

# POWDER MOUNTAIN WATER & SEWER IMPROVEMENT DISTRICT

## TOP OF MOUNTAIN WATER SYSTEM PROJECT

**POW.019.21  
MARCH 2022**

**LOCATED AT POWDER MOUNTAIN  
WEBER COUNTY, UTAH**

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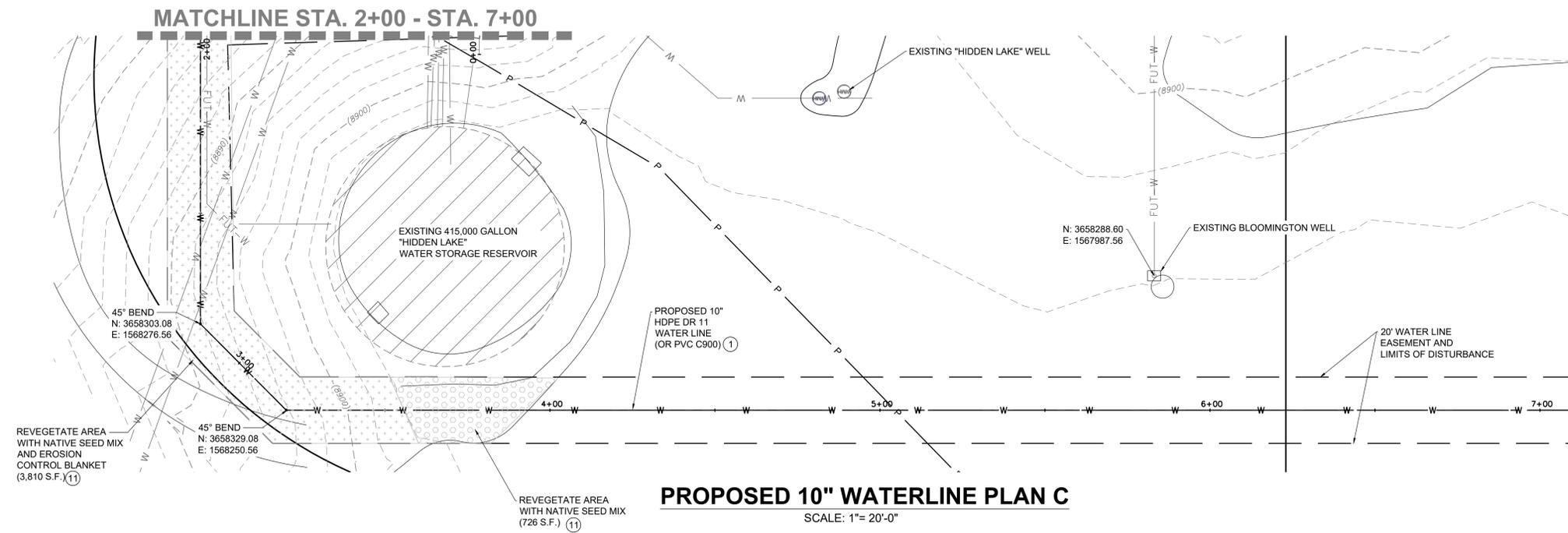




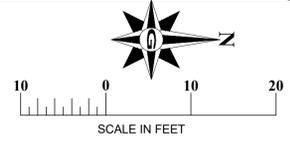






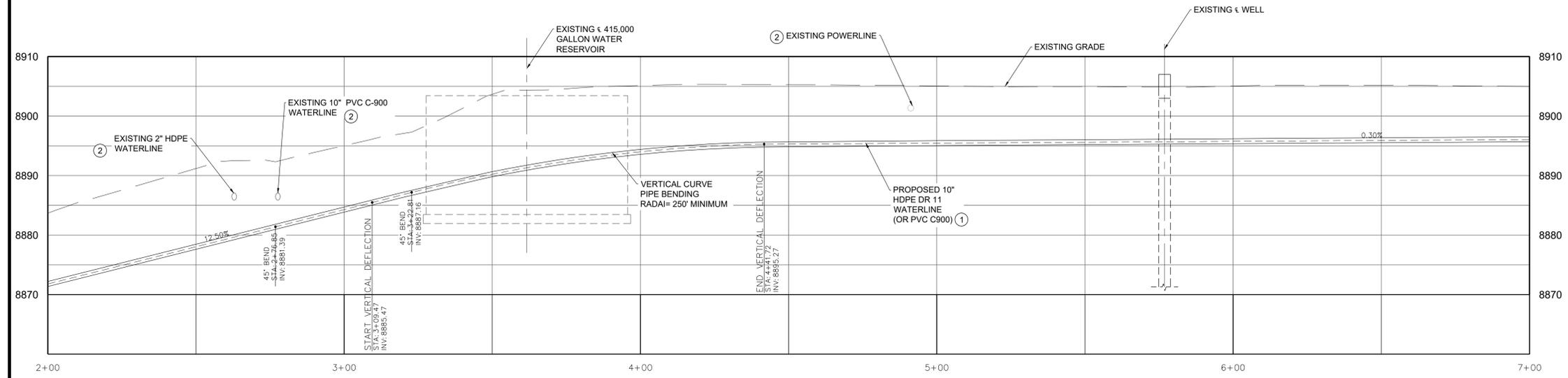


**PROPOSED 10" WATERLINE PLAN C**  
SCALE: 1"= 20'-0"



**CONSTRUCTION NOTES**

- 1 PROPOSED WATER LINES TO BE INSTALLED AT A MINIMUM OF 9' DEEP IN PARKING AREAS AND ROADWAYS, AND 7' DEEP IN ALL OTHER AREAS
- 2 CONTRACTOR SHALL POTHOLE EXISTING LINE PRIOR TO ORDERING PARTS TO VERIFY PIPE LOCATION, TYPE & SIZE.
- 3 DOUBLE POLYWRAP ALL DUCTILE IRON D.I. PIPE.
- 4 CONSTRUCT AIR VAC DETAIL A SHEET D.101
- 5 CONSTRUCT FIRE HYDRANT ASSEMBLY PER DETAIL C SHEET D.104
- 6 CONSTRUCT 8" HDPE DR11 PIPE (PIPE SUPPLIED BY OWNER)
- 7 ADJUST TO GRADE
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- 9 CONSTRUCT 4'X4' INLET WITH GRATE PER DETAIL 6 SHEET D.105
- 10 INSTALL 18" RCP
- 11 ALL UNIMPROVED AREAS DISTURBED DURING CONSTRUCTION SHALL BE RE-VEGETATED WITH NATIVE SEED MIX. INSTALL AN EROSION CONTROL BLANKET, #AEC-SEGRN4 (OR EQUAL) FOR AREAS WITH SLOPES OVER 10%
- 12 INSTALL 1" WATER METER PER DETAIL SHEET D.101



**PROFILE C**  
SCALE: HOR: 1"= 20'-0"  
VER: 1"= 10'-0"

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REVISIONS	REVISIONS	REVISIONS
NO.	DATE	BY/COMMENTS

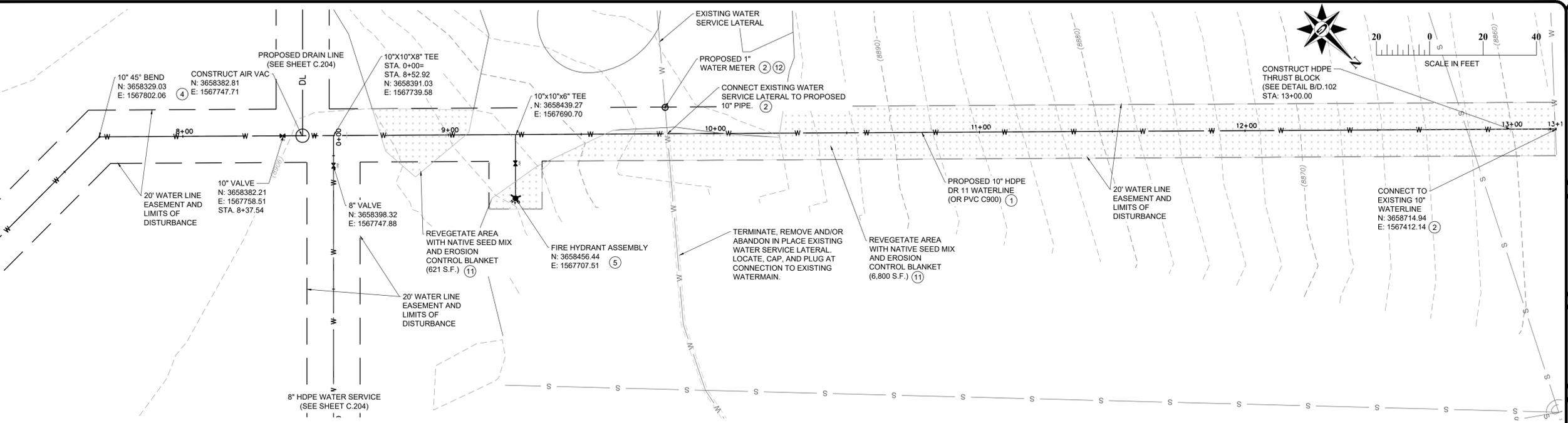
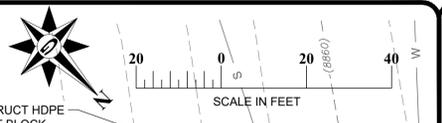
DATE: FEBRUARY 2022	DRAWING NAME:
DESIGNED/DRAWN BY: JMB/BP	CHECKED: APPROVED: [Signature]

**10" WATER SERVICE PLAN AND PROFILE**  
TOP OF MOUNTAIN WATER SYSTEM  
POWDER MOUNTAIN WATER & SEWER IMPROVEMENT DISTRICT  
WEBER COUNTY, UTAH

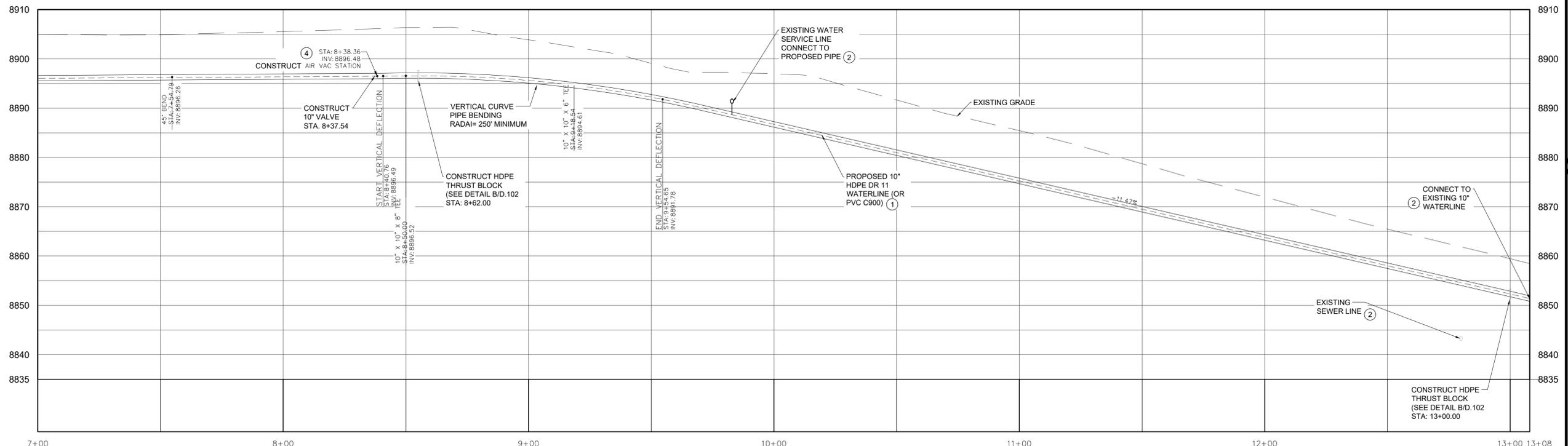
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PROJ. # **POW.019**

**C.202**

MATCHLINE STA. 7+00 - STA. 13+08



**PROPOSED 10" WATERLINE PLAN D**  
SCALE: 1"= 20'-0"



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- ① PROPOSED WATER LINES TO BE INSTALLED AT A MINIMUM OF 9' DEEP IN PARKING AREAS AND ROADWAYS, AND 7' DEEP IN ALL OTHER AREAS
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- ⑫ INSTALL 1" WATER METER PER DETAIL SHEET D.101

**PROFILE D**  
SCALE: HOR: 1"= 20'-0"  
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**GILSON ENGINEERING**  
Professional Engineers & Surveyors  
1000 SOUTH 450 EAST  
PO BOX 148  
CANYONVILLE, UTAH 84505  
PHONE: (801) 271-9414 FAX: (801) 271-5449

03/18/2022  
No. 362118  
Bradley S. Gilson  
Professional Engineer  
STATE OF UTAH



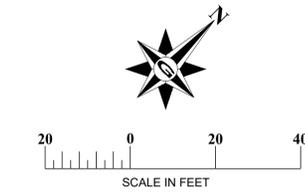
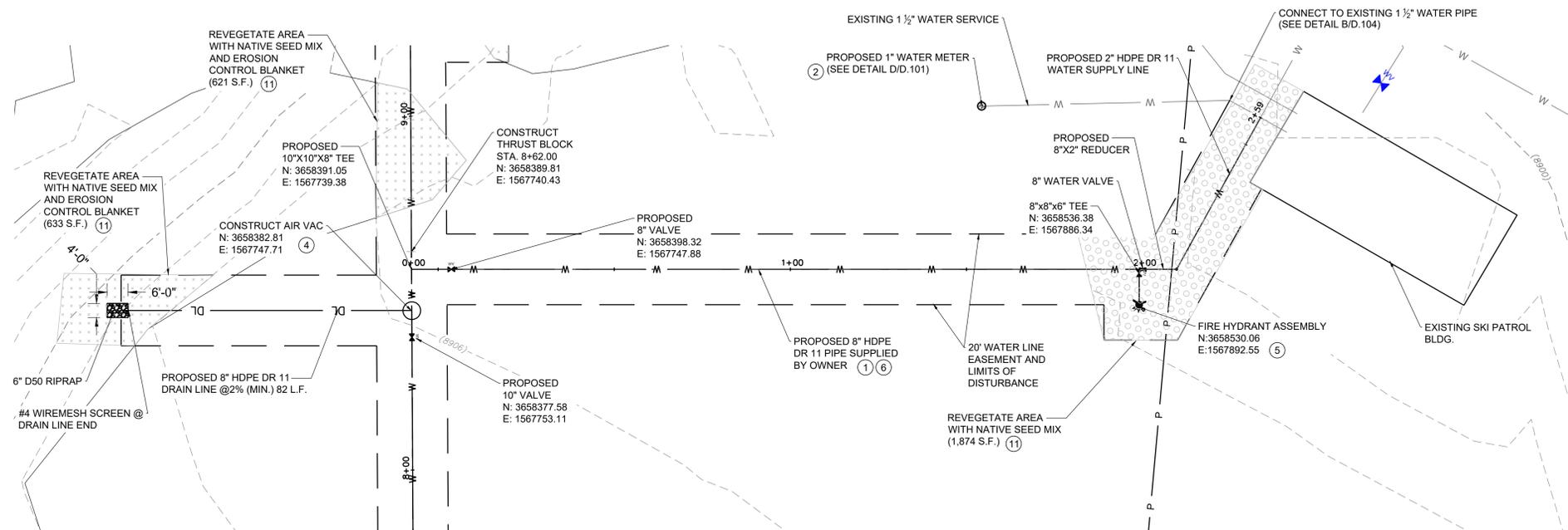
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DESIGNED/DRAWN BY: JMBP  
CHECKED:    
APPROVED:  

1" SCALE MEASURES FOR FULL SIZE SHEET  
ADJUST FOR HALF SIZE SHEETS

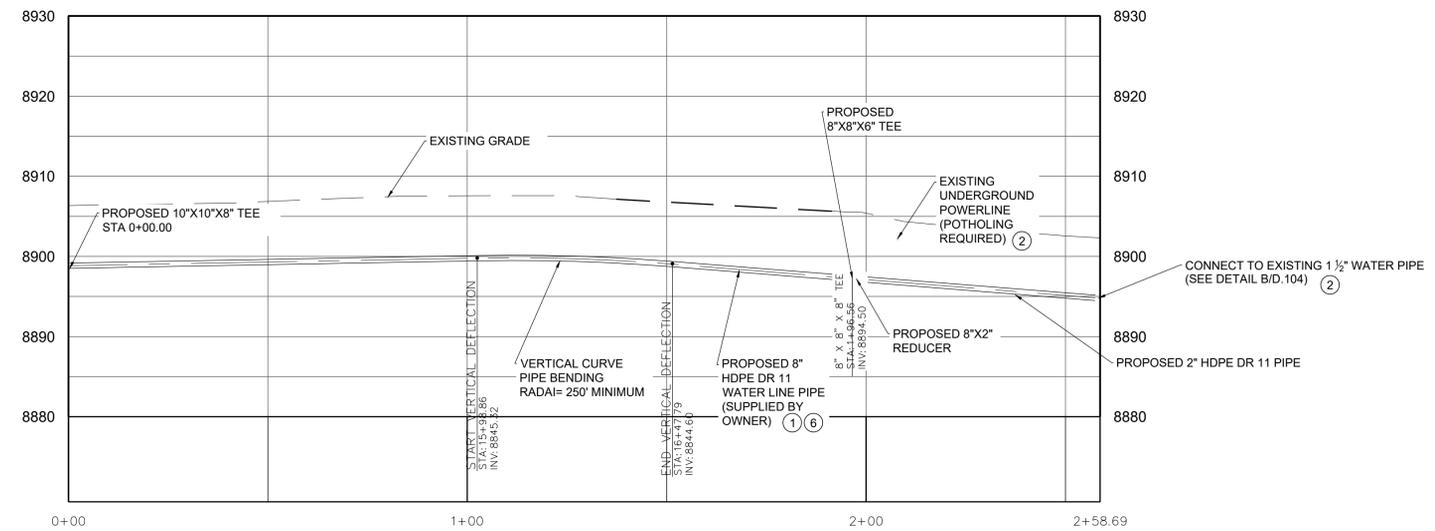
**10" WATER SERVICE PLAN AND PROFILE**  
TOP OF MOUNTAIN WATER SYSTEM  
POWDER MOUNTAIN WATER & SEWER IMPROVEMENT DISTRICT  
WEBER COUNTY, UTAH

REVISION: **A**  
PROJ. # **POW.019**  
**C.203**



**PROPOSED 8" WATERLINE CONNECTION FROM  
MAINLINE TO SKI PATROL LODGE**  
SCALE: 1"= 20'-0"

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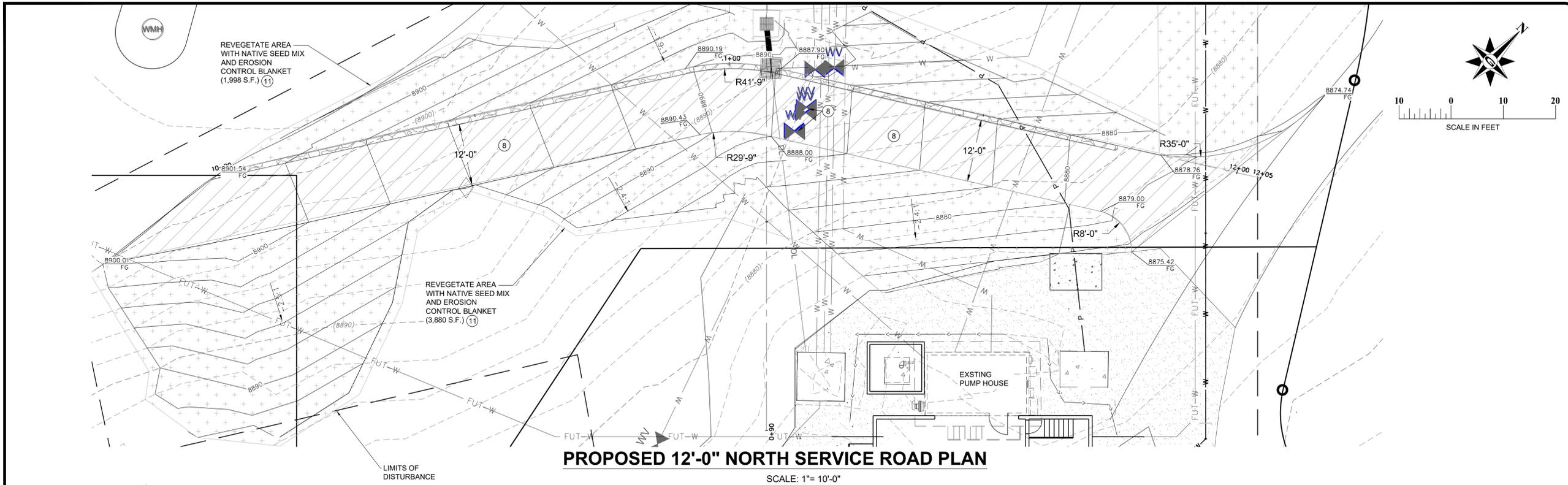
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DESIGNED/DRAWN BY: JMBP	CHECKED: [ ] APPROVED: [ ]

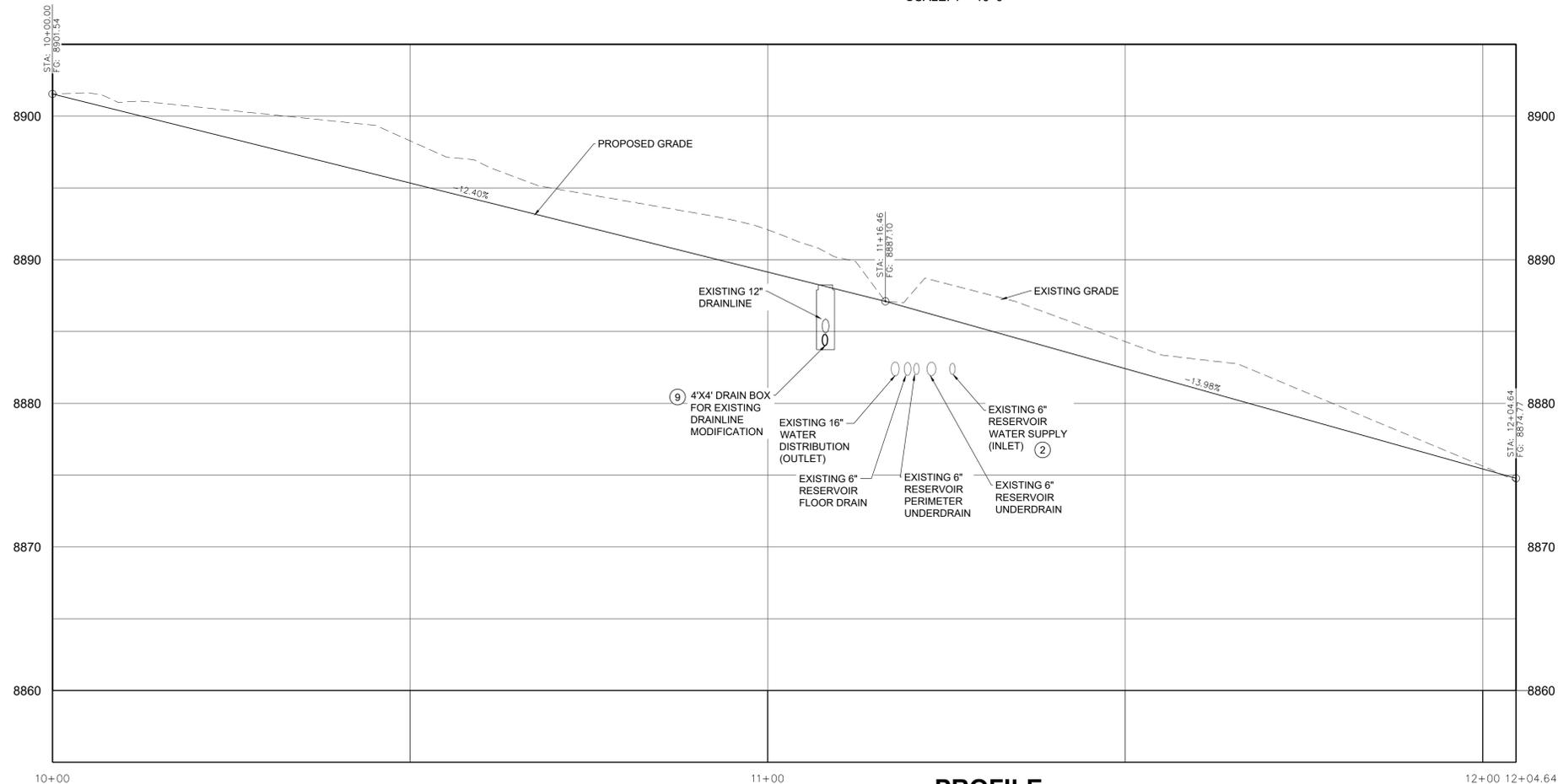
**8" WATER SERVICE PLAN AND PROFILE**  
TOP OF MOUNTAIN WATER SYSTEM  
POWDER MOUNTAIN WATER & SEWER IMPROVEMENT DISTRICT  
WEBER COUNTY, UTAH

REVISION: **A**  
PROJ. # **POW.019**  
**C.204**



**PROPOSED 12'-0" NORTH SERVICE ROAD PLAN**

SCALE: 1" = 10'-0"



**PROFILE**

SCALE: HOR: 1" = 10'-0"  
VER: 1" = 5'-0"

