

KOSSUTH CO.
BRIDGE REPLACEMENT - PPCB
BRFN-169-8(61)--39-55

LETTING DATE
 12-21-2021



Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM KOSSUTH COUNTY BRIDGE REPLACEMENT - PPCB

Black Cat Creek 4.2 mi N of US 18

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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



REVISIONS

TOTAL

22

PROJECT IDENTIFICATION NUMBER

17-55-169-010

PROJECT NUMBER

BRFN-169-8(61)--39-55

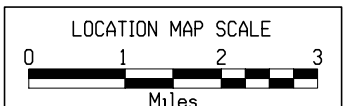
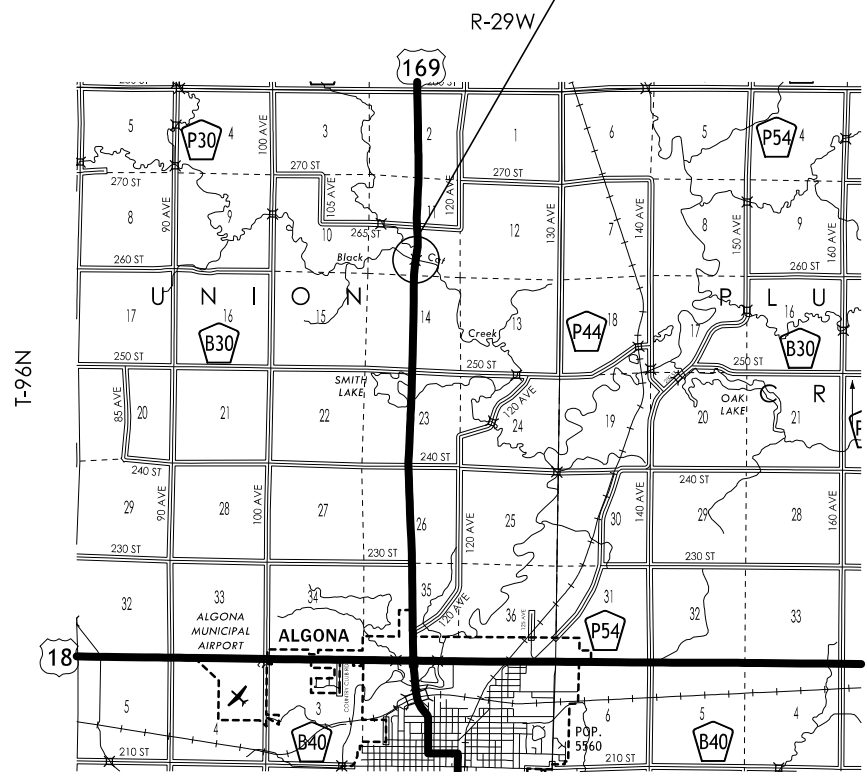
R.O.W. PROJECT NUMBER

NHSN-169-8(62)--2R-55

INDEX OF SHEETS

No.	DESCRIPTION
A Sheets	Title Sheets
A.1	Title Sheet
A.1	Location Map Sheet
B Sheets	Typical Cross Sections and Details
B.1 - 4	Typical Cross Sections and Details
D Sheets	Mainline Plan and Profile Sheets
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2	U.S. 169
G Sheets	Survey Sheets
G.1	Reference Ties and Bench Marks
G.2	Control Point Vicinity Map
G.3	Horizontal and Vertical Project Control Coordinates
J Sheets	Traffic Control and Staging Sheets
J.1	Traffic Control Plan
* J.2	Detour Plan
V Sheets	Bridge and Culvert Situation Plans
* V.1 - 3	Bridge and Culvert Situation Plans
W Sheets	Mainline Cross Sections
W.1 - 7	U.S. 169
	* Color Plan Sheets

Sta. 237+99.90
 Project Location
 REF LOC = 203.00
 FHWA = 32930



P9 PLAN - Date: 08/20/2020
 D4 PLAN - Date: 08/24/2021

PRELIMINARY PLANS

Subject to change by final design.

D5 PLAN - Date: 5/27/2020

DESIGN DATA RURAL			
20	AADT	_____	V.P.D.
20	AADT	_____	V.P.D.
20	DHV	_____	V.P.H.
	TRUCKS	_____	%
	Total		
	Design ESALs	_____	

INDEX OF SEALS		
SHEET NO.	NAME	TYPE
A.1		Primary Signature Block

Match Line

Match Line

HMA Shoulder

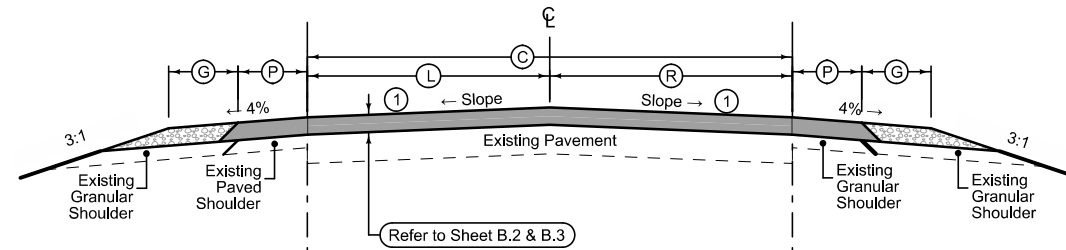
Shoulder Jointing:
Longitudinal joint: B

3R_Shldr_Paved_04-19-11			
STATION TO STATION		(P) Feet	(G) Feet
235+39.57	235+61.84	4	4
240+62.99	241+30.00	4	4

HMA Shoulder

Shoulder Jointing:
Longitudinal joint: B

3R_Shldr_Paved_04-19-11			
STATION TO STATION		(P) Feet	(G) Feet
240+38.00	241+30.00	4	4



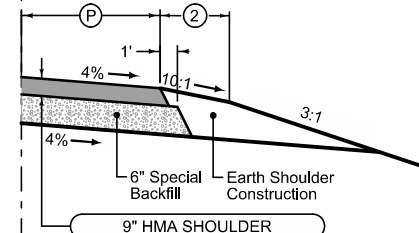
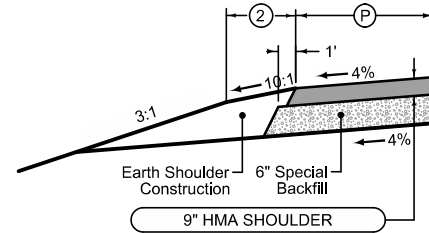
3R_Overlay_04-19-11				
STATION TO STATION		(C) Feet	(L) Feet	(R) Feet
235+39.57	236+33.98	24	12	12
239+65.82	241+30.00	24	12	12

① Match Existing

Paved Shoulder at Guardrail

Longitudinal joint: B

2_P_Guard_04-21-20		
STATION TO STATION		(P) Feet
235+61.84	236+33.98	11.8-10.8
239+65.82	240+62.99	10.3-9.2



Paved Shoulder at Guardrail

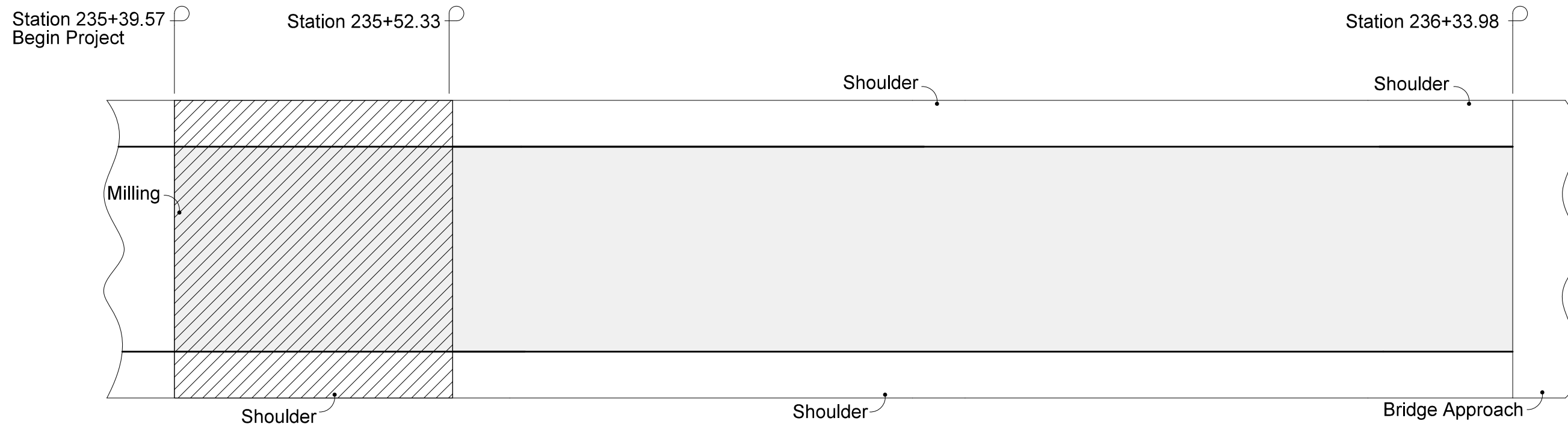
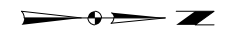
Longitudinal joint: B

2_P_Guard_04-21-20		
STATION TO STATION		(P) Feet
235+36.80	236+33.98	9.2-10.5
239+65.82	240+38.00	10.5-11.3

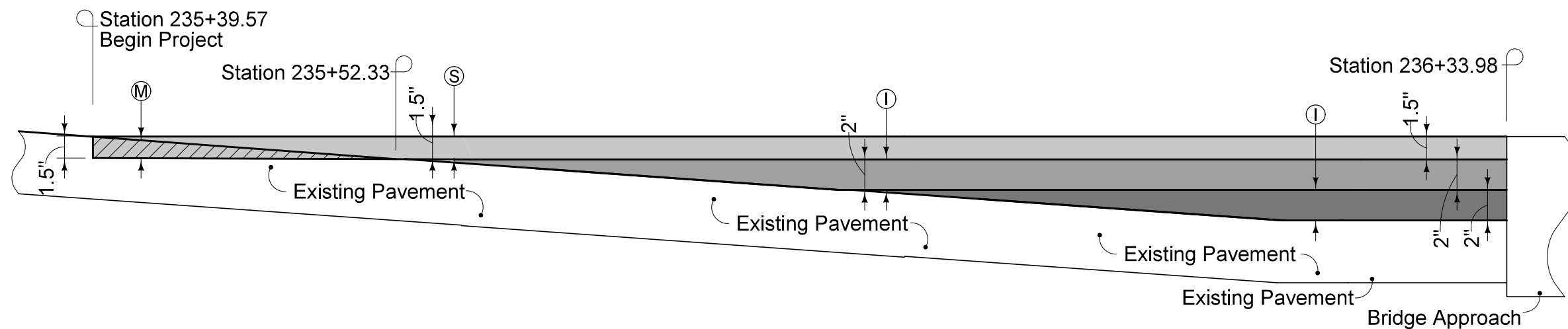
② Refer to Standard Road Plan EW-301 for additional information.

