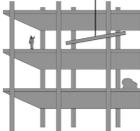


# 1250L PUMP ROOM REHABILITATION LEAD, SOUTH DAKOTA



1750 RAND ROAD ▪ RAPID CITY SD, 57702  
 PHONE: (605) 348-7455 ▪ FAX: (605) 348-9445  
 WWW.WESTPLAINSENGINEERING.COM  
 RAPID CITY, SD ▪ SIOUX FALLS, SD ▪ CASPER, WY ▪ CEDAR RAPIDS, IA

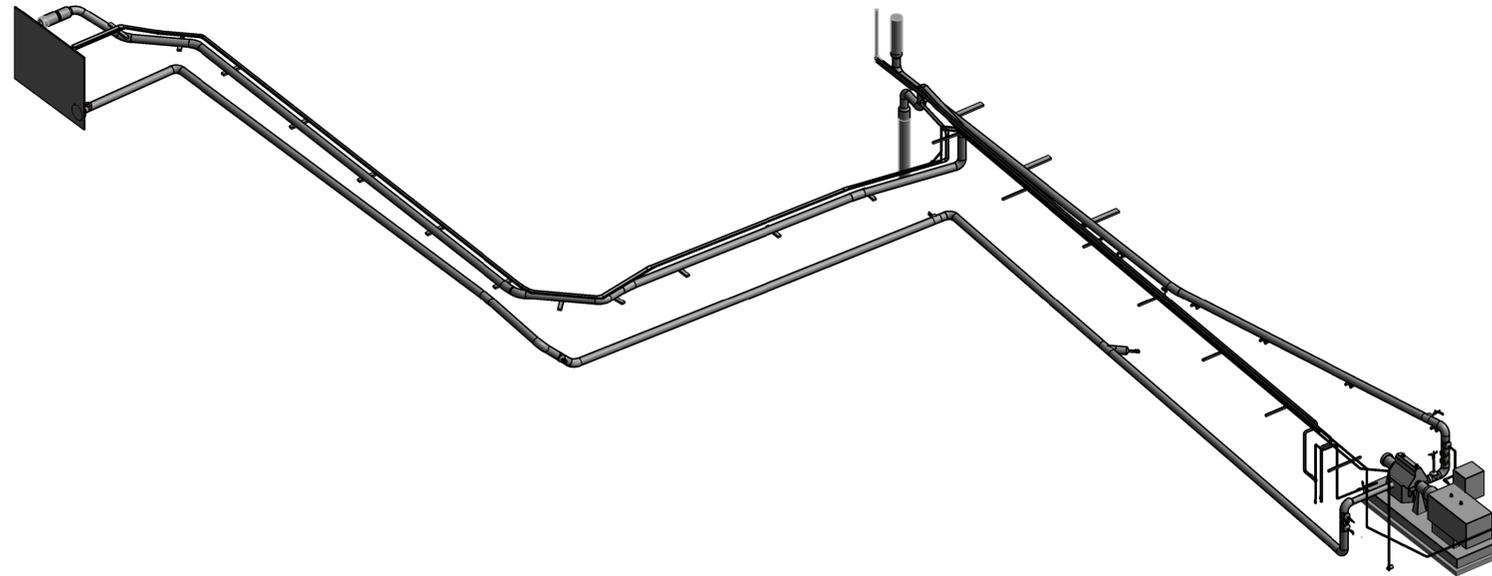
 3202 W. MAIN, SUITE C  
 RAPID CITY, SOUTH DAKOTA 57702  
 605.343.9606

Albertson Engineering Inc.



## SHEET INDEX

T-100	TITLE SHEET
S-001	GENERAL NOTES
S-002	INSPECTION TABLES
S-101	NEW PUMP ROOM FLOOR PLAN
S-102	NEW PUMP ROOM CEILING PLAN
S-103	DRIFT ELEVATED PIPING PLAN
S-104	DRIFT DECKING REPLACEMENT PLAN & RAIL SALVAGE AND RE-INSTALL PLAN
S-201	SHAFT THRUST BLOCK ELEVATIONS
S-501	DETAILS
S-502	DETAILS
G-101	1250L THRUST BLOCK DETAILS
D-100	1250L DIMENSIONAL DEMOLITION PLAN
D-101	1250L REMODEL DIMENSIONAL PLAN
M-101	1250L BELOW GRADE PIPING DEMOLITION PLAN
M-102	1250L ABOVE GRADE PIPING DEMOLITION PLAN
M-201	1250L BELOW GRADE PIPING REMODEL PLAN
M-202	1250L ABOVE GRADE PIPING REMODEL PLAN
M-301	PIPING DEMO SECTIONS
M-302	PIPING REMODEL SECTIONS
M-303	PIPING 3D VIEWS
M-401	MECHANICAL SYMBOLS, DETAILS, AND SCHEDULES
M-402	PIPING & INSTRUMENTATION DIAGRAM
E-101	OVERALL ELECTRICAL DEMOLITION PLAN
E-102	1250L PUMP ROOM ELECTRICAL DEMOLITION PLAN
E-103	ELECTRICAL DEMOLITION ONE-LINE DIAGRAM
E-201	OVERALL ELECTRICAL REMODEL PLAN
E-202	1250L PUMP ROOM ELECTRICAL REMODEL PLAN
E-203	ELECTRICAL NEW ONE-LINE DIAGRAM & PANEL SCHED.
E-301	PUMP CONTROL WIRING SCHEDULES AND DETAILS



MICHAEL HEINRICH, PE  
MECHANICAL ENGINEER



STEPHEN KILBER, PE  
STRUCTURAL ENGINEER



DAREN BECKLOFF, PE  
ELECTRICAL ENGINEER



BRETT BELZER, PE  
GEOTECHNICAL ENGINEER



REVIT FILE NAME: BR24011-1250L\_PUMP ROOM REHABILITATION-MEP25-CENTRAL

WPE PROJECT NO.: BR24011

SHEET:  
**T-100**

Copyright © 2024

**GENERAL NOTES:**

- STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH JOB SPECIFICATIONS AND , MECHANICAL, ELECTRICAL, AND ROCK ANCHOR DRAWINGS. CONSULT THESE DRAWINGS FOR OTHER INFORMATION NOT SHOWN ON STRUCTURAL DRAWINGS.
- ALL DIMENSIONS AND CONDITIONS MUST BE VERIFIED IN THE FIELD. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH THE AFFECTED PART OF THE WORK.
- THE PIPE SUPPORTS, OVERHEAD TROLLEY BEAMS, THRUST BLOCKS, AND OTHER STRUCTURAL ELEMENTS ARE DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THEY ARE FULLY INSTALLED. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURES AND SEQUENCE TO ENSURE SAFETY OF THE STRUCTURAL ELEMENTS AND THEIR COMPONENTS DURING ERECTION. THIS INCLUDES THE ADDITION OF NECESSARY SHORING, SHEETING, TEMPORARY BRACING (AND ACCOMPANYING FOOTINGS), GUYS OR TIEDOWNS.
- ADDITIONAL OBSERVATIONS AS A RESULT OF REJECTION OF WORK COMPLETED AND/OR ADDITIONAL OBSERVATIONS DUE TO THE DEFICIENCIES IN WORK OBSERVED WILL BE AT THE EXPENSE OF THE CONTRACTOR.
- ALL STRUCTURAL SHOP DRAWINGS TO BE REVIEWED BY JOB SUPERINTENDENT IN ADDITION TO ALL PERSONNEL DEEMED NECESSARY BY CONTRACTOR PRIOR TO SUBMITTAL TO SDSTA FOR APPROVAL.
- ALL SHOP DRAWINGS TO BE REVIEWED BY ALBERTSON ENGINEERING INC. SHALL HAVE ELECTRONIC COPIES PROVIDED TO ALBERTSON ENGINEERING INC. FOR REVIEW. AN ELECTRONIC MARKED SET OF THOSE DRAWINGS WILL BE RETURNED TO THE CONTRACTOR. NO ADDITIONAL HARD COPIES OF THE SHOP DRAWINGS NEED TO BE PROVIDED TO ALBERTSON ENGINEERING INC., ALTHOUGH OTHER PARTIES MAY REQUIRE HARD COPIES OF THE MARKED UP DRAWINGS. THESE REQUIREMENTS ARE IN ADDITION TO THE TYPICAL PROJECT SHOP DRAWING SUBMITTAL REQUIREMENTS STATED IN THE PROJECT SPECIFICATIONS.
- THE DESIGN OF THE STRUCTURE SHOWN IN THESE CONSTRUCTION DOCUMENTS IS FOR THE ONE-TIME USE AT THE SPECIFIC SITE REFERENCED IN THE TITLE BLOCK.

**DESIGN CODES:**

- 2021 INTERNATIONAL BUILDING CODE.
- ACI 318-19 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE AND COMMENTARY.
- AISC 360-16 SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS.
- ASCE 7-16 MINIMUM DESIGN LOADS AND ASSOCIATED CRITERIA FOR BUILDINGS AND OTHER STRUCTURES.
- AWC/NDS-2018 NATIONAL DESIGN SPECIFICATION (NDS) FOR WOOD CONSTRUCTION W/ 2018 NDS SUPPLEMENT

**DESIGN LOADS:**

THE STRUCTURAL SYSTEM FOR THIS PUMP ROOM HAS BEEN DESIGNED WITH THE FOLLOWING SUPERIMPOSED LOADINGS BASED ON RISK CATEGORY II:

HIGH PRESSURE DISCHARGE LINE:	
WEIGHT	PIPE SELF WEIGHT + WATER
MAX PUMP PRESSURE	1,500 FT OF WATER
MAX FLOW RATE	1,450 GPM

DRAINAGE LINES:	
WEIGHTS	PIPE SELF WEIGHT + WATER

TROLLEY BEAMS:	
APPLIED LOAD	SINGLE 10 KIP MOVING LOAD
HOIST TYPE	CHAIN DRIVEN (NON ELECTRIC)

BAR GRATING IN PUMP ROOM:	
LIVE LOAD	250 PSF

RAIL CART + MOTOR WEIGHT ON RAILS AND TIES	
COMBINED WEIGHT	7,000 LBS
APPLIED ON (2) AXLES	

**CONCRETE TESTING:**

- CONCRETE TESTING SHALL BE PAID FOR BY THE CONTRACTOR. TESTING LABORATORY SHALL PERFORM THE FOLLOWING TESTS ON CAST-IN-PLACE CONCRETE:
  - ASTM C143 - "STANDARD TEST METHOD FOR SLUMP OF PORTLAND CEMENT CONCRETE."
  - ASTM C39 - "STANDARD TEST METHOD FOR COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS." A SEPARATE TEST SHALL BE CONDUCTED FOR EACH CLASS, FOR EVERY 50 CUBIC YARDS (OR FRACTION THEREOF), PLACED PER DAY. REQUIRED CYLINDER(S) QUANTITIES AND TEST AGE AS FOLLOWS:
    - AT 7 DAYS
    - AT 28 DAYS
  - PROVIDE ONE ADDITIONAL RESERVE CYLINDER TO BE TESTED UNDER THE DIRECTION OF THE ENGINEER, IF REQUIRED. IF 28 DAY STRENGTH IS ACHIEVED, THE ADDITIONAL CYLINDER(S) MAY BE DISCARDED.
  - TESTING SHALL BE BASED UPON CONCRETE TAKEN AT POINT OF PLACEMENT.
  - IN ADDITION TO TYPICAL TESTING REQUIREMENTS, SLUMP AND AIR CONTENT SAMPLES SHALL BE TAKEN AT BEGINNING OF FIRST TRUCK PRIOR TO ANY PLACEMENT AND REPEATED AT THE MIDDLE OF FIRST TRUCK. CONCRETE PLACEMENT SHALL NOT START IF INITIAL TEST(S) FAIL AND SHALL NOT CONTINUE OF TEST TAKEN AT MIDDLE OF FIRST LOAD FAILS.
  - IF ANY SLUMP OR AIR CONTENT FAILS DURING PLACEMENT, TESTS SHALL BE IMMEDIATELY REPORTED AND RETAKEN. IF RETAKEN TESTS FAIL THEN ALL SUBSEQUENT LOADS MUST BE TESTED AT ARRIVAL AND TEST MUST SHOW COMPLIANCE PRIOR TO THE CONCRETE IN THAT TRUCK BEING ALLOWED FOR USE ON PROJECT. ALL COSTS FOR ADDITIONAL TESTING SHALL BE CREDITED TO THE CONTRACTOR.

**PENETRATIONS:**

- NO PENETRATIONS SHALL BE MADE IN ANY STRUCTURAL MEMBERS OTHER THAN THOSE LOCATED ON THESE DRAWINGS WITHOUT PREVIOUS APPROVAL OF THE ENGINEER.

**CONCRETE MIX DESIGN**

- CONCRETE MIX SHALL BE A PRE-BLENDED, PRE-BAGGED MIX DESIGNED TO ACHIEVE A STRENGTH AT 28 DAYS AS SHOWN IN THE BELOW CONCRETE CURING STRENGTH SCHEDULE WITH A PLASTIC AND WORKABLE MIX:

CONCRETE PROPERTIES				
LOCATION	28 DAY COMPRESSIVE STRENGTH	ENTRAINED AIR	SLUMP	MAX W/C RATIO
ALL CONC	4,000 PSI	<3.0%	3"±1"	0.45

- SUBMIT MATERIAL SHEETS OF PROPOSED PRE-BLENDED, PRE-BAGGED CONCRETE PRIOR TO USE. CONCRETE SHALL COMPLY WITH ALL THE REQUIREMENTS OF ASTM STANDARD C94 FOR MEASURING, MIXING, TRANSPORTING, ETC. CONCRETE TICKETS SHALL BE TIME STAMPED WHEN CONCRETE IS BATCHED. THE MAXIMUM TIME ALLOWED FROM THE TIME THE MIXING WATER IS ADDED UNTIL IT IS DEPOSITED IN ITS FINAL POSITION SHALL NOT EXCEED ONE AND ONE HALF (1-1/2) HOURS. IF FOR ANY REASON THERE IS A LONGER DELAY THAN STATED ABOVE, THE CONCRETE SHALL BE DISCARDED. IT SHALL BE THE RESPONSIBILITY OF THE TESTING LAB TO NOTIFY THE OWNER'S REPRESENTATIVE AND THE CONTRACTOR OF ANY NONCOMPLIANCE WITH THE ABOVE. CALCIUM CHLORIDES SHALL NOT BE UTILIZED; OTHER ADMIXTURES MAY BE USED ONLY WITH THE APPROVAL OF THE ENGINEER.
- CONCRETE SHALL UTILIZE TYPE II CEMENT.
- COARSE AND FINE AGGREGATES SHALL COMPLY WITH ASTM C33 AND ACI 302.1, CURRENT VERSIONS.
- THE CONCRETE STRENGTHS SHOWN IN THE SECTION ABOVE AND IN THE SPECIFICATIONS ARE MINIMUM COMPRESSIVE STRENGTHS. THE ENGINEER SHALL DETERMINE IF THE CONCRETE IS ACCEPTABLE, OR TO BE REMOVED, OR TO RECEIVE SPECIAL CURING IF THE COMPRESSIVE STRENGTHS ARE LESS THAN SPECIFIED.
- WATER REDUCING AGENTS MAY BE USED IN THE CONCRETE MIX. PLASTICIZERS AND SUPER-PLASTICIZERS MAY BE USED ONLY WHEN WRITTEN PERMISSION OF THE ENGINEER IS GIVEN.
- NO SALTS OF ANY KIND MAY BE USED IN CONCRETE BEFORE OBTAINING THE ENGINEER'S WRITTEN PERMISSION FOR THEIR USE.
- ONLY SITE MIXING OF THE CONCRETE AT THE 1250L IS ALLOWED. NO RED-MIX CONCRETE DELIVERED TO THE ROSS COMPLEX AND SLUNG DOWN THE SHAFT WILL BE ALLOWED. CONTRACTOR TO REVIEW THE SITE CONDITIONS TO SELECT THE APPROPRIATE PORTABLE SITE MIXER THAT CAN BE READILY MOVED AND SET UP ON THE 1250L. CONTRACTOR TO COORDINATE EQUIPMENT WITH THE SDSTA AND SUBMIT THE PROPOSED PLAN FOR REVIEW.
- THE CONTRACTOR SHALL COORDINATE WITH THE SDSTA ON THE USE OF THE NON-POTABLE INDUSTRIAL WATER PRESENT WITHIN THE ROSS SHAFT INFRASTRUCTURE. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY HOSES TO MOVE THE WATER FROM THE SHAFT TO THE PRE-DETERMINED MIXING AREA.

**CONCRETE AND REINFORCING PLACEMENT:**

- ALL CONCRETE SHALL BE PLACED IN ACCORDANCE WITH ACI 301 AND ACI 117. THE PUMP EQUIPMENT PAD SHALL BE CAST TO MEET OR EXCEED THE TOLERANCE REQUIREMENTS OF THE PUMP MANUFACTURER.
- ALL REINFORCING STEEL TO BE ASTM A615, GRADE 60 (#4 AND LARGER), EXCEPT WHERE NOTED OTHERWISE. REINFORCING SHALL NOT BE WELDED.
- ALL REINFORCING STEEL BARS TO BE DETAILED AND PLACED IN ACCORDANCE WITH THE LATEST ACI MANUALS.
- LAP ALL REINFORCING SPLICES IN CONCRETE A MINIMUM OF 48 BAR DIAMETERS OR 24 INCHES, WHICHEVER IS GREATER, UNLESS NOTED OTHERWISE ON DRAWINGS (CLASS B SPLICE).
- PROVIDE CORNER BARS OF SAME BAR DIAMETER AS SPECIFIED FOR THE WALL, BEAM OR FOOTING. PROVIDE MINIMUM OF 40 BAR DIAMETER LAP FOR ALL CORNER BARS, UNLESS NOTED OTHERWISE.
- PROVIDE FOUNDATION DOWELS AS SHOWN. MINIMUM SIZE DOWELS TO BE #4, UNLESS OTHERWISE NOTED. ALL VERTICAL REINFORCING STEEL IN COLUMNS AND PIERS, OR VERTICAL REINFORCING IN WALLS, SHALL BE DOWELED INTO THE FOOTINGS WITH SAME SIZE AND QUANTITY DOWEL AS THE VERTICAL REINFORCING.
- WHERE SHOWN ON THE DRAWINGS, PROVIDE WELD PLATES, WELDMENTS, OR CONCRETE INSERTS FOR FASTENING AND SECURING OTHER COMPONENTS. CONCRETE INSERTS SHALL BE FURNISHED BY THE CONTRACTOR REQUIRING THEM AND INSTALLED BY THE CONTRACTOR CASTING THE CONCRETE AROUND THEM. CLIP ANGLES SHALL BE FURNISHED BY THE CONTRACTOR REQUIRING THEM.
- REINFORCING STEEL SHALL RECEIVE CONCRETE COVER AS FOLLOWS:

DESCRIPTION	MINIMUM COVER
CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	3"
EXPOSED TO EARTH OR WEATHER	
#6 THROUGH #18 BARS	2"
#5 BARS OR SMALLER	1½"
NOT EXPOSED TO EARTH OR WEATHER OR IN CONTACT WITH THE GROUND, SLABS AND WALLS	
#11 BARS OR SMALLER	¾"
#14 AND #18	1½"
BEAMS AND COLUMNS	1½"

**STRUCTURAL STEEL:**

- STEEL SHALL CONFORM TO ASTM A992 (Fy=50 KSI) FOR ALL W-SHAPES, AND ASTM A36 (Fy=36 KSI) FOR ALL OTHER MISCELLANEOUS SHAPES. ALL PLATE STEEL SHALL CONFORM TO ASTM A572 GRADE 50 (Fy=50 KSI) MATERIAL. STRUCTURAL TUBING SHALL CONFORM TO ASTM A500, GRADE B OR GRADE C (Fy=46 KSI OR 50 KSI). STRUCTURAL PIPE SHALL CONFORM TO ASTM A53, GRADE B, TYPE "E" OR "S" (Fy=35 KSI).
- STEEL SHALL CONFORM TO THE LATEST EDITION OF AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS.
- ALL SHOP CONNECTIONS TO BE WELDED (UTILIZING E70XX ELECTRODES) AND FIELD CONNECTIONS TO BE BOLTED, UNLESS OTHERWISE NOTED. STEEL TO RECEIVE ONE SHOP COAT AND ONE FIELD TOUCH UP COAT OF APPROVED PAINT, EXCEPT WHERE GALVANIZED IS INDICATED ON THE DRAWINGS.
- WELDS FOR ALL EXPOSED STRUCTURAL STEEL SHALL BE GROUND SMOOTH UNLESS NOTED OTHERWISE.
- ALL BOLTED CONNECTIONS SHALL CONSIST OF ¾"Ø F3125 GRADE A325 TYPE F1852 BOLTS, UNLESS NOTED OTHERWISE.
- CONTRACTOR SHALL MAINTAIN ERECTION TOLERANCES OF STRUCTURAL STEEL AND ARCHITECTURALLY EXPOSED STRUCTURAL STEEL WITHIN AISC'S CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES.
- ANCHOR BOLT HOLES IN STRUCTURAL STEEL SHALL BE OVERSIZED NO MORE THAN ¼" MAX, UNLESS NOTED OTHERWISE.

**ROCK ANCHORS:**

- ALL ROCK ANCHORS SHOWN IN THIS DOCUMENT WERE DEVELOPED AND DESIGNED BY RESPEC. APART FROM THE PUMP EQUIPMENT PAD ANCHOR DETAIL, THE CONTRACTOR IS TO REFER TO RESPEC'S DRAWINGS AND SPECIFICATIONS FOR ALL MATERIAL, INSTALLATION, AND INSPECTION REQUIREMENTS FOR THE ROCK ANCHORS SHOWN.
- FOR THE PUMP EQUIPMENT PAD ANCHOR DETAIL, THE ROCK ANCHOR REQUIREMENTS WERE DEVELOPED IN ACCORDANCE WITH INFORMATION PROVIDED BY RESPEC. CONTRACTOR IS TO REFER TO THEIR DRAWINGS AND SPECIFICATIONS FOR FURTHER INFORMATION.

**WOOD:**

- STRUCTURAL ROUGH-SAWN 3x WOOD COMPONENTS HAVE BEEN DESIGNED AS DOUGLAS FIR-LARCH (DG) NO. 1 OR BETTER AND SHALL HAVE THE FOLLOWING MINIMUM ALLOWABLE FIBER STRESSES AND PROPERTIES:
 

MODULUS OF ELASTICITY (E)	1,700,000 PSI
BENDING (Fb)	1,000 PSI
SHEAR (Fv)	180 PSI
- MEMBER SIZES SHOWN ARE ROUGH SAWN (FULL SIZE) UNLESS NOTED OTHERWISE.
- ALL TIMBER ELEMENTS SHOWN IN THESE DOCUMENTS ARE TO BE GREEN-TREATED LUMBER.

**WEST PLAINS ENGINEERING, INC.**  
 1750 RAND ROAD • RAPID CITY SD, 57702  
 PHONE: (605) 348-7455 • FAX: (605) 348-9445  
 www.westplainsengineering.com  
 RAPID CITY, SD • SIOUX FALLS, SD • CASPER, WY • CEDAR RAPIDS, IA • BISMARCK, ND

**Albertson Engineering Inc.**  
 605-343-9006  
 www.albertsonengineering.com  
 Offices in Rapid City, Sioux Falls, & Winner


GENERAL NOTES

**1250L PUMP ROOM REHABILITATION**

LEAD, SOUTH DAKOTA

PROJECT#:	2023-379
DESIGNED:	SJK
DRAWN:	SJK
APPROVED:	SJK
DATE:	07/25/2025

REGISTERED PROFESSIONAL ENGINEER  
 REG. NO. 13396  
 STEPHEN J. KUMER  
 SOUTH DAKOTA  
 07/25/2025

SHEET:  
**S-001**  
 Copyright © 2024

STEEL CONSTRUCTION

TABLE N5.4-1  
INSPECTION TASKS PRIOR TO WELDING

INSPECTION TASKS PRIOR TO WELDING	INSPECTION INTERVAL	REQUIRED ON PROJECT
WELDER QUALIFICATION RECORDS AND CONTINUITY RECORDS	P	YES
WELDING PROCEDURE SPECIFICATIONS (WPSs) AVAILABLE	P	YES
MANUFACTURER CERTIFICATIONS FOR WELDING CONSUMABLES AVAILABLE	P	YES
MATERIAL IDENTIFICATION (TYPE/GRADE)	O	YES
WELDER IDENTIFICATION SYSTEM <sup>(a)</sup>	O	YES
FIT-UP OF GROOVE WELDS (INCLUDING JOINT GEOMETRY) <ul style="list-style-type: none"> <li>JOINT PREPARATION</li> <li>DIMENSIONS (ALIGNMENT, ROOT OPENING, ROOT FACE, BEVEL)</li> <li>CLEANLINESS (CONDITION OF STEEL SURFACES)</li> <li>TACKING (TACK WELD QUALITY AND LOCATION)</li> </ul>	O	YES
FIT-UP OF CJP GROOVE WELDS OF HSS T-, Y- AND K-JOINTS WITHOUT BACKING <ul style="list-style-type: none"> <li>JOINT PREPARATIONS</li> <li>DIMENSIONS (ALIGNMENT, ROOT OPENING, ROOT FACE, BEVEL)</li> <li>CLEANLINESS (CONDITION OF STEEL SURFACES)</li> <li>TACKING (TACK WELD QUALITY AND LOCATION)</li> </ul>	P	YES
CONFIGURATION AND FINISH OF ACCESS HOLES	O	YES
FIT-UP OF FILLET WELDS <ul style="list-style-type: none"> <li>DIMENSIONS (ALIGNMENT, GAPS AT ROOT)</li> <li>CLEANLINESS (CONDITION OF STEEL SURFACES)</li> <li>TACKING (TACK WELD QUALITY AND LOCATION)</li> </ul>	O	YES
CHECK WELDING EQUIPMENT	O	-

(a) THE FABRICATOR OR ERECTOR, AS APPLICABLE, SHALL MAINTAIN A SYSTEM BY WHICH A WELDER WHO HAS WELDED A JOINT OR MEMBER CAN BE IDENTIFIED. STAMPS, IF USED, SHALL BE THE LOW-STRESS TYPE.

TABLE N5.4-2  
INSPECTION TASKS DURING WELDING

INSPECTION TASKS DURING WELDING	INSPECTION INTERVAL	REQUIRED ON PROJECT
USE OF QUALIFIED WELDERS	O	YES
CONTROL AND HANDLING OF WELDING CONSUMABLES <ul style="list-style-type: none"> <li>PACKAGING</li> <li>EXPOSURE CONTROL</li> </ul>	O	YES
NO WELDING OVER CRACKED TACK WELDS	O	YES
ENVIRONMENTAL CONDITIONS <ul style="list-style-type: none"> <li>WIND SPEED WITHIN LIMITS</li> <li>PRECIPITATION AND TEMPERATURE</li> </ul>	O	YES
WPS FOLLOWED <ul style="list-style-type: none"> <li>SETTINGS ON WELDING EQUIPMENT</li> <li>TRAVEL SPEED</li> <li>SELECTED WELDING MATERIALS</li> <li>SHIELDING GAS TYPE/FLOW RATE</li> <li>PREHEAT APPLIED</li> <li>INTERPASS TEMPERATURE MAINTAINED (MIN/MAX)</li> <li>PROPER POSITION (F, V, H, OH)</li> </ul>	O	YES
WELDING TECHNIQUES <ul style="list-style-type: none"> <li>INTERPASS AND FINAL CLEANING</li> <li>EACH PASS WITHIN PROFILE LIMITATIONS</li> <li>EACH PASS MEETS QUALITY REQUIREMENTS</li> </ul>	O	YES
PLACEMENT AND INSTALLATION OF STEEL HEADED STUD ANCHORS	P	YES

AISC 360-16 TABLE N5.4-3  
INSPECTION TASKS AFTER WELDING

INSPECTION TASKS AFTER WELDING	INSPECTION INTERVAL	REQUIRED ON PROJECT
WELDS CLEANED	O	YES
SIZE, LENGTH AND LOCATION OF WELDS	P	YES
WELDS MEET VISUAL ACCEPTANCE CRITERIA: <ul style="list-style-type: none"> <li>CRACK PROHIBITION</li> <li>WELD/BASE-METAL FUSION</li> <li>CRATER CROSS SECTION</li> <li>WELD PROFILES</li> <li>WELD SIZE</li> <li>UNDERCUT</li> <li>POROSITY</li> </ul>	P	YES
ARC STRIKES	P	YES
k-AREA (a)	P	YES
WELD ACCESS HOLES IN ROLLED HEAVY SHAPES AND BUILT-UP HEAVY SHAPES(b)	P	YES
BACKING REMOVED AND WELD TABS REMOVED (IF REQUIRED)	P	YES
REPAIR ACTIVITIES	O	YES
DOCUMENT ACCEPTANCE OR REJECTION OF WELDED JOINT OR MEMBER	O	YES
NO PROHIBITED WELDS HAVE BEEN ADDED WITHOUT THE APPROVAL OF THE EOR	O	YES

(a) WHEN WELDING OF DOUBLE PLATES, CONTINUITY PLATES OR STIFFENERS HAS BEEN PERFORMED IN THE k-AREA, VISUALLY INSPECT THE WEB k-AREA FOR CRACKS WITHIN 3" (75 mm) OF THE WELD.

(b) AFTER ROLLED HEAVY SHAPES (SEE SECTION A3.1c) AND BUILT-UP HEAVY SHAPES (SEE SECTION A3.1d) ARE WELDED, VISUALLY INSPECT THE WELD ACCESS HOLE FOR CRACKS.

