

## IOWA DEPARTMENT OF TRANSPORTATION

**TO OFFICE:** District #2 **DATE:** September 8, 2020  
**ATTENTION:** Jon Ranney, District 2 Engineer **REF.:** Wright County  
Project #BRFN-069-7(42)--39-99  
**FROM:** Cindy Spencer, P.E. PIN: 18-99-069-010  
**OFFICE:** Snyder & Associates, Inc.  
**SUBJECT:** Field Exam Review (D-2)

A field exam meeting was held on-site on Thursday, September 3, 2020, at 1:30 PM. The meeting was attended by the following people:

- Jacob Page, District 2
- Jason Ruter, Mason City RCE
- Cindy Spencer, Snyder & Associates, Inc.
- Chris Criswell, Shuck-Britson

This project involves replacement of the bridge over Drainage Ditch 5, approximately 3.7 miles south of Iowa 3, with a 12' x 10' x 108' RCB. The roadway through the project area will have two 12 foot lanes and 8 foot granular shoulders. At the proposed structure, the foreslopes will be graded per standard detail 4311, with a clear zone of 30 feet. The existing bridge deck and approaches will be overlaid with 3 inches of asphalt. The existing bridge deck is wider than the approach roadway plus shoulder width; we looked into cutting off the excess bridge width, but the beam arrangement makes it so that's not possible. The project design calls for overlay of the bridge deck only to the roadway plus shoulder width.

U.S. 69 is a service level "C" roadway. The 2015 ADT is estimated to be 1,800 vpd with 16% trucks. The 2043 ADT is estimated to 2,000 vpd with 17% trucks.

U.S. 69 will remain open to traffic during construction. Lane closures will be necessary for overlay of the roadway and removal of existing bridge rails.

ROW will be required for ditch grading to accommodate the proposed structure and for rip rap placement. Ditch letdown pipes on the east side of the road will be removed with this project, and will not be replaced.

Access control will not be required for this project.

Upon visit to the project site, it was noted that a significant portion of a previous structure remained in place under the current bridge, including concrete, steel, and wood piling. This will need to be removed prior to construction of the proposed box culvert. There was some question as to whether there was enough room under the existing structure to allow for access of suitably sized equipment to handle the removals. The existing bridge may need to be removed as well. Design changes reflecting removal of the existing bridge will be shown in the D3 plan submittal.

Nesting birds were observed at the existing bridge.

Existing utilities along the west side of the roadway will need to be relocated to accommodate the new culvert, including gas, fiber optic, telephone, and overhead electric lines.

The project D3 submittal date is October 23, 2020, and the D5 date is February 12, 2021.

No plan sheets are included in this submittal; however, plan sheets may be viewed on projectwise at the following link: [D2](#)

This project is currently scheduled for a January, 2023 letting. The estimated cost of construction shown in the final concept was \$443,440. The current cost estimate is \$452,779.

cc:	B. Hofer	S. J. Gent	M. J. Kennerly
	W.A. Sorenson	E. C. Wright	T. Nicholson
	K. D. Nicholson	D. Newell	K. K. Patel
	K. Brink	J. E. Laaser-Webb	T. Crouch
	V. A. Brewer	S. Godbold	N. L. Cuva
	M. A. Swenson	C. B. Brakke	D. E. Sprengeler
	J.S. Nelson	D. A. Popp	A. Shell
	M. Nop	D. R. Claman	J. McCollough
	S. P. Anderson	J. Garton	D. Stokes
	E. D. Gansen	J. Vortherms	M. K. Solberg
	S. J. Megivern	H. Beach	C. Burke
	D. T. Ta	J. E. Bartholomew	S. Schroder
		J. Page	J. Ruter
	N. Humpal	Resident Const. Engr.	District Utility Coordinator
	R. Gelhaus	Local FHWA	Others on Field Exam

RCB CULVERT REPLACEMENT - SINGLE BOX  
BRFN-069-7(42)--39-99  
01-18-2023

WRIGHT COUNTY  
DESIGN NO. 0123

**LEGEND**

INTERSTATE HIGHWAY	
PRIMARY HIGHWAY-DIVIDED	
PRIMARY HIGHWAY	
PORTLAND CEMENT CONCRETE ROAD	
ASPHALT ROAD	
BITUMINOUS ROAD	
GRAVEL ROAD	
EARTHEN ROAD	
INTERSTATE HIGHWAY	
UNITED STATES HIGHWAY	
STATE HIGHWAY	
COUNTY HIGHWAY	
RAILROAD	
PIPELINE	
AIRPORT	
HYDROLOGY	
BRIDGE	
STATE BOUNDARY	
COUNTY BOUNDARY	
CORPORATE BOUNDARY	
TOWNSHIP LINE	
SECTION LINE	
ROAD NAMES	
UNINCORPORATED PLACE	



Highway Division

PLANS OF PROPOSED IMPROVEMENTS ON THE

**PRIMARY ROAD SYSTEM**

**WRIGHT COUNTY**

**RCB CULVERT REPLACEMENT - SINGLE BOX**

*U.S. 69 OVER DRAINAGE DITCH 5*

THE IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2015, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

**ENGLISH STANDARD CULVERT PLANS**

STANDARD	ISSUED	REVISED
PRCB G1-13	01-13	07-16
PRCB G2-13	01-13	07-16
PRCB I2-13	01-13	
PES 1-13-T1	01-13	07-16
PES 1-13-T3	01-13	07-16
PES 3-13-T3	01-13	07-16
PES 4-13	01-13	
PEP 1-13	01-13	12-15

TOTAL SHEETS	
?	
PROJECT NUMBER	
BRFN-069-7(42)--39-99	
R.O.W. PROJECT NUMBER	
STPN-069-7(43)--2J-99	
PROJECT IDENTIFICATION NUMBER	
18-99-069-010	

INDEX OF SHEETS	
NO.	DESCRIPTION
I	TITLE SHEET
V.1-V.2	DESIGN NO. 0123
B.1-B.2	TYPICAL SECTION AND DETAILS
C.1	TABULATIONS
D.1-D.2	U.S. 69 PLAN AND PROFILE
G.1-G.3	SURVEY INFORMATION
J.1-J.2	TRAFFIC CONTROL
W.1-W.2	CROSS SECTION

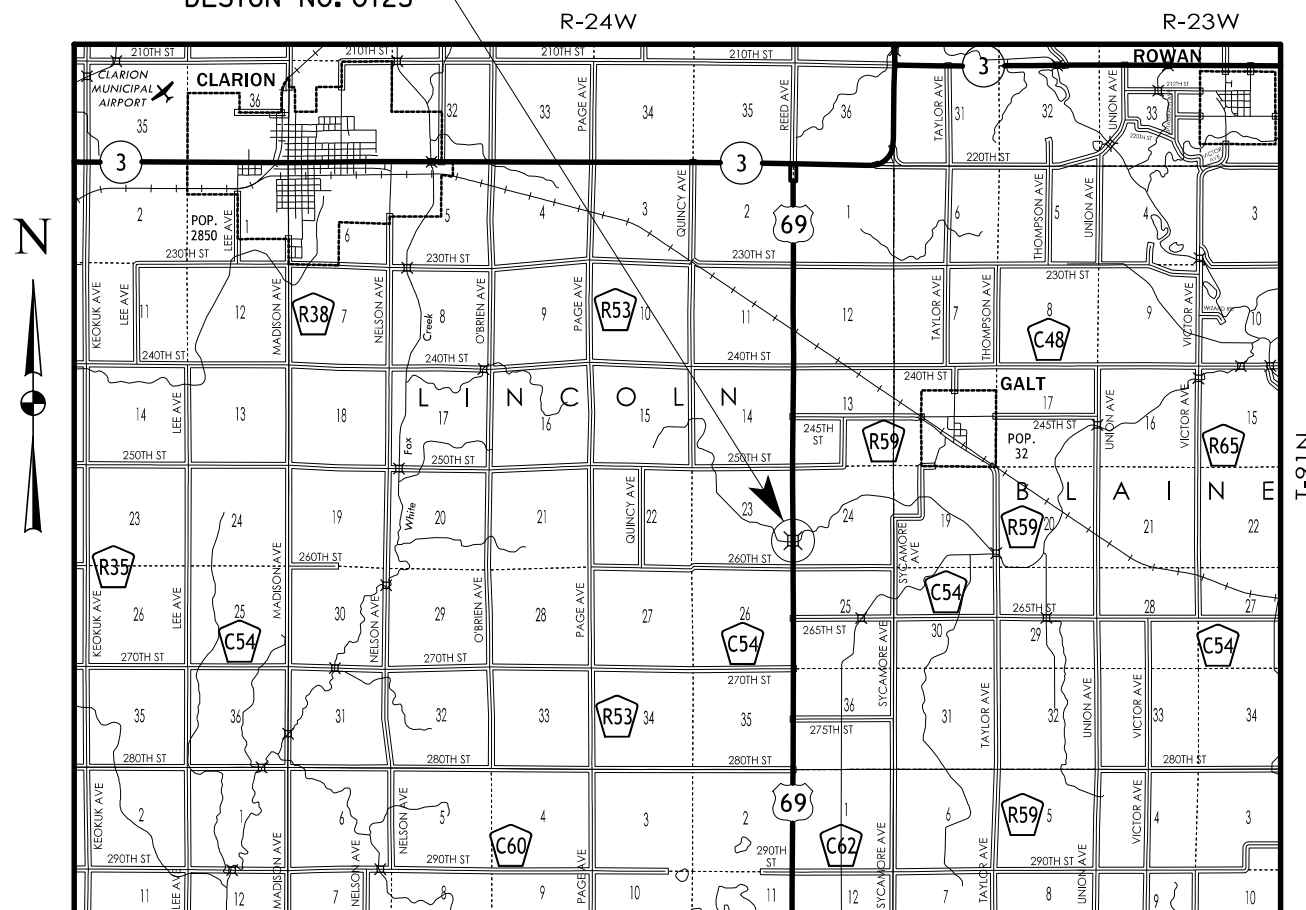
REVISIONS



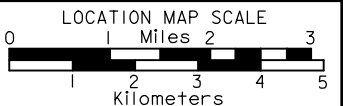
1-800-292-8989  
www.iowaonecall.com

REVISIONS TO THIS DESIGN PLAN AND/OR PROJECT SPECIFICATIONS SHOULD BE SUBMITTED BY \_\_\_\_\_

DESIGN NO. 0123



LOCATION MAP



**STANDARD ROAD PLANS**

STANDARD ROAD PLANS ARE LISTED ON SHEET NUMBER \_\_\_\_\_

**DESIGN DATA RURAL**

2023 AADT	1900	V.P.D.
2043 AADT	2000	V.P.D.
2043 DHV	210	V.P.H.
TRUCKS	17	%
Total Design ESALs	?	

**INDEX OF SEALS**

SHEET NO.	NAME	TYPE
I	CHRISTOPHER J. CRISWELL	STRUCTURAL DESIGN
I	STEVEN A. KLOCKE	HYDRAULIC DESIGN
B.1	CINDY A. SPENCER	ROADWAY DESIGN
P/C CULVERT STANDARDS	NORMAN L. McDONALD	STRUCTURAL DESIGN

**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.  
**Steven A. Klocke**  
 P16312  
 Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
 Printed or Typed Name: Steven A. Klocke  
 License renewal date is December 31, 2021  
 Pages or sheets covered by this seal: V.1 & V.2 (HYDRAULIC DATA, CHANNEL GRADING AND REVETMENT)

**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.  
**Christopher J. Criswell**  
 P14447  
 Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
 Printed or Typed Name: Christopher J. Criswell  
 License renewal date is December 31, 2021  
 Pages or sheets covered by this seal: SHEETS ? THRU ? OF ?

