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PLANS OF PROPOSED IMPROVEMENT ON THE
PRIMARY ROAD SYSTEM
WOODBURY COUNTY

SLIDE REPAIR
1.25 mi S of Plymouth County Line

Refer to the Proposal Form for list of applicable specifications.

Value Engineering Saves. Refer to Article 1105.14 of the Specifications.



REVISIONS

PROJECT IDENTIFICATION NUMBER	TOTAL
	52
26-97-012-030	
PROJECT NUMBER	
NHSN-012-1(071)--2R-97	
R.O.W. PROJECT NUMBER	

INDEX OF SEALS		
SHEET NO.	NAME	TYPE
A.1	Sean L. Ranney	Roadway Design
Q.1	Brian T. Havens	Geotechnical Design
V.1	Adam M. McCune	Structural Design

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

6/5/2026

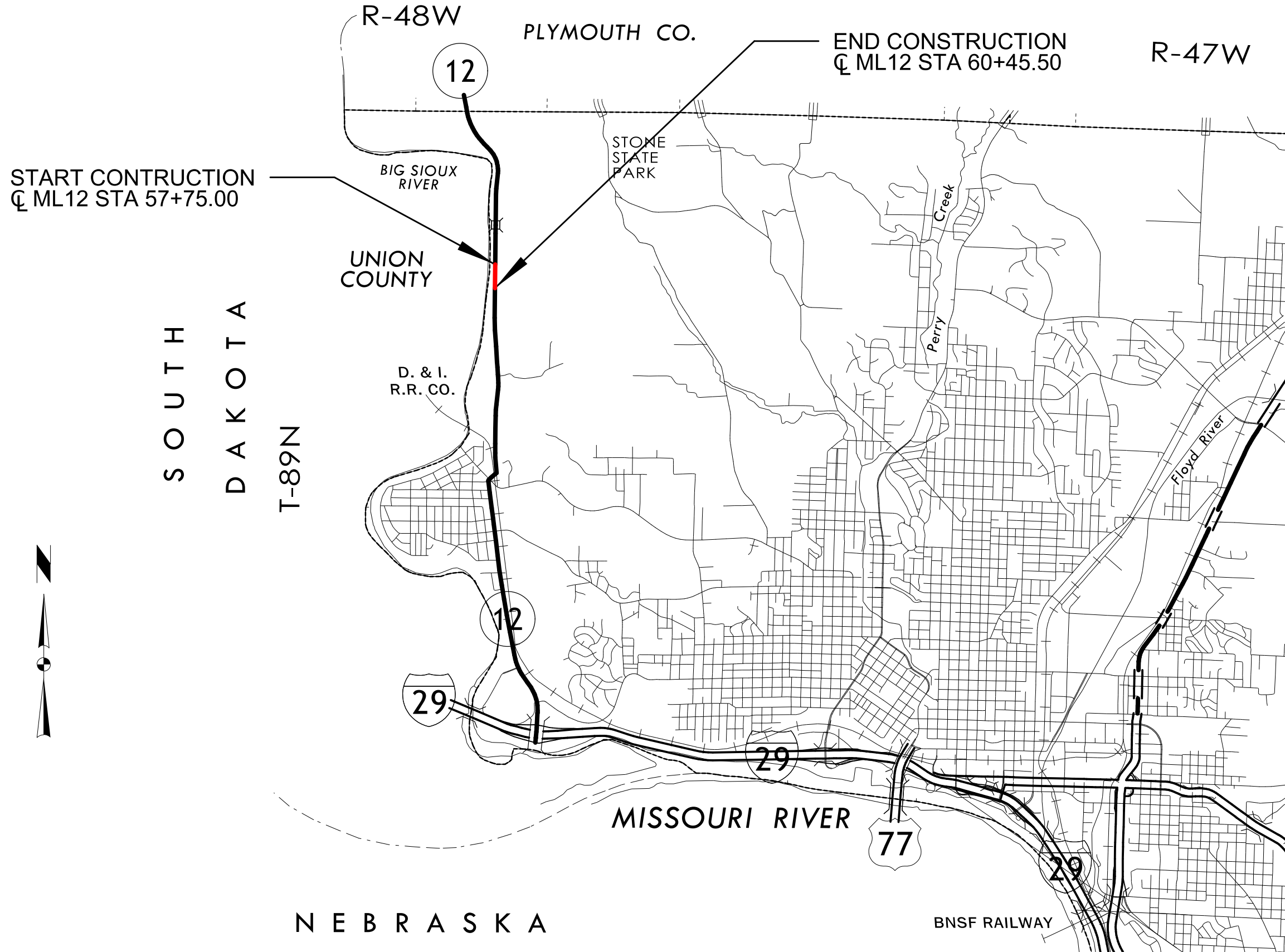
SignatureDate

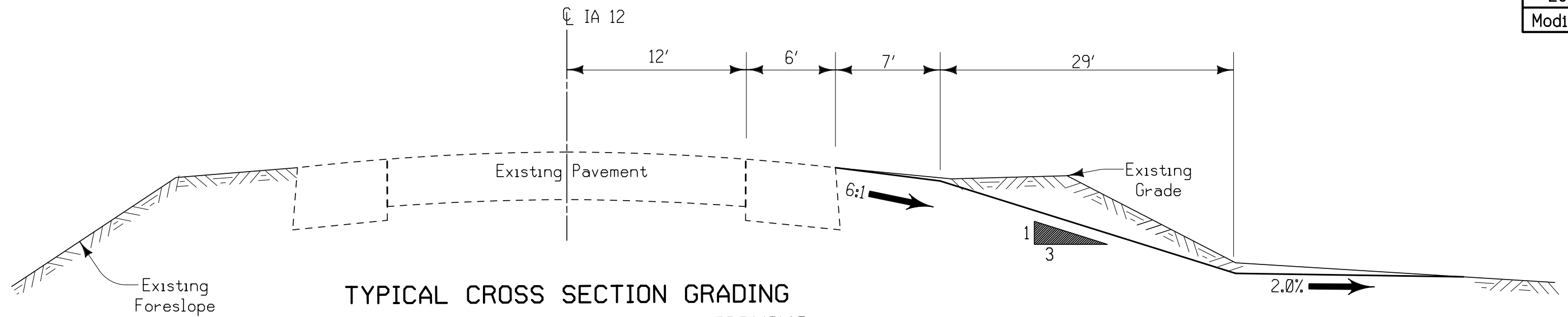
Sean L. Ranney

Printed or Typed Name

My license renewal date is December 31, 2026

Pages or sheets covered by this seal: A.1-2, B.1, C.1-12, J.1-2, U.1-2, W.1-27





TYPICAL CROSS SECTION GRADING
SHOWN IN DIRECTION OF STATIONING

LOCATION		
ROAD IDENTIFICATION	STATION TO STATION	
IA 12	58+00.00	60+00.00

Notes:

Section may be modified only as directed by the engineer through areas of special shaping, superelevation, curves, etc.

Refer to cross sections for details of foreslope grading.

100_01D
8/15/22

PROJECT DESCRIPTION

This project involves grading and pipe piling installation for the riverbank along IA 12 adjacent to the Big Sioux River, located 1.25 mi S of the Plymouth Co line.

ESTIMATED PROJECT QUANTITIES AND REFERENCE NOTES

Roadway Items : Roadway Items

Item no.	Item Code	Item	Unit	Quantities	Estimate Reference Notes
				Estimated	
				Roadway Items	
1	2102-2710090	EXCAVATION, CLASS 10, WASTE	CY	996.5	This item is for the removal of excess material according to Article 1106.07 of the current specifications. Waste material shall be hauled offsite, and it is the Contractor's responsibility to provide sites for waste material. Stockpiling waste material on the State of Iowa ROW or Iowa DNR property between the Big Sioux River and IA 12 will not be allowed. No payment for overhaul will be allowed.
2	2105-8425005	TOPSOIL, FURNISH AND SPREAD	CY	133.6	Refer to Tab. 103-10.
3	2527-9263181	PAVEMENT MARKINGS REMOVED	STA	57.69	Refer to Tab. 108-22.
4	2527-9263209	PAINTED PAVEMENT MARKINGS, WATERBORNE OR SOLVENT-BASED	STA	57.69	
5	2528-8400256	TEMPORARY TRAFFIC SIGNALS	EACH	1	Refer to Tab. 108-28.
6	2528-8445110	TRAFFIC CONTROL	LS	1	
7	2528-8445113	FLAGGERS	EACH	0	See Proposal.
8	2533-4980005	MOBILIZATION	LS	1	
9	2602-0000020	SILT FENCE	LF	500	Refer to Tab. 100-17. The tabulation includes estimated locations for placement of Silt Fence to address erosion to be encountered during construction. Verify the specific locations with the Engineer prior to beginning placement. Bid item includes 25% additional quantity for field adjustments and replacements.
10	2602-0000071	REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS	LF	500	This item is included for silt fence removal, removal to allow for replacement (replacement to be paid separately), or for areas that have achieved 70% permanent growth. Remove silt fence and posts after mulching or vegetation is established and approved by the engineer.
11	2602-0000101	MAINTENANCE OF SILT FENCE OR SILT FENCE FOR DITCH CHECK	LF	400	
12	2602-0000320	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 20 IN. DIA.	LF	300	Refer to Tab. 100-19. Item is intended for use as needed at the limits of the proposed foreslope grading.
13	2602-0000351	REMOVAL OF PERIMETER AND SLOPE OR DITCH CHECK SEDIMENT CONTROL DEVICE	LF	300	Item is intended for the removal of perimeter and slope sediment control device.

<div>105_04 4/21/26</div> <div>STANDARDS</div> <div>The following Standards apply to construction work on this project.</div>		
Number	Date	Title
EC-201	4/20/2021	Silt Fence
EC-204	10/19/2021	Perimeter, Slope and Ditch Check Sediment Control Devices
EC-502	4/21/2015	Seeding in Rural Areas
EW-105	4/21/2015	Reshaping Slopes and Ditches
TC-1	10/15/2019	Work Not Affecting Traffic (Two-Lane or Multi-Lane)
TC-202	4/18/2023	Work Within 15 ft of Traveled Way
TC-213	4/18/2023	Lane Closure with Flaggers
TC-216	4/18/2023	Lane Closure with Signals

111_25 4/21/26			
INDEX OF TABULATIONS			
Line No.	Tabulation	Tabulation Title	Sheet No.
1.0	100_01D	PROJECT DESCRIPTION	C.1
2.0		ESTIMATED PROJECT QUANTITIES AND REFERENCE NOTES	C.2
3.0	105_04	STANDARDS	C.3
4.0	111_25	INDEX OF TABULATIONS	C.4
5.0	100_17	TABULATION OF SILT FENCES	C.5
6.0	100_19	PERIMETER AND SLOPE SEDIMENT CONTROL	C.6
7.0	103_12	TOPSOIL STRIPPING AND PLACEMENT	C.7
8.0	108_22	PAVEMENT MARKING LINE TYPES	C.8
9.0	108_28	TEMPORARY TRAFFIC SIGNALS	C.9
10.0	232_03A	EROSION CONTROL (RURAL SEEDING)	C.10
11.0	232_11	EROSION CONTROL (STABILIZING CROP SEEDING)	C.11
12.0	262_06	UTILITIES (POINT 25 PROJECT)	C.12
13.0	108_23A	TRAFFIC CONTROL PLAN	J.1
14.0	108_25	511 TRAVEL RESTRICTIONS	J.2

<div>TABULATION OF SILT FENCES</div> <div>Refer to EC-201</div>						100_17 8/15/22
Line No.	Station From	Station To	Side	Length (FT)	Remarks	
1.0	57+50.00	61+00.00	Right	400.00		

Silt Fence: 500 LF
Removal of Silt Fence: 500 LF
Maintenance of Silt Fence: 400 LF

<div>PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE</div> <div>Possible Standards: EC-204</div>							
Line No.	Station From	Station To	Side	Sediment Control Device Type	Diameter Size	Length (LF)	Remarks
1.0	57+50.00	60+45.50	Right	Perimeter and Slope	20 inch	300.00	

100_19

10/15/24

TOPSOIL STRIPPING AND PLACEMENT							103_10 4/30/25
Line No.	Road Identification	Dir. of Traffic	Station From	Station To	Topsoil Stripping Thickness (IN)	Topsoil Placement Thickness (IN)	Remarks
1.0	IA 12	SB	57+75.00	60+45.50		4.0	133.6 CY Furnished

TOPSOIL FURNISH AND SPREAD: 133.6 CY

108_22

11/25/25

PAVEMENT MARKING LINE TYPES

Line factors based on 6-inch wide continuous line.

*BCY4 - Place on the same side of the roadway to match existing markings near the project.

**NPY4 - Estimating purposes only. No Passing Zone Lines will be located in the field.

***MNY6 - Factor of 1.00 includes number of 6-inch passes to cover median nose area.

BCY4: Broken Centerline (Yellow) @ 0.17

BCY6: Broken Centerline (Yellow) @ 0.25

BLC6: Broken Line Contrast (White/Black) @ 0.50

BLW4: Broken Lane Line (White) @ 0.17

BLW6: Broken Lane Line (White) @ 0.25

CBW6: Crosswalk Bar (White) @ 10.00

CHW8: Channelizing Line (White) @ 1.33

CHW10: Channelizing Line (White) @ 1.67

CHY8: Channelizing Line (Yellow) @ 1.33

CHY10: Channelizing Line (Yellow) @ 1.67

CLW6: Crosswalk Line (White) @ 2.00

DCY4: Double Centerline (Yellow) @ 1.34

DCY6: Double Centerline (Yellow) @ 2.00

DDY4: Double Dotted Line (Yellow) @ 0.44

DDY6: Double Dotted Line (Yellow) @ 0.67

DLW4: Dotted Line (White) @ 0.22

DLW6: Dotted Line (White) @ 0.33

DLY4: Dotted Line (Yellow) @ 0.22

DLY6: Dotted Line (Yellow) @ 0.33

ELW4: Edge Line Right (White) @ 0.67

ELW6: Edge Line Right (White) @ 1.00

ELY4: Edge Line Left (Yellow) @ 0.67

ELY6: Edge Line Left (Yellow) @ 1.00

LDW8: Lane Drop (White) @ 0.33

LDW10: Lane Drop (White) @ 0.42

MNY6: Median Nose (Yellow) @ 1.00

NPY4: No Passing Zone Line (Yellow) @ 0.84

NPY6: No Passing Zone Line (Yellow) @ 1.25

RLW4: Ramp Edge Line Right (White) @ 0.67

RLW6: Ramp Edge Line Right (White) @ 1.00

RLY4: Ramp Edge Line Left (Yellow) @ 0.67

RLY6: Ramp Edge Line Left (Yellow) @ 1.00

SLW2: Stop Line (White) @ 4.00

SLW4: Solid Lane Line (White) @ 0.67

SLW6: Solid Lane Line (White) @ 1.00

SPW4: Sloped Curb 4" (White) @ 2.16

SPW6: Sloped Curb 6" (White) @ 2.28

SPY4: Sloped Curb 4" (Yellow) @ 2.16

SPY6: Sloped Curb 6" (Yellow) @ 2.28

STW6: Standard Curb 6" (Yellow) @ 2.03

STY6: Standard Curb 6" (Yellow) @ 2.03

YLW2: Yield Line (White) @ 1.15

Line No.	Road ID	Station From	Station To	Lane	Marking Type	Left	Center	Right	Groove Marking Needed?	Groove Qty. (STA)	BCY6 (STA)	ELW6 (STA)	NPY6** (STA)	SLW6 (STA)	Remarks
1.0	IA 12	41+00.00	76+00.00	Center	Removal of Paint		X					35.00			Stage 1
2.0		56+00.00	61+00.00	NB	Removal of Paint			X			5.00				
3.0		56+00.00	61+00.00	SB	Removal of Paint			X			5.00				
4.0		41+00.00	56+00.00	Center	Waterborne/Solvent Paint		X						15.00		
5.0		57+00.00		SB	Waterborne/Solvent Paint		X							0.12	
6.0		60+00.00		NB	Waterborne/Solvent Paint		X							0.12	
7.0		61+00.00	76+00.00	Center	Waterborne/Solvent Paint		X				5.00		15.00		
8.0	IA 12	41+00.00	56+00.00	Center	Removal of Paint		X						15.00		Walkaway
9.0		57+00.00		SB	Removal of Paint		X							0.12	
10.0		60+00.00		NB	Removal of Paint		X							0.12	
11.0		61+00.00	76+00.00	Center	Removal of Paint		X						15.00		
12.0		41+00.00	76+00.00	Center	Waterborne/Solvent Paint		X		Yes	35.00					
13.0		56+00.00	61+00.00	NB	Waterborne/Solvent Paint			X	Yes	5.00					
14.0		56+00.00	61+00.00	SB	Waterborne/Solvent Paint			X	Yes	5.00					

PAINTED PAVEMENT MARKINGS, WATERBORNE OR SOLVENT-BASED: 57.69 STA
PAVEMENT MARKINGS REMOVED: 57.69 STA

TEMPORARY TRAFFIC SIGNALS				
Line No.	Item No.	Station	Signal Type	Remarks
1.0	1	57+00.00	One Lane Traffic	
2.0	2	60+00.00	One Lane Traffic	

108_28
8/15/22

<div><div>232_03A 9/28/22</div><div>EROSION CONTROL (RURAL SEEDING)</div><div>Area to be seeded is estimated to be less than 1 acre. If the contractor determines the area exceeds 2 acres, notify the Engineer. Approved quantity in excess of 2 acres will be paid for as extra work according to Article 1109.03,B of the Standard Specifications.</div><div>Following the completion of work in a disturbed area and according to the seeding dates in Section 2601 of the Standard Specifications, place seed, fertilizer, and mulch on the disturbed area lying 8 feet adjacent to shoulder and median as follows:</div><div>Place seed and fertilize according to the requirements of Article 2601.03,C,3 and Section 4169 of the Standard Specifications.</div><div>Place mulch according to the requirements of Articles 2601.03,E,2,a and 4169.07,A of the Standard Specifications.</div><div>Preparing the seedbed, furnishing and applying seed, fertilizer, and mulch are all incidental to mobilization and will not be paid for separately.</div></div>									
FILE NO.	ENGLISH	DESIGN TEAM	Iowa DOT / HDR		WOODBURY COUNTY	PROJECT NUMBER	NHSN-012-1(071)-2R-97	SHEET NUMBER	C.10

232.11
6/21/23

EROSION CONTROL (STABILIZING CROP SEEDING)

Area to be seeded is estimated to be less than 1 acre. If the contractor determines the area exceeds 2 acres, notify the Engineer. Approved quantity in excess of 2 acres will be paid for as extra work according to Article 1109.03,B of the Standard Specifications.