AISC 360-16 TABLE N5.6-1  
INSPECTION TASKS PRIOR TO BOLTING

INSPECTION TASKS PRIOR TO BOLTING	INSPECTION INTERVAL	REQUIRED ON PROJECT
MANUFACTURER'S CERTIFICATIONS AVAILABLE FOR FASTENER MATERIALS	O	YES
FASTENERS MARKED IN ACCORDANCE WITH ASTM REQUIREMENTS	O	YES
CORRECT FASTENERS SELECTED FOR THE JOINT DETAIL (GRADE, TYPE, BOLT LENGTH IF THREADS ARE TO EXCLUDED FROM SHEAR PLANE)	O	YES
CORRECT BOLTING PROCEDURE SELECTED FOR JOINT DETAIL	O	YES
CONNECTING ELEMENTS, INCLUDING THE APPROPRIATE FAYING SURFACE CONDITION AND HOLE PREPARATION, IF SPECIFIED, MEET APPLICABLE REQUIREMENTS	O	YES
PRE-INSTALLATION VERIFICATION TESTING BY INSTALLATION PERSONNEL OBSERVED AND DOCUMENTED FOR FASTENER ASSEMBLIES AND METHODS USED	P	YES
PROTECTED STORAGE PROVIDED FOR BOLTS, NUTS, WASHERS AND OTHER FASTENER COMPONENTS	O	YES

AISC 360-16 TABLE N5.6-2  
INSPECTION TASKS DURING BOLTING

INSPECTION TASKS DURING BOLTING	INSPECTION INTERVAL	REQUIRED ON PROJECT
FASTENER ASSEMBLIES PLACED IN ALL HOLES AND WASHERS AND NUTS ARE POSITIONED AS REQUIRED	O	YES
JOINT BROUGHT TO THE SNUG-TIGHT CONDITION PRIOR TO THE PRETENSIONING OPERATION	O	YES
FASTENER COMPONENT NOT TURNED BY THE WRENCH PREVENTED FROM ROTATING	O	YES
FASTENERS ARE PRETENSIONED IN ACCORDANCE WITH THE RCSC SPECIFICATION, PROGRESSING SYSTEMATICALLY FROM THE MOST RIGID POINT TOWARD THE FREE EDGES	O	YES

AISC 360-16 TABLE N5.6-3  
INSPECTION TASKS AFTER BOLTING

INSPECTION TASKS AFTER BOLTING	INSPECTION INTERVAL	REQUIRED ON PROJECT
DOCUMENT ACCEPTANCE OR REJECTION OF BOLTED CONNECTIONS	P	YES

- O-OBSERVE THESE ITEMS ON A RANDOM BASIS. OPERATIONS NEED NOT BE DELAYED PENDING THESE INSPECTIONS. P-PERFORM THESE TASKS FOR EACH WELDED JOINT OR MEMBER.
- OBSERVATION OF WELDING OPERATIONS AND VISUAL INSPECTION OF IN-PROCESS AND COMPLETED WELDS SHALL BE THE PRIMARY METHOD TO CONFIRM THAT THE MATERIALS, PROCEDURES AND WORKMANSHIP ARE IN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS.
- FOR STRUCTURES IN RISK CATEGORY II/III/IV (ASCE/SEI 7, TABLE 1.5-1), ULTRASONIC TESTING SHALL BE PERFORMED ON ALL COMPLETE-JOINT-PENETRATION GROOVE WELDS SUBJECT TO TRANSVERSELY APPLIED TENSION LOADING IN BUTT, T- AND CORNER JOINTS, IN MATERIALS 5/16" (8 MM) THICK OR GREATER.
- FOR STRUCTURES IN RISK CATEGORY II (ASCE/SEI 7, TABLE 1.5-1), ULTRASONIC TESTING SHALL BE PERFORMED ON 10% OF COMPLETE-JOINT-PENETRATION GROOVE WELDS SUBJECT TO TRANSVERSELY APPLIED TENSION LOADING IN BUTT, T- AND CORNER JOINTS, IN MATERIALS 5/16" (8 MM) THICK OR GREATER.
- ALL NONDESTRUCTIVE TESTING OF WELDED JOINTS SHALL BE DOCUMENTED.
- SEE AISC360-16 CHAPTER N FOR ADDITIONAL WELD INSPECTION REQUIREMENTS.
- SEE AISC360-16 CHAPTER N FOR ADDITIONAL BOLT INSPECTION REQUIREMENTS.
- EXPOSED CUT SURFACES OF GALVANIZED STRUCTURAL STEEL MAIN MEMBERS AND EXPOSED CORNERS OF RECTANGULAR HSS SHALL BE VISUALLY INSPECTED FOR CRACKS SUBSEQUENT TO GALVANIZING.
- INSPECTION SHALL OCCUR DURING THE PLACEMENT OF ANCHOR RODS AND OTHER EMBEDMENTS SUPPORTING STRUCTURAL STEEL FOR COMPLIANCE WITH THE CONSTRUCTION DOCUMENTS, INCLUDING DIAMETER, GRADE, TYPE AND LENGTH OF THE ANCHOR ROD OR EMBEDDED ITEM, AND THE EXTENT OR DEPTH OF EMBEDMENT INTO THE CONCRETE.
- FABRICATED STEEL AND ERECTED STEEL FRAMES, AS APPROPRIATE, SHALL BE INSPECTED FOR COMPLIANCE WITH THE DETAILS SHOWN ON THE CONSTRUCTION DOCUMENTS, INCLUDING BRACES, STIFFENERS, MEMBER LOCATIONS AND PROPER JOINT DETAIL APPLICATION.

IBC 2021 TABLE 1705.3  
REQUIRED SPECIAL INSPECTION & TESTS OF CONC CONSTRUCTION

TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION	REFERENCED STANDARD*	IBC REFERENCE	REQUIRED ON PROJECT
1. INSPECTION REINFORCEMENT, INCLUDING PRESTRESSING TENDONS, AND VERIFY PLACEMENT	-	X	ACI 318 CH 20, 25.2, 25.3, 26.6.1-26.6.3	1908.4	YES
2. REINFORCING BAR WELDING: <ul style="list-style-type: none"> <li>A. VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A706.</li> <li>B. INSPECT SINGLE-PASS FILLET WELDS, MAXIMUM 5/16".</li> <li>C. INSPECT ALL OTHER WELDS</li> </ul>	-	X	AWS D1.4, ACI 318, 26.6.4	-	NO
3. INSPECT ANCHORS CAST IN CONCRETE.	-	X	ACI 318, 17.8.2	-	NO
4. INSPECT ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS. <ul style="list-style-type: none"> <li>A. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS.</li> <li>B. MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN 4A.</li> </ul>	X	-	ACI 318, 17.8.2.4, ACI 318, 17.8.2	-	NO
5. VERIFY USE OF REQUIRED DESIGN MIX.	-	X	ACI 318, CH. 19, 26.4.3, 26.4.4	1904.1, 1904.2, 1908.2, 1908.3	YES
6. PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	X	-	ASTM C172, ASTM C31, ACI 318, 26.5, 26.12	1908.10	YES
7. INSPECT CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES	X	-	ACI 318, 26.5	1908.6, 1908.7, 1908.8	YES
8. VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.	-	X	ACI 318, 26.5.3-26.5.5	1908.9	YES
9. INSPECT OF PRESTRESSED CONCRETE FOR: <ul style="list-style-type: none"> <li>A. APPLICATION OF PRESTRESSING FORCES.</li> <li>B. GROUTING OF BONDED PRESTRESSING TENDONS.</li> </ul>	X	-	ACI 318, 26.10	-	NO
10. INSPECT ERECTION OF PRECAST CONCRETE MEMBERS.	-	X	ACI 318, CH. 26.9	-	NO
11. VERIFY IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS IN POST-TENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS.	-	X	ACI 318, 26.11.2	-	NO
12. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.	-	X	ACI 318, 26.11.1.2(b)	-	YES

a. WHERE APPLICABLE, SEE SECTION 1705.12, SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE.

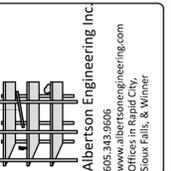
b. SPECIFIC REQUIREMENTS FOR SPECIAL INSPECTION SHALL BE INCLUDED IN THE RESEARCH REPORT FOR THE ANCHOR ISSUED BY AN APPROVED SOURCE IN ACCORDANCE WITH 17.8.2 IN ACI 318, OR OTHER QUALIFICATION PROCEDURES, WHERE SPECIFIC REQUIREMENTS ARE NOT PROVIDED. SPECIAL INSPECTION REQUIREMENTS SHALL BE SPECIFIED BY THE REGISTERED DESIGN PROFESSIONAL AND SHALL BE APPROVED BY THE BUILDING OFFICIAL PRIOR TO THE COMMENCEMENT OF THE WORK.

WELDING OF REINFORCING BARS: SPECIAL INSPECTIONS OF WELDING AND QUALIFICATIONS OF SPECIAL INSPECTORS FOR REINFORCING BARS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF AWS D1.4 FOR SPECIAL INSPECTION AND AWS D1.4 FOR SPECIAL INSPECTOR QUALIFICATION.

MATERIAL TESTS: IN THE ABSENCE OF SUFFICIENT DATA OR DOCUMENTATION PROVIDING EVIDENCE OF CONFORMANCE TO QUALITY STANDARDS FOR MATERIALS IN CHAPTERS 19 AND 20 OF ACI 318, THE BUILDING OFFICIAL SHALL REQUIRE TESTING OF MATERIALS IN ACCORDANCE WITH THE APPROPRIATE STANDARDS AND CRITERIA FOR THE MATERIAL IN CHAPTERS 19 AND 20 OF ACI 318.

SPECIAL INSPECTION AND TESTING:

- SPECIAL INSPECTION AND MINIMUM TESTING SHALL BE PERFORMED IN ACCORDANCE WITH 2021 IBC TABLE 1705.3 (CONCRETE) AND AISC 360 REQUIREMENTS.
- INSPECTION SHALL BE PROVIDED BY AN INDEPENDENT TESTING AGENCY HIRED AT THE CONTRACTOR'S EXPENSE. AGENCY INSPECTION PERSONNEL SHALL MEET THE INSPECTOR QUALIFICATIONS FOR EACH MATERIAL ITEM AS INDICATED IN THE SPECIFICATIONS.
- ANY MATERIAL OR PLACEMENT DEVIATIONS FROM MINIMUMS SHOWN ON THE DRAWINGS OR IN SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
- IN ADDITION TO THE IBC INSPECTION TABLES, THE INSPECTOR SHALL VERIFY THAT ALL STEEL MAINTAIN ERECTION TOLERANCES OF STRUCTURAL STEEL WITHIN AISC'S CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES.
- IN ADDITION TO THE CONCRETE IBC INSPECTION TABLES, THE INSPECTOR SHALL VERIFY THAT ALL CONCRETE MAINTAIN TOLERANCES SPECIFIED IN ACI 117-90 STANDARD SPECIFICATIONS FOR TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS.
- TESTING - ANY FAILED FIELD TEST SHALL BE REPORTED TO ALBERTSON ENGINEERING INC IMMEDIATELY.

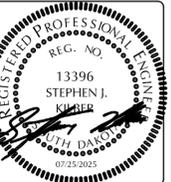



INSPECTION TABLES

1250L PUMP ROOM REHABILITATION

LEAD, SOUTH DAKOTA

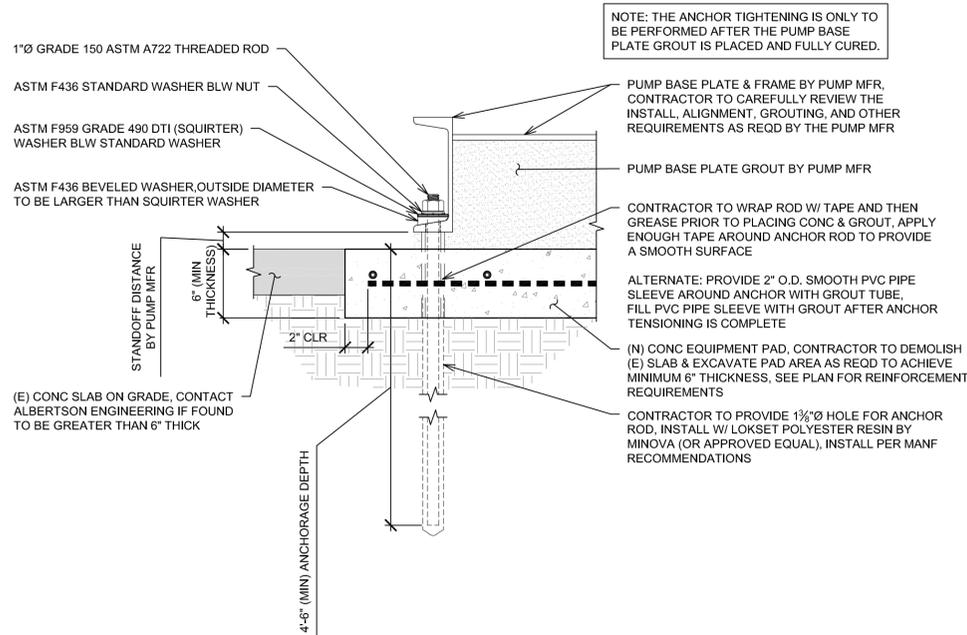
PROJECT#:	2023-379
DESIGNED:	SJK
DRAWN:	SJK
APPROVED:	SJK
DATE:	07/25/2025



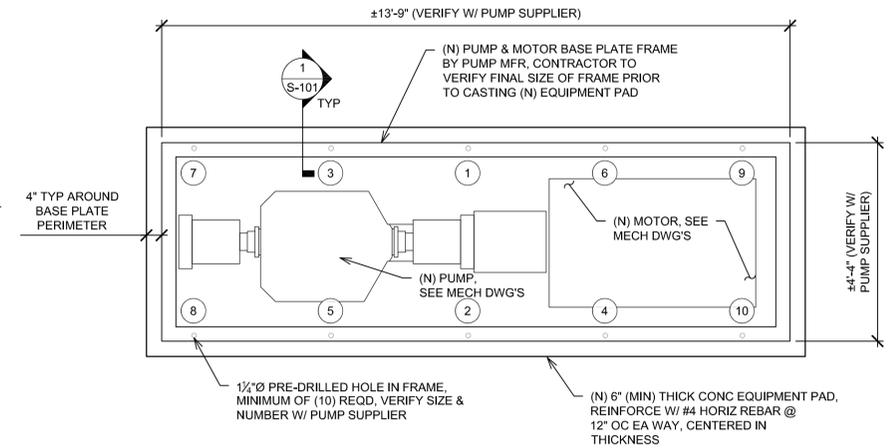
SHEET:  
**S-002**  
Copyright © 2024

**PUMP ROOM FLOOR PLAN NOTES**

- SEE SHEET S-001 FOR GENERAL STRUCTURAL NOTES.
- VERIFY ALL DIMENSIONS & ELEVATIONS WITH MECHANICAL DRAWINGS & EXISTING CONDITIONS BEFORE CONSTRUCTION COMMENCES.
- CONTRACTOR TO COORDINATE ALL SCHEDULING OF DEMOLITION OF EXISTING INFRASTRUCTURE AND INSTALLATION OF NEW PIPING AND MECHANICAL SYSTEMS WITH BOTH THE DESIGN TEAM AND OWNER.
- ALL DIMENSIONS SHOWN IN PLAN ARE FOR REFERENCE ONLY. THE CONTRACTOR IS TO COORDINATE FINAL EQUIPMENT AND PIPING LOCATIONS BETWEEN STRUCTURAL DRAWINGS, MECHANICAL DRAWINGS, AND EXISTING CONDITIONS.
- SEE MECHANICAL DRAWINGS FOR EXTENT OF DEMOLITION FOR EXISTING PIPING, ELECTRICAL, AND PUMPING SYSTEMS.
- ALL NEW RAIL TO CONSIST OF ASCE 40 LB/YD MATERIAL. THE RAIL GAGE SPACING IS TO BE 1'-6" (CONTRACTOR TO FIELD VERIFY WITH EXISTING CONDITIONS.) SEE THE TYPICAL RAIL CONNECTION DETAILS ON SHEET S-104 FOR ADDITIONAL INFORMATION.
- ALL EXISTING RAIL WITHIN THE DRIFT IS TO BE DEMOLISHED AND REPLACED WITH NEW ASCE 40 LB/YD RAIL. THE CONTRACTOR IS TO STOCKPILE THE REMOVED RAIL FOR THE SDSTA TO USE. THE CONTRACTOR SHALL COORDINATE THE STOCKPILE LOCATION WITH THE SDSTA.
- THE INSTALLATION OF THE PUMP BASEPLATE, FRAME, PUMP AND MOTOR IS TO BE IN STRICT ACCORDANCE WITH THE PUMP MANUFACTURER'S REQUIREMENTS. THE CONTRACTOR IS TO CAREFULLY REVIEW THE MANUFACTURER'S INSTALLATION REQUIREMENTS.

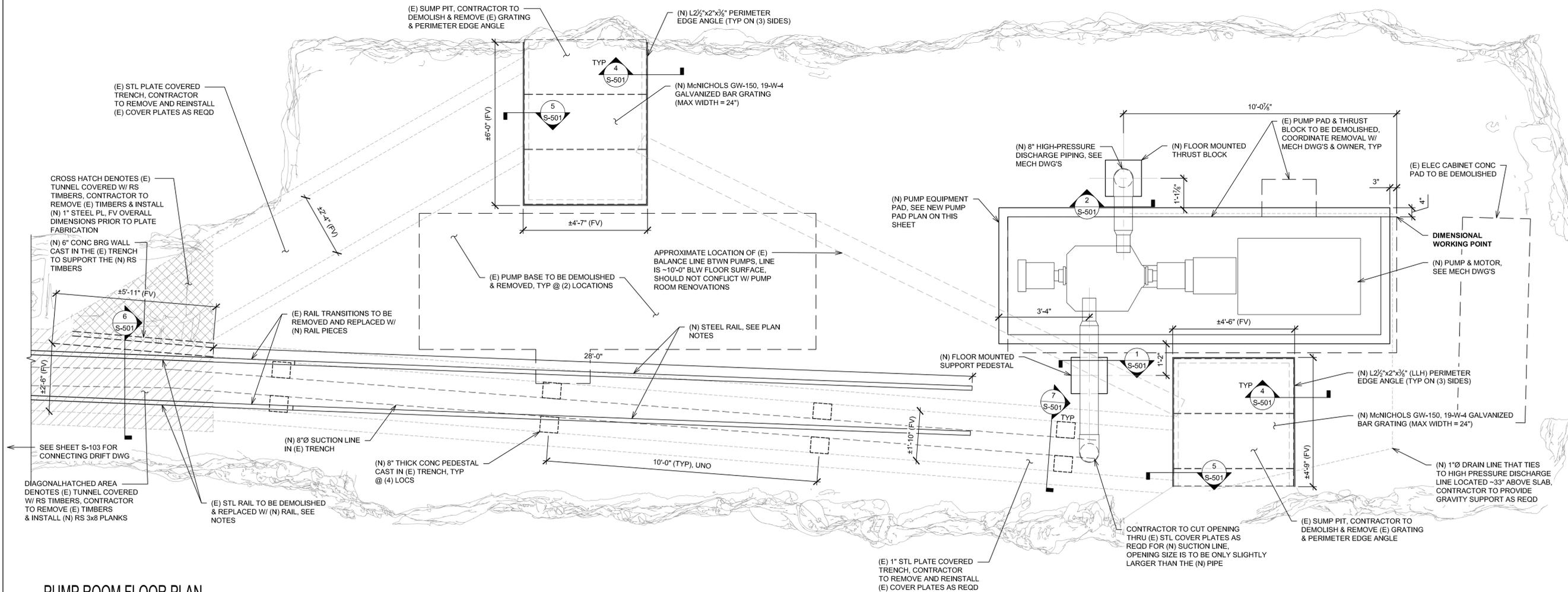
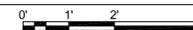
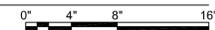


- ANCHOR TIGHTENING NOTES:**
- TENSION THE ANCHOR RODS PER THE NOTED # SEQUENCE SHOWN IN PLAN.
  - ALL BOLTS ARE TO BE MADE SNUG TIGHT.
  - ADVANCE NUTS 1/2 TURN IN THE NUMBERED SEQUENCE IN PLAN.
  - REPEAT STEP 3 WITH THE NUMBER ANCHOR SEQUENCE UNTIL THE SQUIRTER WASHERS ACTIVATE AT ALL OF THE ROD LOCATIONS.



**1**  
**S-101**  
SCALE: 1/2"=1'-0"

**NEW PUMP PAD PLAN**  
SCALE: 1/2"=1'-0"



**PUMP ROOM FLOOR PLAN**

SCALE: 1/2"=1'-0"



**WPE WEST PLAINS ENGINEERING, INC.**  
1750 RAND ROAD • RAPID CITY SD, 57702  
PHONE: (605) 348-7455 • FAX: (605) 348-9445  
WWW.WPEENGINEERING.COM  
RAPID CITY, SD • SIOUX FALLS, SD • CASPER, WY • CEDAR RAPIDS, IA • BISMARCK, ND

**Albertson Engineering Inc.**  
605.343.9006  
WWW.ALBERTSONENGINEERING.COM  
Offices in Rapid City, Sioux Falls, & Winner

**NEW PUMP ROOM FLOOR PLAN**  
**1250L PUMP ROOM REHABILITATION**  
LEAD, SOUTH DAKOTA

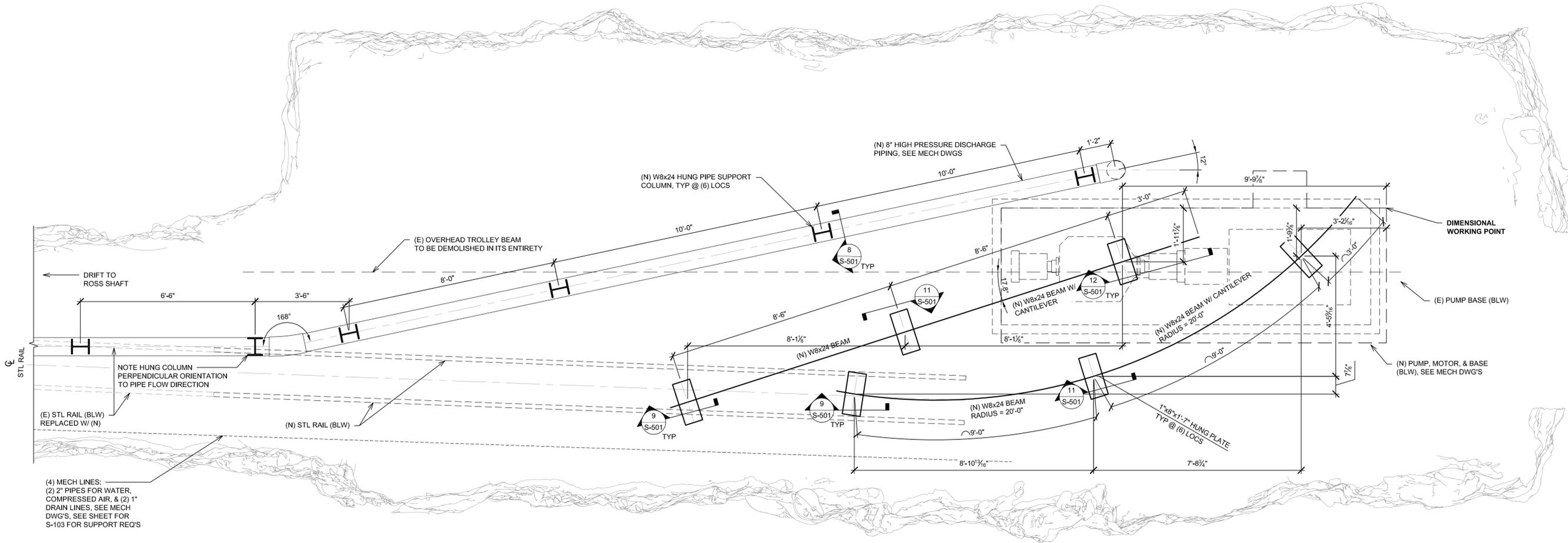
PROJECT#: 2023-379  
DESIGNED: SJK  
DRAWN: SJK  
APPROVED: SJK  
DATE: 07/25/2025

REGISTERED PROFESSIONAL ENGINEER  
REG. NO. 13396  
STEPHEN J. KUBER  
SOUTH DAKOTA  
07/25/2025

SHEET:  
**S-101**  
Copyright © 2024

**PUMP ROOM CEILING PLAN NOTES**

- SEE SHEET S-001 FOR GENERAL STRUCTURAL NOTES.
- VERIFY ALL DIMENSIONS & ELEVATIONS WITH MECHANICAL DRAWINGS & EXISTING CONDITIONS BEFORE CONSTRUCTION COMMENCES.
- CONTRACTOR TO COORDINATE ALL SCHEDULING OF DEMOLITION OF EXISTING INFRASTRUCTURE AND INSTALLATION OF NEW PIPING AND MECHANICAL SYSTEMS WITH BOTH THE DESIGN TEAM AND OWNER.
- ALL DIMENSIONS SHOWN IN PLAN ARE FOR REFERENCE ONLY. THE CONTRACTOR IS TO COORDINATE FINAL EQUIPMENT AND PIPING LOCATIONS BETWEEN STRUCTURAL DRAWINGS, MECHANICAL DRAWINGS, AND EXISTING CONDITIONS.
- SEE MECHANICAL DRAWINGS FOR EXTENT OF DEMOLITION FOR EXISTING PIPING, ELECTRICAL, AND PUMPING SYSTEMS.
- FOR THE OVERHEAD TROLLEY BEAMS, THE CONTRACTOR IS TO INSTALL THESE BEAMS IN ACCORDANCE WITH THE CRANE MANUFACTURERS ASSOCIATION OF AMERICA (CMAA) REQUIREMENTS. SOME OF THE PERTINENT ALIGNMENT AND INSTALLATION REQUIREMENTS ARE:
  - MAXIMUM GAP BETWEEN ENDS OF THE LOAD CARRYING FLANGES SHALL NOT EXCEED  $\frac{1}{8}$ ".
  - THE VERTICAL LONGITUDINAL MISALIGNMENT OF CRANE BEAMS FROM STRAIGHT SHALL NOT EXCEED  $\pm \frac{1}{4}$ " PER 50'-0".
  - THE MAXIMUM RATE OF ELEVATION CHANGE ALONG ANY BEAM LENGTH CANNOT EXCEED  $\frac{1}{4}$ " IN PER 20'-0".
- THE CONTRACTOR IS TO PERFORM A LOAD TEST OF THE TROLLEY BEAM ASSEMBLIES. THE SDSTA REQUIRES A PROOF LOAD OF 125% OF THE RATED TROLLEY BEAM CAPACITY BE APPLIED AS PART OF THE LOAD TEST. THE CONTRACTOR IS TO COORDINATE PROOF TEST OPERATION W/ SDSTA PRIOR TO FIELD EXECUTION.



**PUMP ROOM CEILING PLAN**

SCALE:  $\frac{1}{2}$ "=1'-0"



**WEST PLAINS ENGINEERING, INC.**  
 1750 RAND ROAD • RAPID CITY SD, 57702  
 PHONE: (605) 348-7455 • FAX: (605) 348-9445  
 WWW.WESTPLAINSENGINEERING.COM  
 RAPID CITY, SD • SIOUX FALLS, SD • CASPER, WY • CEDAR RAPIDS, IA • BISMARCK, ND

**Albertson Engineering Inc.**  
 605.243.9006  
 www.albertsonengineering.com  
 Offices in Rapid City, Sioux Falls, & Winner

NEW PUMP ROOM CEILING PLAN  
**1250L PUMP ROOM REHABILITATION**  
 LEAD, SOUTH DAKOTA

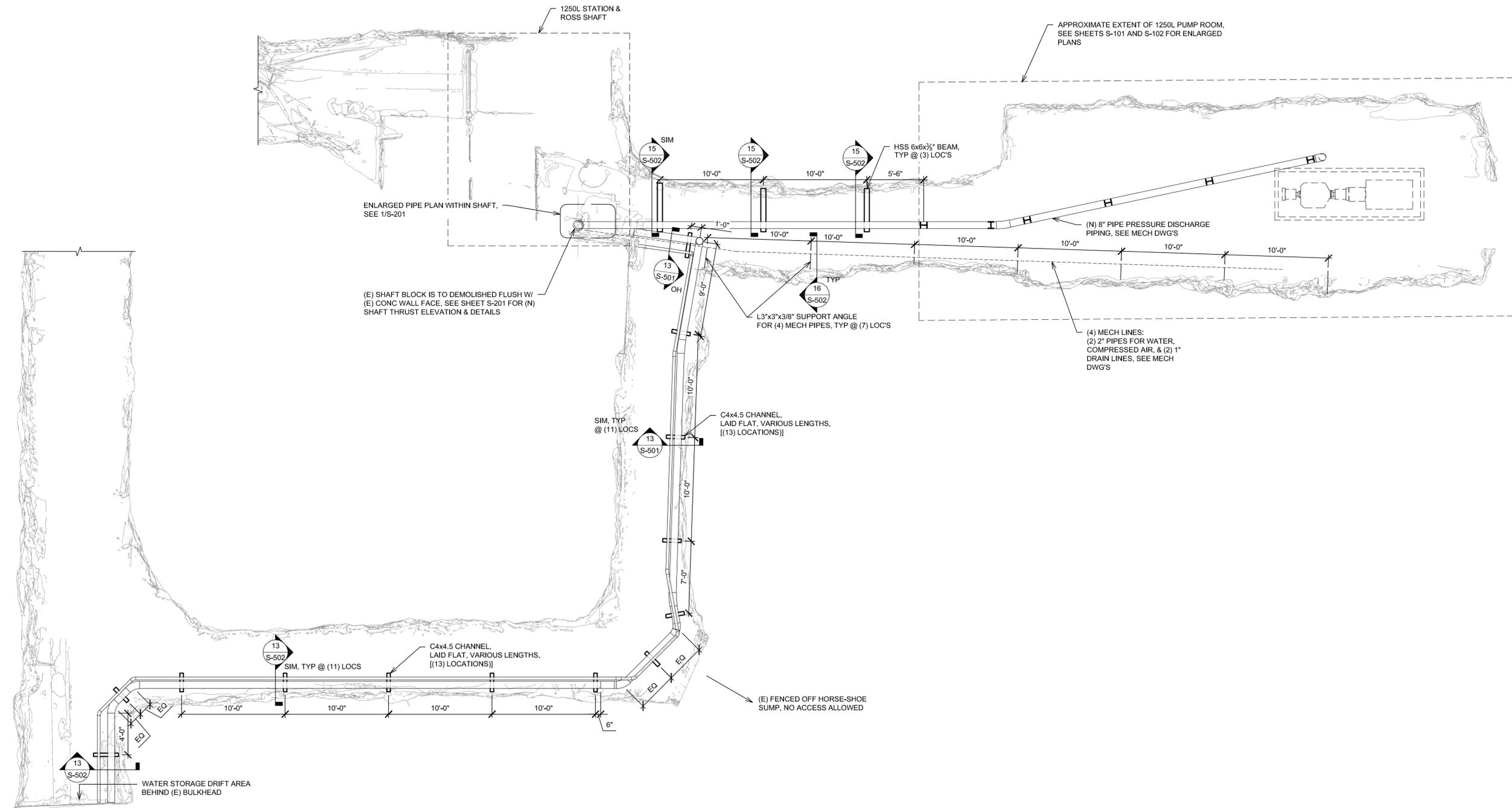
PROJECT#:	2023-379
DESIGNED:	SJK
DRAWN:	SJK
APPROVED:	SJK
DATE:	07/25/2025



SHEET:  
**S-102**  
 Copyright © 2024

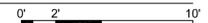
**DRIFT ELEVATED PIPING PLAN NOTES**

- SEE SHEET S-001 FOR GENERAL STRUCTURAL NOTES.
- VERIFY ALL DIMENSIONS & ELEVATIONS WITH MECHANICAL DRAWINGS & EXISTING CONDITIONS BEFORE CONSTRUCTION COMMENCES.
- CONTRACTOR TO COORDINATE ALL SCHEDULING OF DEMOLITION OF EXISTING INFRASTRUCTURE AND INSTALLATION OF NEW PIPING AND MECHANICAL SYSTEMS WITH BOTH THE DESIGN TEAM AND OWNER.
- ALL DIMENSIONS SHOWN IN PLAN ARE FOR REFERENCE ONLY. THE CONTRACTOR IS TO COORDINATE FINAL EQUIPMENT AND PIPING LOCATIONS BETWEEN STRUCTURAL DRAWINGS, MECHANICAL DRAWINGS, AND EXISTING CONDITIONS.
- SEE MECHANICAL DRAWINGS FOR EXTENT OF DEMOLITION FOR EXISTING PIPING, ELECTRICAL, AND PUMPING SYSTEMS.



