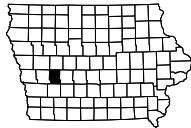


AUDUBON COUNTY

Bridge Replacement
BRF-071-4(57)--38-05

LETTING DATE
Jan 21, 2026



DESIGN DATA RURAL			
2026	AADT	2457	V.P.D.
2046	AADT	2570	V.P.D.
2046	DHV	270	V.P.H.
TRUCKS		18	%
Total			
Design ESALs		--	



PLANS OF PROPOSED IMPROVEMENT ON THE
PRIMARY ROAD SYSTEM
AUDUBON COUNTY
Bridge Replacement
Stream 0.6 Mi N of I-80

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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



INDEX OF SEALS			
SHEET NO.	NAME	TYPE	BID QUANTITY SHEETS
A.1	Michael J. Janecek	Primary Signature Block	X
V.1	Phillip M. Harpole	Hydraulic Design	X

D4 PLAN - Sep 24, 2025

PRELIMINARY PLANS

Subject to change by final design.

D5 PLAN - Dec 1, 2023
(REVISED Feb 15, 2024)

REVISIONS

TOTAL

PROJECT IDENTIFICATION NUMBER

21-05-071-010

PROJECT NUMBER

BRF-071-4(57)--38-05

R.O.W. PROJECT NUMBER

NHSN-071-4(58)--2R-05

FILE NO.

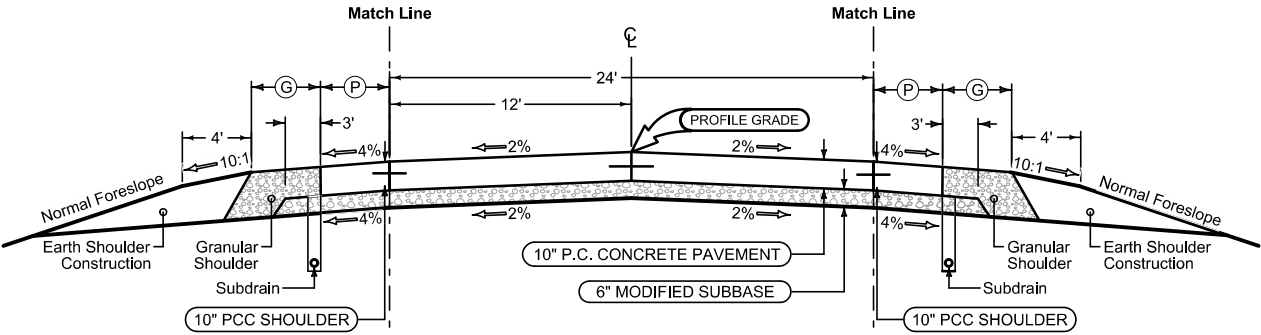
ENGLISH

DESIGN TEAM Iowa DOT\Shive-Hattery

AUDUBON COUNTY

PROJECT NUMBER BRF-071-4(57)--38-05

SHEET NUMBER A1



Mainline Jointing:
Transverse joints: CD at 17' spacing
Longitudinal joint: L-2

2P_04-21-20	
STATION TO STATION	
8+34.45	11+14.52

Full Depth PCC Combination Shoulder

2_C_FullPCC_04-20-21			
STATION TO STATION		(P) Feet	(G) Feet
7+00	11+64.5	6	4

Full Depth PCC Combination Shoulder

2_C_FullPCC_04-20-21			
STATION TO STATION		(P) Feet	(G) Feet
8+34.45	11+14.52	6	4

	Interstate Highway Symbol
	U.S. Highway Symbol
	Iowa Highway Symbol
	County Road Highway Symbol
	Evergreen Tree
	Deciduous Tree
	Fruit Tree
	Shrub (Bushes)
	Timber
	Hedge
	Stump
	Swamp
	Rock Outcrop
	Broken Concrete
	Revetment (Rip Rap)
	Cemetery
	Grave
	Cave
	Sink Hole
	Board Fence
	Chain Link or Security Fence
	Wire Fence
	Terrace
	Earth Dam or Dike (Existing)
	Tile Outlet
	Edge of Water
	Existing Drainage
	Right of Way Rail or Lot Corner
	Concrete Monument
	Well
	Windmill
	Beehive Intake
	Existing Intake
	Existing Utility Access (Manhole)
	Fire Hydrant
	Water Hydrant (Rural)

- Septic Tank
- Cistern
- L.P. Gas Tank (No Footing)
- Underground Storage Tank
- Latrine
- Satellite TV Dish
- Water Hook Up
- Radio Tower
- Tower Anchor
- Guardrail (Beam or Cable)
- Guard Post (one or two)
- Guard Post (over two)
- Filler Pipe
- Gas Valve
- Water Valve
- Speed Limit Sign
- Mile Marker Post
- Sign
- Traffic Signal Control Box
- Rail Road Signal Control Box
- Telephone Switch Box
- Electric Box

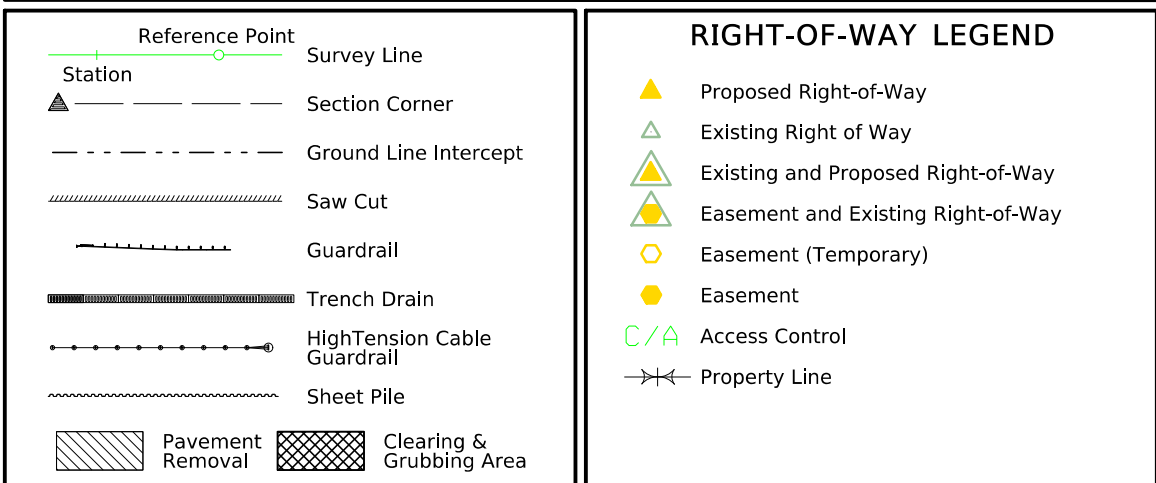
Sub-Surface Utility Mapping Quality Level is in accordance with CI/ASCE 38-02 Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data.

