HYRUM CITY
Established 1860
60 West Main Street
Hyrum, Utah 84319
Ph. (435) 245-6033
www.hyrumcity.gov

Staff Evaluation
First Review

Application: Jeff Hinds, Enbridge Gas District Regulator Station and High-Pressure Gas Feeder Line – Seeking Site Plan Approval for upgrades to the District Regulator Station located at 388 West 300 North, and high-pressure gas feeder line from the District Regulation Station to 4650 South 1200 West. Application #25-030.

Application Number:	**25-030**
Preparation Date:	February 10, 2026
Applicant Name:	Jeff Hinds, Construction Manger
Property Owner:	Questar Gas Company
Property Address:	388 West 300 North
Parcel Number:	01-177-0002
Parcel Area:	0.33 Acres
Planning Commission:	**February 12, 2026**
Commission Role:	Recommending Body to City Council
Application Type:	Site Plan Approval
Zoning District:	Light Manufacturing Zone M-1
Permitted Use:	Public structures (i.e. courts, city hall, fire stations, public works, electrical, gas, and telephone transmission lines and stations, etc.)

Application Overview:
Hyrum City received a Site Plan Approval Application and Excavation and Right of Way Encroachment Application for Enbridge Gas to install a high-pressure feeder line from 388 West 300 North to 4650 South 1200 West to accommodate needs for the JBS Hyrum Beef Plant. The project will require construction work within the public right of way to the north boundary of the Hyrum City limits, cross the railroad switch yard, and continue north to a new station located at the JBS facility in Cache County limits. The length of the trench will be approximately 2000 lineal feet and 900 linear feet of borings.

Currently, the existing Enbridge facility located at 388 North 400 West is non-compliant with Hyrum City Code and the following corrections need to be completed prior to the issuance of site plan approval:

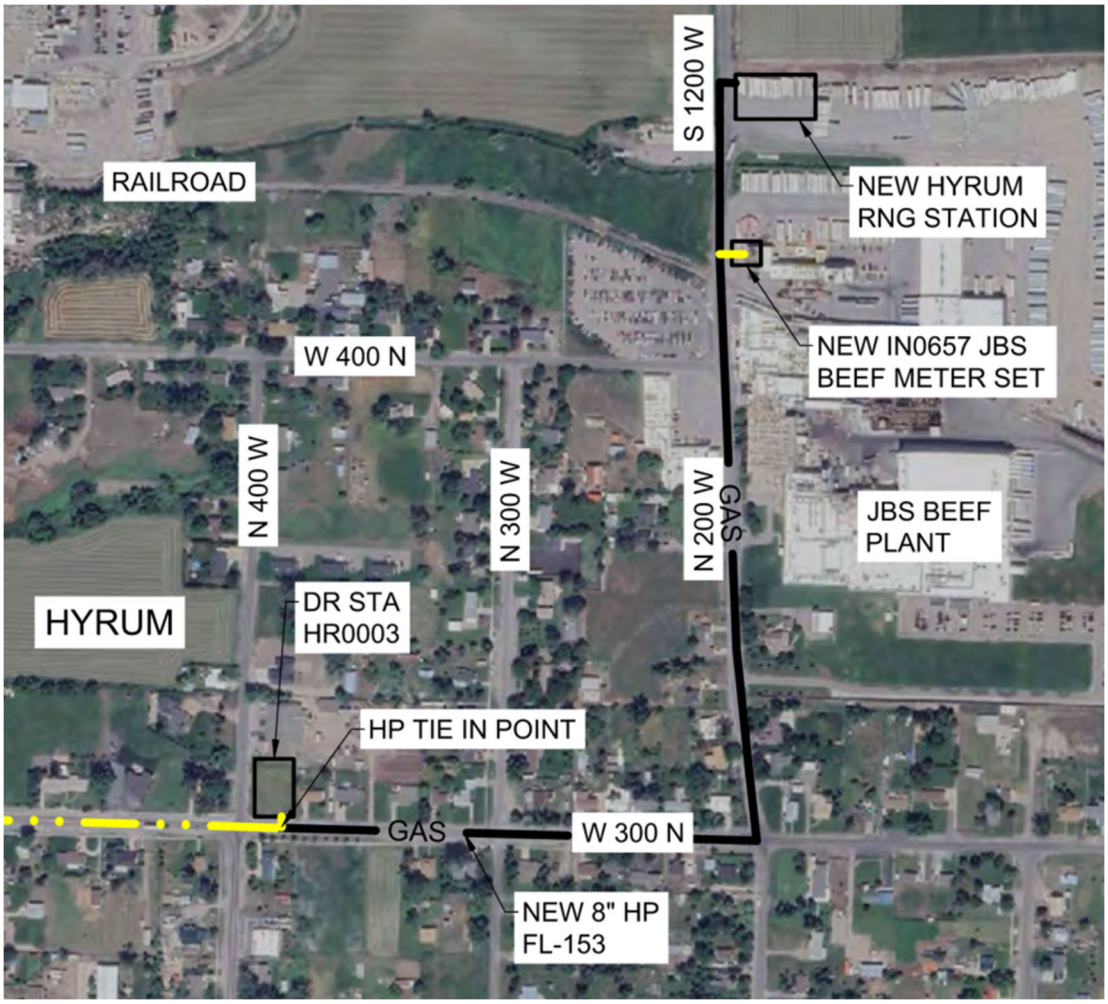
1. Demonstrate noise levels at the direct regulator station are in compliance Hyrum City Code 9.50 Noise Disturbance.

2. The existing Fire Hydrant onsite will need to be raised in elevation.

3. Landscaping on the site from the previous site plan approval has died and needs to be replaced.

The application will require Hyrum City Staff Review, Planning Commission Recommendation to City Council, Pre-Construction Meeting, and Hyrum City Project Management, Inspections and Construction Observations.

Project Vicinity Map:



Staff Comments:

Planning, Zoning and Building Department:

1. Contractor shall coordinate with regulations of Hyrum City Code 12.12 Excavations.
2. Contractor shall coordinate with regulations of Hyrum City Code 12.24 Excavation Permit.
3. Contractor shall coordinate with regulations of Hyrum City Code Title 13 Public Services.
4. Contractor shall coordinate with regulations of Hyrum City Construction Standards.
5. Staff recommends the City Council not approve the site plan for the direct regulator station located at 388 West 300 North until the following corrections are completed for compliance with Hyrum City Code:
    a. Demonstrate noise levels at the direct regulator station are in compliance Hyrum City Code 9.50 Noise Disturbance.
    b. The existing Fire Hydrant onsite will need to be raised in elevation.
    c. Landscaping on the site from the previous site plan approval has died and needs to be replaced.
6. Applicant provided a letter regarding insurance. An insurance certificate needs to be provided as regulated by Hyrum City Code 12.24.130 Insurance Requirements.
7. All city utilities need to be backfilled with sand before applying flowable fill in trenches.
8. Public outreach for all construction activities shall be conducted with affected property owners in an informative and timely manner.
9. A Pre-construction meeting will be required following the City Council's approval of the construction drawings.

10. As-build documents will need to be provided to the city after completion of the project.

Engineering:

1. Currently under engineering review and comments will be provided to the City Council.

Power Department:

1. Be advised overhead power lines exist in the public right of way.
2. Work cautiously around underground power shown on Sheet 3 of 12 on the feeder line drawings.

Sewer Department:

1. Sewer lateral locations and top of lateral elevations need to be illustrated on the high-pressure feeder line construction documents prior to site plan approval.
2. Before and After completion sewer main CCTVs need to be provided to the city.
3. Sheet 7 of 12 on the feeder line drawings shows a 12'-0" offset dimension from sewer main. The sewer does not exist at this location.

Water/Streets Department:

1. Water and Irrigation lateral and main line locations and top elevations need to be illustrated on the high-pressure feeder line construction documents prior to site plan approval.
2. Need to provide a VMS traffic board entering Hyrum City on Highway 101 during the duration of the project.

PLANNING COMMISSION RESPONSIBILITY:

1. The Planning Commission should have a thorough discussion of the site plan, staff comments, and specifying conditions and requirements for approval.

STAFF RECOMMENDATION:

1. Staff recommends the Planning Commission make a motion specifying conditions and requirements, and staff comments to the City Council.

STIPULATIONS:

1. The City Council may approve, disapprove, approve with additional conditions and requirements, or require the requestor to return to the Planning Commission with revisions; or require the applicant to return revisions to the City Council.

FINDINGS OF FACT:

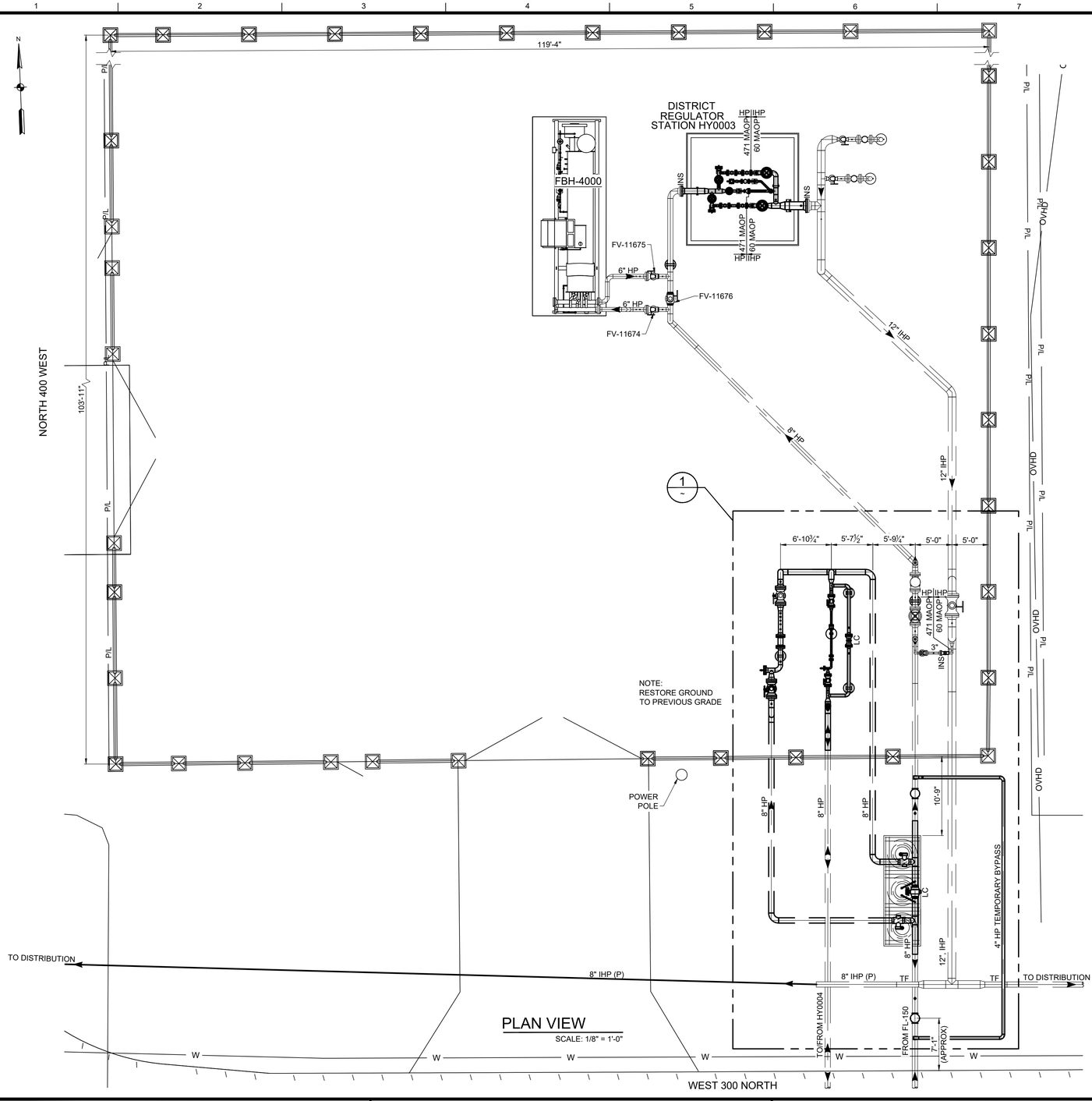
1. Public structures (i.e. courts, city hall, fire stations, public works, electrical, gas, and telephone transmission lines and stations, etc.)

Attachments:

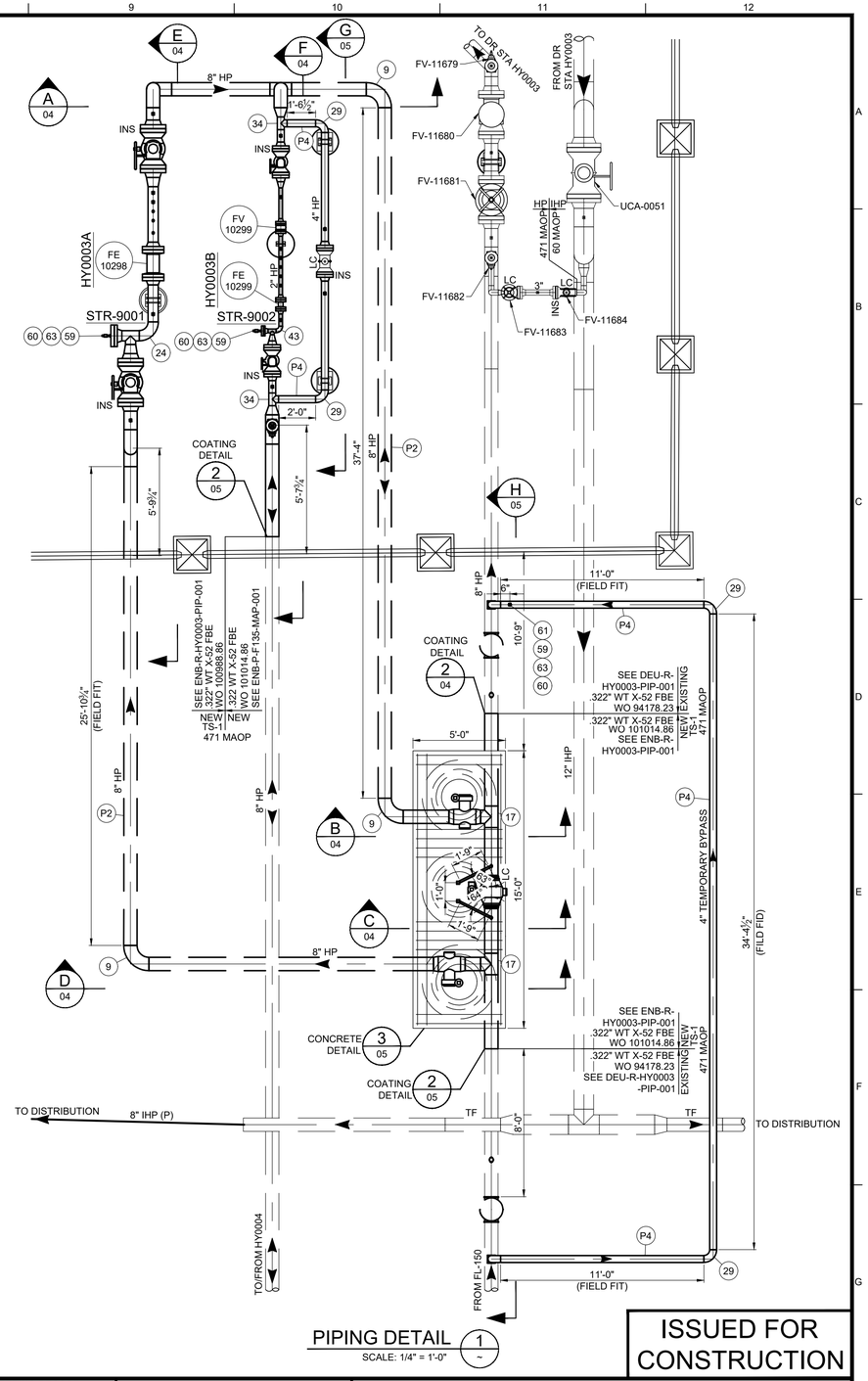
A. District Regulator Station Site Plans (4 Pages)
B. Feeder Line Site Plans (30 Pages)
C. Traffic Control Plans (8 Pages)

Submittals Not Attached On Hyrum City Record Available Upon Request:

A. Storm Water Pollution Prevention Plan (114 Pages)
B. Site Plan Application
C. Excavation and Right-of-Way Encroachment Application



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



PIPING DETAIL 1 ~
SCALE: 1/4" = 1'-0"

ISSUED FOR CONSTRUCTION

REFERENCE DRAWINGS		
DRAWING NUMBER	REV	DRAWING DESCRIPTION
ENB-P-F153-MAP-001	0	FL-153 ALIGNMENT TO HYRUM RNG FACILITY
ENB-R-HY0003-PID-001	0	PIPING AND INSTRUMENTATION DIAGRAM

WORK ORDERS	
WO NUMBER	DESCRIPTION
101014.86	FL-153 TIE IN LOCATION

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
0	ISSUED FOR CONSTRUCTION	10/16/2025	KJK	IAT

ENGINEERING RECORD
DRAWN BY: K KEMPLE
CHECKED BY: I TORRES
PROJECT ENGR: A ASPLUND
SURVEYOR: E CLEMENCE
ENGR MNGR: W RADFORD
CONSTR MNGR: D FRANCIS
MEAS & CTRLS: J ANDERSON
AUTOM ENGR: K YAGI

ENBRIDGE

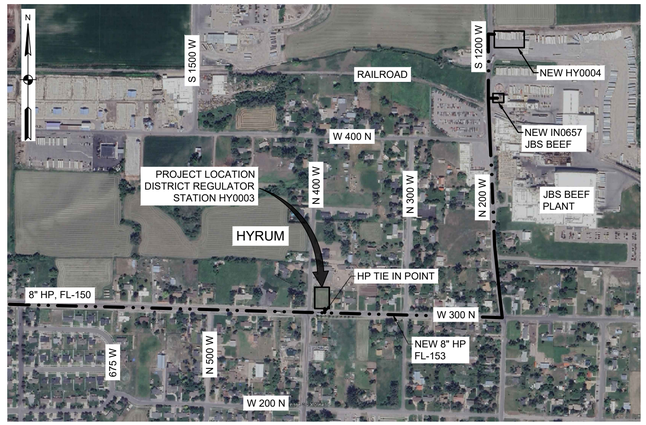
SECTION: 5 T 10N R 1E
ELEVATION: 4632'
LAT: 41.64079 LONG: -111.86568
SCALE: AS SHOWN

LINE NUMBER:
FACILITY: FL- 150 & 153
TITLE: DISTRICT REGULATOR STATION HY0003
DESCRIPTION: BLOCK VALVE AND METER RUNS (HY0003A & HY0003B)
ADDRESS: PLAN VIEW AND PIPING DETAIL
300 NORTH 400 WEST

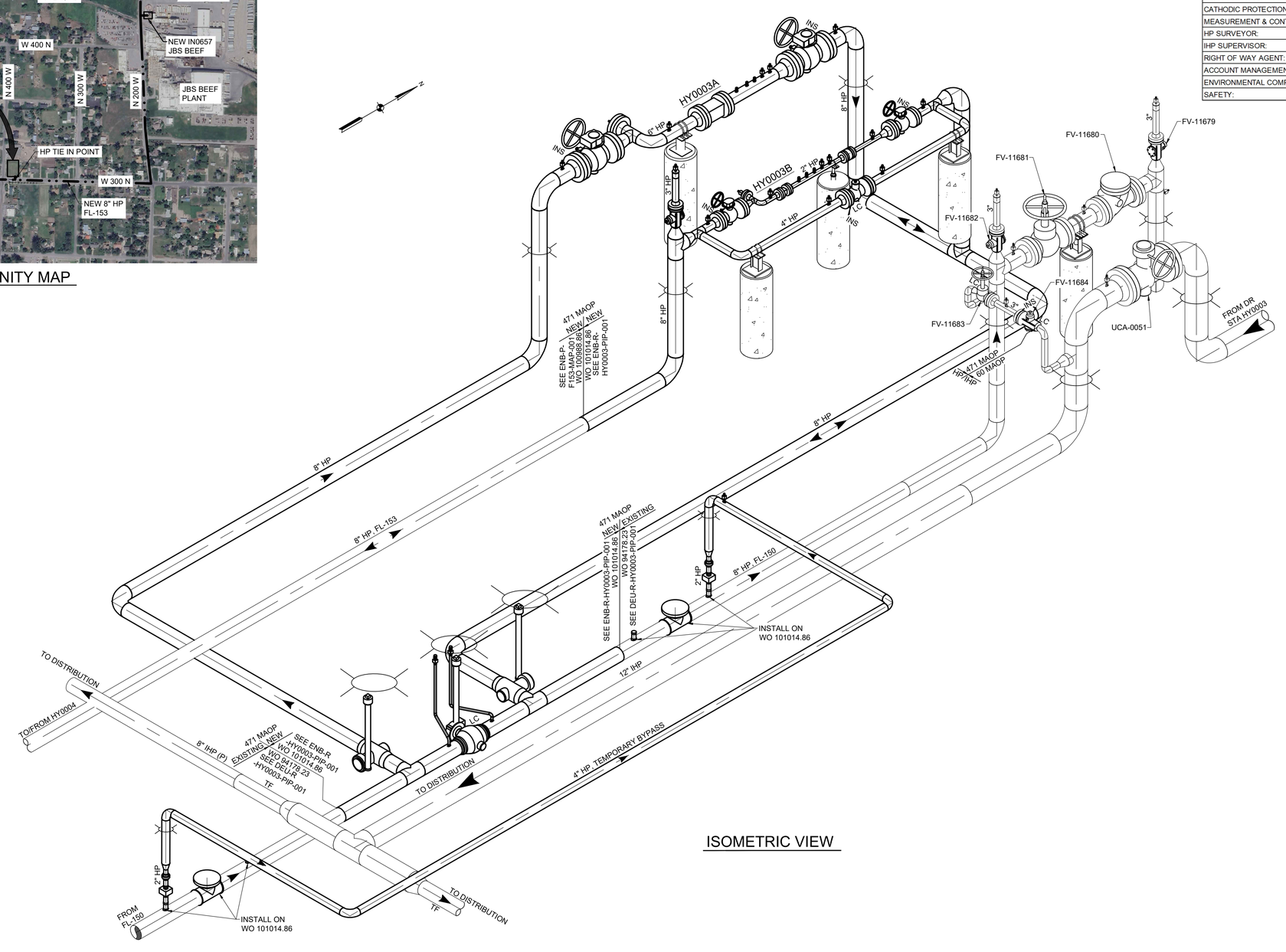
CITY	COUNTY	STATE
HYRUM	CASHE	UTAH

DRAWING NUMBER	SHEET	REVISION
ENB-R-HY0003-PIP-001	3 OF 5	0

ENB-R-HY0003-PIP-001.dwg - 10/14/2025 - 11:34am
ENBRIDGE GAS_ANSI_D



VICINITY MAP



ISOMETRIC VIEW

PROJECT CONTACTS

PROJECT MANAGER:	ANDREW ASPLUND	(801) 694-3871
PROJECT ENGINEER:	ANDREW ASPLUND	(801) 694-3871
CATHODIC PROTECTION:	KENNETH WINN	(801) 310-3241
MEASUREMENT & CONTROLS:	JR SHARP	(801) 209-8126
HP SURVEYOR:	ENOCH CLEMENCE	(801) 793-7950
IHP SUPERVISOR:	ERIC FUHRIMAN (NORTHERN - LOGAN)	(435) 881-0805
RIGHT OF WAY AGENT:	CAROLINE KING	(385) 499-0998
ACCOUNT MANAGEMENT / BUSINESS DEVELOPMENT:	SHELLY FOUTIN	(801) 201-6779
ENVIRONMENTAL COMPLIANCE:	STEPHAN RYDER	(330) 813-8805
SAFETY:	CARRIE CHRISTOFERSON	(385) 910-7749

NOTES

(ALL NOTES MAY OR MAY NOT PERTAIN TO THIS DRAWING)

1. BOLD LINES AND/OR CLOUDS REPRESENT NEW PIPING.
2. ℞ IDENTIFIES GUIDE BARRED TEES.
3. ANY MATERIAL SUBSTITUTION OR FIELD DESIGN CHANGES REQUIRE ENGINEERING APPROVAL.
4. SEE SPECIFICATION 9-00-01 FOR MATERIAL NOTE NUMBERS LISTED.
5. LOCATE ALL UTILITIES PRIOR TO CONSTRUCTION.
6. CORROSION CONTROL: BURIED FABRICATION PIPING SHALL BE CLEANED AND COATED PER SP 2-13-10. THE RECOMMENDED FIELD APPLIED COATING FOR BURIED FBE PIPING IS 2-PART EPOXY AND FOR BURIED ARO PIPING POWERCRETE J APPLIED COATING. COATING TRANSITIONS ARE TO BE APPLIED PER ENB-TYP-GEN-PIP-001. SOIL TO AIR INTERFACES (TRANSITIONS FROM BELOW TO ABOVE GROUND) REQUIRE AN OVERCOAT OF TRENTON WAX TAPE NUMBER 2 APPLIED PER SP 2-13-11. ALL BURIED PIPING TO BE CATHODICALLY PROTECTED WITHIN ONE YEAR OF INSTALLATION. ABOVE GROUND PIPING IS TO BE COATED PER SP 2-13-11. CONSULT CORROSION ENGINEERING FOR PIPELINE COATING EQUIVALENTS.
7. FIELD VERIFY WALL THICKNESS AT ALL TIE-IN LOCATIONS.
8. ALL VALVES MUST HAVE APPROPRIATE LOCKING DEVICES.
9. BALL VALVES - REMOVE ALL MANUFACTURER VENT PLUGS AND REPLACE WITH SMALL BALL VALVES.
10. ALL CHECK VALVES TO BE VENTED.
11. INSULATE GAUGE AND CONTROL LINES, RELIEF STACK, SUPPORT BRACKETS, ETC.
12. ENSURE INSULATION POINTS ARE NOT SHORTED /BYPASSED THROUGH FUEL GAS PIPING, ELECTRICAL CONDUIT, ETC. THAT ARE ATTACHED TO THE PIPE SUPPORTS.
13. ALL PIPE SHALL HAVE MILL TEST REPORTS (MTR'S) AS DEFINED WITHIN STANDARD PRACTICE 3-95-01.
14. THE FORMULA USED TO CALCULATE THE MAWP FOR ALL STEEL PIPE AND NON-RATED FITTINGS IS P=(2SI/D) x F x E x T, WHERE F=0.5 FOR A CLASS 3 LOCATION, E=1, AND T=1.
15. 2" IN SERVICE FILLET WELDS SHALL RECEIVE 100% NDE.
16. PIPE IS DESIGNED TO WITHSTAND ANTICIPATED EXTERNAL PRESSURES AND LOADS FOLLOWING SP 1-01-02.

Blue Stakes of UTAH 811 Bluestakes.org

CALL THREE BUSINESS DAYS BEFORE YOU DIG TO HAVE UTILITIES LOCATED 811 OR 1-800-662-4111

ISSUED FOR CONSTRUCTION

REFERENCE DRAWINGS		
DRAWING NUMBER	REV	DRAWING DESCRIPTION
ENB-P-F153-MAP-001	0	FL-153 ALIGNMENT TO HYRUM RNG FACILITY
ENB-R-HY0003-PID-001	0	PIPING AND INSTRUMENTATION DIAGRAM

WORK ORDERS	
WO NUMBER	DESCRIPTION
101014.86	FL-153 TIE IN LOCATION

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
0	ISSUED FOR CONSTRUCTION	10/16/2025	KJK	IAT

ENGINEERING RECORD
DRAWN BY: K KEMPLE
CHECKED BY: I TORRES
PROJECT ENGR: A ASPLUND
SURVEYOR: E CLEMENCE
ENGR MNGR: W RADFORD
CONSTR MNGR: D FRANCIS
MEAS & CTRLS: J ANDERSON
AUTOM ENGR: K YAGI

ENBRIDGE

SECTION: 5 T10N R 1E
ELEVATION: 4632'
LAT: 41.64079 LONG: -111.86568
SCALE: NONE

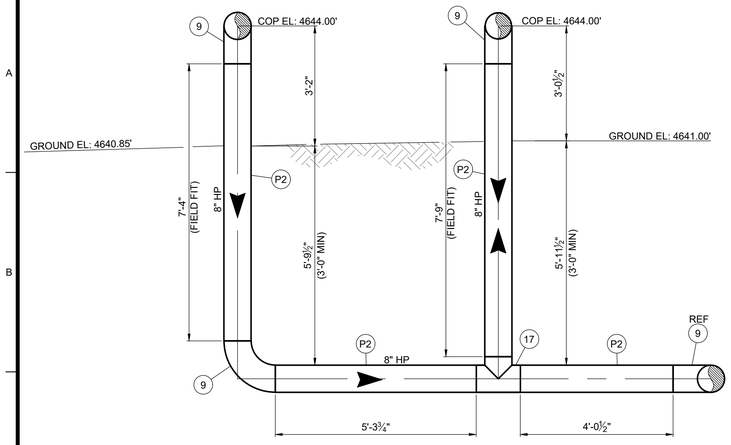
LINE NUMBER: FL- 150 & 153
FACILITY: DISTRICT REGULATOR STATION HY0003
TITLE: BLOCK VALVE AND METER RUNS (HY0003A & HY0003B)
DESCRIPTION: VICINITY MAP AND ISOMETRIC VIEW
ADDRESS: 300 NORTH 400 WEST

CITY	COUNTY	STATE
HYRUM	CASHE	UTAH

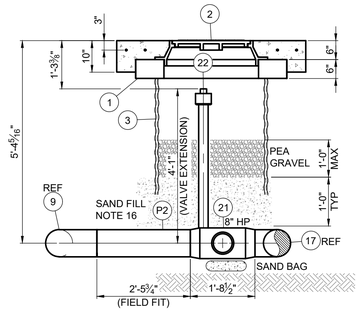
DRAWING NUMBER	SHEET	REVISION
ENB-R-HY0003-PIP-001	1 OF 5	0

ENB-R-HY0003-PIP-001.dwg - 10/3/2025 - 01:05pm

ENBRIDGE GAS, ANSI D



SECTION A 03



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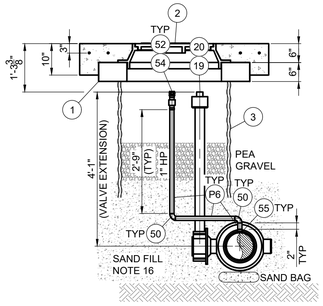
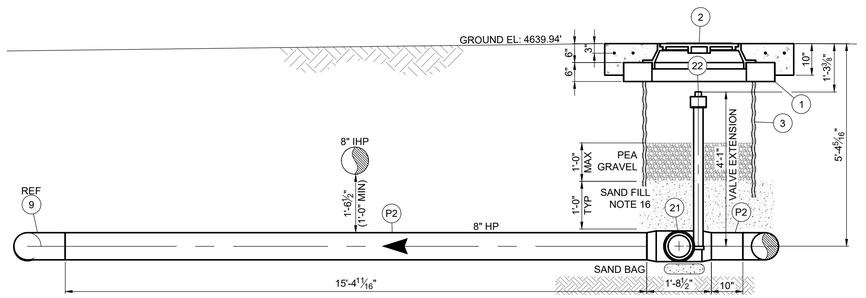
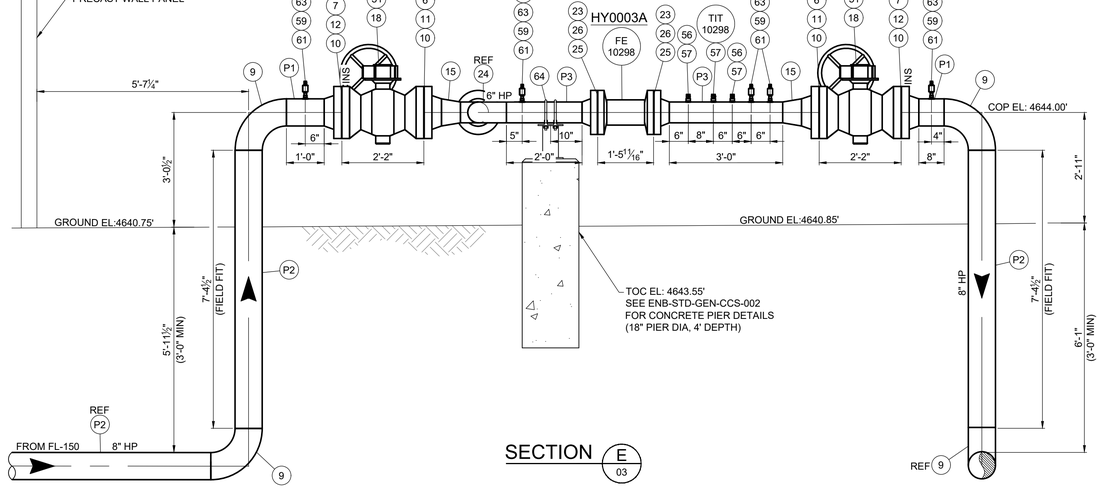


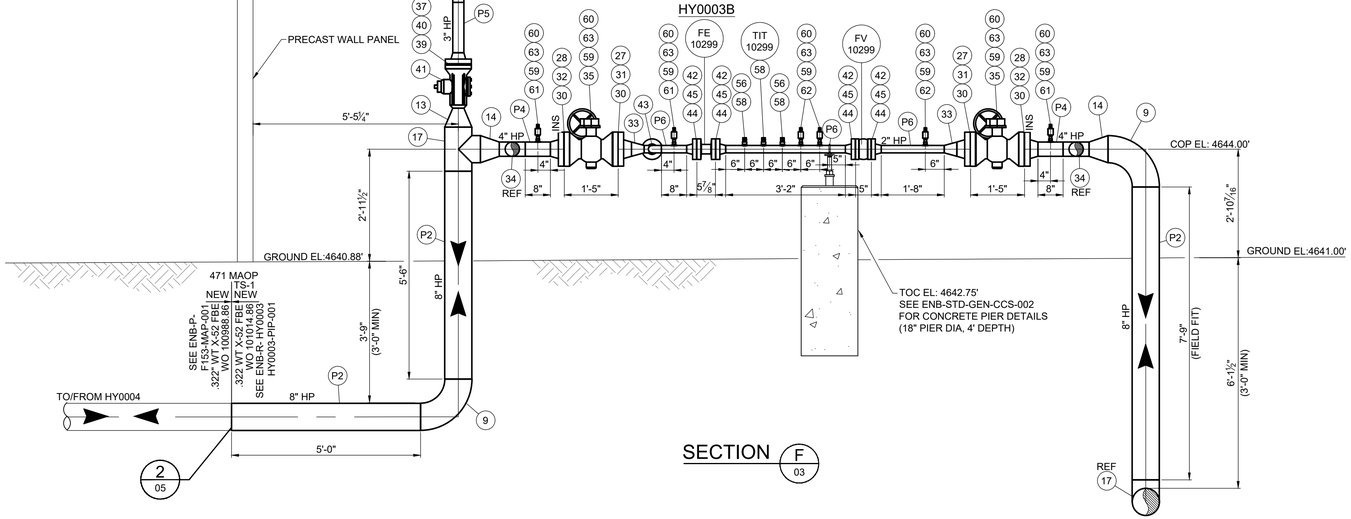
SECTION C 03



SECTION D 03



SECTION E 03



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SECTION F 03

ISSUED FOR CONSTRUCTION

REFERENCE DRAWINGS		
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ENB-P-F153-MAP-001	0	FL-153 ALIGNMENT TO HYRUM RNG FACILITY
ENB-R-HY0003-PID-001	0	PIPING AND INSTRUMENTATION DIAGRAM
ENB-STD-GEN-CCS-002	3	E-Z LINE PIPE SUPPORTS FIGURE "F" W/I-ROD HEAD

WORK ORDERS	
WO NUMBER	DESCRIPTION
101014.86	FL-153 TIE IN LOCATION

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
0	ISSUED FOR CONSTRUCTION	10/16/2025	KJK	IAT

ENGINEERING RECORD
DRAWN BY: K KEMPLE
CHECKED BY: I TORRES
PROJECT ENGR: A ASPLUND
SURVEYOR: E CLEMENCE
ENGR MNGR: W RADFORD
CONSTR MNGR: D FRANCIS
MEAS & CTRLS: J ANDERSON
AUTOM ENGR: K YAGI

ENBRIDGE

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

LINE NUMBER:	FL- 150 & 153
FACILITY:	DISTRICT REGULATOR STATION HY0003
TITLE:	BLOCK VALVE AND METER RUNS (HY0003A & HY0003B)
DESCRIPTION:	SECTIONS AND DETAILS
ADDRESS:	300 NORTH 400 WEST

CITY	COUNTY	STATE
HYRUM	CASHE	UTAH

DRAWING NUMBER	SHEET	REVISION
ENB-R-HY0003-PIP-001	4 OF 5	0

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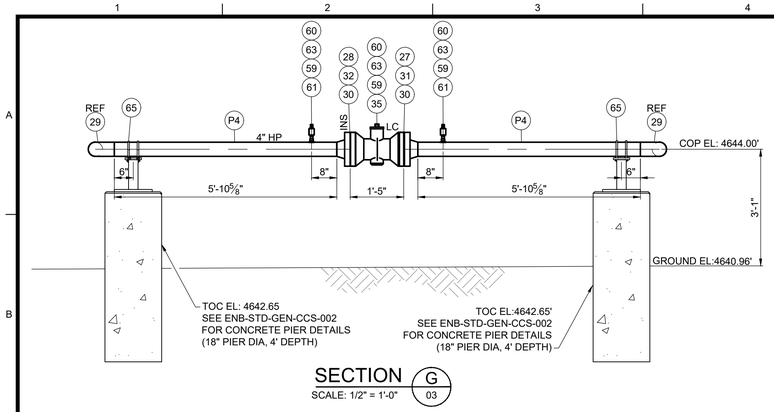

SECTION G 03
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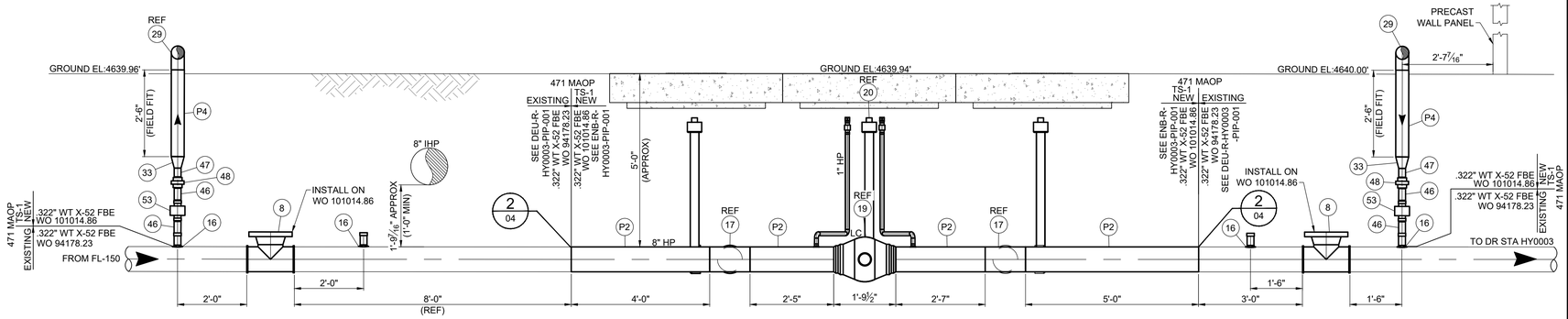

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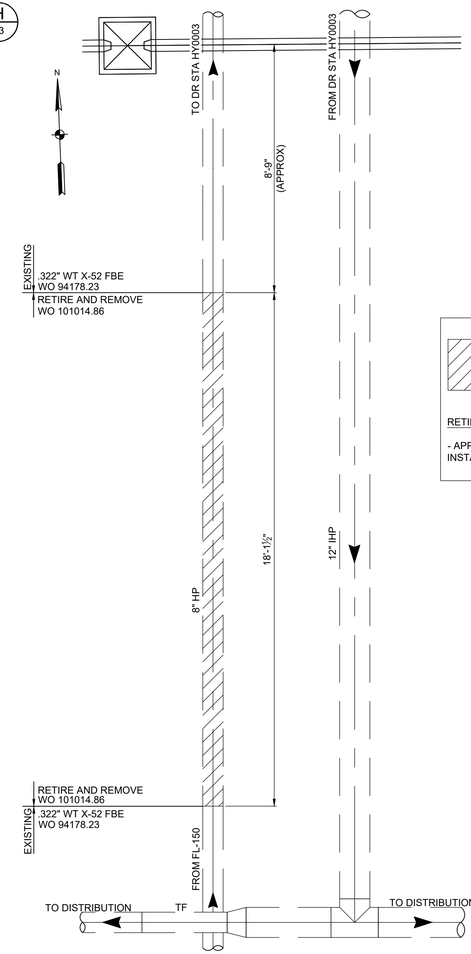


RETIRE AND REMOVE

RETIRE AND REMOVE ON WO 101014.86

- APPROXIMATELY 18' OF 8" HP PIPE INSTALLED ON WO 94178.23

RETIREMENT VIEW
SCALE: 3/8" = 1'-0"

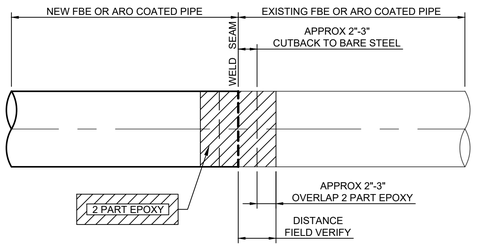
CONCRETE SPECIFICATIONS

REINFORCING STEEL

1. REFERENCES
   - A. ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE"
   - B. ACI "DETAILING MANUAL"
   - C. CRSI MSP-1 "MANUAL OF STANDARD PRACTICE"
2. REINFORCING STEEL: ASTM A706 DEFORMED BARS OR ASTM A615 GRADE 60 DEFORMED BARS WITH AN ACTUAL YIELD STRENGTH NOT EXCEEDING 78,000 PSI AND A RATIO OF ACTUAL ULTIMATE TENSILE STRENGTH TO ACTUAL YIELD STRENGTH NOT LESS THAN 1.25.
3. PROVIDE MINIMUM CONCRETE COVER OVER REINFORCING STEEL AS FOLLOWS, UNLESS STATED OTHERWISE:
   - 3 INCHES FOR CONCRETE CAST AGAINST EARTH
   - 2 INCHES OTHERWISE
   - PROVIDE MINIMUM 1 1/2" CONCRETE COVER TO TOP OF FLATWORK IF APPLICABLE
4. SECURE ALL REINFORCING, INCLUDING DOWELS, IN POSITION WITH BAR SUPPORTS PER CRSI BEFORE CONCRETE PLACEMENT.

