRAP
NTS



Aug-08-2024

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STAMP

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Construction
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Project Title

SIoux FALLS BOILER PLANT

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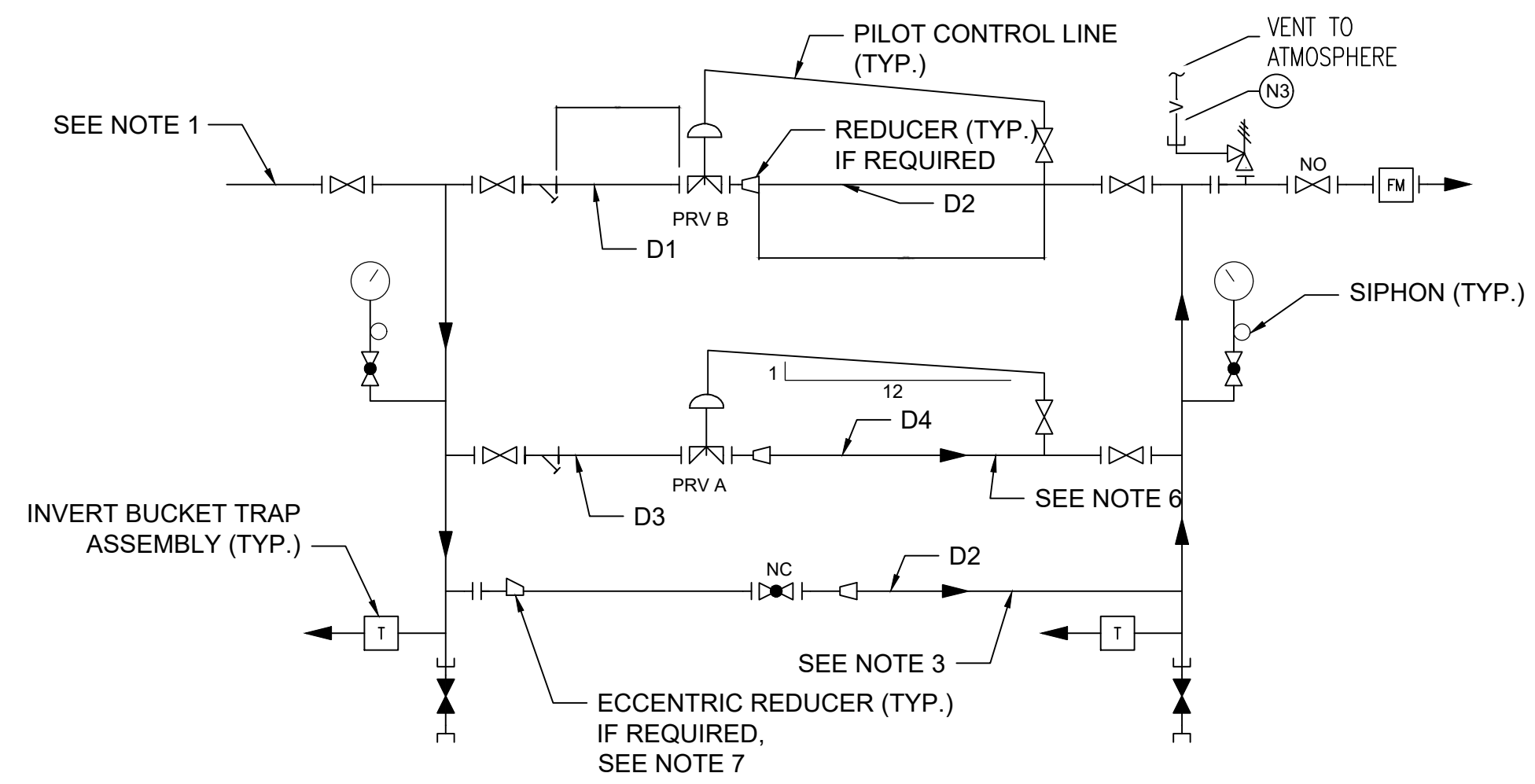
438-22-900

Building Number

12

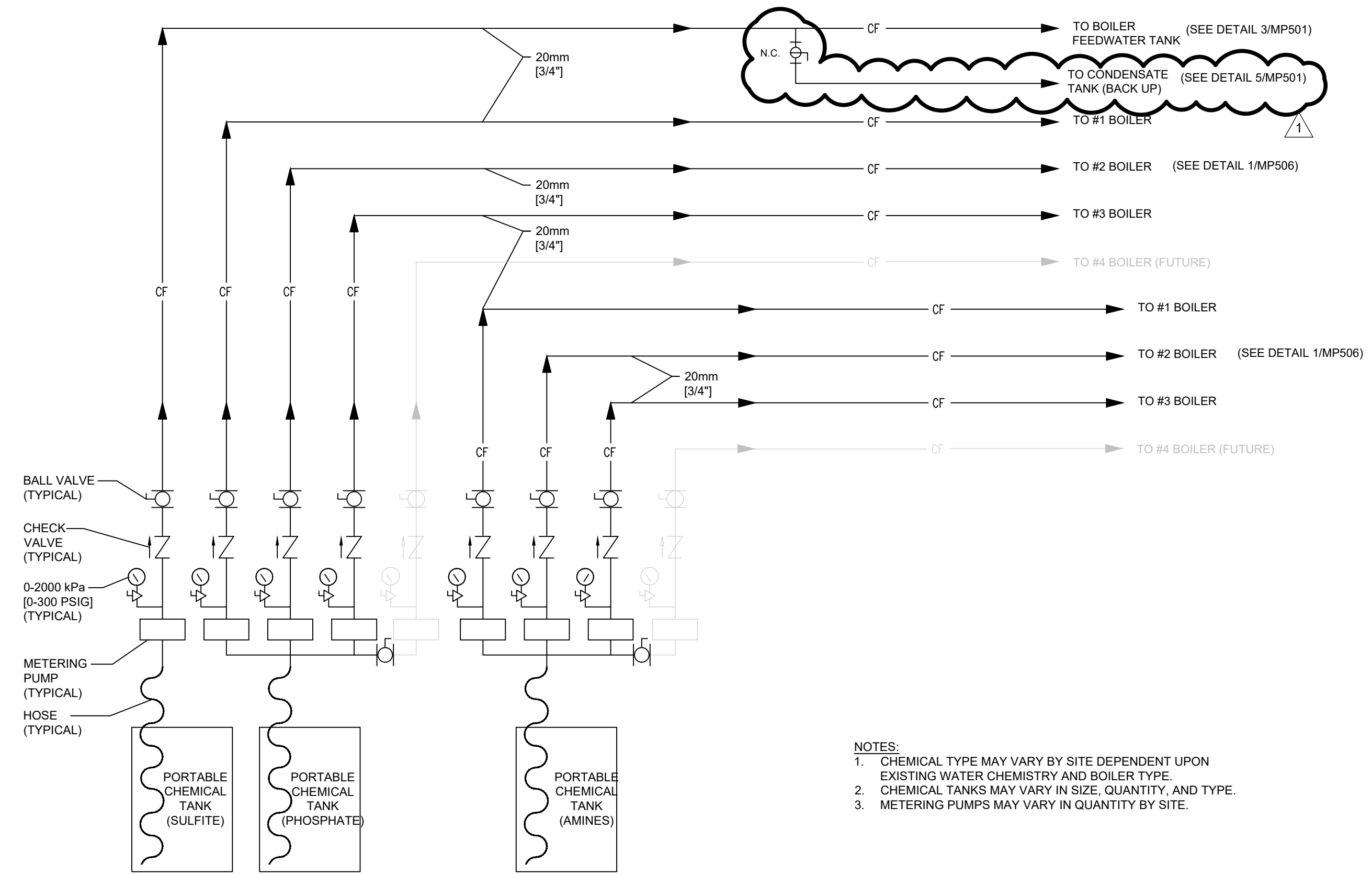
Drawing Number

MP502



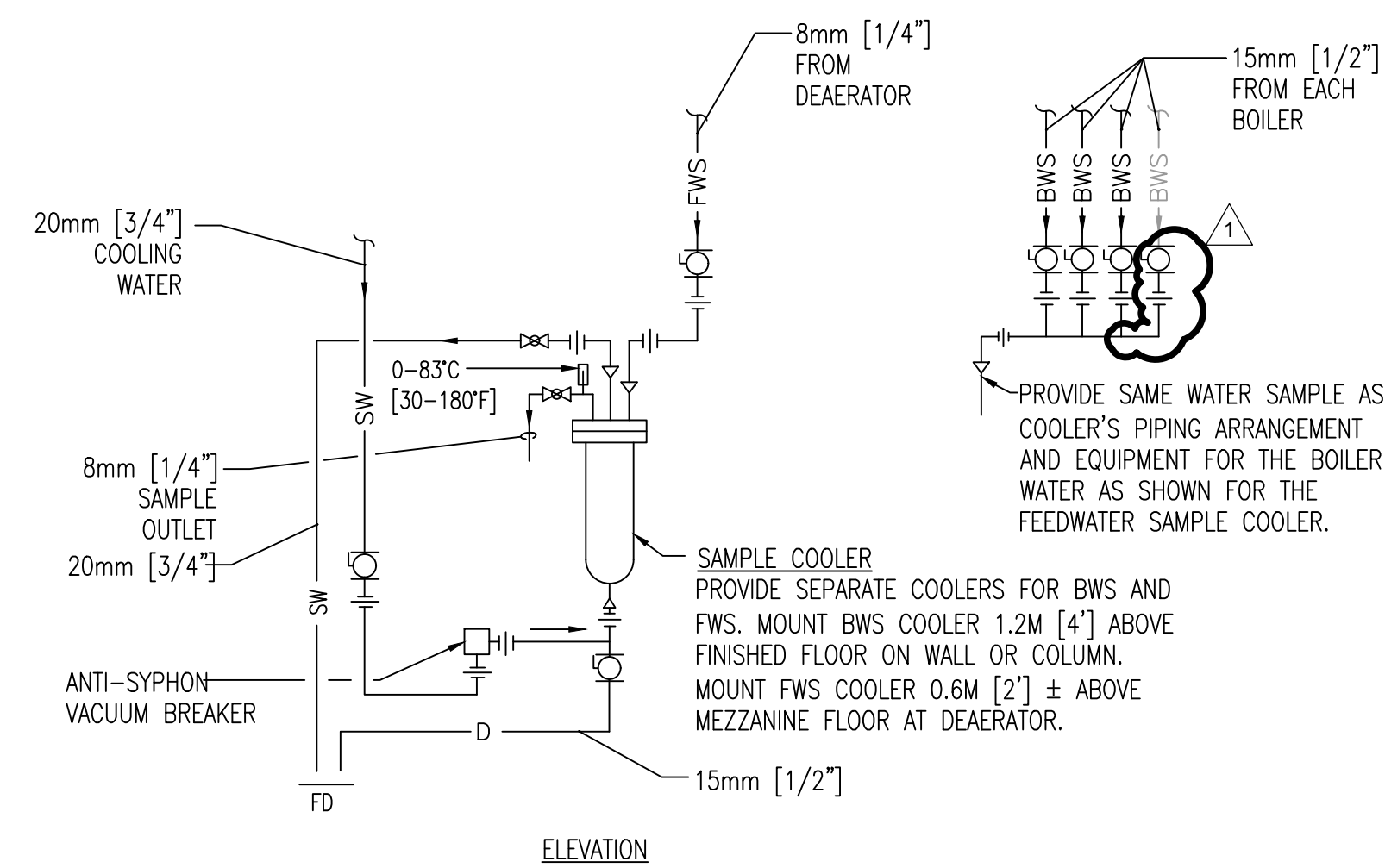
- NOTES:
1. SEE FLOOR PLANS FOR PIPE SIZES.
 2. SEE EQUIPMENT SCHEDULES FOR VALVE DATA AND PIPE SIZES. INSTALL VALVES AS RECOMMENDED BY MANUFACTURER.
 3. BYPASS WILL BE SIZED TO MEET THE COMBINED CAPACITY OF THE TWO PRV'S.
 4. PROVIDE NECESSARY UNIONS FOR THE REMOVAL OF VALVE WITH THREADED CONNECTIONS.
 5. SLOPE PILOT CONTROL LINE FROM THE PRESSURE REDUCING VALVE TO DOWNSTREAM STEAM PIPING. MIN SLOPE WILL BE 25mm/300mm (1/12").
 6. PROVIDE MINIMUM 5 PIPE DIAMETERS STRAIGHT PIPE UPSTREAM AND MINIMUM 10 PIPE DIAMETER STRAIGHT PIPE DOWNSTREAM OF ALL PRV'S.
 7. ALL UPSTREAM REDUCERS WILL BE ECCENTRIC IF REQUIRED.
 8. DOWNSTREAM SAFETY RELIEF VALVE WILL BE SIZED TO MEET THE COMBINED CAPACITY OF THE TWO PRV'S.

1 STEAM PRESSURE REDUCING STATION DOUBLE VALVE (1/3 AND 2/3)
NTS

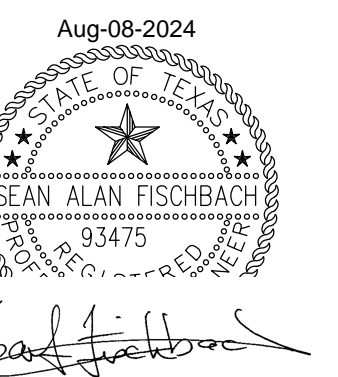


- NOTES:
1. CHEMICAL TYPE MAY VARY BY SITE DEPENDENT UPON EXISTING WATER CHEMISTRY AND BOILER TYPE.
 2. CHEMICAL TANKS MAY VARY IN SIZE, QUANTITY, AND TYPE.
 3. METERING PUMPS MAY VARY IN QUANTITY BY SITE.