PROJECT DIRECTORY NAME: 9906901018

CONTROL POINT 1: NORTHING 8653401.753 EASTING 14821887.920  
 ELEVATION 1224.354 DESCRIPTION: BM DRILL HOLE IN BALL ROW RAIL  
 135 FT EAST OF US HWY 69 AND 33 FT NORTH OF 260TH ST

### EXISTING PROFILE GRADE ON U.S. HIGHWAY 69

U.A.C.

#### NOTES:

FOR DETAILS OF RESURFACING AND EXISTING PROFILE GRADE, SEE ROADWAY PLANS.

\* CONSTRUCT REINFORCED CONCRETE BOX CULVERT UNDER EXISTING BRIDGE AND BURY WITH FLOODABLE BACKFILL AND FLOWABLE MORTAR. VENT HOLES WILL BE DRILLED IN THE EXISTING DECK TO FACILITATE MORTAR PLACEMENT. REMOVE EXISTING BRIDGE RAIL AS NEEDED TO PLACE ROADWAY PAVEMENT. SEE ROADWAY SHEET B.2 FOR ADDITIONAL INFORMATION.

GROUND SHAPING AND CHANNEL ADJUSTMENTS FOR EXISTING C.M.P. AND R.C.P. PIPES ARE NEEDED AT THE OUTLET END OF THE CULVERT, BUT ARE NOT SHOWN FOR CLARITY.

#### HYDRAULIC DATA

DRAINAGE AREA = 4.7 SQ. MI.  
 STREAM SLOPE = 26.4 FT./MI.

DESIGN DISCHARGE,  $Q_{50}$  = 433 CFS  
 H.W. ELEVATION = 1205.37  
 UTFLOW VELOCITY = 7.29 FT/S

DISCHARGE,  $Q_{100}$  = 514 CFS  
 H.W. ELEVATION = 1205.83  
 UTFLOW VELOCITY = 7.99 FT/S

#### LOCATION

U.S. 69 OVER DRAINAGE DITCH 5  
 3.7 MILES SOUTH OF IOWA 3  
 T-91N R-24W  
 SECTION 23 & 24  
 LINCOLN TOWNSHIP  
 WRIGHT COUNTY  
 LATITUDE 42.677385°  
 LONGITUDE -93.636931°

#### UTILITY LEGEND

- FO-- FIBER OPTIC
- T-- TELEPHONE
- E-- OVERHEAD ELECTRIC
- G--HP-- GAS LINE
- POWER POLE
- ⊠ POWER POLE

UTILITIES SHOWN ON THIS SHEET ARE FOR INFORMATION ONLY, SEE ROAD DESIGN SHEETS FOR FINAL UTILITY INFORMATION.

PRELIMINARY

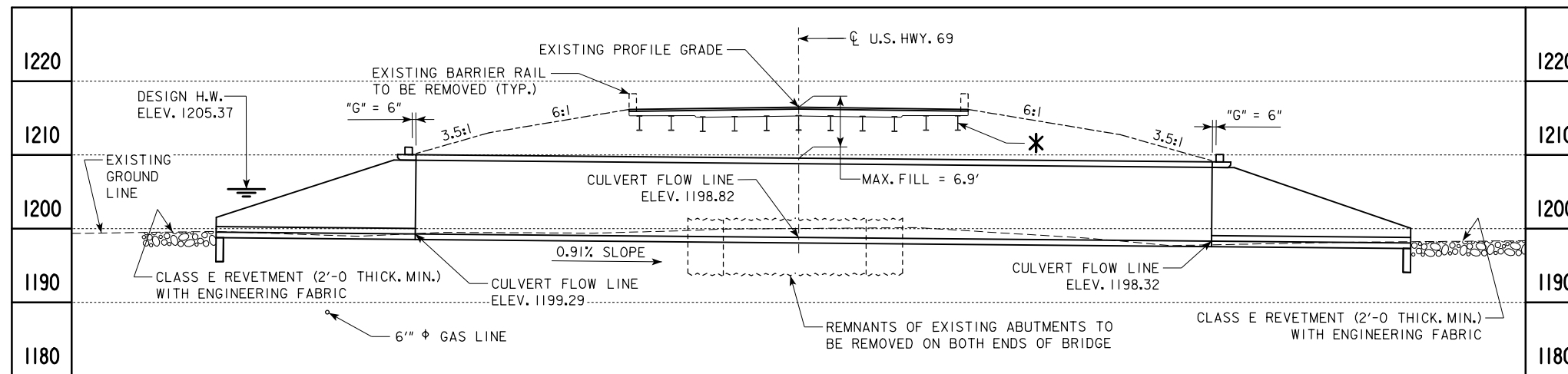
DESIGN FOR 0° SKEW

## SINGLE 12'-0" x 10'-0" x 108'-0" PRECAST R. C. B. CULVERT SITUATION PLAN

STA. 436+62.00 (U.S. 69) AUGUST, 2020

WRIGHT COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION  
 DESIGN SHEET NO. 1 OF 2 FILE NO. 31713 DESIGN NO. 0123

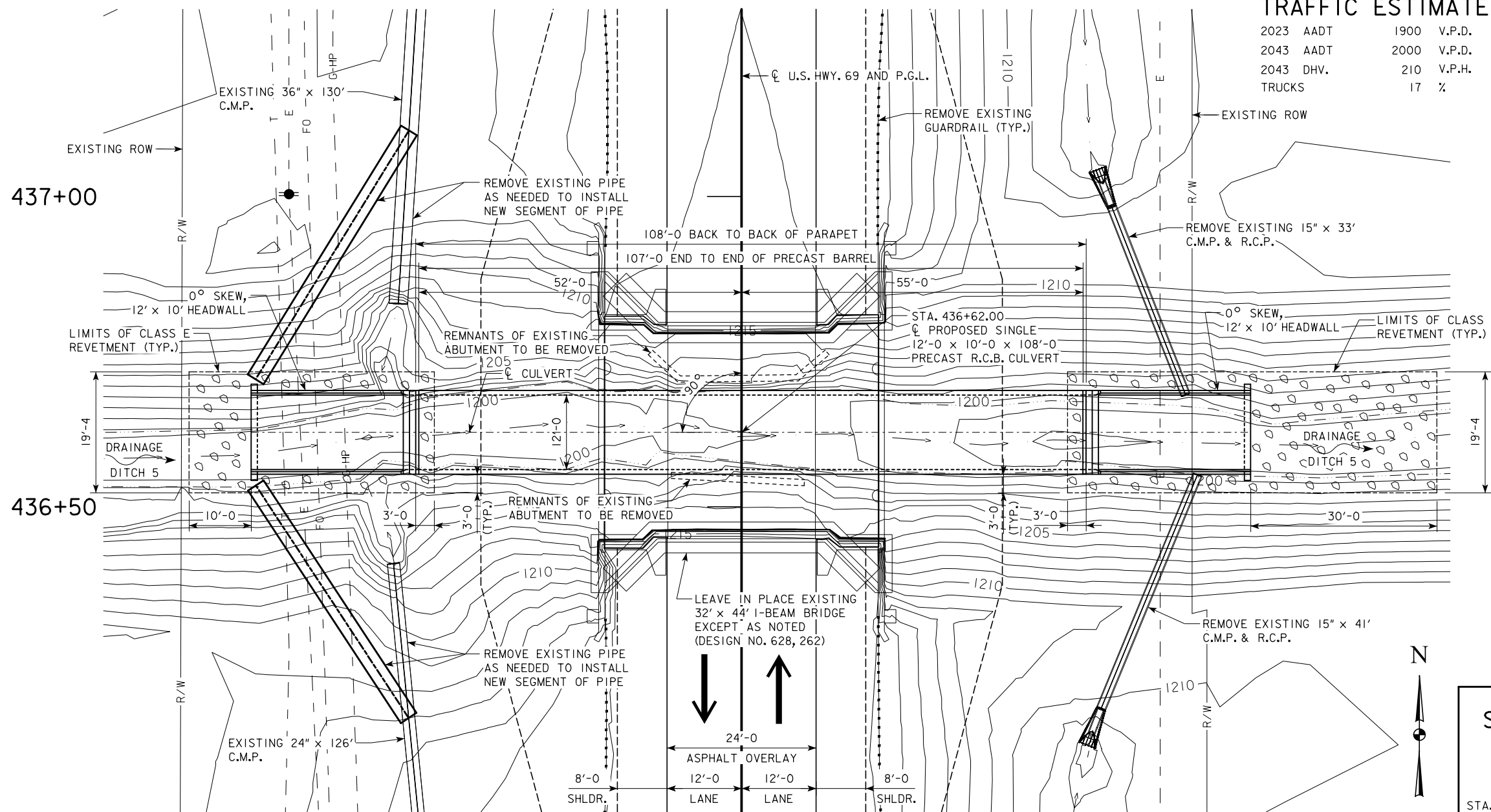


### LONGITUDINAL SECTION ALONG $\bar{C}$ CULVERT

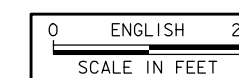
DESIGN FILL HEIGHT = 7'