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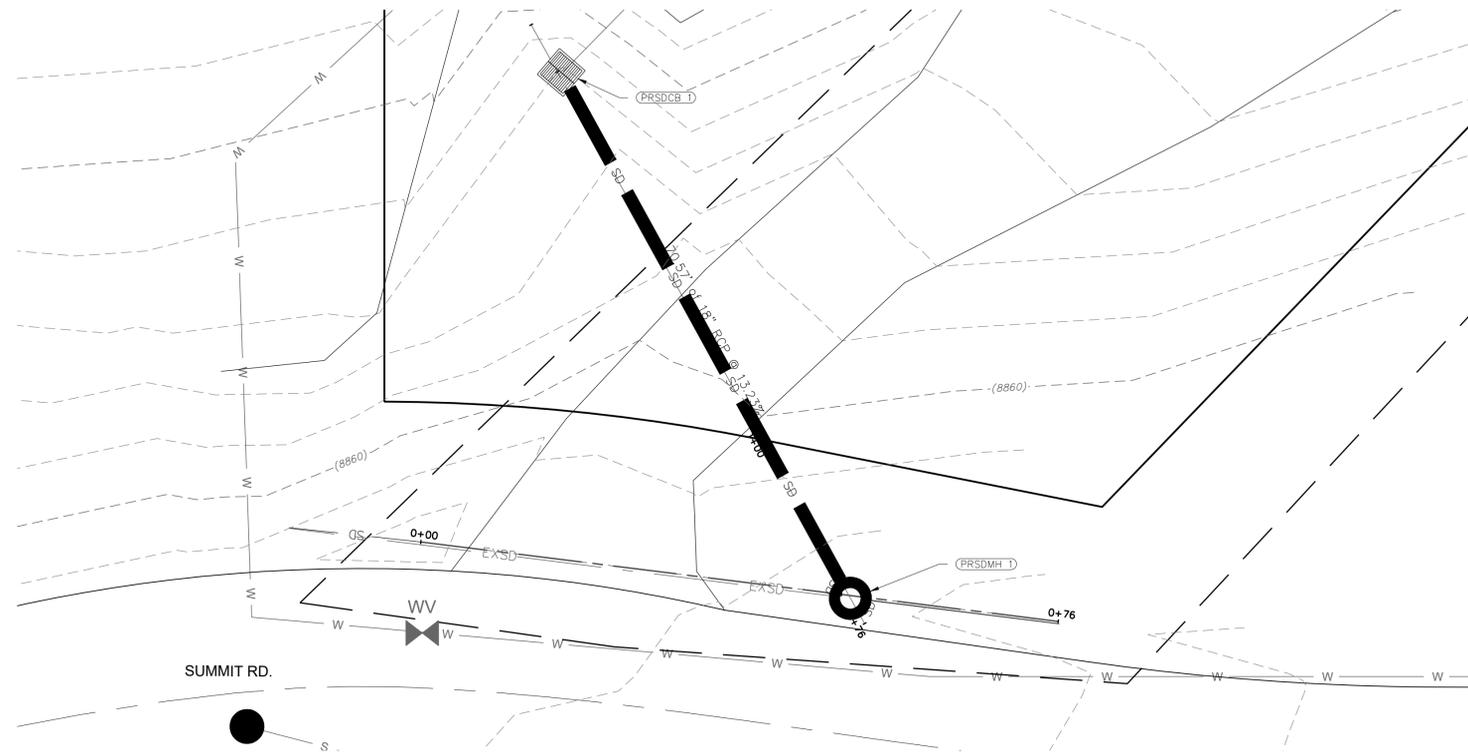
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1" SCALE MEASURES 1" ON FULL SIZE SHEET  
ADJUST FOR HALF SIZE SHEETS

**NORTH ACCESS ROAD PLAN AND PROFILE**  
TOP OF MOUNTAIN WATER SYSTEM  
POWDER MOUNTAIN WATER & SEWER IMPROVEMENT DISTRICT  
WEBER COUNTY, UTAH

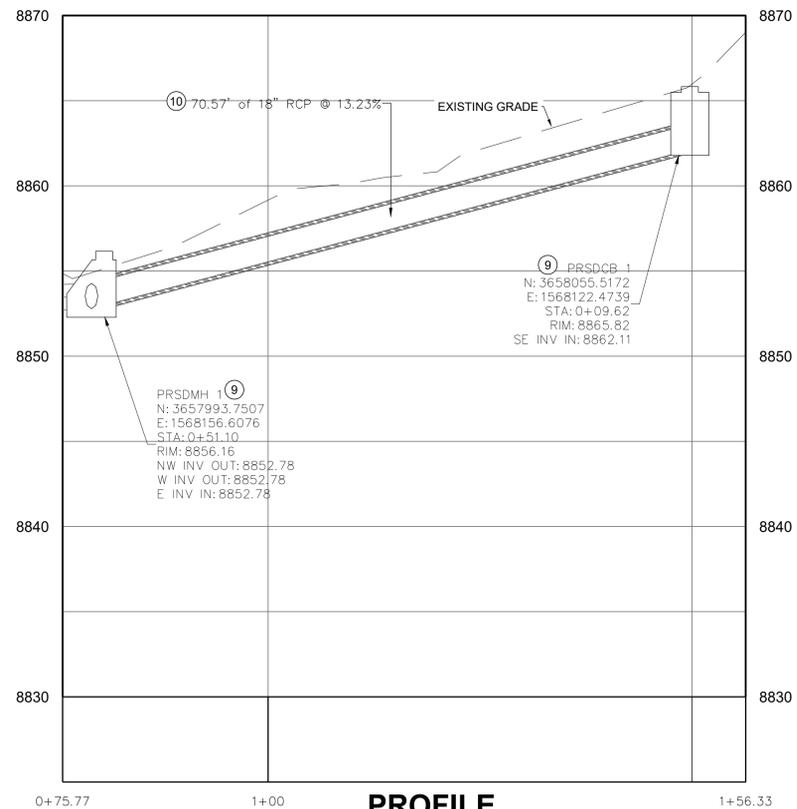
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**C.205**



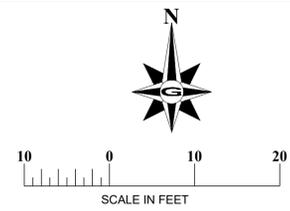
**EXISTING & PROPOSED 18" RCP W/DRAIN BOXES**

SCALE: 1"= 10'-0"



**PROFILE**

SCALE: HOR: 1"= 10'-0"  
 VER: 1"= 5'-0"



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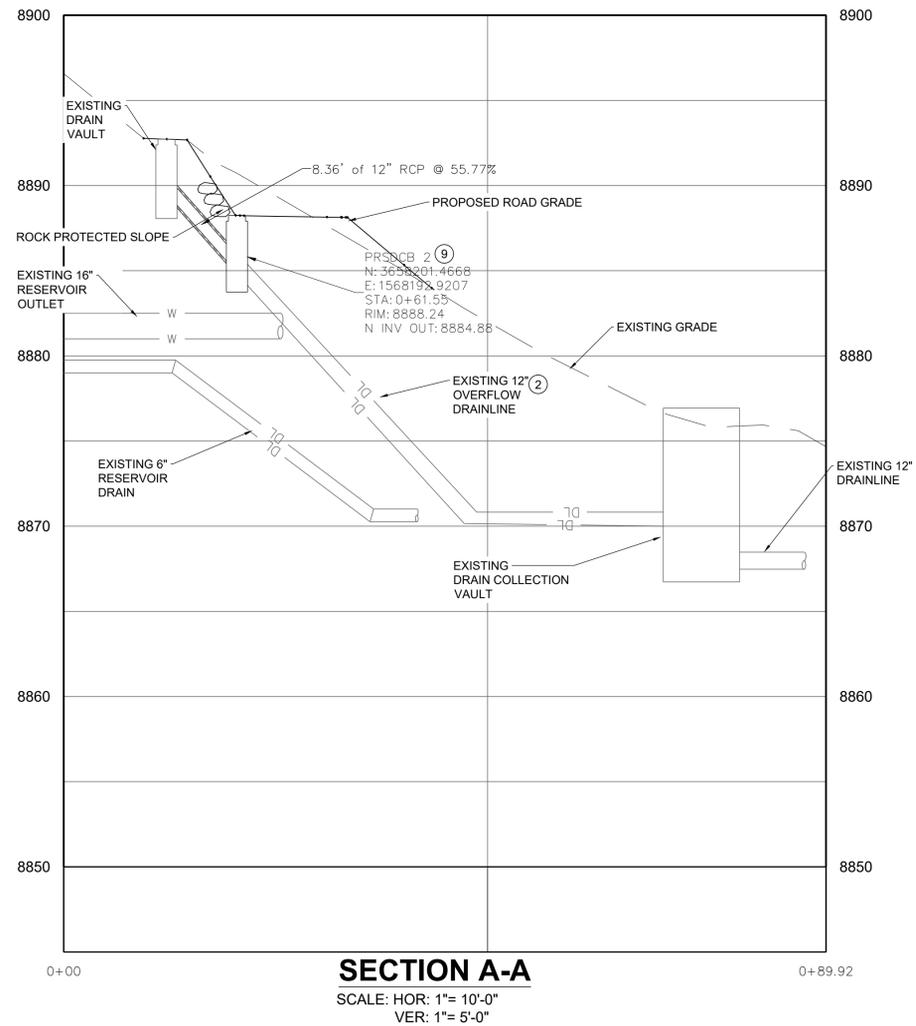
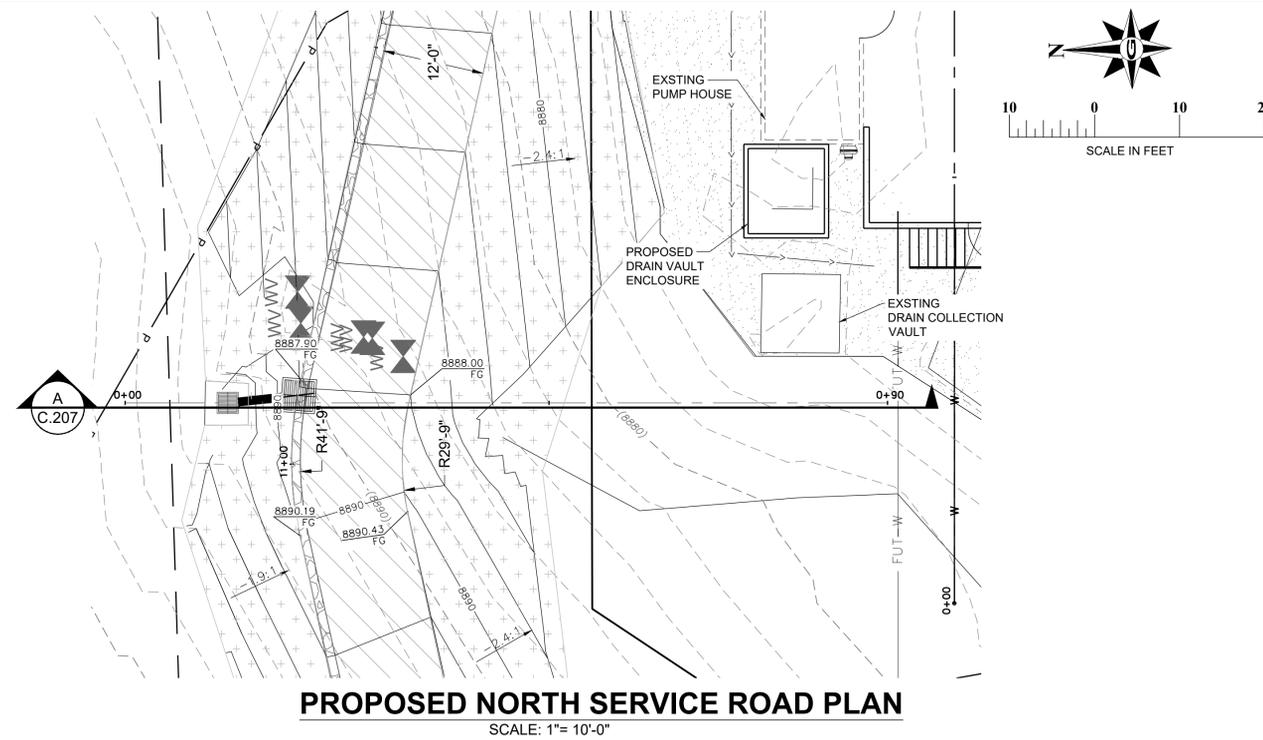
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 CHECKED: APPROVED:   
 T SCALE MEASURES 1" ON FULL SIZE SHEET ADJUST FOR HALF SIZE SHEETS

**STORM DRAIN IMPROVEMENTS**  
 TOP OF MOUNTAIN WATER SYSTEM  
 POWDER MOUNTAIN WATER & SEWER IMPROVEMENT DISTRICT  
 WEBER COUNTY, UTAH

REVISION: **A**  
 PROJ. # **POW.019**  
**C.206**

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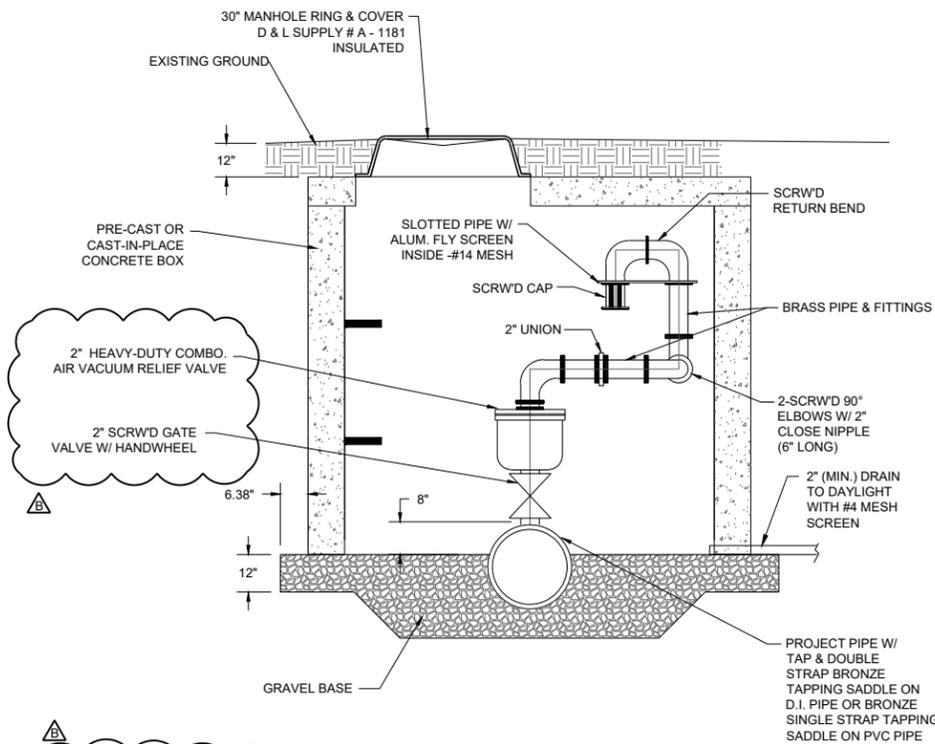
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FEBRUARY 2022 <td></td> <td></td> <td></td>			

DESIGNED/DRAWN BY: JMB/JP  
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1" SCALE MEASURES 1" ON FULL SIZE SHEET / ADJUST FOR HALF SIZE SHEETS

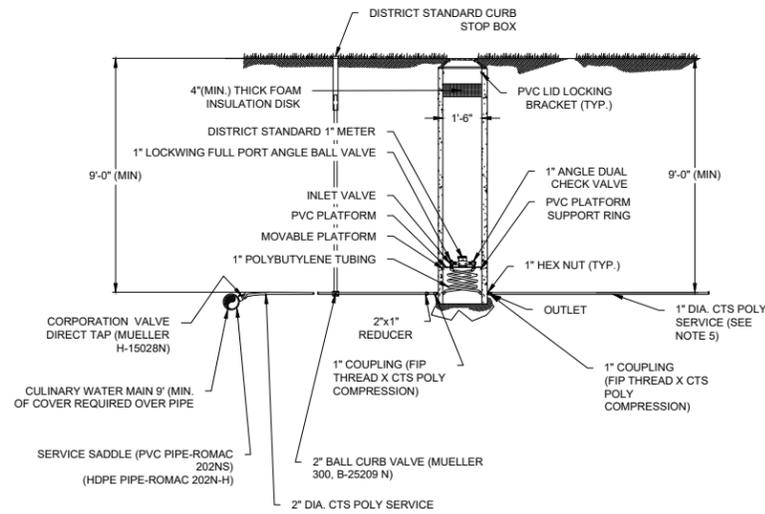
**NORTH SERVICE ROAD PLAN & SECTION**  
TOP OF MOUNTAIN WATER SYSTEM  
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REVISION: **A**  
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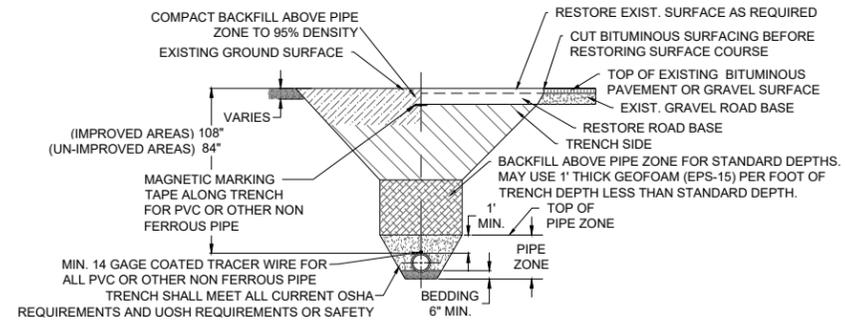
- NOTE:**
1. PROVIDE 2" AIR-VACUUM RELIEF VALVE & PIPING
  2. LOCATE RISER BEHIND CURB & GUTTER OR APPROX. 2 FT. FROM RW LINE, AS DIRECTED BY DISTRICT ENGINEER.

**A AIR VACUUM RELIEF VALVE**  
SCALE: N.T.S.



- NOTES:**
1. METER BOXES SHALL BE 18" DIA. BY 96" DEEP MUELLER-THERMAL-COIL PVC BOXES FOR 1" SINGLE METERS (MUELLER 330CS1896FBBSN)
  2. POLYETHYLENE PIPE FOR WATER SERVICES SHALL BE PE 3408 TUBING, SDR-9, COPPER TUBING SIZE AND NSF APPROVED FOR POTABLE WATER.
  3. METER SHALL BE INSTALLED IN HORIZONTAL ALIGNMENT, WITH METER FACING UP, ONLY.
  4. ALL PIPE, FITTING, AND VALVES SHALL COMPLY WITH NSF STANDARD NO.14 FOR USE WITH POTABLE WATER.
  5. THE CUSTOMER IS RESPONSIBLE FOR PROPERLY SIZING THE SERVICE TO DELIVER FLOWS REQUIRED FOR FIRE SPRINKLER SYSTEMS. THE SERVICE FROM THE METER TO THE BUILDING CAN BE UPSIZED FROM 1" DIAMETER IF NECESSARY. CONNECTING FIRE SPRINKLER LINES TO THE 2" SERVICE BEFORE THE METER MAY BE APPROVED BY THE DISTRICT ENGINEER ONLY IF THE REQUIRED FIRE SPRINKLER CANNOT BE DELIVERED THROUGH THE METER.
  6. THE DEVELOPER IS RESPONSIBLE FOR INSTALLATION OF THE SERVICE FROM THE MAIN TO THE METER BOX, INCLUDING THE SERVICE SADDLE, CORP STOP, CURB STOP BOX, AND METER BOX.
  7. BASED UPON OBSERVATIONS DURING WINTER CONDITIONS, THE DISTRICT HAS DETERMINED THAT 9" (MIN) OF COVER OVER WATER MAINS AND SERVICES IS REQUIRED TO PROTECT AGAINST FREEZING.

**D TYPICAL METER PIT DETAIL**  
SCALE: N.T.S.



CROSS-SECTION: TYPICAL TRENCH

**SAFE BEARING LOADS**

SOIL TYPE	SAFE BEARING LOAD (lb/ft <sup>2</sup> )
SAND	1000
SAND & GRAVEL	1500
SAND & GRAVEL CEMENTED WITH CLAY	2000
SHALE	5000

**SAFE BEARING LOAD FORMULA**

$$\text{THRUST BLOCK AREA AGAINST TRENCH WALL (SQ. FEET)} = \frac{\text{THRUST ON FITTING}}{\text{SAFE BEARING LOAD OF SOIL}}$$

**THRUST ON FITTINGS**

PIPE SIZE	TEES	90° BENDS	45° BENDS	22.5° BENDS
4"	18.5	26.1	14.2	7.2
6"	38	53.7	29.1	14.7
8"	65.8	93	50.4	25.5
10"	107.5	152	82.4	41.7
12"	153.1	216.4	117.2	59.4
14"	183.8	260.0	141.0	71.5
16"	237.8	336.3	182.8	92.7
18"	298.6	422.3	229.7	116.5

\*MULTIPLY THRUST BY MAXIMUM WATER PRESSURE

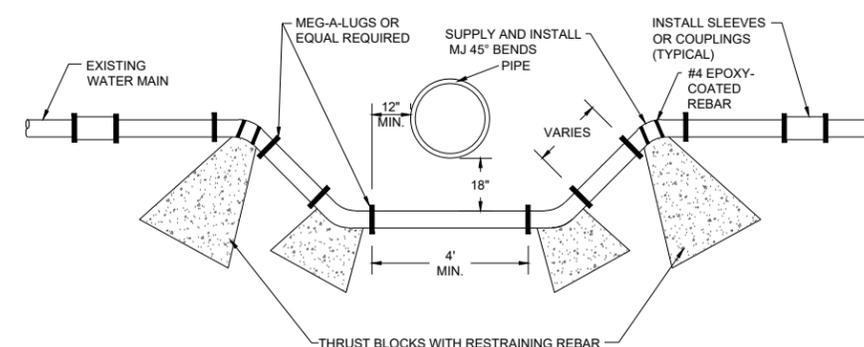


CONCRETE THRUST BLOCK DETAILS

**NOTES:**

1. WATER LINES 12 INCHES AND LARGER SHALL BE DUCTILE IRON CLASS-51.
2. WATER LINES 10 INCHES AND SMALLER SHALL BE PVC AWWA C900 CLASS 200.
3. VALVES 12 INCHES AND LARGER SHALL BE BUTTERFLY VALVES.
4. WHENEVER POSSIBLE "HOT TAP" CONNECTIONS REQUIRED. HOT TAP VALVE TO BE SUPPORTED DURING CONNECTION. CONTRACTOR TO NOTIFY CITY 24 HOURS IN ADVANCE OF MAKING CONNECTION.
5. PIPE ZONE SHALL BE BACKFILLED WITH 3/4" GRAVEL MATERIAL.
6. TRACING WIRE TO BE BROUGHT OUTSIDE OF BOTTOM PORTION OF VALVE BOX AND INSIDE TOP TO SURFACE.
7. FURNISH AND INSTALL POLY-WRAP ON DUCTILE IRON PIPE. POLY-WRAP MAY BE DELETED WHERE DIRECTED BY DISTRICT ENGINEER.
8. WHERE COLLAPSIBLE SOILS ARE ENCOUNTERED, FURNISH, PLACE AND COMPACT IMPORTED BACKFILL MATERIALS AS REQUIRED AND AS DIRECTED.
9. SEE DETAIL "A" / C.504 FOR PIPE BEDDING SPECIFICATIONS
10. WHERE THE TRENCH BOTTOM SOIL CAN BE CUT AND GRADED WITHOUT DIFFICULTY, HDPE PRESSURE PIPE MAY BE INSTALLED DIRECTLY ON THE PREPARED TRENCH BOTTOM. FOR HDPE PRESSURE PIPE, THE TRENCH BOTTOM MAY UNDLULATE, BUT MUST SUPPORT THE PIPE SMOOTHLY AND BE FREE OF RIDGES, HOLLOWES, AND LUMPS.

