

LETTING DATE
10-18-2022

BRIDGE REPLACEMENT-CCS
BRFN-175-1(73)--39-67

MONONA CO.



Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM
MONONA COUNTY
BRIDGE REPLACEMENT-CCS

McCandless Cleghorn Ditch 0.6 mi E of I-29 in Onawa

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

12

PROJECT IDENTIFICATION NUMBER

17-67-175-010

PROJECT NUMBER

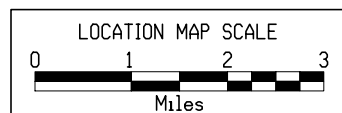
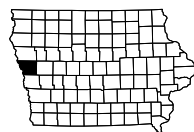
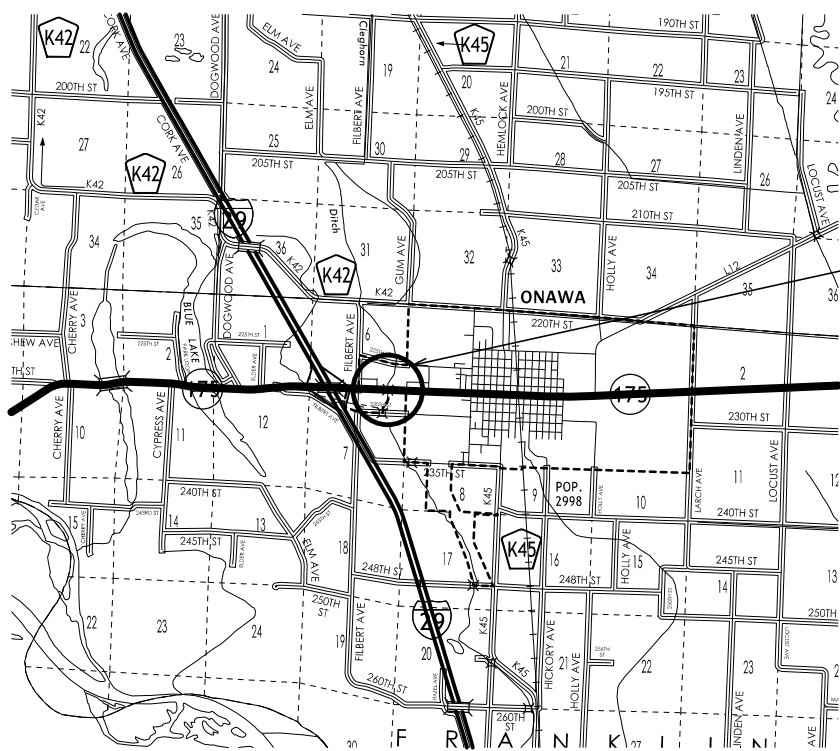
BRFN-175-1(73)--39-67

R.O.W. PROJECT NUMBER

STPN-175-1(74)--2J-67

INDEX OF SHEETS

No.	DESCRIPTION
A Sheets	Title Sheets
A.1	Title Sheet
B Sheets	Typical Cross Sections and Details
B.1 - 3	Typical Cross Sections and Details
D Sheets	Mainline Plan and Profile Sheets
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2	"IA 175"
J Sheets	Traffic Control and Staging Sheets
* J.1	Traffic Control Plan
V Sheets	Bridge and Culvert Situation Plans
V.1	Bridge and Culvert Situation Plans
W Sheets	Mainline Cross Sections
W.1	Cross Sections Legend & Symbol Information Sheet
W.1 - 4	Mainline Cross Sections
	* Color Plan Sheets



DESIGN DATA RURAL

2022	AADT	5800	V.P.D.
2042	AADT	7200	V.P.D.
20--	DHV	--	V.P.H.
	TRUCKS	7	%
	Total		
	Design ESALs	--	

INDEX OF SEALS

SHEET NO.	NAME	TYPE
A.1	Kelly C. Bell	Primary Signature Block
V.1	David R. Claman	Hydraulic Design

PRELIMINARY PLANS

Subject to change by final design.

D5 PLAN - Date: 10-28-2020

FILE NO.

