



REVISIONS

TOTAL	23
PROJECT IDENTIFICATION NUMBER	
PROJECT NUMBER	20-23-136-030
R.O.W. PROJECT NUMBER	BRF-136-1(97)--38-23

INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	Title Sheets
* A.1	Title Sheet
* A.2	Location Map 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 136
G Sheets	Survey Sheets
G.1 - 3	Reference Ties and Bench Marks
J Sheets	Traffic Control and Staging Sheets <--- H Sheets
J.1	Traffic Control Plan
V Sheets	Bridge and Culvert Situation Plans
* V.1 - 2	Bridge and Culvert Situation Plans
W Sheets	Mainline Cross Sections
W.1	Cross Sections Legend & Symbol Information Sheet
W.2 - 10	Mainline Cross Sections
	* Color Plan Sheets

PLANS OF PROPOSED IMPROVEMENT ON THE
PRIMARY ROAD SYSTEM
CLINTON COUNTY
Bridge Replacement
IA 136 Over Elwood Creek 3.1 Mi N of US 61

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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



DESIGN DATA RURAL	
2025 AADT	800 V.P.D.
2045 AADT	900 V.P.D.
2045 DHV	-- V.P.H.
TRUCKS	11 %
Total Design ESALs	--

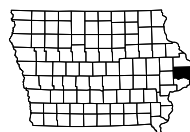
INDEX OF SEALS		
SHEET NO.	NAME	TYPE
A.1	Michael J. Janecek	Primary Signature Block
V.1	Phillipe M. Harpole	Hydraulic Design

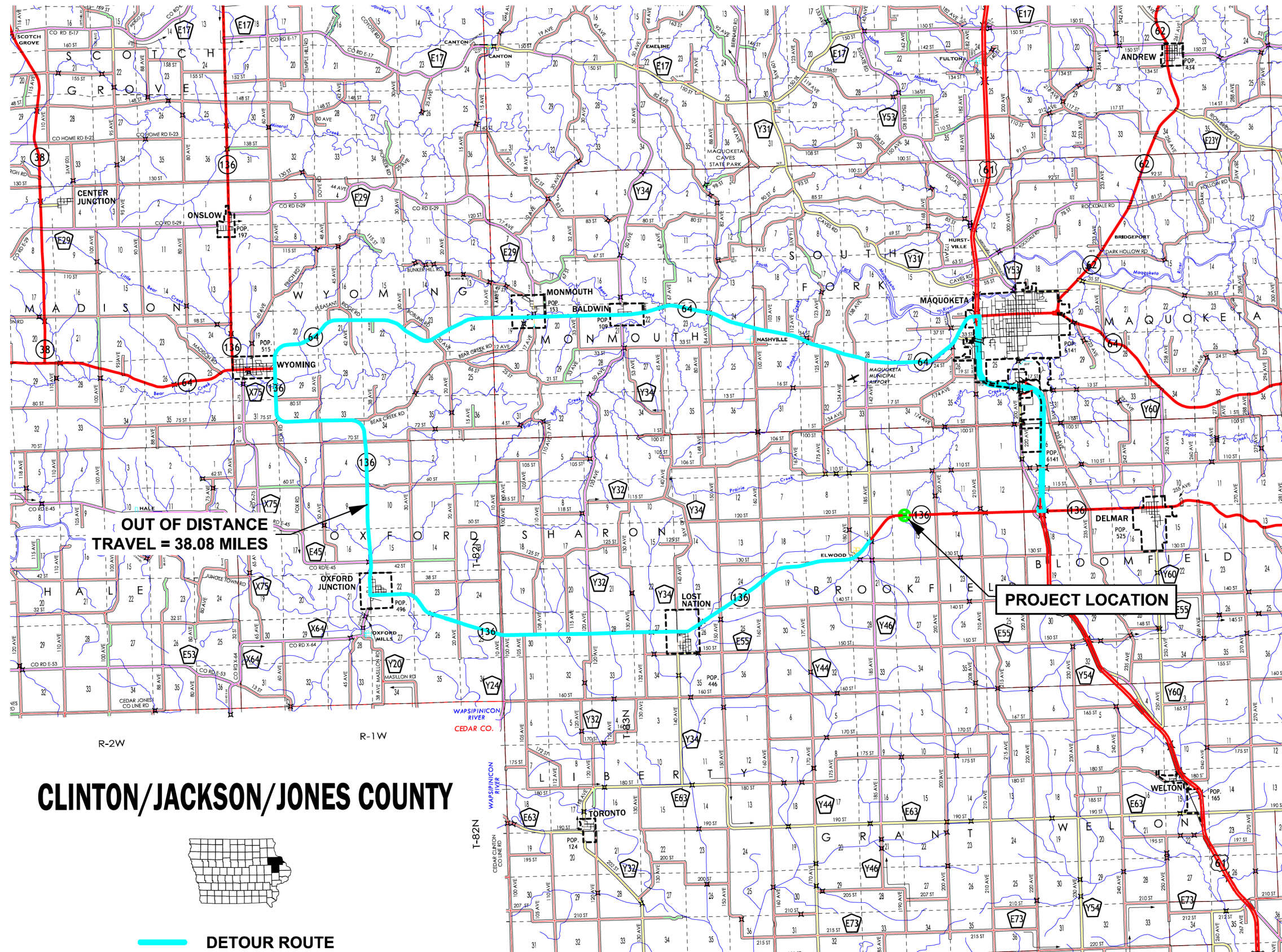
D4 PLAN – June 18, 2024

PRELIMINARY PLANS

Subject to change by final design.

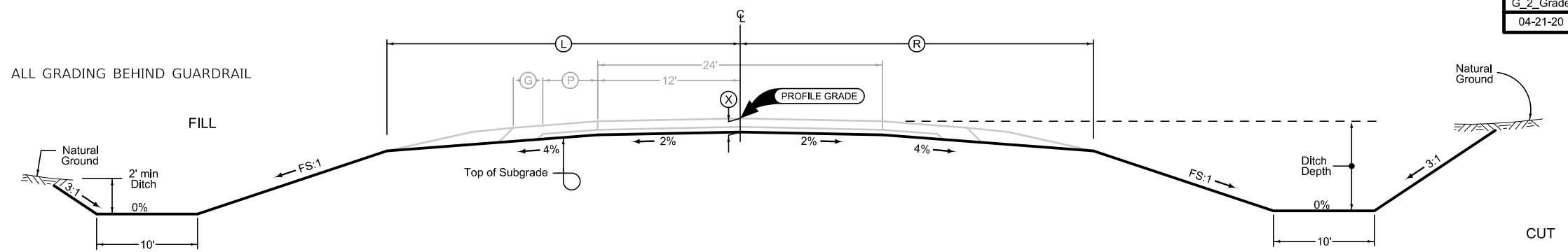
D5 PLAN – Sept 16, 2022





LOCATION		DIMENSIONS			
ROAD IDENTIFICATION	STATION TO STATION	(L) Feet	(R) Feet	(X) Inches	FS
IA 136	736+02.75 738+92.75	33.94	33.94	16	3.5:1

G_2_Grade
04-21-20



Normal section shown may be modified appropriately in areas of superelevated curves or other locations specifically designated by the Engineer.