**DRIFT ELEVATED PIPING PLAN**

SCALE: 3/16"=1'-0"



**WPE** WEST PLAINS ENGINEERING, INC.  
 1750 RAND ROAD • RAPID CITY SD, 57702  
 PHONE: (605) 348-7455 • FAX: (605) 348-9445  
 WWW.WPEENGINEERING.COM  
 RAPID CITY, SD • SIOUX FALLS, SD • CASPER, WY • CEDAR RAPIDS, IA • BISMARCK, ND

Albertson Engineering Inc  
 605.243.9006  
 www.albertsonengineering.com  
 Offices in Rapid City, Sioux Falls, & Winner

DRIFT ELEVATED PIPING PLAN  
**1250L PUMP ROOM REHABILITATION**  
 LEAD, SOUTH DAKOTA

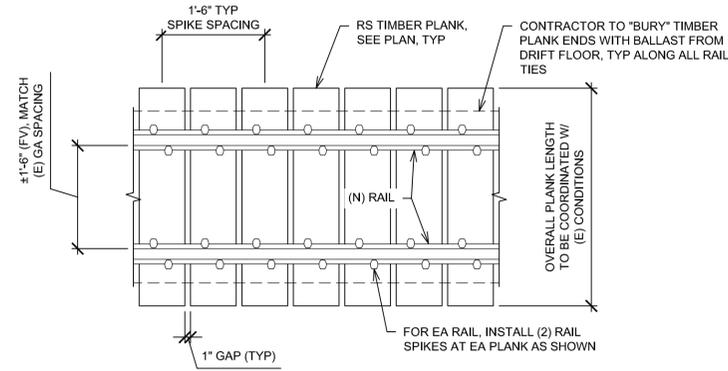
PROJECT#:	2023-379
DESIGNED:	SJK
DRAWN:	SJK
APPROVED:	SJK
DATE:	07/25/2025



SHEET:  
**S-103**  
 Copyright © 2024

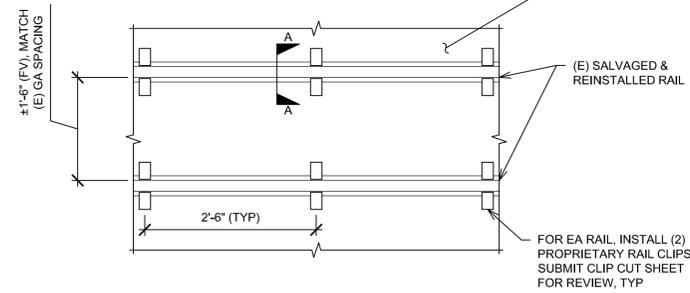
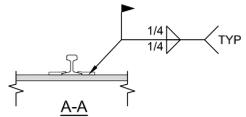
**DRIFT RAIL SALVAGE & REINSTALL PLAN NOTES**

- SEE SHEET S-001 FOR GENERAL STRUCTURAL NOTES.
- VERIFY ALL DIMENSIONS & ELEVATIONS WITH MECHANICAL DRAWINGS & EXISTING CONDITIONS BEFORE CONSTRUCTION COMMENCES.
- CONTRACTOR TO COORDINATE ALL SCHEDULING OF DEMOLITION OF EXISTING INFRASTRUCTURE AND INSTALLATION OF NEW PIPING AND MECHANICAL SYSTEMS WITH BOTH THE DESIGN TEAM AND OWNER.
- ALL DIMENSIONS SHOWN IN PLAN ARE FOR REFERENCE ONLY. THE CONTRACTOR IS TO COORDINATE FINAL EQUIPMENT AND PIPING LOCATIONS BETWEEN STRUCTURAL DRAWINGS, MECHANICAL DRAWINGS, AND EXISTING CONDITIONS.
- SEE MECHANICAL DRAWINGS FOR EXTENT OF DEMOLITION FOR EXISTING PIPING, ELECTRICAL, AND PUMPING SYSTEMS.
- ALL NEW RAIL TO CONSIST OF ASCE 40 LB/YD MATERIAL. THE RAIL GAGE SPACING IS TO BE 1'-6" (CONTRACTOR TO FIELD VERIFY WITH EXISTING CONDITIONS.) SEE THE TYPICAL RAIL CONNECTION DETAILS ON THIS SHEET FOR ADDITIONAL INFORMATION.



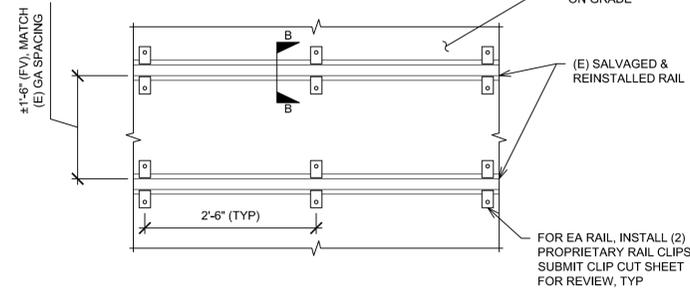
**TYPICAL RAIL OVER TRENCH DETAIL**

SCALE: 3/4"=1'-0"



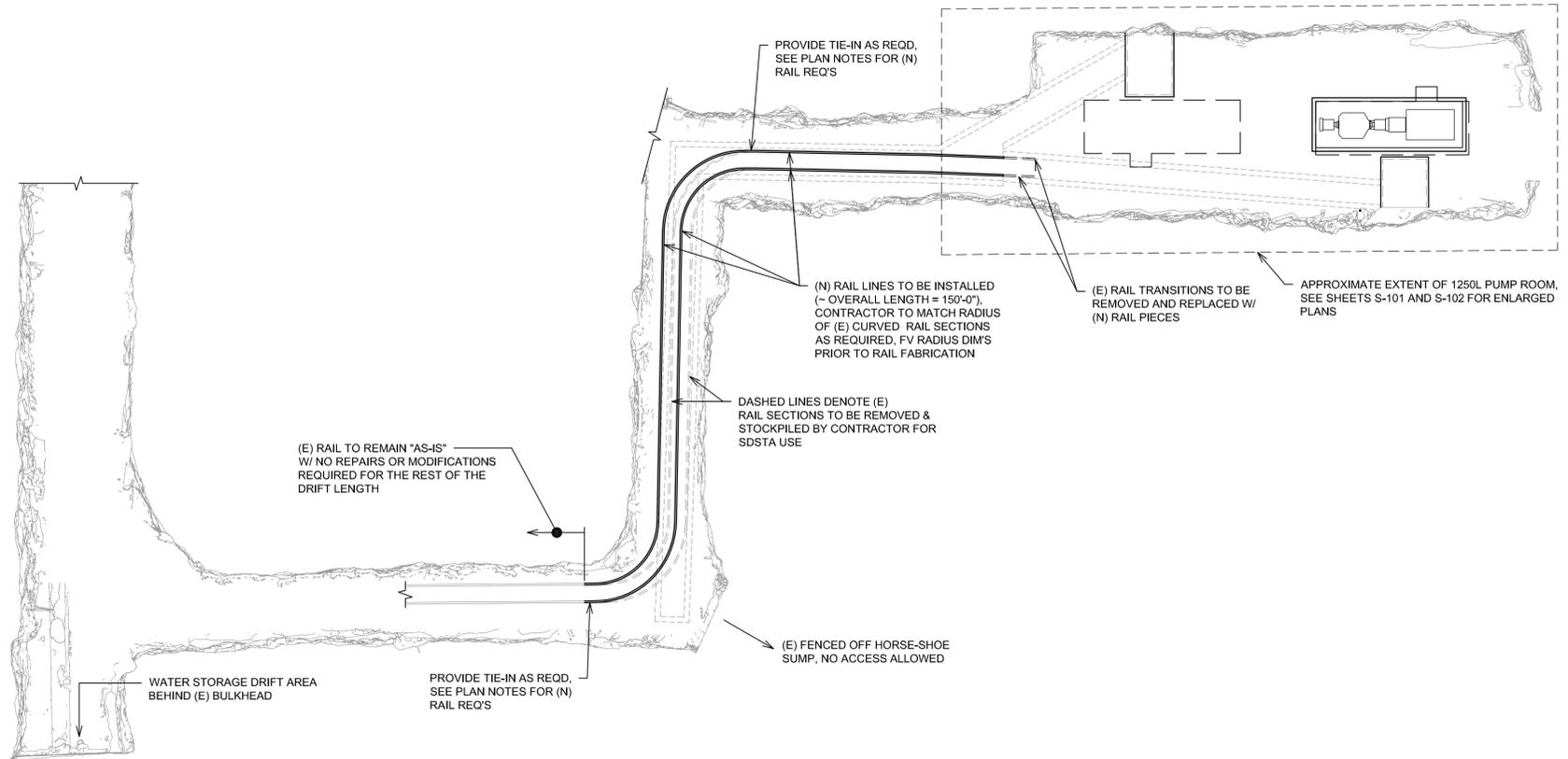
**TYPICAL RAIL ON STEEL PLATE DETAIL**

SCALE: 3/4"=1'-0"



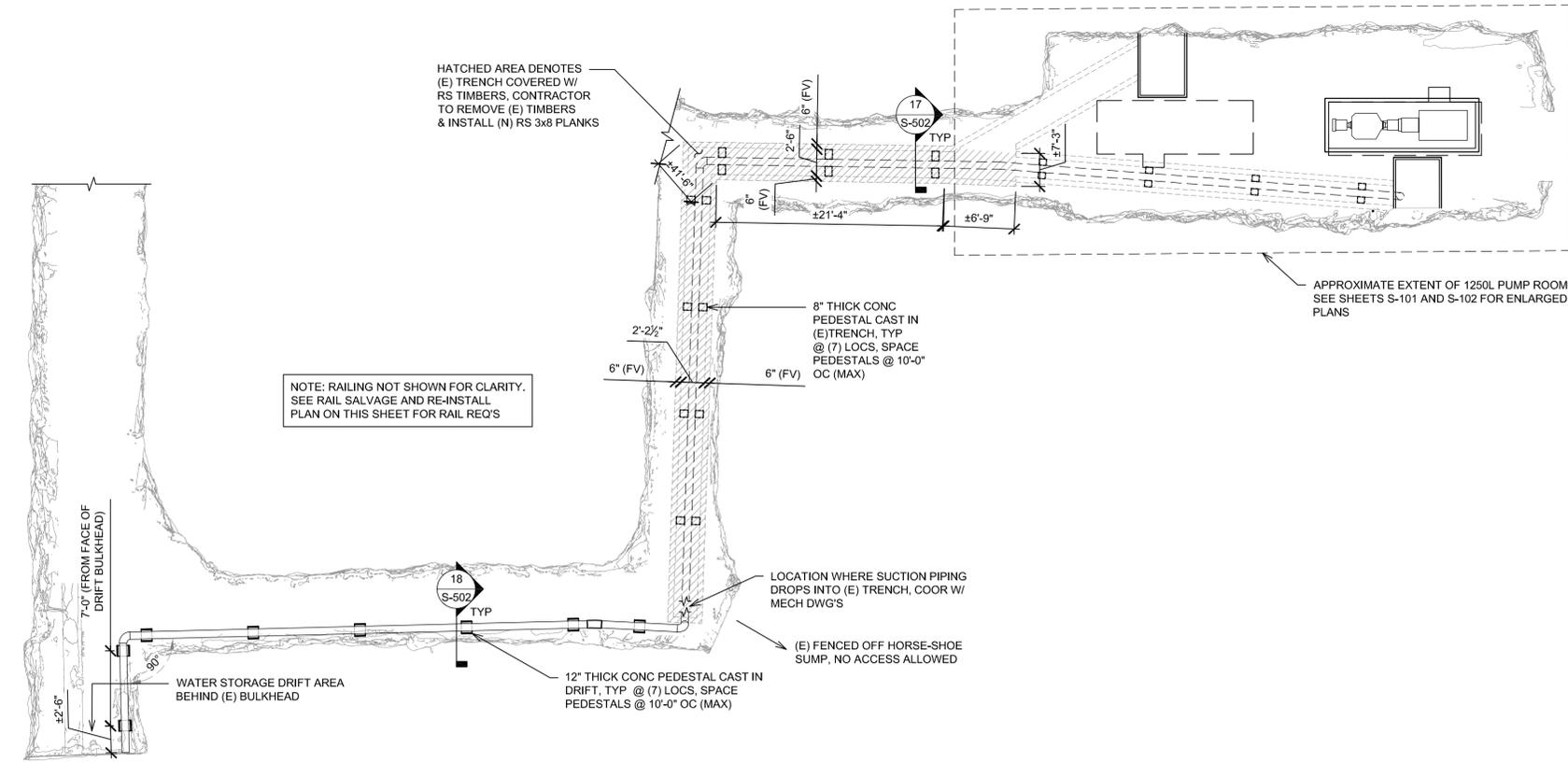
**TYPICAL RAIL ON CONCRETE DETAIL**

SCALE: 3/4"=1'-0"



**DRIFT RAIL SALVAGE AND RE-INSTALL PLAN**

SCALE: 1/8"=1'-0"



**DRIFT TIMBER DECKING REPLACEMENT & AT-GRADE PIPING PLAN**

SCALE: 1/8"=1'-0"

**WPE WEST PLAINS ENGINEERING, INC.**  
 1750 RAND ROAD • RAPID CITY SD, 57702  
 PHONE: (605) 348-7455 • FAX: (605) 348-9445  
 WWW.WPEENGINEERING.COM  
 RAPID CITY, SD • SIOUX FALLS, SD • CASPER, WY • CEDAR RAPIDS, IA • BISMARCK, ND

Albertson Engineering Inc.  
 605.343.9006  
 www.albertsonengineering.com  
 Offices in Rapid City, Sioux Falls, & Winner

DRIFT DECKING REPLACEMENT PLAN & RAIL SALVAGE AND RE-INSTALL PLAN  
**1250L PUMP ROOM REHABILITATION**  
 LEAD, SOUTH DAKOTA

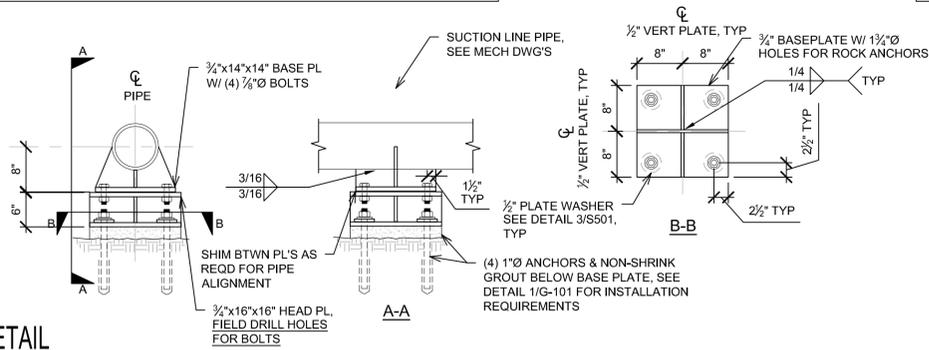
PROJECT#:	2023-379
DESIGNED:	SJK
DRAWN:	SJK
APPROVED:	SJK
DATE:	07/25/2025



SHEET:  
**S-104**  
 Copyright © 2024

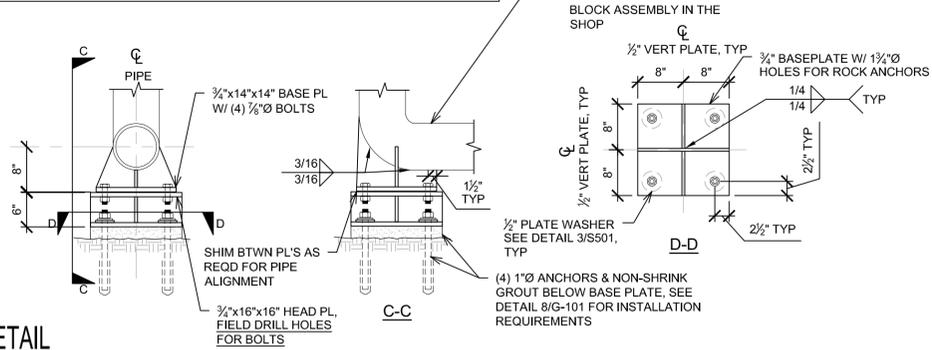


NOTE: THE SUCTION LINE PIPE SHALL BE INSTALLED & ALIGNED IN STRICT ACCORDANCE W/ THE PUMP MFR'S REQUIREMENTS. THE CONTRACT IS TO SHIM BETWEEN THE PLATES AND FIELD DRILL THE BOLT HOLES AS REQUIRED AS PART OF THE NECESSARY PIPE ALIGNMENT.



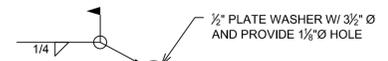
1  
S-501  
SCALE: 3/4"=1'-0"

NOTE: THE SUCTION LINE PIPE SHALL BE INSTALLED & ALIGNED IN STRICT ACCORDANCE W/ THE PUMP MFR'S REQUIREMENTS. THE CONTRACT IS TO SHIM BETWEEN THE PLATES AND FIELD DRILL THE BOLT HOLES AS REQUIRED AS PART OF THE NECESSARY PIPE ALIGNMENT.

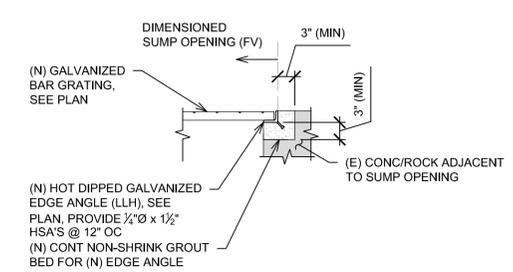


2  
S-501  
SCALE: 3/4"=1'-0"

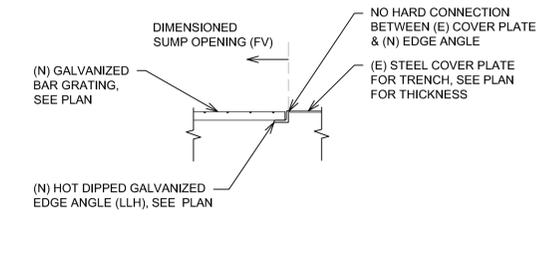
HIGH PRESSURE DISCHARGE PIPE. SEE MECH DWGS. THE PIPE ELBOWS SHALL BE WELDED TO THE THRUST BLOCK ASSEMBLY IN THE SHOP



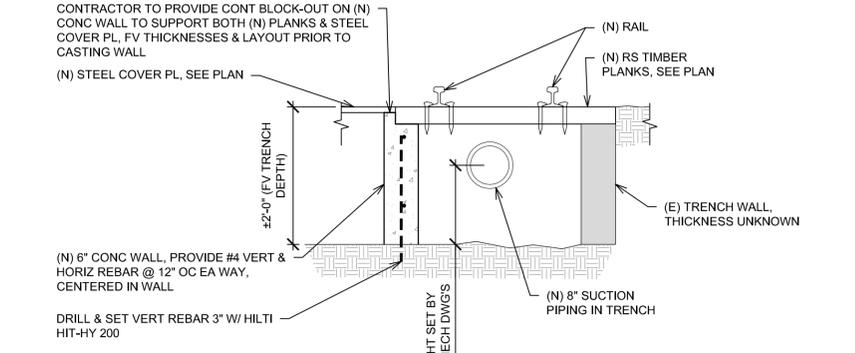
3  
S-501  
SCALE: 3/4"=1'-0"



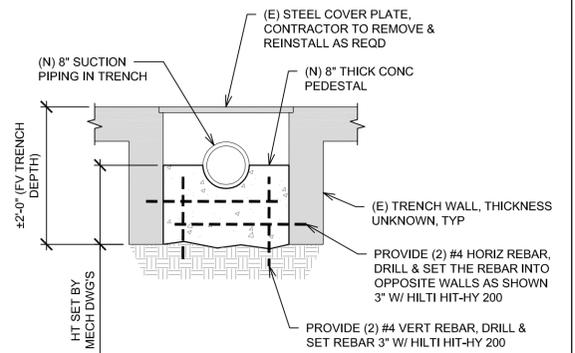
4  
S-501  
SCALE: 3/4"=1'-0"



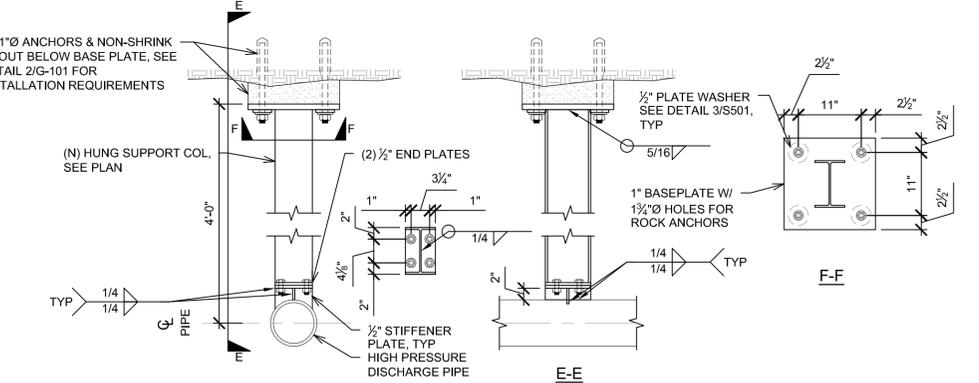
5  
S-501  
SCALE: 3/4"=1'-0"



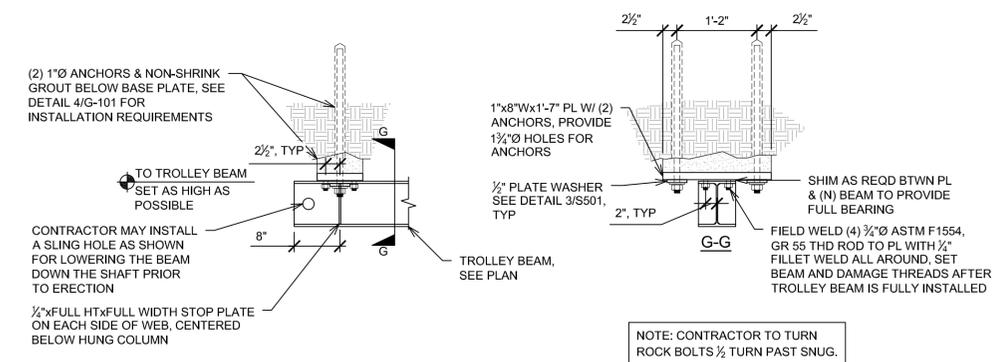
6  
S-501  
SCALE: 3/4"=1'-0"



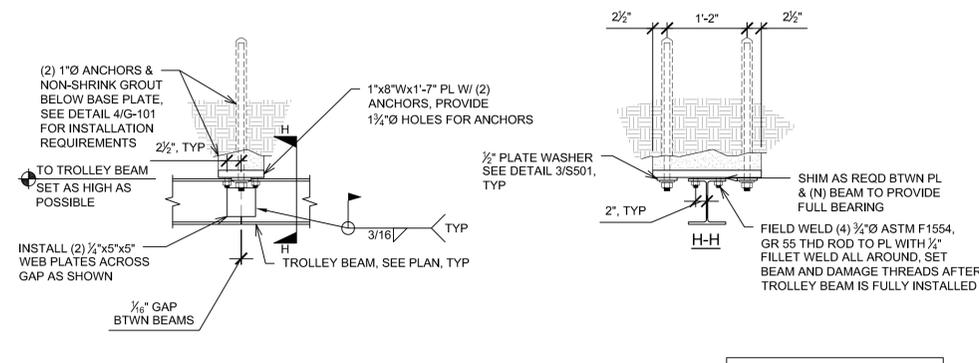
7  
S-501  
SCALE: 3/4"=1'-0"



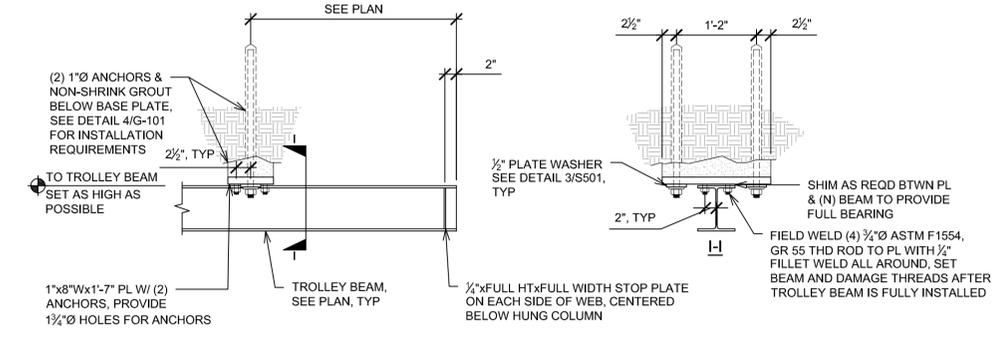
8  
S-501  
SCALE: 3/4"=1'-0"



9  
S-501  
SCALE: 3/4"=1'-0"



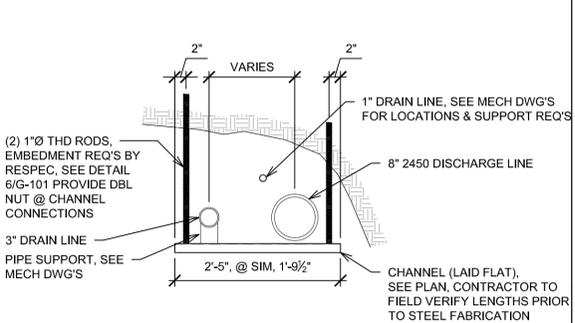
10  
S-501  
SCALE: 3/4"=1'-0"



11  
S-501  
SCALE: 3/4"=1'-0"



12  
S-501  
SCALE: 3/4"=1'-0"



13  
S-501  
SCALE: 3/4"=1'-0"

**WEST PLAINS ENGINEERING, INC.**  
1750 RAND ROAD • RAPID CITY SD, 57702  
PHONE: (605) 348-7455 • FAX: (605) 348-9445  
WWW.WPEENGINEERING.COM  
OFFICES IN RAPID CITY, SIOUX FALLS, SD • CASPER, WY • CEDAR RAPIDS, IA • BISMARCK, ND

Albertson Engineering Inc.  
605.348.9006  
www.albertsonengineering.com  
Offices in Rapid City, Sioux Falls, & Winner

1250L PUMP ROOM REHABILITATION  
LEAD, SOUTH DAKOTA

PROJECT#: 2023-379  
DESIGNED: SJK  
DRAWN: SJK  
APPROVED: SJK  
DATE: 07/25/2025

REGISTERED PROFESSIONAL ENGINEER  
REG. NO. 13396  
STEPHEN J. KUMER  
SOUTH DAKOTA  
07/25/2025

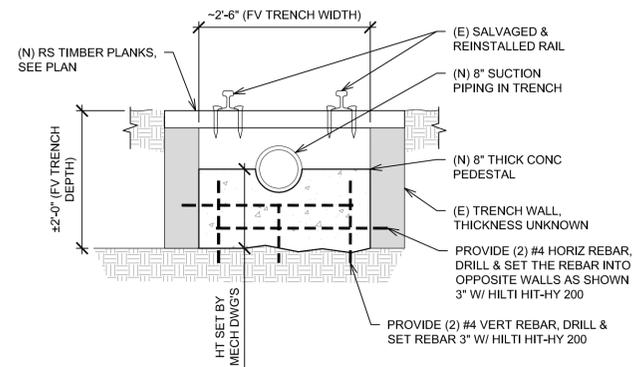
SHEET:  
**S-501**  
Copyright © 2024

NOT USED

14  
S-502

DETAIL

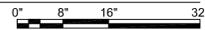
SCALE: 3/4"=1'-0"



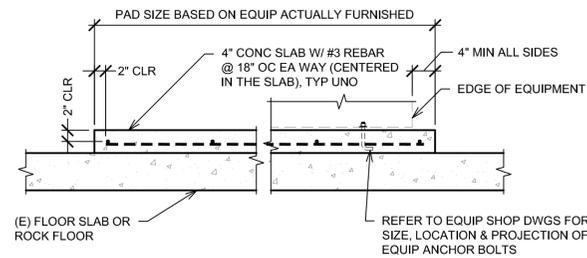
17  
S-502

DETAIL

SCALE: 3/4"=1'-0"

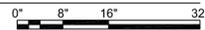


NOTE:  
SEE MECH & ELEC DWGS FOR PADS REQUIRED



TYPICAL EQUIPMENT HOUSE KEEPING PAD DETAIL

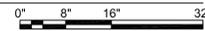
SCALE: 3/4"=1'-0"



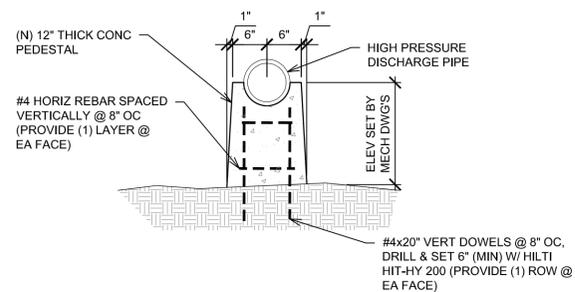
15  
S-502

DETAIL

SCALE: 3/4"=1'-0"



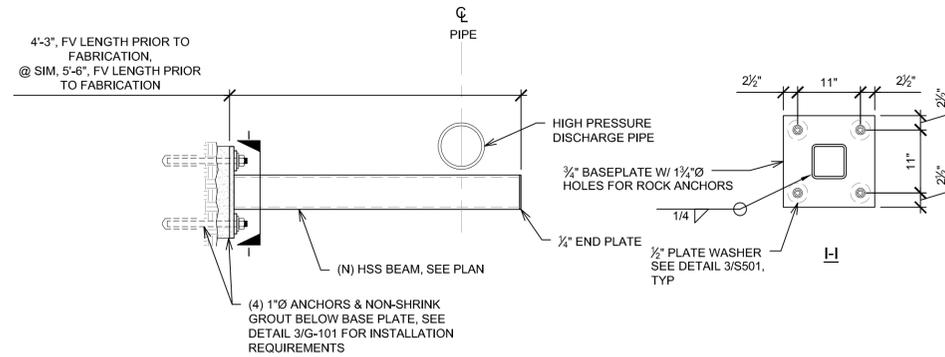
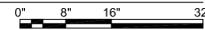
NOTE: PROVIDE 2" CLEAR COVER FOR ALL REBAR FROM FINISHED CONCRETE SURFACES



18  
S-502

DETAIL

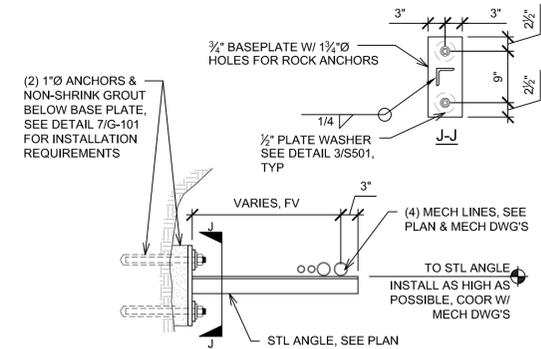
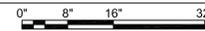
SCALE: 3/4"=1'-0"



16  
S-502

DETAIL

SCALE: 3/4"=1'-0"