ENGLISH

DESIGN TEAM Flattery \ Bell \ Peterson

MONONA COUNTY

PROJECT NUMBER

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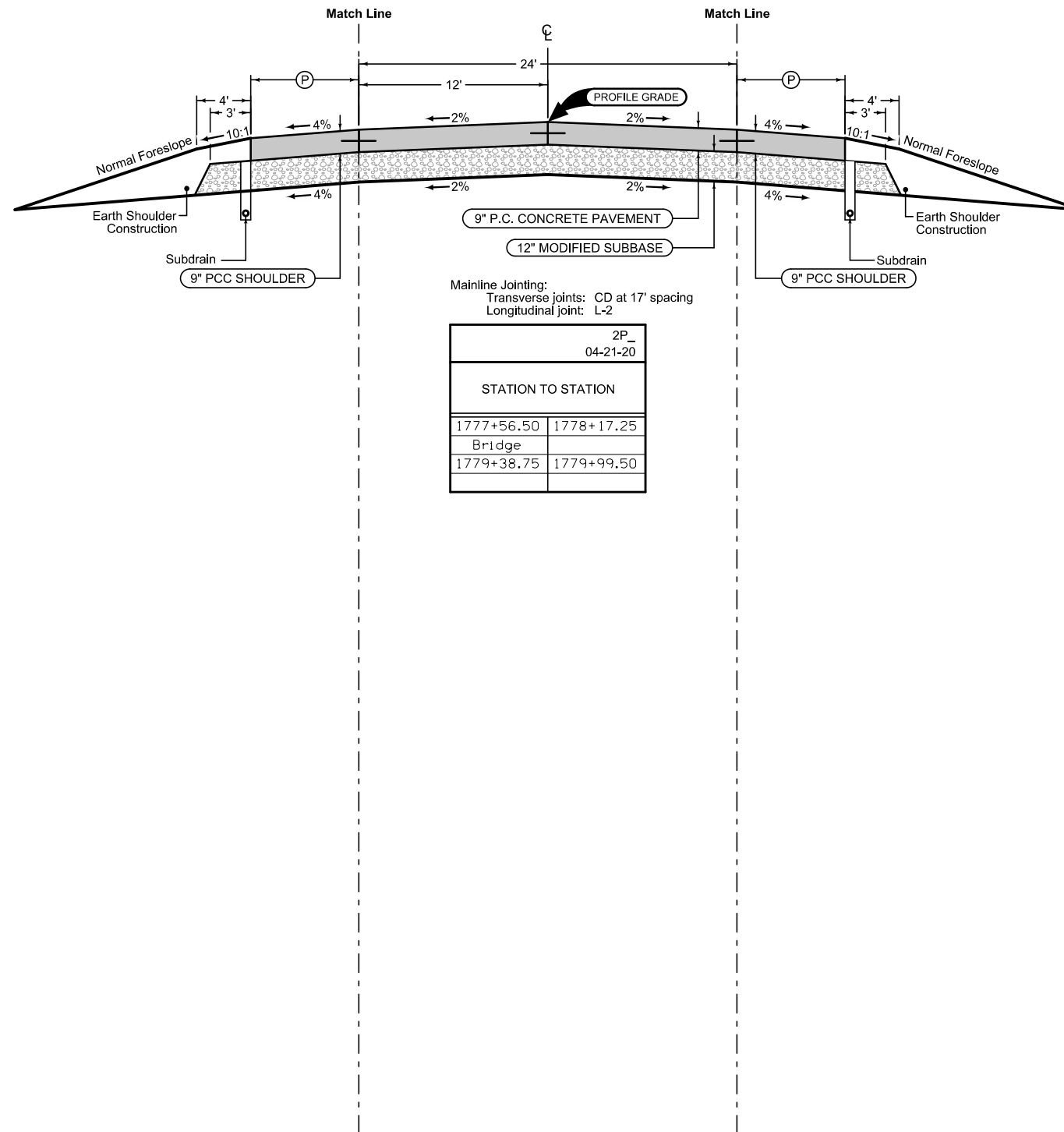
SHEET NUMBER

A.1

Full Depth PCC Shoulder

Shoulder Jointing:
 Longitudinal joint: L-2 or KT-2
 Transverse joints: C at 17' spacing

STATION TO STATION		(P) Feet
1777+56.50	1778+17.25	10
Bridge		
1779+38.75	1779+99.50	10



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

STATION TO STATION	
1777+56.50	1778+17.25
Bridge	
1779+38.75	1779+99.50

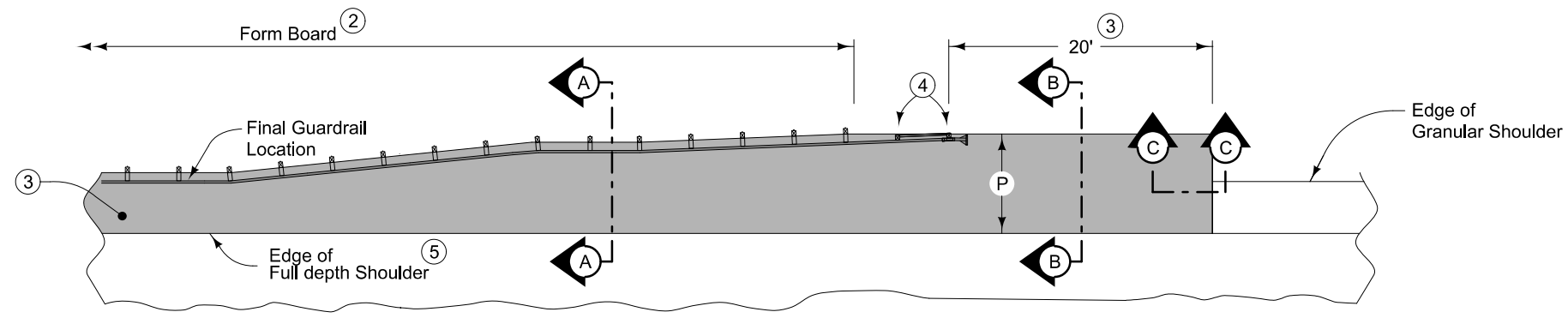
Full Depth PCC Shoulder

Shoulder Jointing:
 Longitudinal joint: L-2 or KT-2
 Transverse joints: C at 17' spacing

STATION TO STATION		(P) Feet
1777+56.50	1778+17.25	10
Bridge		
1779+38.75	1779+99.50	10