#### TRAFFIC ESTIMATE

2023 AADT	1900	V.P.D.
2043 AADT	2000	V.P.D.
2043 DHV	210	V.P.H.
TRUCKS	17	%

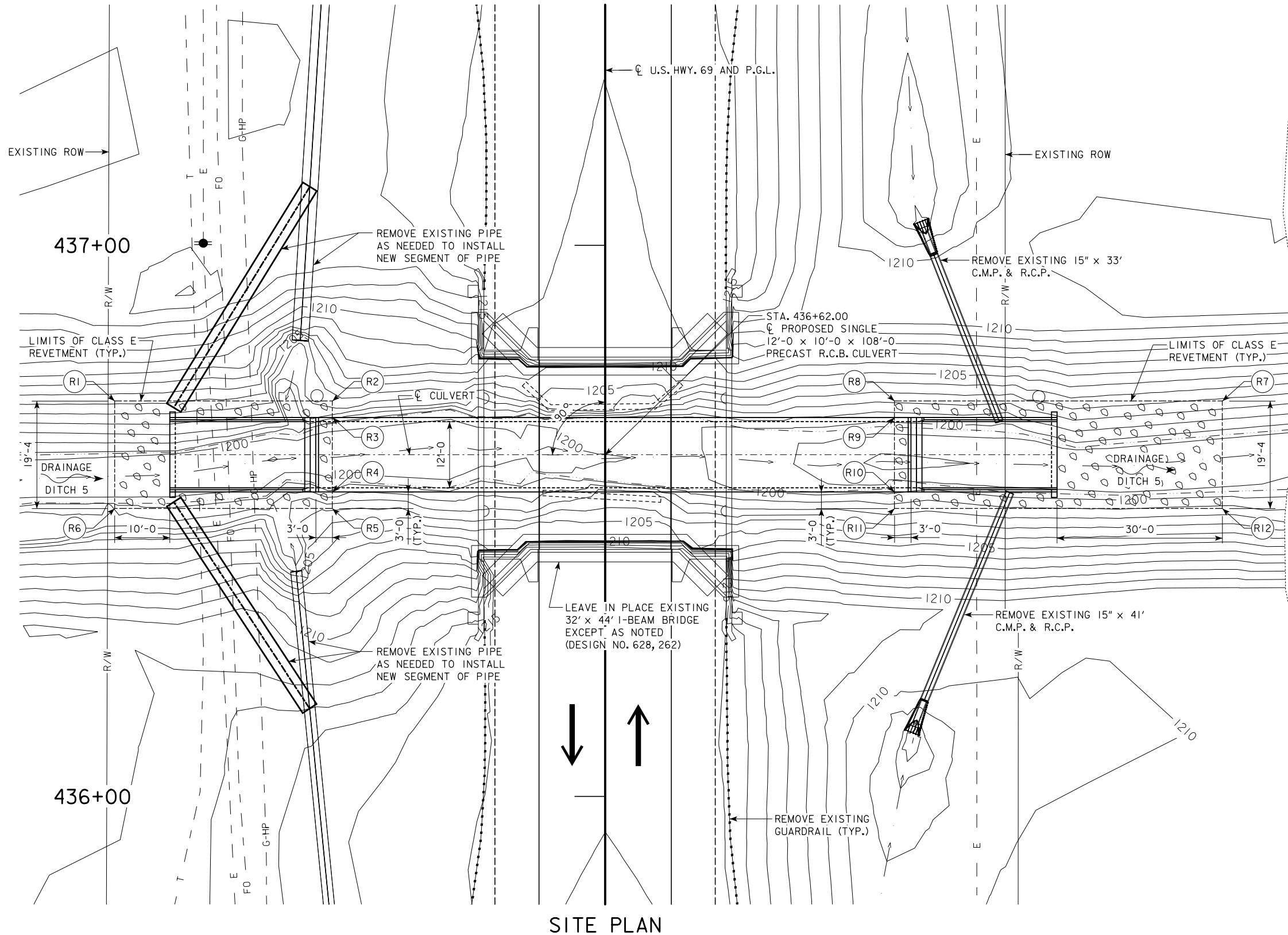


### SITUATION PLAN



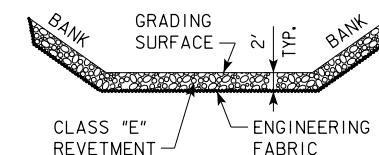
GENERAL NOTE:  
THIS DESIGN IS FOR THE REPLACEMENT OF THE EXISTING  
32' x 44' STEEL I-BEAM BRIDGE, WRIGHT DESIGN NO. 628,  
FHWA NO. 54260, MAINTENANCE NO. 9962. ISO69.

CONTROL POINT 1: NORTHING 8653401.753 EASTING 14821887.920  
ELEVATION 1224.354 DESCRIPTION: BM DRILL HOLE IN BALL ROW RAIL  
135 FT EAST OF US HWY 69 AND 33 FT NORTH OF 260TH ST



TYPICAL CHANNEL PROTECTION			
ESTIMATED REVETMENT QUANTITIES INCLUDED WITH ROAD PLANS			
LOCATION	REVETMENT CL. "E" (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
INLET	XX	41	XX
OUTLET	XXX	85	XXX
TOTALS	XXX	XXX	XXX

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.  
QUANTITIES SHOWN FOR INFORMATION ONLY. SEE ROAD SHEETS.

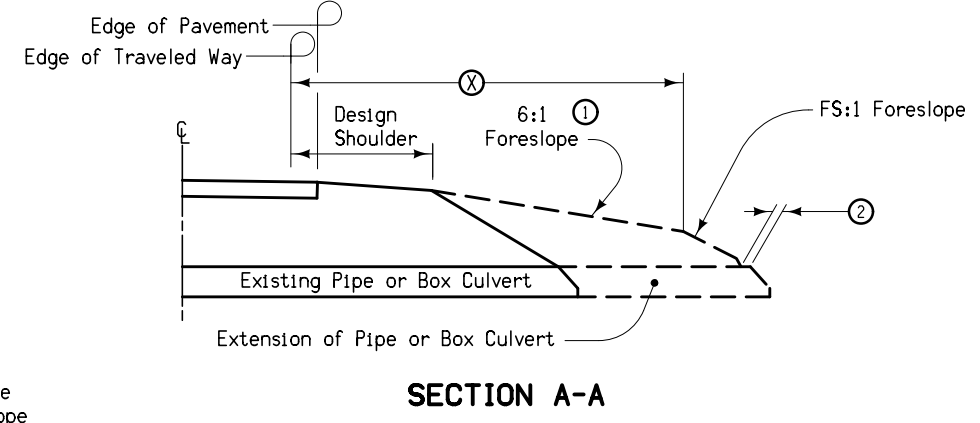
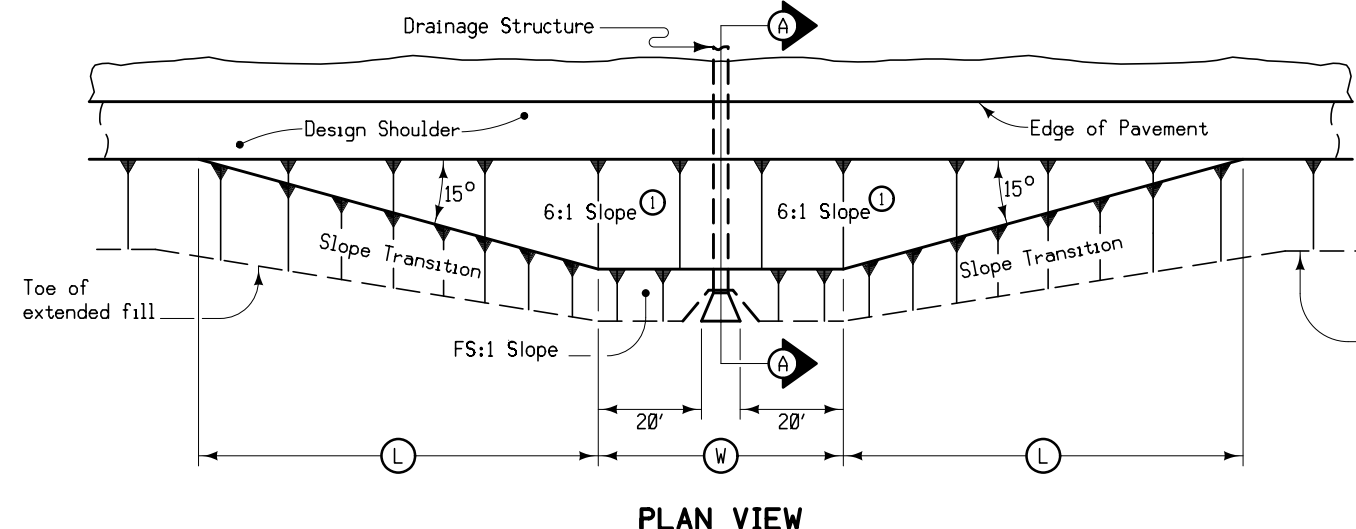


**REVETMENT LAYOUT:**

- (R1) HWY. 69 436+71.67, 89.00' LT.
- (R2) HWY. 69 436+71.67, 49.50' LT.
- (R3) HWY. 69 436+68.67, 49.50' LT.
- (R4) HWY. 69 436+55.33, 49.50' LT.
- (R5) HWY. 69 436+52.33, 49.50' LT.
- (R6) HWY. 69 436+52.33, 89.00' LT.
- (R7) HWY. 69 436+71.67, 112.00' RT.
- (R8) HWY. 69 436+71.67, 52.50' RT.
- (R9) HWY. 69 436+68.67, 52.50' RT.
- (R10) HWY. 69 436+55.33, 52.50' RT.
- (R11) HWY. 69 436+52.33, 52.50' RT.
- (R12) HWY. 69 436+52.33, 112.00' RT.

PRELIMINARY  
DESIGN FOR 0° SKEW  
**SINGLE 12'-0 x 10'-0 x 108'-0  
PRECAST R. C. B. CULVERT  
SITUATION PLAN - SITE**  
STA. 436+62.00 (U.S. 69) AUGUST, 2020  
**WRIGHT COUNTY**  
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION  
DESIGN SHEET NO. 2 OF 2 FILE NO. 31713 DESIGN NO. 0123

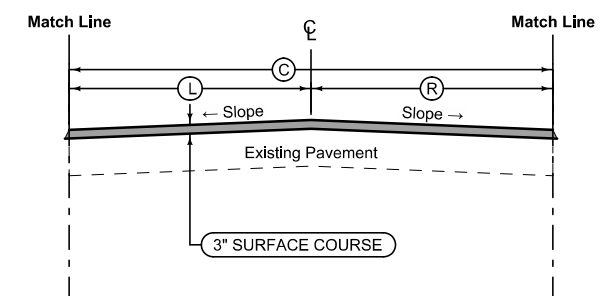




- Notes:
- At locations where an extended or newly constructed drainage structure extends beyond the normal foreslope cover, flatten the foreslope as indicated so as to cover the structure. Minimum earth cover is 6".
  - ① Slope may be flatter than 6:1.
  - ② 6" Minimum for pipe installations or to top of headwall on R.C.B.
  - Ⓜ = Pipe or R.C.B. opening width plus 20 feet each side.

STRUCTURE LOCATION		Ⓜ	Ⓛ	Ⓧ	ⓕs
STATION	SIDE	Feet	Feet	Feet	Feet
436+62.00	Both	49.3	82.1	30	3.5

**BARNROOF FORESLOPE AT DRAINAGE STRUCTURE**



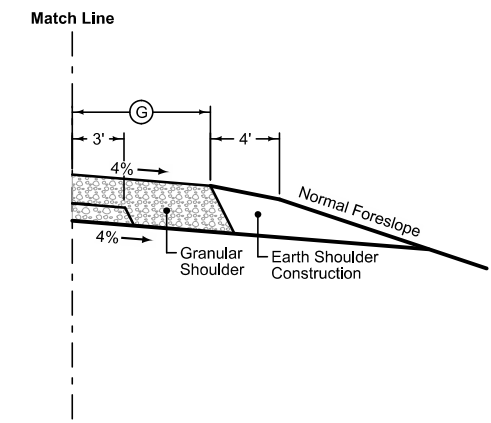
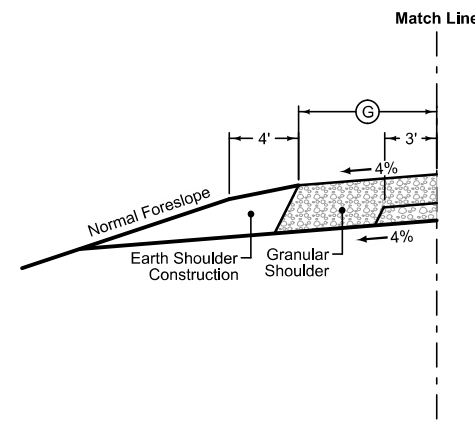
3R_Overlay_04-19-11				
STATION TO STATION		ⓐ	Ⓛ	Ⓡ
		Feet	Feet	Feet
434+95.00	436+44.60	24	12	12
436+44.60	436+79.40	40	20	20
436+79.40	438+29.00	24	12	12

See Tab 100-24 or 100-25 for pavement quantities.  
See Tab 112-9 for shoulder quantities.