Remark Abbreviations
QLA Quality Level A Highest guideline quality level
QLD Quality Level D Lowest guideline quality level

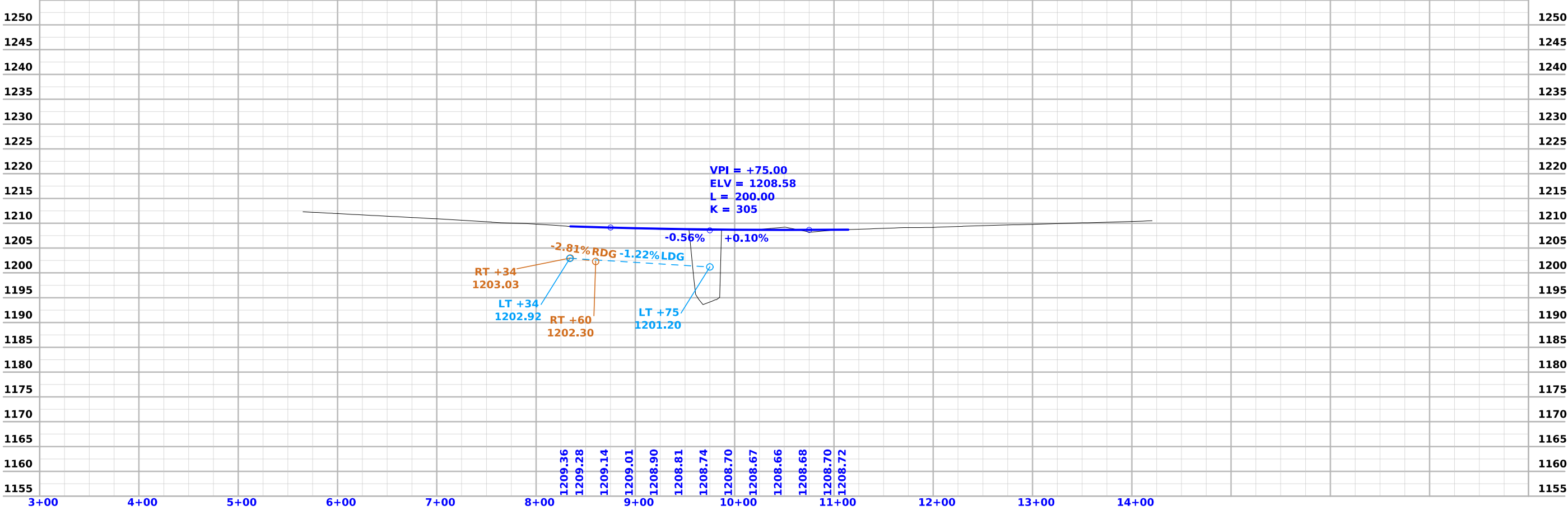
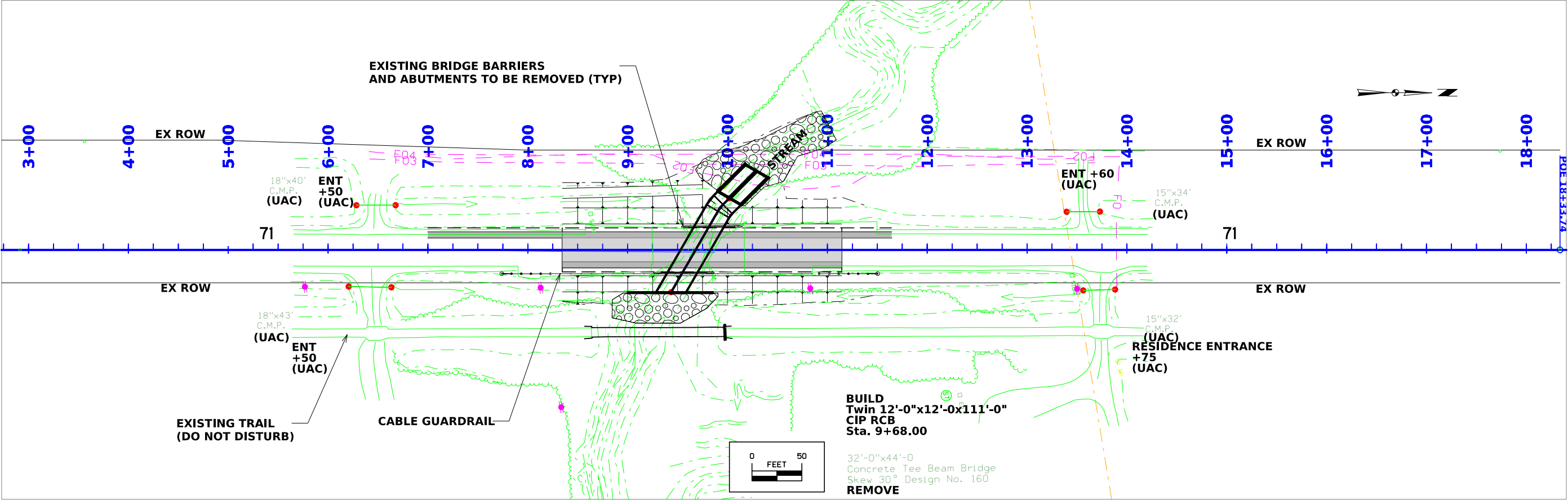
— F0 — **FO1D1, Quality D**
 — F02 — **FO2D2, ICN**
 — F03 — **FO3D3, CENTURYLINK - Quality D**
 — F04 — **FO4D4, MARNE ELKHORN - Quality D**
 ● **PPA**

LINEWORK		Design Color No.
Green	(2)	Existing Topographic Features and Labels
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Magenta	(5)	Existing Utilities
SHADING		Design Color No.
Lavender	(9)	Temporary Pavement Shading
Yellow	(4)	Proposed Pavement Shading
Orange	(6)	Proposed Granular Shading
Orange	(70)	Proposed Shoulder Granular Shading
Yellow	(68)	Proposed Shoulder Paved Full Depth Shading
Yellow	(132)	Proposed Shoulder Paved Partial Depth Shading
Gray, Dark	(112)	Proposed Grade and Pave Shading "In conjunction with a paving project"
Brown, Light	(236)	Grading Shading
Orange, Light	(134)	Proposed Granular Entrance Shading
Yellow	(220)	Proposed Paved Entrance Shading
Tan	(8)	Proposed Sidewalk Shading
Blue, Light	(230)	Proposed Sidewalk Landing Shading
Pink	(11)	Proposed Sidewalk Ramp Shading
Green, Light	(225)	Existing Pavement Shading
Red	(3)	Proposed Structure Shading
Red	(3)	Delineates Restricted Areas

LINEWORK	Design Color No.	
Green	(10)	Existing Ground Line Profile
Blue	(1)	Proposed Profile and Annotation
Magenta	(5)	Existing Utilities
Blue, Light	(230)	Proposed Ditch Grades, Left
Black	(0)	Proposed Ditch Grades, Median
Rust	(14)	Proposed Ditch Grades, Right



(COVERS SHEET SERIES D, E, F, & K)



Survey Information

SURVEY INDEX

County: Audubon
PIN: 21-05-071-010
Project Number: BRF-071-4(57)--38-05
Location: Stream 0.6 mi N of I-80
Type of Work:
Project Directory: 0507101021

Survey Personnel

Murray Berting – PLS
Gavin Gear – Land Survey Technician

Date(s) of Survey

Begin Date 11/28/2022
End Date 03/31/2023

General Information

Measurement units for this survey are US survey feet. This survey is for proposed bridge reconstruction and reconstruction of State Highway 71 0.6 mi North of Interstate 80. Project datum and control information is provided by Shive-Hattery Inc. This project is a Preliminary Survey. This survey request was for the bridge over the stream, State Highway 71 corridor, adjacent trail structure (T-Bone Recreational Trail) and the drainage area.

Project Control

Nearby Iowa Real Time Network reference stations were utilized to obtain horizontal and vertical control on primary project control points. (3) three-minute observations were taken with a minimum two-hour time span between and used in a weighted average to obtain final coordinate values. For additional details of the control survey, contact the Preliminary Survey department.