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

IA 175



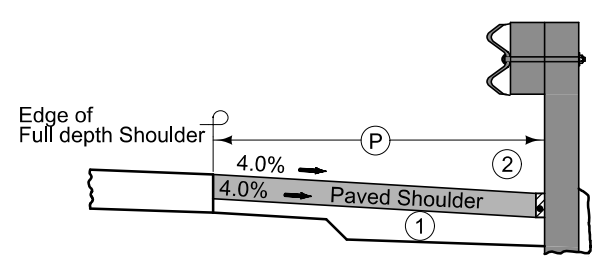
PLAN VIEW

6" PCC paved shoulder at guardrail with the following jointing layout:

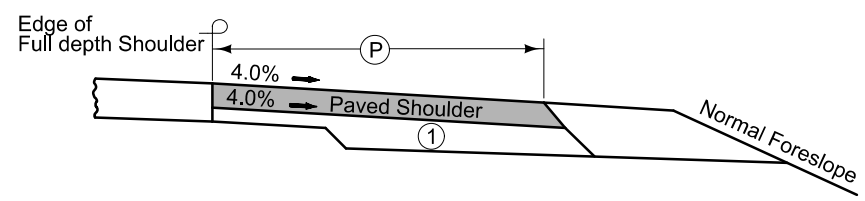
Match mainline pavement joint spacing. When mainline pavement is 8" or greater in thickness, place additional transverse 'C' joints in shoulder at mid-panel of the mainline pavement. Place longitudinal 'C' joint at P/2 from edge of mainline pavement when P is greater than 10' wide. Terminate longitudinal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

Paved guardrail shoulder designed assuming 12" blockouts. Field adjust as needed.

Refer to Tabulation 112-9M for shoulder quantities.

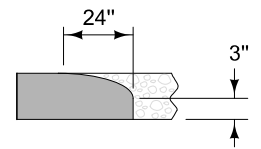


Section A-A



Section B-B

NEW CONSTRUCTION



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














- ① For subgrade treatment, refer to other details in the plan.
- ② 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.

PAVED SHOULDER AT GUARDRAIL







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

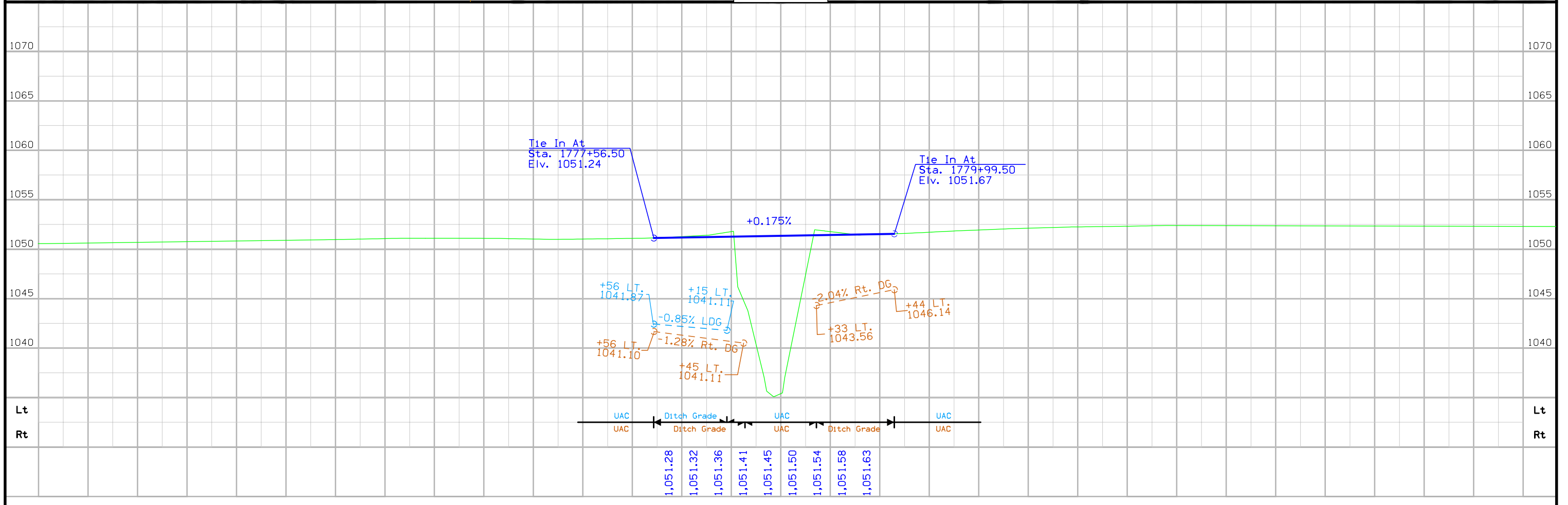
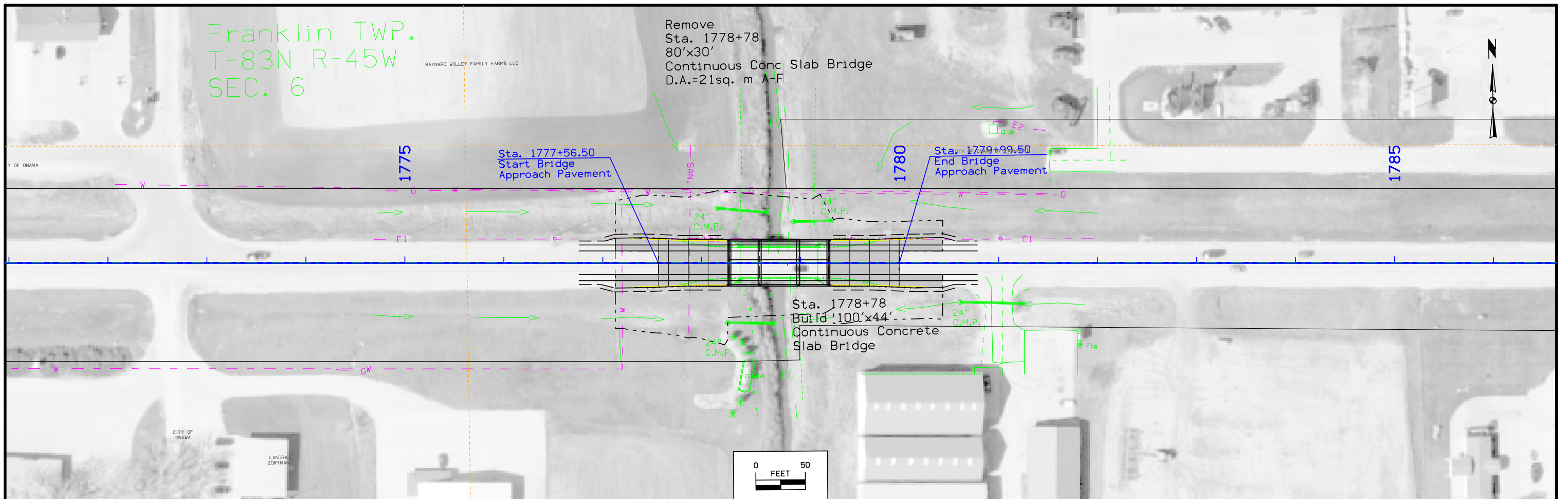
LINEWORK		Design Color No.	
Green	(2)		Existing Ground Line Profile
Blue	(1)		Proposed Profile and Annotation
Magenta	(5)		Existing Utilities
Blue, Light	(230)		Proposed Ditch Grades, Left
Black	(0)		Proposed Ditch Grades, Median
Rust	(14)		Proposed Ditch Grades, Right