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

U.S. 169 RESURFACING



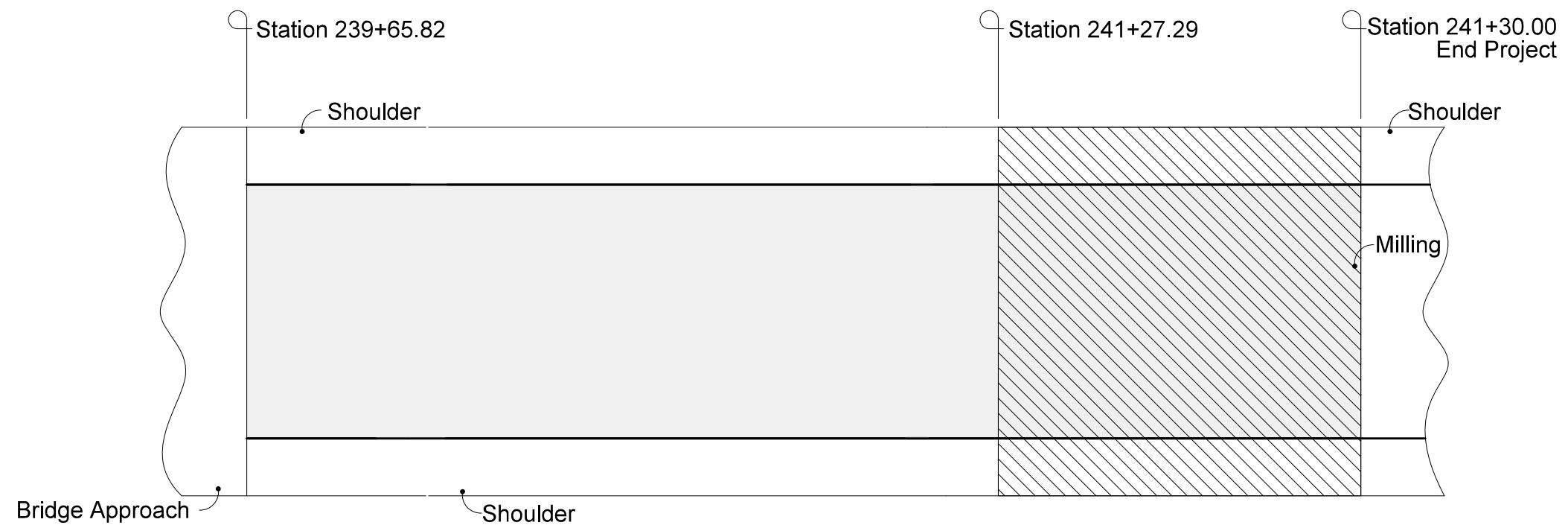
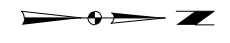
PLAN VIEW



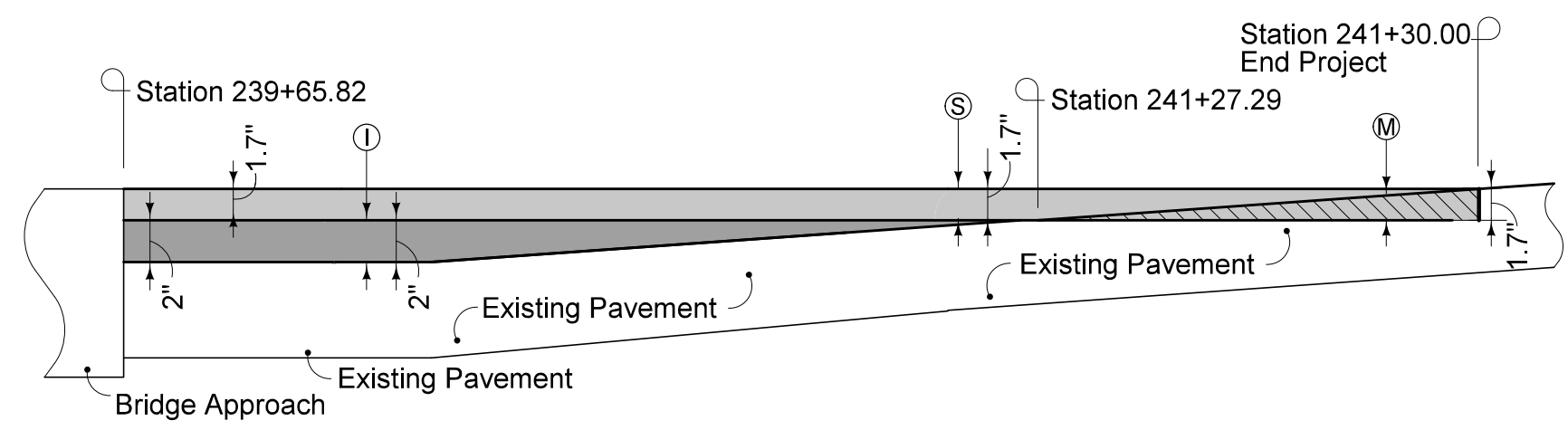
PROFILE VIEW

- (S) Surface Course
- (I) Intermediate Course
- (M) Milling

U.S. 169
MILLING & RESURFACING
 (SOUTH END)



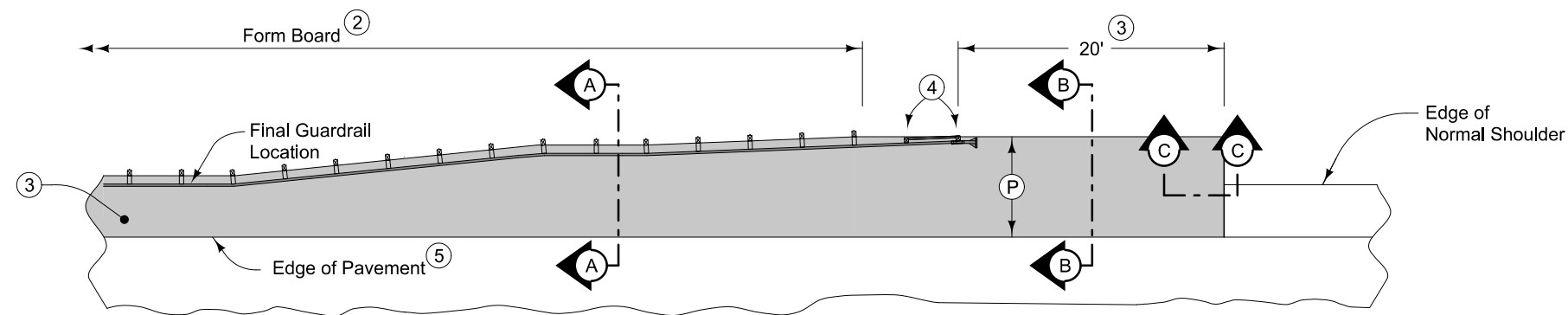
PLAN VIEW



PROFILE VIEW

- Ⓢ Surface Course
- Ⓜ Intermediate Course
- Ⓜ Milling

U.S. 169
MILLING & RESURFACING
 (NORTH END)



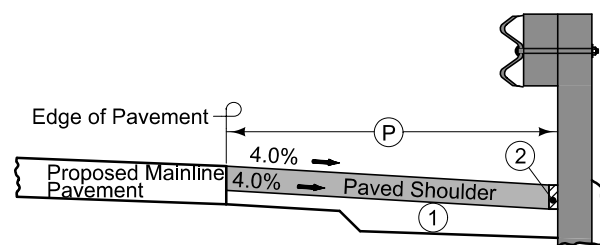
PLAN VIEW

9" HMA Paved Shoulder at guardrail. 8" PCC may be substituted with the following jointing layout:

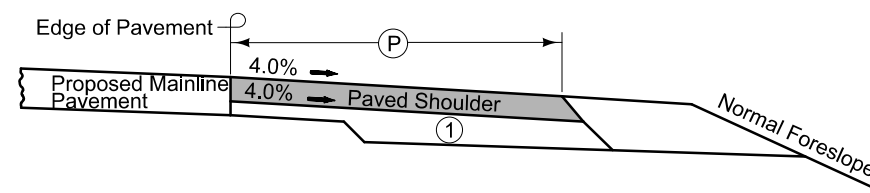
Match mainline pavement joint spacing. When mainline pavement is 8" or greater in thickness, place additional transverse 'C' joints in shoulder at mid-panel of the mainline pavement. Place longitudinal 'C' joint at P/2 from edge of mainline pavement when P is greater than 10' wide. Terminate longitudinal joint at transverse joint less than 10' in length.

Compaction of HMA is required to face of guardrail post. Hand compaction will be allowed under guardrail. Removal and reinstallation of guardrail will be allowed with no additional payment.

Refer to Tabulation 112-9 for shoulder quantities.



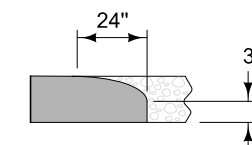
Section A-A



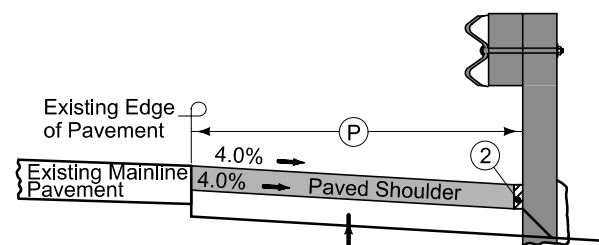
Section B-B

PAVED SHOULDER NEXT TO PROPOSED PAVEMENT

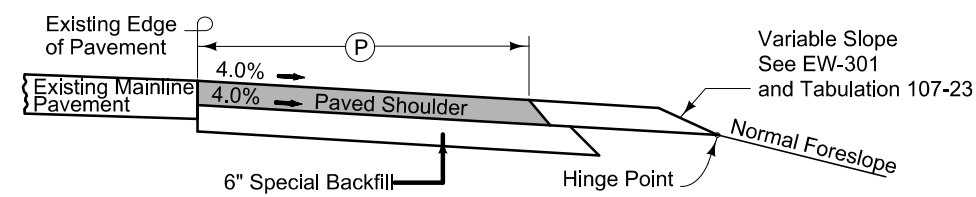
- ① For subgrade treatment, refer to other details in the plan.
- ② PCC option only: When guardrail posts are installed prior to construction of PCC paved shoulder, fasten form board to the face of guardrail posts for the length shown. Refer to note 4 for final 2 posts.
- ③ Continue paved shoulder to existing paved shoulder or 20 feet beyond the center of the first post.
- ④ Shoulder may be notched for final 2 posts or post sleeves may be installed through pavement. Do not drive posts through pavement.
- ⑤ 'KT-1 joint for PCC shoulder.
'B' joint for HMA shoulder.



Section C-C
Roll down at granular shoulder or earth.