If outside of permanent seeding dates in Section 2601 of the Standard Specifications, or if required by a storm water permit, place stabilizing crop, fertilizer, and mulch on the disturbed area as follows:

Place seed and fertilize according to the requirements of Article 2601.03,C,1 and Section 4169 of the Standard Specifications.

Place mulch according to the requirements of Articles 2601.03,E,2,a and 4169.07,A of the Standard Specifications.

Preparing the seedbed, furnishing and applying seed, fertilizer, and mulch are incidental to mobilization and will will not be paid for separately.

262.06
9/28/22

UTILITIES (NOT A POINT 25 PROJECT)

This is NOT a POINT 25 project and is not subject to the provisions of IAC 761-115.25.

108_23A
8/15/22

TRAFFIC CONTROL PLAN

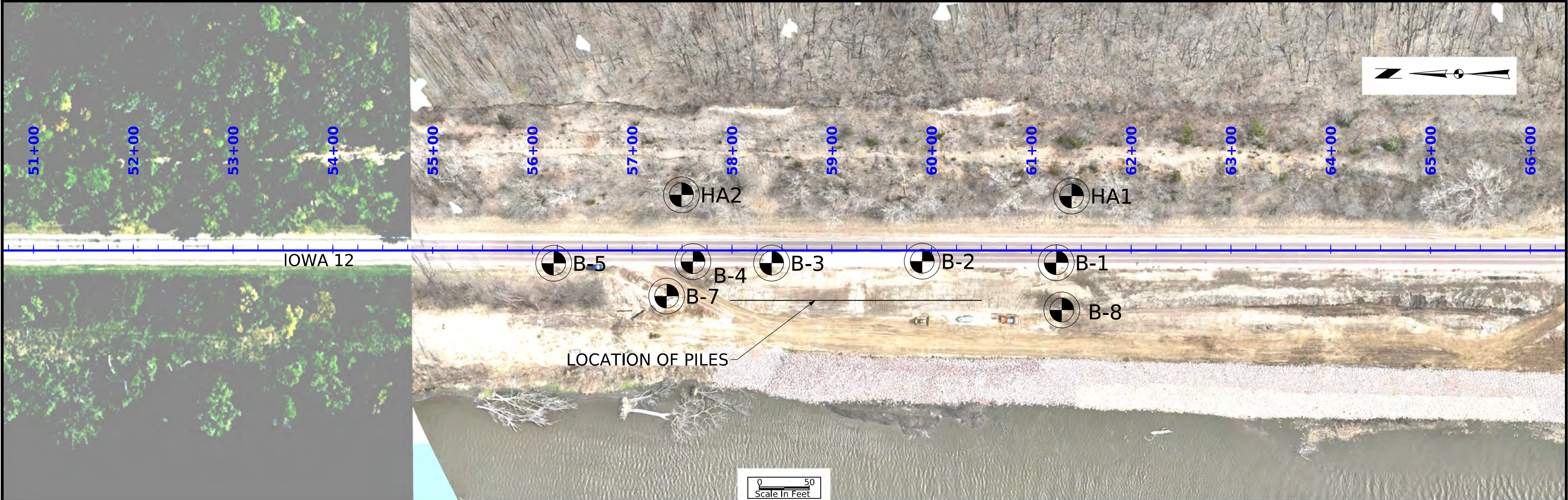
The riverbank along IA 12 adjacent to the Big Sioux River will be under construction. Through traffic will be maintained throughout the project. Refer to Standard Road Plans TC-213 and TC-216 for traffic control details.

The Contractor shall submit any requests for closures or traffic control plan modifications to the Engineer for review and approval two weeks prior to any changes being made.

511 TRAVEL RESTRICTIONS

Line No.	Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No. or Structure ID or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
1.0	IA 12	Both	Woodbury			Traffic Control Device		Horizontal	24' -0"		12' -0"		

FILE NO.	ENGLISH	DESIGN TEAM	Iowa DOT / HDR	WOODBURY COUNTY	PROJECT NUMBER	NHSN-012-1(071)-2R-97	SHEET NUMBER	J.2
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PILE RANGE	PILE LENGTH (FT)	EST. NUMBER OF PILES	PILE DIAMETER (IN)	PILE SPACING CENTER-TO-CENTER (FT)
STA. 57+98 TO 60+45.5	50	56	24	4.5

GEOTECHNICAL NOTES

1. PILE INSTALLATION PLAN.
- a. TWO WEEKS PRIOR TO THE PRE-CONSTRUCTION CONFERENCE, SUBMIT A LIST CONTAINING AT LEAST THREE DRILLED EXCAVATION PROJECTS (DRILLED SHAFTS, PILES INSTALLED IN DRILLED HOLES, ETC.), OF SIMILAR DIAMETER AND LENGTH TO THOSE SHOWN ON THE PLANS, COMPLETED IN THE LAST 3 YEARS. IN THE LIST OF PROJECTS INCLUDE NAMES AND PHONE NUMBERS OF OWNER'S REPRESENTATIVES WHO CAN VERIFY THE CONTRACTOR'S PARTICIPATION ON THOSE PROJECTS. IN ADDITION, SUBMIT A SIGNED STATEMENT THAT THE CONTRACTOR HAS INSPECTED THE PROJECT SITE AND ALL THE SUBSURFACE INFORMATION MADE AVAILABLE IN THE CONTRACT DOCUMENTS.
- b. NO LATER THAN 1 MONTH PRIOR TO INSTALLING PILES, SUBMIT A PILE INSTALLATION PLAN FOR THE ENGINEER TO REVIEW. IN THIS PLAN PROVIDE THE FOLLOWING INFORMATION:
- i. NAME AND EXPERIENCE RECORD OF FIRM(S) AND ASSOCIATED PERSONNEL FOR THE FOLLOWING:
1. DRILLER.
2. SUPERINTENDENT.
- ii. LIST OF PROPOSED EQUIPMENT TO BE USED, INCLUDING CRANES, DRILLS, AUGERS, BAILING BUCKETS, TREMIES OR CONCRETE PUMPS, CASING, SLURRY EQUIPMENT, AND SO FORTH.
- iii. DETAILS OF OVERALL CONSTRUCTION OPERATION SEQUENCE AND THE SEQUENCE OF PILE INSTALLATION.
- iv. DETAILS OF EXCAVATION METHODS, INCLUDING PROCEDURES TO PENETRATE THE MACADAM STONE AND CLASS B REVETMENT.
- v. DETAILS OF CASING AND FORMS, INCLUDING INSTALLATION AND REMOVAL.
- vi. DETAILS OF THE TYPE AND METHODS TO MIX, CIRCULATE, DESAND, TEST, AND DISPOSE OF SLURRY (IF APPLICABLE). IF POLYMER SLURRY IS PROPOSED, SUBMIT MANUFACTURERS REQUIREMENTS FOR SLURRY CONTROL.
- vii. DETAILS OF METHODS TO CLEAN THE EXCAVATION, INCLUDING SPIN BUCKET METHODS AS APPLICABLE.
- viii. DETAILS OF PILE PLACEMENT, INCLUDING SUPPORT AND CENTERING METHODS.
- ix. DETAILS OF CONCRETE PLACEMENT INSIDE AND OUTSIDE OF PILES INCLUDING PROCEDURES FOR TREMIE OR PUMPING METHODS, METHOD TO PREVENT SLURRY INTRUSION AT THE DISCHARGE END AND METHOD TO MANAGE CONCRETE LOSS INTO CLASS B REVETMENT.
- xi. CONCRETE MIX PROPOSAL.
- xii. DETAILS OF METHODS TO CONTROL CUTTINGS, WATER, SLURRY, AND SO FORTH WITH ADJACENT TRAFFIC CONDITIONS.
- xiii. DETAILS OF FINAL DISCHARGE OF CONCRETE AT TOP OF PILE, OF REMOVING CONTAMINATED CONCRETE, AND VERIFYING CONCRETE UNIFORMITY FOR SITE SPECIFIC CONDITIONS.
- xiv. INCLUDE DETAILS ON CASING TO BE USED, INCLUDING:
1. SPECIFIC LENGTH/DEPTH OF ALL CASING PROPOSED.
2. SPECIFIC EVALUATION AND DETERMINATION OF CASING (SIZE, DEPTH, ETC.) REQUIRED TO PREVENT ALL PILE INSTALLATION PROCEDURES FROM HAVING AN EFFECT OR IMPACT ON ADJACENT STRUCTURES AND PILE INSTALLATIONS.
- c. THE ENGINEER WILL EVALUATE THE PILE INSTALLATION PLAN FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS. WITHIN 14 CALENDAR DAYS AFTER RECEIPT OF THE PLAN, THE ENGINEER WILL NOTIFY THE CONTRACTOR OF ADDITIONAL INFORMATION REQUIRED OR CHANGES NECESSARY TO MEET THE CONTRACT REQUIREMENTS, OR BOTH. FIELD TEST THE ENGINEERS PROCEDURAL APPROVALS. THESE APPROVALS DO NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO SATISFACTORILY COMPLETE THE WORK AS DETAILED IN THE CONTRACT DOCUMENTS.
- d. A PRE-DRILLING CONFERENCE, IN WHICH THE CONTRACTING AUTHORITY, CONTRACTOR, AND DRILLING STAFF DISCUSS THE ANTICIPATED DRILLING PROCESS, WILL BE REQUIRED FOR THIS WORK PRIOR TO THE START OF DRILLING.
2. EXCAVATE DRILLED HOLES AS DESCRIBED ON SHEET V.1 AND AS SHOWN ON SHEET Q.1. EXCAVATIONS INVOLVE DRILLING THROUGH VARIOUS LAYERS OF SOIL, MACADAM STONE, CLASS B REVETMENT AND BEDROCK.
3. EXCAVATIONS SHALL BE COMPLETED PER SPECIFICATION 2433.03.D.
4. CONTROL AND DISPOSE OF MATERIALS PER SPECIFICATION 2433.03.C.
5. LIMITATIONS ON EXCAVATION SEQUENCING:
- a. NO PILE EXCAVATION ADJACENT TO A NEWLY COMPLETED PILE WILL BE MADE WITHIN 48 HOURS FOLLOWING CONCRETE PLACEMENT FOR THE NEWLY COMPLETED PILE.
- b. NEW PILE INSTALLATION WILL BE AT LEAST 45 FEET FROM A NEWLY COMPLETED PILE.
- c. A MAXIMUM OF FIVE (5) PILE EXCAVATIONS WILL BE OPEN PRIOR TO PLACING CONCRETE AT ANY TIME DURING CONSTRUCTION AND SPACED AT LEAST 45 FEET APART.
6. INSTALL PIPE PILES AS SHOWN ON SHEET V.1.
7. PLACE CONCRETE AS SHOWN ON SHEET V.1 AND PER SPECIFICATION 2433.03.I.
8. THE DRILLED EXCAVATION DIAMETER SHOWN ON SHEET V.1 IS ONLY AN ESTIMATE. THE ACTUAL DRILLED EXCAVATION DIAMETER(S) WILL BE DETERMINED BY THE CONTRACTOR TO ALLOW FOR PILE INSTALLATION AND PLACEMENT OF CONCRETE IN THE ANNULUS BETWEEN THE PILE AND THE SOIL AND BETWEEN THE PILE AND BEDROCK SOCKET.
9. FOLLOWING INSTALLATION OF PIPE PILES, RESTORE SITE AS DESCRIBED ON SHEET V.1.
10. CONSTRUCTION ACTIVITIES SHALL AVOID DAMAGE TO EXISTING PIPE PILES BETWEEN STATION 60+50 AND 68+02.1.


LEGEND

 BORING DRILLED FOR THIS PROJECT

GEOTECHNICAL DESIGN



I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.


Signature
Brian T. Havens
Printed or Typed Name
My license renewal date is December 31, 2026
Date

Pages or sheets covered by this seal: Q.14

[illegible]

Geotechnical boring log sheet showing soil profiles for borings B-1 through B-8, HA-1, and HA-2. The sheet includes a grid with stationing (52+00 to 65+00) and elevation (1030 to 1115). Soil layers are labeled with descriptions like 'Lean Clay', 'Silty Sand', and 'Highly Weathered Shale'. Water levels are marked with -H2O. A note states: "THIS SHEET IS INCLUDED TO SHOW SOIL INFORMATION. DETAILS AND NOTES SHOWN ELSEWHERE IN THESE PLANS SHALL BE USED FOR STRUCTURE CONSTRUCTION."

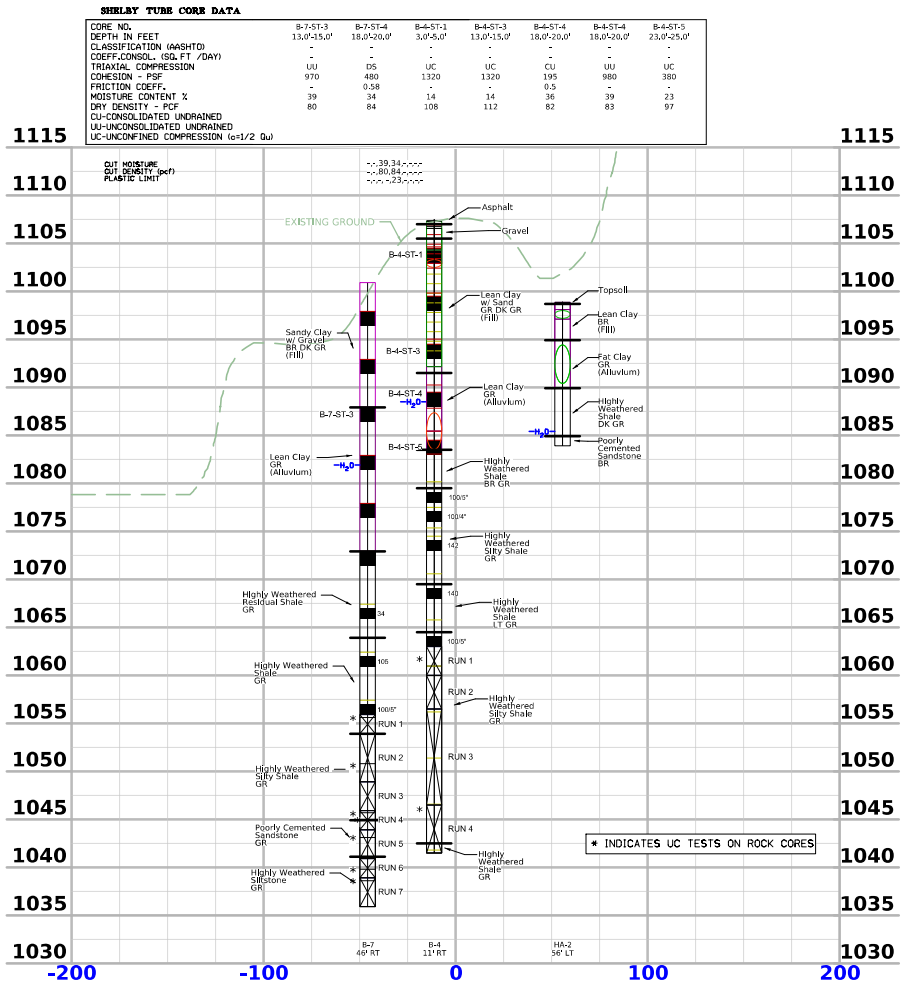
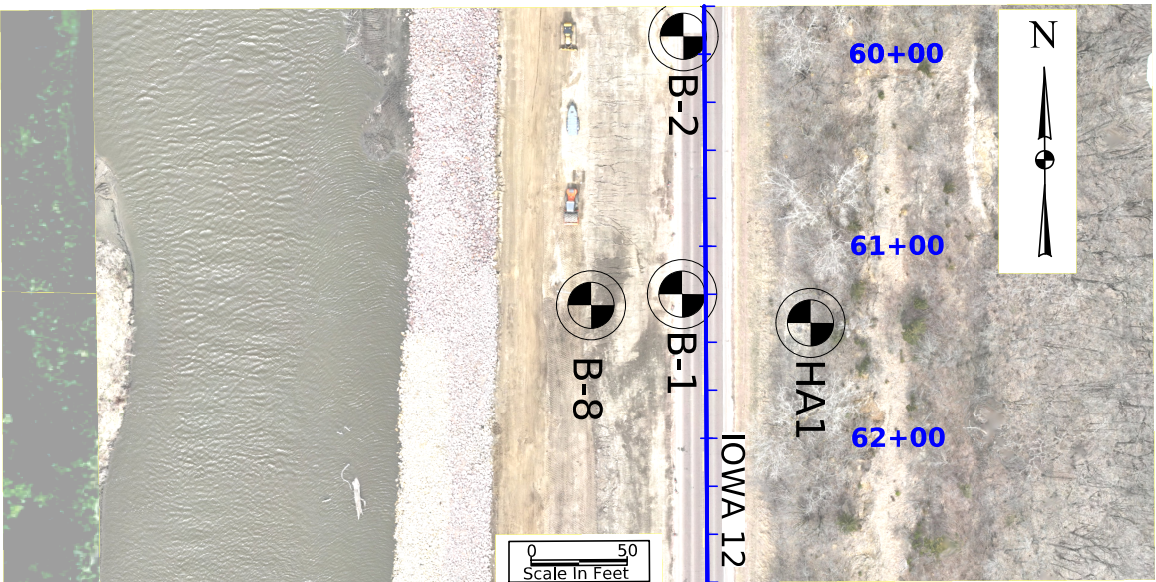
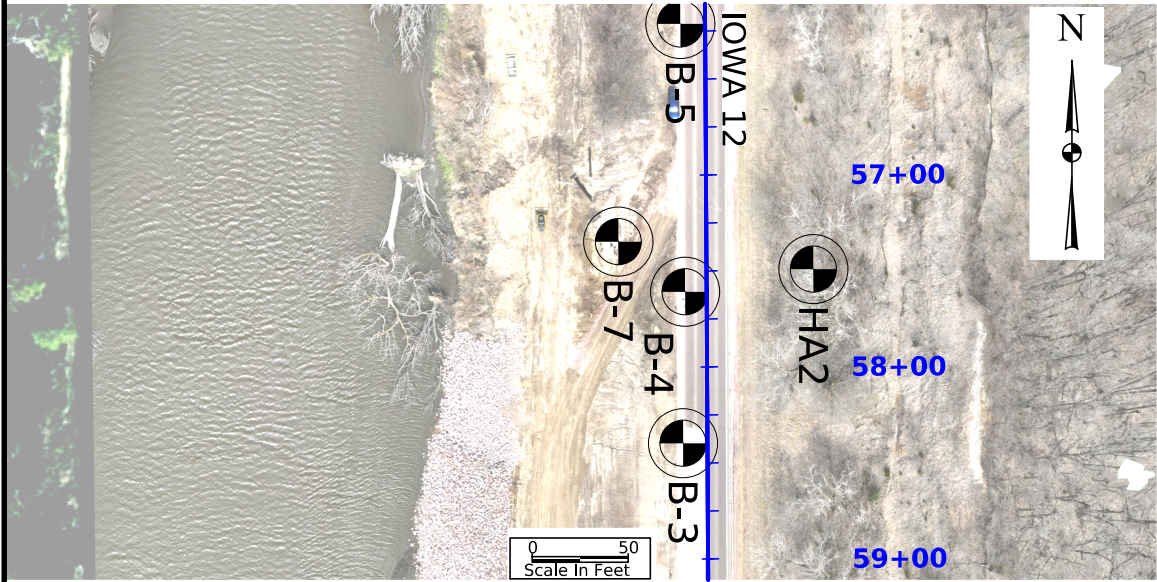
Legend:

- UU-UNCONSOLIDATED UNDRAINED
- UC-UNCONSOLIDATED COMPRESSION ($c=1/2 Q_u$)
- CUT MOISTURE
- CUT DENSITY (pcf)
- PLASTIC LIMIT

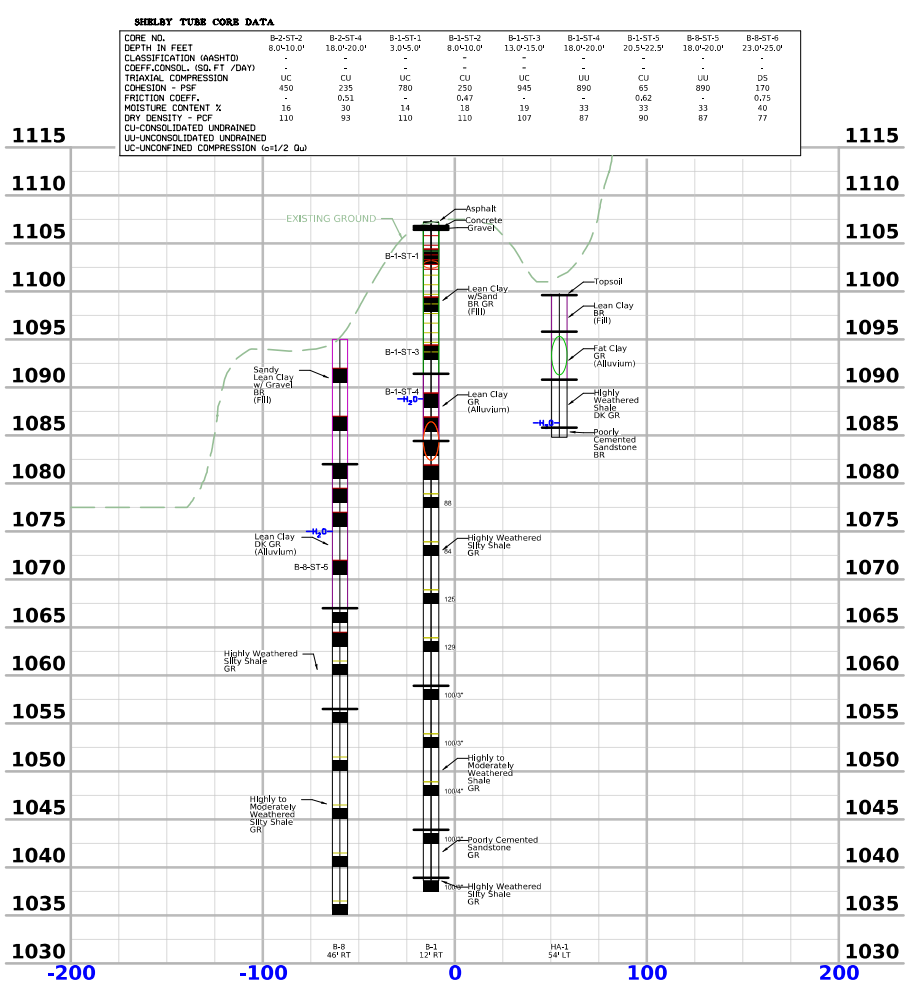
Soil Profile Data (Approximate):

Boring	Station	Depth (ft)	Soil Description	Notes
B-7	52+34.48	0-10	Sandy Clay w/ Gravel BR DK GR (Fill)	
B-7	52+34.48	10-15	Lean Clay GR (Alluvium)	
B-7	52+34.48	15-20	Highly Weathered Residual Shale GR	
B-7	52+34.48	20-25	Highly Weathered Shale GR	
B-7	52+34.48	25-30	Highly Weathered Silty Shale GR	
B-7	52+34.48	30-35	Highly Weathered Silty Shale GR	
B-7	52+34.48	35-40	Highly Weathered Silty Shale GR	
B-7	52+34.48	40-45	Highly Weathered Silty Shale GR	
B-7	52+34.48	45-50	Highly Weathered Silty Shale GR	
B-7	52+34.48	50-55	Highly Weathered Silty Shale GR	
B-7	52+34.48	55-60	Highly Weathered Silty Shale GR	
B-7	52+34.48	60-65	Highly Weathered Silty Shale GR	
B-7	52+34.48	65-70	Highly Weathered Silty Shale GR	
B-7	52+34.48	70-75	Highly Weathered Silty Shale GR	
B-7	52+34.48	75-80	Highly Weathered Silty Shale GR	
B-7	52+34.48	80-85	Highly Weathered Silty Shale GR	
B-7	52+34.48	85-90	Highly Weathered Silty Shale GR	
B-7	52+34.48	90-95	Highly Weathered Silty Shale GR	
B-7	52+34.48	95-100	Highly Weathered Silty Shale GR	
B-7	52+34.48	100-105	Highly Weathered Silty Shale GR	
B-7	52+34.48	105-110	Highly Weathered Silty Shale GR	
B-7	52+34.48	110-115	Highly Weathered Silty Shale GR	
B-7	52+34.48	115-120	Highly Weathered Silty Shale GR	
B-7	52+34.48	120-125	Highly Weathered Silty Shale GR	
B-7	52+34.48	125-130	Highly Weathered Silty Shale GR	
B-7	52+34.48	130-135	Highly Weathered Silty Shale GR	
B-7	52+34.48	135-140	Highly Weathered Silty Shale GR	
B-7	52+34.48	140-145	Highly Weathered Silty Shale GR	
B-7	52+34.48	145-150	Highly Weathered Silty Shale GR	
B-7	52+34.48	150-155	Highly Weathered Silty Shale GR	
B-7	52+34.48	155-160	Highly Weathered Silty Shale GR	
B-7	52+34.48	160-165	Highly Weathered Silty Shale GR	
B-7	52+34.48	165-170	Highly Weathered Silty Shale GR	
B-7	52+34.48	170-175	Highly Weathered Silty Shale GR	
B-7	52+34.48	175-180	Highly Weathered Silty Shale GR	
B-7	52+34.48	180-185	Highly Weathered Silty Shale GR	
B-7	52+34.48	185-190	Highly Weathered Silty Shale GR	
B-7	52+34.48	190-195	Highly Weathered Silty Shale GR	
B-7	52+34.48	195-200	Highly Weathered Silty Shale GR	
B-7	52+34.48	200-205	Highly Weathered Silty Shale GR	
B-7	52+34.48	205-210	Highly Weathered Silty Shale GR	
B-7	52+34.48	210-215	Highly Weathered Silty Shale GR	
B-7	52+34.48	215-220	Highly Weathered Silty Shale GR	
B-7	52+34.48	220-225	Highly Weathered Silty Shale GR	
B-7	52+34.48	225-230	Highly Weathered Silty Shale GR	
B-7	52+34.48	230-235	Highly Weathered Silty Shale GR	
B-7	52+34.48	235-240	Highly Weathered Silty Shale GR	
B-7	52+34.48	240-245	Highly Weathered Silty Shale GR	
B-7	52+34.48	245-250	Highly Weathered Silty Shale GR	
B-7	52+34.48	250-255	Highly Weathered Silty Shale GR	
B-7	52+34.48	255-260	Highly Weathered Silty Shale GR	
B-7	52+34.48	260-265	Highly Weathered Silty Shale GR	
B-7	52+34.48	265-270	Highly Weathered Silty Shale GR	
B-7	52+34.48	270-275	Highly Weathered Silty Shale GR	
B-7	52+34.48	275-280	Highly Weathered Silty Shale GR	
B-7	52+34.48	280-285	Highly Weathered Silty Shale GR	
B-7	52+34.48	285-290	Highly Weathered Silty Shale GR	
B-7	52+34.48	290-295	Highly Weathered Silty Shale GR	
B-7	52+34.48	295-300	Highly Weathered Silty Shale GR	
B-7	52+34.48			

		B-7 46' RT				HA-2 54' LT			B-5 13' RT				B-4 11' RT		B-3 13' RT				B-2 11' RT			B-1 12' RT								B-8 46' RT						HA-1 54' LT	
52+00		53+00		54+00		55+00		56+00		57+00		58+00		59+00		60+00		61+00		62+00		63+00		64+00		65+00											

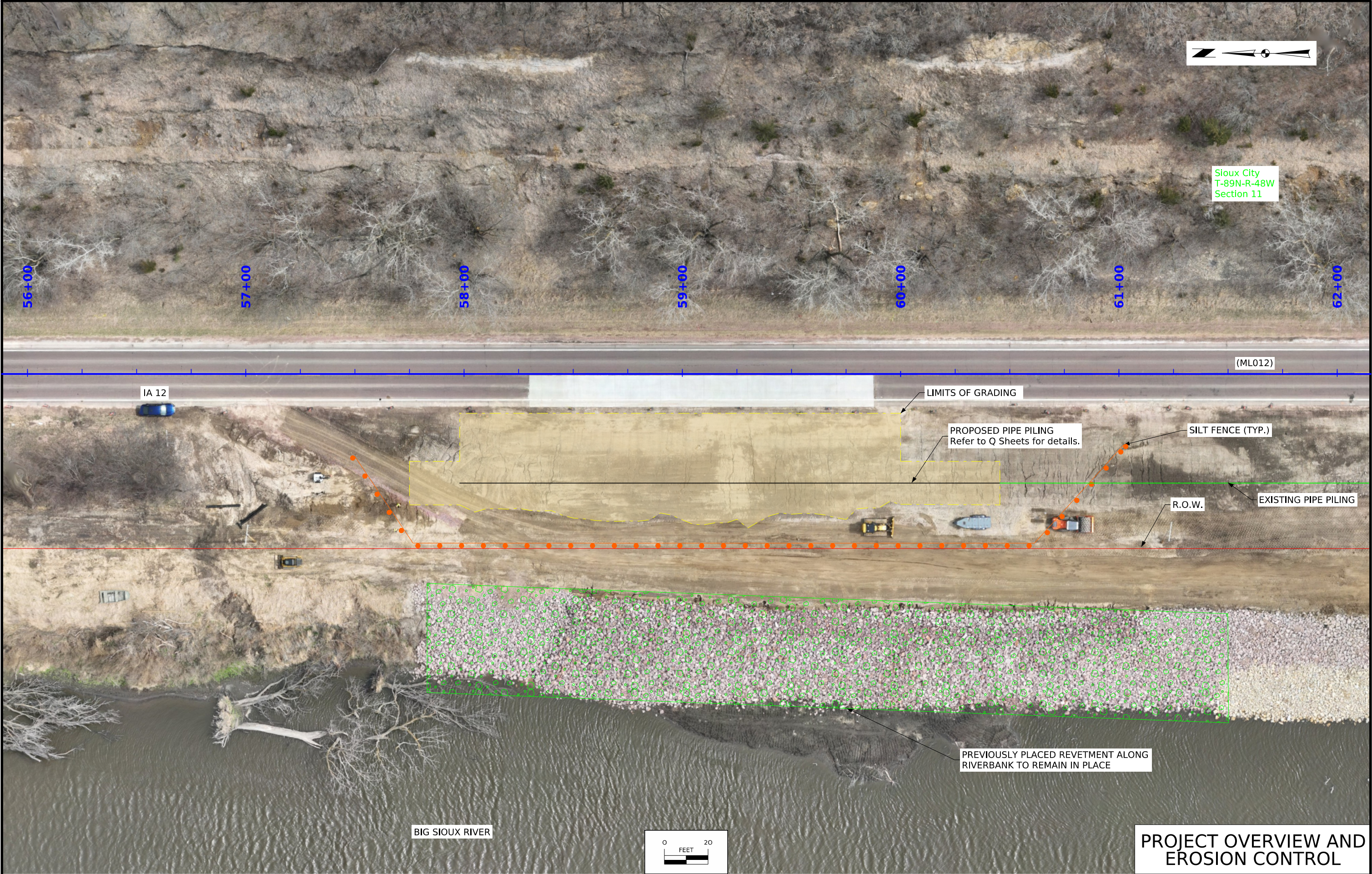


THIS SHEET IS INCLUDED TO SHOW SOIL INFORMATION. DETAILS AND NOTES SHOWN ELSEWHERE IN THESE PLANS SHALL BE USED FOR STRUCTURE CONSTRUCTION.

