

CERRO GORDO CO. BRIDGE REPLACEMENT-CCS
BRFN-065-8(65)--39-17
 LETTING DATE
 10/20/2020



Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM
CERRO GORDO COUNTY
 BRIDGE REPLACEMENT-CCS

E Branch Beaverdam Creek 0.7 mi S of Co Rd B60

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

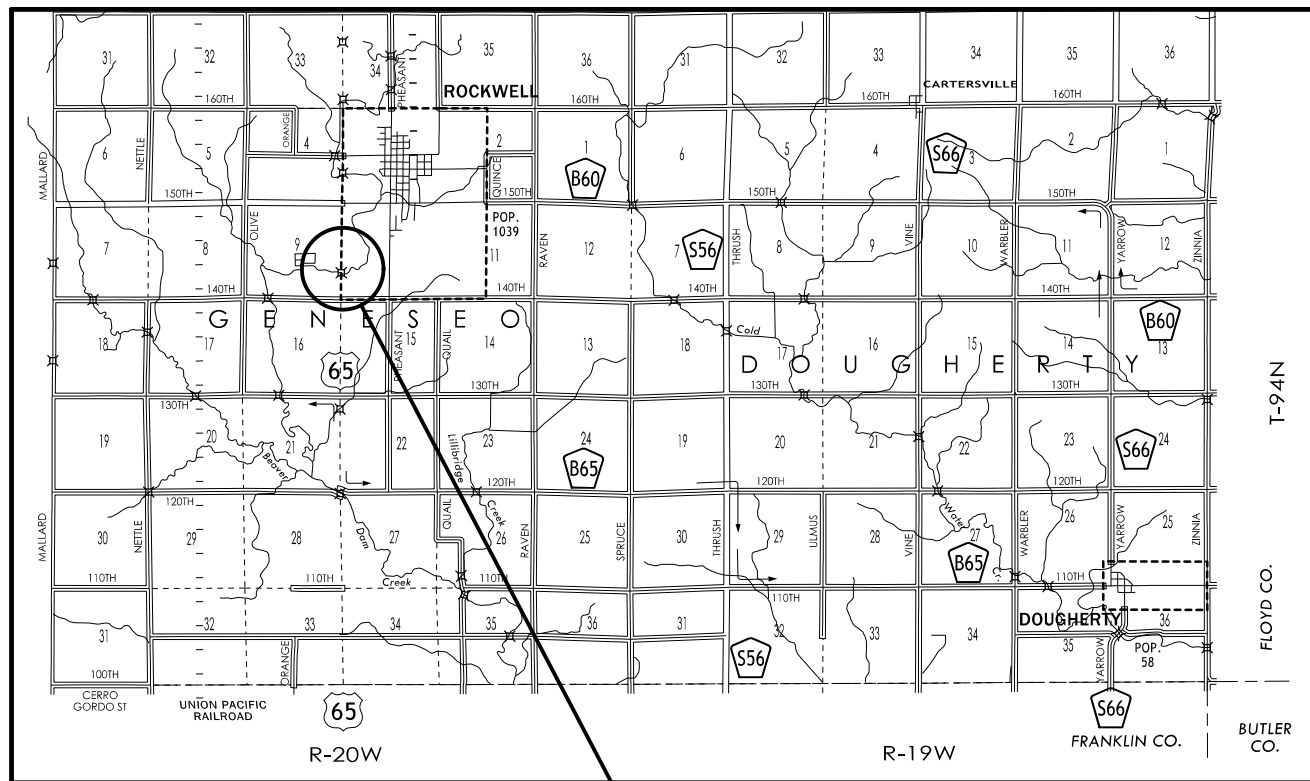
Value Engineering Saves. Refer to Article 1105.14 of the Specifications.



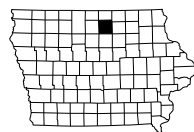
REVISIONS

TOTAL	X
PROJECT IDENTIFICATION NUMBER	16-17-065-030
PROJECT NUMBER	BRFN-065-8(65)--39-17
R.O.W. PROJECT NUMBER	

INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	Title Sheets
A.1	Title Sheet
A.2	Project Location Map
B Sheets	Typical Cross Sections and Details
B.1 - 2	Typical Cross Sections and Details
D Sheets	Mainline Plan and Profile Sheets
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2	US 65
G Sheets	Survey Sheets
G.1 - 3	Reference Ties and Bench Marks
J Sheets	Traffic Control and Staging Sheets
J.1	Traffic Control Plan
* J.2	Detour Map
V Sheets	Bridge and Culvert Situation Plans
V.1	Bridge Situation Plans
W Sheets	Mainline Cross Sections
W.1 - 7	Mainline Cross Sections
	* Color Plan Sheets



Project Location
 FHWA No. 18880
 Refer to Sheet A.2



DESIGN DATA RURAL			
2021 AADT	3100	V.P.D.	
2041 AADT	3600	V.P.D.	
20-- DHV	--	V.P.H.	
TRUCKS	11	%	
Total Design ESALs			

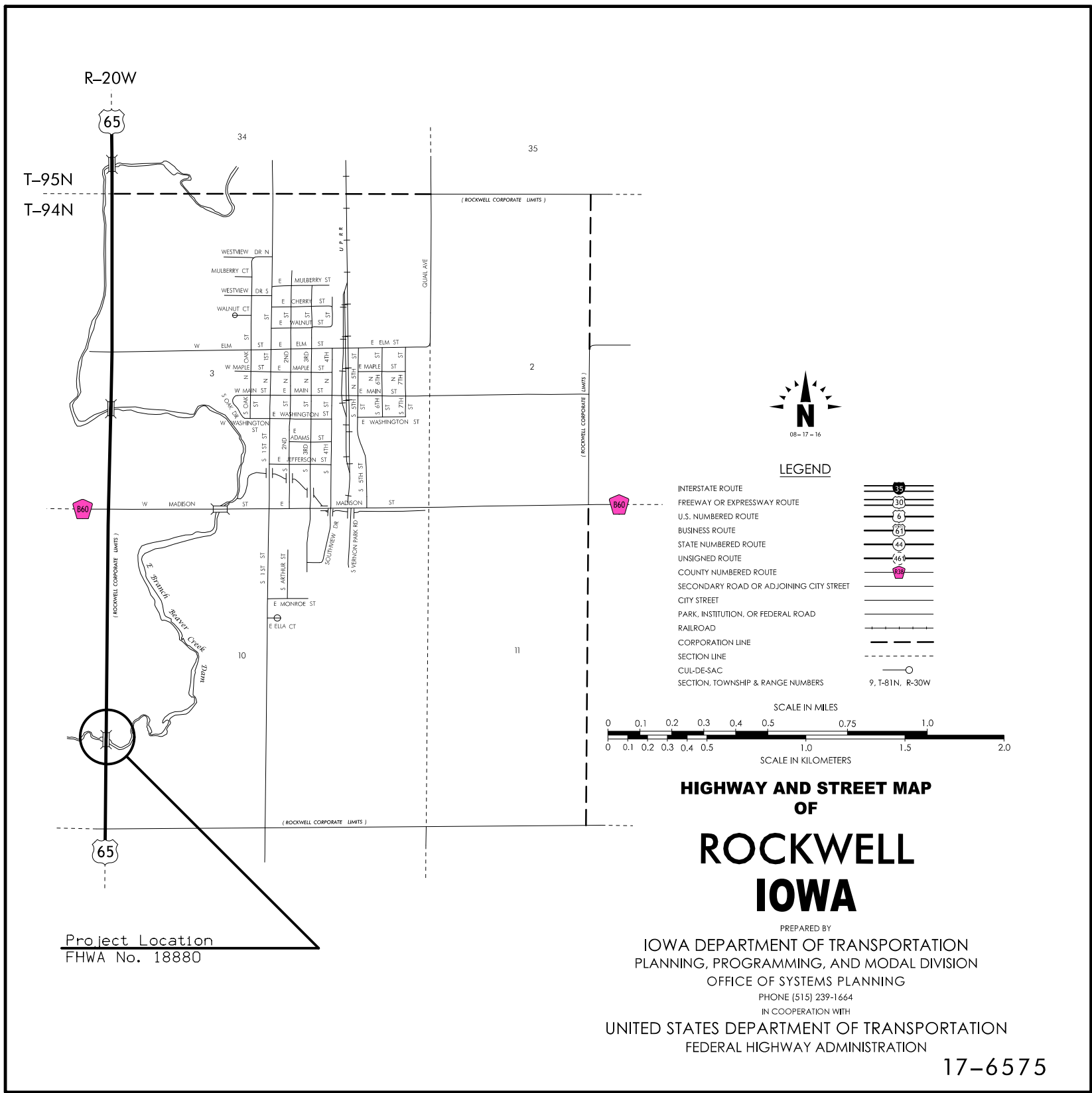
INDEX OF SEALS		
SHEET NO.	NAME	TYPE
A.1	X	Primary Signature Block
X	X	X

D4 PLAN - Date: 06/23/2020
 D5 PLAN - Date: 11/09/2018

PRELIMINARY PLANS

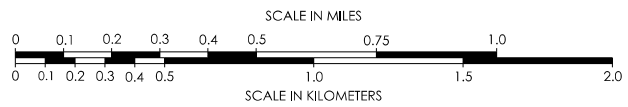
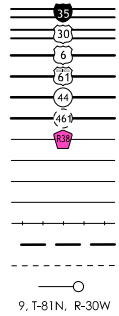
Subject to change by final design.