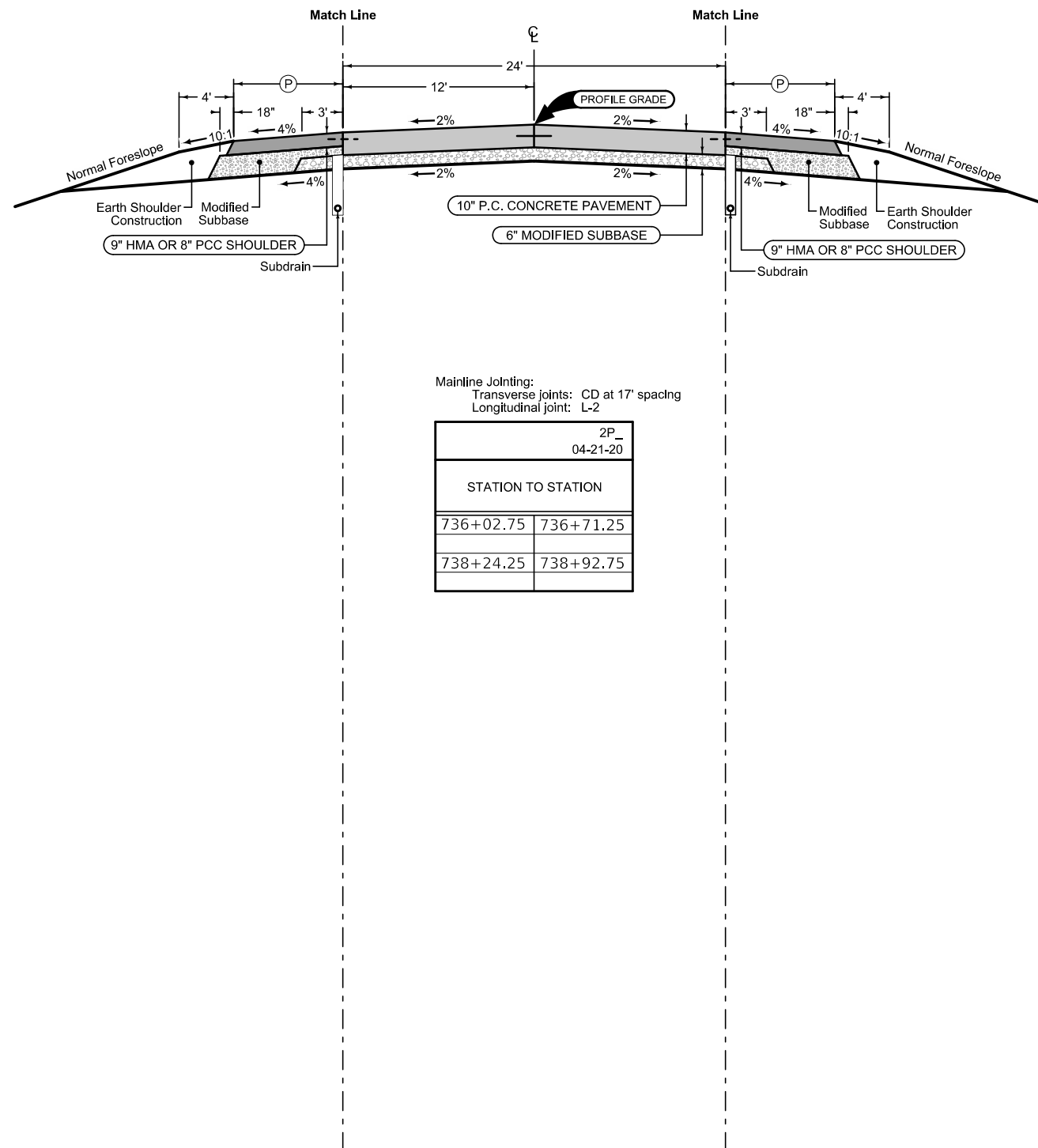
See plan & profile sheets and cross sections for additional details of ditches and backslopes.

2 LANE GRADING

Paved Shoulder at Guardrail

PCC Shoulder Jointing:
 Longitudinal joint: BT-1 or BT-5
 Transverse joints: C at mainline spacing
 HMA Shoulder Jointing:
 Longitudinal joint: B

2_P_Guard_04-21-20		
STATION TO STATION		(P) Feet
735+44.14	736+71.25	VAR.
738+24.25	739+76.19	VAR.



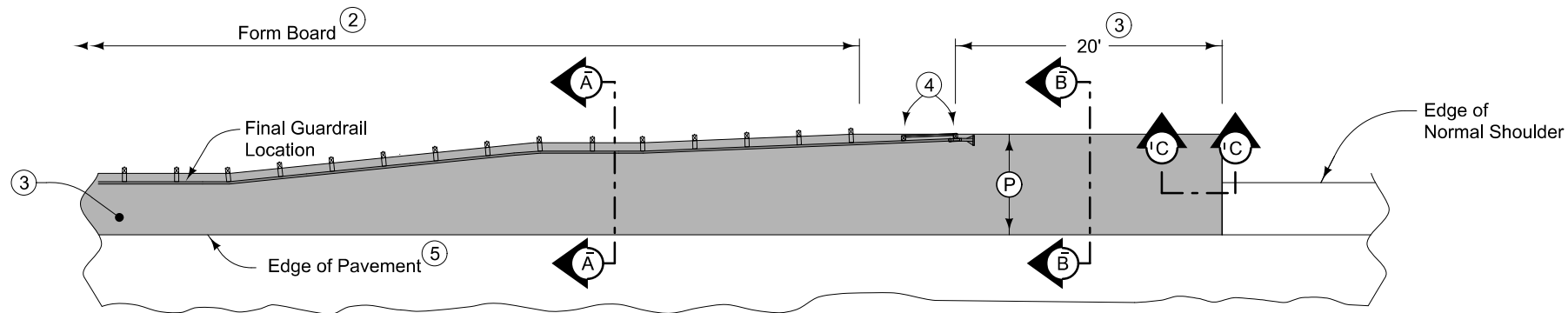
Mainline Jointing:
 Transverse joints: CD at 17' spacing
 Longitudinal joint: L-2

2P_04-21-20	
STATION TO STATION	
736+02.75	736+71.25
738+24.25	738+92.75

Paved Shoulder at Guardrail

PCC Shoulder Jointing:
 Longitudinal joint: BT-1 or BT-5
 Transverse joints: C at mainline spacing
 HMA Shoulder Jointing:
 Longitudinal joint: B

2_P_Guard_04-21-20		
STATION TO STATION		(P) Feet
735+18.89	736+71.25	VAR.
738+24.25	739+51.59	VAR.