2 CHEMICAL FEED SYSTEM - PUMPED TYPE
NTS



3 WATER SAMPLE COOLERS BOILER WATER AND FEEDWATER
NTS



| Revisions: | Date: |
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| Addendum 1 | 08-09-2024 |
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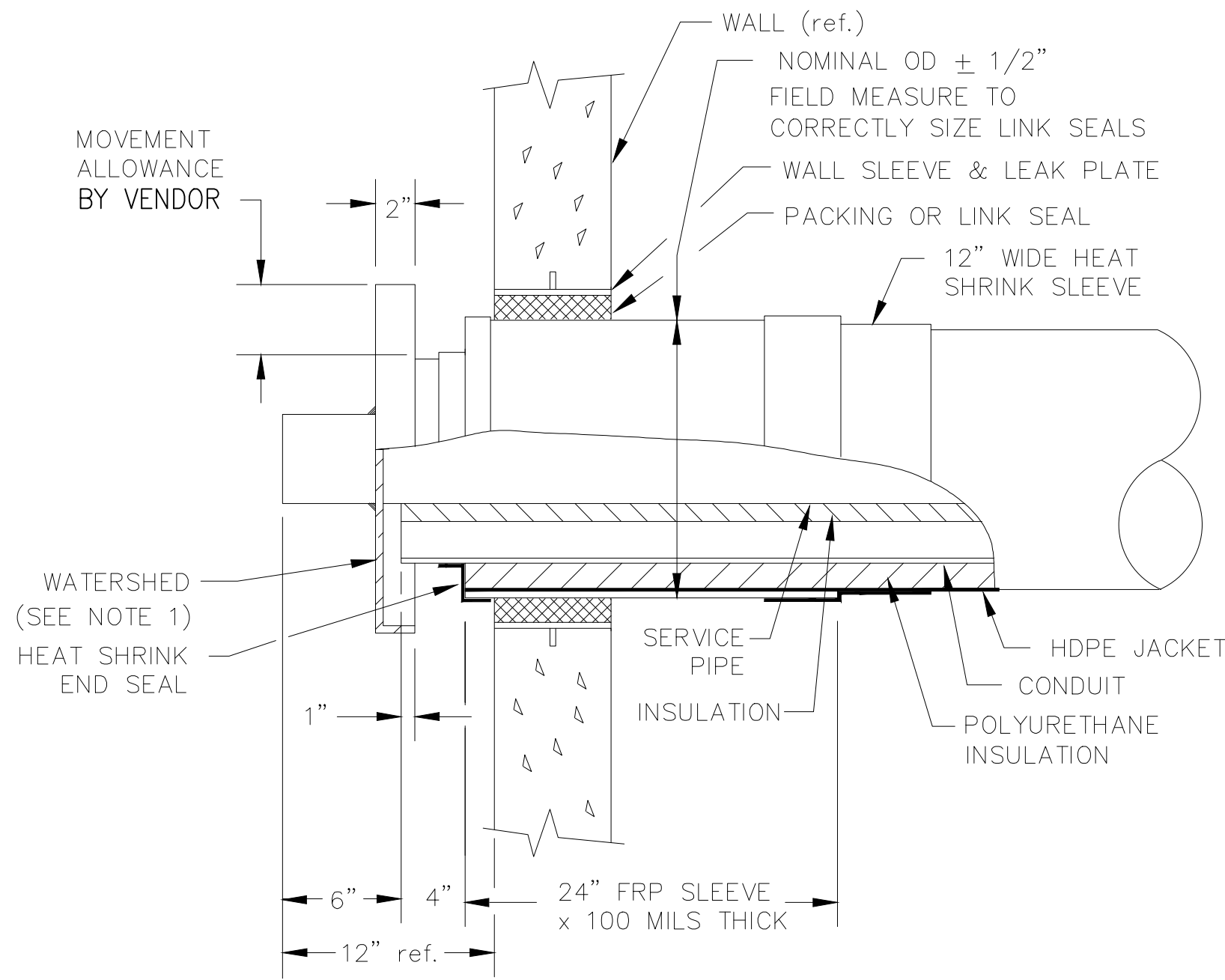
438-22-900

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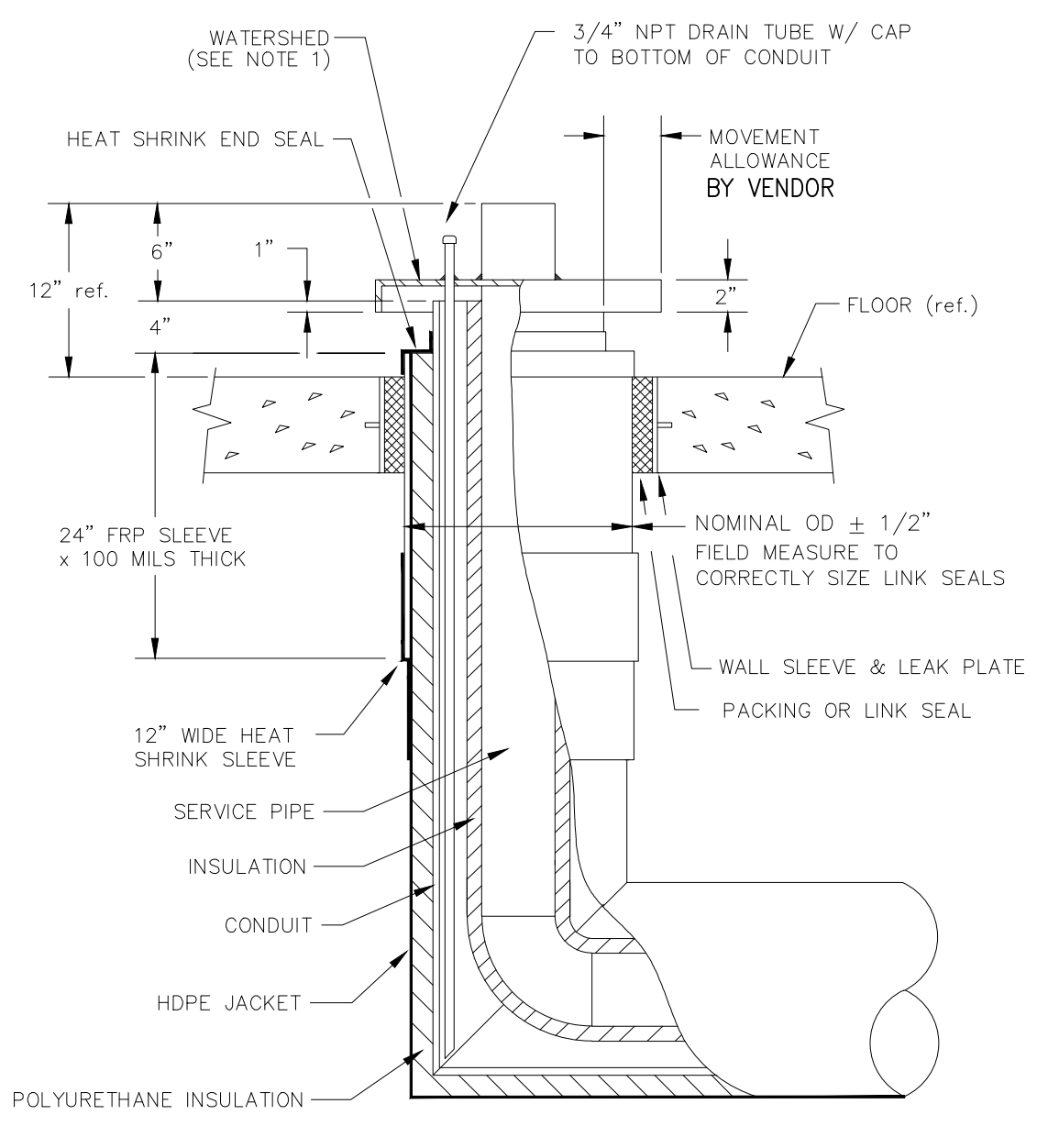
MP503



- NOTE:
1. WATERSHED, SHIPPED LOOSE, WELDED TO SERVICE PIPE BY INSTALLER AFTER FINAL CONDUIT PRESSURE TEST
 2. WALL SLEEVES AND LEAK PLATES BY OTHERS.
 3. PACKING OR LINK SEALS BY OTHERS.

1 SINGLE PIPE, WATERSHED, FRP REINFORCED, WALL PENETRATION DETAIL

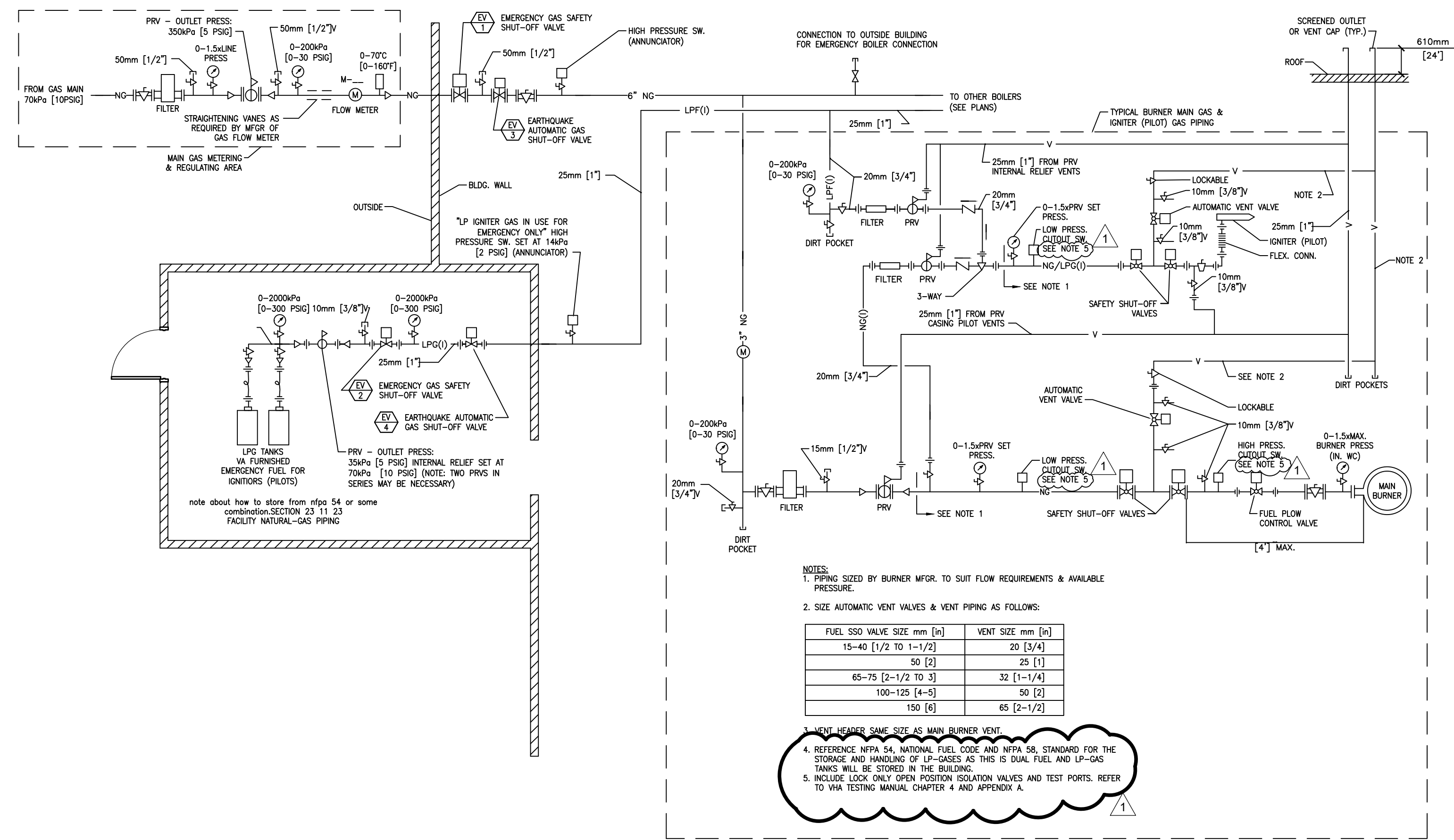
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- NOTE:
1. WATERSHED, SHIPPED LOOSE, WELDED TO SERVICE PIPE BY INSTALLER AFTER FINAL CONDUIT PRESSURE TEST
 2. WALL SLEEVES AND LEAK PLATES BY OTHERS.
 3. PACKING OR LINK SEALS BY OTHERS.