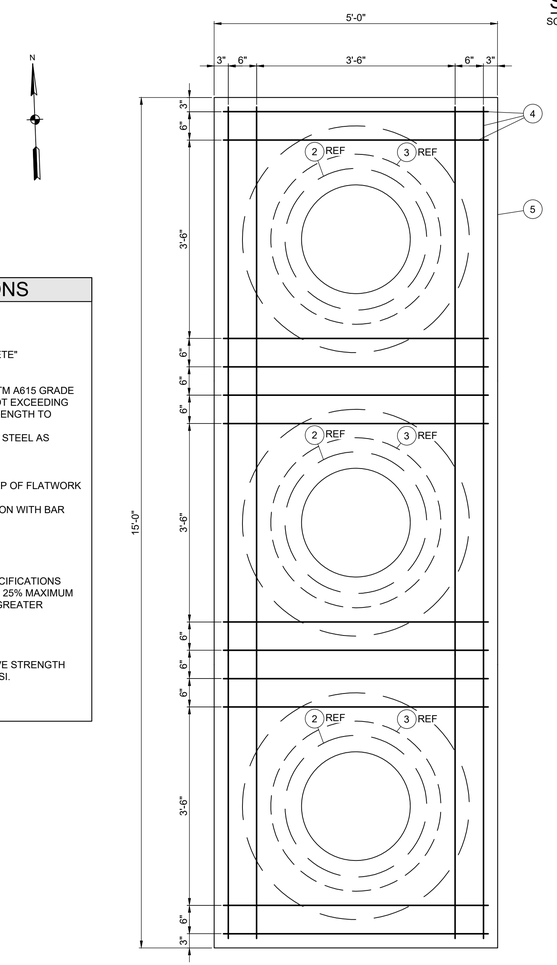
CONCRETE MATERIALS

1. PORTLAND CEMENT: ASTM C150 TYPE I/II.
2. FLY ASH: ASTM 618 CLASS C OR F INCLUDING TABLE 3 SPECIFICATIONS
   - A. CONTENT BY WEIGHT: 15% MINIMUM EXCEPT SLABS - 25% MAXIMUM
3. NORMAL WEIGHT AGGREGATES: ASTM C33, CLASS 3S OR GREATER
4. WATER: POTABLE, IN CONFORMANCE WITH ASTM C94
5. WATER-REDUCING ADMIXTURE: ASTM C494
6. AIR-ENTRAINING ADMIXTURE: ASTM C260
7. STRUCTURAL CONCRETE: ACI 318, CHAPTERS 3 AND 5.
8. CONCRETE SHALL DEVELOP THE FOLLOWING COMPRESSIVE STRENGTH WITHIN 28 DAYS FOR DRIVES, PADS AND FOOTINGS: 4000 PSI.
9. USE AIR-ENTRAINED CONCRETE OF 5%-7% AIR BY VOLUME.
10. CONCRETE SLUMP RANGE OF 3"-6".



NOTE: WHEN ARO COATED PIPE IS USED, THE 2 PART EPOXY COATING THICKNESS DURING SINGLE APPLICATION SHALL NOT EXCEED 40 MILS. BUILD UP TO MAX 70 MILS, WITH TARGET OF 60 MILS.

COATING DETAIL 2 (03/04)
FBE OR ARO COATED PIPE WITH WELD OFFGAS DWELL TIME (SEE SP 2-13-10 FOR BORE APPLICATIONS)
SCALE: NONE



MAN HOLE DETAIL 3 (03)
SCALE: 3/4" = 1'-0"

REFERENCE DRAWINGS		
DRAWING NUMBER	REV	DRAWING DESCRIPTION
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ENB-R-HY0003-PID-001	0	PIPING AND INSTRUMENTATION DIAGRAM
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WORK ORDERS	
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DRAWING NUMBER	SHEET	REVISION
ENB-R-HY0003-PIP-001	5 OF 5	0

ISSUED FOR CONSTRUCTION

ENBRIDGE GAS, ANSI_D

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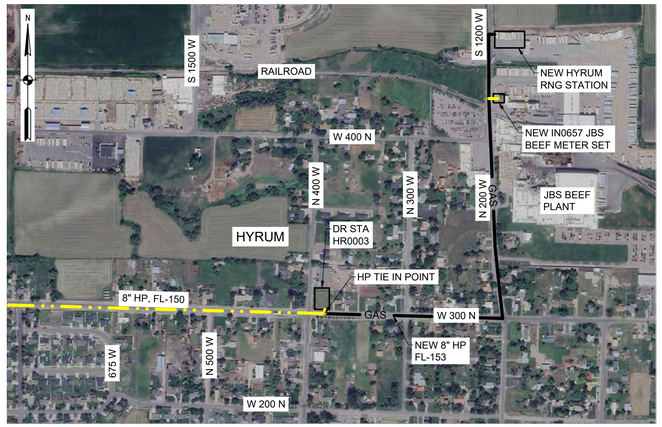
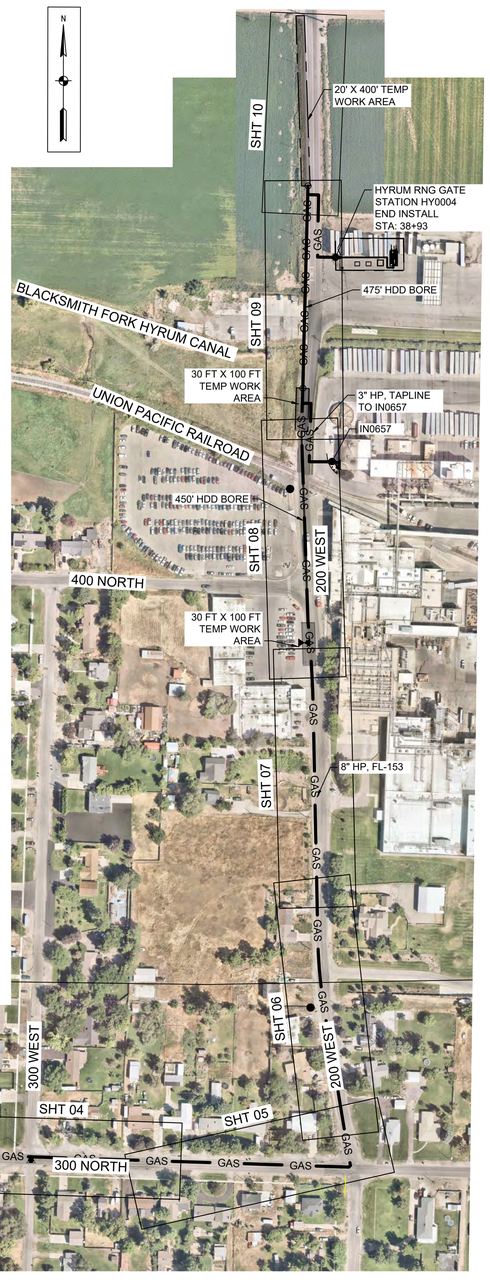


VICINITY MAP

SURVEY CONTROL

FL153 STAKEOUT TABLE

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
FL-153 ALIGNMENT				
1	3757363.135	1540512.269	0	BP: 0+00
2	3757320.263	1540510.598	0	PI: 0+42.9
3	3757274.393	1541864.924	0	PI: 13+98.0
4	3757278.001	1541868.773	0	PI: 14+03.3
5	3757590.337	1541816.629	0	PC: 17+19.9
6	3757854.503	1541791.396	0	PT: 19+85.7
7	3758350.339	1541781.363	0	PC: 24+81.7
8	3758522.477	1541772.104	0	PT: 26+54.1
9	3758552.53	1541769.398	0	BORE EXIT: 26+84.3
10	3759002.263	1541753.897	0	BORE ENTRY : 31+34.3
11	3759067.949	1541755.911	0	BP: 32+00 8X3 TEE
12	3759102.995	1541756.985	0	BORE ENTRY : 32+35.1
13	3759557.39	1541768.673	0	PI: 36+89.6
14	3759577.838	1541769.199	0	BORE EXIT
15	3759557.004	1541794.039	0	PI: 37+15
16	3759410.924	1541791.82	0	PI: 38+61.1
17	3759410.11	1541845.407	0	EP: 39+14.7
IN0657 TAPLINE				
18	3759067.33	1541776.101	0	PI: 0+20.2
19	3758930.363	1541772.156	0	PI: 1+57.2
20	3758930.323	1541820.061	0	EP: 2+05
SURVEY CONTROL				
600	3757749.218	1544182.132	4619.03	SEC SE COR 32
601	3757702.925	1541541.384	4645.806	SEC S1/4 32
602	3757740.731	1538854.991	4622.088	SEC SW 32
603	3757316.232	1540367.397	4639.622	MON 300N 400W
604	3757290.492	1541118.844	4646.839	MON 300N 300W
605	3757234.303	1543400.574	4632.657	MON 300N CENTER ST
606	3755741.011	1541832.494	4664.151	MON 200S 100N
607	3757342.206	1539607.698	4634.712	MON 300N 500W
702	3757326.824	1540475.735	4640.012	CP-702
10073	3757303.685	1540394.592	4638.279	SSMH (BENCH MARK)
43515	3758941.865	1541829.567	4602.62	SSMH (BENCH MARK)
73997	3759282.047	1541812.684	4593.091	SSMH (BENCH MARK)



ALIGNMENT SHEET KEY

MATERIAL LIST

NOTE 3

ITEM #	QTY	SIZE	DESCRIPTION	MAWP NOTE 14	TEST SEG	MATL NOTES NOTE 4	WH #
WO #: 100988.86							
1	7	8"	ELL, CS, 90 DEG 5R, SEGMENTABLE, BW, 8.625 OD 0.322 WT, Y-52, ASTM A694, MSS SP75	1941	TS-1	3	Q1788590
2	10	8"	ELL, CS, 45 DEG 5R, SEGMENTABLE, BW, 8.625 OD 0.322 WT, Y-52, ASTM A694, MSS SP75	1941	TS-1	3	Q1788545
3	1	N/A	8" PIPELINE WITH 3" TAP VALVE ASSEMBLY - SEE ENB-P-F153-PIP-001-r0	N/A	N/A	N/A	N/A
4	5	N/A	CATHODIC PROTECTION PIPELINE CROSSING - SEE ENB-STD-COR-COR-009-r3	N/A	N/A	N/A	N/A
5	3	N/A	TEST STATION WITH GALVANIC ANODES - SEE ENB-STD-COR-COR-011-r5	N/A	N/A	N/A	N/A
6	2	N/A	METRICORR ELECTRICAL RESISTANCE PROBE - SEE ENB-STD-COR-COR-016-r2	N/A	N/A	N/A	N/A
WO #: 101233.54							
7	2	3"	ELL, CS, ES, 90 DEG, BW, LR, 3.500, OD 0.300 WT, GR-B, ASTM A234 WPB	3000	TS-1	2	Q1753011

PRESSURE PIPING

NOTE 6

ITEM #	SIZE	DESCRIPTION	FOOTAGE	O.D.	SMYS	W.T.	MAWP NOTE 14	TEST SEG	WH #
WO# : 100988.86									
P1	8"	PIPE, CS, FBE CTG, 8.625 OD, 0.322 WT, X52, API 5L PSL2, ERW	3057'	8.625"	52,000	0.322"	1941	TS1	Q0208022
P2	8"	PIPE, CS, ARO CTG, 8.625 OD, 0.322 WT, X52, API 5L PSL2, ERW	905'	8.625"	52,000	0.322"	1941	TS1	Q0208029
WO# : 101233.54									
P3	3"	PIPE, CS, FBE CTG, 3.500 OD, 0.300 WT, GR B, ASTM A 106, SMLS	205'	3.500"	35,000	0.300"	3000	TS1	Q0203011

MAOP DETERMINATION

(STANDARD PRACTICES 1-01-02, 1-90-01, 1-97-04)

MAOP SEGMENT NAME:	471 MAOP	
PIPELINE FACILITY CLASSIFICATION:	PIPELINE	
DESIGN CLASS LOCATION:	CLASS 3	
MINIMUM TEST PRESSURE:	1080	
TEST FACTOR:	1.5	
PRESSURE LIMITS	**PSIG**	**%SMYS**
A. PIPE = (2St/D) × F × E × T	1941	49.99%
	S=52000 t=0.322 D=8.625 F=0.5 E=1 T=1	
B. FITTING = (2St/D) × F × E × T	1941	49.99%
	S=52000 t=0.322 D=8.625 F=0.5 E=1 T=1	
C. RATED ITEM	N/A	N/A
	NONE	
D. MAXIMUM DESIGN PRESSURE	720	18.54%
E. REGION PRESSURE LIMITATION	471	12.13%
MAOP (MIN A, B, C, D, E)	**471**	**12.13%**

TEST SPECIFICATION

(STANDARD PRACTICE 1-90-01 FOR HP OR 3-10-04 FOR IHP)

TEST SPECIFICATION DESIGNATION:	**TS-1**	
PRESSURE-TEST PRESSURES:	**PSIG**	**%SMYS**
MINIMUM REQUIRED:	1080	27.82%
MAXIMUM (WATER):	1500	38.63%
MAXIMUM (NITROGEN):	1500	38.63%
MAXIMUM (CNG):	NA	N/A
PRESSURE-TEST DURATIONS:	**SHOP**	**FIELD**
MINIMUM DURATION:	1 HR	1 HR
SMYS CALCULATION INPUTS:	S = 52000 t = 0.322 D = 8.625	

FABRICATION SPECIFICATION

(STANDARD PRACTICE 2-10-01)

WELD REQUIREMENTS:	API 1104	
POST WELD HEAT TREATMENT:	NO	
WELD INSPECTION:	**VISUAL**	**NDE**
GD-OM-E-010-001 INSPECTION AND TESTING OF WELDS	100%	100% > 2"

ALL IN-SERVICE WELDING SHALL BE COMPLETED UTILIZING LOW HYDROGEN ELECTRODES (SP 2-10-01 AND SP 2-10-02)

PROJECT CONTACTS

PROJECT MANAGER:	ANDREW ASPLUND	(801) 694-3797
PROJECT ENGINEER:	ANDREW ASPLUND	(801) 694-3797
CATHODIC PROTECTION:	KRISTI HOFFMANN	(801) 440-6960
MEASUREMENT & CONTROLS:	JR SHARP	(801) 694-3791
HP SURVEYOR:	ENOCH CLEMENCE	(801) 793-7950
LEAD INSPECTOR:		
IHP SUPERVISOR:	ERIC FUHRMAN (NORTHERN - LOGAN)	(435) 881-0805
RIGHT OF WAY AGENT:	CAROLINE KING	(385) 499-0998
ACCOUNT MANAGEMENT / BUSINESS DEVELOPMENT:	SHELLY FOUTIN	(801) 201-6779
ENVIRONMENTAL COMPLIANCE:	STEPHAN RYDER	(330) 813-8805
SAFETY:	CARRIE CHRISTOFERSON	(385) 910-7749

NOTES

(ALL NOTES MAY OR MAY NOT PERTAIN TO THIS DRAWING)

1. BOLD LINES AND/OR CLOUDS REPRESENT NEW PIPING.
2. ⚐ IDENTIFIES GUIDE BARRED TEES.
3. ANY MATERIAL SUBSTITUTION OR FIELD DESIGN CHANGES REQUIRE ENGINEERING APPROVAL.
4. SEE SPECIFICATION 9-00-01 FOR MATERIAL NOTE NUMBERS LISTED.
5. LOCATE ALL UTILITIES PRIOR TO CONSTRUCTION.
6. CORROSION CONTROL: BURIED FABRICATION PIPING SHALL BE CLEANED AND COATED PER SP 2-13-10. THE RECOMMENDED FIELD APPLIED COATING FOR BURIED FBE PIPING IS 2-PART EPOXY AND FOR BURIED ARO PIPING POWERCRETE J APPLIED COATING. COATING TRANSITIONS ARE TO BE APPLIED PER ENB-TYP-GEN-PIP-001. SOIL TO AIR INTERFACES (TRANSITIONS FROM BELOW TO ABOVE GROUND) REQUIRE AN OVERCOAT OF TRENTON WAX TAPE NUMBER 2 APPLIED PER SP 2-13-11. ALL BURIED PIPING TO BE CATHODICALLY PROTECTED WITHIN ONE YEAR OF INSTALLATION. ABOVE GROUND PIPING IS TO BE COATED PER SP 2-13-11. CONSULT CORROSION ENGINEERING FOR PIPELINE COATING EQUIVALENTS.
7. FIELD VERIFY WALL THICKNESS AT ALL TIE-IN LOCATIONS.
8. ALL VALVES MUST HAVE APPROPRIATE LOCKING DEVICES.
9. BALL VALVES - REMOVE ALL MANUFACTURER VENT PLUGS AND REPLACE WITH SMALL BALL VALVES.
10. ALL CHECK VALVES TO BE VENTED.
11. INSULATE GAUGE AND CONTROL LINES, RELIEF STACK, SUPPORT BRACKETS, ETC.
12. ENSURE INSULATION POINTS ARE NOT SHORTED /BYPASSED THROUGH FUEL GAS PIPING, ELECTRICAL CONDUIT, ETC. THAT ARE ATTACHED TO THE PIPE SUPPORTS.
13. ALL PIPE SHALL HAVE MILL TEST REPORTS (MTR'S) AS DEFINED WITHIN STANDARD PRACTICE 3-95-01.
14. THE FORMULA USED TO CALCULATE THE MAWP FOR ALL STEEL PIPE AND NON-RATED FITTINGS IS P=(2St/D) x F x E x T, WHERE F=0.5 FOR A CLASS 3 LOCATION, E=1, AND T=1.
15. 2" IN SERVICE FILLET WELDS SHALL RECEIVE 100% NDE.
16. PIPE IS DESIGNED TO WITHSTAND ANTICIPATED EXTERNAL PRESSURES AND LOADS FOLLOWING SP 1-01-02.

Blue Stakes of UTAH 811 Bluestakes.org

CALL THREE BUSINESS DAYS BEFORE YOU DIG TO HAVE UTILITIES LOCATED 811 OR 1-800-662-4111

ISSUED FOR CONSTRUCTION

REFERENCE DRAWINGS			WORK ORDERS	
DRAWING NUMBER	REV	DRAWING DESCRIPTION	WO NUMBER	DESCRIPTION
ENB-G-HYRNG-PIP-001	0	HYRUM RNG GATE STATION & INDUSTRIAL MTR SET IN0656	100988.86	INSTALL 3800 LF OF 8" FL-153 PIPELINE
DEU-R-HY0003-PIP-001	1	DISTRICT REGULATOR STATION HY0003	101233.54	INSTALL 3" SERVICE LINE TO IN0657
ENB-M-IN0657-PIP-001	0	INDUSTRIAL METER SET IN0657		
ENB-P-F153-PIP-001	0	IN0657 TAP DETAILS		

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
0	ISSUE FOR CONSTRUCTION	10/16/2025	JAJ	ERB

ENGINEERING RECORD	
DRAWN BY: J. JOHNSON	
CHECKED BY: E. BUSH	
PROJECT ENGR: A. ASPLUND	
SURVEYOR: E. CLEMENCE	
ENGR MNGR: W. RADFORD	
CONSTR MNGR: D FRANCIS	
MEAS & CTRLS: JR SHARP	
AUTOM ENGR: L. YAGI	

ENBRIDGE

SECTION: 5, 32 T10, 11 N R 1 E
ELEVATION:
LAT: 41.646324 LONG: -111.860670
SCALE: NONE

LINE NUMBER: FL- 153
FACILITY: FEEDERLINE TO HY0004 RNG GATE STATION
TITLE: INSTALL APPROX 3800 FEET OF 8" HP PIPE
DESCRIPTION: VICINITY MAP, ALIGNMENT SHT KEY, & MATERIALS
ADDRESS: 300 N AND 400 W TO 4650 S AND 1200 W

CITY	COUNTY	STATE
HYRUM	CACHE	UTAH

DRAWING NUMBER	SHEET	REVISION
ENB-P-F153-MAP-001	1 OF 12	0

ENB-P-F153-MAP-001.dwg - 10/16/2025 - 02:36pm

ENBRIDGE GAS ANSI D

LINE AND SYMBOL LEGEND

NOTE: MAY CONTAIN LINES AND SYMBOLS THAT ARE NOT USED IN THIS PLAN SET.

- GAS — GAS — PROPOSED HIGH PRESSURE (HP) GAS LINE
- EXISTING HP GAS LINE
- RETIRE/REMOVE HP GAS LINE
- EXISTING IHP GAS SERVICE LINE
- EXISTING IHP GAS LINE
- PRIVATE / MISC. EASEMENT
- ENB R/W — ENB R/W — ENBRIDGE GAS RIGHT-OF-WAY
- PUE — PUBLIC UTILITY EASEMENT
- R/W — RIGHT-OF-WAY- ROAD
- RIGHT-OF-WAY - HIGHWAY
- PLSS SECTION LINE
- SURVEY LINE
- ROAD CENTERLINE
- CURB AND GUTTER
- EDGE OF ROAD / ASPHALT
- RIVER / CANAL
- EXISTING RAILROAD TRACKS
- P/L — PROPERTY LINE / LOT LINE
- PRECAST WALL
- x — x — x — x — BARBED WIRE FENCE LINE
- > — > — DRAINAGE FLOW LINE
- CATV — EXISTING CABLE TV LINE
- T — EXISTING BURIED COMM LINE
- OH COM — EXISTING OVERHEAD COMM LINE
- FO — EXISTING FIBER OPTIC LINE
- IRR — EXISTING IRRIGATION LINE
- P — EXISTING BURIED POWER LINE
- OH P — EXISTING OVERHEAD POWER LINE
- SS — EXISTING SANITARY SEWER LINE
- SD — EXISTING STORM DRAIN LINE
- W — EXISTING DOMESTIC WATER LINE
- MATCHLINE
- EXISTING CONTOURS
- PROPOSED CONTOURS

- ANODE
- CATHODIC PROTECTION TEST STATION
- GAS MANHOLE
- VALVE
- PRESSURE FITTING
- DEAD END
- R/W MONUMENT / C¼ MONUMENT
- PROPERTY PIN or P/I
- REBAR AND CAP
- POINT-OF-BEGINNING
- EXISTING MONUMENT
- STATION EQUATION
- SECTION CORNER, 1/4 CORNER MONUMENT
- CONIFEROUS TREE
- DECIDUOUS TREE
- BUSH / SHRUB
- LANDSCAPE BOULDERS
- SIGNAL POLE
- LIGHTPOLE
- SIGN
- BILLBOARD
- CABLE TV PEDESTAL
- FIBER OPTIC PEDESTAL
- POWER PEDESTAL
- SIGNAL PEDESTAL
- TELEPHONE PEDESTAL / JUNCTION BOX
- MISC POLE
- GUY WIRE

- CABLE TV MANHOLE
- FIBER OPTIC MANHOLE
- IRRIGATION MANHOLE
- MISC. MANHOLE
- POWER MANHOLE
- SEWER MANHOLE
- SIGNAL MANHOLE
- STORMDRAIN MANHOLE
- TELEPHONE MANHOLE
- WATER MANHOLE
- WATER METER CURB BOX
- FIRE HYDRANT
- STORM DRAIN CATCH BASIN
- STORM DRAIN VAULT

- STRUCTURAL FILL
- GRAVEL
- CONCRETE
- RIP RAP
- FLOW FILL
- BORE

ABBREVIATIONS

NOTE: MAY CONTAIN ABBREVIATIONS THAT ARE NOT USED IN THIS PLAN SET.
SOURCE: ASME Y14.38-2007

APWA	AMERICAN PUBLIC WORKS ASSOCIATION	NIC	NOT IN CONTRACT
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	NO / #	NUMBER
		OC	ON CENTER
BOC	BACK OF CURB	OCEW	ON CENTER EACH WAY
BOW	BACK OF WALK	OHP	OVERHEAD POWER
BV	BLOCK VALVE	PC	POINT OF CURVATURE OR PRESSURE CLASS
BVC	BEGIN VERTICAL CURVE		
C	CURVE	PCC	POINT OF COMPOUND CURVATURE
CB	CATCH BASIN	PI	POINT OF INTERSECTION
C/L	CENTER LINE	PIV	POST INDICATOR VALVE
COMM	COMMUNICATION	P/L	PROPERTY LINE
CONC	CONCRETE	PRC	POINT OF REVERSE CURVATURE
CONT	CONTINUOUS	PRO	PROPOSED
DIA	DIAMETER	PT	POINT OF TANGENCY
EG	EXISTING GRADE	PVC	POINT OF VERTICAL CURVATURE
ELEC	ELECTRICAL	PVI	POINT OF VERTICAL INTERSECTION
ELEV / EL	ELEVATION	PVT	POINT OF VERTICAL TANGENCY
EOA	EDGE OF ASPHALT	R	RADIUS
EVC	END OF VERTICAL CURVE	ROW / R/W	RIGHT OF WAY
EW	EACH WAY	S	SLOPE
EXIST	EXISTING	SD	STORM DRAIN
FF	FINISH FLOOR	SS	SANITARY SEWER
FG	FINISH GRADE	STA	STATION
FL	FLOW LINE OR FLANGE	SW	SIDEWALK
GB	GRADE BREAK		
HP	HIGH POINT	TOG	TOP OF GRATE
IRR	IRRIGATION	TOA	TOP OF ASPHALT
LF	LINEAR FEET	TOC	TOP OF CONCRETE
LOC	LIP OF CURB	TOE	TOE OF SLOPE
LP	LOW POINT	TOF	TOP OF FOUNDATION
MH	MANHOLE	TOW	TOP OF WALL
NG	NATURAL GROUND	TOS	TOP OF STEP
		TYP	TYPICAL
		VC	VERTICAL CURVE

GENERAL NOTES

1.1 GENERAL:

1. ALL STATIONING IS REFERENCED TO CENTERLINE OF PIPELINE ALIGNMENT.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING A BENCHMARK FOR USE IN SITE PREPARATION.
3. PROTECTION AND REPLACEMENT OF SURVEY MONUMENTS OR PROPERTY STAKES NOT DELINEATED ON THE CONTRACT DRAWINGS SHALL BE THE CONTRACTOR'S RESPONSIBILITY. REPLACEMENT OF SURVEY MONUMENTS OR PROPERTY STAKES SHALL BE DONE TO COUNTY STANDARDS.
4. THE CONTRACTOR SHALL TAKE REASONABLE MEASURES TO PROTECT EXISTING IMPROVEMENTS FROM DAMAGE AND ALL SUCH IMPROVEMENTS DAMAGED BY THE CONTRACTORS OPERATION SHALL BE REPAIRED OR RECONSTRUCTED TO THE ENGINEER'S SATISFACTION AT THE EXPENSE OF THE CONTRACTOR.
5. TRENCH BACKFILL MATERIAL UNDER PAVEMENTS OR SURFACE IMPROVEMENTS SHALL BE CLEAN, NON-CLUMPING, GRANULAR (A1-A4 SOILS ARE ACCEPTABLE ACCORDING TO AASHTO 145 SOIL CLASSIFICATION SYSTEM).
6. LIME TREATED FLOWABLE FILLS, IF APPROVED, SHALL HAVE A 28-DAY STRENGTH OF 65 PSI. TRENCH BACKFILL WITHIN R.O.W.'S AND CITY MAINTAINED FACILITIES SHALL BE IN ACCORDANCE WITH STANDARDS.
7. CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL, AND EQUIPMENT NECESSARY TO COMPLETE ALL WORK AS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN. WORK SHALL INCLUDE CLEARING, REMOVAL AND DISPOSAL OF UNSUITABLE MATERIALS, GRADING, EXCAVATING, BACKFILLING, AND ALL RELATED ITEMS. ALL WORK SHALL COMPLY WITH APPLICABLE CODES AND ORDINANCES OF FEDERAL, STATE, REGIONAL AND LOCAL GOVERNING AUTHORITIES HAVING JURISDICTION.
8. CONDUCT ALL OPERATIONS TO ENSURE MINIMUM INTERFERENCE WITH ROADS, WALKS, AND OTHER ADJACENT OCCUPIED OR USED FACILITIES.
9. EXPLOSIVES ARE PROHIBITED ON THE PROJECT SITE, UNLESS APPROVED BY COMPANY. SEE SP. 9-11-01 7. BLASTING.
10. GRANULAR EMBANKMENT MATERIAL PLACED AGAINST ANY CONCRETE STRUCTURE SHALL BE 2 INCH MINUS OR LESS.
11. THE CONTRACTOR SHALL MAINTAIN THE STREETS, SIDEWALKS AND ALL OTHER PUBLIC RIGHT-OF-WAY IN A CLEAN, SAFE AND USABLE CONDITION. ALL SPILLS OF SOIL, ROCK OR CONSTRUCTION DEBRIS SHALL BE REPORTED TO THE COMPANY ECC AND PROMPTLY REMOVED FROM THE PUBLICLY OWNED PROPERTY DURING CONSTRUCTION AND UPON COMPLETION OF THE PROJECT. ALL ADJACENT PROPERTY, PRIVATE OR PUBLIC SHALL BE MAINTAINED IN A CLEAN, SAFE AND USABLE CONDITION.
12. IF CONSTRUCTION IS HALTED DUE TO INCLEMENT WEATHER CONDITIONS, THE CONTRACTOR SHALL CLEAN UP THE PROJECT SITE, AND MAINTAIN THE SITE DURING THE SHUT-DOWN PERIOD.

1.2 PERMITING NOTES:

13. CONTRACTOR TO WORK WITH OWNER TO OBTAIN ALL PERMITS AND LICENSES PRIOR TO COMMENCING WORK ON THIS PROJECT.
14. ANY WORK WITHIN A PUBLIC RIGHT-OF-WAY SHALL BE COORDINATED WITH THE APPROPRIATE JURISDICTION. CONTRACTOR SHALL MEET ANY ADDITIONAL REQUIREMENTS OF SAID JURISDICTION.
15. THE CONTRACTOR SHALL TAKE PRECAUTION TO PREVENT DAMAGE TO ADJACENT PROPERTY AND RESTORE ANY DAMAGES TO ORIGINAL CONDITIONS WITHOUT ADDITIONAL PROJECT COSTS.

1.3 INSPECTION AND TESTING NOTES:

16. CONTRACTOR SHALL BE RESPONSIBLE FOR MATERIALS TESTING INCLUDING BUT NOT LIMITED TO CONCRETE, ASPHALT, AND COMPACTION. SEE CONTRACT SPECIFICATIONS FOR REQUIREMENTS.
17. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE TESTS AND INSPECTIONS WITH THE PROJECT ENGINEER AND SPECIAL INSPECTOR.
18. CONTRACTOR IS RESPONSIBLE FOR RE-INSPECTIONS DUE TO POOR WORKMANSHIP.
19. CONTRACTOR TO FOLLOW NOISE ORDINANCE STANDARDS OF LOCAL GOVERNING AGENCY.
20. CONTRACTORS ARE RESPONSIBLE FOR ALL OSHA REQUIREMENTS ON THE PROJECT SITE.
21. SOIL TESTS PERFORMED SHALL INCLUDE:
    - A. OPTIMUM MOISTURE - MAXIMUM DENSITY CURVE (FOR EACH SOIL ENCOUNTERED).
    - B. COMPRESSIVE STRENGTH AND/OR BEARING TEST (OF EACH SOIL STRATA).
    - C. FIELD DENSITY TEST
    - D. TEST REPORTS ON BORROW MATERIAL
    - E. THE CONTRACTOR, AT ITS OWN EXPENSE, SHALL EMPLOY CONSULTANTS OR TESTING SERVICES TO PERFORM INSPECTIONS AND TESTS NECESSARY TO ASSURE THE SPECIFIED COMPACTION AND OTHER MINIMUM REQUIREMENTS AS SHOWN IN THE CONTRACT DOCUMENTS.
    - F. A COPY OF ALL SOIL TEST RESULTS SHALL BE SUBMITTED TO THE OWNER FOR ITS RECORD.

1.4 EXISTING UTILITY NOTES:

22. EXISTING UTILITY LOCATIONS AND DEPTHS ARE APPROXIMATE UNLESS NOTED OTHERWISE.
23. CONTRACTOR TO CONTACT BLUE STAKES FOR MARKING OF EXISTING UTILITIES PRIOR TO PERFORMING ANY EXCAVATION.
24. AFFECTED UTILITY COMPANIES SHALL BE NOTIFIED AT LEAST TWO (2) WORKING DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
25. CONTRACTOR IS RESPONSIBLE FOR:
    - A) VERIFYING ALL UTILITY LOCATIONS PRIOR TO COMMENCING WORK.
    - B) IDENTIFYING CONFLICTS A MINIMUM OF 500 FEET AHEAD OF TRENCHING OPERATIONS.
    - C) IMMEDIATELY NOTIFYING THE PROJECT ENGINEER OF DISCREPANCIES AND OR CONFLICTS.
    - D) MAINTAINING SERVICE OF OTHER UTILITIES AND NOTIFYING THEM IF CONSTRUCTION MAY INTERFERE WITH NORMAL OPERATIONS.
    - E) RESTORING ANY DAMAGED UTILITIES DUE TO CONSTRUCTION AT NO ADDITIONAL COST TO THE OWNER.
26. MODIFICATIONS TO EXISTING UTILITIES SHALL CONFORM TO THE OWNER'S UTILITY STANDARDS AND SPECIFICATIONS.

1.5 ROUGH GRADING NOTES:

27. IN THE EVENT THAT ANY UNFORESEEN CONDITIONS ARE ENCOUNTERED DURING GRADING OPERATIONS, NOTIFY THE PROJECT ENGINEER FOR DIRECTION.
28. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM ALL NECESSARY EARTHWORK WITHIN THE LIMITS OF THIS PROJECT AND THE RELATED OFF-SITE WORK, SO AS TO GENERATE THE DESIRED SUBGRADE, FINISH GRADES AND SLOPES SHOWN.
29. CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ALL EXCAVATION. ADEQUATE SHORING SHALL BE DESIGNED AND PROVIDED BY THE CONTRACTOR TO PROTECT WORKERS AND PREVENT UNDERMINING OF ANY ADJACENT FEATURES, FACILITIES OR STRUCTURES AND/OR CAVING OF THE EXCAVATION.
30. ANY CONSTRUCTION WASTE (SOIL, ROCKS, TREES, ASPHALT, BUILDING DEMOLITION, ETC) LEAVING THE PROJECT SITE IS REQUIRED TO BE DISPOSED OF AT A FACILITY PRE-APPROVED BY THE COMPANY.
31. THE GENERAL CONTRACTOR IS RESPONSIBLE TO PROVIDE FOR THE REQUIREMENTS OF THE PROJECT STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND ASSOCIATED PERMIT.
32. CONTRACTOR SHALL GRADE TO THE LINES AND ELEVATIONS SHOWN ON THE PLANS WITHIN THE FOLLOWING HORIZONTAL AND VERTICAL TOLERANCES AND DEGREES OF COMPACTION, IN THE AREAS INDICATED:

HORIZONTAL VERTICAL COMPACTION

A. PAVEMENT AREA SUBGRADE 0.1'+ +0.0' TO -0.1' SEE SOILS REPORT
B. ENGINEERED FILL 0.5'+ +0.1' TO -0.1' SEE SOILS REPORT

33. ALL CUT AND FILL SLOPES SHALL BE PROTECTED UNTIL EFFECTIVE EROSION CONTROL HAS BEEN ESTABLISHED.
34. FILL IS DEFINED AS MATERIAL FOR FILLING AND BACKFILLING THAT SHALL BE CLEAN SUBSOIL FREE OF CLAY, ROCK OR GRAVEL LARGER THAN 2" IN GREATEST DIMENSION, TOPSOIL, DEBRIS, WASTE, FROZEN MATERIALS, VEGETABLE AND OTHER DELETERIOUS MATTER PREVENTING UNIFORM CONTROLLABLE COMPACTION.
35. UNLESS OTHERWISE SPECIFIED, CONTRACTOR SHALL CLEAR AND DISPOSE ALL VEGETATION FROM THE LIMITS OF CONSTRUCTION AS SHOWN ON THE DRAWINGS.
36. ALL TREES, BUSHES, ETC., SHALL BE CUT WITH THE STUMPS HAVING AT LEAST 6 INCHES OF PROJECTION ABOVE GROUND SO THEY WILL NOT BE MISSED DURING GRUBBING OPERATIONS. DISPOSAL OF VEGETATION INCLUDING LIMBS SHALL BE REMOVED AND DISPOSED OF OFF SITE.
37. ALL CONSTRUCTION AREAS ON WHICH WORK IS TO BE PERFORMED, INCLUDING EXCAVATION, EMBANKMENT, ROADS, PARKING AREAS, OPERATING AREAS, OR OTHER AREAS AS SHOWN ON DRAWINGS SHALL BE STRIPPED OF ALL TOP SOIL AND DEBRIS TO A DEPTH OF 6" MINIMUM UNLESS OTHERWISE SPECIFIED IN THE GEOTECHNICAL REPORT. THIS MATERIAL CAN BE STOCKPILED, RAKED, AND CLEANED OF DEBRIS, AND REUSED AS FILL AT THE DISCRETION OF THE OWNER AS SPECIFIED.
38. CONTRACTOR SHALL REMOVE FROM THE CONSTRUCTION AREA ALL STUMPS, INCLUDING THEIR ROOT STRUCTURE, DOWN TIMBER AND DEBRIS (INCLUDING CONCRETE SLABS, FOUNDATIONS, STRUCTURES, ETC.) ALL MATERIAL LYING ON THE SURFACE OR PARTIALLY BURIED SHALL BE REMOVED. DISPOSAL OF GRUBBING MATERIALS SHALL BE BY HAULING OFF SITE TO A COMPANY APPROVED LOCATION.
39. STUMP GRINDING OR OTHER APPROVED REMOVAL METHODS MAY BE REQUIRED WHEN IN PROXIMETY TO BURRIED UTILITIES AT THE DISCRETION OF THE OWNER AND PROJECT ENGINEER.
40. THE CONTOUR LINES AND ELEVATIONS ON THE TOPOGRAPHICAL DRAWINGS SHOWING EXISTING ELEVATIONS ARE ONLY APPROXIMATE; THEREFORE, THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ESTIMATING THE AMOUNT OF GRADING, EARTHWORK, AND FILL MATERIAL REQUIRED. OWNER SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OF CONTOUR LINES OF ELEVATIONS SHOWING EXISTING ELEVATIONS.