**ROADWAY IDENTIFICATION**

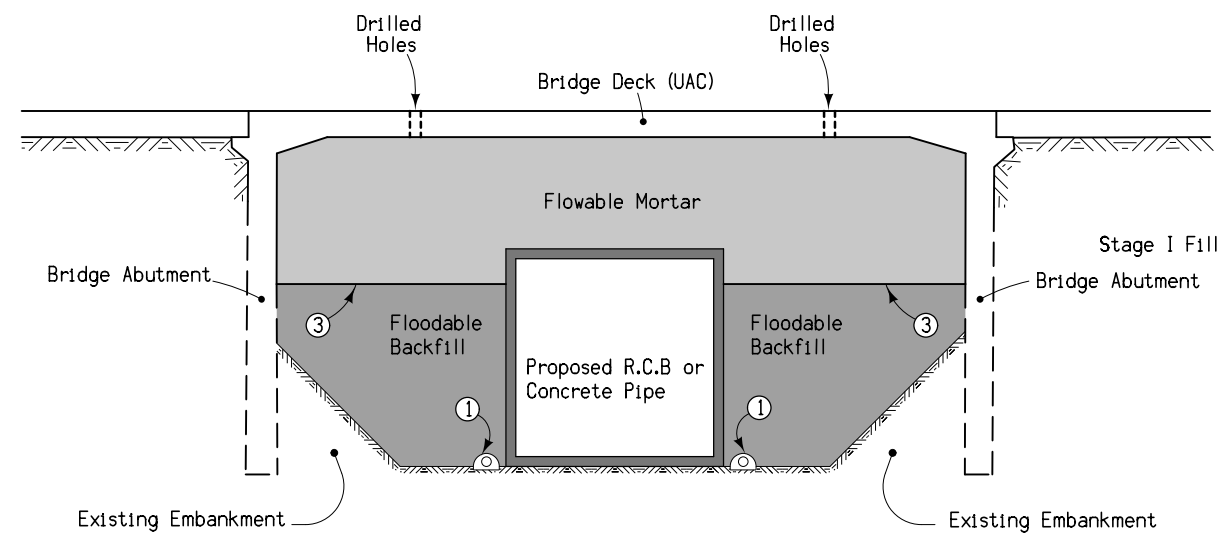
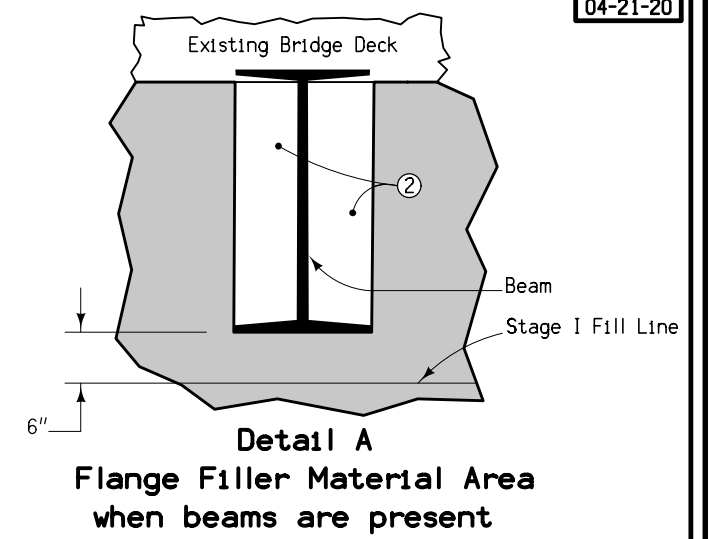
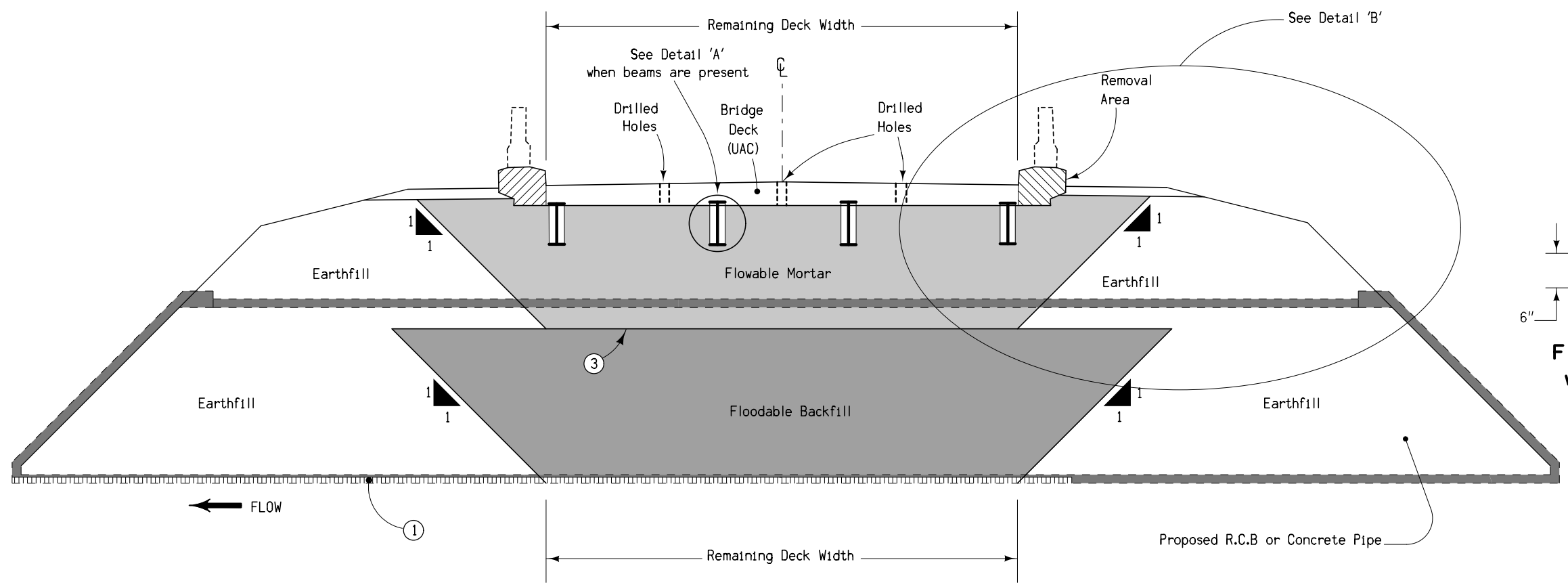
**Granular Shoulder**

2_G_SR_04-21-20		
STATION TO STATION		ⓐ
		Feet
434+95.00	436+44.60	8
436+79.40	438+29.00	8

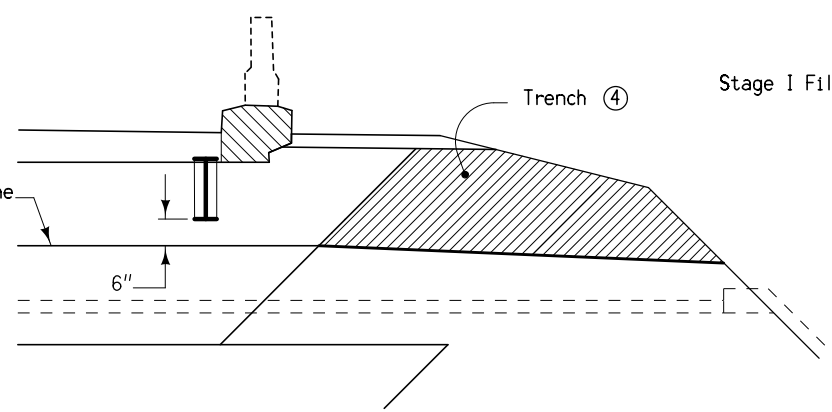


**Granular Shoulder**

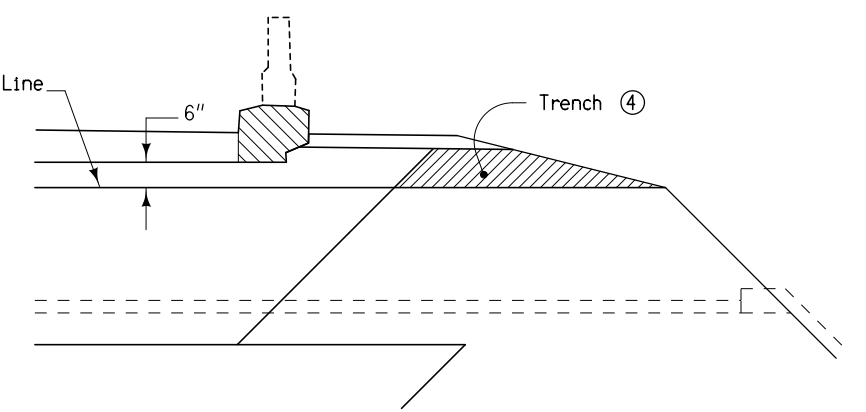
2_G_SR_04-21-20		
STATION TO STATION		ⓐ
		Feet
434+95.00	436+44.60	8
436+79.40	438+29.00	8