**WEST PLAINS ENGINEERING, INC.**  
1750 RAND ROAD • RAPID CITY SD, 57702  
PHONE: (605) 348-7455 • FAX: (605) 348-9445  
WWW.WESTPLAINSENGINEERING.COM  
RAPID CITY, SD • SIOUX FALLS, SD • CASPER, WY • CEDAR RAPIDS, IA • BISMARCK, ND

Albertson Engineering Inc.  
605.348.9006  
www.albertsonengineering.com  
Offices in Rapid City, Sioux Falls, & Winner

DETAILS

**1250L PUMP ROOM REHABILITATION**

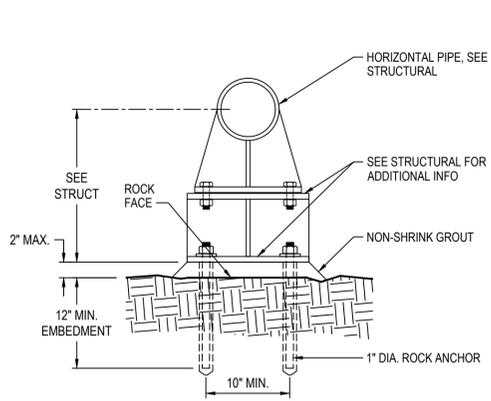
LEAD, SOUTH DAKOTA

PROJECT#: 2023-379

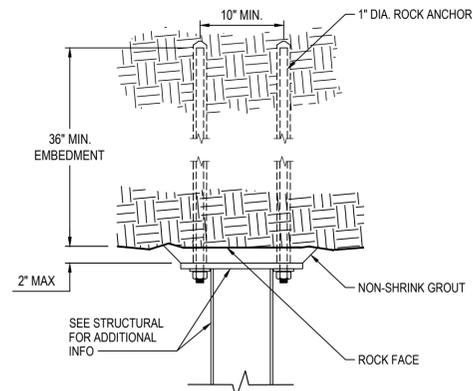
DESIGNED: SJK  
DRAWN: SJK  
APPROVED: SJK  
DATE: 07/25/2025



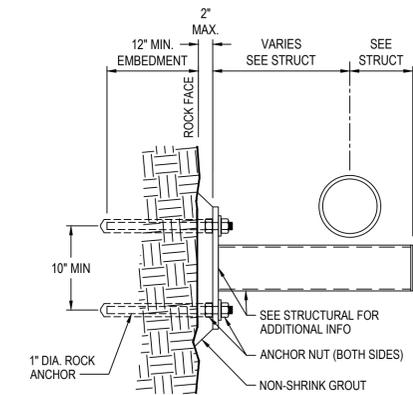
SHEET:  
**S-502**  
Copyright © 2024



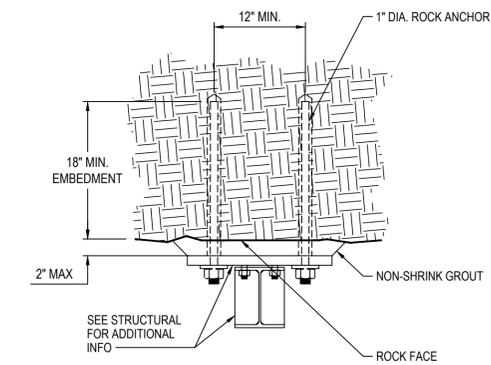
**1 HORIZONTAL PIPE SUPPORT (FLOOR)**  
G-101 SCALE: 1" = 1'



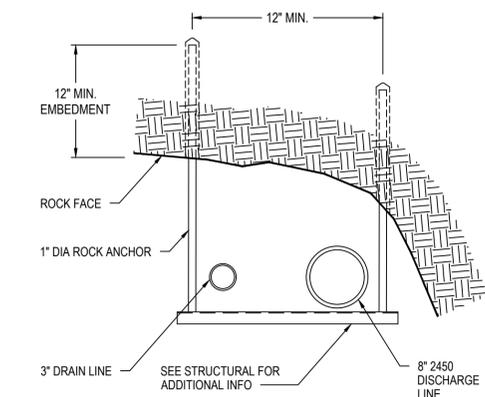
**2 GENERAL PIPE SUPPORT (OVERHEAD)**  
G-101 SCALE: 1" = 1'



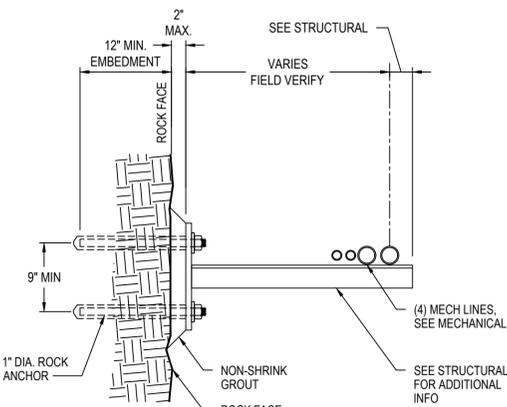
**3 GENERAL PIPE SUPPORT (WALL)**  
G-101 SCALE: 1" = 1'



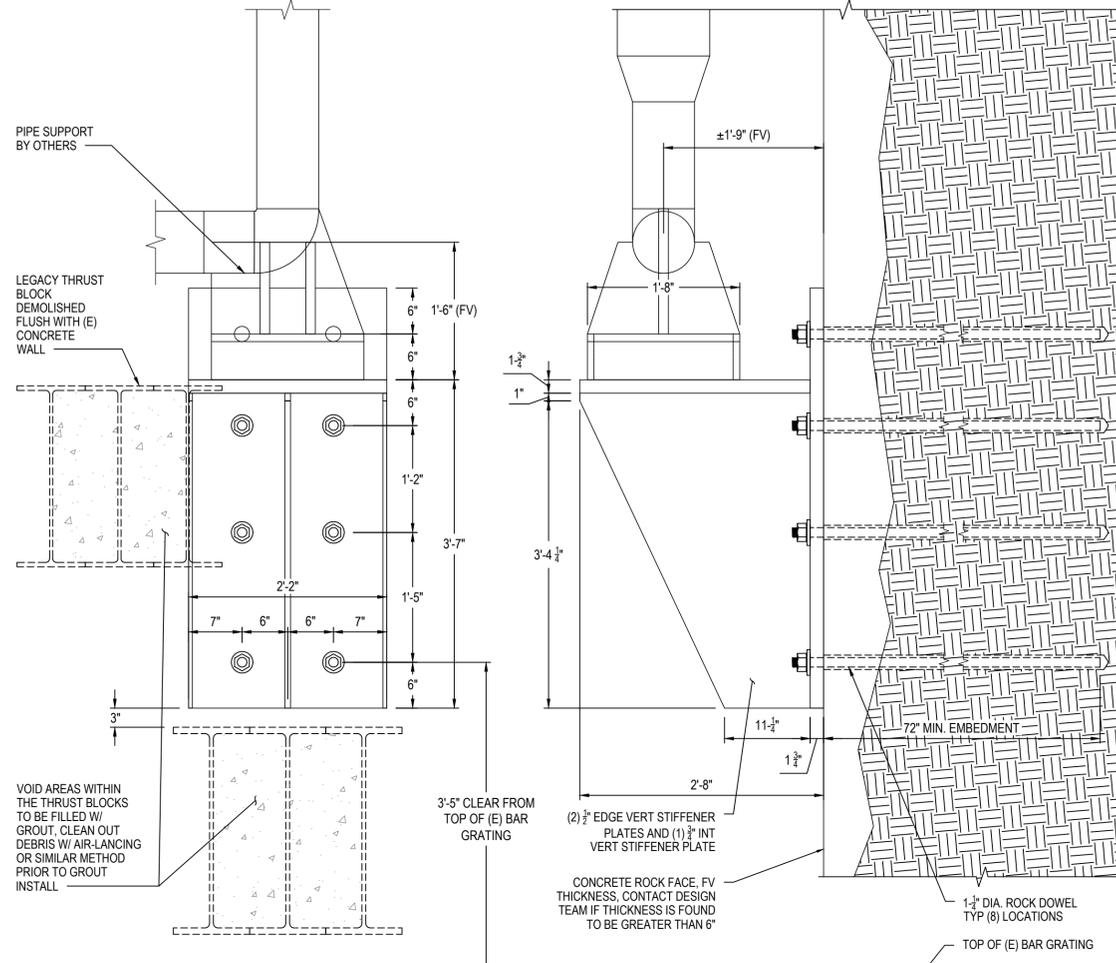
**4 MONORAIL SUPPORT (OVERHEAD)**  
G-101 SCALE: 1" = 1'



**6 TRAPEZE PIPE SUPPORT (OVERHEAD)**  
G-101 SCALE: 1" = 1'



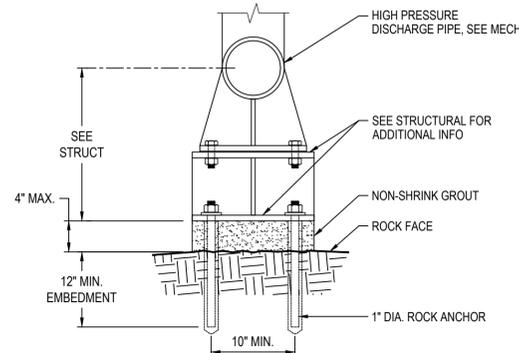
**7 ANGLE PIPE SUPPORT (WALL)**  
G-101 SCALE: 1" = 1'



**FRONT VIEW**  
SCALE: 1" = 1'

**SIDE VIEW**  
SCALE: 1" = 1'

**5 SHAFT THRUST BLOCK (WALL)**  
G-101 SCALE: 1" = 1'



**8 90 DEGREE THRUST BLOCK (FLOOR)**  
G-101 SCALE: 1" = 1'

**SHEET NOTES:**

1. GROUT SHALL BE NON-SHRINK GROUT WITH A COMPRESSIVE STRENGTH OF MINIMUM 7,000 PSI AT 7 DAYS AND MEET ASTM C1107.
2. ANCHORS SHALL BE ALL-THREAD ROCK DOWELS, GRADE 75 (ASTM A615), GRADE 150 (ASTM A722), OR APPROVED PRODUCT.
3. ROCK ANCHORS SHALL BE INSTALLED USING POLYESTER RESIN.
4. ANCHOR NUT SHALL MEET ASTM A108, HARDENED WASHER SHALL MEET ASTM F436.
5. THE EXPOSED THREADED RODS AND HARDWARE SHALL BE COATED USING AN EPOXY COATING SUCH AS PC-591 FROM GULF COAST PAINT MFG., INC. OR APPROVED PRODUCT.
6. NON DESTRUCTIVE PULL TESTING SHALL BE PAID FOR AND COORDINATED BY THE CONTRACTOR.

ROCK ANCHOR SCHEDULE							
ROCK ANCHOR TYPE	ANCHOR LOCATION	MIN. EMBEDMENT LENGTH (IN)	MIN. SPACING BETWEEN ANCHORS (IN)	VERTICAL LOADING (lbs)	HORIZONTAL LOADING (lbs)	LATERAL LOADING (lbs)	ANCHOR DETAIL (STRUCTURAL REFERENCE)
#8 GRADE 75 ALL-THREAD (ASTM A615)	HORIZONTAL PIPE SUPPORT (FLOOR)	12	10	650 (DOWNWARD)	-	-	1/G-101 (DETAIL 1/S-501)
#8 GRADE 75 ALL-THREAD (ASTM A615)	90° VERTICAL BEND PIPE THRUST BLOCK (FLOOR)	36	10	34800 (DOWNWARD)	34800	-	9/G-101 (DETAIL 2/S-501)
#8 GRADE 75 ALL-THREAD (ASTM A615)	GENERAL PIPE SUPPORT (OVERHEAD)	36	10	34800 (UPWARD)	-	8700 (IN PLANE W/ PIPE)	2/G-101 (DETAIL 8/S-501)
#8 GRADE 75 ALL-THREAD (ASTM A615)	GENERAL PIPE SUPPORT (WALL)	12	10	650 (DOWNWARD)	-	700	3/G-101 (DETAIL 15/S-502)
#8 GRADE 75 ALL-THREAD (ASTM A615)	MONORAIL SUPPORT (OVERHEAD)	18	12	10000 (DOWNWARD)	-	-	4/G-101 (DETAIL 9 & 11/S-501)
#8 GRADE 75 ALL-THREAD (ASTM A615)	TRAPEZE PIPE SUPPORT (OVERHEAD)	12	12	750 (DOWNWARD)	-	-	6/G-101 (DETAIL 13/S-502)
STEEL ANGLE PER STRUCTURAL	ANGLE PIPE SUPPORT (WALL)	12	9	100 (DOWNWARD)	-	-	7/G-101 (DETAIL 16/S-502)
1 1/4" 150 KSI ALL-THREAD (ASTM A722)	SHAFT THRUST BLOCK (WALL)	72	12	34400 (DOWNWARD)	12100	52600	5/G-101 (SHEET S-201)
1" 150 KSI ALL-THREAD (ASTM A722)	PUMP EQUIPMENT PAD	54	24	-	-	700	N/A (DETAIL 1/S-101)



PREPARED BY:  
RESPEC  
3824 JET DR.  
RAPID CITY, SD 57703  
www.respec.com

**WPE WEST PLAINS ENGINEERING, INC.**  
1750 RAND ROAD • RAPID CITY SD, 57702  
PHONE: (605) 346-7455 • FAX: (605) 348-9445  
WWW.WESTPLAINSENGINEERING.COM  
RAPID CITY, SD • SIOUX FALLS, SD • CASPER, WY • CEDAR RAPIDS, IA • BISMARCK, ND

THIS DRAWING AND ALL INFORMATION THEREON IS THE PROPERTY OF SDSTA AND IS PROTECTED BY LAWS GOVERNING CONFIDENTIALITY AND PATENT OF PRODUCTS. THIS DRAWING IS NOT TO BE USED FOR PURPOSES OTHER THAN THOSE SPECIFICALLY AGREED TO BY SDSTA.

REVISIONS		
#	DESCRIPTION	DATE
1		
2		
3		
4		

1250 L THRUST BLOCK DETAILS

SDSTA 1250L PUMP ROOM REHAB

LEAD, SOUTH DAKOTA

PROJECT#: M0026.24005

DESIGNED: BEB

DRAWN: JTR

APPROVED: BEB

DATE: 07/25/2025



SHEET:

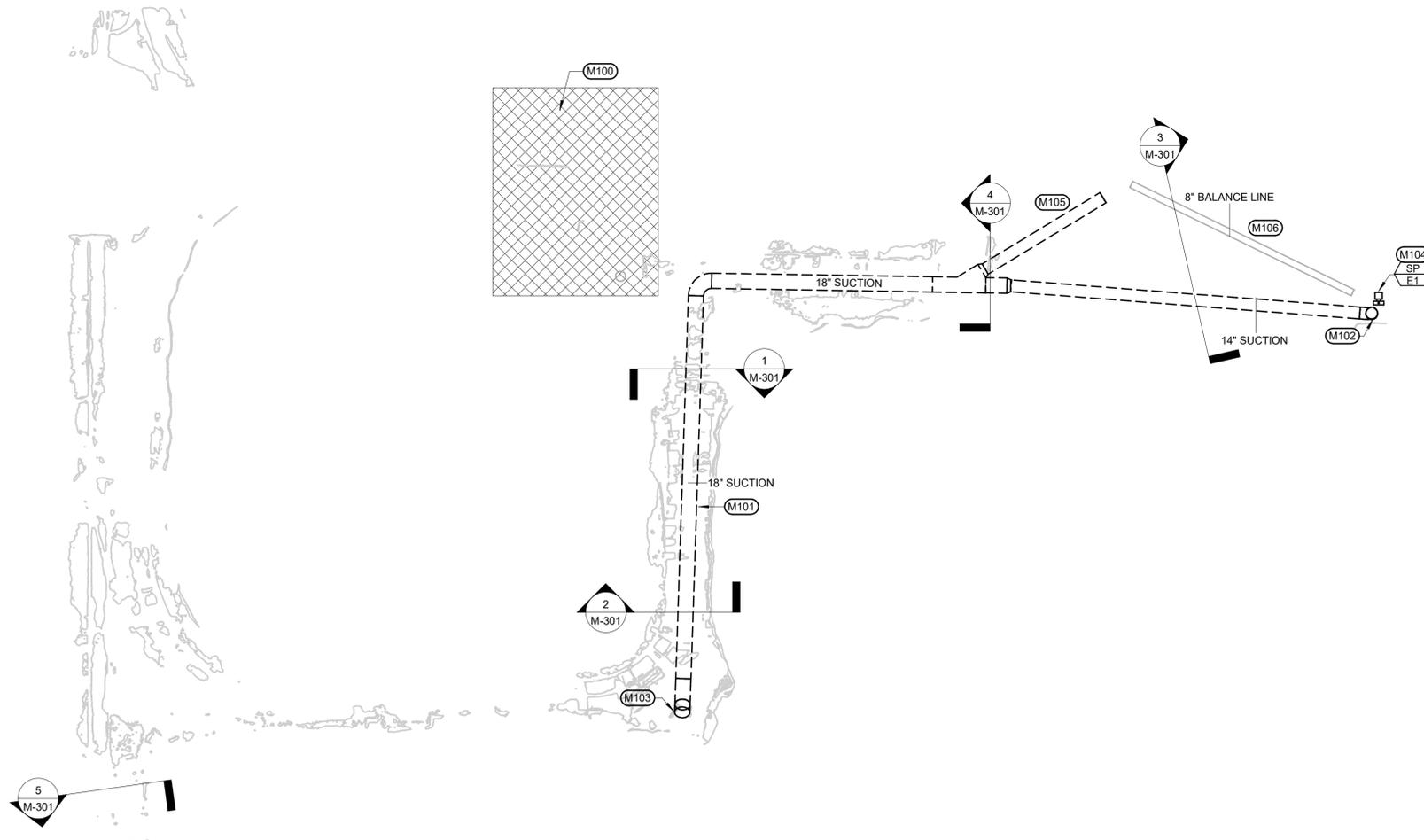
**G-101**

Copyright © 2016





REVIT FILE NAME: BR24011-1250L PUMP ROOM REHABILITATION-MEP25-CENTRAL



**GENERAL MECHANICAL NOTES**

- A COORDINATE PHASING AND REMOVAL OF EXISTING PIPING AND EQUIPMENT WITH OWNER.
- B REMOVE EXISTING PIPING, HANGERS, PUMPS, ETC. WHERE DASHED. CAP PIPING DURING CONSTRUCTION.
- C CONTRACTOR TO CONFIRM LOCATIONS OF PIPING TRENCH, EXISTING PIPING, AND EXISTING EQUIPMENT.
- D MAXIMUM DIMENSIONS FOR PIPING AND EQUIPMENT TO BE REMOVED VIA ROSS SHAFT CAGE ARE 52"x143"x71".

**MECHANICAL SPECIFIC NOTES**

- M100 HATCHED AREA INDICATES THE SHAFT AND IS A HAZARDOUS WORK AREA. ALL WORK WITHIN HATCHED REGION WILL BE COMPLETED BY SDSTA.
- M101 REMOVE EXISTING SUCTION PIPE BELOW CART RAIL IN SUMP. LOCATION SHOWN IS APPROXIMATE. CONTRACTOR TO CONFIRM LOCATION.
- M102 REMOVE EXISTING SUCTION PIPING UP TO PUMP. REFER TO SHEET M-102, 1250L ABOVE GRADE PIPING DEMOLITION PLAN, FOR CONTINUATION.
- M103 REMOVE EXISTING SUCTION PIPING DOWN FROM RESERVOIR. REFER TO SHEET M-102, 1250L ABOVE GRADE PIPING DEMOLITION PLAN, FOR CONTINUATION.
- M104 REMOVE EXISTING SUMP PUMP IN HORSESHOE SUMP AND ALL ASSOCIATED PIPING. REFER TO SHEET M-102, 1250L ABOVE GRADE PIPING DEMOLITION PLAN, FOR CONTINUATION.
- M105 EXISTING SUCTION PIPING BRANCHES OFF AND IS CAPPED IN THIS APPROXIMATE LOCATION. REMOVE ALL EXISTING SUCTION PIPING.
- M106 EXISTING BALANCE LINE APPROXIMATELY 10 FT BELOW FINISHED FLOOR BETWEEN (2) HORSESHOE SUMPS TO REMAIN. LOCATION SHOWN IS APPROXIMATE.

**WPE** WEST PLAINS ENGINEERING, INC.  
 1750 RAND ROAD • RAPID CITY SD, 57702  
 PHONE: (605) 348-7455 • FAX: (605) 348-9445  
 WWW.WESTPLAINSENGINEERING.COM  
 RAPID CITY, SD • SIOUX FALLS, SD • CASPER, WY • CEDAR RAPIDS, IA

THIS DRAWING AND ALL INFORMATION THEREON IS THE PROPERTY OF WEST PLAINS ENGINEERING, INC. AND IS PROTECTED BY LAWS GOVERNING CONFIDENTIALITY AND PATENT OF PRODUCTS. THIS DRAWING IS NOT TO BE USED FOR PURPOSES OTHER THAN THOSE SPECIFICALLY AGREED TO BY WEST PLAINS ENGINEERING, INC.

REVISIONS		
#	DESCRIPTION	DATE

**1250L BELOW GRADE PIPING DEMOLITION PLAN**  
**1250L PUMP ROOM REHABILITATION**  
 LEAD, SOUTH DAKOTA

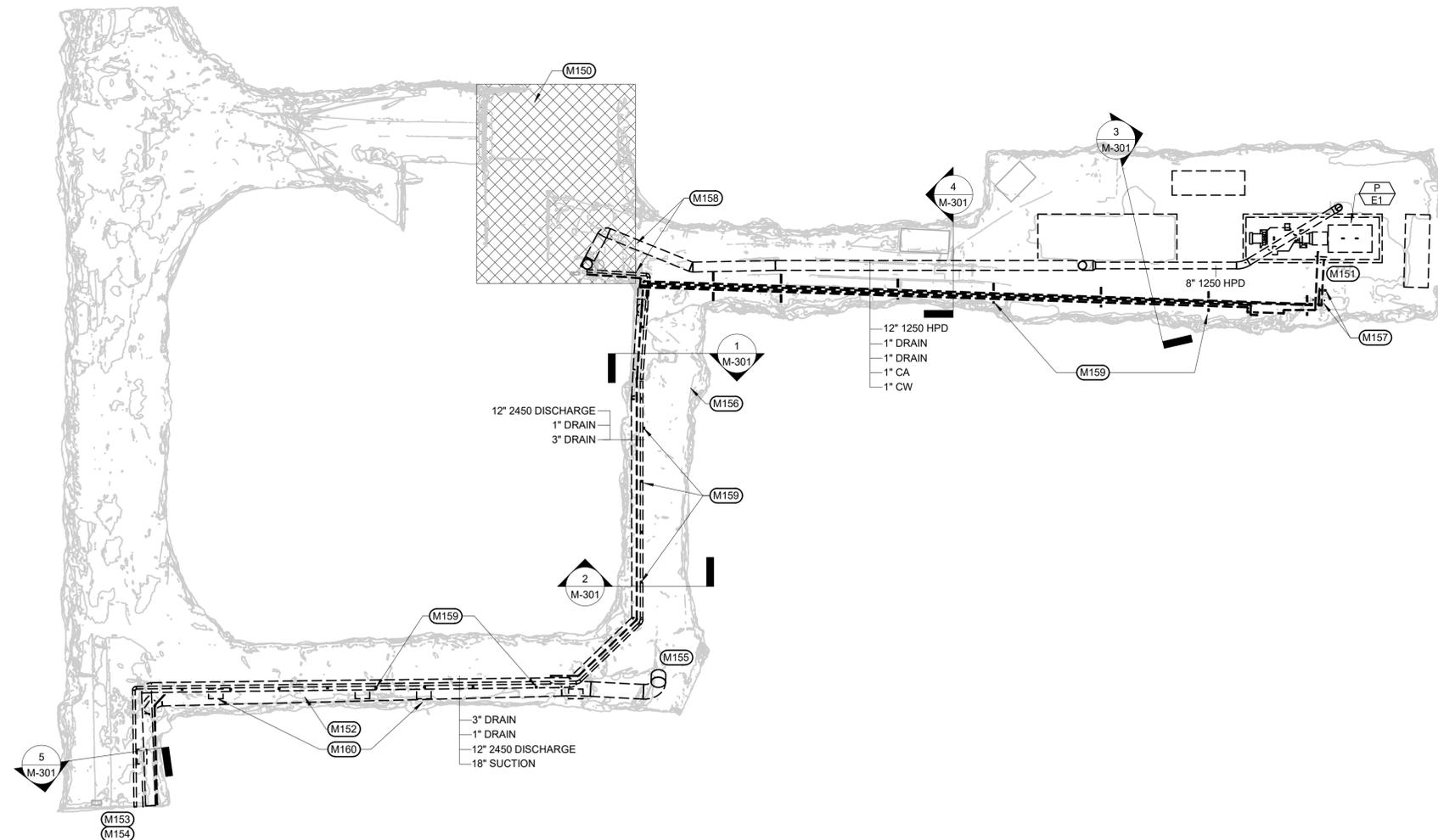
PROJECT#:	BR24011
DESIGNED:	MSH/JNR
DRAWN:	TAJ
APPROVED:	MSH
DATE:	07/25/25



SHEET:  
**M-101**  
 Copyright © 2024

1 BELOW GRADE PIPING DEMOLITION PLAN  
 1/8" = 1'-0"

REVIT FILE NAME: BR24011-1250L PUMP ROOM REHABILITATION-MEP25-CENTRAL



1 ABOVE GRADE PIPING DEMOLITION PLAN  
1/8" = 1'-0"

- GENERAL MECHANICAL NOTES**
- A COORDINATE PHASING AND REMOVAL OF EXISTING PIPING AND EQUIPMENT WITH OWNER.
  - B REMOVE EXISTING PIPING, HANGERS, PUMPS, ETC. WHERE DASHED. CAP PIPING DURING CONSTRUCTION.
  - C CONTRACTOR TO CONFIRM LOCATIONS OF PIPING TRENCH, EXISTING PIPING, AND EXISTING EQUIPMENT.
  - D MAXIMUM DIMENSIONS FOR PIPING AND EQUIPMENT TO BE REMOVED VIA ROSS SHAFT CAGE ARE 52"x143"x71".
- MECHANICAL SPECIFIC NOTES**
- M150 HATCHED AREA INDICATES THE SHAFT AND IS A HAZARDOUS WORK AREA. ALL WORK WITHIN HATCHED REGION WILL BE COMPLETED BY SDSTA.
  - M151 REMOVAL OF PUMP AND MOTOR IN THIS LOCATION TO BE COMPLETED BY OWNER. THIS CONTRACTOR SHALL REMOVE EXISTING PUMP BASE AND ALL ASSOCIATED CONCRETE. COORDINATE AS NECESSARY. OWNER HAS FIRST RIGHT OF REFUSAL ON EXISTING ACCESSORIES.
  - M152 REMOVE DRAIN PIPES, 2450 DISCHARGE PIPE, AND SUCTION PIPE.
  - M153 REMOVE EXISTING VALVES IN THIS LOCATION. TEMPORARILY CAP PIPING.
  - M154 PASSTHROUGH PIPES INTO RESERVOIR ARE TO REMAIN.
  - M155 REMOVE EXISTING SUCTION PIPE DOWN TO BELOW GRADE. REFER TO SHEET M-101, 1250L BELOW GRADE PIPING DEMOLITION PLAN, FOR CONTINUATION.
  - M156 COORDINATE RELOCATION OF PHONE WITH OWNER.
  - M157 REMOVE EXISTING SUCTION PIPING AND SUMP DISCHARGE PIPING UP FROM SUMP. REFER TO SHEET M-101, 1250L BELOW GRADE PIPING DEMOLITION PLAN, FOR CONTINUATION.
  - M158 COORDINATE DEMOLITION OF PIPING AND EQUIPMENT NEAR AND WITHIN SHAFT WITH SDSTA. ONLY REMOVE PIPING TO WITHIN 5 FT OF SHAFT.
  - M159 EXISTING PIPE RACKS TO BE REMOVED (TYP). CONTRACTOR TO CONFIRM LOCATION.
  - M160 EXISTING CONCRETE PIPE SUPPORTS TO BE REMOVED (TYP). CONTRACTOR TO CONFIRM LOCATION.

**WPE WEST PLAINS ENGINEERING, INC.**  
 1750 RAND ROAD • RAPID CITY SD, 57702  
 PHONE: (605) 348-7455 • FAX: (605) 348-9445  
 WWW.WESTPLAINSENGINEERING.COM  
 RAPID CITY, SD • SIOUX FALLS, SD • CASPER, WY • CEDAR RAPIDS, IA

THIS DRAWING AND ALL INFORMATION THEREON IS THE PROPERTY OF WEST PLAINS ENGINEERING, INC. AND IS PROTECTED BY LAWS GOVERNING CONFIDENTIALITY AND PATENT OF PRODUCTS. THIS DRAWING IS NOT TO BE USED FOR PURPOSES OTHER THAN THOSE SPECIFICALLY AGREED TO BY WEST PLAINS ENGINEERING, INC.