1.6 TRAFFIC CONTROL:

41. ALL CONSTRUCTION SIGNING, BARRICADING, AND TRAFFIC DELINEATION SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) -CURRENT EDITION, AND BE APPROVED BEFORE CONSTRUCTION BEGINS.
42. BARRICADE OPEN EXCAVATIONS OCCURRING AS PART OF THIS WORK AND POST WITH WARNING LIGHTS, PER GOVERNING AGENCY REQUIREMENTS.
43. IF THE IMPROVEMENTS NECESSITATE THE REMOVAL OF ANY EXISTING TRAFFIC PAVEMENT MARKING, SUCH PAVEMENT MARKING SHALL BE RESTORED OR REPLACED WITH LIKE MATERIALS TO THE SATISFACTION OF THE STREET DIVISION.
44. THE CONTRACTOR SHALL PROVIDE BARRICADES, SIGNS, FLASHERS, OTHER EQUIPMENT AND FLAG PERSONS NECESSARY TO INSURE THE SAFETY OF WORKERS AND VISITORS.

ISSUED FOR CONSTRUCTION

REFERENCE DRAWINGS			WORK ORDERS	
DRAWING NUMBER	REV	DRAWING DESCRIPTION	WO NUMBER	DESCRIPTION
ENB-G-HYRNG-PIP-001	0	HYRUM RNG GATE STATION & INDUSTRIAL MTR SET IN0656	100988.86	INSTALL 3800 LF OF 8" FL-153 PIPELINE
DEU-R-HY0003-PIP-001	1	DISTRICT REGULATOR STATION HY0003		

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
0	ISSUE FOR CONSTRUCTION	10/09/2025	JAJ	ERB

ENGINEERING RECORD
DRAWN BY: J. JOHNSON
CHECKED BY: E. BUSH
PROJECT ENGR: A. ASPLUND
SURVEYOR: E. CLEMENCE
ENGR MNGR: W. RADFORD
CONSTR MNGR: D FRANCIS
MEAS & CTRLS:
AUTOM ENGR:

ENBRIDGE

SECTION: 5, 32 T10, 11 N R 1 E
ELEVATION:
LAT: 41.646324 LONG: -111.860670
SCALE: NONE

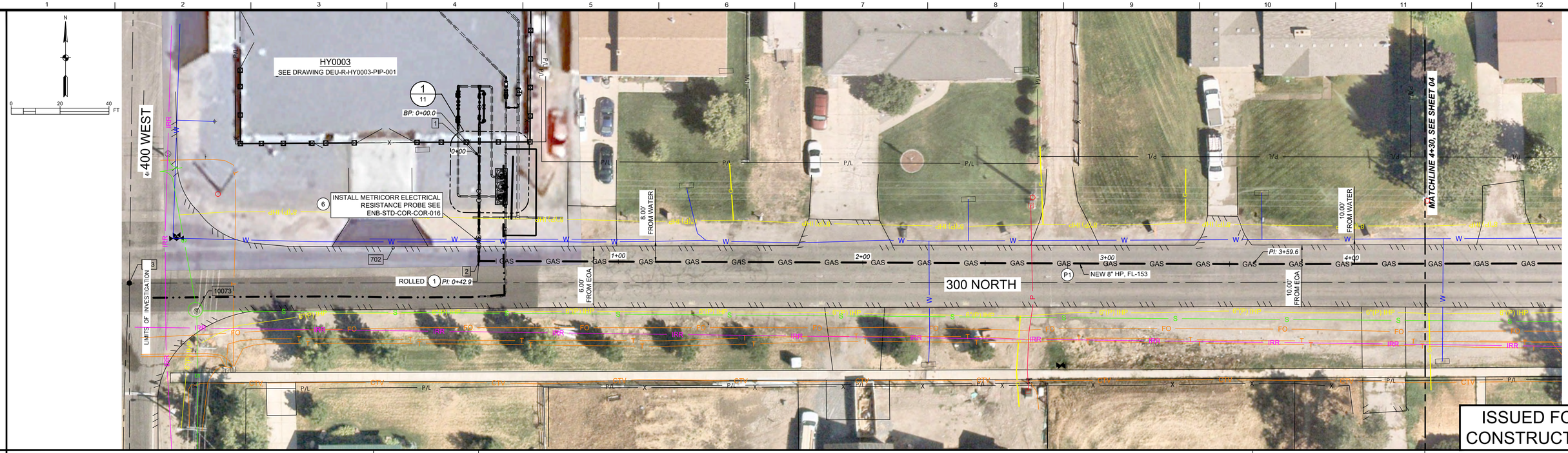
LINE NUMBER: FL- 153
FACILITY: FEEDERLINE TO HY0004 RNG GATE STATION
TITLE: INSTALL APPROX 3800 FEET OF 8" HP PIPE
DESCRIPTION: LEGEND AND GENERAL NOTES
ADDRESS: 300 N AND 400 W TO 4650 S AND 1200 W

CITY	COUNTY	STATE
HYRUM	CACHE	UTAH

DRAWING NUMBER	SHEET	REVISION
ENB-P-F153-MAP-001	2 OF 12	0

ENBRIDGE GAS ANSI D

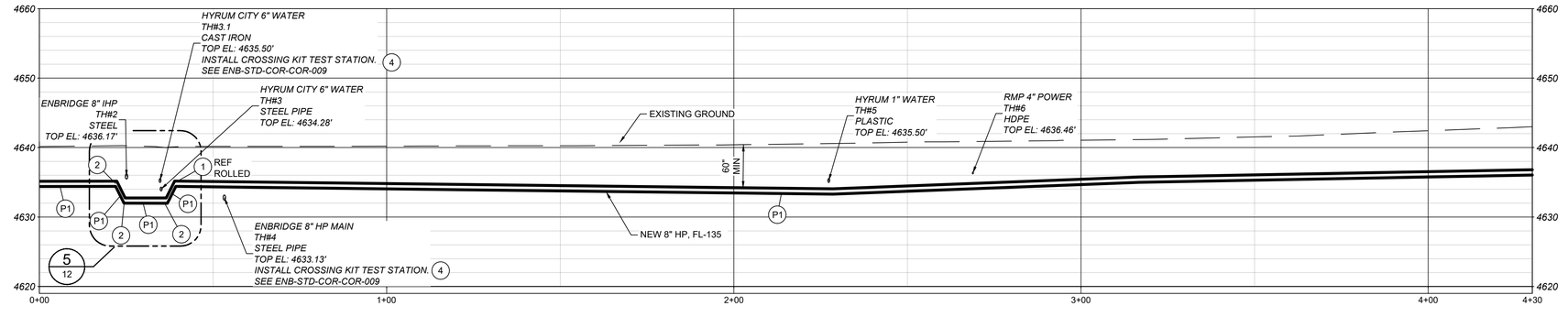
PLAN



ALIGNMENT

S 2°13'59" W 42.9'
PI- 0+42.9
90° 00' 00"
S 87°46'01" E 316.7'
PI- 3+59.6
0° 22' 57"
S 88°08'59" E 1038.4'

PROFILE



PROJECT CONTROLS	INSTALL METHOD:	OPEN TRENCH - SEE DETAIL 7 SHEET 12 — OPEN TRENCH - SEE DETAIL 8 SHEET 12
	RECLAMATION:	N/A
	EROSION CONTROL:	N/A
	ENVIRONMENTAL:	N/A
	AC MITIGATION:	N/A
OWNER		HYRUM
PIPE DATA	PIPE DETAILS:	8" HP .322" WT X52 FBE
	DESIGN CLASS LOC. / MAOP (OPERATING):	CLASS 3 / 471 MAOP
	MINIMUM COVER:	60" MINIMUM COVER

REFERENCE DRAWINGS

DRAWING NUMBER	REV	DRAWING DESCRIPTION
DEU-R-HY0003-PIP-001	0	DISTRICT REGULATOR STATION HY0003
ENB-STD-COR-COR-009	3	CATHODIC PROTECTION PIPELINE CROSSING
ENB-STD-COR-COR-016	2	METRICORR ELECTRICAL RESISTANCE PROBE

WORK ORDERS

WO NUMBER	DESCRIPTION
100988.86	INSTALL 3800 LF OF 8" FL-153 PIPELINE

REVISIONS

NO	DESCRIPTION	DATE	BY	CHECK
0	ISSUE FOR CONSTRUCTION	10/09/2025	JAJ	ERB

ENGINEERING RECORD

DRAWN BY: J. JOHNSON
CHECKED BY: E. BUSH
PROJECT ENGR: A. ASPLUND
SURVEYOR: E. CLEMENCE
ENGR MNGR: W. RADFORD
CONSTR MNGR: D FRANCIS
MEAS & CTRLS:
AUTOM ENGR:

ENBRIDGE

SECTION: 5, 32 T 10, 11 N R 1 E
ELEVATION:
LAT: 41.646324 LONG: -111.860670
SCALE: HORIZ: 1"=40'-0" VERT: 1"=20'-0"

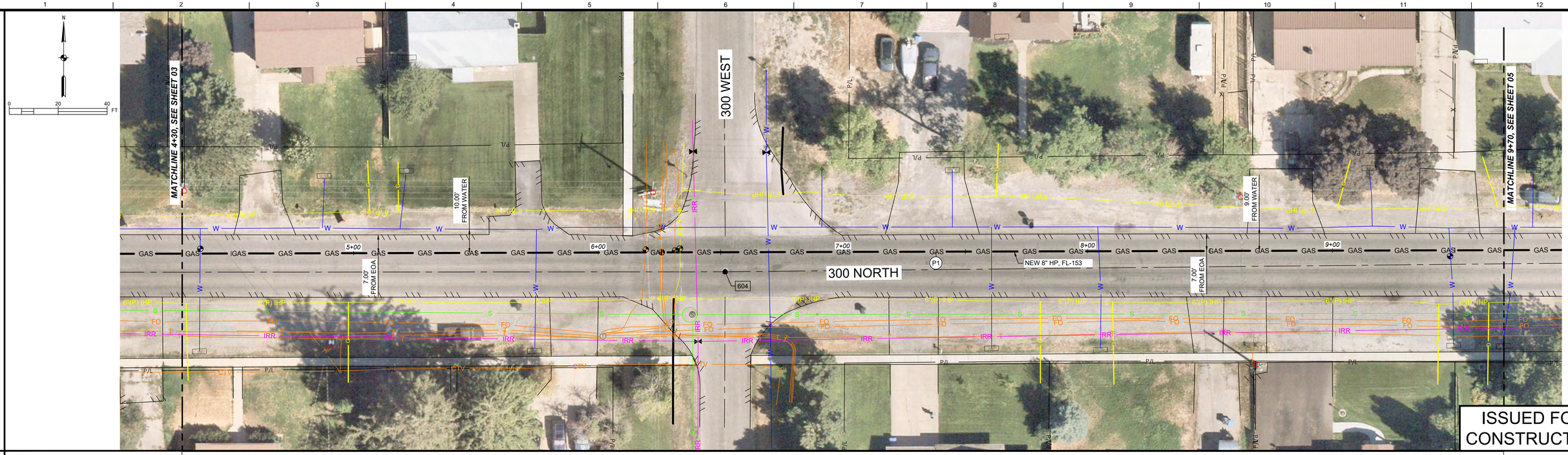
LINE NUMBER: FL- 153
FACILITY: FEEDERLINE TO HY0004 RNG GATE STATION
TITLE: INSTALL APPROX 3800 FEET OF 8" HP PIPE
DESCRIPTION: ALIGNMENT PLAN AND PROFILE
ADDRESS: 300 N AND 400 W TO 4650 S AND 1200 W

CITY	COUNTY	STATE
HYRUM	CACHE	UTAH

DRAWING NUMBER	SHEET	REVISION
ENB-P-F153-MAP-001	3 OF 12	0

ENBRIDGE GAS ANSI D

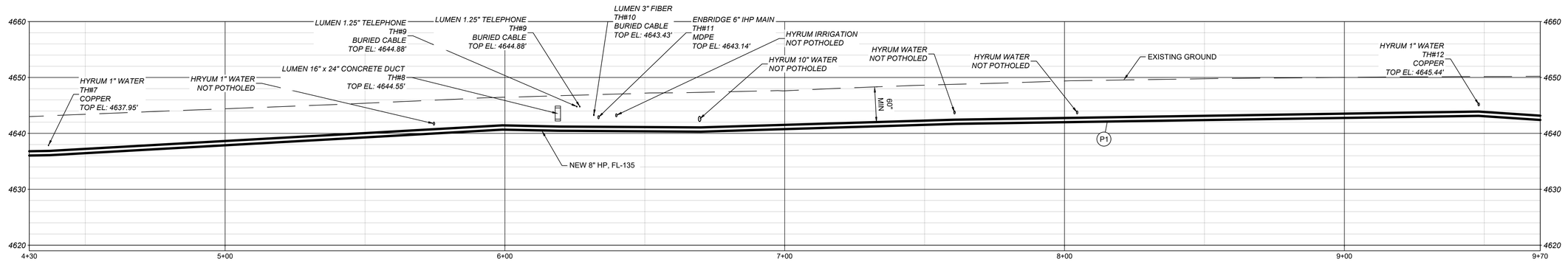
PLAN



ALIGNMENT

S 88°08'59" E 1038.4'

PROFILE



PROJECT CONTROLS	INSTALL METHOD:	OPEN TRENCH - SEE DETAIL 8 SHEET 12
	RECLAMATION:	N/A
	EROSION CONTROL:	N/A
	ENVIRONMENTAL:	N/A
	AC MITIGATION:	N/A
OWNER		HYRUM
PIPE DATA	PIPE DETAILS:	8" HP .322" WT X52 FBE
	DESIGN CLASS LOC. / MAOP (OPERATING):	CLASS 3 / 471 MAOP
	MINIMUM COVER:	60" MINIMUM COVER

ISSUED FOR CONSTRUCTION

REFERENCE DRAWINGS

DRAWING NUMBER	REV	DRAWING DESCRIPTION

WORK ORDERS

WO NUMBER	DESCRIPTION
100988.86	INSTALL 3800 LF OF 8" FL-153 PIPELINE

REVISIONS

NO	DESCRIPTION	DATE	BY	CHECK
0	ISSUE FOR CONSTRUCTION	10/09/2025	JAJ	ERB

ENGINEERING RECORD

DRAWN BY:	J. JOHNSON
CHECKED BY:	E. BUSH
PROJECT ENGR:	A. ASPLUND
SURVEYOR:	E. CLEMENCE
ENGR MNGR:	W. RADFORD
CONSTR MNGR:	D FRANCIS
MEAS & CTRLS:	
AUTOM ENGR:	

ENBRIDGE

SECTION: 5, 32 T 10, 11 N R 1 E
ELEVATION:
LAT: 41.646324 LONG: -111.860670
SCALE: HORIZ: 1"=40'-0" VERT: 1"=20'-0"

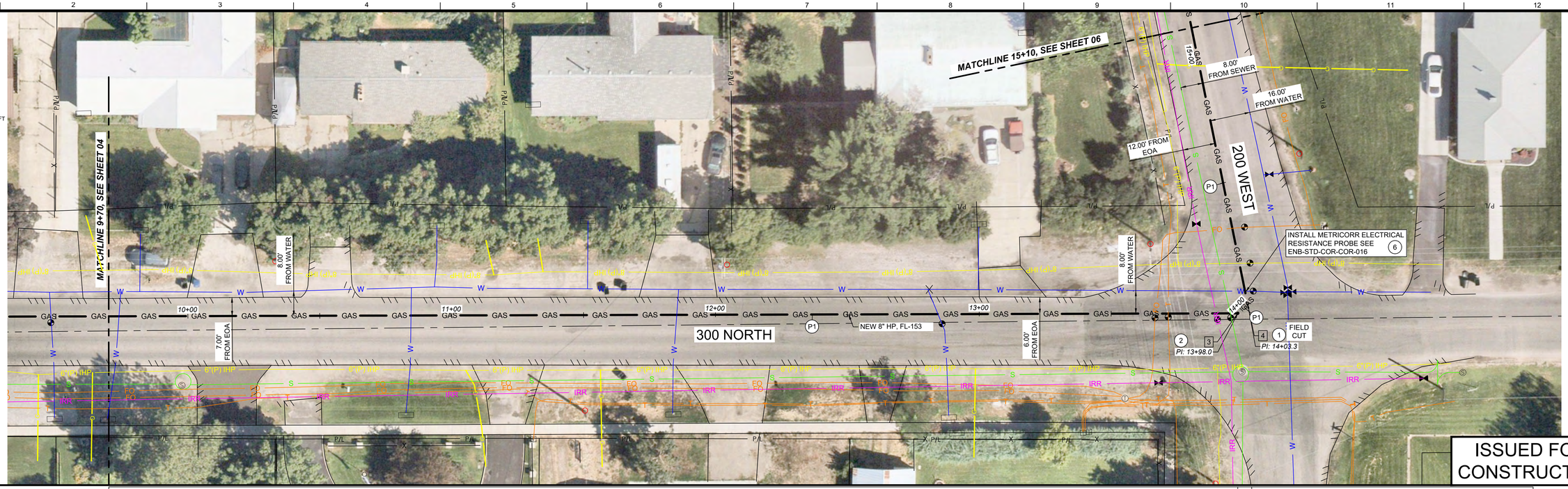
LINE NUMBER:	FL- 153
FACILITY:	FEEDERLINE TO HY0004 RNG GATE STATION
TITLE:	INSTALL APPROX 3800 FEET OF 8" HP PIPE
DESCRIPTION:	ALIGNMENT PLAN AND PROFILE
ADDRESS:	300 N AND 400 W TO 4650 S AND 1200 W

CITY	COUNTY	STATE
HYRUM	CACHE	UTAH

DRAWING NUMBER	SHEET	REVISION
ENB-P-F153-MAP-001	4 OF 12	0

ENBRIDGE GAS ANSI D

PLAN



ALIGNMENT

S 88°08'59" E 1038.4'

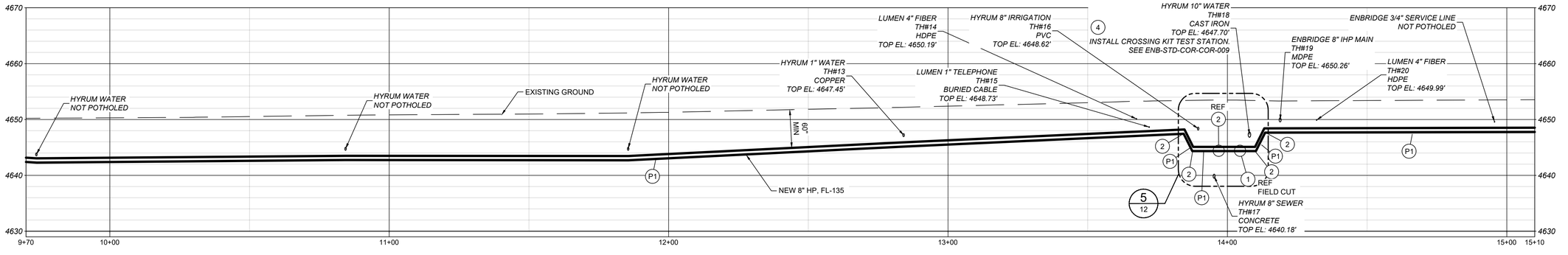
PI- 13+98.0
45° 00' 00"

N 46°51'01" E 5.3'

PI- 14+03.3
56° 19' 42"

N 9°28'41" W 316.7'

PROFILE



PROJECT CONTROLS	INSTALL METHOD:	OPEN TRENCH - SEE DETAIL 8 SHEET 12
	RECLAMATION:	N/A
	EROSION CONTROL:	N/A
	ENVIRONMENTAL:	N/A
	AC MITIGATION:	N/A
OWNER		HYRUM
PIPE DATA	PIPE DETAILS:	8" HP .322" WT X52 FBE
	DESIGN CLASS LOC. / MAOP (OPERATING):	CLASS 3 / 471 MAOP
	MINIMUM COVER:	60" MINIMUM COVER

ISSUED FOR CONSTRUCTION

REFERENCE DRAWINGS

DRAWING NUMBER	REV	DRAWING DESCRIPTION
ENB-STD-COR-COR-009	3	CATHODIC PROTECTION PIPELINE CROSSING
ENB-STD-COR-COR-016	2	METRICORR ELECTRICAL RESISTANCE PROBE

WORK ORDERS

WO NUMBER	DESCRIPTION
100988.86	INSTALL 3800 LF OF 8" FL-153 PIPELINE

REVISIONS

NO	DESCRIPTION	DATE	BY	CHECK
0	ISSUE FOR CONSTRUCTION	10/09/2025	JAJ	ERB

ENGINEERING RECORD

DRAWN BY: J. JOHNSON
CHECKED BY: E. BUSH
PROJECT ENGR: A. ASPLUND
SURVEYOR: E. CLEMENCE
ENGR MNGR: W. RADFORD
CONSTR MNGR: D FRANCIS
MEAS & CTRLS:
AUTOM ENGR:

ENBRIDGE

SECTION: 5, 32 T 10, 11 N R 1 E
ELEVATION:
LAT: 41.646324 LONG: -111.860670
SCALE: HORIZ: 1"=40'-0" VERT: 1"=20'-0"

LINE NUMBER:	FL- 153
FACILITY:	FEEDERLINE TO HY0004 RNG GATE STATION
TITLE:	INSTALL APPROX 3800 FEET OF 8" HP PIPE
DESCRIPTION:	ALIGNMENT PLAN AND PROFILE
ADDRESS:	300 N AND 400 W TO 4650 S AND 1200 W

CITY	COUNTY	STATE
HYRUM	CACHE	UTAH

DRAWING NUMBER	SHEET	REVISION
ENB-P-F153-MAP-001	5 OF 12	0

ENBRIDGE GAS ANSI D

PLAN

ALIGNMENT

N 9°26'41" W 316.7'

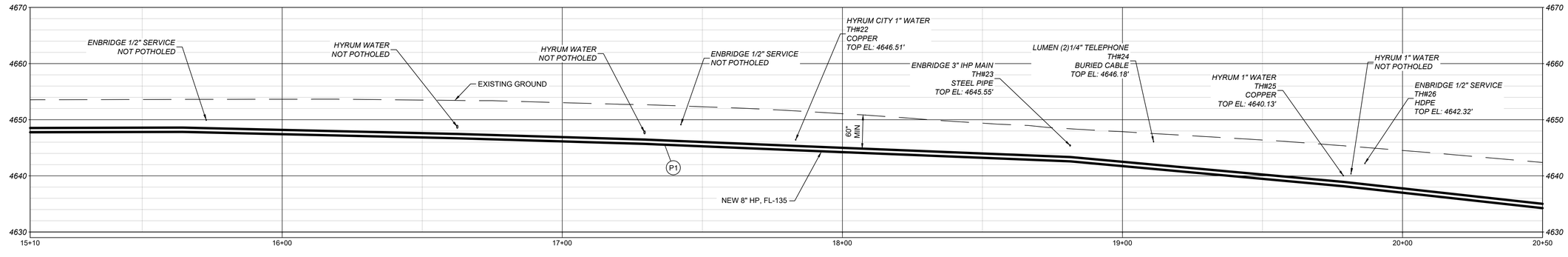
PC- 17+19.95

CURVE DATA
RADIUS= 1341.3 FT
LEN. OF ARC= 265.80 FT
DELTA= 011°21'15"
CHORD DIR.= N05°27'22.4"W
CHORD LEN.= 265.37 FTLabel Text

PT- 19+85.75

N 1°09'33" W 495.9'

PROFILE



ISSUED FOR CONSTRUCTION

PROJECT CONTROLS	INSTALL METHOD:	OPEN TRENCH - SEE DETAIL 8 SHEET 12
	RECLAMATION:	N/A
	EROSION CONTROL:	N/A
	ENVIRONMENTAL:	N/A
	AC MITIGATION:	N/A
OWNER		HYRUM
PIPE DATA	PIPE DETAILS:	8" HP .322" WT X52 FBE
	DESIGN CLASS LOC. / MAOP (OPERATING):	CLASS 3 / 471 MAOP
	MINIMUM COVER:	60" MINIMUM COVER

REFERENCE DRAWINGS

DRAWING NUMBER	REV	DRAWING DESCRIPTION

WORK ORDERS

WO NUMBER	DESCRIPTION
100988.86	INSTALL 3800 LF OF 8" FL-153 PIPELINE

REVISIONS

NO	DESCRIPTION	DATE	BY	CHECK
0	ISSUE FOR CONSTRUCTION	10/09/2025	JAJ	ERB

ENGINEERING RECORD

DRAWN BY: J. JOHNSON
CHECKED BY: E. BUSH
PROJECT ENGR: A. ASPLUND
SURVEYOR: E. CLEMENCE
ENGR MNGR: W. RADFORD
CONSTR MNGR: D FRANCIS
MEAS & CTRLS:
AUTOM ENGR:

SECTION: 5, 32 T 10, 11 N R 1 E
ELEVATION:
LAT: 41.646324 LONG: -111.860670
SCALE: HORIZ: 1"=40'-0" VERT: 1"=20'-0"

ENBRIDGE

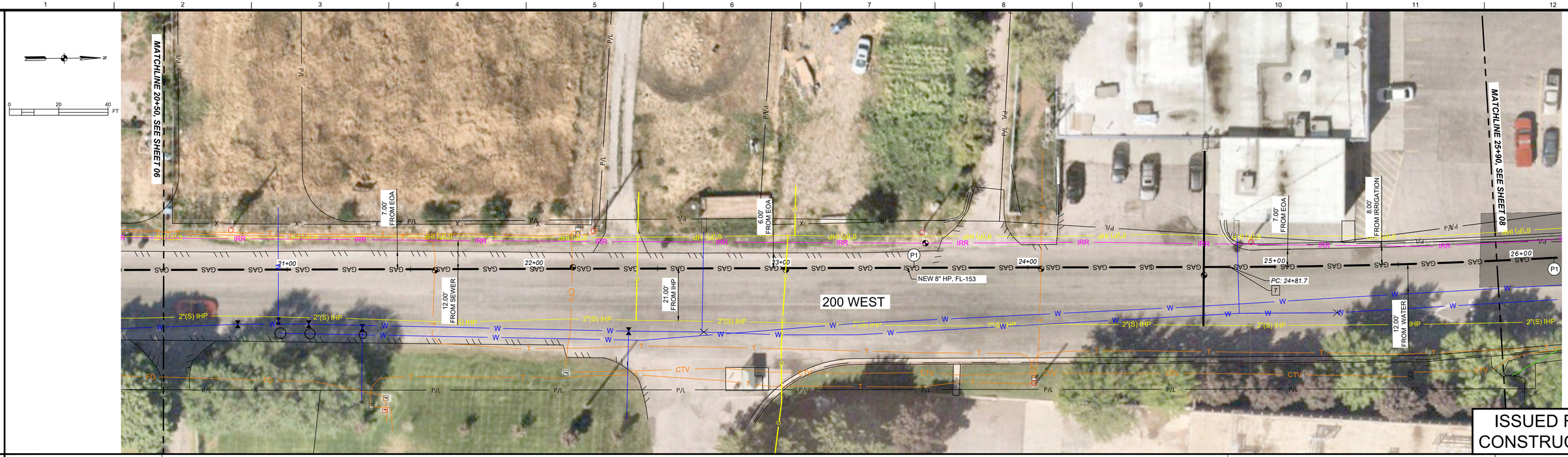
LINE NUMBER: FL- 153
FACILITY: FEEDERLINE TO HY0004 RNG GATE STATION
TITLE: INSTALL APPROX 3800 FEET OF 8" HP PIPE
DESCRIPTION: ALIGNMENT PLAN AND PROFILE
ADDRESS: 300 N AND 400 W TO 4650 S AND 1200 W

CITY	COUNTY	STATE
HYRUM	CACHE	UTAH

DRAWING NUMBER	SHEET	REVISION
ENB-P-F153-MAP-001	6 OF 12	0

ENBRIDGE GAS ANSI D

PLAN



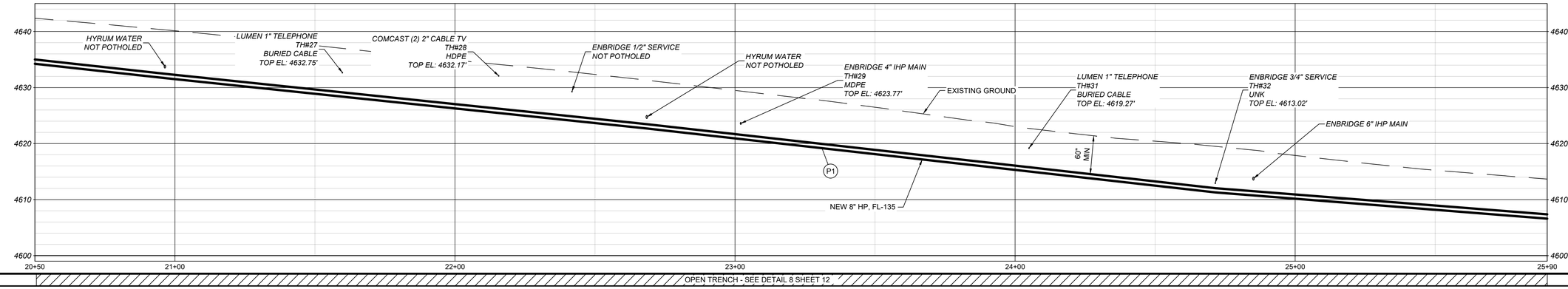
ALIGNMENT

N 1°09'33" W 495.9'

PC- 24+81.69

CURVE DATA
RADIUS= 2465.7 FT
LEN. OF ARC= 172.42 FT
DELTA= 004°00'24"
CHORD DIR.= N03°04'44.4"W
CHORD LEN.= 172.39 FTLabel Text

PROFILE



PROJECT CONTROLS

INSTALL METHOD:	OPEN TRENCH - SEE DETAIL 8 SHEET 12
RECLAMATION:	N/A
EROSION CONTROL:	N/A
ENVIRONMENTAL:	N/A
AC MITIGATION:	N/A

OWNER

HYRUM

PIPE DATA

PIPE DETAILS:	8" HP .322" WT X52 FBE
DESIGN CLASS LOC. / MAOP (OPERATING):	CLASS 3 / 471 MAOP
MINIMUM COVER:	60" MINIMUM COVER

ISSUED FOR CONSTRUCTION

REFERENCE DRAWINGS

DRAWING NUMBER	REV	DRAWING DESCRIPTION

WORK ORDERS

WO NUMBER	DESCRIPTION
100988.86	INSTALL 3800 LF OF 8" FL-153 PIPELINE

REVISIONS

NO	DESCRIPTION	DATE	BY	CHECK
0	ISSUE FOR CONSTRUCTION	10/09/2025	JAJ	ERB

ENGINEERING RECORD

DRAWN BY: J. JOHNSON
CHECKED BY: E. BUSH
PROJECT ENGR: A. ASPLUND
SURVEYOR: E. CLEMENCE
ENGR MNGR: W. RADFORD
CONSTR MNGR: D FRANCIS
MEAS & CTRLS:
AUTOM ENGR:

ENBRIDGE

SECTION: 5, 32 T 10, 11 N R 1 E
ELEVATION:
LAT: 41.646324 LONG: -111.860670
SCALE: HORIZ: 1"=40'-0" VERT: 1"=20'-0"

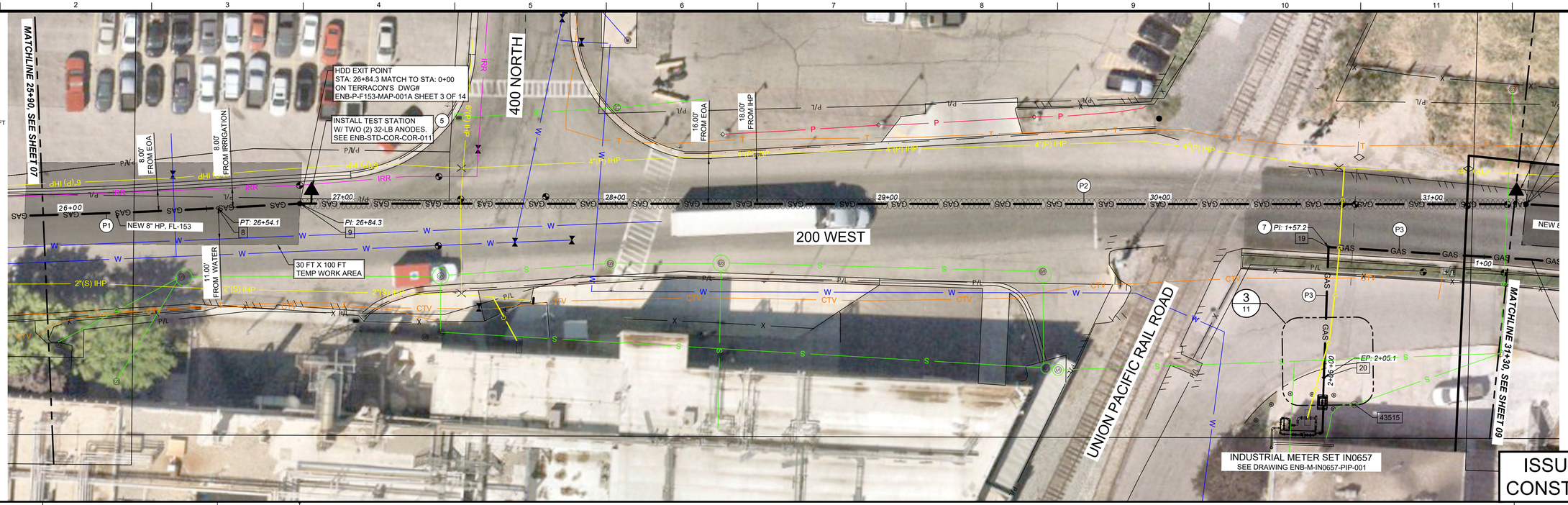
LINE NUMBER: FL- 153
FACILITY: FEEDERLINE TO HY0004 RNG GATE STATION
TITLE: INSTALL APPROX 3800 FEET OF 8" HP PIPE
DESCRIPTION: ALIGNMENT PLAN AND PROFILE
ADDRESS: 300 N AND 400 W TO 4650 S AND 1200 W

CITY	COUNTY	STATE
HYRUM	CACHE	UTAH

DRAWING NUMBER	SHEET	REVISION
ENB-P-F153-MAP-001	7 OF 12	0

ENBRIDGE GAS ANSI D

PLAN



ALIGNMENT

CURVE DATA
RADIUS= 2465.7 FT
LEN. OF ARC= 172.42 FT
DELTA= 004°00'24"
CHORD DIR.= N03°04'44.4"W
CHORD LEN.= 172.39 FTLabel Text

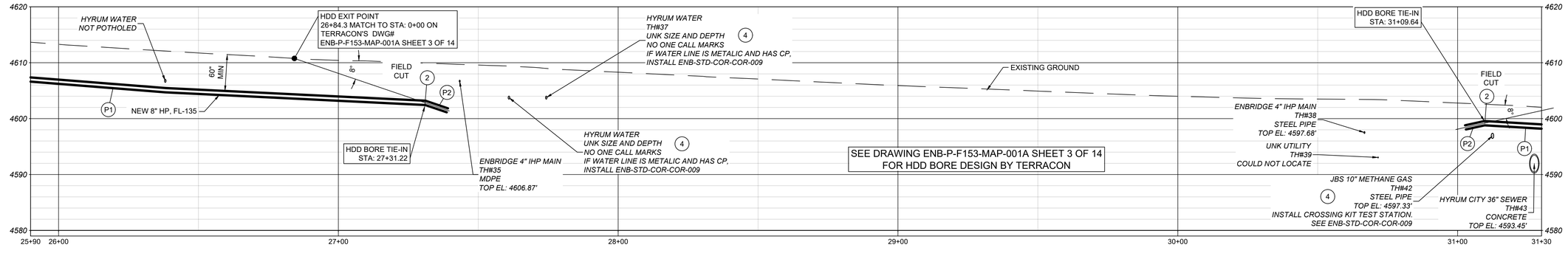
PT- 26+54.11

N 5°08'40" W 30.2'

PI- 26+84.3
3° 10' 13"

N 1°58'27" W 450.0'

PROFILE



PROJECT CONTROLS	INSTALL METHOD:	OPEN TRENCH - SEE DETAIL 8 SHEET 12	HDD BORE - SEE TERRACON DRAWING ENB-P-F153-MAP-001A SHEET 3 OF 14 FOR BORE DESIGN / OPEN TRENCH - SEE DETAIL 8 SHEET 10
	RECLAMATION:	N/A	
	EROSION CONTROL:	N/A	
	ENVIRONMENTAL:	N/A	
	AC MITIGATION:	N/A	
OWNER		HYRUM	
PIPE DATA	PIPE DETAILS:	8" HP .322" WT X52 FBE	8" HP .322" WT X52 ARO / 8" HP .322" WT X52 FBE
	DESIGN CLASS LOC. / MAOP (OPERATING):	CLASS 3 / 471 MAOP	
	MINIMUM COVER:	60" MINIMUM COVER	VARIES / 42" MINIMUM COVER

REFERENCE DRAWINGS

DRAWING NUMBER	REV	DRAWING DESCRIPTION
ENB-P-F153-MAP-001A	0	SEE TERRACON DRAWING SHEET (3) FOR BORE DESIGN
ENB-M-IN0657-PIP-001	0	INDUSTRIAL METER SET IN0657
ENB-STD-COR-COR-009	3	CATHODIC PROTECTION PIPELINE CROSSING
ENB-STD-COR-COR-011	5	TEST STATION WITH GALVANIC ANODES

WORK ORDERS

WO NUMBER	DESCRIPTION
100988.86	INSTALL 3800 LF OF 8" FL-153 PIPELINE
101233.54	INSTALL 3" SERVICE LINE TO IN0657

REVISIONS

NO	DESCRIPTION	DATE	BY	CHECK
0	ISSUE FOR CONSTRUCTION	10/09/2025	JAJ	ERB

ENGINEERING RECORD

DRAWN BY: J. JOHNSON
CHECKED BY: E. BUSH
PROJECT ENGR: A. ASPLUND
SURVEYOR: E. CLEMENCE
ENGR MNGR: W. RADFORD
CONSTR MNGR: D FRANCIS
MEAS & CTRLS:
AUTOM ENGR:

ENBRIDGE

SECTION: 5, 32 T 10, 11 N R 1 E
ELEVATION:
LAT: 41.646324 LONG: -111.860670
SCALE: HORIZ: 1"=40'-0" VERT: 1"=20'-0"

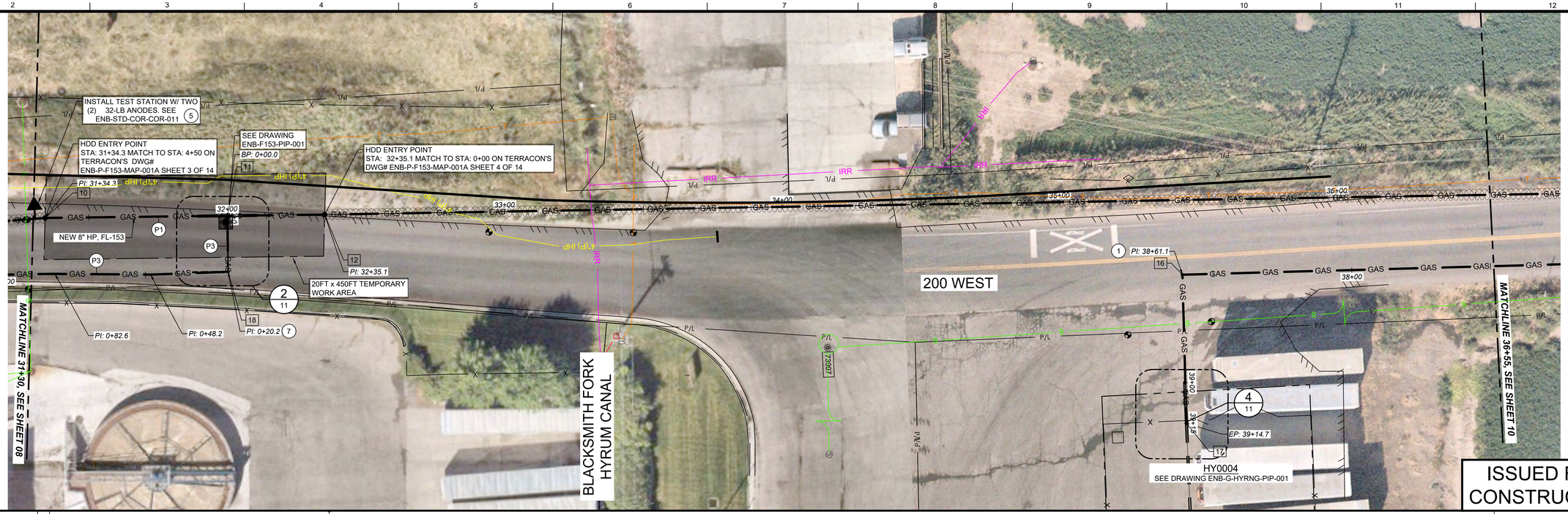
LINE NUMBER: FL- 153
FACILITY:
TITLE: INSTALL APPROX 3800 FEET OF 8" HP PIPE
DESCRIPTION: ALIGNMENT PLAN AND PROFILE
ADDRESS: 300 N AND 400 W TO 4650 S AND 1200 W