D3 PLAN - Date: 06/08/2018



LEGEND

- INTERSTATE ROUTE
- FREEWAY OR EXPRESSWAY ROUTE
- U.S. NUMBERED ROUTE
- BUSINESS ROUTE
- STATE NUMBERED ROUTE
- UNSIGNED ROUTE
- COUNTY NUMBERED ROUTE
- SECONDARY ROAD OR ADJOINING CITY STREET
- CITY STREET
- PARK, INSTITUTION, OR FEDERAL ROAD
- RAILROAD
- CORPORATION LINE
- SECTION LINE
- CUL-DE-SAC
- SECTION, TOWNSHIP & RANGE NUMBERS

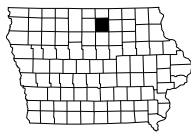


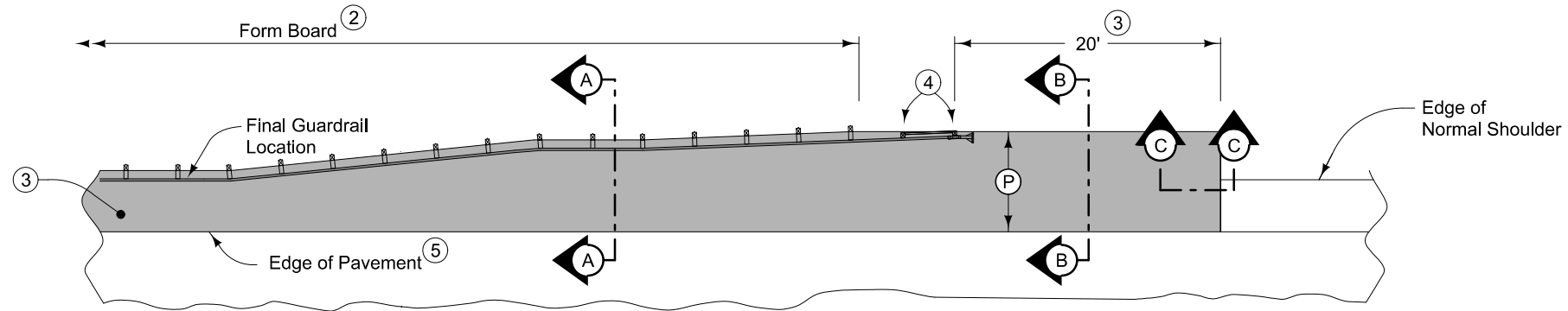
**HIGHWAY AND STREET MAP
OF
ROCKWELL
IOWA**

PREPARED BY
IOWA DEPARTMENT OF TRANSPORTATION
PLANNING, PROGRAMMING, AND MODAL DIVISION
OFFICE OF SYSTEMS PLANNING
PHONE (515) 239-1664
IN COOPERATION WITH
UNITED STATES DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
17-6575



Project Location
FHWA No. 18880





PLAN VIEW

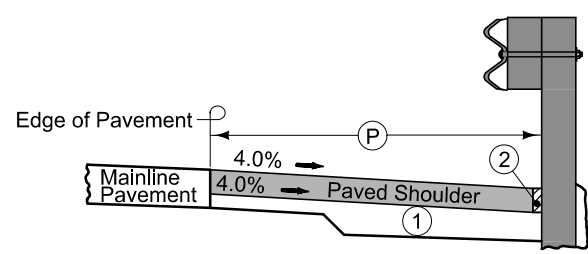
9" HMA Paved Shoulder at guardrail. 8" PCC may be substituted with the following jointing layout:

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.

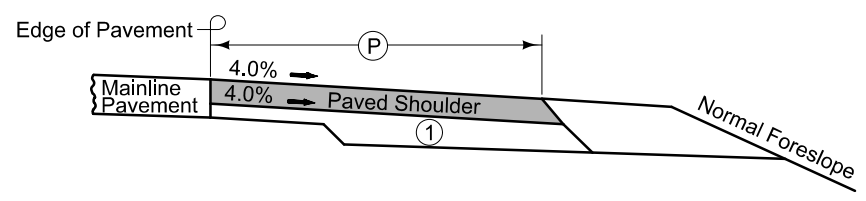
Compaction of HMA is required to face of guardrail post. Hand compaction will be allowed under guardrail. Removal and reinstallation of guardrail will be allowed with no additional payment.

Refer to Tabulation 112-9 for shoulder quantities.

- 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.