Section A-A

















Section B-B




PAVED SHOULDER NEXT TO EXISTING PAVEMENT

PAVED SHOULDER AT GUARDRAIL














SURVEY SYMBOLS

-  FENO FENO Monument
-  PCT Photo Control Target
-  TW Top of Water
-  PPA Power Pole Co. 1
-  BM Bench Mark
-  SNP Unpaved Shoulder
-  FO1D Fiber Optic Co. 1 - Quality D
-  TPD Telephone Pedestal
-  TL1D Telephone Line Co. 1 - Quality D
-  SI Sign
-  WL1D Water Line Co. 1 - Quality D
-  WW Water Valve
-  SCR Section Corner
-  REF Reference Tie Point







UTILITY LEGEND













-  E1 -- Alliant Energy
Heather Dee
200 1st. St. SE
Cedar Rapids, IA 52401
RER0w@alliantenergy.com
(319) 786-8196
-  F02 -- Titonka-Burt Communications
Jim Mayland
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Titonka, IA 50480
jim.mayland@bctel.com
(515) 928-2120
-  FO -- Windstream Communications (ILEC)
Terry Burke
641 West Street South
Grinnell, IA 50112
Terry.r.burke@windstream.com
(641) 787-2259

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

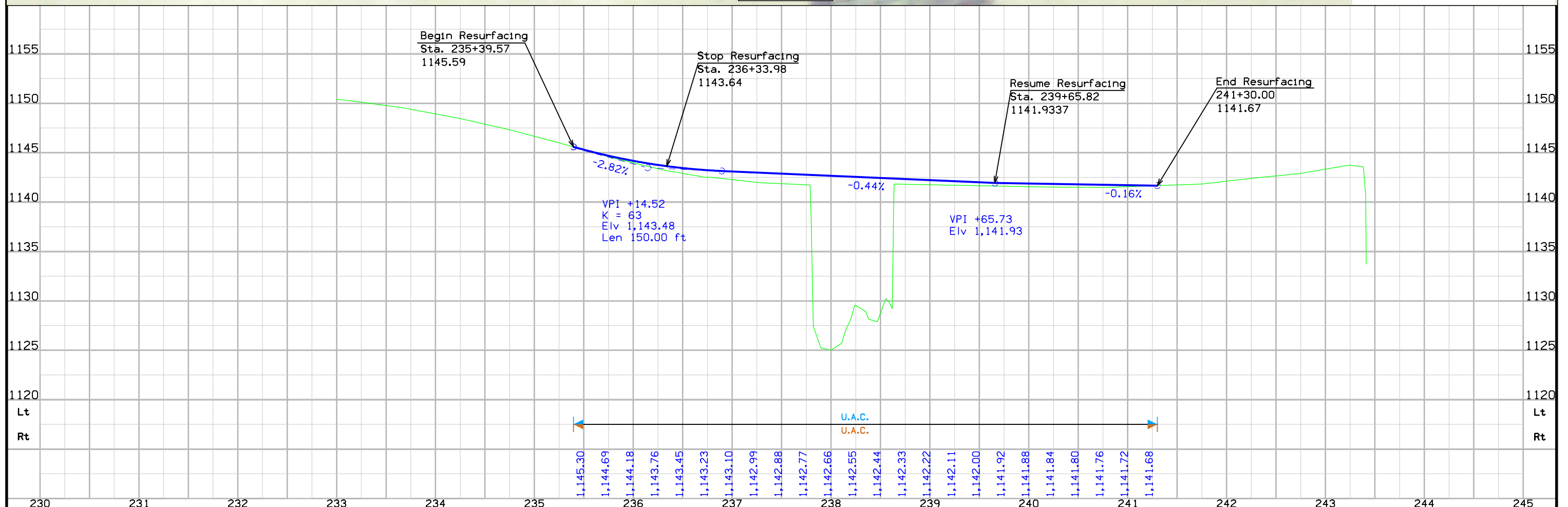
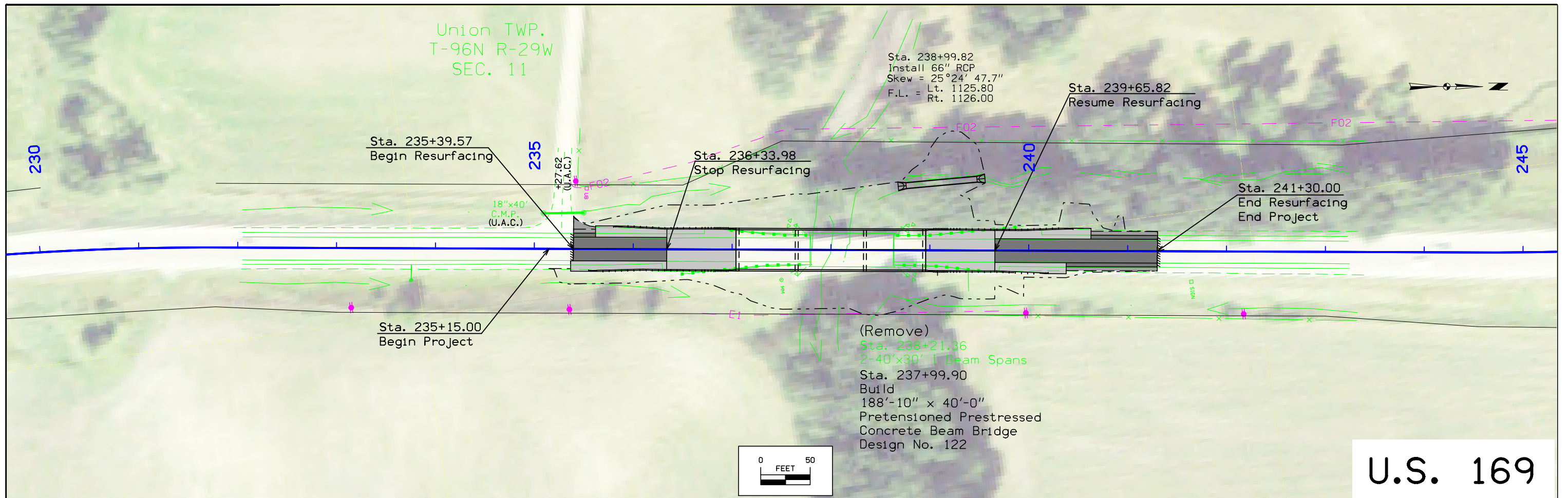
-  Reference Point
-  Station
-  Survey Line
-  Section Corner
-  Ground Line Intercept
-  Saw Cut
-  Guardrail
-  Trench Drain
-  HighTension Cable Guardrail
-  Sheet Pile
-  Pavement Removal
-  Clearing & Grubbing Area

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)



Survey Information

Kossuth County
BRFN-169-8(61)--39-55
Black Cat Creek 4.2 mi N of US 18
PIN 17-55-169-010
Sap-7861

Party Personnel

Jeffrey Duncan- Party Chief

Date(s) of Survey

Begin Date 07/15/2019
End Date 07/31/2019

General Information

Measurement units for this survey are US survey feet. This survey is for proposed bridge replacement along US Highway 169. Project datum and control information is provided by Design Survey Office. This project is a Full DTM with Photo control.

Vertical Control

The vertical datum is NAVD88. Vertical Control was established on 3 monuments designated as points K1, CP1, and 566. These monuments are expected to hold vertical reasonably well. Datum was transferred from Iowa RTN reference stations to the projects monuments by using concurrent 6-hour static measurements and post processing connecting vectors. Geoid 12 B was used in processing.

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

NGS 1st. order class 2 designated K1 has a published Elev. of 1152.30
Survey Elev. = 1152.287

This survey observed 1 Kossuth County Control Monument with published NAVD88 heights to compare to local ground control:

Kossuth County mark designated 566 has a published Elev. Of 1177.93
Survey Elev. = 1177.895

Horizontal Control

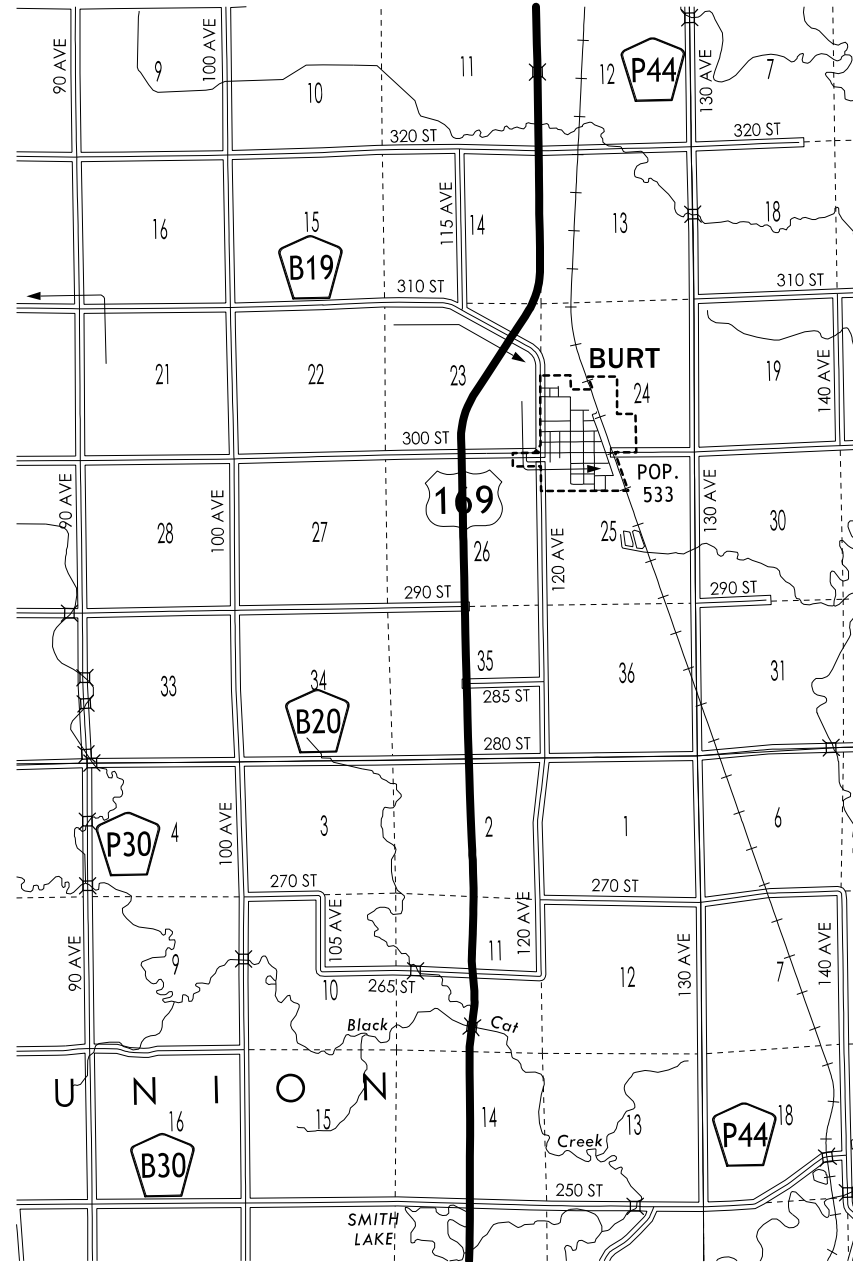
The project coordinate system for this survey is Iowa RCS Zone 1 (U.S. Survey Feet). This survey control is relative to IARTN reference stations. IARTN Reference Station coordinate are relative to the National Reference Station network datum NAD83 (2011) for Epoch 2010.00. Coordinates were determined by using concurrent 6-hour static measurements and post processing connecting vectors. Additional control points were placed throughout the project using a GNSS Base-Rover setups.

Alignment Information

The horizontal alignment for this survey is provided by District 2 ROW.

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 1

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 1

Point Name	North Coordinate	East Coordinate	Elevation	Feature Code-Description
K1	9611326.819	11774180.98	1152.29	CP NGS MON 0.25 MILE EAST ON 320TH STREET 55 FEET NORTH OF 320 STREET 45.7 FEET WEST OF WEST RAILROAD RAIL 19 FEET NORTH OF FENCE CORNER POST 1.5 FEET SOUTH OF CARSONITE WITNESS POST
CP1	9582706.499	11770471.61	1163.87	CP CM SOUTHWEST QUADRANT AT THE INTERSECTION OF 265TH STREET AND US HIGHWAY 169 57 FEET WEST SOUTHWEST OF STOP SIGN 47 FEET SOUTH CENTERLINE 265TH ST 32 FEET NORTHEAST ROW RAIL 30 FEET EAST CENTERLINE FIELD ENTRANCE
566	9590306.029	11777724.89	1177.9	CP COUNTY GPS MON 200 FEET WEST OF THE INTERSECTION OF 280TH STREET AND 130TH AVE 33 FEET NORTH CENTERLINE 280TH AVE 13 FEET WEST POWER POLE

NO ACCESS RIGHTS ARE TO BE ACQUIRED ON THIS PROJECT.