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

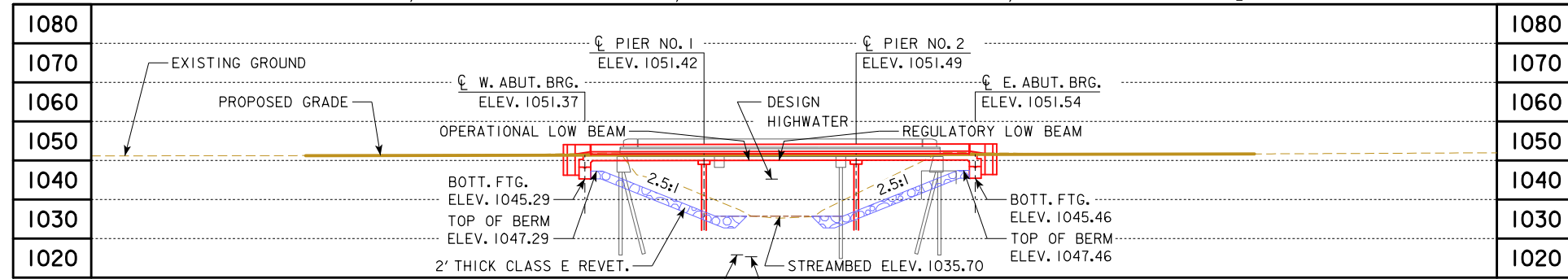
RIGHT-OF-WAY LEGEND	
	Proposed Right-of-Way
	Existing Right of Way
	Existing and Proposed Right-of-Way
	Easement and Existing Right-of-Way
	Easement (Temporary)
	Easement
	Access Control
	Property Line

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

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



CONTROL POINT NO. 67175004: N 7247770.635, E 16395057.42, FENO MONUMENT 3 INCH DEEP. 0.8 MILES EAST OF I-29 AND IA 175 INTERSECTION NEAR ONAWA, TURN NORTH ON 22ND STREET FOR ONE BLOCK, TURN WEST ON IOWA AVE. FOR 0.1 MILE, 27 FEET SOUTH OF IOWA AVE. CL, 8 FEET SOUTH OF SW CORNER OF STREET, 84 FEET NORTH OF IA 175 CL. ELEVATION 1048.803.



LONGITUDINAL SECTION ALONG CL APPROACH ROADWAY

GENERAL NOTES:
THIS DESIGN IS FOR THE REPLACEMENT OF THE EXIST. 80'x30' CCS BRIDGE, MONONA DESIGN NO. 0258, FHWA NO. 36840, MAINT. NO. 6706.1S175.