**B WATERLINE TRENCH DETAIL**  
SCALE: N.T.S.



**NOTES:**

1. DISTRICT TO BE GIVEN 24 HOUR NOTICE BEFORE LOOPING ANY WATERLINE

**C WATERLINE LOOP**  
SCALE: N.T.S.



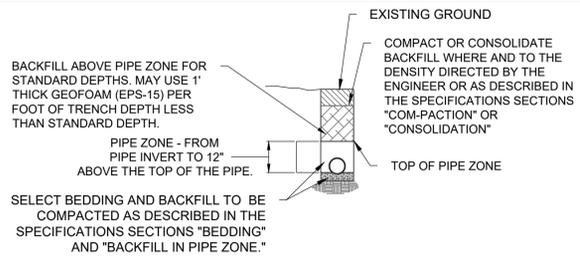
REV. DATE	BY	COMMENTS
B	03/24/22 J.M.	MODIFY NOTE 1 & ADD 2" DESCRIPTION DETAIL A

DATE: FEBRUARY 2022	DESIGNED/DRAWN BY: JMB/JP	CHECKED: APPROVED:
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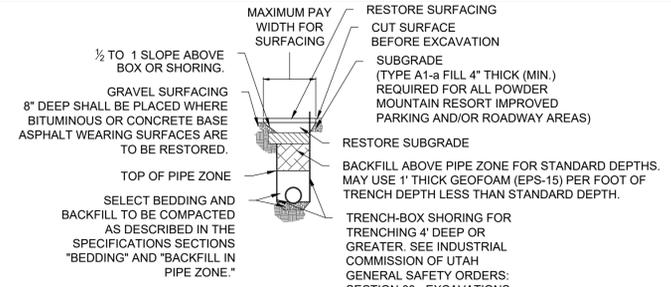
**DETAILS**  
TOP OF MOUNTAIN WATER SYSTEM  
POWDER MOUNTAIN WATER & SEWER IMPROVEMENT DISTRICT  
WEBER COUNTY, UTAH

REVISION: **B**  
PROJ. # **POW.019**

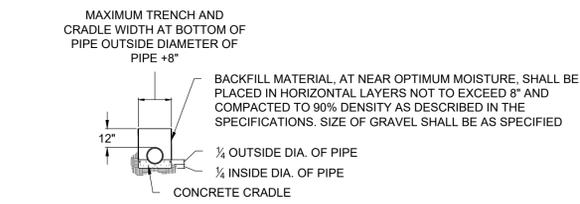
**D.101**



UNIMPROVED TERRAIN TRENCH SECTION

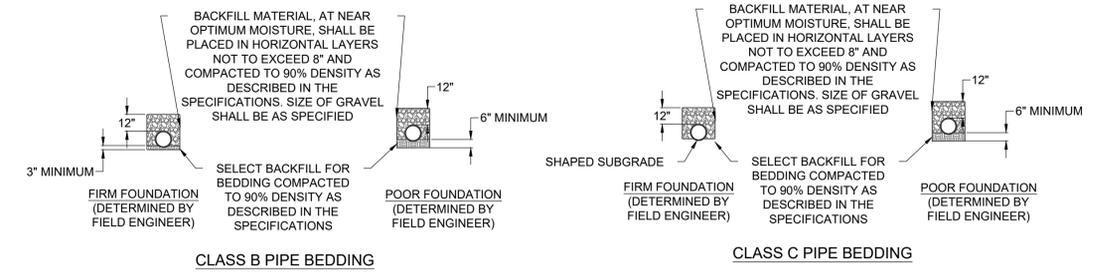


IMPROVED TERRAIN TRENCH SECTION

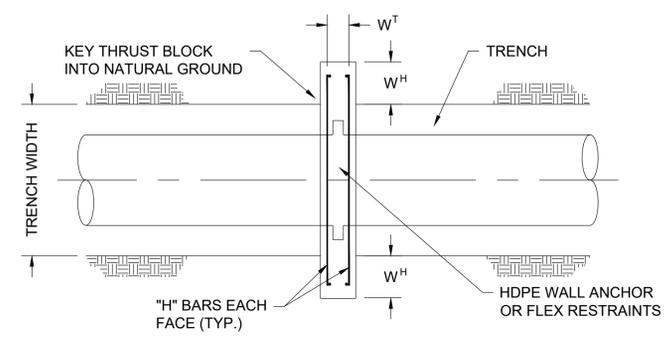


CLASS A PIPE BEDDING

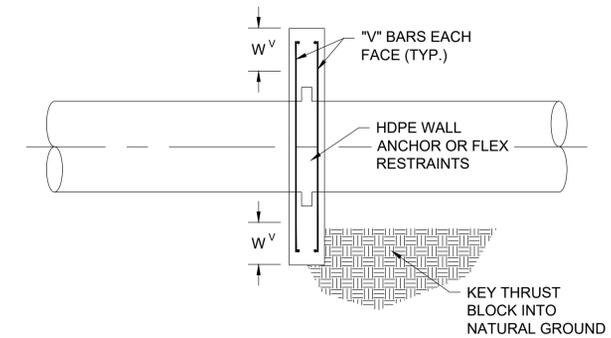
PIPE DIAMETER	MINIMUM WIDTH	MAXIMUM WIDTH
4"	1'-6"	2'-6"
6"	1'-6"	2'-6"
8"	1'-8"	2'-8"
10"	2'-0"	3'-0"
12"	2'-0"	3'-0"
16"	2'-6"	3'-6"
18"	2'-6"	3'-6"



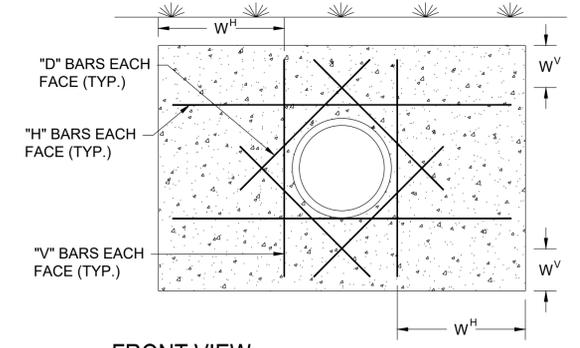
PIPE BEDDING SPECIFICATIONS



PLAN VIEW



SIDE VIEW

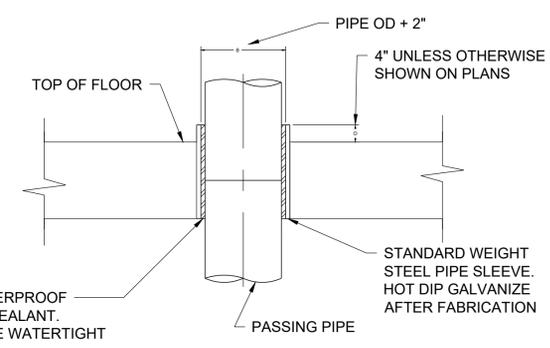


FRONT VIEW

PIPE SIZE	W <sup>H</sup>	W	W	"H" BARS		"V" BARS		"D" BARS		NUMBER OF FLEX RESTRAINTS
				SIZE	NO.	SIZE	NO.	SIZE	NO.	
10" DR11/21	1.5	1.5	1.0	#4	1	#4	1	#4	4	2

- NOTES:
- ELECTROFUSION FLEX RESTRAINTS MAYBE USED IN PLACE OF HDPE WALL ANCHOR. SEE TABLE FOR NUMBER OF FLEX RESTRAINTS REQUIRED FOR EACH PIPE SIZE.
  - A CIRCULAR HOOP TIE AT EACH FACE MAY BE USED IN PLACE OF THE "D" BARS SHOWN IN THE TABLE. THE HOOP TIE SHOULD MATCH THE "D" BAR SIZE SHOWN IN THE TABLE.
  - STRUCTURAL CONCRETE: f<sub>c</sub> = 4,000 PSI, ABSOLUTE WATER-CEMENT RATIO BY WEIGHT = 0.50, AIR CONTENT = 6% (±1.5%).
  - REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 60.
  - UNLESS NOTED ELSEWHERE ON DRAWINGS, ALL REINFORCING STEEL SHALL HAVE THE FOLLOWING CONCRETE COVER:
    - CONCRETE CAST AGAINST EARTH: 3.00 INCH
    - CONCRETE EXPOSED TO EARTH, LIQUID, OR WATER: 1.50 INCH FORMED SURFACES.

HDPE THRUST BLOCK DETAIL



NOTE: COAT FLOOR SLEEVE WITH SPECIFIED PAINT SYSTEM BEFORE CONCRETE PLACEMENT.

FLOOR SLEEVE DETAIL



DATE	REVISIONS	BY	COMMENTS
FEBRUARY 2022		SB	

DESIGNED/DRAWN BY: JMBP

CHECKED: APPROVED:

DATE: FEBRUARY 2022

DRAWING NAME: D.102 DETAILS

SCALE: MEASURES 1/4" ON FULL SIZE SHEET / ADJUST FOR HALF SIZE SHEETS

**DETAILS**

TOP OF MOUNTAIN WATER SYSTEM

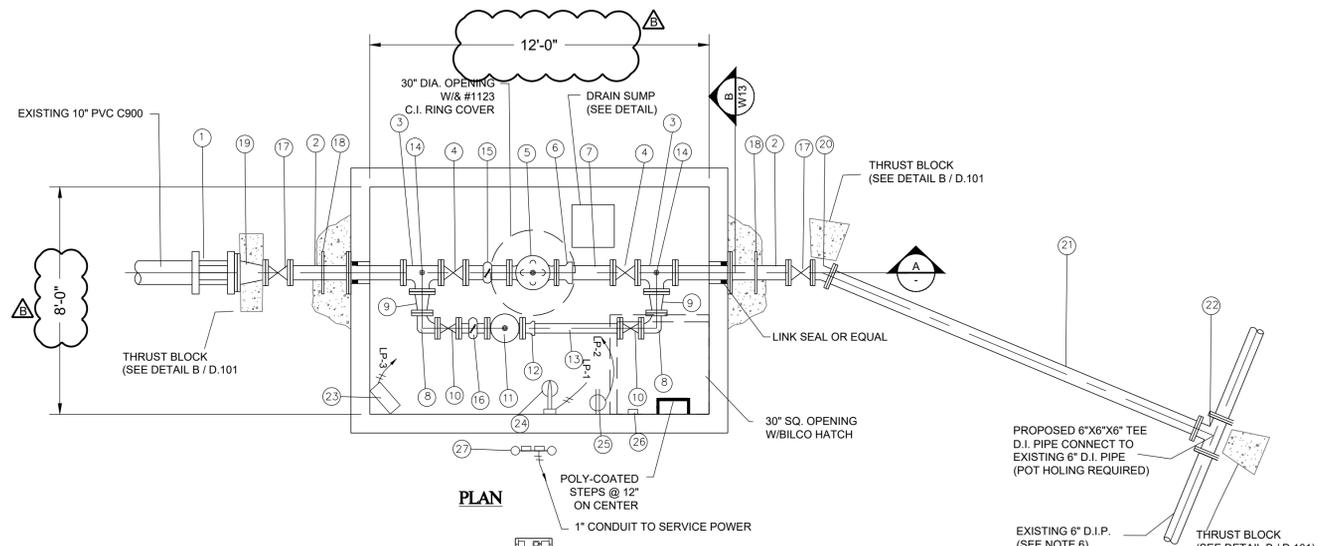
POWDER MOUNTAIN WATER & SEWER IMPROVEMENT DISTRICT

WEBER COUNTY, UTAH

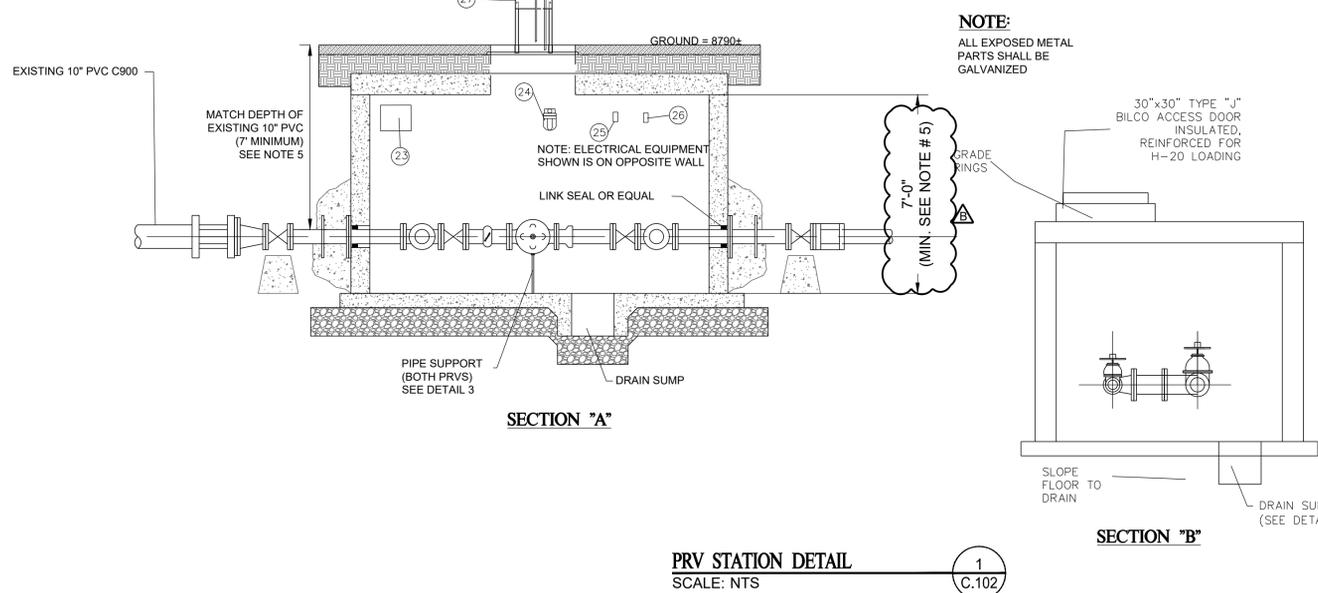
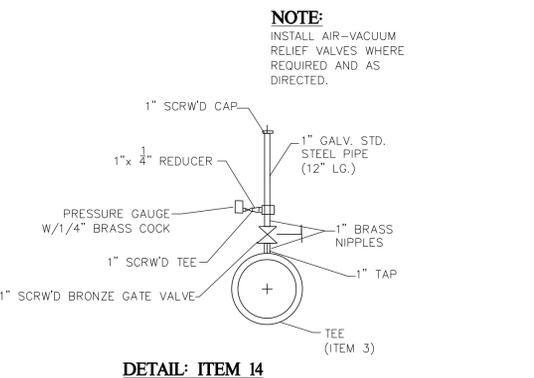
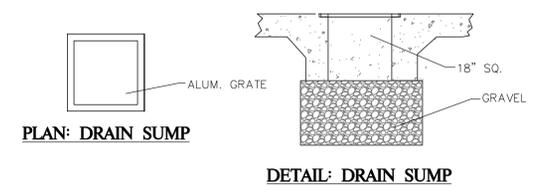
REVISION: **A**

PROJ. # **POW.019**

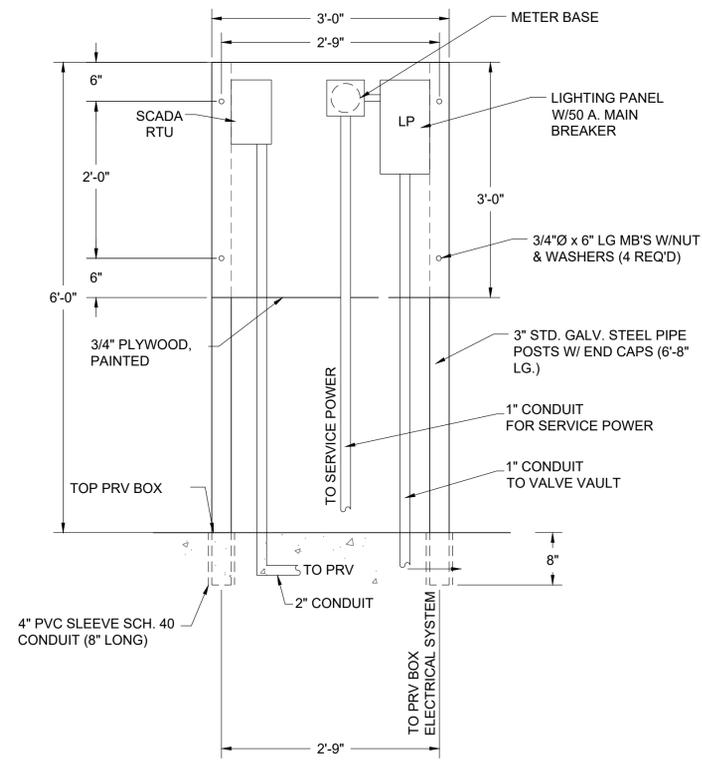
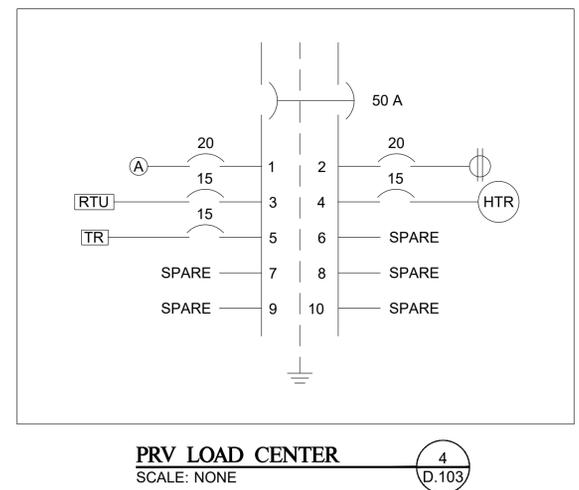
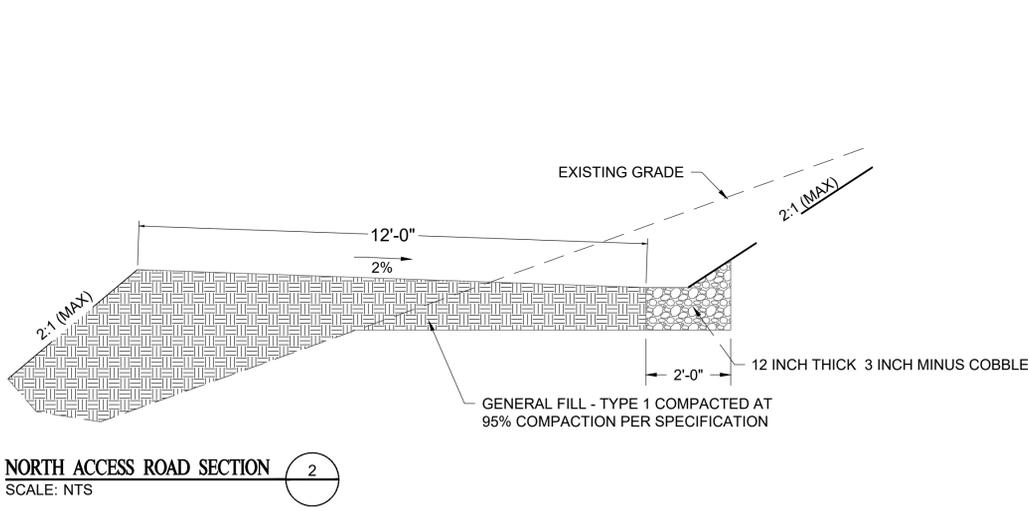
**D.102**



PRV VAULT SCHEDULE		
#	QTY	DESCRIPTION
1	1	10" MECH. COUPLINGS
2	2	6" FLXPE CL 150 D.I. PIPE (LG= ±4'-0") W/ WALL FLANGE
3	2	6"x6"x6" FLG'D TEE W/1" TAP
4	2	6" FLXFL GATE VALVE W/ HANDWHEEL
5	1	6" FLXFL PRESSURE REDUCING VALVE
6	1	6" FLG'D COUPLING ADAPTER
7	1	6" FLXPE CL 150 D.I. PIPE (LG= ±24")
8	2	4" FLXFL 90° BEND
9	2	6x4" FLXFL REDUCER
10	2	4" FLXFL GATE VALVE W/ HANDWHEEL
11	1	4" FLG'D PRESSURE REDUCING VALVE
12	1	4" FLG'D COUPLING ADAPTER
13	1	4" FLXPE CL 150 D.I. PIPE (LG= ±3'5.5")
14	2	PRESSURE GAUGE ASSEMBLY (SEE DETAIL)
15	1	6" FLG'D STRAINER
16	1	4" FLG'D STRAINER
17	2	6" FLG'D GATE VALVE W/THRUST BLOCK BELOW
18	2	THRUST RESTRAINT W/WELDED SEEP RING & THRUST BLOCK
19	1	10" x 6" M.JFL REDUCER D.I. PIPE
20	1	6" FLXFL 22.5° BEND
21	1	6" FLXFL CL 150 D.I. PIPE (LG= ±14')
22	1	6"x6"x6" FLG'D TEE
23	1	CHROMALOX HORIZONTAL BLOW HEATER LUH-D-05-83-32-41-1 (OR EQUAL)
24	1	WALL MOUNT VAPOR PROOF LUMINAIRE W/ JCT. BOX, GLOBE & GUARD - INSTALL ELECTRICAL BOX W/COVER PLATE
25	1	GFI OUTLET INSTALL ELECTRICAL BOX W/COVER PLATE
26	1	SWITCH INSTALL ELECTRICAL BOX W/COVER PLATE
27	1	POWER PEDESTAL (SEE DETAIL 3/ D.103)



- NOTES:**
- INSPECTION: PRV VAULT AND SERVICE LINE SHALL BE INSPECTED BY DISTRICT PRIOR TO BACKFILLING.
  - BACKFILL: INSTALL BACKFILL IN LIFTS NOT EXCEEDING 8" AFTER COMPACTION. COMPACT EACH LIFT TO AN AVERAGE DRY DENSITY OF 97% WITH NO DENSITY TEST RESULT LESS THAN 92%.
  - ALL EXPOSED METAL PARTS SHALL BE GALVANIZED.
  - FURNISH AND INSTALL WALL MOUNT VAPOR PROOF LUMINAIRE W/ JUNCTION, BOX GLOBE & GUARD AND INSTALL ELECTRICAL BOX W/ COVER PLATE.
  - CONTRACTOR SHALL POTHOLE EXISTING LINE PRIOR TO ORDERING PARTS TO VERIFY PIPE LOCATION, TYPE, & SIZE.
  - ALL ELECTRICAL EQUIPMENT FOR PRV VAULTS IS TO BE FURNISHED AND INSTALLED BY OTHERS.



**NORTH ACCESS ROAD SECTION**  
SCALE: NTS

**PRV LOAD CENTER**  
SCALE: NONE

**PRV POWER PEDESTAL**  
SCALE: NONE



REV. DATE	BY	COMMENTS
B	03/28/22	JMB

DATE: FEBRUARY 2022  
DRAWING NAME: D.103 SITE DETAILS  
DESIGNED/DRAWN BY: JMB/JP  
CHECKED: APPROVED: [ ]

1" SCALE MEASURES ON FULL SIZE SHEET  
ADJUST FOR HALF SIZE SHEETS

**SITE DETAILS**  
TOP OF MOUNTAIN WATER SYSTEM  
POWDER MOUNTAIN WATER & SEWER IMPROVEMENT DISTRICT  
WEBER COUNTY, UTAH

REVISIONS	DATE	BY	COMMENTS

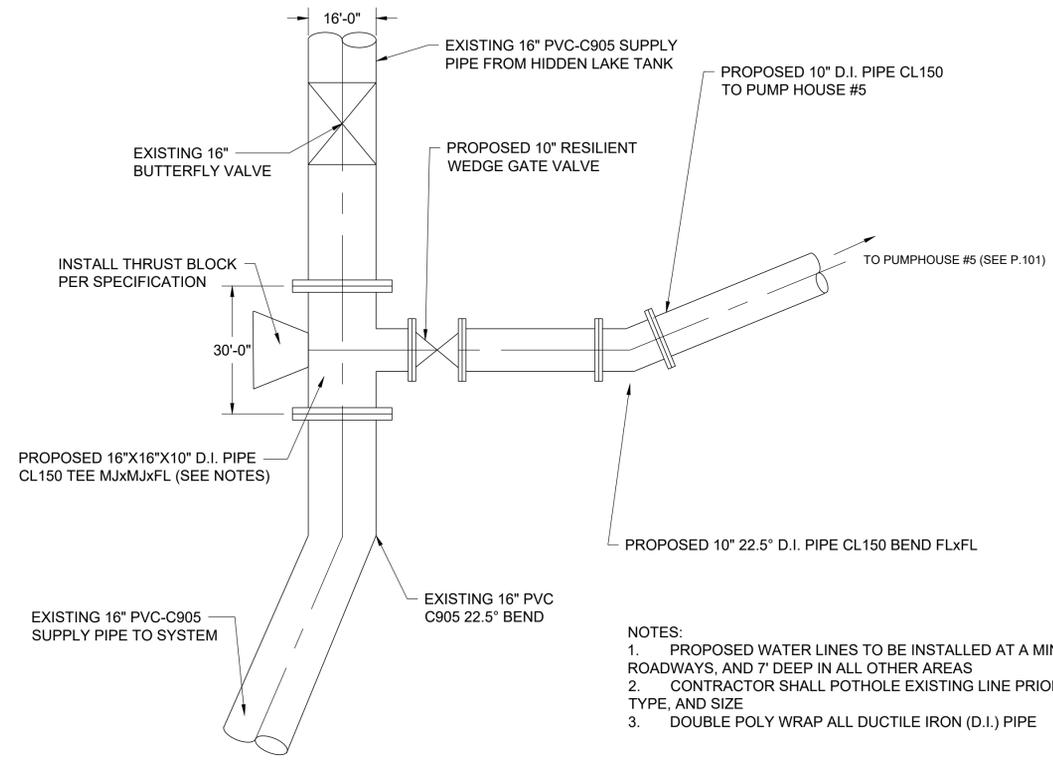
DATE: FEBRUARY 2022  
 DRAWING NAME: D.104 DETAILS  
 DESIGNED/DRAWN BY: JMBP  
 CHECKED: APPROVED: 0