ACCESS CONTROL PREVIOUSLY ACQUIRED.

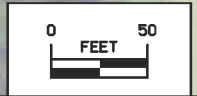
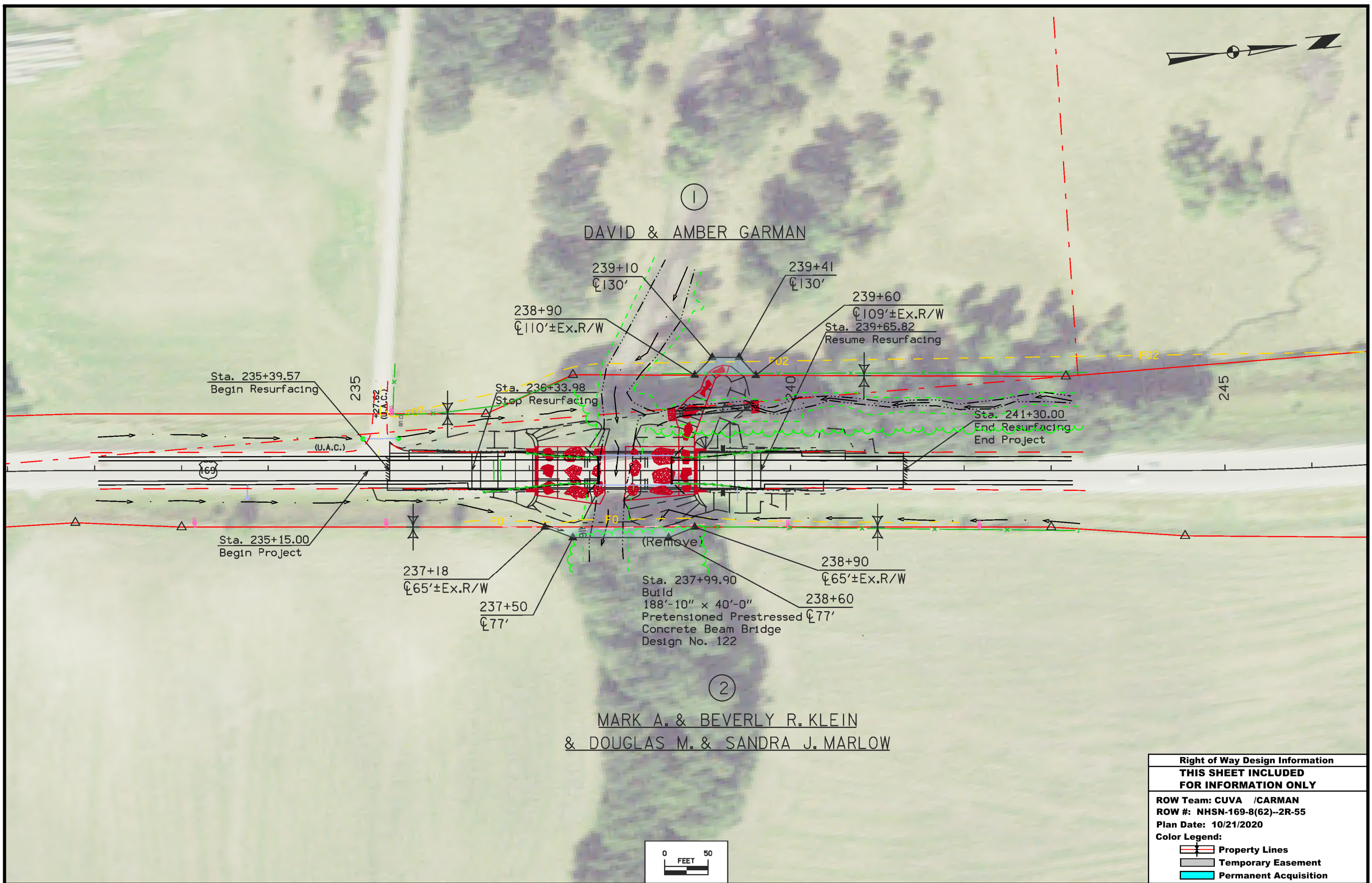


①

DAVID & AMBER GARMAN

②

MARK A. & BEVERLY R. KLEIN
& DOUGLAS M. & SANDRA J. MARLOW



Right of Way Design Information	
THIS SHEET INCLUDED FOR INFORMATION ONLY	
ROW Team: CUVA /CARMAN	
ROW #: NHSN-169-8(62)--2R-55	
Plan Date: 10/21/2020	
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition

TRAFFIC CONTROL PLAN

108-23A
08-01-08

U.S. 169 will be closed during construction. Through traffic shall be detoured (by others) to County Road B-30, P-30, and B-19. Refer to Sheet J.2 for the proposed detour.

COORDINATED OPERATIONS

111-01
04-17-12

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.

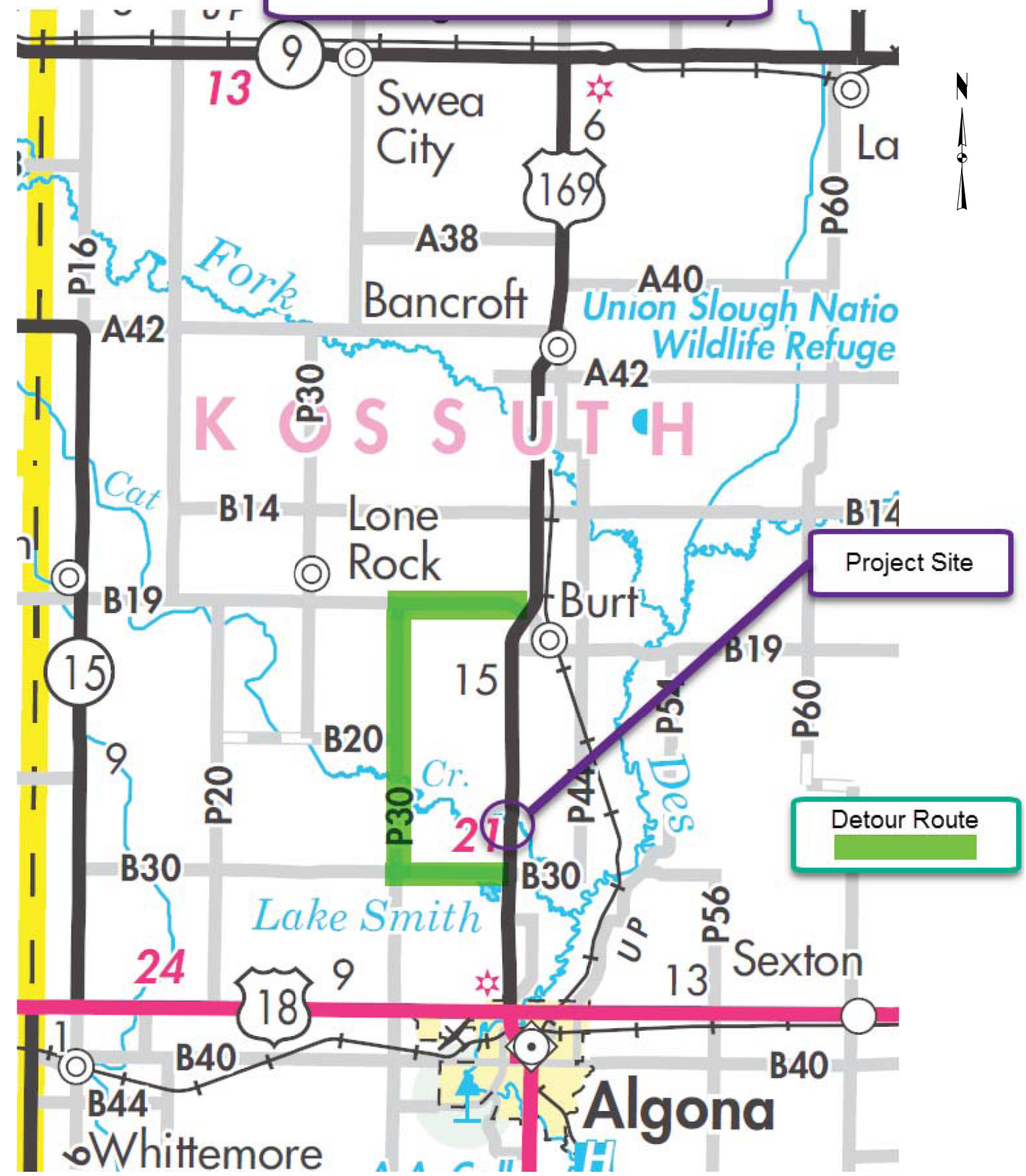
Project	Type of Work
None at the moment.	

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
			No travel restriction expected.									

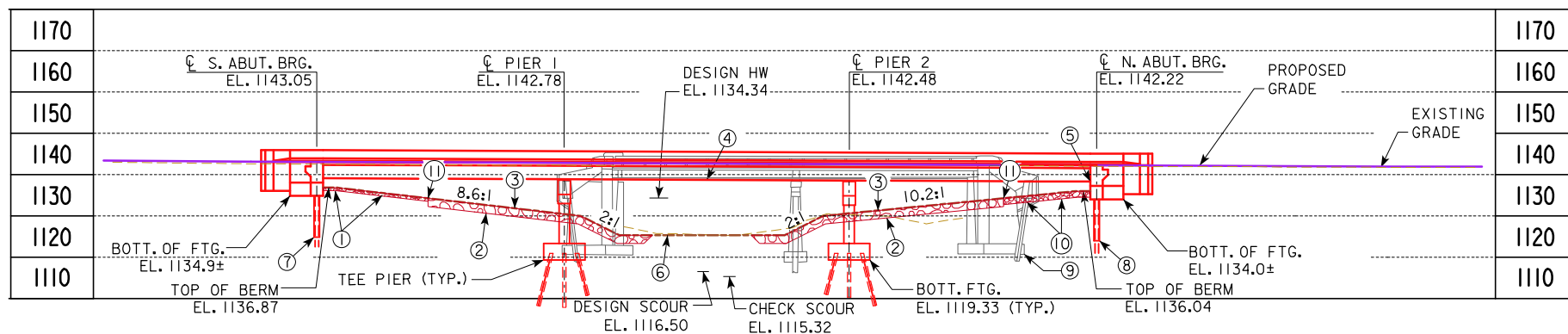
Detour Route
 Kossuth County
 BRFN-169-8(61)--39-55
 Black Cat Creek 4.2 Miles North of US 18