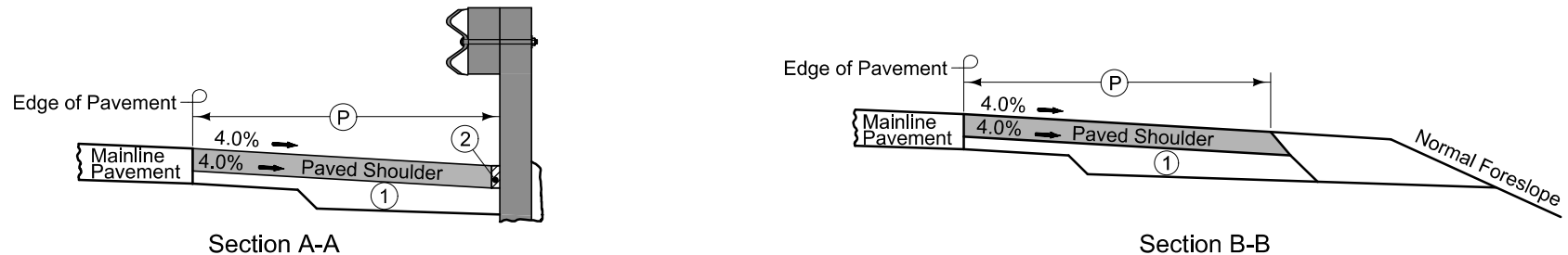
PLAN VIEW

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.

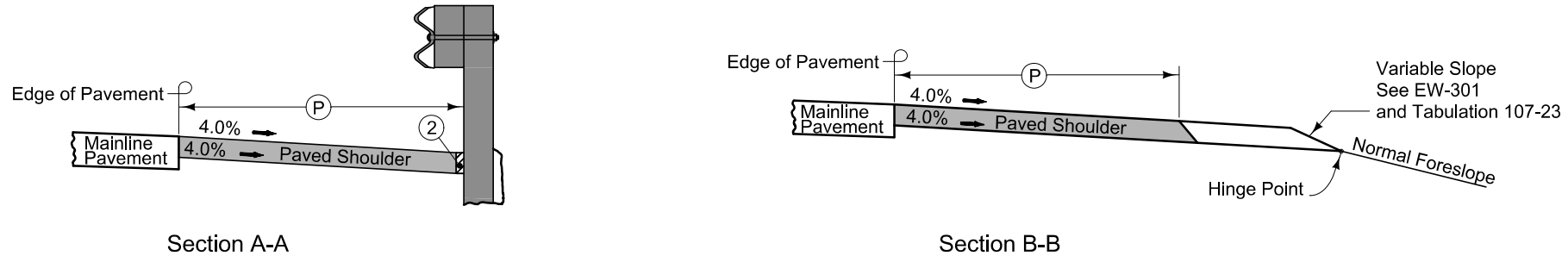
Compaction of HMA is required to face of guardrail post. Hand compaction will be allowed under guardrail. Removal and reinstallation of guardrail will be allowed with no additional payment.

Refer to Tabulation 112-9 for shoulder quantities.

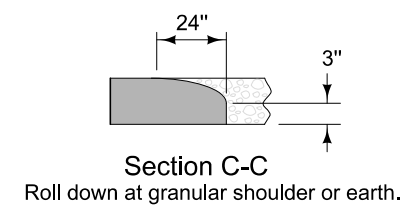


NEW CONSTRUCTION

- 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.



EXISTING SHOULDER



PAVED SHOULDER AT GUARDRAIL

SURVEY SYMBOLS

- 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

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.	
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

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

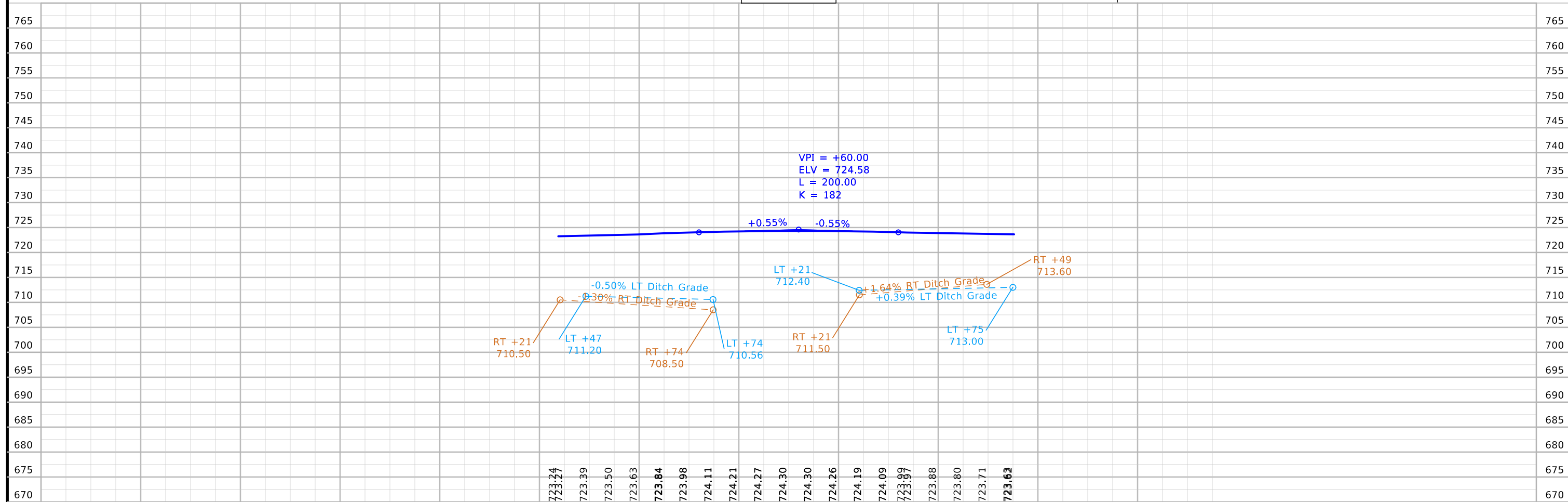
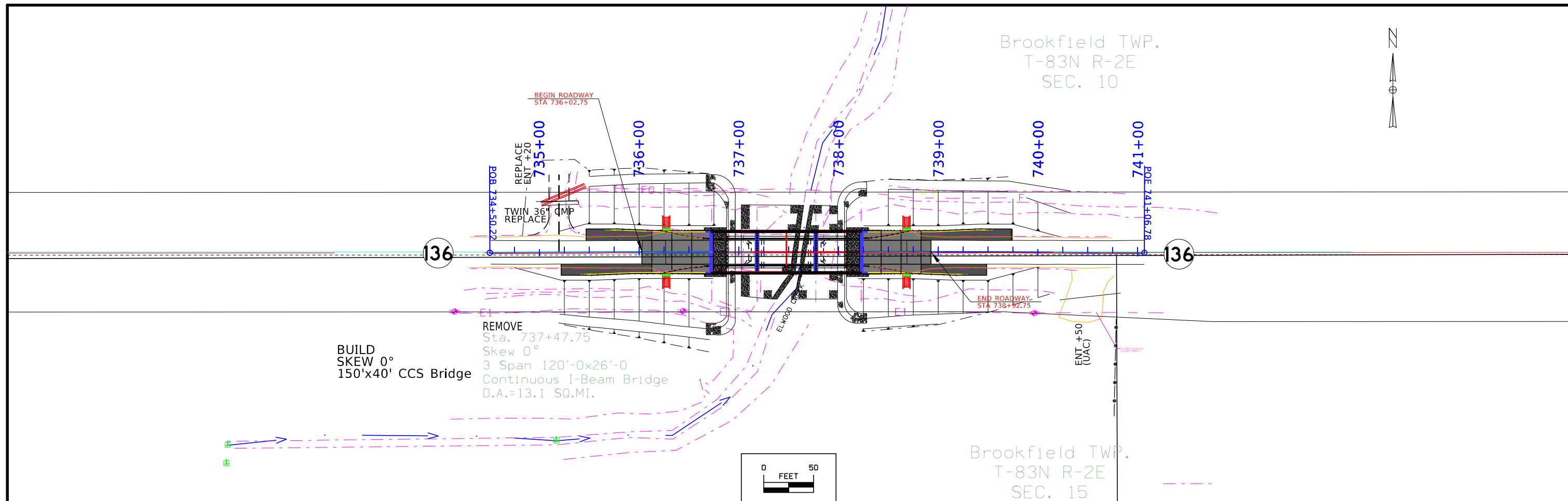
LINEWORK		Design Color No.	
Green	(2)		Existing Ground Line Profile
Blue	(1)		Proposed Profile and Annotation
Magenta	(5)		Existing Utilities
Blue, Light	(230)		Proposed Ditch Grades, Left
Black	(0)		Proposed Ditch Grades, Median
Rust	(14)		Proposed Ditch Grades, Right