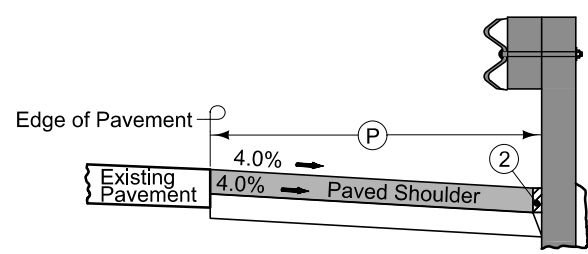


Section A-A

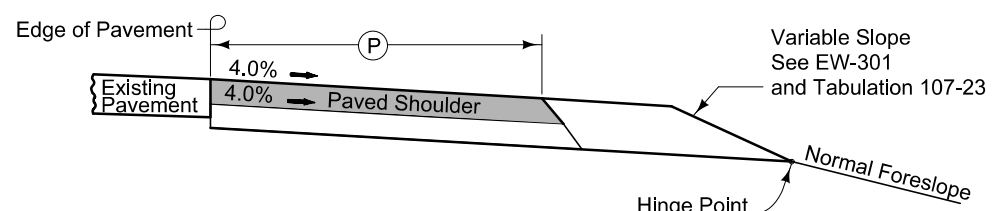


Section B-B

NEW CONSTRUCTION

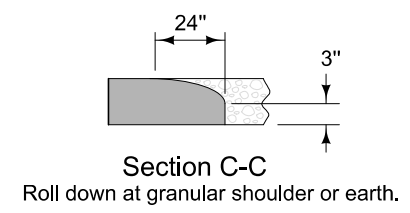


Section A-A



Section B-B

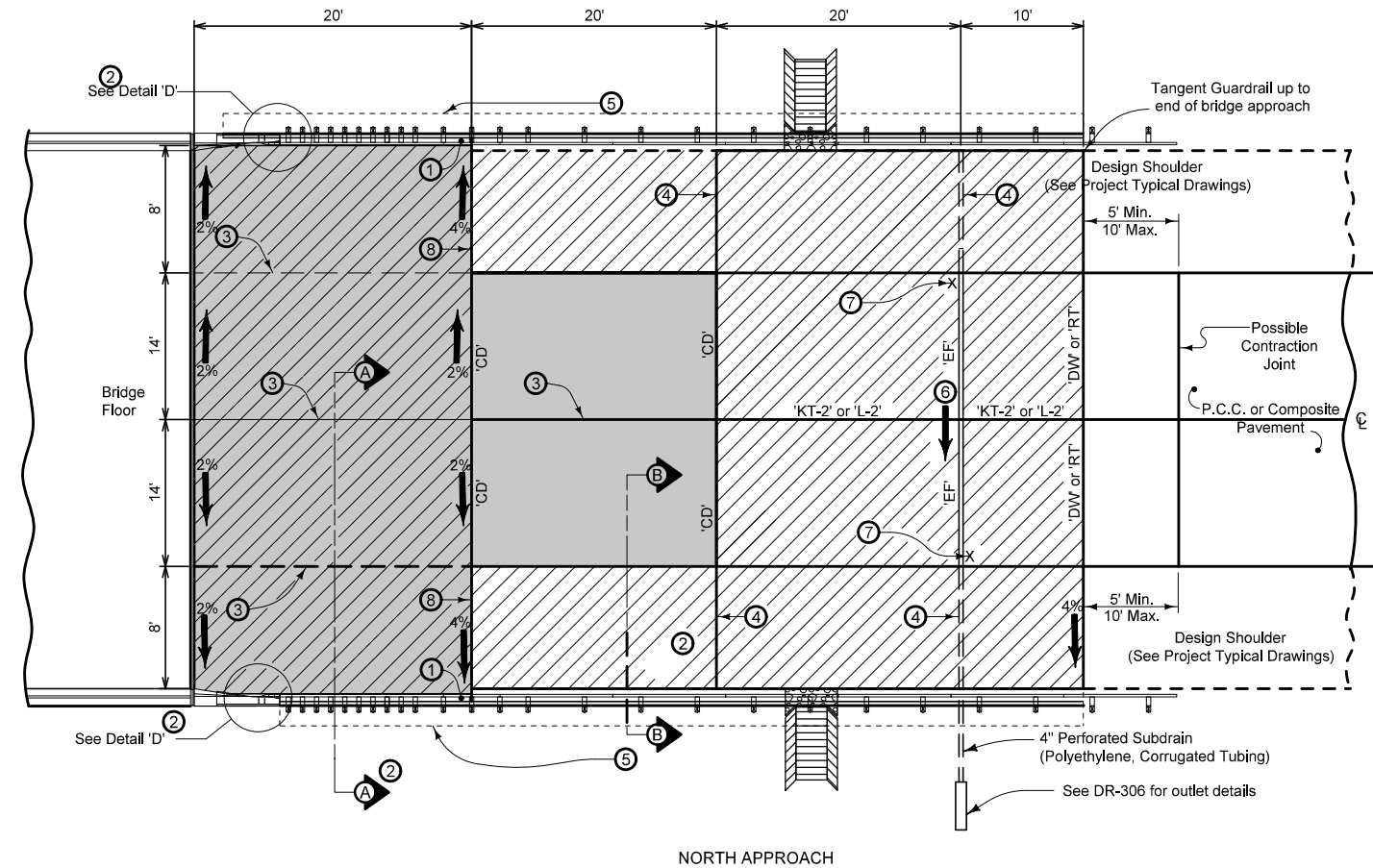
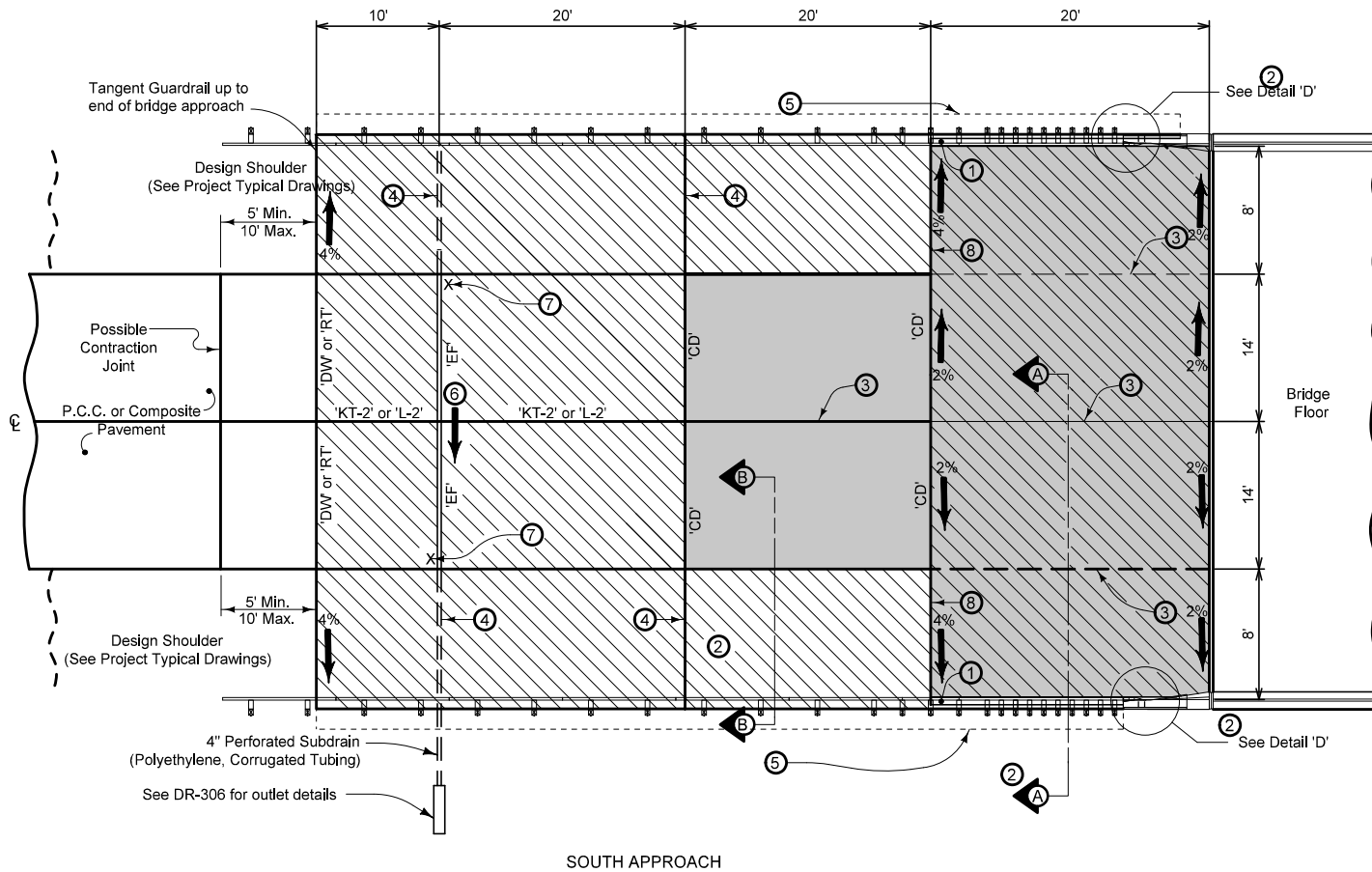
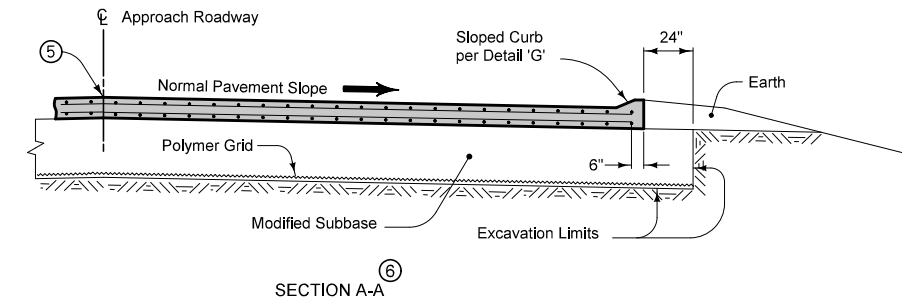
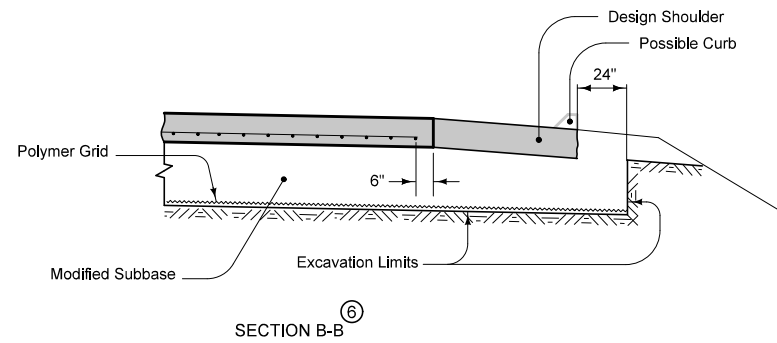
EXISTING SHOULDER



Section C-C

Roll down at granular shoulder or earth.

PAVED SHOULDER AT GUARDRAIL



For joint details, see PV-101.

Pay limits for contract item include the following areas:

- Double Reinforced Section
- Single Reinforced Section
- Non-Reinforced Section

- ① Build 4 inch Sloped Curb to end of Double Reinforced Section.
- ② See BR-201, BR-202, BR-203, or BR-204.
- ③ Longitudinal Joint (PV-101):
Single Pour - Saw cut joint per Detail B.
Two Pours - Use 'KS-1' joint (Single Reinforced Section).
Use 'KS-2' joint (Double Reinforced Section).
- ④ Extend 'CD' and 'EF' joints where PCC Shoulder.
- ⑤ Polymer Grid and excavation limits of Modified Subbase 2 feet outside of pavement edge. See BR-201, BR-202, BR-203, or BR-204.
- ⑥ Slope subdrain to drain.
- ⑦ Place an "X" in the plastic concrete near the 'EF' joint at the outside edge of pavement.
- ⑧ Place 'RD' Joint where PCC shoulder. Place 'B' joint otherwise.

ACCESS POINTS AND SAFETY RAMPS

Refer to Cross-Sections

Length of unclassified pipe calculated is based on using Corrugated Metal 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			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	① PR	② SR		H	Size			Pipe Length	Lt.	Rt.	HMA	PCC	TON
			1 or 2	LF	LF	FT	FT	FT		FT	IN			LF	LF	LF			
120+18.13	Lt.	C															UAC		
127+75.81	Lt.	C															UAC		

SURVEY SYMBOLS

- Default_Point Default Point Feature
- ▲ SCR Section Corner
- SOP Size of Pipe or Culvert
- CP Control Point
- ▲ BM Bench Mark
- WC Wild Card (Misc. Field Shot)
- EW Edge of Water
- BL Topo Breakline
- D Centerline Draw or Stream (Down)
- DU Centerline Draw or Stream (Up)
- TIL Tile Line
- C Centerline BL of Road (ML or SR)
- CON Concrete or A/C Slab
- EP Edge of Paved Roads (ML or SR)
- SNP Unpaved Shoulder
- GR Ground Shot
- ENT Centerline BL of Entrance
- ROW Right of Way Mark
- ENU Edge Unpaved Entrance & Parking
- BNK Stream Bank
- FW Wire Fence
- PPA Power Pole Co. 1
- BRG Bridge
- BCL Bridge Centerline
- BD Bridge Deck
- LIN Miscellaneous Line
- GDL Guard Rail Steel
- OUT Tile Outlet
- PIP Pipe Culvert
- PLG Location of General Photo
- BBB Bottom of Bridge Beam
- TW Top of Water
- FO1D Fiber Optic Co. 1 - Quality D
- TL1D Telephone Line Co. 1 - Quality D
- TP TPD Telephone Pedestal

UTILITY LEGEND

- Power Pole MidAmerican Energy
Adam Streeter
319-291-4742
astreeter@midamerican.com
- Iowa Communications Network - Quality D
Doug Ebelsheiser
515-725-4742
doug.ebelsheiser@iowa.gov
- Rockwell Coop. Telephone - Quality D
David Severin
641-822-3211
rockwell@netins.net

PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design	Color No.	Description
Green	(2)	Green	Existing Topographic Features and Labels
Blue	(1)	Blue	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Magenta	(5)	Magenta	Existing Utilities
SHADING			
Design	Color No.		
Yellow	(4)	Yellow	Highlight for Critical Notes or Features
Red	(3)	Red Hatched	Delineates Restricted Areas
Lavender	(9)	Lavender	Temporary Pavement Shading
Gray, Light	(48)	Light Gray	Proposed Pavement Shading
Gray, Med	(80)	Medium Gray	Proposed Granular Shading
Gray, Dark	(112)	Dark Gray	Proposed Grade and Pave Shading "In conjunction with a paving project"
Brown, Light	(236)	Light Brown	Grading Shading
Tan	(8)	Tan	Proposed Sidewalk Shading
Blue, Light	(230)	Light Blue	Proposed Sidewalk Landing Shading
Pink	(11)	Pink	Proposed Sidewalk Ramp Shading

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

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

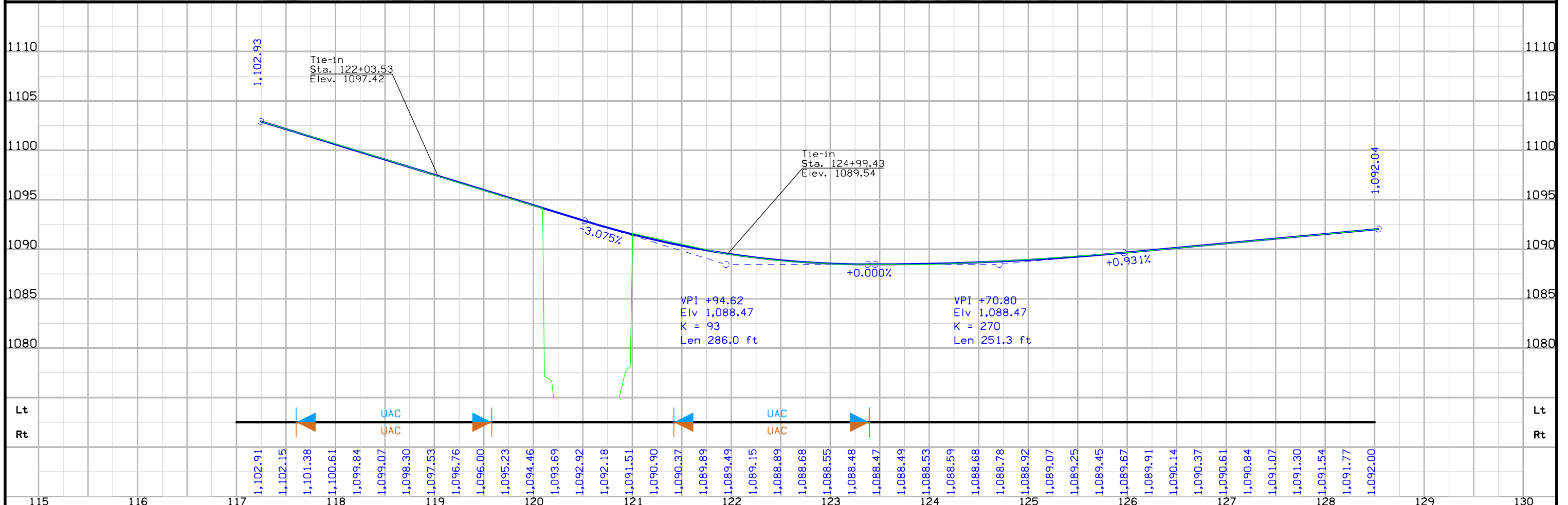
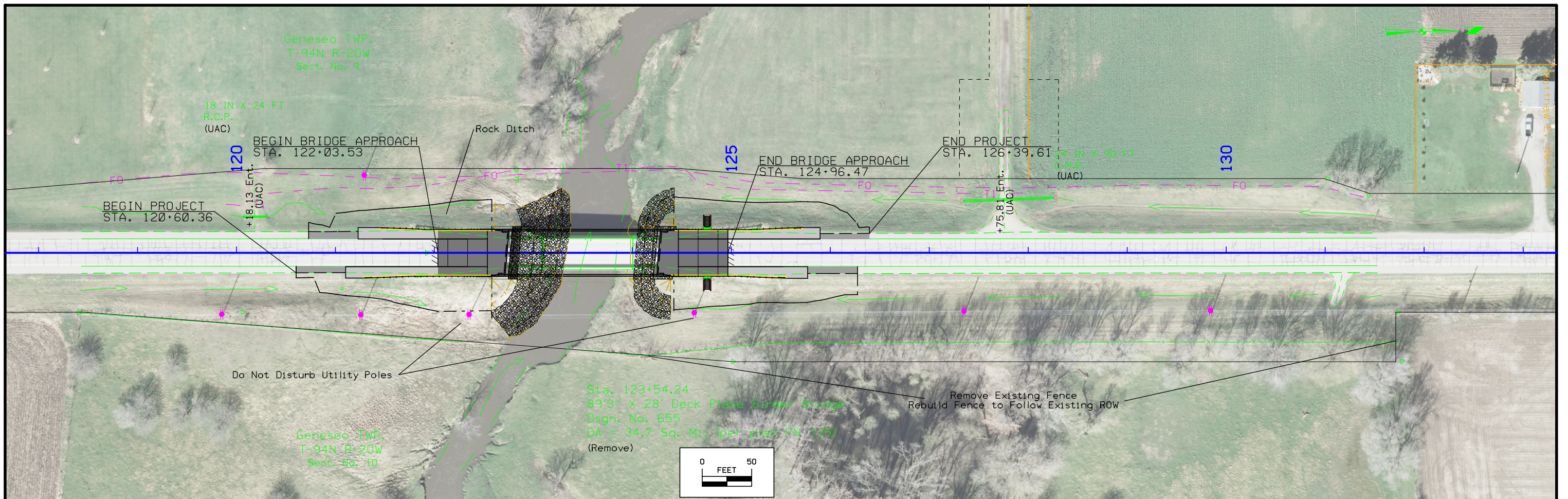
- Reference Point
- Station
- ▲ Section Corner
- Ground Line Intercept
- Saw Cut
- Guardrail
- Trench Drain
- HighTension Cable Guardrail
- Sheet Pile
- Pavement Removal
- Clearing & Grubbing Area

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
- C/A Access Control
- Property Line

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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



FILE NO.	ENGLISH	DESIGN TEAM	JIA \ MILLER \ DEWOLF	CERRO GORDO COUNTY	PROJECT NUMBER	BRFN-065-8(65)--39-17	SHEET NUMBER	D.2
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Survey Information

Cerro Gordo County
BRFN-065-8(065)--39-17
Bridge Replacement
U.S. 65 Bridge Over the East Branch of Beaver Dam Creek
0.7 miles South of County Road B60
PIN 16-17-065-030
Sap-0884.2

General Information

Measurement units for this survey are US survey feet. This survey is for proposed Bridge replacement and new bridge approach sections. Project datum and control information is provided by Design Survey Office. This project is a Partial DTM with Photo control.

Vertical Control

Vertical datum for this survey is NAVD88 (Computed using Geoid12B). GRS80 Ellipsoidal Height was computed at project Pts. CP1, CP2, G113, & G118 by conducting a concurrent 4-hour static observation. The project control is relative to nearby Iowa RTN base stations. Additional benchmarks were placed throughout the project using a GNSS Base-Rover setup relative to Pt. CP1 and Pt. CP2. Two observations with a minimum of 4-hours between were collected and used in a weighted average.

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

Cerro Gordo County Control mark G113 has a published Elev. of 1075.39 (Geoid 12A)
Survey Elev. = 1075.37 (Geoid 12B)

Cerro Gordo County Control mark G118 has a published Elev. of 1129.73 (Geoid 12A)
Survey Elev. = 1129.79 (Geoid 12B)

This survey established 2 local bench marks:

BM 500 Survey Elev. = 1096.67

BM 501 Survey Elev. = 1094.24

No As-Built Plan benchmarks could be located, however survey elevations obtained on the bridge seats are in close agreement with the plan bridge seat elevations as follows:

AB Plan FN 115 Design No. 655
North abutment bridge seat plan elev. = 1086.87
Survey elev. = 1086.81

South abutment bridge seat plan elev. = 1089.14
Survey elev. = 1089.06

The average vertical difference is -0.07' to be applied to as built elevations.

Horizontal Control

The project coordinate system for this survey is Iowa RCS Zone 2 (U.S. Survey Feet). This survey control is relative to IA RTN reference stations. IA RTN Reference Station coordinates are relative to the National Reference Station network datum: NAD83 (2011) for Epoch 2010.00 (2013 Adjustment). Coordinates were determined by conducting a 4-hour concurrent static observation. Additional control points were placed throughout the project using a GNSS Base-Rover setup relative to Pt. CP1 and Pt. CP2. Two observations with a minimum of 4-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 No. FN 115. Survey stationing was equated to the plan POT at STA 135+14.1 and run back without equation throughout the survey.