PROJECT DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 ADJUSTMENT)
COORDINATE SYSTEM: IOWA REGIONAL COORDINATE SYSTEM ZONE 07
(U.S. SURVEY FOOT)
VERTICAL DATUM: NAVD88
GEOID MODEL: 2012bu2

Alignment Information

The horizontal alignment for U.S. Hwy 71 this survey is a retrace of As-built Plans No. HSIPX-071-4(50)-3L-05. Survey stationing was equated to the plan POT at Sta. 2+91.52 and run back and ahead without equation throughout the survey.

Survey stationing relates to as built plan stationing as follows:

POT Sta. 2+91.52 As-built Plans Project No. HSIPX-071-4(50)-3L-05
Survey POT Sta. 2+91.52

POT Sta. 18+33.40 As-built Plans Project HSIPX-071-4(50)-3L-05
Survey POT Sta. 18+33.59

POT Sta. 26+87.26 As-built Plans Project No. HSIPX-071-4(50)-3L-05
Survey POT Sta. 26+87.50

CONTROL POINT VICINITY MAP

This map is a guide to the vicinity of the primary project control points. Primary control is for use with RTK base stations and for RTN validation. Future surveys will use primary project control to establish temporary control as needed for construction or other surveying applications.



HORIZ. DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 Adjustment) - Iowa RCS Zone 07 (U.S. Survey Foot)

VERT. DATUM: NAVD88 - Geoid Model: 2012bu2

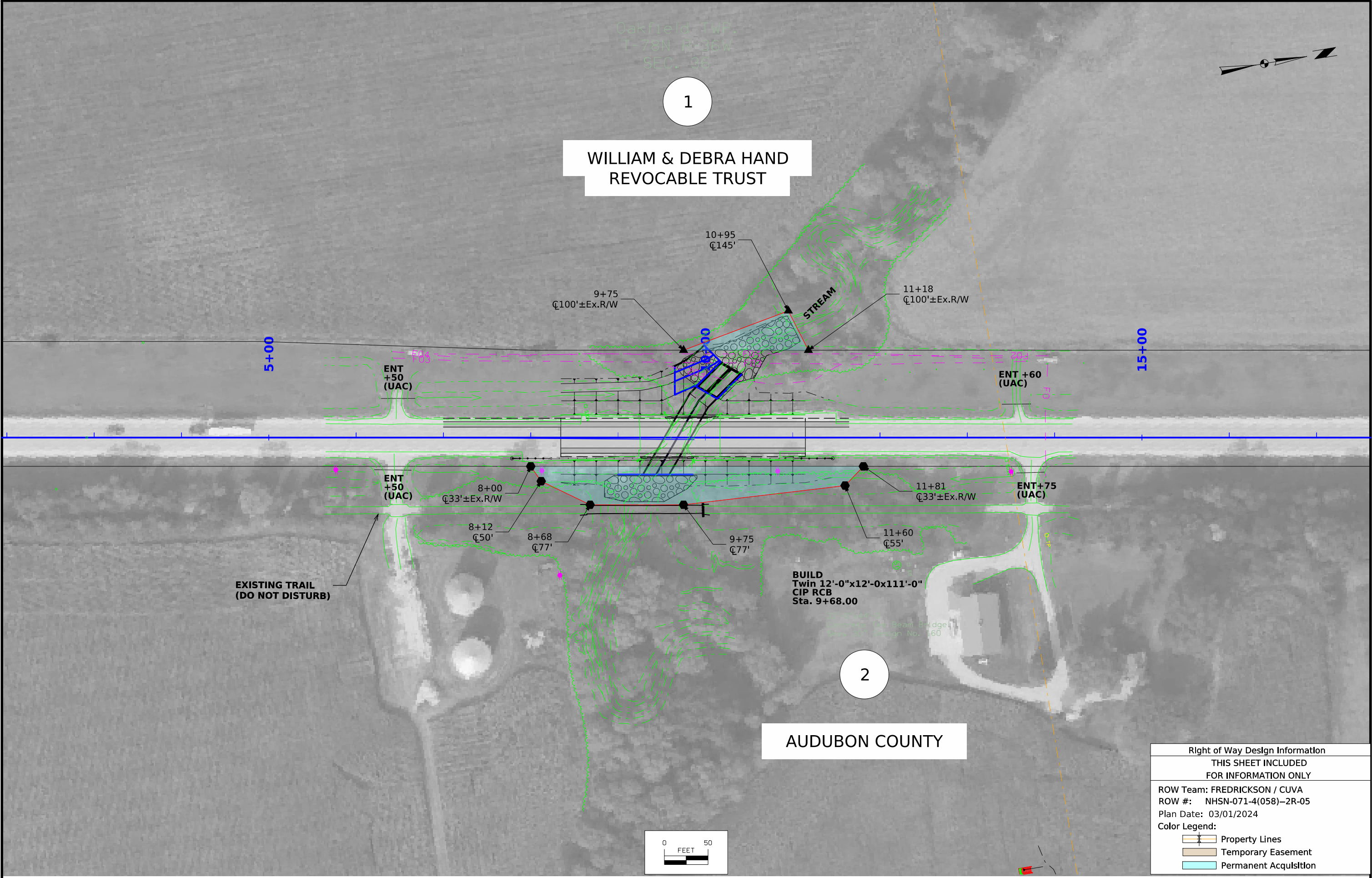
Coordinate listing from next sheet will be used with IaRTN for monument recovery. No other reference ties are given.

HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING
HORIZ. DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 Adjustment)
Ia. Regional Coordinate System Zone 07 (U.S. Survey Foot)
VERT. DATUM: NAVD88
Geoid Model: 2012bu2

POINT NAME	NORTHING	EASTING	ELEVATION	FEATURE DEFINITION
501	7259155.071	17415201	1214.042333	CP 1/2" IR CONC MON
502	7259046.199	17415183	1214.373	CP 1/2" IR CONC MON
503	7257650.076	17414935	1211.480333	CP 1/2" IR CONC MON
504	7257524.024	17415084	1214.161	CP 1/2" IR CONC MON

NO ACCESS RIGHTS ARE TO BE ACQUIRED ON THIS PROJECT.

ACCESS CONTROL PREVIOUSLY ACQUIRED.



FILE NO.	ENGLISH	DESIGN TEAM IowaDOT\Shive-Hattery	AUDUBON COUNTY	PROJECT NUMBER BRF-071-4(057)--38-05	SHEET NUMBER H.1
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108-23A
08-01-08

TRAFFIC CONTROL PLAN

1) While bridge and approaches are being removed and replaced with new RCB, traffic shall be maintained on US 71 at all times by staged construction with temporary signals allowing one lane of traffic. (TC-217)

2) Signage and devices shall be furnished, installed, maintained, and removed by Contractor.

108-26A
08-01-08

STAGING NOTES

Stage 1:
Place temporary pavement. Route traffic on US 71 NB lane. Construct culvert inlet and associated paving.

Stage 2:
Route traffic on US 71 SB lane and temporary pavement. Construct northbound lane, guardrail, and remainder of culvert.

Stage 3:
Route traffic on US 71 NB lane. Place remainder of southbound pavement, cut down shoulders to final width and remove temporary grading on foreslopes.