1" SCALE MEASURES 1" ON FULL SIZE SHEET  
 ADJUST FOR HALF SIZE SHEETS

**DETAILS**  
 TOP OF MOUNTAIN WATER SYSTEM  
 POWDER MOUNTAIN WATER & SEWER IMPROVEMENT DISTRICT  
 WEBER COUNTY, UTAH

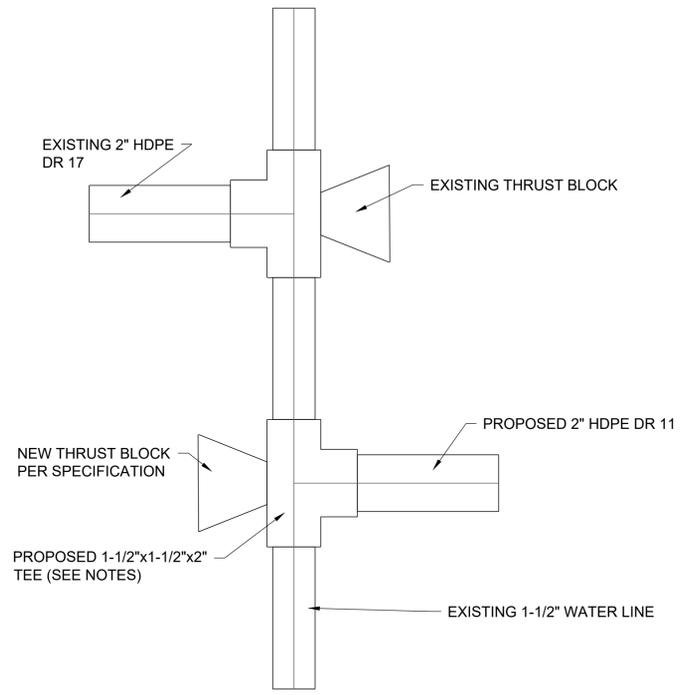
REVISION: **A**  
 PROJ. # **POW.019**

**D.104**

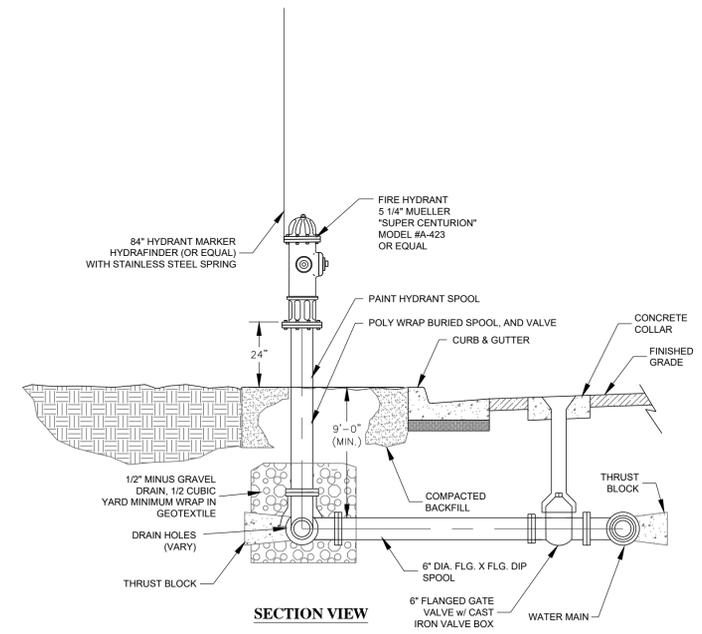


- NOTES:**
1. PROPOSED WATER LINES TO BE INSTALLED AT A MINIMUM OF 9' DEEP IN PARKING AREAS AND ROADWAYS, AND 7' DEEP IN ALL OTHER AREAS
  2. CONTRACTOR SHALL POT-HOLE EXISTING LINE PRIOR TO ORDERING PARTS TO VERIFY PIPE LOCATION, TYPE, AND SIZE
  3. DOUBLE POLY WRAP ALL DUCTILE IRON (D.I.) PIPE

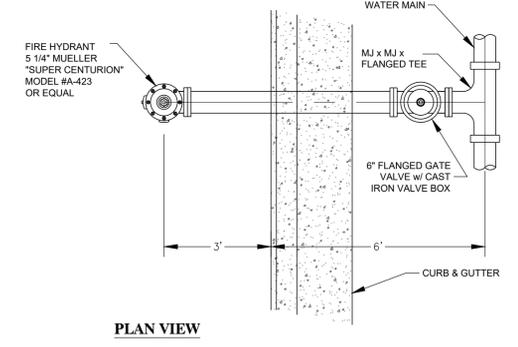
**A CONNECTION DETAIL**  
 SCALE: N.T.S.



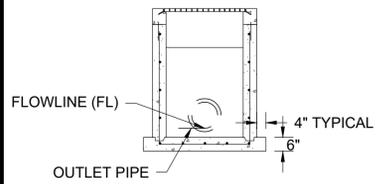
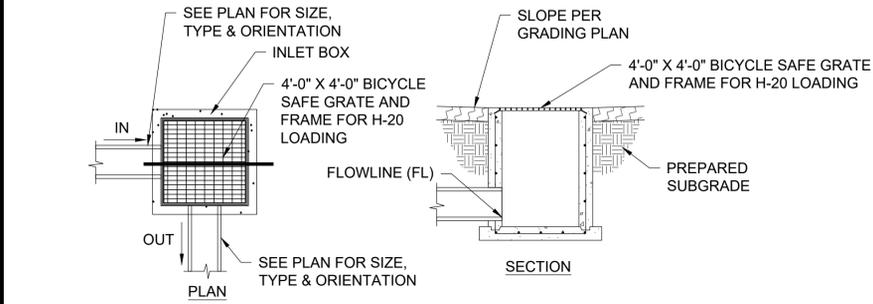
**B 2" HDPE CONNECTION DETAIL**  
 SCALE: N.T.S.



- NOTES:**
1. HYDRANT SHALL BE "TRAFFIC" TYPE WITH A REPLACEABLE BREAK-AWAY UNIT IMMEDIATELY ABOVE GROUND.

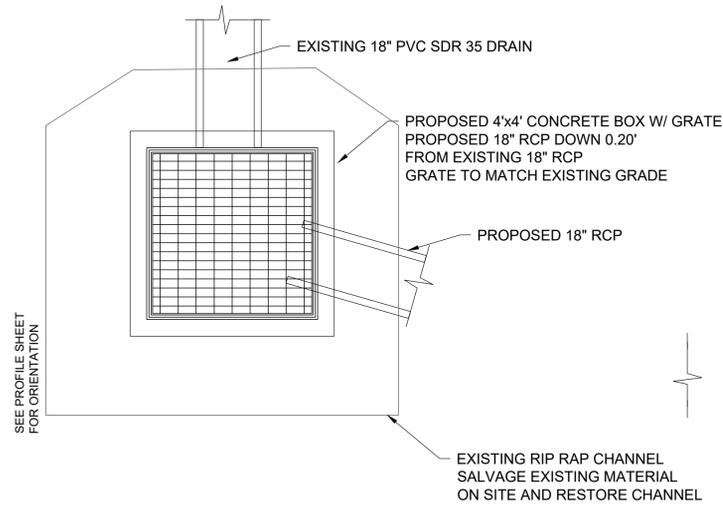


**C FIRE HYDRANT CONNECTION DETAIL**  
 SCALE: N.T.S.

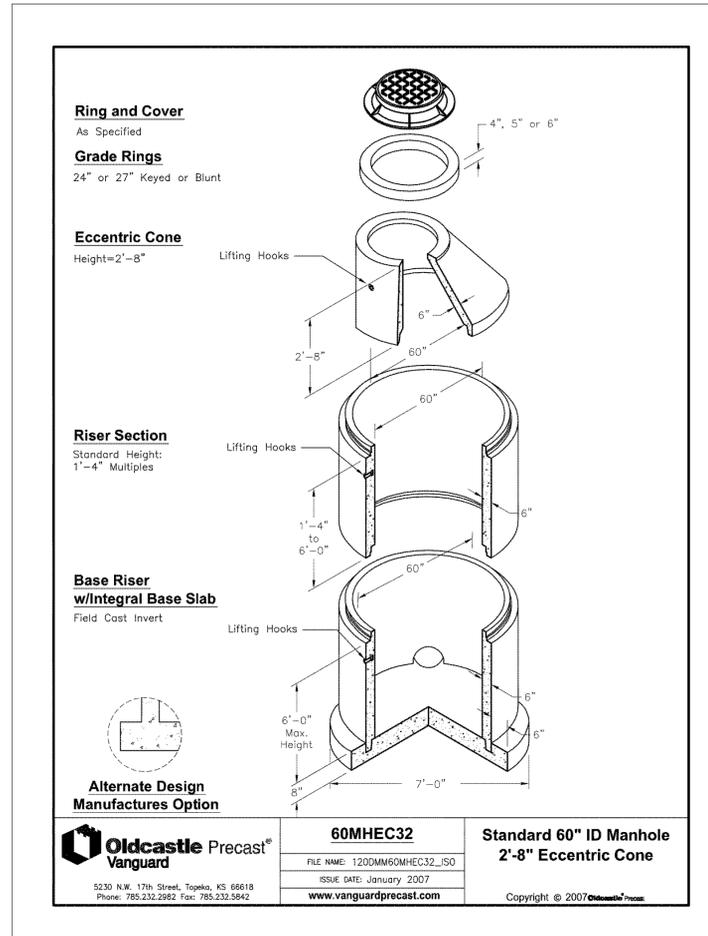


- NOTES:**
- BACKFILL: INSTALL BACKFILL IN LIFTS NOT EXCEEDING 6" AFTER COMPACTION EACH LIFT TO AN AVERAGE DRY DENSITY OF 96% WITH NO DENSITY TEST RESULT LESS THAN 95%
  - REINFORCEMENT: ASTM A615, GRADE 60, DEFORMED STEEL ROD. PLACE STEEL PER CRSI MANUAL OF STANDARD PRACTICE.
  - CONCRETE: USE CLASS 4,000 PORTLAND CEMENT CONCRETE
  - PIPE LATERALS: THE DRAWING SHOWS ALTERNATE CONNECTIONS TO THE CATCH BASIN. REFER TO CONSTRUCTION DRAWINGS FOR ACTUAL CONNECTION LOCATIONS
  - LADDER RUNGS: PROVIDE PLASTIC LADDER RUNGS IN BOXES OVER 4'-0" DEEP. PLACE BOTTOM RUNG 6-INCHES ABOVE TOP OF PIPE.
  - ALL REBAR SHALL BE EPOXY COATED.
  - GRATE AND FRAMES SHALL BE HOT-DIPPED GALVANIZED.
  - DOWEL LAPS SHALL BE 24"
  - COAT ALL METAL PARTS WITH ASPHALTUM PAINT.

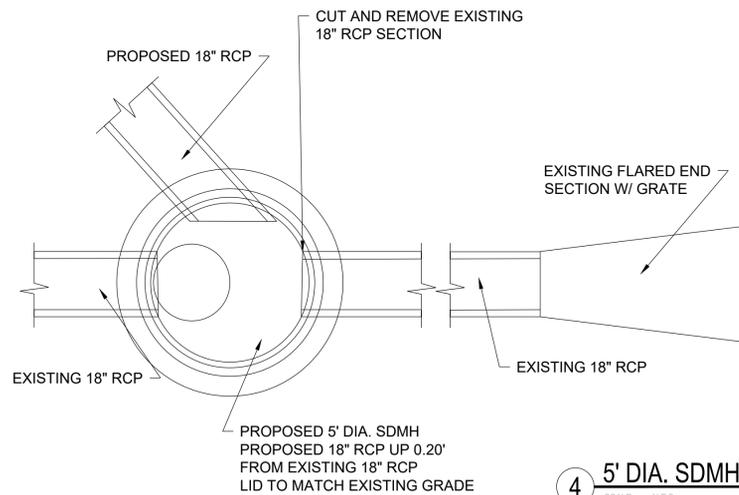
**1 4'x4' INLET BOX**  
SCALE: N.T.S.



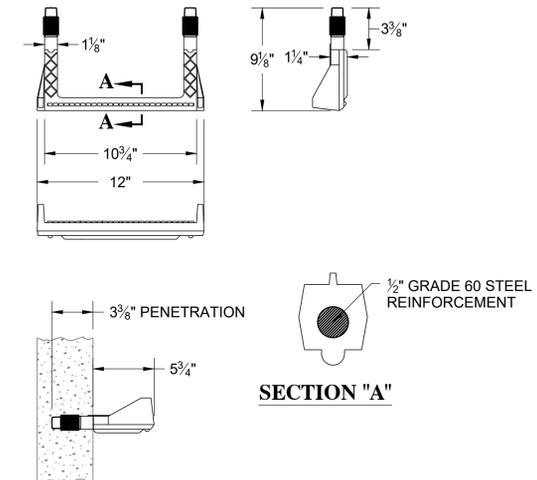
**3 4'x4' INLET BOX PLAN A**  
SCALE: N.T.S.



**2 5' SDM DETAIL**  
SCALE: N.T.S.



**4 5' DIA. SDM PLAN**  
SCALE: N.T.S.



**NOTES:**

- STEPS TO BE CAST, UNALTERED, IN MANHOLE WALL IN A STRAIGHT LINE, VERTICALLY, AT SAME TIME THE BARREL OR CONE SECTIONS ARE CAST.
- IF STEPS ARE NOT CAST INTO MANHOLE BARREL SECTIONS AS MENTIONED ABOVE, STEPS SHALL BE INSTALLED BY THE "PRESS FIT" METHOD FOLLOWING MANUFACTURER'S RECOMMENDED PROCEDURE, AND SHALL NOT BE GROUTED IN PLACE.
- INSTALLED STEPS SHALL BE CAPABLE OF WITHSTANDING A PULL OUT FORCE OF 2,500LBS. PER LEG FOR A MINIMUM PERIOD OF TWO MINUTES.

**5 MANHOLE STEP DETAIL**  
SCALE: N.T.S.



DATE	REVISIONS	BY	COMMENTS
FEBRUARY 2022	D.105 DETAILS	JMB/JP	DESIGNED/DRAWN BY

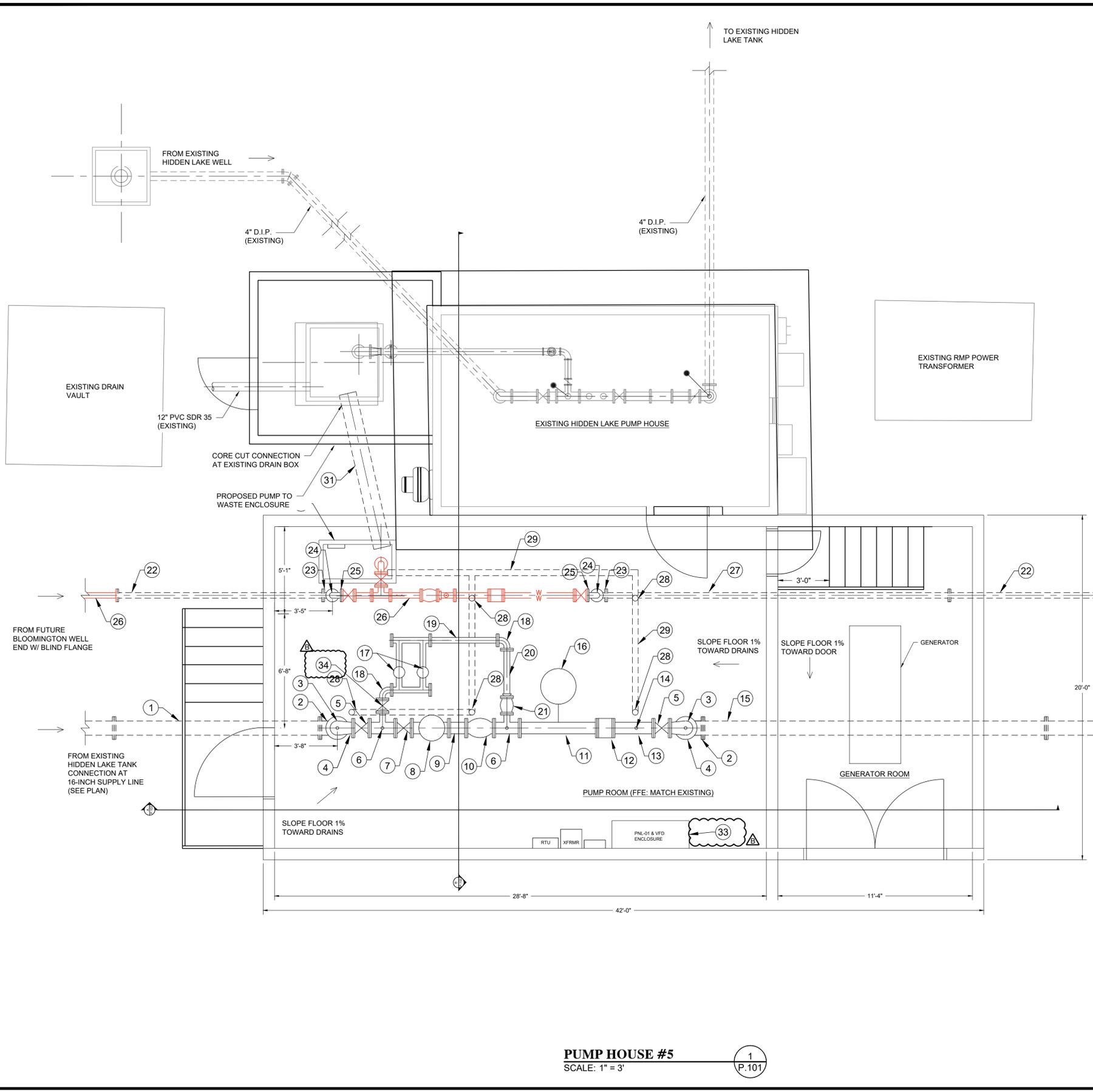
CHECKED: \_\_\_\_\_ APPROVED: \_\_\_\_\_

1" SCALE MEASURES IF ON FULL SIZE SHEET  
ADJUST FOR HALF SIZE SHEETS

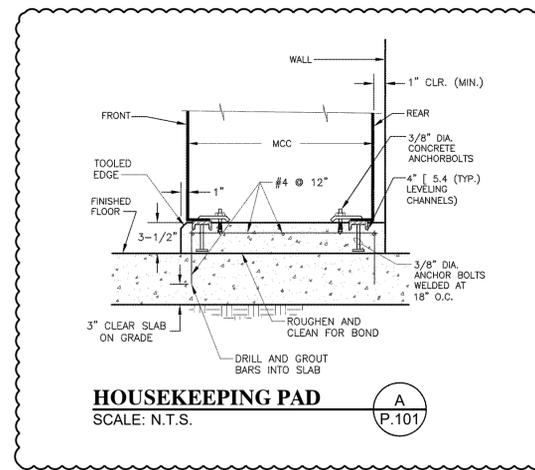
**DETAILS**  
TOP OF MOUNTAIN WATER SYSTEM  
POWDER MOUNTAIN WATER & SEWER IMPROVEMENT DISTRICT  
WEBER COUNTY, UTAH

REVISION: **A**  
PROJ. # **POW.019**

**D.105**



SCHEDULE OF PLUMBING MATERIAL		
ITEM	QUANTITY	DESCRIPTION
1	1	10" DIA. FLGD. C.L. 150 D.I. PIPE SPOOL (12'-0" LG. MOL)
2	4	10" DIA. FLGD. C.L. 150 D.I. PIPE 90 DEG. BEND
3	2	10" DIA. FLGD. C.L. 150 D.I. PIPE SPOOL (11'-1" LG. MOL)
4	2	10"x8" DIA. FLGD. C.L. 150 D.I. PIPE 90 DEG. BEND (REDUCER) W/ AIR RELIEF VALVE (SEE DETAIL 5/P.103)
5	2	8" FLGD. C.L. 150 D.I. PIPE RESILIENT WEDGE GATE VALVE MUELLER W/ MANUAL OPERATOR
6	2	8"x8"x4" FLGD. C.L. 150 D.I. PIPE TEE W/ 3/4" HOSE BIBB (SAMPLE TAP) AND PRESSURE GAUGE ASSEMBLY (SEE DETAIL 6/P.103)
7	1	8" FLGD. C.L. 150 D.I. PIPE RESILIENT WEDGE GATE VALVE MUELLER W/ AUTOMATIC OPERATOR
8	1	500 GPM PUMP (TDH=120-FT) (75 HP) (PENTAIR AURORA 413 SERIES 8X8X11) W/ CONCRETE PEDESTAL (SEE DETAIL 3&4/P.103) AND ALL APPURTENANT ITEMS
9	2	8" DIA. FLGD. C.L. 150 D.I. PIPE SPOOL (1'-0" LG. MOL)
10	1	8" DIA. FLGD. C.L. 150 D.I. SWING TYPE CHECK VALVE
11	1	8" DIA. FLGD. C.L. 150 D.I. PIPE SPOOL (4'-6" LG. MOL)
12	1	8" ABB MAGMETER FLOWMETER
13	1	10" DIA. FLGD. C.L. 150 D.I. PIPE SPOOL (2'-4" LG. MOL)
14	1	3/4" HOSE BIBB (SAMPLE TAP) AND PRESSURE GAUGE
15	1	10" DIA. FLGD. C.L. 150 D.I. PIPE SPOOL (20'-0" LG. MOL)
16	1	VERTICAL 100-GAL PRESSURE BLADDER TANK, ZILMET ZHP350 (OR EQUAL) SKID MOUNTED PUMP STATION WITH GRUNDFOS PUMPS; TWO PUMPS (HYDRO MPC-E 2CRE) (20 GPM @ TDH=150') (5 HP) SYSTEM INCLUDES: UPSTREAM ISOLATION VALVE AND PRESSURE GAUGE, DOWNSTREAM CHECK VALVE ISOLATION VALVE AND PRESSURE GAUGE W/ CONCRETE PEDESTAL (SEE DETAIL 1&2/P.103)
17	1	4" DIA. FLGD. C.L. 150 D.I. PIPE 90 DEG. BEND
18	2	4" DIA. FLGD. C.L. 150 D.I. PIPE 90 DEG. BEND
19	1	4" DIA. FLGD. C.L. 150 D.I. PIPE SPOOL (3'-11" LG. MOL)
20	1	4" DIA. FLGD. C.L. 150 D.I. PIPE SPOOL (2'-9" LG. MOL)
21	1	4" DIA. FLGD. C.L. 150 D.I. SWING TYPE CHECK VALVE
22	1	4" DIA. FLGD. C.L. 150 D.I. PIPE SPOOL (12'-0" LG. MOL) WITH BLIND FLANGE FOR FUTURE CONNECTION
23	2	4" DIA. FLGD. C.L. 150 D.I. PIPE 90 DEG. BEND
24	2	4" DIA. FLGD. C.L. 150 D.I. PIPE SPOOL (12'-0" LG. MOL)
25	2	4" DIA. FLGD. C.L. 150 D.I. PIPE 90 DEG. BEND WITH BLIND FLANGE FOR FUTURE CONNECTION
26	1	FUTURE PIPING FOR FUTURE BLOOMINGTON WELL CONNECTION
27	1	4" DIA. FLGD. C.L. 150 D.I. PIPE SPOOL (20'-0" LG. MOL)
28	5	4" DIA. FLOOR DRAIN
29	1	4" DIA. SCHEDULE 80 FLOOR DRAIN PIPING INCLUDING ALL FITTINGS, CONNECT TO DRAIN BOX (#26) (40' L.F.)
30	1	2'X4" PRECAST BOX WITH GRATE (OLD CASTLE OR EQ.); 5'-6" DEEP
31	1	12" PVC SDR 35 ASTM D3034 GRAVITY PIPE TO DRAIN (9'-2" LG)
32	4	FLOOR SLEEVE (SEE DETAIL C/D 102)
33	1	CONSTRUCT HOUSEKEEPING PADS FOR ELECTRICAL EQUIPMENT. ALL ELECTRICAL EQUIPMENT TO BE FURNISHED AND INSTALLED BY OTHERS. COORDINATE LOCATION WITH ELECTRICAL. (SEE DETAIL A/P.101)
34	1	4" FLGD. C.L. 150 D.I. PIPE RESILIENT WEDGE GATE VALVE MUELLER W/ AUTOMATIC OPERATOR



**PUMP HOUSE #5**  
SCALE: 1" = 3'

1  
P.101



REV	DATE	BY	COMMENTS
1	03/28/2022	JMBP	REVISED PLUMBING #7 #8 #9 #10 & ADD DETAIL A

DATE: FEBRUARY 2022  
DRAWING NAME: P.101 PIPING PLANS  
DESIGNED/DRAWN BY: JMBP  
CHECKED: APPROVED: [Signature]

