LETTING DATE
Nov. 17, 2026

Bridge Replacement - CCS
IMX-029-5(275)86--02-43

HARRISON COUNTY

Index of Sheets

No.	Description
Sheets	Bridge Plan
A.1	Title Sheet
A.2	Location Map Sheet
V.1	Estimated Quantities - Design No. 0127
V.1 - V.23	Design No. 0127
V.24	Estimated Quantities - Design No. 0227
V.24 - V.46	Design No. 0227
SPS Sheets	Bridge Plan Soils Sheet
SPS.1 - SPS.4	Bridge Plan Soils Sheet
Road Sheets	Road Plan
A.3 - W.35	Road Plans
C.1 - C.4	Estimated Quantities - Road
C.5	Standard Plans - Road
RC.2 - RC.3	Estimated Quantities - Roadside

IOWA DOT

Revisions

	TOTAL
	175
PROJECT IDENTIFICATION NUMBER	
22-43-029-110	
PROJECT NUMBER	
IMX-029-5(275)86--02-43	
R.O.W. PROJECT NUMBER	
PROJECT DIRECTORY NUMBER	
4302911022	

PLANS OF PROPOSED IMPROVEMENT ON THE

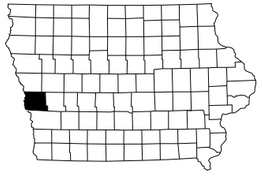
INTERSTATE ROAD SYSTEM
HARRISON COUNTY
Bridge Replacement - CCS

Northbound & Southbound I-29
over Burcham Creek
2.7 mi. S. of IA 127

Refer to the Plan Sheets for list of applicable specifications.

Value Engineering Saves. Refer to Article 1105.13 of the Specifications.

IOWA ONE CALL
1-800-292-8989
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811
Know what's below. Call before you dig.



Standard Road Plans

Standard Road Plans are listed on Sheet Number C.2

Design Data Rural

2027 AADT	16,100 V.P.D.
2047 AADT	20,100 V.P.D.
TRUCKS	31 %
Total Design ESALs	-

Includes NB & SB Lanes

Iowa DOT Bridges and Structures Consultant Coordinator Contact: Linda Narigon

Index of Seals

Sheet No.	Name	Type
A.1	Trevor L. Pence	Structural Design
V.4 & V.27	Timothy J. Sheets	Hydraulic Design
SPS.1 & CS.1	Gopalakrishna Allam	Geotechnical Design
A.3	Ryan Miller	Roadway Design
RC.1	Rachel A. Harris	Landscape Design

Structural Design

LICENSED PROFESSIONAL ENGINEER
Trevor L. Pence
30389
IOWA

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 — Date: 8/20/26

Trevor L. Pence
Printed or Typed Name

My license renewal date is December 31, 2027

Pages or sheets covered by this seal: A.1, A.2 & V.1 - V.46

FILE NO. 32382	ENGLISH	DESIGN TEAM HDR	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER A.1	

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R-45W R-44W R-45W R-42W

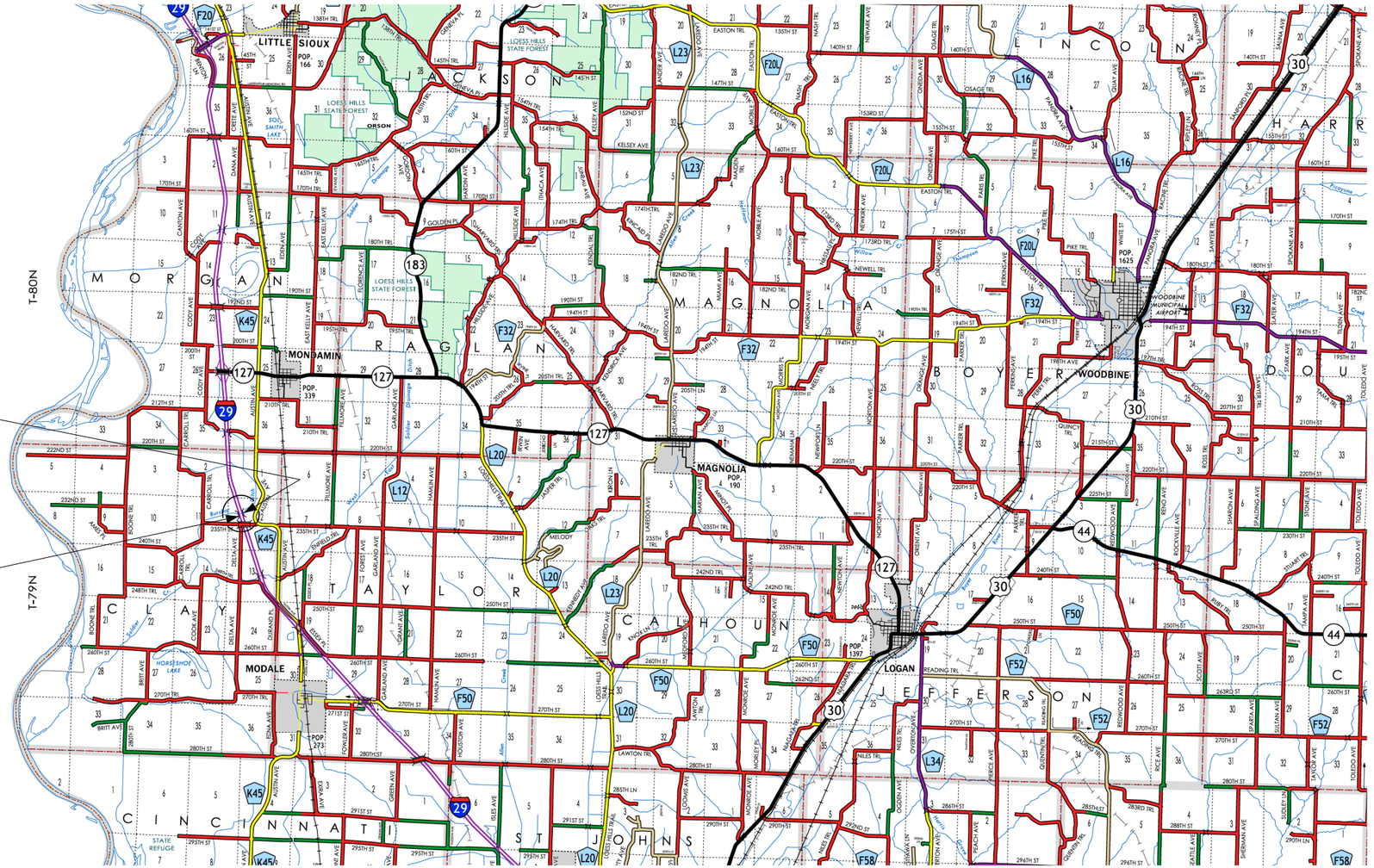
T-80N

T-79N

Design No. 0127
FHWA No. 28241

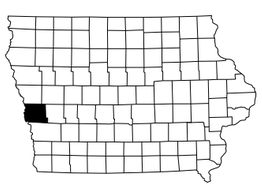
Design No. 0227
FHWA No. 28251

N



Harrison County Location Map

Not To Scale



LEGEND

- INTERSTATE HIGHWAY
- PRIMARY HIGHWAY-DIVIDED
- PRIMARY HIGHWAY
- PORTLAND CEMENT CONCRETE ROAD
- ASPHALT ROAD
- BITUMINOUS ROAD
- GRAVEL ROAD
- EARTHEN ROAD

- INTERSTATE HIGHWAY 80
- UNITED STATES HIGHWAY 65
- STATE HIGHWAY 237
- COUNTY HIGHWAY S27

- RAILROAD
- PIPELINE
- AIRPORT
- HYDROLOGY
- BRIDGE

- STATE BOUNDARY
- COUNTY BOUNDARY
- CORPORATE BOUNDARY
- TOWNSHIP LINE
- SECTION LINE
- ROAD NAMES ABBEY ROAD
- UNINCORPORATED PLACE ELWOOD

- STATE PARKS
- STATE INSTITUTIONS
- FEDERAL LAND

FILE NO. 32382	ENGLISH	DESIGN TEAM HDR	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER A.2	

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Estimated Bridge Quantities - Design No. 0127

Item No.	Item Code	Item	Unit	Total	As Built Quantity
1	2104-2710020	Excavation, Class 10, Channel	CY	875	
2	2401-6745625	Removal of Existing Bridge	LS	1.0	
3	2402-2720000	Excavation, Class 20	CY	350	
4	2402-2721000	Excavation, Class 21	CY	255	
5	2403-0100010	Structural Concrete (Bridge)	CY	293.8	
6	2403-1000005	Fiber Reinforcement for Structural Concrete	CY	945.7	
7	2403-1000010	Trial Batch and Test Placement (Fiber Reinforced Concrete)	LS	1.0	
8	2403-7000210	High Performance Structural Concrete	CY	945.7	
9	2404-7775000	Reinforcing Steel	LB	13,482	
10	2404-7775005	Reinforcing Steel, Epoxy Coated	LB	227,002	
11	2404-7775009	Reinforcing Steel, Stainless Steel	LB	5,680	
12	2414-6424038	Concrete Barrier Rail, 3'-8"	LF	440.0	
13	2501-0201057	Piles, Steel, HP 10 x 57	LF	2,000	
14	2501-0201489	Piles, Steel, HP 14 x 89	LF	5,320	
15	2501-6335010	Prebored Holes	LF	160	
16	2507-2638650	Bridge Wing Armoring - Erosion Stone	SY	13	
17	2507-3250005	Engineering Fabric	SY	1,525	
18	2507-6800061	Revetment, Class E	TON	1,392	
19	2526-8285040	Construction Survey, Location Survey	LS	1.0	
20	2533-4980005	Mobilization	LS	1.0	

Item No.	Estimate Reference Information
1	Includes excavation below the grading surface for placement of engineering fabric and revetment. For details, see Design Sheet No. 5. All waste must be removed from the project site. Dispose of excess material according to Article 1106.07 of the current specifications.
2	Includes all work for removal and off-site disposal of the existing 115'-0" x 39'-0" CCS NB Bridge (Design No. 1965). Removal of scheduled items shall be in accordance with Section 2401, of the Standard Specifications. Contractor to add the following information when submitting the Iowa DNR "Notification of Demolition" form: Name of Asbestos Inspector: Brad Azeltine Date Inspected: 3/5/2020 IA License Number: Iowa DOT Inspector Phone: 515-239-1938 Procedure used to detect the presence of asbestos materials: Polarized Light Microscopy (PLM)
5	All abutment footing and pier concrete is to be Class "C".
6	Refer to the "Developmental Specifications for Fiber Reinforcement for Structural Concrete" for additional information.
7	Includes all work and materials necessary for a trial batch and test placement of fiber reinforced concrete. Refer to the "Developmental Specifications for Fiber Reinforcement for Structural Concrete" for additional information.
8	This bid item includes the 945.7 cubic yards of fiber reinforced concrete for the slab, monolithic pier cap, and wings. Refer to the "Developmental Specifications for High Performance Concrete for Structures" for additional information. Includes all resilient joint filler required. Includes furnishing and placing subdrain (including excavation), floodable backfill, porous backfill, geotextile fabric, water flooding, and subdrain outlet at abutments. Includes furnishing and placing 3 inch diameter PVC plastic pipe and expanding foam in the abutment wings. Includes cost of 12 drains at 48 lbs steel per drain. Includes cost to furnish and install concrete sealer at floor drains. Includes cost of furnishing and placing splash basins (including excavation, erosion stone or Class E revetment, and engineering fabric).
12	Includes material and labor associated with providing and installing the rigid steel conduit, junction boxes and fittings. Includes 220 L.F. of 2" diameter rigid steel conduit. If placement of concrete is done by the slipforming method, Class BR concrete is required. Cast-in-place barrier rails shall use Class C mix. Price bid for this item shall include the cost of cast-in-place forms if required for placement of the concrete.
13 & 14	Piling shall be Grade 50. For additional notes, see Design Sheet Nos. 8 & 10.
16	Includes furnishing and placing engineering fabric, erosion stone, and all required excavating, shaping and compacting for wing armoring.
17	Engineering fabric shall be material as specified for embankment erosion control in accordance with Article 4196.01,B,3, of the Standard Specifications.
18	Estimated at 1.5 ton/cu yd. Class E revetment shall meet requirements of Article 4130. Broken Concrete and granite is not allowed.

Index Of Sheets

Design No. 0127

Sheet Descriptions	Sheet Number
Estimated Bridge Quantities	V.1
Summary Quantities	V.2
General Notes	V.3
Situation Plan	V.4
Staking Diagram	V.6
Pier Details	V.7
Abutment Details	V.9
Superstructure Details	V.11
Top of Slab Elevations	V.15
Conduit Details	V.16
Barrier Rail Details	V.17
Bridge Wing Armoring	V.21
Subdrain Details	V.22
Abutment Backfill Details	V.23
Soil Profile Sheets	SPS.1

Roadway quantities are shown elsewhere in these plans.

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans 59'-0" Interior Spans

Estimated Bridge Quantities

STA. 1655+72.50, 37' Rt. (℄ I-29) Turn-in Date: September 2026

Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0127 Design Sheet No. 1 of 23 FHWA No. 28241

HDR

FILE NO. 32382	ENGLISH	DESIGN TEAM ECS\FG\EES	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.1	

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Summary of Concrete Quantities

Location	Structural Concrete	High Performance Structural Concrete
Pier No. 1	85.5	-
Pier No. 2	85.4	-
Pier No. 3	84.7	-
South Abutment Footing	19.1	-
North Abutment Footing	19.1	-
Bridge Slab + Abut. Diaphragms + Monolithic Pier Cap + Abut. Wings	-	945.7 (F)
Total (Cu. Yds.)	293.8	945.7

(F) Fiber Reinforced

Summary of Reinforcing Steel

Location	Non-Coated Reinforcing Steel	Stainless Steel Reinforcing Steel	Epoxy Coated Reinforcing Steel
Bridge Slab + Abut. Diaphragms + Monolithic Pier Cap + Abut. Wings	-	300	202349
Barrier Rails	-	4492	15118
Barrier End Sections	-	888	1176
Barrier Rail - Conduit	-	-	104
South Abutment Footing	-	-	2800
North Abutment Footing	-	-	2800
Pier No. 1	4494	-	885
Pier No. 2	4494	-	885
Pier No. 3	4494	-	885
Total (Lbs.)	13482	5680	227002

Summary of Excavation

Location	Class 10 Excavation	Class 20 Excavation	Class 21 Excavation
South Abutment	-	85	-
North Abutment	-	85	-
Pier No. 1	-	60	85
Pier No. 2	-	60	85
Pier No. 3	-	60	85
Channel	875	-	-
Total (Cu. Yds.)	875	350	255

Summary of Foundations

Location	Substructure Type	Foundation Type	Number	Length (Lin. Ft.)	Total (Lin. Ft.)
South Abutment	Integral Abutment	HP10x57	8	125	1000
North Abutment	Integral Abutment	HP10x57	8	125	1000
Pier No. 1	Fully Encased Pile Bent Pier	HP14x89	14	125	1750
Pier No. 2	Fully Encased Pile Bent Pier	HP14x89	14	125	1750
Pier No. 3	Fully Encased Pile Bent Pier	HP14x89	14	130	1820
				Total HP10x57 (Lin. Ft.)	2000
				Total HP14x89 (Lin. Ft.)	5320

Summary of Prebored Holes

Location	Number	Length (Lin. Ft.)	Total
South Abutment	8	10	80
North Abutment	8	10	80
		Total (Lin. Ft.)	160

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans 59'-0" Interior Spans

Summary Quantities Sheet

STA. 1655+72.50, 37' Rt. (℄ I-29)

Turn-in Date: September 2026

Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0127 Design Sheet No. 2 of 23 FHWA No. 28241

Specifications:

Design: AASHTO LRFD 10th Ed, Series of 2024, except as noted in the current Iowa Bridge Design Manual.

Construction: Iowa Department of Transportation Standard Specifications for Highway and Bridge Construction, Series 2023, plus applicable General Supplemental Specifications, Developmental Specifications, Supplemental Specifications and Special Provisions, including the following shall apply to construction work on this project:
- "Developmental Specifications for High Performance Concrete for Structures",
- "Developmental Specifications for Fiber Reinforcement for Structural Concrete",
- "Developmental Specifications for Electronic Ticketing".

Design Stresses:

Design stresses for the following materials are in accordance with the AASHTO LRFD Bridge Design Specifications, 10th Ed, Series of 2024, except as noted in the current Iowa Bridge Design Manual.

- Reinforcing steel in accordance with AASHTO LRFD Section 5, Grade 60 for Epoxy Coated and Non-Coated, and Grade 60 or 75 for stainless.
- Concrete in accordance with LRFD AASHTO Section 5, f'c = 4.0 ksi.
- Structural Steel in accordance with AASHTO LRFD Section 6, ASTM A709 Grade 50 (AASHTO M270 Grade 36 or Grade 50), except as noted.

General Notes:

This design is for the replacement of the existing 115'-0" x 39'-0" CCS NB Bridge (Design No. 1965) with a year of construction of 1967. Electronic plans of the Existing Structure are available to the Contractor as part of the E-Files supplied with the contract documents.

The lump sum bid item for "Removal of Existing Bridge" shall include all costs associated with removing the existing 115'-0" x 39'-0" CCS NB Bridge (Design No. 1965). Removals shall be in accordance with Section 2401, of the Standard Specifications.

This bridge is designed for HL-93 loading, plus 20 lbs. per square foot of roadway for future wearing surface.

The slab as shown includes 3/4-inch integral wearing surface.

Utility companies whose facilities are shown on the plans or known to be within the construction limits shall be notified by the Bridge Contractor of the construction starting date.

Faint lines on plans indicate the existing structure.

It shall be the Bridge Contractor's responsibility to provide sites for excess excavated material. No payment for overhaul will be allowed for material hauled to these sites.

The Bridge Contractor shall prebore holes for abutment piles. Holes shall be bored to the elevations shown on the "Longitudinal Section along CL Approach Roadway" on Design Sheet No. 4. Piles shall be driven through the holes to at least the specified design bearing.

Concrete barrier rails placed using the slipform method will require the use of a Class BR concrete in accordance with Article 2513.03, A, 2 of the Standard Specifications. Cast-in-place Barrier Rails shall use Class C mix. Class D concrete is not permitted for concrete barrier rails (cast-in-place or slipformed method).

These bridge plans label all reinforcing steel with English notation (5a1 is $\frac{5}{8}$" inch diameter bar). English reinforcing steel received in the field may display the following "Bar Designation". The "Bar Designation" is the stamped impression on the reinforcing bars, and is equivalent to the bar diameter in millimeters.

English size	3	4	5	6	7	8	9	10	11
Bar Designation	10	13	16	19	22	25	29	32	36

All reinforcing bars and bars noted as dowels supplied for this structure shall be deformed reinforcement unless otherwise noted or shown.

Keyway dimensions shown on the plans are based on nominal dimensions unless stated otherwise. In addition, the bevel used on the keyway shall be limited to a maximum of 10 degrees from vertical.

Bridge Slab Dimensions Table

	Item	Units	Quantity
1	Slab Length	L.F.	209.8
2	Minimum Slab Width	L.F.	57.2
3	Maximum Slab Width	L.F.	57.2
4	Slab Area	S.F.	11995

1. Slab length is measured from face-to-face of paving notches along the centerline of the roadway.

2, 3. Slab widths are measured from out-to-out of slab perpendicular to the centerline of roadway.

4. Slab area is to be based on the face-to-face paving notch distance and out-to-out slab dimensions.

Design History at this Site

(NB I-29)

Des. No.	Type of Work
1965	Original Design
989	Slab Repair and Retrofit Rail
127	Bridge Replacement

All plan dimensions are horizontal unless noted otherwise.

Traffic control plan:
The roadway will be open to thru traffic. Refer to the traffic control plan shown elsewhere in these plans.

Pollution Prevention Plan shown elsewhere in these plans.

Working Drawing and Calculation Submittals

Working drawings and calculations shall be submitted for the following items shown in the table below. (Note additional working drawings and calculations may be required in accordance with Article 1105.03 of the Standard Specifications.)

Submittal requirements for working drawings and calculations shall be in accordance with 1105.03 of the Standard Specifications for Highway and Bridge Construction of the Iowa Department of Transportation. The absence of a certification requirement for a submittal does not relieve the contractor of the responsibility to attain certification.

Calculation submittals in this table which are associated with working drawing submittals shall be submitted on the same day. Review time for calculation submittals shall be of the same duration as and run concurrently with review time for associated working drawings. The calculation submittals listed in the table are not meant to be an exhaustive list and do not relieve the Contractor from providing additional calculation submittals if requested by the Engineer.

No.	Working Drawing Description	Working Drawing File Name Convention for Submittal	Certified by Iowa P.E. (Yes/No)
1	Floor Drains	(275)_Harrison_Design127_FloorDrains.pdf	No
2	Bridge Falsework	(275)_Harrison_Design127_FalseworkDrawings.pdf	Yes
No.	Calculation Description	Calculation File Name Convention for Submittal	Certified by Iowa P.E. (Yes/No)
3	Bridge Falsework	(275)_Harrison_Design127_FalseworkCalculations.pdf	Yes

HDR

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

General Notes

STA. 1655+72.50, 37' Rt. (℄ I-29)

Turn-in Date: September 2026

Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0127 — Design Sheet No. 3 of 23 — FHWA No. 28241

Control Point 43I290865: 7117991.787 N, 16417157.407 E, CP FENA Monument in West I-29 ROW near SW Corner of Southbound Bridge, Elev. 1018.886

Hydraulic Data

RIDB: Not Applicable
Drainage Area = 8.18 Sq. Mi.
Stream Slope (HGL) = 2.40 ft./Mi.
Avg. Low Water Stage = 1005.57

Q_{50} = 3830 cfs
Stage = 1015.05
Channel Low Beam = 1018.35 ft.
Avg. Bridge Velocity = 6.28 fps

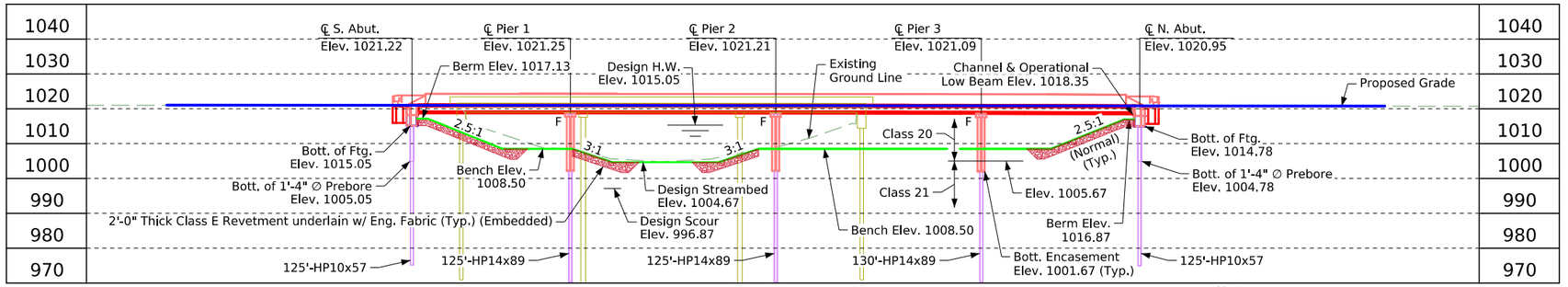
Q_{100} = 4610 cfs
Stage = 1015.56
Backwater = 1.49 ft.
Avg. Bridge Velocity = 6.76 fps

Q_{200} = 5420 cfs
Stage = 1016.05
Calculated Design Scour = 996.87

Q_{500} = 6500 cfs
Stage = 1016.60
Avg. Bridge Velocity = 7.71 fps
Calculated Check Scour = 996.17

Roadway Overtop 1020.66
Sta. 1658+41.26

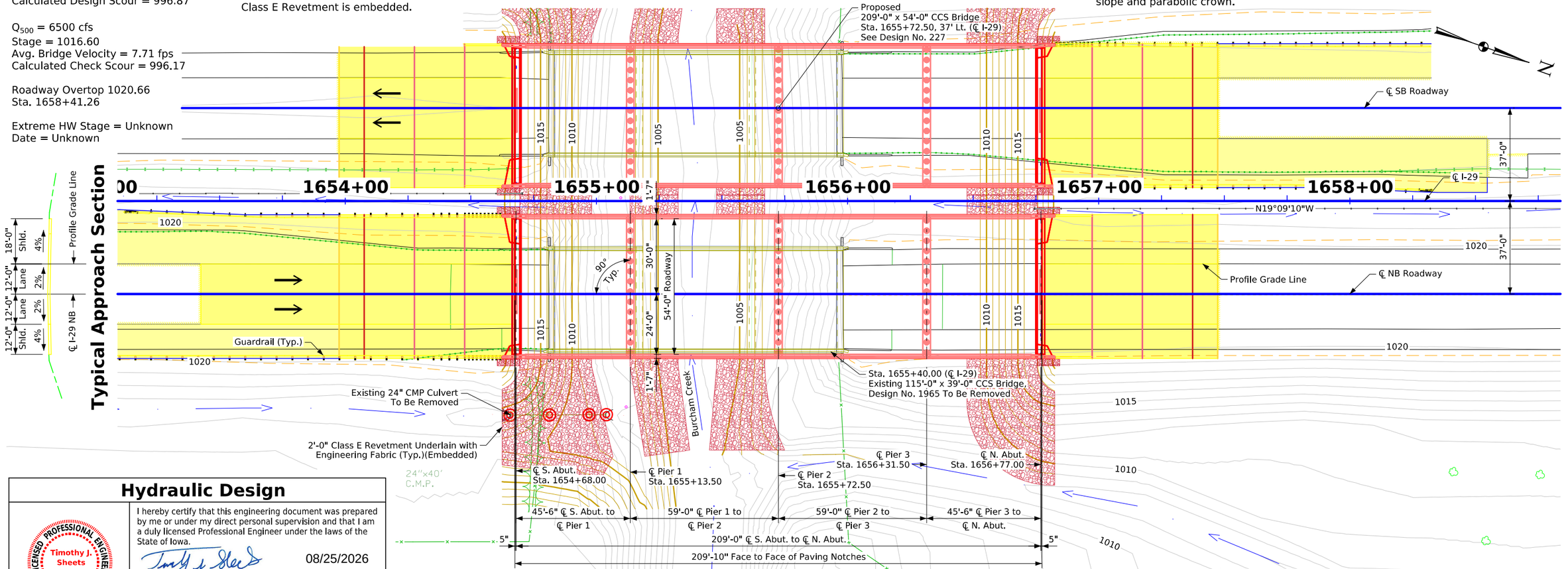
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Date = Unknown



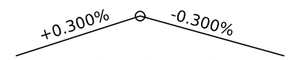
Longitudinal Section Along ℄ Approach Roadway

Note:
Class E Revetment is embedded.

Note:
Top of bridge slab at centerline roadway is 0.21' above the profile grade to account for slab cross slope and parabolic crown.



Typical Approach Section



VPI Sta. = 1655+20.00
VPI Elev. = 1021.21
VC = 225'

Profile Grade I-29

Situation Plan

Traffic Estimate

NB Lanes

2027 AADT	8,050 V.P.D.
2047 AADT	10,050 V.P.D.
TRUCKS	31 %
Total Design ESALs	-

Location

NB I-29 over Burcham Creek
T-79N R-45W
Section 12
Clay Township
Harrison County
FHWA No. 28241
Bridge Maint. No. 4386.5R029
Latitude 41.671643°
Longitude -96.036161°

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.

LICENSED PROFESSIONAL ENGINEER — Timothy J. Sheets P23778 — IOWA

Signature — Date: 08/25/2026

Timothy J. Sheets
Printed or Typed Name

My license renewal date is December 31, 2027

Pages or sheets covered by this seal: Hydraulic & Revetment Data on V.4 & V.5

Utilities Note:

No known utilities shown in this area.

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Situation Plan

STA. 1655+72.50, 37' Rt. (℄ I-29)

Turn-in Date: September 2026

Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0127 — Design Sheet No. 4 of 23 — FHWA No. 28241

FILE NO. 32382	ENGLISH	DESIGN TEAM HDR	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.4

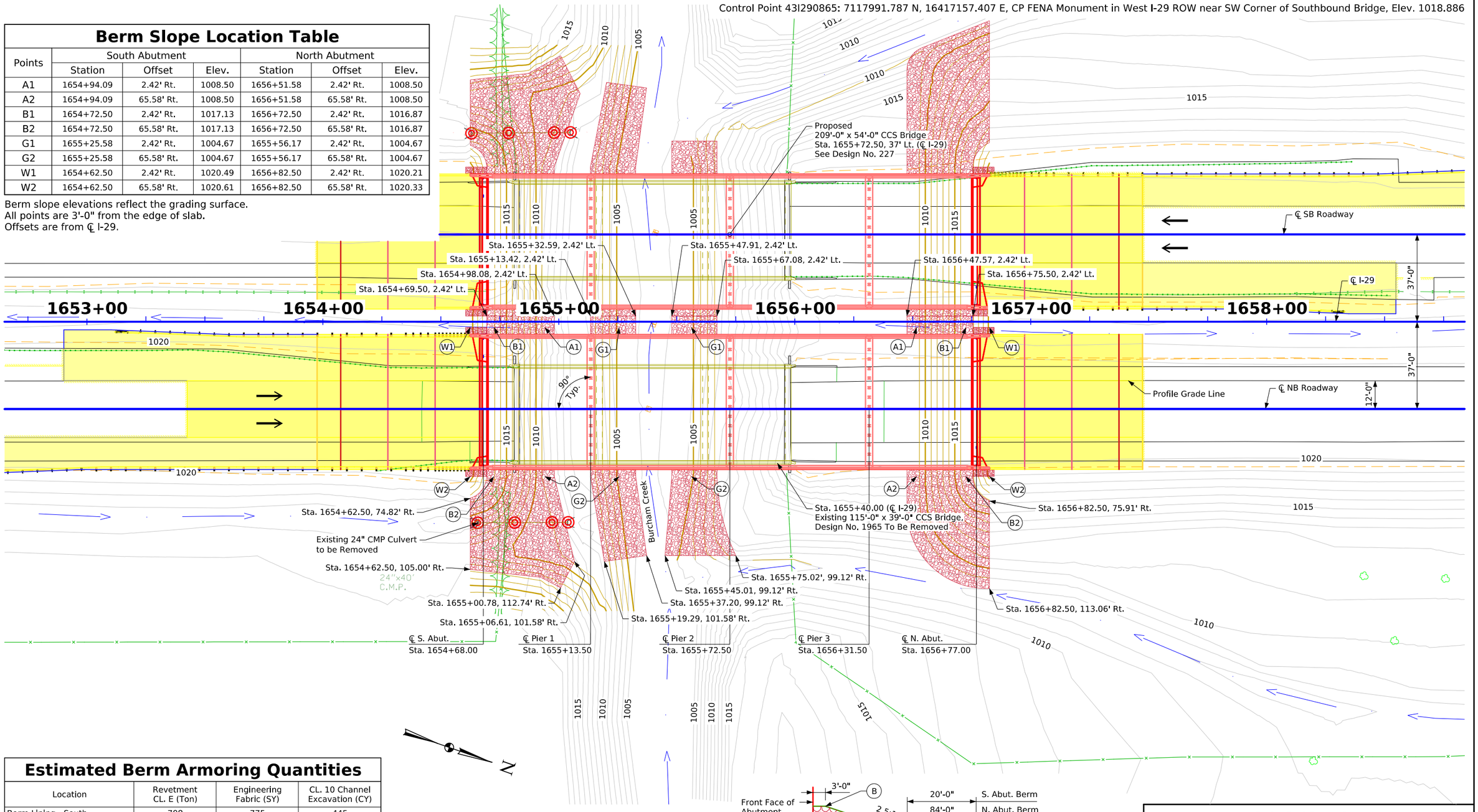
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Control Point 43I290865: 7117991.787 N, 16417157.407 E, CP FENA Monument in West I-29 ROW near SW Corner of Southbound Bridge, Elev. 1018.886

Berm Slope Location Table

Points	South Abutment			North Abutment		
	Station	Offset	Elev.	Station	Offset	Elev.
A1	1654+94.09	2.42' Rt.	1008.50	1656+51.58	2.42' Rt.	1008.50
A2	1654+94.09	65.58' Rt.	1008.50	1656+51.58	65.58' Rt.	1008.50
B1	1654+72.50	2.42' Rt.	1017.13	1656+72.50	2.42' Rt.	1016.87
B2	1654+72.50	65.58' Rt.	1017.13	1656+72.50	65.58' Rt.	1016.87
G1	1655+25.58	2.42' Rt.	1004.67	1655+56.17	2.42' Rt.	1004.67
G2	1655+25.58	65.58' Rt.	1004.67	1655+56.17	65.58' Rt.	1004.67
W1	1654+62.50	2.42' Rt.	1020.49	1656+82.50	2.42' Rt.	1020.21
W2	1654+62.50	65.58' Rt.	1020.61	1656+82.50	65.58' Rt.	1020.33

Berm slope elevations reflect the grading surface.
All points are 3'-0" from the edge of slab.
Offsets are from ℄ I-29.



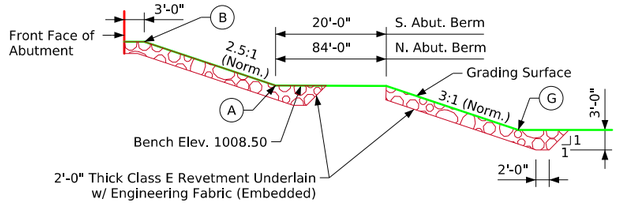
Site Plan

Estimated Berm Armoring Quantities

Location	Revetment CL. E (Ton)	Engineering Fabric (SY)	CL. 10 Channel Excavation (CY)
Berm Lining - South	708	775	445
Berm Lining - North	684	750	430
Totals	1392	1525	875

Excavation quantity calculated from grading surface. Excavation quantity if for embedded revetment core out only, and does not include excavation to the grading surface. Excavation quantity to the grading surface is determined by Road Design and included in the Road Plans.

Revetment based on a density of 1.5 Ton/CY.



Section Thru Embedded Revetment Berm

(Normal To Abutment)

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Site Plan

STA. 1655+72.50, 37' Rt. (℄ I-29) — Turn-in Date: September 2026

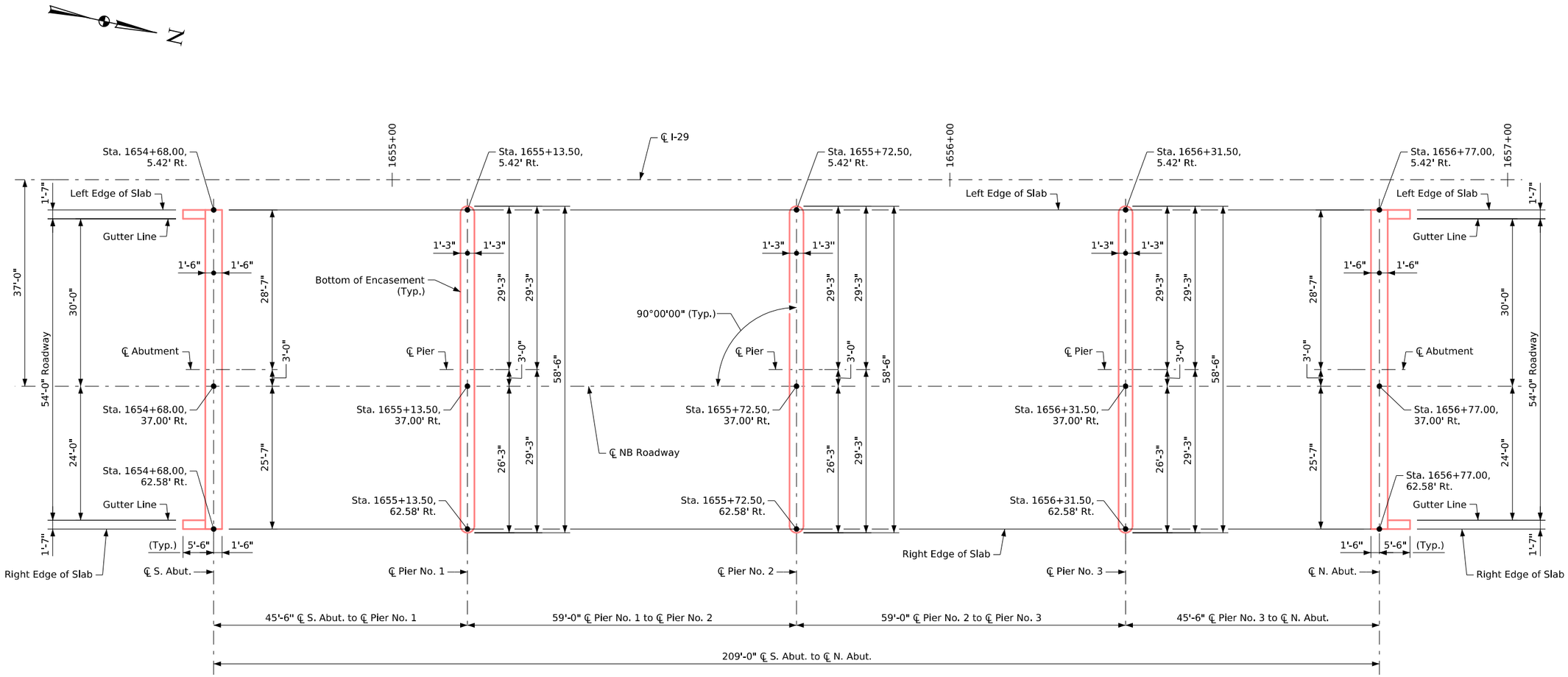
Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0127 — Design Sheet No. 5 of 23 — FHWA No. 28241

FILE NO. 32382	ENGLISH	DESIGN TEAM HDR	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.5

9:05:50 AM 8/17/2026 ESORENS pw:\\pwhdruscen02.intranet.hdr:HDR_US_Central_02\Documents\IADOT\IDOT-I29_Burcham_Creek_Br_Des\6.0_CAD_BIM\6.2_WIP\0127 - Drafting\Sit. Plan NB I29 Design 0127 209 x 54 CCS Bridge



Staking Diagram

Bridge Staking Coordinates

Location	℄ S. Abut.	℄ Pier No. 1	℄ Pier No. 2	℄ Pier No. 3	℄ N. Abut.
Left Edge of Slab	E=16417267.431 N=7118026.378	E=16417252.503 N=7118069.359	E=16417233.145 N=7118125.093	E=16417213.788 N=7118180.827	E=16417198.860 N=7118223.809
℄ NB Roadway	E=16417297.266 N=7118036.740	E=16417282.338 N=7118079.721	E=16417262.980 N=7118135.456	E=16417243.623 N=7118191.190	E=16417228.695 N=7118234.171
Right Edge of Slab	E=16417321.433 N=7118045.133	E=16417306.505 N=7118088.115	E=16417287.148 N=7118143.849	E=16417267.790 N=7118199.583	E=16417252.862 N=7118242.565

Note:
An electronic file containing the bridge coordinate data is available as part of the E-files supplied with the contract documents. The Contractor shall verify these coordinates with the project horizontal control information provided in the road plans.