REVISIONS		
#	DESCRIPTION	DATE

**1250L ABOVE GRADE PIPING DEMOLITION PLAN**  
**1250L PUMP ROOM REHABILITATION**  
 LEAD, SOUTH DAKOTA

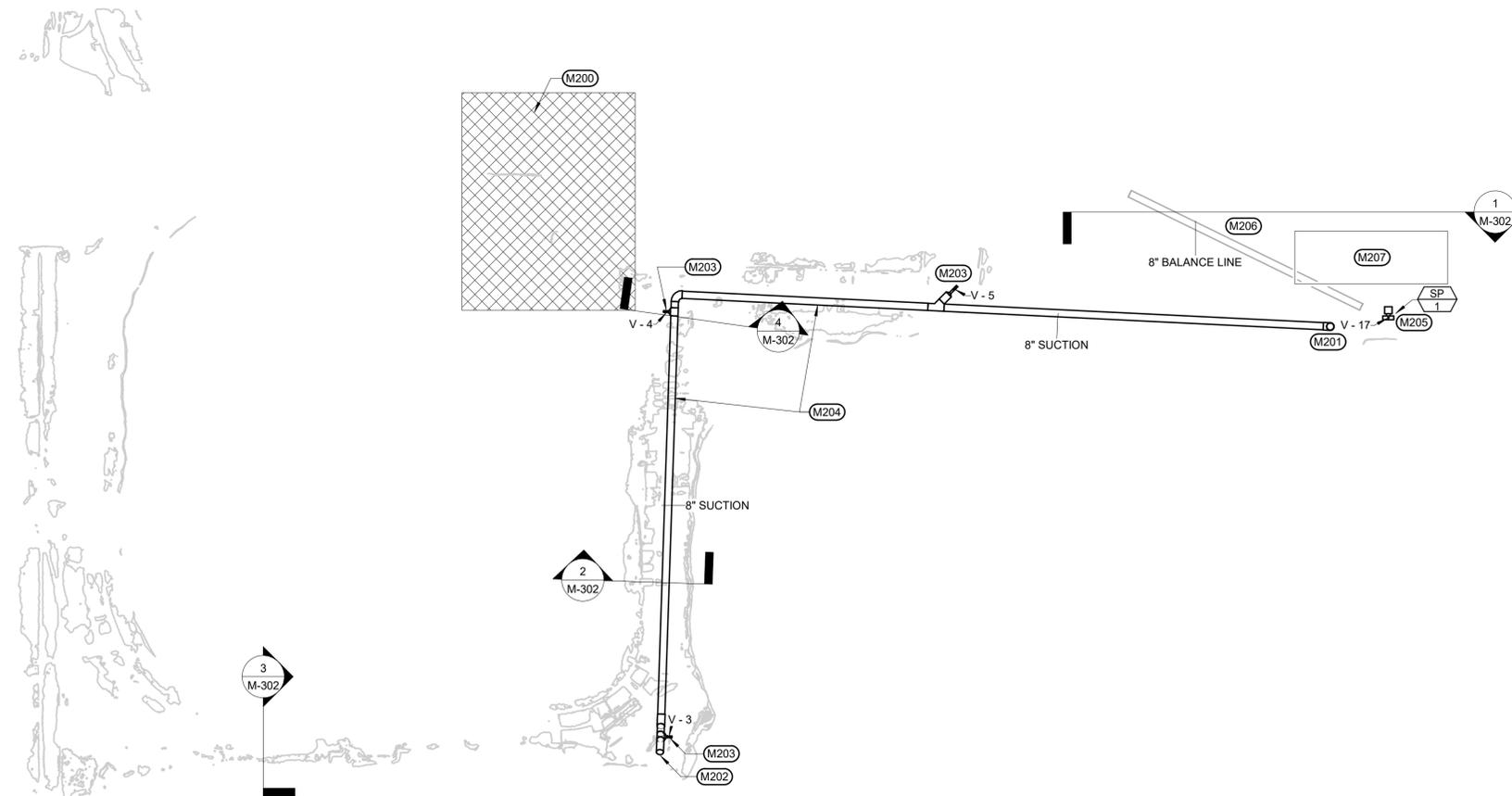
PROJECT#:	BR24011
DESIGNED:	MSH/JNR
DRAWN:	TAJ
APPROVED:	MSH
DATE:	07/25/25



SHEET:  
**M-102**  
 Copyright © 2024

REVIT FILE NAME: BR24011-1250L PUMP ROOM REHABILITATION-MEP25-CENTRAL

PIPE AND FITTING RATING SCHEDULE		
SYSTEM TYPE	SYSTEMS	PIPING AND FITTING TYPES
LOW PRESSURE DRAIN PIPING	2450 DISCHARGE, SUCTION, CW, CA	SCHEDULE 40: WELDED OR GROOVED JOINTS, 300# RATED.
HIGH PRESSURE PIPING	1250 HPD, PUMP COLUMN DRAIN	SCHEDULE 80: WELDED OR GROOVED JOINTS, 600# RATED.
EQUIPMENT DRAINS AND OVERFLOWS	DRAINS	SCHEDULE 40: WELDED OR GROOVED JOINTS, 300# RATED.



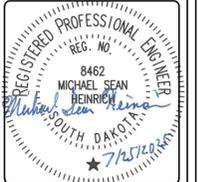
- GENERAL MECHANICAL NOTES**
- A COORDINATE LOCATIONS OF PIPING WITH OTHER TRADES.
  - B THE MINIMUM PRESSURE CLASSIFICATION FOR PIPING AND FITTINGS SHALL BE AS PER PIPE AND FITTING RATING SCHEDULE AND THE REQUIREMENTS OF SPECIFICATION SECTION 23 2113 MECHANICAL PIPING.
  - C ALL EQUIPMENT MUST FIT WITHIN INDICATED. THIS SHALL INCLUDE ASSOCIATED SERVICE CLEARANCES TO PROVIDE 100% OF EQUIPMENT CAPACITY AND SERVICEABILITY.
  - D MAXIMUM DIMENSIONS FOR PIPING AND EQUIPMENT TO BE TRANSPORTED TO LEVEL VIA ROSS SHAFT CAGE ARE 52"X143"X71".
  - E CONTRACTOR SHALL SURVEY ENTIRE 1250 LEVEL PRIOR TO PURCHASE/FABRICATION OF PIPING AND SUPPORTS.
  - F LOCATIONS OF PIPING SHOWN ARE APPROXIMATE. CONTRACTOR SHALL SURVEY AND CONFIRM PIPING LAYOUT AND COORDINATE WITH CONTOUR OF DRIFT WALL.

- MECHANICAL SPECIFIC NOTES**
- M200 HATCHED AREA INDICATES THE SHAFT AND IS A HAZARDOUS WORK AREA. ALL WORK WITHIN HATCHED REGION WILL BE COMPLETED BY SDSTA.
  - M201 ROUTE NEW 8" SUCTION PIPE UP TO PUMP P-1. REFER TO SHEET M-202, 1250L ABOVE GRADE PIPING REMODEL PLAN, FOR CONTINUATION.
  - M202 NEW 8" SUCTION PIPE DOWN, ROUTED THROUGH SUMP. REFER TO SHEET M-202, 1250L ABOVE GRADE PIPING REMODEL PLAN, FOR CONTINUATION.
  - M203 PROVIDE PIPING STUB OUT WITHIN SUMP WITH 8X2 REDUCER AND SHUT-OFF VALVE.
  - M204 PIPING LOCATION WITHIN SUMP IS APPROXIMATE. CONTRACTOR TO SURVEY AND CONFIRM PATH OF SUMP PRIOR TO MATERIAL PURCHASE AND FABRICATION.
  - M205 1" DRAIN UP FROM SUMP PUMP SP-1. REFER TO SHEET M-202, 1250L ABOVE GRADE PIPING REMODEL PLAN, FOR CONTINUATION.
  - M206 APPROXIMATE LOCATION OF EXISTING BALANCE LINE APPROXIMATELY 10 FT BELOW FINISHED FLOOR.
  - M207 NEW HOUSEKEEPING PAD BURIED. REFER TO STRUCTURAL/GROUND SUPPORT.

**1250L BELOW GRADE PIPING REMODEL PLAN**  
**1250L PUMP ROOM REHABILITATION**  
 LEAD, SOUTH DAKOTA

REVISIONS	
#	DESCRIPTION

PROJECT#:	BR24011
DESIGNED:	MSH/JNR
DRAWN:	TAJ
APPROVED:	MSH
DATE:	07/25/25



SHEET:  
**M-201**  
 Copyright © 2024

**WPE WEST PLAINS ENGINEERING, INC.**  
 1750 RAND ROAD • RAPID CITY SD, 57702  
 PHONE: (605) 348-7455 • FAX: (605) 348-9445  
 WWW.WESTPLAINSENGINEERING.COM  
 RAPID CITY, SD • SIOUX FALLS, SD • CASPER, WY • CEDAR RAPIDS, IA

THIS DRAWING AND ALL INFORMATION THEREON IS THE PROPERTY OF WEST PLAINS ENGINEERING, INC. AND IS PROTECTED BY LAWS GOVERNING CONFIDENTIALITY AND PATENT OF PRODUCTS. THIS DRAWING IS NOT TO BE USED FOR PURPOSES OTHER THAN THOSE SPECIFICALLY AGREED TO BY WEST PLAINS ENGINEERING, INC.

1 BELOW GRADE PIPING REMODEL PLAN  
 1/8" = 1'-0"

REVIT FILE NAME: BR24011-1250L PUMP ROOM REHABILITATION-MEP25-CENTRAL

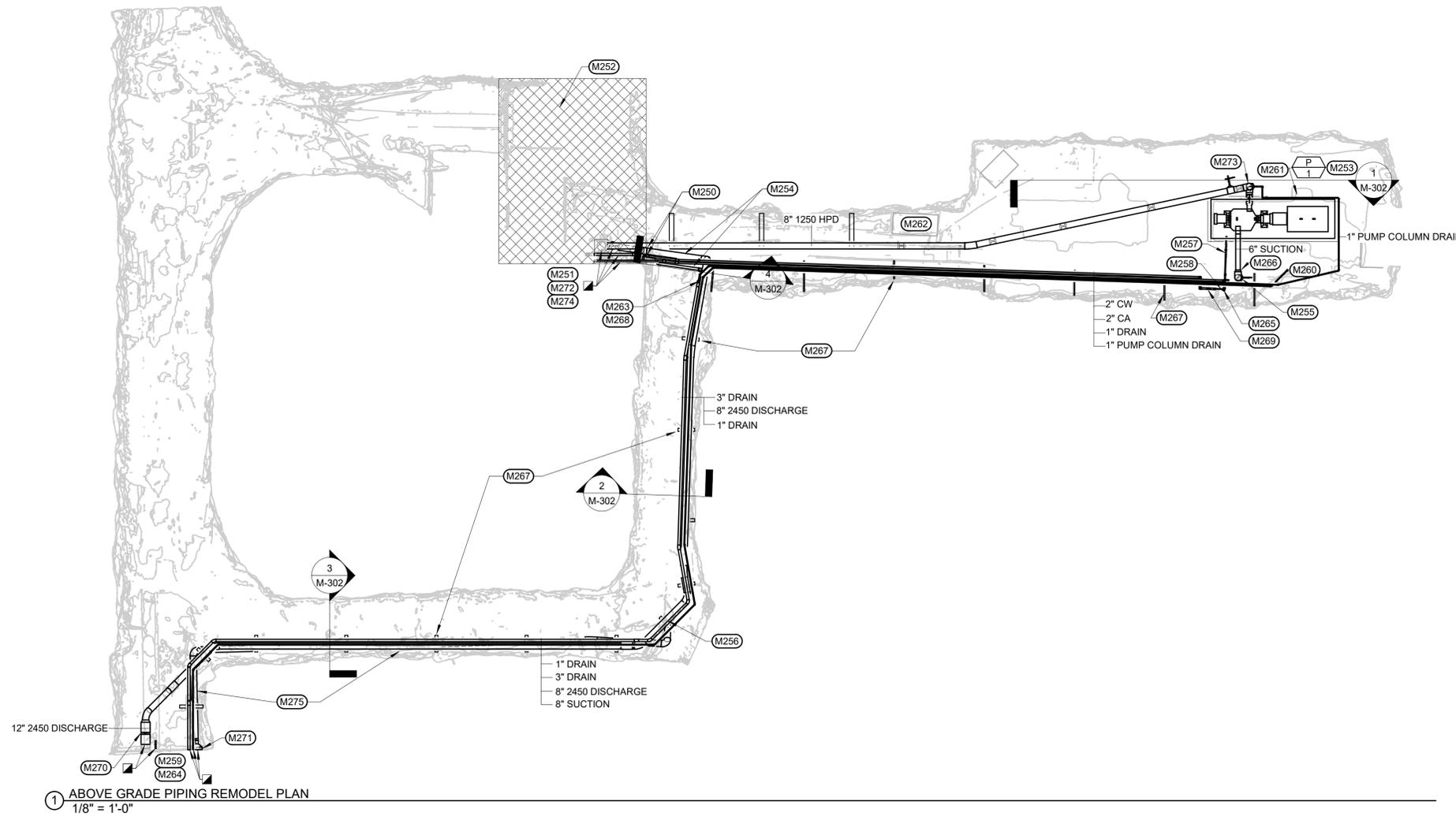
**GENERAL MECHANICAL NOTES**

- A COORDINATE LOCATIONS OF PIPING WITH OTHER TRADES.
- B THE MINIMUM PRESSURE CLASSIFICATION FOR PIPING AND FITTINGS SHALL BE AS PER PIPE AND FITTING RATING SCHEDULE AND THE REQUIREMENTS OF SPECIFICATION SECTION 23 2113 MECHANICAL PIPING.
- C ALL EQUIPMENT MUST FIT WITHIN INDICATED. THIS SHALL INCLUDE ASSOCIATED SERVICE CLEARANCES TO PROVIDE 100% OF EQUIPMENT CAPACITY AND SERVICEABILITY.
- D MAXIMUM DIMENSIONS FOR PIPING AND EQUIPMENT TO BE TRANSPORTED TO LEVEL VIA ROSS SHAFT CAGE ARE 52"X143"X71".
- E FLANGE ADAPTERS AND FLANGE ADAPTER NIPPLES ARE NOT ALLOWED ON HIGH PRESSURE PIPING. ALL PIPING CONNECTIONS SHALL BE WELD NECK RAISED FACE FLANGE.
- F FLANGE ADAPTERS ARE NOT ALLOWED ON LOW PRESSURE PIPING. ALL PIPING CONNECTIONS SHALL BE WELD NECK RAISED FACE FLANGE OR SHALL USE FLANGE ADAPTER NIPPLES.
- G CONTRACTOR SHALL SURVEY ENTIRE 1250 LEVEL PRIOR TO PURCHASE/FABRICATION OF PIPING AND SUPPORTS.
- H LOCATIONS OF PIPING SHOWN ARE APPROXIMATE. CONTRACTOR SHALL CONFIRM PIPING LAYOUT AND COORDINATE WITH CONTOUR OF DRIFT WALL.

**MECHANICAL SPECIFIC NOTES**

- M250 COORDINATE INSTALLATION OF NEW PIPING AND EQUIPMENT NEAR AND WITHIN THE SHAFT WITH SDSTA. ONLY INSTALL PIPING UP TO WITHIN 5 FT OF SHAFT.
- M251 CONNECT NEW 3" DRAIN PIPE, 8" PRESSURIZED DISCHARGE FROM 2450L, 6" PRESSURIZED DISCHARGE TO GROUND LEVEL, 2" CA, AND 2" CW TO EXISTING WITHIN ROSS SHAFT AT JOINT. PROVIDE AN ADDITIONAL 10 FEET OF 12" SCHEDULE 80 PIPING, 10 FEET OF 12" SCHEDULE 40 PIPING, 20 FEET OF 8" SCHEDULE 40 PIPING, 15 FEET OF 8" SCHEDULE 80 PIPING, 15 FEET OF 3" SCHEDULE 40 PIPING, 35 FEET OF 2" SCHEDULE 40 PIPING, (1) 12" TO 8" 300# GROOVED REDUCER, (1) 12" TO 8" 600# 8-BOLT FLANGED REDUCER, (1) 12" TO 8" 600# 8-BOLT FLANGED COUPLER, (1) 12" 300# GROOVED COUPLER, (1) 8" 300# GROOVED COUPLER, (1) 8" 600# 8-BOLT FLANGED COUPLER, (3) 8" 300# 90 DEG GROOVED ELBOWS, (2) 8" 600# 90 DEG WELDED ELBOWS, (2) 3" 90 DEG 300# GROOVED ELBOWS, (2) 3" 300# COUPLINGS (4) 2" 90 DEG 300# GROOVED ELBOWS, (4) 2" 300# COUPLINGS FOR OWNERS USE CONNECTING WITHIN THE SHAFT.
- M252 HATCHED AREA INDICATES THE SHAFT AND IS A HAZARDOUS WORK AREA. ALL WORK WITHIN HATCHED REGION WILL BE COMPLETED BY SDSTA.
- M253 REFER TO TYPICAL SINGLE SUCTION PUMP SCHEMATIC ON SHEET M-401.
- M254 INSTALL NEW 8" 1250 HPD AND 3" DRAIN FROM 300L AS HIGH AS POSSIBLE (MINIMUM 7') IN LOCATION SHOWN ON PLANS. ELBOW PIPES DOWN TO RUN THROUGH DRIFT. REFER TO SECTION 4 ON SHEET M-302. PIPING REMODEL SECTIONS.
- M255 8" SUCTION UP FROM SUMP BELOW GRADE TO PUMP P-1. REFER TO SHEET M-201, 1250L BELOW GRADE PIPING REMODEL PLAN, FOR CONTINUATION.
- M256 8" SUCTION DOWN TO SUMP BELOW GRADE. REFER TO SHEET M-201, 1250L BELOW GRADE PIPING REMODEL PLAN, FOR CONTINUATION.
- M257 PROVIDE 1" PRESSURE REDUCING VALVE, PRESSURE GAUGE, AND 1" NEEDLE VALVE FOR REGULATION OF PUMP SEAL FLUSH.
- M258 PROVIDE WOODFORD 40HT-LH OR EQUIVALENT HOSE BIB WITH SHUT-OFF VALVE IN THIS LOCATION. REFER TO VALVE SCHEDULE ON SHEET M-401 FOR VALVE INFORMATION.
- M259 CONNECT NEW 8" SUCTION PIPE, NEW 8" 2450 DISCHARGE PIPE, AND NEW 3" AND 1" DRAIN PIPES TO EXISTING PIPES IN THIS LOCATION.
- M260 1" DRAIN UP FROM SUMP PUMP SP-1. REFER TO SHEET M-201, 1250L BELOW GRADE PIPING REMODEL PLAN, FOR CONTINUATION.
- M261 PROVIDE TEE FITTING FOR CONNECTION OF PUMP COLUMN DRAIN PIPE.
- M262 EXISTING ELECTRICAL EQUIPMENT IN THIS LOCATION TO BE RELOCATED. COORDINATE WITH ELECTRICAL CONTRACTOR. AVOID ROUTING PIPING ABOVE ELECTRICAL EQUIPMENT.
- M263 CONNECT 1" PUMP COLUMN DRAIN INTO 3" DRAIN PIPE USING Y FITTING IN THIS LOCATION.
- M264 PROVIDE AND INSTALL NEW SHUT-OFF VALVES ON 8" SUCTION PIPE AND 1" DRAIN PIPE IN THIS LOCATION. REFER TO PUMP SYSTEM DIAGRAM AND VALVE SCHEDULE FOR SIZE/TYPE OF VALVE.
- M265 COMPRESSED AIR OUTLET IN THIS LOCATION. REFER TO COMPRESSED AIR OUTLET DETAIL ON SHEET M-401, MECHANICAL SYMBOLS, DETAILS, AND SCHEDULES.
- M266 TRANSITION FROM 8" SUCTION PIPING TO 6" SUCTION PIPING AFTER INSTRUMENTATION AND ELBOW. MAINTAIN A MINIMUM OF 48" STRAIGHT SUCTION PIPING INTO PUMP FLANGE. MAKE THIS STRAIGHT RUN AS LONG AS SPACE ALLOWS.
- M267 PROVIDE MSS SP-58 COMPLIANT PIPE SUPPORTS AT EVERY PIPE RACK. FOR ALL PIPES, USE FIXED, 2 HOLE PIPE STRAPS TO RIGIDLY SUPPORT PIPES AT EVERY SUPPORT.
- M268 PUMP COLUMN DRAIN PIPING PRIOR TO TIE IN WITH 3" DRAIN SHALL BE HIGH PRESSURE PIPING (SCHEDULE 80: WELDED OR GROOVED JOINTS, 600# RATED) 3" DRAIN PIPING SHALL BE LOW PRESSURE PIPING (SCHEDULE 40: WELDED OR GROOVED JOINTS, 300# RATED).
- M269 WATER PRESSURE DOWN THROUGH SHAFT IS APPROXIMATELY 200 PSI. PROVIDE PRESSURE REDUCING VALVE TO REDUCE PRESSURE TO 75 PSI.
- M270 PROVIDE AND INSTALL BALANCING VALVE ON 2450 DISCHARGE IN THIS LOCATION. BALANCING VALVE SHALL BE RATED FOR 1450 GPM.
- M271 THROUGH PIPE FOR SUCTION IS 18" DIAMETER. CONNECT NEW 8" SUCTION PIPE TO EXISTING 18" SUCTION PIPE WITH TRANSITION. NEW VALVE V-2 SHALL BE 8".
- M272 PROVIDE AND INSTALL AN ADDITIONAL 8 FT OF 12" DIAMETER PIPING AND BALANCING VALVE ON 1250 DISCHARGE PIPE ON GROUND LEVEL. PROVIDE AND INSTALL TRANSITIONS TO CONNECT TO LINE SIZE. COORDINATE LOCATION WITH OWNER. BALANCING VALVE SHALL BE RATED FOR 1450 GPM. THIS BALANCING VALVE MUST BE INSTALLED ON GROUND LEVEL. IT CANNOT BE INSTALLED ON THE 1250L DUE TO THE HIGHER PRESSURE IN THE DISCHARGE PIPING.
- M273 ALL FITTINGS ON DISCHARGE OF PUMP WITHIN 12' OF PUMP SHALL HAVE RAISED FACE WELD NECK FLANGES.
- M274 ALL THRUST BLOCK FITTINGS SHALL BE CARBON STEEL.
- M275 REFER TO STRUCTURAL PLANS FOR CONCRETE PIPE SUPPORT LOCATIONS.

PIPE AND FITTING RATING SCHEDULE		
SYSTEM TYPE	SYSTEMS	PIPING AND FITTING TYPES
LOW PRESSURE DRAIN PIPING	2450 DISCHARGE, SUCTION, CW, CA	SCHEDULE 40: WELDED OR GROOVED JOINTS, 300# RATED.
HIGH PRESSURE PIPING	1250 HPD, PUMP COLUMN DRAIN	SCHEDULE 80: WELDED OR GROOVED JOINTS, 600# RATED.
EQUIPMENT DRAINS AND OVERFLOWS	DRAINS	SCHEDULE 40: WELDED OR GROOVED JOINTS, 300# RATED.



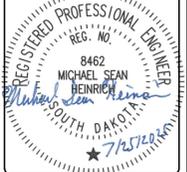
**WPE WEST PLAINS ENGINEERING, INC.**  
 1750 RAND ROAD • RAPID CITY SD, 57702  
 PHONE: (605) 348-7455 • FAX: (605) 348-9445  
 WWW.WESTPLAINSENGINEERING.COM  
 RAPID CITY, SD • SIOUX FALLS, SD • CASPER, WY • CEDAR RAPIDS, IA

THIS DRAWING AND ALL INFORMATION THEREON IS THE PROPERTY OF WEST PLAINS ENGINEERING, INC. AND IS PROTECTED BY LAWS GOVERNING CONFIDENTIALITY AND PATENT OF PRODUCTS. THIS DRAWING IS NOT TO BE USED FOR PURPOSES OTHER THAN THOSE SPECIFICALLY AGREED TO BY WEST PLAINS ENGINEERING, INC.

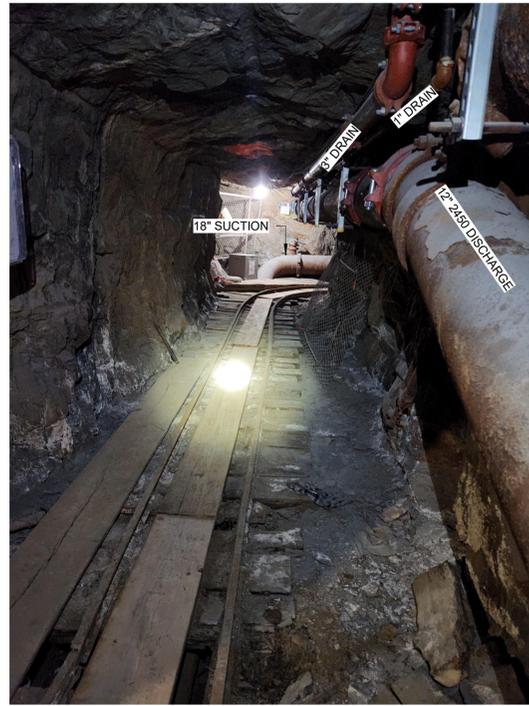
REVISIONS		
#	DESCRIPTION	DATE

**1250L ABOVE GRADE PIPING REMODEL PLAN**  
**1250L PUMP ROOM REHABILITATION**  
 LEAD, SOUTH DAKOTA

PROJECT#:	BR24011
DESIGNED:	MSH/JNR
DRAWN:	TAJ
APPROVED:	MSH
DATE:	07/25/25



SHEET:  
**M-202**  
 Copyright © 2024



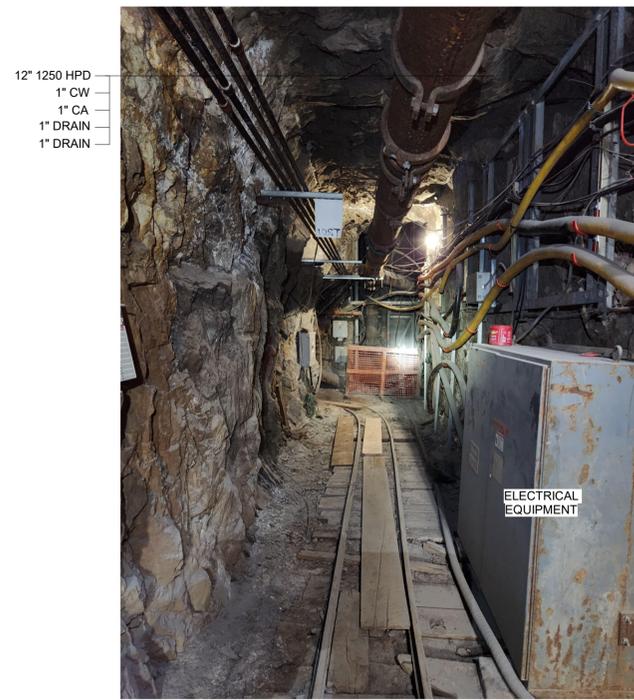
① DEMO SECTION 1 - FROM SHAFT TO RESERVOIR  
NO SCALE



② DEMO SECTION 2 - FROM RESERVOIR TO SHAFT  
NO SCALE



③ DEMO SECTION 3 - PUMP ROOM  
NO SCALE



④ DEMO SECTION 4 - FROM PUMP ROOM TO SHAFT  
NO SCALE



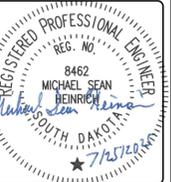
⑤ DEMO SECTION 5 - RESERVOIR WALL  
NO SCALE

THIS DRAWING AND ALL INFORMATION THEREON IS THE PROPERTY OF WEST PLAINS ENGINEERING, INC. AND IS PROTECTED BY LAWS GOVERNING CONFIDENTIALITY AND PATENT OF PRODUCTS. THIS DRAWING IS NOT TO BE USED FOR PURPOSES OTHER THAN THOSE SPECIFICALLY AGREED TO BY WEST PLAINS ENGINEERING, INC.

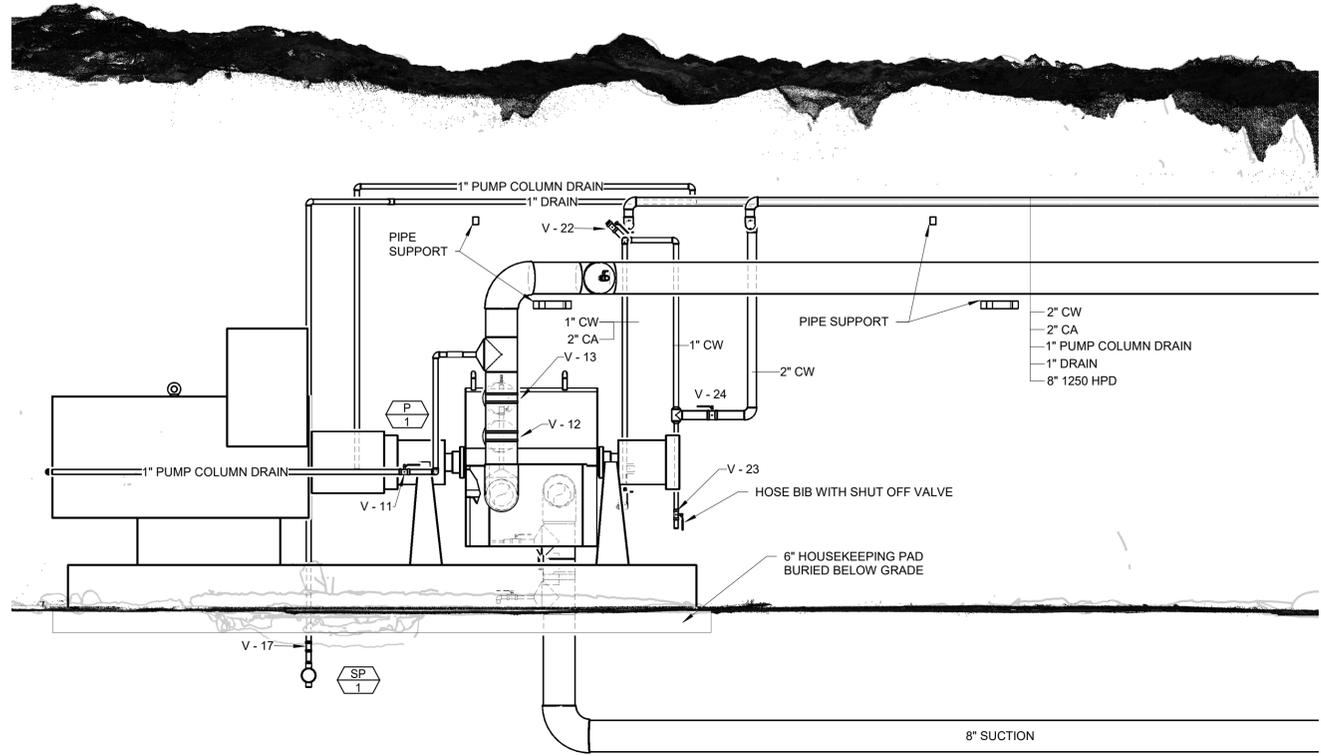
REVISIONS		
#	DESCRIPTION	DATE

**PIPING DEMO SECTIONS**  
**1250L PUMP ROOM REHABILITATION**  
 LEAD, SOUTH DAKOTA

PROJECT#:	BR24011
DESIGNED:	MSH/JNR
DRAWN:	TAJ
APPROVED:	MSH
DATE:	07/25/25

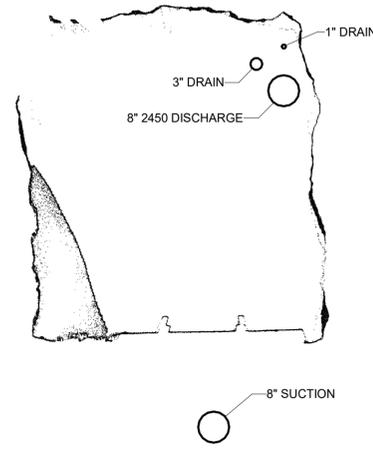


REVIT FILE NAME: BR24011-1250L PUMP ROOM REHABILITATION-MEP25-CENTRAL

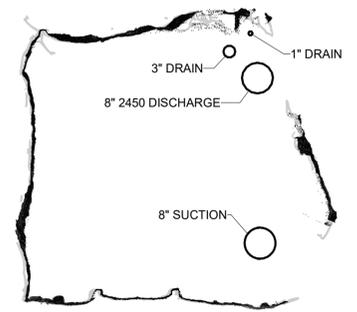


① REMODEL SECTION 1 - PUMP ROOM  
1/2" = 1'-0"

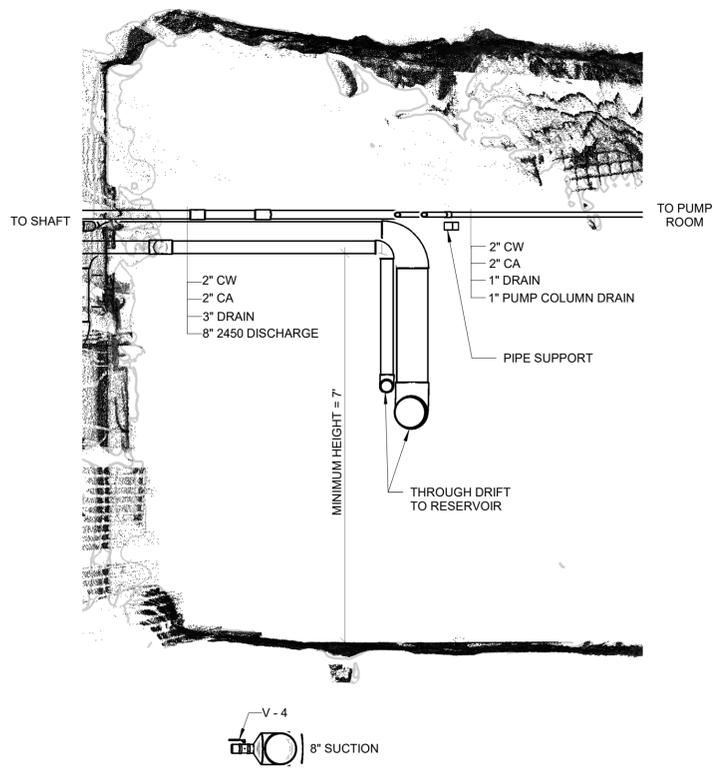
TO SHAFT



② REMODEL SECTION 2 - FROM RESERVOIR TO SHAFT  
1/2" = 1'-0"



③ REMODEL SECTION 3 - FROM RESERVOIR TO RESERVOIR  
1/2" = 1'-0"



④ REMODEL SECTION 4 - PIPING NEAR SHAFT  
1/2" = 1'-0"

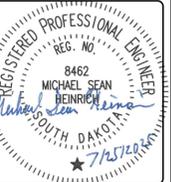
**WPE** WEST PLAINS ENGINEERING, INC.  
1750 RAND ROAD • RAPID CITY SD, 57702  
PHONE: (605) 348-7455 • FAX: (605) 348-9445  
WWW.WESTPLAINSENGINEERING.COM  
RAPID CITY, SD • SIOUX FALLS, SD • CASPER, WY • CEDAR RAPIDS, IA

THIS DRAWING AND ALL INFORMATION THEREON IS THE PROPERTY OF WEST PLAINS ENGINEERING, INC. AND IS PROTECTED BY LAWS GOVERNING CONFIDENTIALITY AND PATENT OF PRODUCTS. THIS DRAWING IS NOT TO BE USED FOR PURPOSES OTHER THAN THOSE SPECIFICALLY AGREED TO BY WEST PLAINS ENGINEERING, INC.