Project Site

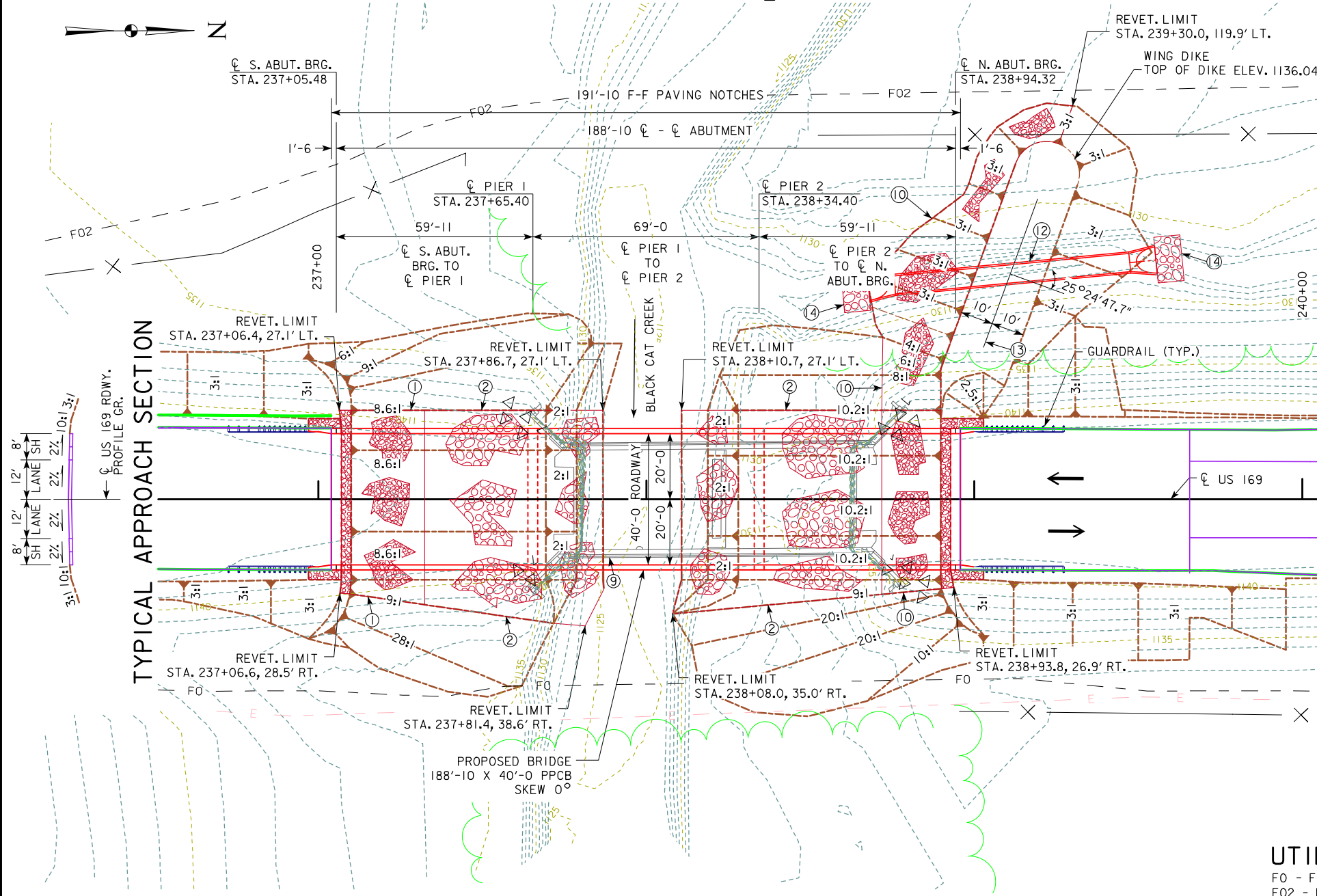
Detour Route

BENCH MARK NO. CPI N 9582706.50, E 11770471.61, CM SW QUAD AT THE INTERSECTION OF 265TH STREET AND US 169, 57' WEST SW OF STOP SIGN, 47' SOUTH CENTERLINE 265TH STREET, 32' NE ROW RAIL, 30' EAST CENTERLINE FIELD ENTRANCE, ELEV. 1163.87



- ① BERM PROTECTION EROSION STONE (0-9 THICK. MIN.) UNDERLAIN W/ ENGR. FABRIC
- ② BERM PROTECTION CLASS E REVET. (2' THICK. MIN.) UNDERLAIN W/ ENGR. FABRIC
- ③ GRADING SURFACE
- ④ REGULATORY LOW BEAM
- ⑤ OPERATIONAL LOW BEAM
- ⑥ STREAMBED EL. 1125.33
- ⑦ PRE BORE HOLES, 1'-4 DIA., BOTTOM EL. 1124.87
- ⑧ PRE BORE HOLES, 1'-4 DIA., BOTTOM EL. 1124.04
- ⑨ EXISTING BRIDGE 80' X 30' I BEAM DES # 157 TO BE REMOVED
- ⑩ BERM PROTECTION EROSION STONE (1-6 THICK. MIN.) UNDERLAIN W/ ENGR. FABRIC
- ⑪ EXTEND CLASS E REVET. TO ELEVATION 1134.34
- ⑫ 66 IN. RCP CULVERT; SEE ROAD SHEETS FOR TABULATION. C OF PIPE AT C OF WING DIKE = STA. 239+10.98, 68.68' LT. FLOW LINE NOMINALLY BURIED 6 INCHES.
- ⑬ C OF WING DIKE
- ⑭ CLASS E REVET. SPLASH PAD UNDERLAIN W/ ENGR. FABRIC

LONGITUDINAL SECTION ALONG C APPROACH ROADWAY

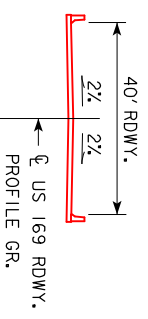


PROPOSED PROFILE GRADE US 169
 VPT STA. = 236+89.52 VPC STA. = 239+65.73
 VPT ELEV. = 1143.15 VPC ELEV. = 1141.93
 G1 = -0.440%

HYDRAULIC DATA

DRAINAGE AREA = 108 SQ. MI.
 STREAM SLOPE = 4.2 FT./MI.
 AVG. LOW WATER STAGE = 1128.0
 Q₅₀ = 3,957 CFS
 STAGE = 1134.34
 REGULATORY LOW BEAM = 1138.20
 BACKWATER = 0.67 FT.
 AVG. BRIDGE VELOCITY = 6.0 FPS
 Q₁₀₀ = 4,762 CFS
 STAGE = 1134.67
 OPERATIONAL LOW BEAM = 1137.79
 BACKWATER = 0.95 FT.
 AVG. BRIDGE VELOCITY = 6.7 FPS
 Q₂₀₀ = 5,200 CFS
 STAGE = 1134.92
 CALCULATED DESIGN SCOUR = 1116.50
 Q₅₀₀ = 6,300 CFS
 STAGE = 1135.28
 AVG. BRIDGE VELOCITY = 7.8 FPS
 CALCULATED CHECK SCOUR = 1115.32
 ROADWAY OVERTOP 1141.7
 STA. 241+30.0
 EXTREME HW STAGE = UNKNOWN
 DATE = UNKNOWN

TYPICAL BRIDGE SECTION



LOCATION

US 169 OVER BLACK CAT CREEK
 T-96N R-29W
 SECTION 11
 UNION TOWNSHIP
 KOSSUTH COUNTY
 BRIDGE MAINT. NO. 5503.OS169
 FHWA NO. 32931
 LATITUDE 43.143059°
 LONGITUDE -94.236395°

TRAFFIC ESTIMATE

2022 AADT	2,700	V.P.D.
2042 AADT	2,800	V.P.D.
202_ DHV	-	V.P.H.
TRUCKS	14	%
TOTAL DESIGN ESALS	-	



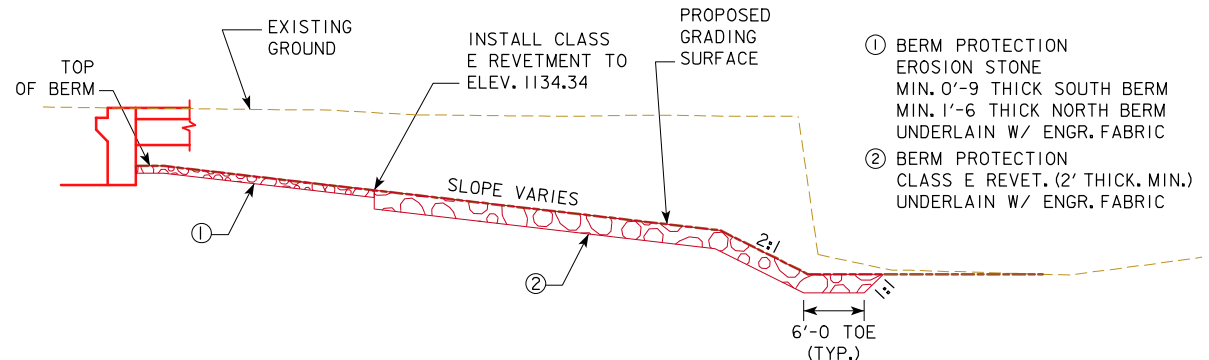
NOTES:
 TL-4 BRIDGE RAILING PROPOSED.
 TOP OF BRIDGE DECK CROWN 0.03' BELOW PROFILE GRADE

SITUATION PLAN

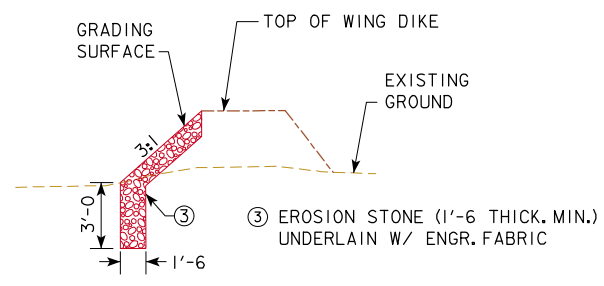
UTILITIES LEGEND:

FO - FIBER OPTIC - WINDSTREAM
 F02 - FIBER OPTIC - TITONKA COMMUNICATIONS
 E - ELECTRIC - ALLIANT ENERGY
 UTILITIES SHOWN ON THIS SHEET ARE FOR INFORMATION ONLY, SEE ROAD DESIGN SHEETS FOR FINAL UTILITY INFORMATION.