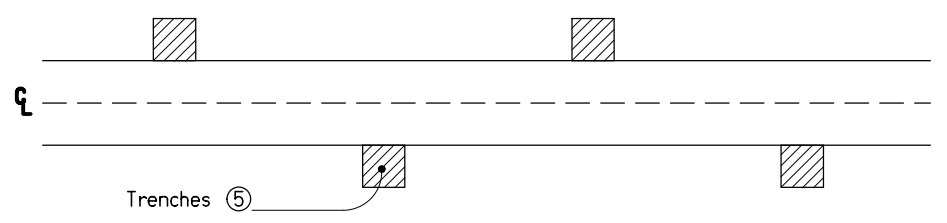
**Section along Centerline**



**Detail B (Beam Bridge)**



**Detail B (Slab Bridge)**



**Trench Layout**

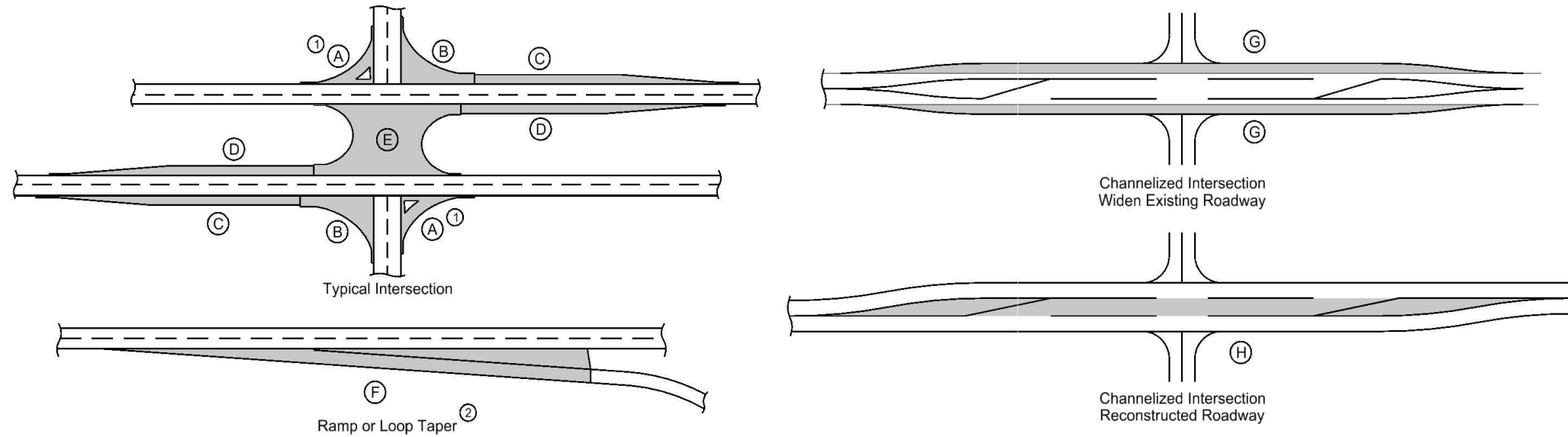
Denotes pay limits for flowable mortar

Denotes pay limits for flooded backfill

- ① 4" Subdrain at flowline elevation of culvert with 4" cover of porous backfill.
- ② Place Flange Filler Material to fill pocket area between flanges to prevent flowable mortar from building up. Flange Filler Material is incidental to flowable mortar.
- ③ Fill void with the maximum amount of Floodable Backfill possible. Distance from Floodable Backfill to bridge beams (when present) or bridge deck shall not exceed 5'.
- ④ Cut trenches in the soil plug to provide drainage for the flowable mortar. Backfill the trenches with open graded crushed stone, gravel, or recycled PCC to allow water to drain. Backfill material is incidental to flowable mortar.
- ⑤ Place trenches at 20' spacing with a minimum of two trenches on each side of the roadway.

**FILL FOR CULVERT USED  
IN BRIDGE REPLACEMENTS**

**HMA PAVEMENT**



- ① Does not include raised island area or curb. Refer to tabulation 112-4 for quantities.
- ② Refer to PV-410, PV-411, PV-412, and PV-414.
- ③ Quantity includes Pavement Header.

Calculations assume a surface course unit weight (lbs/cf) of 147, an intermediate course unit weight (lbs/cf) of 147, a base course unit weight (lbs/cf) of 145, and a special backfill unit weight (lbs/cf) of 140.

Road Identification	Direction of Travel	Location		Mainline		Area ③								Hot Mix Asphalt Pavement						Bid Items					Remarks							
		Station to Station	Width	Length	Area	A ①	B	C	D	E	F ②	G	H	Surface		Intermediate		Base		Surface	Binder			Special Backfill		Modified Subbase	Granular Subbase	Pavement Scarification				
														TONS	SY	TONS	SY	TONS	SY		TONS	TONS	TONS						TONS	CY	SY	
U.S. 69	BOTH	434+95.00	436+44.60	24.0	149.6	398.9									65.974	398.9																
U.S. 69	BOTH	436+44.60	436+79.40	40.0	34.8	154.7									25.578	154.7																
U.S. 69	BOTH	436+79.40	438+29.00	24.0	149.6	398.9									65.974	398.9																

**SHOULDERS**

- ① Lane(s) to which the shoulder is adjacent.
- ② Bid Item
- ③ Applies only for Paved Shoulders constructed on project with existing granular shoulders.
- ④ Does not include shrink.

Calculations assume a HMA unit weight (lbs/cf) of 0, a Special Backfill unit weight (lbs/cf) of 140, and a Granular Shoulder unit weight (lbs/cf) of 140.

Road Identification	Direction of Traffic	Location		Side	P Width	G Width	L Length	Class 13 Excavation	Quantities													Remarks											
		Station to Station	Hot Mix Asphalt						Binder	Paved Shoulder	Reinforced Paved Shoulder	Special Backfill				Modified Subbase	Granular Shoulder		Earth Shoulder Construction Alternates														
												TON	TON/STA	TONS	SY ②		SY ②	HMA Alternate		PCC Alternate			CY ②	TON ②	TON/STA	STA ②	HMA CY ④	PCC CY ④					
U.S. 69	NB	434+95.00	436+44.60	RT		8.0	149.6																										
U.S. 69	NB	436+79.40	438+29.00	RT		8.0	149.6																										
U.S. 69	SB	434+95.00	436+44.60	LT		8.0	149.6																										
U.S. 69	SB	436+79.40	438+29.00	LT		8.0	149.6																										

**NOTCHES AND RUNOUTS FOR RESURFACING**

Refer to PR-201 and PR-202.

- ① Bid item. Applies only to Types 'N1' and 'N3' on PR-202. Refer to 100-25 for remaining values.

Location Station	Type of Notch or Runout	S	I	DI	L	M	Pavement Scarification ①	Remarks
		IN	IN	IN	FT	IN	SY	
434+95.00	Type 'N1'	3.0	0.0		150.0	3.0	400.0	
438+29.00	Type 'N1'	3.0	0.0		150.0	3.0	400.0	



### ACCESS POINTS AND SAFETY RAMPS

Refer to Cross-Sections

Length of unclassified pipe calculated is based on using Reinforced Concrete Pipe.

- ① Refer to MI-210
- ② Refer to EW-501.
- ③ Refer to EW-501 or EW-502.














\*Predetermined for access point not constructed with this project.

Location		Type	Length of Opening ①			① ②			Pipe Culvert ③					Aprons	Driveway Surface Area		Driveway Surfacing Material	Remarks
Station	Side	A, B, C, Safety Ramp, or Predetermined*	Case	1½" Dropped Curb	3" Dropped Curb	W	PR	SR	H	Size	Pipe Length	Lt.	Rt.		HMA	PCC		
			1 or 2	LF	LF	FT	FT	FT	FT	IN	LF	LF	LF	No.	SY	SY	TON	
435+86.00	LT	C				15.0				24.0	48.0			0				1 bend
437+79.00	LT	C				17.0				36.0	48.0			0				1 bend







**SURVEY SYMBOLS**













**UTILITY LEGEND**









**PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS**

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.	
Yellow	(4)		Highlight for Critical Notes or Features
Red	(3)		Delineates Restricted Areas
Lavender	(9)		Temporary Pavement Shading
Gray, Light	(48)		Proposed Pavement Shading
Gray, Med	(80)		Proposed Granular Shading
Gray, Dark	(112)		Proposed Grade and Pave Shading "In conjunction with a paving project"
Brown, Light	(236)		Grading Shading
Tan	(8)		Proposed Sidewalk Shading
Blue, Light	(230)		Proposed Sidewalk Landing Shading
Pink	(11)		Proposed Sidewalk Ramp Shading

**PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS**

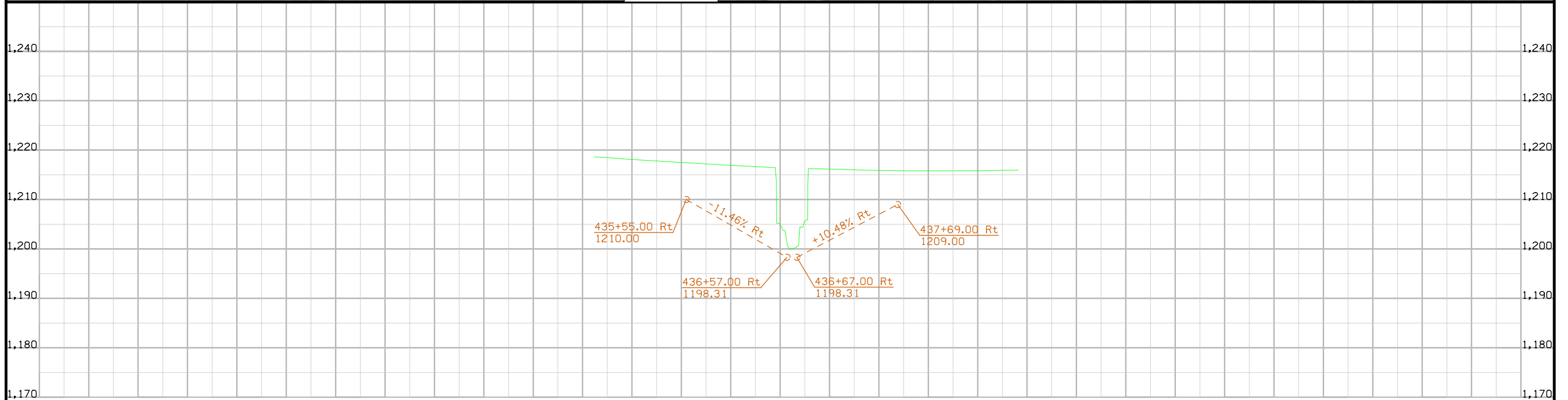
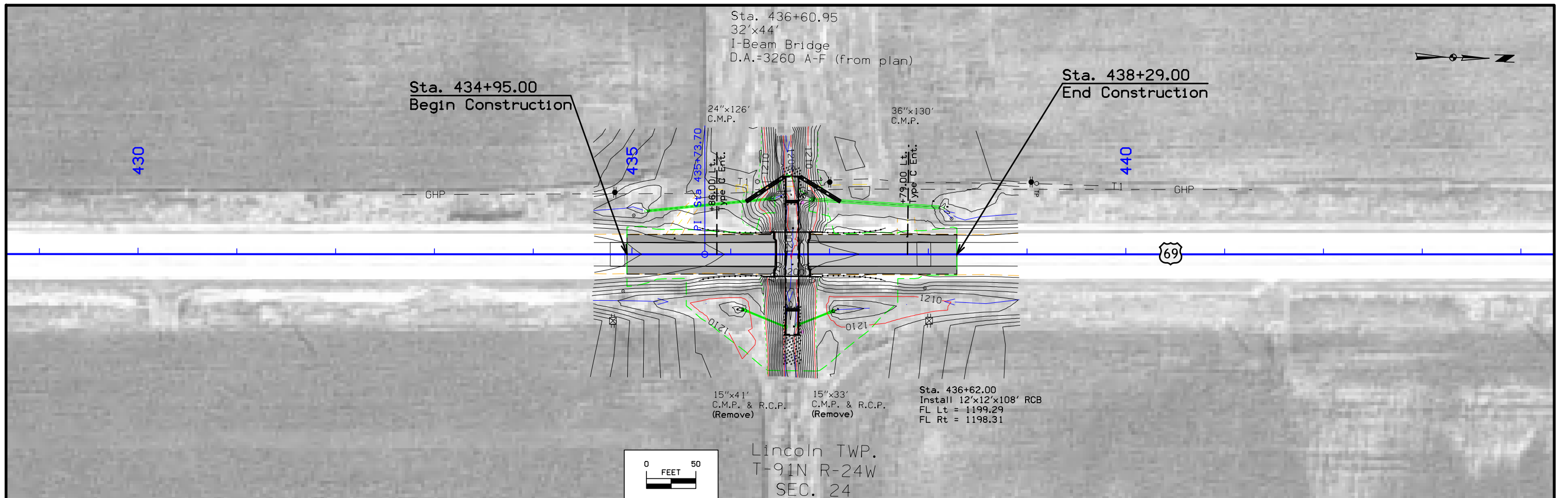
LINEWORK		Design Color No.	
Green	(2)		Existing Ground Line Profile
Blue	(1)		Proposed Profile and Annotation
Magenta	(5)		Existing Utilities
Blue, Light	(230)		Proposed Ditch Grades, Left
Black	(0)		Proposed Ditch Grades, Median
Rust	(14)		Proposed Ditch Grades, Right

	Reference Point
	Station
	Survey Line
	Section Corner
	Ground Line Intercept
	Saw Cut
	Guardrail
	Trench Drain
	High Tension Cable Guardrail
	Sheet Pile
	Pavement Removal
	Clearing & Grubbing Area

RIGHT-OF-WAY LEGEND	
	Proposed Right-of-Way
	Existing Right of Way
	Existing and Proposed Right-of-Way
	Easement and Existing Right-of-Way
	Easement (Temporary)
	Easement
	Access Control
	Property Line

**PLAN AND PROFILE  
LEGEND AND SYMBOL  
INFORMATION SHEET**

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



430	431	432	433	434	435	436	437	438	439	440	441	442	443	444
FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.			WRIGHT COUNTY		PROJECT NUMBER	BRFN-069-7(42)--39-99			SHEET NUMBER	D.2	

## Survey Information

Wright County  
BRFN-069-7(42)--39-99  
Drainage Ditch 5 - 3.7 mi S of IA 3  
Bridge-Unspecified  
PIN 18-99-069-010  
Sap-0656.3

### General Information

Measurement units for this survey are US survey feet. This survey is for proposed U.S Hwy. 69 Bridge over Drainage Ditch No. 5 replacement. Project datum and control information is provided by Design Survey Office. This project is a Full DTM with Photo control. This survey request was for the U.S. Hwy. 69 corridor only.