1" SCALE MEASURES IF ON FULL SIZE SHEET  
ADJUST FOR HALF SIZE SHEETS

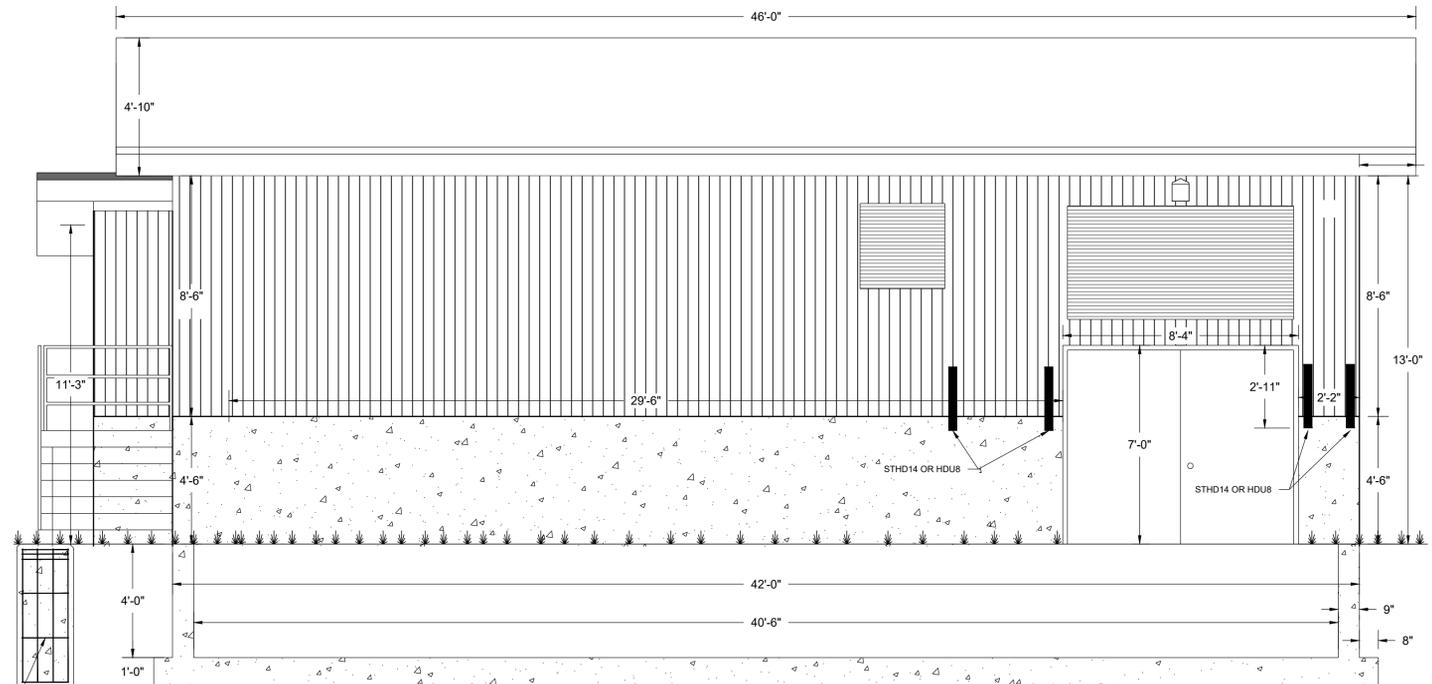
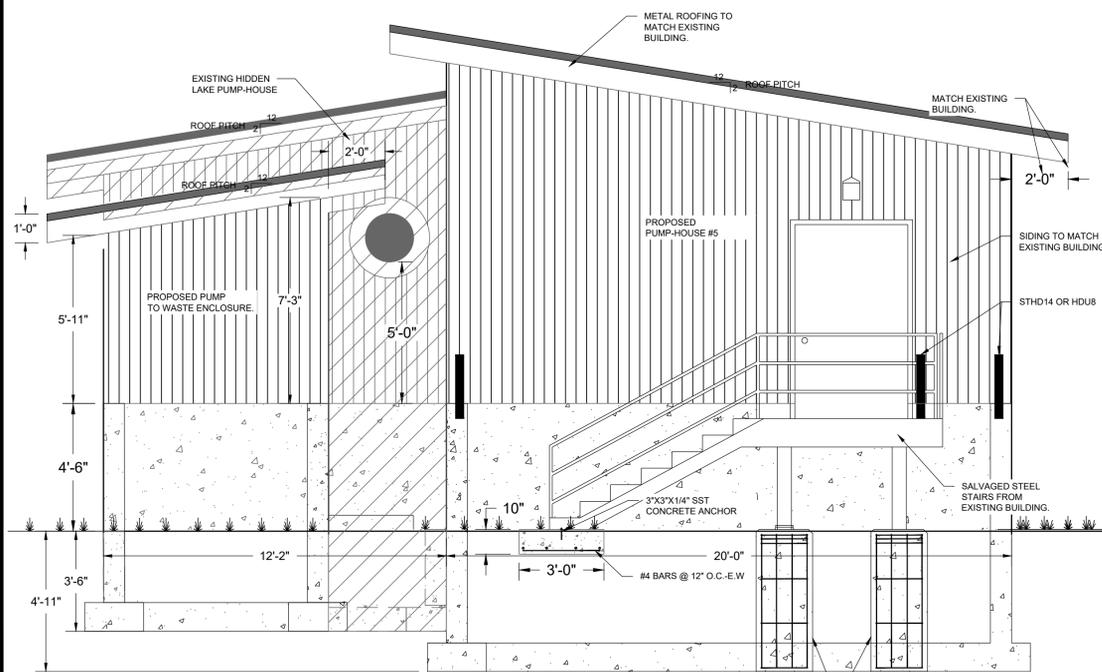
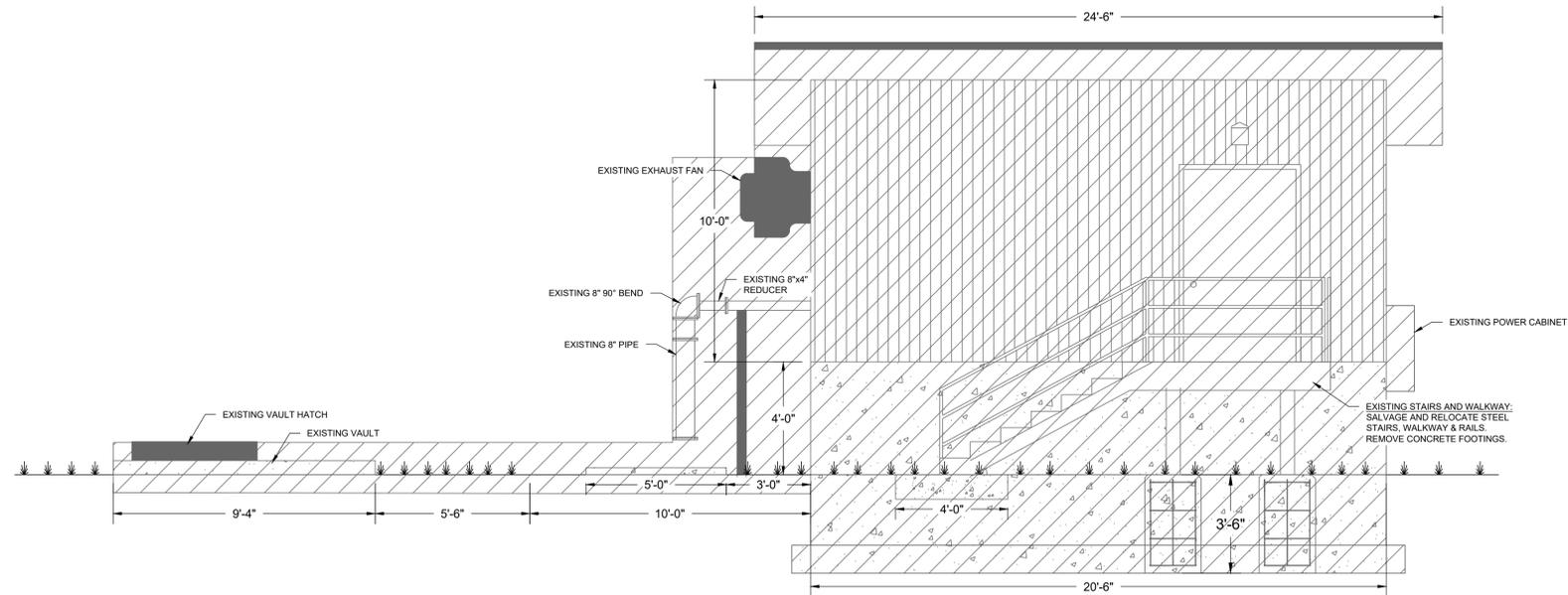
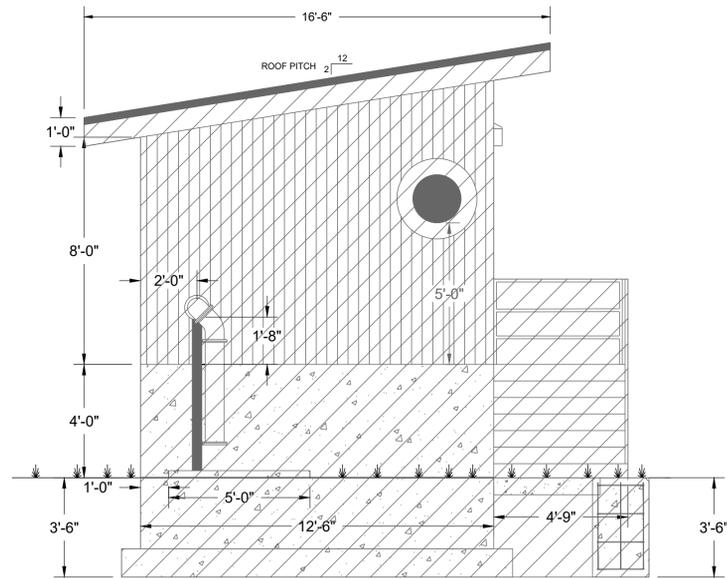
**PIPING PLAN**  
TOP OF MOUNTAIN WATER SYSTEM  
POWDER MOUNTAIN WATER & SEWER IMPROVEMENT DISTRICT  
WEBER COUNTY, UTAH

REVISION: **B**  
PROJ. # **POW.019**

**P.101**







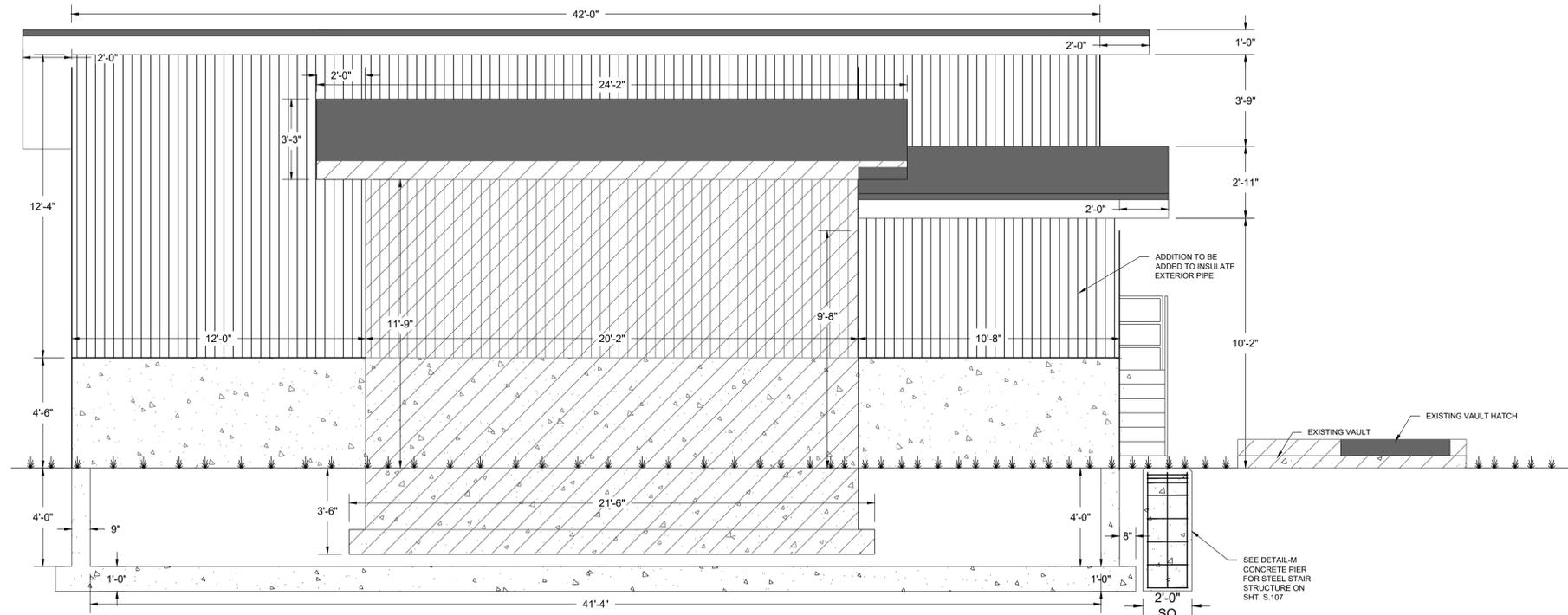
REV.	DATE	BY	COMMENTS

DATE: FEBRUARY 2022  
DRAWING NAME: S.101 BOOSTER STATION ELEVATION  
DESIGNED/DRAWN BY: JMBP  
CHECKED: APPROVED: 0

**EXISTING & PROPOSED BOOSTER STATION ELEVATION**  
TOP OF MOUNTAIN WATER SYSTEM  
POWDER MOUNTAIN WATER & SEWER IMPROVEMENT DISTRICT  
WEBER COUNTY, UTAH

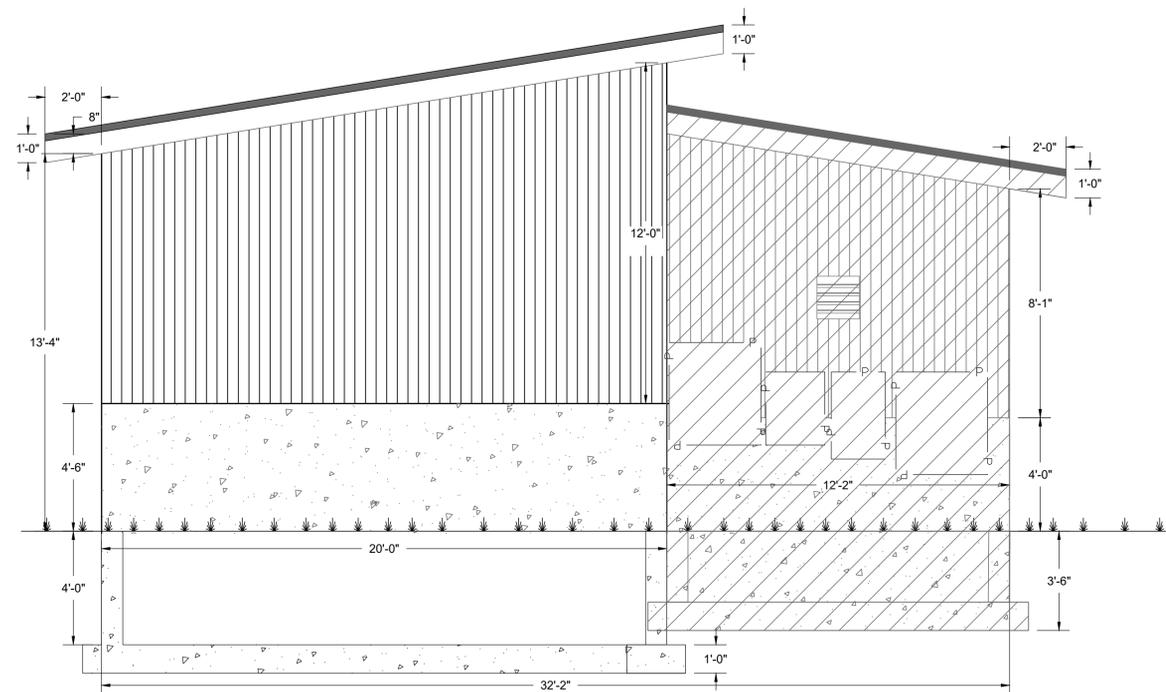
REVISION: A  
PROJ. # POW.019

**S.101**



**PROPOSED PUMPHOUSE  
REAR ELEVATION**  
SCALE: 1" = 3'

1  
S.102



**PROPOSED PUMPHOUSE  
SIDE ELEVATION**  
SCALE: 1" = 3'

2  
S.102



REV.	DATE	BY	COMMENTS

DATE: FEBRUARY 2022  
DRAWING NAME: S.102 BOOSTER STATION ELEVATION  
DESIGNED/DRAWN BY: JMBP  
CHECKED: APPROVED: 0

1" SCALE MEASURES 1" ON FULL SIZE SHEET  
ADJUST FOR HALF SIZE SHEETS

**PROPOSED BOOSTER STATION ELEVATION**  
TOP OF MOUNTAIN WATER SYSTEM  
POWDER MOUNTAIN WATER & SEWER IMPROVEMENT DISTRICT  
WEBER COUNTY, UTAH

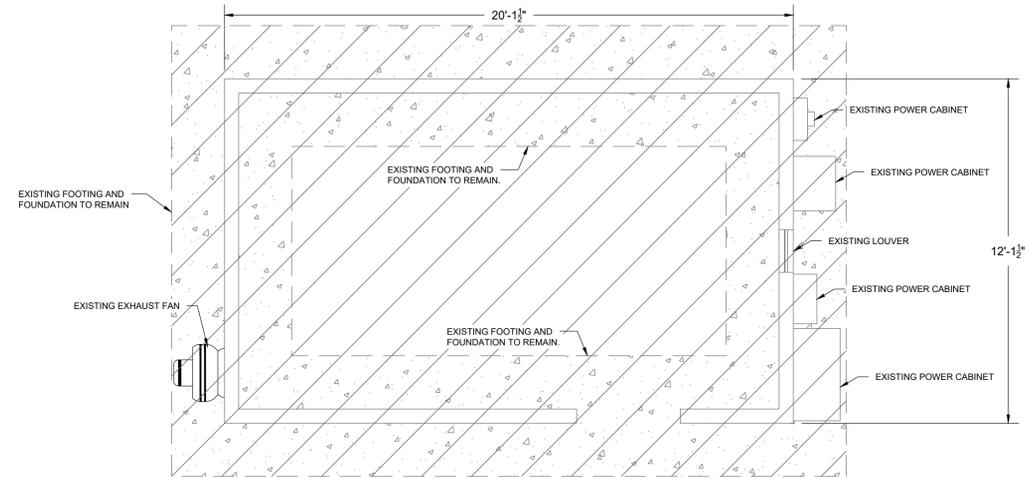
REVISION: A  
PROJ. # **POW.019**

**S.102**

**FOOTING SCHEDULE:**

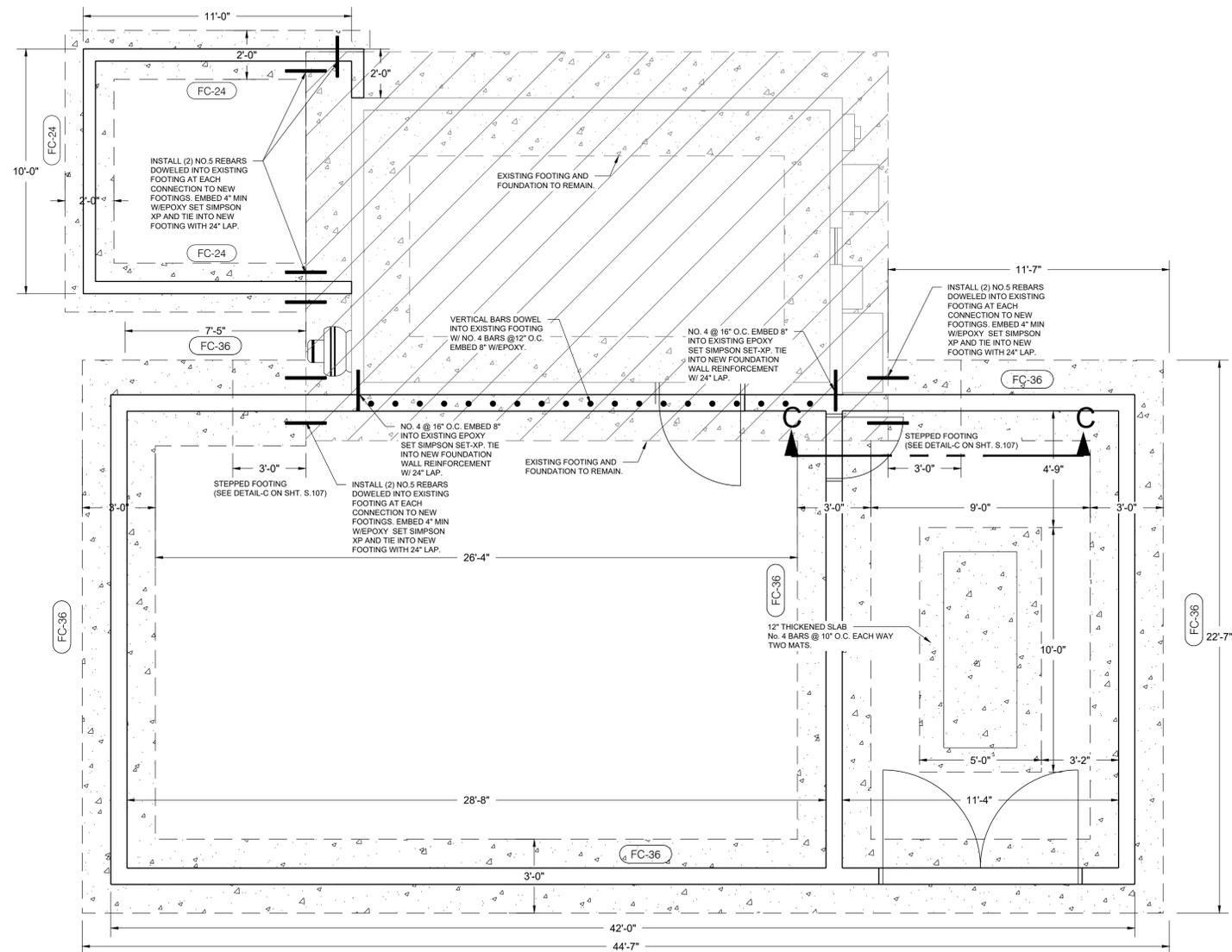
MARK	SIZE			REBAR	REMARKS
	WIDTH	THICK	LENGTH		
FC-24	24"	12"	CONT.	(3) #4 BARS CONTINUOUS	1, 2, 3
FC-36	36"	12"	CONT.	(3) #5 BARS CONTINUOUS	1, 2, 3

- 2500 PSI CONCRETE.
- GRADE 60 STEEL.
- INTERIOR CONTINUOUS FOOTINGS ARE OKAY TO BE THICKENED SLAB FOOTINGS.
- SPOT FOOTING MUST BE THE THICKNESS LISTED + SLAB THICKNESS ON TOP.
- SEE DETAIL A ON SHEET S.107.



**EXISTING PUMPHOUSE  
FOOTING PLAN VIEW**  
SCALE: 1" = 3'

1  
S.102



**PROPOSED PUMPHOUSE  
FOOTING PLAN VIEW**  
SCALE: 1" = 3'

2  
S.103



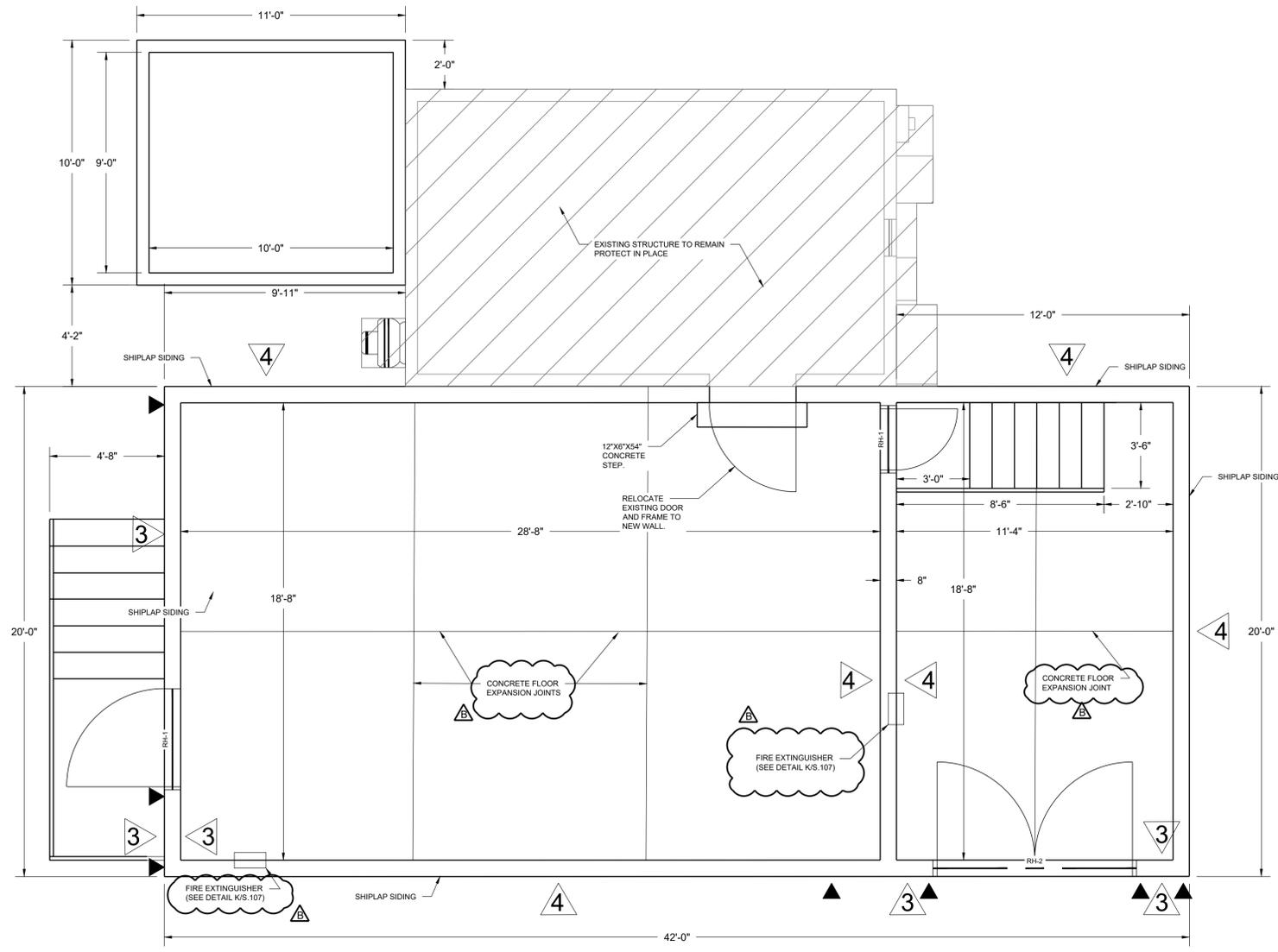
REVISION	DATE	BY	COMMENTS

DATE: FEBRUARY 2022  
DRAWING NAME: S.103 BOOSTER STATION FOOTING PLAN  
DESIGNED/DRAWN BY: JMBP  
CHECKED: [ ] APPROVED: [ ]

1" SCALE MEASURES IF ON FULL SIZE SHEET  
ADJUST FOR HALF SIZE SHEETS

**EXISTING & PROPOSED BOOSTER STATION FOOTING PLAN**  
TOP OF MOUNTAIN WATER SYSTEM  
POWDER MOUNTAIN WATER & SEWER IMPROVEMENT DISTRICT  
WEBER COUNTY, UTAH

REVISION: **A**  
PROJ. # **POW.019**  
**S.103**



**PROPOSED PUMPHOUSE  
FLOORING PLAN VIEW**  
SCALE: 1" = 3'

1  
S.104

ALL EXTERIOR WALLS TO BE 6" UNLESS OTHERWISE NOTED

INDICATES INTERIOR SHEARWALL

**SHEARWALL SCHEDULE** 8d NAILS TO BE 2 1/2" LONG (MINIMUM)

MARK	SIZE	TYPE	GRADE	NAILING		REMARKS
				EDGE	FIELD	
3	7/16"	CDX OR O.S.B.	APA RATED C-C, C-D	8d @ 3' O.C.	8d @ 12" O.C.	1, 2, 3
4	7/16"	CDX OR O.S.B.	APA RATED C-C, C-D	8d @ 4' O.C.	8d @ 12" O.C.	1, 2, 3
6	7/16"	CDX OR O.S.B.	APA RATED C-C, C-D	8d @ 6' O.C.	8d @ 12" O.C.	1, 2, 3

1. USE COMMON OR GALVANIZED BOX NAILS.  
2. BLOCK ALL EDGES.

▲ SIMPSON STD14(RJ) HOLD-DOWN STRAPS. USE (RJ) MODEL WHERE STRAP OVERLAPS A FLOOR RIM JOIST, OR HDU-11 WITH 1" WEDGE ANCHOR BOLT WITH 10" EMBED SET EPOXY.