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Staking Diagram

STA. 1655+72.50, 37' Rt. (℄ I-29)

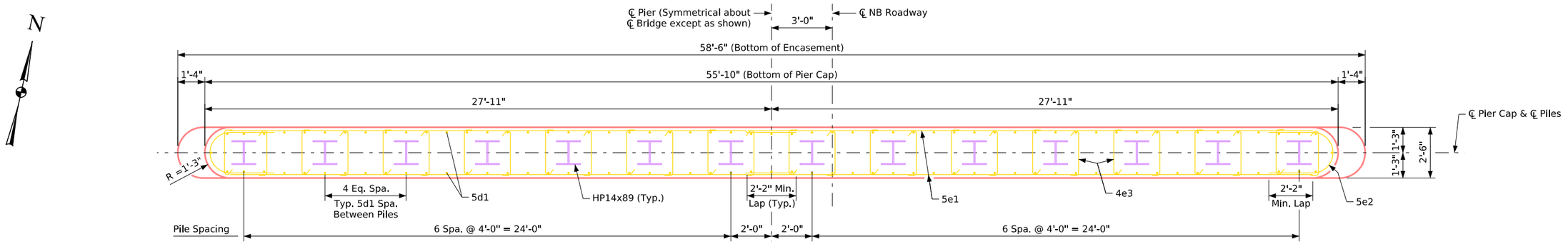
Turn-in Date: September 2026

Harrison County

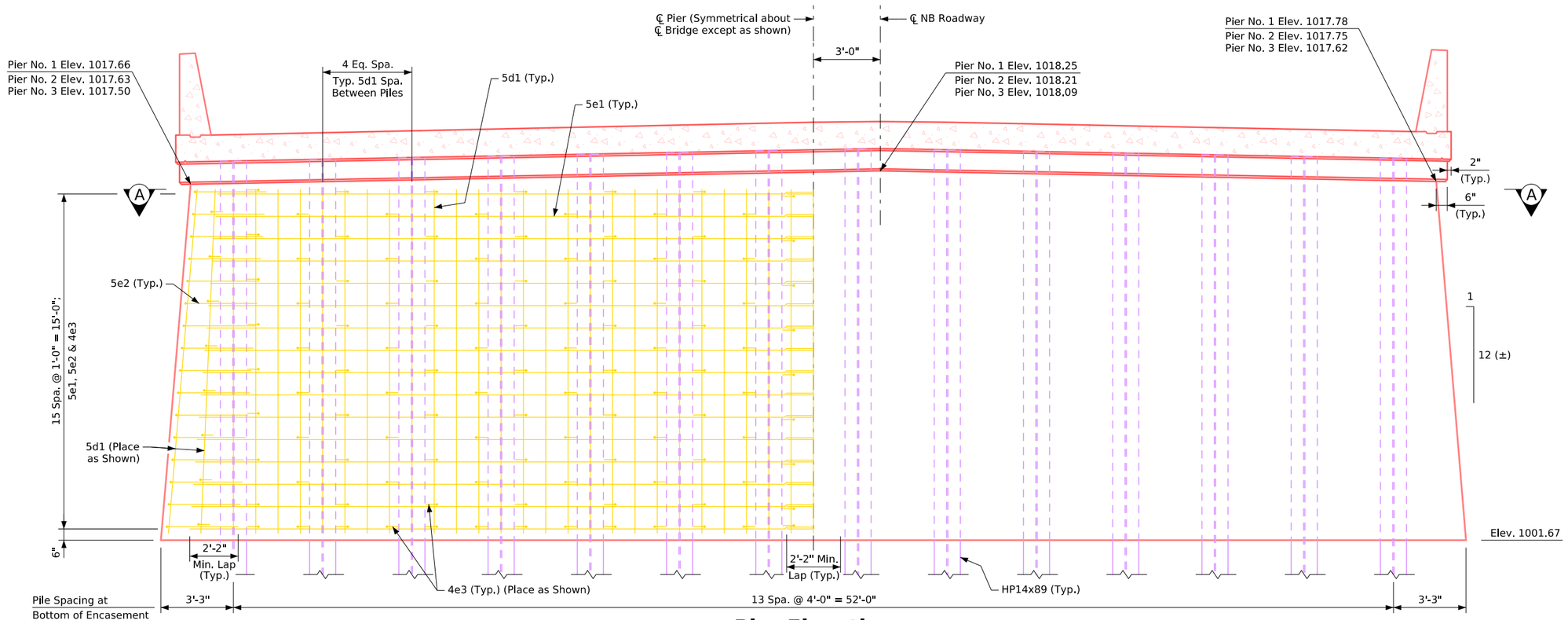
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0127 — Design Sheet No. 6 of 23 — FHWA No. 28241

Control Point 43I290865: 7117991.787 N, 16417157.407 E, CP FENA Monument in West I-29 ROW near SW Corner of Southbound Bridge, Elev. 1018.886



Section A-A



Pier Elevation

(Looking Upstation)
(Pier Cap Reinforcing Not Shown)

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Pier Details

STA. 1655+72.50, 37' Rt. (℄ I-29)

Turn-in Date: September 2026

Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0127 — Design Sheet No. 7 of 23 — FHWA No. 28241

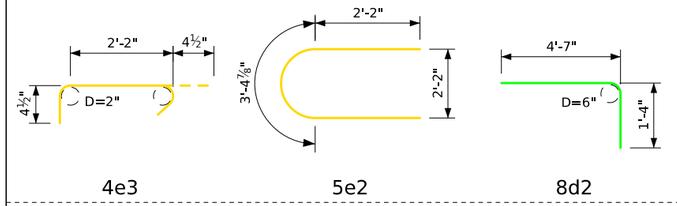
FILE NO. 32382	ENGLISH	DESIGN TEAM ECS\FG\EES	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.7	

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Concrete Quantities

Location	Quantity
Pier No. 1 Encasement	85.5
Pier No. 2 Encasement	85.4
Pier No. 3 Encasement	84.7
Total - Structural Concrete (Bridge) (CY)	255.6

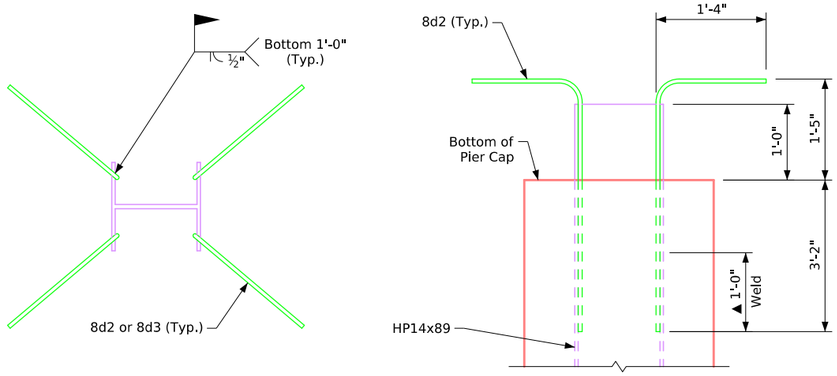
Bent Bar Details



Note: All Dimensions Are Out To Out. D=pin Diameter.

Reinforcing Bar List - One Pier

	Bar	Location	Shape	No.	Length	Weight
Non-Coated	5d1	Encasement, Vertical		112	15'-8"	1,830
	5e1	Encasement, Horizontal		64	29'-1"	1,941
	5e2	Encasement, End, Horizontal		32	7'-9"	259
	4e3	Encasement, Ties		238	2'-11"	464
		Non-Coated Reinforcing Total Weight (lbs.)				4,494
Epoxy Coated	8d2	Encasement, Top		56	5'-11"	885
		Epoxy Coated Reinforcing Total Weight (lbs.)				885



Cap Steel Details

▲ Weld bottom 1'-0" only. Epoxy coating touch-up is not required.

Pier Notes:

Minimum clear distance from face of concrete to near reinforcing bar is to be 2" unless otherwise noted or shown.

Pier Pile Notes:

The contract length of 125 feet for Pier No. 1 & Pier No. 2 piles, and 130 feet for Pier No. 3 piles is based on a non-cohesive soil classification, a total factored axial load per pile (Pu) of 228 kips, and a geotechnical resistance factor (phi) of 0.55 for soil and 0.7 for rock end bearing.

The nominal axial bearing resistance for construction control was determined from a non-cohesive soil classification and a geotechnical resistance factor (phi) of 0.55 for soil and 0.7 for rock end bearing. Piles are assumed to be driven from a start elevation at the bottom of encasement. Design scour (200-year) was assumed to affect the upper 6.3 feet of embedded pile length and cause 6 kips of driving resistance.

The required nominal axial bearing resistance for the pier piles is 190 tons (Pier No. 1), 187 tons (Pier No. 2), and 198 tons (Pier No. 3) at end of drive or retap. The pile contract length shall be driven as per plans unless piles reach refusal. Construction control requires a weap analysis with bearing graph.

Pier piles are designed to accommodate the absence of scourable soils above the 200 year scour elevation shown in these plans. Piles shall be driven to 190 tons (Pier No. 1), 187 tons (Pier No. 2), and 198 tons (Pier No. 3) based on the theoretical driving resistance. This includes 3 tons (Pier No. 1 & Pier No. 2) and 5 tons (Pier No. 3) of resistance in the scourable layers, and 187 tons (Pier No. 1), 184 tons (Pier No. 2), and 193 tons (Pier No. 3) resistance for dead load and live load bearing capacity.

14 - HP14x89 steel bearing piling are required for each pier.

Seal Coat Note:

Pier piles are designed to accommodate a concrete seal coat, if required. The concrete seal coat, if used, shall be limited to 65 feet in length, 9 feet in width, and 3 feet in thickness. The Bridge Engineer shall be notified prior to using a seal coat exceeding these dimensions.

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans 59'-0" Interior Spans

Pier Details

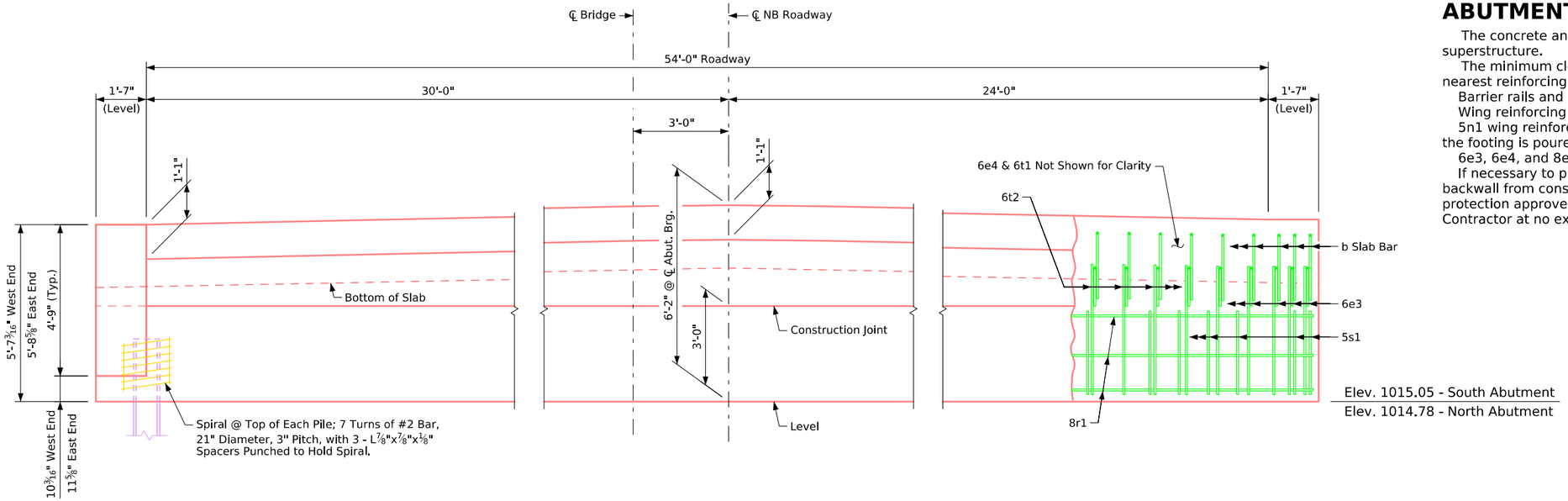
STA. 1655+72.50, 37' Rt. (℄ I-29) Turn-in Date: September 2026

Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0127 Design Sheet No. 8 of 23 FHWA No. 28241

Control Point 43I290865: 7117991.787 N, 16417157.407 E, CP FENA Monument in West I-29 ROW near SW Corner of Southbound Bridge, Elev. 1018.886



Rear Elevation

(South Abutment Shown, North Abutment Similar)

ABUTMENT NOTES:

The concrete and reinforcing steel for the wings is included with the superstructure.

The minimum clear distance from the face of the concrete to the nearest reinforcing bar is to be 2 inches unless otherwise noted or shown.

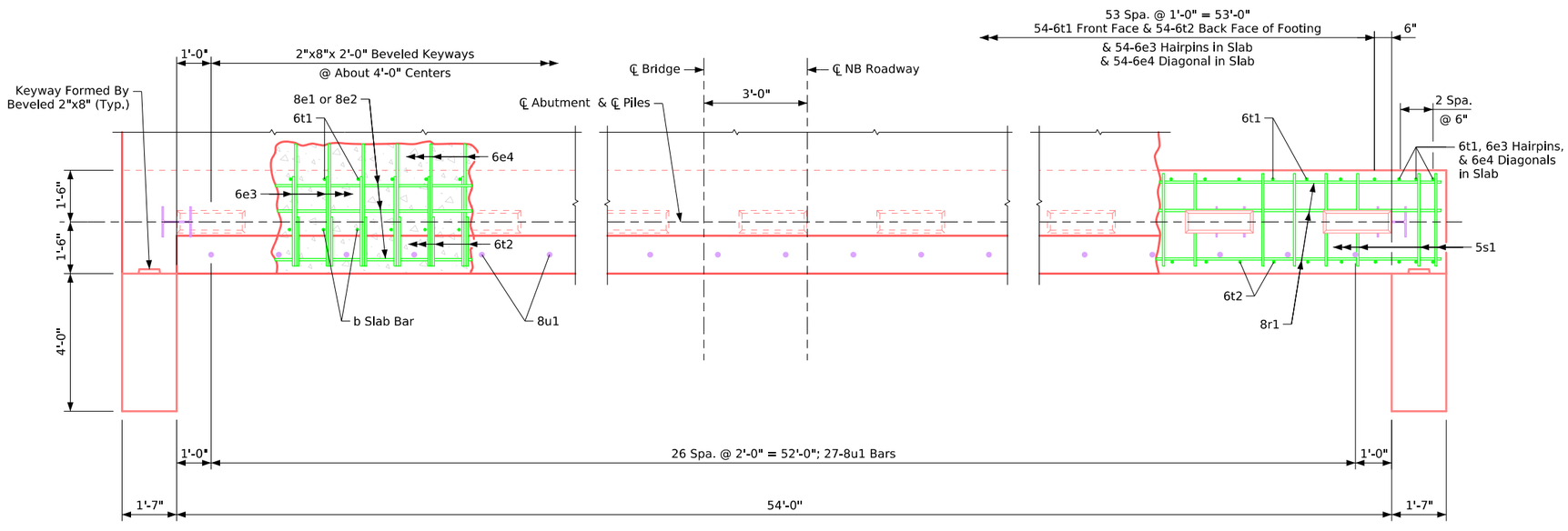
Barrier rails and reinforcement not shown.

Wing reinforcing not shown.

5n1 wing reinforcement shall be placed in the abutment footing before the footing is poured. For additional details, see Design Sheet No. 12.

6e3, 6e4, and 8e bars are included in the Superstructure Quantities.

If necessary to prevent damage to the end of the bridge slab and backwall from construction equipment, an appropriate method of protection approved by the Engineer shall be provided by the Bridge Contractor at no extra cost to the State.



Plan View

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Abutment Details

STA. 1655+72.50, 37' Rt. (℄ I-29)

Turn-in Date: September 2026

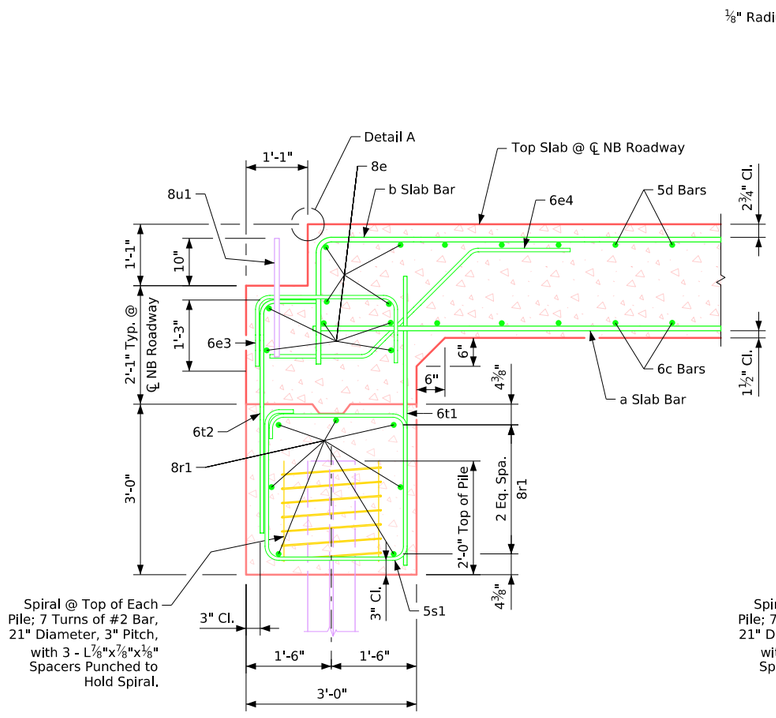
Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

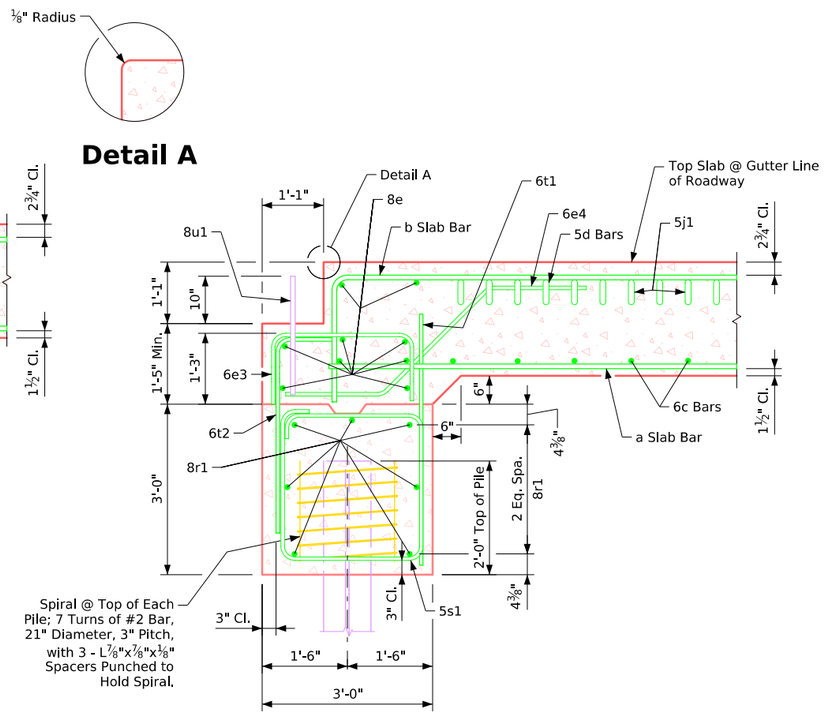
Design No. 0127 | Design Sheet No. 9 of 23 | FHWA No. 28241

FILE NO. 32382	ENGLISH	DESIGN TEAM ECS\FG\EES	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.9

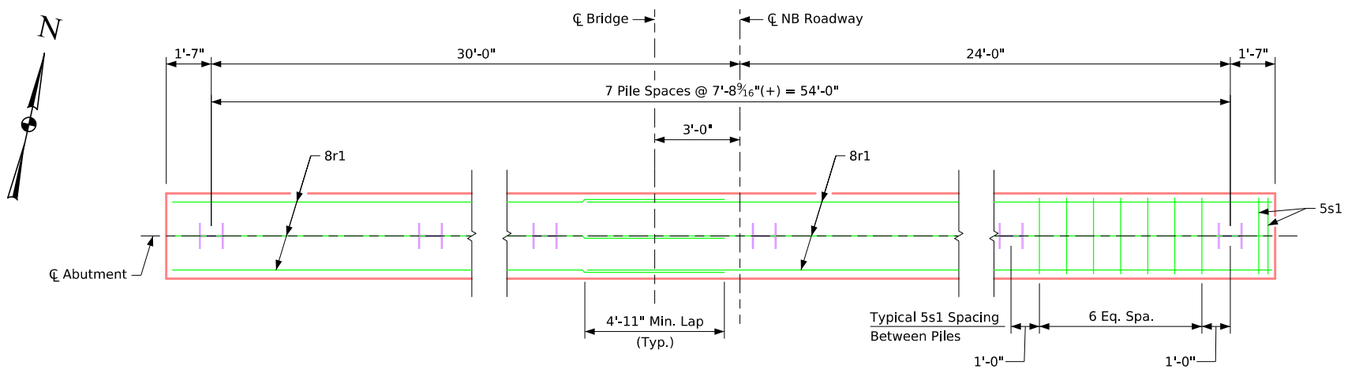
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Section Normal to Abutment @ ℄ NB Roadway



Section Normal to Abutment @ Gutter Line

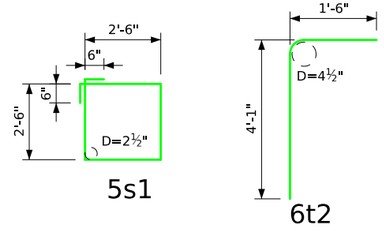


Pile Layout

Epoxy Coated Reinforcing Bar List - One Abutment

Bar	Location	Shape	No.	Length	Weight
8r1	Abutment Footing Longitudinal		14	30'-11"	1,156
5s1	Abutment Footing Hoops		53	11'-0"	608
6t1	Footing to Slab Bars		60	5'-0"	451
6t2	Footing to Slab Bars		60	5'-7"	503
#2	Pile Spiral		8	38'-6"	51
	Spiral Spacers - L ⅞x⅞x⅛x 0.70		24	1'-10"	31
		Epoxy Coated Reinforcing Total Weight (lbs.)			2,800

BENT BAR DETAILS



Note: All Dimensions Are Out To Out. D=pin Diameter.

ESTIMATED QUANTITIES - ONE ABUT.

Location	Unit	Quantity
Structural Concrete (Bridge)	CY	19.1
Reinforcing Steel, Epoxy Coated	LB	2,800
Piles, Steel, HP10x57	LF	1,000
Prebored Holes	LF	80

Abutment Pile Notes:

The contract length of 125 feet for the South and North abutment piles is based on a non-chohesive soil classification, a total factored axial load per pile (Pu) of 141 kips, and a geotechnical resistance factor (phi) of 0.55 for soil and 0.7 for rock end bearing.

The nominal axial bearing resistance for construction control was determined from a non-cohesive soil classification and a geotechnical resistance factor (phi) of 0.55 for soil and 0.7 for rock end bearing. Piles are assumed to be driven from a start elevation at the bottom of prebore.

The required nominal axial bearing resistance for South abutment piles is 119 tons and 124 tons for North abutment piles at end of drive or retap. The pile contract length shall be driven as per plan unless piles reach refusal. Construction control requires a weap analysis with bearing graph.

8 - HP10x57 steel bearing piling are required for each abutment.

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Abutment Details

STA. 1655+72.50, 37' Rt. (℄ I-29) — Turn-in Date: September 2026

Harrison County

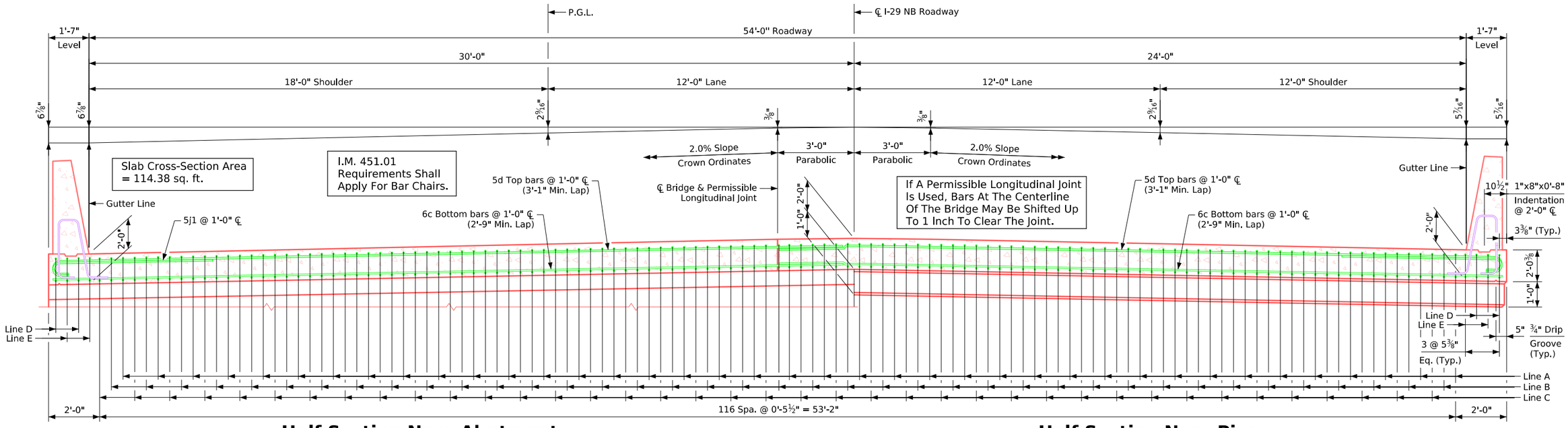
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0127 — Design Sheet No. 10 of 23 — FHWA No. 28241

HDR

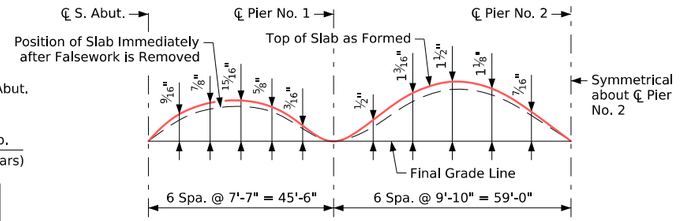
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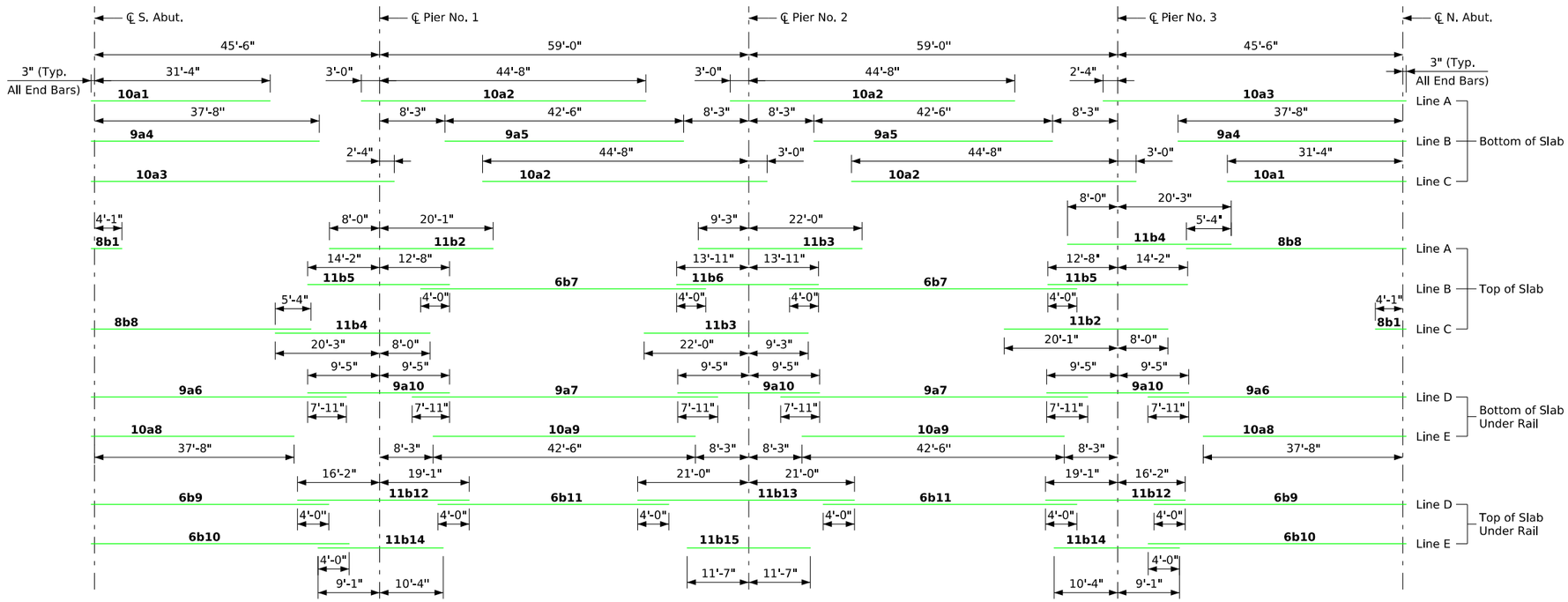
Half Section Near Abutment

Half Section Near Pier



Form Camber Diagram

This diagram illustrates the form camber required to compensate for the anticipated ultimate dead load deflection. The dimensions shown do not account for form deflection or falsework settlement.



Placement for Longitudinal Reinforcement

Notes:

Top longitudinal reinforcing steel shall be parallel to and 2¾ inches clear below the top of the slab.

Bottom longitudinal reinforcing steel shall be parallel to and 1½ inches clear above the bottom of the slab.

Reinforcing steel shall be securely wired in place and adequately supported on bar chairs before concrete placement.

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Superstructure Details

STA. 1655+72.50, 37' Rt. (℄ I-29) — Turn-in Date: September 2026

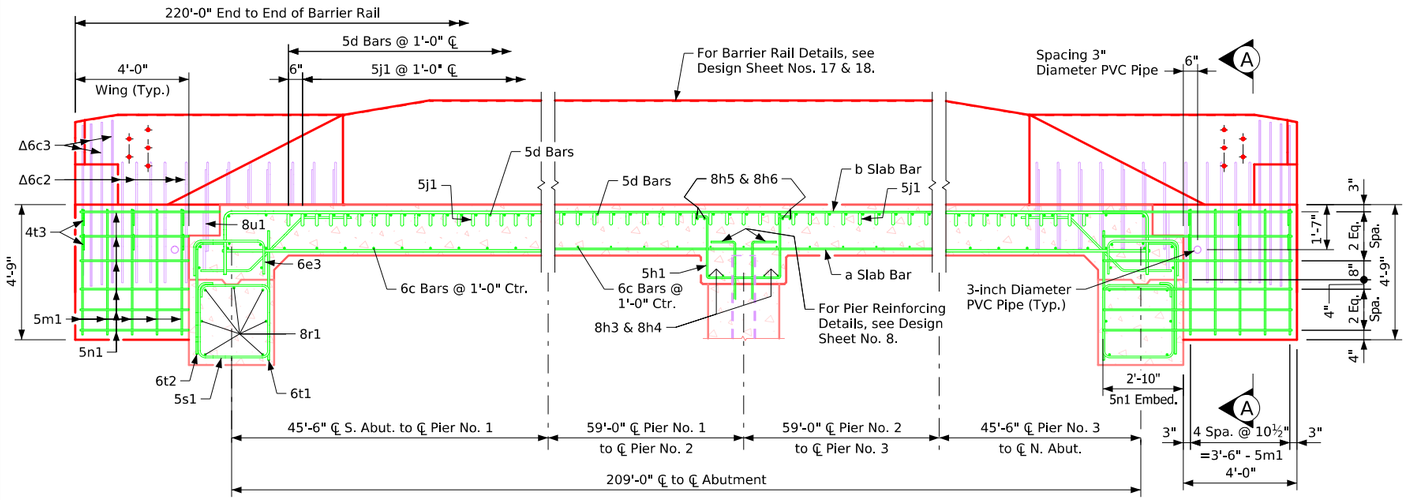
Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

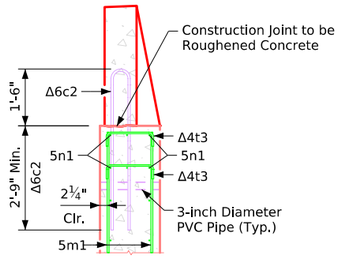
Design No. 0127 — Design Sheet No. 11 of 23 — FHWA No. 28241

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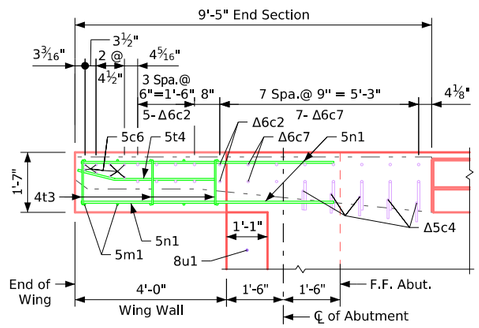


Part Longitudinal Section Near Gutter Line



Section A-A

Note:
Δ See Barrier Rail End Section Details in these plans for details of barrier rail end section. Reinforcing 6c2, 5c4, and 4t3 are included in the barrier rail end section quantities. 5m1 and 5n1 are included in the superstructure quantities.



Part Plan at Wing

(End Section Not Shown)

Superstructure Notes:

The minimum clear distance from the face of concrete to the nearest reinforcing bar shall be 2 inches unless otherwise noted or shown. All reinforcing steel is to be securely wired in place. See Bar Chair Note.

The concrete slab is to be placed with a minimum number of construction joints. Procedures for placing slab concrete shall be submitted for approval, together with a statement of the proposed method and evidence that the Contractor possesses the necessary equipment and facilities to accomplish the required result. Slab falsework shall be removed prior to the construction of the barrier rails.

Note that when Portland cement approach pavement is placed, compressible joint material must be used between the pavement and the end of the bridge. If necessary to prevent damage to the end of the bridge slab or backwall from construction equipment, an appropriate method of protection approved by the Engineer shall be provided by the Bridge Contractor at no extra cost to the State.

The cost of furnishing and placing a 3-inch diameter PVC pipe in each wing is included in the price bid for "High Performance Structural Concrete".