PRELIMINARY
 DESIGN FOR 0° SKEW
**188'-10 X 40'-0 PRETENSIONED
 PRESTRESSED CONCRETE BEAM BRIDGE**
 59'-11 END SPANS B BEAMS 69'-0 CENTER SPAN
SITUATION PLAN
 STATION 237+99.90 APRIL 2020
KOSSUTH COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 1 OF 3 FILE NO. 31889 DESIGN NO. 122



TYPICAL SECTION AT BRIDGE BERM AND STREAMBANK
NOT TO SCALE



TYPICAL SECTION AT WING DIKE
NOT TO SCALE

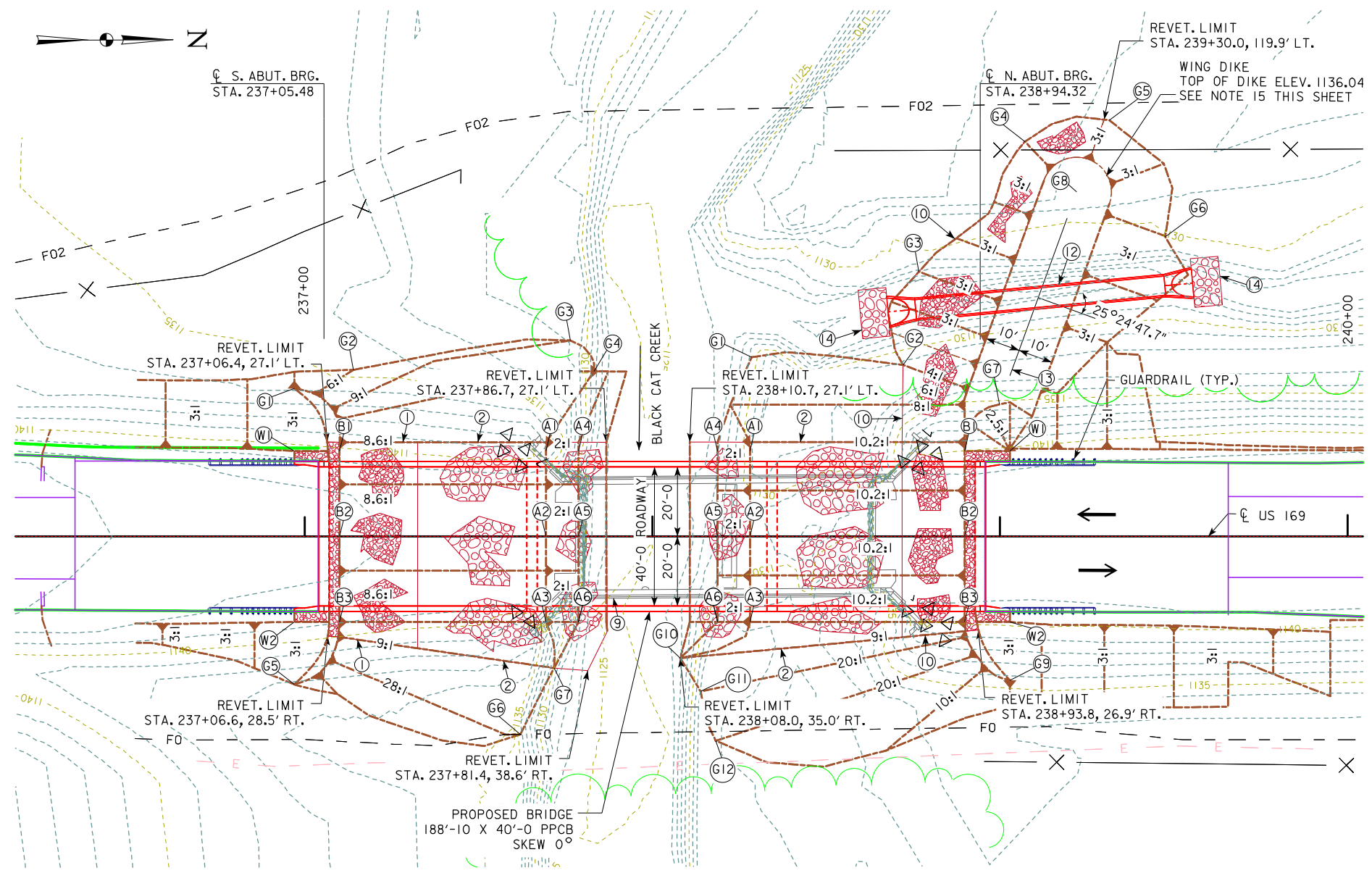
		SOUTH ABUTMENT			NORTH ABUTMENT		
	STATION	OFFSET	ELEV	STATION	OFFSET	ELEV	
A1	237+69.37	24.58' LT	1130.00	238+28.07	24.58' LT	1130.00	
A2	237+69.37	0	1130.00	238+28.07	0	1130.00	
A3	237+69.37	24.58' RT	1130.00	238+28.07	24.58' RT	1130.00	
A4	237+78.72	24.58' LT	1125.33	238+18.72	24.58' LT	1125.33	
A5	237+78.72	0	1125.33	238+18.72	0	1125.33	
A6	237+78.72	24.58' RT	1125.33	238+18.72	24.58' RT	1125.33	
B1	237+09.98	24.58' LT	1136.87	238+89.82	24.58' LT	1136.04	
B2	237+09.98	0	1136.87	238+89.82	0	1136.04	
B3	237+09.98	24.58' RT	1136.87	238+89.82	24.58' RT	1136.04	
G1	236+96.98	42.57' LT	1136.87	238+28.53	51.57' LT	1129.30	
G2	237+13.99	47.93' LT	1134.80	238+72.11	49.31' LT	1131.00	
G3	237+76.37	56.38' LT	1131.80	238+76.66	76.13' LT	1127.75	
G4	237+83.19	47.47' LT	1128.51	239+07.17	113.56' LT	1132.40	
G5	236+96.98	42.56' RT	1136.87	239+31.42	119.73' LT	1131.80	
G6	237+61.99	56.95' RT	1134.75	239+47.51	86.17' LT	1129.80	
G7	237+71.71	37.86' RT	1129.95	238+99.82	38.00' LT	1136.04	
G8				239+22.05	99.08' LT	1136.04	
G9				239+02.82	41.38' RT	1136.04	
G10				238+08.03	34.99' RT	1126.94	
G11				238+13.89	44.58' RT	1132.20	
G12				238+18.20	58.79' RT	1132.80	
W1	236+96.98	24.58' LT	1142.53	239+02.82	24.58' LT	1141.65	
W2	236+96.98	24.58' RT	1142.53	239+02.82	24.58' RT	1141.65	

W - END WING / EROSION STONE
BERM SLOPE TABLE ELEVATIONS REFLECT GRADING SURFACE
GRADING CONTROL-SOUTH:
POINTS A4, A5, A6 ARE BANK GRADING CONTROL LINE
GRADING CONTROL-NORTH:
POINTS A4, A5, A6 ARE BANK GRADING CONTROL LINE

ESTIMATED ARMORING QUANTITIES				
LOCATION	REVETMENT CL. E (TON)	EROSION STONE (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
BERM LINING - SOUTH ABUTMENT	420	67	625	298
BERM AND WING DIKE LINING - NORTH ABUTMENT	434	286	503	466
66 IN. RCP APRON SOUTH SPLASH PAD	14		23	9
66 IN. RCP APRON NORTH SPLASH PAD	14		23	9
TOTALS	882	353	1,174	782

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.

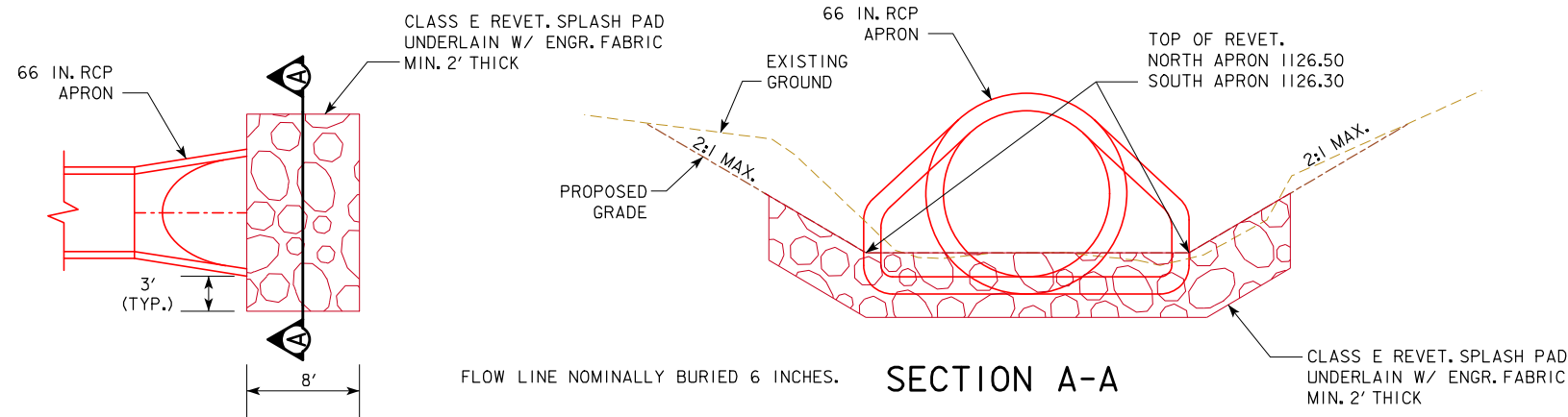
- 12 66 IN. RCP CULVERT; SEE ROAD SHEETS FOR TABULATION. ϕ OF PIPE AT ϕ OF WING DIKE = STA. 239+10.98, 68.68' LT. FLOW LINE NOMINALLY BURIED 6 INCHES.
- 13 ϕ OF WING DIKE
- 14 CLASS E REVET. SPLASH PAD UNDERLAIN W/ ENGR. FABRIC
- 15 REFER TO IDOT STANDARD ROAD PLAN EW-210 FOR DETAILS. GRADING SHOWN FOR DIKE BASED ON 0° SKEWED BRIDGE DETAIL IN ROAD PLAN. WING DIKE LOCATION STATION 238+99.82



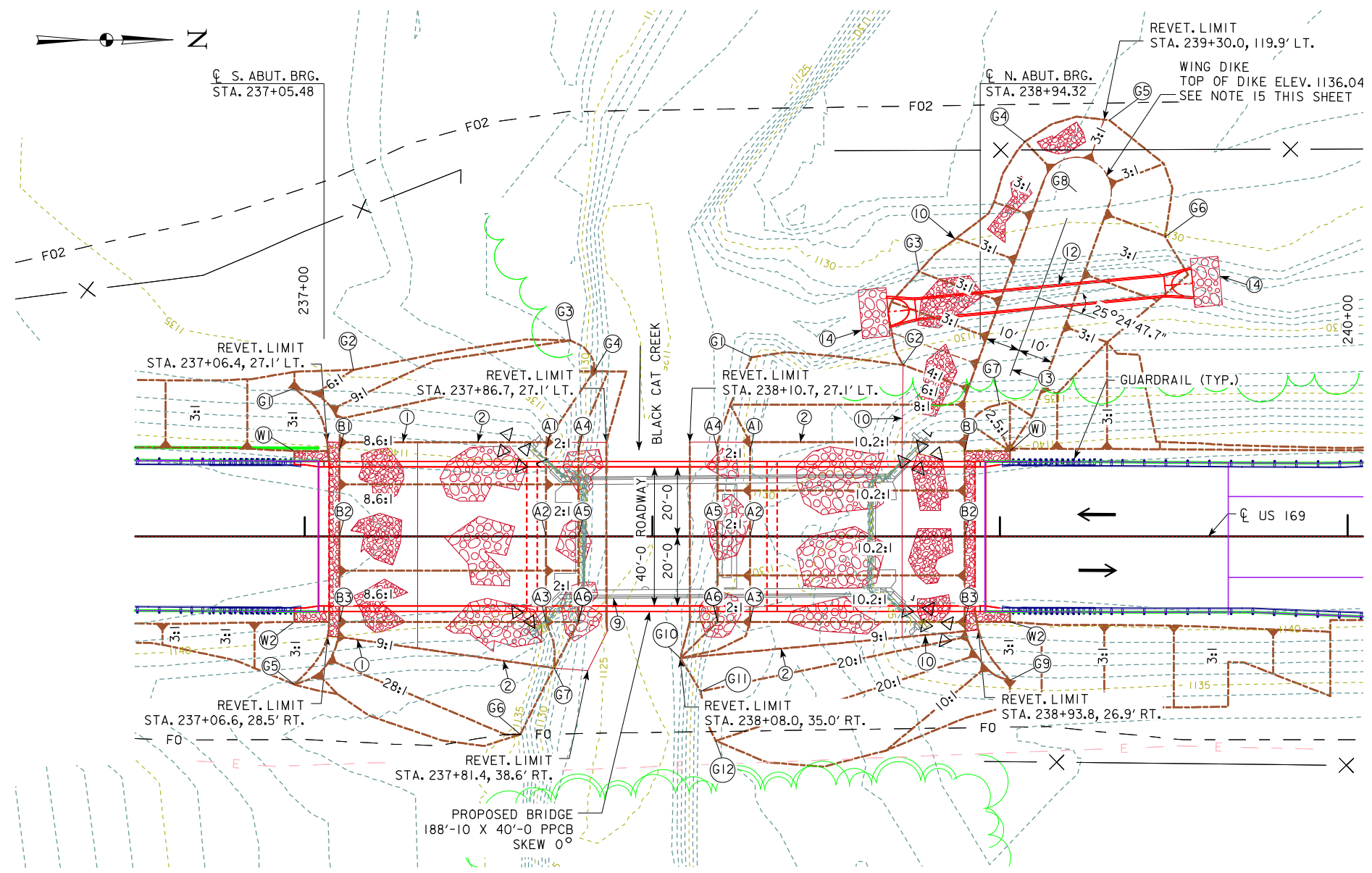
SITE PLAN

- 1 BERM PROTECTION EROSION STONE (0-9 THICK. MIN.) UNDERLAIN W/ ENGR. FABRIC
- 2 BERM PROTECTION CLASS E REVET. (2' THICK. MIN.) UNDERLAIN W/ ENGR. FABRIC
- 3 EXISTING BRIDGE 80' X 30' I BEAM DES # 157 TO BE REMOVED
- 10 BERM PROTECTION EROSION STONE (1-6 THICK. MIN.) UNDERLAIN W/ ENGR. FABRIC