### Vertical Control

Vertical datum for this survey is NAVD88 (Computed using Geoid12b). GRS80 Ellipsoidal Height was computed at project Pts. L 28, 46, 47, CP1, CP2, & CP3 by conducting one concurrent six-hour static observation. Additional benchmarks were placed throughout the project using a GNSS Base-Rover setup relative to Pt. CP2 and Pt. CP1. Two observations with a minimum of four hours between were collected and used in a weighted average.

This survey observed 1 NGS Control Monument with published NAVD88 height to compare to local ground control:

NGS 2nd. order class 0 mark designated L 28 has a published Elev. Of 1160.36  
Survey Elev. = 1160.31

This survey observed 2 local area county Control Monuments with published NAVD88 heights to compare to local ground control:

Wright County GPS Control mark 46 has a published Elev. of 1238.83  
Survey Elev. = 1238.47

Wright County GPS Control mark 47 has a published Elev. of 1189.03  
Survey Elev. = 1188.71

No As-Built Plan benchmarks could be located, however survey elevations obtained on the bridge seats have a close vertical difference relationship with the plan bridge seat elevations as follows:

As-built Plan F-267(10) Bridges Design No. 262

North abutment bridge seat plan elev. = 619.41  
Survey elev. = 1213.34

South abutment bridge seat plan elev. = 619.66  
Survey elev. = 1213.62

The average vertical difference is +593.945 to be applied to as built elevations.

### Horizontal Control

The project coordinate system for this survey is Iowa RCS Zone 4 (U.S. Survey Feet). This survey control is relative to IaRTN reference stations. IaRTN Reference Station coordinates are relative to the National Reference Station network datum: NAD83 (2011) for Epoch 2010.00. Coordinates were determined by conducting one concurrent six-hour static observation at project points L 28, 46, 47, CP1, CP2, & CP3. Additional control points were placed throughout the project using a GNSS Base-Rover setup relative to Pt. CP2 and Pt. CP1. Two observations with a minimum of four hours between were collected and used in a weighted average.

### Alignment Information

The horizontal alignment for this survey is a retrace of As-built Plans Project No. FN-69-7(1)--21-99. Survey stationing was equated to the plan POT at bridge Sta. 436+62.1 and run back and ahead without equation throughout the survey.

Survey stationing relates to as built plan stationing as follows:

PI Sta. 422+51.0 As-built Plans Project No. FN-69-7(1)--21-99  
Survey PI Sta. 422+52.15

PI Sta. 435+73.7 As-built Plans Project No. FN-69-7(1)--21-99  
Survey PI Sta. 435+73.70

POT Sta. 436+62.1 As-built Plans Project No. FN-69-7(1)--21-99  
Survey POT Sta. 436+62.10

PI Sta. 448+92.9 As-built Plans Project No. FN-69-7(1)--21-99  
Survey PI Sta. 448+93.89

PI Sta. 475+32.8 As-built Plans Project No. FN-69-7(1)--21-99  
Survey PI Sta. 475+35.71

## 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) EPOCH 2010.00

VERT. DATUM: NAVD88

1a. Regional Coordinate System Zone 4

Coordinate listing from next sheet will be used with 1aRTN for monument recovery. No other reference ties are given.

HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING

HORIZ. DATUM: NAD83(2011) EPOCH 2010.00

VERT. DATUM: NAVD88

Ia. Regional Coordinate System Zone 4

Point Name	Northing	Easting	Elevation	Feature Code - Description
CP1	8653401.753	14821887.920	1224.354	BM DRILL HOLE IN BALL ROW RAIL 135 FT EAST OF US HWY 69 AND 33 FT NORTH OF 260TH ST
CP2	8656530.100	14821737.066	1221.349	BM SET FENO MON 0.4 MI SOUTH OF 250TH ST AND 35 FT EAST OF US HWY 69 AND 17 FT NORTH OF DRIVE ENT
CP3	8658709.613	14821567.129	1228.882	BM DRILL HOLE IN RBR IN CM 90 FT WEST OF US HWY 69 AND 65 FT NORTH OF 250TH ST

### TRAFFIC CONTROL PLAN

1. U.S. 69 will remain open to traffic at all times.
2. Single lane closures as necessary for bridge rail removals and HMA resurfacing shall be per the Standard Road Plans referenced elsewhere in these plans.
3. Access to individual properties shall be maintained at all times. Staged construction may be necessary to maintain access to properties with accesses immediately adjacent to the existing bridge.

**LINE STYLE LEGEND OF CROSS SECTION SHEETS (ROAD)**

- - - - - - Existing Ground Line
- Proposed Template
- Proposed Topsoil Placement
- - - - - Additional Topsoil Removal
- 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 ————— Topsoil (Class 10)
- Slope Dressing Only
- CL 10 ————— Class 10 Materials
- SEL LO ————— Select Loams And Clay-Loams
- SEL SA ————— Select Sand
- UNS A ————— Unsuitable Type A Disposal
- UNS B ————— Unsuitable Type B Disposal
- UNS C ————— Unsuitable Type C Disposal
- SHALE ————— Shale
- WASTE ————— Waste
- BRN LS ————— Broken and Weathered Rock
- ROCK ————— Solid Rock
- BLDGS ————— 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**

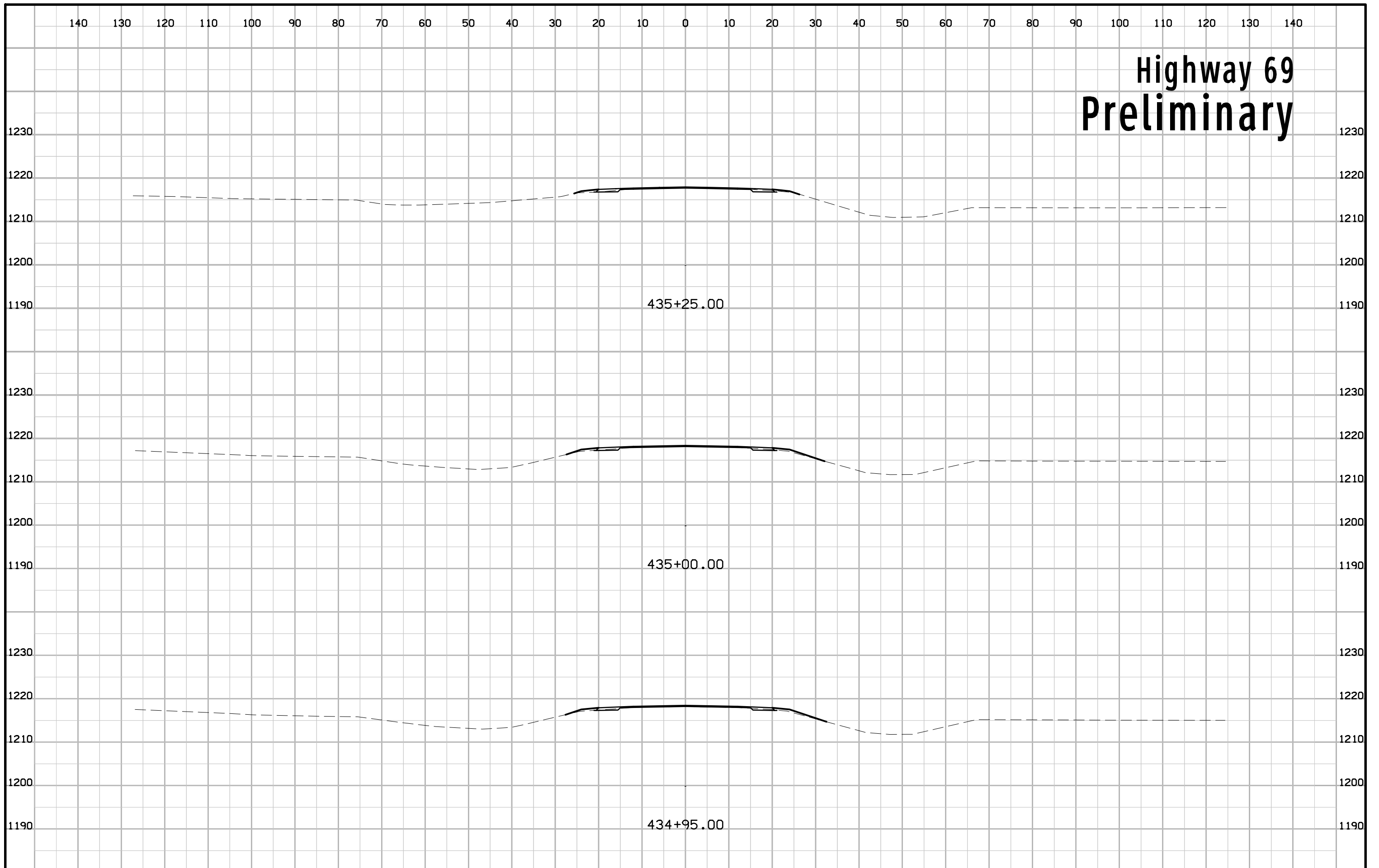
- Existing ROW  
|  
Existing Right-of-Way Limit
- Proposed ROW  
|  
Proposed Right-of-Way Limit
- Temporary ROW  
|  
Temporary Right-of-Way Limit