Bar Chair Note:

The top mat of reinforcing steel is to be supported by individual bar chairs spaced at no more than 3'-0" centers longitudinally and transversely. The bottom mat of reinforcing steel is to be supported by individual bar chairs spaced at no more than 3'-0" centers longitudinally and transversely, or by continuous rows of bar high chairs or slab bolsters spaced 4'-0" apart. I.M. 451.01 requirements shall apply for bar chairs, bar high chairs, and slab bolsters.

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Superstructure Details

STA. 1655+72.50, 37' Rt. (℄ I-29)

Turn-in Date: September 2026

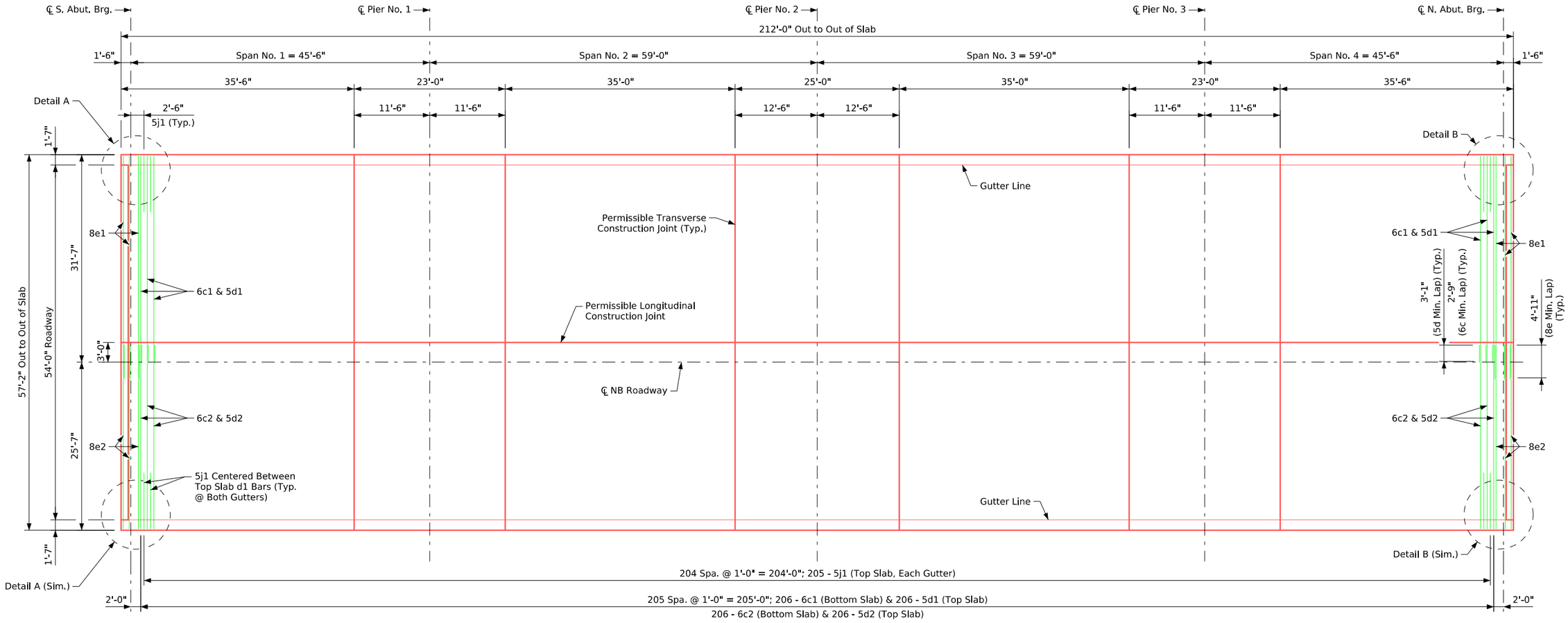
Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

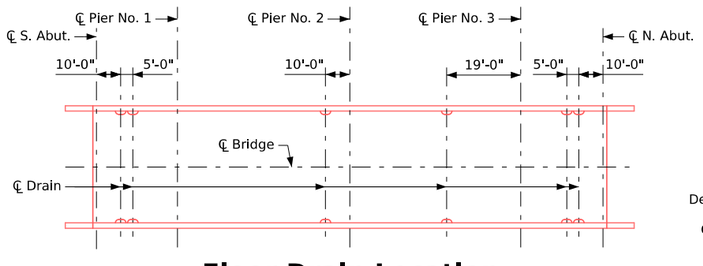
Design No. 0127 | Design Sheet No. 12 of 23 | FHWA No. 28241

FILE NO. 32382	ENGLISH	DESIGN TEAM ECS\FG\EES	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.12

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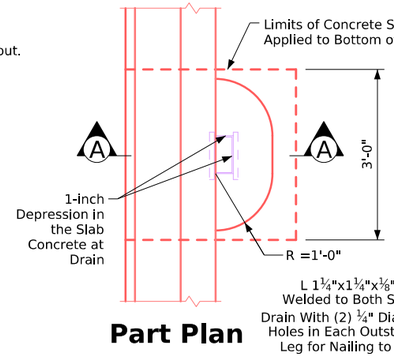
Transverse Reinforcing Steel Layout & Concrete Placement Diagram



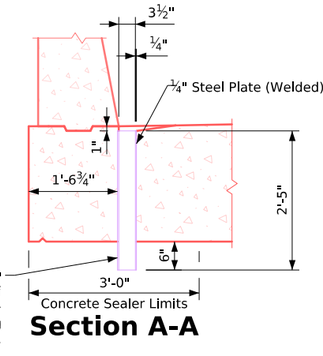
Floor Drain Location

Note:
Weight of one drain = 48 Lbs.
(Based on Rolled Tube)

Note: 4" x 8" Outside dimension rolled tube with 1/4" wall thickness may be substituted for the welded drain shown.



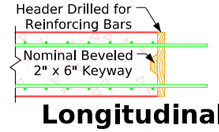
Part Plan



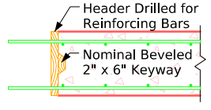
Section A-S

Floor Drain Details

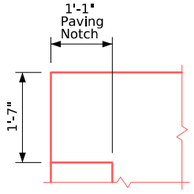
Note: Drains are to be galvanized. Include the cost of drains in the price bid for "High Performance Structural Concrete". (12 Drains Required)



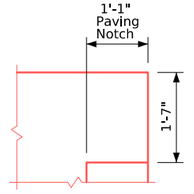
Longitudinal Construction Joint



Transverse Construction Joint



Detail A



Detail B

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Superstructure Details

STA. 1655+72.50, 37' Rt. (℄ I-29) — Turn-in Date: September 2026

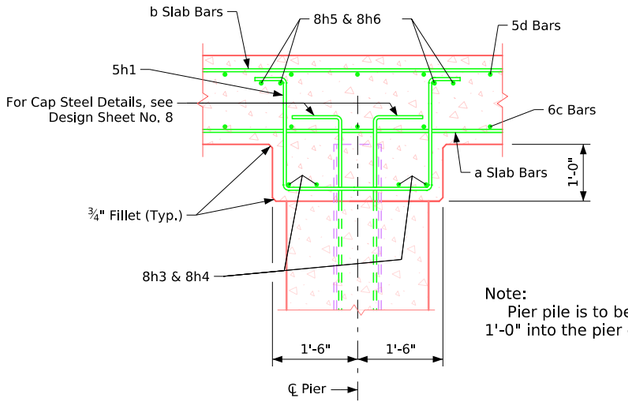
Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0127 — Design Sheet No. 13 of 23 — FHWA No. 28241

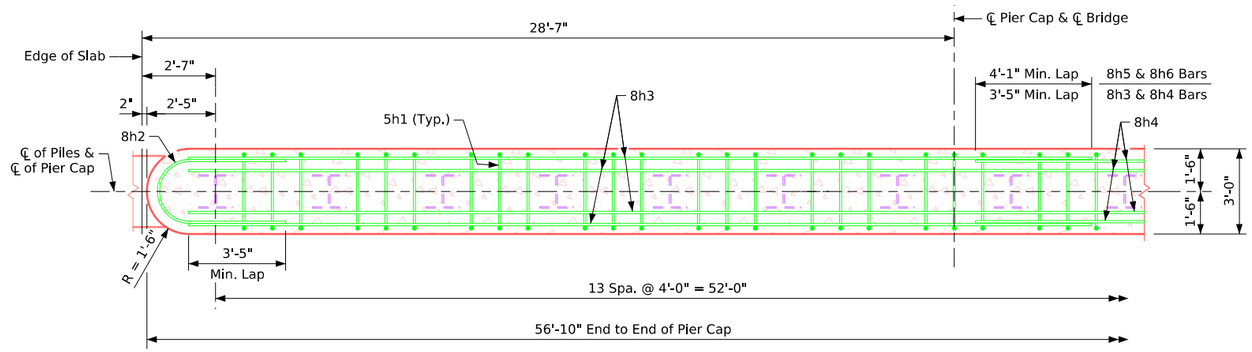
FILE NO. 32382	ENGLISH	DESIGN TEAM ECS\FG\EES	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.13

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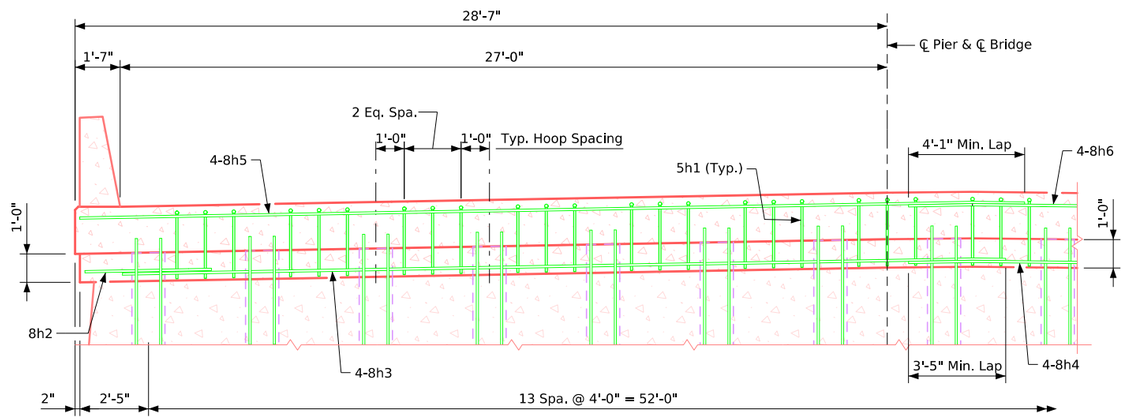


Note:
Pier pile is to be embedded 1'-0" into the pier cap.

Typical Cap Section



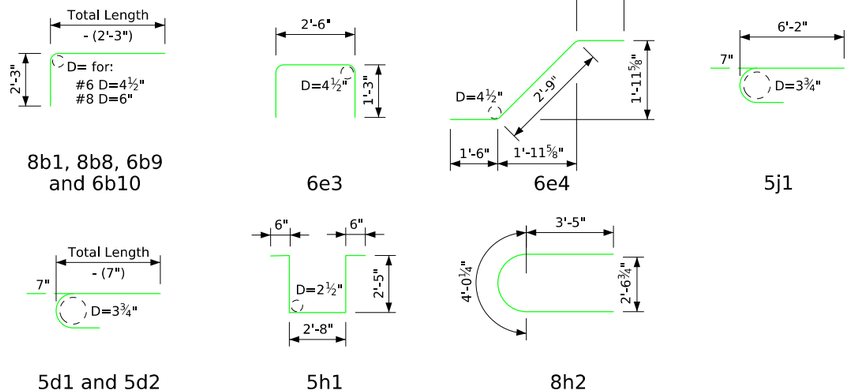
Part Plan View at Pier



Part Section View at Pier

Looking Upstation

Bent Bar Details



Note: All Dimensions Are Out To Out. D=pin Diameter.

Epoxy Coated Reinforcing Bar List

Bar	Location	Shape	No.	Length	Weight
10a1	Slab, Longitudinal, Bottom		78	31'-7"	10,600
10a2	Slab, Longitudinal, Bottom		156	47'-8"	31,997
10a3	Slab, Longitudinal, Bottom		78	48'-1"	16,138
9a4	Slab, Longitudinal, Bottom		78	37'-11"	10,056
9a5	Slab, Longitudinal, Bottom		78	42'-6"	11,271
9a6	Slab, Longitudinal, Bottom, at Rail		8	44'-3"	1,204
9a7	Slab, Longitudinal, Bottom, at Rail		8	56'-0"	1,523
10a8	Slab, Longitudinal, Bottom, at Rail		8	37'-11"	1,305
10a9	Slab, Longitudinal, Bottom, at Rail		8	42'-6"	1,463
9a10	Slab, Longitudinal, Bottom, at Rail		12	18'-10"	768
8b1	Slab, Longitudinal, Top		78	6'-7"	1,371
11b2	Slab, Longitudinal, Top		78	28'-1"	11,638
11b3	Slab, Longitudinal, Top		78	31'-3"	12,950
11b4	Slab, Longitudinal, Top		78	28'-3"	11,707
11b5	Slab, Longitudinal, Top		78	26'-10"	11,120
11b6	Slab, Longitudinal, Top		39	27'-10"	5,767
6b7	Slab, Longitudinal, Top		78	40'-5"	4,735
8b8	Slab, Longitudinal, Top		78	33'-1"	6,890
6b9	Slab, Longitudinal, Top, at Rail		8	35'-10"	431
6b10	Slab, Longitudinal, Top, at Rail		8	42'-11"	516
6b11	Slab, Longitudinal, Top, at Rail		8	26'-11"	323
11b12	Slab, Longitudinal, Top, at Rail		8	35'-3"	1,498
11b13	Slab, Longitudinal, Top, at Rail		4	42'-0"	893
11b14	Slab, Longitudinal, Top, at Rail		8	19'-5"	825
11b15	Slab, Longitudinal, Top, at Rail		4	23'-2"	492
6c1	Slab, Transverse, Bottom		206	31'-4"	9,695
6c2	Slab, Transverse, Bottom		206	28'-3"	8,741
5d1	Slab, Transverse, Top		206	32'-3"	6,929
5d2	Slab, Transverse, Top		206	28'-10"	6,195
8e1	Slab, Transverse, at Abutment		18	33'-6"	1,610
8e2	Slab, Transverse, at Abutment		18	28'-3"	1,358
6e3	Slab, Hairpins, at Abutment		120	5'-0"	901
6e4	Slab, Diagonal, at Abutment		120	5'-9"	1,036
5h1	Slab, Monolithic Pier Cap		117	8'-6"	1,037
8h2	Slab, Monolithic Pier Cap		6	10'-11"	175
8h3	Slab, Monolithic Pier Cap		12	30'-6"	977
8h4	Slab, Monolithic Pier Cap		12	26'-9"	857
8h5	Slab, Monolithic Pier Cap		12	32'-8"	1,047
8h6	Slab, Monolithic Pier Cap		12	28'-3"	905
5j1	Top of Slab, Transverse, at Rail		410	6'-9"	2,887
5m1	Wing, Vertical		40	4'-5"	184
5n1	Wing, Horizontal		48	6'-8"	334
				Epoxy Coated Reinforcing Total Weight (lbs.)	202,349

Stainless Reinforcing Bar List

Bar	Location	Shape	No.	Length	Weight
8u1	Abutment Paving Notch		54	2'-1"	300
				Stainless Reinforcing Total Weight (lbs.)	300

Note:
For pier reinforcing, see Design Sheet No. 7.

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Superstructure Details

STA. 1655+72.50, 37' Rt. (℄ I-29) — Turn-in Date: September 2026

Harrison County

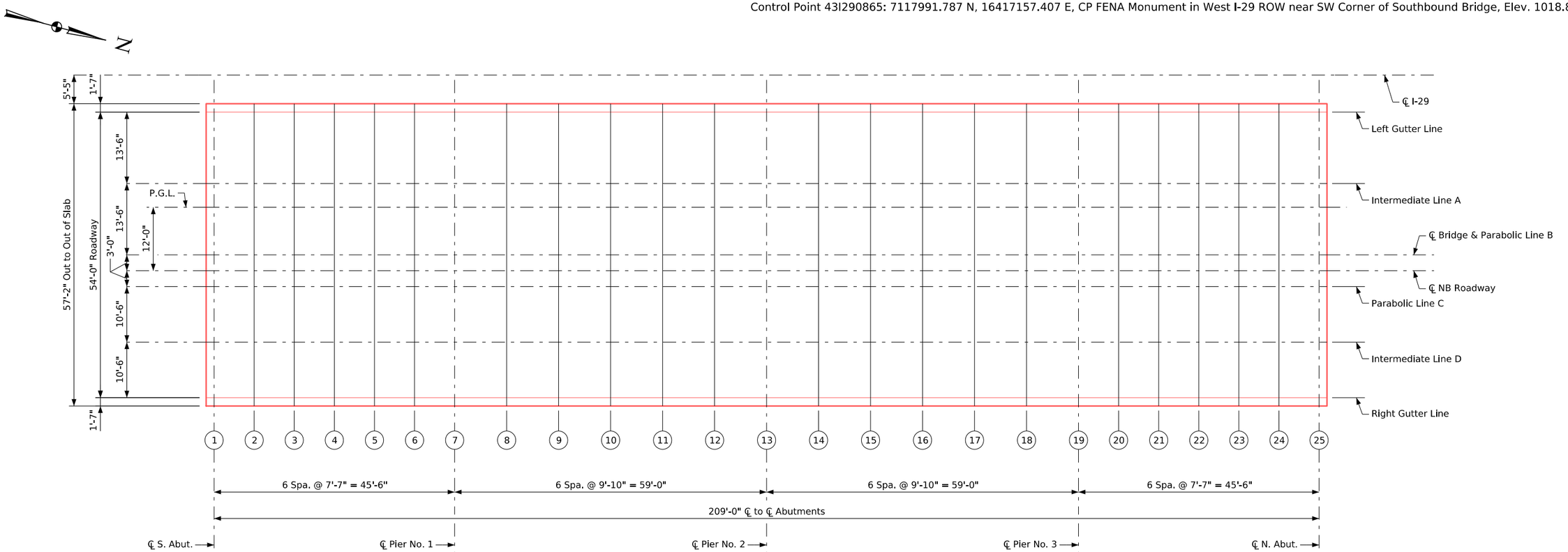
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0127 — Design Sheet No. 14 of 23 — FHWA No. 28241

FILE NO. 32382	ENGLISH	DESIGN TEAM ECS\FG\EES	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.14	

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Control Point 43I290865: 7117991.787 N, 16417157.407 E, CP FENA Monument in West I-29 ROW near SW Corner of Southbound Bridge, Elev. 1018.886



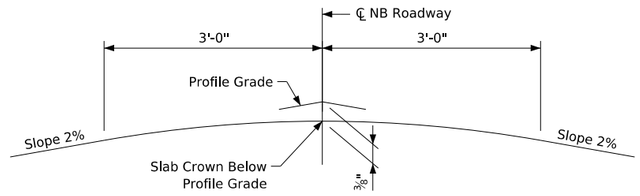
Top of Slab Elevations

Table of Top of Slab Elevations

Line \ Point	℄ South Abut. (1)	(2)	(3)	(4)	(5)	(6)	℄ Pier No. 1 (7)	(8)	(9)	(10)	(11)	(12)	℄ Pier No. 2 (13)
Left Gutter Line	1020.65	1020.65	1020.66	1020.67	1020.68	1020.68	1020.68	1020.68	1020.68	1020.67	1020.67	1020.66	1020.64
Intermediate Line A	1020.92	1020.92	1020.93	1020.94	1020.95	1020.95	1020.95	1020.95	1020.95	1020.94	1020.94	1020.93	1020.91
℄ Bridge & Parabolic Line B	1021.19	1021.19	1021.20	1021.21	1021.22	1021.22	1021.22	1021.22	1021.22	1021.21	1021.21	1021.20	1021.18
℄ NB Roadway	1021.22	1021.22	1021.23	1021.24	1021.25	1021.25	1021.25	1021.25	1021.25	1021.24	1021.24	1021.23	1021.21
Parabolic Line C	1021.19	1021.19	1021.20	1021.21	1021.22	1021.22	1021.22	1021.22	1021.22	1021.21	1021.21	1021.20	1021.18
Intermediate Line D	1020.98	1020.98	1020.99	1021.00	1021.01	1021.01	1021.01	1021.01	1021.01	1021.00	1021.00	1020.99	1020.97
Right Gutter Line	1020.77	1020.77	1020.78	1020.79	1020.80	1020.80	1020.80	1020.80	1020.80	1020.79	1020.79	1020.78	1020.76

Table of Top of Slab Elevations

Line \ Point	℄ Pier No. 3 (19)	(20)	(21)	(22)	(23)	(24)	℄ North Abut. (25)
Left Gutter Line	1020.52	1020.49	1020.47	1020.45	1020.42	1020.40	1020.38
Intermediate Line A	1020.79	1020.76	1020.74	1020.72	1020.69	1020.67	1020.65
℄ Bridge & Parabolic Line B	1021.06	1021.03	1021.01	1020.99	1020.96	1020.94	1020.92
℄ NB Roadway	1021.09	1021.06	1021.04	1021.02	1020.99	1020.97	1020.95
Parabolic Line C	1021.06	1021.03	1021.01	1020.99	1020.96	1020.94	1020.92
Intermediate Line D	1020.85	1020.82	1020.80	1020.78	1020.75	1020.73	1020.71
Right Gutter Line	1020.64	1020.61	1020.59	1020.57	1020.54	1020.52	1020.50



Parabolic Crown Template

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

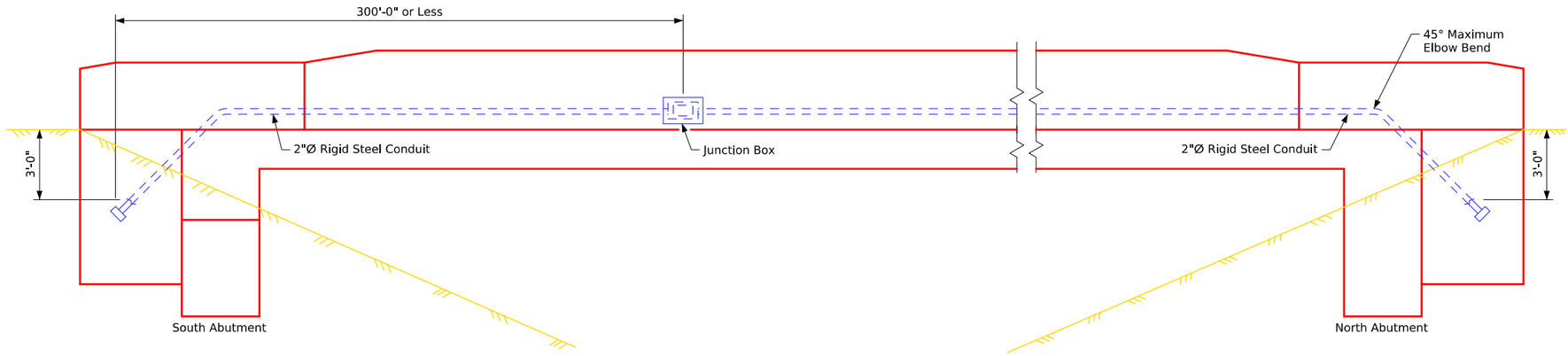
Top of Slab Elevations

STA. 1655+72.50, 37' Rt. (℄ I-29) — Turn-in Date: September 2026

Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0127 — Design Sheet No. 15 of 23 — FHWA No. 28241

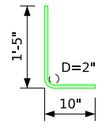


Exterior Elevation - East Barrier Rail - Looking West

Epoxy Coated Reinf. Steel - One Rail

Bar	Location	Shape	No.	Length	Weight
4s1	Rail Conduit		69	2'-3"	104
	Epoxy Reinforcing Total Weight (lbs.)				104

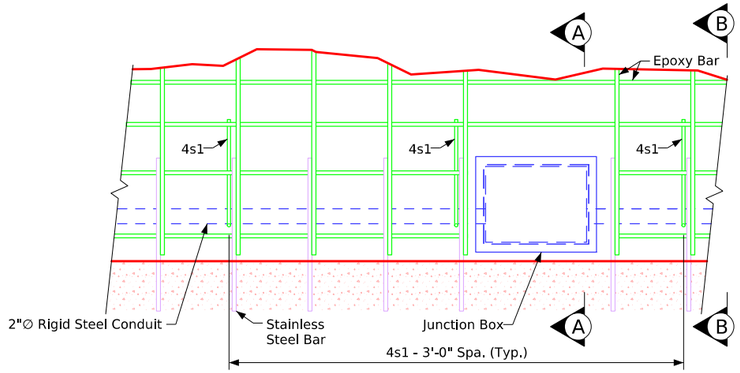
Bent Bar Details



4s1

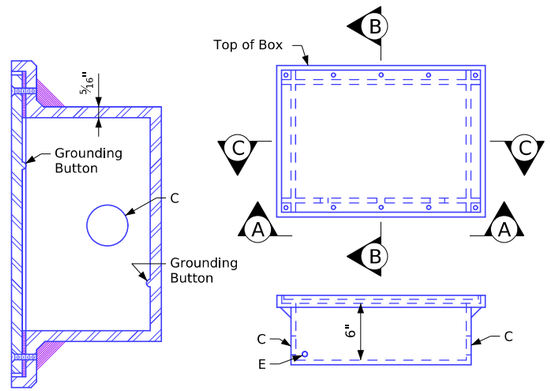
Note: All Dimensions are out to out. D = Pin Diameter

Note: Reinforcing steel quantities are included on the Summary Quantities Sheet.



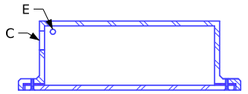
Conduit Support - Rail Elev. Detail

Adjust reinforcing to clear junction box.
Junction boxes are to be placed no further than 300'-0" apart.



Section B-B

View A-A



Section C-C

LI-104 Junction Box

Watertight, Cast Iron - Flush Mount

Bossed For	Hole	For Conduit Size
5 Threads	C	2" Ø Rigid Steel
None	E	½" Ø Copper Drain

Note: The grounding buttons are to be blind drilled and tapped for ⅜"Ø x 0'-0¾" bolts.

Lighting Notes:

See LI-104 Standard Road Plan for additional information on junction boxes.

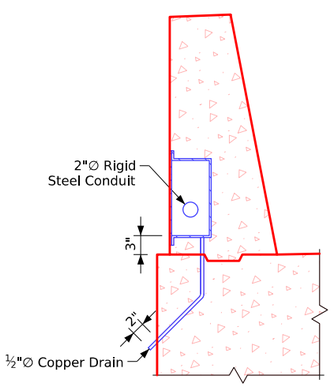
Construction shall conform to the current Iowa D.O.T. Standard and Supplemental Specifications and Special Provisions.

Conduit installation shall be in accordance with Article 2523.03, N, of the Standard Specifications.

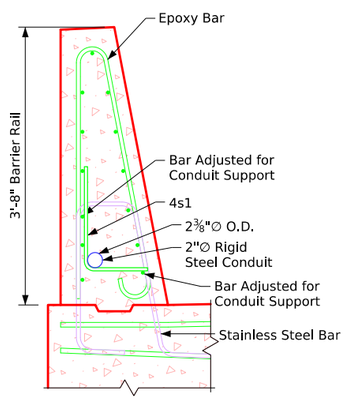
All "C" entrance holes in junction boxes shall be drilled and tapped for the specified conduit size. All other holes shall have a concrete - tight slip fit. Conduit ends shall not protrude into junction box more than ¼". Drain pipe end shall be flush with inside surface of box. Grounding buttons shall be located approximately 3" from the inside surface of the box wall, and not closer than 3" to the edge of any hole in the box floor. Holes for drain pipe shall be placed in the low corner of the box, with a minimum clearance of 1" between the edge of the hole and the inside surface of the box wall. Typical details are shown on this sheet.

The rigid steel conduit, junction boxes and fittings including labor and any additional work to do the installation is considered incidental to the cost of the concrete barrier rail.

Stainless-steel reinforcement shall not be allowed to be in contact with the uncoated reinforcement, bare metal forming hardware, or to galvanized attachments or galvanized conduit.



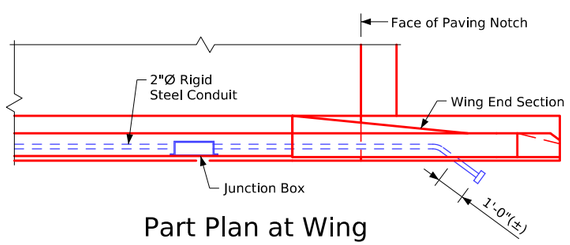
Section A-A Thru Junction Box



Section B-B - Conduit Support

Only used in rail with conduit, use 3'-0" spacing. Galvanized conduit shall not come into contact with the stainless steel reinforcing. Conduit can only be 2" diameter.

Conduit to be installed in East Barrier Rail only.



Part Plan at Wing

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Conduit Details

STA. 1655+72.50, 37' Rt. (℄ I-29)

Turn-in Date: September 2026

Harrison County

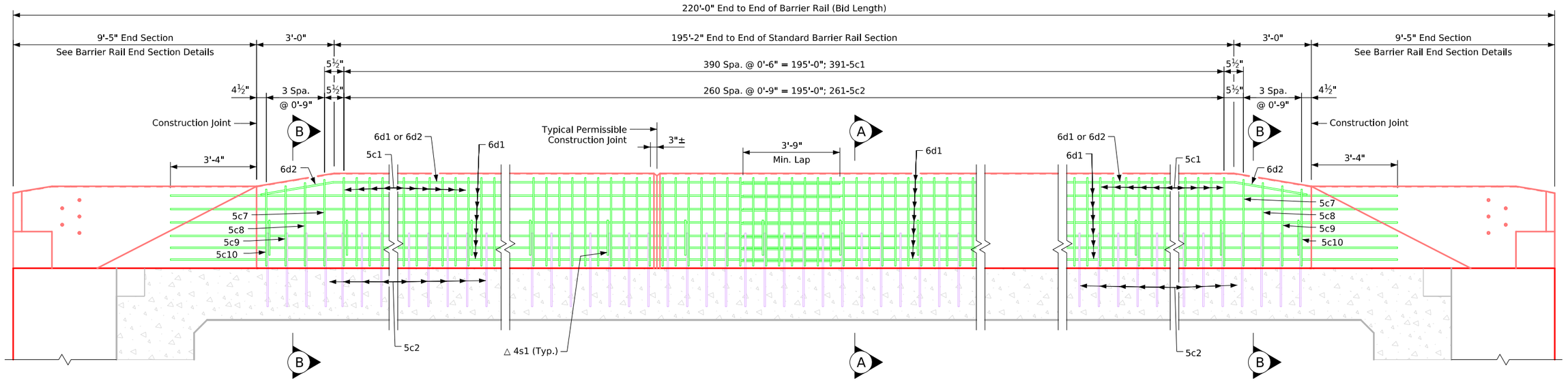
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0127 — Design Sheet No. 16 of 23 — FHWA No. 28241

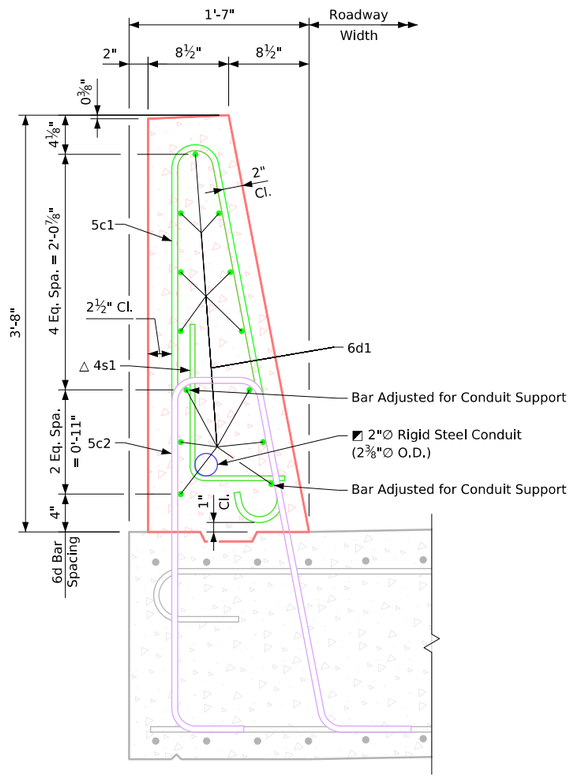
Revised 09-16: Added Conduit Support Rail Detail to Keep Conduit Isolated from the Stainless Steel Reinforcing.
Issued 09-03.
DeckRailBridges.dgn - 1030As2 -This Sheet Re-Issued 05-2024. Sheet Format Update.

FILE NO. 32382	ENGLISH	DESIGN TEAM ECS\FG\EES	Lighting Details (2 of 2)	Standard Sheet 1030As2 (Modified)	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.16

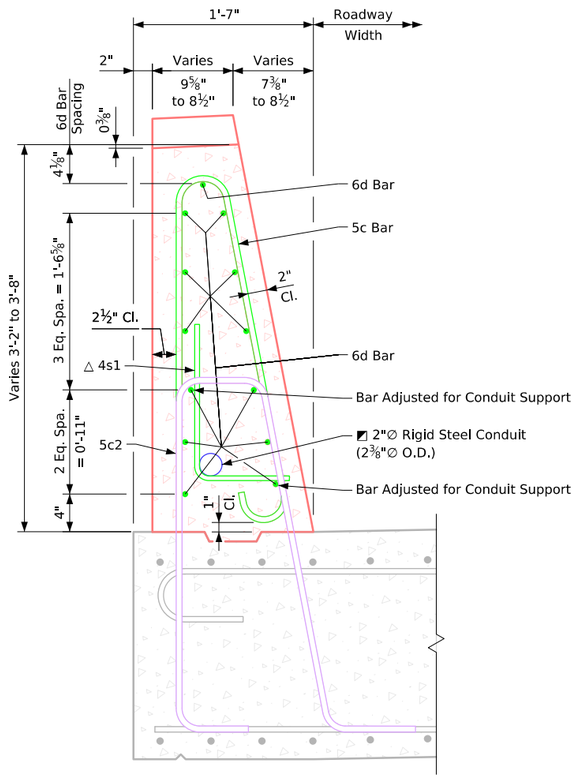
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Elevation of Barrier Rail



Part Section A-A



Part Section B-B

Notes:
For Barrier Rail Notes, joint details, reinforcing steel details and quantities, see Design Sheet No. 18.
◩ Conduit to be placed in East Barrier Rail only.
△ For details and quantities, see Design Sheet No. 16.

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Barrier Rail Details

STA. 1655+72.50, 37' Rt. (℄ I-29) — Turn-in Date: September 2026

Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0127 — Design Sheet No. 17 of 23 — FHWA No. 28241

Revised 09-16: Changed 5c1 Bar Length to 7'-5" (It was 5'-11" in Error).
Issued 04-14. Added Stainless Steel Reinforcing Bar List and Changed 5c2, 5c3, 5c14 Bars to Stainless Steel.
DeckRailBridges.dgn - 1020SF-1 -This Sheet Re-Issued 05-2024. Revised to Single Slope Barrier Shape. Sheet Format Update. (Sheet Number was Originally 1020SF).

FILE NO. 32382	ENGLISH	DESIGN TEAM ECS\FG\EES	Barrier Rail (TSS TL-5) (Stainless) - Integral Abut. w/Wing Ext. (1 of 2)	Standard Sheet 1020SF-1 (Modified)	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.17	

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Barrier Rail Notes:

Minimum clear distance from face of concrete to near reinforcing bar is to be 2" unless otherwise noted or shown.

The permissible construction joints are to be placed between vertical bars at a minimum spacing of 20 feet. Construction joint contact surfaces are to be coated with an approved bond breaker.

Cost of the joint sealer and bond breaker shall be considered incidental to other construction.

All barrier rail reinforcing steel is to be either epoxy coated or stainless steel as shown. Stainless steel reinforcing shall be deformed bar Grade 60 meeting the requirements of construction and materials I.M. 452.

The concrete barrier rail is to be bid on a lineal foot basis. The number of linear feet of barrier rail installed will be paid for at the contract price per lineal foot based on plan quantities. Price bid for concrete barrier railing shall be full compensation for furnishing all material, excluding reinforcing steel, and all of the equipment and labor required to erect the rail in accordance with these plans and current specifications. The rigid steel conduit, junction boxes and fittings including labor and any additional work to do the installation is considered incidental to the cost of the concrete barrier rail.

The joint sealer shall be light gray nonsag latex caulking sealer marketed for outdoor use. No testing or certification is required.

Top of the barrier rail is to be parallel to the theoretical ℄ grade.

All exposed corners on the top of the barrier and all other corners 90° or sharper to be filleted with a ¾" dressed and beveled strip.

Cross sectional area of the Standard and Special Sections of the barrier rail = 3.90 square feet, except the 3'-0" sloped ends at the end sections.