DESIGN NOTES:
TL-4 BRIDGE RAILING PROPOSED
PIER TYPE - PILE BENT (FULLY ENCASED)
AN IOWA DNR FLOOD PLAIN CONSTRUCTION PERMIT IS REQUIRED
BERM SLOPES TO BE CONFIRMED DURING FINAL DESIGN
THIS STRUCTURE IS TO BE STAGED
TOP OF BRIDGE DECK AT PROFILE GRADE

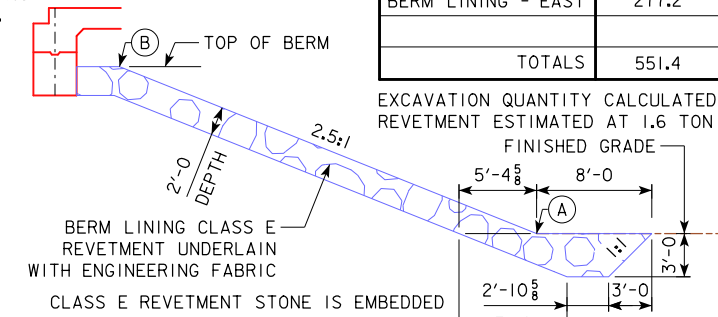
BERM SLOPE LOCATION TABLE						
POINTS	WEST ABUTMENT			EAST ABUTMENT		
	STATION	OFFSET	ELEV.	STATION	OFFSET	ELEV.
A1	1778+61.47	26.58' LT.	1035.70	1778+94.10	26.58' RT.	1035.70
A2	1778+61.47	26.58' RT.	1035.70	1778+94.10	26.58' LT.	1035.70
B1	1778+32.50	26.58' LT.	1047.29	1779+23.50	26.58' RT.	1047.46
B2	1778+32.50	26.58' RT.	1047.29	1779+23.50	26.58' LT.	1047.46
W1	1778+22.50	26.58' LT.	1051.08	1779+33.50	26.58' RT.	1051.28
W2	1778+22.50	26.58' RT.	1051.08	1779+33.50	26.58' LT.	1051.28

BERM SLOPE ELEVATIONS REFLECT THE GRADING SURFACE

ESTIMATED BERM ARMORING QUANTITIES

LOCATION	CLASS E REVET. (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
BERM LINING - WEST	274.2	257.7	171.4
BERM LINING - EAST	277.2	260.5	173.2
TOTALS	551.4	518.2	344.6

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE. REVETMENT ESTIMATED AT 1.6 TON / CY



SECTION THRU EMBEDDED REVETMENT BERM

UTILITIES LEGEND:

- W - WATER - CITY OF ONAWA
- E - ELECTRIC - CITY OF ONAWA
- G - GAS - BLACK HILLS ENERGY
- F02 - FIBER OPTIC - CENTURY LINK
- FO - FIBER OPTIC - LONG LINES BROADBAND

VPI STA. = 1777+56.50 VPI STA. = 1779+99.50
VPI ELEV. = 1051.24 VPI ELEV. = 1051.67

PROPOSED PROFILE GRADE IA 175

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

HYDRAULIC DATA

DRAINAGE AREA = 69.8 SQ. MI.
STREAM SLOPE = 2.5 FT./MI.
Q₅₀ = 2,731 CFS
STAGE = 1046.7
REGULATORY LOW BEAM = 1049.5
BACKWATER = 0.30 FT.
AVG. BRIDGE VELOCITY = 4.4 FPS