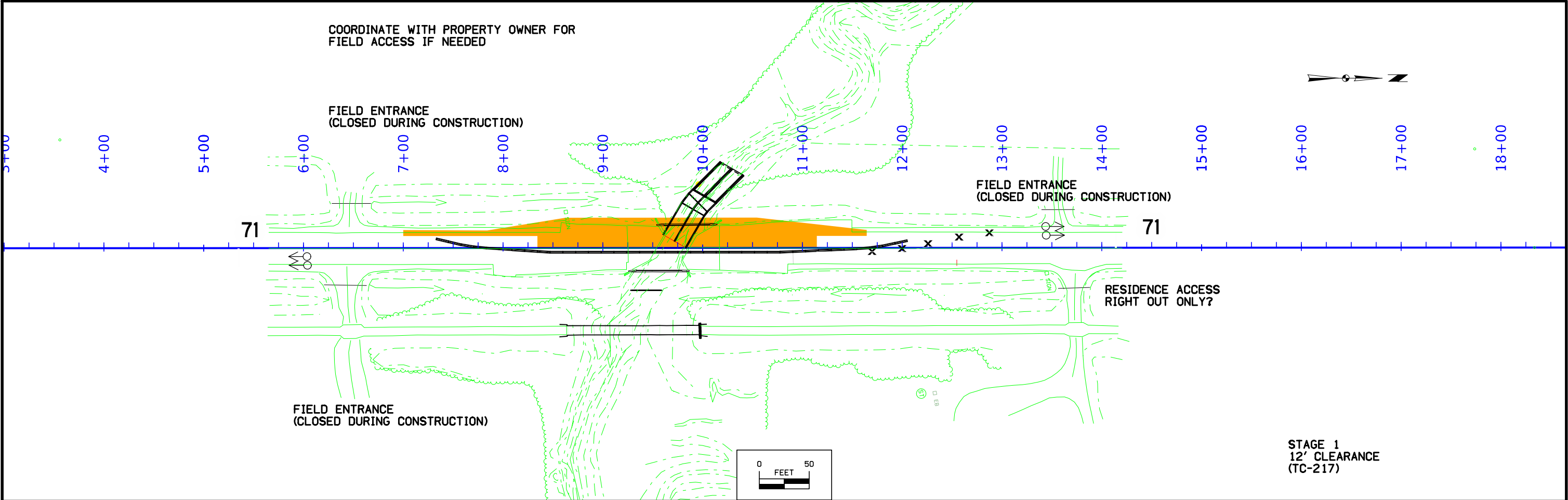
511 TRAVEL RESTRICTIONS													108-25 10-21-14
Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No., Structure ID, or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks	
US 71	Both	AUDUBON	Bridge Over Stream, 0.6 Mi N of I-80	Stream	Bridge		Width			11'-0			

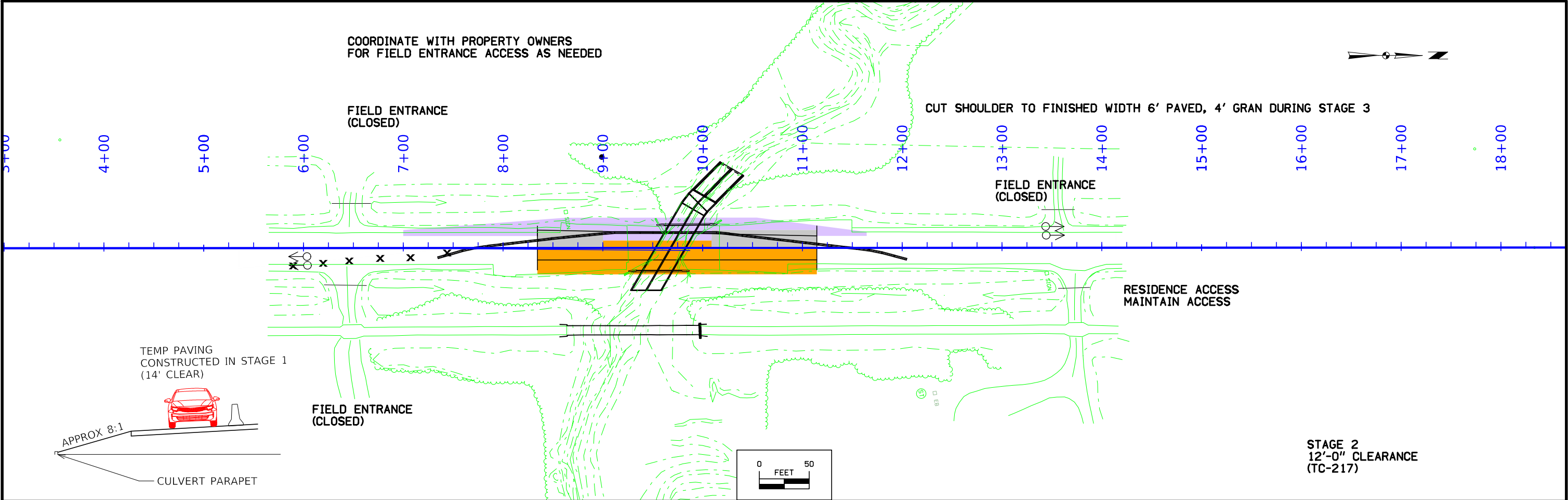
111-01
04-17-12

COORDINATED OPERATIONS

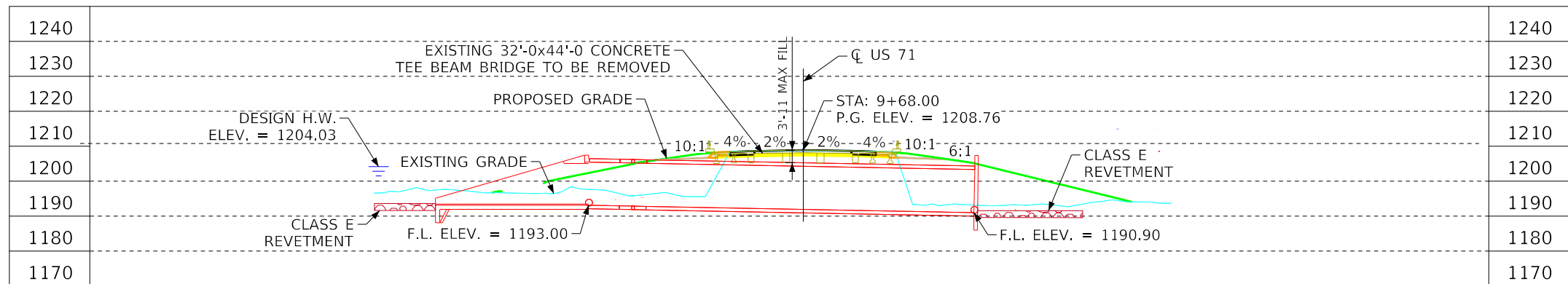
Other work in progress during the same period of time will include the construction of the projects listed. Coordinate operations with those of other contractors working within the same area.