DATE	REVISIONS
FEBRUARY 2022 <td>BY COMMENTS </td>	BY COMMENTS
S.104 <td>B 03/28/2022 ADD FIRE EXTINGUISHERS &amp; JOINT NOTES </td>	B 03/28/2022 ADD FIRE EXTINGUISHERS & JOINT NOTES

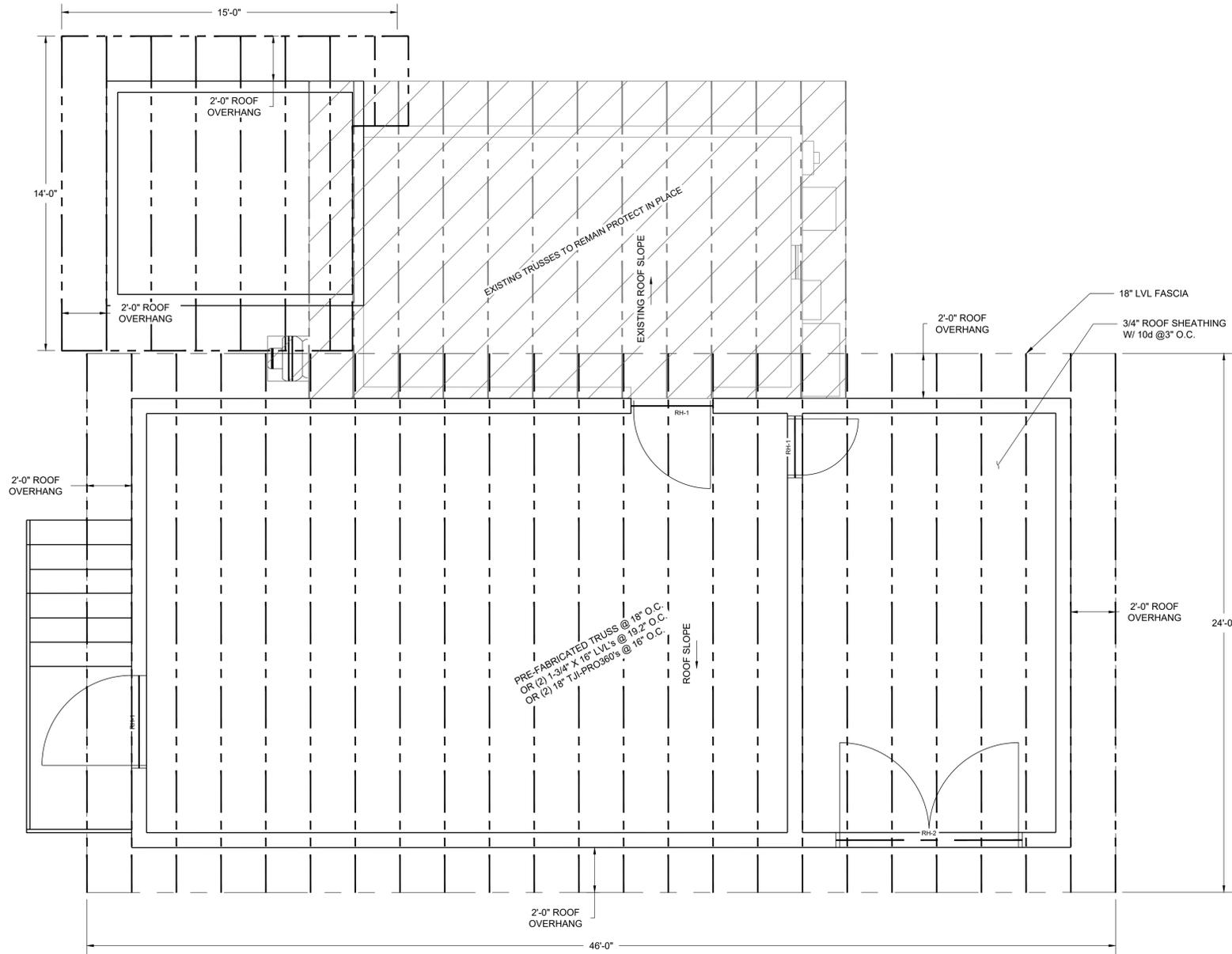
DESIGNER: JMBP  
DRAWN BY: JMBP  
CHECKED: APPROVED: \_\_\_\_\_

1" SCALE MEASURES 1" ON FULL SIZE SHEET  
ADJUST FOR HALF SIZE SHEETS

**PROPOSED BOOSTER STATION FLOORING PLAN**  
TOP OF MOUNTAIN WATER SYSTEM  
POWDER MOUNTAIN WATER & SEWER IMPROVEMENT DISTRICT  
WEBER COUNTY, UTAH

REVISION: **B**  
PROJ. # **POW.019**

**S.104**



**ROOF HEADER SCHEDULE:**

MARK	BEAM TYPE & SIZE	TRIMMERS (CF #2)
RH-1	(2) 2X10 DF, NO. 2	(2) 2X6s TRIMMERS
RH-2	(2) 1 1/2" x 9 1/2" LVLs	(3) 2X6s TRIMMERS

\*\* NAIL (1) 2x6 KING STUD IN ADDITION TO THE TRIMMERS SPECIFIED IN PARENTHESES ABOVE W/ 16d COMMON @ 4" O.C.

**PROPOSED PUMPHOUSE  
ROOFING PLAN VIEW**  
SCALE: 1" = 3'

1  
S.105



DATE	REVISIONS
FEBRUARY 2022 <td></td>	

DESIGNED/DRAWN BY: JMBP  
CHECKED: APPROVED: \_\_\_\_\_

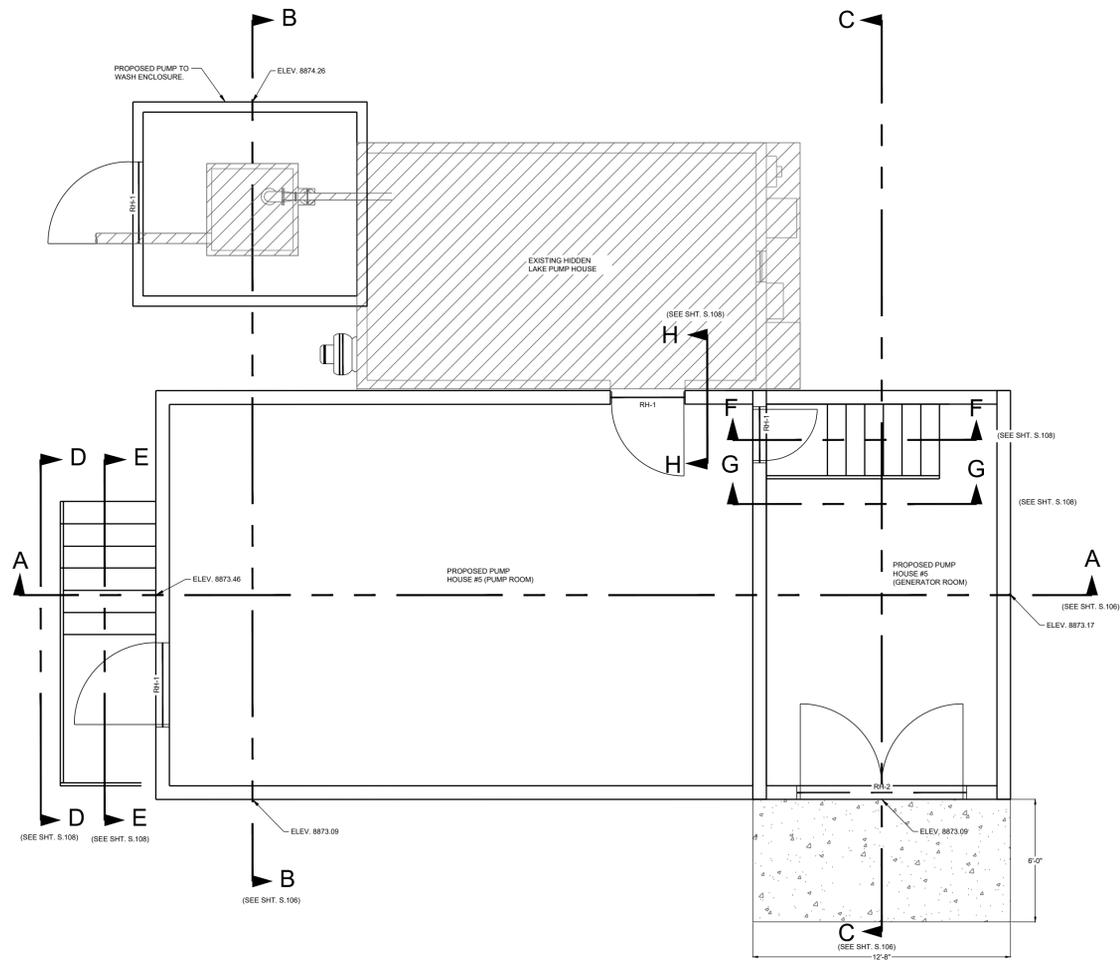
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ADJUST FOR HALF SIZE SHEETS

**PROPOSED BOOSTER STATION ROOFING PLAN**  
TOP OF MOUNTAIN WATER SYSTEM  
POWDER MOUNTAIN WATER & SEWER IMPROVEMENT DISTRICT  
WEBER COUNTY, UTAH

REVISION: **A**

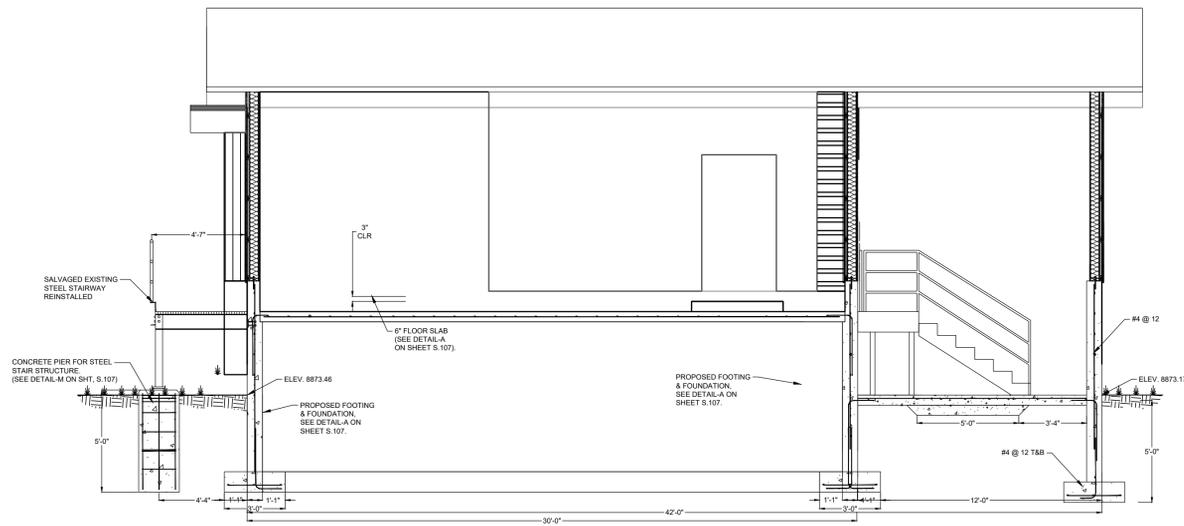
PROJ. # **POW.019**

**S.105**



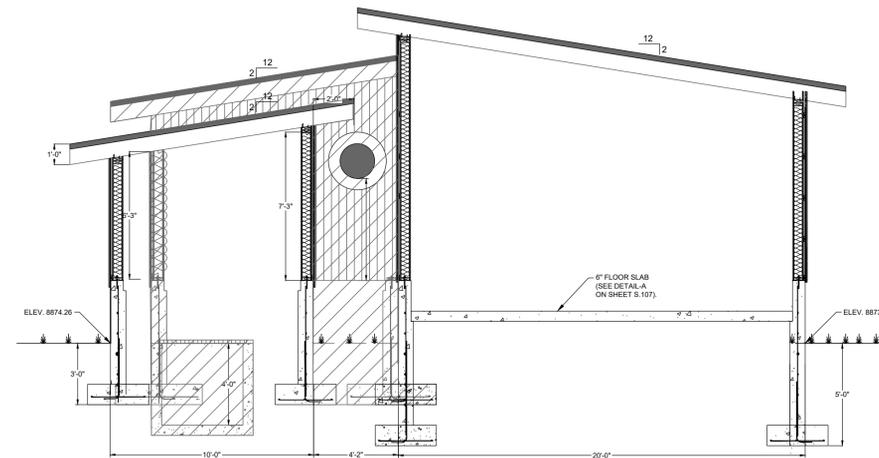
**PROPOSED PUMPHOUSE  
STRUCTURAL SECTION(S)**  
SCALE: 1" = 50'

1  
S.106



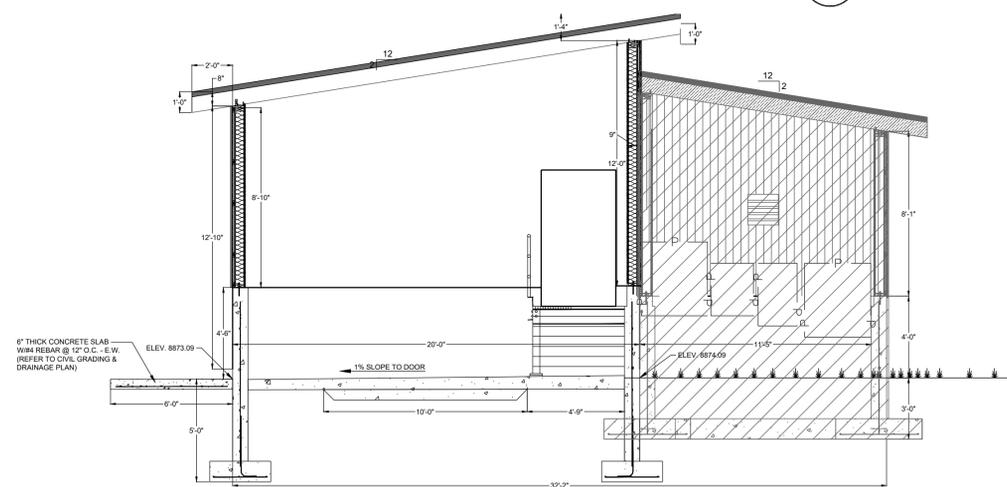
**PROPOSED PUMPHOUSE  
SECTION-A DETAIL**  
SCALE: 1" = 50'

2  
S.102



**PROPOSED PUMPHOUSE  
SECTION-B DETAIL**  
SCALE: 1" = 50'

3  
S.106



**PROPOSED PUMPHOUSE  
SECTION-C DETAIL**  
SCALE: 1" = 50'

4  
S.106



REV.	DATE	BY	COMMENTS

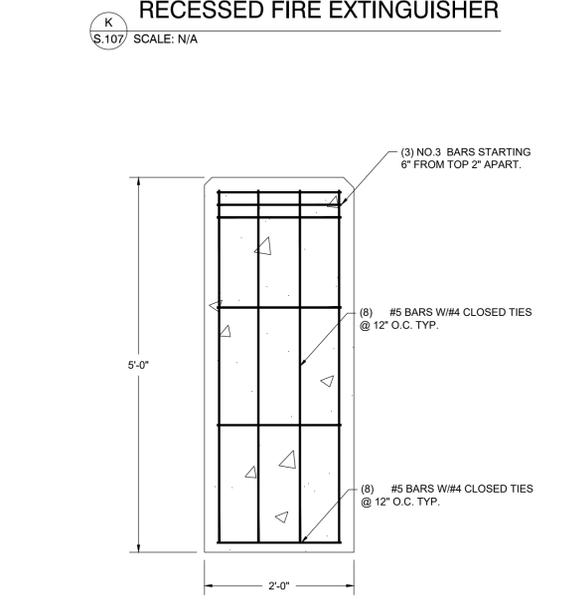
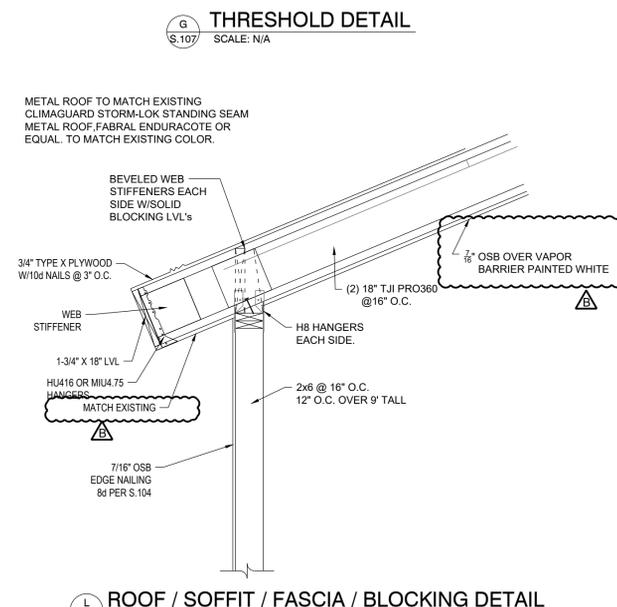
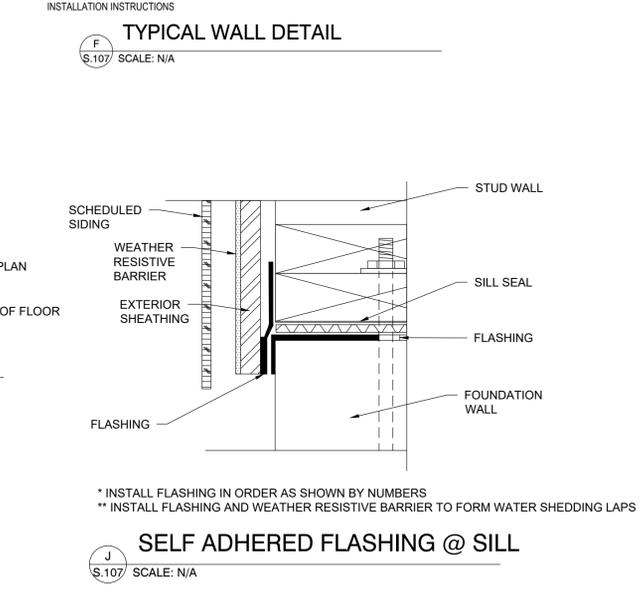
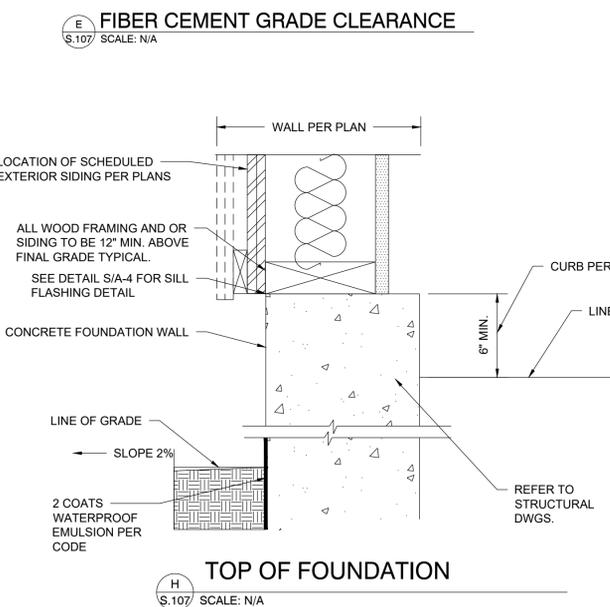
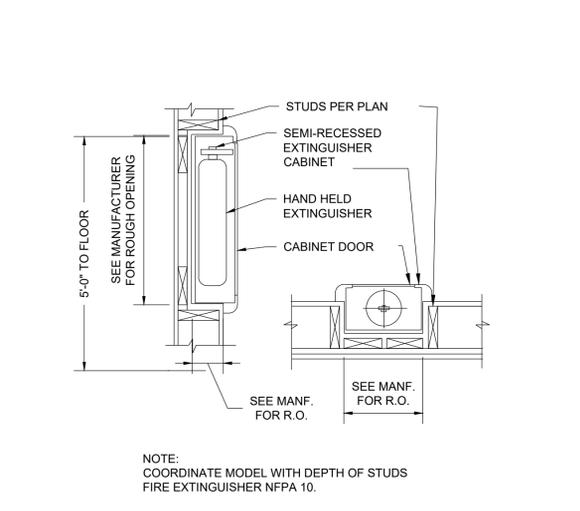
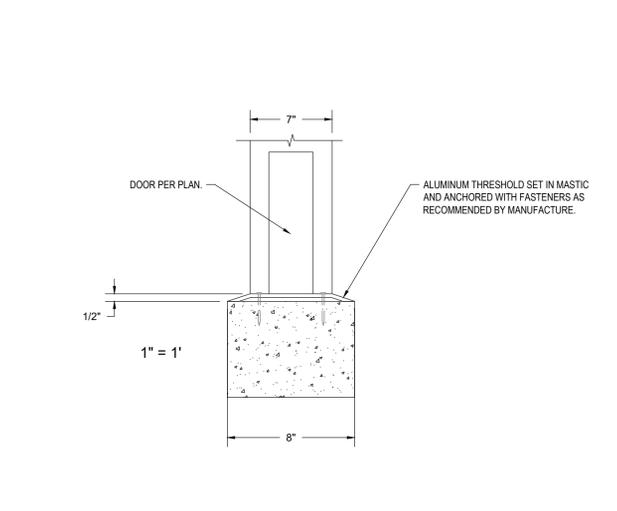
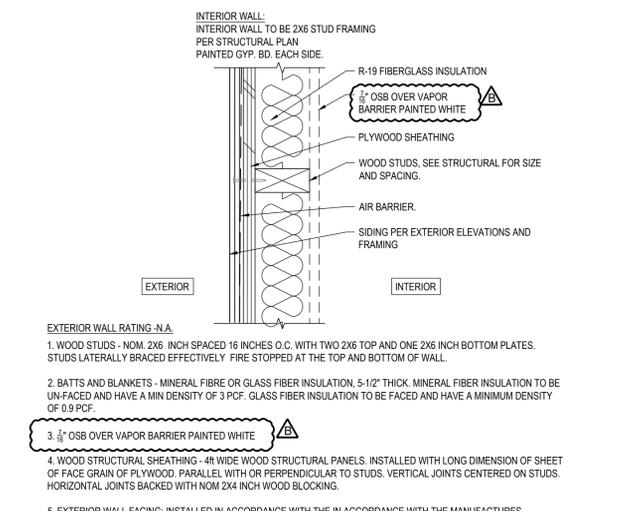
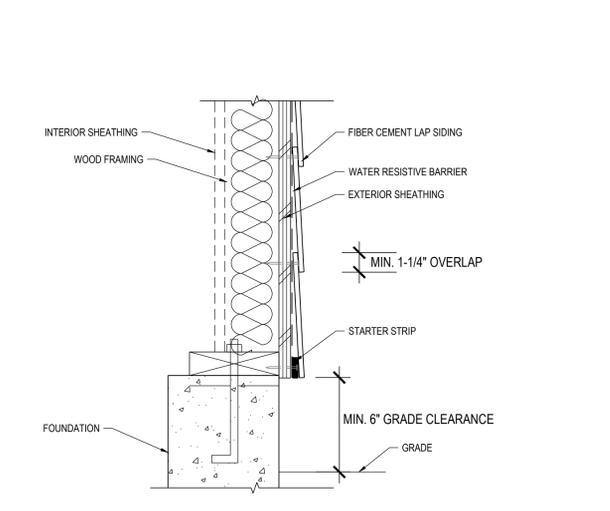
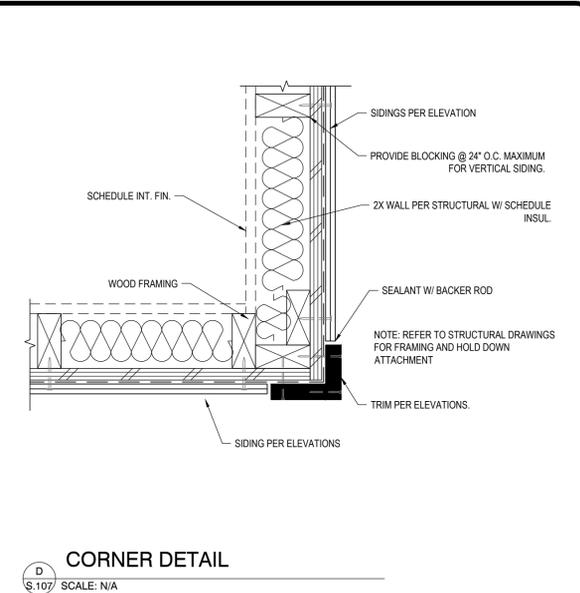
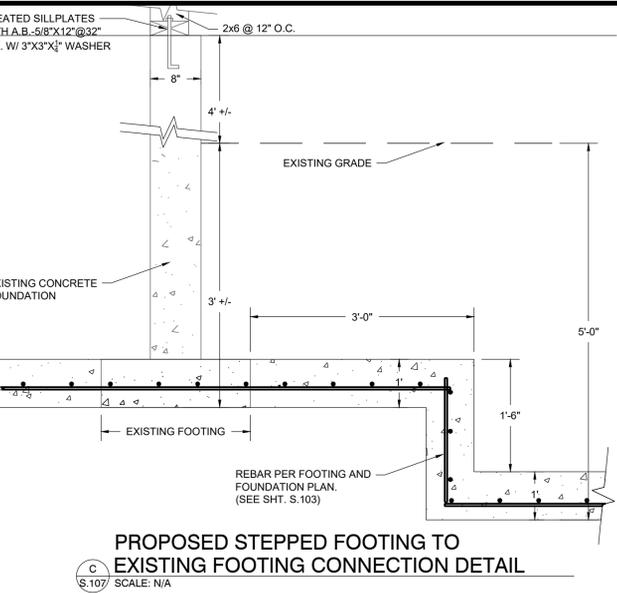
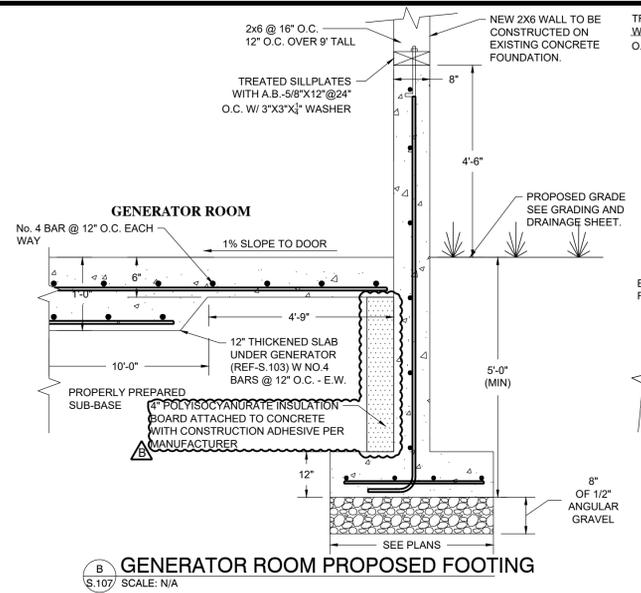
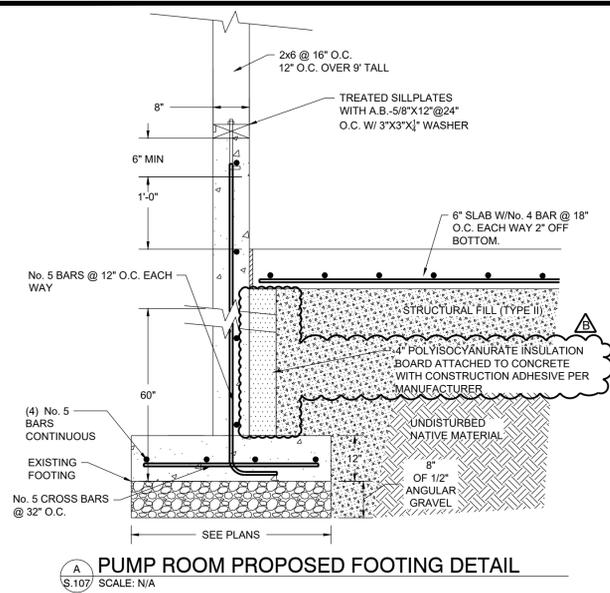
DATE: FEBRUARY 2022  
 DRAWING NAME: S.106 STRUCTURAL DETAILS  
 DESIGNED/DRAWN BY: JMB/JP  
 CHECKED: [ ] APPROVED: [ ]