- Reference Point
- Station
 - 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)



731+00	732+00	733+00	734+00	735+00	736+00	737+00	738+00	739+00	740+00	741+00
723.24	723.39	723.50	723.63	723.84	723.98	724.11	724.21	724.27	724.30	724.30
724.26	724.19	724.09	723.99	723.88	723.80	723.71	723.62			

Survey Information

Clinton County
BRF-136-1(97)--38-23
State Highway 136 over Elwood Creek
PIN 20-23-136-030
Sap-766.2

Party Personnel

Murray Berting – Survey Party Chief
Gavin Gear – Assistant Survey Party Chief

Date(s) of Survey

Begin Date 08/23/2021
End Date 10/22/2021

General Information

Measurement units for this survey are US survey feet. This survey is for proposed Bridge reconstruction and reconstruction of State Highway 136, over Elwood Creek. Project datum and control information is provided by Shive-Hattery Inc. This project is a Preliminary DTM Field Survey. This survey request was for the Bridge over Elwood Creek, State Highway 136 Corridor and Elwood Creek.

Vertical Control

IARTN
Vertical datum for this survey is NAVD88 (Computed using Geoid12B). Additional benchmarks were placed throughout the project using a Total Station setup relative to Point 1 and Point 2. Vertical control was verified between control points with check shots by Total Station through multiple setup from various occupation points with a vertical error of less than 0.05 feet.

This survey found a local control benchmark monument (benchmark disc on bridge abutment in NW corner bridge). No vertical information was available at the time field work was completed.

Horizontal Control

(Project Coordinates from Redundant IARTN Observations)

The project coordinate system is modified Iowa Regional Coordinate System Zone 11 (U.S. Survey Feet This survey control is relative to the IARTN reference stations. IARTN Reference Station coordinates are relative to the National Reference Station

observations with appropriate occupation times. Additional control points were placed throughout the project using a Total Station setup relative to Point 1 and Point 2.

Utility Information

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

A One-call utility locate request (Ticket# 552104697) was made August 02, 2021. The following Companies were listed:

<u>Company (Quality)</u>	<u>Symbol</u>	<u>Remark</u>
Iowa D.O.T	---	Not Affected
Alliant Energy (ASE)	PPA	Power Poles North of IA 136
Lost Nation-Elwood Telephone (LN1)	FOA	Buried Telephone Fiber Optic Line

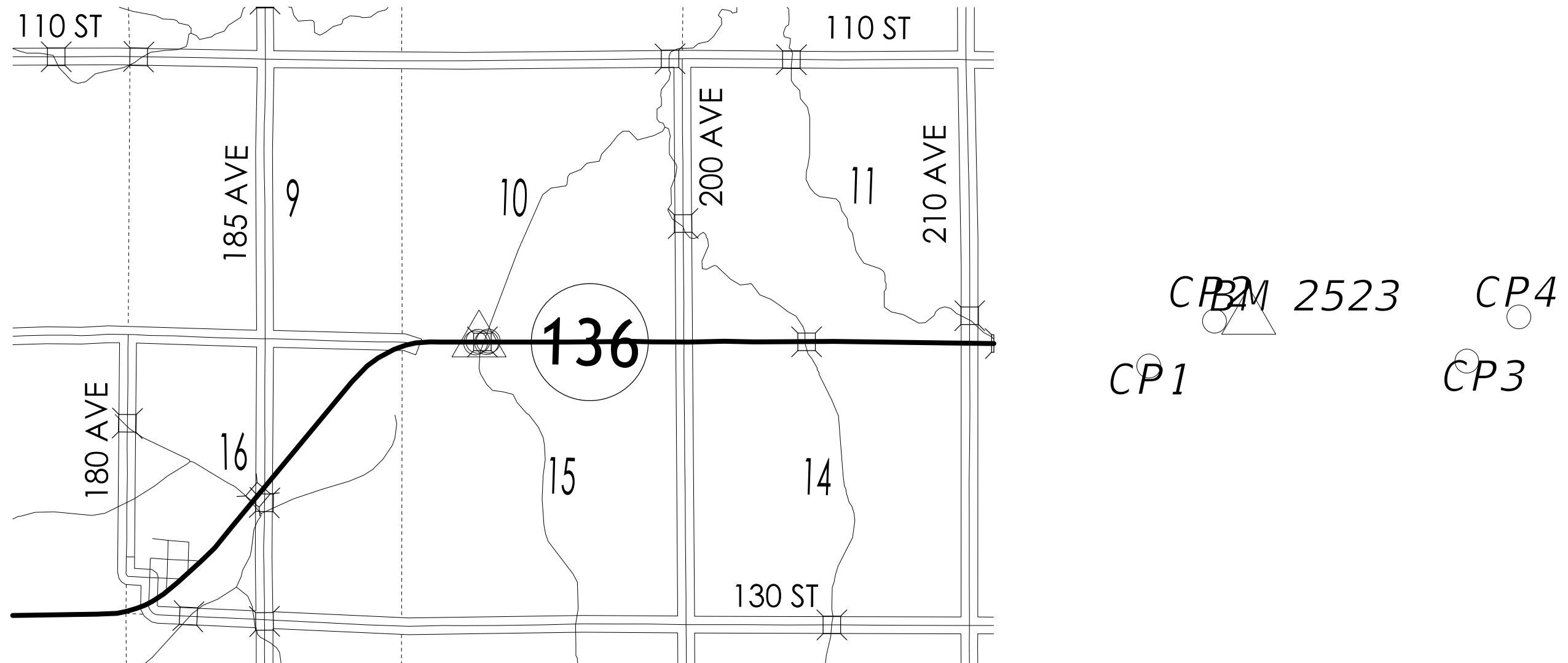
Following are the list of contacts made in the order they were received:

(ASE) ALLIANT ENERGY
Contact Name : Alliant Energy Field Engineer
Contact Phone: 8002554268
Contact Email: locate_IPL@alliantenergy.com

(LN1) LOST NATION-ELWOOD TELEPHONE
Contact Name : Jody Holtz
Contact Phone: 5636782470
Contact Email: jody@lencomm.com

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 11

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

1a. Regional Coordinate System Zone 11
Project Control Marks are Bench Marks

POINT NAME	Y	X	Z	FEATURE DEFINITION - DESCRIPTION
1	8239046.714	21449631.27	723.470	CP1 IR (IRON ROD)
2	8239075.722	21449673.96	723.722	CP2 CX (CUT 'X' IN PAVEMENT
3	8239049.989	21449837.67	723.830	CP3 CX (CUT 'X' IN PAVEMENT
4	8239078.666	21449871.26	723.684	CP4 IR (IRON ROD)
2523	8239078.083	21449695.11	727.018	BM DISC

NOTE:

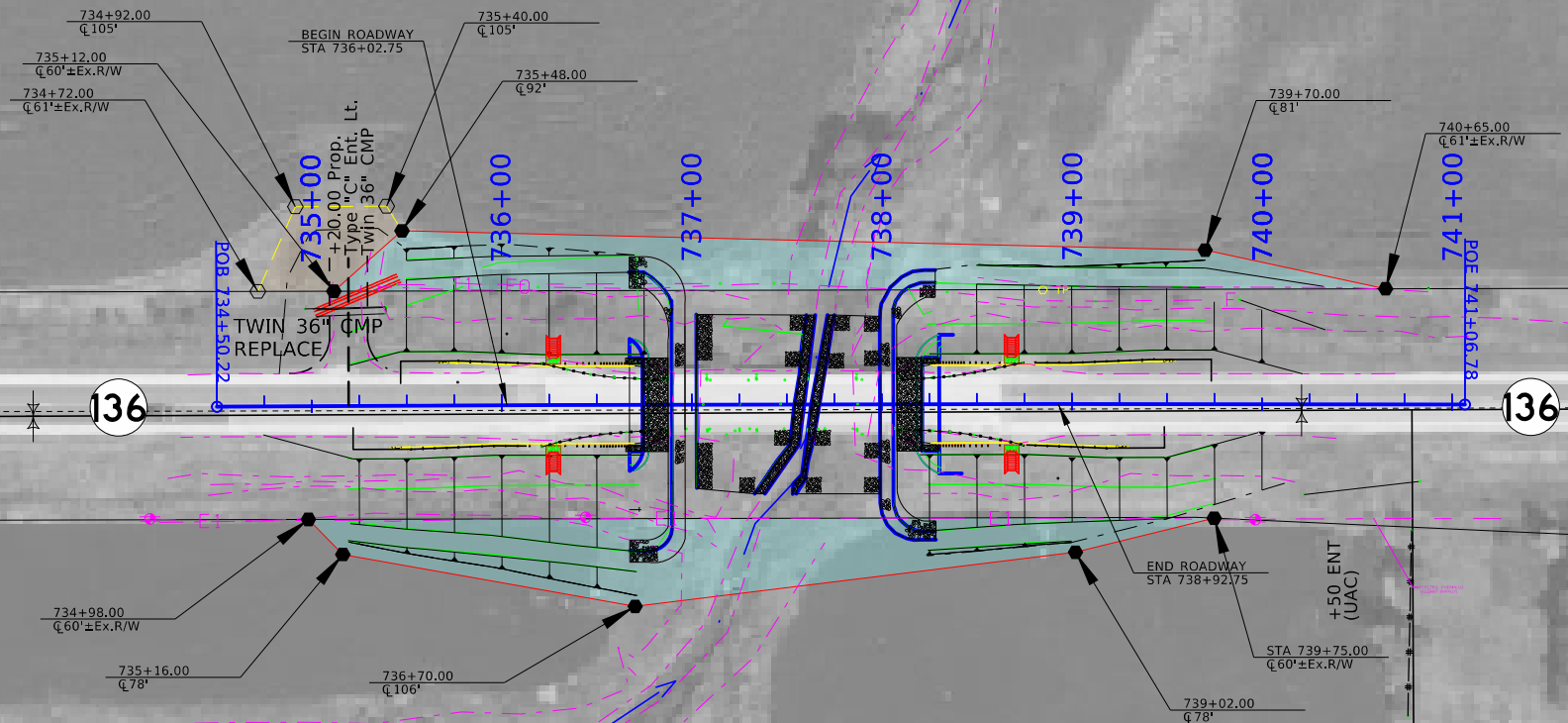
The first two digits in the control point name refer to the county number.
The next 3 digits refer to the highway number.
The next 3 digits refer to the highway milepost.
The last digit refers to the distance from the referenced milepost to the nearest tenth of a mile.

1

CMB ACRES LLC

TEMPORARY EASEMENT TO CONSTRUCT ENTRANCE

Brookfield TWP.
T-83N R-2E
SEC. 10

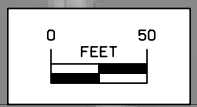


2

BECKER FAMILY FARMS LLC

Brookfield TWP.
T-83N R-2E
SEC. 15

Right of Way Design Information	
THIS SHEET INCLUDED FOR INFORMATION ONLY	
ROW Team:	CUVA / FREDRICKSON
ROW #:	STPN-136-1(98)--2J-23
Plan Date:	11/15/2022
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition



108-26A
08-01-08

STAGING NOTES

Stage 1:
With IA 136 traffic using detour, remove and replace bridge over the stream with a culvert.