CITY	COUNTY	STATE
HYRUM	CACHE	UTAH

DRAWING NUMBER	SHEET	REVISION
ENB-P-F153-MAP-001	8 OF 12	0

ENBRIDGE GAS ANSI D

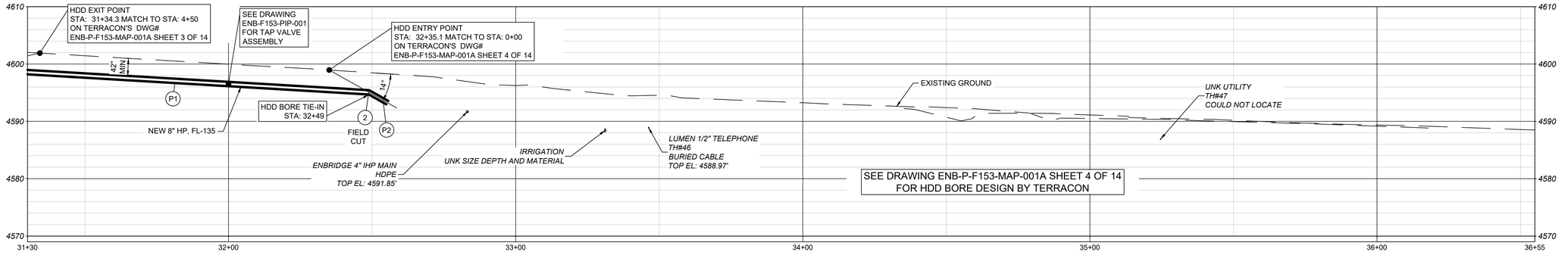
PLAN



ALIGNMENT

N 1°58'27" W 450.0'
PI- 31+34.3
3° 43' 47"
N 1°45'21" E 100.8'
PI- 32+35.1
0° 16' 56"
N 1°28'24" E 454.5'

PROFILE



PROJECT CONTROLS

INSTALL METHOD:	OPEN TRENCH - SEE DETAIL 8 SHEET 12 / HDD BORE - SEE TERRACON DRAWING ENB-P-F153-MAP-001A SHEET 4 OF 14 FOR BORE DESIGN
RECLAMATION:	N/A
EROSION CONTROL:	N/A
ENVIRONMENTAL:	N/A
AC MITIGATION:	N/A

OWNER: HYRUM

PIPE DATA

PIPE DETAILS:	8" HP .322" WT X52 FBE	8" HP .322" WT X52 ARO
DESIGN CLASS LOC. / MAOP (OPERATING):	CLASS 3 / 471 MAOP	
MINIMUM COVER:	42" MINIMUM COVER	VARIES

REFERENCE DRAWINGS

DRAWING NUMBER	REV	DRAWING DESCRIPTION
ENB-G-HYRNG-PIP-001	0	HYRUM RNG GATE STATION & INDUSTRIAL MTR SET IN0656
ENB-P-F153-MAP-001A	0	SEE TERRACON DRAWING FOR BORE DESIGN
ENB-P-F153-MAP-001B	0	SEE TERRACON DRAWING FOR BORE DESIGN
ENB-P-F153-PIP-001	0	8x3 BURIED VALVE ASSEMBLY
ENB-STD-COR-COR-011	5	TEST STATION WITH GALVANIC ANODES

WORK ORDERS

WO NUMBER	DESCRIPTION
100988.86	INSTALL 3800 LF OF 8" FL-153 PIPELINE
101233.54	INSTALL 3" SERVICE LINE TO IN0657

REVISIONS

NO	DESCRIPTION	DATE	BY	CHECK
0	ISSUE FOR CONSTRUCTION	10/16/2025	JAJ	ERB

ENGINEERING RECORD

DRAWN BY: J. JOHNSON
CHECKED BY: E. BUSH
PROJECT ENGR: A. ASPLUND
SURVEYOR: E. CLEMENCE
ENGR MNGR: W. RADFORD
CONSTR MNGR: D FRANCIS
MEAS & CTRLS:
AUTOM ENGR:

ENBRIDGE

SECTION: 5, 32 T 10, 11 N R 1 E
ELEVATION:
LAT: 41.646324 LONG: -111.860670
SCALE: HORIZ: 1"=40'-0" VERT: 1"=20'-0"

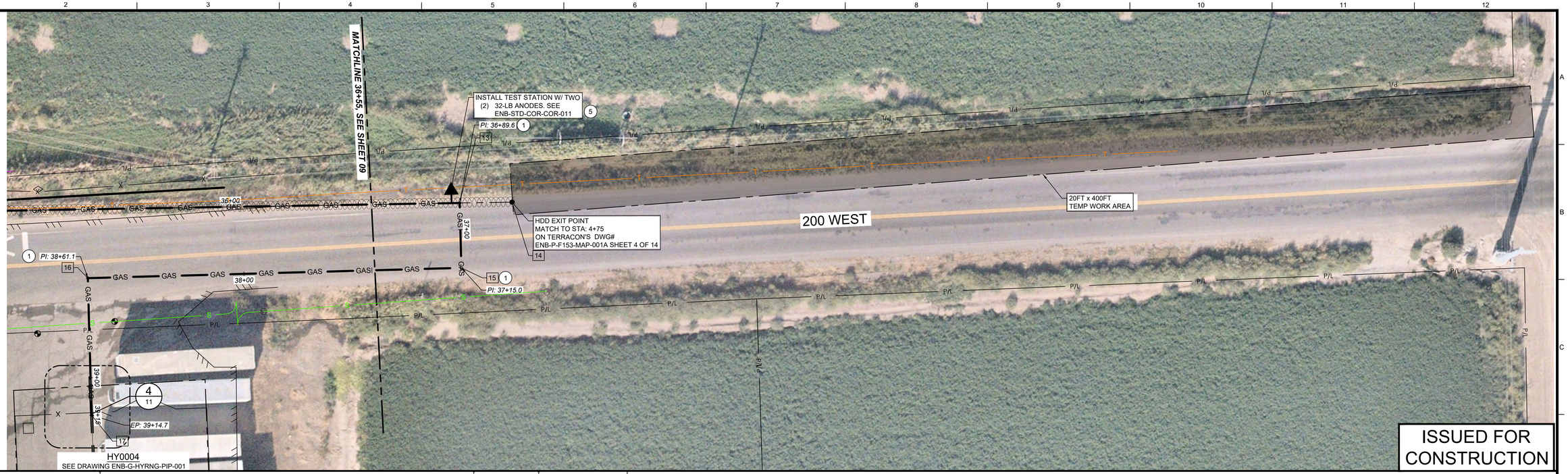
LINE NUMBER:
FACILITY: FL- 153
TITLE: FEEDERLINE TO HY0004 RNG GATE STATION
DESCRIPTION: INSTALL APPROX 3800 FEET OF 8" HP PIPE
ADDRESS: ALIGNMENT PLAN AND PROFILE
300 N AND 400 W TO 4650 S AND 1200 W

CITY	COUNTY	STATE
HYRUM	CACHE	UTAH

DRAWING NUMBER	SHEET	REVISION
ENB-P-F153-MAP-001	9 OF 12	0

ENBRIDGE GAS ANSI D

PLAN



ALIGNMENT

S 89°07'47" E 53.6'

PI- 38+61.1
90° 00' 00"

S 0°52'13" W 146.1'

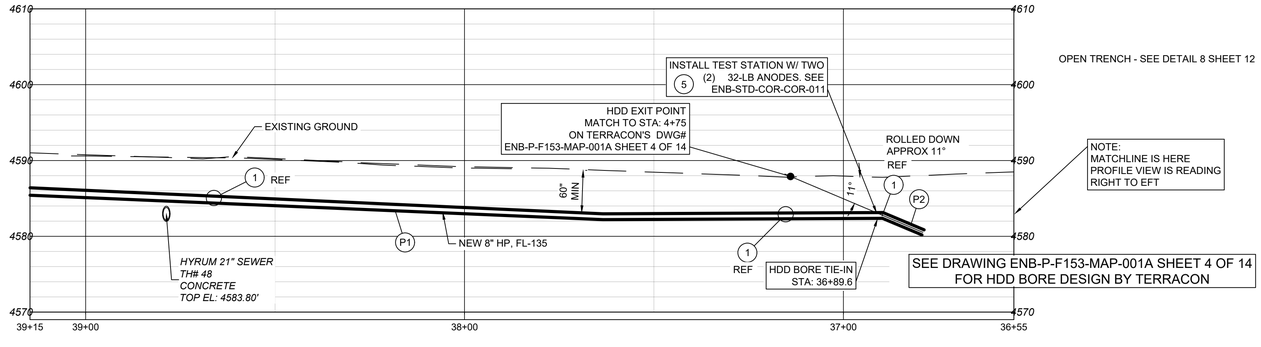
PI- 37+15.0
90° 00' 00"

S 89°07'47" E 25.4'

PI- 36+89.6
90° 00' 00"

N 1°28'24" E 454.5'

PROFILE



OPEN TRENCH - SEE DETAIL 8 SHEET 12

SEE DRAWING ENB-P-F153-MAP-001A SHEET 4 OF 14 FOR HDD BORE DESIGN BY TERRACON

ISSUED FOR CONSTRUCTION

PROJECT CONTROLS

INSTALL METHOD:	OPEN TRENCH - SEE DETAIL 8 SHEET 12 ← HDD BORE - SEE TERRACON DRAWING ENB-P-F153-MAP-001A SHEET 4 OF 14 FOR BORE DESIGN
RECLAMATION:	N/A
EROSION CONTROL:	N/A
ENVIRONMENTAL:	N/A
AC MITIGATION:	N/A

OWNER

HYRUM

PIPE DATA

PIPE DETAILS:	8" HP .322" WT X52 FBE	8" HP .322" WT X52 ARO
DESIGN CLASS LOC. / MAOP (OPERATING):	CLASS 3 / 471 MAOP	
MINIMUM COVER:	60" MINIMUM COVER	VARIES

REFERENCE DRAWINGS

DRAWING NUMBER	REV	DRAWING DESCRIPTION
ENB-G-HYRNG-PIP-001	0	HYRUM RNG GATE STATION & INDUSTRIAL MTR SET IN0656
ENB-P-F153-MAP-001A	0	SEE TERRACON DRAWING FOR BORE DESIGN
ENB-P-F153-MAP-001B	0	SEE TERRACON DRAWING FOR BORE DESIGN
ENB-P-F153-PIP-001	0	8x3 BURIED VALVE ASSEMBLY
ENB-STD-COR-COR-011	5	TEST STATION WITH GALVANIC ANODES

WORK ORDERS

WO NUMBER	DESCRIPTION
100988.86	INSTALL 3800 LF OF 8" FL-153 PIPELINE
101233.54	INSTALL 3" SERVICE LINE TO IN0657

REVISIONS

NO	DESCRIPTION	DATE	BY	CHECK
0	ISSUE FOR CONSTRUCTION	10/16/2025	JAJ	ERB

ENGINEERING RECORD

DRAWN BY: J. JOHNSON
CHECKED BY: E. BUSH
PROJECT ENGR: A. ASPLUND
SURVEYOR: E. CLEMENCE
ENGR MNGR: W. RADFORD
CONSTR MNGR: D FRANCIS
MEAS & CTRLS:
AUTOM ENGR:

ENBRIDGE

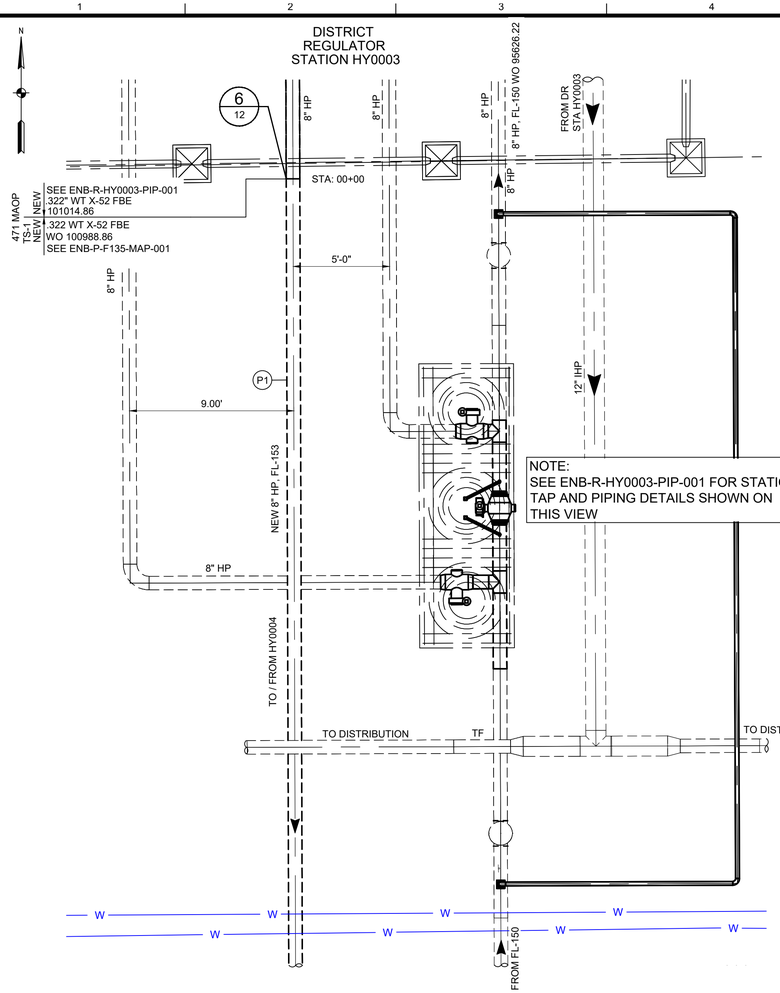
SECTION: 5, 32 T 10, 11 N R 1 E
ELEVATION:
LAT: 41.646324 LONG: -111.860670
SCALE: HORIZ: 1"=40'-0" VERT: 1"=20'-0"

LINE NUMBER: FL- 153
FACILITY: FEEDERLINE TO HY0004 RNG GATE STATION
TITLE: INSTALL APPROX 3800 FEET OF 8" HP PIPE
DESCRIPTION: ALIGNMENT PLAN AND PROFILE
ADDRESS: 300 N AND 400 W TO 4650 S AND 1200 W

CITY	COUNTY	STATE
HYRUM	CACHE	UTAH

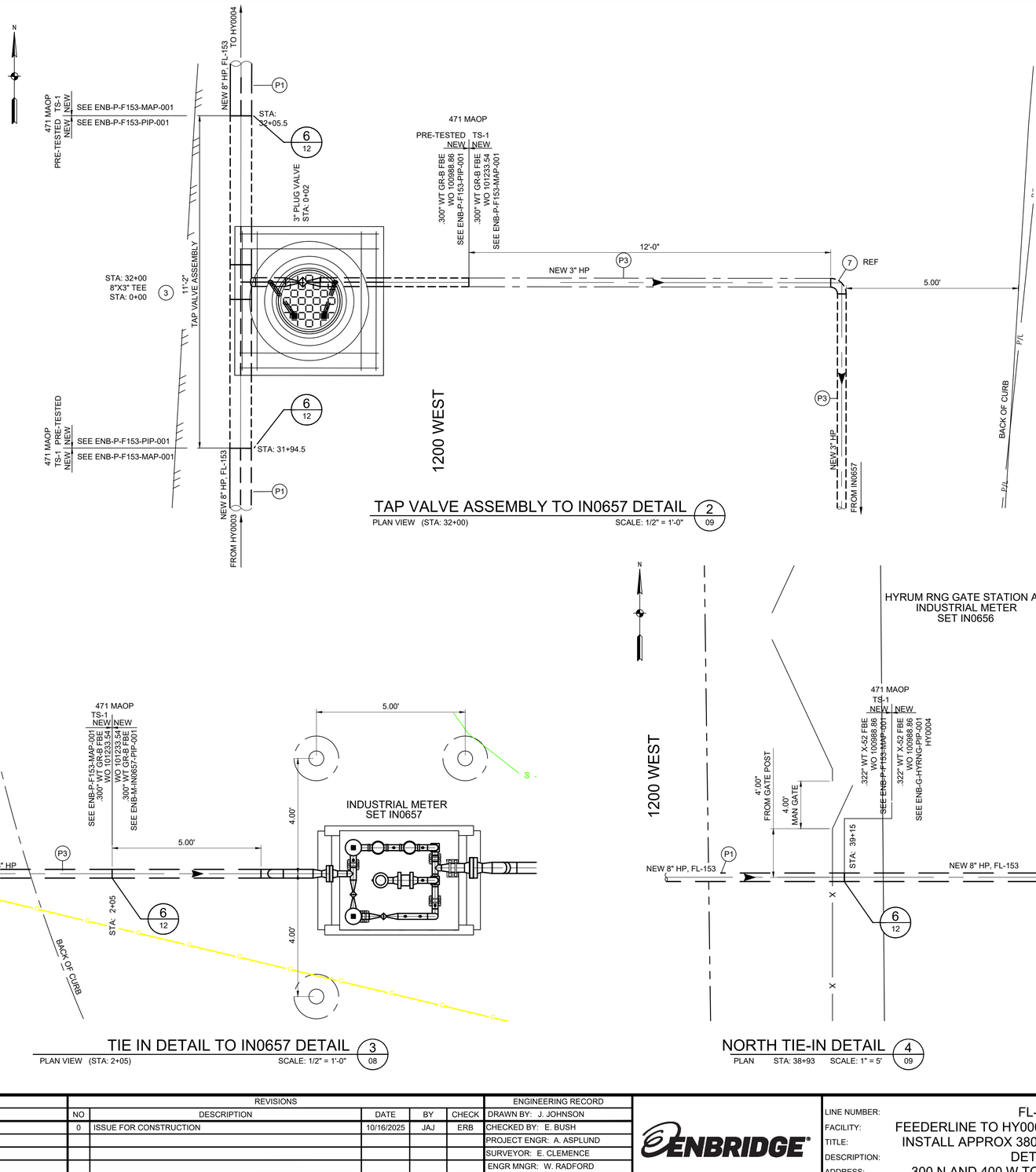
DRAWING NUMBER	SHEET	REVISION
ENB-P-F153-MAP-001	10 OF 12	0

ENBRIDGE GAS ANSI D



WEST TIE-IN DETAIL HY0003 (1/03)

STA: 0+00 SCALE: 1" = 4'



TAP VALVE ASSEMBLY TO IN0657 DETAIL (2/09)

PLAN VIEW (STA: 32+00) SCALE: 1/2" = 1'-0"

TIE IN DETAIL TO IN0657 DETAIL (3/08)

PLAN VIEW (STA: 2+05) SCALE: 1/2" = 1'-0"

NORTH TIE-IN DETAIL (4/09)

PLAN STA: 38+93 SCALE: 1" = 5'

ISSUED FOR CONSTRUCTION

REFERENCE DRAWINGS			WORK ORDERS	
DRAWING NUMBER	REV	DRAWING DESCRIPTION	WO NUMBER	DESCRIPTION
ENB-G-HYRNG-PIP-001	0	HYRUM RNG GATE STATION & INDUSTRIAL MTR SET IN0656	100988.86	INSTALL 3800 LF OF 8" FL-153 PIPELINE
ENB-M-IN0657-PIP-001	0	INDUSTRIAL METER SET IN0657	101233.54	INSTALL 3" SERVICE LINE TO IN0657
ENB-P-F153-MAP-001B	0	SEE TERRACON DRAWING FOR BORE DESIGN		
ENB-G-HYRNG-CCS-001	0	SITE AND GRADING PLAN		

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
0	ISSUE FOR CONSTRUCTION	10/16/2025	JAJ	ERB

ENGINEERING RECORD	
DRAWN BY:	J. JOHNSON
CHECKED BY:	E. BUSH
PROJECT ENGR:	A. ASPLUND
SURVEYOR:	E. CLEMENCE
ENGR MNGR:	W. RADFORD
CONSTR MNGR:	D FRANCIS
MEAS & CTRLS:	
AUTOM ENGR:	

ENBRIDGE

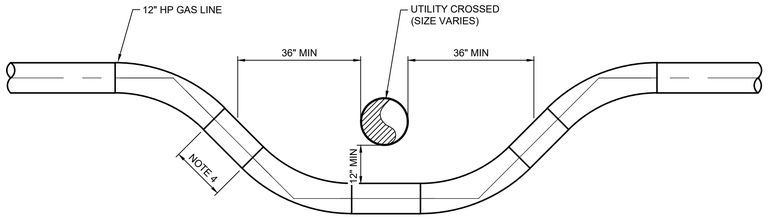
SECTION: 5, 32 T10, 11 N R 1 E
ELEVATION:
LAT: 41.646324 LONG: -111.860670
SCALE: AS SHOWN

LINE NUMBER:
FACILITY: FL- 153
TITLE: FEEDERLINE TO HY0004 RNG GATE STATION
DESCRIPTION: INSTALL APPROX 3800 FEET OF 8" HP PIPE
ADDRESS: DETAILS
300 N AND 400 W TO 4650 S AND 1200 W

CITY	COUNTY	STATE
HYRUM	CACHE	UTAH

DRAWING NUMBER	SHEET	REVISION
ENB-P-F153-MAP-001	11 OF 12	0

ENBRIDGE GAS ANSI D

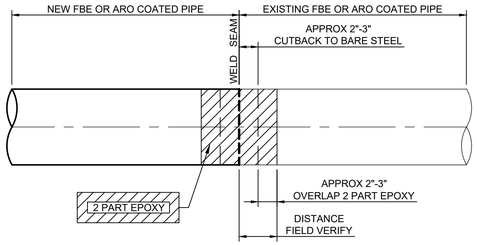


UTILITY CROSSING NOTES:

1. FIELD ENGINEER TO DETERMINE CROSSING METHOD DURING EXCAVATION.
2. PIPE CROSSING ACHIEVED VIA ELBOWS, PIPE BENDING OR SAGGING THE PIPELINE.
3. IN ALL INSTANCES, MINIMUM DIMENSIONS SHOWN SHALL GOVERN.
4. 3 PIPE DIAMETER MINIMUM PIPE LENGTH BETWEEN FITTINGS WHEREVER POSSIBLE, OTHERWISE FOLLOW SP 1-01-02.

TYPICAL UTILITY LOOP CROSSING DETAIL (5)

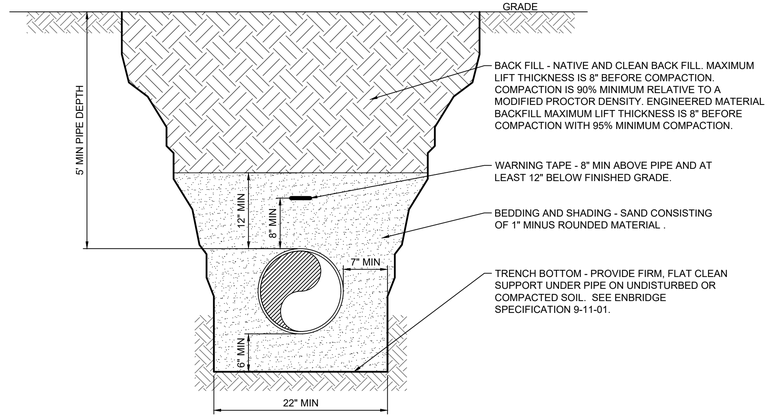
SCALE NONE



NOTE: WHEN ARO COATED PIPE IS USED, THE 2 PART EPOXY COATING THICKNESS DURING SINGLE APPLICATION SHALL NOT EXCEED 40 MILS. BUILD UP TO MAX 70 MILS, WITH TARGET OF 60 MILS.

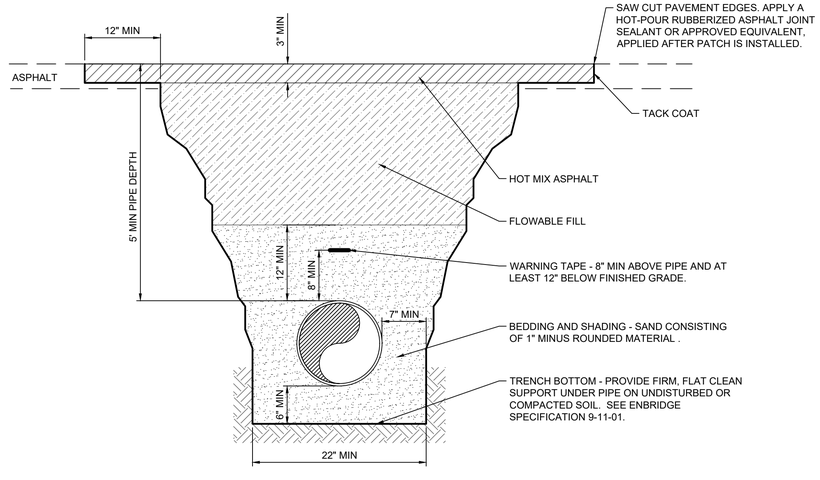
COATING DETAIL (6)

FBE OR ARO COATED PIPE WITH WELD OFFGAS DWELL TIME
(SEE SP 2-13-10 FOR BORE APPLICATIONS)
SCALE: NONE



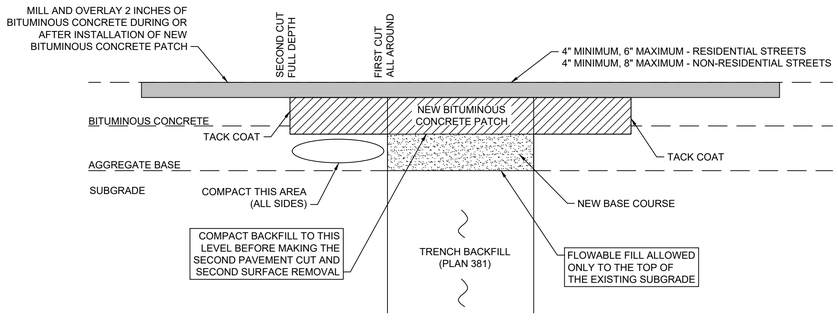
GRANULAR BACK FILL TYPICAL TRENCH DETAIL (7)

SCALE: NONE



ASPHALT T-PATCH TYPICAL TRENCH DETAIL (8)

SCALE: NONE



BITMUMINOUS CONCRETE RESTORATION (9)

SCALE: NONE

ISSUED FOR CONSTRUCTION

REFERENCE DRAWINGS			WORK ORDERS		REVISIONS					ENGINEERING RECORD
DRAWING NUMBER	REV	DRAWING DESCRIPTION	WO NUMBER	DESCRIPTION	NO	DESCRIPTION	DATE	BY	CHECK	DRAWN BY: J. JOHNSON
ENB-G-HYRNG-PIP-001	0	HYRUM RNG GATE STATION & INDUSTRIAL MTR SET IN0656	100988.86	INSTALL 3800 LF OF 8" FL-153 PIPELINE	0	ISSUE FOR CONSTRUCTION	10/16/2025	JAJ	ERB	CHECKED BY: E. BUSH
ENB-P-F153-MAP-001A	0	SEE TERRACON DRAWING FOR BORE DESIGN								PROJECT ENGR: A. ASPLUND
ENB-P-F153-MAP-001B	0	SEE TERRACON DRAWING FOR BORE DESIGN								SURVEYOR: E. CLEMENCE
										ENGR MNGR: W. RADFORD
										CONSTR MNGR: D FRANCIS
										MEAS & CTRLS:
										AUTOM ENGR:

ENBRIDGE

SECTION: 5, 32 T 10, 11 N R 1 E
ELEVATION:
LAT: 41.646324 LONG: -111.860670
SCALE: AS SHOWN

LINE NUMBER: FL- 153
FACILITY: FEEDERLINE TO HY0004 RNG GATE STATION
TITLE: INSTALL APPROX 3800 FEET OF 8" HP PIPE
DESCRIPTION: DETAILS
ADDRESS: 300 N AND 400 W TO 4650 S AND 1200 W

CITY	COUNTY	STATE
HYRUM	CACHE	UTAH

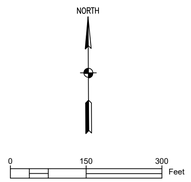
DRAWING NUMBER	SHEET	REVISION
ENB-P-F153-MAP-001	12 OF 12	0

ENBRIDGE GAS ANSI D

HYRUM 200 WEST UPRR / BLACKSMITH FORK CANAL FL-153 8" STEEL HDD CROSSING

CACHE COUNTY, UTAH

SHEET INDEX	
1	COVER SHEET AND VICINITY MAP
2	CONSTRUCTION NOTES
3	HDD PLAN AND PROFILE ALIGNMENT 1
4	HDD PLAN AND PROFILE ALIGNMENT 2
5	HDD GEOTECHNICAL PLAN & PROFILE ALIGNMENT 1
6	HDD GEOTECHNICAL PLAN & PROFILE ALIGNMENT 2
7	HDD PIPE STRESS & IR ANALYSIS ALIGNMENT 1
8	HDD PIPE STRESS & IR ANALYSIS ALIGNMENT 2
9	HDD PULL BACK CALCULATIONS ALIGNMENT 1
10	HDD PULL BACK CALCULATIONS ALIGNMENT 2
11	KEY TO BORE LOGS
12	BORE LOGS
13	BORE LOGS
14	BORE LOGS



APPROXIMATE CROSSINGS LOCATIONS: ALIGNMENT 1 3758552.5304 N 1541769.3983 E / 3759002.2634 N 1541753.8970 E ALIGNMENT 2 3759102.9949 N 1541756.9847 E / 3759577.9390 N 1541764.2742 E

8" STEEL PIPE HDD

LINE AND SYMBOL LEGEND

NOTE: MAY CONTAIN LINES AND SYMBOLS THAT ARE NOT USED IN THIS PLAN SET.

- PROPOSED HIGH PRESSURE (HP) GAS LINE
- EXISTING HP GAS LINE
- RETIRE/REMOVE HP GAS LINE
- EXISTING IHP GAS SERVICE LINE
- EXISTING IHP GAS LINE
- PRIVATE / MISC. EASEMENT
- DOMINION ENERGY GAS RIGHT-OF-WAY LINE
- PUBLIC UTILITY EASEMENT
- RIGHT-OF-WAY- ROAD
- RIGHT-OF-WAY - HIGHWAY
- PLSS SECTION LINE
- SURVEY LINE
- ROAD CENTERLINE
- CURB AND GUTTER
- EDGE OF ROAD / ASPHALT
- RIVER / CANAL
- EXISTING RAILROAD TRACKS
- PROPERTY LINE / LOT LINE
- PRECAST WALL
- BARBED WIRE FENCE LINE
- DRAINAGE FLOW LINE
- EXISTING CABLE TV LINE
- EXISTING BURIED COMM LINE
- EXISTING OVERHEAD COMM LINE
- EXISTING FIBER OPTIC LINE
- EXISTING IRRIGATION LINE
- EXISTING BURIED POWER LINE
- EXISTING OVERHEAD POWER LINE
- EXISTING SANITARY SEWER LINE
- EXISTING STORM DRAIN LINE
- EXISTING DOMESTIC WATER LINE
- MATCHLINE
- EXISTING CONTOURS
- PROPOSED CONTOURS
- STRUCTURAL FILL
- GRAVEL
- CONCRETE
- RIP RAP
- FLOW FILL
- BORE
- HDD ALIGNMENT

- ANODE
- CATHODIC PROTECTION TEST STATION
- GAS MANHOLE
- VALVE
- PRESSURE FITTING
- DEAD END
- R/W MONUMENT / C¼ MONUMENT
- PROPERTY PIN or P/I
- REBAR AND CAP
- POINT-OF-BEGINNING
- EXISTING MONUMENT
- STATION EQUATION
- SECTION CORNER, 1/4 CORNER MONUMENT
- CONIFEROUS TREE
- DECIDUOUS TREE
- BUSH / SHRUB
- LANDSCAPE BOULDERS
- SIGNAL POLE
- LIGHTPOLE
- SIGN
- BILLBOARD
- CABLE TV PEDESTAL
- FIBER OPTIC PEDESTAL
- POWER PEDESTAL
- SIGNAL PEDESTAL
- TELEPHONE PEDESTAL / JUNCTION BOX
- MISC POLE
- GUY WIRE
- CABLE TV MANHOLE
- FIBER OPTIC MANHOLE
- IRRIGATION MANHOLE
- MISC. MANHOLE
- POWER MANHOLE
- SEWER MANHOLE
- SIGNAL MANHOLE
- STORMDRAIN MANHOLE
- TELEPHONE MANHOLE
- WATER MANHOLE
- WATER METER CURB BOX
- FIRE HYDRANT
- STORM DRAIN CATCH BASIN
- STORM DRAIN VAULT

ABBREVIATIONS

NOTE: MAY CONTAIN ABBREVIATIONS THAT ARE NOT USED IN THIS PLAN SET.
SOURCE: ASME Y14.38-2007

APWA	AMERICAN PUBLIC WORKS ASSOCIATION	NO / #	NUMBER
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	OC	ON CENTER
BOC	BACK OF CURB	OCEW	ON CENTER EACH WAY
BOW	BACK OF WALK	OHP	OVERHEAD POWER
BV	BLOCK VALVE	PC	POINT OF CURVATURE OR PRESSURE CLASS
BVC	BEGIN VERTICAL CURVE	PCC	POINT OF COMPOUND CURVATURE
C	CURVE	PI	POINT OF INTERSECTION
CB	CATCH BASIN	PIV	POST INDICATOR VALVE
C/L	CENTER LINE	P/L	PROPERTY LINE
COMM	COMMUNICATION	PRC	POINT OF REVERSE CURVATURE
CONC	CONCRETE	PRO	PROPOSED
CONT	CONTINUOUS	PT	POINT OF TANGENCY
DIA	DIAMETER	PVC	POINT OF VERTICAL CURVATURE
EG	EXISTING GRADE	PVI	POINT OF VERTICAL INTERSECTION
ELEC	ELECTRICAL	PVT	POINT OF VERTICAL TANGENCY
ELEV / EL	ELEVATION	R	RADIUS
EOA	EDGE OF ASPHALT	ROW / R/W	RIGHT OF WAY
EVC	END OF VERTICAL CURVE	S	SLOPE
EW	EACH WAY	SD	STORM DRAIN
EXIST	EXISTING	SS	SANITARY SEWER
FF	FINISH FLOOR	STA	STATION
FG	FINISH GRADE	SW	SIDEWALK
FL	FLOW LINE OR FLANGE	TOG	TOP OF GRATE
GB	GRADE BREAK	TOA	TOP OF ASPHALT
HP	HIGH POINT	TOC	TOP OF CONCRETE
IRR	IRRIGATION	TOE	TOE OF SLOPE
LF	LINEAR FEET	TOF	TOP OF FOUNDATION
LOC	LIP OF CURB	TOW	TOP OF WALL
LP	LOW POINT	TOS	TOP OF STEP
MH	MANHOLE	TYP	TYPICAL
NG	NATURAL GROUND	VC	VERTICAL CURVE
NIC	NOT IN CONTRACT		

Blue Stakes of Utah 811 — Blustakes.org

CALL THREE BUSINESS DAYS
BEFORE YOU DIG TO HAVE
UTILITIES LOCATED
811 or 1-800-662-4111

PREPARED BY:

Terracon

ISSUED FOR CONSTRUCTION

REFERENCE DRAWINGS		
DRAWING NUMBER	REV	DRAWING DESCRIPTION
ENB-P-FL153-MAP-001	0	8" HP TAPLINE FROM HY0003

WORK ORDERS	
WO NUMBER	DESCRIPTION
100988.86	FL-153: INSTALL 450 LF & 475 LF OF 8" STEEL PIPE VIA HDD TRENCHLESS METHODS

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
0	ISSUED FOR CONSTRUCTION	10/16/2025	RFR	JWD/DD

ENGINEERING RECORD
DRAWN BY: TERRACON (RR)
CHECKED BY: TERRACON (JD)
PROJECT ENGR: ANDREW ASPULND
SURVEYOR: ENSIGN
ENGR MNGR: WILL RADFORD
CONSTR MNGR: NA
-

ENBRIDGE

SECTION: 32 T 11N R 1E
ELEVATION: 4610.8 AT ENTRY
LAT: LONG:
SCALE: 1"=300'-0" H 1"=300'-0" V

LINE NUMBER:
FACILITY:
TITLE: FL-153
DESCRIPTION: INSTALL 450 LF & 475 LF OF 8" STEEL PIPE HDD TRENCHLESS CROSSING
ADDRESS: COVER AND VICINITY MAP 200 WEST NEAR 570 NORTH

CITY	COUNTY	STATE
HYRUM	CACHE	UTAH

DRAWING NUMBER	SHEET	REVISION
ENB-P-FL153-MAP-001A	1 OF 14	0

1 Cover and Vicinity Map.dwg – 10/14/2025 – 05:00pm

CONSTRUCTION NOTES

1. THE REQUIREMENT OF AN HDD INSTALLATION ARE MORE FULLY DESCRIBED IN OWNER STANDARD PRACTICE 2-15-01. ALL HDD CONSTRUCTION OPERATIONS SHALL BE IN ACCORDANCE WITH STANDARD PRACTICE 2-15-01. THE STANDARD PRACTICE WILL SUPERSEDE THESE NOTES, IF DISCREPANCIES EXIST.

2. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL UNDERGROUND UTILITIES WITHIN THE CONSTRUCTION AREA. CONTRACTOR SHOULD PERFORM CONTINUOUS MONITORING FOR ANY SIGN OF DRILLING FLUIDS DURING HDD DRILLING AND PULLBACK OPERATIONS.

3. CONTRACTOR SHALL CALL BLUESTAKES UTILITY LOCATION SERVICE PRIOR TO CONSTRUCTION.

4. CONTRACTOR IS RESPONSIBLE FOR ALL LOSSES AND REPAIRS OCCASIONED BY DAMAGE TO UNDERGROUND FACILTIES/UTILITIES RESULTING FROM THEIR WORK.

5. CONTRACTOR SHALL AT ALL TIMES PROVIDE AND MAINTAIN INSTRUMENTATION WHICH WILL ACCURATELY LOCATE THE PILOT HOLE, MEASURE DRILL STRING AXIAL AND TORSIONAL LOADS, AND MEASURE DRILLING FLUID DISCHARGE RATE AND PRESSURE. THE OWNER AND/OR THEIR SITE REPRESENTATIVE SHALL HAVE ACCESS TO SAID INSTRUMENTATION AND THEIR READINGS AT ALL TIMES. A LOG OF ALL RECORDED READINGS SHALL BE MAINTAINED AND WILL BECOME PART OF THE "AS-BUILT" INFORMATION DEVELOPED BY THE CONTRACTOR AND SUBMITTED TO THE OWNER.

6. THE PILOT HOLE SHALL BE DRILLED ALONG THE PATH SHOWN ON THE DRAWINGS WITHIN THE FOLLOWING TOLERANCES:
a. HORIZONTAL: +/- 5 FEET FROM DESIGN CENTERLINE
b. VERTICAL: + 2 FEET TO -10 FEET FROM DESIGN PROFILE (THE HDD DRILL PATH MAY BE UP TO 10 FEET LOWER THAN THAT WHICH IS DEPICTED AND UP TO 2 FEET HIGHER THAN THAT WHICH IS DEPICTED). ADDITIONALLY, CONCERN FOR ADJACENT UTILITIES AND/OR STRUCTURES SHALL TAKE PRECEDENCE OVER THE LISTED TOLERANCES. LISTING OF TOLERANCES DOES NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR SAFE OPERATIONS OR DAMAGE TO ADJACENT UTILITIES AND STRUCTURES.