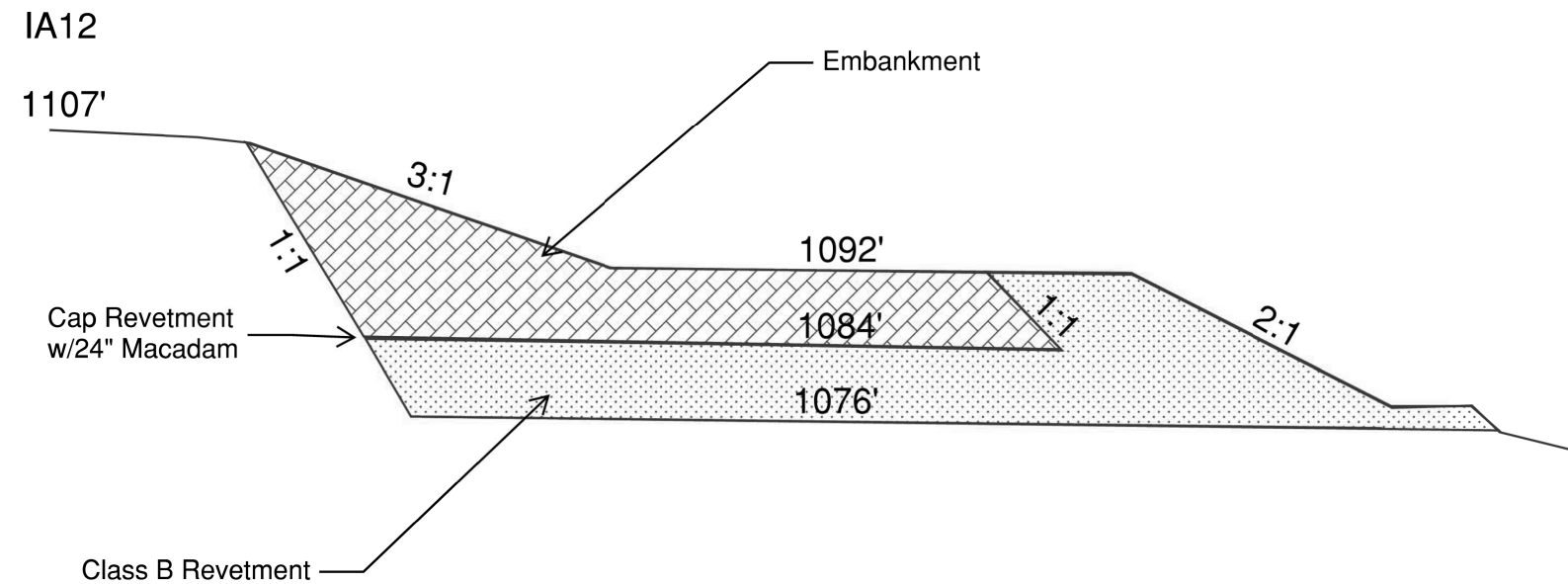


ROCK CORE COMPRESSIVE STRENGTH TESTING REPORT						
Boring	Length of Sample (in)	Elevation (ft)	Material Description (See profile for additional details)	Compressive Strength (psi)	Moisture (%)	Dry Density (Pcf)
B-4	4.585	1063.0	SHALE	86	12.7	124
	4.810	1046.5	SHALE	148	11.8	125
B-7	4.613	1055.6	SHALE	31	13.7	118
	3.890	1050.8	SHALE	57	15.5	118
	2.517	1045.7	SHALE	-	13.2	118
	4.715	1043.1	SANDSTONE	27	13.9	118
	4.539	1039.8	SILTSTONE	114	10.6	125
	4.870	1038.6	SILTSTONE	54	10.7	128

ROCK CORE INFORMATION					
Boring	Approx.Surf.El.(ft)	Run No.	Interval(ft)	Recovery(%)	RQD(%)
B-4	1107.5	1	44.5-47.5	53	39
		2	47.56-51.0	52	19
		3	51.0-61.0	20	3
		4	61.0-66.0	27	18
B-7	1100.9	1	45.0-47.0	58	33
		2	47.0-52.0	30	15
		3	52.0-55.0	11	0
		4	55.0-57.0	46	25
		5	57.0-60.0	83	72
		6	60.0-62.0	71	46
		7	62.0-65.0	25	17

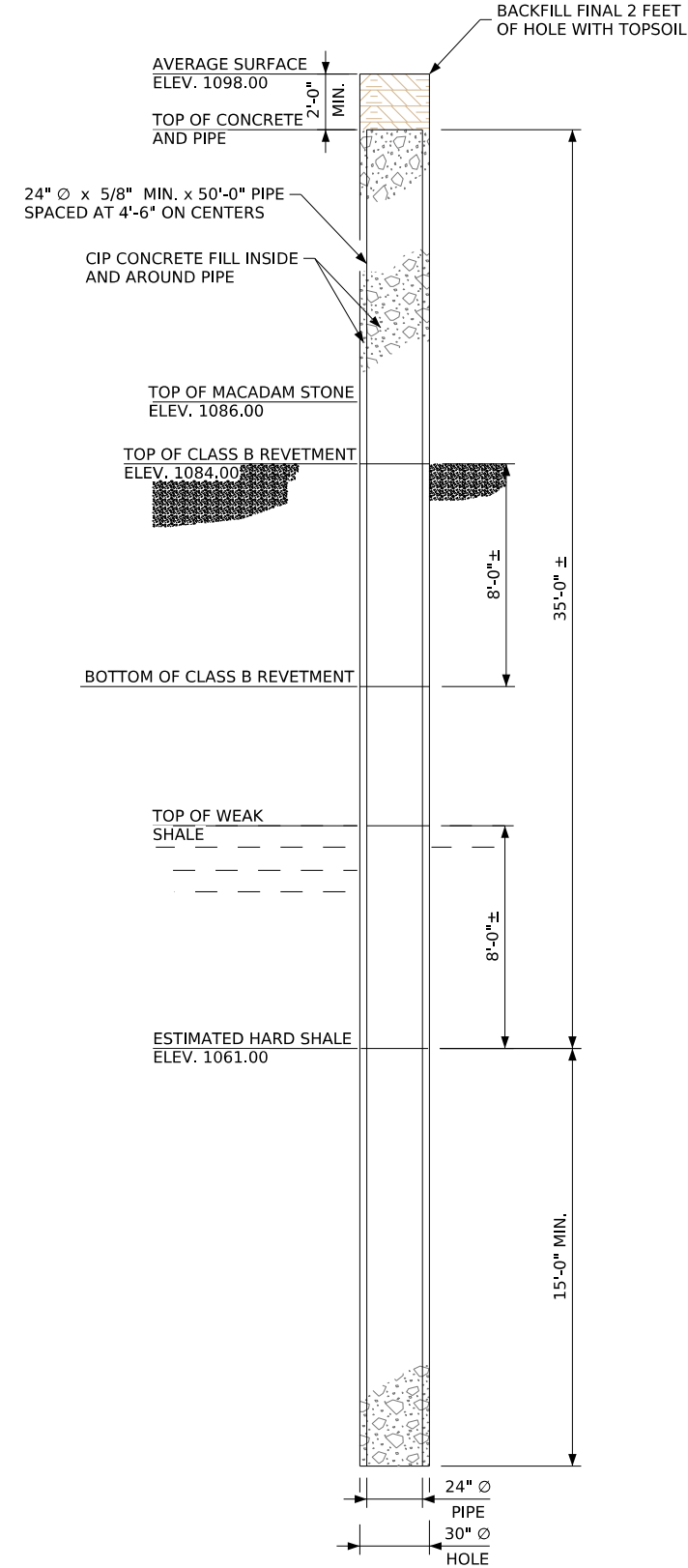


FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT / HDR	WOODBURY COUNTY	PROJECT NUMBER NHSN-012-1(071)--2R-97	SHEET NUMBER U.1
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Approximate Typical Section Through Pile Installation Limits (Facing South)
For Information Only

IA 12 Existing Foreslope



PILE ELEVATION

(24" Ø x 5/8" x 50'-0" LONG PIPE
IN 30" DRILLED HOLE-56 REQ'D)

NOTE:
THE ACTUAL LENGTH FROM THE TOP OF PIPE
PILES TO THE ESTIMATED HARD SHALE MAY
VARY

GENERAL NOTES:

IT IS THE INTENT OF THIS PLAN TO STABILIZE EARTH ALONG THE WESTERN EDGE OF THE SOUTHBOUND LANE OF IA 12. STABILIZATION SHALL BE ACCOMPLISHED BY PIPE PILES INSTALLED IN DRILLED HOLES. SEE Q SHEETS FOR ACTUAL LOCATIONS OF PILES.

PLACE 24" DIAMETER STEEL PIPE PILES WITH A MINIMUM THICKNESS OF 5/8" INTO 30" MINIMUM DIAMETER DRILLED HOLES. PILES SHALL BE EMBEDDED AT LEAST 15 FEET INTO HARD SHALE. HOLES SHALL BE SPACED AT 4'-6" INTERVALS ON CENTERS. 56 PILES ARE REQUIRED

HOLES SHALL BE DRILLED THROUGH THE SOIL AND RIPRAP LAYERS AND A MINIMUM OF 15'-0" INTO THE HARD SHALE LAYER. THE CONTRACTOR SHALL USE EITHER THE DRY METHOD OR THE CASING METHOD OF SHAFT EXCAVATION DESCRIBED IN SECTION 2433.03,D OF THE STANDARD SPECIFICATION. THE CONTRACTOR SHALL THEN PLACE THE STEEL PIPE AT BOTTOM OF THE HOLE AND BACKFILL THE HOLE WITH STRUCTURAL CONCRETE TO AN ELEVATION TWO FEET BELOW THE SURFACE ELEVATION. THE REMAINING TWO FEET SHALL BE BACKFILLED WITH TOPSOIL.

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE SITES FOR EXCESS EXCAVATED MATERIAL. NO PAYMENT FOR OVERHAUL WILL BE ALLOWED FOR MATERIAL HAULED TO THESE SITES.

THE CONTRACTOR SHALL DRESS UP THE SLOPE AROUND THE HOLES WHICH ARE DISTURBED DURING CONSTRUCTION. THIS WORK SHALL BE CONSIDERED INCIDENTAL AND NO EXTRA PAYMENT WILL BE MADE.

IN ORDER TO MAINTAIN A MINIMUM CLEARANCE OF 2 FEET FROM THE TOP OF STEEL TO THE SURFACE ELEVATION, IT WILL BE NECESSARY IN SOME CASES TO REMOVE A PORTION OF THE STEEL PILING. ALL COSTS ASSOCIATED WITH REMOVING AND WASTING A SECTION OF SOME STEEL PIPE PILING SHALL BE INCLUDED IN THE PRICE BID FOR THE PIPE PILE.

FOR BID ITEM "24 INCH DIAMETER PIPE PILE", THE COST OF FURNISHING THE MATERIAL AND THE LABOR AND EQUIPMENT TO INSTALL THE PIPE IS INCLUDED IN PRICE BID FOR THIS ITEM.

FOR BID ITEM "30 INCH MINIMUM DIAMETER HOLE", THE COST OF ALL EQUIPMENT, LABOR, AND MATERIALS NECESSARY TO SATISFACTORILY DRILL THE HOLES IN ACCORDANCE WITH SECTION 2433.03,D IS INCLUDED IN THE PRICE BID FOR THIS ITEM.

SPECIFICATIONS:

DESIGN: AASHTO LRFD 10th ED, SERIES 2024, EXCEPT AS NOTED IN THE CURRENT IOWA BRIDGE DESIGN MANUAL.

CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2012, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

DESIGN STRESS

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 10th ED, SERIES OF 2024.

CONCRETE IN ACCORDANCE WITH LRFD AASHTO SECTION 5, f'c = 4,000 PSI.
STRUCTURAL STEEL IN ACCORDANCE WITH LRFD AASHTO SECTION 6. ASTM A252
GRADE 3 (fy = 45,000 PSI).

DESIGN CONDITION (FOR IOWA DOT DISTRICT STAFF)

IT IS THE INTENT OF THESE PLANS TO REPAIR AND STABILIZE THE ROADWAY FORESLOPE AGAINST EXISTING AND FUTURE EARTH SLIDES. THE PILES ARE DESIGNED TO SUPPORT A MAXIMUM UNBALANCED SOIL HEIGHT (CANTILEVER HEIGHT) OF 8 FEET AS MEASURED FROM THE PLAN SURFACE ELEVATION AT THE PILE LOCATIONS DOWN TO THE SOIL SLIDE ELEVATION AT THE WEST FACE OF THE PILES.

NOTE:
SHAFT LOCATIONS ARE SHOWN ON Q SHEETS

TRAFFIC CONTROL PLAN

REFER TO J SHEET FOR TRAFFIC CONTROL
DETAILS

Location

WESTERN EDGE SB IA 12
1.7 MILES NORTH OF SIOUX CITY
SIOUX CITY TWP.
T-89N R-48W
SECTION 11
WOODBURY COUNTY
LONGITUDINAL -96.47611°
LATITUDE 42.545556°

STRUCTURAL DESIGN

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

05/01/2026

Signature _____ Date _____

Adam M. McCune
Printed or Typed Name

My license renewal date is December 31, 2026

Pages or sheets covered by this seal: V.1-2

Design For

SLIDE REPAIR

STATION: 57+98.00 TO 60+45.50, 50' RT. (IA 12) APRIL , 2026

WOODBURY COUNTY
















IOWA DEPARTMENT OF TRANSPORTATION














Design Sheet No. 1 of 1




ESTIMATED PROJECT QUANTITIES AND REFERENCE NOTES













Structures Items : Structures Items

Item no.	Item Code	Item	Unit	Quantities	Estimate Reference Notes
				Estimated	
				Structures Items	
1	2102-2713090	EXCAVATION, CLASS 13, WASTE	CY	530	Since the drilled holes will be backfilled with concrete, excavation will result in approximately 530 cu. yds. of spoil. Disposal of this spoil shall be the responsibility of the contractor. The contractor shall provide sites for the disposal of this material. Stockpiling waste material on the State of Iowa ROW or Iowa DNR property between the Big Sioux River and IA 12 will not be allowed.
2	2403-0100000	STRUCTURAL CONCRETE (MISCELLANEOUS)	CY	476	<p>Concrete shall comply with the requirements of the Section 2433.02. B of the Iowa Department of Transportation Standard Specifications. Concrete may be placed by tremie or pump in accordance with Section 2433.03, 1. 2, or 2433.1,3 of the Standard Specification. Concrete shall be Class C per Section 2403.</p> <p>The bid quantity 476 cu. yds. is a cumulative estimate for 56 - 30" minimum diameter holes filled with concrete inside and outside of the piles. The pile lengths will vary, and the contractor shall be paid for the plan quantity of volume of concrete poured based on the unit price bid for the item "Structural Concrete, Miscellaneous."</p>
3	2599-9999009	('LINEAR FEET' ITEM) 24 INCH DIAMETER PIPE PILE	LF	2,800	<p>24" diameter pipe piles shall meet the requirements of materials I.M. 467.03 for "Welded and Seamless Steel Pipe Piles." The steel shall meet the chemical and physical requirements of ASTM A252 Grade 3. Pipe piles shall have a minimum diameter of 24" and a minimum wall thickness of 5/8". A total of 56 sections of pipe piles embedded at least 15 feet into hard shale are required.</p> <p>Approved rolling mills and suppliers shall be as listed in materials I.M. 467.03 Appendix A and Appendix B.</p>
4	2599-9999009	('LINEAR FEET' ITEM) 30 INCH MINIMUM DIAMETER HOLE	LF	2,912	<p>30" minimum diameter holes shall be excavated in accordance with the requirements of Section 2433.03, D of the standard specifications. The Contractor may use either the dry or casing method of excavation.</p> <p>The estimated excavation depth is 37 feet from the surface elevation to the top of the hard shale. Each of the 56 holes will require 15 feet of penetration into the hard shale.</p> <p>The bid quantity of 2912 lineal feet is based on 56 round holes excavated to an average depth of 52 feet below the surface elevation. The actual depth of excavation will vary, and the Contractor shall be paid for the plan quantity of lineal feet excavated (measured to the nearest 6 inches) based on the unit price bid for the item "30 INCH MINIMUM DIAMETER HOLE".</p>

LINE STYLE LEGEND OF CROSS SECTION SHEETS (ROAD)			
	Existing Ground Line		Existing Granular Shoulder
	Proposed Template		Existing Pavement
	Proposed Topsoil Placement		Coreout
	Additional Topsoil Removal		Historical LiDAR
	Subgrade Treatment		
	Granular Shoulder		
	Pavement		
	Existing Pipe\RCB		
	Proposed Pipe\RCB		
	Proposed Dike		
	All Elements Associated with Proposed Entrances		

LINE STYLE LEGEND OF CROSS SECTION SHEETS (SOILS)			
	Topsoil (Class 10)		
	Slope Dressing Only		
	Class 10 Materials		
	Select Loams And Clay-Loams		
	Select Sand		
	Unsuitable Type A Disposal		
	Unsuitable Type B Disposal		
	Unsuitable Type C Disposal		
	Shale		
	Waste		
	Broken and Weathered Rock		
	Solid Rock		
	Boulders		
Note: All layer lines and descriptions identify layers above the line.			
Note: Vertical or near vertical lines connecting soil layers at edges of cross sections are only for the purpose of calculating template quantities and do not depict soil stratification.			