Stage 2:
Reopen IA 136 to normal traffic pattern.

108-23A
08-01-08

TRAFFIC CONTROL PLAN

1) While bridge and approaches are being removed and replaced with RCB culvert, IA 136 traffic shall be maintained via an off-site detour. Detours are furnished, maintained and removed by the Contractor. Refer to TC-252 for road closure and advanced signage details.

2) Contractor will furnish, install, maintain, and remove detour signs. All existing signs that conflict with detour shall be covered. These functions shall be included in the Traffic Control Bid Item.

108-25
10-21-14

511 TRAVEL RESTRICTIONS

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 Restrictions Expected									

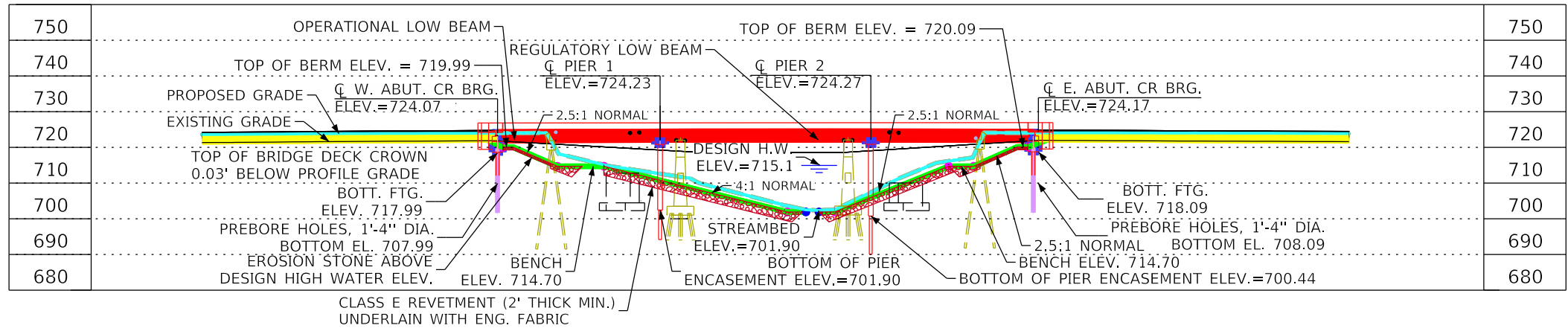
111-01
04-17-12

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

Control Point: POINT NAME 2523, Y=8239078.083, X=21449695.11
 Z=720.00 BOUNDARY DISC

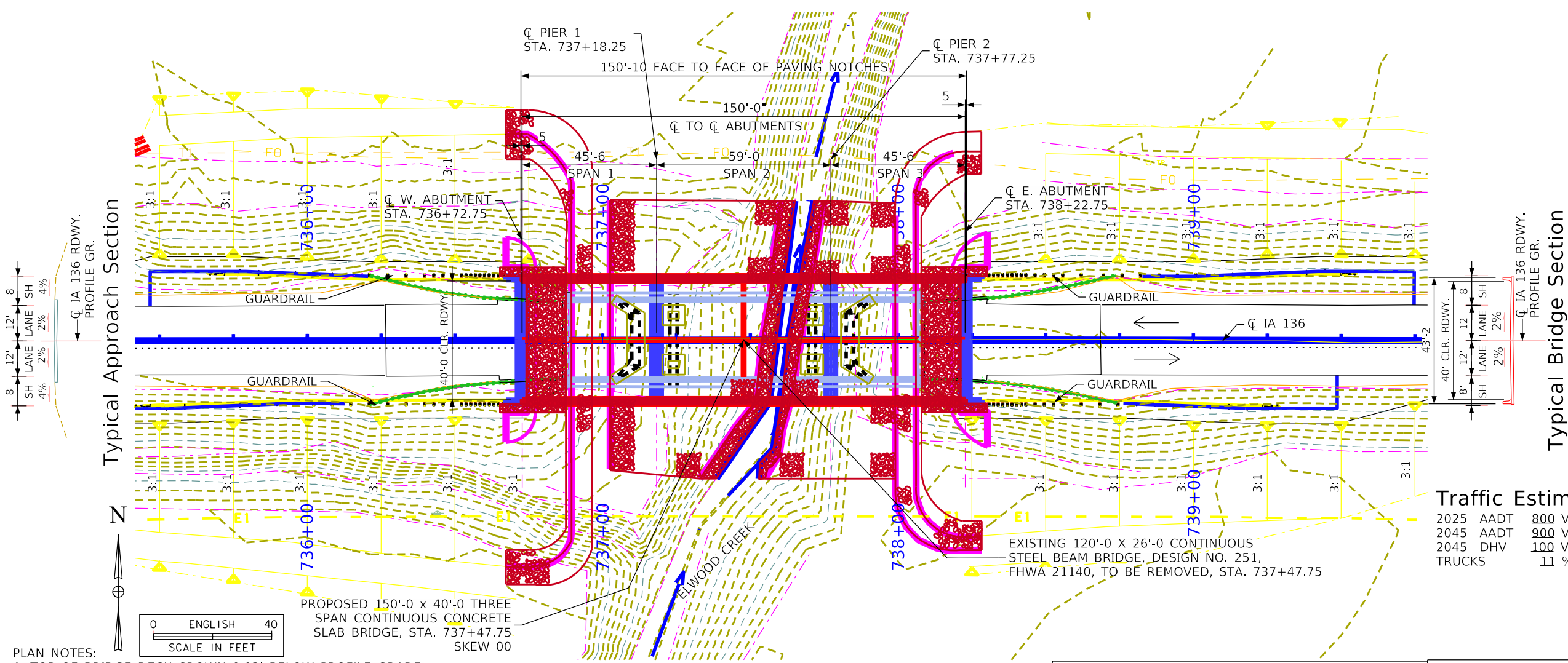


LONGITUDINAL SECTION ALONG Q APPROACH ROADWAY

+0.55% -0.55%
 VPI = 737+60.00 ELV = 724.58
 L = 200.00 K = 182
Proposed Profile Grade IA 136

Utilities Legend:
 SYMBOL - TYPE
 TP Telephone Pedestal
 FO FIBEROPTIC TELEPHONE
 T1 TELEPHONE LINE
 E1 ELECTRIC LINE
 Power Pole
 Telephone Pedestal
 FIBEROPTIC TELEPHONE
 TELEPHONE LINE
 ELECTRIC LINE
 UTILITIES SHOWN ON THIS SHEET ARE FOR INFORMATION ONLY, SEE ROAD DESIGN SHEETS FOR FINAL UTILITY INFORMATION.