7. CURVES SHOULD BE DRILLED AT A RADIUS EQUAL TO OR GREATER THAN THAT LISTED ON THE DRAWINGS. HOWEVER, IN THE EVENT THAT A STEERING CORRECTION IS NEEDED AND A TIGHTER RADIUS MUST BE CONSTRUCTED TO STAY WITHIN ALIGNMENT TOLERANCES, THE MINIMUM THREE JOINT RADIUS SHALL BE 600 FEET. THE DRILLED RADIUS WILL BE CALCULATED OVER ANY THREE OR MORE JOINT SEGMENTS USING THE FOLLOWING FORMULA:
a. R = L / A * 57.296
WHERE:
R = DRILLED RADIUS OVER LENGTH (L)
L = LENGTH DRILLED, NO LESS THAN 75 FEET AND NO GREATER THAN 100 FEET
A = TOTAL CHANGE IN ANGLE OVER LENGTH (L)

8. AT THE COMPLETION OF THE PILOT HOLE DRILLING, THE CONTRACTOR SHALL PROVIDE A TABULATION OF COORDINATES, REFERENCED TO THE DRILLED ENTRY POINT, WHICH ACCURATELY DESCRIBES THE LOCATION OF THE PILOT HOLE. THIS TABULATION SHALL BE IN ADDITION TO THE LOG OF RECORDED READINGS REQUIRED IN ACCORDANCE WITH NOTE 5.

9. THE MAXIMUM ALLOWABLE TENSILE LOAD IMPOSED ON THE PULL SECTION SHALL BE EQUAL TO 90% OF THE PRODUCT OF THE SPECIFIED MINIMUM YIELD STRENGTH OF THE PIPE AND THE AREA OF THE PIPE SECTION. IF MORE THAN ONE VALUE IS INVOLVED FOR A GIVEN PULL SECTION, THE LESSER SHALL GOVERN.

10. A SWIVEL SHALL BE USED TO CONNECT THE PULL SECTION TO THE REAMING ASSEMBLY TO MINIMIZE TORSIONAL STRESS IMPOSED ON THE SECTION.

11. THE PULL SECTION SHALL BE SUPPORTED AS IT PROCEEDS DURING PULLBACK SO THAT IT MOVES FREELY AND THE PIPE AND COATING ARE NOT DAMAGED.

12. THE PULL SECTION SHALL BE INSTALLED IN THE REAMED HOLE IN SUCH A MANNER THAT EXTERNAL STRESSES ARE MINIMIZED. THE PULL SECTION MAY BE BALLASTED INTERNALLY WITH WATER TO HELP REDUCE PULLING STRESSES. ANY DAMAGE TO THE PIPE RESULTING FROM EXTERNAL PRESSURE OR EXCESSIVE STRESS DURING INSTALLATION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

13. BUOYANCY MODIFICATION SHALL BE USED AT THE DISCRETION OF THE CONTRACTOR. ANY BUOYANCY MODIFICATION PROCEDURE PROPOSED FOR USE SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO USE. NO PROCEDURE SHALL BE USED WHICH HAS NOT BEEN APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THE PULL SECTION RESULTING FROM BUOYANCY MODIFICATION.

14. IF THE PULL SECTION IS CORROSION COATED, IT SHALL BE INSPECTED FOR HOLIDAYS WITH A HOLIDAY DETECTOR AS IT ENTERS THE HOLE. ANY COATING DAMAGE FOUND SHALL BE REPAIRED.

15. THE COMPOSITION OF ALL DRILLING FLUIDS PROPOSED FOR USE SHALL BE SUBMITTED TO THE OWNER FOR REVIEW AND APPROVAL. NO FLUID WILL BE APPROVED OR UTILIZED THAT DOES NOT COMPLY WITH PERMIT REQUIREMENTS AND ENVIRONMENTAL REGULATIONS.

16. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING, TRANSPORTING, AND STORING ANY WATER REQUIRED FOR DRILLING FLUIDS.

17. CONTRACTOR SHALL MAXIMIZE RECIRCULATION OF DRILLING FLUID SURFACE RETURNS. CONTRACTOR SHALL PROVIDE SOLIDS CONTROL AND FLUID CLEANING EQUIPMENT OF A CONFIGURATION AND CAPACITY THAT CAN PROCESS SURFACE RETURNS AND PRODUCE DRILLING FLUID WITH APPROPRIATE PROPERTIES AND FOR REMOVAL OF EXCESS CUTTINGS FROM THE FLUID.

18. DISPOSAL OF EXCESS DRILLING FLUIDS IS THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE CONDUCTED IN COMPLIANCE WITH OWNER POLICIES AND PROCEDURES, ALL ENVIRONMENTAL REGULATIONS, RIGHT-OF-WAY AND WORKSPACE AGREEMENTS, AND PERMIT REQUIREMENTS. DRILLING FLUID DISPOSAL PROCEDURES PROPOSED FOR USE SHALL BE SUBMITTED TO THE OWNER FOR APPROVAL TWO WEEKS PRIOR TO CONSTRUCTION.

19. CONTRACTOR SHALL EMPLOY HIS BEST EFFORTS TO MAINTAIN FULL ANNULAR CIRCULATION OF DRILLING FLUIDS. DRILLING FLUID RETURNS AT LOCATIONS OTHER THAN THE ENTRY AND EXIT POINTS SHALL BE MINIMIZED. IN THE EVENT THAT ANNULAR CIRCULATION IS LOST, THE CONTRACTOR SHALL TAKE IMMEDIATE STEPS TO RESTORE CIRCULATION. IF INADVERTENT SURFACE RETURNS OF DRILLING FLUIDS OCCUR, THEY SHALL BE IMMEDIATELY CONTAINED, COLLECTED, AND REMOVED/DISPOSED IN ACCORDANCE WITH OWNER POLICIES AND I.R. CONTINGENCY PLAN.

20. THE CONTRACTOR SHALL SUBMIT TO THE OWNER A LIST OF ON SITE CONTAINMENT EQUIPMENT AND SDS SHEETS FOR ALL DRILLING FLUID ADDITIVES TO BE INCLUDED IN THE IR PLAN FOUR WEEKS PRIOR TO CONSTRUCTION. THE PLAN SHALL ADDRESS, BUT NOT BE LIMITED TO, THE FOLLOWING ITEMS:
a. IDENTIFICATION OF AREAS REQUIRING PROTECTION (STREAMS, WETLANDS, PONDS, RESTRICTED PROPERTY, ETC.);
b. DESCRIPTION OF THE METHOD(S) THAT WILL BE USED TO LOCATE INADVERTENT RETURNS WHEN THEY OCCUR;
c. DESCRIPTION OF THE METHOD(S) THAT WILL BE USED TO CONTAIN, COLLECT, AND REMOVE/DISPOSE OF THE INADVERTENT RETURNS;
d. METHOD TO RESTORE AREAS ONTO WHICH INADVERTENT RETURNS WERE CONTAINED.

21. IF THE AMOUNT OF INADVERTENT RETURNS EXCEEDS THE CAPACITY OF THE CONTAINMENT, DRILLING OPERATIONS SHALL BE SUSPENDED UNTIL THE VOLUME OF INADVERTENT RETURNS CAN BE MANAGED WITHOUT EXCEEDING THE CAPACITY OF THE CONTAINMENT.

22. THE HDD CONSTRUCTION SHOULD BE OBSERVED ON A FULL-TIME BASIS BY A REPRESENTATIVE OF THE ENGINEER.

SITE CONDITIONS (GEOLOGY NOTES AND SUBSURFACE SOILS)

THE PROPOSED CROSSING IS LOCATED NEAR THE EASTERN MARGIN OF THE BASIN AND RANGE PHYSIOGRAPHIC PROVINCE. THIS PROVINCE IS CHARACTERIZED BY NORTH-SOUTH TRENDING MOUNTAIN RANGES SEPARATED FROM ADJACENT BROAD VALLEYS BY NORMAL FAULTS. GEOLOGIC FORMATIONS IN THE MOUNTAINS CONSIST PREDOMINANTLY OF PALEOZOIC LIMESTONE, QUARTZITE, SANDSTONE AND MORE RECENT INTRUSIVE VOLCANIC ROCK. REGIONAL UPLIFT ALONG THE NORMAL FAULTS HAS RESULTED IN FRACTURING AND JOINTING OF THE BEDROCK. BASED ON PUBLISHED GEOLOGIC MAPPING BY MCKEAN & HYLLAND (2019) SURFACE SOILS AT THE PROPOSED CROSSING LOCATION CONSIST OF STREAM DEPOSITS THAT CONSISTS PRIMARILY OF SAND, SILT, AND CLAY IN ABANDONED STREAM CHANNELS AND FLOOD PLAINS AND IN DELTA AND LACUSTRINE DEPOSITS. SUBSURFACE CONDITIONS ENCOUNTERED IN THE BORING CONSIST OF PREDOMINANTLY SANDY SOILS INTERBEDDED WITH CLAY.

THE MAJOR SOIL GROUPS ENCOUNTERED DURING THE FIELD EVALUATION ARE DESCRIBED HERE IN THE GENERAL ORDER OF THEIR OCCURRENCE. MORE DETAILED DESCRIPTIONS OF THE SOILS ENCOUNTERED IN THE BORINGS, INCLUDING FIELD GEO-MECHANICAL DATA, SUCH AS DRIVEN SAMPLER BLOW COUNTS, ARE PRESENTED ON THE BORING LOGS (SHEETS 12-14). GEOTECHNICAL PLAN AND PROFILE SHEETS SHOWING THE BORINGS PERFORMED FOR EACH CROSSING WITH RESPECT TO THE EXISTING GROUND (TOPOGRAPHIC SURVEY) AND THE PROPOSED DRILL PATH IS PROVIDED ON SHEETS 5 -6.

REFERENCES

EVANS, JAMES P., MCCALPIN, JAMES P, AND HOLMES, DAVID C., 1996. GEOLOGIC MAP OF THE LOGAN 7.5' QUADRANGLE CACHE COUNTY, UTAH.
UTAH DEPARTMENT OF NATURAL RESOURCES, UTAH GEOLOGICAL SURVEY MISC. PUBLICATION 96-1

LIMITATIONS

1. THE HDD DESIGNS PRESENTED ON THESE DRAWINGS SHALL BE REVIEWED BY THE OWNER AND HDD CONTRACTOR PRIOR TO CONSTRUCTION. SHOULD THE CONTRACTOR DEVIATE FROM THE DESIGN DEPICTED IN THIS DRAWING SET IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ANY ADDITIONAL INFORMATION (INCLUDING, BUT NOT LIMITED TO, GEOTECHNICAL DATA) THAT IS NECESSARY AND TO PERFORM ADDITIONAL ANALYSIS AS REQUIRED TO ACCOMMODATE THEIR REVISED PLAN.

2. THIS WORK WAS PERFORMED IN A MANNER CONSISTENT WITH THAT LEVEL OF CARE AND SKILL ORDINARILY EXERCISED BY OTHER MEMBERS OF TERRACON'S PROFESSION PRACTICING IN THE SAME LOCALITY, UNDER SIMILAR CONDITIONS AND AT THE DATE THE SERVICES ARE PROVIDED. TERRACON MAKES NO OTHER REPRESENTATION, GUARANTEE OR WARRANTY, EXPRESS OR IMPLIED, REGARDING THE SERVICES, COMMUNICATION (ORAL OR WRITTEN), PLANS, OPINION, OR INSTRUMENT OF SERVICE PROVIDED.

3. DESCRIPTIONS CONTAINED IN THESE PLANS ARE BASED ON OUR FIELD OBSERVATIONS AND SUBSURFACE EXPLORATIONS, LIMITED LABORATORY TESTS, AND OUR PRESENT KNOWLEDGE OF THE PROPOSED CONSTRUCTION. IT IS POSSIBLE THAT SOIL OR GROUNDWATER CONDITIONS COULD VARY BETWEEN OR BEYOND THE POINTS EXPLORED. THE DESCRIPTIONS PRESENTED IN THESE PLANS ARE FOR THE EXCLUSIVE USE OF THE CLIENT AND THEIR DESIGNATED CONTRACTORS AND ARE ONLY APPLICABLE TO THE SPECIFIC SITE REFERENCED. THE DESCRIPTIONS ARE NOT TO BE EXTRAPOLATED TO OTHER PROJECTS.

4. THE SUBSURFACE CONDITIONS DESCRIBED IN THIS DRAWING SET ARE ONLY APPLICABLE TO THE POINTS OF EXPLORATION.

5. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SELECT THE CONSTRUCTION MEANS AND METHODS (I.E., TYPE OF DRILLING FLUID, PUMPING RATE FOR FLUID, TOOLING SELECTION, RATE OF ADVANCEMENT, DRILLING FLUID CONTAINMENT, INADVERTENT FLUID RELEASE CONTINGENCY PLANNING, ETC.).

PAD NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR THEIR MEANS AND METHODS AND TO ANCHOR THEIR EQUIPMENT DURING CONSTRUCTION.

2. EROSION AND SEDIMENT CONTROL IS NOT DEPICTED ON THESE DRAWINGS. THE HDD CONTRACTOR IS RESPONSIBLE FOR INSTALLING AND MAINTAINING EROSION AND SEDIMENT CONTROL DEVICES IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS.

3. GRADING DESIGN IS BY OTHERS.

4. TEMPORARY EXCAVATIONS SHALL BE IN ACCORDANCE WITH OSHA REQUIREMENTS.

5. THE CONTRACTOR SHALL RESTORE THE SITE GRADING AND VEGETATION TO ITS FORMER CONDITION AT THE COMPLETION OF WORK.

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ISSUED FOR CONSTRUCTION

REFERENCE DRAWINGS		
DRAWING NUMBER	REV	DRAWING DESCRIPTION
ENB-P-FL153-MAP-001	0	8" HP TAPLINE FROM HY0003

WORK ORDERS	
WO NUMBER	DESCRIPTION
100988.86	FL-153: INSTALL 450 LF & 475 LF OF 8" STEEL PIPE VIA HDD TRENCHLESS METHODS

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
0	ISSUED FOR CONSTRUCTION	10/16/2025	RFR	JWD/DD

ENGINEERING RECORD
DRAWN BY: TERRACON (RR)
CHECKED BY: TERRACON (JD)
PROJECT ENGR: ANDREW ASPULND
SURVEYOR: ENSIGN
ENGR MNGR: WILL RADFORD
CONSTR MNGR: NA
-

ENBRIDGE

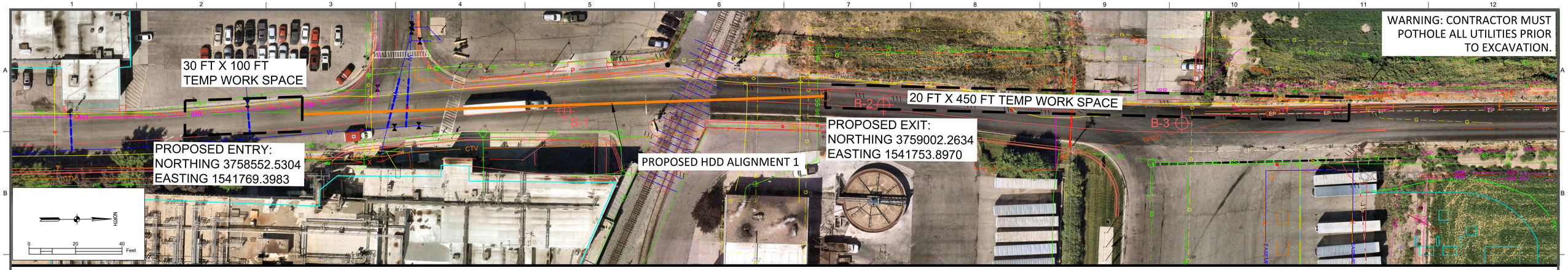
SECTION: 32 T 11N R 1E
ELEVATION: 4610.8 AT ENTRY
LAT: LONG:
SCALE: NA

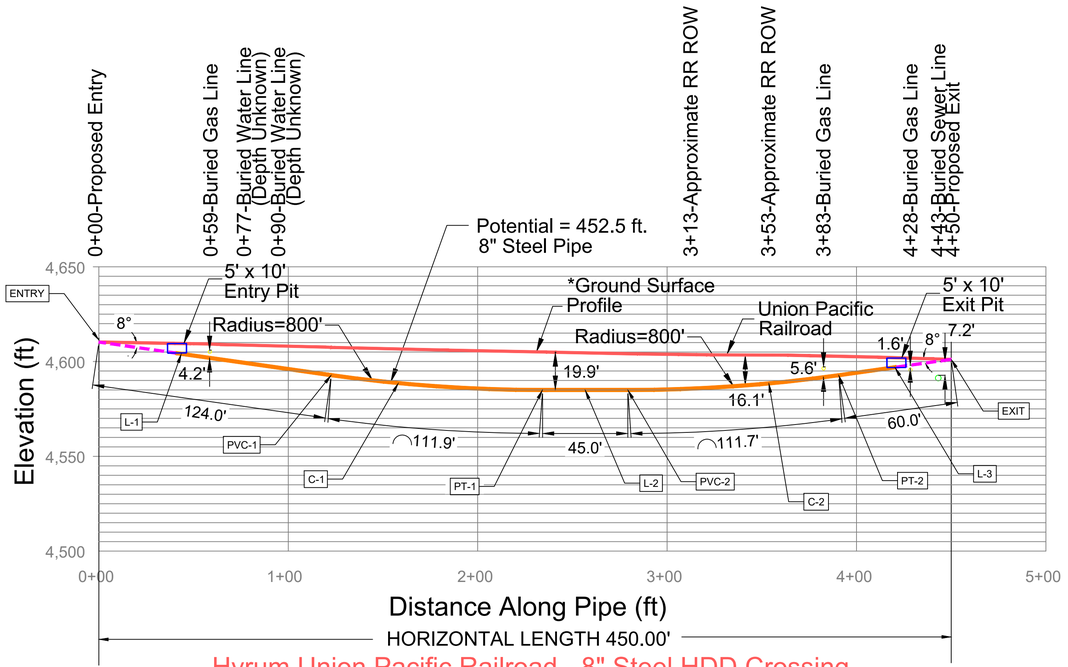
LINE NUMBER:
FACILITY:
TITLE: FL-153
DESCRIPTION: INSTALL 450 LF & 475 LF OF 8" STEEL PIPE HDD TRENCHLESS CROSSING
ADDRESS: CONSTRUCTION NOTES
200 WEST NEAR 570 NORTH

CITY	COUNTY	STATE
HYRUM	CACHE	UTAH

DRAWING NUMBER	SHEET	REVISION
ENB-P-FL153-MAP-001A	2 OF 14	0

2 Construction Notes.dwg – 10/14/2025 – 04:59pm





Hyrum Union Pacific Railroad - 8" Steel HDD Crossing

Ground Elevation at 4605'±

HDD Pipe Length = 452.5'±

DRILL DATA				
DATA POINT	STATION	ELEVATION	NORTHING	EASTING
ENTRY	0+00.0	4610.3'	3758552.5304	1541769.3983
PVC-1	1+22.7	4592.8'	3758675.1492	1541765.1719
PT-1	2+34.2	4585.0'	3758786.6282	1541761.3295
PVC-2	2+79.2	4585.0'	3758831.6101	1541759.7790
PT-2	3+90.6	4592.8'	3758942.8825	1541755.9437
EXIT	4+50.0	4601.1'	3759002.2634	1541753.8970

LINE/CURVE DATA			
LINE	LENGTH	RADIUS	DELTA
L1	124.0'		
C1	111.9'	800'	8°
L2	45.0'		
C2	111.7'	800'	8°
L3	60.0'		

*THE ANALYSES PERFORMED AND THE RECOMMENDATIONS DEVELOPED FOR THIS PROJECT ARE BASED ON TOPOGRAPHIC AND CONCEPTUAL ALIGNMENT DATA PROVIDED BY THE CLIENT; ANY VARIATIONS FROM THIS CLIENT-PROVIDED DATA SHOULD BE REPORTED TO TERRACON TO EVALUATE THE IMPACTS OF SHOULD CHANGES ON OUR ANALYSES AND RECOMMENDATIONS

ISSUED FOR CONSTRUCTION

REFERENCE DRAWINGS		
DRAWING NUMBER	REV	DRAWING DESCRIPTION
ENB-P-FL153-MAP-001	0	8" HP TAPLINE FROM HY0003

WORK ORDERS	
WO NUMBER	DESCRIPTION
100988.86	FL-153: INSTALL 450 LF & 475 LF OF 8" STEEL PIPE VIA HDD TRENCHLESS METHODS

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
0	ISSUED FOR CONSTRUCTION	10/16/2025	RFR	JWD/DD

ENGINEERING RECORD
DRAWN BY: TERRACON (RR)
CHECKED BY: TERRACON (JD)
PROJECT ENGR: ANDREW ASPULND
SURVEYOR: ENSIGN
ENGR MNGR: WILL RADFORD
CONSTR MNGR: NA
-

ENBRIDGE

SECTION: 32 T 11N R 1E

ELEVATION: 4610.8 AT ENTRY

LAT: LONG:

SCALE: 1"=40'-0" H 1"=40'-0" V

LINE NUMBER:

FACILITY:

TITLE: FL-153
INSTALL 450 LF & 475 LF OF 8" STEEL PIPE
HDD TRENCHLESS CROSSING
HDD PLAN AND PROFILE ALIGNMENT 1

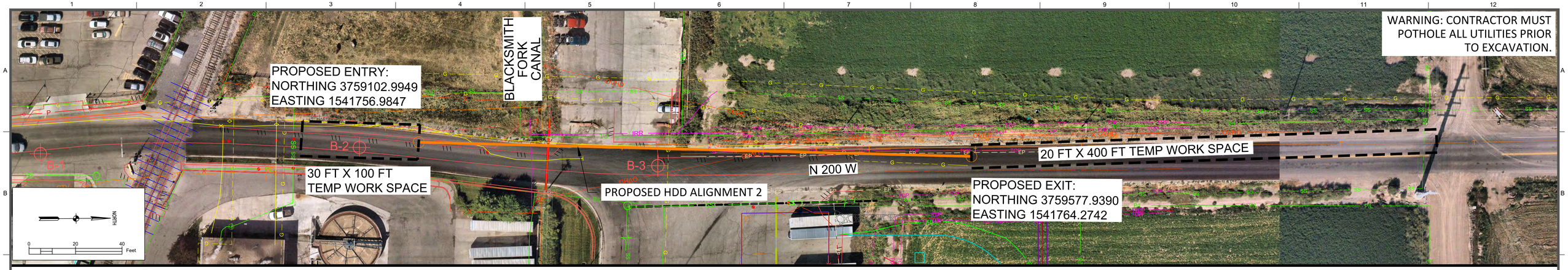
DESCRIPTION:

ADDRESS: 200 WEST NEAR 570 NORTH

CITY	COUNTY	STATE
HYRUM	CACHE	UTAH

DRAWING NUMBER	SHEET	REVISION
ENB-P-FL153-MAP-001A	3 OF 14	0

3 HDD Plan and Profile.dwg – 10/14/2025 – 04:59pm

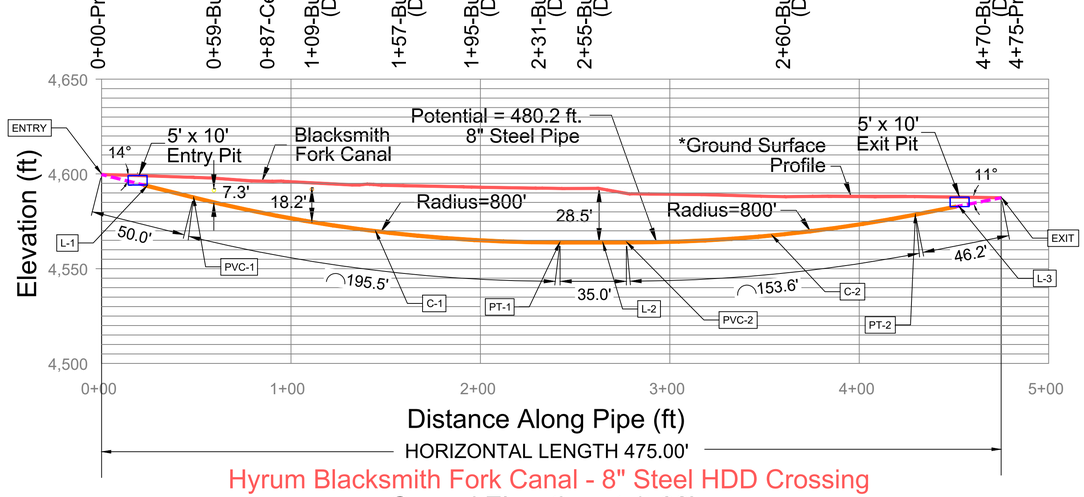


DRILL DATA

DATA POINT	STATION	ELEVATION	NORTHING	EASTING
ENTRY	0+00.0	4599.7'	3759102.9949	1541756.9847
PVC-1	0+48.5	4587.6'	3759151.5041	1541757.7217
PT-1	2+42.1	4563.8'	3759345.0193	1541760.6615
PVC-2	2+77.1	4563.8'	3759380.0161	1541761.1932
PT-2	4+29.7	4578.5'	3759532.6457	1541763.5119
EXIT	4+75.0	4587.1'	3759577.9390	1541764.2742

LINE/CURVE DATA

LINE	LENGTH	RADIUS	DELTA
L1	50.0'		
C1	195.5'	800'	14°
L2	35.0'		
C2	153.6'	800'	11°
L3	46.2'		



Hyrum Blacksmith Fork Canal - 8" Steel HDD Crossing

Ground Elevation at 4592'±

HDD Pipe Length = 480.2'±

*THE ANALYSES PERFORMED AND THE RECOMMENDATIONS DEVELOPED FOR THIS PROJECT ARE BASED ON TOPOGRAPHIC AND CONCEPTUAL ALIGNMENT DATA PROVIDED BY THE CLIENT; ANY VARIATIONS FROM THIS CLIENT-PROVIDED DATA SHOULD BE REPORTED TO TERRACON TO EVALUATE THE IMPACTS OF SUCH CHANGES ON OUR ANALYSES AND RECOMMENDATIONS

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ISSUED FOR CONSTRUCTION

REFERENCE DRAWINGS		
DRAWING NUMBER	REV	DRAWING DESCRIPTION
ENB-P-FL153-MAP-001	0	8" HP TAPLINE FROM HY0003

WORK ORDERS	
WO NUMBER	DESCRIPTION
100988.86	FL-153: INSTALL 450 LF & 475 LF OF 8" STEEL PIPE VIA HDD TRENCHLESS METHODS

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
0	ISSUED FOR CONSTRUCTION	10/16/2025	RFR	JWD/DD

ENGINEERING RECORD
DRAWN BY: TERRACON (RR)
CHECKED BY: TERRACON (JD)
PROJECT ENGR: ANDREW ASPULND
SURVEYOR: ENSIGN
ENGR MNGR: WILL RADFORD
CONSTR MNGR: NA
-

ENBRIDGE

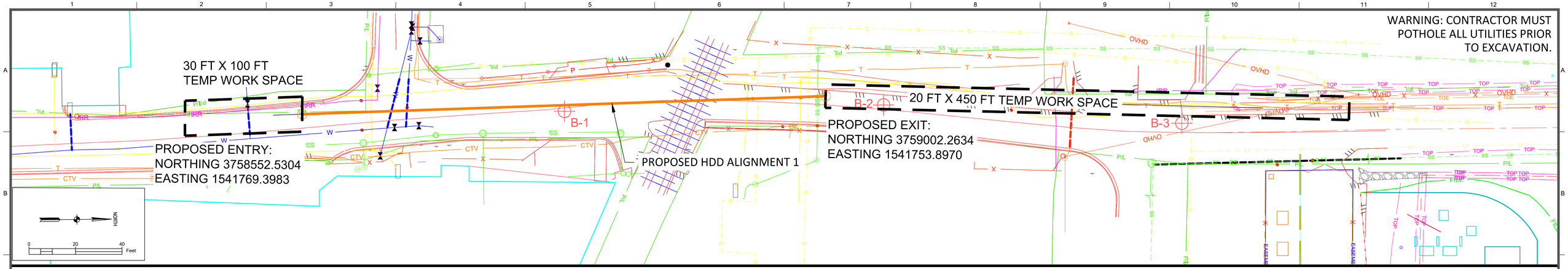
SECTION: 32 T 11N R 1E
ELEVATION: 4610.8 AT ENTRY
LAT: LONG:
SCALE: 1"=40'-0" H 1"=40'-0" V

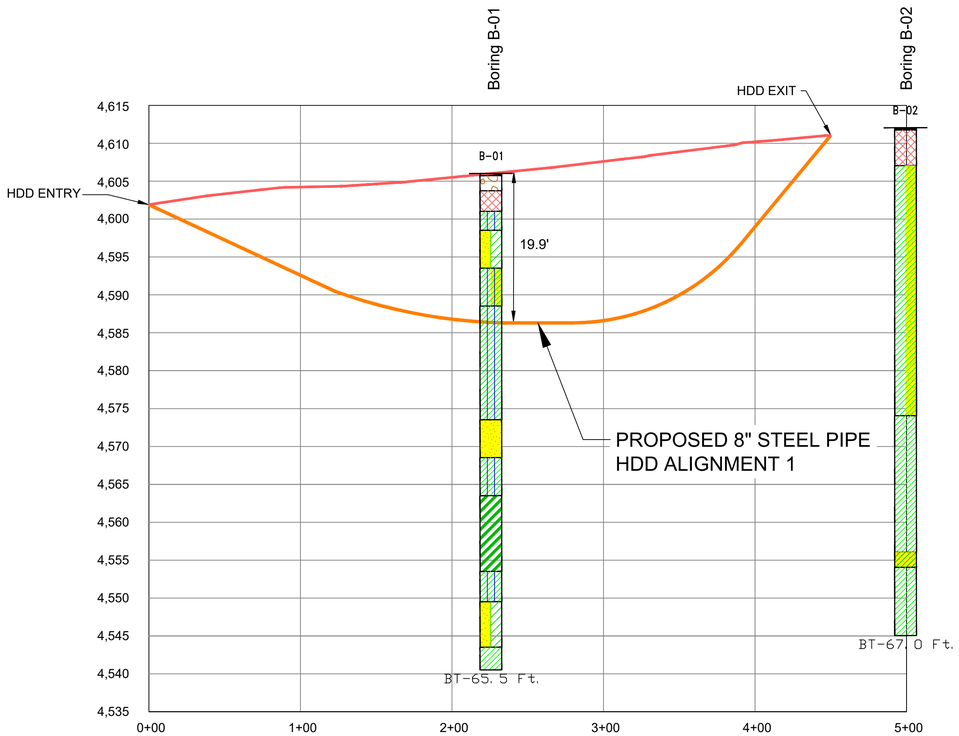
LINE NUMBER:
FACILITY: FL-153
TITLE: INSTALL 450 LF & 475 LF OF 8" STEEL PIPE HDD TRENCHLESS CROSSING
DESCRIPTION: HDD PLAN AND PROFILE ALIGNMENT 2
ADDRESS: 200 WEST NEAR 570 NORTH

CITY	COUNTY	STATE
HYRUM	CACHE	UTAH

DRAWING NUMBER	SHEET	REVISION
ENB-P-FL153-MAP-001A	4 OF 14	0

4 HDD Plan and Profile.dwg — 10/14/2025 — 04:58pm





NOTE:
SEE SHEETS 12-14 FOR ADDITIONAL BORING INFORMATION.

VERTICAL SCALE
0 Approx. Scale in Feet 20

HORIZONTAL SCALE
0 Approx. Scale in Feet 200

CALL THREE BUSINESS DAYS BEFORE YOU DIG TO HAVE UTILITIES LOCATED 811 or 1-800-662-4111

ISSUED FOR CONSTRUCTION

REFERENCE DRAWINGS		
DRAWING NUMBER	REV	DRAWING DESCRIPTION
ENB-P-FL153-MAP-001	0	8" HP TAPLINE FROM HY0003

WORK ORDERS	
WO NUMBER	DESCRIPTION
100988.86	FL-153: INSTALL 450 LF & 475 LF OF 8" STEEL PIPE VIA HDD TRENCHLESS METHODS

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
0	ISSUED FOR CONSTRUCTION	10/16/2025	RFR	JWD/DD

ENGINEERING RECORD
DRAWN BY: TERRACON (RR)
CHECKED BY: TERRACON (JD)
PROJECT ENGR: ANDREW ASPULND
SURVEYOR: ENSIGN
ENGR MNGR: WILL RADFORD
CONSTR MNGR: NA
-

ENBRIDGE

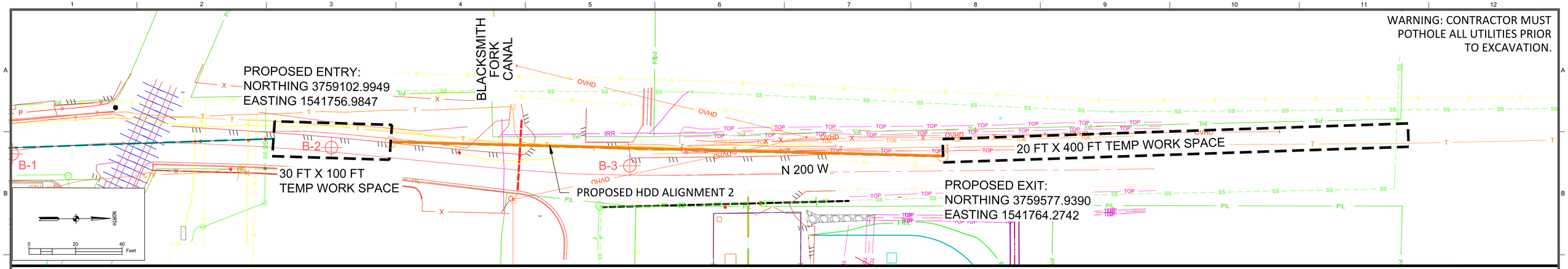
SECTION: 32 T 11N R 1E
ELEVATION: 4610.8 AT ENTRY
LAT: LONG:
SCALE: 1"=40'-0" H 1"=40'-0" V

LINE NUMBER:
FACILITY:
TITLE: FL-153
DESCRIPTION: INSTALL 450 LF & 475 LF OF 8" STEEL PIPE HDD TRENCHLESS CROSSING
ADDRESS: HDD GEOTECHNICAL PLAN AND PROFILE ALIGNMENT 1
200 WEST NEAR 570 NORTH

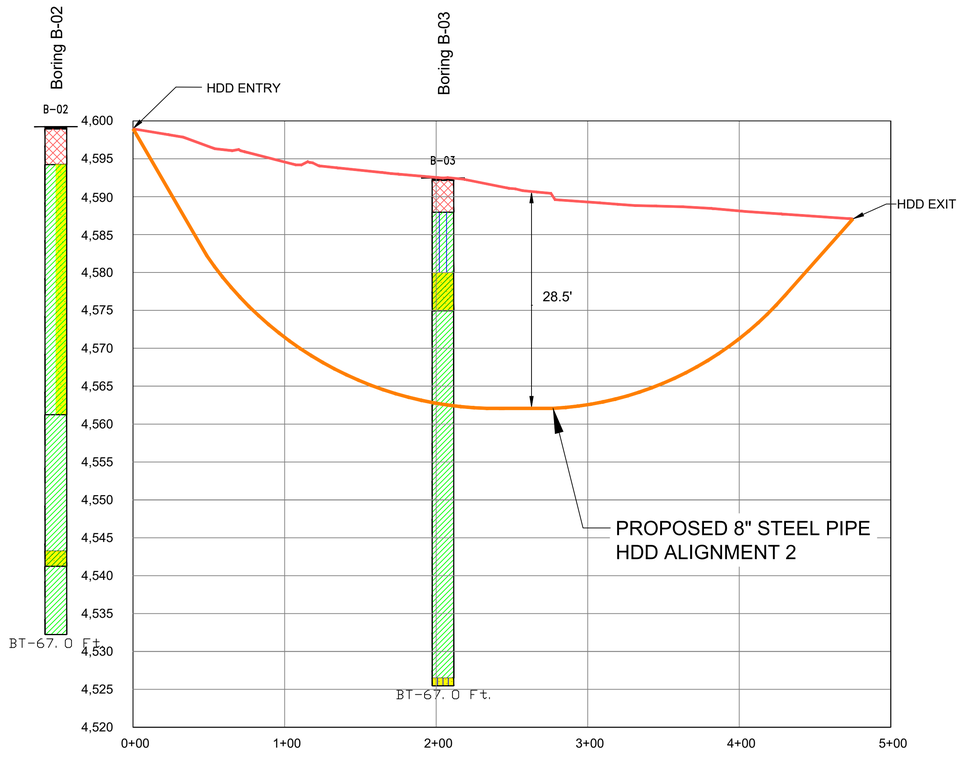
CITY	COUNTY	STATE
HYRUM	CACHE	UTAH

DRAWING NUMBER	SHEET	REVISION
ENB-P-FL153-MAP-001A	5 OF 14	0

5 HDD Geotechnical Plan and Profile.dwg — 10/14/2025 — 04:57am



NOTE:
SEE SHEETS 12-14 FOR ADDITIONAL BORING INFORMATION.



VERTICAL SCALE
0 Approx. Scale in Feet 20

HORIZONTAL SCALE
0 Approx. Scale in Feet 200

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REFERENCE DRAWINGS		
DRAWING NUMBER	REV	DRAWING DESCRIPTION
ENB-P-FL153-MAP-001	0	8" HP TAPLINE FROM HY0003

WORK ORDERS	
WO NUMBER	DESCRIPTION
100988.86	FL-153: INSTALL 450 LF & 475 LF OF 8" STEEL PIPE VIA HDD TRENCHLESS METHODS

REVISIONS				
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0	ISSUED FOR CONSTRUCTION	10/16/2025	RFR	JWD/DD

ENGINEERING RECORD
DRAWN BY: TERRACON (RR)
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PROJECT ENGR: ANDREW ASPULND
SURVEYOR: ENSIGN
ENGR MNGR: WILL RADFORD
CONSTR MNGR: NA
-

ENBRIDGE

SECTION: 32 T 11N R 1E
ELEVATION: 4610.8 AT ENTRY
LAT: LONG:
SCALE: 1"=40'-0" H 1"=40'-0" V

LINE NUMBER:
FACILITY: FL-153
TITLE: INSTALL 450 LF & 475 LF OF 8" STEEL PIPE HDD TRENCHLESS CROSSING
DESCRIPTION: HDD GEOTECHNICAL PLAN AND PROFILE ALIGNMENT 2
ADDRESS: 200 WEST NEAR 570 NORTH

CITY	COUNTY	STATE
HYRUM	CACHE	UTAH

DRAWING NUMBER	SHEET	REVISION
ENB-P-FL153-MAP-001A	6 OF 14	0

6 HDD Geotechnical Plan and Profile.dwg — 10/14/2025 — 04:57am

Settlement Estimation

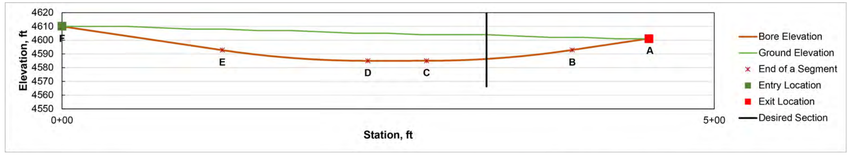
Pipe Specification

Pipe Material	Steel Pipe	
Outer Diameter	8.625	in
Wall Thickness	0.322	in
Inner Diameter	7.981	in
Dimension Ratio	26.7857143	

HDD Bore Path

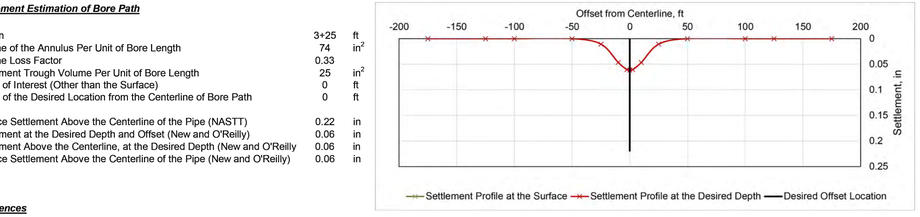
Segment	Curve Type	True Length	Unit
1	Tangent	124	ft
2	Vertical Curve	112	ft
3	Tangent	45	ft
4	Vertical Curve	112	ft
5	Tangent	60	ft

Entry Angle	8	Degrees
Exit Angle	8.0	Degrees
Total Drill Length	453	ft



Settlement Estimation of Bore Path

Station	3+25	ft
Volume of the Annulus Per Unit of Bore Length	74	in^2
Volume Loss Factor	0.33	
Settlement Trough Volume Per Unit of Bore Length	25	in^2
Depth of Interest (Other than the Surface)	0	ft
Offset of the Desired Location from the Centerline of Bore Path	0	ft
Surface Settlement Above the Centerline of the Pipe (NASTT)	0.22	in
Settlement at the Desired Depth and Offset (New and O'Reilly)	0.06	in
Settlement Above the Centerline, at the Desired Depth (New and O'Reilly	0.06	in
Surface Settlement Above the Centerline of the Pipe (New and O'Reilly)	0.06	in



References

NASTT's "Horizontal Directional Drilling (HDD) Good Practices Guidelines", 4th Edition, by The HDD Consortium (2017).