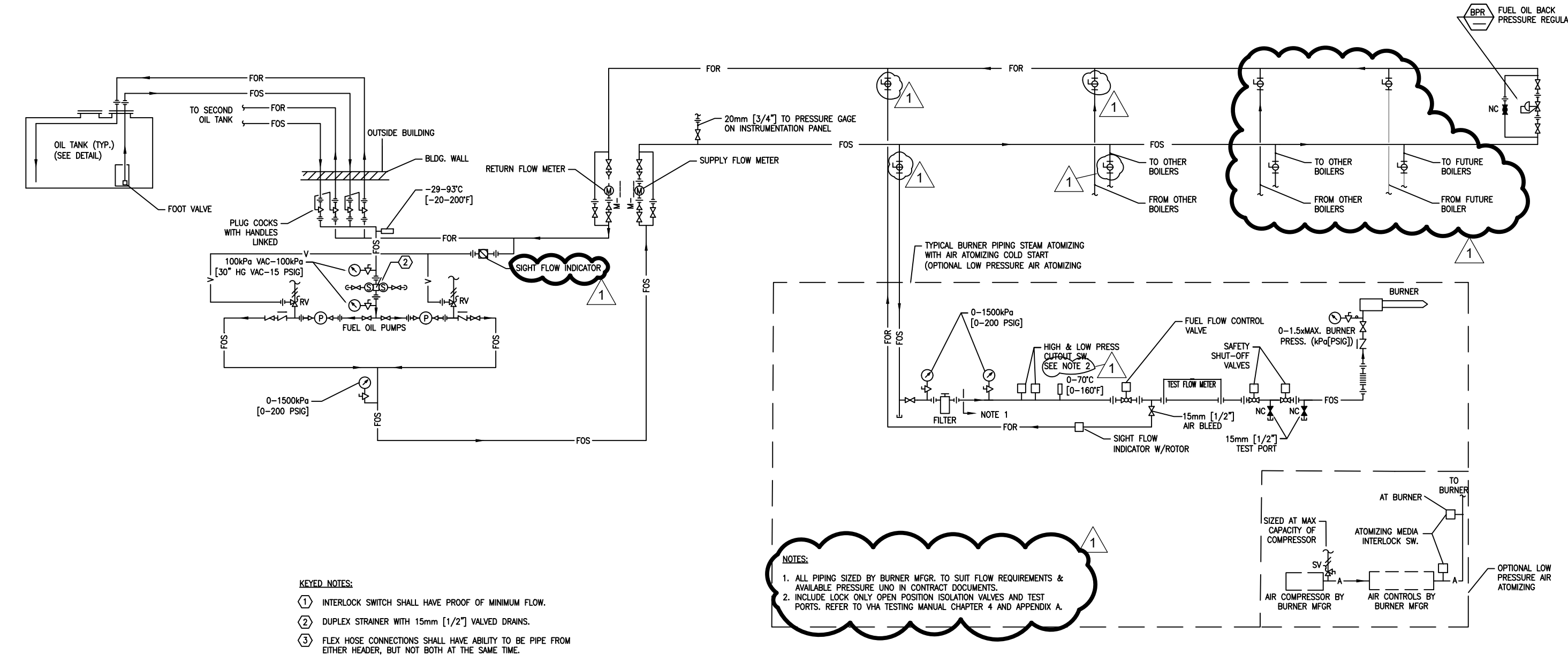
2 SINGLE PIPE, WATERSHED, FRP REINFORCED, FLOOR PENETRATION DETAIL

NTS



3 NATURAL GAS AND LIQUIFIED PETROLEUM GAS - BURNER AND IGNITER FUEL STANDARD PIPING DIAGRAM

NTS



4 NO. 2 BURNER FUEL OIL SYSTEMS - STANDARD PIPING DIAGRAM BURNER FUEL OIL SYSTEMS

NTS



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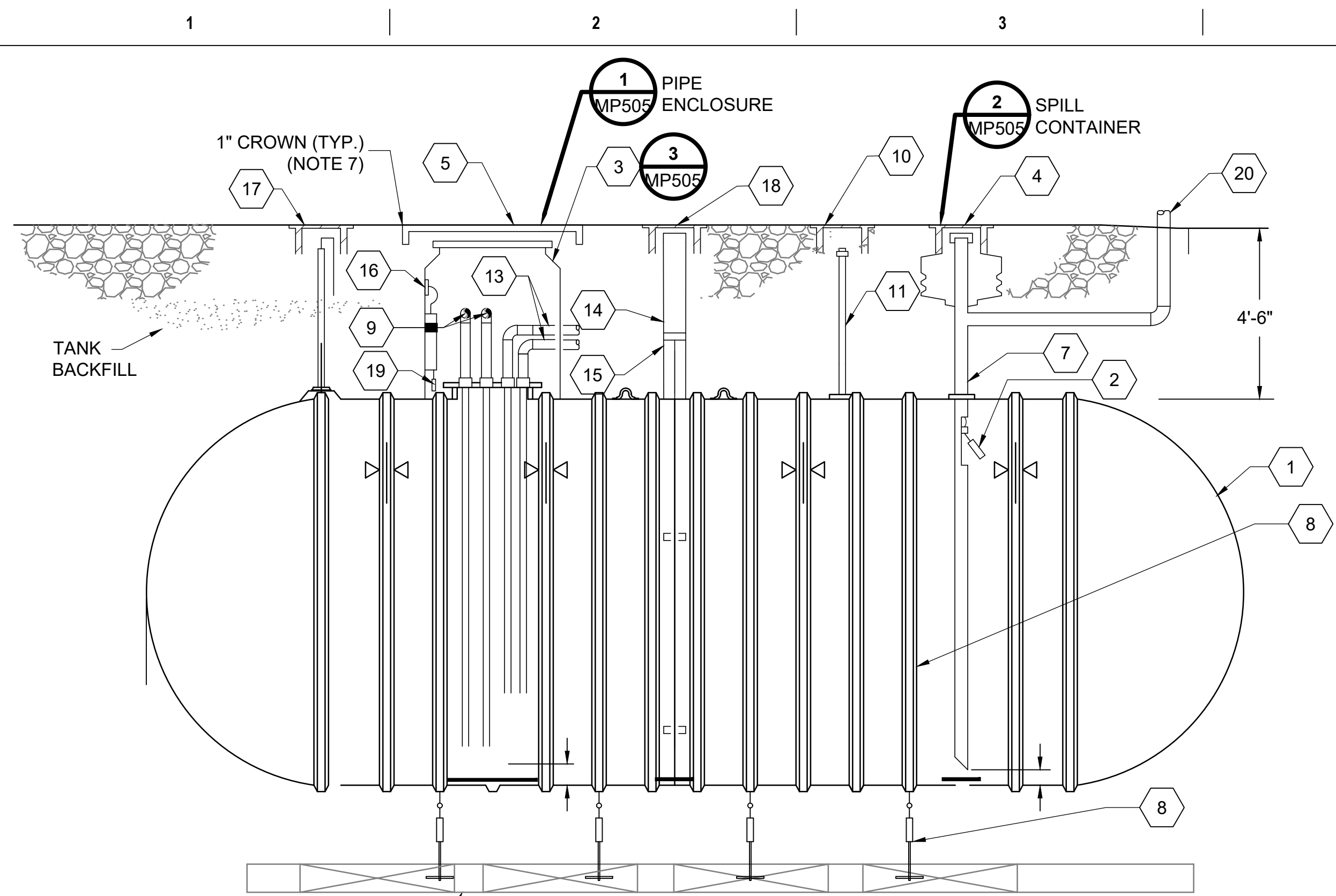
438-22-900

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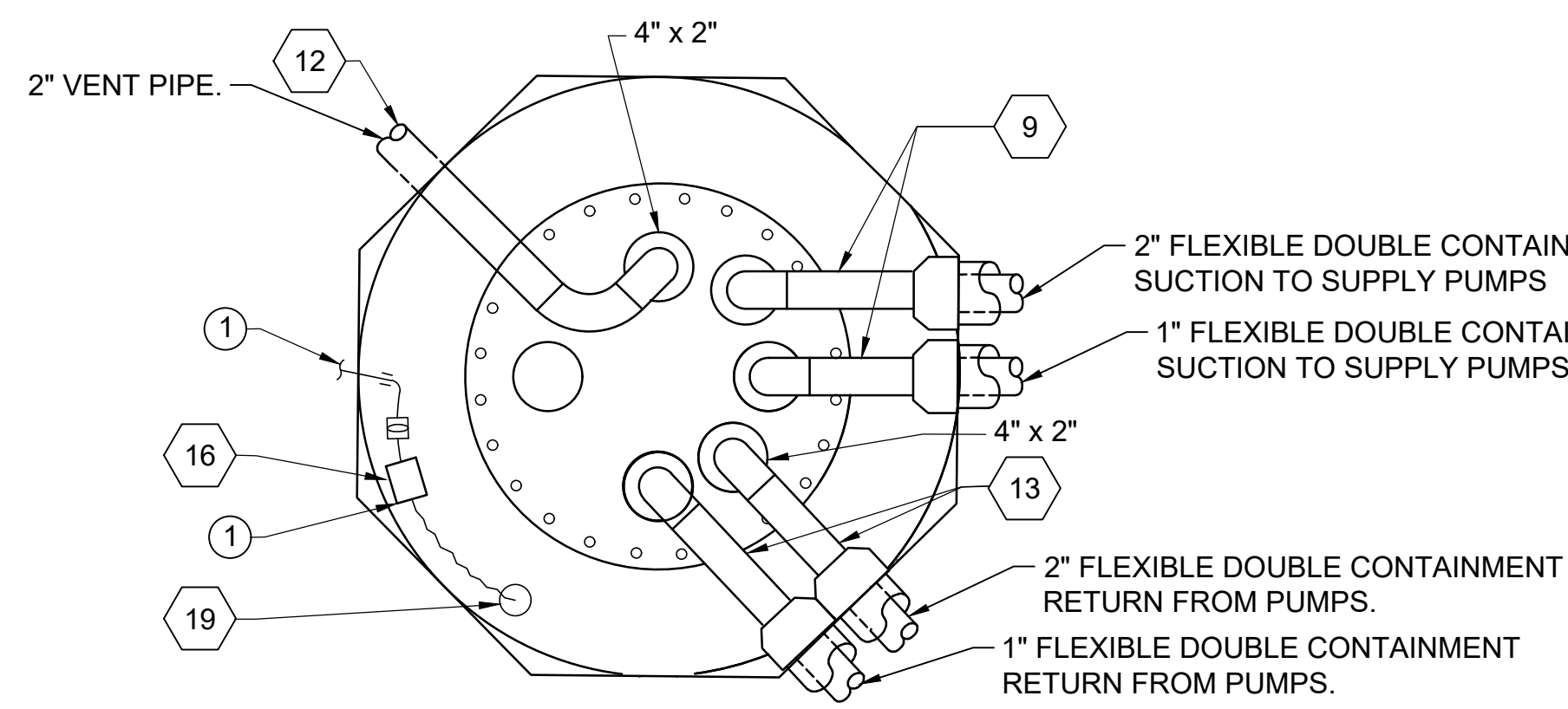
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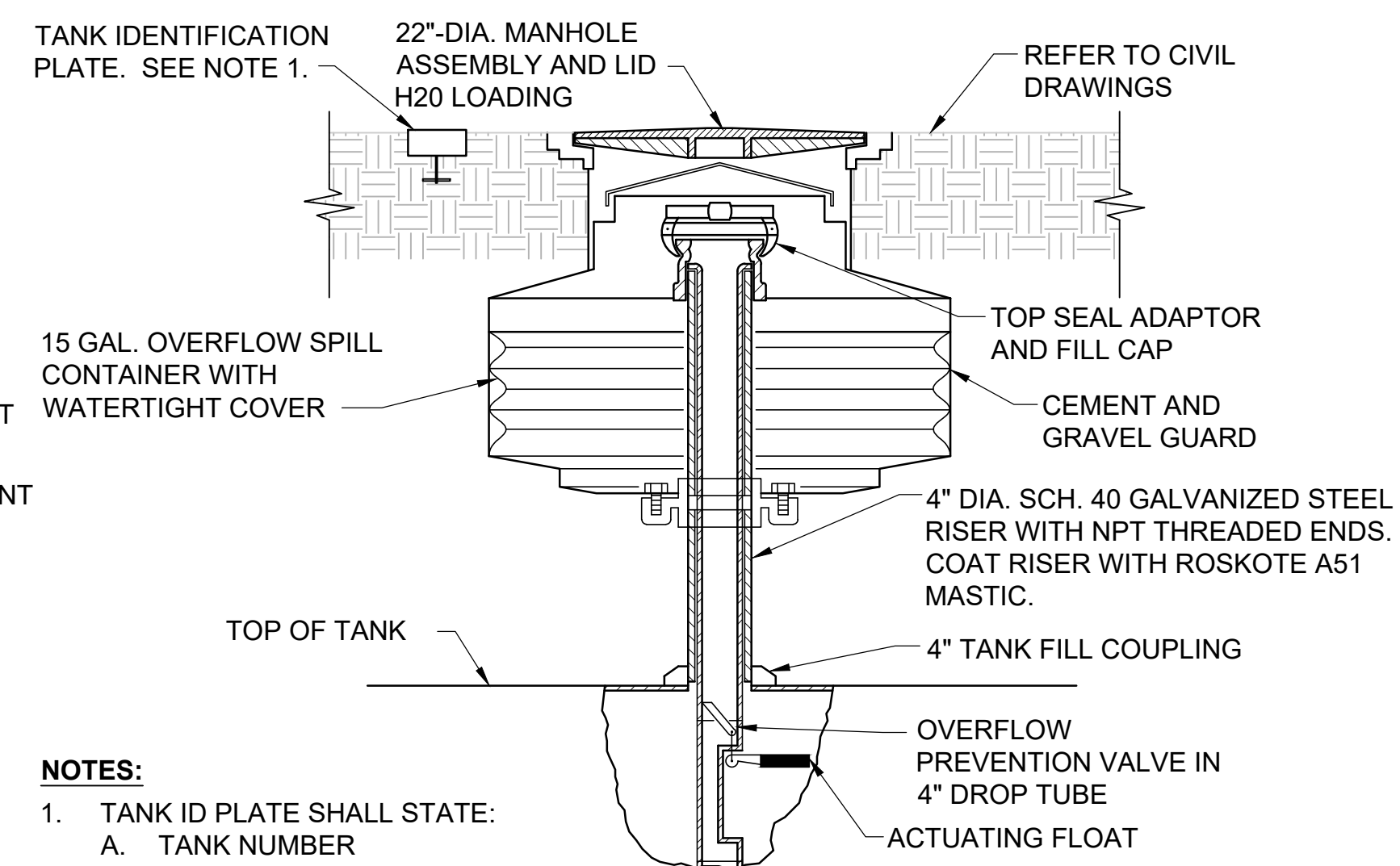
- NOTES:**
- TANK VENT LINE NOT SHOWN FOR CLARITY PURPOSES.
 - REFER TO CIVIL DRAWINGS FOR TANK INSTALLATION DETAILS.

SECTION
40,000 GALLON UNDERGROUND
DOUBLE WALLED DIESEL
STORAGE TANK SECTION
 NOT TO SCALE



- EQUIPMENT NOTE:**
- REFER TO ELECTRICAL DRAWINGS FOR CONDUIT AND CIRCUIT INFORMATION.