1" SCALE MEASURES 1" ON FULL SIZE SHEET / ADJUST FOR HALF SIZE SHEETS

**STRUCTURAL SECTION DETAILS**  
 TOP OF MOUNTAIN WATER SYSTEM  
 POWDER MOUNTAIN WATER & SEWER IMPROVEMENT DISTRICT  
 WEBER COUNTY, UTAH

REVISION: [ ]  
 PROJ. # **POW.019**

**S.106**



REV. DATE	BY	COMMENTS
FEBRUARY 2022	JMB	ADD INSULATION & CHANGE SHEET TO USE
03/28/2022	JMB	ADD INSULATION & CHANGE SHEET TO USE

DATE: FEBRUARY 2022  
DRAWING NAME: S. 107 BOOSTER STATION STRUCTURAL DETAILS  
DESIGNED/DRAWN BY: JMB  
CHECKED: APPROVED: [Signature]

1" SCALE MEASURES IF ON FULL SIZE SHEET  
ADJUST FOR HALF SIZE SHEETS

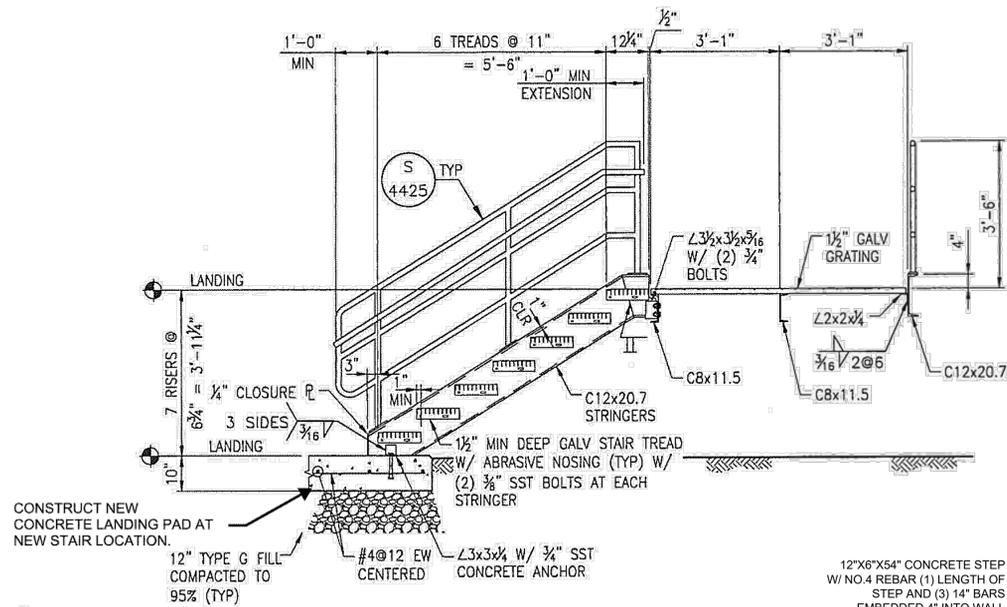
**PROPOSED BOOSTER STATION STRUCTURAL DETAILS**  
TOP OF MOUNTAIN WATER SYSTEM  
POWDER MOUNTAIN WATER & SEWER IMPROVEMENT DISTRICT  
WEBER COUNTY, UTAH

REVISION: **B**

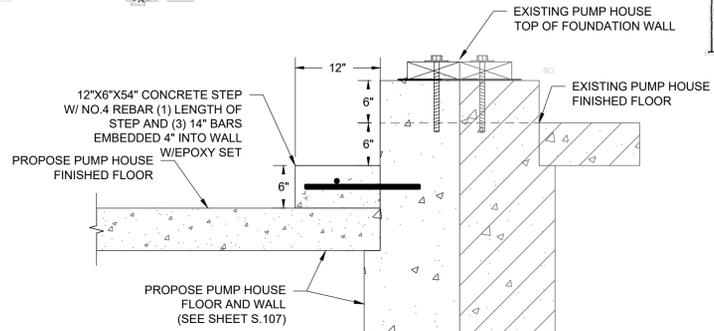
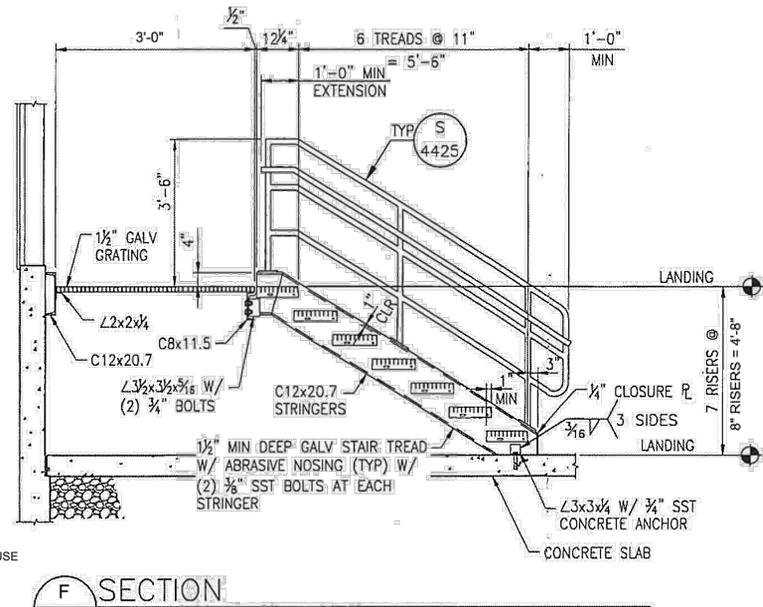
PROJ. # **POW.019**

**S.107**

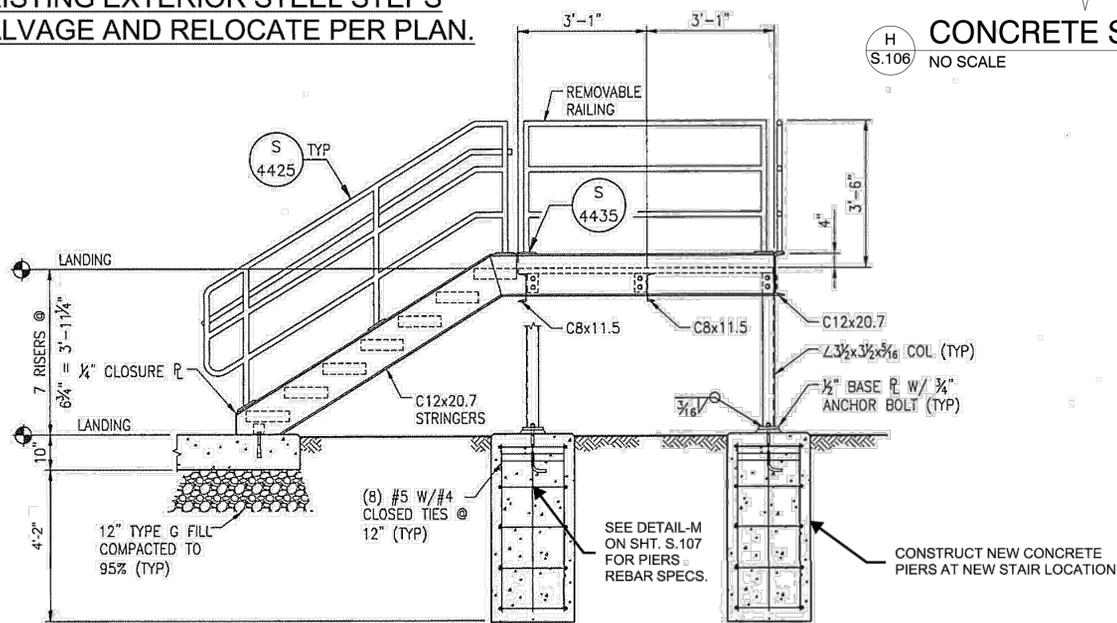
**EXISTING EXTERIOR STEEL STEPS  
SALVAGE AND RELOCATE PER PLAN.**



**INTERIOR STEEL STEPS SEE SHT. S.106 FOR PLACEMENT PER PLAN.**

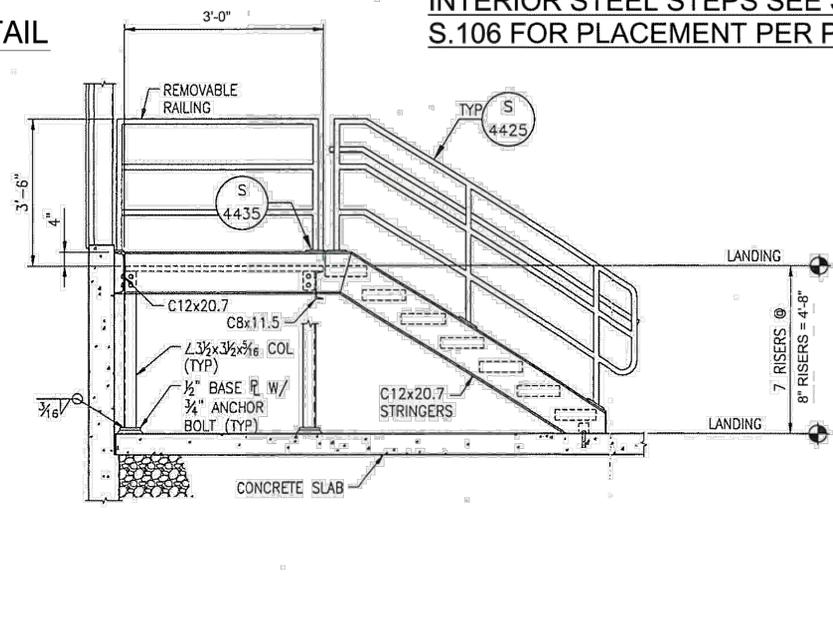


**EXISTING EXTERIOR STEEL STEPS  
SALVAGE AND RELOCATE PER PLAN.**



**CONCRETE STEP DETAIL**

**INTERIOR STEEL STEPS SEE SHT. S.106 FOR PLACEMENT PER PLAN.**



**MATIX**  
Matix Corporation  
Salt Lake City, UT  
Phone: (385) 226-5966

**GILSON ENGINEERING**  
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**PROFESSIONAL STRUCTURAL ENGINEER**  
03/18/2022  
No. 38218  
Bradley S. Gilson  
SALT LAKE CITY, UT

**UTAH DEPARTMENT OF HERITAGE & ARTS**

REVISIONS	DATE	BY	COMMENTS

DATE: FEBRUARY 2022  
DRAWING NAME: 8777 BOOSTER STATION STRUCTURAL DETAILS  
DESIGNED/DRAWN BY: JMB/JP  
CHECKED: APPROVED: \_\_\_\_\_  
1" SCALE MEASURES 1/2" ON FULL SIZE SHEET  
ADJUST FOR HALF SIZE SHEETS

**PROPOSED BOOSTER STATION STRUCTURAL DETAILS**  
TOP OF MOUNTAIN WATER SYSTEM  
POWDER MOUNTAIN WATER & SEWER IMPROVEMENT DISTRICT  
WEBER COUNTY, UTAH

REVISION: **A**  
PROJ. # **POW.019**

**S.108**

**EROSION CONTROL NOTES**

1. AT ALL TIMES DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREVENTING AND CONTROLLING EROSION DUE TO WIND AND RUNOFF. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR MAINTAINING THE EROSION CONTROL FACILITIES SHOWN ON THE PLAN.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING DRAINAGE AND EROSION CONTROL FACILITIES AS REQUIRED. STREETS SHALL BE KEPT CLEAN OF DEBRIS FROM TRAFFIC FROM THE SITE.
3. CONTRACTOR SHALL USE VEHICLE TRACKING CONTROL AT ALL LOCATIONS WHERE VEHICLES WILL ENTER OR EXIT THE SITE. CONTROL FACILITIES WILL BE MAINTAINED WHILE CONSTRUCTION IS IN PROGRESS, MOVED WHEN NECESSARY, AND REMOVED WHEN THE SITE IS PAVED.
4. INLET PROTECTION DEVICES SHALL BE INSTALLED IMMEDIATELY UPON INDIVIDUAL INLETS BECOMING FUNCTIONAL.
5. ALL CONTRACTORS AND SUBCONTRACTORS INVOLVED WITH STORM WATER POLLUTION PREVENTION SHALL OBTAIN A COPY OF THE STORM WATER MANAGEMENT PLAN AND THE STATE OF UTAH DISCHARGE PERMIT SYSTEM GENERAL PERMIT FOR "STORM DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY" AND BECOME FAMILIAR WITH THEIR CONTENT.
6. ALL WASH WATER (CONCRETE TRUCKS, VEHICLE CLEANING, ETC.) SHALL BE DISPOSED IN A MANNER THAT PREVENTS CONTACT WITH STORM WATER DISCHARGES FROM THE SITE.
7. FUGITIVE DUST AREAS SHALL BE CONTROLLED BY SPRAYING WATER ON THE DRY AREAS OF THE SITE. CONTRACTOR WILL SUPPLY THE CITY WITH A DUST CONTROL PLAN AT THE TIME OF THE PRE-CONSTRUCTION MEETING.
8. NO RUBBISH, TRASH, GARBAGE OR OTHER SUCH MATERIALS SHALL BE DISCHARGED INTO DRAINAGE DITCHES OR WATERS OF THE STATE.
9. ALL MATERIALS SPILLED, DROPPED, WASHED OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS MUST BE REMOVED IMMEDIATELY.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING THE EROSION CONTROL MEASURES (SILT FENCES, STRAW BALES, ETC.) DUE TO GRADE CHANGES OR OTHER UNFORESEEN CONDITIONS DURING DEVELOPMENT OF THE PROJECT.
11. ALL INLETS WILL HAVE TEMPORARY INLET CONTROL.
12. TEMPORARY SANITATION FACILITIES REQUIRED.
13. CONTRACTOR TO COORDINATE WITH PUBLIC WORKS INSPECTOR ON ALL REQUESTS TO MODIFY OR MAKE CHANGES TO SWPPP/EROSION CONTROL PLAN.

**LEGEND**

-  -BMP SILT FENCE/STRAW BALE BARRIER
-  -BMP INSPECTION AND MAINTENANCE, BMP STABILIZED CONSTRUCTION ENTRANCE AND WASH AREA
-  -TOPSOIL STOCKPILE AREA (OR AS DIRECTED BY OWNER) BMP EARTH BERM BARRIER
-  -BMP MATERIALS STORAGE, BMP VEHICLE AND EQUIPMENT FUELING, BMP CONCRETE WASTE MANAGEMENT, BMP PORTABLE TOILETS, BMP EARTH BERM BARRIER
-  -BMP DUST CONTROLS, BMP GRADING PRACTICES, BMP CONTAMINATED OR ERODIBLE SURFACE AREAS, REPOSITORY STOCKPILE AREA (OR AS DIRECTED BY OWNER), BMP EARTH BERM BARRIER
-  -BMP INLET PROTECTION

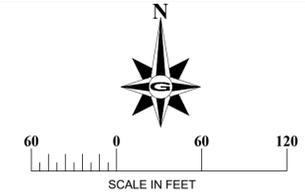
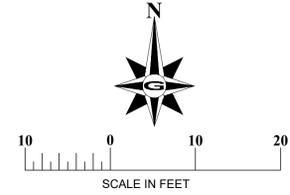
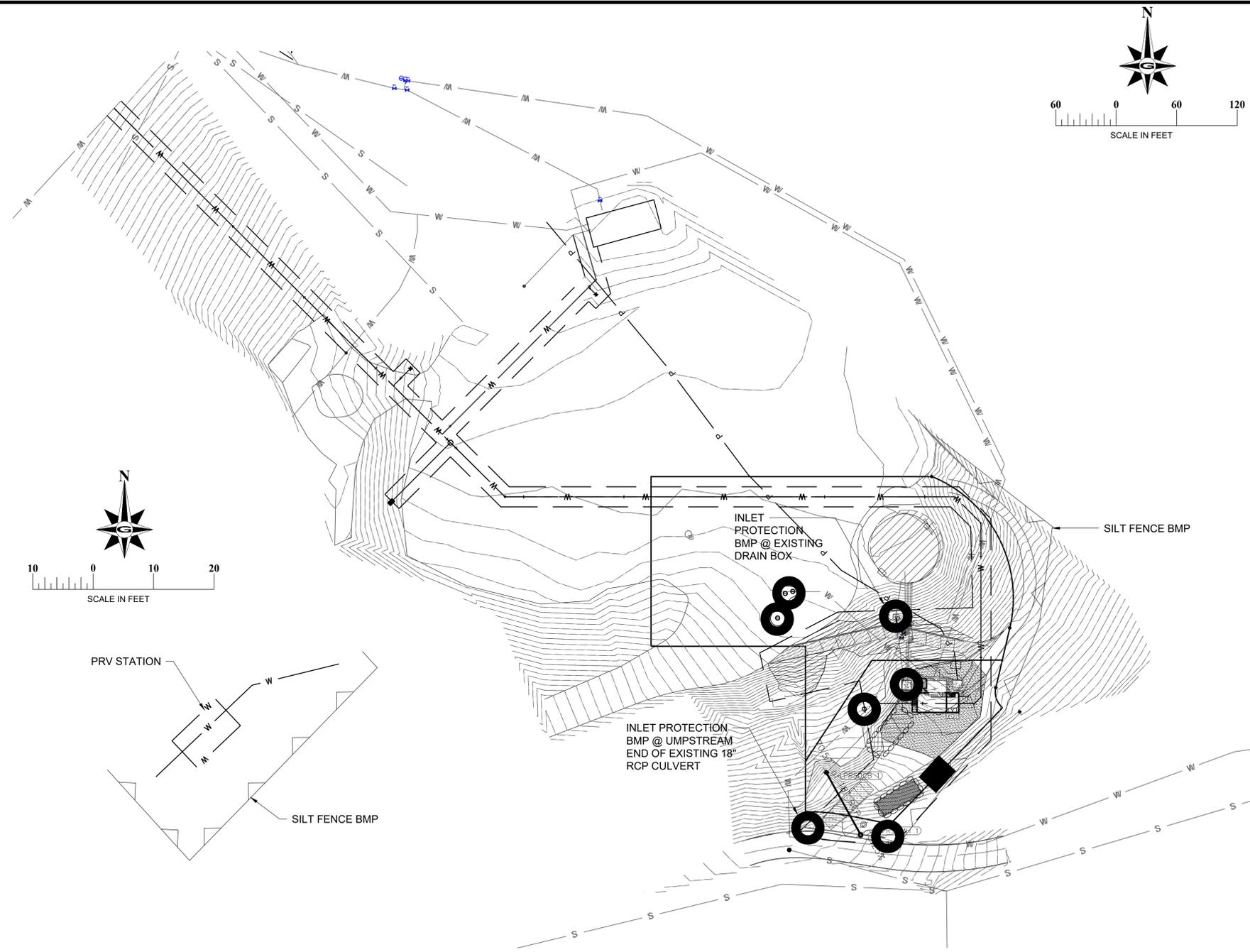
**NOTES:**

- 1 - ALL PROPOSED AND EXISTING INLETS ARE TO BE PROTECTED. SEE BMP INLET PROTECTION ER.102, BMP CATCH BASIN CLEANING, BMP INSPECTION AND MAINTENANCE FOR INLET PROTECTION DETAILS.
  - 2 - EXISTING GROUND COVER = 50% SEE BMP PRESERVATION OF EXISTING VEGETATION.
  - 3 - SEQUENCE OF CONSTRUCTION
- PHASE I**
1. INSTALL STABILIZED CONSTRUCTION ENTRANCES.
  2. CONSTRUCT SILT FENCES ON THE SITE.
  3. CONSTRUCT SEDIMENTATION PONDS WHERE NEEDED PER DISCRETION OF CONTRACTOR. SIZE TO BE DETERMINED BY ENGINEER.
  4. HALT ALL ACTIVITIES AND CONTACT CIVIL ENGINEERING CONSULTANT TO PERFORM INSPECTION OF BMP'S. GENERAL CONTRACTOR SHALL SCHEDULE AND CONDUCT STORM WATER PRE-CONSTRUCTION MEETING WITH ENGINEER AND ALL GROUND DISTURBING CONTRACTORS BEFORE PRECEDING WITH CONSTRUCTION. PREPARE TEMPORARY PARKING AND STORAGE AREAS.
  5. START CONSTRUCTION OF BUILDING PAD AND STRUCTURES. STORM DRAIN WATER DURING CONSTRUCTION WILL BE LOCATED IN RETENTION POND.
  7. BEGIN GRADING THE SITE.
- PHASE II**
1. MAINTAIN SILT FENCE, INLET PROTECTION AND STABILIZED CONSTRUCTION EXITS INSTALLED DURING PHASE #1.
  2. COMPLETE PERMANENT DETENTION POND CONSTRUCTION.
  3. BEGIN CONSTRUCTION OF UNDERGROUND UTILITIES.
  4. INSTALL INLET PROTECTION AT NEW STORM DRAIN INLETS, AS INSTALLED.
  4. INSTALL PERMANENT VEGETATION AND PLANT MATERIALS.
  9. REMOVE ALL TEMPORARY EROSION & SEDIMENTATION CONTROL DEVICES (ONLY AFTER FINAL STABILIZATION HAS BEEN ACHIEVED).
- 4 - DETAILS AND BMP'S ON DRAWINGS ER.102 ARE INCORPORATED INTO THIS PLAN BY REFERENCE.