Project	Type of Work
None Provided	

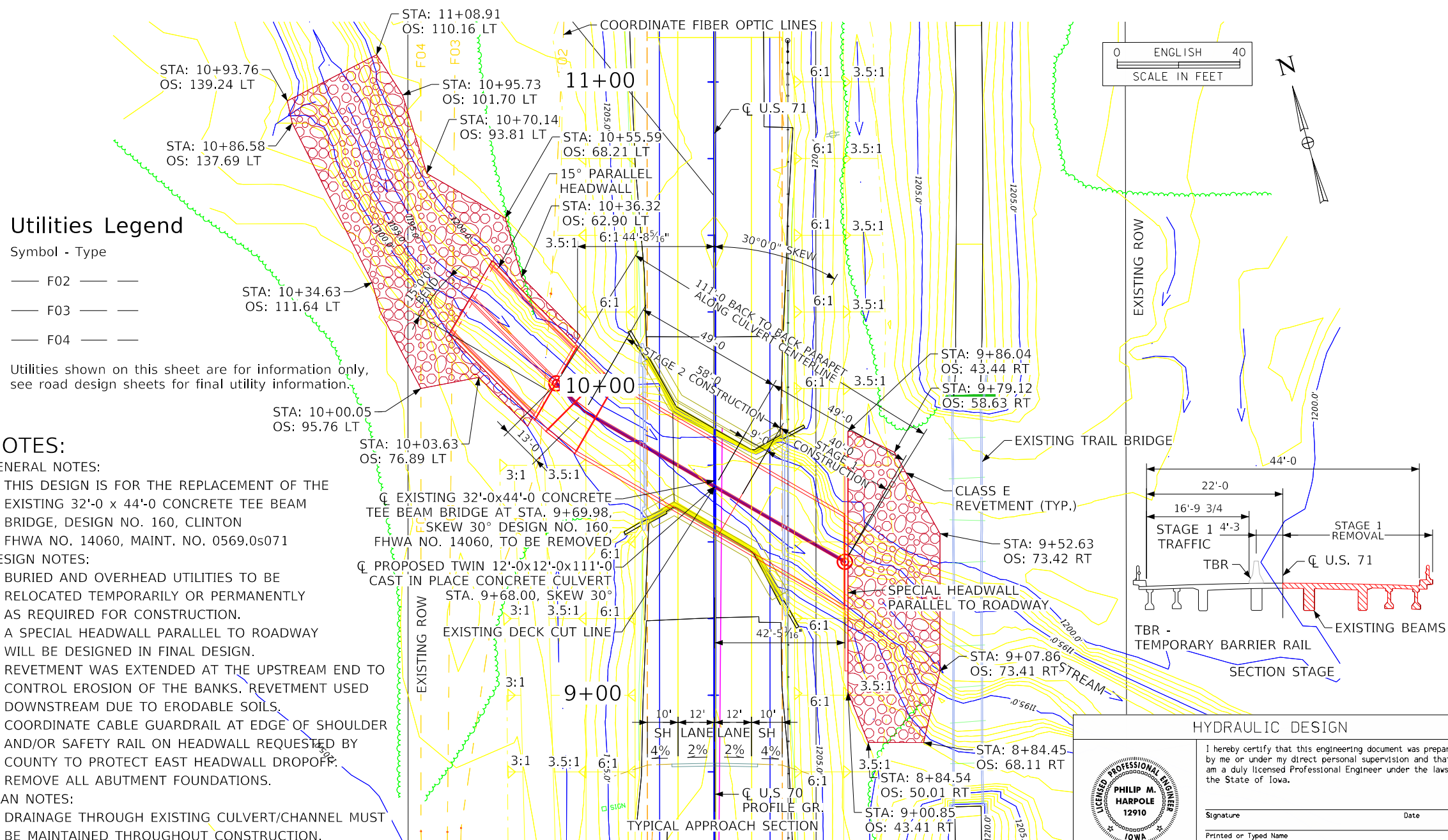




Control Point: Y=7259155.071, X=17415201, Z=1214.0423, CP 1/2" IR CONC MON



LONGITUDINAL SECTION ALONG CULVERT



NOTES:

GENERAL NOTES:

1. THIS DESIGN IS FOR THE REPLACEMENT OF THE
EXISTING 32'-0" x 44'-0" CONCRETE TEE BEAM
BRIDGE, DESIGN NO. 160, CLINTON
FHWA NO. 14060, MAINT. NO. 0569.0s071

DESIGN NOTES:

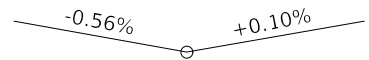
1. BURIED AND OVERHEAD UTILITIES TO BE RELOCATED TEMPORARILY OR PERMANENTLY AS REQUIRED FOR CONSTRUCTION.
2. A SPECIAL HEADWALL PARALLEL TO ROADWAY WILL BE DESIGNED IN FINAL DESIGN.
3. REVETMENT WAS EXTENDED AT THE UPSTREAM END TO CONTROL EROSION OF THE BANKS. REVETMENT USED DOWNSTREAM DUE TO ERODABLE SOILS.

4. COORDINATE CABLE GUARDRAIL AT EDGE OF SHOULDER AND/OR SAFETY RAIL ON HEADWALL REQUESTED BY COUNTY TO PROTECT EAST HEADWALL DROPOFF.

5. REMOVE ALL ABUTMENT FOUNDATIONS.

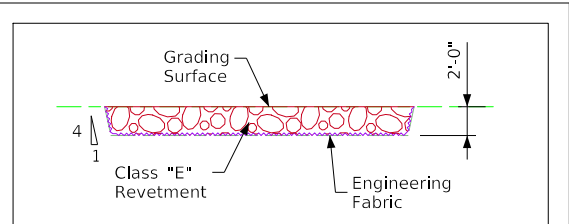
PLAN NOTES:

1. DRAINAGE THROUGH EXISTING CULVERT/CHANNEL MUST BE MAINTAINED THROUGHOUT CONSTRUCTION.
2. FLOW LINE OF CULVERT HAS BEEN SET 1 FOOT BELOW STREAMBED.
3. SAFETY RAIL ON EAST HEADWALL.



VPI Sta. = 9+75.00 LVC = 200'
VPI Elev. = 1208.58

Proposed Profile
Grade U.S. 71



Typical Channel Protection

Estimated Revetment Quantities Included With Road Plans

Location	Revetment Class "E" (Ton)	Engineering Fabric (SY)	CL. 10 Channel Excavation (CY)
Inlet	456	518	267
Outlet	315	348	197
Totals	771	866	464

Excavation quantity calculated from grading surface.
Quantities shown for information only. See Road Sheets.

Hydraulic Data

Drainage Area = 1.62 Sq. Mi.
Stream Slope = 71.4 Ft./Mi.

Q₅₀ = 1,690 CFS
HW Elev. = 1204.03

Q₁₀₀ = 2,060 CFS
HW Elev. = 1205.29

Q₅₀₀ = 2,930 CFS
HW Elev. = 1208.60

Roadway Overtop
Sta. 10+45.00
Elev. 1208.66

Location

U.S. 71 over Stream
T-78N R-36W
Section 36
Oakfield Township
Audubon County
FHWA No.
Bridge Maint. No. 0569.0s071
Latitude 41.507244°
Longitude -94.943128°

Traffic Estimate

2026	AADT	<u>2,500</u>	V.P.D.
2046	AADT	<u>2,600</u>	V.P.D.
2046	DHV	<u>270</u>	V.P.H.
Trucks		<u>18</u>	%
Total			
Design	ESALs	<u>??,???</u>	

Design For 30° Skew L.A.