Survey stationing relates to as built plan stationing as follows:

POT Sta. 135+14.1 As-built Plans Project No. FN 115
Survey POT Sta. 135+14.1

Bridge CL Sta. 123+54.2 As-built Plans Project No. FN 115
Survey Bridge CL Sta. 123+54.24

PI Sta. 108+69.5 As-built Plans Project No. FN 115
Survey PI Sta. 108+70.40

HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING

HORIZ. DATUM: NAD83(2011) For EPOCH 2010.00 (2013 Adjustment)

VERT. DATUM: NAVD88

Ia. Regional Coordinate System Zone 2

Name: CP1

Description: Set FENO Mon w/Brass Cap Stamped IA DOT CP1 - 3" Below Grade - Mon Is 0.36 mi N of Intersection US Hwy 65 & 140th St 56' W of CL US Hwy 65 & 14' N of Center Drive Ent to West

Northing: 9728949.58 Easting: 12378905.40 Elevation: 1087.15

Name: CP2

Description: Found IDOT ROW Rail -1" Above Grade- Drilled 1/4" Diameter Hole in Ball - Rail Is 150' N of Intersection US Hwy 65 & 140th St & 58' W of CL US Hwy 65

Northing: 9727180.78 Easting: 12378869.82 Elevation: 1119.21

Name: G113

Description: Found Cerro Gordo Co GPS Control Mon w/Cap Stamped G113 Inside NGS Style Access Cover 275' W of Intersection US Hwy 65 & 130th St & 48' N of Center 130th St & W of Old RR Bed

Northing: 9721800.18 Easting: 12378559.48 Elevation: 1075.37

Name: G118

Description: Found Cerro Gordo Co GPS Control Mon w/Cap Stamped G118 Inside NGS Style Access Cover 0.60 mi S of Intersection US Hwy 65 & Co Route B55 (170th St) 80' E of CL US Hwy 65 & 120' N of Center Field Entrance to E

Northing: 9739655.86 Easting: 12379215.68 Elevation: 1129.79

Name: 500

Description: Found Survey Marker Nail Top of Barrier Rail SE End 89'3" x 28' Deck Girder Bridge

Northing: 9728468.43 Easting: 12378966.85 Elevation: 1096.67

Name: 501

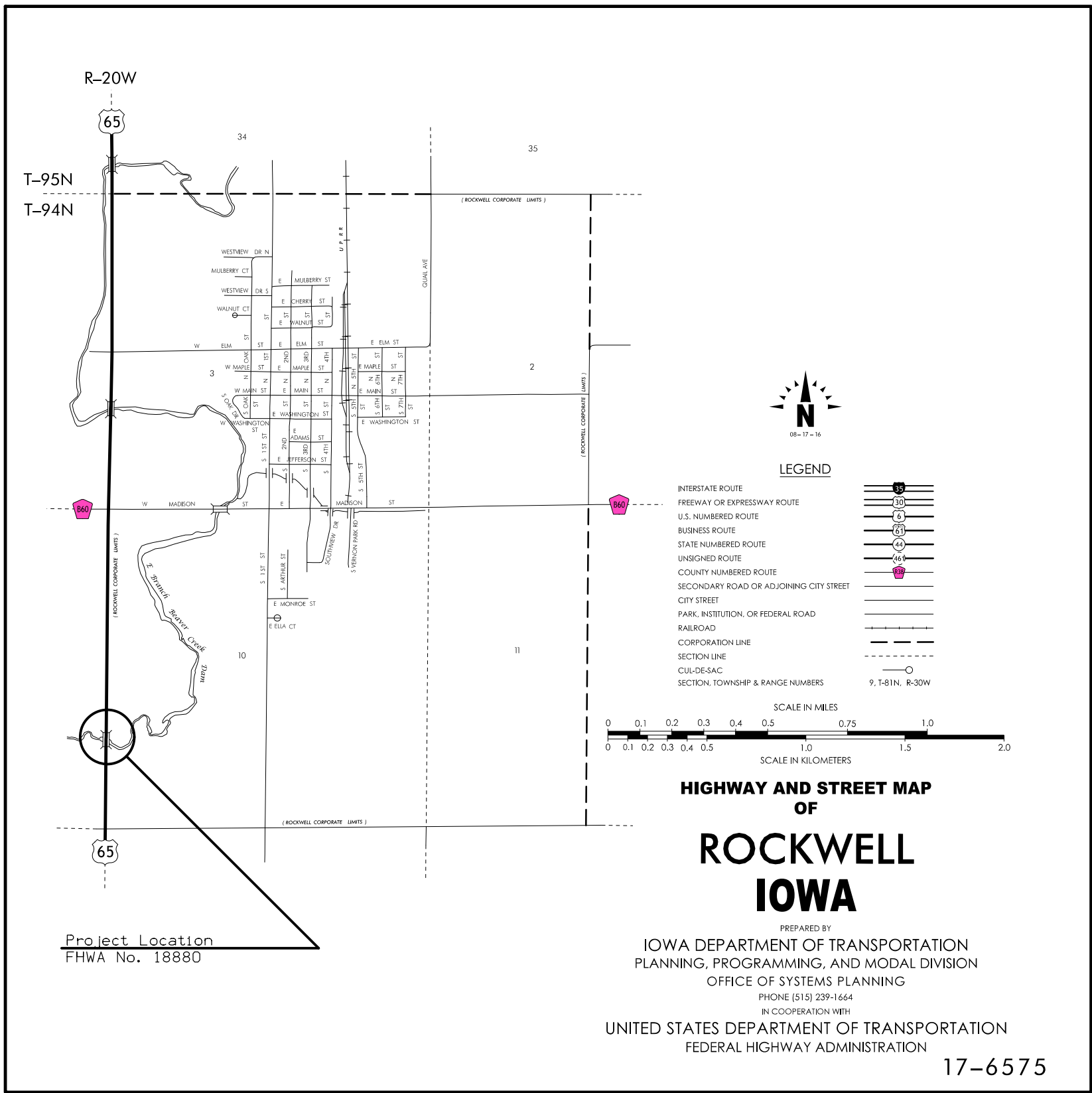
Description: Found Survey Marker Nail Top of Barrier Rail NW End 89'3" x 28' Deck Plate Girder Bridge

Northing: 9728558.77 Easting: 12378938.94 Elevation: 1094.24

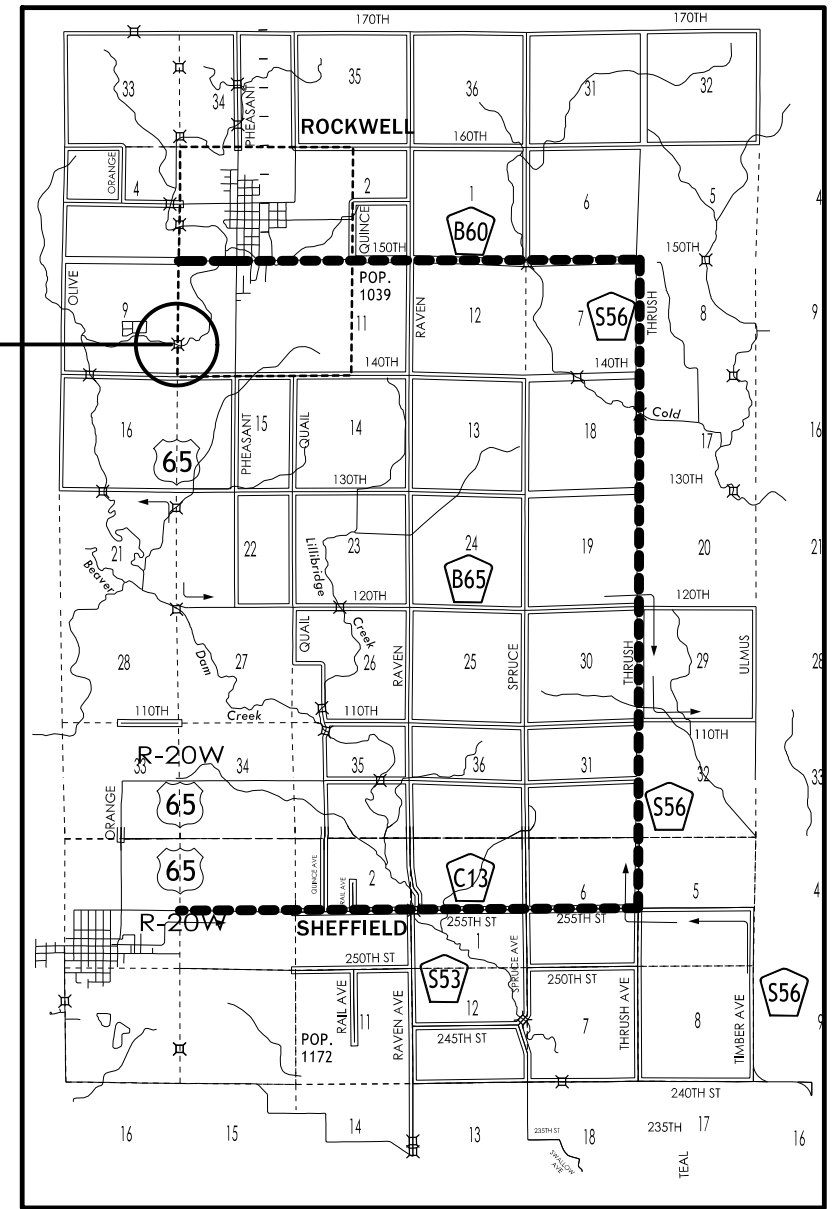
108-23A
08-01-08

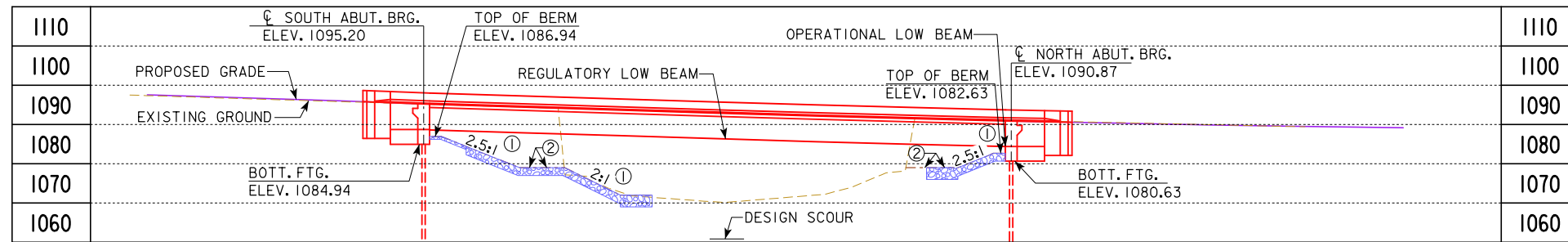
TRAFFIC CONTROL PLAN

Traffic will be detoured via County Road C13 East to S56, then North to B60, and back to U.S. 65.