Epoxy Coated Reinf. Steel - Two Rails

Section	Bar	Location	Shape	No.	Length	Weight
Standard Sections	5c1	Rail, Vertical		782	7'-6"	6,117
	5c7	Rail, Vertical, Sloped Ends		4	7'-4"	31
	5c8	Rail, Vertical, Sloped Ends		4	7'-1"	30
	5c9	Rail, Vertical, Sloped Ends		4	6'-10"	29
	5c10	Rail, Vertical, Sloped Ends		4	6'-7"	27
	6d1	Rail, Longitudinal		152	38'-0"	8,676
	6d2	Rail, Longitudinal, Top		4	34'-7"	208
					Epoxy Reinf. Total Weight (lbs.)	15,118

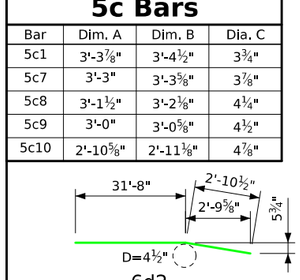
Stainless Steel Reinf. Steel - Two Rails

Section	Bar	Location	Shape	No.	Length	Weight
Standard Sections	5c2	Rail, Vertical		522	8'-3"	4,492
					Stainless Steel Reinf. Total Weight (lbs.)	4,492

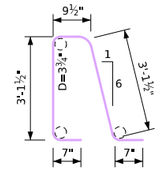
Bent Bar Details

5c Bars

Bar	Dim. A	Dim. B	Dia. C
5c1	3'-3⅞"	3'-4½"	3¾"
5c7	3'-3"	3'-3⅝"	3⅞"
5c8	3'-1½"	3'-2⅛"	4¼"
5c9	3'-0"	3'-0⅝"	4½"
5c10	2'-10⅝"	2'-11⅛"	4⅞"



5c1
5c7-5c10



5c2

6d2

Note: All dimensions are out to out. D = Pin Diameter

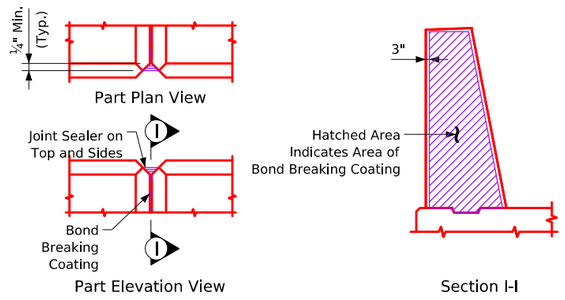
Note: Reinforcing steel quantities are included on the Summary Quantities Sheet.

Concrete Placement Summary

Section	Total
Δ Standard Section 402'-4" at 0.144 cu. yd. per ft.	58.0
Total (cu. yd.)	58.0
Note: Δ Deduct 0.021 cu. yd. for each sloped end.	

Concrete Barrier Rail Quantities

Item	Unit	Quantity
Concrete Barrier Railing, 3'-8"	L.F.	440.0



Barrier Rail Joint Details

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans 59'-0" Interior Spans

Barrier Rail Details

STA. 1655+72.50, 37' Rt. (℄ I-29) Turn-in Date: September 2026

Harrison County

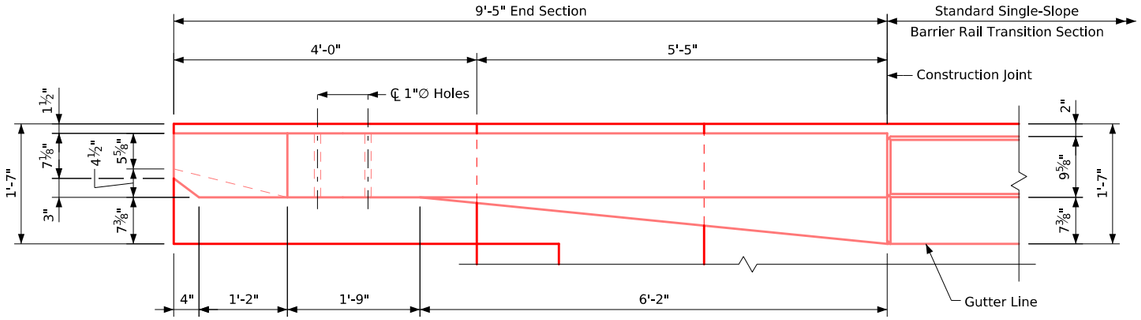
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0127 Design Sheet No. 18 of 23 FHWA No. 28241

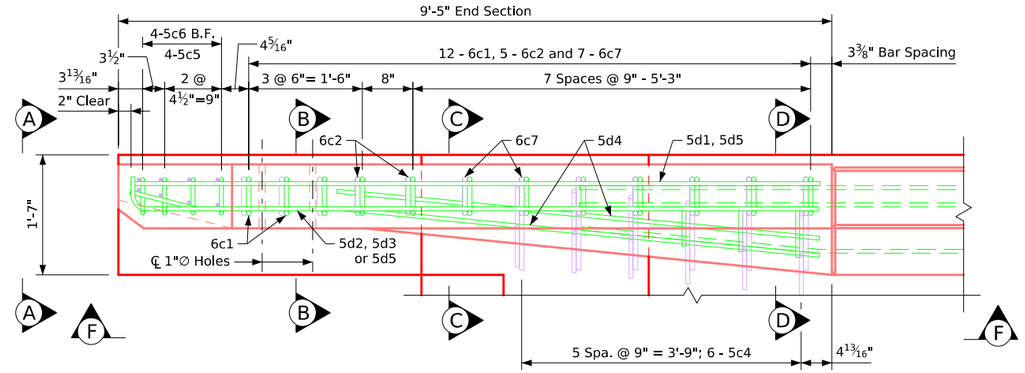
FILE NO. 32382	ENGLISH	DESIGN TEAM ECS\FG\EES	Barrier Rail (TSS TL-5) (Stainless) - Integral Abut. w/Wing Ext. (2 of 2)	Standard Sheet 1020SF-2 (Modified)	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.18	

9:06:07 AM 8/17/2026 ESORENS pw:\\pwhdruscen02.intranet.hdr:HDR_US_Central_02\Documents\IADOT\IDOT-I29_Burcham_Creek_Br_Des\6.0_CAD_BIM\6.2_WIP\0127 - Drafting\Final Design NB I29 Design 0127 209 x 54 CCS Bridge

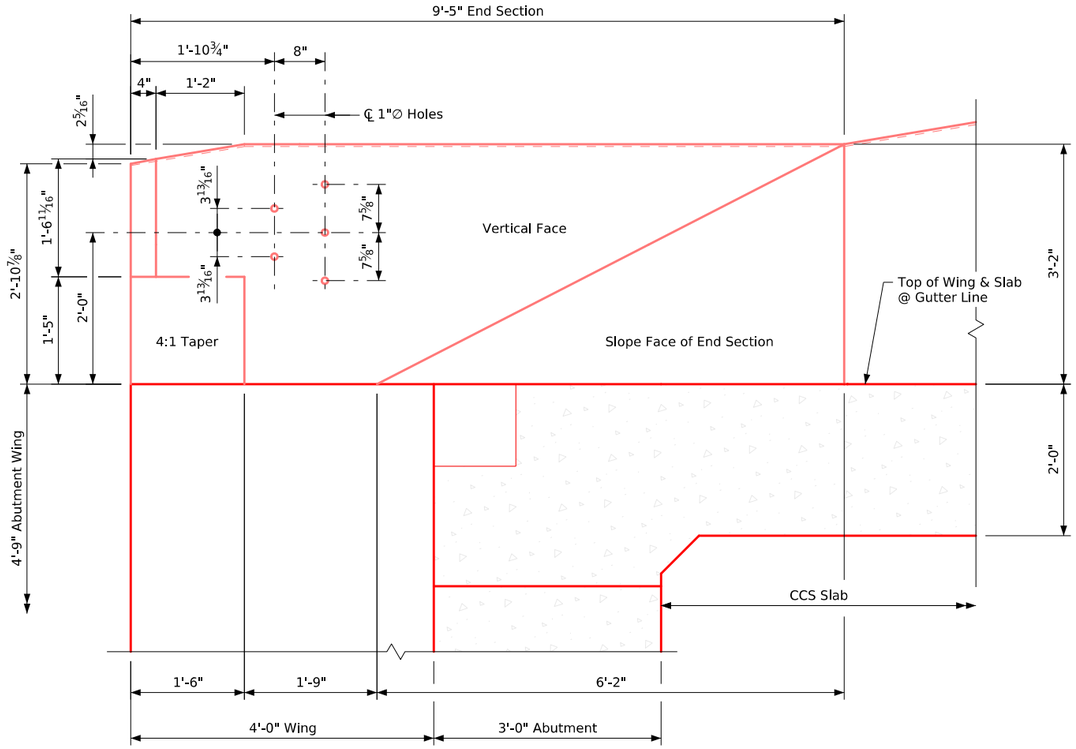
DeckRailBridges.dgn - 1020SF-2 -This Sheet Issued 05-2024. Additional Sheet for Clarity. (Sheet Number was Originally 1020SF).



Part Plan View

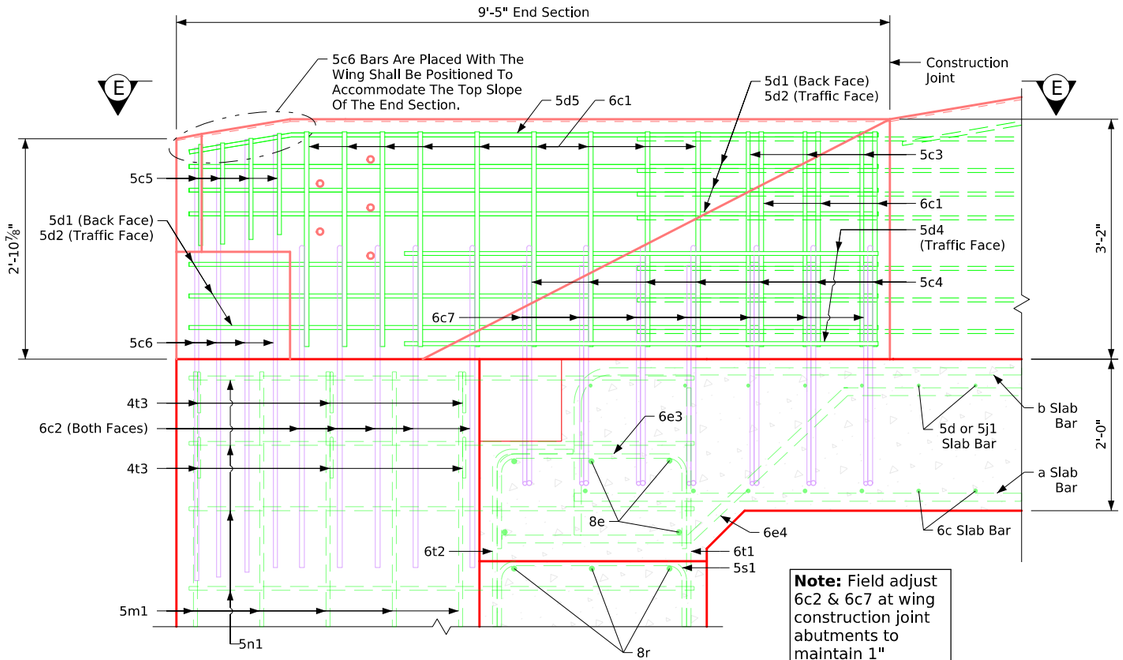


Part View E-E



Part Elevation View

Provide 5 holes formed with 1"Ø plastic conduit.
Cost to be included in price of bid for "Concrete Barrier Railing, 3'-8"".



Part View F-F

Note: Field adjust 6c2 & 6c7 at wing construction joint abutments to maintain 1" minimum cover.

Notes:

4t3 placement: Six bars each at the top two rows of the 5n1 bars in the abutment wing to provide construction tie locations for vertical barrier bars.

Construction joint between the top of the abutment wing and the single-slope barrier rail is roughened concrete.

6c2, 5c4, 5c6, 6c7, 5t4, and 4t3 bars are to be placed with the abutment wing.

Dashed lines below the top of the wing indicate abutment wing and slab reinforcing steel. See Superstructure Details Sheets for placement.

For Bar List, Bent Bar Details, View A-A, Sections B-B, C-C, and D-D see Design Sheet No. 20.

HDR

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Barrier Rail End Section Details

STA. 1655+72.50, 37' Rt. (℄ I-29) — Turn-in Date: September 2026

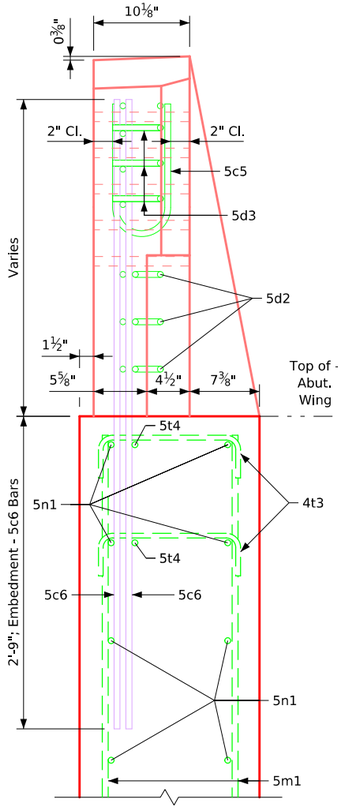
Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

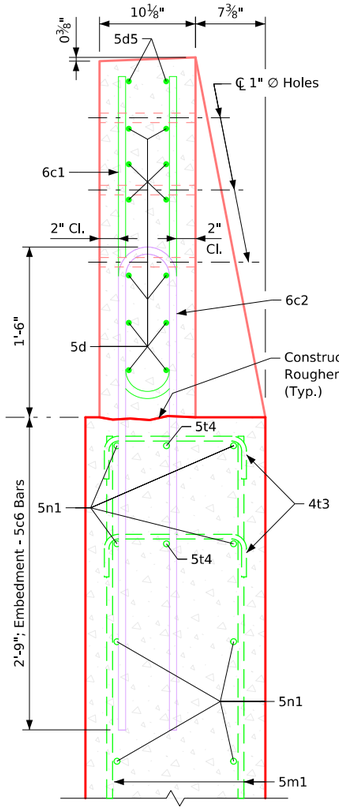
Design No. 0127 — Design Sheet No. 19 of 23 — FHWA No. 28241

FILE NO. 32382	ENGLISH	DESIGN TEAM ECS\FG\EES	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.19	

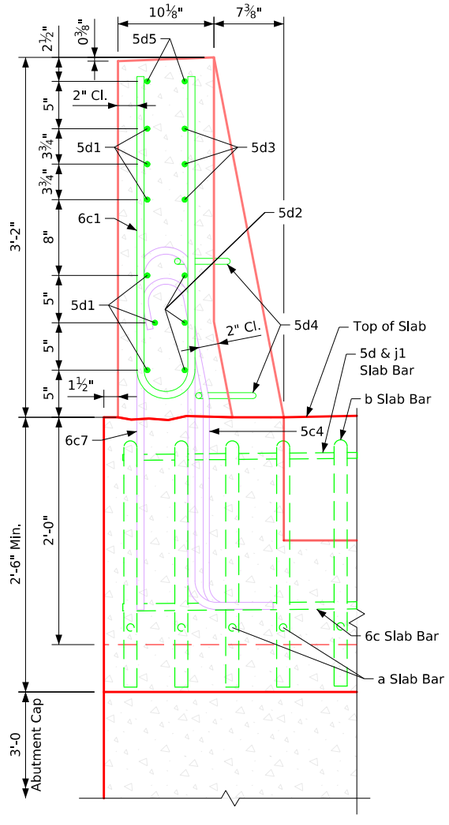
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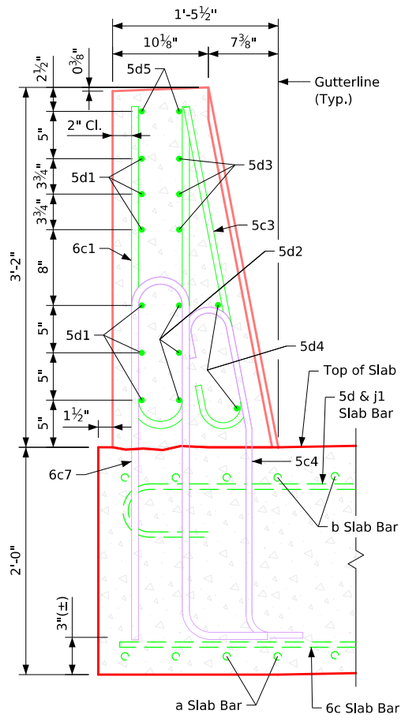
View A-A



Section B-B



Section C-C



Section D-D

Epoxy Coated Reinforcing Steel - One End Section

Bar	Location	Shape	No.	Length	Weight
6c1	Rail, Vertical		12	5'-11"	107
5c3	Rail, Vertical (Traffic Face)		3	3'-5"	11
5c5	Rail, Vertical (End)		4	3'-1"	13
5d1	Rail, Horizontal (Back Face)		6	9'-1"	57
5d2	Rail, Horizontal (Traffic Face)		3	9'-1"	28
5d3	Rail, Horizontal (Traffic Face)		3	9'-7"	30
5d4	Rail, Horizontal (Traffic Face)		2	6'-3"	13
5d5	Rail, Horizontal (Top)		2	9'-1"	19
4t3	Rail, Abutment Wing Tie Bars		6	2'-0"	8
5t4	Wing, Horizontal (Tie Bars)		2	3'-8"	8
				Epoxy Reinforcing Total Weight (lbs.)	294

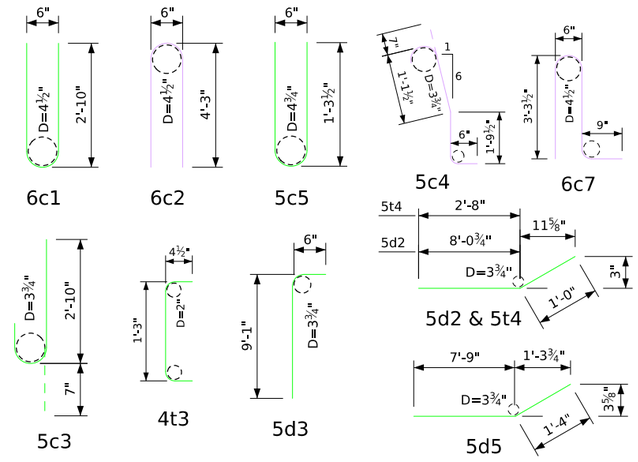
Stainless Steel Reinforcing Steel - One End Section

Bar	Location	Shape	No.	Length	Weight
6c2	Rail, Vertical		5	9'-0"	68
5c4	Rail, Vertical (Traffic Face)		6	4'-0"	25
5c6	Rail, Vertical (End)		8	5'-8"	47
6c7	Rail, Vertical		7	7'-10"	82
				Stainless Steel Reinforcing Total Weight (lbs.)	222

Concrete Placement Summary

Section	Total
Barrier Rail, One End Section	1.0 cu. yd.

Bent Bar Details



Note: All dimensions are out to out. D = Pin Diameter

Note: Reinforcing steel quantities are included on the Summary Quantities Sheet.

Note:
For view and section locations, see Design Sheet No. 19.

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Barrier Rail End Section Details

STA. 1655+72.50, 37' Rt. (℄ I-29)

Turn-in Date: September 2026

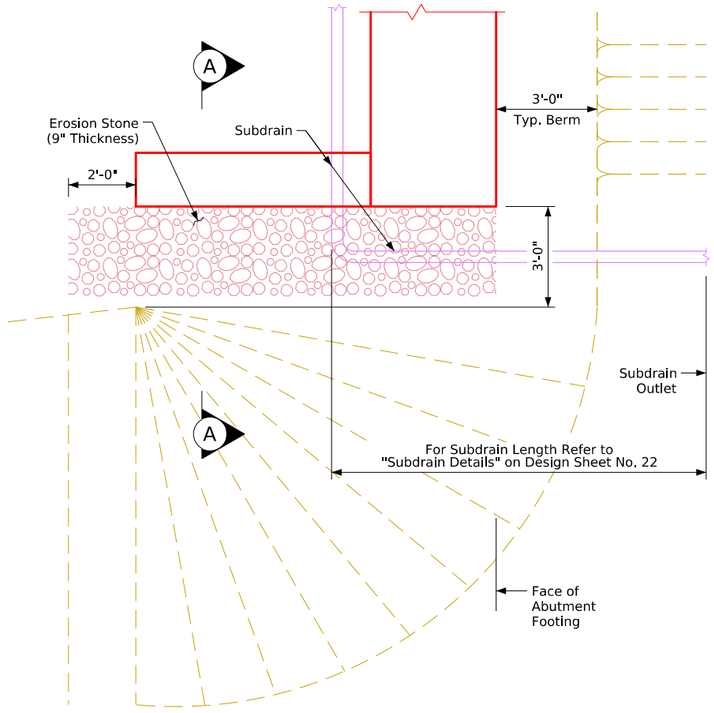
Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0127 | Design Sheet No. 20 of 23 | FHWA No. 28241

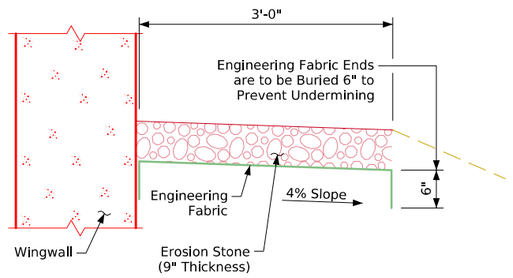
FILE NO. 32382	ENGLISH	DESIGN TEAM ECS\FG\EES	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.20

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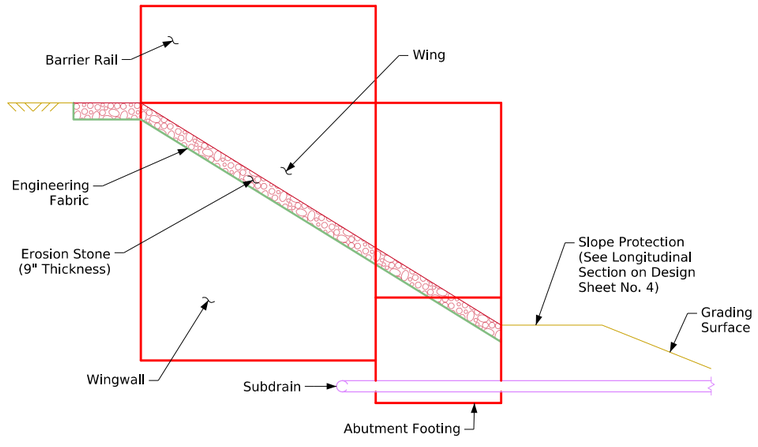


Top View of Wing Armoring

A check shall be made at the subdrain outlet to ensure that it is draining properly during the backfill flooding process.



Section A-A



Profile View of Wing Armoring

General Notes:

Erosion stone shall be placed along the sides of the wings and abutment footing as shown in Section A-A. This is typical at each corner of the bridge unless otherwise noted in the plans. The erosion stone at these locations shall be underlayed with engineering fabric in accordance with Article 4196.01, B, 3, of the Standard Specifications.

The erosion stone shall be in accordance with Section 4130, of the Standard Specifications. Material passing the 3 inch screen but 100% retained on a 1 inch screen may be used as choke stone.

The erosion stone shall be deposited, spread, consolidated and shaped by mechanical or hand methods that will provide uniform 9 inch depth and density and provide uniform surface appearance.

Payment for the bridge wing armoring will be bid per square yard. Cost will include engineering fabric, erosion stone, excavation, shaping, and compaction to dimensions shown in these plans. Bid item shall be "Bridge Wing Armoring - Erosion Stone".

Note:
For Subdrain Notes and details, see Design Sheet No. 22.

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans 59'-0" Interior Spans

Bridge Wing Armoring

STA. 1655+72.50, 37' Rt. (℄ I-29) Turn-in Date: September 2026

Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0127 Design Sheet No. 21 of 23 FHWA No. 28241

Revised 06-14 - Added 2 Feet of Length of Erosion Stone in Front of the Bridge Wing.
Revised 09-2023: Changed direction of Section Director Arrows "A-A" to match what section view "Section A-A" is showing.
ForeSlopeProtectionBridges.dgn - 1005A - This Sheet Issued 06-02.
ForeSlopeProtectionBridges.dgn - 1005A - This Sheet Issued 07-23.

FILE NO. 32382	ENGLISH	DESIGN TEAM ECS\FG\EES	Bridge Wing Armoring for Water Crossings	Standard Sheet 1005A	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.21	

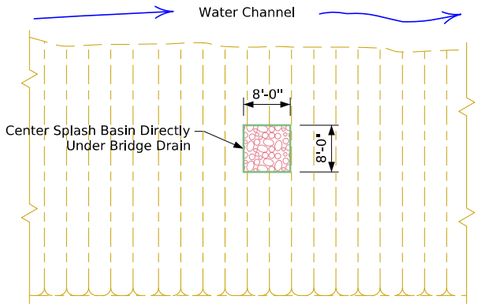
9:06:08 AM 8/17/2026 ESORENS pw:\\pwhdruscen02.intranet.hdr:HDR_US_Central_02\Documents\IADOT\IDOT-I29_Burcham_Creek_Br_Des\6.0_CAD_BIM\6.2_WIP\0127 - Drafting\Final Design NB I29 Design 0127 209 x 54 CCS Bridge

Note: Section A-A is shown on Abutment Backfill Details Sheet on Design Sheet No. 23.

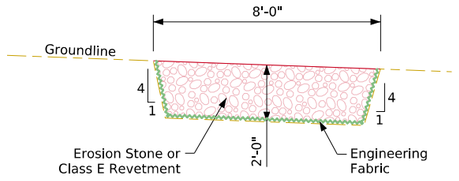
Control Point 43I290865: 7117991.787 N, 16417157.407 E, CP FENA Monument in West I-29 ROW near SW Corner of Southbound Bridge, Elev. 1018.886

Splash Basin Note:

The cost of furnishing and placing splash basins (including excavation, erosion stone or Class E revetment, and engineering fabric) is to be included in the price bid for "High Performance Structural Concrete". No extra payment will be made. The total number of splash basins = 2.



Splash Basin Under Floor Drain Plan View



Splash Basin Under Floor Drain Typical Section for Existing Grades

Subdrain Notes:

This plan sheet shows details for placing all subdrains and subdrain outlets required for this structure.

The subdrains shall be 4"Ø and shall be in accordance with Article 4143.01, B, of the Standard Specifications.

The subdrain outlet shall consist of a length of pipe with a removable rodent guard as detailed on this sheet. The length of the outlet pipe shall be determined by the revetment and it's placement location. The Contractor is to ensure the outlet pipe is adequately strong enough and will not be damaged when revetment is placed. A check will be made at the subdrain outlet to ensure that the subdrain is not damaged and is draining properly during the backfill flooding process. If a metal outlet pipe is used, it shall be 6"Ø and coupled to the 4"Ø subdrain in one of the two following ways.

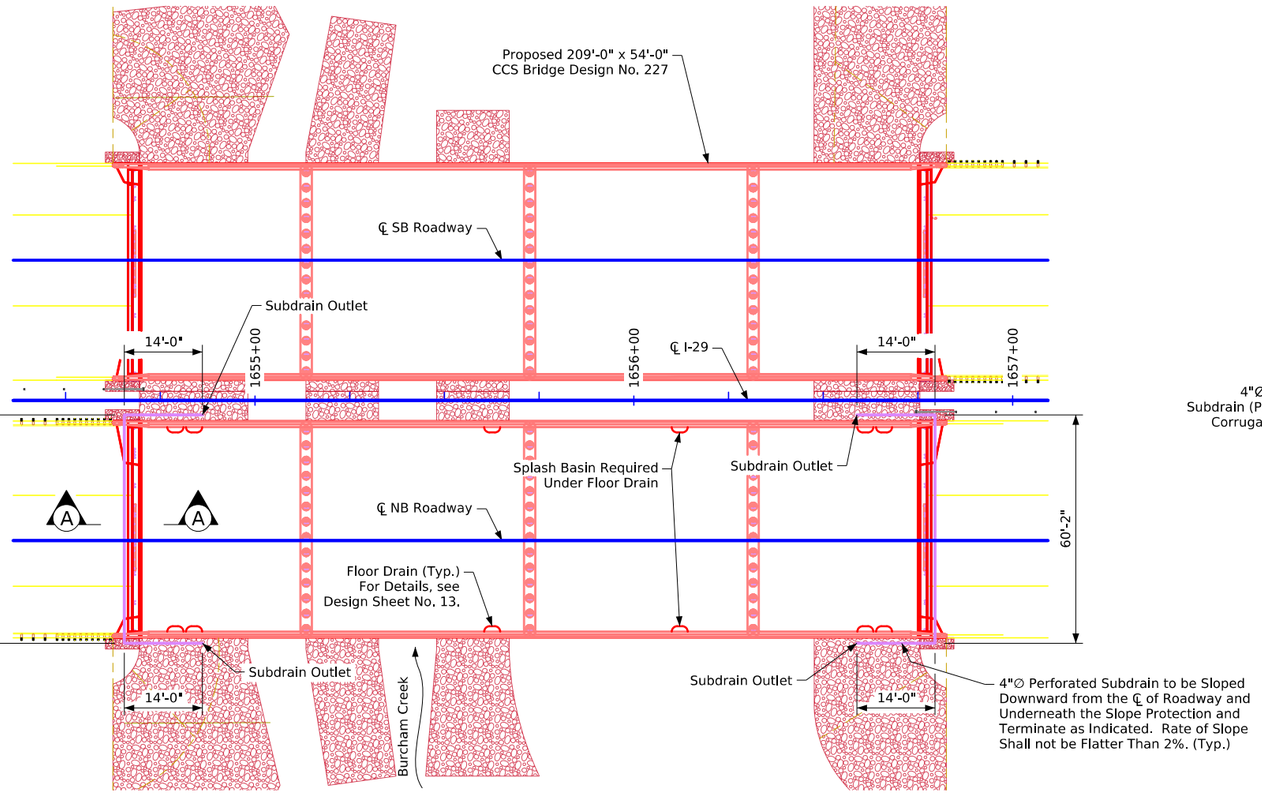
- -Use an inside fit reducer coupler (coupler must be inserted a minimum of 1'-0" into the metal outlet pipe).
- -Insert 1'-0" of the 4"Ø subdrain into the 6"Ø metal outlet pipe, then fully seal the entire opening with grout.

The cost of furnishing and placing subdrain (including excavation), granular backfill, porous backfill, and subdrain outlet is to be included in the price bid for "High Performance Structural Concrete". No extra payment will be made.

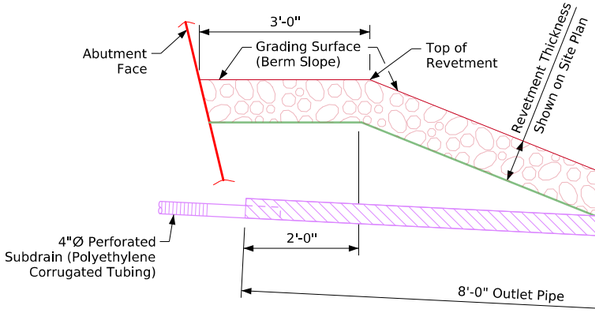
The dimensions shown for the proposed subdrains are based on the proposed grading layout of bridge berms. The dimensions shown are for estimating only. Required lengths and general locations of subdrains are subject to change due to field adjustments of the grading layout.

Subdrain Outlet Elevations

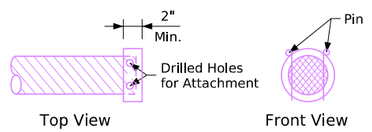
Location	Elevation
South Abutment	1014.80
North Abutment	1014.50



Situation Plan
Showing Subdrain Locations



Typical Section of Subdrain Outlet



Removable Rodent Guard Details

Revetment Stone (Embedded) Outlet Details

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Subdrain Details

STA. 1655+72.50, 37' Rt. (℄ I-29) — Turn-in Date: September 2026

Harrison County

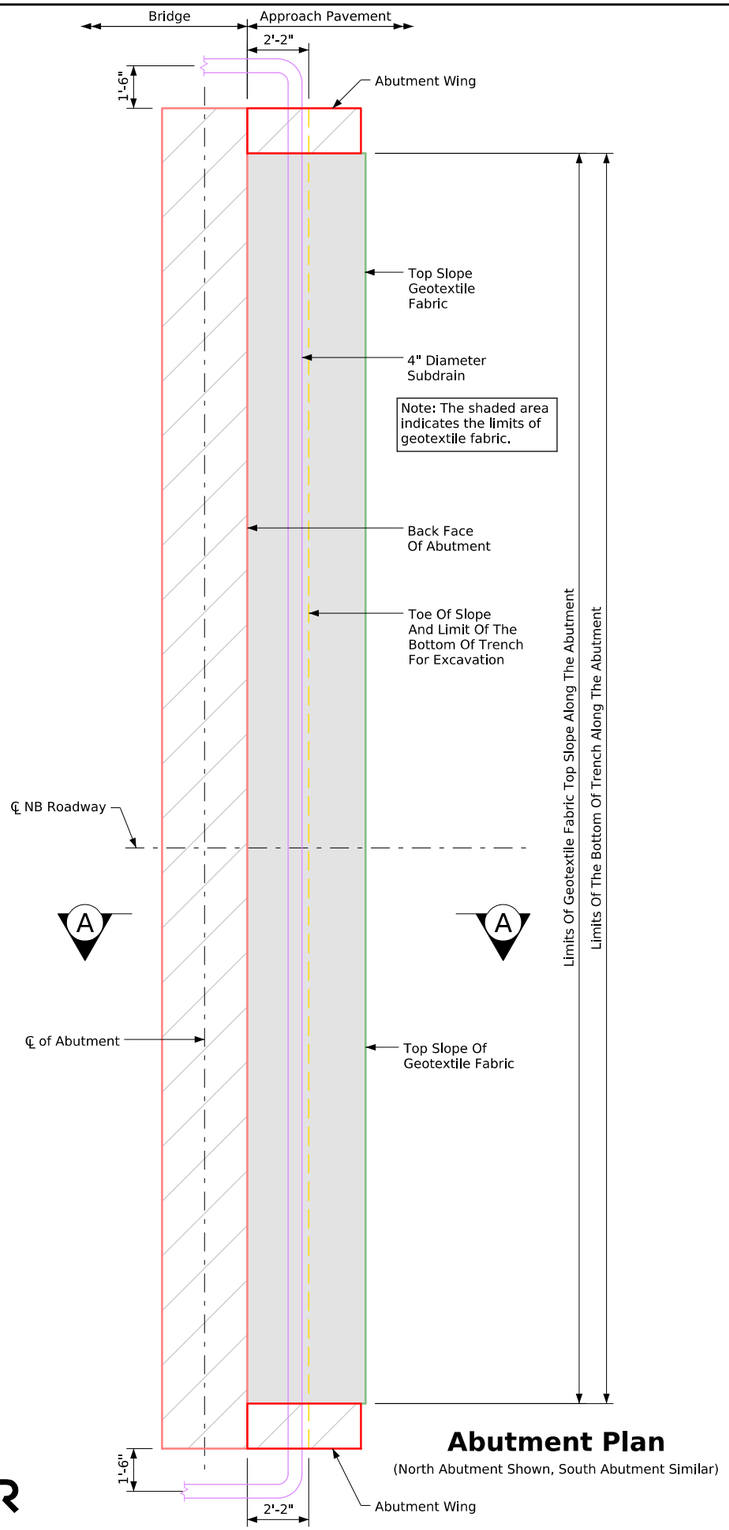
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0127 — Design Sheet No. 22 of 23 — FHWA No. 28241

Revised 10-14 - Two Additional Foreslope Protection Details were Added Outside of the Border to Show Revetment up to Back of Abutment Footing.
Revised 06-2024: Changed Control Point text (was Bench Mark).
ForeSlopeProtectionBridges.dgn - 1007C - This Sheet Issued 06-02 for Water Crossings.
ForeSlopeProtectionBridges.dgn - 1007C - This Sheet Redrawn 07-23.

FILE NO. 32382	ENGLISH	DESIGN TEAM ECS\FG\EES	Subdrain Details for Water Crossings	Standard Sheet 1007C	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.22	

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Abutment Plan

(North Abutment Shown, South Abutment Similar)

Abutment Backfill Process:

The base of the excavation subgrade behind the abutment shall be graded with a 4% slope away from the abutment footing and a 2% cross slope towards the subdrain outlet. This grading should be completed before the installation of the geotextile and backfill material.