TWIN 12'-0x12'-0x111'-0 CAST
IN PLACE CONCRETE CULVERT

SITUATION PLAN

STA. 9+68.00 (U.S. 71) SEPTEMBER 2023

Audubon County

IOWA DEPARTMENT OF TRANSPORTATION
 Design No. ##### Design Sheet No. 001 of 001 FHWA/Asset #####

	HYDRAULIC 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 _____ Date _____
	Printed or Typed Name _____
	My license renewal date is December 31, 2023

Pages or sheets covered by this seal: V.1

CROSS SECTION VIEW COLOR LEGEND			
Design Color No.	Feature	Design Color No.	Feature
Aggregate		Structural	
(64)	Choke Stone	(112)	Noise Wall
(42)	Engineering Fabric	(112)	Noise Wall Footing
(8)	Flooded Backfill	(112)	Retaining Wall Back
(92)	Macadam Stone	(112)	Retaining Wall Back Excavate
(20)	Modified	(112)	Retaining Wall Face
(12)	Plowing Shaping	(112)	Retaining Wall Front Excavate
(14)	Porous Backfill	(112)	Retaining Wall Front Footing
(8)	Revetment Class A	(112)	Retaining Wall MSE Gutter
(6)	Revetment Class B	(112)	Retaining Wall Reinforced Earth
(62)	Revetment Class C	Grading	
(188)	Revetment Class D	(8)	Behind Curb Cut
(28)	Revetment Class E	(6)	Granular
(12)	Shoulder Special Backfill	(13)	Granular Back Fill
(12)	Special Backfill	(48)	Rock Undercut
(20)	Subbase	(8)	Shoulder Earth Fill
(20)	Subbase Lower	(2)	Side Slopes
(20)	Subbase Upper	(226)	Side Slopes Dressing
(118)	Subgrade Treatment	Substrata	
Asphalt		(128)	Boulder Substrata
(207)	HMA Base Course	(48)	Broken Weathered Substrata
(207)	HMA Interim Course	(3)	Core Out Substrata
(207)	HMA Surface Course	(203)	Existing Pavement Substrata
Concrete		(6)	Loam Substrata
(0)	Barrier Concrete	(80)	Rock Substrata
(0)	Barrier Concrete Footing	(4)	Select Sand Substrata
(0)	Curb Gutter	(3)	Shale Substrata
(48)	Flowable Mortar	(10)	Topsoil Substrata
(0)	Median Concrete	Unsuitable / Waste	
(0)	PCC Pavement	(3)	Unsuitable Type A
(0)	Sidewalk	(13)	Unsuitable Type B
Shoulder		(11)	Unsuitable Type C
(209)	Shoulder HMA	(3)	Waste
(0)	Shoulder PCC		
(6)	Shoulder Granular		
Existing			
(0)	Existing Pavement		

NOTES:

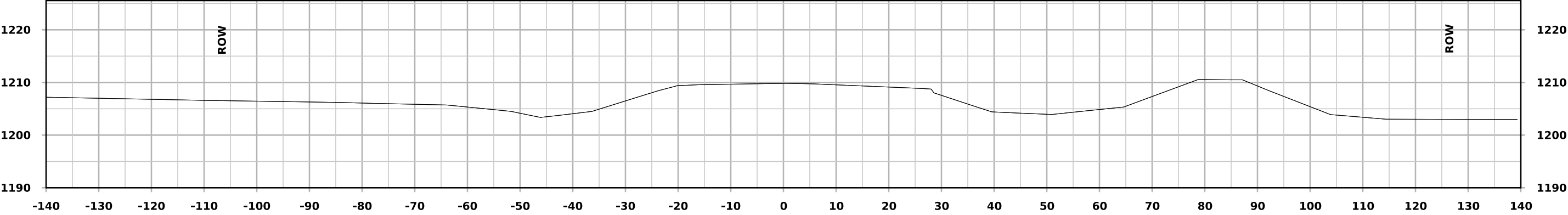
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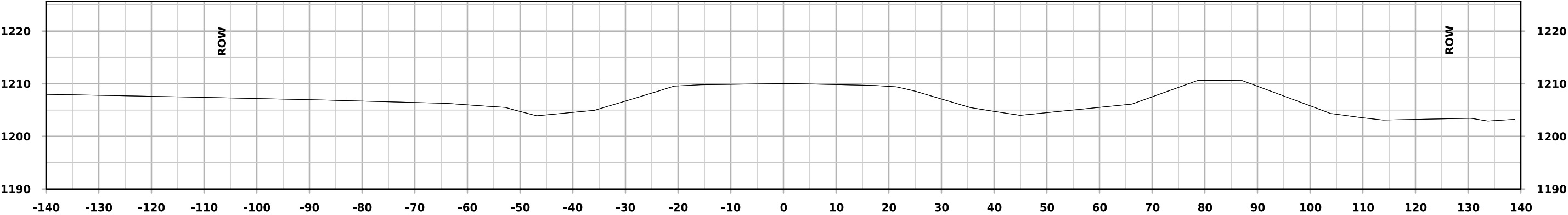
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CROSS SECTIONS
LEGEND AND INFORMATION SHEET