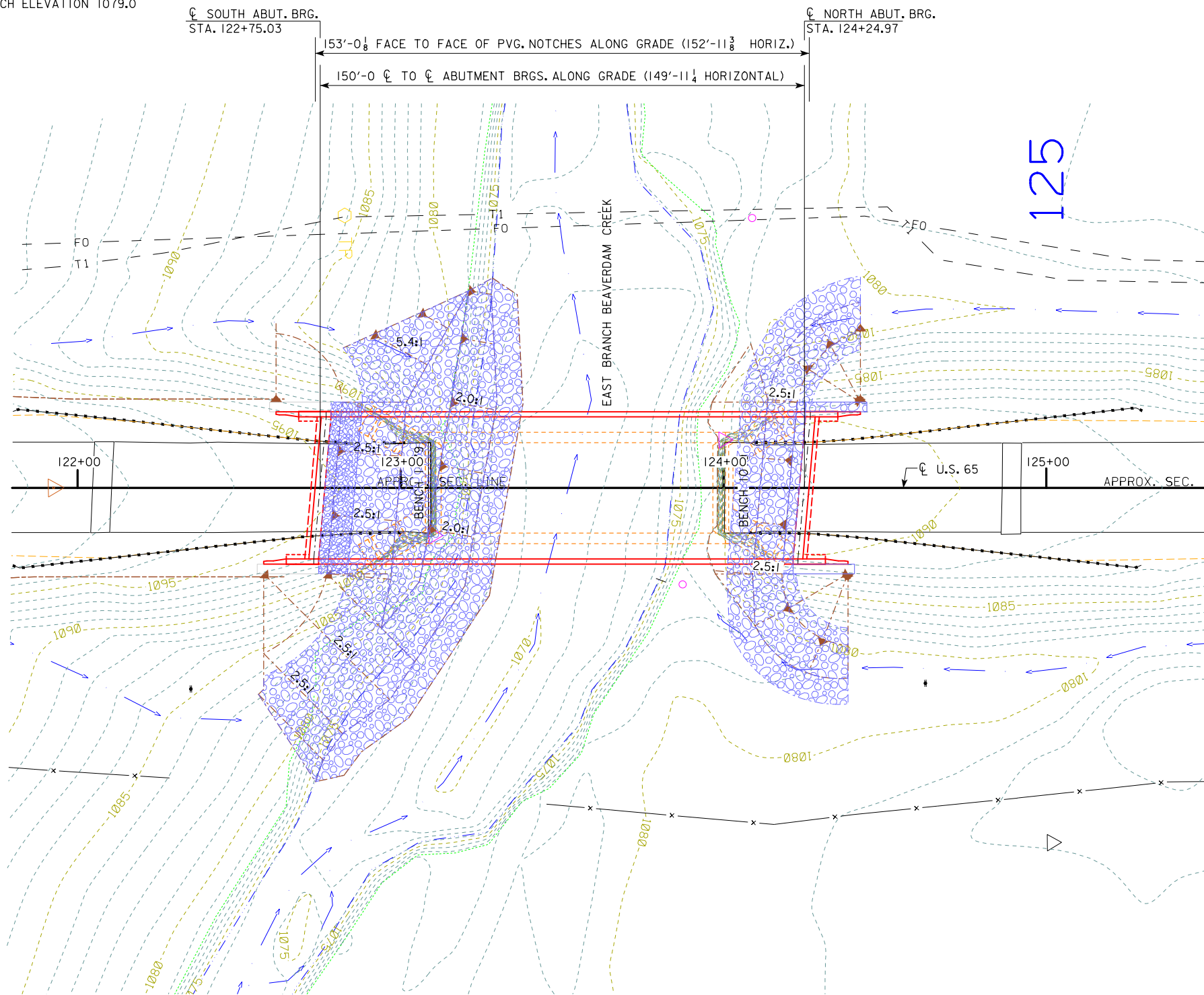
Project Location





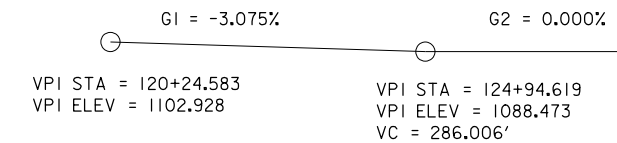
LONGITUDINAL SECTION ALONG CL APPROACH ROADWAY

- ① NORMAL TO ABUTMENT
- ② BENCH ELEVATION 1079.0



SITUATION PLAN

BENCH MARK NO.



PROPOSED PROFILE GRADE US 65

NOTES:

1. TOP OF BRIDGE DECK CROWN AT CENTERLINE ROADWAY IS 0.03' BELOW PROFILE GRADE.
2. TL-4 BRIDGE RAILING PROPOSED.
3. PROVIDE VENT HOLES IN BEAMS.
4. AN IOWA DOT FLOOD PLAIN CONSTRUCTION PERMIT IS REQUIRED.

HYDRAULIC DATA

DRAINAGE AREA = 31.1 SQ. MI.
 STREAM SLOPE = 6.9 FT./MI.
 AVG. LOW WATER STAGE = 1074.0

Q₅₀ = 6650 CFS
 STAGE = 1084.4
 REGULATORY LOW BEAM = 1086.37
 BACKWATER = 0.6 FT.
 AVG. BRIDGE VELOCITY = 5.5 FPS

Q₁₀₀ = 7830 CFS
 STAGE = 1085.0
 OPERATIONAL LOW BEAM = 1084.38
 BACKWATER = 0.8 FT.
 AVG. BRIDGE VELOCITY = 6.2 FPS

Q₂₀₀ = 10,100 CFS
 STAGE = 1086.0
 CALCULATED DESIGN SCOUR = 1060.8

Q₅₀₀ = 11,100 CFS
 STAGE = 1086.4
 CALCULATED CHECK SCOUR = 1056.1

ROADWAY OVERTOP 1088.47
 STA. 126+50

UTILITIES LEGEND:

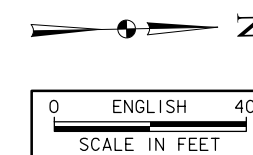
- TI - TELEPHONE LINE - ROCKWELL COOP. TELEPHONE
- FO - FIBER OPTIC - IOWA COMMUNICATIONS NETWORK
- * POWER POLE - MIDAMERICAN ENERGY

LOCATION

US 65 OVER EAST BR. BEAVERDAM CK.
 T-94N R-20W
 SECTIONS 9&10
 GENESEO TOWNSHIP
 CERRO GORDO COUNTY
 FHWA NO.
 BRIDGE MAINT. NO. 1783.8S065
 LATITUDE ??°12'34.56"
 LONGITUDE -??°12'34.56"

TRAFFIC ESTIMATE

200_ AADT	_____	V.P.D.
202_ AADT	_____	V.P.D.
202_ DHV	_____	V.P.H.
TRUCKS	_____	%
TOTAL DESIGN ESALS	_____	
PRELIMINARY		



DESIGN FOR 5° SKEW (R.A.)