After the subgrade is shaped, the geotextile fabric shall be installed according to the details shown. The fabric is to be placed at the base of the excavation and extended vertically up the abutment backwall, wing walls, and excavation face, reaching a height approximately 1 to 2 feet higher than the porous backfill, as shown in the "Backfill Details" on this sheet. The fabric strips should overlap by about 1 foot and be pinned in place. The fabric should be attached to the abutment using lath folded into the fabric and secured with shallow concrete nails. The fabric against the excavation face must also be pinned.

After the fabric is installed, the subdrain shall be placed directly on it at the toe of the rear excavation slope. A slot should be cut in the fabric where the subdrain exits near the end of the abutment wing wall.

Porous backfill shall be placed and leveled without compaction.

Next, floodable backfill shall be used, followed by surface flooding and vibratory compaction. The floodable backfill material must conform to the Standard Specifications. It should be placed in lifts, surface flooded, and compacted with vibratory compaction to ensure full consolidation, with a maximum loose lift thickness of 2 feet.

Surface flooding for each lift should start at the high point of the subdrain and proceed to the low point where the subdrain exits the fabric. Water should be applied through a 2-inch diameter hose, sprayed in 6-foot to 8-foot increments for 3 minutes per increment to ensure uniform flooding.

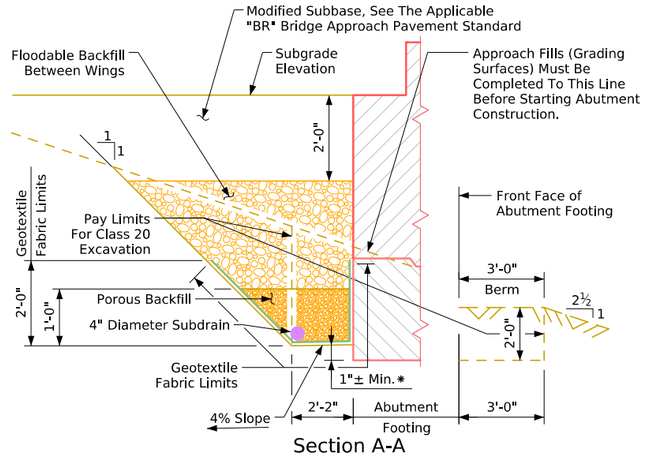
The placement of floodable backfill, flooding, and compaction should continue until the full thickness of the abutment backfill is completed.

Water used for flooding, subdrains, porous backfill, floodable backfill, and geotextile fabric at the bridge abutments will not be measured separately for payment. The cost of this water shall be included in the contract unit price bid for "High Performance Structural Concrete".

Notes:

Subdrain shall slope downward 2% from centerline NB roadway.

The geotextile fabric shall be in accordance with Article 4196.01, B, 6 of the Standard Specifications. If the engineering fabric is lapped the laps shall be a minimum of one foot in length, shingle fashion with up slope lap piece on top and stapled for continuity.



Section A-A

Backfill Details

Note: Geotextile fabric shall be attached to the face of the abutment footing and wings.

✷ Dimension varies due to the 2% subdrain slope.

Note:
For Subdrain Notes and details, see Design Sheet No. 22.

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Abutment Backfill Details

STA. 1655+72.50, 37' Rt. (℄ I-29) — Turn-in Date: September 2026

Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0127 — Design Sheet No. 23 of 23 — FHWA No. 28241

FILE NO. 32382	ENGLISH	DESIGN TEAM TLP\FG\EES	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.23

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Estimated Bridge Quantities - Design No. 0227

Item No.	Item Code	Item	Unit	Total	As Built Quantity
1	2104-2710020	Excavation, Class 10, Channel	CY	870	
2	2401-6745625	Removal of Existing Bridge	LS	1.0	
3	2402-2720000	Excavation, Class 20	CY	350	
4	2402-2721000	Excavation, Class 21	CY	255	
5	2403-0100010	Structural Concrete (Bridge)	CY	293.8	
6	2403-1000005	Fiber Reinforcement for Structural Concrete	CY	945.7	
7	2403-1000010	Trial Batch and Test Placement (Fiber Reinforced Concrete)	LS	1.0	
8	2403-7000210	High Performance Structural Concrete	CY	945.7	
9	2404-7775000	Reinforcing Steel	LB	13,482	
10	2404-7775005	Reinforcing Steel, Epoxy Coated	LB	227,002	
11	2404-7775009	Reinforcing Steel, Stainless Steel	LB	5,680	
12	2414-6424038	Concrete Barrier Rail, 3'-8"	LF	440.0	
13	2501-0201057	Piles, Steel, HP 10 x 57	LF	2,000	
14	2501-0201489	Piles, Steel, HP 14 x 89	LF	5,320	
15	2501-6335010	Prebored Holes	LF	160	
16	2507-2638650	Bridge Wing Armoring - Erosion Stone	SY	13	
17	2507-3250005	Engineering Fabric	SY	1,440	
18	2507-6800061	Revetment, Class E	TON	1,312	
19	2526-8285040	Construction Survey, Location Survey	LS	1.0	
20	2533-4980005	Mobilization	LS	1.0	

Item No.	Estimate Reference Information
1	Includes excavation below the grading surface for placement of engineering fabric and revetment. For details, see Design Sheet No. 5. All waste must be removed from the project site. Dispose of excess material according to Article 1106.07 of the current specifications.
2	Includes all work for removal and off-site disposal of the existing 115'-0" x 39'-0" CCS SB Bridge (Design No. 1965). Removal of scheduled items shall be in accordance with Section 2401, of the Standard Specifications. Contractor to add the following information when submitting the Iowa DNR "Notification of Demolition" form: Name of Asbestos Inspector: Brad Azeltine Date Inspected: 3/5/2020 IA License Number: Iowa DOT Inspector Phone: 515-239-1938 Procedure used to detect the presence of asbestos materials: Polarized Light Microscopy (PLM)
5	All abutment footing and pier concrete is to be Class "C".
6	Refer to the "Developmental Specifications for Fiber Reinforcement for Structural Concrete" for additional information.
7	Includes all work and materials necessary for a trial batch and test placement of fiber reinforced concrete. Refer to the "Developmental Specifications for Fiber Reinforcement for Structural Concrete" for additional information.
8	This bid item includes the 945.7 cubic yards of fiber reinforced concrete for the slab, monolithic pier cap, and wings. Refer to the "Developmental Specifications for High Performance Concrete for Structures" for additional information. Includes all resilient joint filler required. Includes furnishing and placing subdrain (including excavation), floodable backfill, porous backfill, geotextile fabric, water flooding, and subdrain outlet at abutments. Includes furnishing and placing 3 inch diameter PVC plastic pipe and expanding foam in the abutment wings. Includes cost of 12 drains at 48 lbs steel per drain. Includes cost to furnish and install concrete sealer at floor drains. Includes cost of furnishing and placing splash basins (including excavation, erosion stone or Class E revetment, and engineering fabric).
12	Includes material and labor associated with providing and installing the rigid steel conduit, junction boxes and fittings. Includes 220 L.F. of 2" diameter rigid steel conduit. If placement of concrete is done by the slipforming method, Class BR concrete is required. Cast-in-place barrier rails shall use Class C mix. Price bid for this item shall include the cost of cast-in-place forms if required for placement of the concrete.
13 & 14	Piling shall be Grade 50. For additional notes, see Design Sheet Nos. 8 & 10.
16	Includes furnishing and placing engineering fabric, erosion stone, and all required excavating, shaping and compacting for wing armoring.
17	Engineering fabric shall be material as specified for embankment erosion control in accordance with Article 4196.01,B,3, of the Standard Specifications.
18	Estimated at 1.5 ton/cu yd. Class E revetment shall meet requirements of Article 4130. Broken Concrete and granite is not allowed.

Index Of Sheets

Design No. 0227

Sheet Descriptions	Sheet Number
Estimated Bridge Quantities	V.24
Summary Quantities	V.25
General Notes	V.26
Situation Plan	V.27
Staking Diagram	V.29
Pier Details	V.30
Abutment Details	V.32
Superstructure Details	V.34
Top of Slab Elevations	V.38
Conduit Details	V.39
Barrier Rail Details	V.40
Bridge Wing Armoring	V.44
Subdrain Details	V.45
Abutment Backfill Details	V.46
Soil Profile Sheets	SPS.3

Roadway quantities are shown elsewhere in these plans.

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans 59'-0" Interior Spans

Estimated Bridge Quantities

STA. 1655+72.50, 37' Lt. (℄ I-29) Turn-in Date: September 2026

Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0227 Design Sheet No. 1 of 23 FHWA No. 28251

FILE NO. 32382	ENGLISH	DESIGN TEAM ECS\FG\EES	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.24	

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Summary of Concrete Quantities

Location	Structural Concrete	High Performance Structural Concrete
Pier No. 1	85.5	-
Pier No. 2	85.4	-
Pier No. 3	84.7	-
South Abutment Footing	19.1	-
North Abutment Footing	19.1	-
Bridge Slab + Abut. Diaphragms + Monolithic Pier Cap + Abut. Wings	-	945.7 (F)
Total (Cu. Yds.)	293.8	945.7

(F) Fiber Reinforced

Summary of Reinforcing Steel

Location	Non-Coated Reinforcing Steel	Stainless Steel Reinforcing Steel	Epoxy Coated Reinforcing Steel
Bridge Slab + Abut. Diaphragms + Monolithic Pier Cap + Abut. Wings	-	300	202349
Barrier Rails	-	4492	15118
Barrier End Sections	-	888	1176
Barrier Rail - Conduit	-	-	104
South Abutment Footing	-	-	2800
North Abutment Footing	-	-	2800
Pier No. 1	4494	-	885
Pier No. 2	4494	-	885
Pier No. 3	4494	-	885
Total (Lbs.)	13482	5680	227002

Summary of Excavation

Location	Class 10 Excavation	Class 20 Excavation	Class 21 Excavation
South Abutment	-	85	-
North Abutment	-	85	-
Pier No. 1	-	60	85
Pier No. 2	-	60	85
Pier No. 3	-	60	85
Channel	870	-	-
Total (Cu. Yds.)	870	350	255

Summary of Foundations

Location	Substructure Type	Foundation Type	Number	Length (Lin. Ft.)	Total (Lin. Ft.)
South Abutment	Integral Abutment	HP10x57	8	125	1000
North Abutment	Integral Abutment	HP10x57	8	125	1000
Pier No. 1	Fully Encased Pile Bent Pier	HP14x89	14	125	1750
Pier No. 2	Fully Encased Pile Bent Pier	HP14x89	14	125	1750
Pier No. 3	Fully Encased Pile Bent Pier	HP14x89	14	130	1820
				Total HP10x57 (Lin. Ft.)	2000
				Total HP14x89 (Lin. Ft.)	5320

Summary of Prebored Holes

Location	Number	Length (Lin. Ft.)	Total
South Abutment	8	10	80
North Abutment	8	10	80
		Total (Lin. Ft.)	160

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans 59'-0" Interior Spans

Summary Quantities Sheet

STA. 1655+72.50, 37' Lt. (℄ I-29) Turn-in Date: September 2026

Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0227 Design Sheet No. 2 of 23 FHWA No. 28251

Specifications:

Design: AASHTO LRFD 10th Ed, Series of 2024, except as noted in the current Iowa Bridge Design Manual.

Construction: Iowa Department of Transportation Standard Specifications for Highway and Bridge Construction, Series 2023, plus applicable General Supplemental Specifications, Developmental Specifications, Supplemental Specifications and Special Provisions, including the following shall apply to construction work on this project:
- -"Developmental Specifications for High Performance Concrete for Structures",
- -"Developmental Specifications for Fiber Reinforcement for Structural Concrete",
- -"Developmental Specifications for Electronic Ticketing".

Design Stresses:

Design stresses for the following materials are in accordance with the AASHTO LRFD Bridge Design Specifications, 10th Ed, Series of 2024, except as noted in the current Iowa Bridge Design Manual.

- -Reinforcing steel in accordance with AASHTO LRFD Section 5, Grade 60 for Epoxy Coated and Non-Coated, and Grade 60 or 75 for stainless.
- -Concrete in accordance with LRFD AASHTO Section 5, f'c = 4.0 ksi.
- -Structural Steel in accordance with AASHTO LRFD Section 6, ASTM A709 Grade 50 (AASHTO M270 Grade 36 or Grade 50), except as noted.

General Notes:

This design is for the replacement of the existing 115'-0" x 39'-0" CCS SB Bridge (Design No. 1965) with a year of construction of 1967. Electronic plans of the Existing Structure are available to the Contractor as part of the E-Files supplied with the contract documents.

The lump sum bid item for "Removal of Existing Bridge" shall include all costs associated with removing the existing 115'-0" x 39'-0" CCS SB Bridge (Design No. 1965). Removals shall be in accordance with Section 2401, of the Standard Specifications.

This bridge is designed for HL-93 loading, plus 20 lbs. per square foot of roadway for future wearing surface.

The slab as shown includes 3/4-inch integral wearing surface.

Utility companies whose facilities are shown on the plans or known to be within the construction limits shall be notified by the Bridge Contractor of the construction starting date.

Faint lines on plans indicate the existing structure.

It shall be the Bridge Contractor's responsibility to provide sites for excess excavated material. No payment for overhaul will be allowed for material hauled to these sites.

The Bridge Contractor shall prebore holes for abutment piles. Holes shall be bored to the elevations shown on the "Longitudinal Section along CL Approach Roadway" on Design Sheet No. 4. Piles shall be driven through the holes to at least the specified design bearing.

Concrete barrier rails placed using the slipform method will require the use of a Class BR concrete in accordance with Article 2513.03, A, 2 of the Standard Specifications. Cast-in-place Barrier Rails shall use Class C mix. Class D concrete is not permitted for concrete barrier rails (cast-in-place or slipformed method).

These bridge plans label all reinforcing steel with English notation (5a1 is $\frac{5}{8}$" inch diameter bar). English reinforcing steel received in the field may display the following "Bar Designation". The "Bar Designation" is the stamped impression on the reinforcing bars, and is equivalent to the bar diameter in millimeters.

English size	3	4	5	6	7	8	9	10	11
Bar Designation	10	13	16	19	22	25	29	32	36

All reinforcing bars and bars noted as dowels supplied for this structure shall be deformed reinforcement unless otherwise noted or shown.

Keyway dimensions shown on the plans are based on nominal dimensions unless stated otherwise. In addition, the bevel used on the keyway shall be limited to a maximum of 10 degrees from vertical.

Bridge Slab Dimensions Table

	Item	Units	Quantity
1	Slab Length	L.F.	209.8
2	Minimum Slab Width	L.F.	57.2
3	Maximum Slab Width	L.F.	57.2
4	Slab Area	S.F.	11995

1. Slab length is measured from face-to-face of paving notches along the centerline of the roadway.

2, 3. Slab widths are measured from out-to-out of slab perpendicular to the centerline of roadway.

4. Slab area is to be based on the face-to-face paving notch distance and out-to-out slab dimensions.

Design History at this Site

(SB I-29)

Des. No.	Type of Work
1965	Original Design
1289	Retrofit Rail
192	Overlay & Repairs
415	Paving Notch Repairs
227	Bridge Replacement

All plan dimensions are horizontal unless noted otherwise.

Traffic control plan:
The roadway will be open to thru traffic. Refer to the traffic control plan shown elsewhere in these plans.

Pollution Prevention Plan shown elsewhere in these plans.

Working Drawing and Calculation Submittals

Working drawings and calculations shall be submitted for the following items shown in the table below. (Note additional working drawings and calculations may be required in accordance with Article 1105.03 of the Standard Specifications.)

Submittal requirements for working drawings and calculations shall be in accordance with 1105.03 of the Standard Specifications for Highway and Bridge Construction of the Iowa Department of Transportation. The absence of a certification requirement for a submittal does not relieve the contractor of the responsibility to attain certification.

Calculation submittals in this table which are associated with working drawing submittals shall be submitted on the same day. Review time for calculation submittals shall be of the same duration as and run concurrently with review time for associated working drawings. The calculation submittals listed in the table are not meant to be an exhaustive list and do not relieve the Contractor from providing additional calculation submittals if requested by the Engineer.

No.	Working Drawing Description	Working Drawing File Name Convention for Submittal	Certified by Iowa P.E. (Yes/No)
1	Floor Drains	(275)_Harrison_Design227_FloorDrains.pdf	No
2	Bridge Falsework	(275)_Harrison_Design227_FalseworkDrawings.pdf	Yes
No.	Calculation Description	Calculation File Name Convention for Submittal	Certified by Iowa P.E. (Yes/No)
3	Bridge Falsework	(275)_Harrison_Design227_FalseworkCalculations.pdf	Yes

HDR

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans 59'-0" Interior Spans

General Notes

STA. 1655+72.50, 37' Lt. (℄ I-29) Turn-in Date: September 2026

Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0227 Design Sheet No. 3 of 23 FHWA No. 28251

Control Point 43I290865: 7117991.787 N, 16417157.407 E, CP FENA Monument in West I-29 ROW near SW Corner of Southbound Bridge, Elev. 1018.886

Hydraulic Data

RIDB: Not Applicable
Drainage Area = 8.18 Sq. Mi.
Stream Slope (HGL) = 2.40 ft./Mi.
Avg. Low Water Stage = 1005.57

Q_{50} = 3830 cfs
Stage = 1015.05
Channel Low Beam = 1018.35 ft.
Avg. Bridge Velocity = 6.28 fps

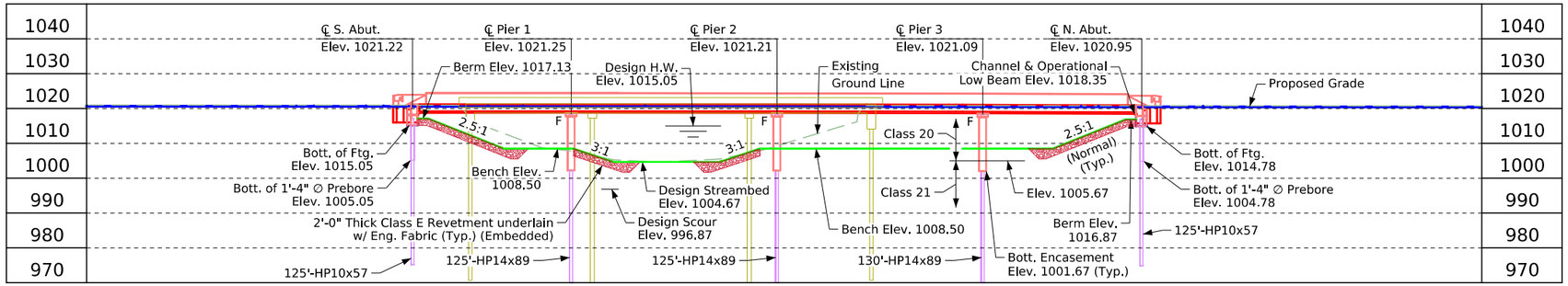
Q_{100} = 4610 cfs
Stage = 1015.56
Backwater = 1.49 ft.
Avg. Bridge Velocity = 6.76 fps

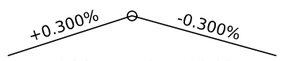
Q_{200} = 5420 cfs
Stage = 1016.05
Calculated Design Scour = 996.87

Q_{500} = 6500 cfs
Stage = 1016.60
Avg. Bridge Velocity = 7.71 fps
Calculated Check Scour = 996.17

Roadway Overtop 1020.66
Sta. 1658+41.26

Extreme HW Stage = Unknown
Date = Unknown





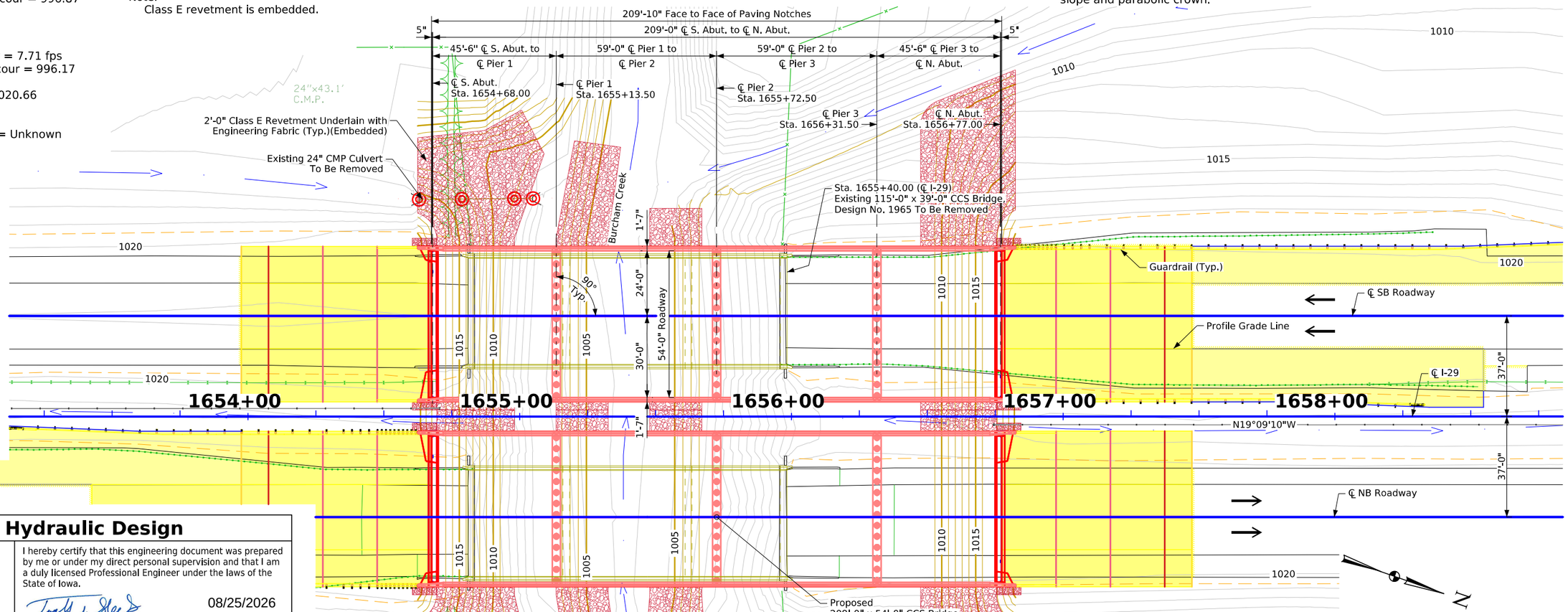
VPI Sta. = 1655+20.00
VPI Elev. = 1021.21
VC = 225'

Profile Grade I-29

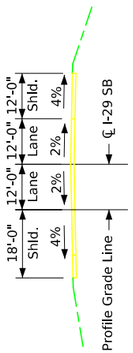
Note:
Class E revetment is embedded.

Longitudinal Section Along ℄ Approach Roadway

Note:
Top of bridge slab at centerline roadway is 0.21' above the profile grade to account for slab cross slope and parabolic crown.



Typical Approach Section



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.

Timothy J. Sheets
P23778
IOWA
LICENSED PROFESSIONAL ENGINEER

08/25/2026
Signature — Date

Timothy J. Sheets
Printed or Typed Name

My license renewal date is December 31, 2027

Pages or sheets covered by this seal: Hydraulic & Revetment Data on V.27 & V.28

Utilities Note:

No known utilities shown in this area.

Traffic Estimate

SB Lanes

2027 AADT	8,050 V.P.D.
2047 AADT	10,050 V.P.D.
TRUCKS	31 %
Total Design ESALs	-

Situation Plan

Location

SB I-29 over Burcham Creek
T-79N R-45W
Section 12
Clay Township
Harrison County
FHWA No. 28251
Bridge Maint. No. 4386.5L029
Latitude 41.671575°
Longitude -96.036416°

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Situation Plan

STA. 1655+72.50, 37' Lt. (℄ I-29) — Turn-in Date: September 2026

Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0227 — Design Sheet No. 4 of 23 — FHWA No. 28251

FILE NO. 32382	ENGLISH	DESIGN TEAM HDR	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.27

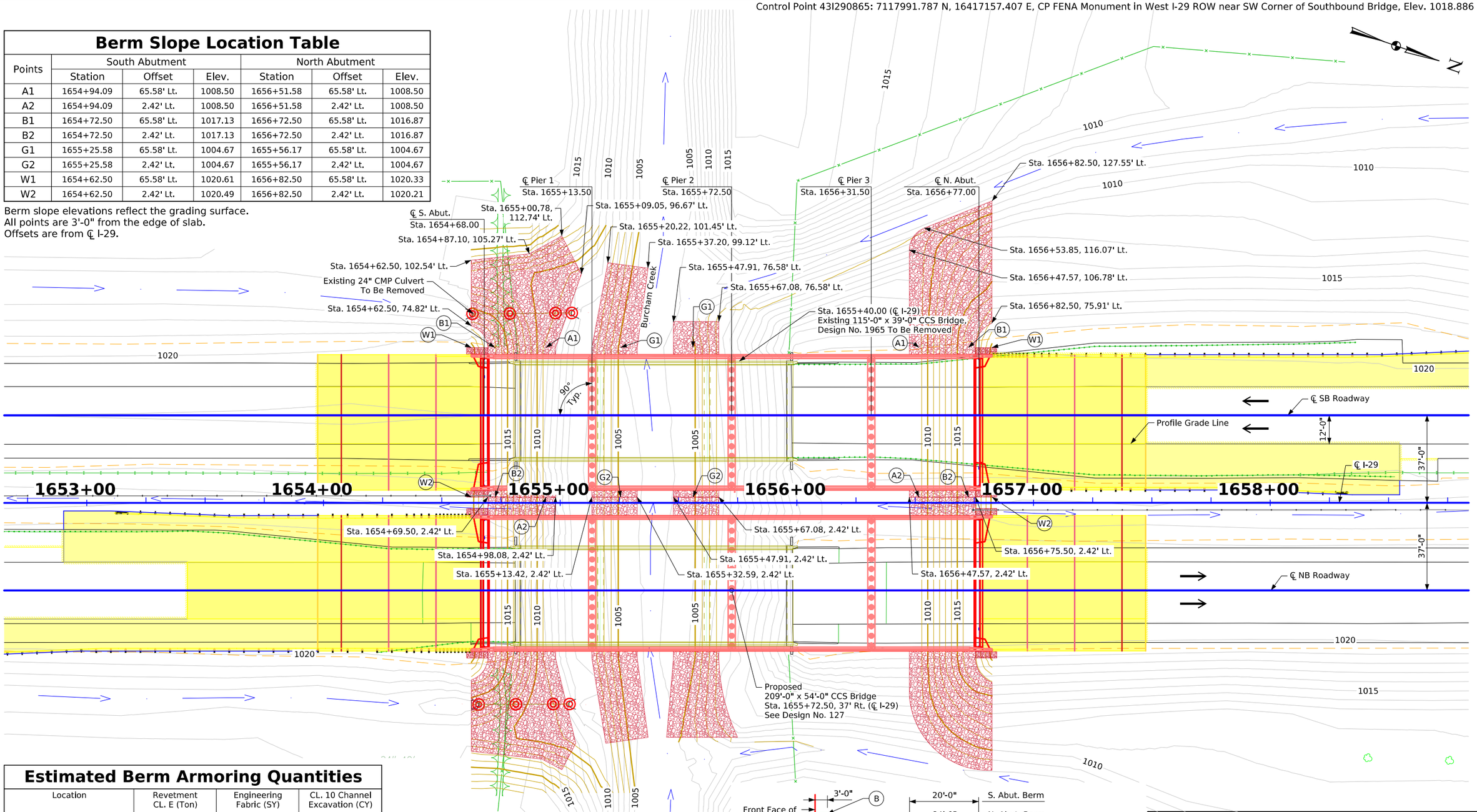
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Control Point 43I290865: 7117991.787 N, 16417157.407 E, CP FENA Monument in West I-29 ROW near SW Corner of Southbound Bridge, Elev. 1018.886

Berm Slope Location Table

Points	South Abutment			North Abutment		
	Station	Offset	Elev.	Station	Offset	Elev.
A1	1654+94.09	65.58' Lt.	1008.50	1656+51.58	65.58' Lt.	1008.50
A2	1654+94.09	2.42' Lt.	1008.50	1656+51.58	2.42' Lt.	1008.50
B1	1654+72.50	65.58' Lt.	1017.13	1656+72.50	65.58' Lt.	1016.87
B2	1654+72.50	2.42' Lt.	1017.13	1656+72.50	2.42' Lt.	1016.87
G1	1655+25.58	65.58' Lt.	1004.67	1655+56.17	65.58' Lt.	1004.67
G2	1655+25.58	2.42' Lt.	1004.67	1655+56.17	2.42' Lt.	1004.67
W1	1654+62.50	65.58' Lt.	1020.61	1656+82.50	65.58' Lt.	1020.33
W2	1654+62.50	2.42' Lt.	1020.49	1656+82.50	2.42' Lt.	1020.21

Berm slope elevations reflect the grading surface.
All points are 3'-0" from the edge of slab.
Offsets are from ℄ I-29.



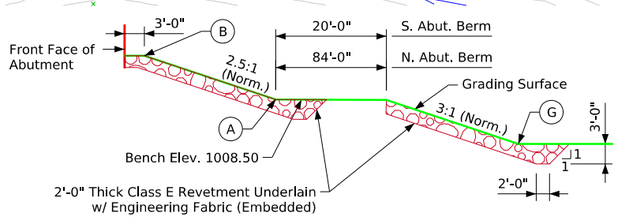
Site Plan

Estimated Berm Armoring Quantities

Location	Revetment CL. E (Ton)	Engineering Fabric (SY)	CL. 10 Channel Excavation (CY)
Berm Lining - South	670	735	445
Berm Lining - North	642	705	425
Totals	1312	1440	870

Excavation quantity calculated from grading surface. Excavation quantity if for embedded revetment core out only, and does not include excavation to the grading surface. Excavation quantity to the grading surface is determined by Road Design and included in the Road Plans.

Revetment based on a density of 1.5 Ton/CY.



Section Thru Embedded Revetment Berm

(Normal To Abutment)

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Site Plan

STA. 1655+72.50, 37' Lt. (℄ I-29) — Turn-in Date: September 2026

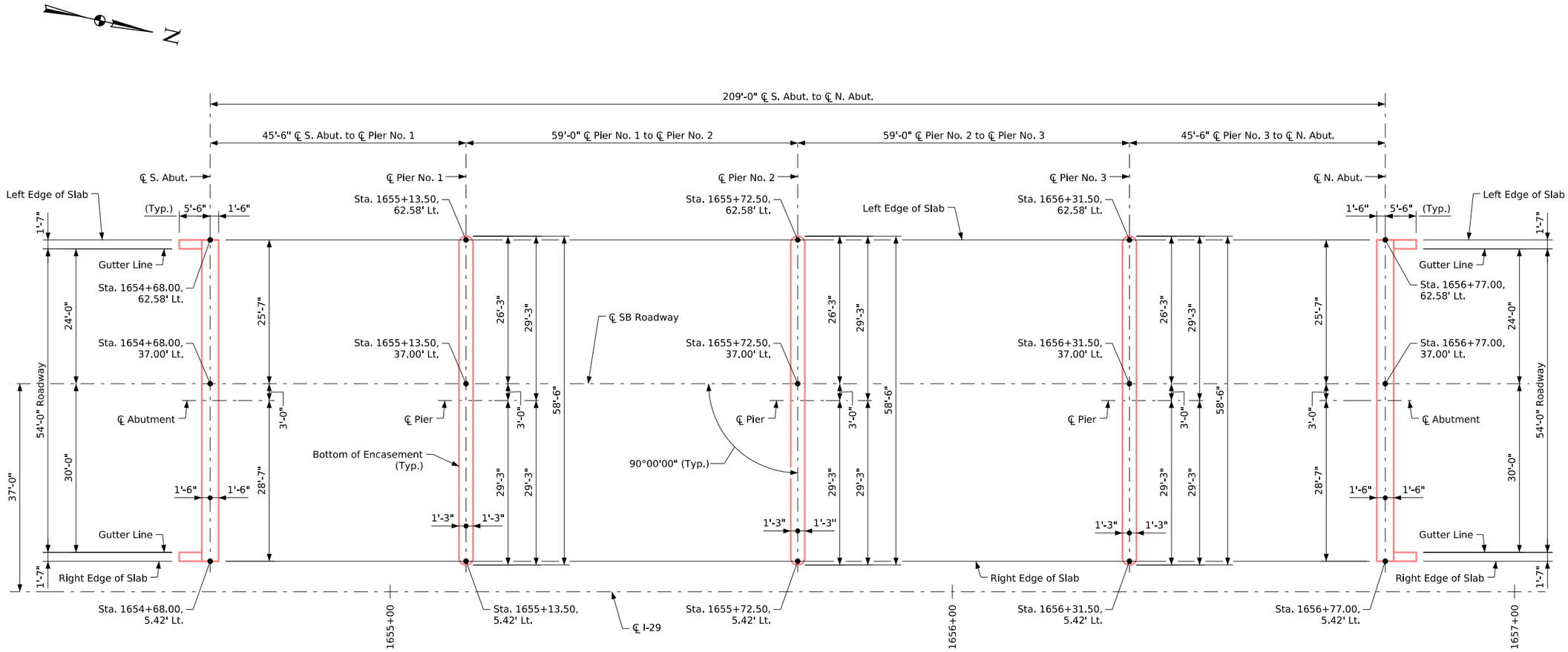
Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0227 — Design Sheet No. 5 of 23 — FHWA No. 28251

FILE NO. 32382	ENGLISH	DESIGN TEAM HDR	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.28

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Staking Diagram

Bridge Staking Coordinates

Location	℄ S. Abut.	℄ Pier No. 1	℄ Pier No. 2	℄ Pier No. 3	℄ N. Abut.
Left Edge of Slab	E=16417203.195 N=7118004.068	E=16417188.267 N=7118047.049	E=16417168.909 N=7118102.783	E=16417149.552 N=7118158.517	E=16417134.624 N=7118201.499
℄ SB Roadway	E=16417227.362 N=7118012.461	E=16417212.434 N=7118055.443	E=16417193.077 N=7118111.177	E=16417173.718 N=7118166.914	E=16417158.791 N=7118209.892
Right Edge of Slab	E=16417257.197 N=7118022.823	E=16417242.269 N=7118065.805	E=16417222.912 N=7118121.539	E=16417203.554 N=7118177.273	E=16417188.626 N=7118220.255

Note:
An electronic file containing the bridge coordinate data is available as part of the E-files supplied with the contract documents. The Contractor shall verify these coordinates with the project horizontal control information provided in the road plans.