Hydraulic Data
 Drainage Area = 12.8 Sq.Mi.
 Stream Slope = 22.7 Ft./Mi.
 Avg. Low Water Stage = 702.7
 Q₂₅ = 3,585 CFS
 Stage = 713.8
 Q₅₀ = 4,420 CFS
 Stage = 714.1
 Regulatory Low Beam = 721.87
 Backwater 1.7 Ft.
 Avg. Bridge Velocity = 8.5 FPS
 Q₁₀₀ = 5,240 CFS
 Stage = 714.5
 Operational Low Beam = 721.67
 Backwater = 2.5 Ft.
 Avg. Bridge Velocity = 9.0 FPS
 Q₂₀₀ = 6,800 CFS
 Stage = 715.3
 Calculated Design Scour = 694.5
 Q₅₀₀ = 7,480 CFS
 Stage = 715.6
 Avg. Bridge Velocity 9.7 FPS
 Calculated Check Scour = 694.5
 Roadway Overtop = 722.6
 Sta. 730+30



SITUATION PLAN

- PLAN NOTES:**
 1. TOP OF BRIDGE DECK CROWN 0.03' BELOW PROFILE GRADE.
 2. CLASS E REVETMENT STONE IS EMBEDDED.
- GENERAL NOTES:**
 1. THIS DESIGN IS FOR THE REPLACEMENT OF THE EXISTING 120'-0 X 26'-0 CONTINUOUS STEEL BEAM BRIDGE, DESIGN NO. 251 FHWA NO. 21140, MAINT. NO. 2333.1S136
- DESIGN NOTES:**
 1. TL-4 BRIDGE RAILING PROPOSED.
 2. J40-06 CONTINUOUS CONCRETE SLAB.
 3. PILE BENT PIERS, INDIVIDUALLY ENCASED.

Traffic Estimate Location

2025 AADT	800	V.P.D.	IA136 Over Elwood Creek
2045 AADT	900	V.P.D.	T-83N R-2E
2045 DHV	100	V.P.H.	Section 10 & 15
TRUCKS	11	%	Brookfield Township
			Clinton County
			FHWA NO.
			Bbridge Maint. No. 2333.1S136
			Latitude 42.003746°
			Longitude -90.717936°

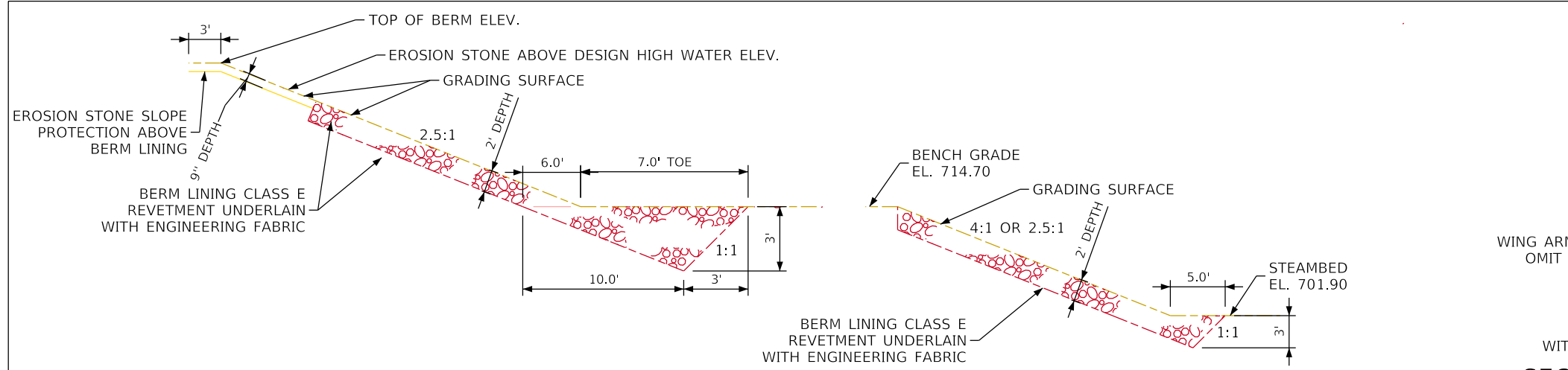
ROADWAY DESIGN

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.

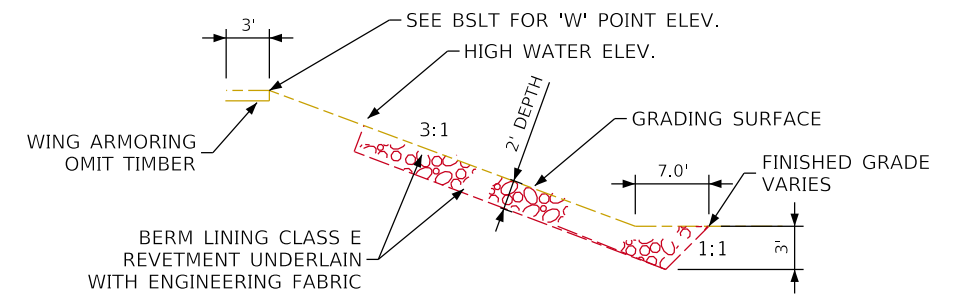
Signature: PHILIP M. HARPOLE Date: _____
 Printed or Typed Name: PHILIP M. HARPOLE
 My license renewal date is December 31, 2023