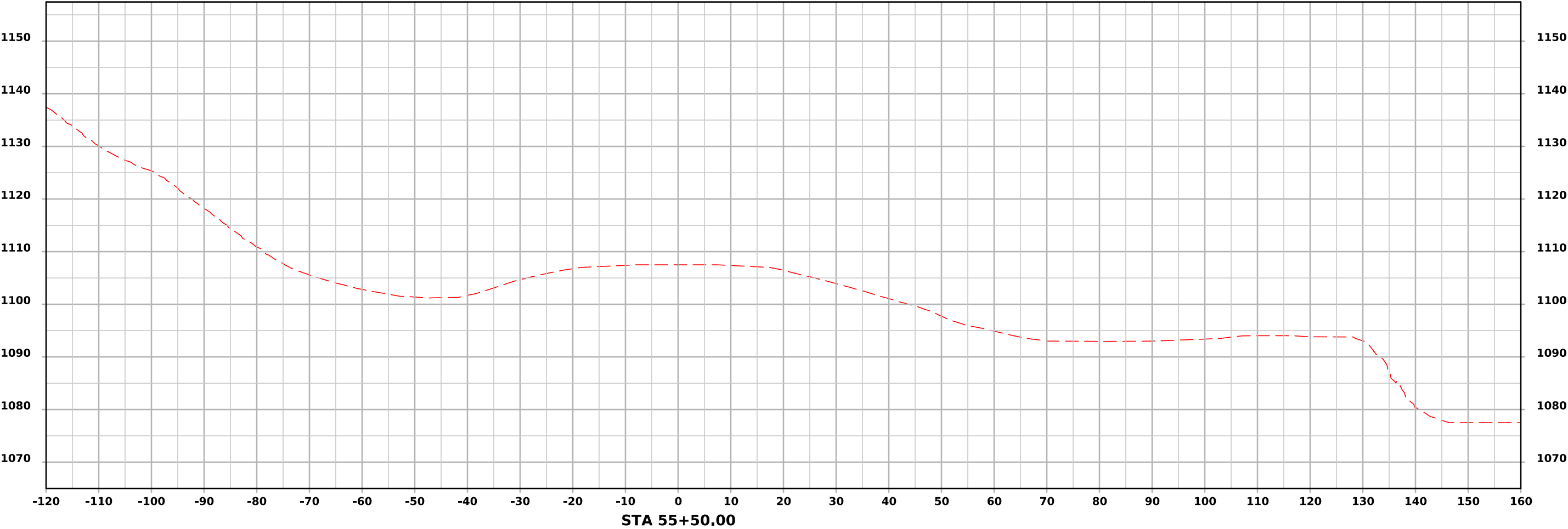
SYMBOL LEGEND OF CROSS SECTION SHEETS			
	Existing Right-of-Way Limit		
	Proposed Right-of-Way Limit		
	Temporary Right-of-Way Limit		

CROSS SECTION VIEW SUBSTRATA COLOR LEGEND			
Design	Color No.	Feature	
(128)		Boulder Substrata	
(3)		Core out Substrata	
(203)		Existing Pavement	
(6)		Loam Substrata	
(80)		Rock Substrata	
(4)		Select Sand Substrata	
(3)		Shale Substrata	
(10)		Existing Topsoil Substrata	
(3)		Unsuitable Type A Substrata	
(13)		Unsuitable Type B Substrata	
(11)		Unsuitable Type C Substrata	
(3)		Waste Substrata	

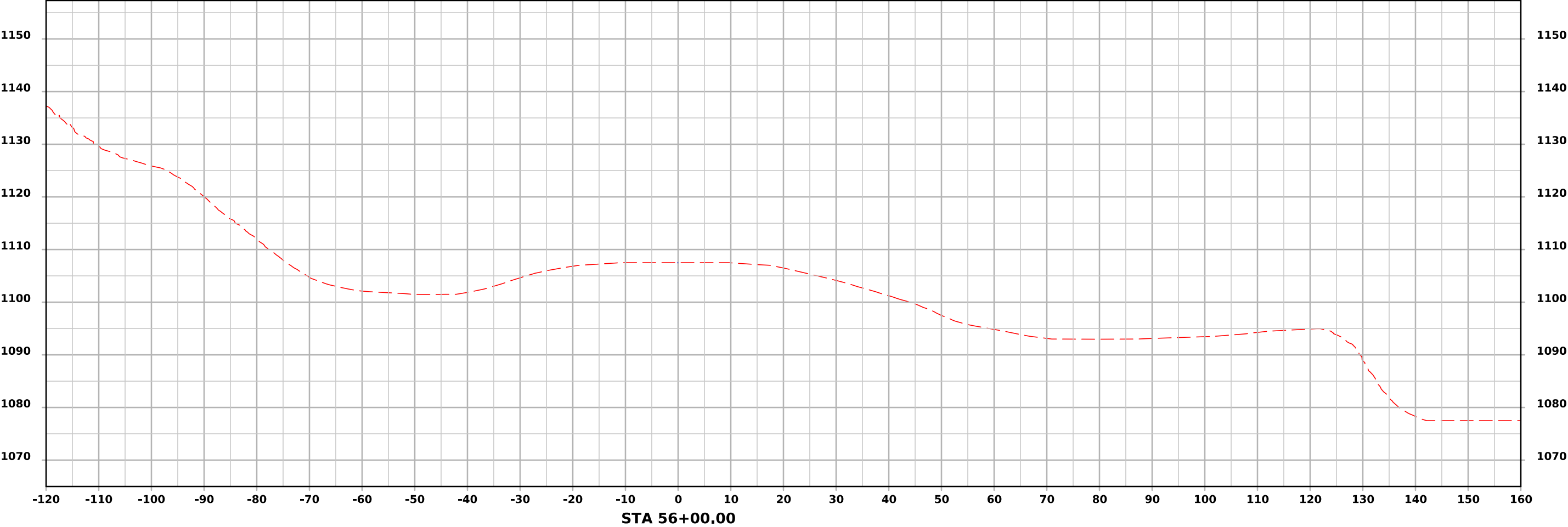
CROSS SECTIONS
LEGEND AND INFORMATION SHEET
(COVERS SHEET SERIES W)

FILE NO.	ENGLISH	DESIGN TEAM	Iowa DOT / HDR	WOODBURY COUNTY	PROJECT NUMBER	NHSN-012-1(071)—2R-97	SHEET NUMBER	W.1
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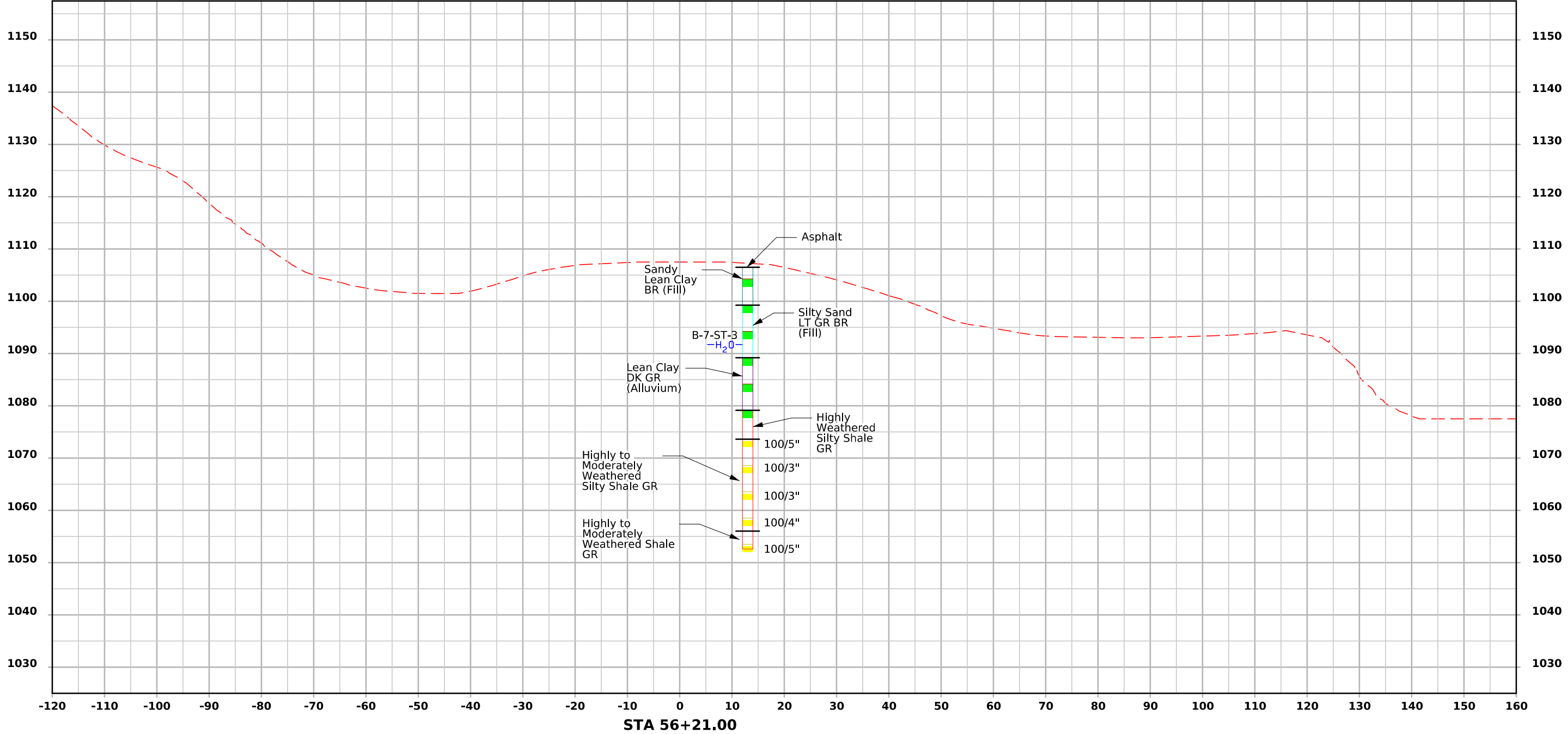
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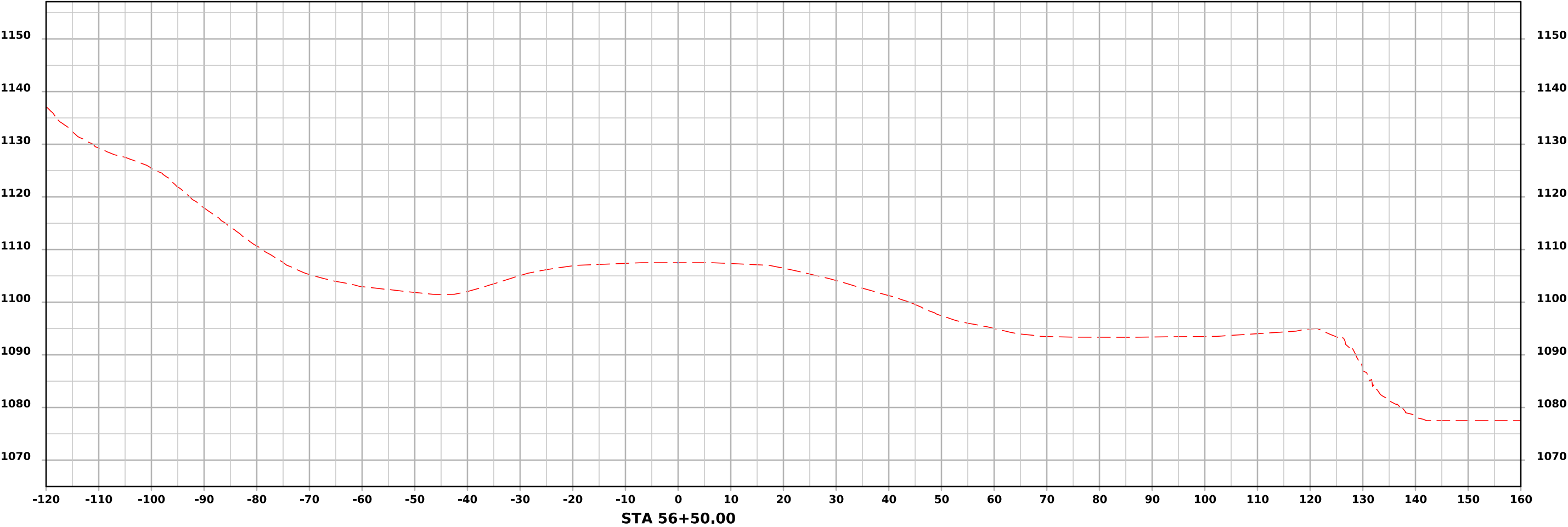
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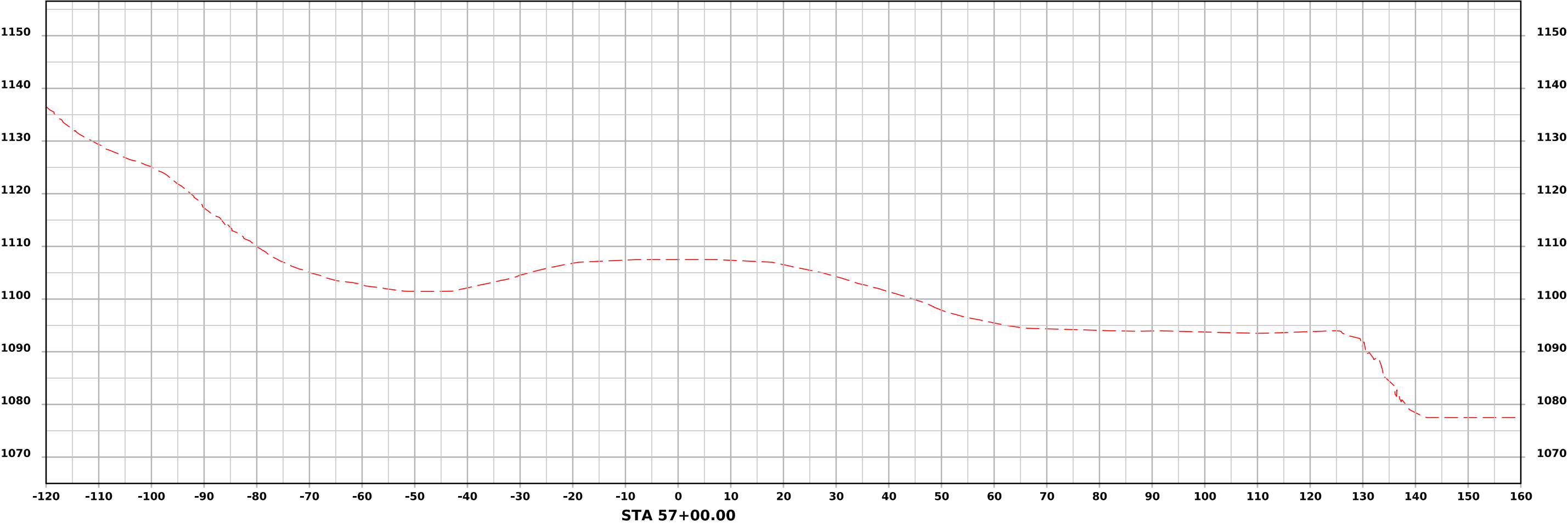
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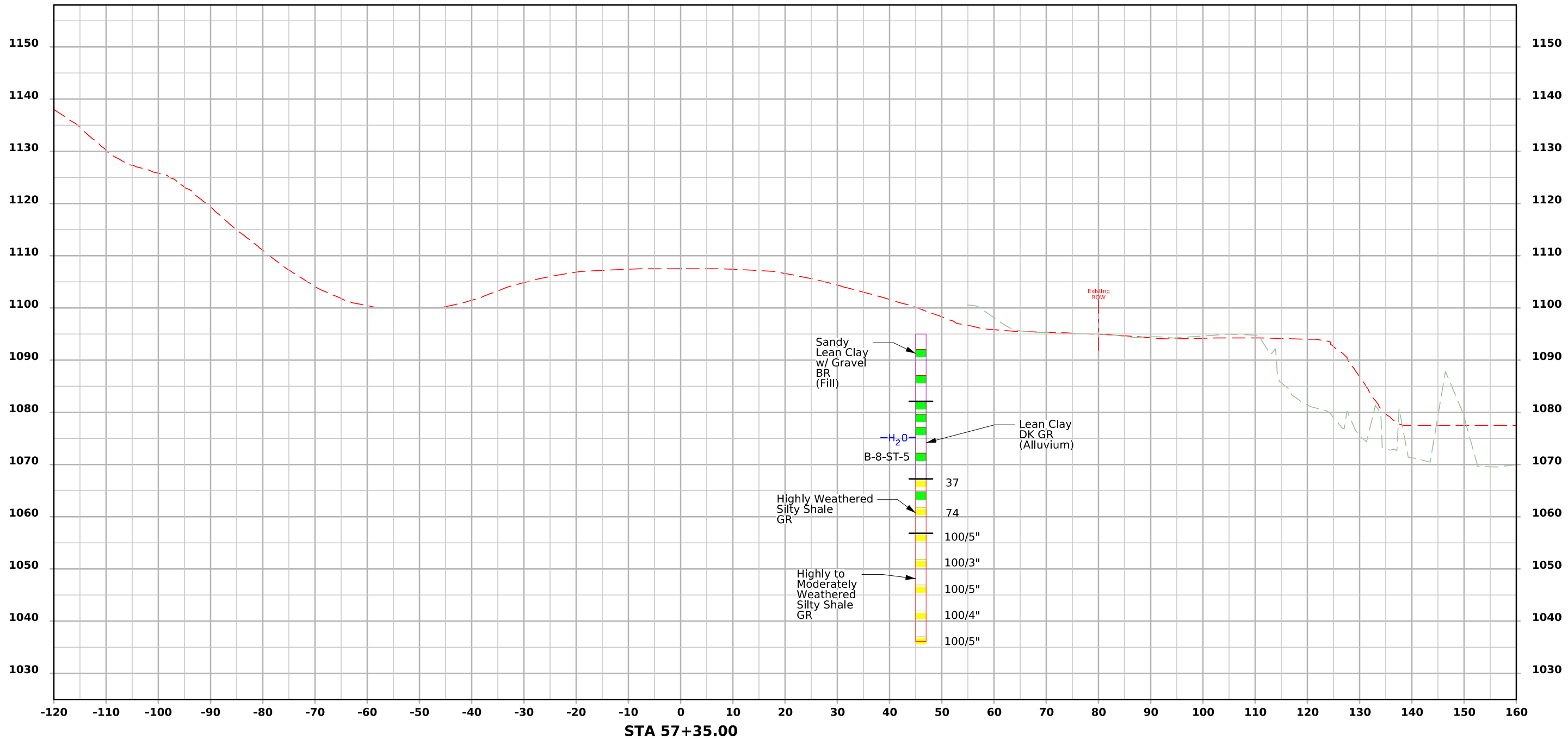
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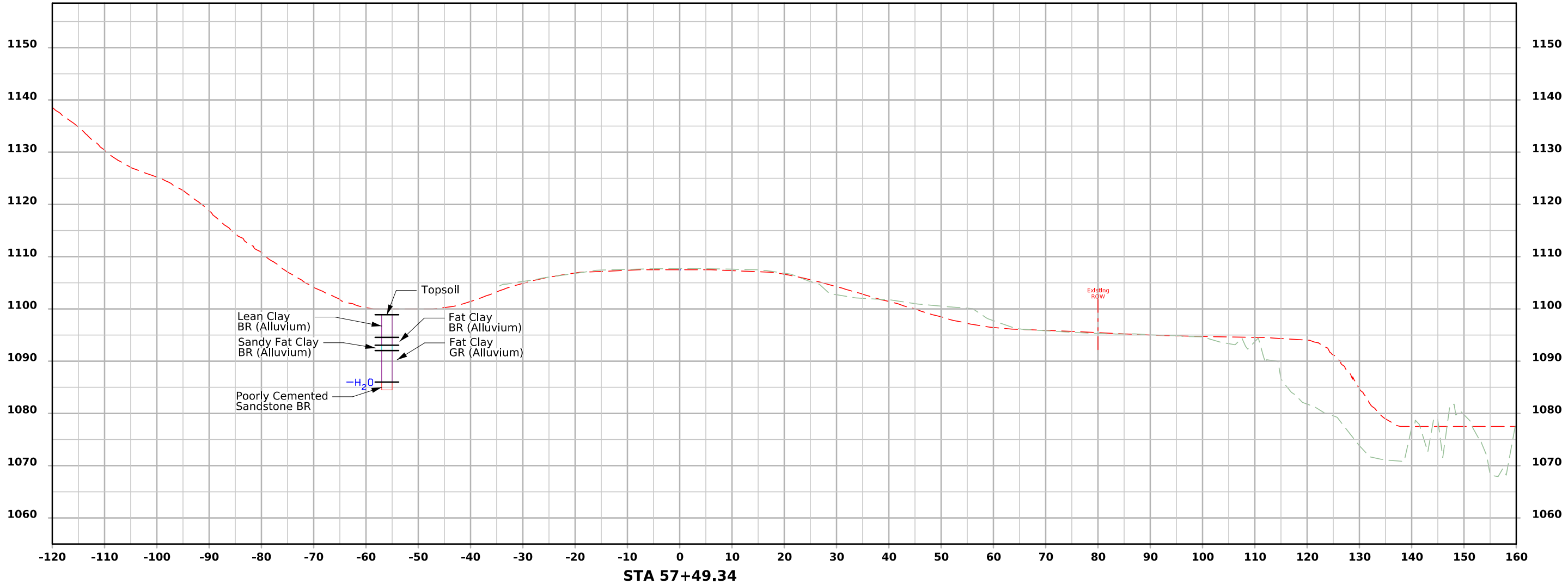
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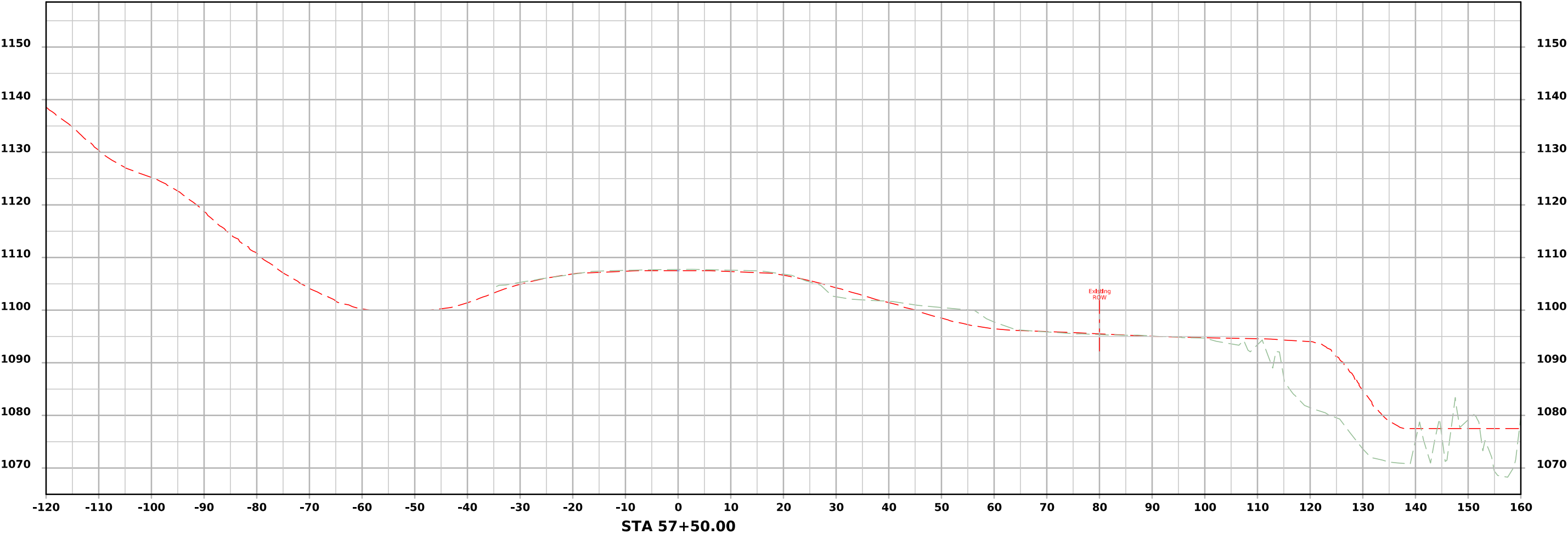
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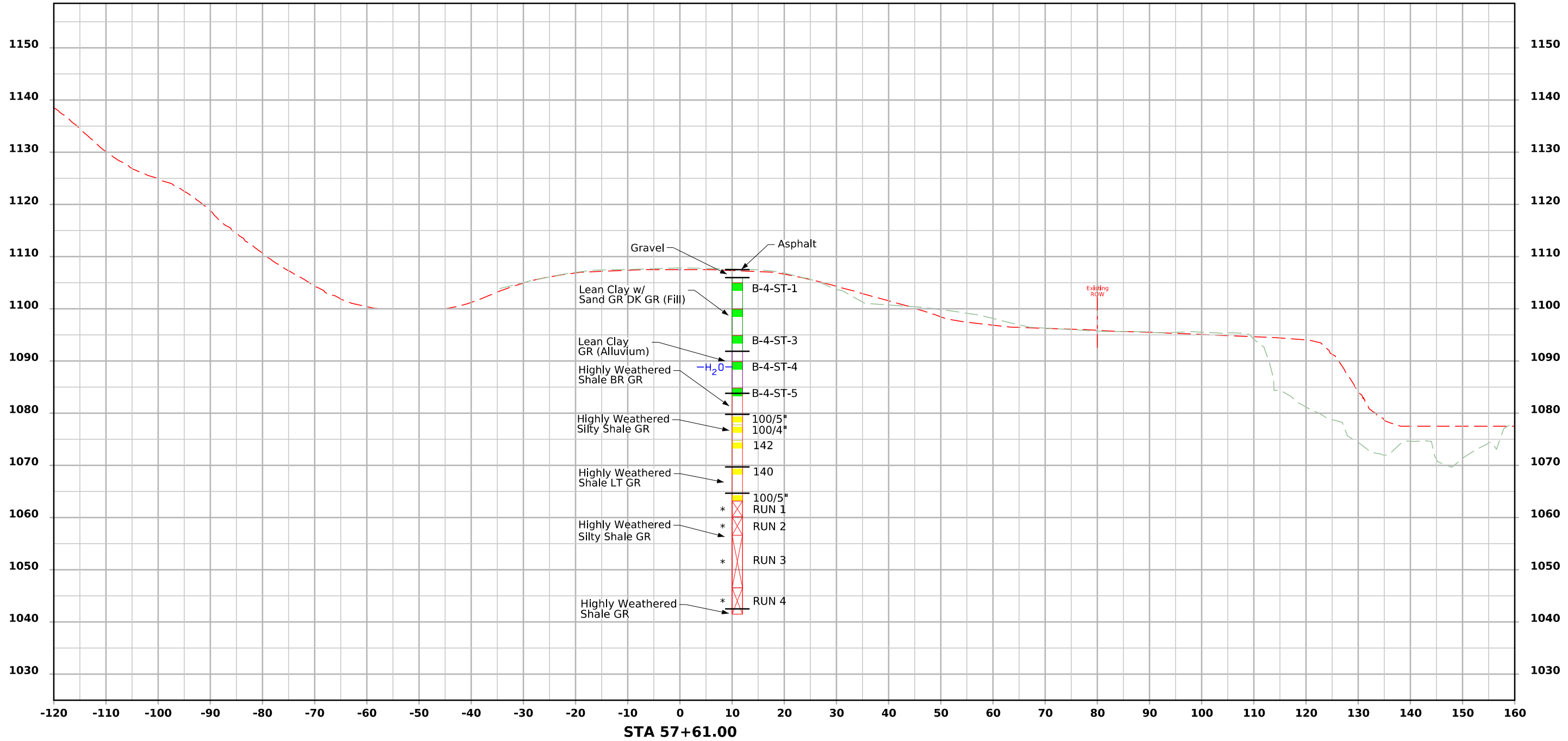
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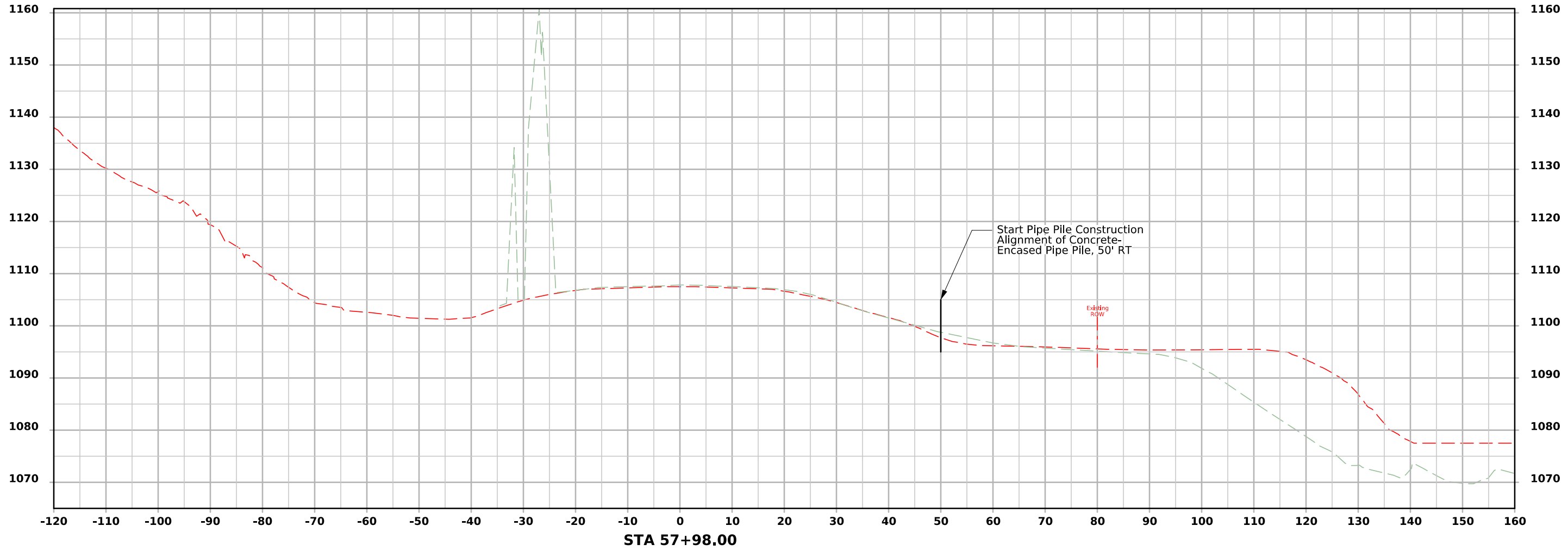
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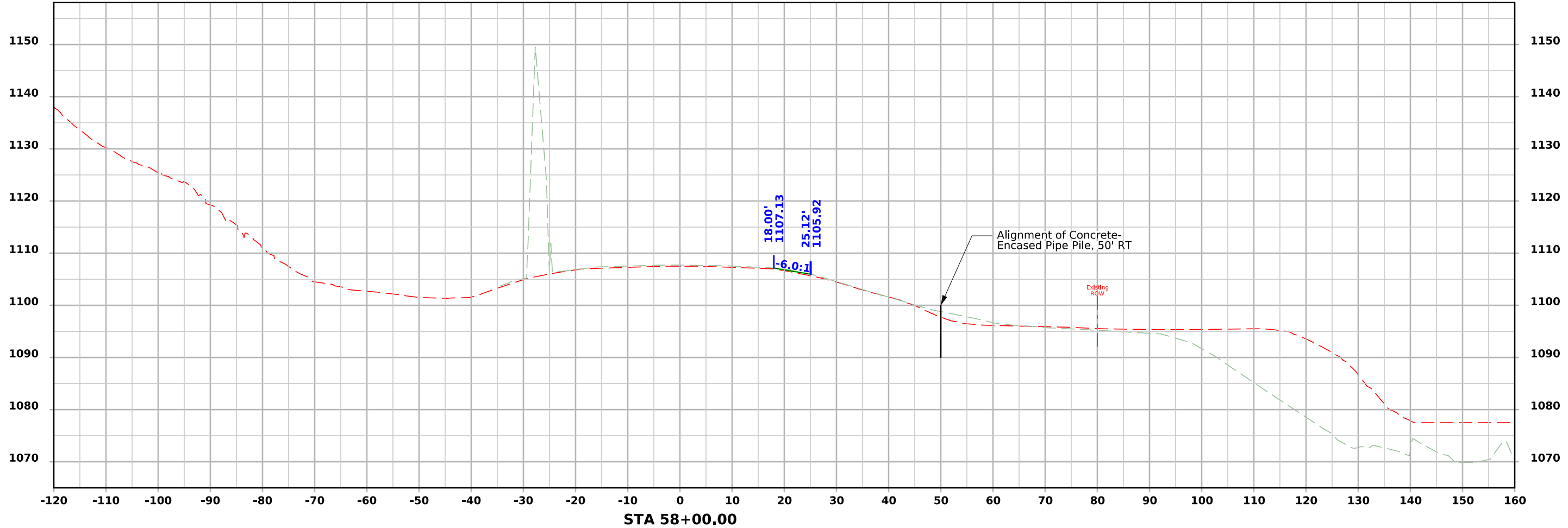