150'-0" X 44'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

150'-0" SPAN (BULB TEE E BEAMS)

SITUATION PLAN

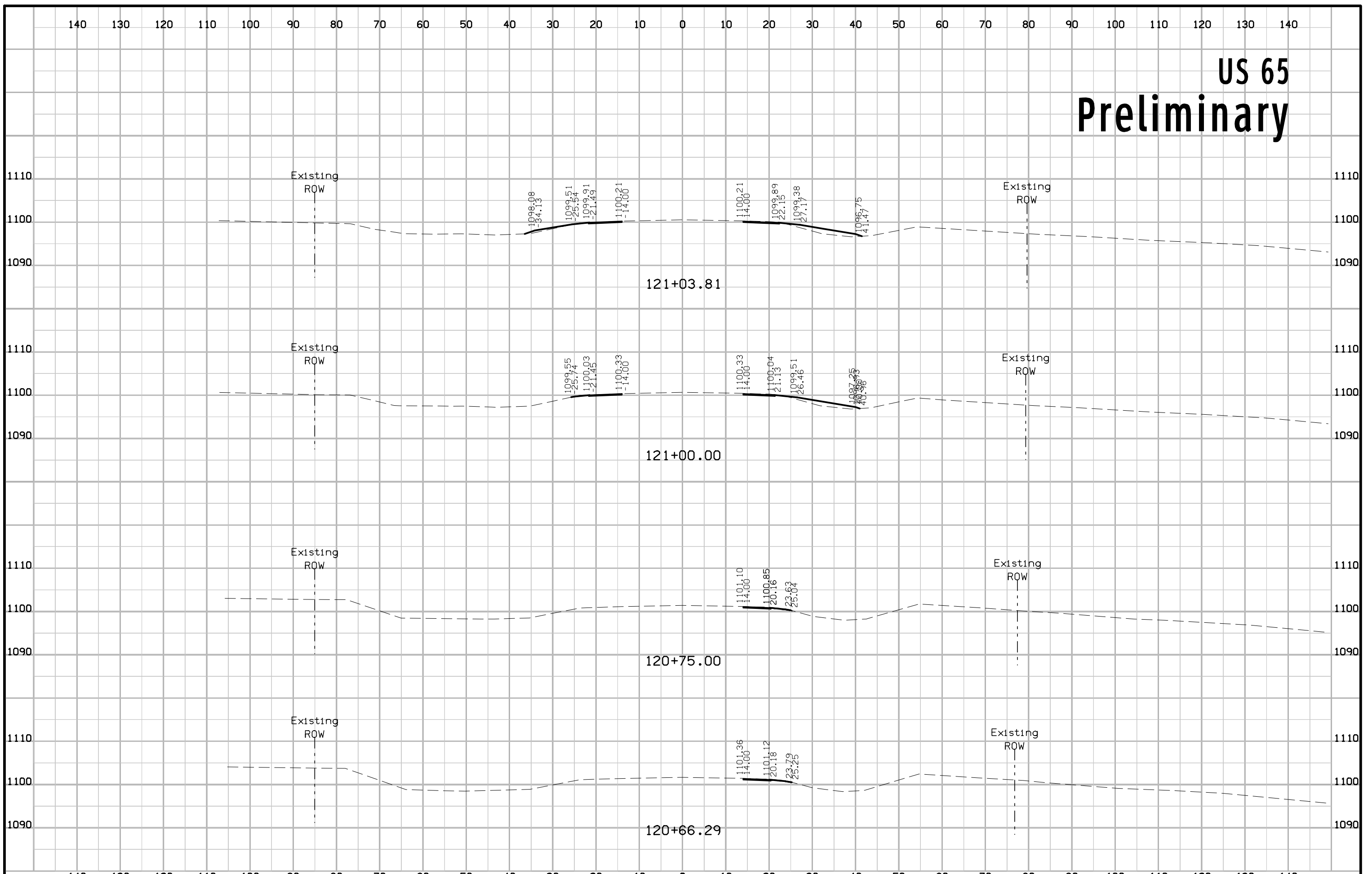
STATION 123+50.0 APRIL 2018

CERRO GORDO COUNTY

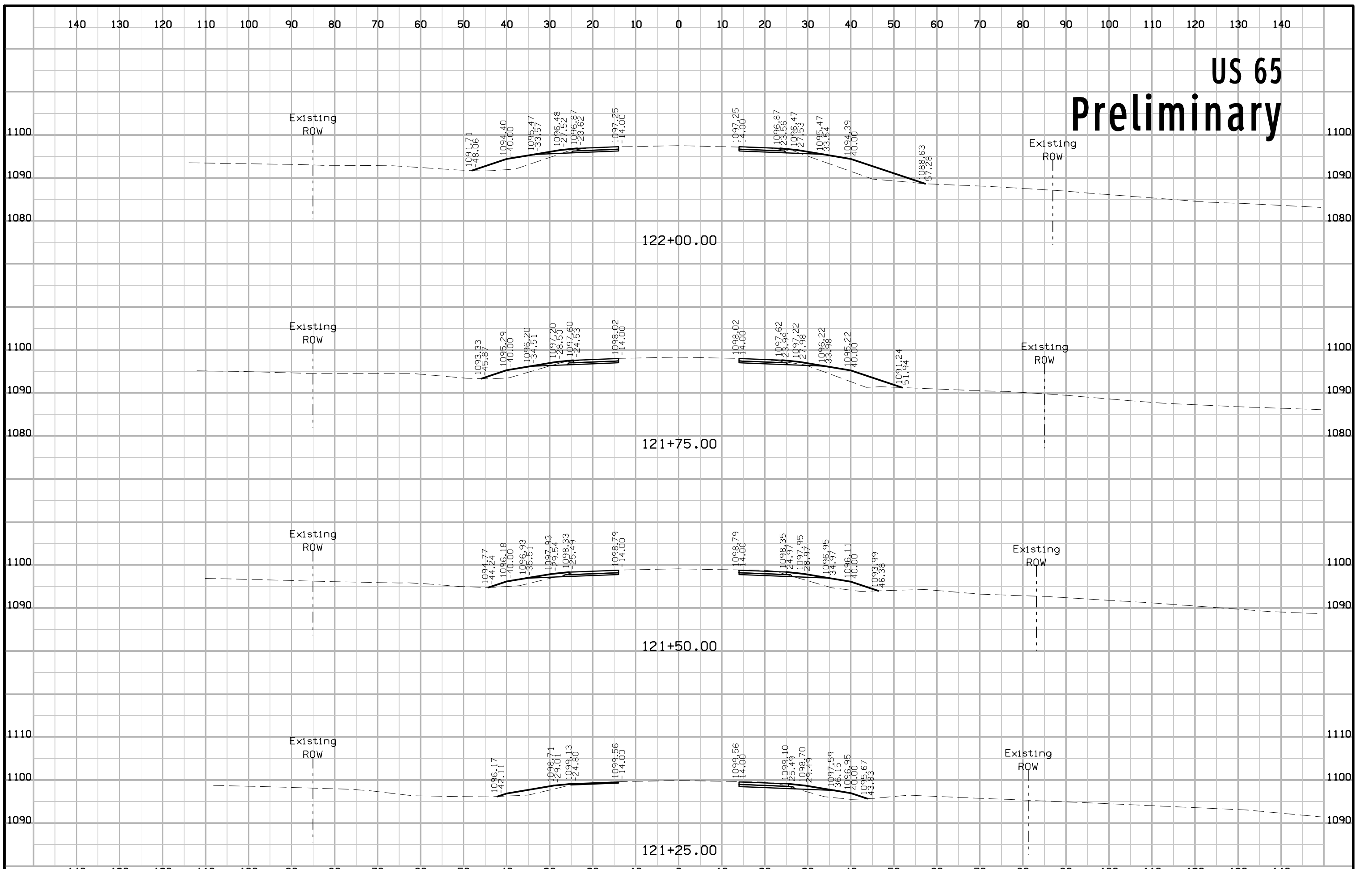
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ___ OF 2_ FILE NO. 31620 DESIGN NO. 221