DETAIL
DOUBLE WALLED PIPE
ENCLOSURE DETAIL
 NOT TO SCALE

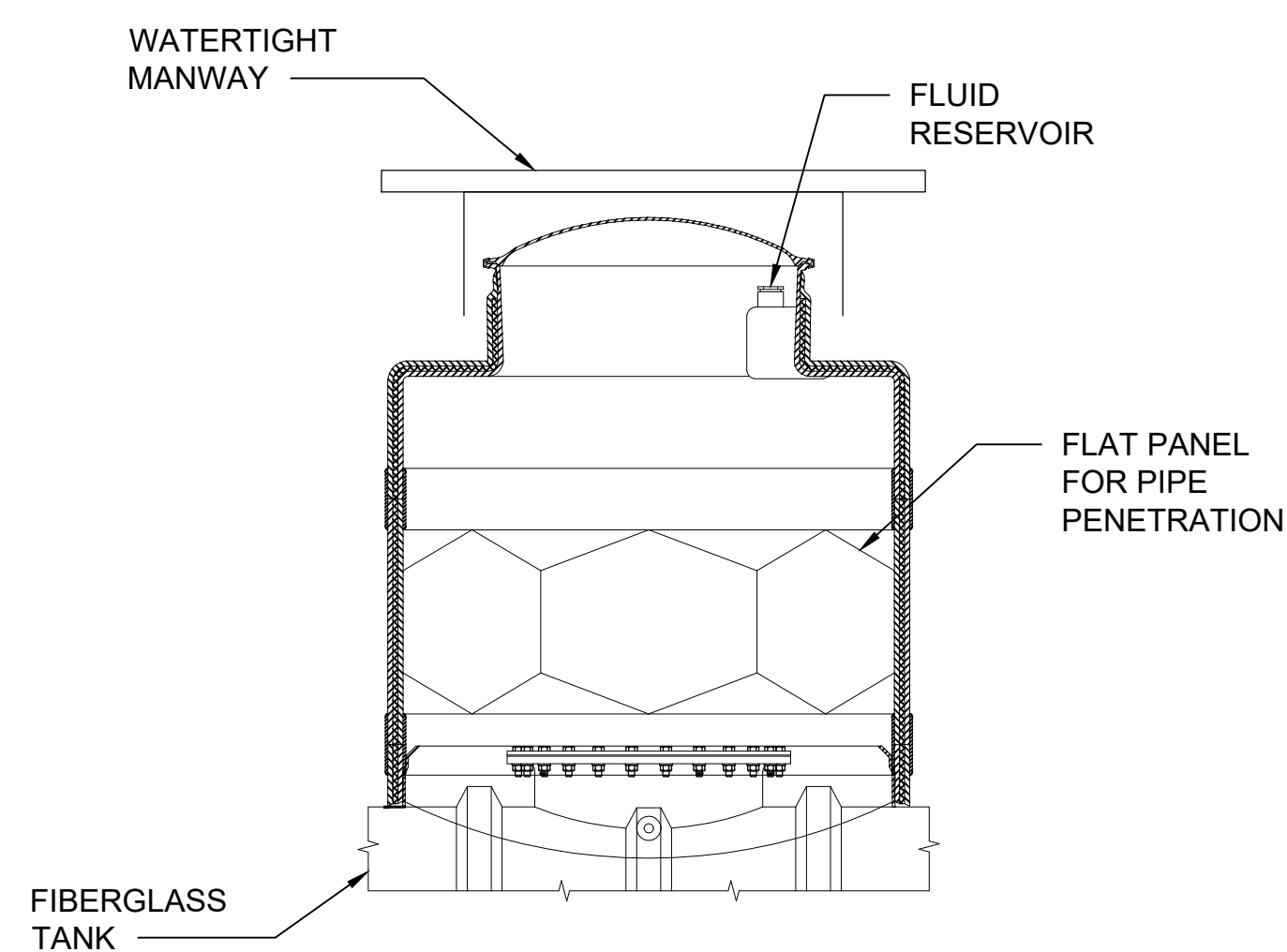


- NOTES:**
- TANK ID PLATE SHALL STATE:
 A. TANK NUMBER
 B. TANK PRODUCT
 C. TANK VOLUME
 D. DATE INSTALLED
 - PLATE SHALL BE CONSTRUCTED OF BRONZE, WITH 1/2" HIGH LETTERING AND ANCHOR.
 - DIESEL FUEL TANK FILL PORT SHALL BE 4" DIA.
 - PAINT 22" DIA. MANHOLE LID YELLOW PER API.

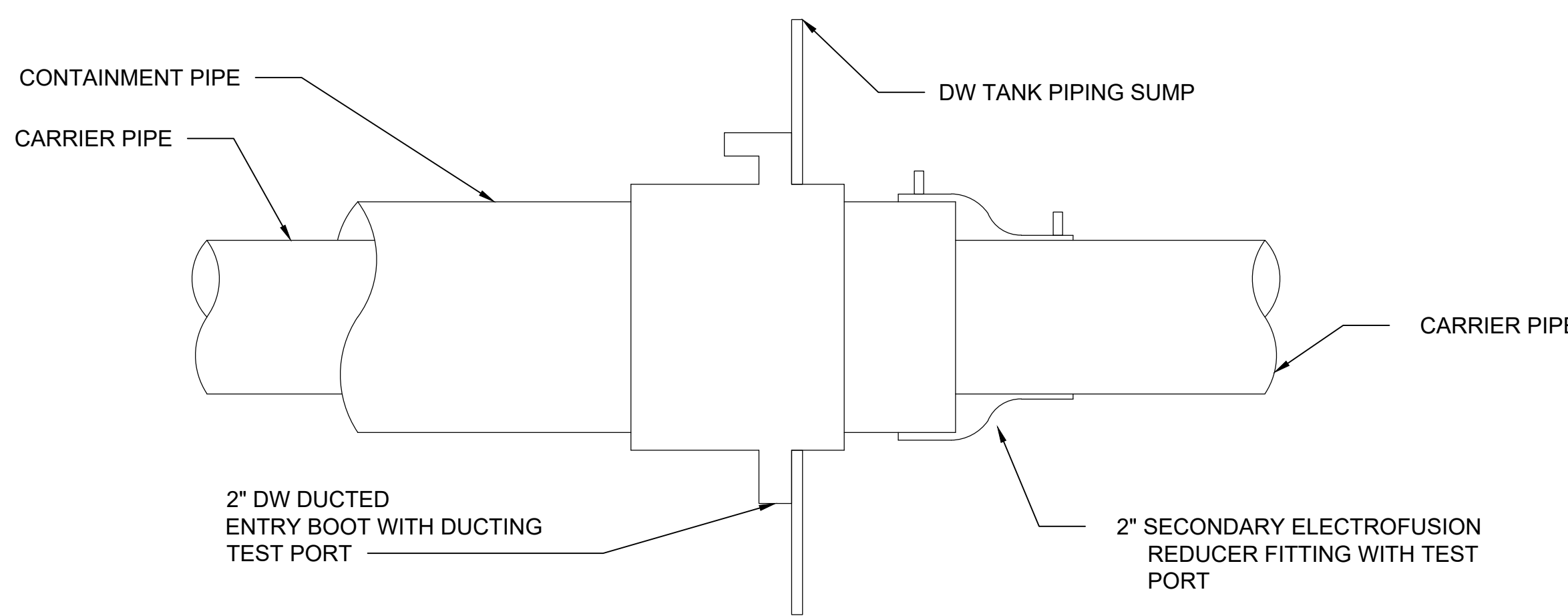
DETAIL
DOUBLE WALLED SPILL
CONTAINMENT/OVERFLOW
PREVENTION DETAIL
 NOT TO SCALE

- GENERAL NOTES:**
- UNDERGROUND DOUBLE CONTAINMENT FIBERGLASS PIPING SHALL BE FIBERGLASS SYSTEMS "U.L. LISTED".
 - SUBCONTRACTOR TO PROVIDE CONTRACTOR WITH COMPLETED INSTALLATION CHECKLIST PROVIDED BY TANK SUPPLIER.
 - ASPHALT-COAT ALL UNDERGROUND STEEL WIRE ROPE AND TURN BUCKLES, WITH ROSKOTE MASTIC A-5.
 - FIELD-MODIFY HEIGHT OF PIPE SUMP ENCLOSURE AS REQUIRED.
 - UNDERGROUND RISERS ON THE DIESEL TANK SHALL BE GALVANIZED STEEL AND ASPHALT COATED WITH ROSKOTE MASTIC A51 FOR CORROSION PROTECTION.
 - SEE CIVIL DRAWINGS FOR GEOTEXTILE FABRIC, BACKFILL MATERIAL SPECIFICATIONS AND GENERAL CIVIL REQUIREMENTS.
 - ALL TANK MANHOLES SHALL HAVE THE CONCRETE SLOPED AWAY WITH A MINIMUM 1-INCH CROWN. SEE CIVIL DRAWINGS FOR DETAIL.

- KEYED NOTE:**
- FIBERGLASS DOUBLE WALL TANK WITH 42"Ø PIPING SUMP COLLAR AND 22"Ø CUSTOM MANWAY LID. TANK SHALL BE SUBCONTRACTOR FURNISHED AND INSTALLED. REFER TO CIVIL DRAWINGS
 - OVERFILL PREVENTION VALVE AND DROPTUBE: CUT DROPTUBE TO APPROPRIATE LENGTHS.
 - DOUBLE WALLED PIPE ENCLOSURE: FIBERGLASS WITH 42"Ø WORKSPACE 32"Ø LID, SIZED TO HOLD EQUIPMENT AND PIPING AS SHOWN.
 - DOUBLE WALLED SPILL CONTAINER: GRADE LEVEL TYPE WITH RAIN TIGHT COVER FOR H-20 LOADING.
 - PIPING SUMP ACCESS MANHOLE: H-20 LOADING LID AND FRAME (42" Ø THROAT).
 - TANK HOLD DOWN ANCHORS. REFER TO CIVIL DRAWINGS.
 - TANK FILL CONNECTION: PROVIDE WITH TOP SEAL ADAPTER AND TOP SEAL CAP. 4 INCH GALVANIZED STEEL RISER PIPE. PROVIDE ROSKOTE MASTIC A51 COAT ON EXPOSED STEEL.
 - STRAPS FURNISHED BY TANK MANUFACTURER.
 - SUCTION PIPE TO FUEL OIL PUMPS.
 - STICK GAUGE ACCESS MANHOLE. CAST IRON FRAME AND LID. H-20 LOADING.
 - 4" GALVANIZED STEEL RISER PIPE. PROVIDE ROSKOTE MASTIC A51 COAT ON EXPOSED STEEL THREADED PIPE CAP.
 - 2" VAPOR VENT PIPING TO RACK.
 - RETURN PIPING FROM BOILERS AND GENERATOR.
 - 4"Ø SCHEDULE 40 GALVANIZED STEEL PIPE RISER. INSTALL RISER CAP, STRAIN RELIEF CHAIN AND CONNECT PROBE CABLE TO JUNCTION BOX. PROVIDE MASTIC COAT OF EXPOSED STEEL.
 - ATG INVENTORY PROBE MUST BE COMPATIBLE WITH TANK MONITORING SYSTEM. INSTALL PER MANUFACTURER'S INSTRUCTION. PROVIDE WATER LEVEL DETECTION FLOATS FOR THE DIESEL TANK ATG PROBES.
 - WEATHERPROOF JUNCTION BOX (16 CU. IN. MIN.) FOR PROBE WITH 3/4" NPT THREADS.
 - LEAK DETECTION SENSOR FOR INTERSTITIAL SPACE AND 22" DIAMETER MANHOLE. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
 - 18" DIAMETER MANHOLE WITH H-20 RATED LID.
 - LEAK DETECTION SENSOR FOR INTERIOR OF PIPING SUMP. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
 - DOUBLE WALL PIPING TO REMOTE FILL STATION. REFER TO CIVIL DRAWINGS FOR LOCATION OF REMOTE FILL. ROUTE BELOW GRADE TO REMOTE FILL STATION IN DOUBLE WALL PIPING.