**LAND DISTURBANCE NOTES**

1. CONTRACTOR SHOULD PERFORM EARTHWORK IN ACCORDANCE WITH CITY LAND DISTURBANCE ORDINANCE, THE CITY STANDARD SPECIFICATIONS, CITY LAND DISTURBANCE DESIGN AND CONSTRUCTION STANDARDS, EROSION, SEDIMENT, REVEGETATION REQUIREMENTS, AND THE DUST CONTROL PLANS REQUIRED BY THE STATE OF UTAH, DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF AIR QUALITY.
2. THE SEQUENCE OF CONSTRUCTION IS TO BE FOLLOWED.
3. SEDIMENTATION BMP'S SHOWN ON THE EROSION CONTROL AND SEDIMENT CONTROL PLANS TO BE INSTALLED WITHIN THE SAME WORKING DAY THE LAND DISTURBANCE OCCURS.
4. DUST CONTROL BMP'S ARE TO BE ON SITE AND IMPLEMENTED AS SOON AS LAND DISTURBANCE OCCURS. THE DUST CONTROL AS REQUIRED BY THE STATE OF UTAH AIR QUALITY PLAN IS TO BE SUBMITTED WITH THE GRADING PLAN. THE DEVELOPER IS RESPONSIBLE FOR CONTROLLING THE DUST PRODUCED AT HIS PROJECT AND SHALL PROVIDE THE NECESSARY MITIGATION TO KEEP THE DUST TO THE ACCEPTABLE LIMITS IDENTIFIED IN THE AIR QUALITY PERMIT OBTAINED FOR THE STATE OF UTAH, DEPARTMENT OF ENVIRONMENTAL QUALITY, AND DIVISION OF AIR QUALITY.
5. ALL AREAS TO BE REVEGETATED ARE TO RECEIVE REVEGETATION BMP'S WITHIN 21 DAYS OF DISTURBANCE.
6. IF THE EXISTING GRADE IS DIFFERENT FROM WHAT IS SHOWN ON THIS GRADING PLAN, STOP WORK AND CONTACT CITY, ENGINEERING DEPARTMENT. WORK IS TO REMAIN STOPPED UNTIL THE CITY ENGINEERING DEPARTMENT PROVIDES A WRITTEN NOTICE TO RESUME WORK.
7. THE PROJECT OWNER IS RESPONSIBLE FOR MAINTAINING THE STREETS, STORM DRAINS, AND CHANNELS, DITCHES AND SWALES FREE FROM DEBRIS, SOIL, MUD, OR OTHER MATERIAL THAT WOULD CAUSE A PUBLIC SAFETY CONCERN, VIOLATE THE CITY UPDES PERMIT, STATE OR FEDERAL LAWS, OR PREVENT THE FACILITY FROM OPERATING.

8. ALL CONCRETE TRUCKS ARE TO USE THE DESIGNATED WASHOUT AREA(S). FAILURE TO COMPLY WILL RESULT IN A WORK STOP AND THE OFFENDER COULD BE GUILTY OF A CLASS C MISDEMEANOR.
9. L.O.D. BARRIERS ARE TO BE IN PLACE AND MAINTAINED UNTIL WRITTEN NOTIFICATION IS RECEIVED FROM THE ENGINEERING DEPARTMENT. THE OWNER IS RESPONSIBLE FOR MAINTAINING L.O.D. BARRIERS.
10. IF DISTURBANCE OCCURS OUTSIDE THE L.O.D. WORK WILL STOP AND REMAIN STOPPED UNTIL THE WRITTEN RESPONSE IS RECEIVED FROM THE COUNTY.
11. THE OWNER IS TO BE RESPONSIBLE FOR ADDITIONAL GRADING INFORMATION AS REQUIRED THROUGHOUT THE REMAINDER OF THE PROJECT.
12. SILT FENCES TO BE INSTALLED AT ALL DOWN GRADE SLOPES AND SHALL BE REQUIRED ON PHASE LINE FOR NON-CONCURRENT CONSTRUCTION.
13. ADDITIONAL CONSTRUCTION ENTRANCES SHALL BE REQUIRED ON PHASE LINE FOR NON-CONCURRENT CONSTRUCTION.



REVISIONS	DATE	BY	COMMENTS

DATE: FEBRUARY 2022  
 DRAWING NAME: ER.101 EROSION CONTROL PLAN  
 DESIGNED/DRAWN BY: JMB/JP  
 CHECKED: [ ] APPROVED: [ ]

1" SCALE MEASURES IF ON FULL SIZE SHEET  
 1/2" SCALE MEASURES IF ON HALF SIZE SHEET

**EROSION CONTROL PLAN**  
 TOP OF MOUNTAIN WATER SYSTEM  
 POWDER MOUNTAIN WATER & SEWER IMPROVEMENT DISTRICT  
 WEBER COUNTY, UTAH

REVISION: **A**  
 PROJ # **POW.019**  
**ER.101**



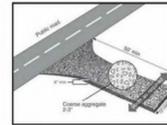
## STABILIZED CONSTRUCTION ENTRANCE

**S-027**  
1 OF 1

### OBJECTIVES

Housekeeping Practices  
Contain Waste  
Minimize Disturbed Areas  
Stabilize Disturbed Areas  
Protect Slopes/Channels  
Control Site Perimeter  
Control Internal Erosion

**DESCRIPTION:**  
A stabilized pad of crushed stone located where construction traffic enters or leaves the site from or to paved surface.



**APPLICATIONS:**  
At any point of ingress or egress at a construction site where adjacent traveled way is paved. Generally applies to sites over 2 acres unless special conditions exist.

### INSTALLATION/APPLICATION CRITERIA:

- Clear and grub area and grade to provide maximum slope of 2%.
- Compact subgrade and place filter fabric if desired (recommended for entrances to remain for more than 9 months).
- Place coarse aggregate, 1 to 2-1/2 inches in size, to a minimum depth of 8 inches.

### LIMITATIONS:

- Requires periodic top dressing with additional stones.
- Should be used in conjunction with street sweeping on adjacent public right-of-way.

### MAINTENANCE:

- Inspect daily for loss of gravel or sediment buildup.
- Inspect adjacent roadway for sediment deposit and clean by sweeping or shoveling.
- Repair entrance and replace gravel as required to maintain control in good working condition.
- Expand stabilized area as required to accommodate traffic and prevent erosion at driveways.

### TARGETED POLLUTANTS:

- Sediment
- Heavy Metals
- Toxic Materials
- Oxygen Demanding Substances
- Oil and Grease
- Floatable Materials
- Bacteria and Viruses



## OUTDOOR STORAGE OF RAW MATERIALS

**WM-008**  
1 OF 1

### OBJECTIVES

Manufacturing  
Material Handling  
Vehicle Maintenance  
Construction  
Commercial Activities  
Roadways  
Waste Containment  
Housekeeping Practices

**DESCRIPTION:**  
Prevent or reduce the discharge of pollutants to stormwater from outdoor materials and product storage areas by enclosing or covering materials, installing secondary containment, and preventing stormwater run-on.



### IMPLEMENTATION

- Protect materials from rainfall, run-on, runoff and wind dispersal:
- Store material indoors.
  - Cover the storage area with a roof.
  - Cover the material with a temporary covering made of polyethylene, polypropylene, or hypalon.
  - Minimize stormwater run-on by enclosing the area or building a berm around the area.
  - Use a "doghouse" for storage of liquid containers.
  - Parking lots or other surfaces near bulk materials should be swept periodically to remove debris blown or washed from storage area.
  - < Install pellet traps at stormwater discharge points where plastic pellets are loaded and unloaded.
  - Keep liquids in a designated area on a paved impervious surface within a secondary containment.
  - Keep outdoor storage containers in good condition.
  - Use berms and curbing.
  - Use catch basin filtration inserts.

### LIMITATIONS:

- Space limitations may preclude storing some materials indoors.
- Some municipalities require that secondary containment areas (regardless of size) be connected to the sanitary sewer, prohibiting any hard connections to the storm drain.
- Storage sheds often must meet building and fire code requirements.

### MAINTENANCE:

Berm and curbing repair and patching.

### TARGETED POLLUTANTS:

- Sediment
- Heavy Metals
- Toxic Materials
- Oxygen Demanding Substances
- Oil and Grease
- Floatable Materials
- Bacteria and Viruses



## DUST CONTROLS

**S-006**  
1 OF 1

### OBJECTIVES

Housekeeping Practices  
Contain Waste  
Minimize Disturbed Areas  
Stabilize Disturbed Areas  
Protect Slopes/Channels  
Control Site Perimeter  
Control Internal Erosion

**DESCRIPTION:**  
Dust control measures are used to stabilize soil from wind erosion, and reduce dust by construction activities.



**APPLICATION:**  
Dust control is useful in any process area, loading and unloading area, material handling areas, and transfer areas where dust is generated. Street sweeping is limited to areas that are paved.

### INSTALLATION/APPLICATION CRITERIA:

- Mechanical dust collection systems are designed according to the size of dust particles and the amount of air to be processed. Manufacturers' recommendations should be followed for installation (as well as the design of the equipment).
- Two kinds of street sweepers are common: brush and vacuum. Vacuum sweepers are more efficient and work best when the area is dry.
- Mechanical equipment should be operated according to the manufacturers' recommendations and should be inspected regularly.

### LIMITATIONS:

- Is generally more expensive than manual systems.
- May be impossible to maintain by plant personnel (the more elaborate equipment).
- Is labor and equipment intensive and may not be effective for all pollutants (street sweepers).

### MAINTENANCE:

If water sprayers are used, dust-contaminated waters should be collected and taken for treatment. Areas will probably need to be resprayed to keep dust from spreading.

### TARGETED POLLUTANTS:

- Sediment
- Heavy Metals
- Toxic Materials
- Oxygen Demanding Substances
- Oil and Grease
- Floatable Materials
- Bacteria and Viruses



## CONTAMINATED OR ERODIABLE SURFACE AREAS

**WM-017**  
1 OF 1

### OBJECTIVES

Manufacturing  
Material Handling  
Vehicle Maintenance  
Construction  
Commercial Activities  
Roadways  
Waste Containment  
Housekeeping Practices

**DESCRIPTION:**  
Prevent or reduce the discharge of pollutants to stormwater from contaminated or erodible surface areas by leaving as much vegetation on-site as possible, minimizing soil exposure time, stabilizing exposed soils, and preventing stormwater runoff and runoff.



### IMPLEMENTATION

This BMP addresses soils which are not so contaminated as to exceed criteria but the soil is eroding and carrying pollutants off in the stormwater.

Contaminated or erodible surface areas can be controlled by:

- Preservation of natural vegetation,
- Re-vegetation,
- Chemical stabilization,
- Removal of contaminated soils, or
- Geosynthetics.

### LIMITATIONS:

- Disadvantages of preserving natural vegetation or re-vegetating include:
  - Requires substantial planning to preserve and maintain the existing vegetation.
  - May not be cost-effective with high land costs.
  - Lack of rainfall and/or poor soils may limit the success of re-vegetated areas.
- Disadvantages of chemical stabilization include:
  - Creation of impervious surfaces.
  - May cause harmful effects on water quality.
  - Is usually more expensive than vegetative cover.

### MAINTENANCE:

Maintenance should be minimal, except if irrigation of vegetation is necessary.

### TARGETED POLLUTANTS:

- Sediment
- Heavy Metals
- Toxic Materials
- Oxygen Demanding Substances
- Oil and Grease
- Floatable Materials
- Bacteria and Viruses



## ILLEGAL DUMPING CONTROLS

**WM-021**  
1 OF 1

### OBJECTIVES

New Development  
Residential  
Commercial Activities  
Industrial Activities  
Municipal Facilities  
Illegal Discharges

**DESCRIPTION:**  
Implement measures to detect, correct, and enforce against illegal dumping of pollutants on streets, into the storm drain system, and into creeks. Substance illegally dumped on streets, into the storm drain system, and into creeks includes paints, used oil and other automotive fluids, construction debris, chemicals, fresh concrete, leaves, grass clippings, and pet wastes. All of these wastes can cause storm water and receiving water quality problems as well as clog the storm drain system.



### IMPLEMENTATION

- One of the keys to success is increasing the general public's awareness of the problem and to at least identify the incident, if not correct it. There are a number of ways of accomplishing this:
- Train municipal staff from all departments to recognize and report incidents.
  - Deputize municipal staff that may come into contact with illegal dumping with the authority to write illegal dumping tickets for offenders caught in the act.
  - Educate the public.
  - Provide the public with a mechanism for reporting such as a hot line.

Establish system for tracking incidents which will identify:

- Illegal dumping "hot spots".
- Types and quantities (in some cases) of wastes.
- Patterns in time of occurrence (time of day/night, month, or year).
- Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accident/spills), and
- Responsible parties.
- A tracking system also helps manage the program by indicating trends, and identifying who, what, when, and where efforts should be concentrated.

### LIMITATIONS

The elimination of illegal dumping is dependent on the availability, convenience, and cost of alternative means of disposal.

### TARGETED POLLUTANTS:

- Sediment
- Heavy Metals
- Toxic Materials
- Oxygen Demanding Substances
- Oil and Grease
- Floatable Materials
- Bacteria and Viruses



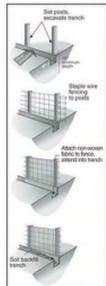
## SILT FENCE

**S-026**  
1 OF 1

### OBJECTIVES

Housekeeping Practices  
Contain Waste  
Minimize Disturbed Areas  
Stabilize Disturbed Areas  
Protect Slopes/Channels  
Control Site Perimeter  
Control Internal Erosion

**DESCRIPTION:**  
A temporary sediment barrier consisting of entrenched filter fabric stretched across and secured to supporting posts.



### APPLICATION:

- Perimeter control: place barrier at down gradient limits of disturbance.
- Sediment barrier: place barrier at toe of slope or soil stockpile.
- Protection of existing waterways: place barrier at top of stream bank.
- Inlet protection: place fence surrounding catch basins.

### INSTALLATION/APPLICATION CRITERIA:

- Place posts 6 feet apart on center along contour (or use preassembled unit) and drive 2 feet minimum into ground. Excavate an anchor trench immediately up gradient of posts.
- Secure wire mesh (14 gage min. With 6 inch openings) 1 up slope side of posts. Attach with heavy duty 1 inch long wire staples, tie wires off hog rings.
- Cut fabric to required width, unroll along length of barrier and drape over barrier.
- Secure fabric to mesh with twine, staples, or similar, with trailing edge extending into anchor trench.
- Backfill trench over filter fabric to anchor.

### LIMITATIONS:

- Recommended maximum drainage area of 0.5 acre per 100 feet of fence
- Recommended maximum up gradient slope length of 150 feet
- Recommended maximum uphill grade of 2:1 (50%)
- Recommended maximum flow rate of 0.5 cfs
- Ponding should not be allowed behind fence

### MAINTENANCE:

- Inspect immediately after any rainfall and at least daily during prolonged rainfall.
- Look for runoff bypassing ends of barriers or undercutting barriers.
- Repair or replace damaged areas of the barrier and remove accumulated sediment.
- Re-anchor fence as necessary to prevent shortcutting.
- Remove accumulated sediment when it reaches 1/2 the height of the fence.

### TARGETED POLLUTANTS:

- Sediment
- Heavy Metals
- Toxic Materials
- Oxygen Demanding Substances
- Oil and Grease
- Floatable Materials
- Bacteria and Viruses



## OUTDOOR LOADING/UNLOADING MATERIALS

**WM-007**  
1 OF 1

### OBJECTIVES

Manufacturing  
Material Handling  
Vehicle Maintenance  
Construction  
Commercial Activities  
Roadways  
Waste Containment  
Housekeeping Practices

**DESCRIPTION:**  
Prevent or reduce the discharge of pollutants to stormwater from outdoor loading/unloading of materials.



### IMPLEMENTATION

- Park tank trucks or delivery vehicles so that spills or leaks can be contained.
- Cover the loading/unloading docks to reduce exposure of materials to rain.
- A seal or door skirt between trailer and building can also prevent exposure to rain.
- Design loading/unloading area to prevent stormwater run-on: grade/berm and position roof downspouts to direct stormwater away from loading/unloading areas.
- Contain leaks during transfer.
- Use drip pans under hoses.
- Make sure fork lift operators are properly trained.
- Train employees for spill containment and cleanup.

### LIMITATIONS:

- Space and time limitations may preclude all transfers from being performed indoors or under cover.
- It may not be possible to conduct transfers only during dry weather.

### MAINTENANCE:

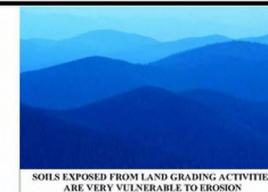
- Conduct regular inspections and make repairs as necessary. The frequency of repairs will depend on the age of the facility.
- Check loading and unloading equipment regularly for leaks: valves, pumps, flanges, and connections.

### TARGETED POLLUTANTS:

- Sediment
- Heavy Metals
- Toxic Materials
- Oxygen Demanding Substances
- Oil and Grease
- Floatable Materials
- Bacteria and Viruses



## BMP: GRADING PRACTICES



SOILS EXPOSED FROM LAND GRADING ACTIVITIES ARE VERY VULNERABLE TO EROSION

### DESCRIPTION:

CONTROL SOIL EROSION BY MINIMIZING THE EXPOSURE OF BARE SOIL TO EROSION FORCES. THIS IS DONE BY:

- Limiting the amount of land disturbed at one time in preparation for construction.
- Limiting the amount of time between the disturbance of soil and protection or stabilization of disturbed soils.
- Using grading practices to protect exposed soils susceptible to storm water runoff. Related practices include construction sequencing, preservation of existing vegetation, erosion control practices and sediment control practices.

### APPROACH:

- Limit the area of disturbance to those areas requiring grading. This preserves existing vegetation and reduces the vulnerability of soil to erosion.
- Based on erosion potential and sediment control measures on the site, establish what areas are to be graded at one time.
- An undisturbed buffer zone containing vegetation at the lowest elevation of a construction site can reduce the transport of sediment off site.
- Initiate soil protection measures during the course of work to minimize the length of time soils exposed to erosive forces.
- Conduct work in stages so that construction or soil stabilization occurs promptly after disturbance of soil.
- Establish a schedule governing the stabilization of disturbed slopes, both in terms of passage of time since commencement and completion of disturbance and in terms of planting season.
- Leaving the surface of the disturbed soil graded in a roughened condition (NOT SMOOTH) can reduce the quantity and velocity of storm water runoff.
- Prevent storm water runoff from running onto steep slopes from above.
- Avoid long, steep cut or fill slopes that allow runoff water of sufficient quantity or velocity to cut into and erode the slope.

### LIMITATIONS:

The specific approach to grading on a particular site depends on the conditions of the site and surrounding land; engineering judgment is required to design the approach best suited for each site.

### MAINTENANCE:

Practices may need to vary from the approved plan if erosion problems appear when storm water runoff occurs.

### OBJECTIVES

- Housekeeping Practices
- Contain Waste
- Minimize Disturbed Areas
- Stabilize Disturbed Areas
- Protect Slopes/Channels
- Control Site Perimeter
- Control Internal Erosion

### TARGETED POLLUTANTS:

- Sediment
- Nutrients
- Heavy Metals
- Toxic Materials
- Oxygen Demanding Substances
- Oil & Grease
- Floatable Materials
- Bacteria & Viruses
- High Impact
- Medium Impact
- Low or Unknown Impact

### IMPLEMENTATION REQUIRED:

- Capital Costs
- O&M Costs
- Maintenance
- Training
- High
- Medium
- Low

**BMP DETAILS**  
TOP OF MOUNTAIN WATER SYSTEM  
POWDER MOUNTAIN WATER & SEWER IMPROVEMENT DISTRICT  
WEBER COUNTY, UTAH

REVISION: **A**  
PROJ # **POW.019**  
**ER.103**

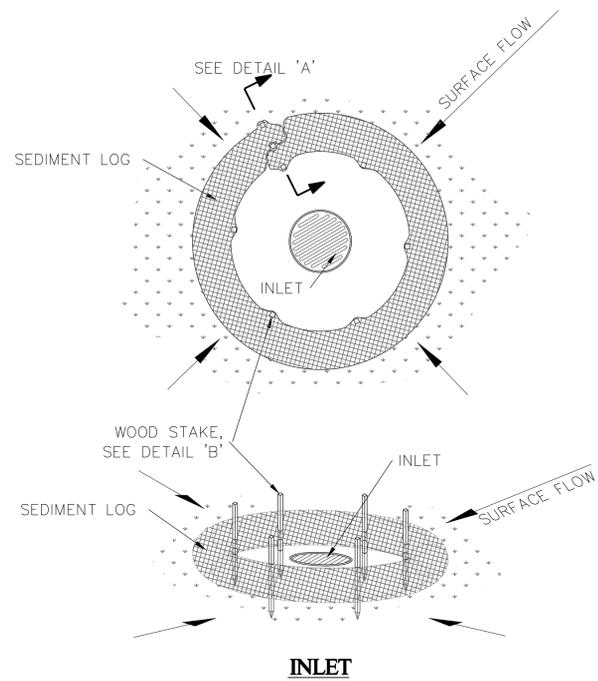


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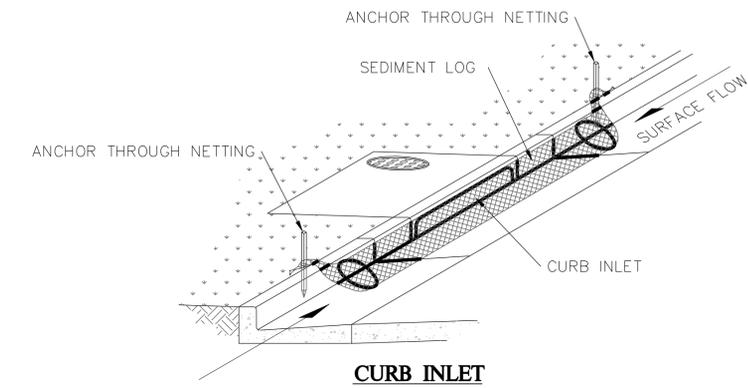
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DRAWING NAME: ER.103 BMP DETAILS  
DESIGNED/DRAWN BY: JMB/BP  
CHECKED: APPROVED: 0

1" SCALE MEASURES IF ON FULL SIZE SHEET  
ADJUST FOR HALF SIZE SHEETS

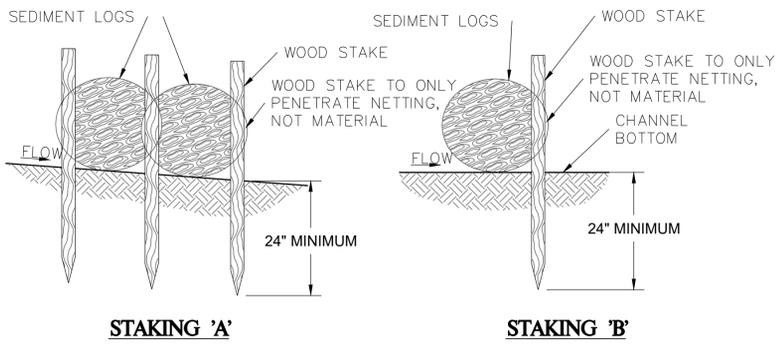




**INLET PROTECTION**  
SCALE: NTS



**CURB INLET**



**STAKING 'A'**

**STAKING 'B'**

**BMP DETAILS**

TOP OF MOUNTAIN WATER SYSTEM  
POWDER MOUNTAIN WATER & SEWER IMPROVEMENT DISTRICT  
WEBER COUNTY, UTAH

REVISION: **A**

PROJ. # **POW.019**

**ER.105**

DATE	REVISIONS
FEBRUARY 2022	
ER.105	
BMP DETAILS	
JM/BP	

CHECKED: \_\_\_\_\_ APPROVED: \_\_\_\_\_

DATE: FEBRUARY 2022  
DRAWING NAME: ER.105  
BMP DETAILS  
DESIGNED/DRAWN BY: JM/BP  
CHECKED: \_\_\_\_\_ APPROVED: \_\_\_\_\_

1" SCALE MEASURES IF ON FULL SIZE SHEET  
# ADJUST FOR HALF SIZE SHEETS