PRELIMINARY
DESIGN FOR 0° SKEW
**188'-10 X 40'-0 PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE**
59'-11 END SPANS B BEAMS 69'-0 CENTER SPAN
SITUATION PLAN - SITE
STATION 237+99.90 APRIL 2020
KOSSUTH COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 2 OF 3 FILE NO. 31889 DESIGN NO. 122



66 IN. RCP APRON WITH SPLASH PAD DETAILS NOT TO SCALE



DETAILS

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: *David J. Mulholland* Date: 4/20/20

Printed or Typed Name: **David J. Mulholland**

My license renewal date is December 31, 2020

Pages or sheets covered by this seal: V.I-V.3

- ⑫ 66 IN. RCP CULVERT; SEE ROAD SHEETS FOR TABULATION. CL OF PIPE AT CL OF WING DIKE = STA. 239+10.98, 68.68' LT. FLOW LINE NOMINALLY BURIED 6 INCHES.
- ⑬ CL OF WING DIKE
- ⑭ CLASS E REVET. SPLASH PAD UNDERLAIN W/ ENGR. FABRIC
- ⑮ REFER TO IDOT STANDARD ROAD PLAN EW-210 FOR DETAILS. GRADING SHOWN FOR DIKE BASED ON 0° SKEWED BRIDGE DETAIL IN ROAD PLAN. WING DIKE LOCATION STATION 238+99.82



- ① BERM PROTECTION EROSION STONE (0-9 THICK. MIN.) UNDERLAIN W/ ENGR. FABRIC
- ② BERM PROTECTION CLASS E REVET. (2' THICK. MIN.) UNDERLAIN W/ ENGR. FABRIC
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- ⑩ BERM PROTECTION EROSION STONE (1-6 THICK. MIN.) UNDERLAIN W/ ENGR. FABRIC

PRELIMINARY
DESIGN FOR 0° SKEW

**188'-10 X 40'-0 PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE**

59'-11 END SPANS B BEAMS 69'-0 CENTER SPAN

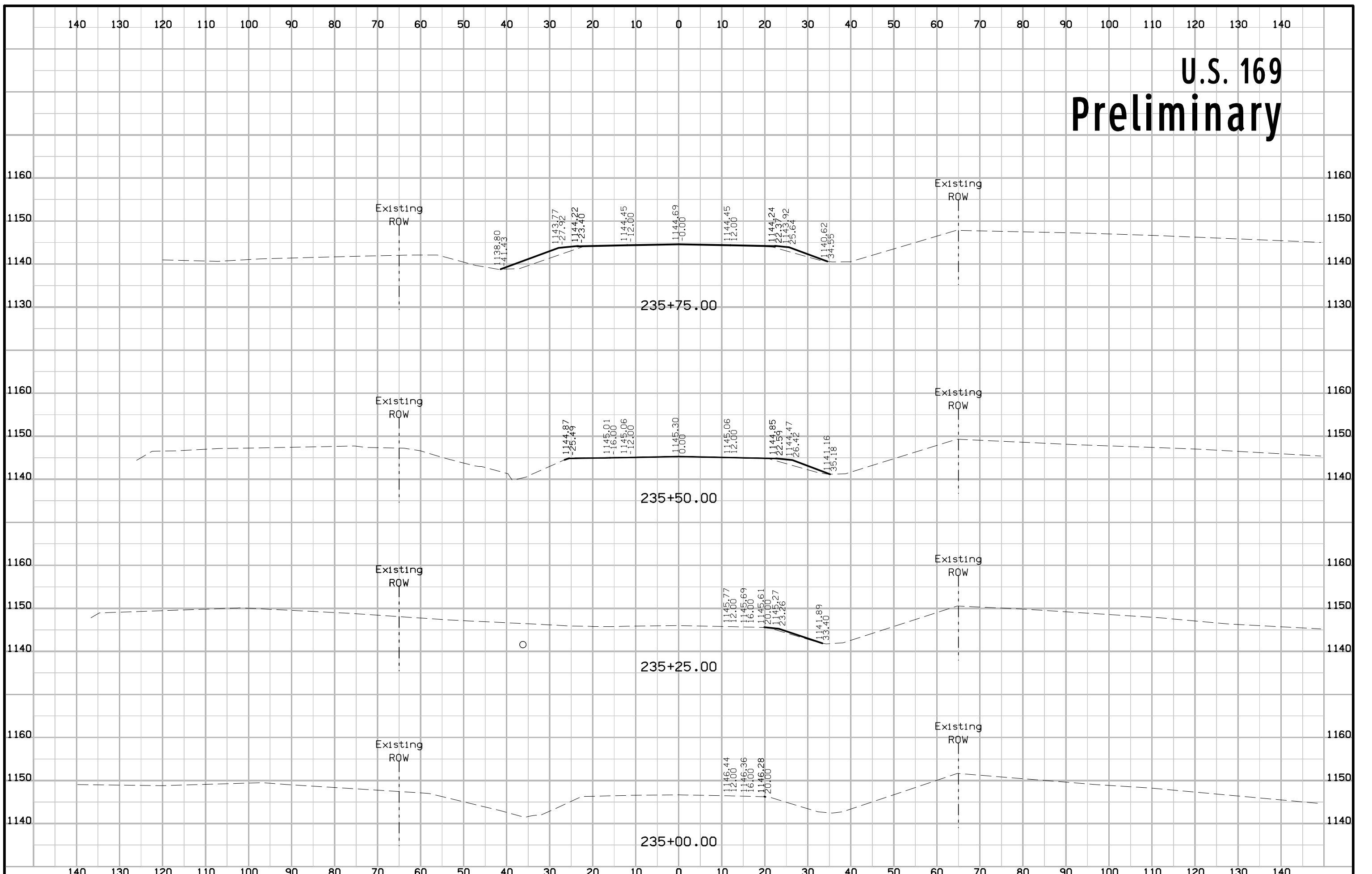
DETAILS

STATION 237+99.90 APRIL 2020

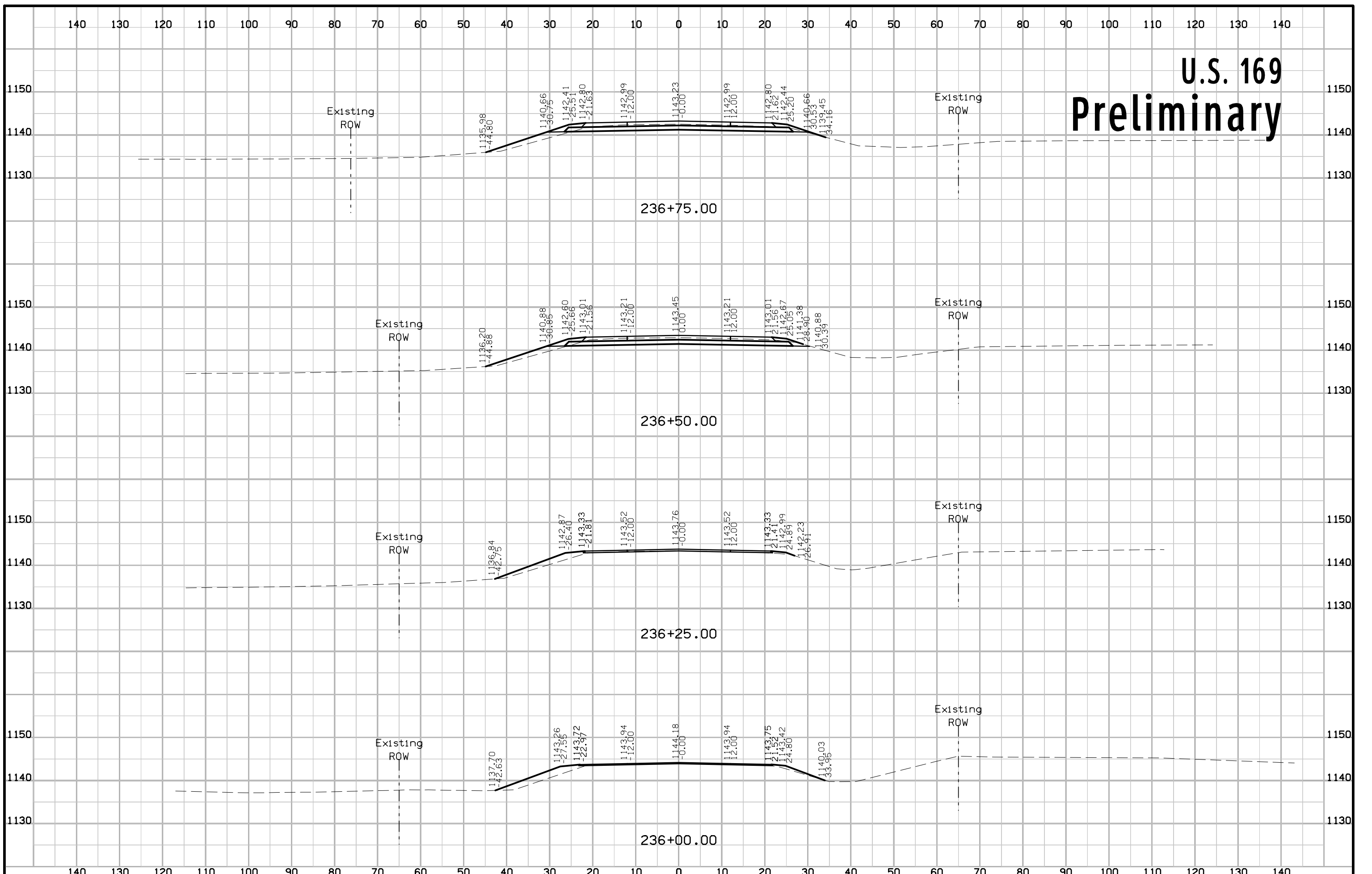
KOSSUTH COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 3 OF 3 FILE NO. 31889 DESIGN NO. 122