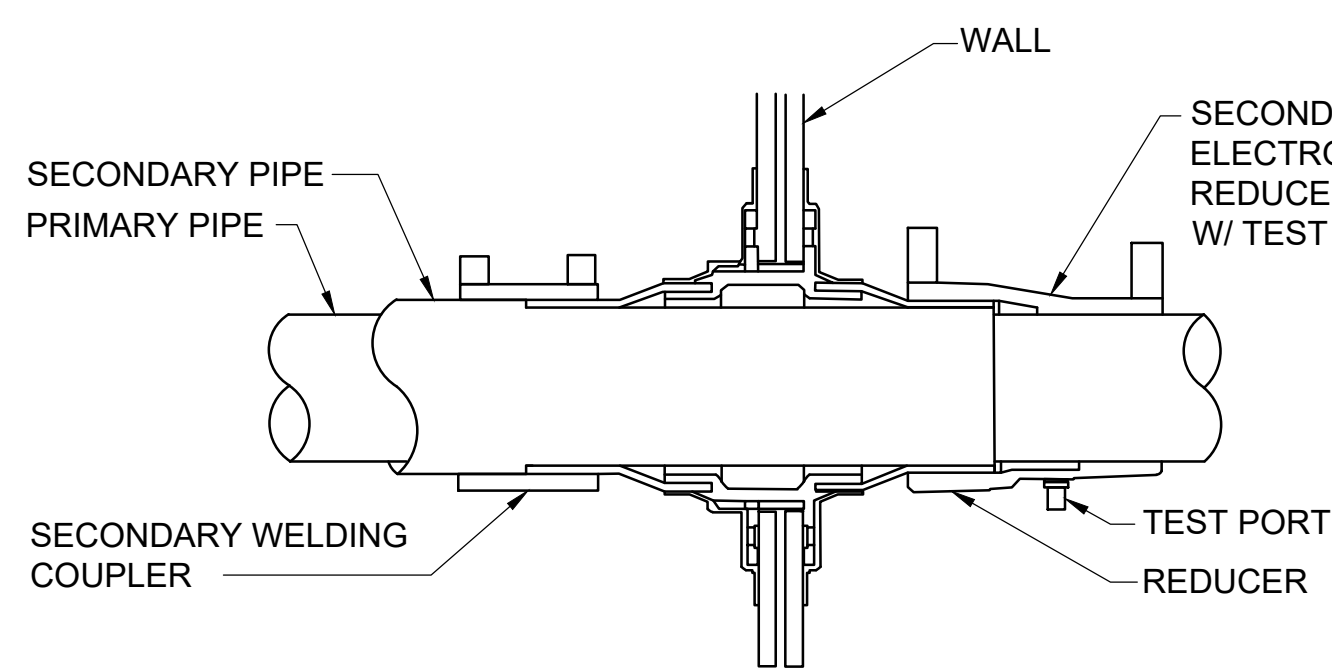


DETAIL
DOUBLE WALL TANK MANWAY
CONTAINMENT SUMP
 NOT TO SCALE



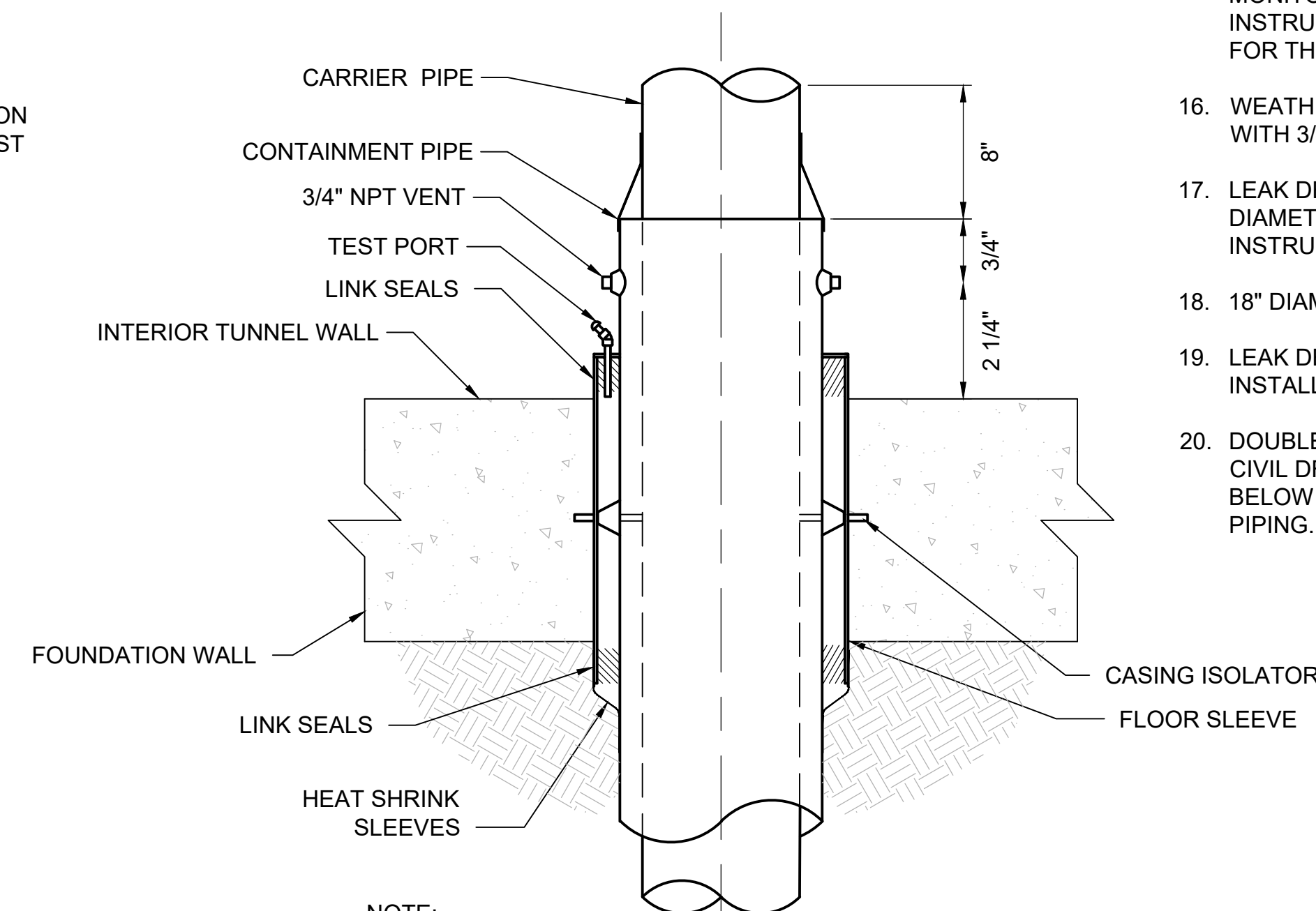
- NOTE:**
- ALL FITTINGS FOR 2" FLEXIBLE DOUBLE CONTAINMENT PIPING ARE PRE-MANUFACTURED AT THE FACTORY.

DETAIL
2\"/>



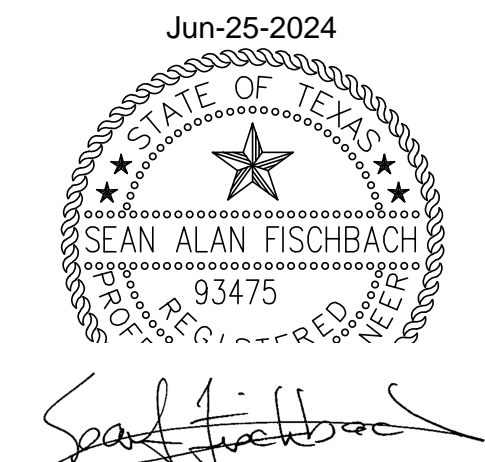
- NOTES:**
- INSTALL PER MANUFACTURERS INSTRUCTIONS.
 - ALL FITTINGS FOR 2" FLEXIBLE DOUBLE CONTAINMENT PIPING ARE PRE-MANUFACTURED AT THE FACTORY.

DETAIL
ELECTROFUSION FIBERGLASS
ENTRY BOOT
 NOT TO SCALE



- NOTE:**
- DRAIN PLUG SHALL BE LEFT OUT AFTER PNEUMATIC TESTING TO ALLOW FOR LEAK DETECTION OF INTERSTITIAL SPACE TO OPERATE. PROVIDE PLUG TO OWNER.

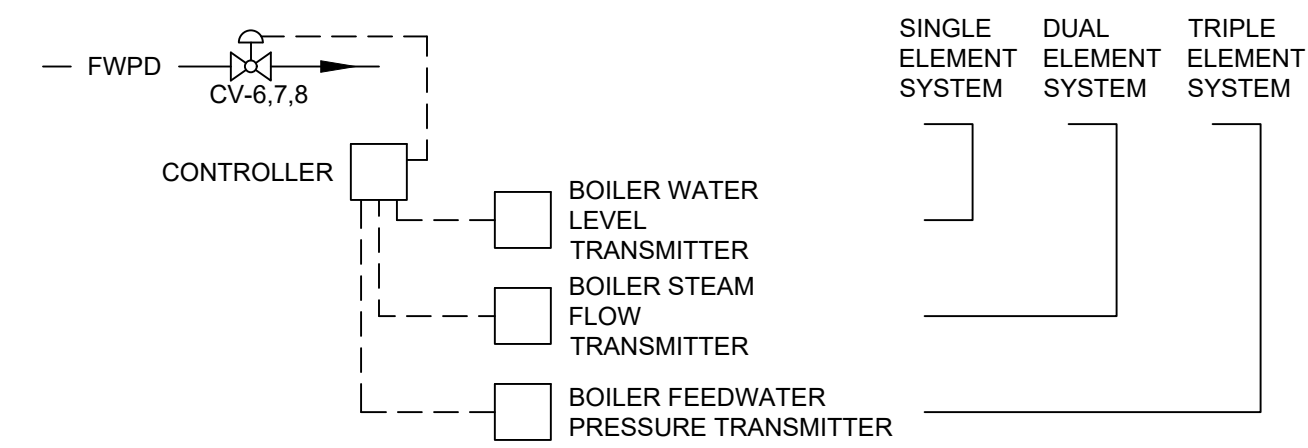
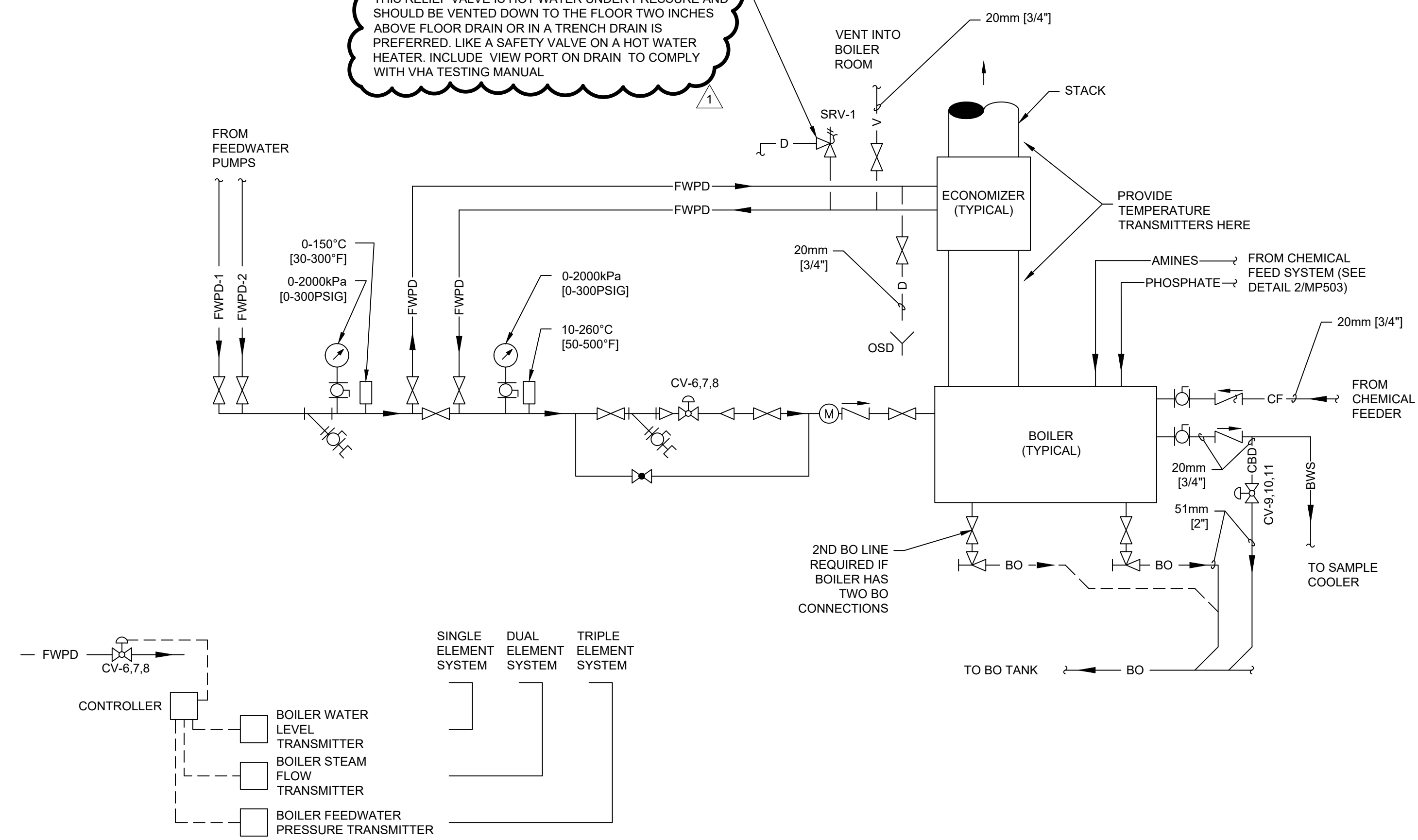
DETAIL
TYPICAL FLOOR PIPE AND CONDUIT
PENETRATION
 NOT TO SCALE



Signature of Sean Alan Fischbach

| | | | | | | | | |
|------------|-------|---|---|---|---------------------------------|---|---|------------------------------|
| Revisions: | Date: | CONSULTANT <small>Burns & McDonnell Engineering Company, Inc. 9450 WARD PARKWAY, KANSAS CITY, MO</small> | ARCHITECT/ENGINEER OF RECORD <small>Architecture Engineering Design-Build 200 Envoy Circle, Suite 201, Louisville, KY 40299 www.paradigmusa.com</small> | STAMP Office of Construction and Facilities Management | Drawing Title PIPING DETAILS | Phase 100% CONSTRUCTION DOCUMENTS | Project Title SIOUX FALLS BOILER PLANT | Project Number 438-22-900 |
| | | | | | Approved: | Location VAMC-Sioux Falls: 2501 W 22nd St. Sioux Falls, SD 57105 | Building Number 12 | Drawing Number MP505 |

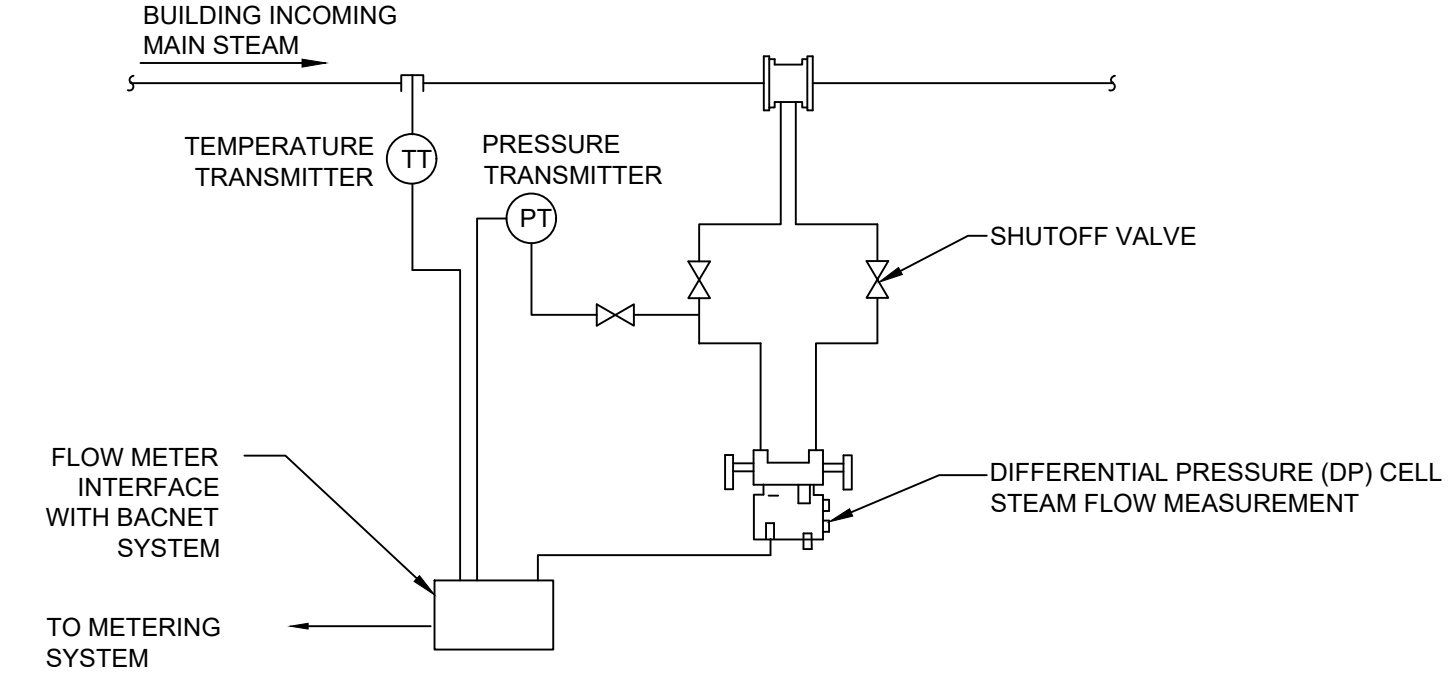
THIS RELIEF VALVE IS HOT WATER UNDER PRESSURE AND SHOULD BE VENTED DOWN TO THE FLOOR TWO INCHES ABOVE FLOOR DRAIN OR IN A TRENCH DRAIN IS PREFERRED. LIKE A SAFETY VALVE ON A HOT WATER HEATER, INCLUDE VIEW PORT ON DRAIN TO COMPLY WITH VHA TESTING MANUAL.