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Staking Diagram

STA. 1655+72.50, 37' Lt. (℄ I-29)

Turn-in Date: September 2026

Harrison County

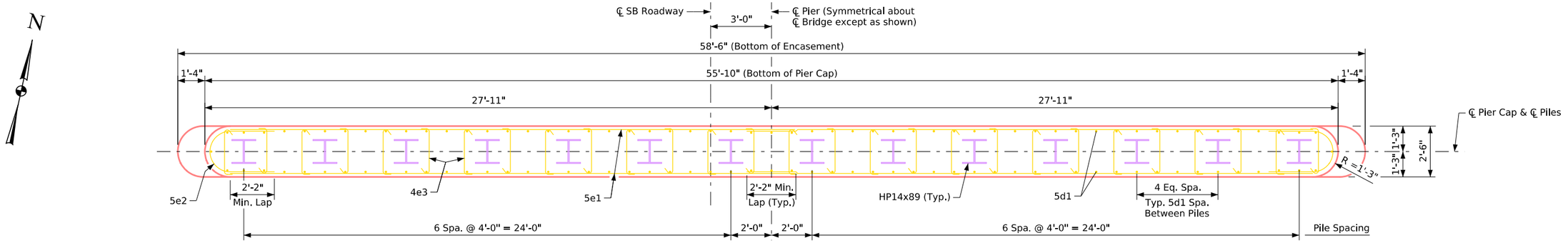
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0227 | Design Sheet No. 6 of 23 | FHWA No. 28251

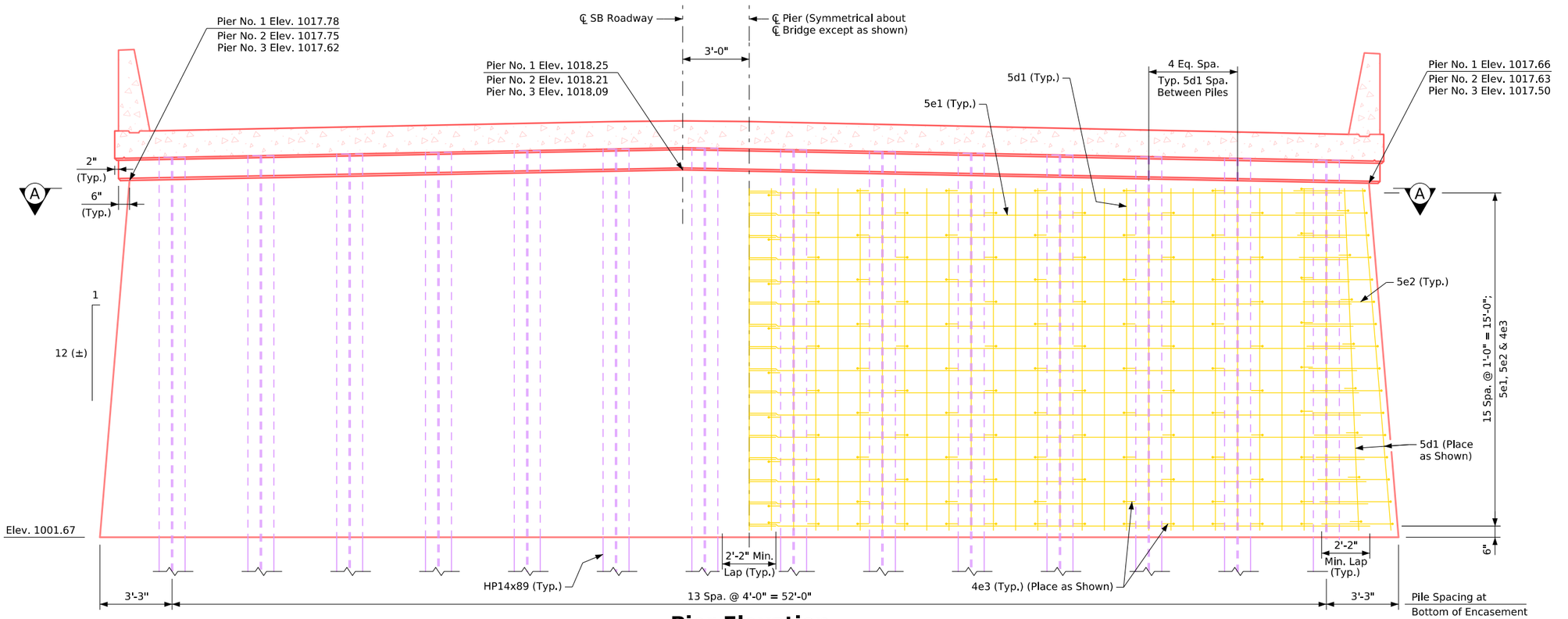
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Control Point 43I290865: 7117991.787 N, 16417157.407 E, CP FENA Monument in West I-29 ROW near SW Corner of Southbound Bridge, Elev. 1018.886



Section A-A



Pier Elevation

(Looking Upstation)
(Pier Cap Reinforcing Not Shown)

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Pier Details

STA. 1655+72.50, 37' Lt. (℄ I-29)

Turn-in Date: September 2026

Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0227 — Design Sheet No. 7 of 23 — FHWA No. 28251

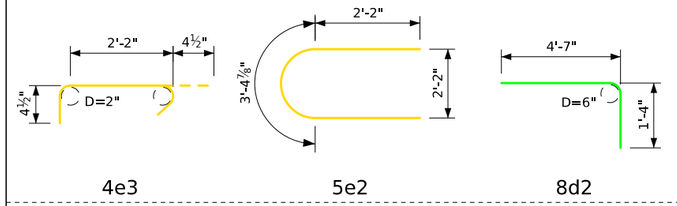
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Concrete Quantities

Location	Quantity
Pier No. 1 Encasement	85.5
Pier No. 2 Encasement	85.4
Pier No. 3 Encasement	84.7
Total - Structural Concrete (Bridge) (CY)	255.6

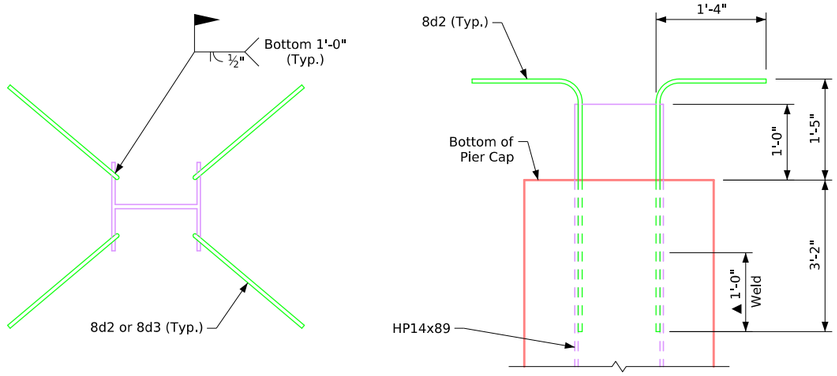
Bent Bar Details



Note: All Dimensions Are Out To Out. D=pin Diameter.

Reinforcing Bar List - One Pier

	Bar	Location	Shape	No.	Length	Weight
Non-Coated	5d1	Encasement, Vertical		112	15'-8"	1,830
	5e1	Encasement, Horizontal		64	29'-1"	1,941
	5e2	Encasement, End, Horizontal		32	7'-9"	259
	4e3	Encasement, Ties		238	2'-11"	464
		Non-Coated Reinforcing Total Weight (lbs.)				4,494
Epoxy Coated	8d2	Encasement, Top		56	5'-11"	885
		Epoxy Coated Reinforcing Total Weight (lbs.)				885



Cap Steel Details

▲ Weld bottom 1'-0" only. Epoxy coating touch-up is not required.

Pier Notes:

Minimum clear distance from face of concrete to near reinforcing bar is to be 2" unless otherwise noted or shown.

Pier Pile Notes:

The contract length of 125 feet for Pier No. 1 & Pier No. 2 piles, and 130 feet for Pier No. 3 piles is based on a non-cohesive soil classification, a total factored axial load per pile (Pu) of 228 kips, and a geotechnical resistance factor (phi) of 0.55 for soil and 0.7 for rock end bearing.

The nominal axial bearing resistance for construction control was determined from a non-cohesive soil classification and a geotechnical resistance factor (phi) of 0.55 for soil and 0.7 for rock end bearing. Piles are assumed to be driven from a start elevation at the bottom of encasement. Design scour (200-year) was assumed to affect the upper 6.3 feet of embedded pile length and cause 6 kips of driving resistance.

The required nominal axial bearing resistance for the pier piles is 190 tons (Pier No. 1), 187 tons (Pier No. 2), and 198 tons (Pier No. 3) at end of drive or retap. The pile contract length shall be driven as per plans unless piles reach refusal. Construction control requires a weap analysis with bearing graph.

Pier piles are designed to accommodate the absence of scourable soils above the 200 year scour elevation shown in these plans. Piles shall be driven to 190 tons (Pier No. 1), 187 tons (Pier No. 2), and 198 tons (Pier No. 3) based on the theoretical driving resistance. This includes 3 tons (Pier No. 1 & Pier No. 2) and 5 tons (Pier No. 3) of resistance in the scourable layers, and 187 tons (Pier No. 1), 184 tons (Pier No. 2), and 193 tons (Pier No. 3) resistance for dead load and live load bearing capacity.

14 - HP14x89 steel bearing piling are required for each pier.

Seal Coat Note:

Pier piles are designed to accommodate a concrete seal coat, if required. The concrete seal coat, if used, shall be limited to 65 feet in length, 9 feet in width, and 3 feet in thickness. The Bridge Engineer shall be notified prior to using a seal coat exceeding these dimensions.

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans 59'-0" Interior Spans

Pier Details

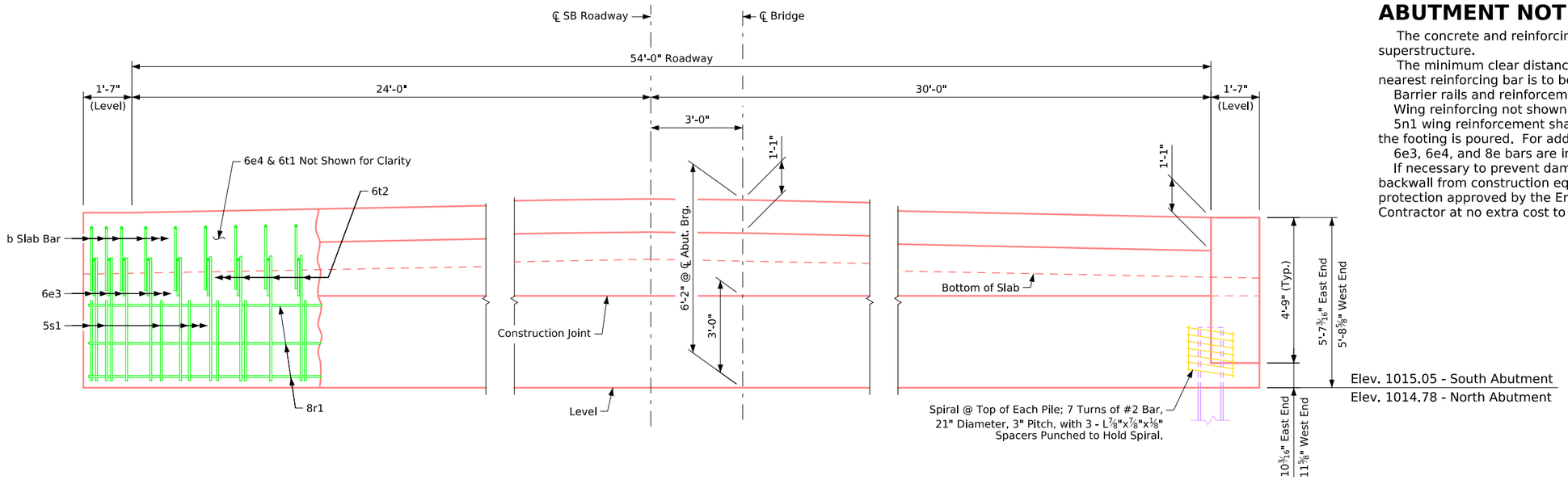
STA. 1655+72.50, 37' Lt. (℄ I-29) Turn-in Date: September 2026

Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0227 Design Sheet No. 8 of 23 FHWA No. 28251

Control Point 43I290865: 7117991.787 N, 16417157.407 E, CP FENA Monument in West I-29 ROW near SW Corner of Southbound Bridge, Elev. 1018.886



Rear Elevation

(South Abutment Shown, North Abutment Similar)

ABUTMENT NOTES:

The concrete and reinforcing steel for the wings is included with the superstructure.

The minimum clear distance from the face of the concrete to the nearest reinforcing bar is to be 2 inches unless otherwise noted or shown.

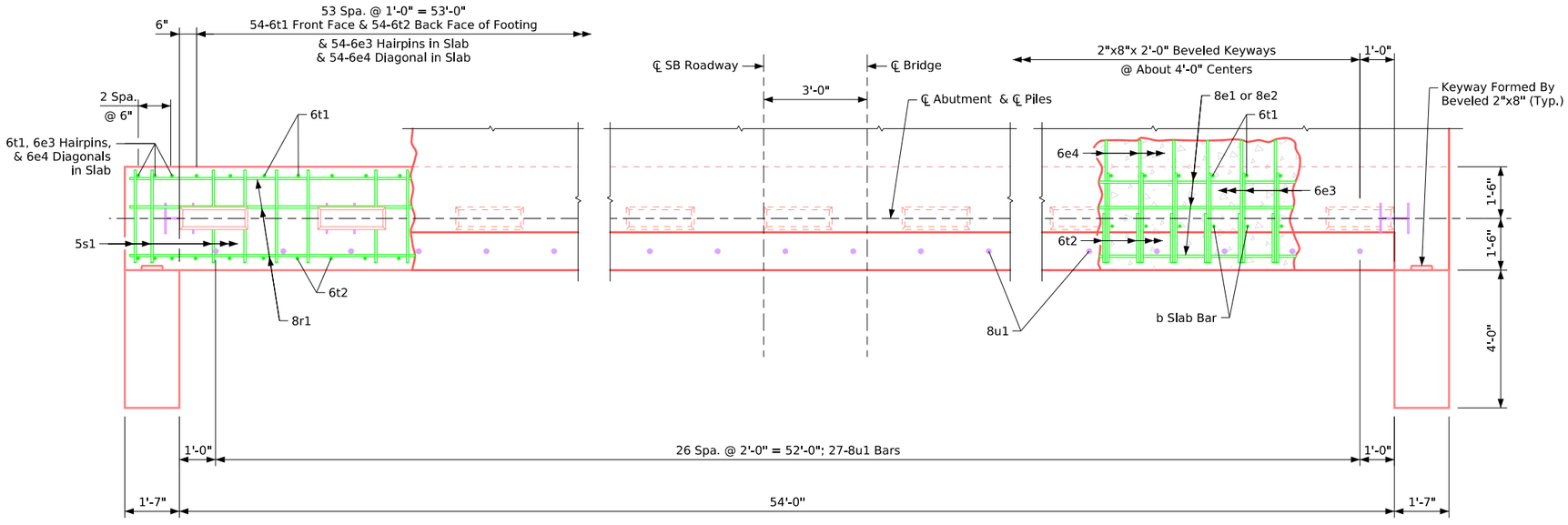
Barrier rails and reinforcement not shown.

Wing reinforcing not shown.

5n1 wing reinforcement shall be placed in the abutment footing before the footing is poured. For additional details, see Design Sheet No. 12.

6e3, 6e4, and 8e bars are included in the Superstructure Quantities.

If necessary to prevent damage to the end of the bridge slab and backwall from construction equipment, an appropriate method of protection approved by the Engineer shall be provided by the Bridge Contractor at no extra cost to the State.



Plan View

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Abutment Details

STA. 1655+72.50, 37' Lt. (℄ I-29)

Turn-in Date: September 2026

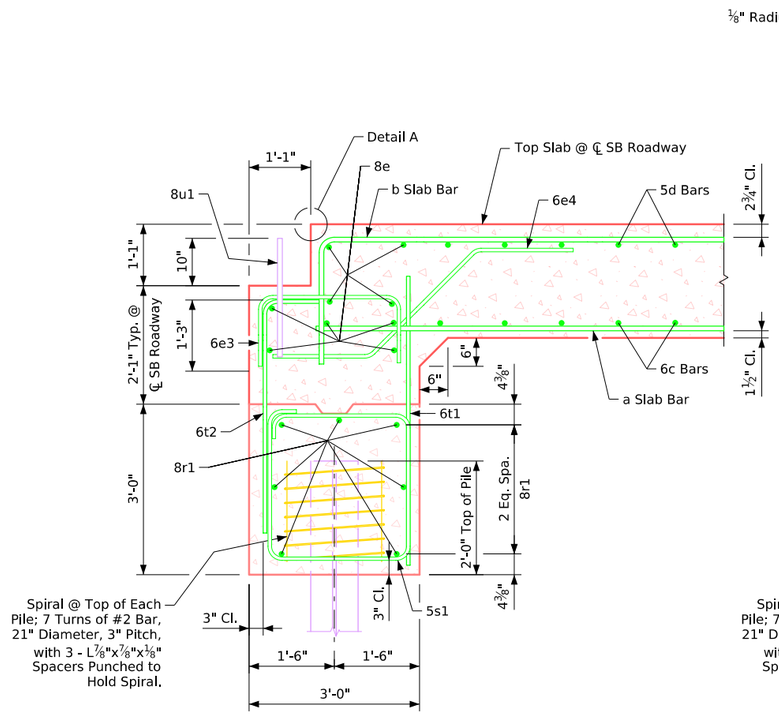
Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

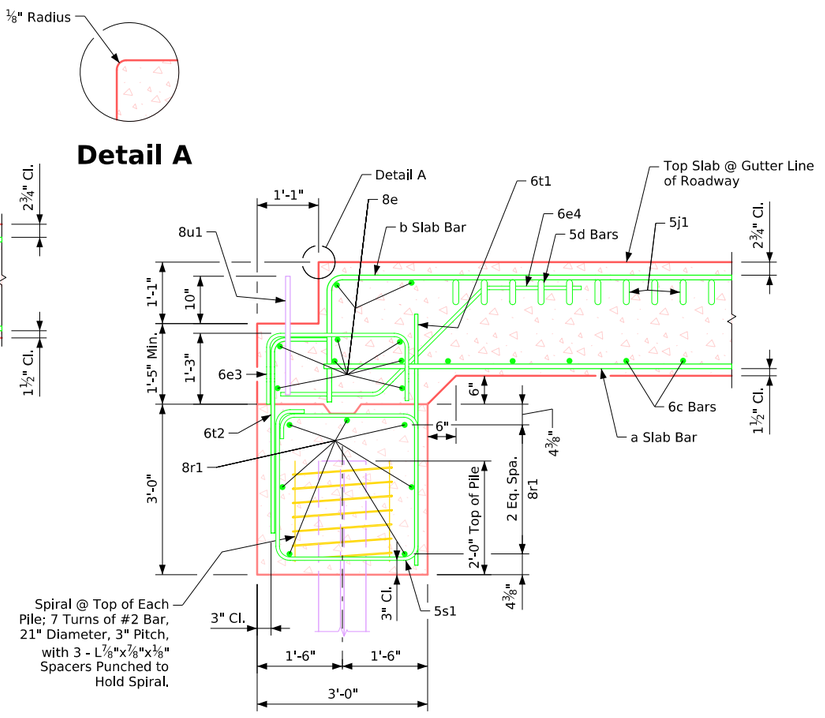
Design No. 0227 | Design Sheet No. 9 of 23 | FHWA No. 28251

FILE NO. 32382	ENGLISH	DESIGN TEAM ECS\FG\EES	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.32

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Section Normal to Abutment @ ℄ SB Roadway

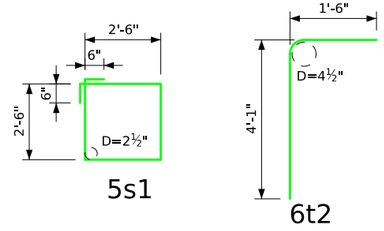


Section Normal to Abutment @ Gutter Line

Epoxy Coated Reinforcing Bar List - One Abutment

Bar	Location	Shape	No.	Length	Weight
8r1	Abutment Footing Longitudinal		14	30'-11"	1,156
5s1	Abutment Footing Hoops		53	11'-0"	608
6t1	Footing to Slab Bars		60	5'-0"	451
6t2	Footing to Slab Bars		60	5'-7"	503
#2	Pile Spiral		8	38'-6"	51
	Spiral Spacers - L ⅞x⅞x⅛x 0.70		24	1'-10"	31
		Epoxy Coated Reinforcing Total Weight (lbs.)			2,800

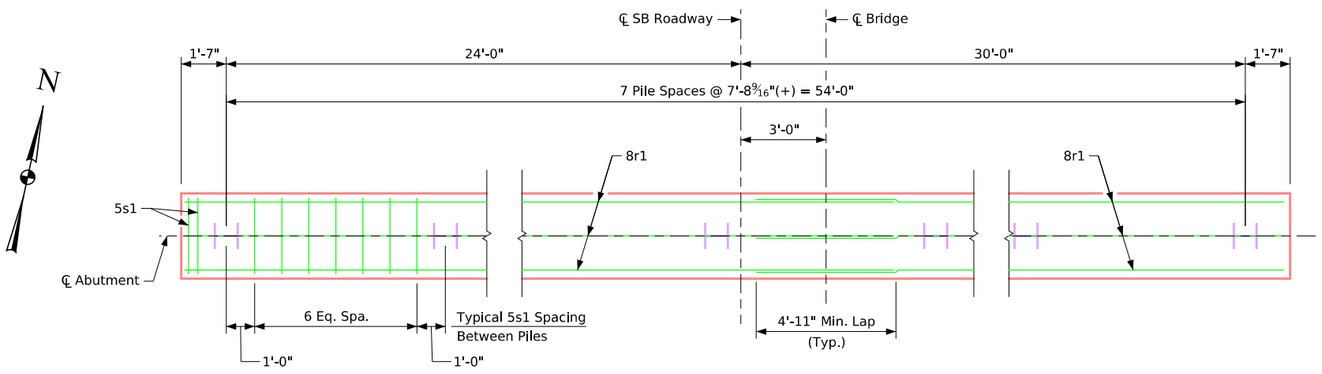
BENT BAR DETAILS



Note: All Dimensions Are Out To Out. D=pin Diameter.

ESTIMATED QUANTITIES - ONE ABUT.

Location	Unit	Quantity
Structural Concrete (Bridge)	CY	19.1
Reinforcing Steel, Epoxy Coated	LB	2,800
Piles, Steel, HP10x57	LF	1,000
Prebored Holes	LF	80



Pile Layout

Abutment Pile Notes:

The contract length of 125 feet for the South and North abutment piles is based on a non-chohesive soil classification, a total factored axial load per pile (Pu) of 141 kips, and a geotechnical resistance factor (phi) of 0.55 for soil and 0.7 for rock end bearing.

The nominal axial bearing resistance for construction control was determined from a non-cohesive soil classification and a geotechnical resistance factor (phi) of 0.55 for soil and 0.7 for rock end bearing. Piles are assumed to be driven from a start elevation at the bottom of prebore.

The required nominal axial bearing resistance for South abutment piles is 119 tons and 124 tons for North abutment piles at end of drive or retap. The pile contract length shall be driven as per plan unless piles reach refusal. Construction control requires a weap analysis with bearing graph.

8 - HP10x57 steel bearing piling are required for each abutment.

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans 59'-0" Interior Spans

Abutment Details

STA. 1655+72.50, 37' Lt. (℄ I-29) Turn-in Date: September 2026

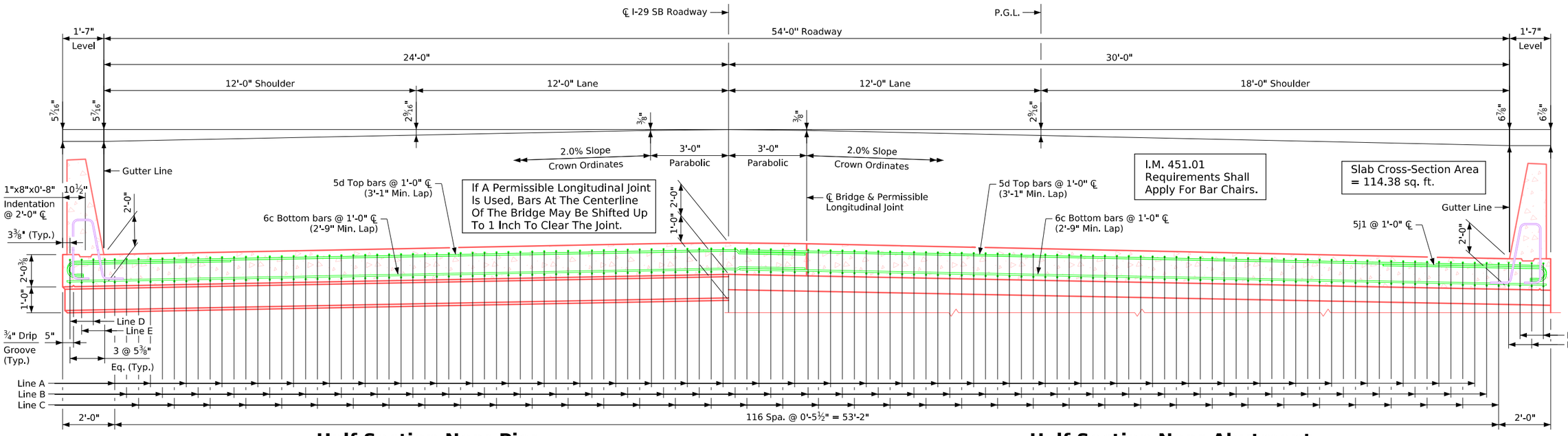
Harrison County

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Design No. 0227 Design Sheet No. 10 of 23 FHWA No. 28251

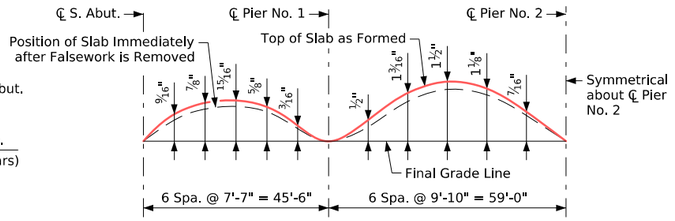
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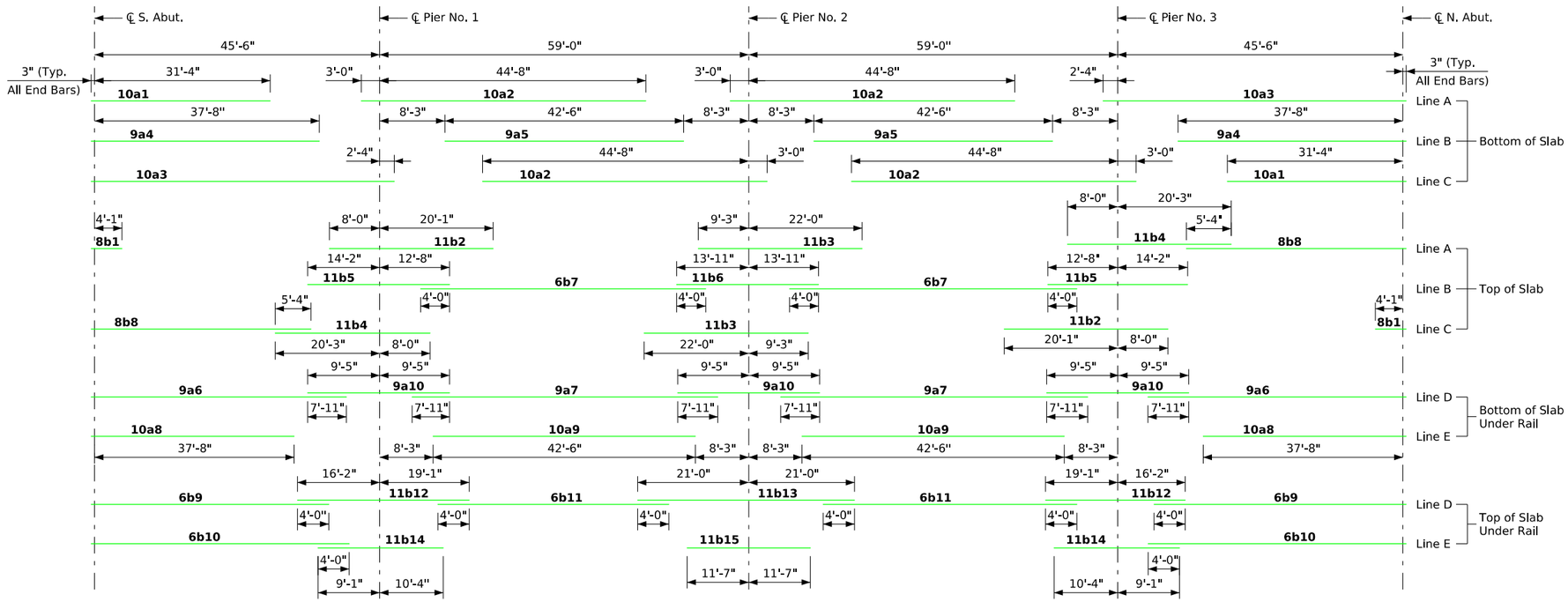
Half Section Near Pier

Half Section Near Abutment



Form Camber Diagram

This diagram illustrates the form camber required to compensate for the anticipated ultimate dead load deflection. The dimensions shown do not account for form deflection or falsework settlement.



Placement for Longitudinal Reinforcement

Notes:

Top longitudinal reinforcing steel shall be parallel to and 2¾ inches clear below the top of the slab.

Bottom longitudinal reinforcing steel shall be parallel to and 1½ inches clear above the bottom of the slab.

Reinforcing steel shall be securely wired in place and adequately supported on bar chairs before concrete placement.

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Superstructure Details

STA. 1655+72.50, 37' Lt. (℄ I-29) — Turn-in Date: September 2026

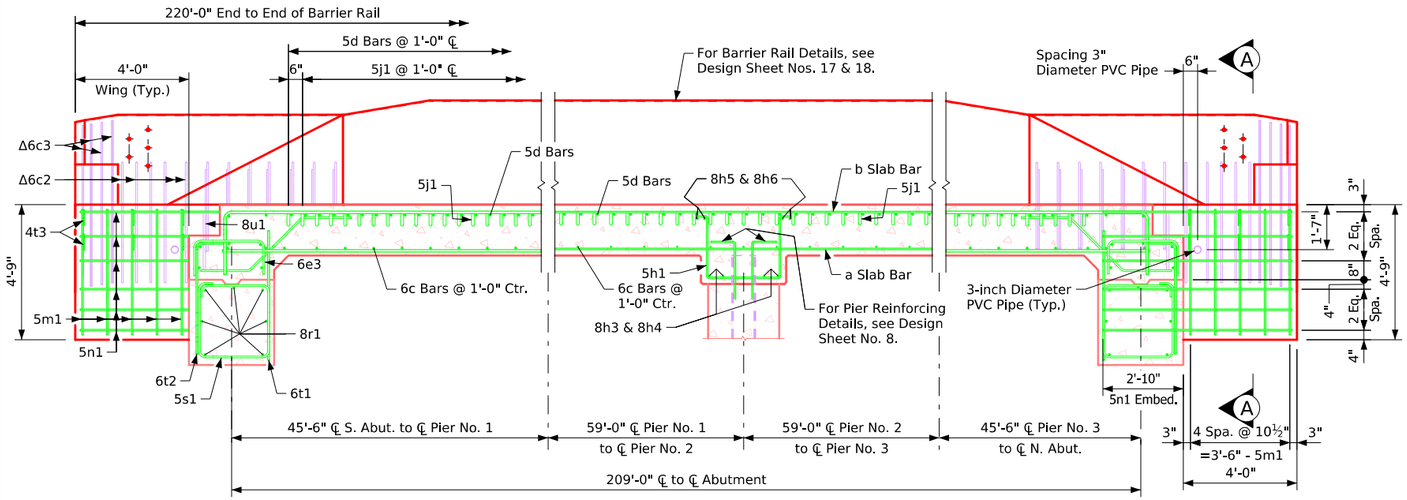
Harrison County

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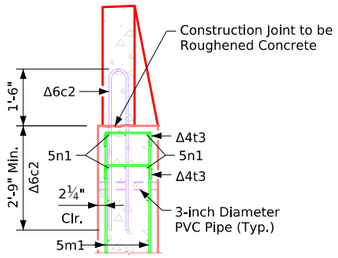
Design No. 0227 — Design Sheet No. 11 of 23 — FHWA No. 28251

FILE NO. 32382	ENGLISH	DESIGN TEAM ECS\FG\EES	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.34

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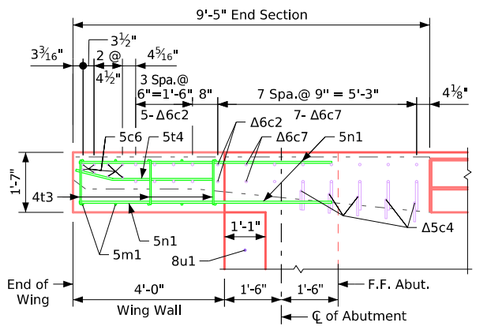


Part Longitudinal Section Near Gutter Line



Section A-A

Note:
Δ See Barrier Rail End Section Details in these plans for details of barrier rail end section. Reinforcing 6c2, 5c4, and 4t3 are included in the barrier rail end section quantities. 5m1 and 5n1 are included in the superstructure quantities.



Part Plan at Wing

(End Section Not Shown)

Superstructure Notes:

The minimum clear distance from the face of concrete to the nearest reinforcing bar shall be 2 inches unless otherwise noted or shown. All reinforcing steel is to be securely wired in place. See Bar Chair Note.

The concrete slab is to be placed with a minimum number of construction joints. Procedures for placing slab concrete shall be submitted for approval, together with a statement of the proposed method and evidence that the Contractor possesses the necessary equipment and facilities to accomplish the required result. Slab falsework shall be removed prior to the construction of the barrier rails.

Note that when Portland cement approach pavement is placed, compressible joint material must be used between the pavement and the end of the bridge. If necessary to prevent damage to the end of the bridge slab or backwall from construction equipment, an appropriate method of protection approved by the Engineer shall be provided by the Bridge Contractor at no extra cost to the State.

The cost of furnishing and placing a 3-inch diameter PVC pipe in each wing is included in the price bid for "High Performance Structural Concrete".

Bar Chair Note:

The top mat of reinforcing steel is to be supported by individual bar chairs spaced at no more than 3'-0" centers longitudinally and transversely. The bottom mat of reinforcing steel is to be supported by individual bar chairs spaced at no more than 3'-0" centers longitudinally and transversely, or by continuous rows of bar high chairs or slab bolsters spaced 4'-0" apart. I.M. 451.01 requirements shall apply for bar chairs, bar high chairs, and slab bolsters.

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Superstructure Details

STA. 1655+72.50, 37' Lt. (℄ I-29) — Turn-in Date: September 2026

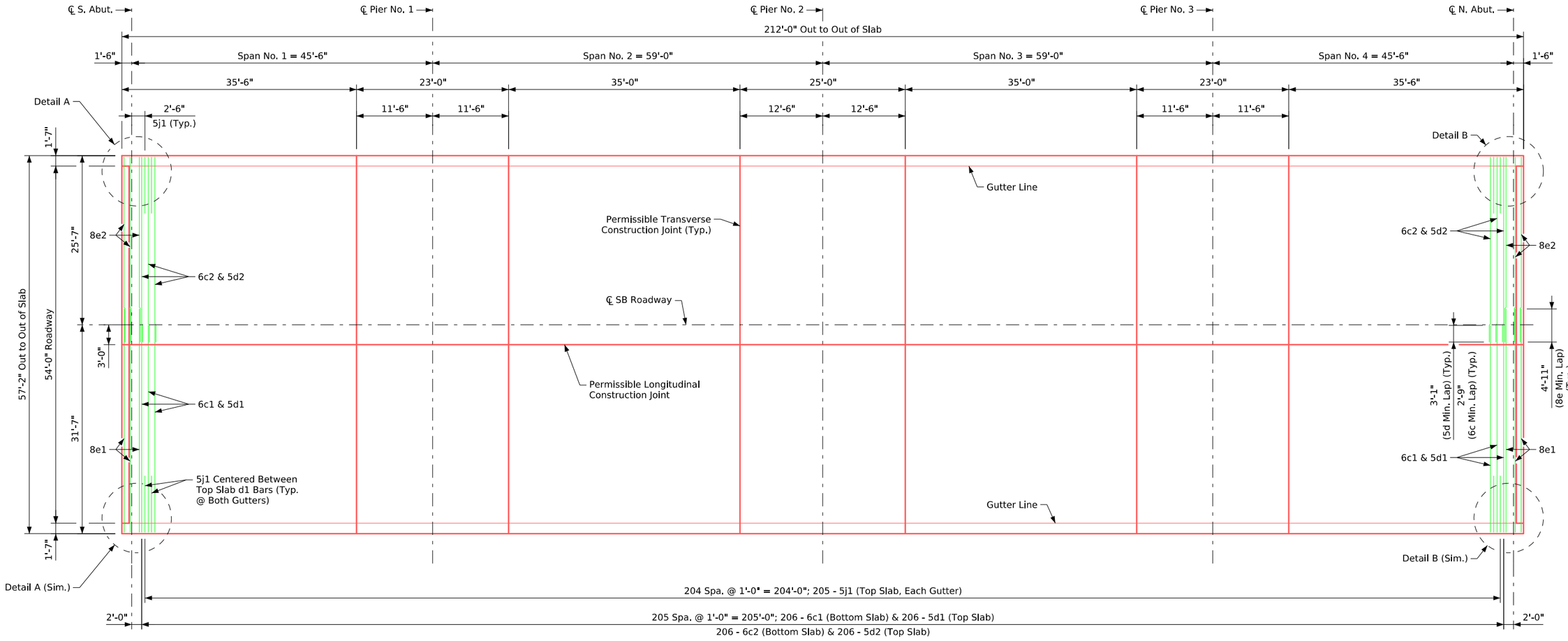
Harrison County

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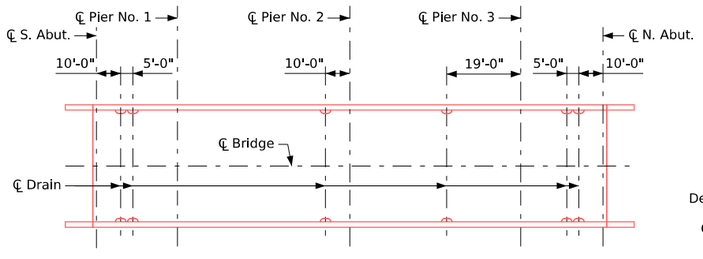
Design No. 0227 — Design Sheet No. 12 of 23 — FHWA No. 28251

FILE NO. 32382	ENGLISH	DESIGN TEAM ECS\FG\EES	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.35

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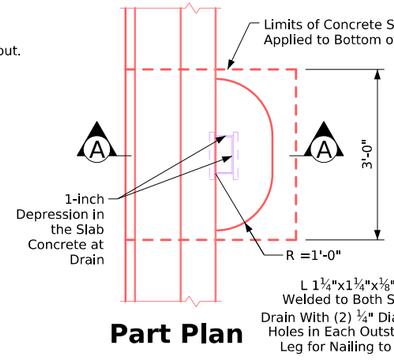
Transverse Reinforcing Steel Layout & Concrete Placement Diagram



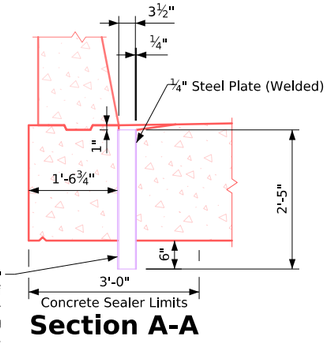
Floor Drain Location

Note:
Weight of one drain = 48 Lbs.
(Based on Rolled Tube)

Note: 4" x 8" Outside dimension rolled tube with 1/4" wall thickness may be substituted for the welded drain shown.