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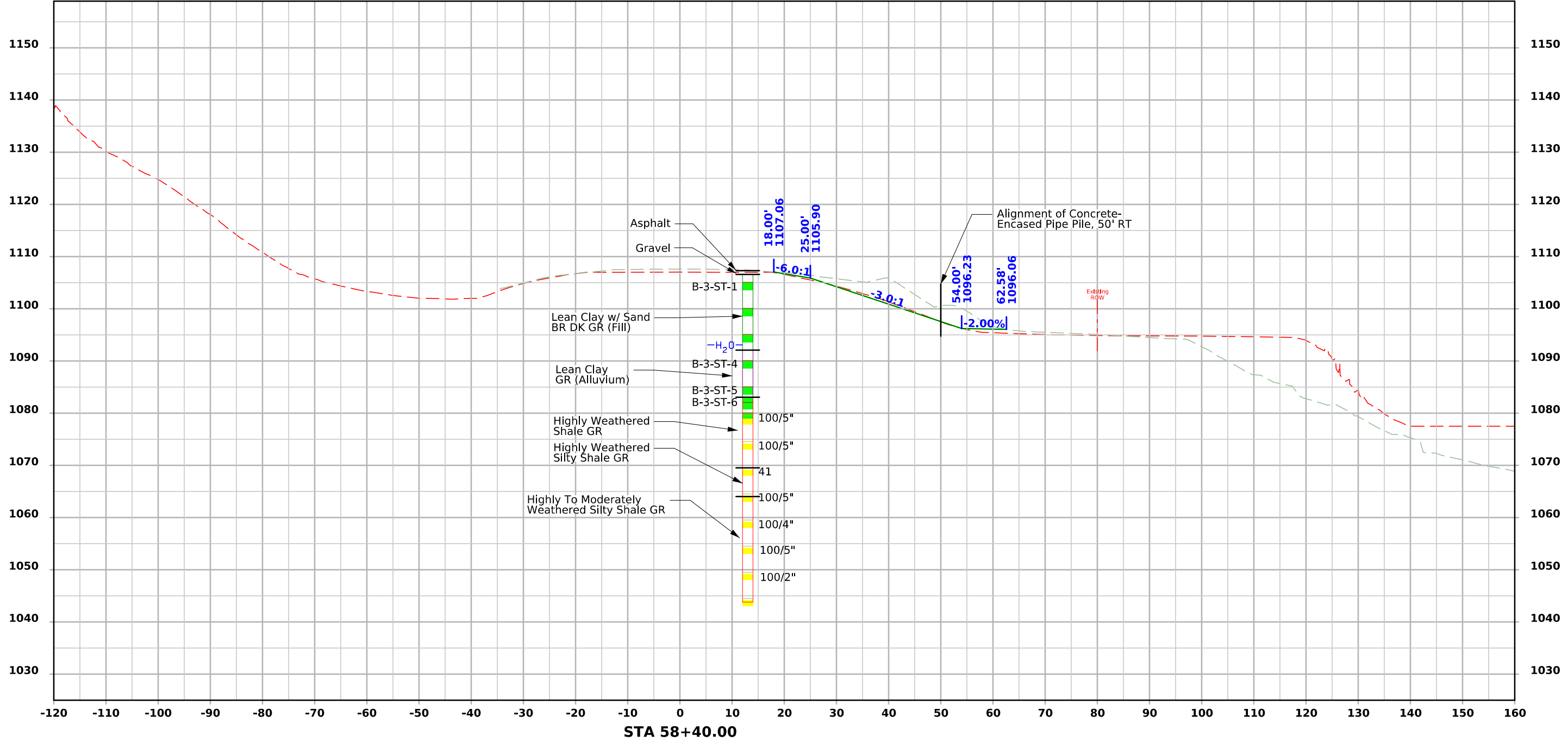