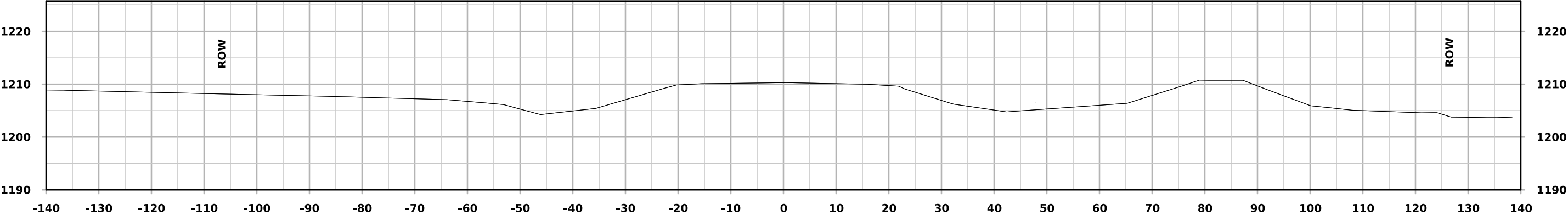
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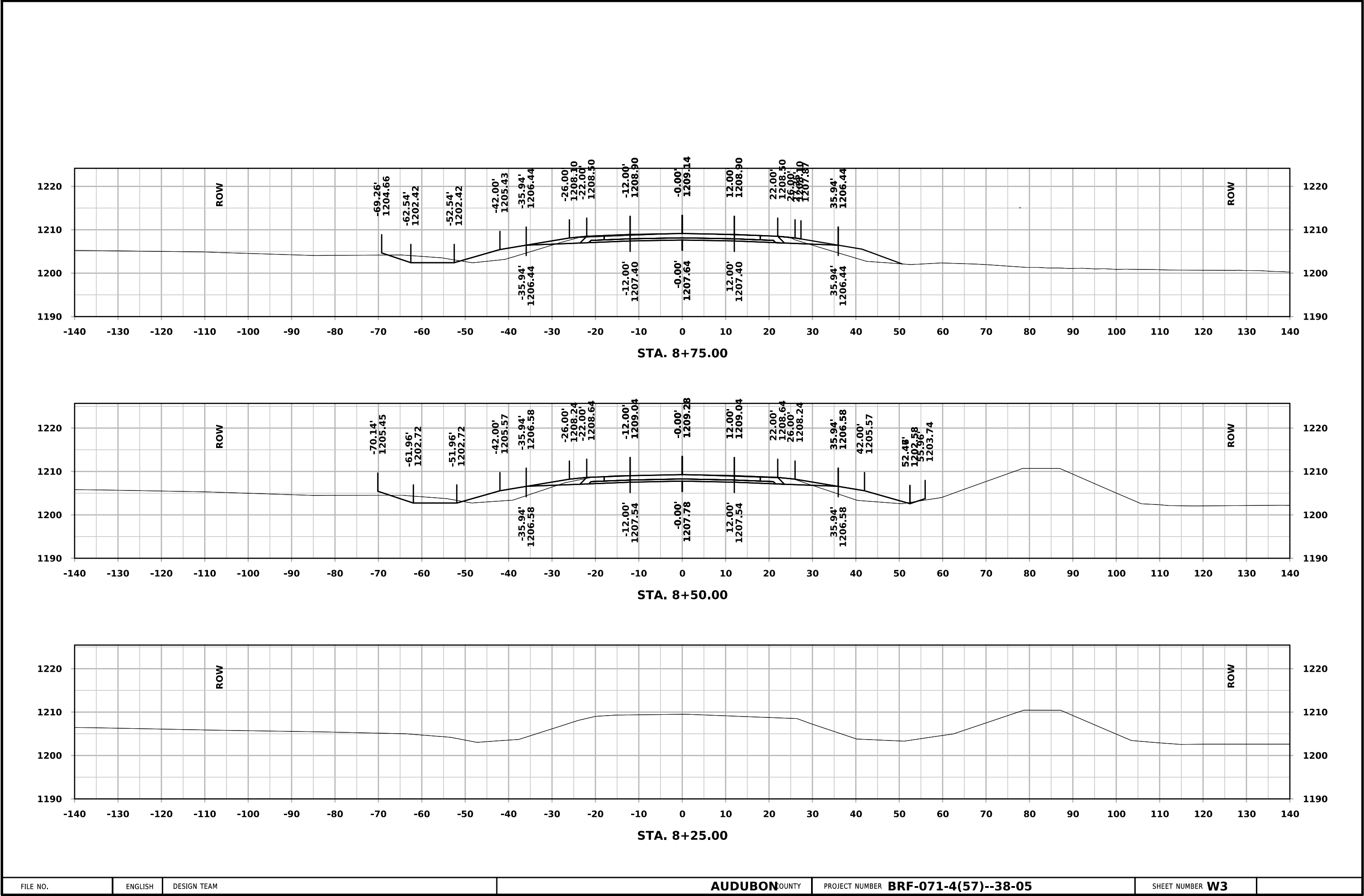
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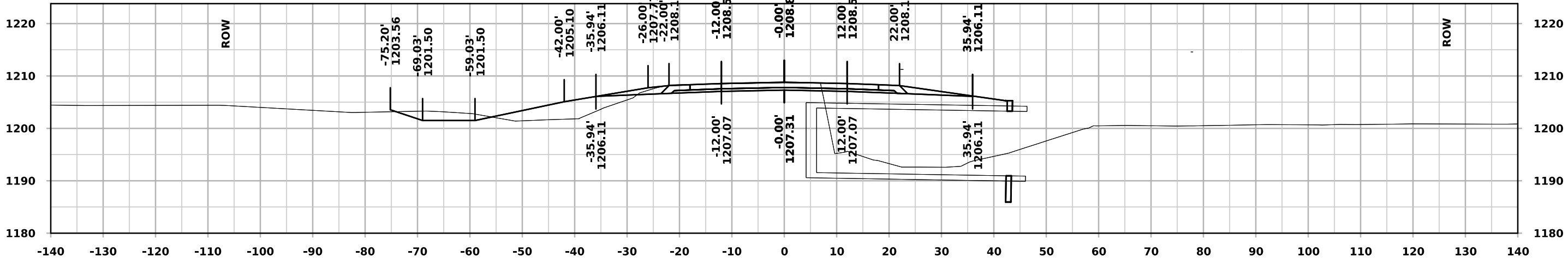


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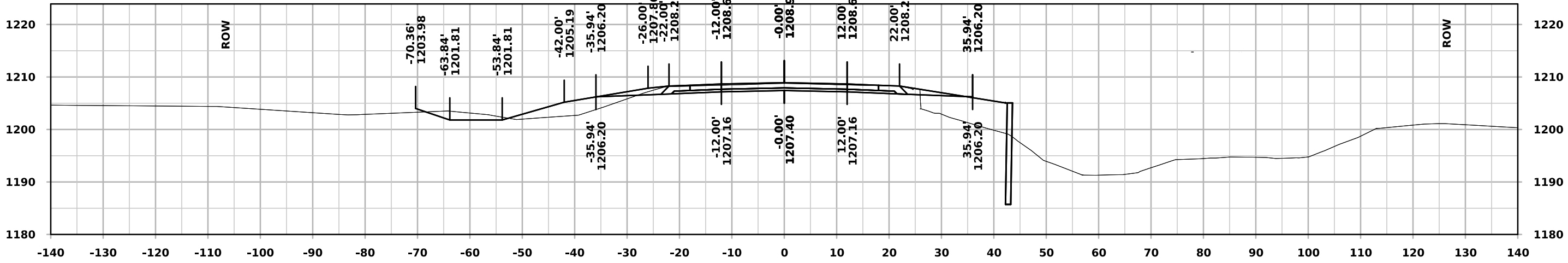


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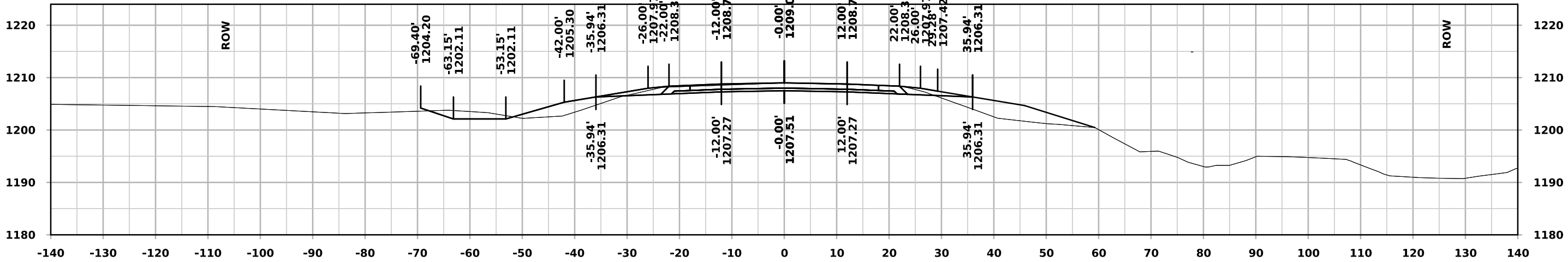