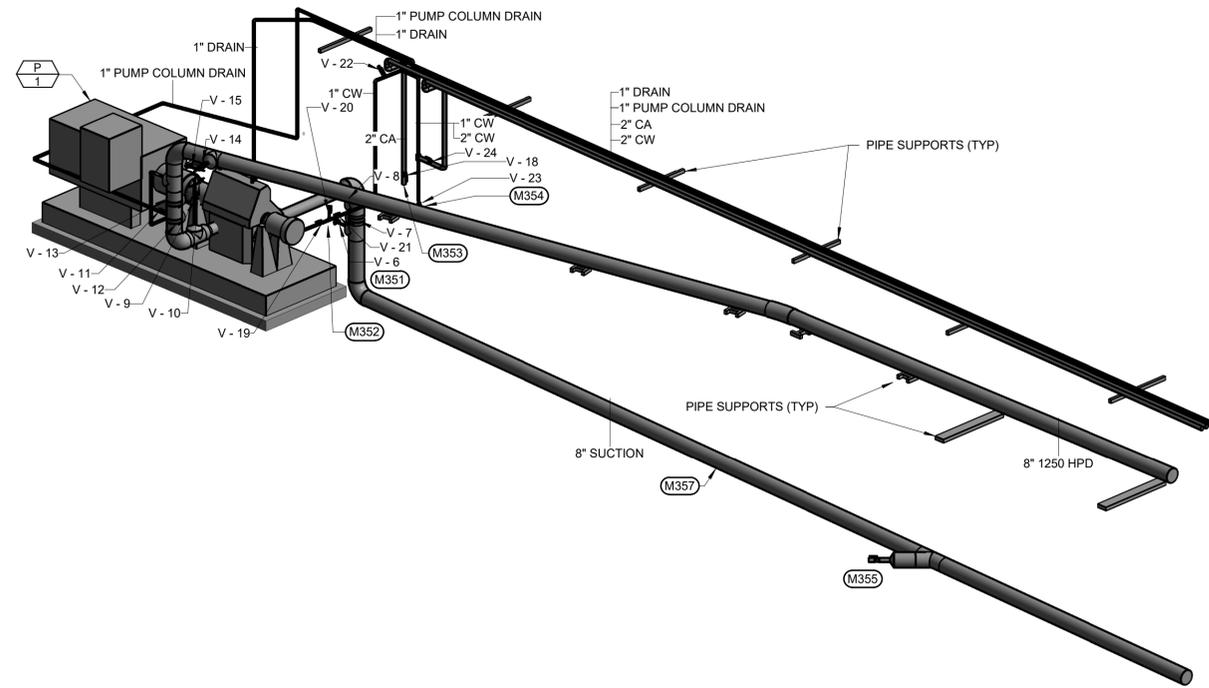
REVISIONS		
#	DESCRIPTION	DATE

**PIPING REMODEL SECTIONS**  
**1250L PUMP ROOM REHABILITATION**  
LEAD, SOUTH DAKOTA

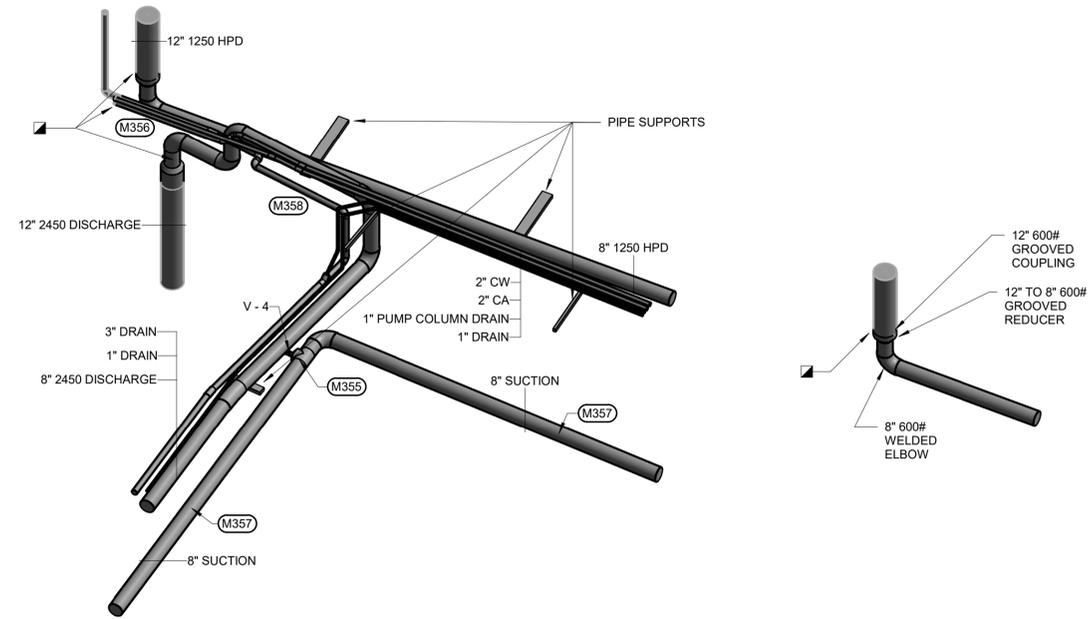
PROJECT#:	BR24011
DESIGNED:	MSH/JNR
DRAWN:	TAJ
APPROVED:	MSH
DATE:	07/25/25



SHEET:  
**M-302**  
Copyright © 2024

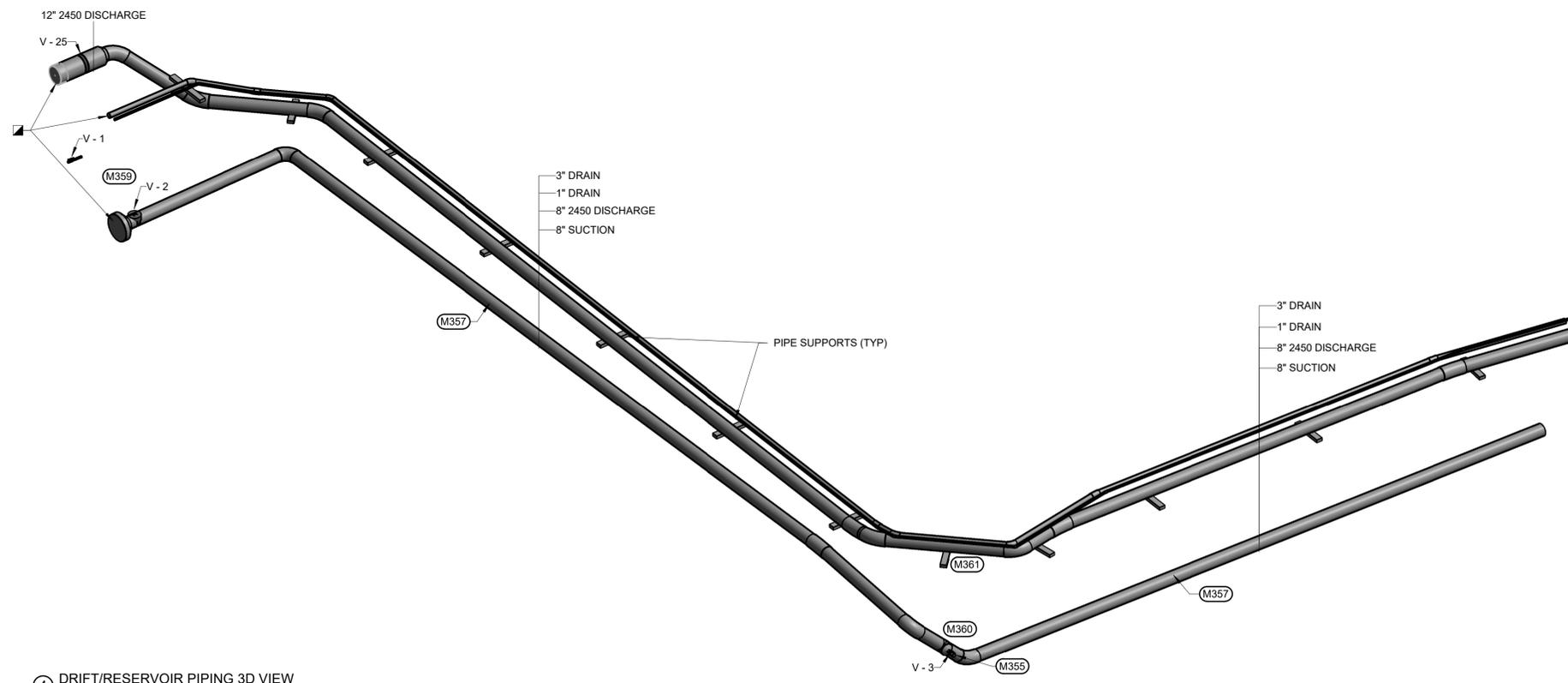


1 PUMP ROOM 3D VIEW

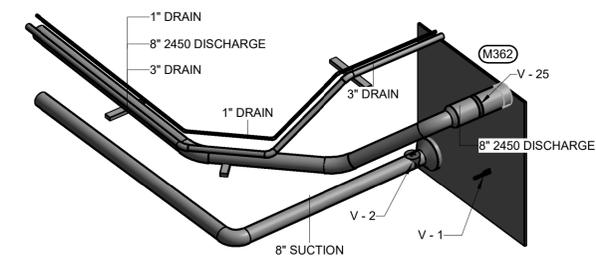


2 SHAFT PIPING 3D VIEW

3 SHAFT PIPING AND FITTINGS 3D VIEW



4 DRIFT/RESERVOIR PIPING 3D VIEW



5 RESERVOIR PIPING 3D VIEW

- MECHANICAL SPECIFIC NOTES**
- M351 8" SUCTION UP FROM BELOW GRADE TO PUMP P-1.
  - M352 PROVIDE 1" PRESSURE REDUCING VALVE, PRESSURE GAUGE, AND 1" NEEDLE VALVE FOR REGULATION OF PUMP SEAL FLUSH.
  - M353 REFER TO COMPRESSED AIR OUTLET DETAIL ON SHEET M-401, MECHANICAL SYMBOLS, DETAILS, AND SCHEDULES.
  - M354 PROVIDE WOODFORD 40HT-LH OR EQUIVALENT HOSE BIB WITH SHUT-OFF VALVE IN THIS LOCATION. REFER TO VALVE SCHEDULE ON SHEET M-401 FOR VALVE INFORMATION.
  - M355 PROVIDE PIPING STUB OUT WITHIN SUMP WITH 8X2 REDUCER AND SHUT-OFF VALVE.
  - M356 CONNECT NEW 8" DRAIN PIPE, 8" PRESSURIZED DISCHARGE FROM 2450L, 8" PRESSURIZED DISCHARGE TO GROUND LEVEL, 1" CA, AND 1" CW TO EXISTING WITHIN ROSS SHAFT AT JOINT. ALL WORK WITHIN 5 FT OF SHAFT TO BE COMPLETED BY SDSTA.
  - M357 NEW 8" SUCTION PIPE ROUTED BELOW GRADE THROUGH SUMP.
  - M358 INSTALL NEW 8" 1250 HPD AND 3" DRAIN FROM 300L AS HIGH AS POSSIBLE (MINIMUM 7') IN LOCATION SHOWN ON PLANS. ELBOW PIPES DOWN TO RUN THROUGH DRIFT.
  - M359 PROVIDE NEW SHUT-OFF VALVES ON 8" SUCTION AND 1" STUB OUT PIPE IN THIS LOCATION. REFER TO PUMP SYSTEM DIAGRAM ON SHEET M-402 AND VALVE SCHEDULE ON SHEET M-401 FOR SIZE/TYPED OF VALVE.
  - M360 NEW 8" SUCTION PIPE DOWN TO SUMP.
  - M361 ROUTE 3" DRAIN, 1" DRAIN, AND 8" 2450 DISCHARGE TIGHT TO CORNER TO AVOID BLOCKING TRAVEL THROUGH DRIFT.
  - M362 APPROXIMATE LOCATION OF RESERVOIR WALL. CONTRACTOR TO CONFIRM LOCATION OF PIPING PENETRATIONS.

**WPE** WEST PLAINS ENGINEERING, INC.  
 1750 RAND ROAD • RAPID CITY SD, 57702  
 PHONE: (605) 348-7455 • FAX: (605) 348-9445  
 WWW.WESTPLAINSENGINEERING.COM  
 RAPID CITY, SD • SIOUX FALLS, SD • CASPER, WY • CEDAR RAPIDS, IA

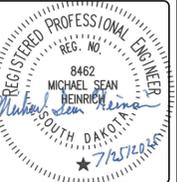
THIS DRAWING AND ALL INFORMATION THEREON IS THE PROPERTY OF WEST PLAINS ENGINEERING, INC. AND IS PROTECTED BY LAWS GOVERNING CONFIDENTIALITY AND PATENT OF PRODUCTS. THIS DRAWING IS NOT TO BE USED FOR PURPOSES OTHER THAN THOSE SPECIFICALLY AGREED TO BY WEST PLAINS ENGINEERING, INC.

REVISIONS		
#	DESCRIPTION	DATE

PIPING 3D VIEWS  
 1250L PUMP ROOM REHABILITATION  
 LEAD, SOUTH DAKOTA

PROJECT#: BR24011

DESIGNED:	MSH/JNR
DRAWN:	TAJ
APPROVED:	MSH
DATE:	07/25/25



SHEET:  
**M-303**  
 Copyright © 2024

## MECHANICAL SYMBOLS

—SAN— UNDERFLOOR WASTE PIPE	—UNION— UNION	—CURB STOP— CURB STOP
—ST— UNDERFLOOR STORM PIPE	—FLEXIBLE PIPE CONNECTION— FLEXIBLE PIPE CONNECTION	—CONNECT TO EXIST. SERVICE— CONNECT TO EXIST. SERVICE
—OST— UNDERFLOOR OVERFLOW STORM PIPE	—SAN— ABOVE FLOOR WASTE PIPE	—VENT PIPE— VENT PIPE
—PD— PUMP DISCHARGE	—ST— ABOVE FLOOR STORM PIPE	—COMPRESSED AIR OUTLET— COMPRESSED AIR OUTLET
—CA— COMPRESSED AIR PIPE	—OST— ABOVE FLOOR OVERFLOW STORM PIPE	—FLOW ALARM— FLOW ALARM
—D— EQUIPMENT DRAIN	—PD— PUMP DISCHARGE	—PRESSURE/TEMPERATURE TAP— PRESSURE/TEMPERATURE TAP
—2450 DISCHARGE FROM 2450 PUMP— HIGH PRESSURE DISCHARGE FROM 2450 PUMP	—DS— DOWN SPOUT	—PRESSURE GAUGE— PRESSURE GAUGE
—1250 HPD— HIGH PRESSURE DISCHARGE FROM 1250 PUMP	—SP— STAND PIPE	—STATIC PRESSURE SENSOR— STATIC PRESSURE SENSOR
—SUCTION— PUMP SUCTION	—AIR VENT— AIR VENT	—THERMOMETER— THERMOMETER
—D— EQUIPMENT DRAIN	—FLOW MEASURING DEVICE— FLOW MEASURING DEVICE	—EXPANSION JOINT, PIPE GUIDE— EXPANSION JOINT, PIPE GUIDE
—CONCEALED SPRINKLER HEAD— CONCEALED SPRINKLER HEAD	—CAPPED OUTLET— CAPPED OUTLET	—STEAM TRAP— STEAM TRAP
—PIPE CONNECTION— PIPE CONNECTION	—SHUT OFF VALVE— SHUT OFF VALVE	—BACK FLOW PREVENTER— BACK FLOW PREVENTER
—ELBOW DOWN— ELBOW DOWN	—BALANCING VALVE— BALANCING VALVE	—FLOW CONTROL VALVE— FLOW CONTROL VALVE
—ELBOW UP— ELBOW UP	—CONTROL VALVE— CONTROL VALVE	—PRESSURE SENSOR DIFFERENTIAL— PRESSURE SENSOR DIFFERENTIAL
—TEE DOWN— TEE DOWN	—3-WAY CONTROL VALVE— 3-WAY CONTROL VALVE	—FLOW SWITCH— FLOW SWITCH
—DIRECTION OF FLOW— DIRECTION OF FLOW	—PRESSURE REDUCING VALVE— PRESSURE REDUCING VALVE	—DEMOLITION HATCHING— DEMOLITION HATCHING
—PIPE ANCHOR— PIPE ANCHOR	—PRESSURE RELIEF VALVE— PRESSURE RELIEF VALVE	
—REDUCER OR INCREASER— REDUCER OR INCREASER	—CHECK VALVE— CHECK VALVE	

## VALVE SCHEDULE

UNIT TYPE	UNIT NUMBER	PIPE SIZE	VALVE TYPE	SYSTEM	PRESSURE CLASS	NO / NC	PURPOSE	COMMENTS
V	1	1"	BALL VALVE WITH LUG END FLANGES	DRAIN	300#	NO	RESERVOIR SHUT-OFF	
V	2	8"	BUTTERFLY VALVE WITH LUG END FLANGES	SUCTION	300#	NO	RESERVOIR SHUT-OFF	
V	3	2"	BALL VALVE WITH LUG END FLANGES	SUCTION	300#	NC	RESERVOIR DRAIN	
V	4	2"	BALL VALVE WITH LUG END FLANGES	SUCTION	300#	NC	CONNECTION TO 2450 PUMP COLUMN	
V	5	2"	BUTTERFLY VALVE WITH LUG END FLANGES	SUCTION	300#	NC	SUCTION PIPE DRAIN	
V	6	3/4"	BALL VALVE WITH LUG END FLANGES	SUCTION	300#	NO	PUMP SUCTION DRAIN	
V	7	8"	BUTTERFLY VALVE WITH LUG END FLANGES	SUCTION	300#	NO	1250 SUCTION SHUT-OFF/PUMP ISOLATION	
V	8	1"	BALL VALVE WITH LUG END FLANGES	SUCTION	300#	NO	PRESSURE GAUGE	2
V	9	1"	BALL VALVE WITH LUG END FLANGES	1250 HPD	600#	NO	PRESSURE GAUGE	2
V	10	3/8"	BALL VALVE WITH LUG END FLANGES	1250 HPD	600#	NC	BLOW DOWN	2
V	11	1"	BALL VALVE WITH LUG END FLANGES	PUMP COLUMN DRAIN	600#	NO	PUMP DRAIN COLUMN SHUT-OFF	1,2
V	12	8"	CHECK VALVE	1250 HPD	600#	N/A	1250 DISCHARGE CHECK VALVE	2
V	13	8"	GATE VALVE WITH LUG END FLANGES	1250 HPD	600#	NO	1250 DISCHARGE SHUT-OFF/PUMP ISOLATION	2
V	14	1"	BALL VALVE WITH LUG END FLANGES	1250 HPD	600#	NO	PRESSURE GAUGE	2
V	15	3/8"	BALL VALVE WITH LUG END FLANGES	1250 HPD	600#	NO	BLOW DOWN	2
V	16	12"	BALANCING VALVE WITH LUG END FLANGES	1250 HPD	150#	N/A	1250 BALANCING	
V	17	1"	CHECK VALVE	DRAIN	600#	N/A	SUMP PUMP CHECK VALVE	
V	18	2"	BALL VALVE WITH LUG END FLANGES	COMPRESSED AIR (CA)	300#	NO	COMPRESSED AIR SHUT-OFF	
V	19	1"	NEEDLE VALVE	COLD WATER (CW)	300#	NO	PUMP SEAL FLUSH SHUT-OFF	
V	20	1/2"	BALL VALVE WITH LUG END FLANGES	COLD WATER (CW)	300#	NO	PRESSURE GAUGE	
V	21	1"	PRESSURE-REGULATING VALVE	COLD WATER (CW)	300#	N/A	PUMP SEAL FLUSH PRESSURE REGULATING	
V	22	1"	BALL VALVE WITH LUG END FLANGES	COLD WATER (CW)	300#	NC	PUMP SEAL AIR VENT	1
V	23	3/4"	BALL VALVE WITH LUG END FLANGES	COLD WATER (CW)	300#	NO	HOSE BIB SHUT-OFF	
V	24	2"	PRESSURE-REGULATING VALVE	COLD WATER (CW)	300#	N/A	CW PRESSURE REDUCING	
V	25	12"	BALANCING VALVE WITH LUG END FLANGES	2450 HPD	150#	N/A	2450 BALANCING	

- COMMENTS:  
 1 CONTROL VALVE.  
 2 WELD NECK FLANGE.

## PUMP SCHEDULE

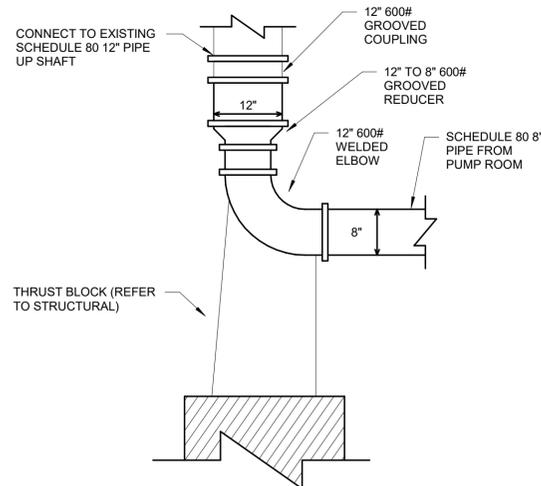
UNIT TYPE	UNIT NUMBER	MANUFACTURER	MODEL	SERVICE	GPM	HEAD	ELECTRICAL				COMMENTS
							HP	VOLTAGE	PHASES	RPM	
P	1	PUMPWORKS	PWM 6X8X12	DEWATERING	1450	1500 RH2O	800	4160	3	3560	1,2,3

- COMMENTS:  
 1 PUMP, PUMP BASE, AND MOTOR PROVIDED AND INSTALLED BY THIS CONTRACTOR.  
 2 THIS CONTRACTOR TO PROVIDE A 6" HOUSEKEEPING PAD PER STRUCTURAL DRAWINGS. SIZE TO BE DETERMINED BASED ON ACTUAL PUMP DIMENSIONS.  
 3 APPROXIMATE DIMENSIONS: 52"X143"X71"; APPROXIMATE PUMP WEIGHT: 4500LBS; APPROXIMATE BASEPLATE WEIGHT: 3500LBS; APPROXIMATE MOTOR WEIGHT: 6000LBS.

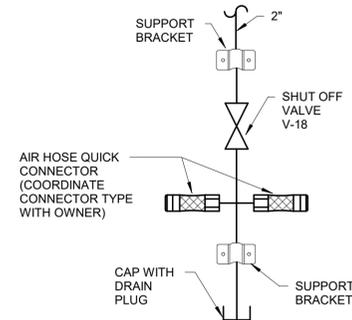
## SUMP PUMP SCHEDULE

UNIT TYPE	UNIT NUMBER	MANUFACTURER	MODEL	LOCATION	SERVES	GPM	HEAD	ELECTRICAL				COMMENTS
								HP	VOLTAGE	PHASES	RPM	
SP	1	GRUNDFOS	10 SQ05-110	PUMP ROOM	HORSESHOE SUMP	10	105 RH2O	1.34	220	1	10700	1,2,3,4,5

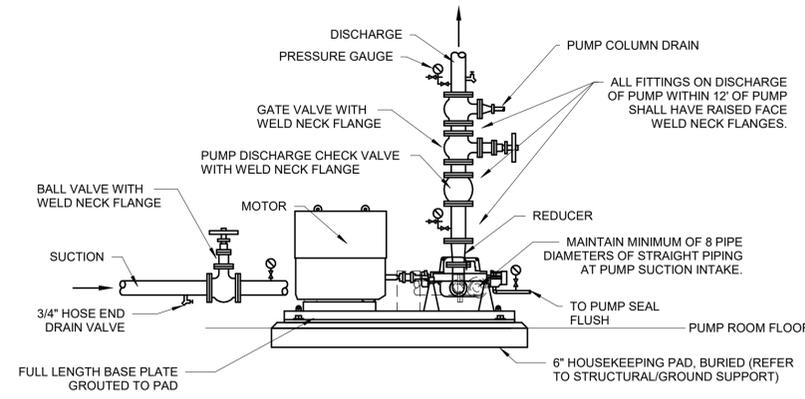
- COMMENTS:  
 1 INSTALL CHECK VALVE ON PUMP DISCHARGE.  
 2 PROVIDE WITH NEMA 4 8153 SIMPLEX CONTROL PANEL (3)-8234 FLOAT SWITCH, AND HIGH LEVEL ALARM HORN ON RTU PANEL. CONNECT TO EXISTING CONTROL PANEL.  
 3 UNIT SHALL BE SUBMERSIBLE AND SIMPLEX.  
 4 PROVIDE WITH ISOLATED CONTACT FOR HIGH WATER ALARM TO RTU.  
 5 PROVIDE WITH SPECIAL PURPOSE GROUND FAULT CIRCUIT INTERRUPTER (SPGFCI) PROTECTION.



1 SHAFT PIPING DETAIL  
NO SCALE



2 COMPRESSED AIR OUTLET DETAIL  
NO SCALE



3 TYPICAL SINGLE SUCTION PUMP SCHEMATIC  
NO SCALE

REVIT FILE NAME: BR24011-1250L PUMP ROOM REHABILITATION-MEP25-CENTRAL

**WPE** WEST PLAINS ENGINEERING, INC.  
 1750 RAND ROAD • RAPID CITY, SD, 57702  
 PHONE: (605) 348-7455 • FAX: (605) 348-9445  
 WWW.WESTPLAINSENGINEERING.COM  
 RAPID CITY, SD • SIOUX FALLS, SD • CASPER, WY • CEDAR RAPIDS, IA

THIS DRAWING AND ALL INFORMATION THEREON IS THE PROPERTY OF WEST PLAINS ENGINEERING, INC. AND IS PROTECTED BY LAWS GOVERNING CONFIDENTIALITY AND PATENT OF PRODUCTS. THIS DRAWING IS NOT TO BE USED FOR PURPOSES OTHER THAN THOSE SPECIFICALLY AGREED TO BY WEST PLAINS ENGINEERING, INC.

REVISIONS		
#	DESCRIPTION	DATE

MECHANICAL SYMBOLS, DETAILS, AND SCHEDULES  
 1250L PUMP ROOM REHABILITATION  
 LEAD, SOUTH DAKOTA

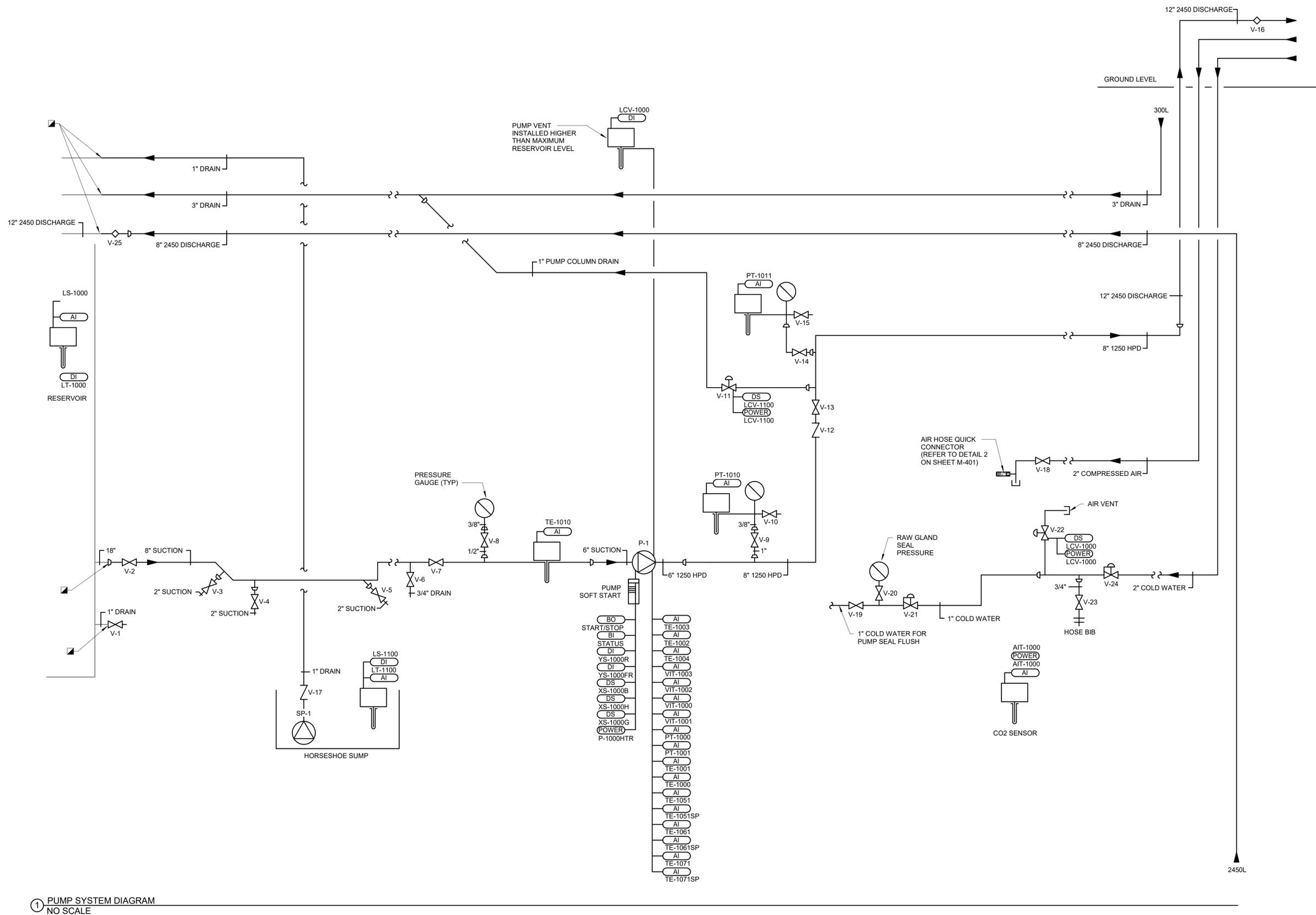
PROJECT#: BR24011

DESIGNED:	MSH/JNR
DRAWN:	TAJ
APPROVED:	MSH
DATE:	07/25/25



SHEET:  
**M-401**  
 Copyright © 2024

REVIT FILE NAME: BR24011-1250L PUMP ROOM REHABILITATION-MEP25-CENTRAL



1 PUMP SYSTEM DIAGRAM  
NO SCALE

**WPE** WEST PLAINS ENGINEERING, INC.  
 1750 RAND ROAD • RAPID CITY SD, 57702  
 PHONE: (605) 348-7455 • FAX: (605) 348-9445  
 WWW.WESTPLAINSENGINEERING.COM  
 RAPID CITY, SD • SIOUX FALLS, SD • CASPER, WY • CEDAR RAPIDS, IA

THIS DRAWING AND ALL INFORMATION THEREON IS THE PROPERTY OF WEST PLAINS ENGINEERING, INC. AND IS PROTECTED BY LAWS GOVERNING CONFIDENTIALITY AND PATENT OF PRODUCTS. THIS DRAWING IS NOT TO BE USED FOR PURPOSES OTHER THAN THOSE SPECIFICALLY AGREED TO BY WEST PLAINS ENGINEERING, INC.