Q₁₀₀ = 3,280 CFS
STAGE = 1047.3
OPERATIONAL LOW BEAM = 1049.6
BACKWATER = 0.95 FT.
AVG. BRIDGE VELOCITY = 4.9 FPS

Q₂₀₀ = 3,884 CFS
STAGE = 1048.0
CALCULATED DESIGN SCOUR = 1025.8

Q₅₀₀ = 4,587 CFS
STAGE = 1,048.8
AVG. BRIDGE VELOCITY = 8.8 FPS
CALCULATED CHECK SCOUR = 1025.3

TRAFFIC ESTIMATE

2022 AADT	5,800	V.P.D.
2042 AADT	7,200	V.P.D.
202 DHV		V.P.H.
TRUCKS	7	%
TOTAL DESIGN ESALS		

LOCATION

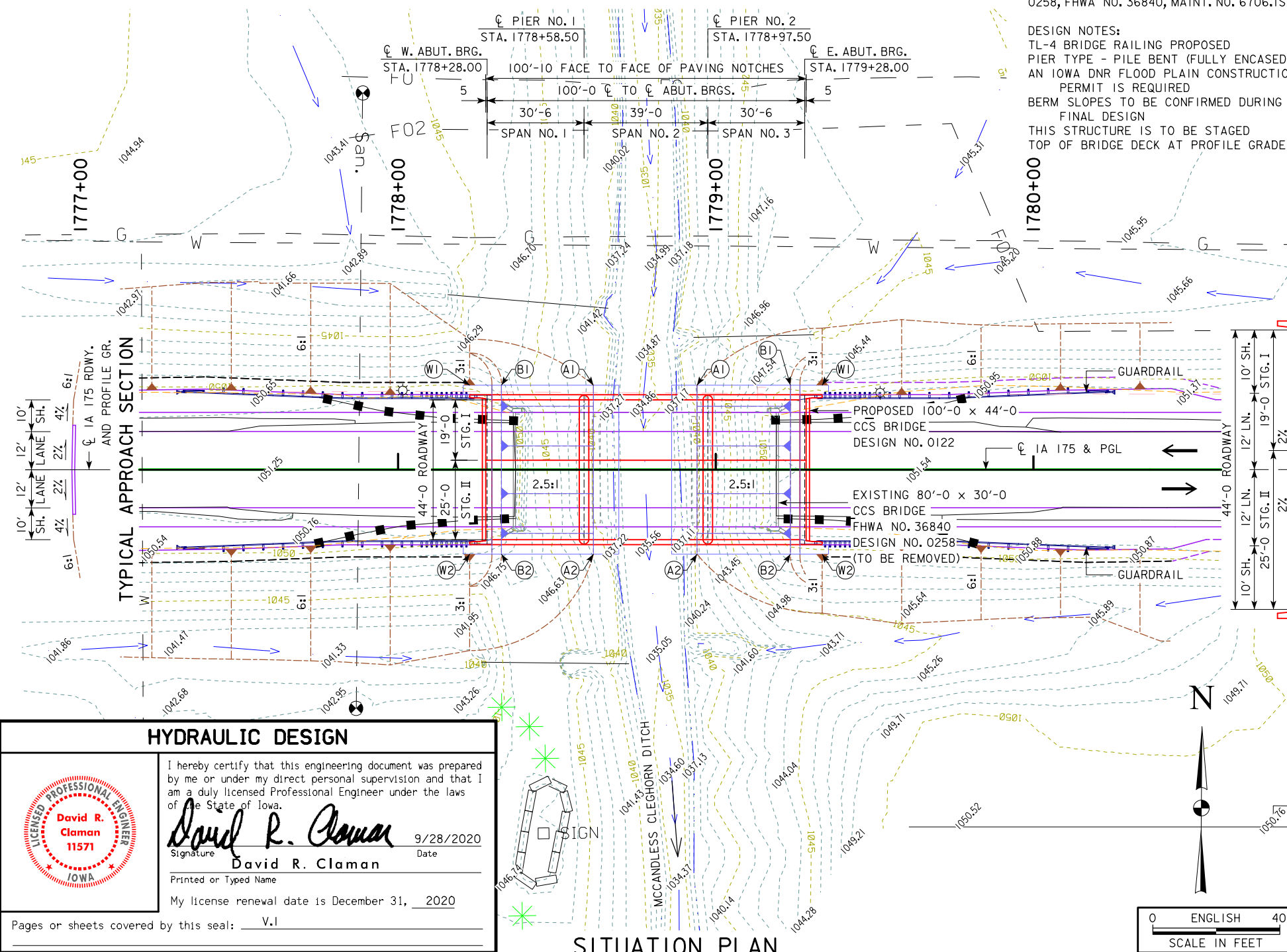
ON IA 175 OVER MCCANDLESS CLEGHORN DITCH
T-83N R-45W
SECTION 6
FRANKLIN TOWNSHIP
MONONA COUNTY
CITY OF ONAWA
FHWA NO. 36840 (EXISTING)
FHWA NO. 36841 (REPLACEMENT)
BRIDGE MAINT. NO. 6706.1S175
LATITUDE 42.026900°
LONGITUDE -96.120569°

PRELIMINARY

DESIGN FOR 0° SKEW

100'-0 x 44'-0 CONTINUOUS CONCRETE SLAB BRIDGE

30'-6 END SPANS 39'-0 INTERIOR SPAN
SITUATION PLAN
STA. 1778+78.00 (CL IA 175) SEPTEMBER 2020
MONONA COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 1 OF 1 FILE NO. 31666 DESIGN NO. 0122



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.