BOILER WATER LEVEL CONTROL SCHEMATIC (SEE SPECS FOR TYPE OF SYSTEM)

1 BOILER FEEDWATER / BLOWDOWN FLOW DIAGRAM

NTS

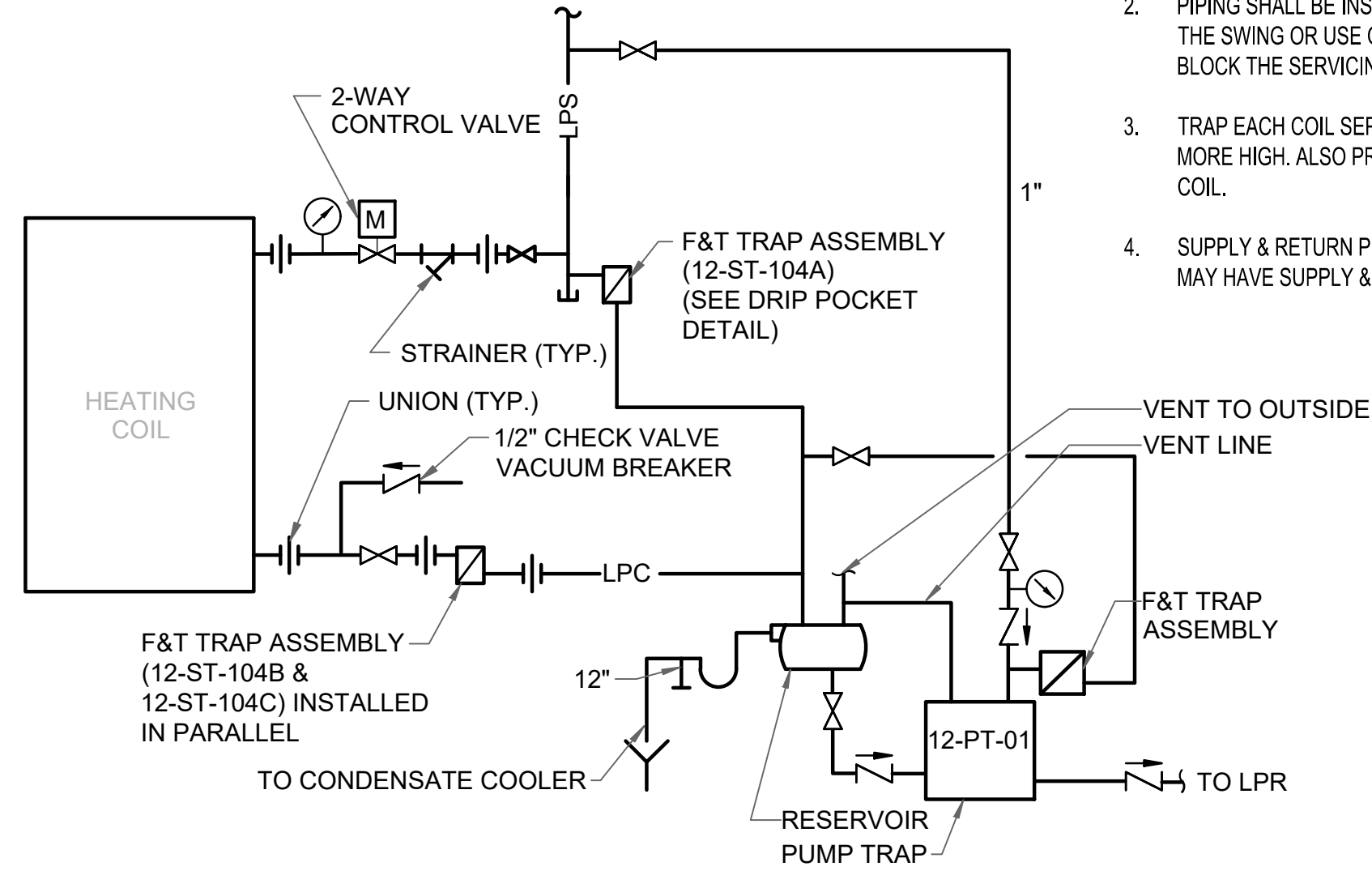


NOTE: MAINTAIN UPSTREAM AND DOWN STREAM DISTANCES RECOMMENDED BY METER MANUFACTURERS

2 STEAM METER DETAIL

NTS

- NOTES: 1. WHEN COIL IS INCLUDED IN CASING MOUNTED ON VIBRATION ISOLATOR UNITS... 2. PIPING SHALL BE INSTALLED IN SUCH MANNER THAT IT WILL NOT BLOCK THE SWING OR USE OF ACCESS DOORS OR PANELS... 3. TRAP EACH COIL SEPARATELY WHEN INSTALLED IN A BANK OF TWO OR MORE HIGH... 4. SUPPLY & RETURN PIPES ARE SHOWN FROM SAME END...



3 HEATING COIL PUMP TRAP (AHU-1)

NTS

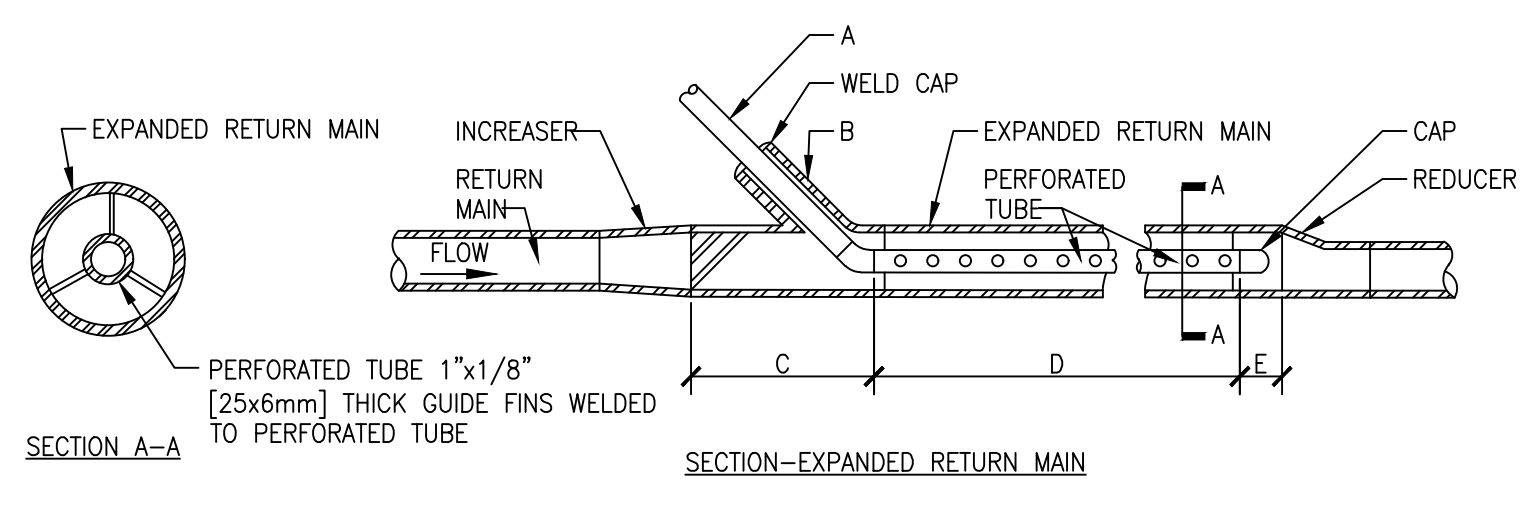


Table with dimensions for trap discharge line, expanded main ahead of trap, and expanded return main following trap.

Table with return main and expanded return main sizes for different flow rates.

- NOTES: 1. 15mm [1/2"] PERFORATED TUBE SHALL HAVE 40 - 16mm [1/8"] DIAMETER HOLES SPACED 40mm [1-1/2"] O.C. IN 4 ROWS. 2. 20mm [3/4"] PERFORATED TUBE SHALL HAVE 78 - 6mm [1/8"] DIAMETER HOLES SPACED 40mm [1-1/2"] O.C. IN 6 ROWS. 3. HOLES IN TUBE SHALL BE SPACED EQUALLY AROUND PERIMETER.

4 HIGH PRESSURE STEAM TRAP DISCHARGE INTO PUMPED CONDENSATE RETURN LINE

NTS

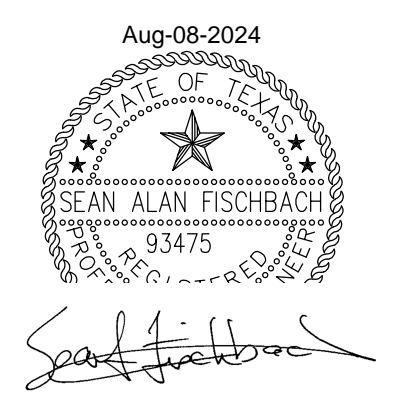


Table for Addendum 1 with date 08-09-2024 and a Revisions section.

CONSULTANT logo for Burns & McDonnell, including address and company name.

ARCHITECT/ENGINEER OF RECORD logo for paradigm Architecture | Engineering | Design-Build.

STAMP area for the Office of Construction and Facilities Management.

Drawing Title: PIPING DETAILS. Includes Approved signature line and VA logo.

Phase: 100% CONSTRUCTION DOCUMENTS. Includes Fully Sprinklered status.

Project information table including Project Title (SIOUX FALLS BOILER PLANT), Project Number (438-22-900), Building Number (12), Location (VAMC-Sioux Falls), Issue Date (06/25/2024), Checked (BDI), Drawn (MFM), and Drawing Number (MP506).

BOILER PLANT - FIRE TUBE STEAM BOILER SCHEDULE, PACKAGED TYPE, SHOP ASSEMBLED

Table with columns: MARK, LOCATION, AREA AND/OR BLDG SERVED, MAN./MODEL (BASIS OF DESIGN), TYPE, MAX CONTINUOUS RATING (MCR) AT OPERATING PRESSURE, OPERATING PRESS, MAWP, RELIEF VALVE 1 SETTING, RELIEF VALVE 2 SETTING, OIL ATOM COMPRESS MOTOR (POWER, PHASE, VOLT), FD FAN MOTOR (POWER, PHASE, VOLT), NOTES.

- NOTES: 1. STEAM QUALITY IS 99% MINIMUM. 2. DESIGN PRESSURE IS 200 PSIG [1378 kPa] MINIMUM. 3. FEEDWATER TEMPERATURE IS 212 °F [100 °C] MINIMUM, AND 228 °F [109 °C] NORMAL. 4. FOR STEAM NOZZLE FORCES AND MOMENTS, SEE DRAWING # MP103. 5. ALTITUDE IS 1453 FT [M] ABOVE SEA LEVEL. 6. 10:1 BOILER TURNDOWN. 7. NOX 30 PPM. 8. THERE SHALL BE 5 PSIG [35 kPa] BETWEEN SAFETY VALVES. 9. MOTOR HP IS ESTIMATED, REFER TO SPECIFICATION FOR REQUIRED MINIMUM EFFICIENCY. 10. REFER TO FIRE TUBE BOILER SPECIFICATION 23 52 39.

- NOTES: 1. ALL ITEMS THAT REQUIRE ACCESS, SUCH AS FOR OPERATING, CLEANING, SERVICING, MAINTENANCE, AND CALIBRATION, SHALL BE EASILY AND SAFELY ACCESSIBLE BY PERSONS STANDING AT FLOOR LEVEL, OR STANDING ON PERMANENT PLATFORMS, WITHOUT THE USE OF PORTABLE LADDERS. EXAMPLES OF THESE ITEMS INCLUDE, BUT ARE NOT LIMITED TO: ALL TYPES OF VALVES, FILTERS AND STRAINERS, TRANSMITTERS, CONTROL DEVICES. PRIOR TO COMMENCING INSTALLATION WORK, REFER CONFLICTS BETWEEN THIS REQUIREMENT AND CONTRACT DOCUMENTS TO THE COR FOR RESOLUTION. FAILURE OF THE CONTRACTOR TO RESOLVE, OR POINT OUT ANY ISSUES WILL RESULT IN THE CONTRACTOR CORRECTING AT NO ADDITIONAL COST OR TIME OF THE GOVERNMENT.

BOILER PLANT - DEAERATOR SCHEDULE

Table with columns: TAG, LOCATION, MAN./MODEL (BASIS OF DESIGN), TYPE, TANK CAPACITY (GAL), MAWP (PSIG), BOILER FEED PUMPS (PUMP QTY, FLOW (GPM), TDH (FT), SPEED (RPM), MOTOR HP (EA)), ELECTRICAL (VOLT, PH), DIMENSIONS (INCHES) (LENGTH, DIAMETER), NOTES.

- NOTES: 1. OXYGEN CONTENT OF FEEDWATER OUTPUT: 7 PPB MAX OVER TURNDOWN RANGE WITH MINIMUM AND NORMAL FEEDWATER INPUT TEMPERATURES LISTED WITH NO CHEMICAL TREATMENT. 2. MOTOR HP IS ESTIMATED, REFER TO SPECIFICATION FOR REQUIRED MINIMUM EFFICIENCY. 3. REFER TO BOILER PLANT MECHANICAL EQUIPMENT SPECIFICATION 23 50 11. 4. VFD TO BE SUPPLIED WITH BYPASS CONTRACTOR. 5. SYSTEM WILL REQUIRE 120V FEED FOR CONTROL DEVICE POWER. SEE ELECTRICAL DRAWING EM601.

BOILER PLANT - CONDENSATE STORAGE TANK SCHEDULE

Table with columns: TAG, LOCATION, MAN./MODEL (BASIS OF DESIGN), SYSTEM AND/OR SERVICE, TANK CAPACITY (GAL), MAWP (PSIG), COND RETURN PUMPS (PUMP QTY, FLOW (GPM), TDH (FT), SPEED (RPM), MOTOR HP (EA)), ELECTRICAL (VOLT, PH), DIMENSIONS (INCHES) (LENGTH, DIAMETER), NOTES.

- NOTES: 1. REFER TO BOILER PLANT MECHANICAL EQUIPMENT SPECIFICATION 23 50 11. 2. MOTOR HP IS ESTIMATED, REFER TO SPECIFICATION FOR REQUIRED MINIMUM EFFICIENCY. 3. SYSTEM WILL REQUIRE 120V FEED FOR CONTROL DEVICE POWER. SEE ELECTRICAL DRAWING EM602.

BOILER PLANT - STEAM CONTROL VALVE SCHEDULE

Table with columns: MARK, LOCATION, SYSTEM AND/OR SERVICE, OPERATING FLOW COEFFICIENT [Cv], VALVE SIZE INCHES [MM], VALVE PRESSURE CLASS, MAXIMUM FLOW, DESIGN FLOW, MINIMUM FLOW, FLUID TEMP, INLET PRESS, OUTLET PRESS, SHUTOFF CLASS, FAILSAFE POSITION, REMARKS.

- NOTES: 1. REFER TO BOILER PLANT PIPING SYSTEMS SPECIFICATION 23 21 11.