Pages or sheets covered by this seal: V.1, V.2

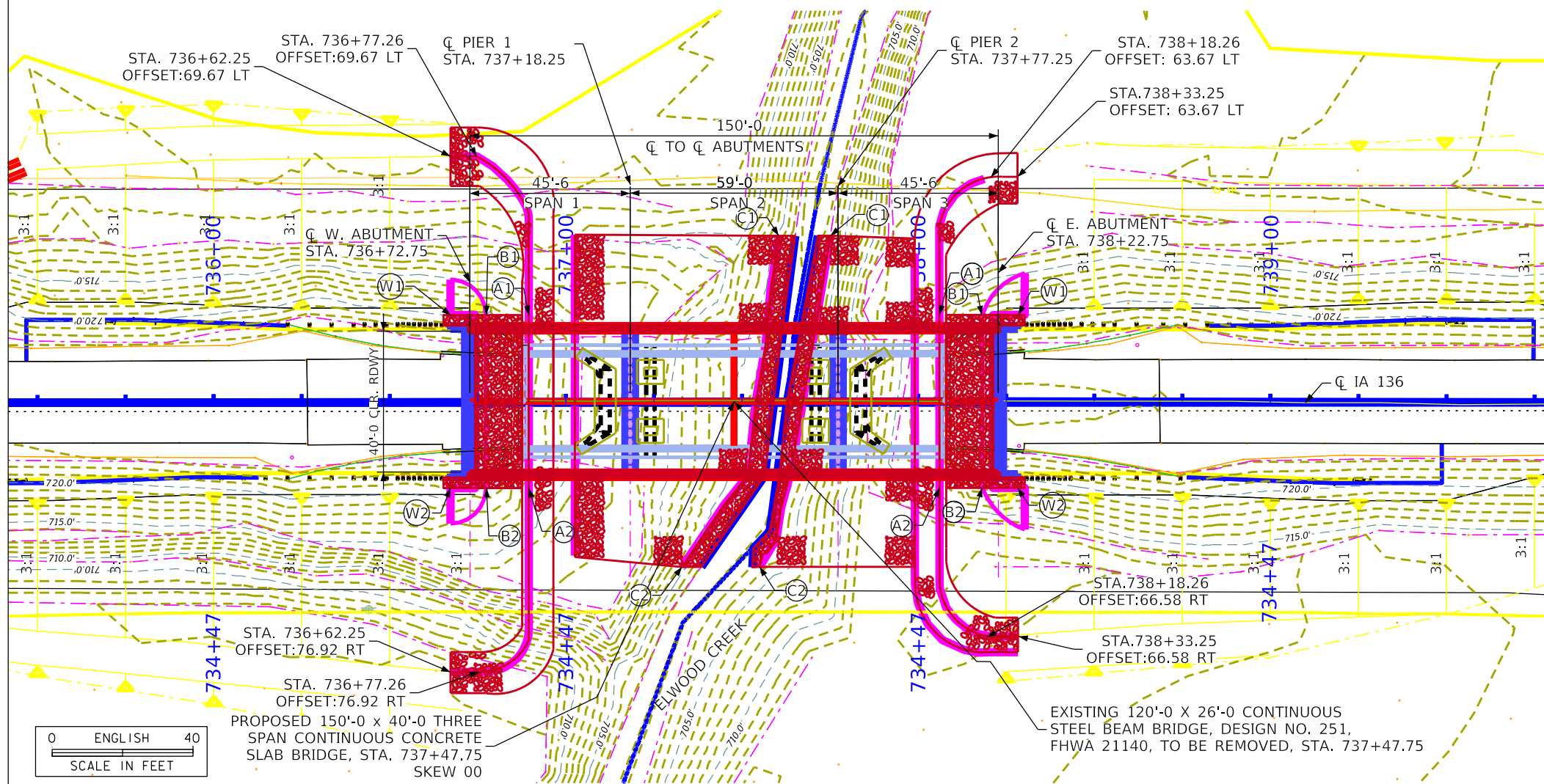
DESIGN FOR 0° SKEW
150'-0 X 40'-0 CONTINUOUS CONCRETE SLAB BRIDGE
 45'-6 END SPANS 59'-0 INTERIOR SPAN
SITUATION PLAN
 STA. 737+47.75 (IA 136) AUGUST 2022
CLINTON COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION
 Design No. Design Sheet No. 001 of 002 FHWA No. #####



SECTION THRU EMBEDDED REVETMENT BERM



SECTION THRU EMBEDDED REVETMENT NORMAL TO BRIDGE WING AT W POINT



SITE PLAN

Estimated Berm Armoring Quantities				
Location	Revetment CL. E (Ton)	Erosion Stone (Ton)	Engineering Fabric (SY)	Excavation (CY)
Berm Lining - West Abutment	880.3	31.2	943.0	569.5
Berm Lining - East Abutment	683.0	30.1	749.3	445.5
Totals	1563.3	61.3	1692.3	1015.0

Excavation quantity calculated from grading surface.

Points	West Abutment			East Abutment		
	Station	Offset	Elev.	Station	Offset	Elev.
A1	736+89.50	24.58' LT	714.70	738+06.08	24.58' LT	714.70
A2	736+89.50	24.58' RT	714.70	738+06.08	24.58' RT	714.70
B1	736+77.25	24.58' LT	719.99	738+18.25	24.58' LT	720.09
B2	736+77.25	24.58' RT	719.99	738+18.25	24.58' RT	720.09
C1	737+60.43	46.91' LT	701.90	737+75.08	47.05' LT	701.90
C2	737+32.91	47.03' RT	701.90	737+55.01	47.02' RT	701.90
W1	736+67.25	24.58' LT	723.36	738+28.25	24.58' LT	723.47
W2	736+67.25	24.58' RT	723.36	738+28.25	24.58' RT	723.47

Berm slope elevations reflect the grading surface.

DESIGN FOR 0° SKEW
150'-0" X 40'-0" CONTINUOUS CONCRETE SLAB BRIDGE
 45'-6" END SPANS 59'-0" INTERIOR SPAN
SITUATION PLAN - SITE
 STA. 737+47.75 (IA 136) AUGUST 2022
CLINTON COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION
 Design No. Design Sheet No. 002 of 002 FHWA No. #####

CROSS SECTION VIEW COLOR LEGEND

Design Color No.	Feature	Design Color No.	Feature
Aggregate			
(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		
(188)	Revetment Class D	Grading	
(28)	Revetment Class E	(8)	Behind Curb Cut
(12)	Shoulder Special Backfill	(6)	Granular
(12)	Special Backfill	(13)	Granular Back Fill
(20)	Subbase	(48)	Rock Undercut
(20)	Subbase Lower	(8)	Shoulder Earth Fill
(20)	Subbase Upper	(2)	Side Slopes
(118)	Subgrade Treatment	(226)	Side Slopes Dressing
Asphalt			
(207)	HMA Base Course	Substrata	
(207)	HMA Interim Course	(128)	Boulder Substrata
(207)	HMA Surface Course	(48)	Broken Weathered Substrata
Concrete			
(0)	Barrier Concrete	(3)	Core Out Substrata
(0)	Barrier Concrete Footing	(203)	Existing Pavement Substrata
(0)	Curb Gutter	(6)	Loam Substrata
(48)	Flowable Mortar	(80)	Rock Substrata
(0)	Median Concrete	(4)	Select Sand Substrata
(0)	PCC Pavement	(3)	Shale Substrata
(0)	Sidewalk	(10)	Topsoil Substrata
Shoulder			
(209)	Shoulder HMA	Unsuitable / Waste	
(0)	Shoulder PCC	(3)	Unsuitable Type A
(6)	Shoulder Granular	(13)	Unsuitable Type B
		(11)	Unsuitable Type C
		(3)	Waste
Existing			
(0)	Existing Pavement		

NOTES:

Text

NOTES:

Text

CROSS SECTIONS LEGEND AND INFORMATION SHEET

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