**CROSS SECTION  
LEGEND AND SYMBOL  
INFORMATION SHEET**

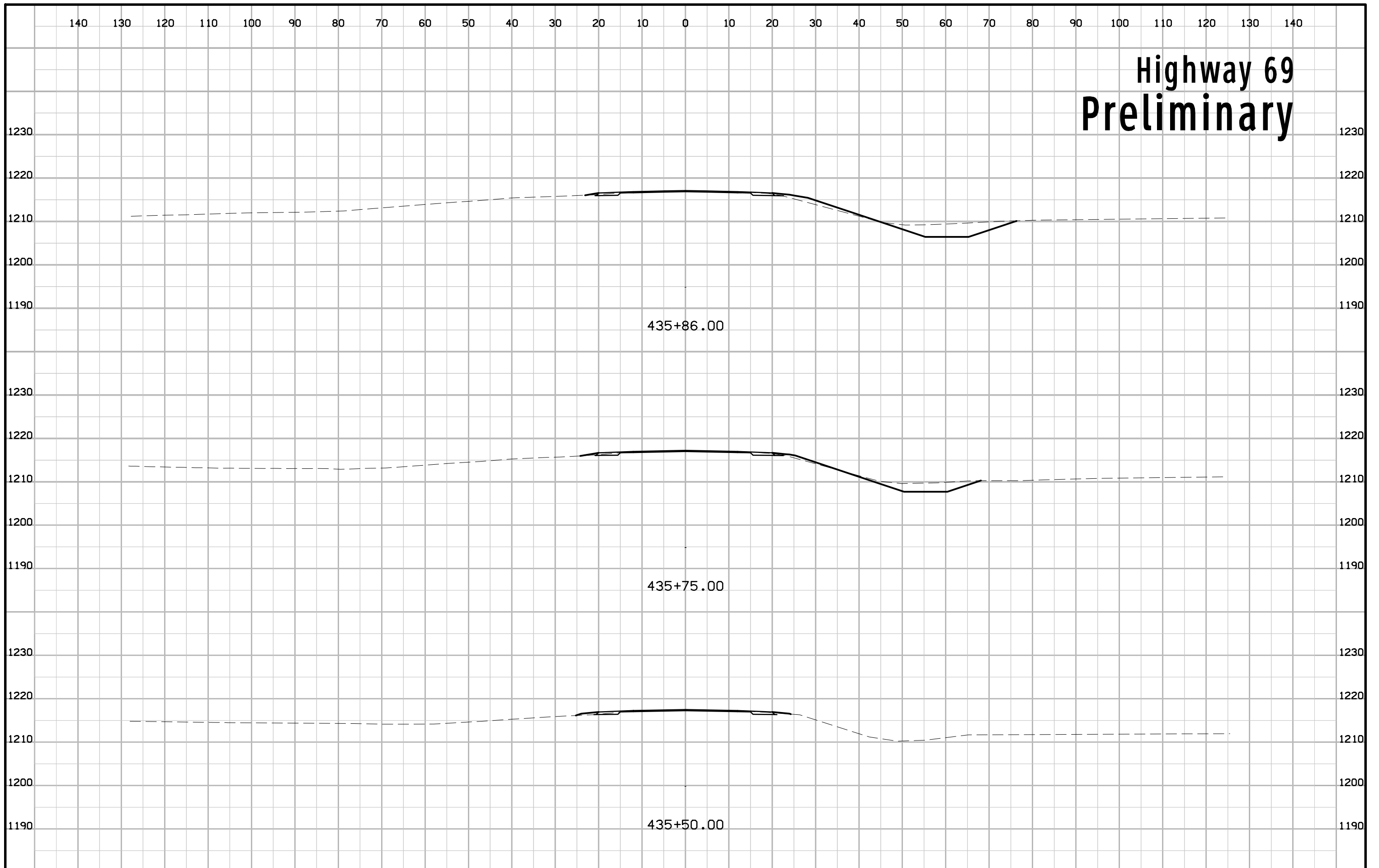
(COVERS SHEET SERIES W, X, Y, & Z)