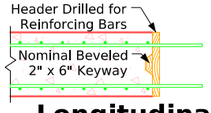
Part Plan



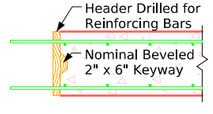
Section A-A

Floor Drain Details

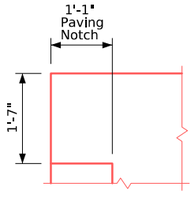
Note: Drains are to be galvanized. Include the cost of drains in the price bid for "High Performance Structural Concrete". (12 Drains Required)



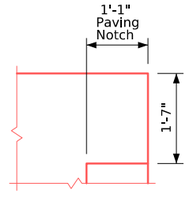
Longitudinal Construction Joint



Transverse Construction Joint



Detail A



Detail B

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Superstructure Details

STA. 1655+72.50, 37' Lt. (℄ I-29)

Turn-in Date: September 2026

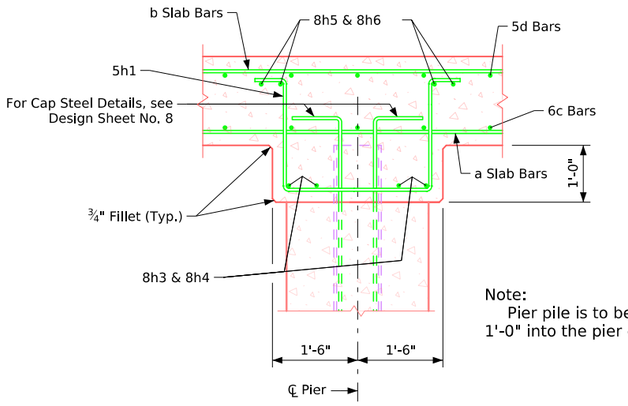
Harrison County

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Design No. 0227 — Design Sheet No. 13 of 23 — FHWA No. 28251

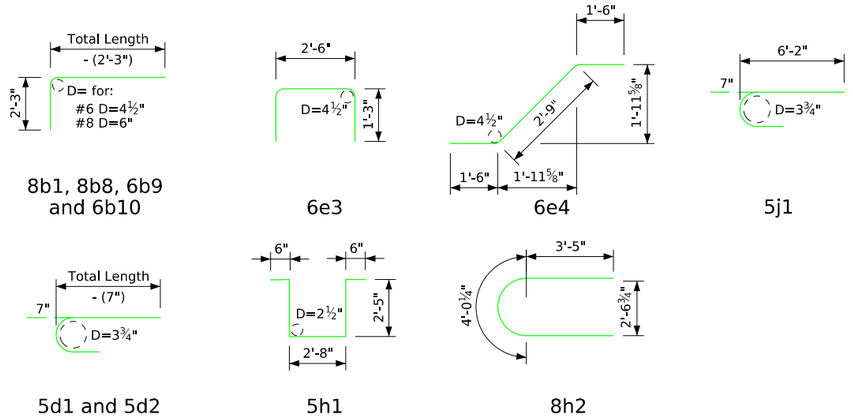
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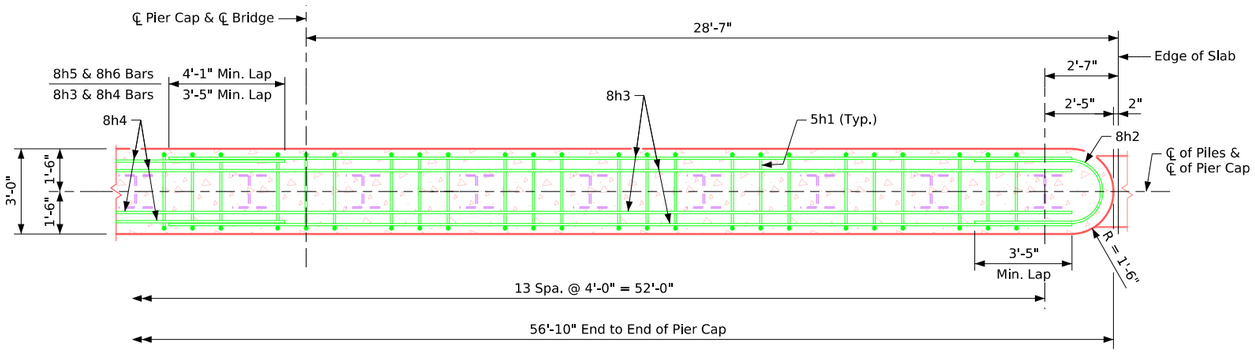
Note:
Pier pile is to be embedded 1'-0" into the pier cap.

Bent Bar Details

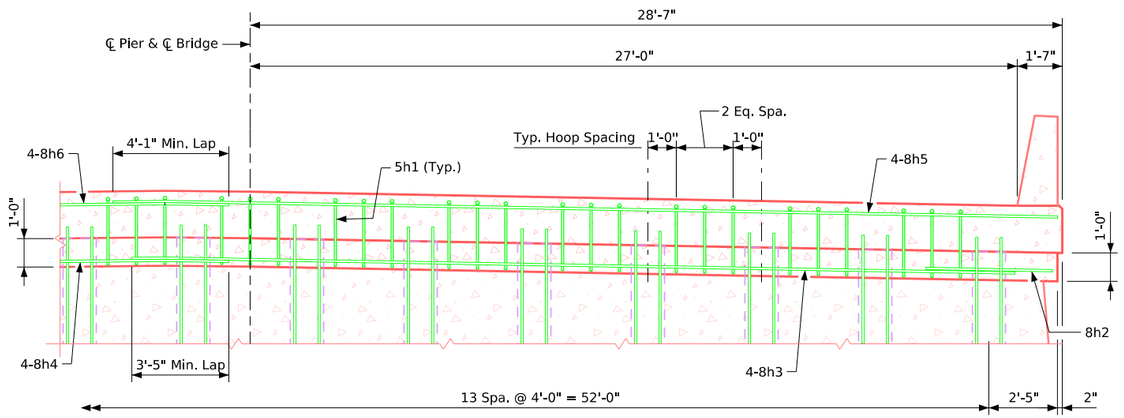


Note: All Dimensions Are Out To Out. D=pin Diameter.

Typical Cap Section



Part Plan View at Pier



Part Section View at Pier

Looking Upstation

Epoxy Coated Reinforcing Bar List

Bar	Location	Shape	No.	Length	Weight
10a1	Slab, Longitudinal, Bottom		78	31'-7"	10,600
10a2	Slab, Longitudinal, Bottom		156	47'-8"	31,997
10a3	Slab, Longitudinal, Bottom		78	48'-1"	16,138
9a4	Slab, Longitudinal, Bottom		78	37'-11"	10,056
9a5	Slab, Longitudinal, Bottom		78	42'-6"	11,271
9a6	Slab, Longitudinal, Bottom, at Rail		8	44'-3"	1,204
9a7	Slab, Longitudinal, Bottom, at Rail		8	56'-0"	1,523
10a8	Slab, Longitudinal, Bottom, at Rail		8	37'-11"	1,305
10a9	Slab, Longitudinal, Bottom, at Rail		8	42'-6"	1,463
9a10	Slab, Longitudinal, Bottom, at Rail		12	18'-10"	768
8b1	Slab, Longitudinal, Top		78	6'-7"	1,371
11b2	Slab, Longitudinal, Top		78	28'-1"	11,638
11b3	Slab, Longitudinal, Top		78	31'-3"	12,950
11b4	Slab, Longitudinal, Top		78	28'-3"	11,707
11b5	Slab, Longitudinal, Top		78	26'-10"	11,120
11b6	Slab, Longitudinal, Top		39	27'-10"	5,767
6b7	Slab, Longitudinal, Top		78	40'-5"	4,735
8b8	Slab, Longitudinal, Top		78	33'-1"	6,890
6b9	Slab, Longitudinal, Top, at Rail		8	35'-10"	431
6b10	Slab, Longitudinal, Top, at Rail		8	42'-11"	516
6b11	Slab, Longitudinal, Top, at Rail		8	26'-11"	323
11b12	Slab, Longitudinal, Top, at Rail		8	35'-3"	1,498
11b13	Slab, Longitudinal, Top, at Rail		4	42'-0"	893
11b14	Slab, Longitudinal, Top, at Rail		8	19'-5"	825
11b15	Slab, Longitudinal, Top, at Rail		4	23'-2"	492
6c1	Slab, Transverse, Bottom		206	31'-4"	9,695
6c2	Slab, Transverse, Bottom		206	28'-3"	8,741
5d1	Slab, Transverse, Top		206	32'-3"	6,929
5d2	Slab, Transverse, Top		206	28'-10"	6,195
8e1	Slab, Transverse, at Abutment		18	33'-6"	1,610
8e2	Slab, Transverse, at Abutment		18	28'-3"	1,358
6e3	Slab, Hairpins, at Abutment		120	5'-0"	901
6e4	Slab, Diagonal, at Abutment		120	5'-9"	1,036
5h1	Slab, Monolithic Pier Cap		117	8'-6"	1,037
8h2	Slab, Monolithic Pier Cap		6	10'-11"	175
8h3	Slab, Monolithic Pier Cap		12	30'-6"	977
8h4	Slab, Monolithic Pier Cap		12	26'-9"	857
8h5	Slab, Monolithic Pier Cap		12	32'-8"	1,047
8h6	Slab, Monolithic Pier Cap		12	28'-3"	905
5j1	Top of Slab, Transverse, at Rail		410	6'-9"	2,887
5m1	Wing, Vertical		40	4'-5"	184
5n1	Wing, Horizontal		48	6'-8"	334
				Epoxy Coated Reinforcing Total Weight (lbs.)	202,349

Stainless Reinforcing Bar List

Bar	Location	Shape	No.	Length	Weight
8u1	Abutment Paving Notch		54	2'-1"	300
				Stainless Reinforcing Total Weight (lbs.)	300

Note:
For pier reinforcing, see Design Sheet No. 7.

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans 59'-0" Interior Spans

Superstructure Details

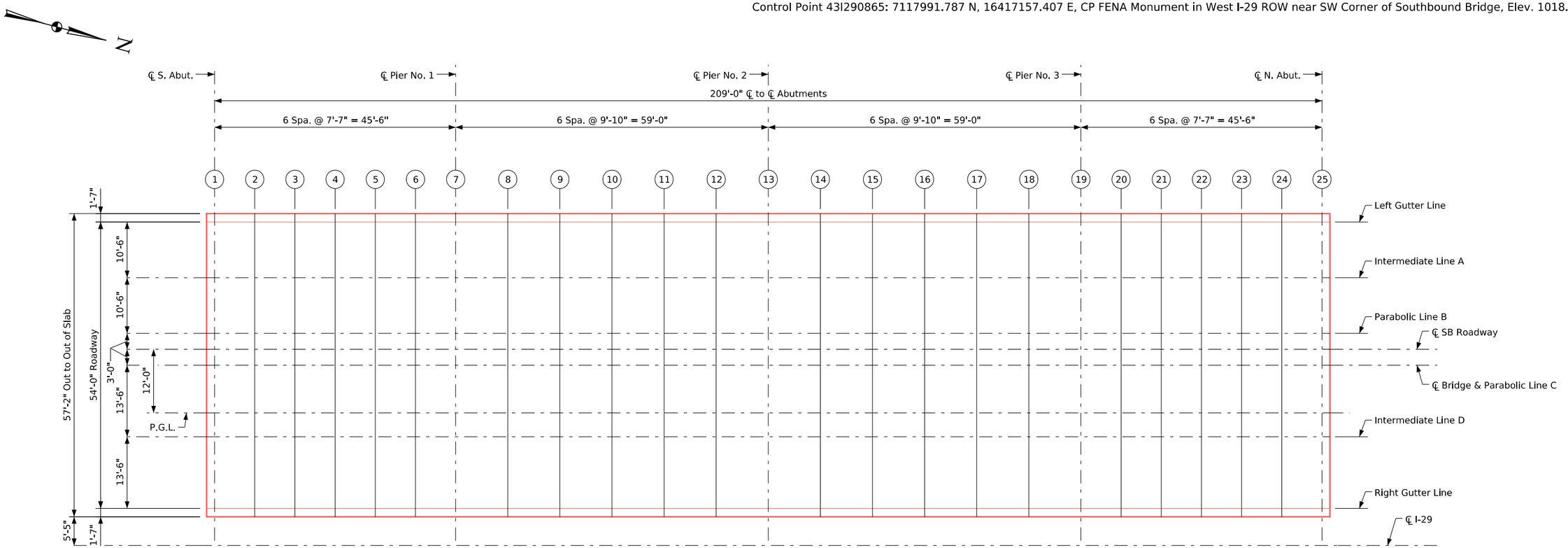
STA. 1655+72.50, 37' Lt. (℄ I-29) Turn-in Date: September 2026

Harrison County

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Design No. 0227 Design Sheet No. 14 of 23 FHWA No. 28251

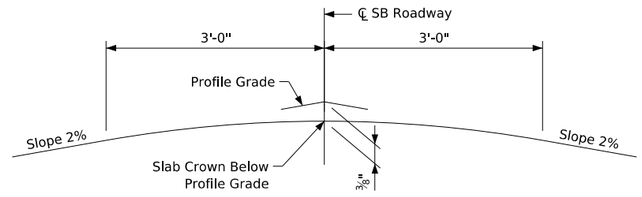
Control Point 43I290865: 7117991.787 N, 16417157.407 E, CP FENA Monument in West I-29 ROW near SW Corner of Southbound Bridge, Elev. 1018.886



Top of Slab Elevations

Table of Top of Slab Elevations													
	℄ South Abut.						℄ Pier No. 1						℄ Pier No. 2
Line \ Point	1	2	3	4	5	6	7	8	9	10	11	12	13
Left Gutter Line	1020.77	1020.77	1020.78	1020.79	1020.80	1020.80	1020.80	1020.80	1020.80	1020.79	1020.79	1020.78	1020.76
Intermediate Line A	1020.98	1020.98	1020.99	1021.00	1021.01	1021.01	1021.01	1021.01	1021.01	1021.00	1021.00	1020.99	1020.97
Parabolic Line B	1021.19	1021.19	1021.20	1021.21	1021.22	1021.22	1021.22	1021.22	1021.22	1021.21	1021.21	1021.20	1021.18
℄ SB Roadway	1021.22	1021.22	1021.23	1021.24	1021.25	1021.25	1021.25	1021.25	1021.25	1021.24	1021.24	1021.23	1021.21
℄ Bridge & Parabolic Line C	1021.19	1021.19	1021.20	1021.21	1021.22	1021.22	1021.22	1021.22	1021.22	1021.21	1021.21	1021.20	1021.18
Intermediate Line D	1020.92	1020.92	1020.93	1020.94	1020.95	1020.95	1020.95	1020.95	1020.95	1020.94	1020.94	1020.93	1020.91
Right Gutter Line	1020.65	1020.65	1020.66	1020.67	1020.68	1020.68	1020.68	1020.68	1020.68	1020.67	1020.67	1020.66	1020.64

Table of Top of Slab Elevations												
						℄ Pier No. 3						℄ North Abut.
Line \ Point	14	15	16	17	18	19	20	21	22	23	24	25
Left Gutter Line	1020.75	1020.73	1020.71	1020.69	1020.66	1020.64	1020.61	1020.59	1020.57	1020.54	1020.52	1020.50
Intermediate Line A	1020.96	1020.94	1020.92	1020.90	1020.87	1020.85	1020.82	1020.80	1020.78	1020.75	1020.73	1020.71
Parabolic Line B	1021.17	1021.15	1021.13	1021.11	1021.08	1021.06	1021.03	1021.01	1020.99	1020.96	1020.94	1020.92
℄ SB Roadway	1021.20	1021.18	1021.16	1021.14	1021.11	1021.09	1021.06	1021.04	1021.02	1020.99	1020.97	1020.95
℄ Bridge & Parabolic Line C	1021.17	1021.15	1021.13	1021.11	1021.08	1021.06	1021.03	1021.01	1020.99	1020.96	1020.94	1020.92
Intermediate Line D	1020.90	1020.88	1020.86	1020.84	1020.81	1020.79	1020.76	1020.74	1020.72	1020.69	1020.67	1020.65
Right Gutter Line	1020.63	1020.61	1020.59	1020.57	1020.54	1020.52	1020.49	1020.47	1020.45	1020.42	1020.40	1020.38



Parabolic Crown Template

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Top of Slab Elevations

STA. 1655+72.50, 37' Lt. (℄ I-29)

Turn-in Date: September 2026

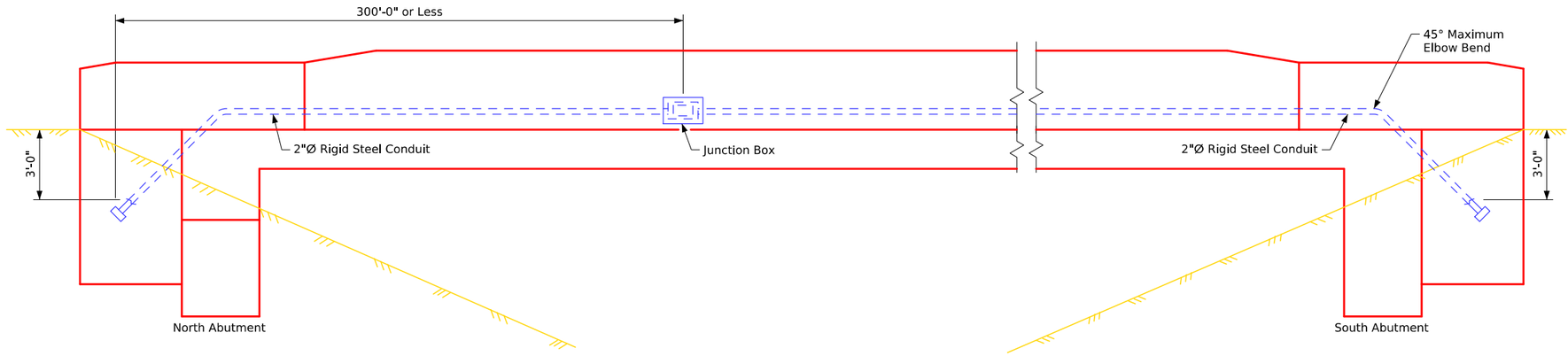
Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0227 — Design Sheet No. 15 of 23 — FHWA No. 28251

FILE NO. 32382	ENGLISH	DESIGN TEAM ECS\FG\EES	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.38

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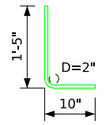


Exterior Elevation - West Barrier Rail - Looking East

Epoxy Coated Reinf. Steel - One Rail

Bar	Location	Shape	No.	Length	Weight
4s1	Rail Conduit		69	2'-3"	104
	Epoxy Reinforcing Total Weight (lbs.)				104

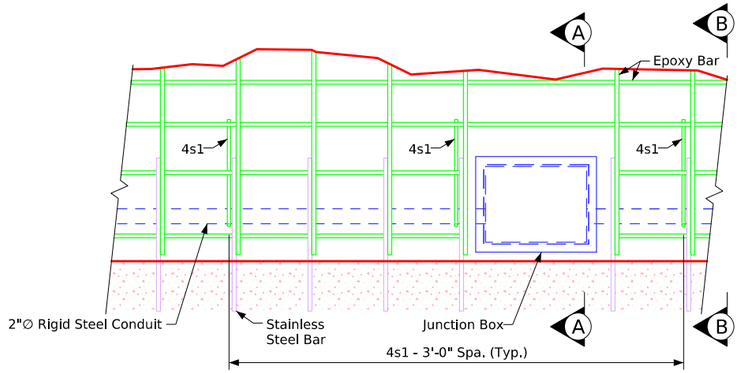
Bent Bar Details



4s1

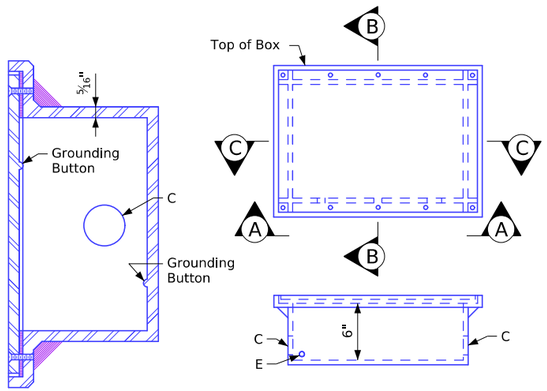
Note: All Dimensions are out to out. D = Pin Diameter

Note: Reinforcing steel quantities are included on the Summary Quantities Sheet.



Conduit Support - Rail Elev. Detail

Adjust reinforcing to clear junction box.
Junction boxes are to be placed no further than 300'-0" apart.

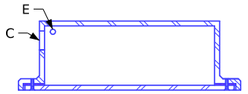


Section B-B

View A-A

LI-104 Junction Box

Watertight, Cast Iron - Flush Mount



Section C-C

Bossed For	Hole	For Conduit Size
5 Threads	C	2" Ø Rigid Steel
None	E	½" Ø Copper Drain

Note: The grounding buttons are to be blind drilled and tapped for ⅜"Ø x 0'-0¾" bolts.

Lighting Notes:

See LI-104 Standard Road Plan for additional information on junction boxes.

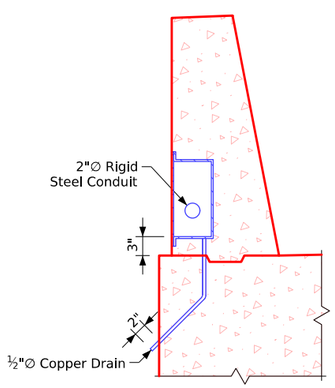
Construction shall conform to the current Iowa D.O.T. Standard and Supplemental Specifications and Special Provisions.

Conduit installation shall be in accordance with Article 2523.03, N, of the Standard Specifications.

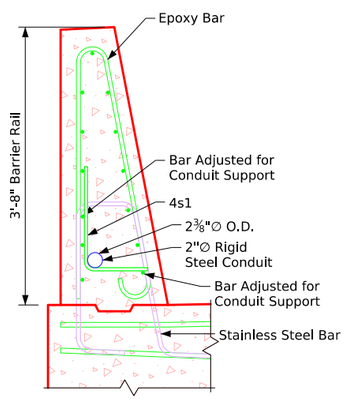
All "C" entrance holes in junction boxes shall be drilled and tapped for the specified conduit size. All other holes shall have a concrete - tight slip fit. Conduit ends shall not protrude into junction box more than ¼". Drain pipe end shall be flush with inside surface of box. Grounding buttons shall be located approximately 3" from the inside surface of the box wall, and not closer than 3" to the edge of any hole in the box floor. Holes for drain pipe shall be placed in the low corner of the box, with a minimum clearance of 1" between the edge of the hole and the inside surface of the box wall. Typical details are shown on this sheet.

The rigid steel conduit, junction boxes and fittings including labor and any additional work to do the installation is considered incidental to the cost of the concrete barrier rail.

Stainless-steel reinforcement shall not be allowed to be in contact with the uncoated reinforcement, bare metal forming hardware, or to galvanized attachments or galvanized conduit.



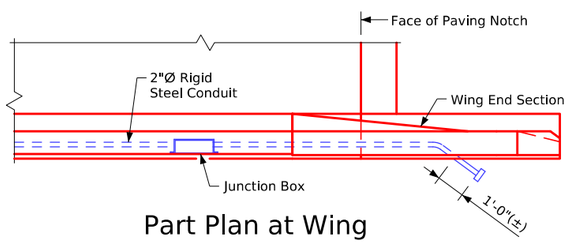
Section A-A Thru Junction Box



Section B-B - Conduit Support

Only used in rail with conduit, use 3'-0" spacing. Galvanized conduit shall not come into contact with the stainless steel reinforcing. Conduit can only be 2" diameter.

Conduit to be installed in West Barrier Rail only.



Part Plan at Wing

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Conduit Details

STA. 1655+72.50, 37' Lt. (℄ I-29) — Turn-in Date: September 2026

Harrison County

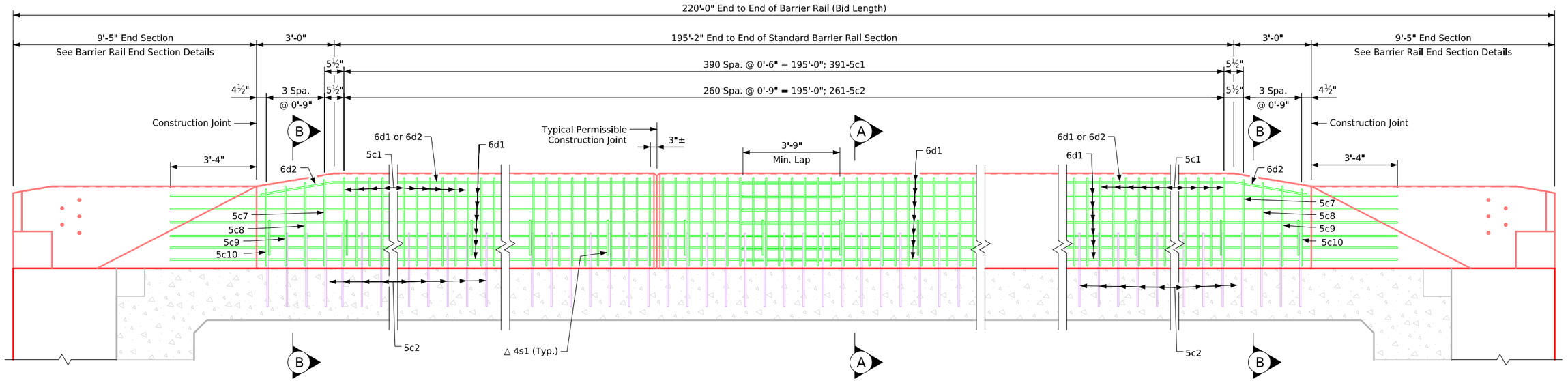
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0227 — Design Sheet No. 16 of 23 — FHWA No. 28251

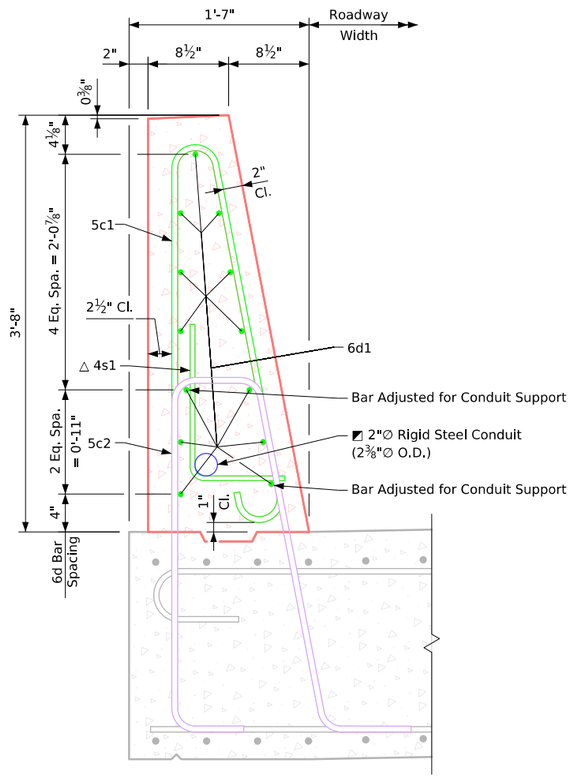
Revised 09-16: Added Conduit Support Rail Detail to Keep Conduit Isolated from the Stainless Steel Reinforcing.
Issued 09-03.
DeckRailBridges.dgn - 1030As2 -This Sheet Re-Issued 05-2024. Sheet Format Update.

FILE NO. 32382	ENGLISH	DESIGN TEAM ECS\FG\EES	Lighting Details (2 of 2)	Standard Sheet 1030As2 (Modified)	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.39

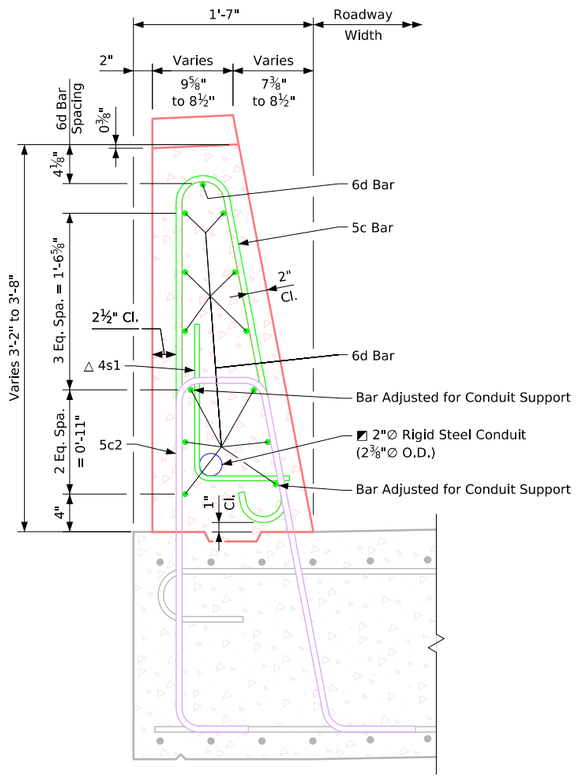
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Elevation of Barrier Rail



Part Section A-A



Part Section B-B

Notes:
For Barrier Rail Notes, joint details, reinforcing steel details and quantities, see Design Sheet No. 18.
◩ Conduit to be placed in West Barrier Rail only.
△ For details and quantities, see Design Sheet No. 16.

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Barrier Rail Details

STA. 1655+72.50, 37' Lt. (℄ I-29) — Turn-in Date: September 2026

Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0227 — Design Sheet No. 17 of 23 — FHWA No. 28251

FILE NO. 32382	ENGLISH	DESIGN TEAM ECS\FG\EES	Barrier Rail (TSS TL-5) (Stainless) - Integral Abut. w/Wing Ext. (1 of 2)	Standard Sheet 1020SF-1 (Modified)	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.40	

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Revised 09-16: Changed 5c1 Bar Length to 7'-5" (It was 5'-11" in Error).
Issued 04-14. Added Stainless Steel Reinforcing Bar List and Changed 5c2, 5c3, 5c14 Bars to Stainless Steel.
DeckRailBridges.dgn - 1020SF-1 -This Sheet Re-Issued 05-2024. Revised to Single Slope Barrier Shape. Sheet Format Update. (Sheet Number was Originally 1020SF).

Barrier Rail Notes:

Minimum clear distance from face of concrete to near reinforcing bar is to be 2" unless otherwise noted or shown.

The permissible construction joints are to be placed between vertical bars at a minimum spacing of 20 feet. Construction joint contact surfaces are to be coated with an approved bond breaker.

Cost of the joint sealer and bond breaker shall be considered incidental to other construction.

All barrier rail reinforcing steel is to be either epoxy coated or stainless steel as shown. Stainless steel reinforcing shall be deformed bar Grade 60 meeting the requirements of construction and materials I.M. 452.

The concrete barrier rail is to be bid on a lineal foot basis. The number of linear feet of barrier rail installed will be paid for at the contract price per lineal foot based on plan quantities. Price bid for concrete barrier railing shall be full compensation for furnishing all material, excluding reinforcing steel, and all of the equipment and labor required to erect the rail in accordance with these plans and current specifications. The rigid steel conduit, junction boxes and fittings including labor and any additional work to do the installation is considered incidental to the cost of the concrete barrier rail.

The joint sealer shall be light gray nonsag latex caulking sealer marketed for outdoor use. No testing or certification is required.

Top of the barrier rail is to be parallel to the theoretical ℄ grade.

All exposed corners on the top of the barrier and all other corners 90° or sharper to be filleted with a ¾" dressed and beveled strip.

Cross sectional area of the Standard and Special Sections of the barrier rail = 3.90 square feet, except the 3'-0" sloped ends at the end sections.

Epoxy Coated Reinf. Steel - Two Rails

Section	Bar	Location	Shape	No.	Length	Weight
Standard Sections	5c1	Rail, Vertical		782	7'-6"	6,117
	5c7	Rail, Vertical, Sloped Ends		4	7'-4"	31
	5c8	Rail, Vertical, Sloped Ends		4	7'-1"	30
	5c9	Rail, Vertical, Sloped Ends		4	6'-10"	29
	5c10	Rail, Vertical, Sloped Ends		4	6'-7"	27
	6d1	Rail, Longitudinal		152	38'-0"	8,676
	6d2	Rail, Longitudinal, Top		4	34'-7"	208
					Epoxy Reinf. Total Weight (lbs.)	15,118

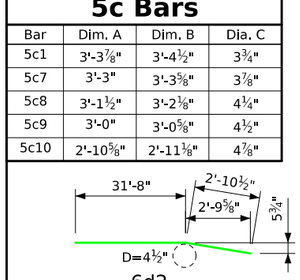
Stainless Steel Reinf. Steel - Two Rails

Section	Bar	Location	Shape	No.	Length	Weight
Standard Sections	5c2	Rail, Vertical		522	8'-3"	4,492
					Stainless Steel Reinf. Total Weight (lbs.)	4,492

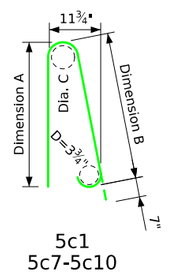
Bent Bar Details

5c Bars

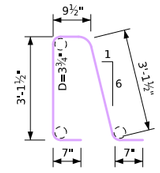
Bar	Dim. A	Dim. B	Dia. C
5c1	3'-3⅞"	3'-4½"	3¾"
5c7	3'-3"	3'-3⅝"	3⅞"
5c8	3'-1½"	3'-2⅛"	4¼"
5c9	3'-0"	3'-0⅝"	4½"
5c10	2'-10⅝"	2'-11⅛"	4⅞"



6d2



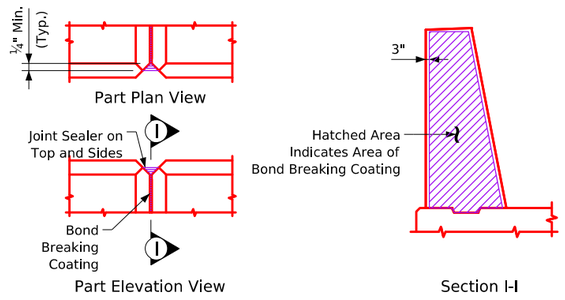
5c1
5c7-5c10



5c2

Note: All dimensions are out to out. D = Pin Diameter

Note: Reinforcing steel quantities are included on the Summary Quantities Sheet.



Barrier Rail Joint Details

Concrete Placement Summary

Section	Total
Δ Standard Section 402'-4" at 0.144 cu. yd. per ft.	58.0
Total (cu. yd.)	58.0
Note: Δ Deduct 0.021 cu. yd. for each sloped end.	