David R. Claman 9/28/2020
Signature Date
David R. Claman
Printed or Typed Name

My license renewal date is December 31, 2020

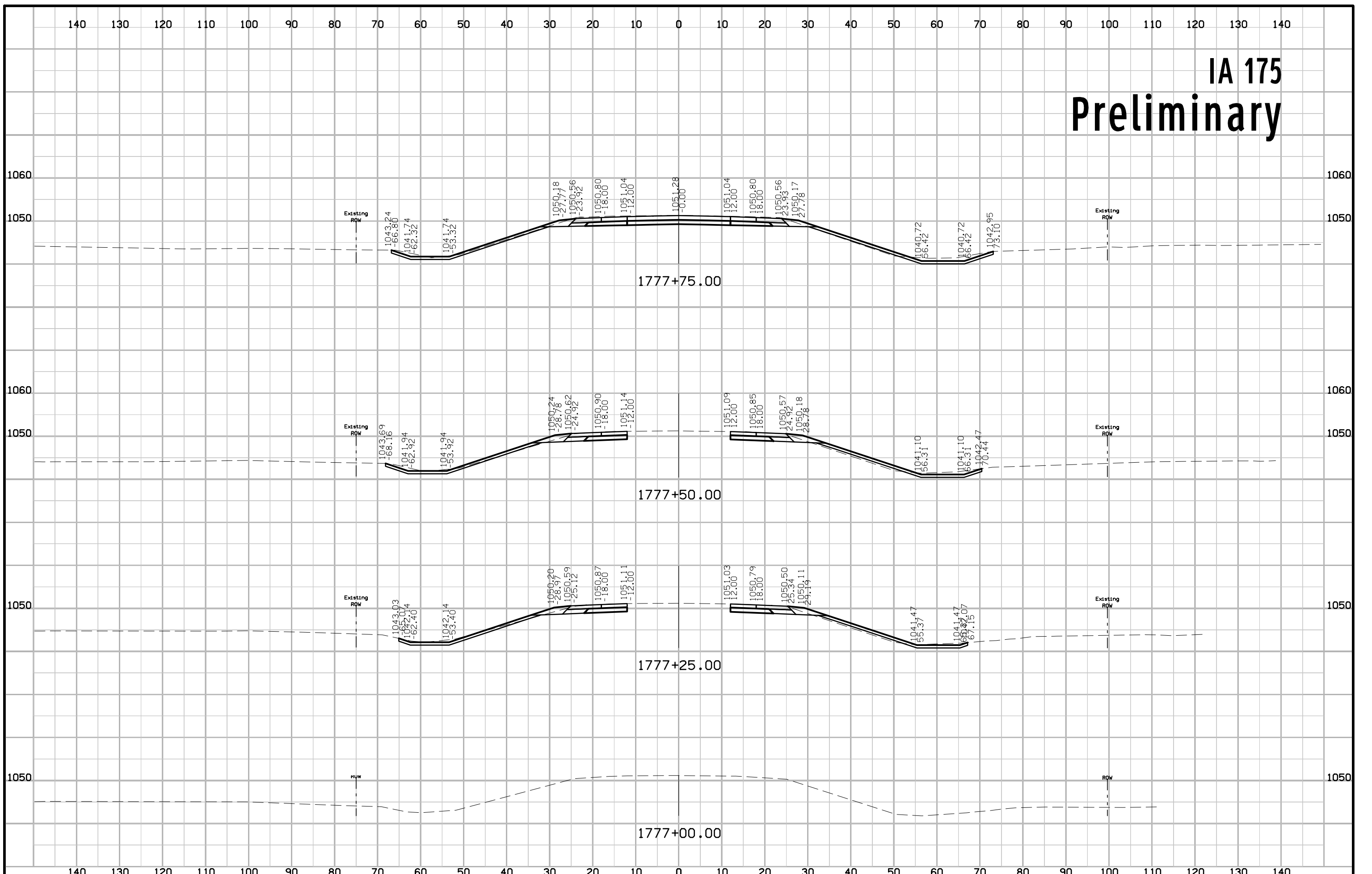
Pages or sheets covered by this seal: V.I