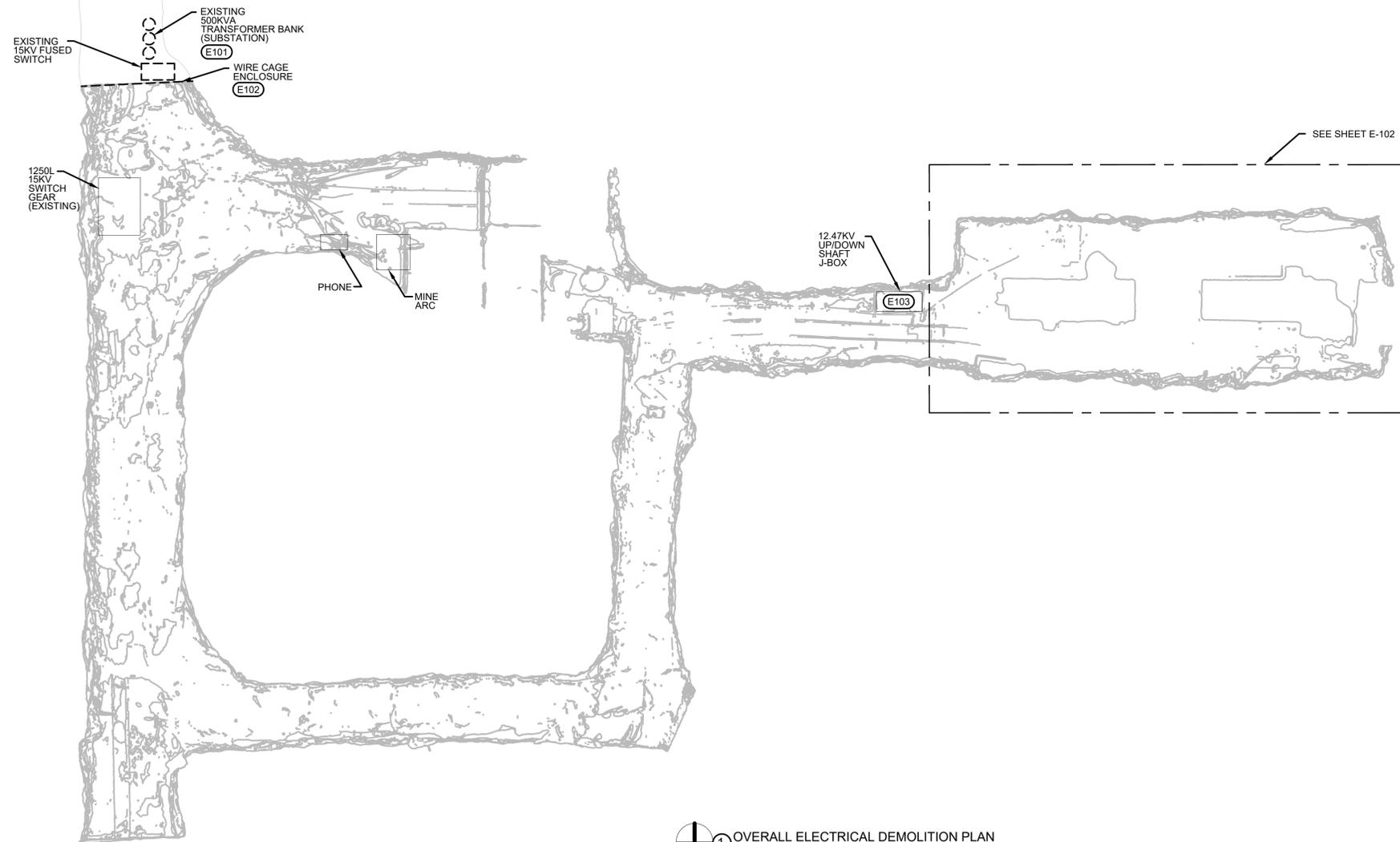
REVISIONS		
#	DESCRIPTION	DATE

**PIPING & INSTRUMENTATION DIAGRAM**  
**1250L PUMP ROOM REHABILITATION**  
 LEAD, SOUTH DAKOTA

PROJECT#:	BR24011
DESIGNED:	MSH/JNR
DRAWN:	TAJ
APPROVED:	MSH
DATE:	07/25/25



SHEET:  
**M-402**  
 Copyright © 2024



1 OVERALL ELECTRICAL DEMOLITION PLAN  
SCALE: 1/8" = 1'-0"

**ELECTRICAL MISCELLANEOUS NOTES:**

- A. EXISTING EQUIPMENT IS SHOWN HALFTONE. EQUIPMENT BEING DEMOLISHED IS SHOWN DASHED. NEW EQUIPMENT IS SHOWN FULLTONE.
- B. UNLESS SPECIFICALLY NOTED, ALL EQUIPMENT SHOWN AS EXISTING TO REMAIN.

**(X) ELECTRICAL SPECIFIC NOTES:**

- E101 DISCONNECT AND REMOVE EXISTING ELECTRICAL EQUIPMENT AND ALL ASSOCIATED COMPONENTS AND CONDUCTORS.
- E102 THE ELECTRICAL CONTRACTOR SHALL DEMOLISH THE EXISTING WIRE CAGE ENCLOSURE.
- E103 EXISTING 12.47KV UP/DOWN SHAFT J-BOX TO BE REPLACED. CONTRACTOR TO DISCONNECT J-BOX DURING CONSTRUCTION OF MECHANICAL PIPES. INSTALL NEW J-BOX AT NEW LOCATION AFTER MECHANICAL WORK IS COMPLETED AND RECONNECT EXISTING CABLES WITH NEW TERMINATIONS. COORDINATE J-BOX OUTAGE WITH SDSTA. SEE SHEET E-201 FOR DETAILS.



THIS DRAWING AND ALL INFORMATION THEREON IS THE PROPERTY OF WEST PLAINS ENGINEERING, INC. AND IS PROTECTED BY LAWS GOVERNING CONFIDENTIALITY AND PATENT OF PRODUCTS. THIS DRAWING IS NOT TO BE USED FOR PURPOSES OTHER THAN THOSE SPECIFICALLY AGREED TO BY WEST PLAINS ENGINEERING, INC.

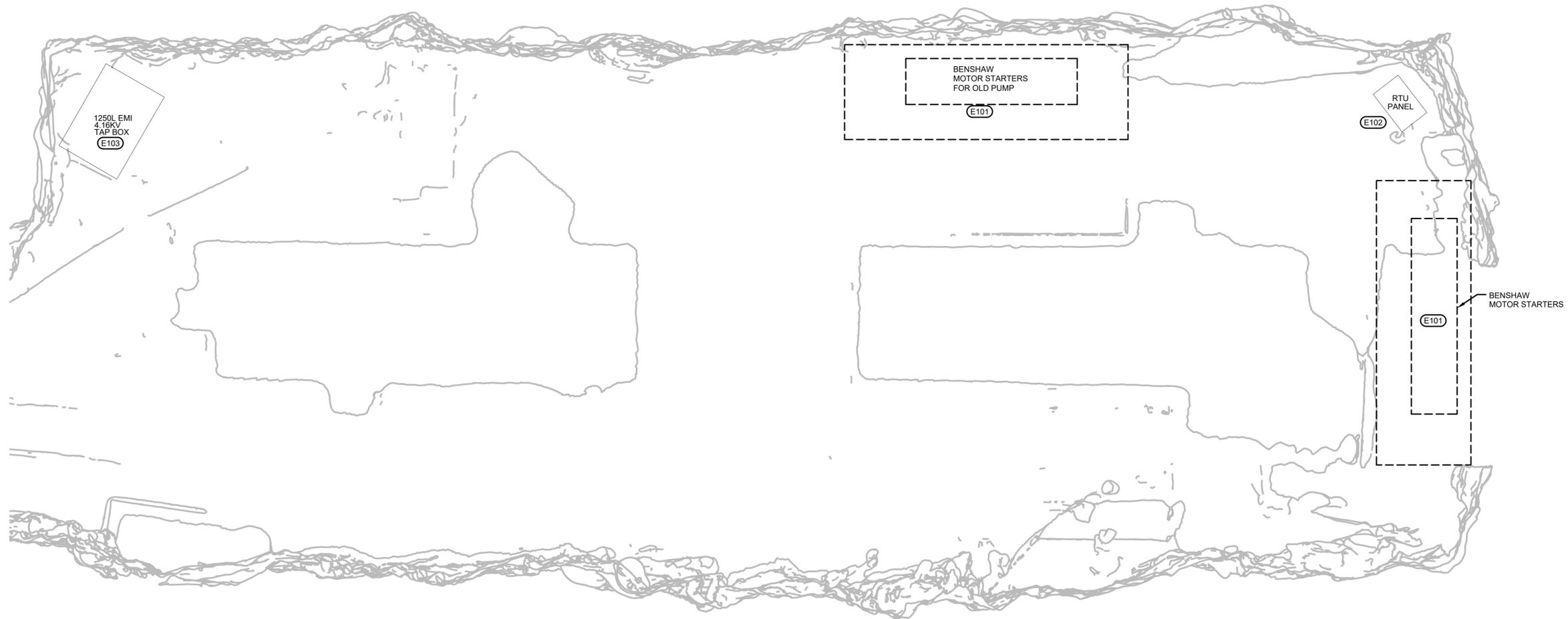
REVISIONS		
#	DESCRIPTION	DATE

OVERALL ELECTRICAL DEMOLITION PLAN  
**1250L PUMP ROOM REHABILITATION**  
LEAD, SOUTH DAKOTA

PROJECT#:	BR24011
DESIGNED:	MH/DWB
DRAWN:	TAJ
APPROVED:	DWB
DATE:	7/25/25



SHEET:  
**E-101**  
Copyright © 2016



**ELECTRICAL MISCELLANEOUS NOTES:**

- A. EXISTING EQUIPMENT IS SHOWN HALFTONE. EQUIPMENT BEING DEMOLISHED IS SHOWN DASHED. NEW EQUIPMENT IS SHOWN FULLTONE.
- B. UNLESS SPECIFICALLY NOTED, ALL EQUIPMENT SHOWN AS EXISTING TO REMAIN.

**(X) ELECTRICAL SPECIFIC NOTES:**

- E101 DISCONNECT AND REMOVE EXISTING ELECTRICAL EQUIPMENT AND ALL ASSOCIATED COMPONENTS AND CONDUCTORS.
- E102 EXISTING RTU/SCADA PANEL TO REMAIN. SEE SHEET E-202 FOR DETAILS.
- E103 EXISTING 1250L EMI 4.16KV TAP BOX TO REMAIN. SEE SHEET E-202 FOR DETAILS.

**WEST PLAINS ENGINEERING, INC.**  
 1750 RAND ROAD • RAPID CITY SD, 57702  
 PHONE: (605) 348-7455 • FAX: (605) 348-9445  
 WWW.WESTPLAINSENGINEERING.COM  
 RAPID CITY, SD • SIOUX FALLS, SD • CASPER, WY • CEDAR RAPIDS, IA • BISMARCK, ND

THIS DRAWING AND ALL INFORMATION THEREON IS THE PROPERTY OF WEST PLAINS ENGINEERING, INC. AND IS PROTECTED BY LAWS GOVERNING CONFIDENTIALITY AND PATENT OF PRODUCTS. THIS DRAWING IS NOT TO BE USED FOR PURPOSES OTHER THAN THOSE SPECIFICALLY AGREED TO BY WEST PLAINS ENGINEERING, INC.

REVISIONS		
#	DESCRIPTION	DATE

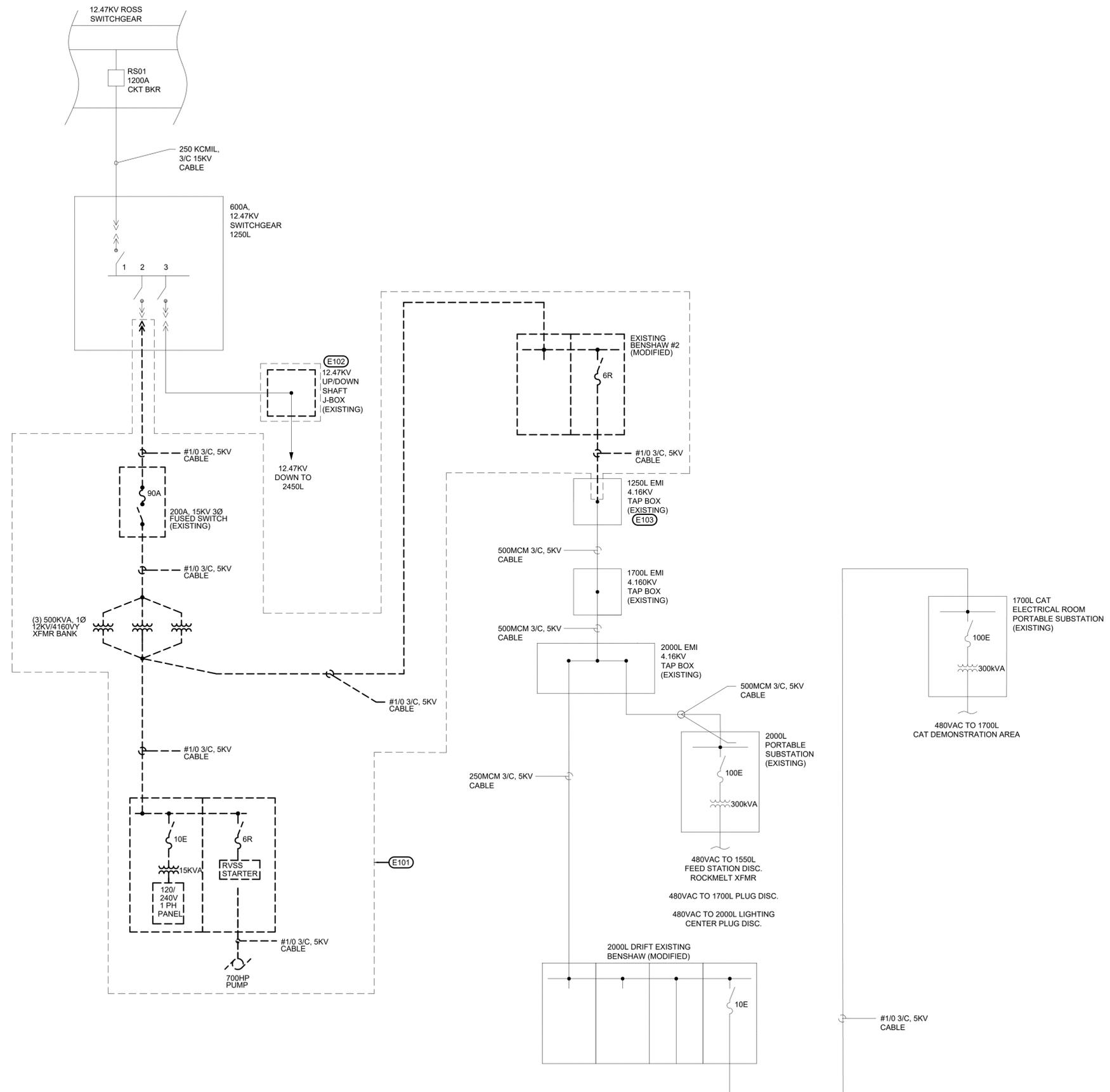
1250 L PUMP ROOM ELECTRICAL DEMOLITION PLAN  
**1250L PUMP ROOM REHABILATION**  
 LEAD, SOUTH DAKOTA

PROJECT#:	BR24011
DESIGNED:	MH/DWB
DRAWN:	TAJ
APPROVED:	DWB
DATE:	7/25/25



SHEET:  
**E-102**  
 Copyright © 2016

1 PUMP ROOM ELECTRICAL DEMOLITION PLAN  
 SCALE: 1/2" = 1'-0"



① ELECTRICAL DEMOLITION ONE-LINE DIAGRAM  
NO SCALE

- ELECTRICAL MISCELLANEOUS NOTES:**
- A. EXISTING EQUIPMENT IS SHOWN HALFTONE. EQUIPMENT BEING DEMOLISHED IS SHOWN DASHED. NEW EQUIPMENT IS SHOWN FULLTONE.
  - B. UNLESS SPECIFICALLY NOTED, ALL EQUIPMENT SHOWN AS EXISTING TO REMAIN.
- X ELECTRICAL SPECIFIC NOTES:**
- E101 DISCONNECT AND REMOVE EXISTING ELECTRICAL EQUIPMENT AND ALL ASSOCIATED COMPONENTS AND CONDUCTORS.
  - E102 EXISTING 12.47KV UP/DOWN SHAFT J-BOX TO BE REPLACED. CONTRACTOR TO DISCONNECT J-BOX DURING CONSTRUCTION OF MECHANICAL PIPES. INSTALL NEW J-BOX AT NEW LOCATION AFTER MECHANICAL WORK IS COMPLETED AND RECONNECT EXISTING CABLES WITH NEW TERMINATIONS. COORDINATE J-BOX OUTAGE WITH SDSTA. SEE SHEET E-201 FOR DETAILS.
  - E103 EXISTING 1250L EMI 4.16KV TAP BOX TO REMAIN. SEE SHEET E-202 FOR DETAILS.

**WEST PLAINS ENGINEERING, INC.**  
 1750 RAND ROAD • RAPID CITY SD, 57702  
 PHONE: (605) 348-7455 • FAX: (605) 348-9445  
 WWW.WESTPLAINSENGINEERING.COM  
 RAPID CITY, SD • SIOUX FALLS, SD • CASPER, WY • CEDAR RAPIDS, IA • BISMARCK, ND

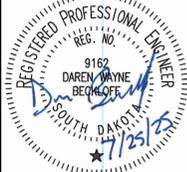
THIS DRAWING AND ALL INFORMATION THEREON IS THE PROPERTY OF WEST PLAINS ENGINEERING, INC. AND IS PROTECTED BY LAWS GOVERNING CONFIDENTIALITY AND PATENT OF PRODUCTS. THIS DRAWING IS NOT TO BE USED FOR PURPOSES OTHER THAN THOSE SPECIFICALLY AGREED TO BY WEST PLAINS ENGINEERING, INC.

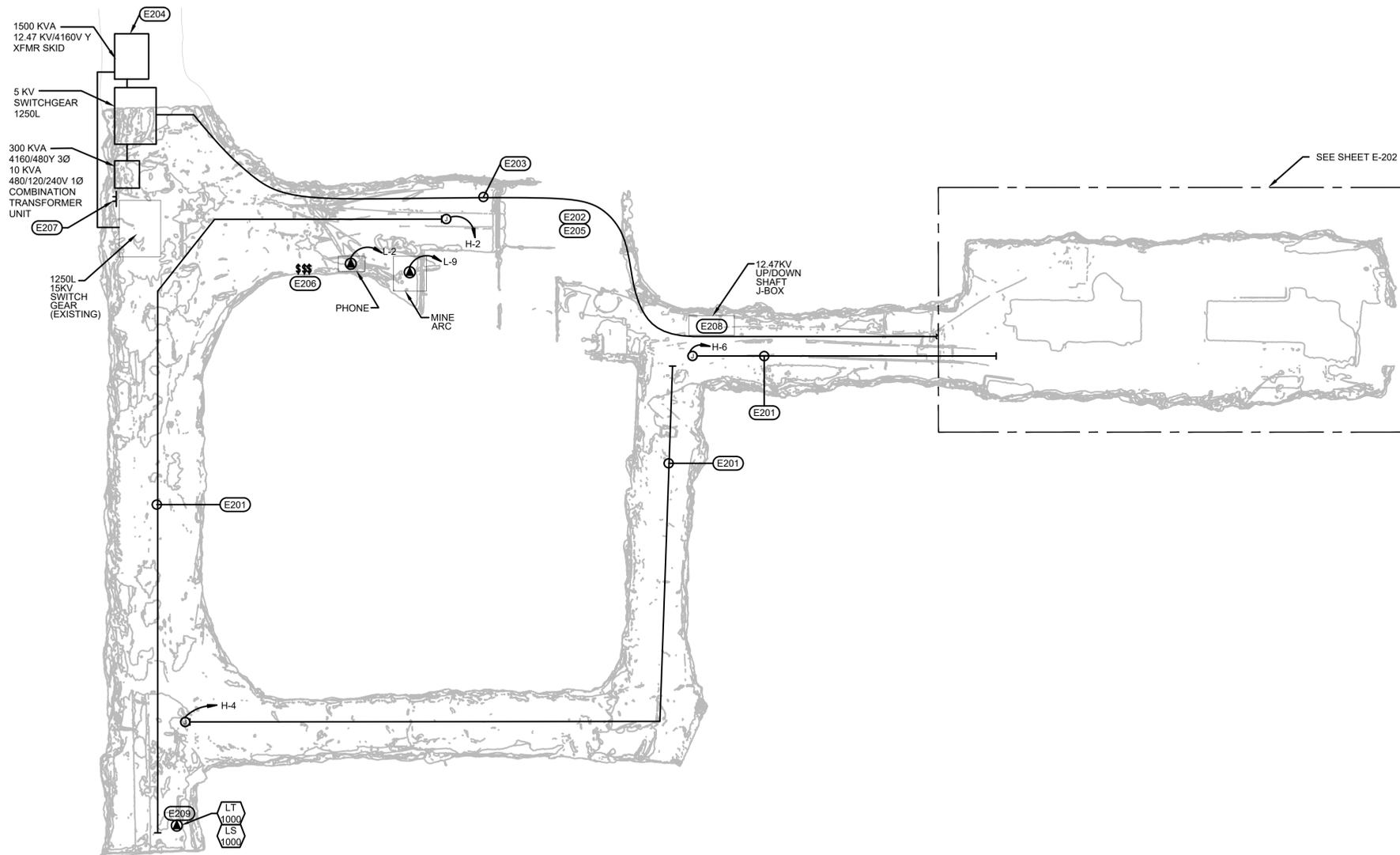
REVISIONS		
#	DESCRIPTION	DATE

ELECTRICAL DEMOLITION ONE-LINE DIAGRAM  
**1250L PUMP ROOM REHABILITATION**  
 LEAD, SOUTH DAKOTA

PROJECT#: BR24011

DESIGNED:	MH/DWB
DRAWN:	TAJ
APPROVED:	DWB
DATE:	7/25/25





1 OVERALL ELECTRICAL REMODEL PLAN  
SCALE: 1/8" = 1'-0"

**ELECTRICAL MISCELLANEOUS NOTES:**

- A. EXISTING EQUIPMENT IS SHOWN HALFTONE. NEW EQUIPMENT IS SHOWN FULLTONE.
- B. UNLESS SPECIFICALLY NOTED, ALL EQUIPMENT SHOWN AS EXISTING TO REMAIN.
- C. ALL CABLING TO BE METAL CLAD WITH PVC JACKET. ROUTE ALONG CEILING OF DRIFT W/ UNISTRUT.

**(X) ELECTRICAL SPECIFIC NOTES:**

- E201 X-GLO-30 OR EQUAL LED ROPE LIGHTING. 36VDC WITH 277 VAC 400W INPUT POWER SUPPLY
- E202 ALL WORK IN SHAFT WILL BE COMPLETED BY SDSTA PERSONNEL.
- E203 PROVIDE UNISTRUT RACK FOR ALL CABLE WITH SUPPORTS EVERY 6 FT.
- E204 PROVIDE EQUIPMENT ON LEVEL 6" CONCRETE HOUSEKEEPING PAD
- E205 ALL EQUIPMENT MUST MEET SIZE LIMITATIONS ON 10,000 LBS. AND TRANSPORT LIMITATIONS:  
  
CAGE LIMIT:  
WIDTH = 52.25 INCHES  
HEIGHT = 122 INCHES  
LENGTH = 143.5 INCHES  
  
TRANSPORTED LOAD LIMITS (TUNNEL LIMITED ASSUMES USING FLAT DECK RAIL CAR):  
  
WIDTH = 45 INCHES (SOME FLEXIBILITY BUT WANT TO FLAG IF SOMETHING WIDER IS NEEDED)  
  
HEIGHT = 72 INCHES (STRICT ACCESS TO 1250L PUMP ROOM LIMITS THIS)  
  
LENGTH = 93 INCHES (SOME FLEXIBILITY BUT WANT TO FLAG IF SOMETHING LONGER IS NEEDED)
- E206 SWITCHBANK FOR 1250L LIGHTING CIRCUITS
- E207 PROVIDE TINNED COPPER GROUND BAR MOUNTED ON RIB. SEE DETAILS ON E-301. BOND ALL EQUIPMENT TO GROUND BAR WITH BARE TINNED COPPER.
- E208 PROVIDE AND INSTALL NEW 12.47KV UP/DOWN SHAFT J-BOX AT NEW LOCATION AFTER MECHANICAL WORK IS COMPLETED AND RECONNECT EXISTING CABLES WITH NEW TERMINATIONS. SEE ONE-LINE DIAGRAM ON SHEET E-203 FOR DETAILS.
- E209 HOME-RUN ALL DIGITAL & ANALOG PUMP CONTROL INSTRUMENTATIONS TO THE RTU PANEL. ALSO SEE PUMP CONTROL WIRING SCHEDULE ON SHEET E301.



THIS DRAWING AND ALL INFORMATION THEREON IS THE PROPERTY OF WEST PLAINS ENGINEERING, INC. AND IS PROTECTED BY LAWS GOVERNING CONFIDENTIALITY AND PATENT OF PRODUCTS. THIS DRAWING IS NOT TO BE USED FOR PURPOSES OTHER THAN THOSE SPECIFICALLY AGREED TO BY WEST PLAINS ENGINEERING, INC.

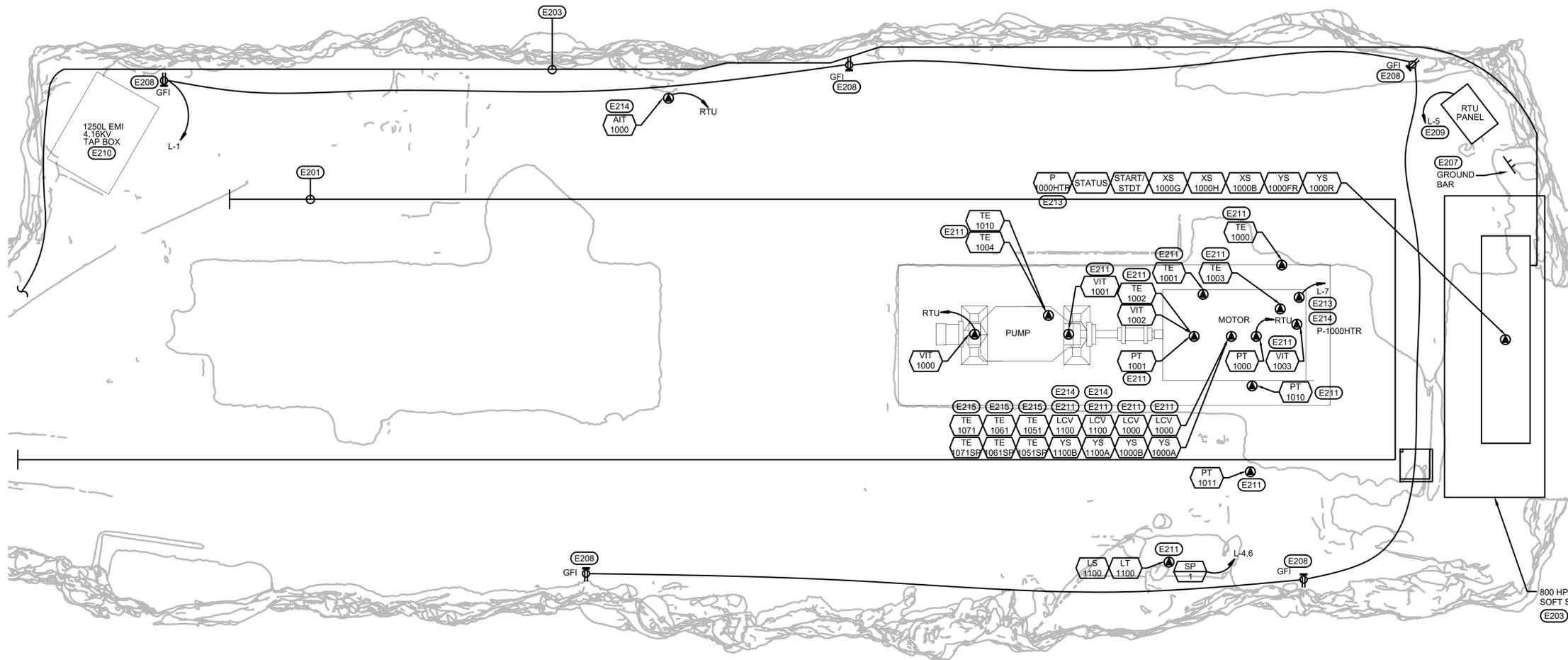
REVISIONS		
#	DESCRIPTION	DATE

OVERALL ELECTRICAL REMODEL PLAN  
**1250L PUMP ROOM REHABILATION**  
LEAD, SOUTH DAKOTA

PROJECT#:	BR24011
DESIGNED:	MH/DWB
DRAWN:	TAJ
APPROVED:	DWB
DATE:	7/25/25



SHEET:  
**E-201**  
Copyright © 2016



1 PUMP ROOM ELECTRICAL REMODEL PLAN  
SCALE: 1/2" = 1'-0"

**ELECTRICAL MISCELLANEOUS NOTES:**

- A. EXISTING EQUIPMENT IS SHOWN HALFTONE. NEW EQUIPMENT IS SHOWN FULLTONE.
- B. UNLESS SPECIFICALLY NOTED, ALL EQUIPMENT SHOWN AS EXISTING TO REMAIN.
- C. ALL CABLING TO BE METAL CLAD WITH PVC JACKET, ROUTE ALONG CEILING OF DRIFT W/ UNISTRUT.