BOILER PLANT - BLOWOFF TANK SCHEDULE

Table with columns: MARK, LOCATION, SYSTEM AND/OR SERVICE, MAWP, MIN NET CAPACITY, DIMENSIONS (LENGTH), DIMENSIONS (DIAMETER), NOTES.

- NOTES: 1. TANK CONSTRUCTION SHALL BE PER SPECIFICATIONS: ASME CODE FOR 40 PSIG [276 kPa] MINIMUM WORKING PRESSURE. 2. REFER TO BOILER PLANT MECHANICAL EQUIPMENT SPECIFICATION 23 50 11.

BOILER PLANT - FUEL OIL SUPPLY PUMPS

Table with columns: TAG, LOCATION, SYSTEM AND/OR SERVICE, MAN./MODEL (BASIS OF DESIGN), VISCOSITY (cSt), PUMP QTY, FLOW (GPM), MAX PRESSURE (PSIG), OPERATING PRESSURE (PSIG), MOTOR HP (EA), SPEED (RPM), ELECTRICAL (VOLT, PH, Hz), SKID DIMENSIONS (INCHES) (LENGTH, DEPTH), NOTES.

- NOTES: 1. SPUR GEAR PUMP. 2. REFER TO BOILER PLANT MECHANICAL EQUIPMENT SPECIFICATION 23 50 11. 3. MOTOR HP IS ESTIMATED, REFER TO SPECIFICATION FOR REQUIRED MINIMUM EFFICIENCY.

STEAM PRESSURE REDUCING VALVE SCHEDULE

Table with columns: MARK, LOCATION, SYSTEM AND/OR SERVICE, MAN./MODEL (BASIS OF DESIGN), VALVE SIZE [MM] INCHES, REQUIRED CAPACITY, CV, PRESSURE (IN, OUT), NOTES.

- NOTES: 1. 2" NORMALLY CLOSED BYPASS GLOBE VALVE WITH 23 CV TO PASS COMBINED FLOW OF PRV-1A AND PRV-1B. 2. CLASS 150 LB. SELF-CONTAINED PRESSURE REDUCING VALVE. 3. REFER TO BOILER PLANT PIPING SYSTEMS SPECIFICATION 23 21 11.

BOILER PLANT - STEAM VENT SILENCER SCHEDULE

Table with columns: MARK, LOCATION, MAN./MODEL (BASIS OF DESIGN), SYSTEM AND/OR SERVICE, FLOW, INLET SIZE, NOTES.

- NOTES: 1. REFER TO FIRE TUBE BOILER SPECIFICATION 23 52 39.

STEAM PRESSURE RELIEF VALVE SCHEDULE

Table with columns: MARK, LOCATION, SYSTEM AND/OR SERVICE, MAN./MODEL (BASIS OF DESIGN), TEMPERATURE, MINIMUM CAPACITY, SET PRESSURE, NOTES.

- NOTES: 1. REFER TO FIRE TUBE BOILER SPECIFICATION 23 52 39. 2. REFER TO BOILER PLANT MECHANICAL EQUIPMENT SPECIFICATION 23 50 11. 3. REFER TO BOILER PLANT PIPING SYSTEMS SPECIFICATION 23 21 11. 4. CONFIRM INLET/OUTLET SIZES OF SV WITH EQUIPMENT MANUFACTURER.

STEAM TRAP SCHEDULE

Table with columns: MARK, LOCATION, SYSTEM AND/OR SERVICE, MAWP, CAPACITY AT MIN DIFF, MIN DIFF, MIN INLET, TRAP TYPE, TRAP SIZE, NOTES.

- NOTES: 1. REFER TO BOILER PLANT PIPING SYSTEMS SPECIFICATION 23 21 11.

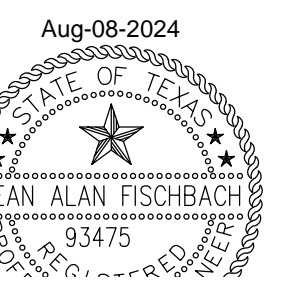
BOILER PLANT - ECONOMIZER SCHEDULE, FLUE GAS/FEEDWATER HEAT EXCHANGERS

Table with columns: MARK, LOCATION, MAN./MODEL (BASIS OF DESIGN), SYSTEM AND/OR SERVICE, MAX PRESS DROP WATER SIDE, MAX PRESS DROP GAS SIDE, DESIGN WATER TEMPERATURES, NOTES.

- NOTES: 1. FEEDWATER INLET TEMPERATURE SHALL BE 228 °F [109 °C]. 2. MINIMUM HEAT EXCHANGED AT 100% BOILER LOAD. 3. MINIMUM ALLOWABLE FLUE GAS TEMPERATURE AFTER THE ECONOMIZER SHALL BE 240 DEG F. 4. REFER TO FIRE TUBE BOILER SPECIFICATION 23 52 39.

PUMP TRAP SCHEDULE

Table with columns: MARK, LOCATION, SYSTEM AND/OR SERVICE, DELTA P (PSIG), MOTIVE PRESSURE (PSIG), CAPACITY, TRAP TYPE, TRAP SIZE, NOTES.



Signature of Sean Alan Fischbach

Table with columns: Addendum 1, Date: 08-09-2024, Revisions, Date.

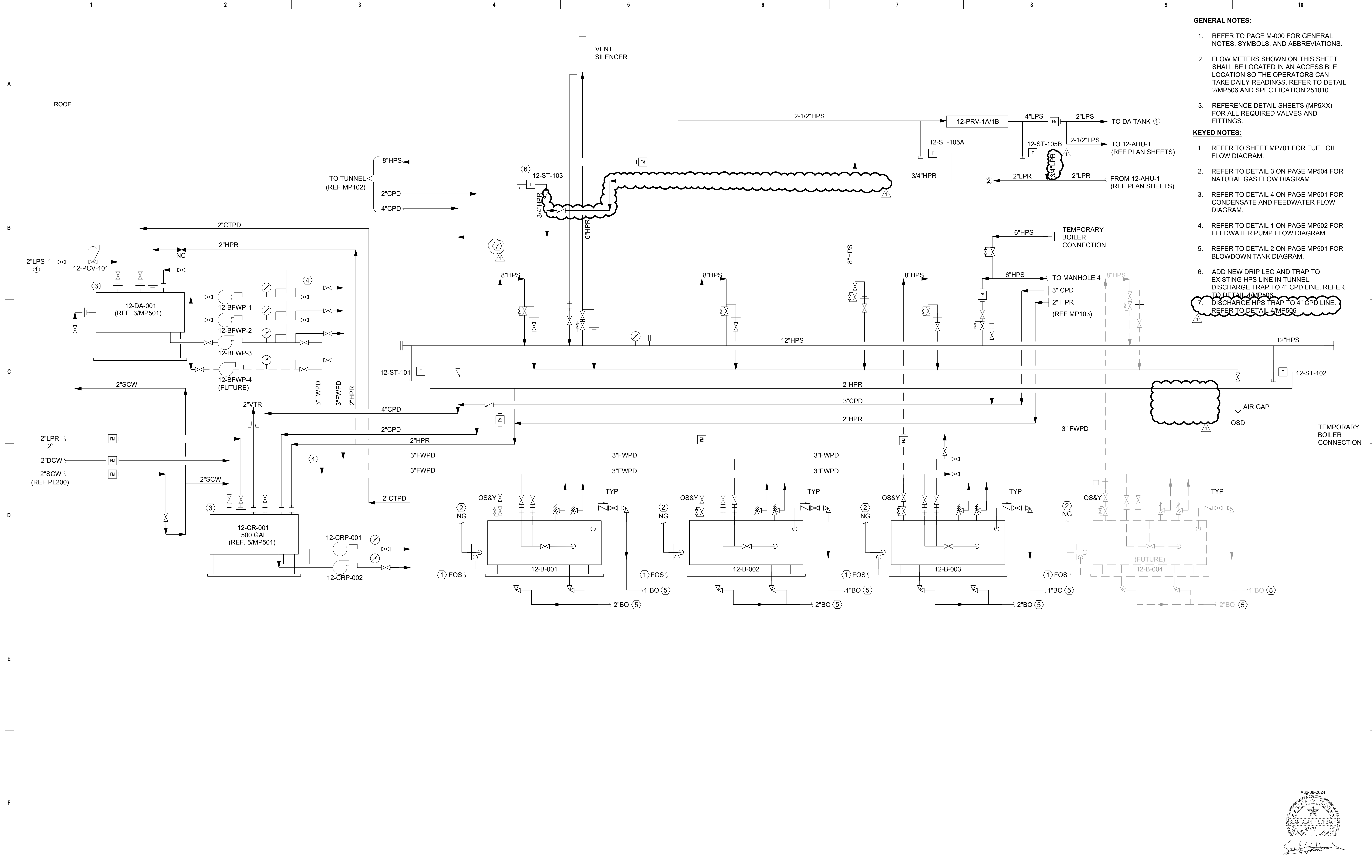
CONSULTANT: BURNS & MCDONNELL, Burns & McDonnell Engineering Company, Inc. 9450 WARD PARKWAY, KANSAS CITY, MO

ARCHITECT/ENGINEER OF RECORD: paradigm, Architecture | Engineering | Design-Build, 200 Envoy Circle, Suite 201, Louisville, KY 40299, www.paradigmusa.com

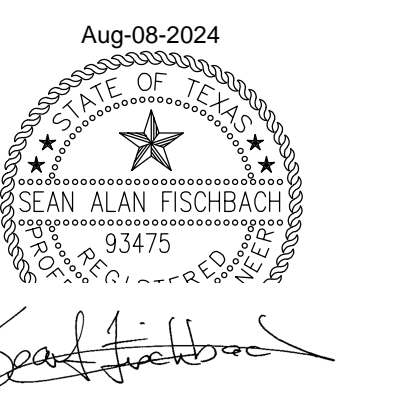
STAMP: Office of Construction and Facilities Management, VA

Drawing Title: STEAM GENERATION SCHEDULES, Phase: 100% CONSTRUCTION DOCUMENTS, Approved: FULLY SPRINKLERED

Project Title: SIOUX FALLS BOILER PLANT, Project Number: 438-22-900, Building Number: 12, Drawing Number: MP600, Location: VAMC-Sioux Falls: 2501 W 22nd St, Sioux Falls, SD 57105, Issue Date: 06/25/2024, Checked: BDI, Drawn: MFM



- GENERAL NOTES:**
- REFER TO PAGE M-000 FOR GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.
 - FLOW METERS SHOWN ON THIS SHEET SHALL BE LOCATED IN AN ACCESSIBLE LOCATION SO THE OPERATORS CAN TAKE DAILY READINGS. REFER TO DETAIL 2/MP506 AND SPECIFICATION 251010.
 - REFERENCE DETAIL SHEETS (MP5XX) FOR ALL REQUIRED VALVES AND FITTINGS.
- KEYED NOTES:**
- REFER TO SHEET MP701 FOR FUEL OIL FLOW DIAGRAM.
 - REFER TO DETAIL 3 ON PAGE MP504 FOR NATURAL GAS FLOW DIAGRAM.
 - REFER TO DETAIL 4 ON PAGE MP501 FOR CONDENSATE AND FEEDWATER FLOW DIAGRAM.
 - REFER TO DETAIL 1 ON PAGE MP502 FOR FEEDWATER PUMP FLOW DIAGRAM.
 - REFER TO DETAIL 2 ON PAGE MP501 FOR BLOWDOWN TANK DIAGRAM.
 - ADD NEW DRIP LEG AND TRAP TO EXISTING HPS LINE IN TUNNEL. DISCHARGE TRAP TO 4" CPD LINE. REFER TO DETAIL 4/MP506.
 - DISCHARGE HPS TRAP TO 4" CPD LINE. REFER TO DETAIL 4/MP506.



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|---|--|---|-------------------------------------|--------------------------------------|---|------------------------------|
| Addendum 1 08-09-2024 CONSULTANT BURNS & MCDONNELL Burns & McDonnell Engineering Company, Inc. 9450 WARD PARKWAY, KANSAS CITY, MO | ARCHITECT/ENGINEER OF RECORD paradigm Architecture Engineering Design-Build 200 Envoy Circle, Suite 201, Louisville, KY 40299 www.paradigmusa.com | STAMP Office of Construction and Facilities Management VA | Drawing Title STEAM FLOW DIAGRAM | Phase 100% CONSTRUCTION DOCUMENTS | Project Title SIOUX FALLS BOILER PLANT | Project Number 438-22-900 |
| | | | Approved: | FULLY SPRINKLERED | Location VAMC-Sioux Falls: 2501 W 22nd St, Sioux Falls, SD 57105 | Building Number 12 |
| Revisions: | Date: | | Issue Date 06/25/2024 | Checked BDI | Drawn MFM | Drawing Number MP700 |

GENERAL NOTES:

- CONTRACTOR SHALL FURNISH A COMPLETE VEEDER ROOT SYSTEM FOR THE PURPOSES OF AUTOMATIC TANK GAUGING AND LEAK DETECTION.
- VEEDER ROOT CONTROL PANEL SHALL BE LOCATED IN A SPACE SHOWN ON DRAWINGS. PANEL SHOULD INCLUDE AN OVERFILL ALARM AND ACKNOWLEDGEMENT PUSH BUTTON MOUNTED NEAR THE FUELING FACILITY.
- OWNER SHALL BE PRESENT DURING COMMISSIONING TO ENSURE THAT THE PROPER INFORMATION IS BEING COMMUNICATED REMOTELY.
- ALL TANKS SHALL BE EQUIPPED WITH AN INTERSTITIAL NON-DISCRIMINATING SENSOR FOR FIBERGLASS TANKS, LEVEL TRANSMITTERS, AND PIPE SUMP LEAK DETECTORS. DIESEL TANK LEVEL TRANSMITTER SHALL BE EQUIPPED WITH A WATER LEVEL SENSOR.
- SUBCONTRACTOR RESPONSIBLE FOR ALL PROGRAMMING AND SYSTEM INTERFACE NECESSARY TO PROVIDE A FULLY FUNCTIONING AUTOMATIC TANK GAUGING AND LEAK DETECTION SYSTEM.
- PROVIDE ALL MATERIALS, VALVES, HANGERS, AND EQUIPMENT TO PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED, AND AS REQUIRED BY CODE.
- INSTALL ALL MECHANICAL PIPING, EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
- CONTRACTOR SHALL FIELD VERIFY ALL TIE IN LOCATIONS AND EXISTING CONDITIONS.
- CONTRACTOR SHALL FIELD VERIFY ALL DEMO LOCATIONS AND PREPARE DEMO POINTS FOR FUTURE CONNECTIONS AS NEEDED.
- VISUALLY INSPECT ALL PIPING TO BE RE-USED. CONFIRM PIPE AND WELDS ARE VISUALLY ACCEPTABLE FOR RE-USE.
- ALL EXISTING TO REMAIN VALVES SHALL BE TESTED FOR PROPER OPERATION. ANY DEFICIENCIES FOUND SHOULD BE REPORTED TO MU PROJECT ENGINEERS.
- FLOW METERS SHOWN ON THIS SHEET SHALL BE LOCATED IN AN ACCESSIBLE LOCATION SO THE OPERATORS CAN TAKE DAILY READINGS. REFER TO SPECIFICATION 251010.