Stein D, and Stein R. (2013). "Trenchless Technology for Installation of Cables and Pipelines- Horizontal Directional Drilling (HDD)" Prof. Dr.-Ing. Stein and Partners GmbH.

New, B. M., and O'Reilly, M. P. (1991). "Tunnelling Induced Ground Movements, Predicting their Magnitude and Effects."Proc., 4th Conf. on Ground Movements and Structures.

Mair, R.J., Taylor, R.N., Bracegirdle, A. (1993). Subsurface Settlement Profiles Above Tunnels in Clay. Géotechnique 43, Issue 2.

Leach, G. (1984). "Pipeline Response to Tunnelling", British Gas Engineering Research Station.

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TC			
Checked by:	Project No.	Date	Exhibit
DD	61255162	9/8/2025	A-4

NOTES FOR HYDRAULIC FRACTURING ANALYSIS PRESSURE CHART

1. ALLOWABLE BOREHOLE PRESSURE FOR THE ANTICIPATED HDD PILOT HOLE WAS EVALUATED USING THE DELFT EQUATION. THIS EVALUATION IS PRELIMINARY BASED ON OUR ASSUMPTIONS AND SHOULD BE CHECKED FOLLOWING SELECTION OF DRILLING EQUIPMENT BY THE CONTRACTOR.

2. ANALYSIS WAS BASED ON ENTRY ANGLE OF 8 DEGREES FROM HORIZONTAL, AND AN EXIT ANGLE OF 8 DEGREES FROM HORIZONTAL. A PILOT HOLE DIAMETER OF 10 INCHES, A DRILL ROD DIAMETER OF 4.5 INCHES, A MUD PUMP OUTPUT OF UP TO 100 GALLONS PER MINUTE, AND A MUD UNIT WEIGHT OF 75 PCF. CHANGES IN THE DRILLING FLUID PROPERTIES AND DRILLING EQUIPMENT WILL AFFECT THE ANALYSIS RESULTS.

3. PREDICTED DRILLING FLUID PRESSURE CURVES ARE APPROXIMATE AND WERE DEVELOPED USING DRILLING FLUID RHEOLOGY FORMULAS AND SEVERAL HDD DRILLING RULES OF THUMB (I.E., 1 PSI DYNAMIC HEAD LOSS PER 15-FOOT-LONG DRILL ROD.). THIS ASSUMES THE HDD DRILL CUTTINGS ARE BEING PROPERLY REMOVED FROM THE DRILLING FLUID, AS RECOMMENDED IN THE HDD GOOD PRACTICES GUIDELINES. IF THE DRILLING FLUID IS HEAVILY LOADED WITH SOIL, THE PRESSURES CAN BE HIGHER. IF SOLIDS ARE ALLOWED TO BUILD UP IN THE HDD BORE HOLE DURING DRILLING, THE PREDICTED PRESSURES CAN EXCEED ESTIMATES, WHICH CAN LEAD TO INADVERTENT FLUID RETURNS TO THE GROUND SURFACE.

4. ALL HDD DRILLING AND PIPELINE INSTALLATION SHOULD BE PERFORMED IN GENERAL ACCORDANCE WITH THE "NASTT HORIZONTAL DIRECTIONAL DRILLING (HDD) GOOD PRACTICES GUIDELINES", FOURTH EDITION (2017).

5. AS INDICATED BY THE ALLOWABLE PRESSURE CURVES PRESENTED, THERE IS A HIGHER RISK FOR INADVERTENT FLUID RETURNS BETWEEN STATIONS 1+00 AND 2+90 AND NEAR THE HDD EXIT POINT (APPROXIMATELY STATION 4+10). THE HDD CONTRACTOR SHOULD USE ADDITIONAL CAUTION AND LIMIT DRILLING FLUID PRESSURES TO LESS THAN 50 PSI NEAR THE EXIT POINT. IF THE CONTRACTOR IS DRILLING IN ACCORDANCE WITH THE HORIZONTAL DIRECTIONAL DRILLING GOOD PRACTICES GUIDELINES, THE PRESSURE SHOULD BE SIMILAR TO THAT DEPICTED FOR THE "1 PSI PER JOINT" PLOT.

6. THIS ANALYSIS IS BASED ON THE EQUIPMENT AND DRILLING MUD PROPERTIES ESTIMATED BY TERRACON. IF THE CONTRACTOR DEVIATES FROM THE PROVIDED EQUIPMENT OR DRILLING MUD PROPERTIES THE ANALYSIS SHOULD BE CHECKED AND MODIFIED AS APPROPRIATE FOR CONSTRUCTION PURPOSES.

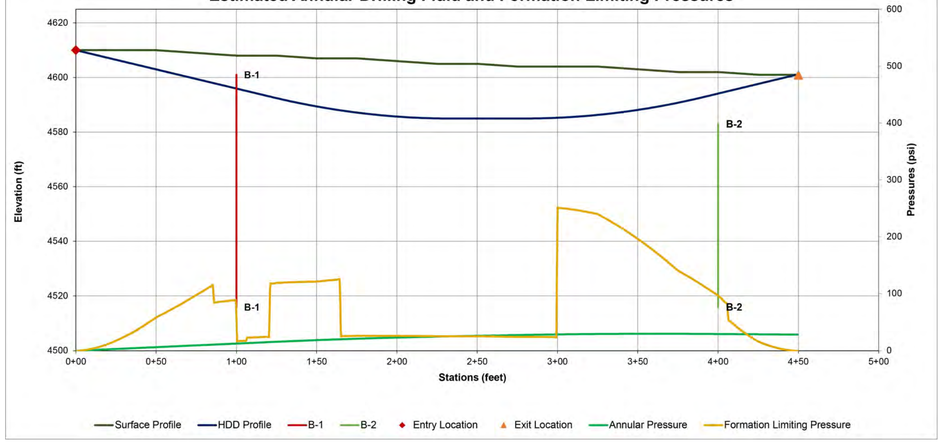
REFERENCES:

1. EVANS, JAMES P., MCCALPIN, JAMES P, AND HOLMES, DAVID C., 1996. GEOLOGIC MAP OF THE LOGAN 7.5' QUADRANGLE CACHE COUNTY, UTAH. UTAH DEPARTMENT OF NATURAL RESOURCES, UTAH GEOLOGICAL SURVEY MISC. PUBLICATION 96-1

2. ALLOWABLE BOREHOLE PRESSURE FOR THE ANTICIPATED HDD PILOT HOLE WAS EVALUATED USING THE DELFT GEOTECHNICS EQUATION, AS PUBLISHED IN "RECOMMENDED GUIDELINES FOR INSTALLATION OF PIPELINES BENEATH LEVEES USING HORIZONTAL DIRECTIONAL DRILLING, APPENDIX B, CPAR-GL-98-1," BY THE PIPELINE RESEARCH COUNCIL INTERNATIONAL AND THE US ARMY CORPS OF ENGINEERS (1998), AND USING

3. THE APPROACH OUTLINED BY BENNETT, R.D., WALLIN, K., (2008). THIS EVALUATION IS PRELIMINARY BASED ON OUR ASSUMPTIONS AND SHOULD BE CHECKED FOLLOWING SELECTION OF DRILLING EQUIPMENT BY THE CONTRACTOR.

Estimated Annular Drilling Fluid and Formation Limiting Pressures



Assumptions:

Drilling Fluid Weight (pcf)	74.8	Pilot Hole Diameter (in)	10
Pump Output (gpm)	100	Pilot Hole Drill Rod Diameter (in)	4.5
Plastic Viscosity (cP)	25	Formation Limiting Pressure Model	Cavity Expansion/NASTT
Yield Point (lb/100ft^2)	30		

References

Bennett, David and Wallin, Kathryn. (2008). "Step By Step Evaluation of Hydrofracture Risks for HDD Projects". NASTT No-Dig Conference and Exhibition.

Ariaratnam, Samuel T., Stauber, R. and Harbin, Bruce. (2004). "Modeling of Annular Pressures in Horizontal Directional Drilling". Proceedings of IPC 2004 International Pipeline Conference.

Baroid. (1997). "Drilling Fluids Handbook".

NASTT's "Horizontal Directional Drilling (HDD) Good Practices Guidelines", 4th Edition, by The HDD Consortium (2017).

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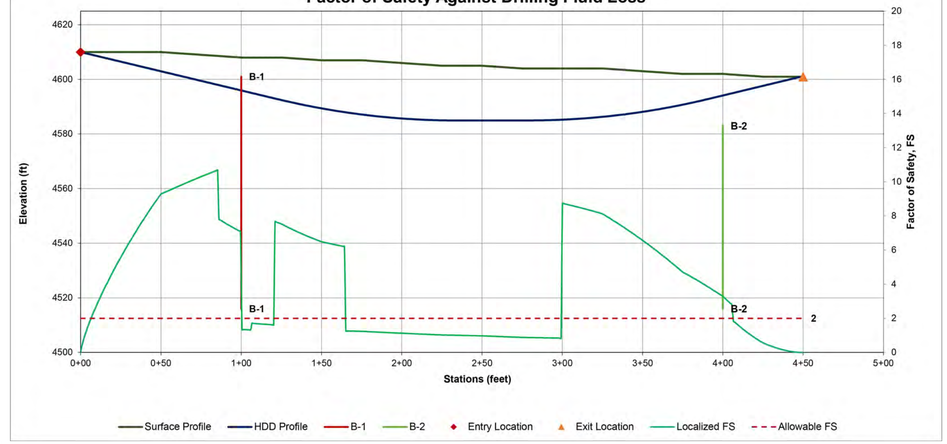
Checked by:	Project No.	Date	Exhibit
DD	61255162	9/8/2025	A-1

Factor of Safety Against Drilling Fluid Loss



Assumptions:

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Pump Output (gpm)	100	Pilot Hole Drill Rod Diameter (in)	4.5
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Yield Point (lb/100ft^2)	30		

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Ariaratnam, Samuel T., Stauber, R. and Harbin, Bruce. (2004). "Modeling of Annular Pressures in Horizontal Directional Drilling". Proceedings of IPC 2004 International Pipeline Conference.

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Checked by:	Project No.	Date	Exhibit
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ISSUED FOR CONSTRUCTION

REFERENCE DRAWINGS			WORK ORDERS	
DRAWING NUMBER	REV	DRAWING DESCRIPTION	WO NUMBER	DESCRIPTION
ENB-P-FL153-MAP-001	0	8" HP TAPLINE FROM HY0003	100988.86	FL-153: INSTALL 450 LF & 475 LF OF 8" STEEL PIPE VIA HDD TRENCHLESS METHODS

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
0	ISSUED FOR CONSTRUCTION	10/16/2025	RFR	JWD/DD

ENGINEERING RECORD
DRAWN BY: TERRACON (RR)
CHECKED BY: TERRACON (JD)
PROJECT ENGR: ANDREW ASPULND
SURVEYOR: ENSIGN
ENGR MNGR: WILL RADFORD
CONSTR MNGR: NA
-

ENBRIDGE

SECTION: 32 T 11N R 1E

ELEVATION: 4610.8 AT ENTRY

LAT: LONG:

SCALE: NA

LINE NUMBER:

FACILITY:

TITLE: FL-153 INSTALL 450 LF & 475 LF OF 8" STEEL PIPE HDD TRENCHLESS CROSSING HDD PIPE STRESS & IR ANALYSIS ALIGNMENT 1

DESCRIPTION:

ADDRESS: 200 WEST NEAR 570 NORTH

CITY	COUNTY	STATE
HYRUM	CACHE	UTAH

DRAWING NUMBER	SHEET	REVISION
ENB-P-FL153-MAP-001A	7 OF 14	0

7 HDD Pipe Stress & IR Analysis.dwg – 10/14/2025 – 04:56pm

Settlement Estimation

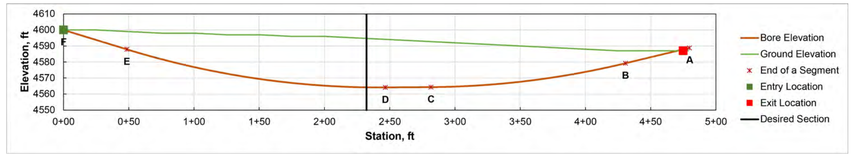
Pipe Specification

Pipe Material	Steel Pipe	
Outer Diameter	8.625	in
Wall Thickness	0.322	in
Inner Diameter	7.981	in
Dimension Ratio	26.7857143	

HDD Bore Path

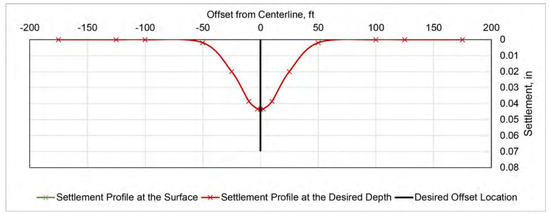
Segment	Curve Type	True Length	Unit
1	Tangent	50	ft
2	Vertical Curve	200	ft
3	Tangent	35	ft
4	Vertical Curve	150	ft
5	Tangent	50	ft

Entry Angle	14	Degrees
Exit Angle	11.1	Degrees
Total Drill Length	485	ft



Settlement Estimation of Bore Path

Station	2+32	ft
Volume of the Annulus Per Unit of Bore Length	79	in^2
Volume Loss Factor	0.33	
Settlement Trough Volume Per Unit of Bore Length	28	in^2
Depth of Interest (Other than the Surface)	0	ft
Offset of the Desired Location from the Centerline of Bore Path	0	ft
Surface Settlement Above the Centerline of the Pipe (NASTT)	0.07	in
Settlement at the Desired Depth and Offset (New and O'Reilly)	0.04	in
Settlement Above the Centerline, at the Desired Depth (New and O'Reilly	0.04	in
Surface Settlement Above the Centerline of the Pipe (New and O'Reilly)	0.04	in



References

NASTT's "Horizontal Directional Drilling (HDD) Good Practices Guidelines", 4th Edition, by The HDD Consortium (2017).

Stein D, and Stein R. (2013). "Trenchless Technology for Installation of Cables and Pipelines- Horizontal Directional Drilling (HDD)" Prof. Dr.-Ing. Stein and Partners GmbH.

New, B. M., and O'Reilly, M. P. (1991). "Tunnelling Induced Ground Movements, Predicting their Magnitude and Effects."Proc., 4th Conf. on Ground Movements and Structures.

Mair, R.J., Taylor, R.N., Bracegirdle, A. (1993). Subsurface Settlement Profiles Above Tunnels in Clay. Géotechnique 43, Issue 2.

Leach, G (1984). "Pipeline Response to Tunnelling", British Gas Engineering Research Station.

Calculated by:	Hyrum FL-153 Blacksmith Fork Canal		
TC			
Checked by:	Project No.	Date	Exhibit
DD	61255162	9/8/2025	A-4

NOTES FOR HYDRAULIC FRACTURING ANALYSIS PRESSURE CHART

1. ALLOWABLE BOREHOLE PRESSURE FOR THE ANTICIPATED HDD PILOT HOLE WAS EVALUATED USING THE DELFT EQUATION. THIS EVALUATION IS PRELIMINARY BASED ON OUR ASSUMPTIONS AND SHOULD BE CHECKED FOLLOWING SELECTION OF DRILLING EQUIPMENT BY THE CONTRACTOR.

2. ANALYSIS WAS BASED ON ENTRY ANGLE OF 14 DEGREES FROM HORIZONTAL, AND AN EXIT ANGLE OF 11 DEGREES FROM HORIZONTAL. A PILOT HOLE DIAMETER OF 10 INCHES, A DRILL ROD DIAMETER OF 4.5 INCHES, A MUD PUMP OUTPUT OF UP TO 100 GALLONS PER MINUTE, AND A MUD UNIT WEIGHT OF 75 PCF. CHANGES IN THE DRILLING FLUID PROPERTIES AND DRILLING EQUIPMENT WILL AFFECT THE ANALYSIS RESULTS.

3. PREDICTED DRILLING FLUID PRESSURE CURVES ARE APPROXIMATE AND WERE DEVELOPED USING DRILLING FLUID RHEOLOGY FORMULAS AND SEVERAL HDD DRILLING RULES OF THUMB (I.E., 1 PSI DYNAMIC HEAD LOSS PER 15-FOOT-LONG DRILL ROD.). THIS ASSUMES THE HDD DRILL CUTTINGS ARE BEING PROPERLY REMOVED FROM THE DRILLING FLUID, AS RECOMMENDED IN THE HDD GOOD PRACTICES GUIDELINES. IF THE DRILLING FLUID IS HEAVILY LOADED WITH SOIL, THE PRESSURES CAN BE HIGHER. IF SOLIDS ARE ALLOWED TO BUILD UP IN THE HDD BORE HOLE DURING DRILLING, THE PREDICTED PRESSURES CAN EXCEED ESTIMATES, WHICH CAN LEAD TO INADVERTENT FLUID RETURNS TO THE GROUND SURFACE.

4. ALL HDD DRILLING AND PIPELINE INSTALLATION SHOULD BE PERFORMED IN GENERAL ACCORDANCE WITH THE "NASTT HORIZONTAL DIRECTIONAL DRILLING (HDD) GOOD PRACTICES GUIDELINES", FOURTH EDITION (2017).

5. AS INDICATED BY THE ALLOWABLE PRESSURE CURVES PRESENTED, THERE IS A HIGHER RISK FOR INADVERTENT FLUID RETURNS BETWEEN STATIONS 1+25 AND 4+75 AND NEAR THE HDD EXIT POINT (APPROXIMATELY STATION 4+75). THE HDD CONTRACTOR SHOULD USE ADDITIONAL CAUTION AND LIMIT DRILLING FLUID PRESSURES TO LESS THAN 50 PSI NEAR THE EXIT POINT. IF THE CONTRACTOR IS DRILLING IN ACCORDANCE WITH THE HORIZONTAL DIRECTIONAL DRILLING GOOD PRACTICES GUIDELINES, THE PRESSURE SHOULD BE SIMILAR TO THAT DEPICTED FOR THE "1 PSI PER JOINT" PLOT.

6. THIS ANALYSIS IS BASED ON THE EQUIPMENT AND DRILLING MUD PROPERTIES ESTIMATED BY TERRACON. IF THE CONTRACTOR DEVIATES FROM THE PROVIDED EQUIPMENT OR DRILLING MUD PROPERTIES THE ANALYSIS SHOULD BE CHECKED AND MODIFIED AS APPROPRIATE FOR CONSTRUCTION PURPOSES.

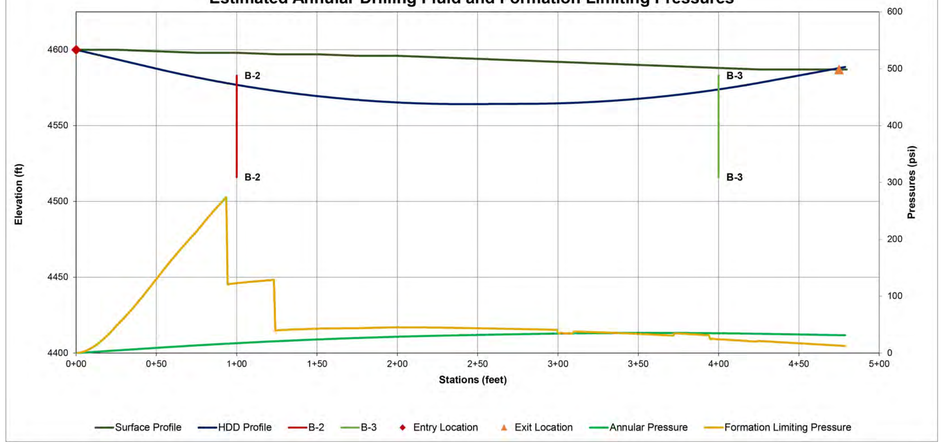
REFERENCES:

1. EVANS, JAMES P., MCCALPIN, JAMES P, AND HOLMES, DAVID C., 1996. GEOLOGIC MAP OF THE LOGAN 7.5' QUADRANGLE CACHE COUNTY, UTAH. UTAH DEPARTMENT OF NATURAL RESOURCES, UTAH GEOLOGICAL SURVEY MISC. PUBLICATION 96-1

2. ALLOWABLE BOREHOLE PRESSURE FOR THE ANTICIPATED HDD PILOT HOLE WAS EVALUATED USING THE DELFT GEOTECHNICS EQUATION, AS PUBLISHED IN "RECOMMENDED GUIDELINES FOR INSTALLATION OF PIPELINES BENEATH LEVEES USING HORIZONTAL DIRECTIONAL DRILLING, APPENDIX B, CPAR-GL-98-1," BY THE PIPELINE RESEARCH COUNCIL INTERNATIONAL AND THE US ARMY CORPS OF ENGINEERS (1998), AND USING

3. THE APPROACH OUTLINED BY BENNETT, R.D., WALLIN, K., (2008). THIS EVALUATION IS PRELIMINARY BASED ON OUR ASSUMPTIONS AND SHOULD BE CHECKED FOLLOWING SELECTION OF DRILLING EQUIPMENT BY THE CONTRACTOR.

Estimated Annular Drilling Fluid and Formation Limiting Pressures



Assumptions:

Drilling Fluid Weight (pcf)	74.8	Pilot Hole Diameter (in)	10
Pump Output (gpm)	100	Pilot Hole Drill Rod Diameter (in)	4.5
Plastic Viscosity (cP)	25	Formation Limiting Pressure Model	Cavity Expansion/NASTT
Yield Point (lb/100ft^2)	30		

References

Bennett, David and Wallin, Kathryn. (2008). "Step By Step Evaluation of Hydrofracture Risks for HDD Projects". NASTT No-Dig Conference and Exhibition.

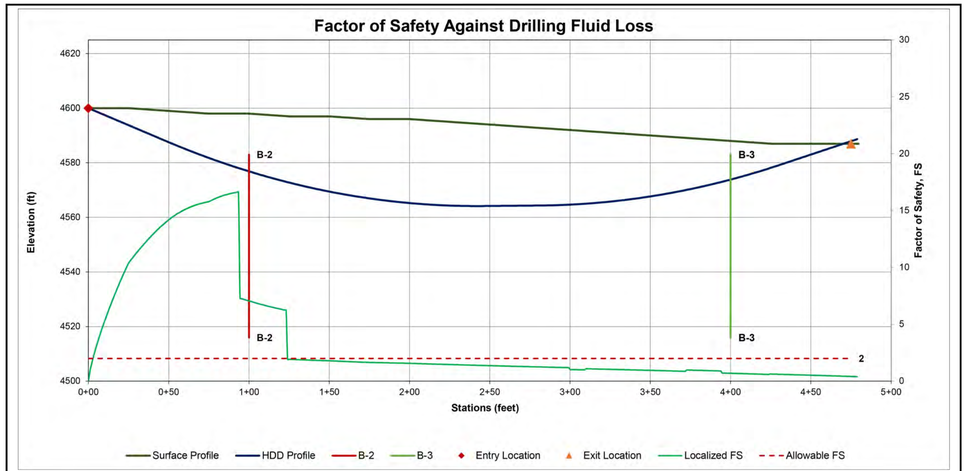
Ariaratnam, Samuel T., Stauber, R. and Harbin, Bruce. (2004). "Modeling of Annular Pressures in Horizontal Directional Drilling". Proceedings of IPC 2004 International Pipeline Conference.

Baroid. (1997). "Drilling Fluids Handbook".

NASTT's "Horizontal Directional Drilling (HDD) Good Practices Guidelines", 4th Edition, by The HDD Consortium (2017).

Calculated by:	Hyrum FL-153 Blacksmith Fork Canal		
TC			
Checked by:	Project No.	Date	Exhibit
DD	61255162	9/8/2025	A-3

Factor of Safety Against Drilling Fluid Loss



Assumptions:

Drilling Fluid Weight (pcf)	74.8	Pilot Hole Diameter (in)	10
Pump Output (gpm)	100	Pilot Hole Drill Rod Diameter (in)	4.5
Plastic Viscosity (cP)	25	Formation Limiting Pressure Model	Cavity Expansion/NASTT
Yield Point (lb/100ft^2)	30		

References

Bennett, David and Wallin, Kathryn. (2008). "Step By Step Evaluation of Hydrofracture Risks for HDD Projects". NASTT No-Dig Conference and Exhibition.

Ariaratnam, Samuel T., Stauber, R. and Harbin, Bruce. (2004). "Modeling of Annular Pressures in Horizontal Directional Drilling". Proceedings of IPC 2004 International Pipeline Conference.

Baroid. (1997). "Drilling Fluids Handbook".

NASTT's "Horizontal Directional Drilling (HDD) Good Practices Guidelines", 4th Edition, by The HDD Consortium (2017).

Calculated by:	Hyrum FL-153 Blacksmith Fork Canal		
TC			
Checked by:	Project No.	Date	Exhibit
DD	61255162	9/8/2025	A-2

ISSUED FOR CONSTRUCTION

REFERENCE DRAWINGS			WORK ORDERS		REVISIONS				ENGINEERING RECORD
DRAWING NUMBER	REV	DRAWING DESCRIPTION	WO NUMBER	DESCRIPTION	NO	DESCRIPTION	DATE	BY	CHECK	DRAWN BY: TERRACON (RR)
ENB-P-FL153-MAP-001	0	8" HP TAPLINE FROM HY0003	100988.86	FL-153: INSTALL 450 LF & 475 LF OF 8" STEEL PIPE VIA HDD TRENCHLESS METHODS	0	ISSUED FOR CONSTRUCTION	10/16/2025	RFR	JWD/DD	CHECKED BY: TERRACON (JD)
										PROJECT ENGR: ANDREW ASPULND
										SURVEYOR: ENSIGN
										ENGR MNGR: WILL RADFORD
										CONSTR MNGR: NA
										-

ENBRIDGE

SECTION: 32 T 11N R 1E
ELEVATION: 4610.8 AT ENTRY
LAT: LONG:
SCALE: NA

LINE NUMBER:
FACILITY:
TITLE: FL-153
DESCRIPTION: INSTALL 450 LF & 475 LF OF 8" STEEL PIPE
ADDRESS: HDD TRENCHLESS CROSSING
HDD PIPE STRESS & IR ANALYSIS ALIGNMENT 2
200 WEST NEAR 570 NORTH

CITY	COUNTY	STATE
HYRUM	CACHE	UTAH

DRAWING NUMBER	SHEET	REVISION
ENB-P-FL153-MAP-001A	8 OF 14	0

8 HDD Pipe Stress & IR Analysis.dwg — 10/14/2025 — 04:56am

Design Calculations for Pullback Force

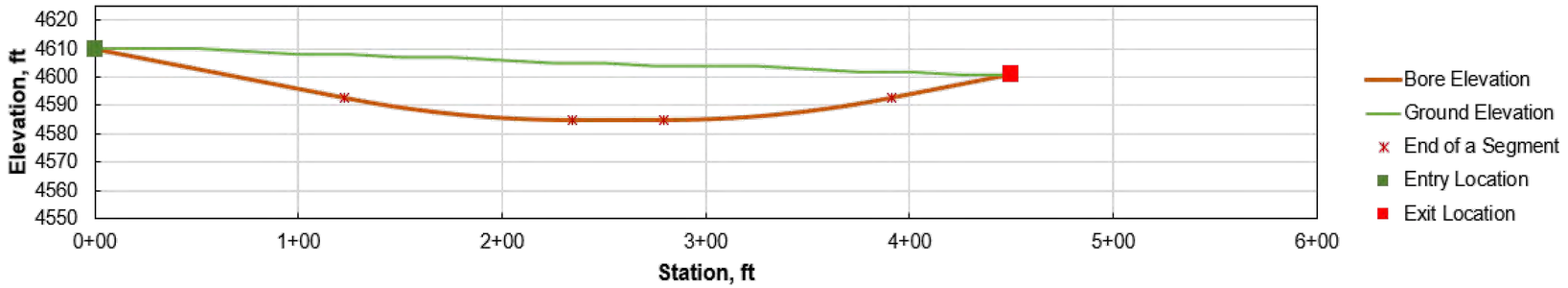
Pipe Specification

Pipe Material	Steel Pipe	
Outer Diameter	8.625	in
Wall Thickness	0.322	in
Inner Diameter	7.981	in
Dimension Ratio	26.785714	
Safe Pulling Tensile Stress	46800	psi
Allowable Bending Stress	39000	psi
Allowable Hoop Stress	65372	psi
Pipe Ballast Status	No ballast	

HDD Bore Path

Segment	Curve Type	True Length	Unit
1	Tangent	60	ft
2	Vertical Curve	110	ft
3	Tangent	45	ft
4	Vertical Curve	110	ft
5	Tangent	125	ft

Entry Angle	8	Degrees
Exit Angle	7.8	Degrees
Total Drill Length	450	ft



Results of Pipe Stress Analysis

Point	Tensile Load (lb)	Startup Load (lb)	Axial Stress (psi)	Status	Bending Stress (psi)	Hoop Stress (psi)	Combined Axial and Bending Stress Ratio	Status	Combined Axial, Bending and Hoop Stress Ratio	Status
A (Start of Pullback)	1261	2521	300	OK	0	0	0.01	OK	0.00	OK
B (End of Segment 5)	1333	2666	317	OK	0	125	0.01	OK	0.00	OK
C (End of Segment 4)	1600	3199	381	OK	13027	176	0.35	OK	0.10	OK
D (End of Segment 3)	1764	3528	420	OK	0	175	0.01	OK	0.00	OK
E (End of Segment 2)	2135	4269	508	OK	13027	121	0.35	OK	0.11	OK
F (End of Segment 1)	2384	4768	568	OK	0	63	0.02	OK	0.00	OK

Summary of Pipe Stress Analysis

Evaluated Aspect	Value	Unit*	Status
Pull Force	4768	lbf	OK
Pull Stress	568	psi	OK
Bending Stress	13027	psi	OK
Hoop Stress	176	psi	OK
Combine tensile and bending stress	0.350		OK
Combine tensile, bending and hoop stress	0.105		OK

**D stands for outer diameter of the product pipe*

References

NASTT's "Horizontal Directional Drilling (HDD) Good Practices Guidelines", 4th Edition, by The HDD Consortium (2017).

Stein D, and Stein R. (2013). "Trenchless Technology for Installation of Cables and Pipelines- Horizontal Directional Drilling (HDD)" Prof. Dr.-Ing. Stein and Partners GmbH.

Calculated by:	Hyrum FL-153 Union Pacific Railroad		
TC			
Checked by:	Project No.	Date	Exhibit
DD	61255162	9/8/2025	A-3

CALL THREE BUSINESS DAYS BEFORE YOU DIG TO HAVE UTILITIES LOCATED 811 or 1-800-662-4111

ISSUED FOR CONSTRUCTION

REFERENCE DRAWINGS		
DRAWING NUMBER	REV	DRAWING DESCRIPTION
ENB-P-FL153-MAP-001	0	8" HP TAPLINE FROM HY0003

WORK ORDERS	
WO NUMBER	DESCRIPTION
100988.86	FL-153: INSTALL 450 LF & 475 LF OF 8" STEEL PIPE VIA HDD TRENCHLESS METHODS

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
0	ISSUED FOR CONSTRUCTION	10/16/2025	RFR	JWD/DD

ENGINEERING RECORD

DRAWN BY: TERRACON (RR)
CHECKED BY: TERRACON (JD)
PROJECT ENGR: ANDREW ASPULND
SURVEYOR: ENSIGN
ENGR MNGR: WILL RADFORD
CONSTR MNGR: NA
-

SECTION: 32 T 11N R 1E
ELEVATION: 4610.8 AT ENTRY
LAT: LONG:
SCALE: NA

LINE NUMBER:
FACILITY: FL-153
TITLE: INSTALL 450 LF & 475 LF OF 8" STEEL PIPE
DESCRIPTION: HDD TRENCHLESS CROSSING
ADDRESS: HDD PULL BACK CALCULATIONS ALIGNMENT 1
200 WEST NEAR 570 NORTH

CITY	COUNTY	STATE
HYRUM	CACHE	UTAH

DRAWING NUMBER	SHEET	REVISION
ENB-P-FL153-MAP-001A	9 OF 14	0

9 HDD Pull Back Calculations.dwg — 10/14/2025 — 05:04pm

Design Calculations for Pullback Force

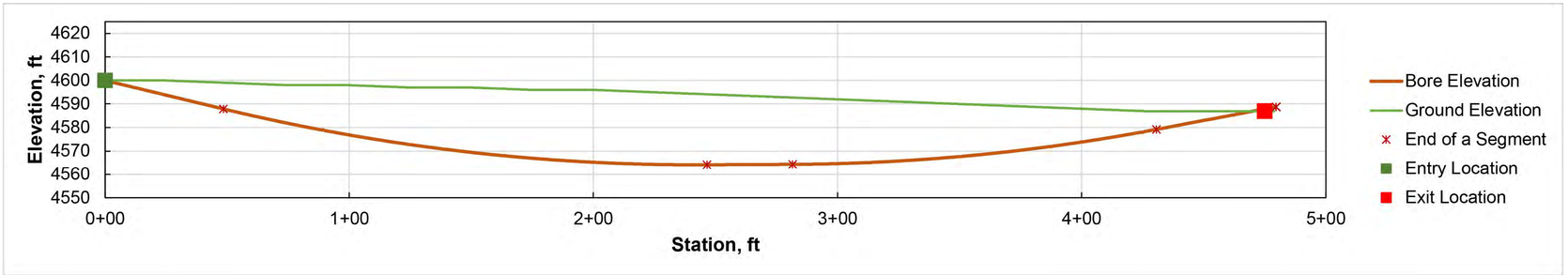
Pipe Specification

Pipe Material	Steel Pipe	
Outer Diameter	8.625	in
Wall Thickness	0.322	in
Inner Diameter	7.981	in
Dimension Ratio	26.785714	
Safe Pulling Tensile Stress	46800	psi
Allowable Bending Stress	39000	psi
Allowable Hoop Stress	65372	psi
Pipe Ballast Status	No ballast	

HDD Bore Path

Segment	Curve Type	True Length	Unit
1	Tangent	50	ft
2	Vertical Curve	200	ft
3	Tangent	35	ft
4	Vertical Curve	150	ft
5	Tangent	50	ft

Entry Angle	14	Degrees
Exit Angle	11.1	Degrees
Total Drill Length	485	ft



Results of Pipe Stress Analysis

Point	Tensile Load (lb)	Startup Load (lb)	Axial Stress (psi)	Status	Bending Stress (psi)	Hoop Stress (psi)	Combined Axial and Bending Stress Ratio	Status	Combined Axial, Bending and Hoop Stress Ratio	Status
A (Start of Pullback)	1343	2687	320	OK	0	0	0.01	OK	0.00	OK
B (End of Segment 5)	1376	2751	328	OK	0	145	0.01	OK	0.00	OK
C (End of Segment 4)	2111	4221	503	OK	13027	249	0.35	OK	0.10	OK
D (End of Segment 3)	2410	4821	574	OK	0	250	0.02	OK	0.00	OK
E (End of Segment 2)	5678	11357	1352	OK	13027	84	0.38	OK	0.12	OK
F (End of Segment 1)	6177	12353	1471	OK	0	0	0.05	OK	0.00	OK

Summary of Pipe Stress Analysis

Evaluated Aspect	Value	Unit*	Status
Pull Force	12353	lbf	OK
Pull Stress	1471	psi	OK
Bending Stress	13027	psi	OK
Hoop Stress	250	psi	OK
Combine tensile and bending stress	0.377		N/A
Combine tensile, bending and hoop	0.119		N/A
stress			

**D stands for outer diameter of the product pipe*

References

NASTT's "Horizontal Directional Drilling (HDD) Good Practices Guidelines", 4th Edition, by The HDD Consortium (2017).

Stein D, and Stein R. (2013). "Trenchless Technology for Installation of Cables and Pipelines- Horizontal Directional Drilling (HDD)" Prof. Dr.-Ing. Stein and Partners GmbH.

Calculated by:	Hyrum FL-153 Blacksmith Fork Canal		
TC			
Checked by:	Project No.	Date	Exhibit
DD	61255162	9/8/2025	A-3

CALL THREE BUSINESS DAYS BEFORE YOU DIG TO HAVE UTILITIES LOCATED 811 or 1-800-662-4111

ISSUED FOR CONSTRUCTION

REFERENCE DRAWINGS			WORK ORDERS		REVISIONS				ENGINEERING RECORD
DRAWING NUMBER	REV	DRAWING DESCRIPTION	WO NUMBER	DESCRIPTION	NO	DESCRIPTION	DATE	BY	CHECK	DRAWN BY: TERRACON (RR)
ENB-P-FL153-MAP-001	0	8" HP TAPLINE FROM HY0003	100988.86	FL-153: INSTALL 450 LF & 475 LF OF 8" STEEL PIPE VIA HDD TRENCHLESS METHODS	0	ISSUED FOR CONSTRUCTION	10/16/2025	RFR	JWD/DD	CHECKED BY: TERRACON (JD)
										PROJECT ENGR: ANDREW ASPULND
										SURVEYOR: ENSIGN
										ENGR MNGR: WILL RADFORD
										CONSTR MNGR: NA
										-

ENBRIDGE

SECTION: 32 T 11N R 1E
ELEVATION: 4610.8 AT ENTRY
LAT: LONG:
SCALE: NA

LINE NUMBER:
FACILITY: FL-153
TITLE: INSTALL 450 LF & 475 LF OF 8" STEEL PIPE HDD TRENCHLESS CROSSING
DESCRIPTION: HDD PULL BACK CALCULATIONS ALIGNMENT 2
ADDRESS: 200 WEST NEAR 570 NORTH

CITY	COUNTY	STATE
HYRUM	CACHE	UTAH

DRAWING NUMBER	SHEET	REVISION
ENB-P-FL153-MAP-001A	10 OF 14	0

10 HDD Pull Back Calculations.dwg – 10/14/2025 – 04:54pm

FL-153 Trenchless Crossing
Near 570 North and 200 West
Hyrum, Utah
Terracon Proposal No. 61255162

Terracon
6952 S High Tech Dr, Ste B
Midvale, UT

General Notes

Sampling	Water Level	Field Tests
Modified California Ring Sampler Modified Dames & Moore Ring Sampler Shelby Tube Standard Penetration Test	Water Initially Encountered Water Level After a Specified Period of Time Water Level After a Specified Period of Time Cave In Encountered Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.	N Standard Penetration Test Resistance (Blows/Ft.) (HP) Hand Penetrometer (T) Torvane (DCP) Dynamic Cone Penetrometer UC Unconfined Compressive Strength (PID) Photo-Ionization Detector (OVA) Organic Vapor Analyzer

Descriptive Soil Classification

Soil classification as noted on the soil boring logs is based Unified Soil Classification System. Where sufficient laboratory data exist to classify the soils consistent with ASTM D2487 "Classification of Soils for Engineering Purposes" this procedure is used. ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)" is also used to classify the soils, particularly where insufficient laboratory data exist to classify the soils in accordance with ASTM D2487. In addition to USCS classification, coarse grained soils are classified on the basis of their in-place relative density, and fine-grained soils are classified on the basis of their consistency. See "Strength Terms" table below for details. The ASTM standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

Location And Elevation Notes

Exploration point locations as shown on the Exploration Plan and as noted on the soil boring logs in the form of Latitude and Longitude are approximate. See Exploration and Testing Procedures in the report for the methods used to locate the exploration points for this project. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

Strength Terms

Relative Density of Coarse-Grained Soils (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance			Consistency of Fine-Grained Soils (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance			
Relative Density	**Standard Penetration or N-Value (Blows/Ft.)**	**Ring Sampler (Blows/Ft.)**	**Consistency**	**Unconfined Compressive Strength Qu (tsf)**	**Standard Penetration or N-Value (Blows/Ft.)**	**Ring Sampler (Blows/Ft.)**
Very Loose	0 - 3	0 - 6	Very Soft	less than 0.25	0 - 1	< 3
Loose	4 - 9	7 - 18	Soft	0.25 to 0.50	2 - 4	3 - 4
Medium Dense	10 - 29	19 - 58	Medium Stiff	0.50 to 1.00	4 - 8	5 - 9
Dense	30 - 50	59 - 98	Stiff	1.00 to 2.00	8 - 15	10 - 18
Very Dense	> 50	> 99	Very Stiff	2.00 to 4.00	15 - 30	19 - 42
			Hard	> 4.00	> 30	> 42

Relevance of Exploration and Laboratory Test Results

Exploration/field results and/or laboratory test data contained within this document are intended for application to the project as described in this document. Use of such exploration/field results and/or laboratory test data should not be used independently of this document.