**X ELECTRICAL SPECIFIC NOTES:**

- E201 X-GLO-30 OR EQUAL LED ROPE LIGHTING. 36VDC WITH 277 VAC 400W INPUT POWER SUPPLY
- E202 ALL WORK IN SHAFT WILL BE COMPLETED BY SDSTA PERSONNEL.
- E203 PROVIDE UNISTRUT RACK FOR ALL CABLE WITH SUPPORTS EVERY 6 FT.
- E204 PROVIDE EQUIPMENT ON LEVEL 6" CONCRETE HOUSEKEEPING PAD
- E205 ALL EQUIPMENT MUST MEET SIZE LIMITATIONS ON 10,000 LBS. AND TRANSPORT LIMITATIONS:  
  
CAGE LIMIT:  
WIDTH = 52.25 INCHES  
HEIGHT = 122 INCHES  
LENGTH = 143.5 INCHES  
  
TRANSPORTED LOAD LIMITS (TUNNEL LIMITED ASSUMES USING FLAT DECK RAIL CAR):  
  
WIDTH = 45 INCHES (SOME FLEXIBILITY BUT WANT TO FLAG IF SOMETHING WIDER IS NEEDED)  
  
HEIGHT = 72 INCHES (STRICT ACCESS TO 1250L PUMP ROOM LIMITS THIS)  
  
LENGTH = 93 INCHES (SOME FLEXIBILITY BUT WANT TO FLAG IF SOMETHING LONGER IS NEEDED)
- E206 SWITCHBANK FOR 1250L LIGHTING CIRCUITS
- E207 PROVIDE TINNED COPPER GROUND BAR MOUNTED ON RIB. SEE DETAILS ON E-301. BOND ALL EQUIPMENT TO GROUND BAR WITH BARE TINNED COPPER.
- E208 GFCI OUTLET WITH WEATHERPROOF COVER.
- E209 REMOUNT EXISTING RTU/SCADA PANEL TO SURFACE W/ UNISTRUT.
- E210 EXISTING 1250L EMI 4.16KV TAP BOX FEEDING THE 1700L EMI TAP BOX TO REMAIN. PROVIDE NEW FEEDER CABLE FROM THE NEW 5KV SWITCHGEAR TO THE 1250L EMI 4.16KV TAP BOX. SEE THE ONE-LINE DIAGRAM ON SHEET E-203 FOR NEW CABLE SIZE.
- E211 HOME-RUN ALL DIGITAL & ANALOG PUMP CONTROL INSTRUMENTATIONS TO THE RTU PANEL. ALSO SEE PUMP CONTROL WIRING SCHEDULE ON SHEET E301.
- E212 ALL INSTRUMENTATIONS TO BE PROVIDED BY SDSTA. THE INSTRUMENTATION SHALL BE INSTALLED AND WIRED BY THE CONSTRUCTION CONTRACTOR. INSTRUMENTATION WIRING AND ASSOCIATED RACEWAYS SHALL BE PROVIDED BY THE CONTRACTOR.
- E213 THE MOTOR HEATER FEEDER RUNS THROUGH THE RELAY CONTACT IN THE SOFT STARTER.
- E214 PROVIDE 120VAC POWER. SEE SCHEDULES ON SHEETS E-203 AND E-301.
- E215 HOME-RUN INSTRUMENTATIONS AND SPARES TO SOFT STARTER CABINET.

**WPE WEST PLAINS ENGINEERING, INC.**  
1750 RAND ROAD • RAPID CITY SD, 57702  
PHONE: (605) 348-7455 • FAX: (605) 348-9445  
WWW.WESTPLAINSENGINEERING.COM  
RAPID CITY, SD • SIOUX FALLS, SD • CASPER, WY • CEDAR RAPIDS, IA • BISMARCK, ND

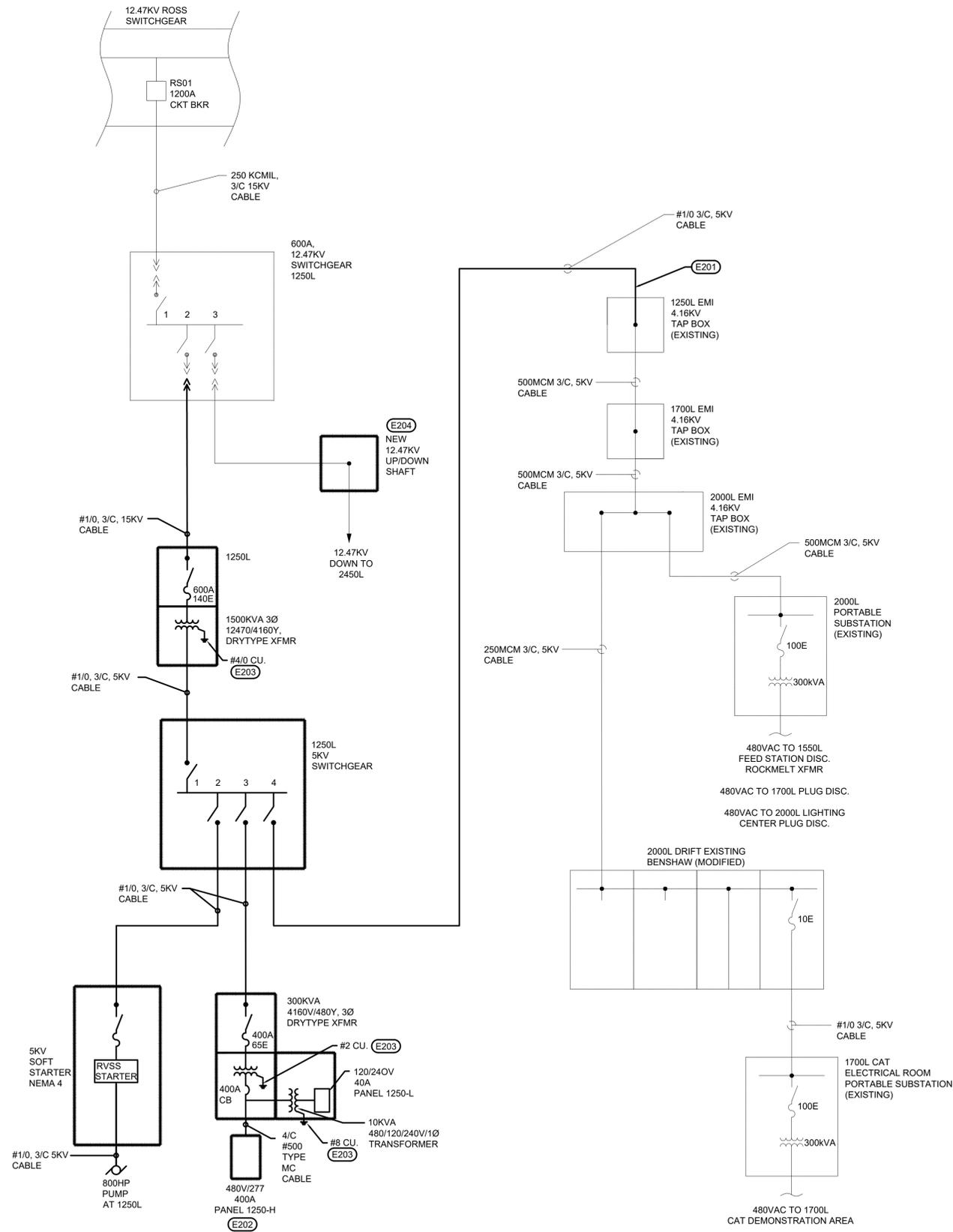
THIS DRAWING AND ALL INFORMATION THEREON IS THE PROPERTY OF WEST PLAINS ENGINEERING, INC. AND IS PROTECTED BY LAWS GOVERNING CONFIDENTIALITY AND PATENT OF PRODUCTS. THIS DRAWING IS NOT TO BE USED FOR PURPOSES OTHER THAN THOSE SPECIFICALLY AGREED TO BY WEST PLAINS ENGINEERING, INC.

REVISIONS		
#	DESCRIPTION	DATE

1250 L PUMP ROOM ELECTRICAL REMODEL PLAN  
**1250L PUMP ROOM REHABILITATION**  
LEAD, SOUTH DAKOTA

PROJECT#:	BR24011
DESIGNED:	MH/DWB
DRAWN:	TAJ
APPROVED:	DWB
DATE:	7/25/25





1 ELECTRICAL REMODEL ONE-LINE DIAGRAM  
NO SCALE

**ELECTRICAL MISCELLANEOUS NOTES:**

- A. EXISTING EQUIPMENT IS SHOWN HALFTONE. NEW EQUIPMENT IS SHOWN FULLTONE.
- B. UNLESS SPECIFICALLY NOTED, ALL EQUIPMENT SHOWN AS EXISTING TO REMAIN.
- C. ALL CABLING TO BE METAL CLAD WITH PVC JACKET, ROUTE ALONG CEILING OF DRIFT W/ UNISTRUT.

**(X) ELECTRICAL SPECIFIC NOTES:**

- E201 RECONNECT THE 1700L/2000L FEEDER INTO THE NEW 1250L 5KV SWITCHGEAR.
- E202 PROVIDE (2) CONNECTIONS FOR COMBINATION STARTER DISCONNECTS FOR VENTILATION FANS DURING DEMOLITION. SEE PANEL 1250-H SCHEDULE.
- E203 BOND GROUND TO GROUND BAR. SEE DETAIL ON SHEET E-301
- E204 PROVIDE AND INSTALL NEW 12.47KV UP/DOWN SHAFT J-BOX AT NEW LOCATION AFTER MECHANICAL WORK IS COMPLETED AND RECONNECT EXISTING CABLES WITH NEW TERMINATIONS.

PANEL 1250-H														
		VOLTS: 277/ 480		PHASE: 3		WIRE: 4		MAIN CAP: 400		AMPERES				
		A/C RATING: 22,000		NEMA 4										
		MOUNTING: SURF		FEEDER SIZE				MAIN CONNECTION: MLO						
OCT NO	ITEM FED	LOAD WATTS	WIRE SIZE	CIRCUIT BREAKER AMPS	POLES	FRAME	NEUTRAL	CIRCUIT BREAKER FRAME	POLES	AMPS	WIRE SIZE	LOAD WATTS	ITEM FED	OCT NO
1	**STATION FAN 1	7,170	10	60	3		A		3	20	10	500	1250L LIGHTING	2
3	-	7,170	-	-	-		B		-	20	10	500	1250L LIGHTING	4
5	-	7,170	-	-	-		C		-	20	10	500	1250L LIGHTING	6
7	**STATION FAN 2	7,170	10	60	3		A		1	20			SPARE	8
9	-	7,170	-	-	-		B		1	20			SPARE	10
11	-	7,170	-	-	-		C		1	20			SPARE	12
13							A							14
15							B							16
17							C							18
19							A							20
21							B							22
23							C							24
25							A							26
27							B							28
29							C							30
31							A							32
33							B							34
35							C							36
37							A							38
39							B							40
41							C							42

\*INDICATES EXISTING EQUIPMENT & CIRCUIT TO BE RECONNECTED TO NEW PANEL  
\*\*CONNCTION FOR COMBINATION STARTER DISCONNECT TO PROVIDE VENTILATION DURING DEMOLITION.

APPROXIMATE CONNECTED LOAD	
A	14,841 WATTS
B	14,841 WATTS
C	14,841 WATTS
<b>TOTAL AMPS</b>	<b>54</b>

PANEL 1250-L														
		VOLTS: 120/ 240		PHASE: 1		WIRE: 3		MAIN CAP: 40		AMPERES				
		A/C RATING: 22,000		SEE RISER										
		MOUNTING: SURF		FEEDER SIZE				MAIN CONNECTION: 40A MCB						
OCT NO	ITEM FED	LOAD WATTS	WIRE SIZE	CIRCUIT BREAKER AMPS	POLES	FRAME	NEUTRAL	CIRCUIT BREAKER FRAME	POLES	AMPS	WIRE SIZE	LOAD WATTS	ITEM FED	OCT NO
1	PUMP ROOM RECEPTACLE	900	10	20	1		L1		1	20	12	200	*PHONE/FIBER	2
3	SPACE	720	12	20	1		L2		2	20	12	572	SUMP PUMP (GFCI)	4
5	RTU/SCADA PANEL	200	10	20	1		L1		-	-	12	572	-	6
7	**MOTOR HEATER	500	10	20	1		L2		1	20	12	250	DEWATERING PUMP VENT VALVE	8
9	*MINE ARC	1,200	10	20	2		L1		1	20	12	250	DWT. DISCHARGE PUMP DRAIN VALVE	10
11	-	1,200	10	-	-		L2		1	20			SPARE	12
13							L1						SPARE	14
15							L2							16
17							L1							18
19							L2							20
21							L1							22
23							L2							24
25							L1							26
27							L2							28
29							L1							30
31							L2							32
33							L1							34
35							L2							36
37							L1							38
39							L2							40
41							L1							42

\*INDICATES EXISTING EQUIPMENT & CIRCUIT TO BE RECONNECTED TO NEW PANEL  
\*\* RUN THROUGH THE RELAY CONTACT IN THE SOFT STARTER.

APPROXIMATE CONNECTED LOAD	
L1-	3,322 WATTS
L2-	3,242 WATTS
<b>TOTAL AMPS</b>	<b>27</b>

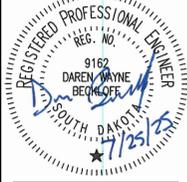
**WEST PLAINS ENGINEERING, INC.**  
1750 RAND ROAD • RAPID CITY SD, 57702  
PHONE: (605) 348-7455 • FAX: (605) 348-9445  
WWW.WESTPLAINSENGINEERING.COM  
RAPID CITY, SD • SIOUX FALLS, SD • CASPER, WY • CEDAR RAPIDS, IA • BISMARCK, ND

THIS DRAWING AND ALL INFORMATION THEREON IS THE PROPERTY OF WEST PLAINS ENGINEERING, INC. AND IS PROTECTED BY LAWS GOVERNING CONFIDENTIALITY AND PATENT OF PRODUCTS. THIS DRAWING IS NOT TO BE USED FOR PURPOSES OTHER THAN THOSE SPECIFICALLY AGREED TO BY WEST PLAINS ENGINEERING, INC.

REVISIONS		
#	DESCRIPTION	DATE

ELECTRICAL NEW ONE-LINE DIAGRAM & PANEL SCHED.  
**1250L PUMP ROOM REHABILITATION**  
LEAD, SOUTH DAKOTA

PROJECT#: BR24011  
DESIGNED: MH/DWB  
DRAWN: TAJ  
APPROVED: DWB  
DATE: 7/25/25



SHEET:  
**E-203**  
Copyright © 2016

THIS DRAWING AND ALL INFORMATION THEREON IS THE PROPERTY OF WEST PLAINS ENGINEERING, INC. AND IS PROTECTED BY LAWS GOVERNING CONFIDENTIALITY AND PATENT OF PRODUCTS. THIS DRAWING IS NOT TO BE USED FOR PURPOSES OTHER THAN THOSE SPECIFICALLY AGREED TO BY WEST PLAINS ENGINEERING, INC.

REVISIONS		
#	DESCRIPTION	DATE

PUMP CONTROL WIRING SCHEDULES & DETAILS  
**1250L PUMP ROOM REHABILATION**  
 LEAD, SOUTH DAKOTA

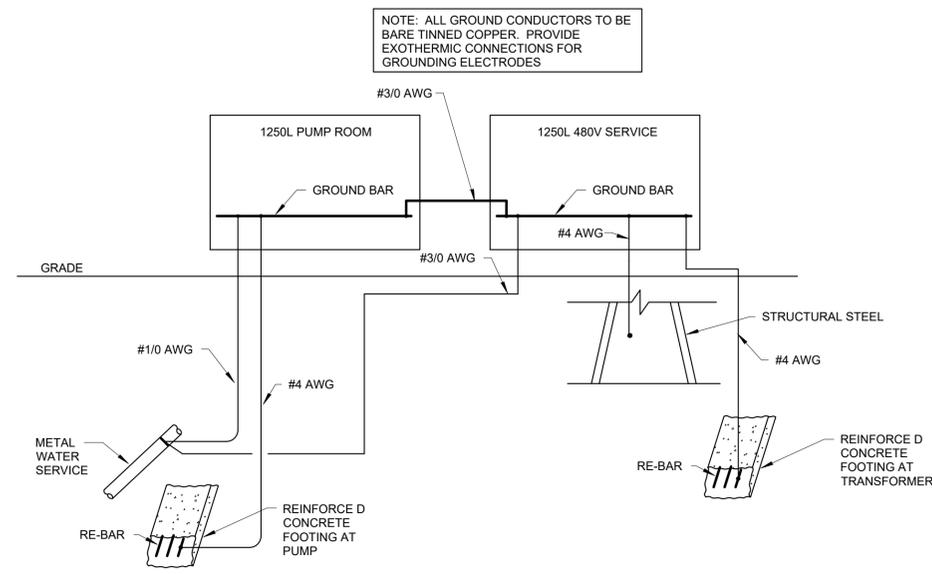
PROJECT#: BR24011  
 DESIGNED: TAJ  
 DRAWN: TAJ  
 APPROVED: DWB  
 DATE: 7/25/25



SHEET:  
**E-301**  
 Copyright © 2016

1250L PUMP CONTROL WIRING SCHEDULE						
ANALOG						
TAG	INSTRUMENT NAME	SIGNAL STATUS	TYPE	CABLE SIZE	FROM	NOTES
TE-1003	DEWATERING PUMP P-1000 OUTBOARD/NDE BEARING TEMPERATURE	TEMPERATURE	ANALOG	3C#16 TWISTED SHIELDED TYPE MC	RTU	CLASS 1 CONTROL CIRCUIT
TE-1002	DEWATERING PUMP P-1000 INBOARD/DE BEARING TEMPERATURE	TEMPERATURE	ANALOG	3C#16 TWISTED SHIELDED TYPE MC	RTU	CLASS 1 CONTROL CIRCUIT
TE-1004	DEWATERING PUMP P-1000 PUMP CASE/INLINE PIPE TEMPERATURE	TEMPERATURE	ANALOG	3C#16 TWISTED SHIELDED TYPE MC	RTU	CLASS 1 CONTROL CIRCUIT
VIT-1003	DEWATERING PUMP P-1000 OUTBOARD/NDE BEARING VIBRATION	VIBRATION	ANALOG	2C#16 TWISTED SHIELDED TYPE MC	RTU	CLASS 1 CONTROL CIRCUIT
VIT-1002	DEWATERING PUMP P-1000 INBOARD/DE BEARING VIBRATION	VIBRATION	ANALOG	2C#16 TWISTED SHIELDED TYPE MC	RTU	CLASS 1 CONTROL CIRCUIT
VIT-1000	DEWATERING PUMP P-1000 MOTOR OUTBOARD/NDE BEARING VIBRATION	VIBRATION	ANALOG	2C#16 TWISTED SHIELDED TYPE MC	RTU	CLASS 1 CONTROL CIRCUIT
VIT-1001	DEWATERING PUMP P-1000 MOTOR INBOARD/DE BEARING VIBRATION	VIBRATION	ANALOG	2C#16 TWISTED SHIELDED TYPE MC	RTU	CLASS 1 CONTROL CIRCUIT
PT-1000	DEWATERING PUMP P-1000 OUTBOARD/NDE BEARING SEAL PACKING PRESSURE	PRESSURE	ANALOG	2C#16 TWISTED SHIELDED TYPE MC	RTU	CLASS 1 CONTROL CIRCUIT
PT-1001	DEWATERING PUMP P-1000 INBOARD/DE BEARING SEAL PACKING PRESSURE	PRESSURE	ANALOG	2C#16 TWISTED SHIELDED TYPE MC	RTU	CLASS 1 CONTROL CIRCUIT
TE-1010	WATER INLET PIPE TEMPERATURE	TEMPERATURE	ANALOG	3C#16 TWISTED SHIELDED TYPE MC	RTU	CLASS 1 CONTROL CIRCUIT
PT-1010	DEWATERING PUMP P-1000 DISCHARGE PIPE PRESSURE	PRESSURE	ANALOG	2C#16 TWISTED SHIELDED TYPE MC	RTU	CLASS 1 CONTROL CIRCUIT
PT-1011	DEWATERING PUMP P-1000 DISCHARGE PIPE COLUMN PRESSURE	PRESSURE	ANALOG	2C#16 TWISTED SHIELDED TYPE MC	RTU	CLASS 1 CONTROL CIRCUIT
AIT-1000	DEWATERING PUMP ROOM CO MONITOR	CO LEVEL %	ANALOG	2C#16 TWISTED SHIELDED TYPE MC	RTU	CLASS 1 CONTROL CIRCUIT
TE-1001	DEWATERING PUMP P-1000 MOTOR INBOARD/DE BEARING TEMPERATURE	TEMPERATURE	ANALOG	3C#16 TWISTED SHIELDED TYPE MC	SOFT START -> RTU	CLASS 1 CONTROL CIRCUIT
TE-1000	DEWATERING PUMP P-1000 MOTOR OUTBOARD/NDE BEARING TEMPERATURE	TEMPERATURE	ANALOG	3C#16 TWISTED SHIELDED TYPE MC	SOFT START -> RTU	CLASS 1 CONTROL CIRCUIT
TE-1051	DEWATERING PUMP P-1000 MOTOR A-PHASE WINDING TEMPERATURE	TEMPERATURE	ANALOG	3C#16 TWISTED SHIELDED TYPE MC	SOFT START	CLASS 1 CONTROL CIRCUIT
TE-1051SP	DEWATERING PUMP P-1000 MOTOR A-PHASE WINDING TEMPERATURE SPARE	TEMPERATURE	ANALOG	3C#16 TWISTED SHIELDED TYPE MC	SOFT START	CLASS 1 CONTROL CIRCUIT
TE-1061	DEWATERING PUMP P-1000 MOTOR B-PHASE WINDING TEMPERATURE	TEMPERATURE	ANALOG	3C#16 TWISTED SHIELDED TYPE MC	SOFT START	CLASS 1 CONTROL CIRCUIT
TE-1061SP	DEWATERING PUMP P-1000 MOTOR B-PHASE WINDING TEMPERATURE SPARE	TEMPERATURE	ANALOG	3C#16 TWISTED SHIELDED TYPE MC	SOFT START	CLASS 1 CONTROL CIRCUIT
TE-1071	DEWATERING PUMP P-1000 MOTOR C-PHASE WINDING TEMPERATURE	TEMPERATURE	ANALOG	3C#16 TWISTED SHIELDED TYPE MC	SOFT START	CLASS 1 CONTROL CIRCUIT
TE-1071SP	DEWATERING PUMP P-1000 MOTOR C-PHASE WINDING TEMPERATURE SPARE	TEMPERATURE	ANALOG	3C#16 TWISTED SHIELDED TYPE MC	SOFT START	CLASS 1 CONTROL CIRCUIT
LT-1000	1250L DEWATERING RESERVOIR LEVEL	PRESSURE -> LEVEL	ANALOG	2C#16 TWISTED SHIELDED TYPE MC	RTU	CLASS 1 CONTROL CIRCUIT
LT-1100	1250L HORSESHOE SUMP LEVEL	PRESSURE -> LEVEL	ANALOG	2C#16 TWISTED SHIELDED TYPE MC	RTU	CLASS 1 CONTROL CIRCUIT

NOTE: ALL INSTRUMENTATION DEVICES PROVIDED BY SDSTA INSTALLED BY ELECTRICAL CONTRACTOR. WIRING PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR.



1250L PUMP CONTROL WIRING SCHEDULE						
DIGITAL						
TAG	INSTRUMENT NAME	SIGNAL STATUS	TYPE	CABLE SIZE	FROM	NOTES
LCV-1000 / YS-1000A	DEWATERING PUMP P-1000 VENT VALVE	OPENED STATUS	DIGITAL	3C#16 TYPE MC	RTU	CLASS 1 CONTROL CIRCUIT
LCV-1000 / YS-1000B	DEWATERING PUMP P-1000 VENT VALVE	CLOSED STATUS	DIGITAL	3C#16 TYPE MC	RTU	CLASS 1 CONTROL CIRCUIT
LCV-1100 / YS-1100A	DEWATERING DISCHARGE PIPE COLUMN DRAIN VALVE	OPENED STATUS	DIGITAL	3C#16 TYPE MC	RTU	CLASS 1 CONTROL CIRCUIT
LCV-1100 / YS-1100B	DEWATERING DISCHARGE PIPE COLUMN DRAIN VALVE	CLOSED STATUS	DIGITAL	3C#16 TYPE MC	RTU	CLASS 1 CONTROL CIRCUIT
LS-1000	1250L DEWATERING RESERVOIR LEVEL	LO-LO STATUS	DIGITAL	2C#16 TYPE MC	SOFT START	CLASS 1 CONTROL CIRCUIT
LS-1100	1250L HORSESHOE SUMP LEVEL	HI STATUS	DIGITAL	2C#16 TYPE MC	RTU	CLASS 1 CONTROL CIRCUIT
YS-1000R	SOFT START RUN PERMISSIVE	INPUT	DIGITAL	2C#16 TYPE MC	RTU	CLASS 1 CONTROL CIRCUIT
YS-1000FR	SOFT START FAULT RESET	INPUT	DIGITAL	2C#16 TYPE MC	RTU	CLASS 1 CONTROL CIRCUIT
XS-1000B	SOFT START RUNNING STATUS	STATUS	DIGITAL	2C#16 TYPE MC	RTU	CLASS 1 CONTROL CIRCUIT
XS-1000H	SOFT START ALARM STATUS	STATUS	DIGITAL	2C#16 TYPE MC	RTU	CLASS 1 CONTROL CIRCUIT
XS-1000G	SOFT START FAULTED STATUS	STATUS	DIGITAL	2C#16 TYPE MC	RTU	CLASS 1 CONTROL CIRCUIT
	MODBUS TCP BETWEEN SOFT START AND RTU	COMMUNICATION	DIGITAL	CAT6 ETHERNET	RTU	COMMUNICATION CIRCUIT

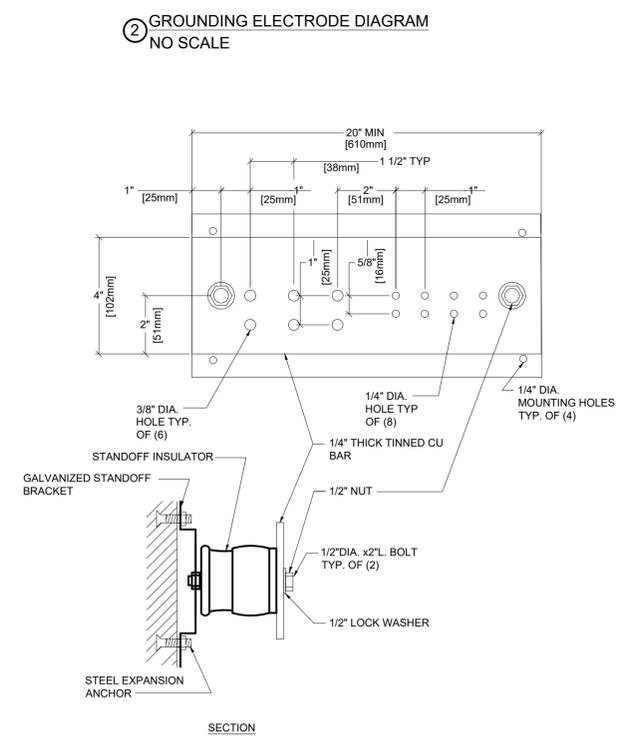
NOTE: ALL INSTRUMENTATION DEVICES PROVIDED BY SDSTA INSTALLED BY ELECTRICAL CONTRACTOR. WIRING PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR.

1250L PUMP INSTRUMENT/DEVICE POWER WIRING SCHEDULE						
POWER						
TAG	INSTRUMENT/DEVICE NAME	VOLTAGE	TYPE	CABLE SIZE	FROM	NOTES
P-1000HTR	PUMP P-1000 MOTOR SPACE HEATER	120VAC	POWER	2C#10 TYPE MC	PANELBOARD -> SOFT START	POWER CIRCUIT
AIT-1000	DEWATERING PUMP ROOM CO MONITOR	24VDC	POWER	2C#16 TYPE MC	RTU	CLASS 1 CONTROL CIRCUIT
LCV-1000	DEWATERING PUMP P-1000 VENT VALVE	120VAC	POWER	3C#14 TYPE MC	RTU	MOTOR POWER CIRCUIT (VAM)
LCV-1100	DEWATERING DISCHARGE PIPE COLUMN DRAIN VALVE	120VAC	POWER	3C#14 TYPE MC	RTU	MOTOR POWER CIRCUIT (VAM)

NOTE: ALL INSTRUMENTATION DEVICES PROVIDED BY SDSTA INSTALLED BY ELECTRICAL CONTRACTOR. WIRING PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR.

STARTER AND DISCONNECT SCHEDULE									
UNIT NO	MOTOR		TYPE	STARTER		DISCONNECT		REMARKS/NOTES	
	HP	VOLT PHASE		NEMA SIZE	ENCLOSURE TYPE	KEY FEATURES	SWITCH SIZE		
SF-1	20 HP	480V/3P		2	NEMA 4		600A	50A	STATION FAN STARTER/DISCONNECT
SF-2	20 HP	480V/3P		2	NEMA 4		600A	50A	STATION FAN STARTER/DISCONNECT
SR-1	1.34 HP	240V/2P		00	NEMA 4		30A		PROVIDED BY DIVISION 23

NOTES:  
 KEY:  
 B= HAND-OFF-AUTO SELECTOR SWITCH      G= GREEN "OFF" PILOT LIGHT      R= RED "ON" PILOT LIGHT  
 FT= CONTROL XPMR 120V FUSED      SPC= SINGLE POINT CONNECTION  
 FVNR= FULL VOLTAGE NON REVERSING      FVR= FULL VOLTAGE REVERSING      RV= REDUCED VOLTAGE START  
 VFD= VARIABLE FREQUENCY DRIVE      MMS= MANUAL MOTOR STARTER WITH OVERLOAD PROTECTION & LOCK-OFF GUARD  
 PROVIDE ALL MOTORS OVER 5 HP WITH SOLID STATE OVERLOADS  
 COORDINATE EXACT REQUIREMENTS WITH MECHANICAL SHOP DRAWINGS PRIOR TO ORDERING EQUIPMENT OR RUNNING FEEDERS  
 PROVIDE ALL STARTERS WITH 2 NO & 2 N.C. AUXILIARY INTERLOCKING RELAYS



- GENERAL NOTES
- ALL HARDWARE SHOWN SHALL BE STAINLESS STEEL.
  - PROVIDE 1 MOUNTING POINT PER 12" OF BAR LENGTH.
  - HOLES MAY BE ADDED IF REQUIRED.

GROUND BAR DETAIL NO SCALE