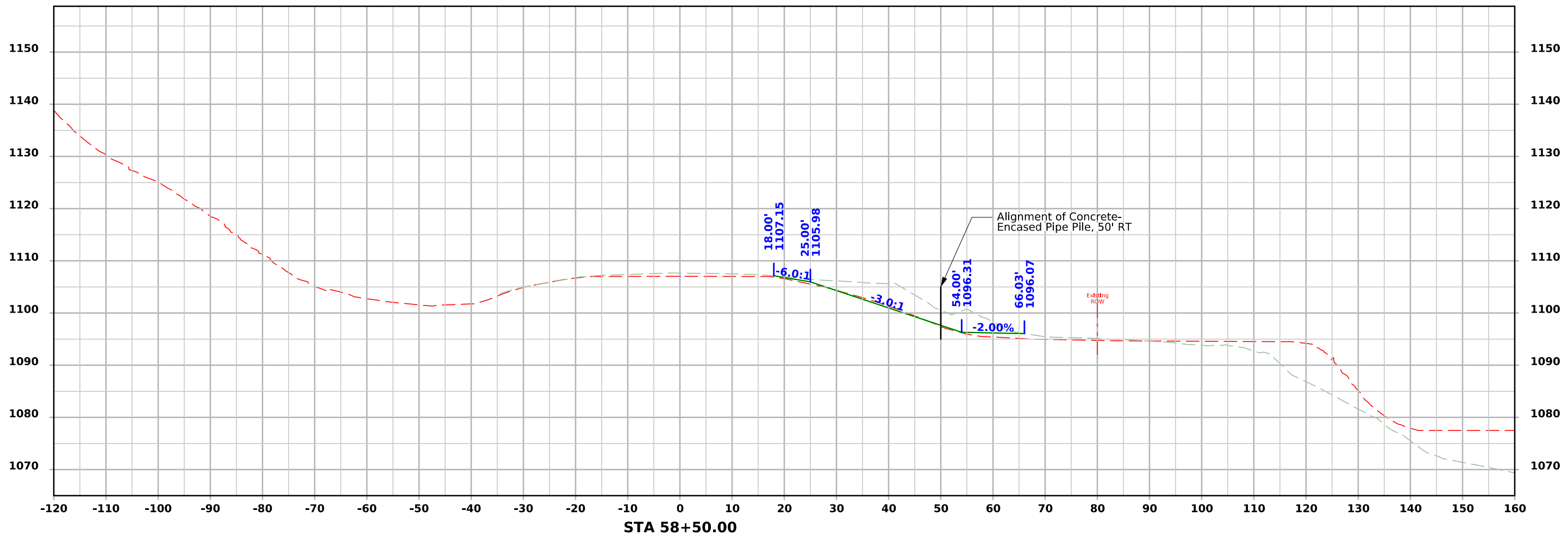
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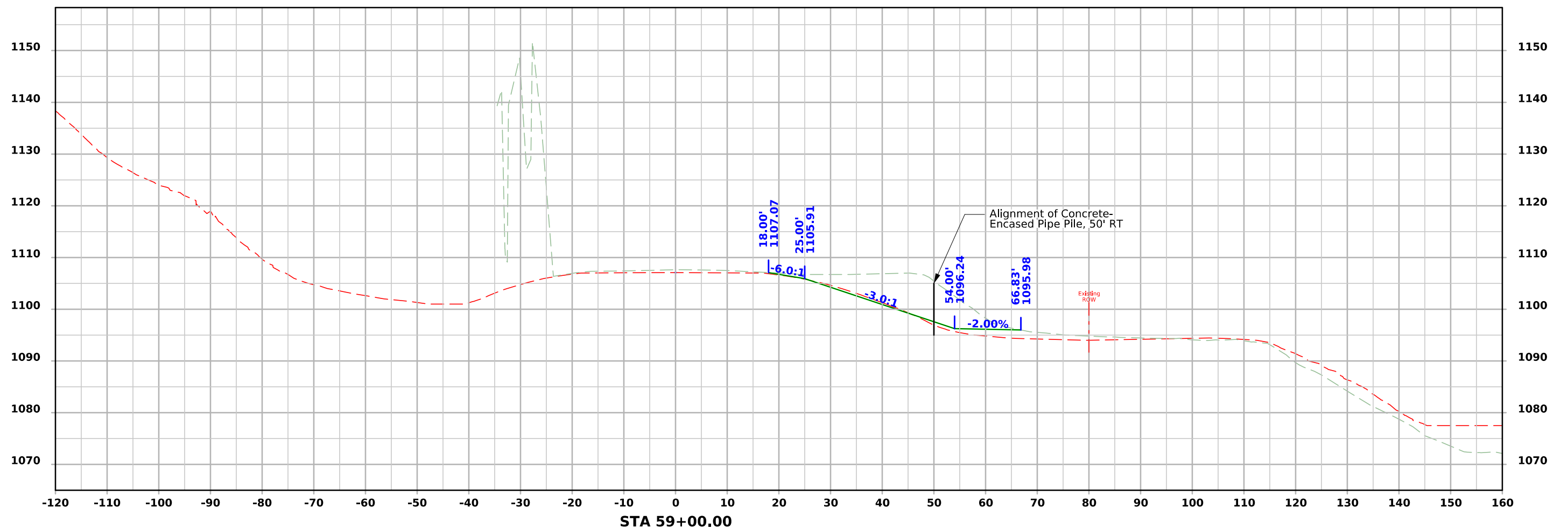


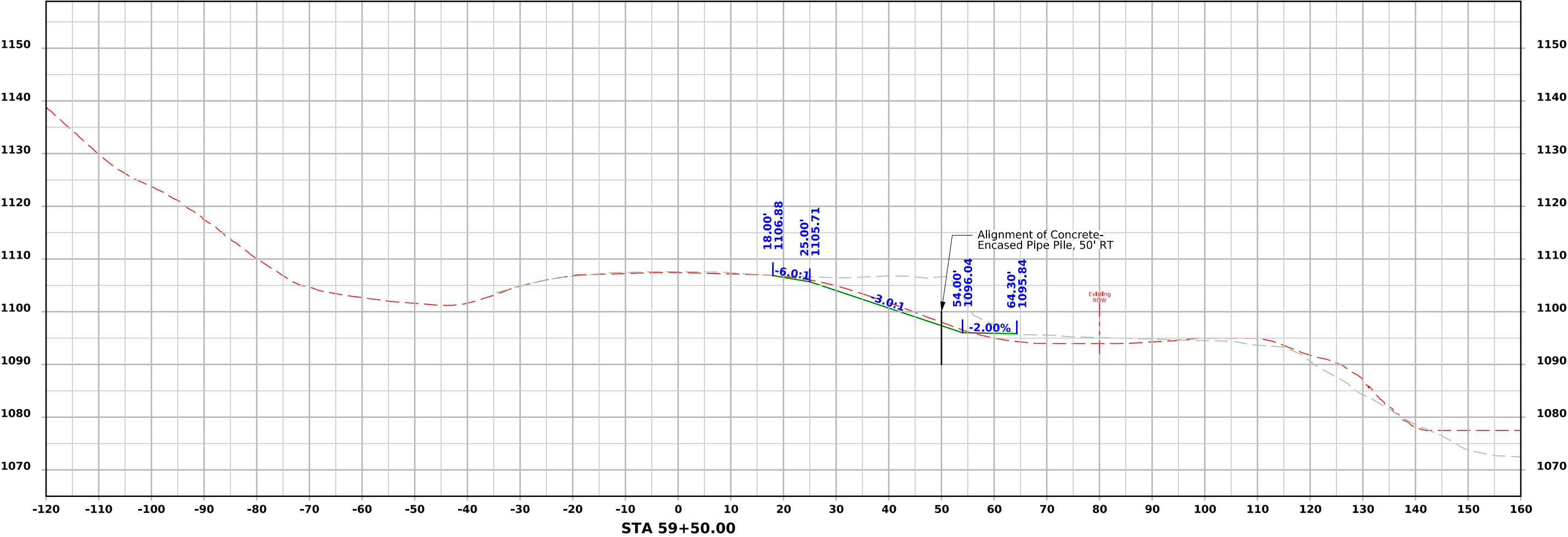
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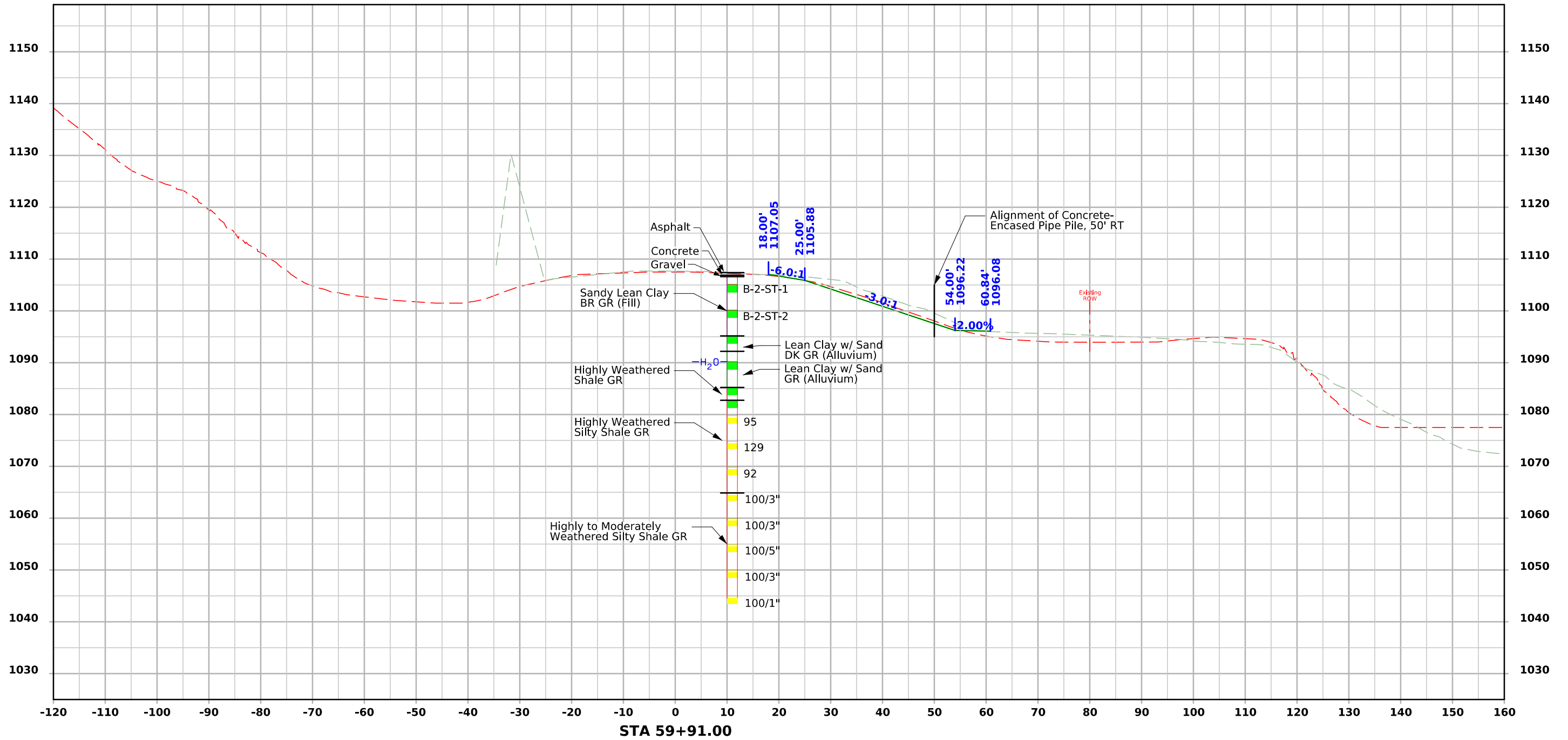


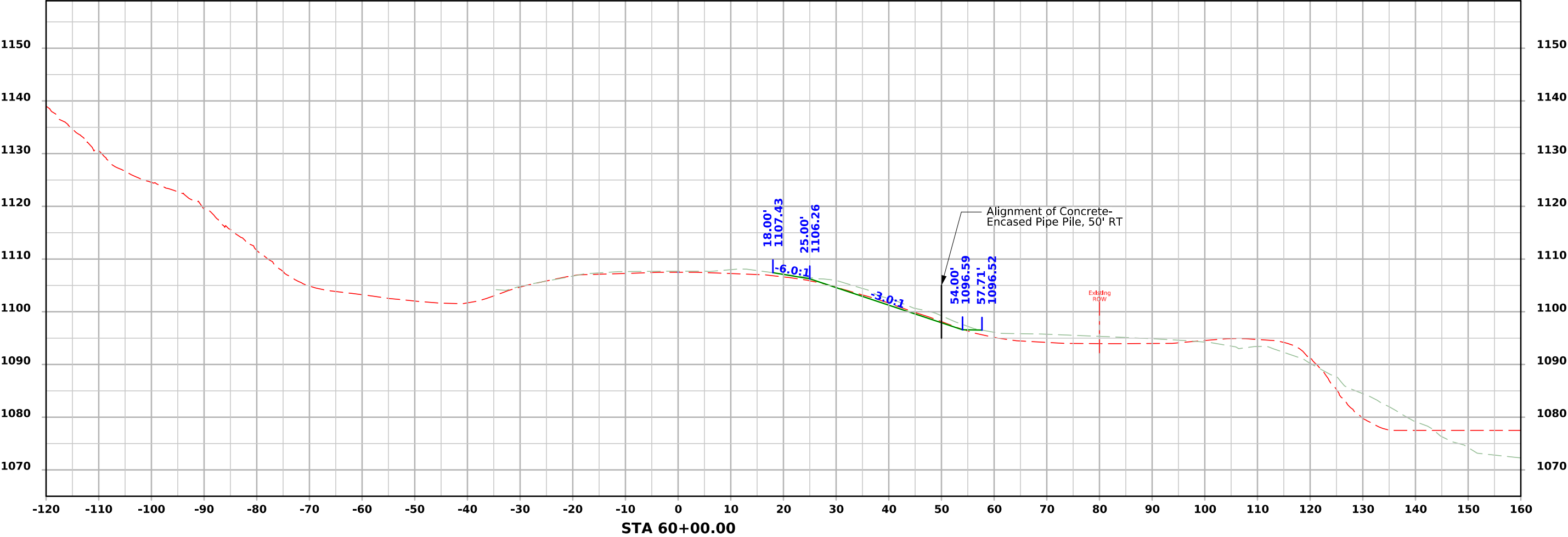
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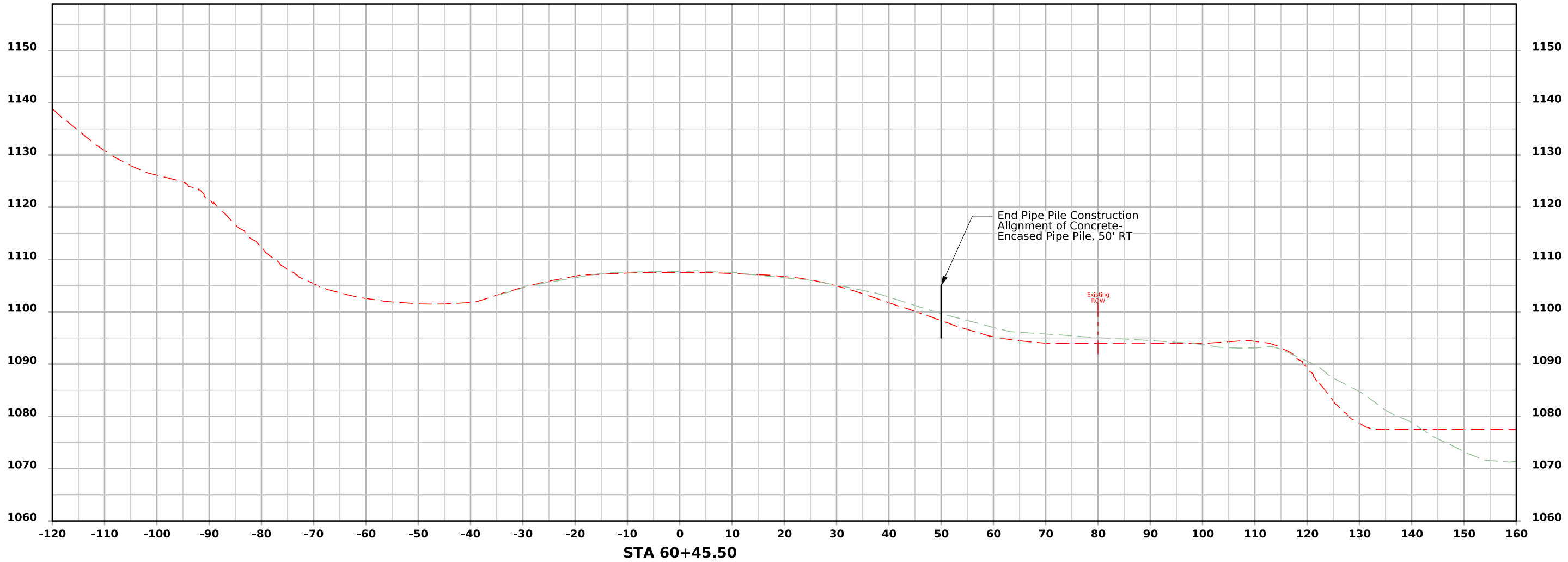