Facilities | Environmental | **Geotechnical** | Materials

BlueStakes of UTAH 811 Bluestakes.org
CALL THREE BUSINESS DAYS BEFORE YOU DIG TO HAVE UTILITIES LOCATED
811 or 1-800-662-4111

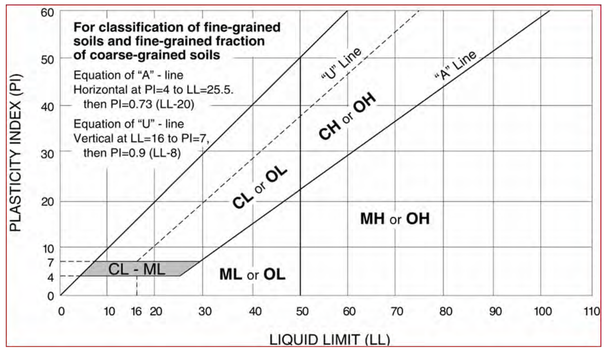
FL-153 Trenchless Crossing
Near 570 North and 200 West
Hyrum, Utah
Terracon Proposal No. 61255162

Terracon

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]

				Soil Classification	
				Group Symbol	**Group Name [B]**
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	Cu≥4 and 1≤Cc≤3 [E]	GW	Well-graded gravel [F]
			Cu<4 and/or [Cc<1 or Cc>3.0] [E]	GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH	GM	Silty gravel [F, G, H]
			Fines classify as CL or CH	GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	Cu≥6 and 1≤Cc≤3 [E]	SW	Well-graded sand [I]
			Cu<6 and/or [Cc<1 or Cc>3.0] [E]	SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH	SM	Silty sand [G, H, I]
			Fines classify as CL or CH	SC	Clayey sand [G, H, I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots above "A" line [J]	CL	Lean clay [K, L, M]
			PI < 4 or plots below "A" line [J]	ML	Silt [K, L, M]
		Organic:	$\frac{LL\ oven\ dried}{LL\ not\ dried} < 0.75$	OL	Organic clay [K, L, M, N] Organic silt [K, L, M, O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line	CH	Fat clay [K, L, M]
			PI plots below "A" line	MH	Elastic silt [K, L, M]
		Organic:	$\frac{LL\ oven\ dried}{LL\ not\ dried} < 0.75$	OH	Organic clay [K, L, M, P] Organic silt [K, L, M, Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor			PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve.
[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.
[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.
[E] $Cu = D_{60}/D_{10}$ $Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$
[F] If soil contains ≥ 15% sand, add "with sand" to group name.
[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.
[H] If fines are organic, add "with organic fines" to group name.
[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.
[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.
[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.
[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.
[N] PI ≥ 4 and plots on or above "A" line.
[O] PI < 4 or plots below "A" line.
[P] PI plots on or above "A" line.
[Q] PI plots below "A" line.



Facilities | Environmental | **Geotechnical** | Materials

ISSUED FOR CONSTRUCTION

REFERENCE DRAWINGS			WORK ORDERS		REVISIONS					ENGINEERING RECORD
DRAWING NUMBER	REV	DRAWING DESCRIPTION	WO NUMBER	DESCRIPTION	NO	DESCRIPTION	DATE	BY	CHECK	DRAWN BY: TERRACON (RR)
ENB-P-FL153-MAP-001	0	8" HP TAPLINE FROM HY0003	100988.86	FL-153: INSTALL 450 LF & 475 LF OF 8" STEEL PIPE VIA HDD TRENCHLESS METHODS	0	ISSUED FOR CONSTRUCTION	10/16/2025	RFR	JWD/DD	CHECKED BY: TERRACON (JD)
										PROJECT ENGR: ANDREW ASPULND
										SURVEYOR: ENSIGN
										ENGR MNGR: WILL RADFORD
										CONSTR MNGR: NA
										-

ENBRIDGE

SECTION: 32 T 11N R 1E
ELEVATION: 4610.8 AT ENTRY
LAT: LONG:
SCALE: NA

LINE NUMBER:
FACILITY:
TITLE: FL-153
DESCRIPTION: INSTALL 450 LF & 475 LF OF 8" STEEL PIPE HDD TRENCHLESS CROSSING
ADDRESS: BORE LOG KEYS
200 WEST NEAR 570 NORTH

CITY	COUNTY	STATE
HYRUM	CACHE	UTAH

DRAWING NUMBER	SHEET	REVISION
ENB-P-FL153-MAP-001A	11 OF 14	0

11 Bore Log Keys.dwg – 10/14/2025 – 04:54am

Hyrum - FL-153 HDD
4687-4699 S 1200 W | Hyrum, UT
Terracon Project No. 61255162

Terracon
6952 S High Tech Dr, Ste B
Midvale, UT

Boring Log No. B-01

Location: See Exploration Plan
Latitude: 41.6445° Longitude: -111.8610°

Model Layer	Graphic Log	Depth (Ft.)	Elevation: 4601 (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Recovery (In.)	Field Test Results	Water Content (%)	Atterberg Limits LL-PL-PI	Percent Fines
1		0.3	**ASPHALT**, appromixately 3.5 inches thick / 4600.71								
2		2.3	**AGGREGATE BASE COURSE**, approximately 2 feet thick / 4598.71								
3		5.0	**SILTY CLAY (CL-ML)**, dark brown, medium stiff / 4596				21	2-3-2-2 N=5			
4		7.5	**SILTY CLAY (CL-ML)**, dark brown to light brown, very soft, trace oxidation stains / 4593.5	5	▽		23	1-0-0-0 N=0			
5		12.5	**POORLY GRADED SAND WITH CLAY (SP-SC)**, light brown to dark brown, loose / light gray / 4588.5				22				
				10			16	1-3-3-5 N=6	28.0	NP	55.0
4		17.5	**SILTY CLAY WITH SAND (CL-ML)**, dark gray to dark brown, soft, trace oxidation stains / 4583.5				21	2-0-2-2 N=2			
				15							
							22	2-2-4-5 PP = 1.0 tsf			
				20							
							20	PP = 1.5 tsf	31.7	NP	81.0
				25							
							23	6-6-7-7 PP = 0.75 tsf			
				30							
4		32.5	trace oxidation staining / 4568.5								
5			**POORLY GRADED SAND (SP)**, dark gray								

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations obtained using Google Earth

Water Level Observations
▽ 5' observed while drilling

Drill Rig
Geoprobe 3100 GT

Hammer Type
Automatic

Driller
Terracon

Notes

Advancement Method
Mud Rotary

Logged by
ACL

Boring Started
08-28-2025

Abandonment Method
Boring backfilled with bentonite upon completion and asphalt core utilibonded

Boring Completed
08-27-2025

Facilities | Environmental | **Geotechnical** | Materials

Hyrum - FL-153 HDD
4687-4699 S 1200 W | Hyrum, UT
Terracon Project No. 61255162

Terracon
6952 S High Tech Dr, Ste B
Midvale, UT

Boring Log No. B-01

Location: See Exploration Plan
Latitude: 41.6445° Longitude: -111.8610°

Model Layer	Graphic Log	Depth (Ft.)	Elevation: 4601 (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Recovery (In.)	Field Test Results	Water Content (%)	Atterberg Limits LL-PL-PI	Percent Fines
5			**POORLY GRADED SAND (SP)**, dark gray *(continued)*				8	PP = 1.5 tsf	31.3		86.5
		37.5	4563.5	35							
			SILTY CLAY (CL-ML), dark gray, soft to medium stiff				24	3-1-3-1 N=4			
		42.5	4558.5	40							
4			**FAT CLAY (CH)**, dark gray, very soft, trace black mottling, trace oxidation staining				24	0-0-2-5 PP = 0.25 tsf	34.2		99.6
				45							
							22	PP = 0.75 tsf			
				50							
		52.5	4548.5								
			SILTY CLAY (CL-ML), dark gray, medium stiff, trace black mottling				24	3-4-5-6 PP = 0.5 tsf			
		56.5	4544.5	55							
5			**POORLY GRADED SAND WITH CLAY (SP-SC)**, dark brownish gray, medium dense								
							24	6-11-12-15 PP = 0.75 tsf			
		62.5	4538.5	60							
4			**LEAN CLAY (CL)**, dark gray, soft, trace black mottling				24	0-0-3-3 N=3			
		65.5	4535.5	65							
			Boring Terminated at 65.5 Feet								

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.
Elevation Reference: Elevations obtained using Google Earth

Water Level Observations
▽ 5' observed while drilling

Drill Rig
Geoprobe 3100 GT

Hammer Type
Automatic

Driller
Terracon

Notes

Advancement Method
Mud Rotary

Logged by
ACL

Boring Started
08-28-2025

Abandonment Method
Boring backfilled with bentonite upon completion and asphalt core utilibonded

Boring Completed
08-27-2025

Facilities | Environmental | **Geotechnical** | Materials

Blue Stakes of UTAH 811 — Bluestakes.org
CALL THREE BUSINESS DAYS BEFORE YOU DIG TO HAVE UTILITIES LOCATED
811 or 1-800-662-4111

ISSUED FOR CONSTRUCTION

REFERENCE DRAWINGS			WORK ORDERS		REVISIONS					ENGINEERING RECORD
DRAWING NUMBER	REV	DRAWING DESCRIPTION	WO NUMBER	DESCRIPTION	NO	DESCRIPTION	DATE	BY	CHECK	DRAWN BY: TERRACON (RR)
ENB-P-FL153-MAP-001	0	8" HP TAPLINE FROM HY0003	100988.86	FL-153: INSTALL 450 LF & 475 LF OF 8" STEEL PIPE VIA HDD TRENCHLESS METHODS	0	ISSUED FOR CONSTRUCTION	10/16/2025	RFR	JWD/DD	CHECKED BY: TERRACON (JD)
										PROJECT ENGR: ANDREW ASPULND
										SURVEYOR: ENSIGN
										ENGR MNGR: WILL RADFORD
										CONSTR MNGR: NA
										-

ENBRIDGE

SECTION: 32 T 11N R 1E
ELEVATION: 4610.8 AT ENTRY
LAT: LONG:
SCALE: NA

LINE NUMBER:
FACILITY:
TITLE: FL-153
DESCRIPTION: INSTALL 450 LF & 475 LF OF 8" STEEL PIPE HDD TRENCHLESS CROSSING BORE LOGS
ADDRESS: 200 WEST NEAR 570 NORTH

CITY	COUNTY	STATE
HYRUM	CACHE	UTAH

DRAWING NUMBER	SHEET	REVISION
ENB-P-FL153-MAP-001A	12 OF 14	0

12 Bore Logs.dwg – 10/14/2025 – 04:53pm

Hyrum - FL-153 HDD
4687-4699 S 1200 W | Hyrum, UT
Terracon Project No. 61255162

Terracon
6952 S High Tech Dr, Ste B
Midvale, UT

Boring Log No. B-02

Location: See Exploration Plan

Latitude: 41.6453° Longitude: -111.8610°

Depth (Ft.) Elevation: 4583 (Ft.)

Depth (Ft.)	Graphic Log	Model Layer	Water Level Observations	Sample Type	Recovery (In.)	Field Test Results	Water Content (%)	Atterberg Limits LL-PL-PI	Percent Fines
0.3		1							
ASPHALT, approximately 3.5 inches thick 4582.7									
FILL - SILTY GRAVEL WITH SAND (GM), black to gray, medium dense		3							
				X	10	14-12-8-2 N=20	6.9	NP	2.7
5.0 4578									
LEAN CLAY WITH SAND (CL), light tan to gray, soft to medium stiff		4		X	19	2-3-4-5 N=7			
				X	23	2-1-1-1 N=2			
10				X	21	1-1-2-2 N=3	32.2		74.3
15				X	21	2-3-4-3 N=7			
20					16	2-2-3-4	34.1	31-22-9	82.2
25				X	22	1-2-2-3 N=4			
30				■	20	PP = 2.5 tsf			

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevation Reference: Elevations obtained using Google Earth

Water Level Observations
Groundwater not observed while drilling

Drill Rig
CME 55

Hammer Type
Automatic

Driller
South Slopes

Notes

Advancement Method
Mud Rotary

Logged by
VH

Boring Started
08-13-2025

Abandonment Method
Boring backfilled with bentonite grout upon completion. Asphalt core patched with utilibond.

Boring Completed
08-13-2025

Facilities | Environmental | **Geotechnical** | Materials

Hyrum - FL-153 HDD
4687-4699 S 1200 W | Hyrum, UT
Terracon Project No. 61255162

Terracon
6952 S High Tech Dr, Ste B
Midvale, UT

Boring Log No. B-02

Location: See Exploration Plan

Latitude: 41.6453° Longitude: -111.8610°

Depth (Ft.) Elevation: 4583 (Ft.)

Depth (Ft.)	Graphic Log	Model Layer	Water Level Observations	Sample Type	Recovery (In.)	Field Test Results	Water Content (%)	Atterberg Limits LL-PL-PI	Percent Fines
LEAN CLAY WITH SAND (CL), light tan to gray, soft to medium stiff *(continued)*		4		X	22	2-1-3-3 N=4	32.7		
38.0 4545									
LEAN CLAY (CL), gray, soft to stiff				▒	18	2-2-2-4			
35									
40				X	24	1-1-1-2 N=2	32.5		99.7
45									
50				X	24	0-1-2-2 N=3			
55				X	24	1-5-6-9 N=11			
56.0 4527									
SANDY LEAN CLAY (CL), gray, stiff									
58.0 4525									
LEAN CLAY (CL), gray, medium stiff, with sand seams				X	24	0-2-2-3 N=4			
60									
65				X	24	1-2-3-3 N=5			
67.0 4516									
Boring Terminated at 67 Feet									

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevation Reference: Elevations obtained using Google Earth

Water Level Observations
Groundwater not observed while drilling

Drill Rig
CME 55

Hammer Type
Automatic

Driller
South Slopes

Notes

Advancement Method
Mud Rotary

Logged by
VH

Boring Started
08-13-2025

Abandonment Method
Boring backfilled with bentonite grout upon completion. Asphalt core patched with utilibond.

Boring Completed
08-13-2025

Facilities | Environmental | **Geotechnical** | Materials

Blue Stakes of Utah 811 — Bluestakes.org

CALL THREE BUSINESS DAYS
BEFORE YOU DIG TO HAVE
UTILITIES LOCATED
811 or 1-800-662-4111

ISSUED FOR CONSTRUCTION

REFERENCE DRAWINGS			WORK ORDERS		REVISIONS					ENGINEERING RECORD
DRAWING NUMBER	REV	DRAWING DESCRIPTION	WO NUMBER	DESCRIPTION	NO	DESCRIPTION	DATE	BY	CHECK	DRAWN BY: TERRACON (RR)
ENB-P-FL153-MAP-001	0	8" HP TAPLINE FROM HY0003	100988.86	FL-153: INSTALL 450 LF & 475 LF OF 8" STEEL PIPE VIA HDD TRENCHLESS METHODS	0	ISSUED FOR CONSTRUCTION	10/16/2025	RFR	JWD/DD	CHECKED BY: TERRACON (JD)
										PROJECT ENGR: ANDREW ASPULND
										SURVEYOR: ENSIGN
										ENGR MNGR: WILL RADFORD
										CONSTR MNGR: NA
										-

ENBRIDGE

SECTION: 32 T 11N R 1E
ELEVATION: 4610.8 AT ENTRY
LAT: LONG:
SCALE: NA

LINE NUMBER:
FACILITY:
TITLE:
DESCRIPTION:
ADDRESS:

FL-153
INSTALL 450 LF & 475 LF OF 8" STEEL PIPE
HDD TRENCHLESS CROSSING
BORE LOGS
200 WEST NEAR 570 NORTH

CITY	COUNTY	STATE
HYRUM	CACHE	UTAH

DRAWING NUMBER	SHEET	REVISION
ENB-P-FL153-MAP-001A	13 OF 14	0

13 Bore Logs.dwg – 10/14/2025 – 04:52pm

DOMINION ENERGY ANSI D

Hyrum - FL-153 HDD
4687-4699 S 1200 W | Hyrum, UT
Terracon Project No. 61255162

6952 S High Tech Dr, Ste B
Midvale, UT

Boring Log No. B-03

Location: See Exploration Plan

Latitude: 41.6464° Longitude: -111.8609°

Depth (Ft.) Elevation: 4583 (Ft.)

Model Layer	Graphic Log	Depth (Ft.)	Water Level Observations	Sample Type	Recovery (In.)	Field Test Results	Water Content (%)	Atterberg Limits LL-PL-PI	Percent Fines
1		0.3 **ASPHALT**, approximately 3.75 inches thick 4582.69							
3		**SANDY SILT WITH GRAVEL (ML)**, light tan to gray, medium stiff to stiff							
		4.5 4578.5			16	7-5-5-8 N=10			
		SILTY CLAY (CL-ML), light tan to gray, medium stiff to stiff, trace sand			22	1-2-2-5 N=4	28.7	28-21-7	89.8
					16	3-4-5-6 N=9			
		12.5 4570.5			16	3-3-4-5 N=7			
		SANDY LEAN CLAY (CL), light tan to gray, medium stiff to stiff							
		with oxidation staining			22	3-3-3-4 N=6	28.1		72.7
		17.5 4565.5							
4		**LEAN CLAY (CL)**, gray, very soft to stiff							
					23	1-2-2-2 N=4			
					18	3-5-5-5 PP = 0.75 tsf			
					24	0-0-0-1 N=0	37.0	48-19-29	99.2

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevation Reference: Elevations obtained using Google Earth

Water Level Observations
Groundwater not observed while drilling

Drill Rig
CME 55

Hammer Type
Automatic

Driller
South Slopes

Notes

Advancement Method
Mud Rotary

Logged by
VH

Boring Started
08-14-2025

Abandonment Method
Boring backfilled with bentonite grout upon completion. Asphalt core patched with utilibond.

Boring Completed
08-14-2025

Hyrum - FL-153 HDD
4687-4699 S 1200 W | Hyrum, UT
Terracon Project No. 61255162

6952 S High Tech Dr, Ste B
Midvale, UT

Boring Log No. B-03

Location: See Exploration Plan

Latitude: 41.6464° Longitude: -111.8609°

Depth (Ft.) Elevation: 4583 (Ft.)

Model Layer	Graphic Log	Depth (Ft.)	Water Level Observations	Sample Type	Recovery (In.)	Field Test Results	Water Content (%)	Atterberg Limits LL-PL-PI	Percent Fines
4		**LEAN CLAY (CL)**, gray, very soft to stiff *(continued)*							
					18	0-2-3 PP = 0.5 tsf			
					24	PP = 2.75 tsf	34.8		99.5
		with trace sand seams			24	0-2-2-4 N=4			
					24	0-2-2-2 N=4			
					24	1-2-2-3 N=4			
					24	2-3-4-3 N=7			
					24	14-25-34-26 N=59			
5		66.0 4517 **SILTY SAND (SM)**, light brown, very dense							
		67.0 4516 ***Boring Terminated at 67 Feet***							

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevation Reference: Elevations obtained using Google Earth

Water Level Observations
Groundwater not observed while drilling

Drill Rig
CME 55

Hammer Type
Automatic

Driller
South Slopes

Notes

Advancement Method
Mud Rotary

Logged by
VH

Boring Started
08-14-2025

Abandonment Method
Boring backfilled with bentonite grout upon completion. Asphalt core patched with utilibond.

Boring Completed
08-14-2025

Facilities | Environmental | Geotechnical | Materials

ISSUED FOR CONSTRUCTION

REFERENCE DRAWINGS			WORK ORDERS		REVISIONS					ENGINEERING RECORD
DRAWING NUMBER	REV	DRAWING DESCRIPTION	WO NUMBER	DESCRIPTION	NO	DESCRIPTION	DATE	BY	CHECK	DRAWN BY: TERRACON (RR)
ENB-P-FL153-MAP-001	0	8" HP TAPLINE FROM HY0003	100988.86	FL-153: INSTALL 450 LF & 475 LF OF 8" STEEL PIPE VIA HDD TRENCHLESS METHODS	0	ISSUED FOR CONSTRUCTION	10/16/2025	RFR	JWD/DD	CHECKED BY: TERRACON (JD)
										PROJECT ENGR: ANDREW ASPULND
										SURVEYOR: ENSIGN
										ENGR MNGR: WILL RADFORD
										CONSTR MNGR: NA
										-

ENBRIDGE

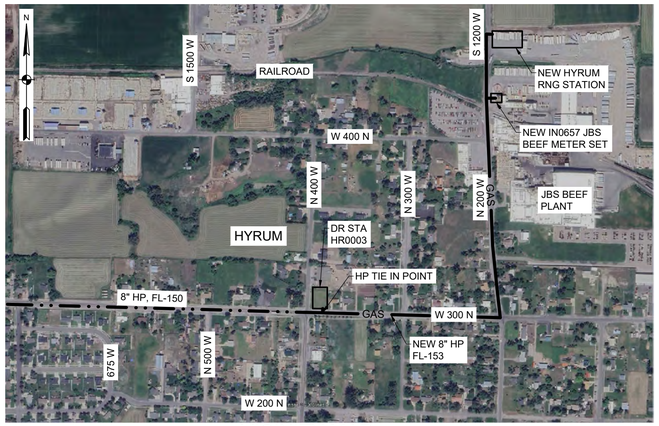
SECTION: 32 T 11N R 1E
ELEVATION: 4610.8 AT ENTRY
LAT: LONG:
SCALE: NA

LINE NUMBER:
FACILITY:
TITLE: FL-153
DESCRIPTION: INSTALL 450 LF & 475 LF OF 8" STEEL PIPE HDD TRENCHLESS CROSSING BORE LOGS
ADDRESS: 200 WEST NEAR 570 NORTH

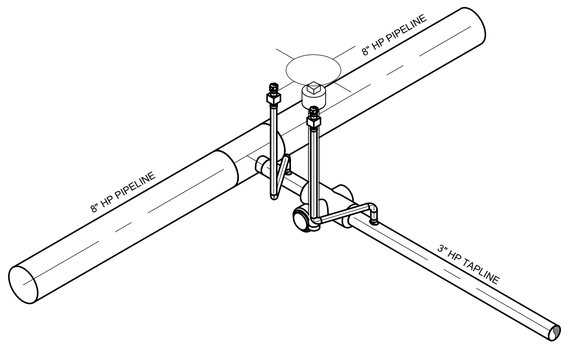
CITY	COUNTY	STATE
HYRUM	CACHE	UTAH

DRAWING NUMBER	SHEET	REVISION
ENB-P-FL153-MAP-001A	14 OF 14	0

14 Bore Logs.dwg – 10/14/2025 – 04:32pm
DOMINION ENERGY ANSI D



VICINITY MAP



ISOMETRIC VIEW

SCALE: NONE

MATERIAL LIST

NOTE 3

ITEM #	QTY	SIZE	DESCRIPTION	MAWP NOTE 14	MATL NOTES NOTE 4	WH #
1	1	48"	MANHOLE GRADE RING, CONCRETE, 6"-8" THICK, 30" CENTERED ACCESS HOLE, W/ LIFTING INSERTS, GENEVA PIPE	N/A	N/A	Q3531501
2	1	30"	MANHOLE RING AND COVER, STAMPED "GAS", AMCOR HW-200 OR EQUAL, LIFTING HOLES DRILLED OPPOSITE EACH OTHER ON LID	N/A	N/A	Q3531241
3	1	36"	PIPE, CORRUGATED POLYETHYLENE, ADS N-12 OR EQUAL (CONTRACTOR SUPPLIED)	N/A	N/A	N/A
4	1	6"x3"	TEE, CS, RDCD, BW, 8.625 OD 0.322 WT x 3.500 OD 0.216 WT, Y-52, ASTM A694, MSS SP75	1941	3	Q2558035
5	1	3"	VALVE, CS, PLUG, CL600, 3 NPS, BW x BW, XH BORE, GRB, NORDSTROM, FIG 2249 1/2, W/ RIGHT ANGLE WORM GEAR OPERATOR & 34" EXTENSION AS PER VALVE EXTENSION SCHEDULE (SEE TABLE BELOW) (FROM CENTER TO VALVE TO TOP OF OPERATING NUT). REFER TO DRAWING QGC-V-VLV-MEC-001 FOR DETAILS	1480	1	Q2743235
6	2	1"	WELDOLET, 1 NPS 0.179 WT OUTLET, GR-B, FOR RUN SIZES 2 TO 36, ASTM A105, B16.9	4764	4	Q1281011
7	4	1"	ELL, 1" XS, CS, 90 DEG, BW, LR, 1.315 OD 0.179 WT, A-105, ASTM A234 WPB	4764	2	Q1751011
8	2	1"	VALVE, CS, PLUG, CL600, 1 NPS, STD SW x FNPT, NORDSTROM, FIG 2224 1/4, W/ LOCKING DEVICE #Q3710101	1480	N/A	42335718
9	2	1"	PARKER BLEED PLUG, CS, 10000#, MNPT, 1", BV10N8-80	10000	17	Q2701010
10	40 LF	#4	60 KSI, UNCOATED DEFORMED REINFORCEMENT BARS (CONTRACTOR SUPPLIED)	N/A	N/A	N/A
11	.6 CU YD	~	STRUCTURAL CONCRETE, 4000 PSI MINIMUM COMPRESSIVE STRENGTH	N/A	N/A	N/A
12	1	N/A	VALVE EXTENSION FOR 3" NORDSTROM PLUGE VALVE, 34" EXTENSION LENGTH FROM CENTER OF VALVE TO TOP OF OPERATING NUT	N/A	N/A	Q2700000

PRESSURE PIPING

NOTE 6

ITEM #	SIZE	DESCRIPTION	FOOTAGE	O.D.	SMYS	W.T.	MAWP NOTE 14	WH #
P1	8"	PIPE, CS, FBE CTG, 8.625 OD, 0.322 WT, X52, API 5L PSL2, ERW	10'	8.625"	52,000	0.322"	1941	Q0208022
P2	3"	PIPE, CS, FBE CTG, 3.500 OD, 0.300 WT, GR B, ASTM A106, SMLS	6'	3.500"	35,000	0.300"	3000	Q0203011
P3	1"	PIPE, CS, BARE, 1.315 OD, 0.179 WT, GR B, ASTM A106, SMLS	4'	1.315"	35,000	0.179"	4764	Q0101007

NOTES

1. ALL PIPING SHOWN IS NEW. DIMENSIONS INCLUDE WELD GAPS.
2. ⋈ IDENTIFIES GUIDE BARRED TEES.
3. ANY MATERIAL SUBSTITUTION OR FIELD DESIGN CHANGES REQUIRE ENGINEERING APPROVAL.
4. SEE SPECIFICATION 9-00-01 FOR MATERIAL NOTE NUMBERS LISTED.
5. LOCATE ALL UTILITIES PRIOR TO CONSTRUCTION.
6. CORROSION CONTROL: BURIED FABRICATION PIPING SHALL BE CLEANED AND COATED PER SP 2-13-10. THE RECOMMENDED FIELD APPLIED COATING FOR BURIED FBE PIPING IS 2-PART EPOXY AND FOR BURIED ARO PIPING POWERCRETE J APPLIED COATING. COATING TRANSITIONS ARE TO BE APPLIED PER DE-TYP-GEN-PIP-001. SOIL TO AIR INTERFACES (TRANSITIONS FROM BELOW TO ABOVE GROUND) REQUIRE AN OVERCOAT OF TRENTON WAX TAPE NUMBER 2 APPLIED PER SP 2-13-11. ALL BURIED PIPING TO BE CATHODICALLY PROTECTED WITHIN ONE YEAR OF INSTALLATION. ABOVE GROUND PIPING IS TO BE COATED PER SP 2-13-11. CONSULT CORROSION ENGINEERING FOR PIPELINE COATING EQUIVALENTS.
7. FIELD VERIFY WALL THICKNESS AT ALL TIE-IN LOCATIONS.
8. ALL VALVES MUST HAVE APPROPRIATE LOCKING DEVICES.
9. BALL VALVES - REMOVE ALL MANUFACTURER VENT PLUGS AND REPLACE WITH SMALL BALL VALVES.
10. NOT USED
11. NOT USED
12. NOT USED
13. ALL PIPE SHALL HAVE MILL TEST REPORTS (MTR'S) AS DEFINED WITHIN STANDARD PRACTICE 3-95-01.
14. THE FORMULA USED TO CALCULATE THE MAWP FOR ALL STEEL PIPE AND NON-RATED FITTINGS IS P=(2St/D) x F x E x T, WHERE F=0.5 FOR A CLASS 3 LOCATION, E=1, AND T=1.
15. 2" IN SERVICE FILLET WELDS SHALL RECEIVE 100% NDE.
16. PIPE IS DESIGNED TO WITHSTAND ANTICIPATED EXTERNAL PRESSURES AND LOADS FOLLOWING SP 1-01-02.
17. USE FLOWABLE SAND UNDER HARD SURFACES (ASPHALT AND CONCRETE) AND ROADWAYS. SEE STANDARD PRACTICE 9-11-01 ON FLOWABLE SAND SHADING AND FLOWFILL BACKFILL REQUIREMENTS.
18. GROUT BETWEEN RING AND COVER IF REQUIRED TO ESTABLISH GRADE.
19. MAINTAIN 10" TO 12" SEPARATION BETWEEN BOTTOM OF H.D.P.E. PIPE SLEEVE AND PRESSURE PIPING.
20. ACTUAL LENGTH TO BE DETERMINED BY THE WELD SHOP.

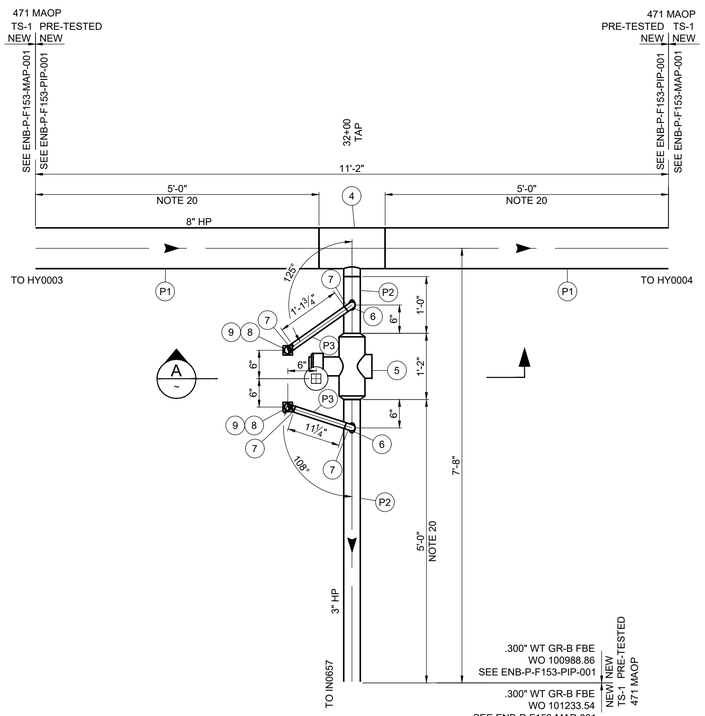
CONCRETE SPECIFICATIONS

REINFORCING STEEL

1. REFERENCES
   - A. ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE"
   - B. ACI "DETAILING MANUAL"
   - C. CRSI MSP-1 "MANUAL OF STANDARD PRACTICE"
2. REINFORCING STEEL: ASTM A706 DEFORMED BARS OR ASTM A615 GRADE 60 DEFORMED BARS WITH AN ACTUAL YIELD STRENGTH NOT EXCEEDING 78,000 PSI AND A RATIO OF ACTUAL ULTIMATE TENSILE STRENGTH TO ACTUAL YIELD STRENGTH NOT LESS THAN 1.25.
3. PROVIDE MINIMUM CONCRETE COVER OVER REINFORCING STEEL AS FOLLOWS, UNLESS STATED OTHERWISE:
   - 3 INCHES FOR CONCRETE CAST AGAINST EARTH
   - 2 INCHES OTHERWISE
   - PROVIDE MINIMUM 1 1/2" CONCRETE COVER TO TOP OF FLATWORK IF APPLICABLE.
4. SECURE ALL REINFORCING, INCLUDING DOWELS, IN POSITION WITH BAR SUPPORTS PER CRSI BEFORE CONCRETE PLACEMENT.

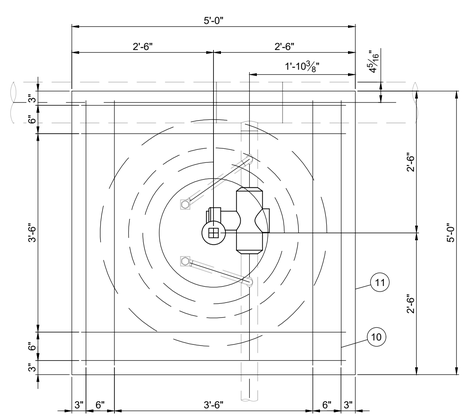
CONCRETE MATERIALS

1. PORTLAND CEMENT: ASTM C150 TYPE I/II.
2. FLY ASH: ASTM 618 CLASS C OR F INCLUDING TABLE 3 SPECIFICATIONS
   - A. CONTENT BY WEIGHT: 15% MINIMUM EXCEPT SLABS - 25% MAXIMUM
3. NORMAL WEIGHT AGGREGATES: ASTM C33, CLASS 3S OR GREATER
4. WATER: POTABLE, IN CONFORMANCE WITH ASTM C94
5. WATER-REDUCING ADMIXTURE: ASTM C494
6. AIR-ENTRAINING ADMIXTURE: ASTM C260
7. STRUCTURAL CONCRETE: ACI 318, CHAPTERS 3 AND 5.
8. CONCRETE SHALL DEVELOP THE FOLLOWING COMPRESSIVE STRENGTH WITHIN 28 DAYS FOR DRIVES, PADS AND FOOTINGS: 4000 PSI.
9. USE AIR-ENTRAINED CONCRETE OF 5%-7% AIR BY VOLUME.
10. CONCRETE SLUMP RANGE OF 3"-6".



PLAN VIEW

PIPE LAYOUT



PLAN VIEW

CONCRETE, MAN HOLE & REBAR LAYOUT

TEST SPECIFICATIONS

(STANDARD PRACTICE 1-90-01)

	TS-1 (TEST SEGMENT)
MINIMUM TEST PRESSURE:	1080 PSIG
	(24.6% SMYS)
MAXIMUM TEST PRESSURE:	
WATER	2220 PSIG 50.5% SMYS
NITROGEN	2197 PSIG 50% SMYS
CNG	N/A
TEST DURATION MINIMUM:	SHOP: 1 HR
	FIELD: 1 HR

FABRICATION SPECIFICATIONS

(STANDARD PRACTICE 2-10-01)

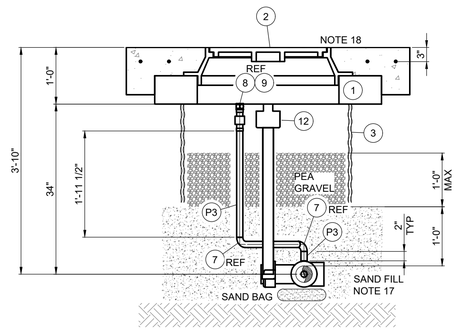
	SEGMENT 1
WELDING REQUIREMENTS:	API 1104
POST WELD HEAT TREATMENT	NO
WELD INSPECTION	VISUAL: 100%
	NDE: 100% > 2"
	STD. PRACTICE: 3-15-01
JOB SPECIFIC REQUIREMENTS	LOW HY DROGEN WELD
	FOR IN SERVICE
	FILLET WELD

MAOP DETERMINATION

(STANDARD PRACTICE 1-97-04)

	MAOP SEGMENT 1
DESIGN CLASS LOCATION:	3
DESIGN FACTOR (F):	F = 0.5
TEST PRESSURE (MINIMUM):	1080 PSIG
TEST FACTOR:	1.5
MINIMUM DESIGN PRESSURES	
A. PIPE: (NOTE 14)	2197 PSIG
B. CALCULATED FITTINGS: (NOTE 14)	2197 PSIG
C. RATED ITEMS	1480 PSIG
D. TEST PRESSURE (MIN) / TEST FACTOR:	
1080 PSIG / 1.5 =	720 PSIG
E. OTHER LIMITING FACTORS	
FEEDERLINE MAOP	N/A
SEGMENT MAOP (DESIGN) (MIN A, B, C, D)	720 PSIG
% SMYS @ SEGMENT MAOP	16.4%
PIPELINE MAOP (OPERATING) (MIN A, B, C, D, E)	N/A
% SMYS @ PIPELINE MAOP	N/A

REFER TO STANDARD PRACTICE 3-10-04 FOR IHP TEST



SECTION A

ISSUED FOR CONSTRUCTION

REFERENCE DRAWINGS		
DRAWING NUMBER	REV	DRAWING DESCRIPTION
ENB-P-F153-MAP-001	0	TAPLINE TO HY0004 GATE STATION
ENB-M-IN0657-PIP-001	0	INDUSTRIAL METER SET IN0657

WORK ORDERS	
WO NUMBER	DESCRIPTION
100988.86	INSTALL 190 LF OF 2" FL-153 PIPELINE

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
0	ISSUE FOR CONSTRUCTION	10/09/2025	JAJ	IAT

ENGINEERING RECORD	
DRAWN BY:	J. JOHNSON
CHECKED BY:	I TORRES
PROJECT ENGR:	A. ASPLUND
SURVEYOR:	E. CLEMENCE
ENGR MNGR:	W. RADFORD
CONSTR MNGR:	D FRANCIS
MEAS & CTRLS:	
AUTOM ENGR:	

ENBRIDGE

LINE NUMBER:	FL- 153
FACILITY:	TAPLINE TO INDUSTRIAL METER SET IN0657
TITLE:	8" PIPELINE WITH 3" TAP VALVE ASSEMBLY
DESCRIPTION:	MATERIAL LIST, PLAN, AND SECTION
ADDRESS:	570 NORTH AND 1200 WEST

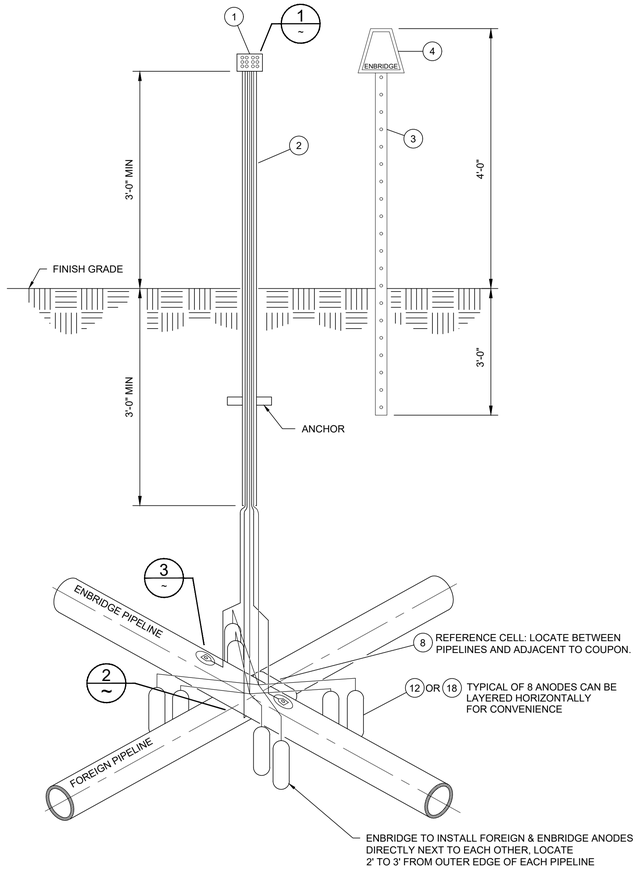
CITY	COUNTY	STATE
HYRUM	CACHE	UTAH

SECTION: 5, 32 T 10, 11 N R 1 E
ELEVATION: 4600'
LAT: 41.64555 LONG: -111.86149
SCALE: 3/4" = 1'-0"

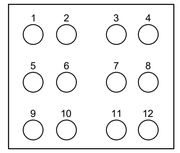
DRAWING NUMBER	SHEET	REVISION
ENB-P-F153-PIP-001	1 OF 1	0

ENB-P-F153-PIP-001-01.dwg, 10/09/2025 08:50am

ENBRIDGE GAS, ANSI D



ISOMETRIC VIEW

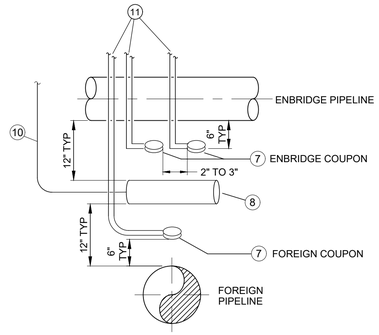


LEGEND:

1. FOREIGN LINE - #10 WHITE (OPTIONAL)
2. FOREIGN COUPON - #10 GREEN
3. ENBRIDGE COUPON - #10 GREEN (TWO WIRES)
4. ENBRIDGE PIPELINE - #10 BLACK
5. FOREIGN PIPELINE - #10 WHITE (OPTIONAL)
6. STATIONARY REFERENCE CELL - #14 YELLOW
7. ENBRIDGE COUPON - #10 GREEN (TWO WIRES)
8. ENBRIDGE LINE #12 - #10 BLACK
9. FOREIGN ANODES - #8 WIRE
10. NOT USED
11. NOT USED
12. ENBRIDGE ANODES - #8 WIRE

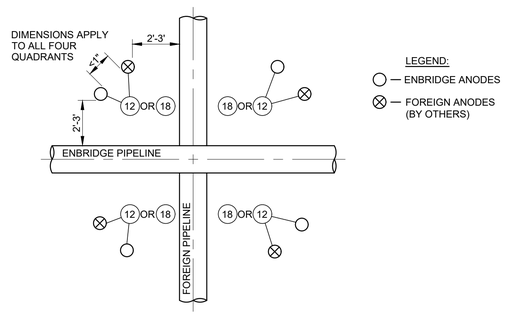
TEST HEAD TERMINATIONS (1)

ENBRIDGE GAS TECHNICIAN TO CONNECT WIRES TO TERMINALS
NOTE 8 & 9



COUPONS & REFERENCE CELL DETAIL (2)

AREA BETWEEN PIPELINES
NOTE 5



ANODE CONFIGURATION DETAIL (3)

PLAN VIEW - ENBRIDGE AND FOREIGN ANODES
NOTE 4

MATERIAL LIST

ITEM	REQ.	SIZE	DESCRIPTION	WH #
1	1	N/A	TEST STATION, 12 TERMINAL TESTOX TEST STATION HEAD	Q3901275
2	1	3" DIA	TEST STATION, 3" x 6'-0" COTT YELLOW CONDUIT PIPE MODEL 07-11306	Q3901276
3	1	N/A	POST MARKER 7'-0" POWDER COATED ALL SAFETY YELLOW	Q5314601
4	1	N/A	SIGN TRAPEZOID DEUWI WARNING GAS PIPELINE	Q5621031
5	AS REQ	#10	WIRE, DIRECT BURIAL CABLE AWG #10 SOILD WIRE THHN/THWN, BLACK - 500 FT SPOOL	Q6135010
6	2	N/A	FUSION CARTRIDGE, CADWELD MODEL CA-15	Q3504020
7	3	N/A	COUPON, MCMILLER IR-FREE 10CM2 COUPON WITH TWIN #12 AWG STRANDED 25-FT GREEN THHN LEAD WIRES, MODEL COU100	Q3901272
8	AS REQ	N/A	REFERENCE CELL, BORIN STELTH 2 WITH 50-FT #14 AWG RHH-RHW STRANDED YELLOW WIRE, MODEL SRE-007-CUY	Q3901270
9	AS REQ	#10	WIRE, DIRECT BURIAL CABLE AWG #10 SOILD WIRE THHN/THWN, WHITE- 500 FT SPOOL	Q6135011
10	AS REQ	#14	WIRE, DIRECT BURIAL CABLE AWG #14 SOLID WIRE THHN/THWN, YELLOW- 500 FT SPOOL	Q6135008
11	AS REQ	#10	WIRE, DIRECT BURIAL CABLE AWG #10 STRANDED WIRE THHN/THWN, GREEN - 500 FT SPOOL	Q3923105
12	NOTE 1	17 LB	ANODE, 17LB HIGH POTENTIAL MAGNESIUM (ASTM-B843 M1C ALLOY) PACKAGED IN COTTON BAG WITH 75% GYPSUM, 20% BENTONITE, & 5% SODIUM SULPHATE BACKFILL, MODEL 17D3 WITH A 10-FOOT SOLID #12 AWG BLACK THWN/THNN WIRE	Q3900200
13	1	N/A	SHUNT, 0.01 OHM YELLOW COTT MODEL 08-12002	Q3901277
14	AS REQ	#8	WIRE, DIRECT BURIAL CABLE AWG #8 STRANDED WIRE HMWPE, Black - 500 FT OR 1000-FT SPOOL	Q6135020 OR Q6135022
15	1	N/A	TAPE, 3M SCOTCH 130C LINERLESS RUBBER SPLICING TAPE, 1"X30' ROLL	Q5703010
16	1	N/A	TAPE, 3M SCOTCH SUPER 88 VINYL ELECTRICAL TAPE, 1"X36 YARD ROLL	Q3918800
17	2	N/A	COMPRESSION CONNECTION, BURNDY TYPE YC MODEL YC26C2	Q3901250
18	NOTE 1	32 LB	ANODE, 32LB HIGH POTENTIAL MAGNESIUM (ASTM-B843 M1C ALLOY) PACKAGED IN COTTON BAG WITH 75% GYPSUM, 20% BENTONITE, & 5% SODIUM SULPHATE BACKFILL, MODEL 32D5 WITH A 10-FOOT SOLID #12 AWG BLACK THWN/THNN WIRE	42420065

NOTES

CONTRACTOR:

1. ACTUAL NUMBER OF ANODES AND SIZE VARIES BY DESIGN
2. INSTALL PER ENBRIDGE STANDARD PRACTICES:
   - 7-00-01 - GENERAL CORROSION CONTROL PROCEDURES
   - 7-10-01 - DESIGNING CATHODIC SYSTEMS
   - 7-10-02 - CADWELD AND CADWELD PLUS PROCEDURE
   - 7-20-01 - INSTALLING GALVANIC ANODES FOR CATHODIC PROTECTION OF BURIED PIPELINES
   - 7-40-03 - TESTING FOR AND MITIGATING DC INTERFERENCE ON PIPELINES
   - 2-13-10 - SURFACE PREPARATION AND PROTECTIVE COATINGS FOR BURIED PIPELINE SYSTEMS
3. ABOVE GRADE MATERIALS TO BE INSTALLED OUTSIDE HARD SURFACE OF ROAD.
   - SEE ENB-STD-COR-COR-002 DETAIL 3 FOR PLACING CABLES IN CONDUIT WHEN TEST STATION IS PLACED 5-FEET OR MORE AWAY FROM THE PIPELINE.
4. ANODE INSTALLATION:
   - ATTACH ANODE GROUPS (FOUR PER PIPELINE) AS SHOWN IN ENB-STD- COR-COR-002 DETAIL 5.
   - ANODES INCLUDE AN ATTACHED LEAD WIRE USED FOR INSTALLATION.
   - REMOVE ANODE FROM PLASTIC PACKAGING BEFORE INSTALLATION.
   - ENSURE ANODES ARE NOT IN CONTACT WITH ANY OTHER BELOW GRADE STRUCTURES.
   - SATURATE EACH ANODE WITH A MINIMUM OF FIVE GALLONS OF WATER AFTER BACKFILLING AND COMPACTION 6" ABOVE ANODE.
   - WHEN POSSIBLE; PLACE ANODES WITHIN MOIST LOAM AND CLAY SOIL. AVOID PLACEMENT OF ANODES WITHIN DRY SAND AND DO NOT PLACE WITHIN GRAVEL.
5. COUPONS AND REFERENCE CELL INSTALLATION:
   - COUPONS INCLUDE AN ATTACHED LEAD WIRE; ADDITIONAL LEAD WIRE MAY BE REQUIRED AS COVERED WITHIN ITEM 11 WITHIN THE MATERIAL LIST.
   - REMOVE REFERENCE CELL FROM PACKAGING; SATURATE EACH REFERENCE CELL WITH A MINIMUM OF FIVE GALLONS OF WATER BEFORE BACKFILLING.
   - COUPONS ARE TO BE INSTALLED A MINIMUM OF 12" FROM THE PIPELINE AND 6" FROM REFERENCE CELL.
   - BACKFILL WITH 1" MINUS SOIL AND PACK NATIVE SOIL A MINIMUM OF 6" AROUND COUPONS AND THE REFERENCE CELL TO ENSURE ACCURATE READINGS.
   - REFERENCE CELLS TO BE INSTALLED WITH A MINIMUM OF 6" VERTICAL DISTANCE FROM PIPELINE

ENBRIDGE CORROSION TECHNICIAN:

6. CONTACT FOREIGN PIPELINE TO COORDINATE PROJECT.
7. CREATE A PREVENTATIVE MAINTENANCE (PM) REPORT WITHIN THE DOT SYSTEM FOR COMMISSIONING.
8. INSTALL AND LABEL EACH WIRE WITHIN THE TEST STATION.
9. INSTALL SHUNT WITHIN TEST STATION HEAD.

ISSUED FOR CONSTRUCTION

REFERENCE DRAWINGS		
DRAWING NUMBER	REV	DRAWING DESCRIPTION
ENB-STD-COR-COR-002	2	STANDARD CORROSION DETAILS

WORK ORDERS	
WO NUMBER	DESCRIPTION

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
0	ISSUED FOR CONSTRUCTION - SUPERSEDES QGC-STD-COR-COR-009	5/21/2018	KJK	PHH
1	UPDATED NOTES AND MATERIAL LIST	04/06/21	PHH	EN
2	GENERAL UPDATES	04/06/22	PHH	KH
3	SUPERSEDES DE-STD-COR-COR-009 - ISSUED FOR CONSTRUCTION	03/03/2025	BJP	DGB

ENGINEERING RECORD

DRAWN BY: PHH
CHECKED BY: J. BERG
PROJECT ENGR: K HOFFMANN
SURVEYOR: N/A
ENGR MNGR: K. COWAN
CONSTR MNGR: J. FOX
MEAS & CTRLS:
AUTOM ENGR:

SECTION: N/A T N/A R N/A
ELEVATION: N/A
LAT: N/A LONG: N/A
SCALE: NONE

ENBRIDGE

LINE NUMBER:
FACILITY:
TITLE: STANDARD DRAWING
DESCRIPTION: CATHODIC PROTECTION PIPELINE CROSSING
ADDRESS: ISOMETRIC VIEW, DETAILS & MATERIAL LIST

CITY	COUNTY	STATE
VARIES	VARIES	VARIES

DRAWING NUMBER	SHEET	REVISION
ENB-STD-COR-COR-009	1 OF 1	3

ENB-STD-COR-COR-009.dwg - 05/07/2025 - 08:14am

ENBRIDGE GAS ANSI_D

MATERIAL LIST

ITEM #	QTY	SIZE	DESCRIPTION	WH #
1	1	N/A	TEST STATION, MARKER TEST STATION QGC 72-IN YELLOW, 6 TERMINALS, YELLOW HEAD	Q3903610
2	NOTE 1	17 LB	ANODE, 17LB HIGH POTENTIAL MAGNESIUM (ASTM-B843 MTC ALLOY) PACKAGED IN COTTON BAG WITH 75% GYPSUM, 20% BENTONITE, & 5% SODIUM SULPHATE BACKFILL, MODEL 17D3 WITH A 10-FOOT SOLID #12 AWG BLACK THWN/THHN WIRE	Q3900200
3	NOTE 1	32 LB	ANODE, 32LB HIGH POTENTIAL MAGNESIUM (ASTM-B843 MTC ALLOY) PACKAGED IN COTTON BAG WITH 75% GYPSUM, 20% BENTONITE, & 5% SODIUM SULPHATE BACKFILL, MODEL 32D5 WITH A 10-FOOT SOLID #12 AWG BLACK THWN/THHN WIRE	42420065
4	AS REQ	#12	WIRE, DIRECT BURIAL CABLE AWG #12 SOLID THHN/THWN, BLACK	42488966

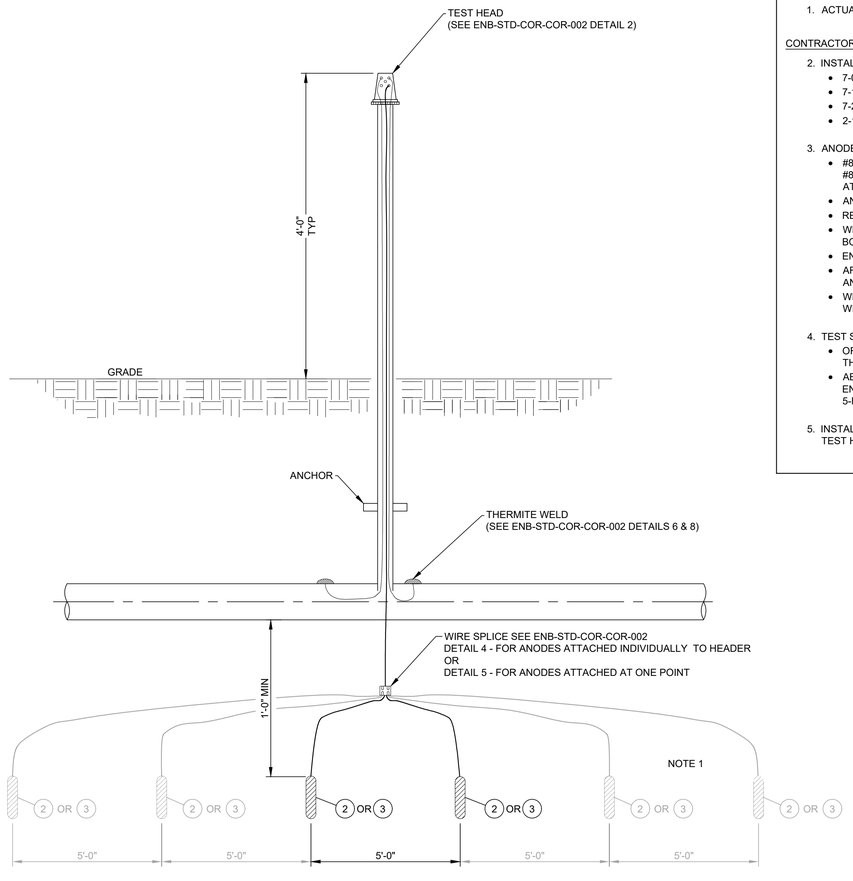
NOTES

1. ACTUAL NUMBER AND SIZE OF ANODES VARIES BY DESIGN

CONTRACTOR:

2. INSTALL PER ENBRIDGE STANDARD PRACTICES:
   - 7-00-01 - GENERAL CORROSION CONTROL PROCEDURES
   - 7-10-01 - DESIGNING CATHODIC SYSTEMS
   - 7-20-01 - INSTALLING GALVANIC ANODES FOR CATHODIC PROTECTION OF BURIED PIPELINES
   - 2-13-10 - SURFACE PREPARATION AND PROTECTIVE COATINGS FOR BURIED PIPELINE SYSTEMS
3. ANODE INSTALLATION:
   - #8 ANODE HEADER CABLE MAY BE LOOPED SO THERE ARE TWO ENDS IN THE TEST HEAD. ALTERNATIVELY, #8 ANODE HEADER CABLE MAY BE A SINGLE CABLE WITH ONE END IN THE TEST HEAD AND THE OTHER ATTACHED THE ANODE(S).
   - ANODES INCLUDE AN ATTACHED LEAD WIRE USED FOR INSTALLATION.
   - REMOVE ANODE FROM PLASTIC PACKAGING BEFORE INSTALLATION.
   - WHEN POSSIBLE; INSTALL ANODES HORIZONTALLY OR VERTICALLY WITH THE TOP 1 FOOT BELOW THE BOTTOM OF THE PIPELINE.
   - ENSURE ANODES ARE NOT IN CONTACT WITH ANY OTHER BELOW GRADE STRUCTURES.
   - AFTER BACKFILLING AND COMPACTING AT LEAST 6-INCHES AROUND EACH ANODE, SATURATE EACH ANODE WITH A MINIMUM OF FIVE GALLONS OF POTABLE WATER BEFORE FINAL BACKFILL.
   - WHEN POSSIBLE; PLACE ANODES WITHIN MOIST LOAM AND CLAY SOIL. AVOID PLACEMENT OF ANODES WITHIN DRY SAND AND DO NOT PLACE WITHIN GRAVEL.
4. TEST STATION INSTALLATION:
   - OFFSET TEST STATION 6" FROM NEAREST EDGE OF PIPELINE AND AT A DEPTH EQUAL TO THE CENTER OF THE PIPELINE.
   - ABOVE GRADE MATERIALS TO BE INSTALLED OUTSIDE HARD SURFACE OF ROAD. SEE DRAWING ENB-STD-COR-COR-002 DETAIL 3 FOR PLACING CABLES IN CONDUIT WHEN TEST STATION IS PLACED 5-FEET OR MORE AWAY FROM PIPELINE.
5. INSTALL AND LABEL EACH WIRE IN TEST STATION. A ENBRIDGE EMPLOYEE WILL CONNECT THE WIRES TO THE TEST HEAD.

PLAN VIEW



SECTION VIEW A ~

ISSUED FOR CONSTRUCTION

REFERENCE DRAWINGS		
DRAWING NUMBER	REV	DRAWING DESCRIPTION
ENB-STD-COR-COR-002	2	STANDARD CORROSION DETAILS

WORK ORDERS	
WO NUMBER	DESCRIPTION

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
0	ISSUED FOR CONSTRUCTION - SUPERSEDES QGC-STD-COR-COR-011	5/21/18	KJK	PHH
1	CHANGED DRAWING TO CREATE ANODE QUANTITY FLEXIBILITY	10/24/18	PHH	
2	CREATED SEPARATE DRAWINGS FOR FOUR ANODE INSTALLATION	12/4/18	PHH	
	(VERSION A) AND TWO ANODE INSTALLATION (VERSION B)			
3	UPDATED AND CORRECTIONS MADE TO MATERIALS	4/6/21	PHH	EN
4	COMBINED DRAWINGS 011A, 011B AND 011C, MOVED DETAILS TO 002	4/6/22	PHH	KH
5	SUPERSEDES DE-STD-COR-COR-011	1/22/25	PHH	KH

ENGINEERING RECORD	
DRAWN BY: P HAHN	
CHECKED BY: J BERG	
PROJECT ENGR: T MARTUS	
SURVEYOR: N/A	
ENGR MNGR: K COWAN	
CONSTR MNGR: J FOX	
MEAS & CTRLS: N/A	
AUTOM ENGR: N/A	

ENBRIDGE

SECTION: N/A TN/A R N/A
ELEVATION: N/A
LAT: N/A LONG: N/A
SCALE: NONE

LINE NUMBER:
FACILITY:
TITLE: STANDARD DRAWING
DESCRIPTION: TEST STATION WITH GALVANIC ANODES
ADDRESS: PLAN, SECTION AND DETAILS

CITY	COUNTY	STATE
VARIES	VARIES	VARIES

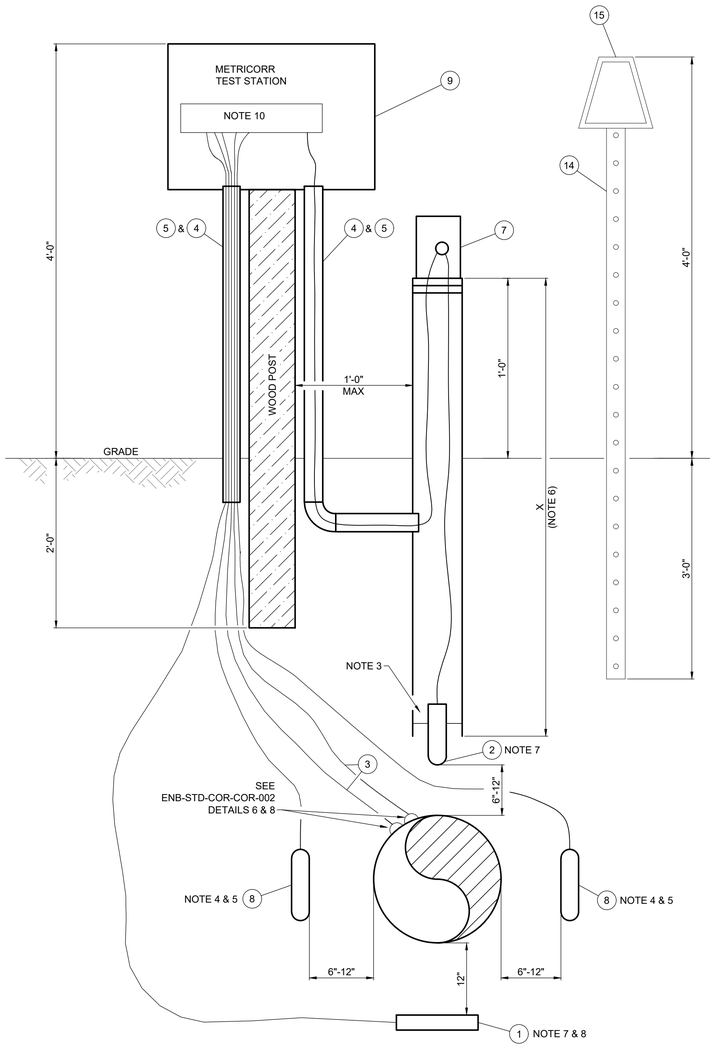
DRAWING NUMBER	SHEET	REVISION
ENB-STD-COR-COR-011	1 OF 1	5

ENB-STD-COR-COR011.dwg - 05/07/2025 - dlicken

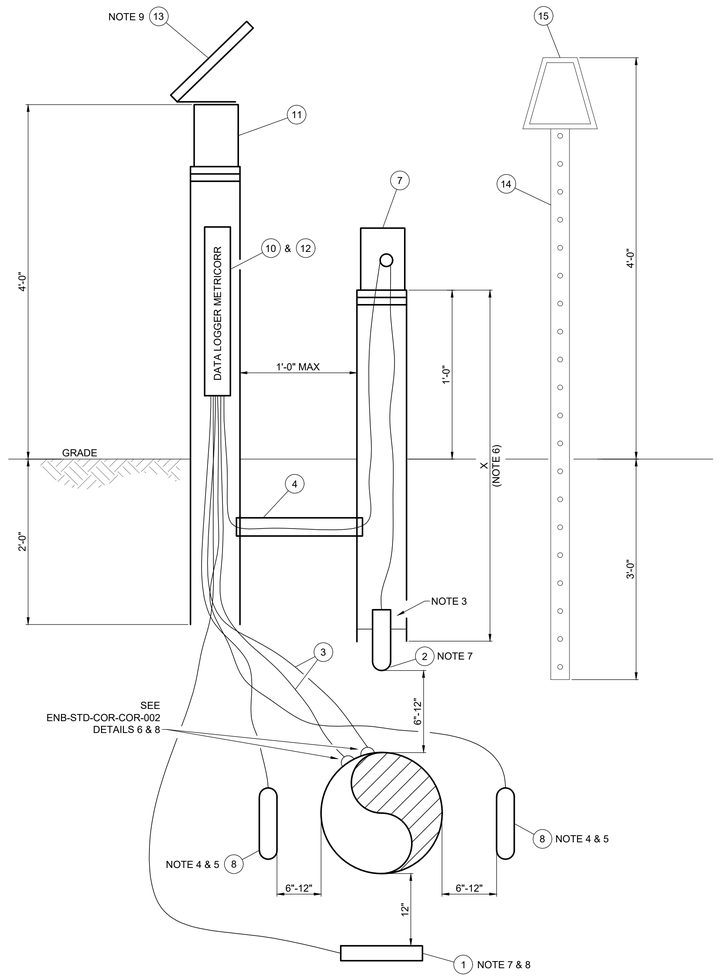
ENBRIDGE GAS ANSI_D

MATERIAL LIST

ITEM #	QTY	SIZE	DESCRIPTION	WH #
1	1	N/A	REFERENCE CELL, BORIN STELTH 2 WITH 50-FT #14 AWG RHH-RHW STRANDED YELLOW WIRE, MODEL SRE-007-CUY	Q3901270
2	1	N/A	REFERENCE CELL, BORIN STELTH 1 WITH 50-FT #14 AWG RHH-RHW STRANDED YELLOW WIRE, MODEL SRE-002-CFY	42492391
3	AS REQ	#10	WIRE, DIRECT BURIAL CABLE AWG #10 SOLID WIRE THHN/THWN, BLACK - 500 FT SPOOL	Q6135010
4	AS REQ	1"	CONDUIT, 1" SCHEDULE 40 PVC GREY PIPE	CONTRACTOR PROVIDED
5	AS REQ	1"	CONDUIT MOUNTING BRACKETS FOR 1" SCHEDULE 40 PVC PIPE	CONTRACTOR PROVIDED
6	1	4x4x10	PRESSURE TREATED WOOD POST	CONTRACTOR PROVIDED
7	1	N/A	TEST STATION, COTT BIG FINK 3 TERMINAL WHITE TEST STATION HEAD FOR 3-INCH RISER WITH YELLOW 3-INCH DIAMETER RISER	42492392
8	2	1cm2	METRICORR ER PROBE, ROD, FE, 1CM2 COUPON AREA, 500 MICROMETER THICKNESS, 12M CABLE LENGTH, ITEM 101370-00	42492938
9	1	N/A	METRICORR MONITORING PACK, DATA LOGGER RMU & CELLULAR TRANSMITTER UNIT, SOLAR, JUNCTION BOX, NO PROBES FOR BIG BORE APPLICATIONS ITEM 101373	42492941
10	1	N/A	METRICORR ICL MASTERLINK PACK, CELLULAR, ITEM 101222-00	42492937
11	1	N/A	TEST STATION, COTT BIG FINK 3 TERMINAL YELLOW TEST STATION HEAD FOR 3-INCH RISER WITH WHITE 3-INCH DIAMETER RISER	42492393
12	1	N/A	METRICORR BIG FINK MOUNTING CLIP SET, ITEM 101468-00	42492939
13	1	N/A	METRICORR SOLAR POWER KIT FOR BIG FINK TOP YELLOW, ITEM 101450-00	42492940
14	1	N/A	POST MARKER 7'-0" POWDER COATED ALL SAFETY YELLOW	Q5314601
15	1	N/A	PIPELINE MARKER	Q5621031



BIG BOX METRICORR TEST STATION



SLIMLINE METRICORR TEST STATION

NOTES

1. INSTALL PER STANDARD PRACTICES:
   - 7-00-01 - GENERAL CORROSION CONTROL PROCEDURES
   - 7-10-01 - DESIGNING CATHODIC SYSTEMS
   - 7-10-02 - CADWELD AND CADWELD PLUS PROCEDURE
   - 2-13-10 - SURFACE PREPARATION AND PROTECTIVE COATINGS FOR BURIED PIPELINE SYSTEMS
2. ABOVE GRADE MATERIALS TO BE INSTALLED OUTSIDE HARD SURFACE OF ROAD.
   - SEE ENB-STD-COR-COR-002 DETAIL 3 FOR PLACING CABLES IN CONDUIT WHEN TEST STATION IS PLACED 5-FEET OR MORE AWAY FROM THE PIPELINE.
3. TUBE TO REMAIN EMPTY DOWN TO REFERENCE CELL.
4. ER PROBE WIRE MUST REMAIN THE LENGTH PROVIDED BY MANUFACTURER.
5. ER PROBE TO BE PLACED ON EITHER SIDE OF THE PIPE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. LABEL WIRES TO DISTINGUISH WHICH SIDE IT IS ON.
6. DIMENSION "X" TO BE FIELD DETERMINED AND ADDITIONAL LENGTH ADDED TO TUBE, AS NEEDED. DIMENSION "X" WILL BE WRITTEN ON THE INSIDE OF THE TUBE NEAR THE TEST HEAD.
7. LABEL REFERENCE CELL WIRES.
8. REFERENCE CELL MAY BE PLACED ABOVE PIPE, BUT AT LEAST 12" AWAY FROM ER PROBES OR OTHER REFERENCE CELL.
9. WHEN POSSIBLE, FACE SOLAR PANEL SOUTH.
10. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR WIRE TERMINATION INSIDE OF TEST STATION.

ISSUED FOR CONSTRUCTION

REFERENCE DRAWINGS		
DRAWING NUMBER	REV	DRAWING DESCRIPTION
ENB-STD-COR-COR-002	2	STANDARD DWG - CORROSION INSTALLATION DETAILS

WORK ORDERS	
WO NUMBER	DESCRIPTION

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
0	ISSUED FOR CONSTRUCTION	05/31/22	PHH	KH
1	UPDATES TO MATERIAL LIST, WH#s ADDED	09/20/22	PHH	KH
2	ISSUED FOR CONSTRUCTION - SUPERSEDES DE-STD-COR-COR-016	09/27/24	PHH	

ENGINEERING RECORD
DRAWN BY: P HAHN
CHECKED BY:
PROJECT ENGR: K HOFFMANN
SURVEYOR: N/A
ENGR MNGR: R KISER
CONSTR MNGR: K FACER
MEAS & CTRLS: N/A
AUTOM ENGR: N/A

ENBRIDGE

SECTION: N/A T N/A R N/A
ELEVATION: N/A
LAT: N/A LONG: N/A
SCALE: NONE

LINE NUMBER:
FACILITY:
TITLE: STANDARD DRAWING
METRICORR ELECTRICAL RESISTANCE PROBE TEST STATIONS
DESCRIPTION:
ADDRESS:

CITY	COUNTY	STATE
N/A	N/A	N/A

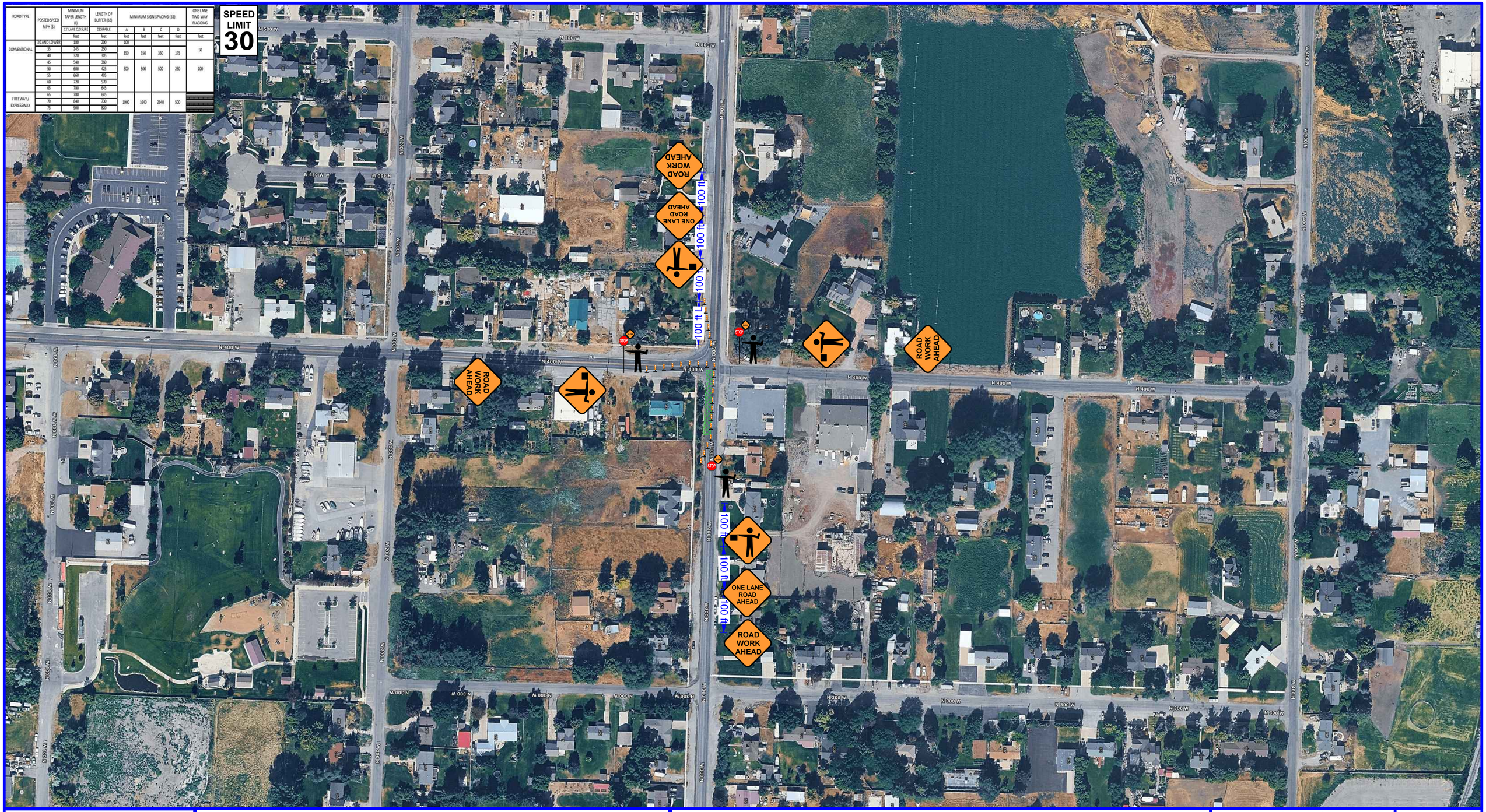
DRAWING NUMBER	SHEET	REVISION
ENB-STD-COR-COR-016	1 OF 1	2

ENB-STD-COR-COR-016.dwg - 09/27/2024 - 08:08am

ENBRIDGE GAS_ANSI_D

ROAD TYPE	POSTED SPEED MPH (S)	MINIMUM TAPER LENGTH (L)	LENGTH OF BUFFER (BZ)	MINIMUM SIGN SPACING (SS)				ONE LANE TWO-WAY FLAGGING
		12' LANE CLOSURE	DESIRABLE	A	B	C	D	
		feet	feet	feet	feet	feet	feet	feet
CONVENTIONAL	30 AND LOWER	180	200	100				50
	35	245	250	350	350	350	175	
	40	320	305					
	45	540	360					100
	50	600	425	500	500	500	250	
	55	660	495					
	60	720	570					
	65	780	645					
FREEWAY / EXPRESSWAY	70	840	730	1000	1640	2640	500	
	75	900	820					

SPEED LIMIT 30



AWP Safety

801-627-1970
www.awpsafety.com

Project: Flare 300 North & 200 West, Hyrum
Location: 41.6404, -111.8606
Comments:

Date: 12/19/2025
Author: Jenna Perryman - 7998566051
TTCP:
Notes:
-Sign spacing may be adjusted to fit field conditions.
-Buffer space may be eliminated or modified to fit field conditions.
-Roads with no posted speed limit have been designed for 25 mph.
-Road Work Ahead signs shall be placed on all cross streets intersecting within the advance signing. The signs should be placed a minimum of 100 feet in advance of the intersection.

Legend
Work Area
Flagger
Vertical Panel

PLANS ARE NOT TO SCALE

N

ROAD TYPE	POSTED SPEED MPH (S)	MINIMUM TAPER LENGTH (L) 12' LANE CLOSURE	LENGTH OF BUFFER (BZ) DESIRABLE	MINIMUM SIGN SPACING (SS) A	B	C	D	ONE LANE TWO-WAY FLAGGING
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	65	780	645					
FREEWAY / EXPRESSWAY	70	840	730	1000	1640	2640	500	
	75	900	820					

SPEED LIMIT 30

ROAD WORK AHEAD
ONE LANE ROAD AHEAD
100 ft
STOP
N 400 W
W 200 N
W 300 N
W 400 N
N 300 W
N 200 W
N 100 W
W 500 N
W 600 N
W 700 N
W 800 N
W 900 N
W 1000 N
W 1100 N
W 1200 N
S 1200 W

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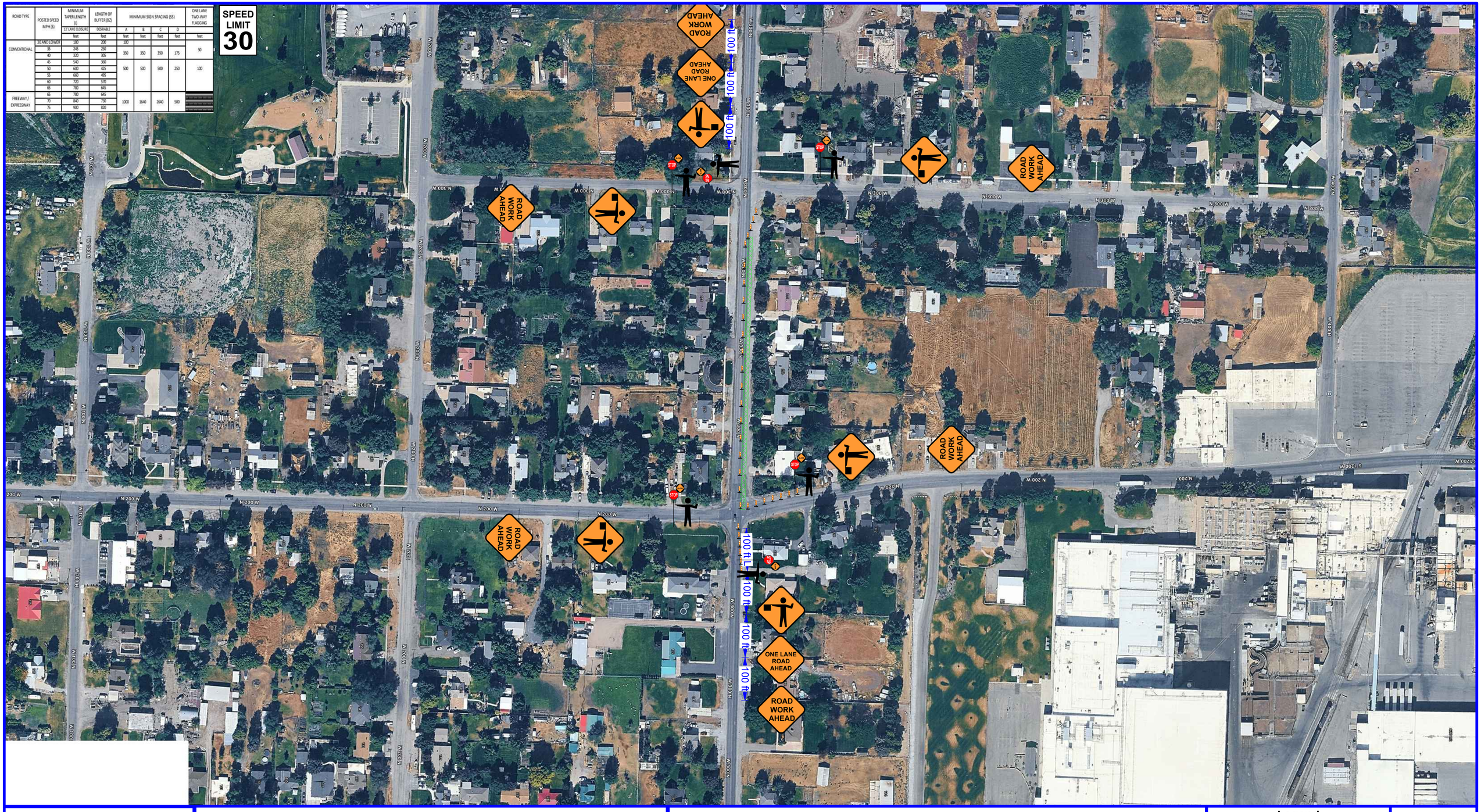

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SPEED LIMIT 30

ROAD WORK AHEAD

ONE LANE ROAD AHEAD

100 ft 100 ft 100 ft

Miller Rd

N 200 W

N 300 W

W 300 N

W 200 N

W 400 N

S 1200 W

N 100 W

N 100 W W

W 500 N

W 600 N

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Flagger

Work Area

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SPEED LIMIT 30

DETOUR

DETOUR

DETOUR

DETOUR

ROAD CLOSED AHEAD

DETOUR AHEAD

ROAD WORK AHEAD

ROAD CLOSED DETOUR

Local Traffic Only

RAILROAD CERTIFIED FLAGGERS

ROAD CLOSED

ROAD CLOSED DETOUR

Local Traffic Only

100 ft 100 ft 100 ft 100 ft

ONE LANE ROAD AHEAD

ROAD WORK AHEAD

100 ft 100 ft 100 ft

ROAD WORK AHEAD

ONE LANE ROAD AHEAD

100 ft 100 ft 100 ft

N 300 W N 200 W W 600 N W 400 N W 200 N W 800 N W 1000 S W 1200 S S 1200 W Miller Rd

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Work Area

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SPEED LIMIT 30

ROAD WORK AHEAD

RAILROAD CERTIFIED FLAGGERS

ONE LANE ROAD AHEAD

ROAD WORK AHEAD

100 ft 100 ft 100 ft

100 ft 100 ft 100 ft 100 ft L

ROAD WORK AHEAD

ONE LANE ROAD AHEAD

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SPEED LIMIT 30

RAILROAD CERTIFIED FLAGGER

STOP

100 ft | 100 ft | 100 ft

ROAD WORK AHEAD

ONE LANE ROAD AHEAD

N 300 W

W 400 N

W 600 N

W 6000 S

N 200 W

S 1200 W

Miller Rd

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