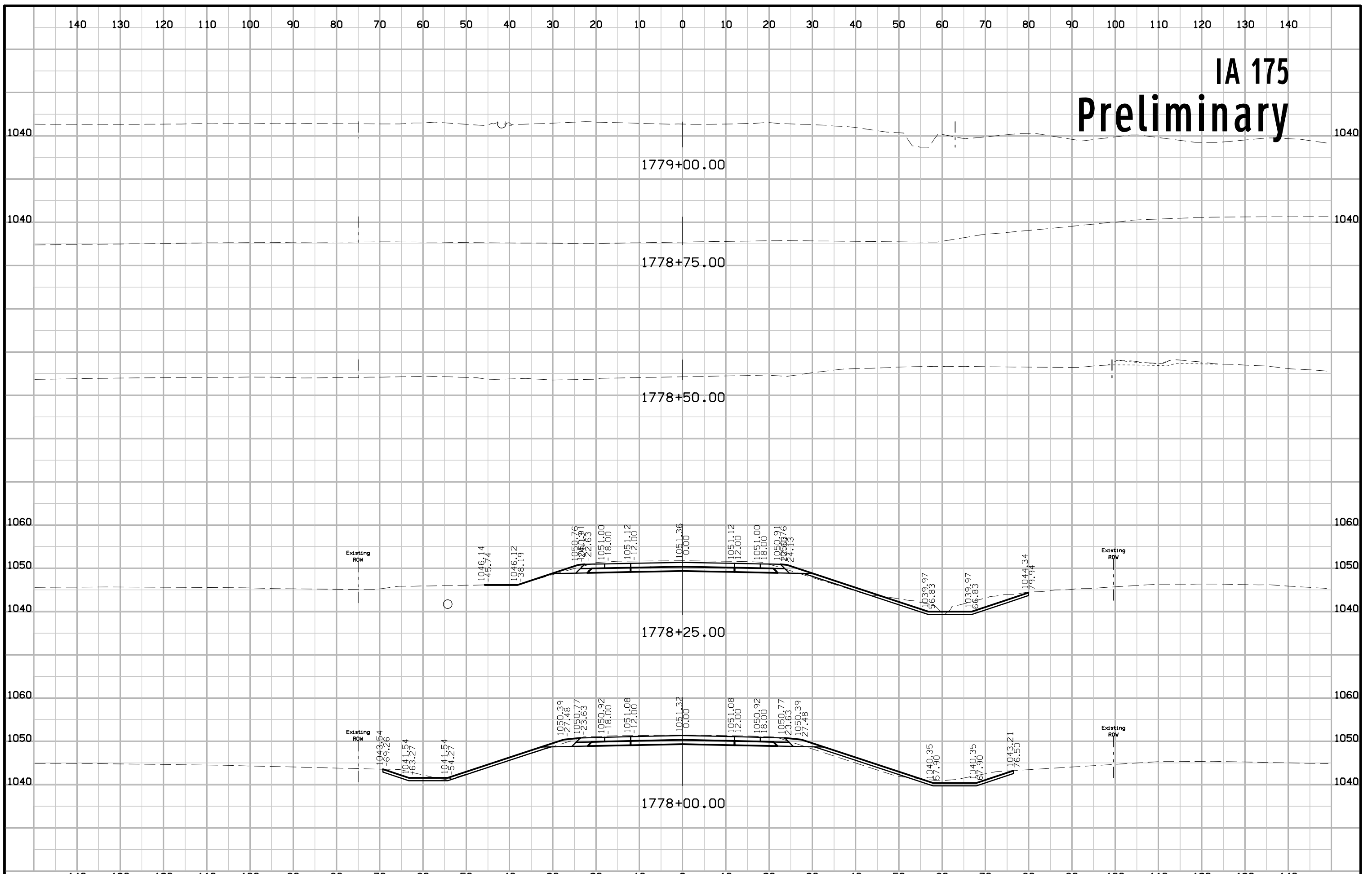
SITUATION PLAN



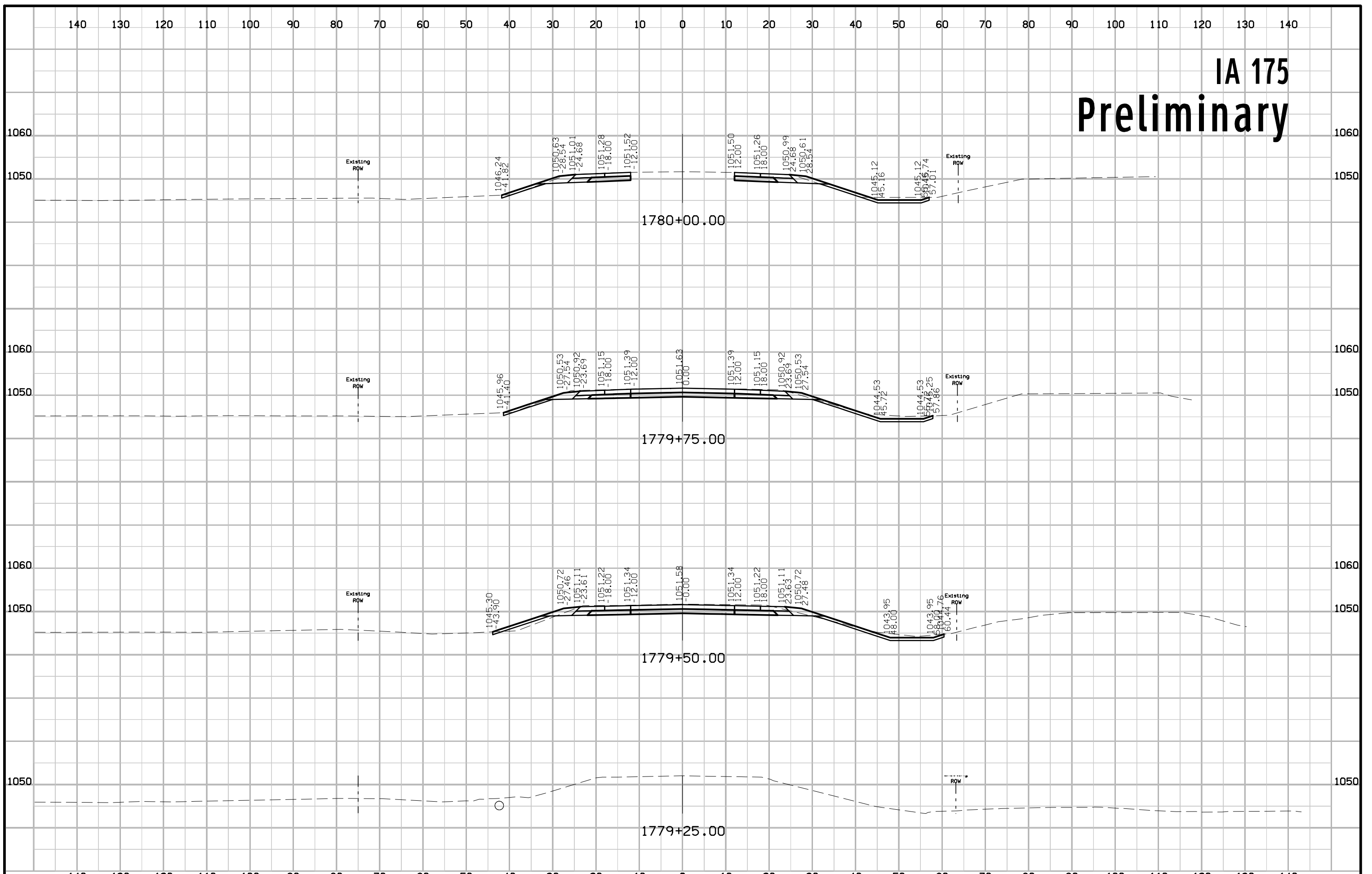
IA 175 Preliminary



IA 175 Preliminary



IA 175 Preliminary



IA 175 Preliminary