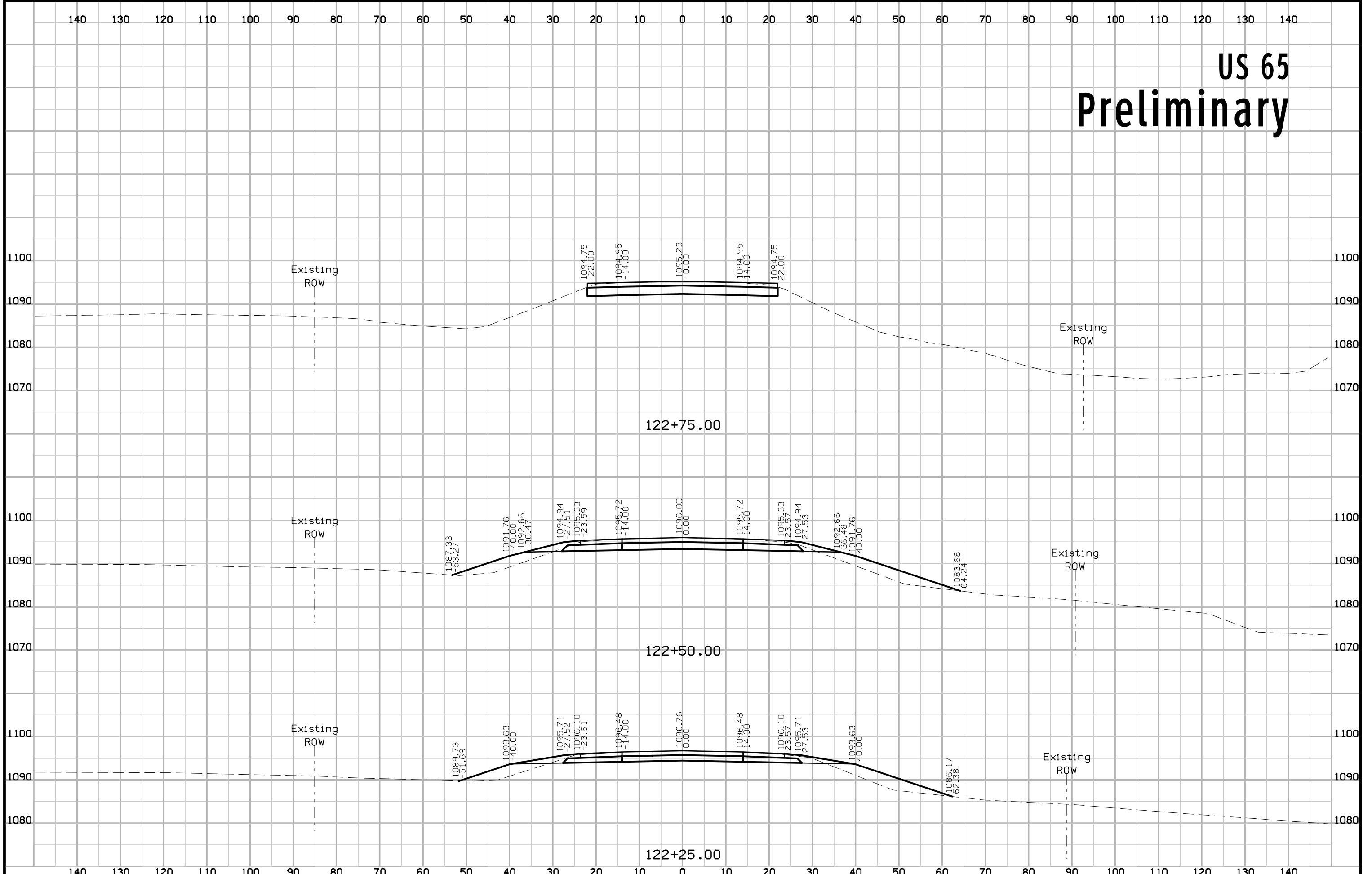
US 65 Preliminary

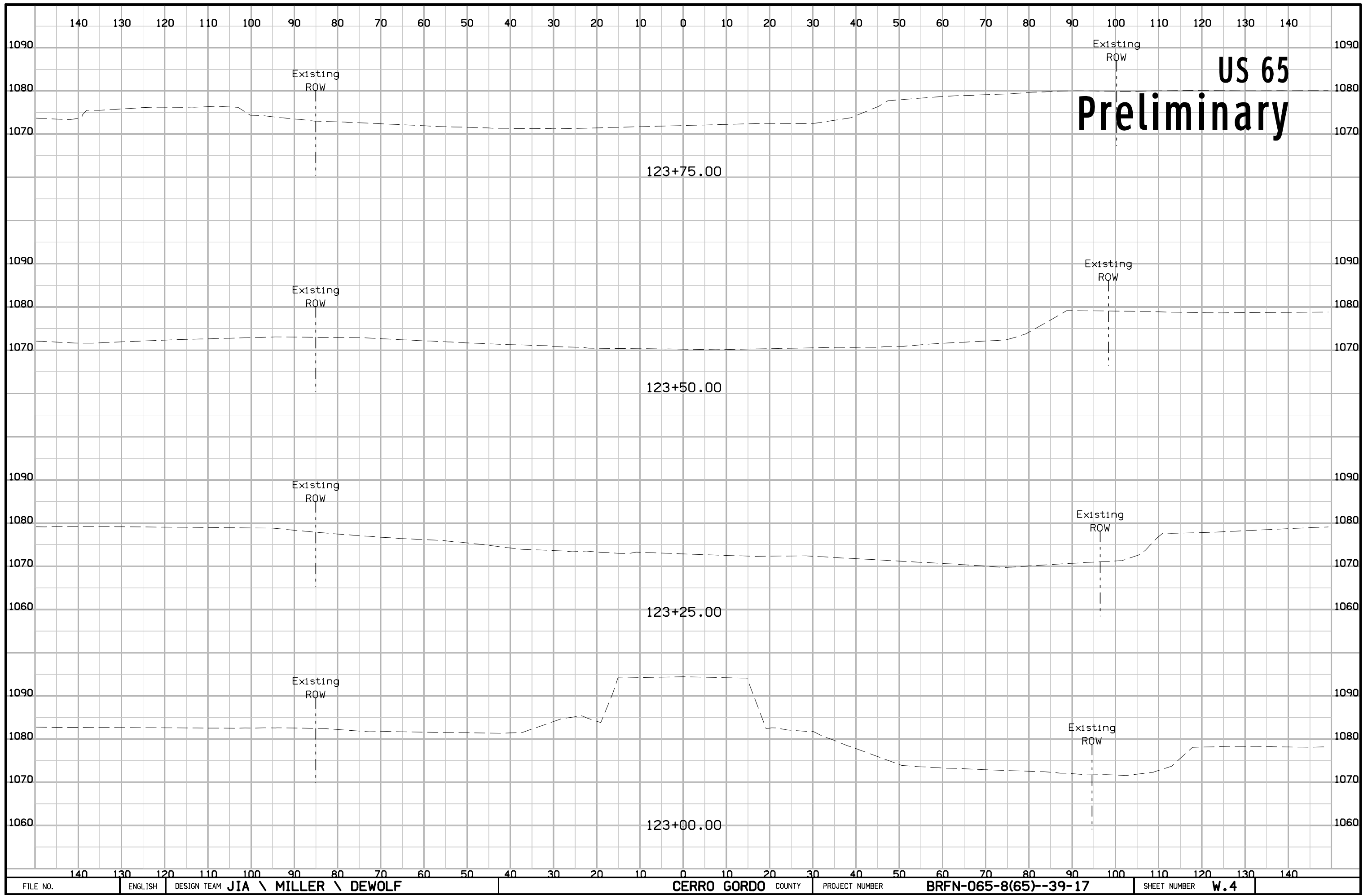


US 65 Preliminary

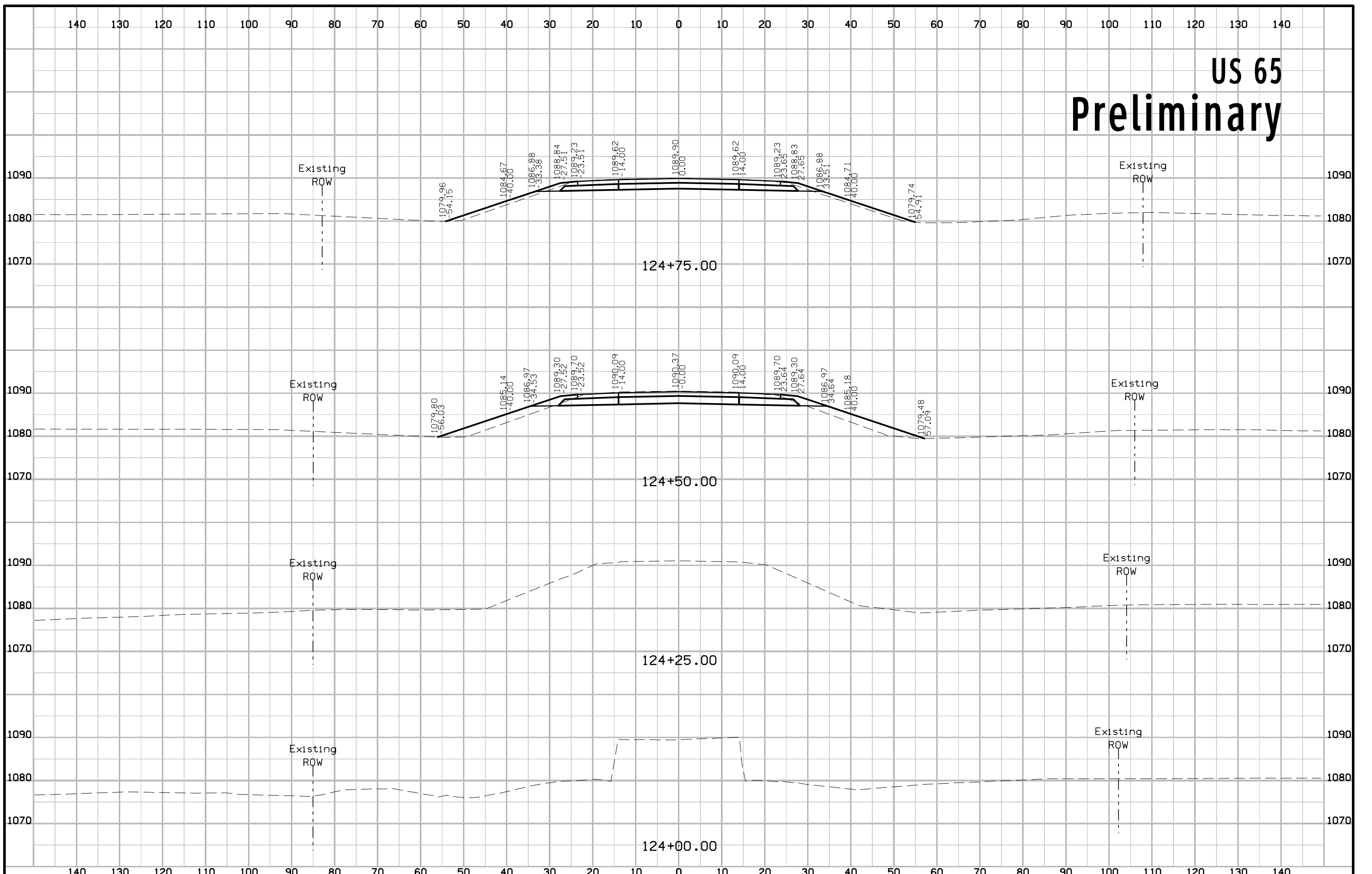


US 65 Preliminary





US 65 Preliminary



US 65 Preliminary