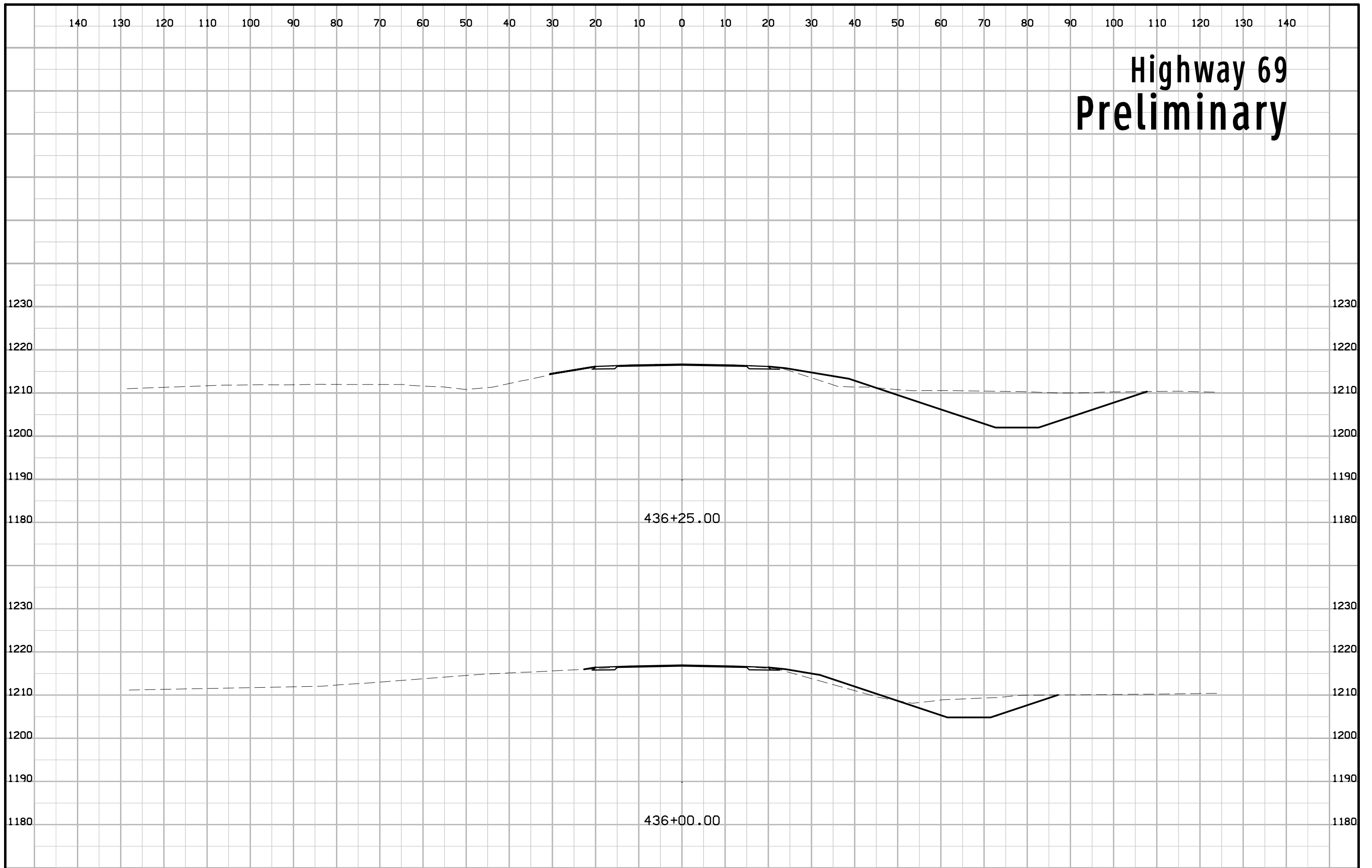
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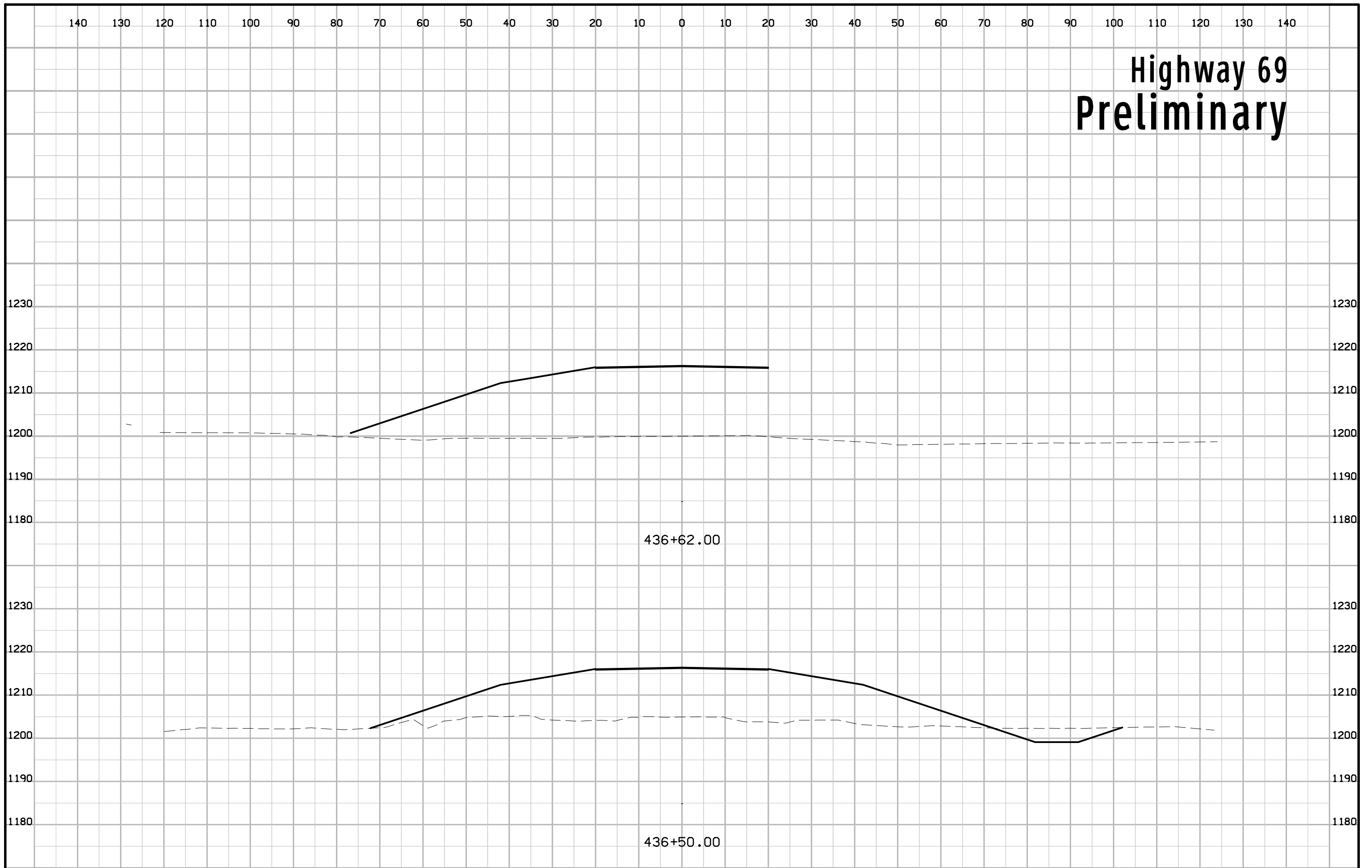
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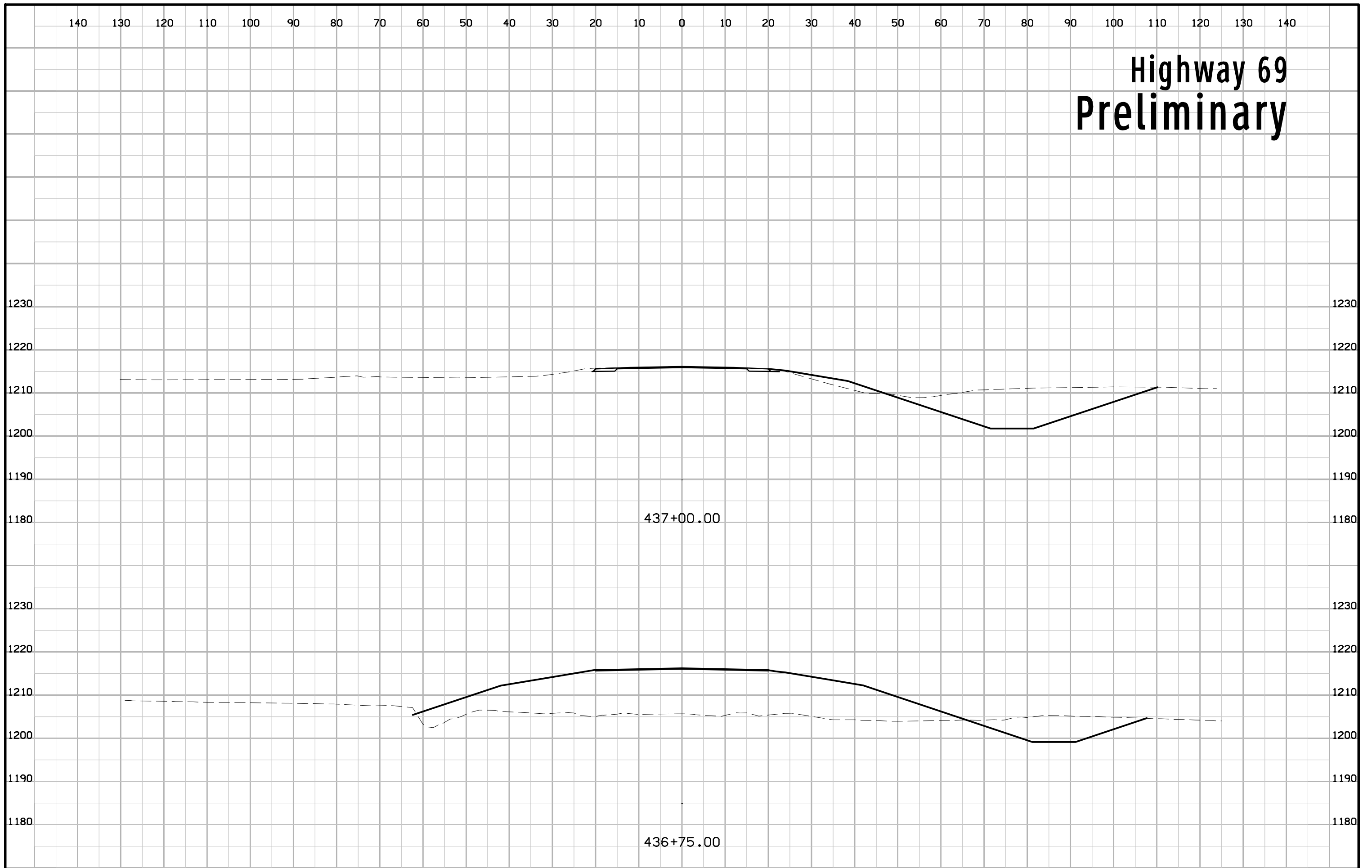
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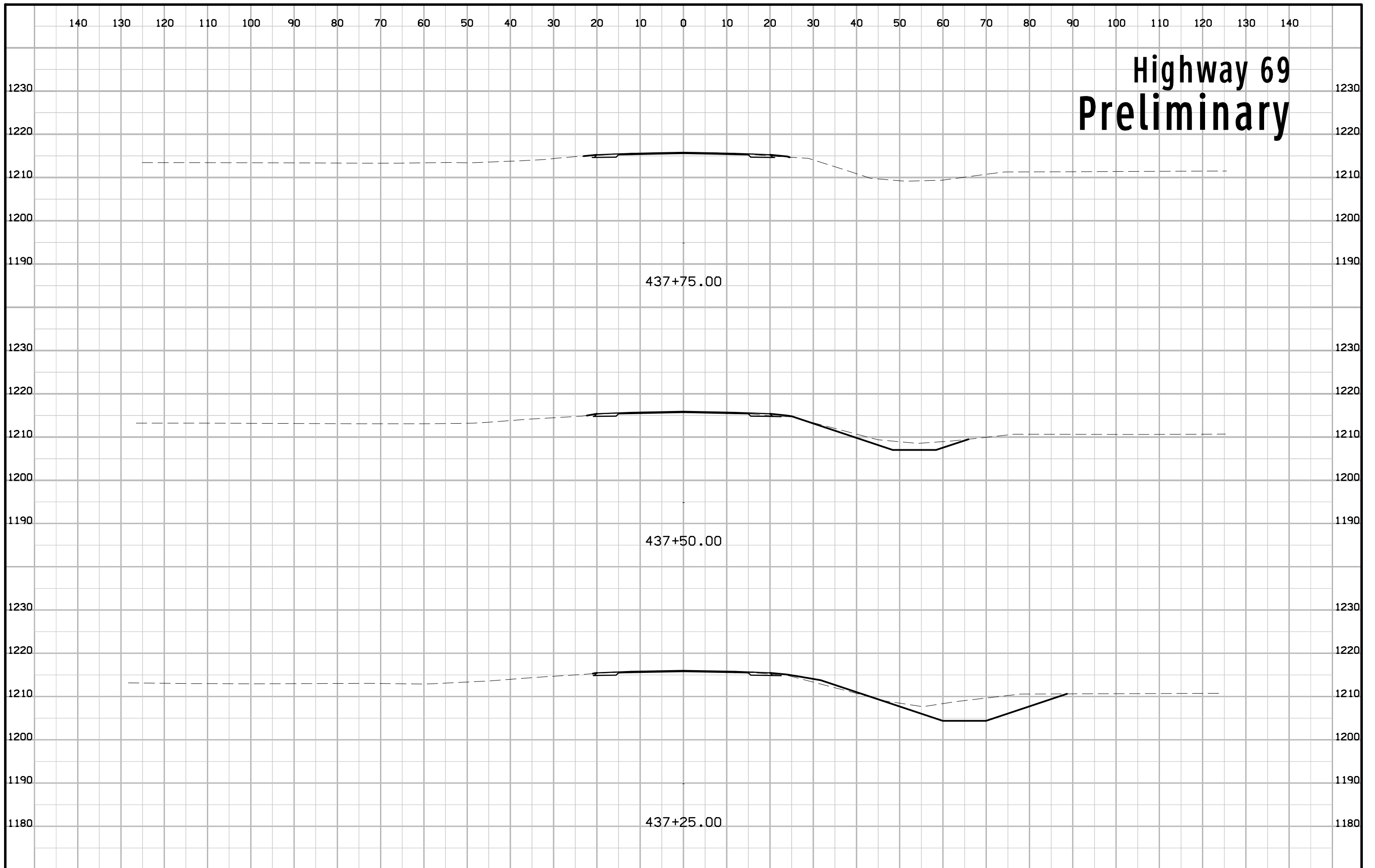
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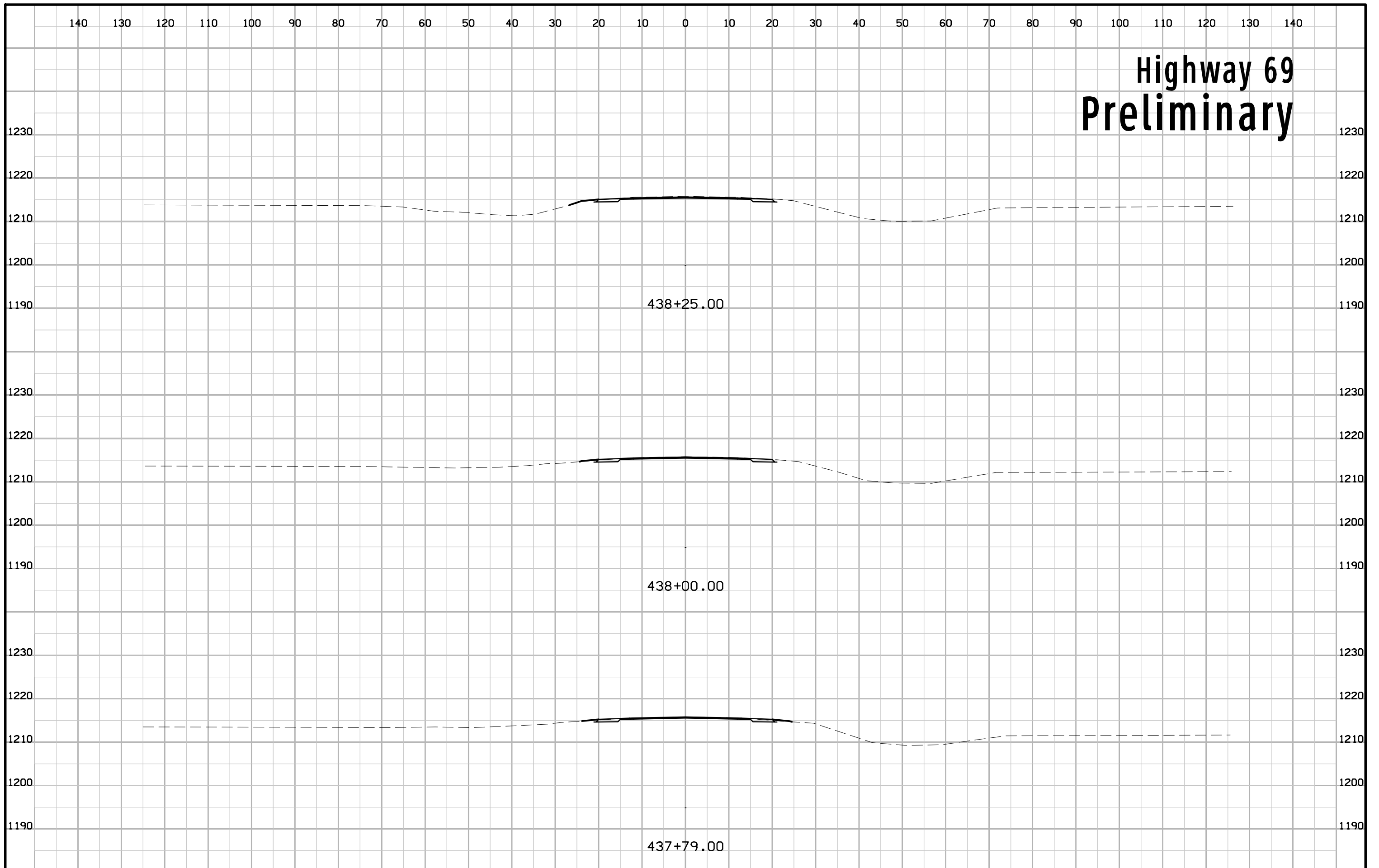
# Highway 69 Preliminary



# Highway 69 Preliminary



# Highway 69 Preliminary



# Highway 69 Preliminary