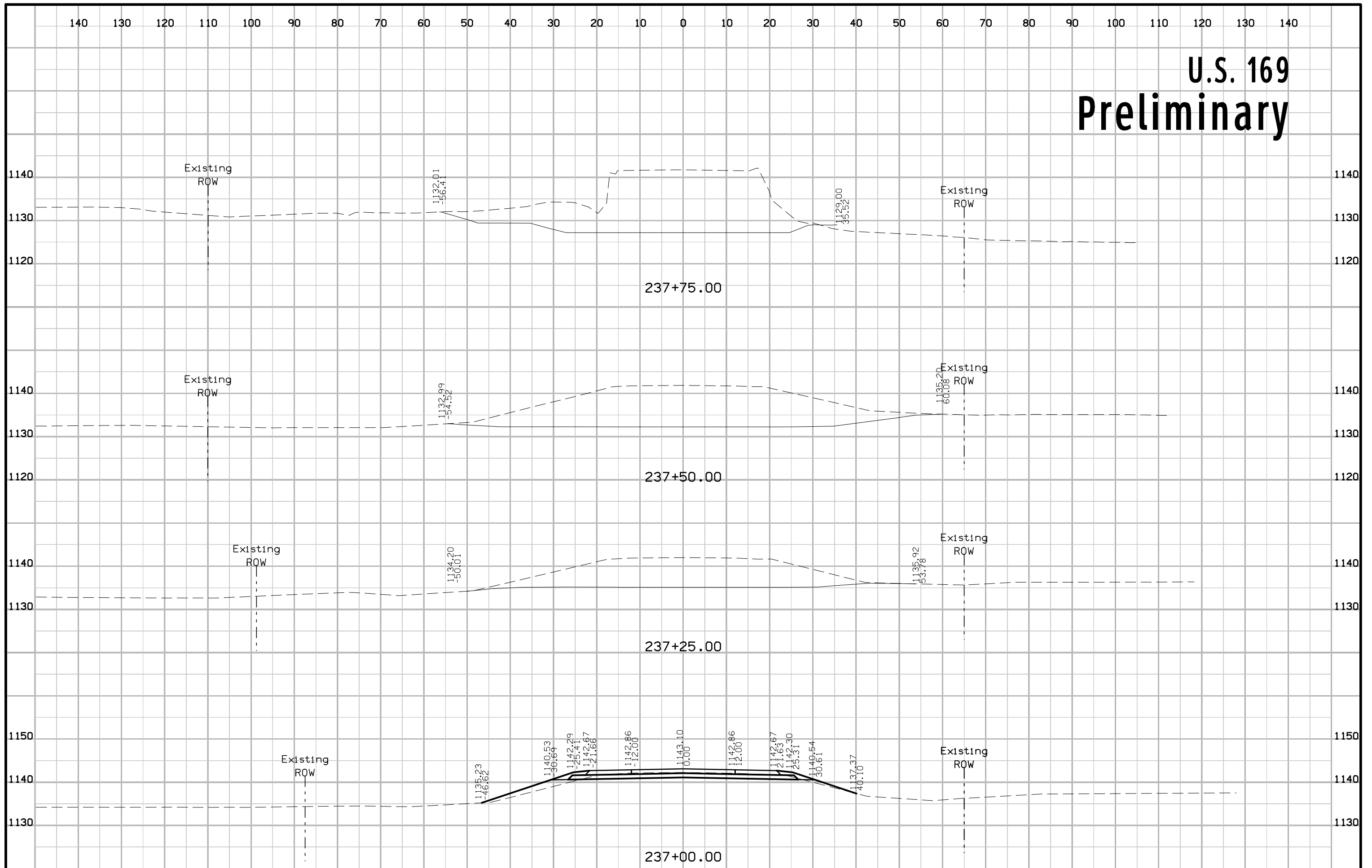
U.S. 169 Preliminary



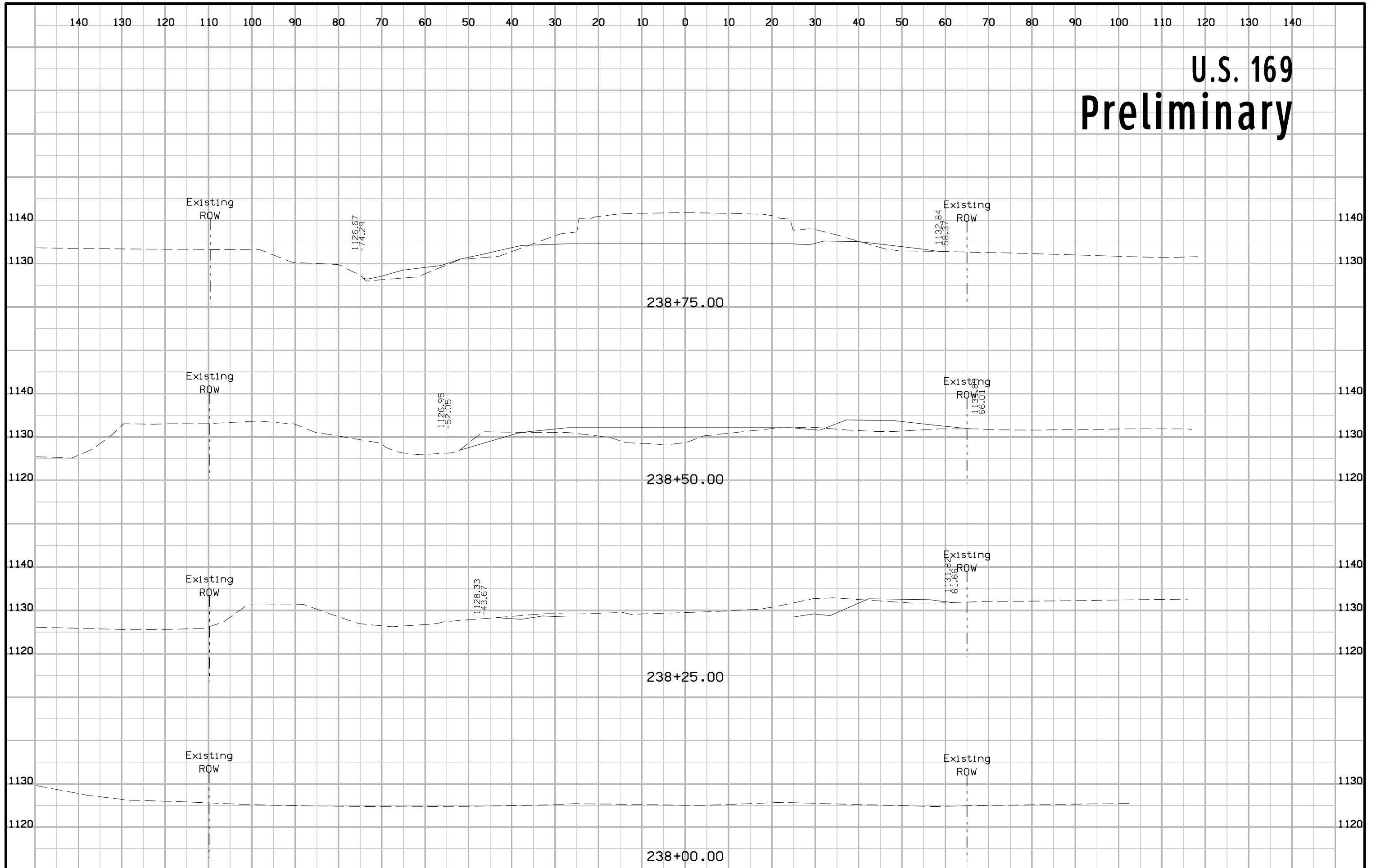
U.S. 169 Preliminary



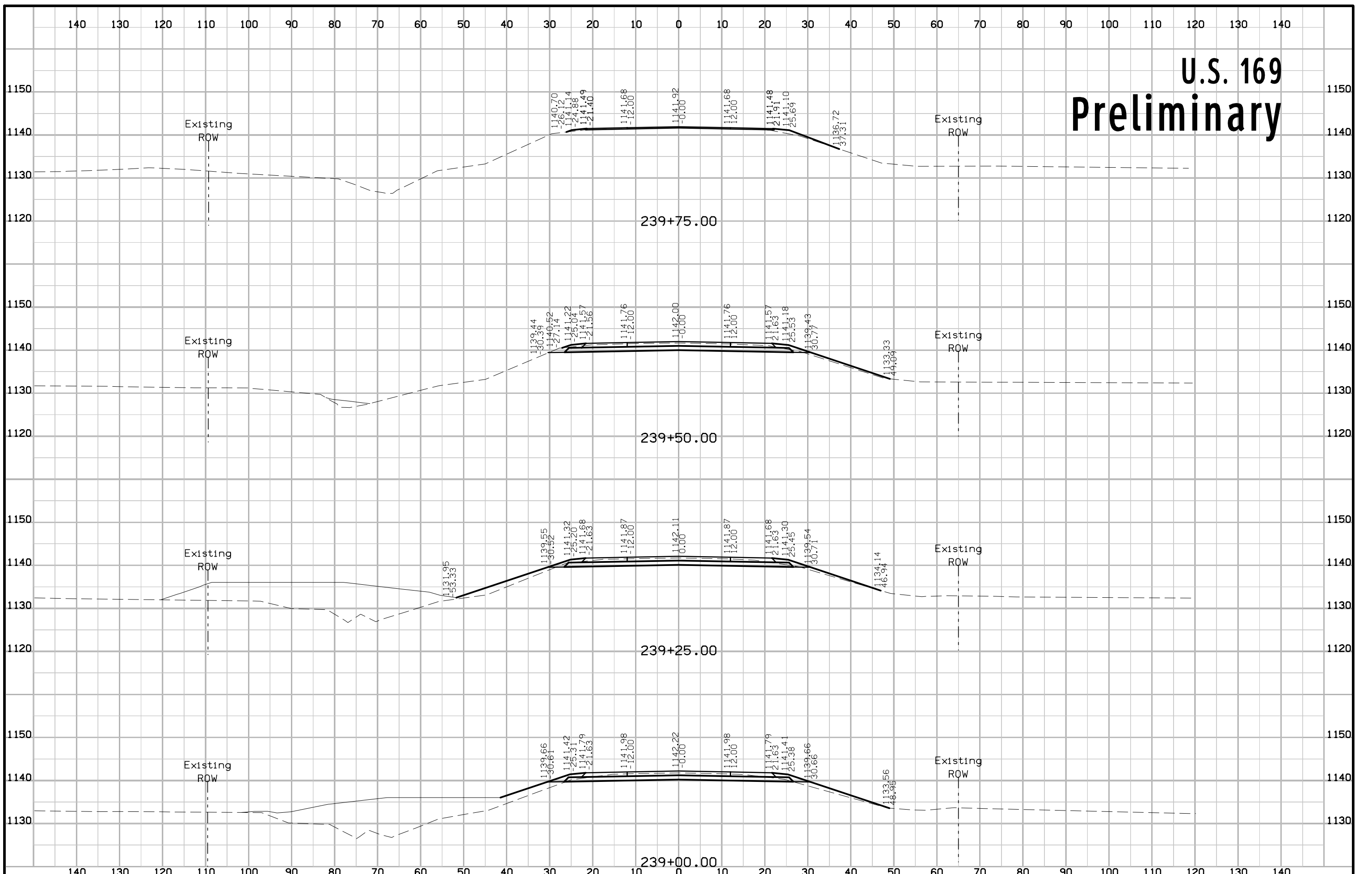
U.S. 169 Preliminary



U.S. 169 Preliminary



U.S. 169 Preliminary



U.S. 169 Preliminary