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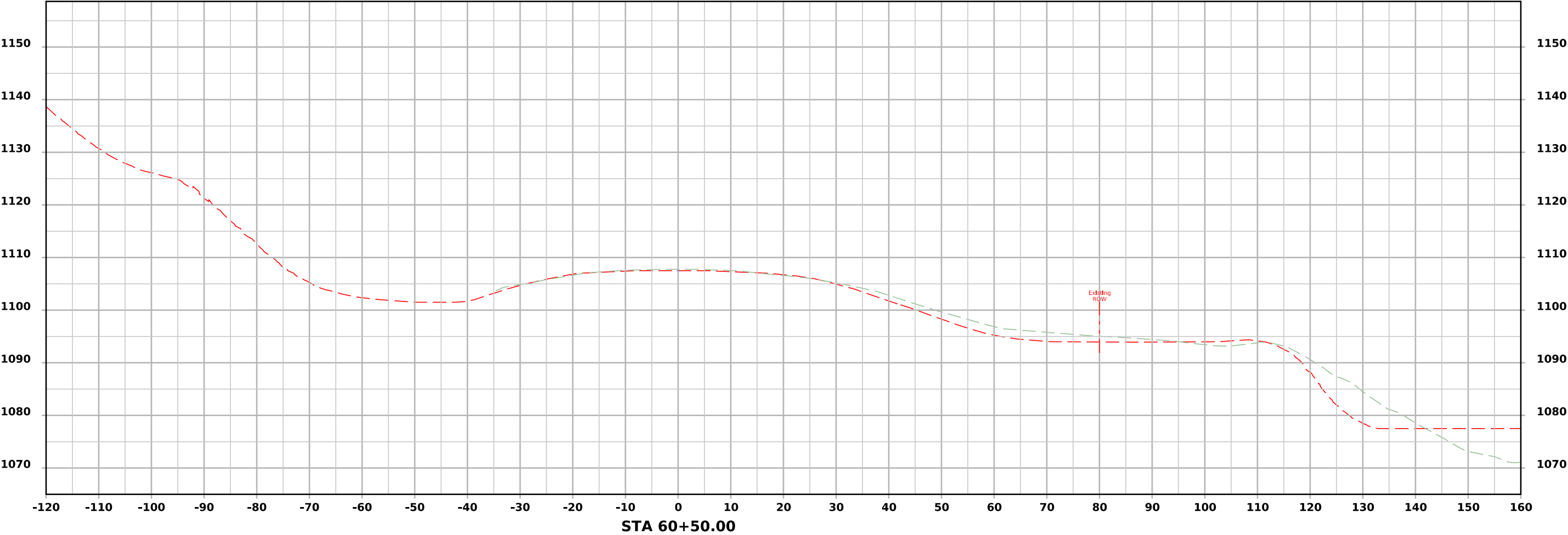




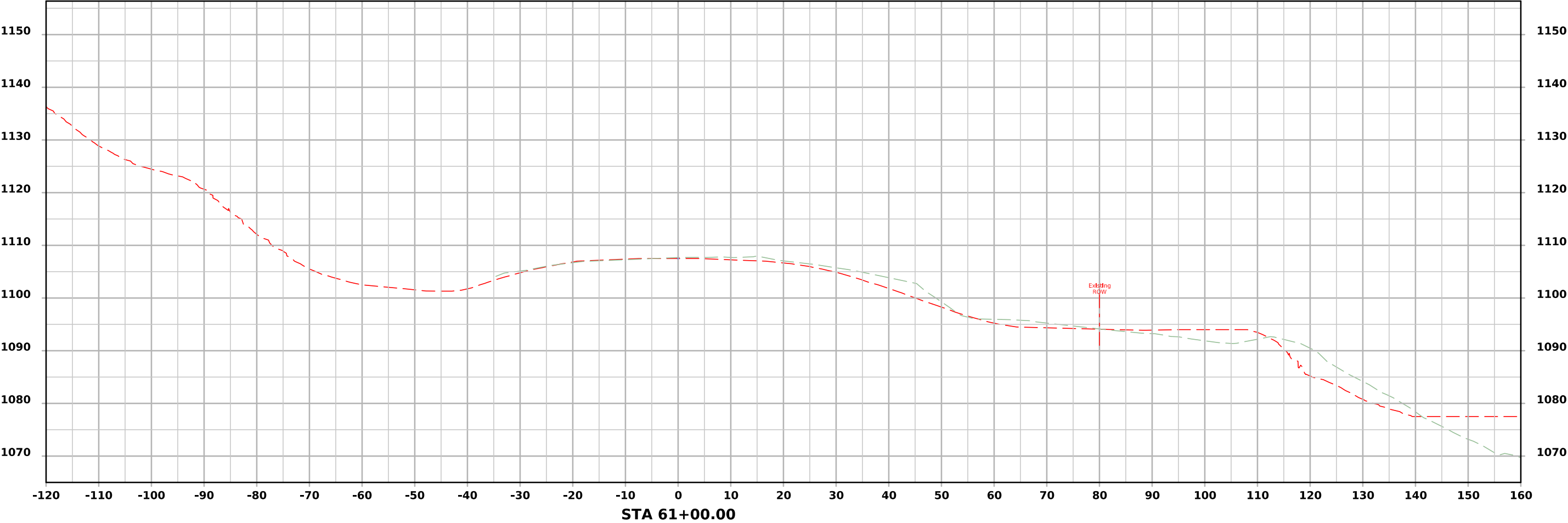
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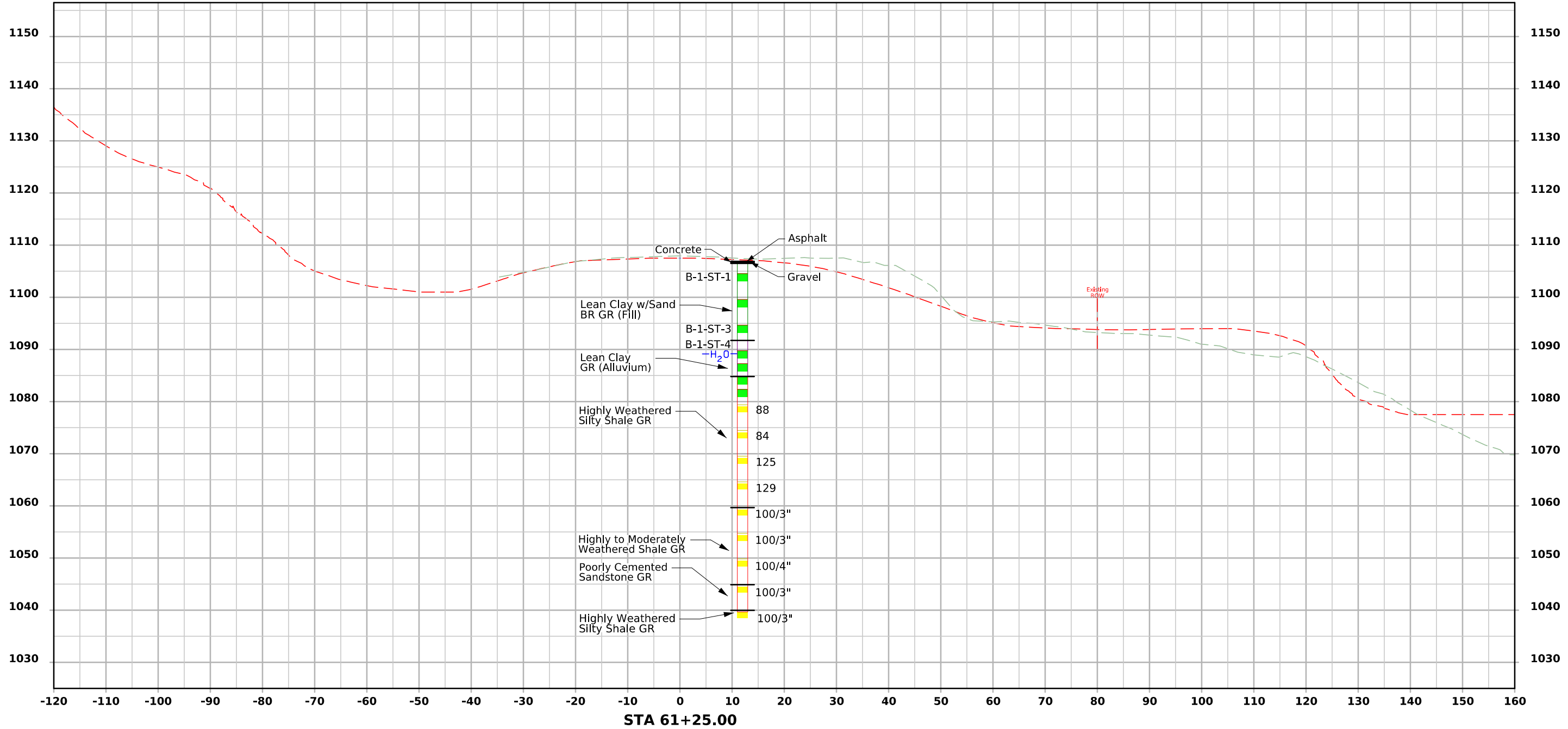
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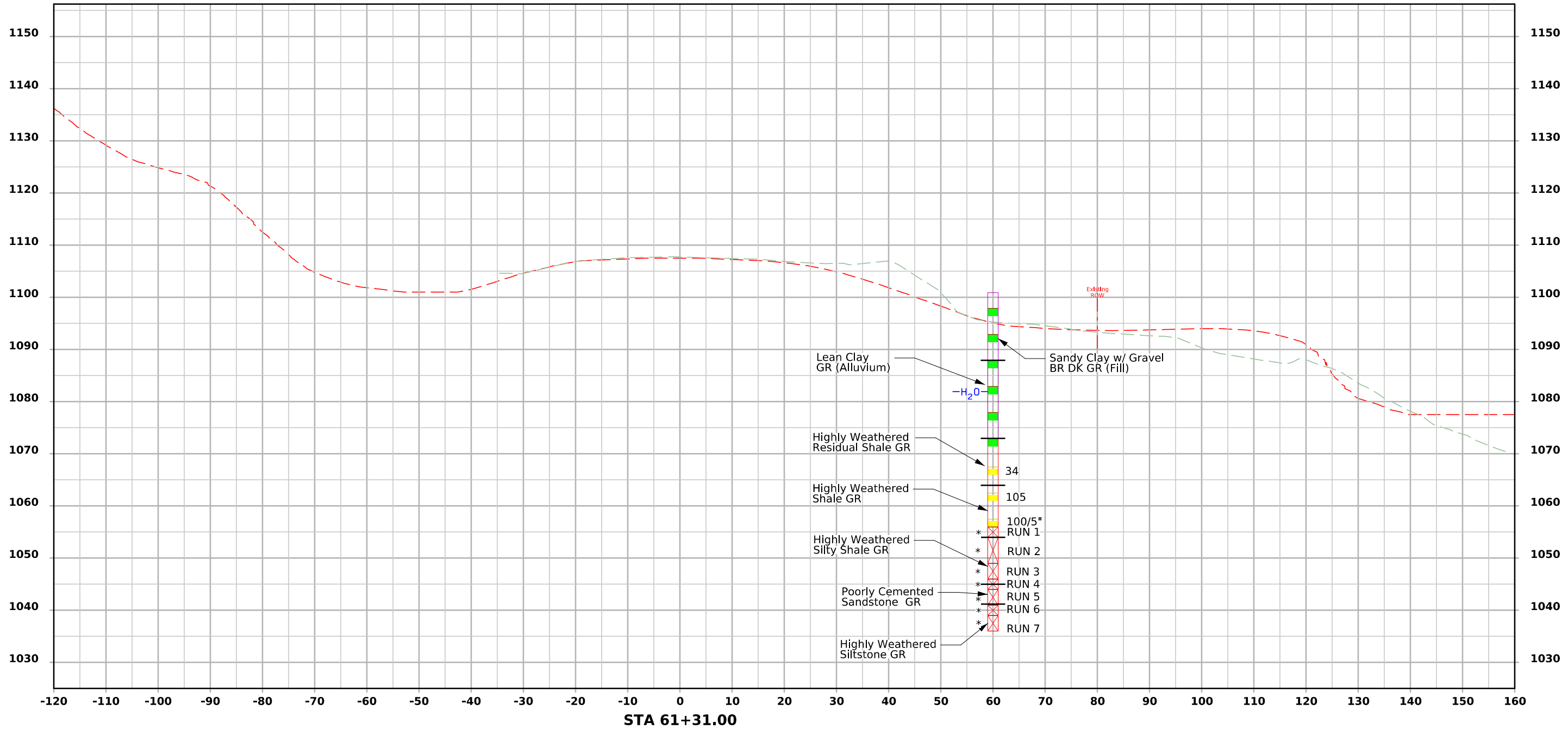
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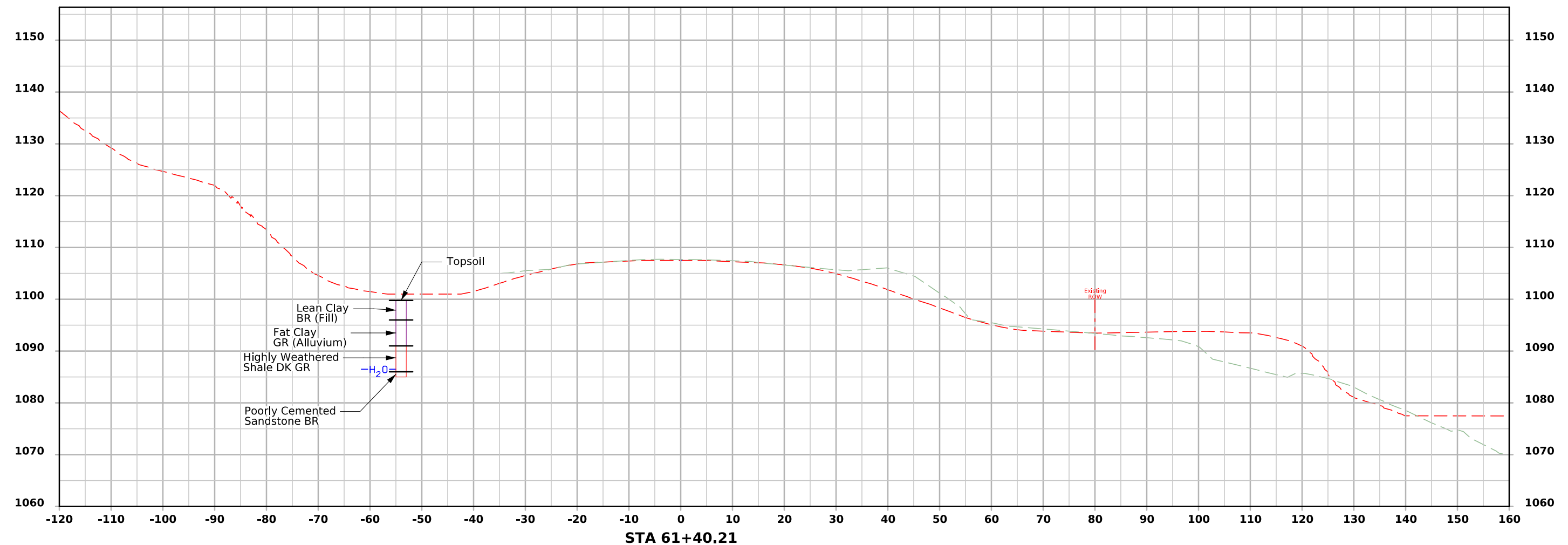
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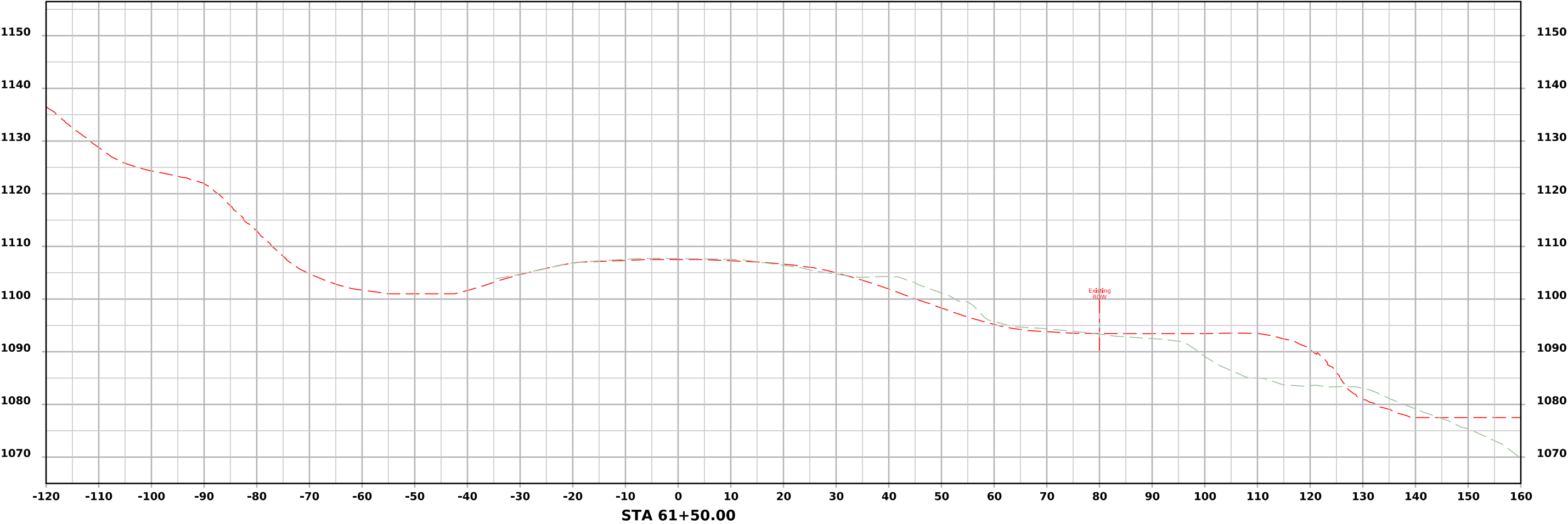
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BORING NO. HA1



ML - IA 12



ML - IA 12