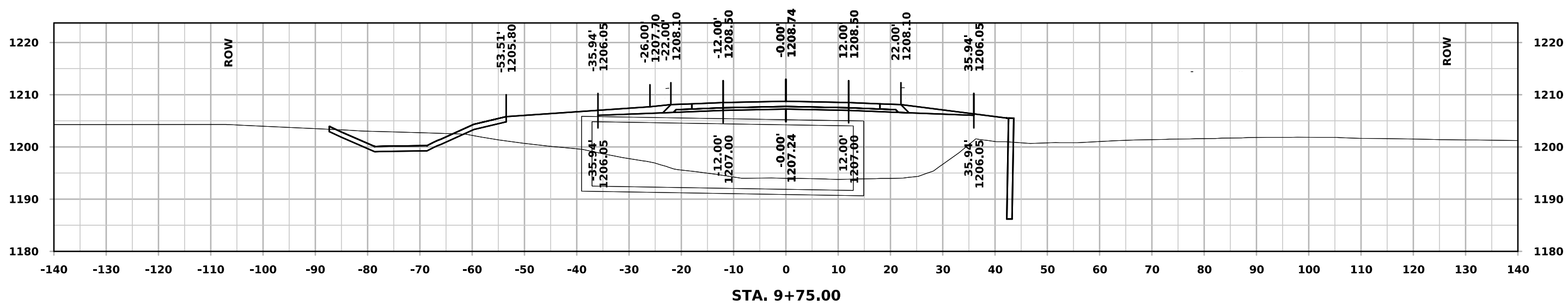
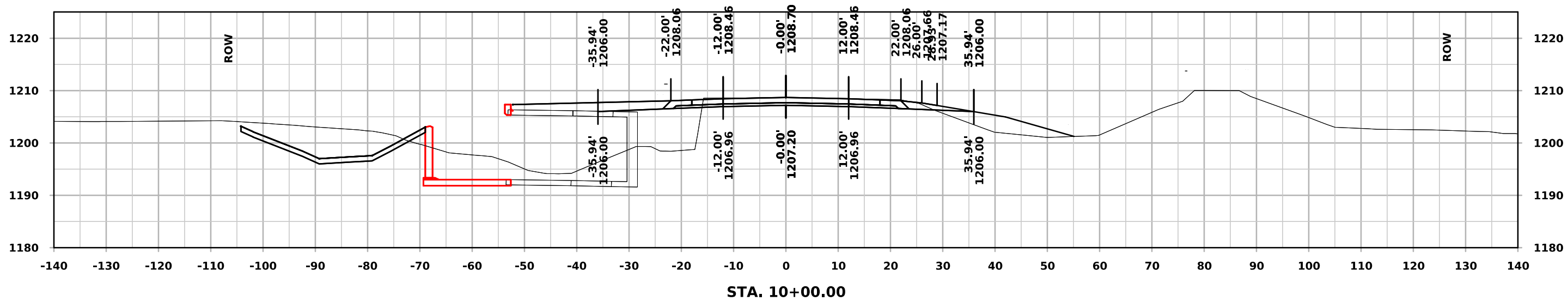
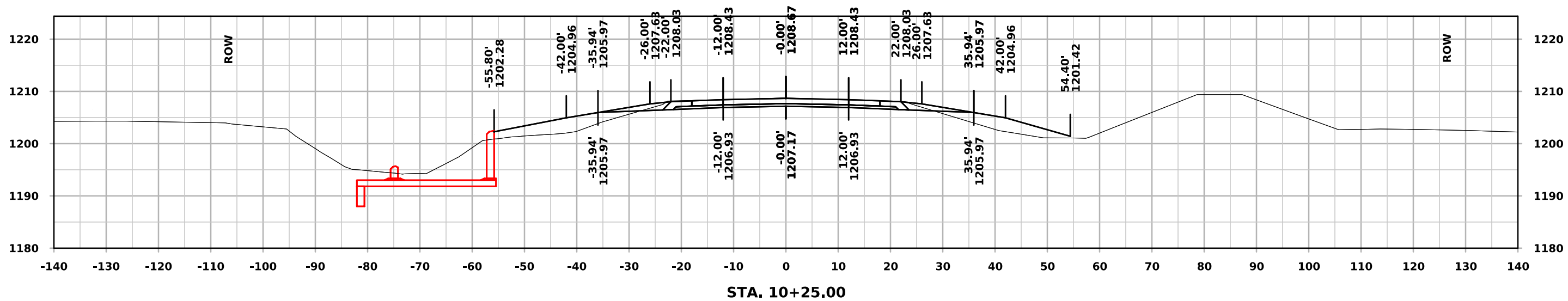
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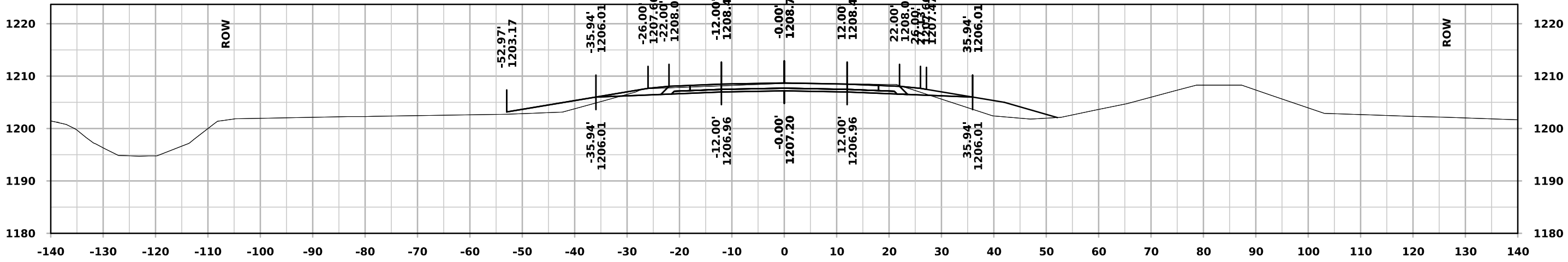


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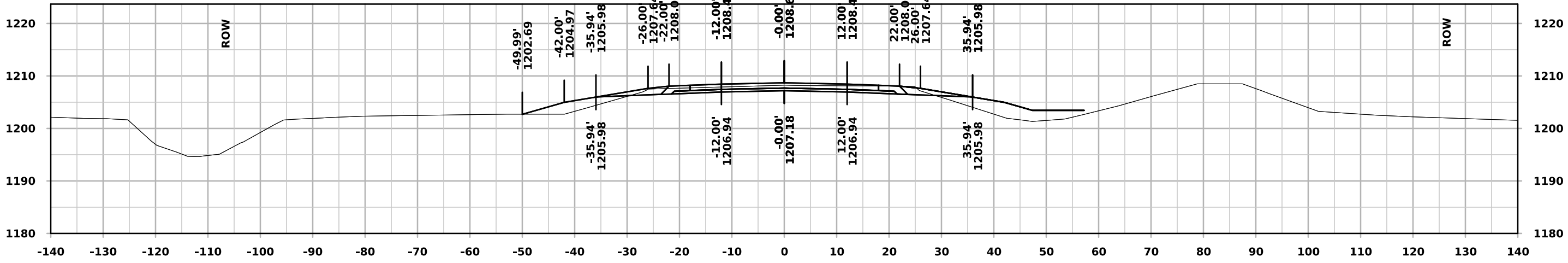


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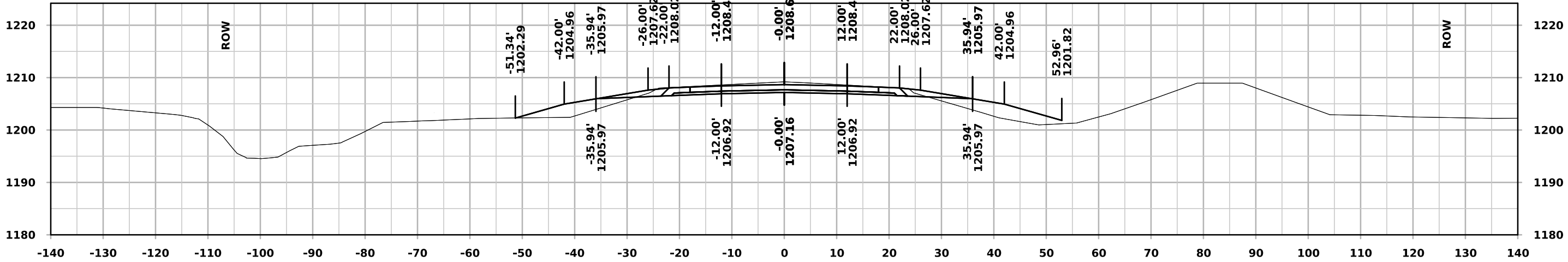




STA. 11+00.00



STA. 10+75.00



STA. 10+50.00