KEYED NOTES:

- FUEL OIL PRESSURE RELIEF VALVE. TIE INTO EXISTING VENT LINE.
- VENT LINE.
- ROUTE NEW FUEL OIL RETURN LINE TO NEW FUEL OIL TANK.
- TRANSITION FROM 2" FLEXIBLE DOUBLE CONTAINMENT PIPING TO 2" CARBON STEEL PIPING. REFER TO SPECS FOR PIPE MATERIAL REQUIREMENTS.
- AUTOMATIC TANK GAGE PANEL LOCATED INSIDE CONTROL ROOM. SEE MP105 FOR APPROXIMATE LOCATION.
- EMERGENCY FUEL OIL SUPPLY/RETURN CONNECTIONS.

GENERATOR TANK SEQUENCE:

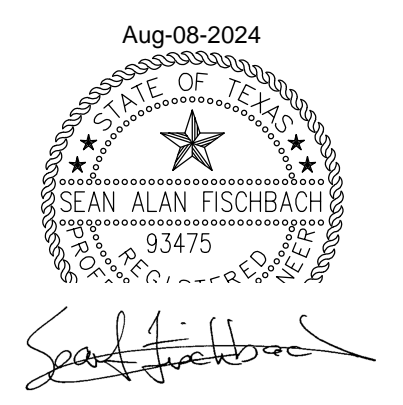
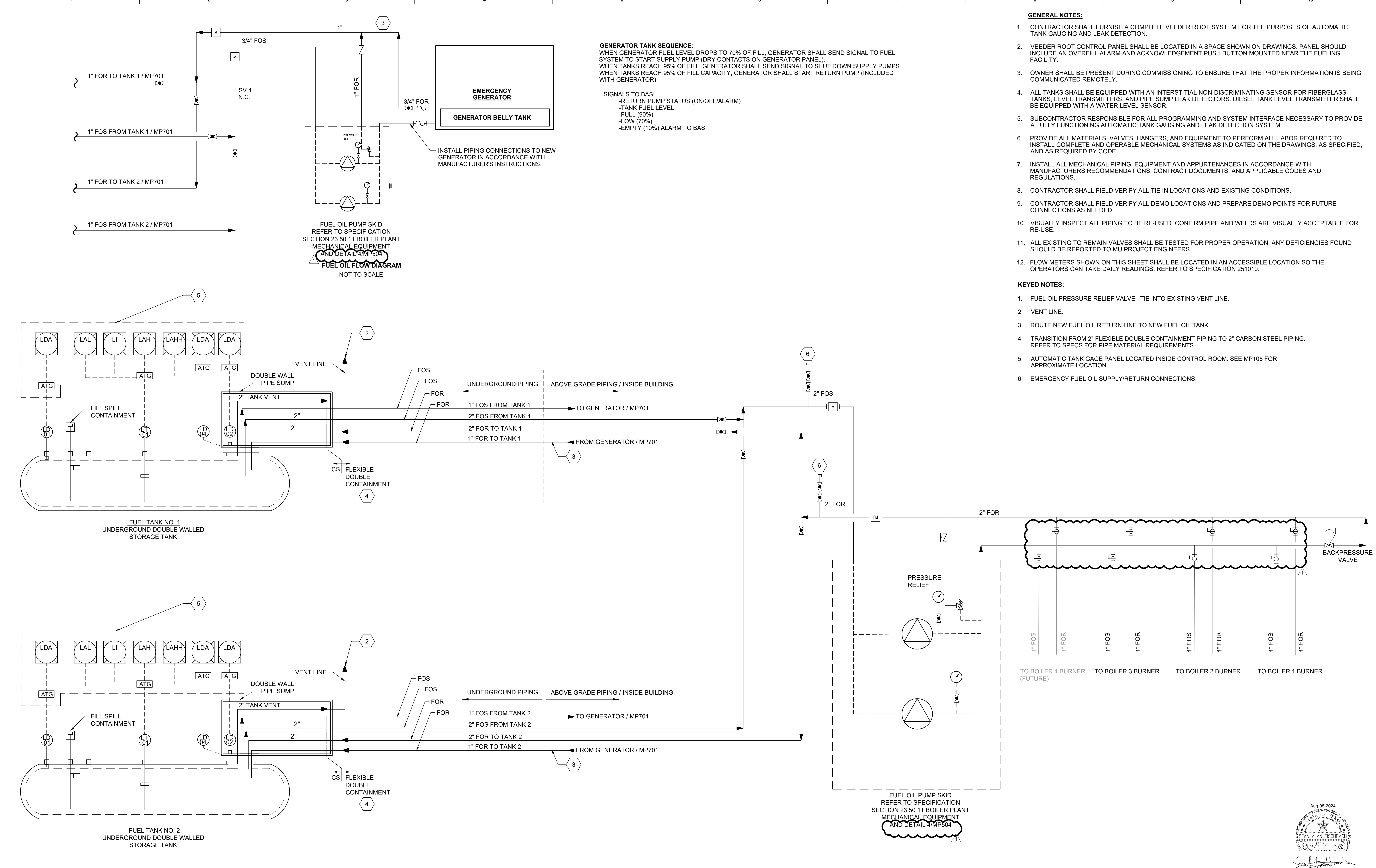
WHEN GENERATOR FUEL LEVEL DROPS TO 70% OF FILL, GENERATOR SHALL SEND SIGNAL TO FUEL SYSTEM TO START SUPPLY PUMP (DRY CONTACTS ON GENERATOR PANEL).
 WHEN TANKS REACH 95% OF FILL, GENERATOR SHALL SEND SIGNAL TO SHUT DOWN SUPPLY PUMPS.
 WHEN TANKS REACH 95% OF FILL CAPACITY, GENERATOR SHALL START RETURN PUMP (INCLUDED WITH GENERATOR)

- SIGNALS TO BAS:
- RETURN PUMP STATUS (ON/OFF/ALARM)
 - TANK FUEL LEVEL
 - FULL (90%)
 - LOW (70%)
 - EMPTY (10%) ALARM TO BAS

EMERGENCY GENERATOR
GENERATOR BELLY TANK

INSTALL PIPING CONNECTIONS TO NEW GENERATOR IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

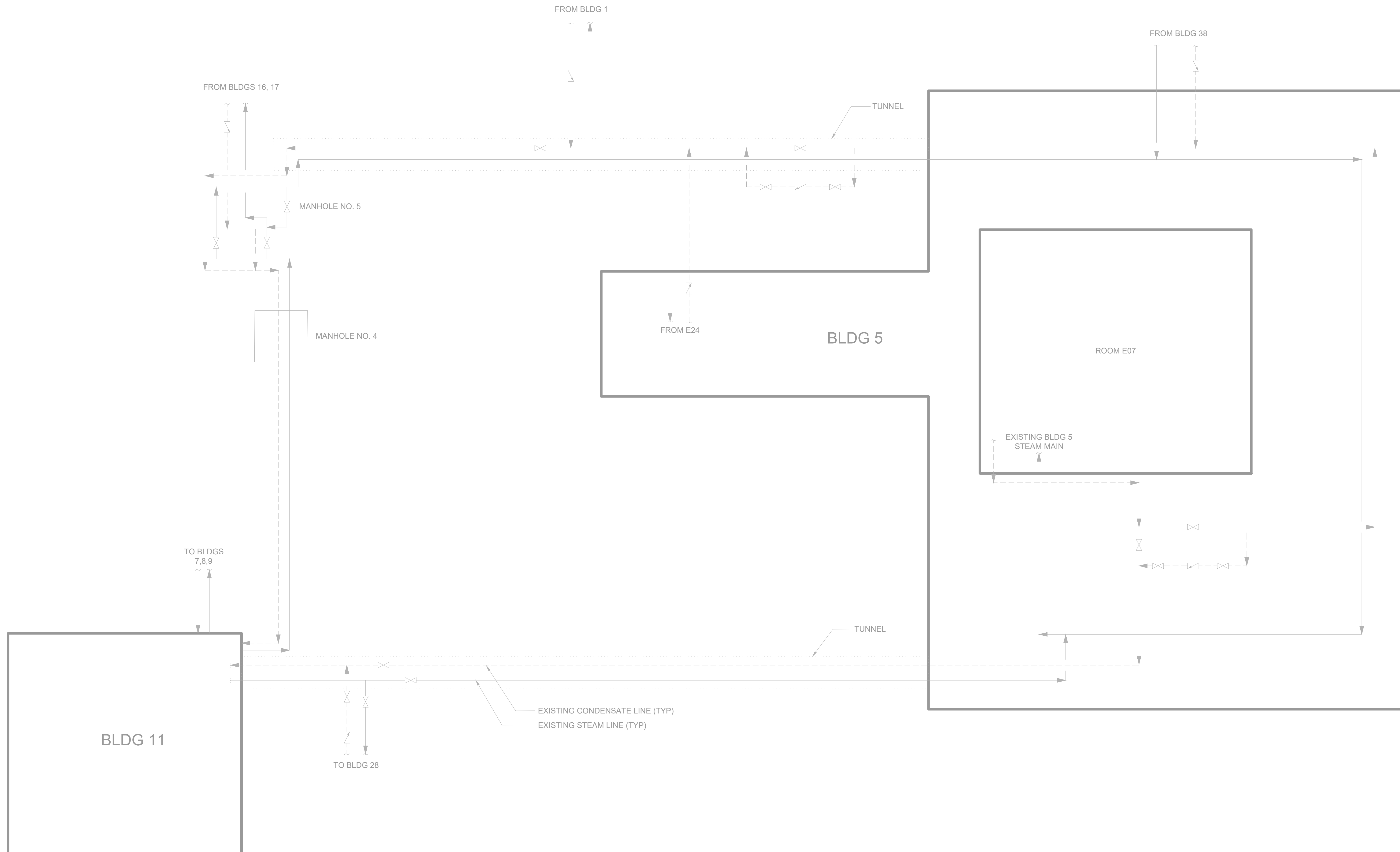
FUEL OIL PUMP SKID
 REFER TO SPECIFICATION SECTION 23 50 11 BOILER PLANT MECHANICAL EQUIPMENT AND DETAIL 4/MP504
FUEL OIL FLOW DIAGRAM
 NOT TO SCALE



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|---|--|--|--|--------------------------------------|---|------------------------------|--------------------------|
| Addendum 1 08-09-2024 CONSULTANT BURNS & MCDONNELL Burns & McDonnell Engineering Company, Inc. 9450 WARD PARKWAY, KANSAS CITY, MO | ARCHITECT/ENGINEER OF RECORD paradigm Architecture Engineering Design-Build 200 Envoy Circle, Suite 201, Louisville, KY 40299 www.paradigmusa.com | STAMP Office of Construction and Facilities Management VA | Drawing Title FUEL OIL FLOW DIAGRAM | Phase 100% CONSTRUCTION DOCUMENTS | Project Title SIOUX FALLS BOILER PLANT | Project Number 438-22-900 | |
| | | | Approved: | FULLY SPRINKLERED | Location VAMC-Sioux Falls: 2501 W 22nd St, Sioux Falls, SD 57105 | Building Number 12 | Issue Date 06/25/2024 |

GENERAL NOTES:

- COORDINATE ALL ISOLATION OF STEAM PIPING WITH OWNER CONTRACTOR TO PROVIDE PHASING WORK PLAN, SCHEDULE, AND DURATION OF TIE-IN TO EXISTING CAMPUS STEAM PIPING SYSTEMS FOR REVIEW BY OWNER. TIE IN DETAILS SUGGESTED AS NOTED BELOW. CONTRACTOR TO CONFIRM ALL VALVE AND ISOLATION REQUIREMENTS WITH OWNER. TIE-INS TO BE COMPLETED DURING LOW LOAD SEASONAL OPERATIONS.
- TIE INTO EXISTING MANHOLE 4 TO BE COMPLETED DURING LOW LOAD SEASON (MP103). THE 6" LINE FROM BUILDING 11 CAN BE ISOLATED AT THE STEAM HEADER AND IN THE NORTH TUNNEL. THE BUILDING 11 TO BUILDING 5 TUNNEL 8" STEAM LINE HAS ENOUGH CAPACITY TO PROVIDE BUILDING 5 AND THE REST OF THE CAMPUS LOAD.
- TIE INTO EXISTING BUILDING 11 TO BUILDING 5 TUNNEL 8" STEAM LINE DURING LOW LOAD SEASON (MD101, MP102). THE 6" LINE FROM BUILDING 11 TO THE NORTH TUNNEL HAS ENOUGH CAPACITY TO FEED BUILDING 5 AND THE REST OF THE CAMPUS LOAD.
- ONCE TIE-INS ARE COMPLETED AND THE BUILDING 12 STEAM PLANT HAS BEEN COMMISSIONED AND SUBSTANTIALLY COMPLETED, THE REMOVAL AND ISOLATION OF THE BUILDING 11 STEAM LINES CAN BE COMPLETED (MP102, MD101)



FOR INFORMATION ONLY.
NOT TO BE USED FOR
CONSTRUCTION.

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|------------|-------|--|--|---------------|---|---|--------------------------------------|---|------------------------------|
| Revisions: | Date: | CONSULTANT <small>Burns & McDonnell Engineering Company, Inc. 9450 WARD PARKWAY, KANSAS CITY, MO</small> | ARCHITECT/ENGINEER OF RECORD Architecture Engineering Design-Build <small>200 Envoy Circle, Suite 201, Louisville, KY 40299 www.paradigmusa.com</small> | STAMP | Office of Construction and Facilities Management | Drawing Title CAMPUS STEAM AND CONDENSATE DISTRIBUTION SCHEMATIC | Phase 100% CONSTRUCTION DOCUMENTS | Project Title SIOUX FALLS BOILER PLANT | Project Number 438-22-900 |
| | | | | | | Approved: | FULLY SPRINKLERED | Location VAMC-Sioux Falls: 2501 W 22nd St, Sioux Falls, SD 57105 | Building Number 12 |