Concrete Barrier Rail Quantities

Item	Unit	Quantity
Concrete Barrier Railing, 3'-8"	L.F.	440.0

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Barrier Rail Details

STA. 1655+72.50, 37' Lt. (℄ I-29) — Turn-in Date: September 2026

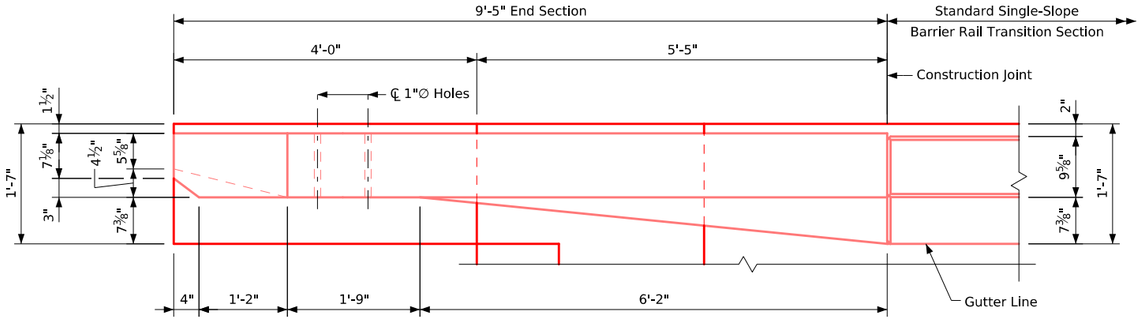
Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

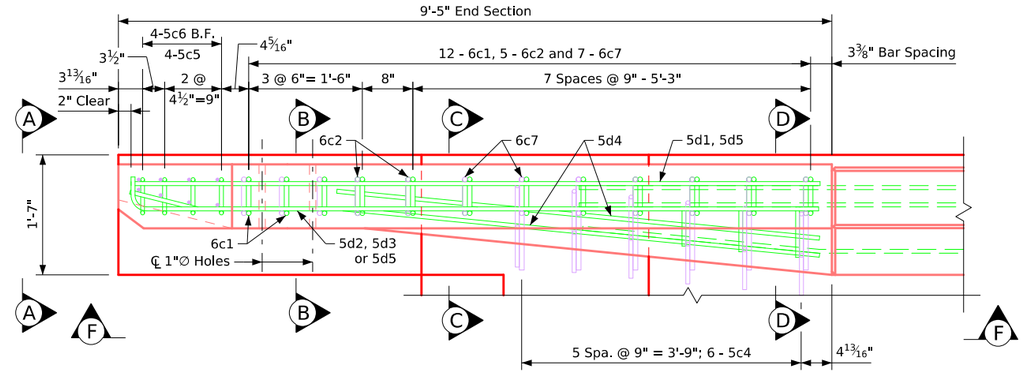
Design No. 0227 — Design Sheet No. 18 of 23 — FHWA No. 28251

FILE NO. 32382	ENGLISH	DESIGN TEAM ECS\FG\EES	Barrier Rail (TSS TL-5) (Stainless) - Integral Abut. w/Wing Ext. (2 of 2)	Standard Sheet 1020SF-2 (Modified)	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.41	

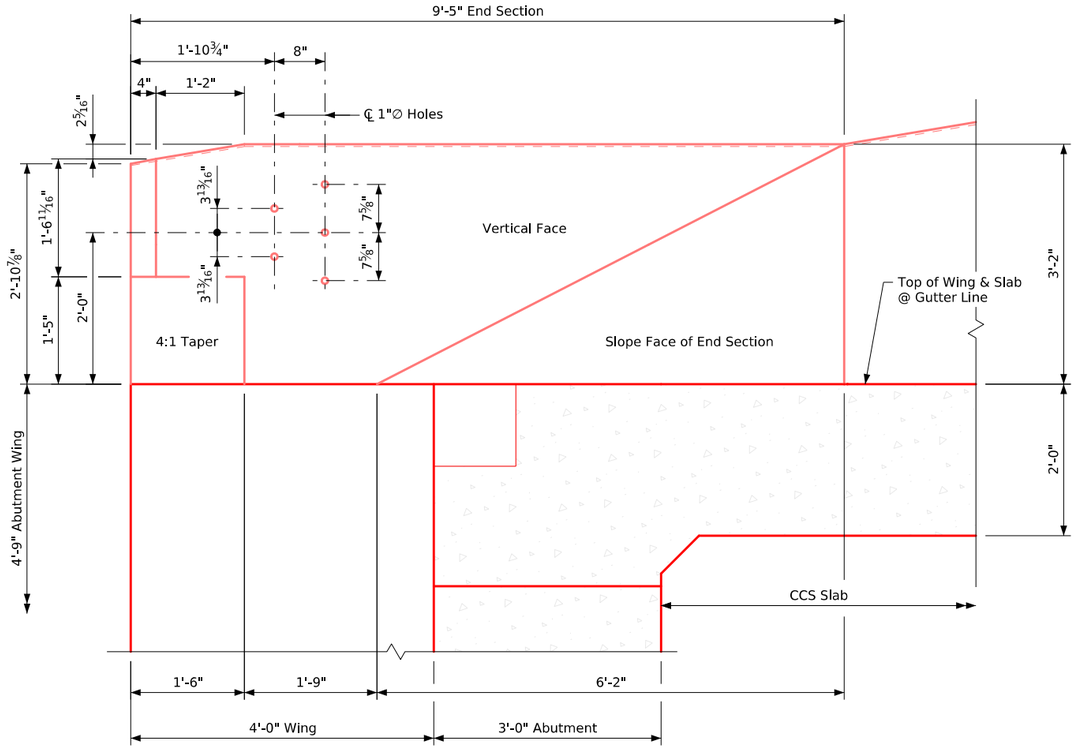
DeckRailBridges.dgn - 1020SF-2 -This Sheet Issued 05-2024. Additional Sheet for Clarity. (Sheet Number was Originally 1020SF).



Part Plan View

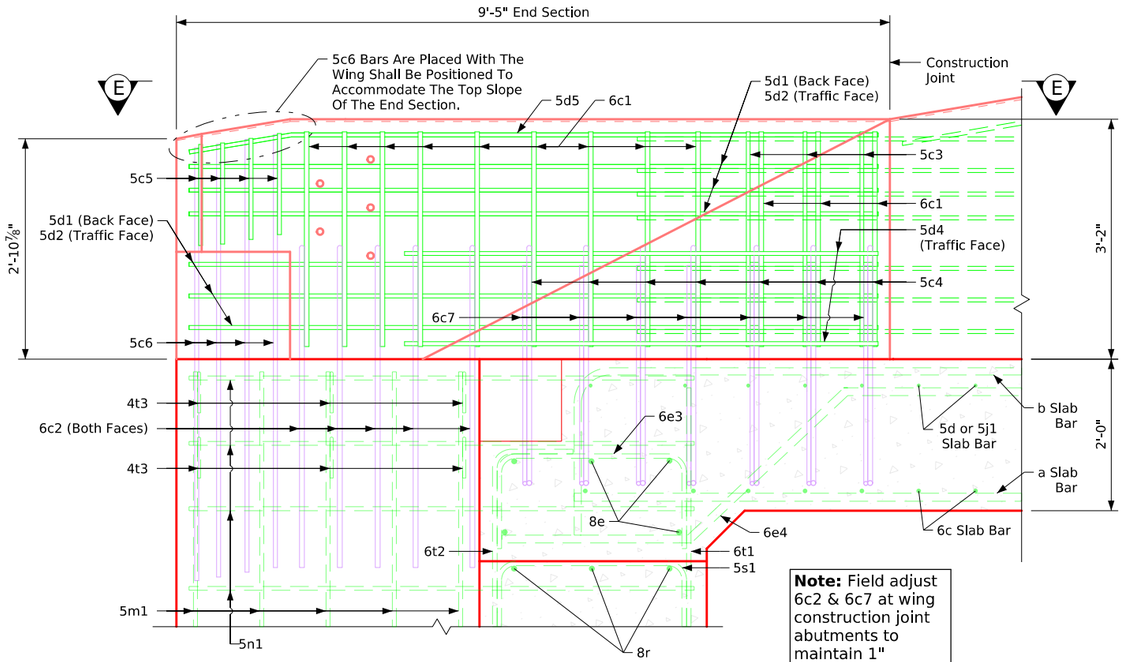


Part View E-E



Part Elevation View

Provide 5 holes formed with 1"Ø plastic conduit.
Cost to be included in price of bid for "Concrete Barrier Railing, 3'-8"".



Note: Field adjust 6c2 & 6c7 at wing construction joint abutments to maintain 1" minimum cover.

Part View F-F

Notes:

4t3 placement: Six bars each at the top two rows of the 5n1 bars in the abutment wing to provide construction tie locations for vertical barrier bars.

Construction joint between the top of the abutment wing and the single-slope barrier rail is roughened concrete.

6c2, 5c4, 5c6, 6c7, 5t4, and 4t3 bars are to be placed with the abutment wing.

Dashed lines below the top of the wing indicate abutment wing and slab reinforcing steel. See Superstructure Details Sheets for placement.

For Bar List, Bent Bar Details, View A-A, Sections B-B, C-C, and D-D see Design Sheet No. 20.

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Barrier Rail End Section Details

STA. 1655+72.50, 37' Lt. (℄ I-29) — Turn-in Date: September 2026

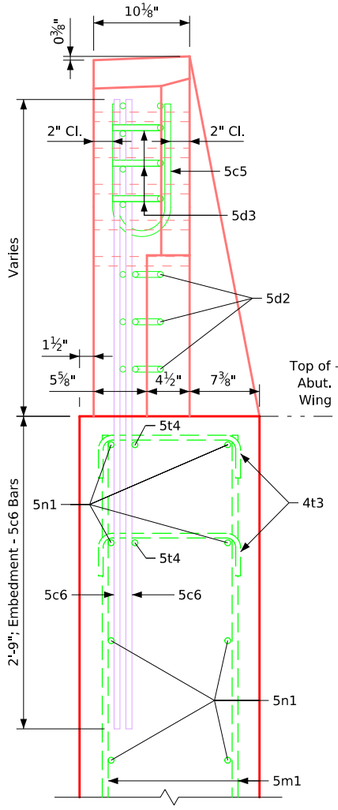
Harrison County

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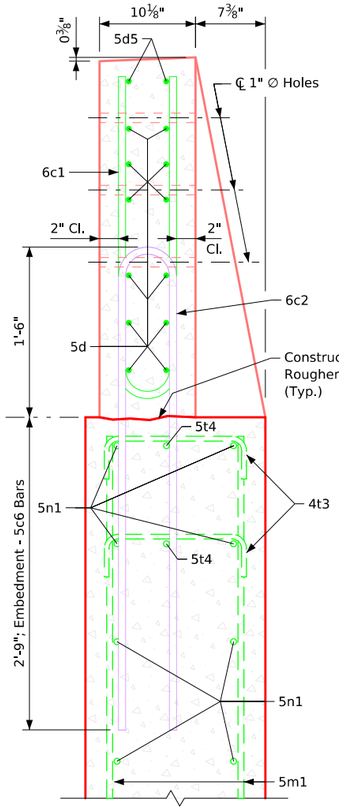
Design No. 0227 — Design Sheet No. 19 of 23 — FHWA No. 28251

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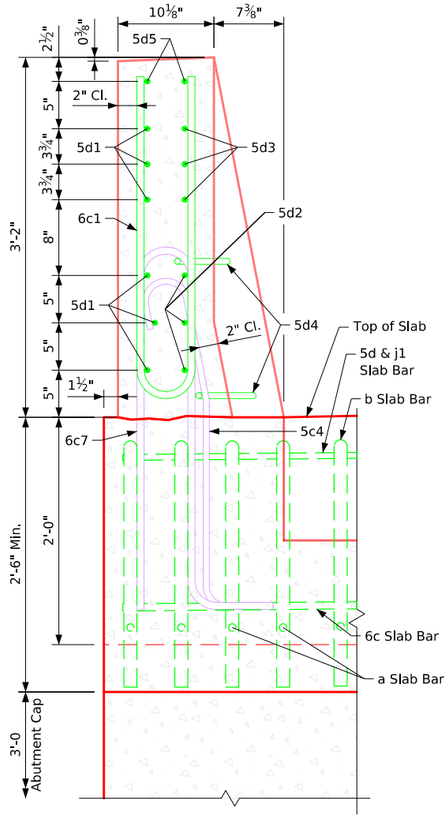
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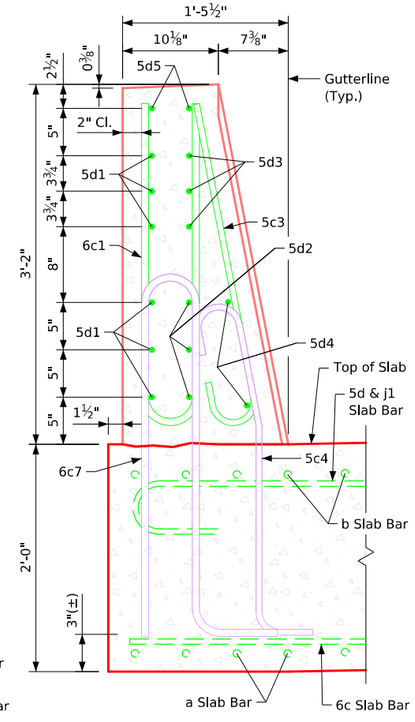
View A-A



Section B-B



Section C-C



Section D-D

Epoxy Coated Reinforcing Steel - One End Section

Bar	Location	Shape	No.	Length	Weight
6c1	Rail, Vertical		12	5'-11"	107
5c3	Rail, Vertical (Traffic Face)		3	3'-5"	11
5c5	Rail, Vertical (End)		4	3'-1"	13
5d1	Rail, Horizontal (Back Face)		6	9'-1"	57
5d2	Rail, Horizontal (Traffic Face)		3	9'-1"	28
5d3	Rail, Horizontal (Traffic Face)		3	9'-7"	30
5d4	Rail, Horizontal (Traffic Face)		2	6'-3"	13
5d5	Rail, Horizontal (Top)		2	9'-1"	19
4t3	Rail, Abutment Wing Tie Bars		6	2'-0"	8
5t4	Wing, Horizontal (Tie Bars)		2	3'-8"	8
				Epoxy Reinforcing Total Weight (lbs.)	294

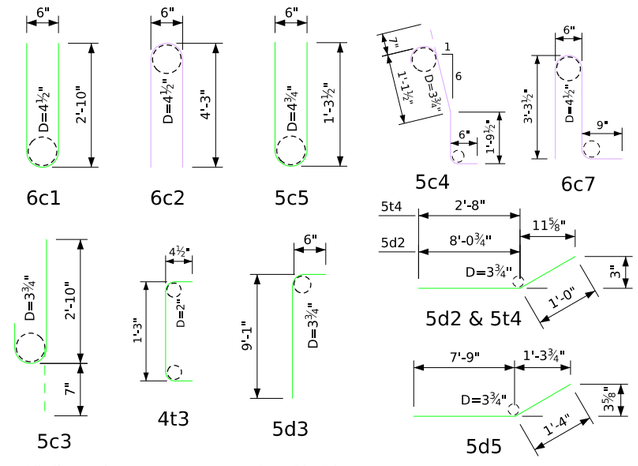
Stainless Steel Reinforcing Steel - One End Section

Bar	Location	Shape	No.	Length	Weight
6c2	Rail, Vertical		5	9'-0"	68
5c4	Rail, Vertical (Traffic Face)		6	4'-0"	25
5c6	Rail, Vertical (End)		8	5'-8"	47
6c7	Rail, Vertical		7	7'-10"	82
				Stainless Steel Reinforcing Total Weight (lbs.)	222

Concrete Placement Summary

Section	Total
Barrier Rail, One End Section	1.0 cu. yd.

Bent Bar Details



Note: All dimensions are out to out. D = Pin Diameter

Note: Reinforcing steel quantities are included on the Summary Quantities Sheet.

Note:
For view and section locations, see Design Sheet No. 19.

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Barrier Rail End Section Details

STA. 1655+72.50, 37' Lt. (℄ I-29)

Turn-in Date: September 2026

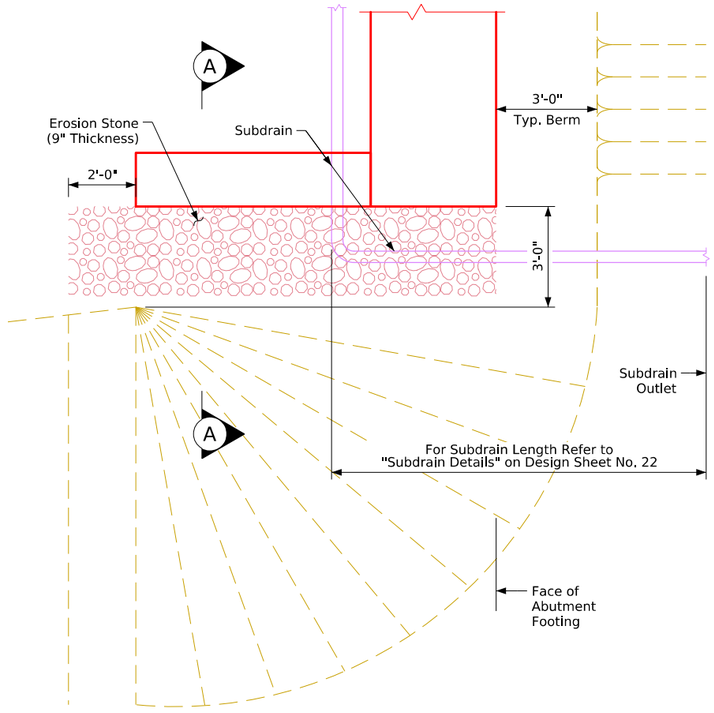
Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0227 | Design Sheet No. 20 of 23 | FHWA No. 28251

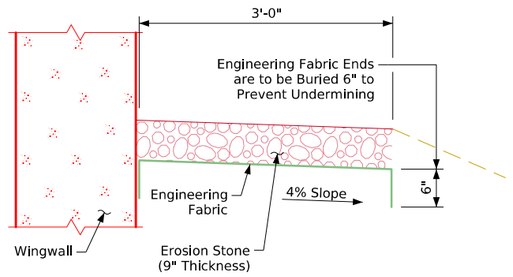
FILE NO. 32382	ENGLISH	DESIGN TEAM ECS\FG\EES	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.43

9:06:49 AM 8/17/2026 ESORENS pw:\\pwhdruscen02.intranet.hdr:HDR_US_Central_02\Documents\IADOT\IDOT-I29_Burcham_Creek_Br_Des\6.0_CAD_BIM\6.2_WIP\0227 - Drafting\Final Design SB I29 Design 0227 209 x 54 CCS Bridge

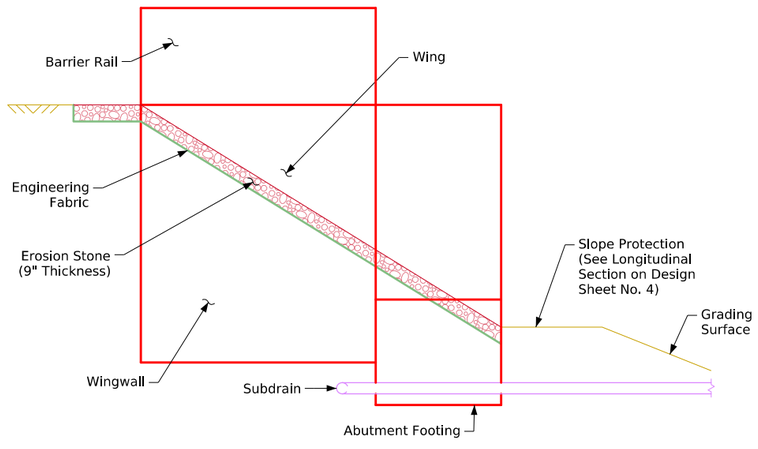


Top View of Wing Armoring

A check shall be made at the subdrain outlet to ensure that it is draining properly during the backfill flooding process.



Section A-A



Profile View of Wing Armoring

General Notes:

Erosion stone shall be placed along the sides of the wings and abutment footing as shown in Section A-A. This is typical at each corner of the bridge unless otherwise noted in the plans. The erosion stone at these locations shall be underlayed with engineering fabric in accordance with Article 4196.01, B, 3, of the Standard Specifications.

The erosion stone shall be in accordance with Section 4130, of the Standard Specifications. Material passing the 3 inch screen but 100% retained on a 1 inch screen may be used as choke stone.

The erosion stone shall be deposited, spread, consolidated and shaped by mechanical or hand methods that will provide uniform 9 inch depth and density and provide uniform surface appearance.

Payment for the bridge wing armoring will be bid per square yard. Cost will include engineering fabric, erosion stone, excavation, shaping, and compaction to dimensions shown in these plans. Bid item shall be "Bridge Wing Armoring - Erosion Stone".

Note:
For Subdrain Notes and details, see Design Sheet No. 22.

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans 59'-0" Interior Spans

Bridge Wing Armoring

STA. 1655+72.50, 37' Lt. (℄ I-29) Turn-in Date: September 2026

Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0227 Design Sheet No. 21 of 23 FHWA No. 28251

Revised 06-14 - Added 2 Feet of Length of Erosion Stone in Front of the Bridge Wing.
Revised 09-2023: Changed direction of Section Director Arrows "A-A" to match what section view "Section A-A" is showing.
ForeSlopeProtectionBridges.dgn - 1005A - This Sheet Issued 06-02.
ForeSlopeProtectionBridges.dgn - 1005A - This Sheet Issued 07-23.

FILE NO. 32382	ENGLISH	DESIGN TEAM ECS\FG\EES	Bridge Wing Armoring for Water Crossings	Standard Sheet 1005A	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.44	

9:06:49 AM 8/17/2026 ESORENS pw:\\pwhdruscen02.intranet.hdr:HDR_US_Central_02\Documents\IADOT\IDOT-I29_Burcham_Creek_Br_Des\6.0_CAD_BIM\6.2_WIP\0227 - Drafting\Final Design SB I29 Design 0227 209 x 54 CCS Bridge

Note: Section A-A is shown on Abutment Backfill Details Sheet on Design Sheet No. 23.

Control Point 43I290865: 7117991.787 N, 16417157.407 E, CP FENA Monument in West I-29 ROW near SW Corner of Southbound Bridge, Elev. 1018.886

Splash Basin Note:

The cost of furnishing and placing splash basins (including excavation, erosion stone or Class E revetment, and engineering fabric) is to be included in the price bid for "High Performance Structural Concrete". No extra payment will be made. The total number of splash basins = 2.

Subdrain Notes:

This plan sheet shows details for placing all subdrains and subdrain outlets required for this structure.

The subdrains shall be 4"Ø and shall be in accordance with Article 4143.01, B, of the Standard Specifications.

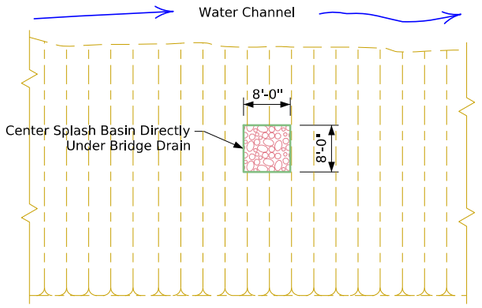
The subdrain outlet shall consist of a length of pipe with a removable rodent guard as detailed on this sheet. The length of the outlet pipe shall be determined by the revetment and it's placement location. The Contractor is to ensure the outlet pipe is adequately strong enough and will not be damaged when revetment is placed. A check will be made at the subdrain outlet to ensure that the subdrain is not damaged and is draining properly during the backfill flooding process. If a metal outlet pipe is used, it shall be 6"Ø and coupled to the 4"Ø subdrain in one of the two following ways.

-Use an inside fit reducer coupler (coupler must be inserted a minimum of 1'-0" into the metal outlet pipe).

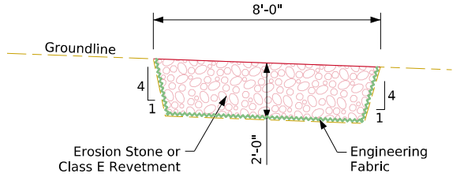
-Insert 1'-0" of the 4"Ø subdrain into the 6"Ø metal outlet pipe, then fully seal the entire opening with grout.

The cost of furnishing and placing subdrain (including excavation), granular backfill, porous backfill, and subdrain outlet is to be included in the price bid for "High Performance Structural Concrete". No extra payment will be made.

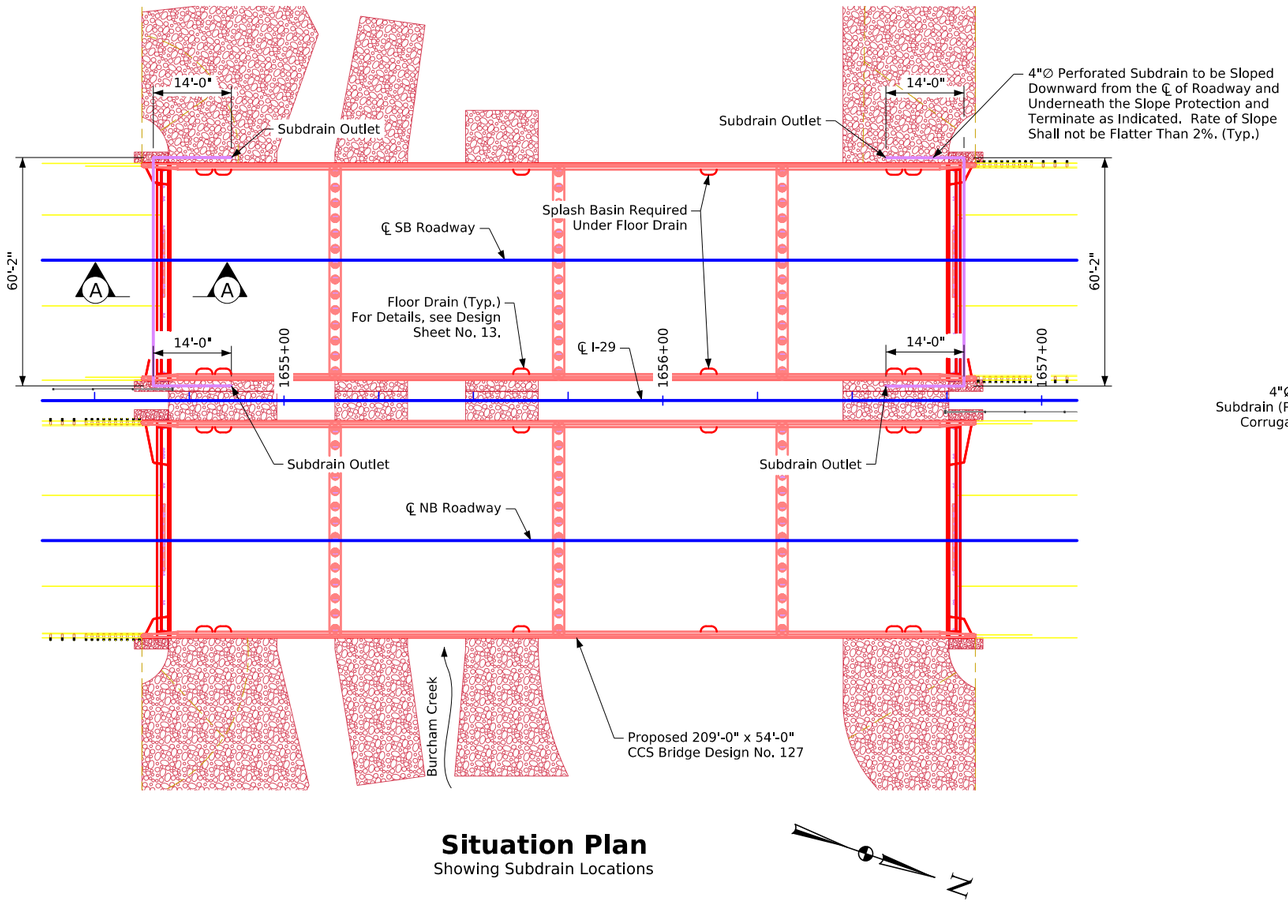
The dimensions shown for the proposed subdrains are based on the proposed grading layout of bridge berms. The dimensions shown are for estimating only. Required lengths and general locations of subdrains are subject to change due to field adjustments of the grading layout.



Splash Basin Under Floor Drain Plan View



Splash Basin Under Floor Drain Typical Section for Existing Grades

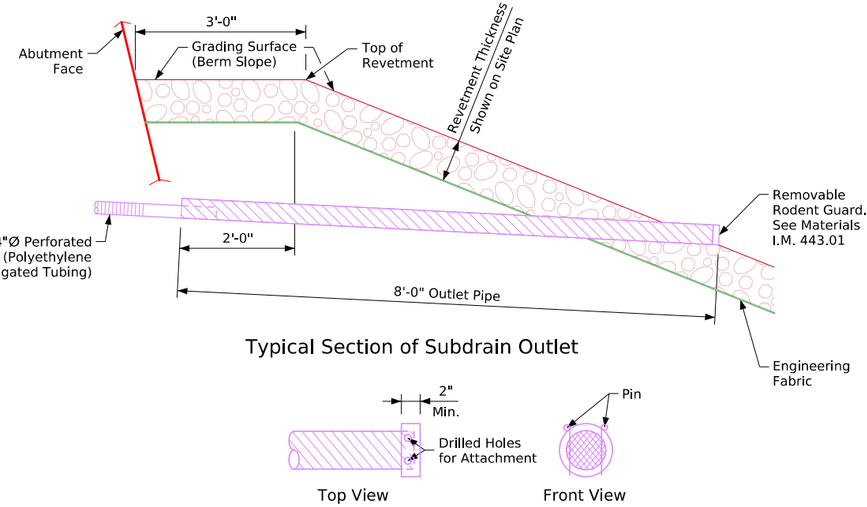


Situation Plan
Showing Subdrain Locations

N

Subdrain Outlet Elevations

Location	Elevation
South Abutment	1014.80
North Abutment	1014.50



Typical Section of Subdrain Outlet

Removable Rodent Guard Details

Revetment Stone (Embedded) Outlet Details

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Subdrain Details

STA. 1655+72.50, 37' Lt. (℄ I-29) — Turn-in Date: September 2026

Harrison County

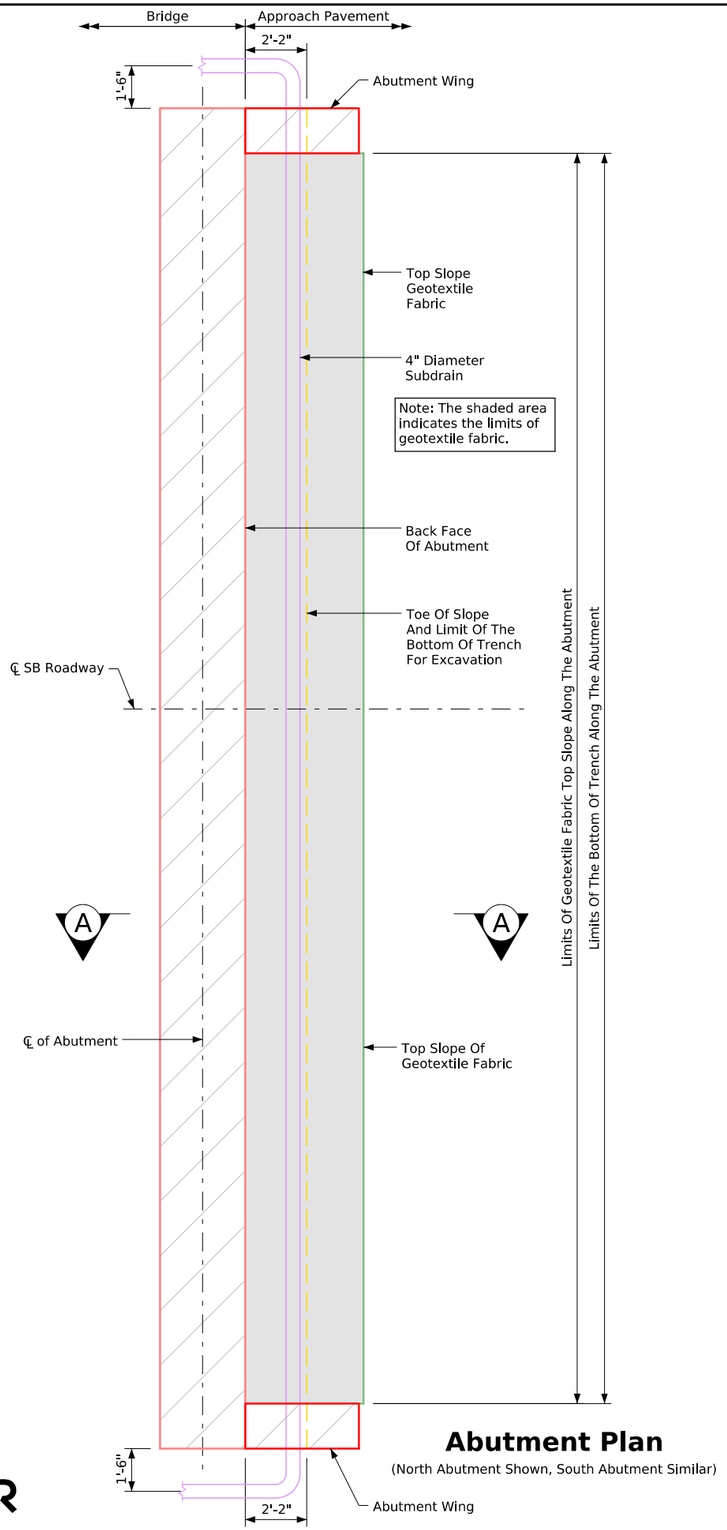
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0227 — Design Sheet No. 22 of 23 — FHWA No. 28251

FILE NO. 32382	ENGLISH	DESIGN TEAM ECS\FG\EES	Subdrain Details for Water Crossings	Standard Sheet 1007C	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.45

9:06:51 AM 8/17/2026 ESORENS pw:\\pwhdruscen02.intranet.hdr:HDR_US_Central_02\Documents\IADOT\IDOT-I29_Burcham_Creek_Br_Des\6.0_CAD_BIM\6.2_WIP\0227 - Drafting\Final Design SB I29 Design 0227 209 x 54 CCS Bridge

Revised 10-14 - Two Additional Foreslope Protection Details were Added Outside of the Border to Show Revetment up to Back of Abutment Footing.
Revised 06-2024: Changed Control Point text (was Bench Mark).
ForeSlopeProtectionBridges.dgn - 1007C - This Sheet Issued 06-02 for Water Crossings.
ForeSlopeProtectionBridges.dgn - 1007C - This Sheet Redrawn 07-23.



Abutment Plan

(North Abutment Shown, South Abutment Similar)

Abutment Backfill Process:

The base of the excavation subgrade behind the abutment shall be graded with a 4% slope away from the abutment footing and a 2% cross slope towards the subdrain outlet. This grading should be completed before the installation of the geotextile and backfill material.

After the subgrade is shaped, the geotextile fabric shall be installed according to the details shown. The fabric is to be placed at the base of the excavation and extended vertically up the abutment backwall, wing walls, and excavation face, reaching a height approximately 1 to 2 feet higher than the porous backfill, as shown in the "Backfill Details" on this sheet. The fabric strips should overlap by about 1 foot and be pinned in place. The fabric should be attached to the abutment using lath folded into the fabric and secured with shallow concrete nails. The fabric against the excavation face must also be pinned.

After the fabric is installed, the subdrain shall be placed directly on it at the toe of the rear excavation slope. A slot should be cut in the fabric where the subdrain exits near the end of the abutment wing wall.

Porous backfill shall be placed and leveled without compaction.

Next, floodable backfill shall be used, followed by surface flooding and vibratory compaction. The floodable backfill material must conform to the Standard Specifications. It should be placed in lifts, surface flooded, and compacted with vibratory compaction to ensure full consolidation, with a maximum loose lift thickness of 2 feet.

Surface flooding for each lift should start at the high point of the subdrain and proceed to the low point where the subdrain exits the fabric. Water should be applied through a 2-inch diameter hose, sprayed in 6-foot to 8-foot increments for 3 minutes per increment to ensure uniform flooding.

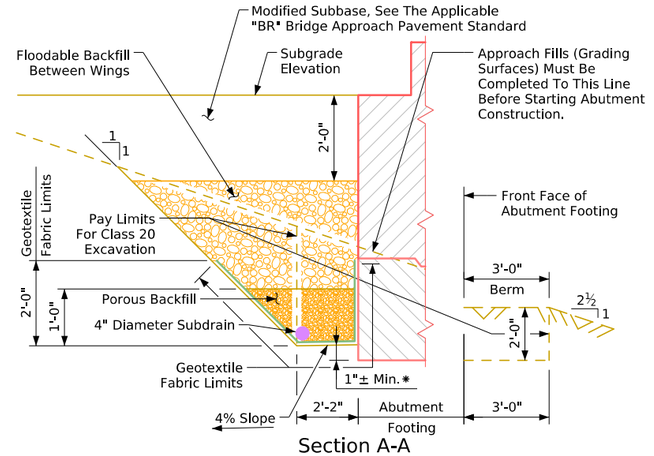
The placement of floodable backfill, flooding, and compaction should continue until the full thickness of the abutment backfill is completed.

Water used for flooding, subdrains, porous backfill, floodable backfill, and geotextile fabric at the bridge abutments will not be measured separately for payment. The cost of this water shall be included in the contract unit price bid for "High Performance Structural Concrete".

Notes:

Subdrain shall slope downward 2% from centerline SB roadway.

The geotextile fabric shall be in accordance with Article 4196.01, B, 6 of the Standard Specifications. If the engineering fabric is lapped the laps shall be a minimum of one foot in length, shingle fashion with up slope lap piece on top and stapled for continuity.



Section A-A

Backfill Details

Note: Geotextile fabric shall be attached to the face of the abutment footing and wings.

✳ Dimension varies due to the 2% subdrain slope.

Note:
For Subdrain Notes and details, see Design Sheet No. 22.

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans — 59'-0" Interior Spans

Abutment Backfill Details

STA. 1655+72.50, 37' Lt. (℄ I-29) — Turn-in Date: September 2026

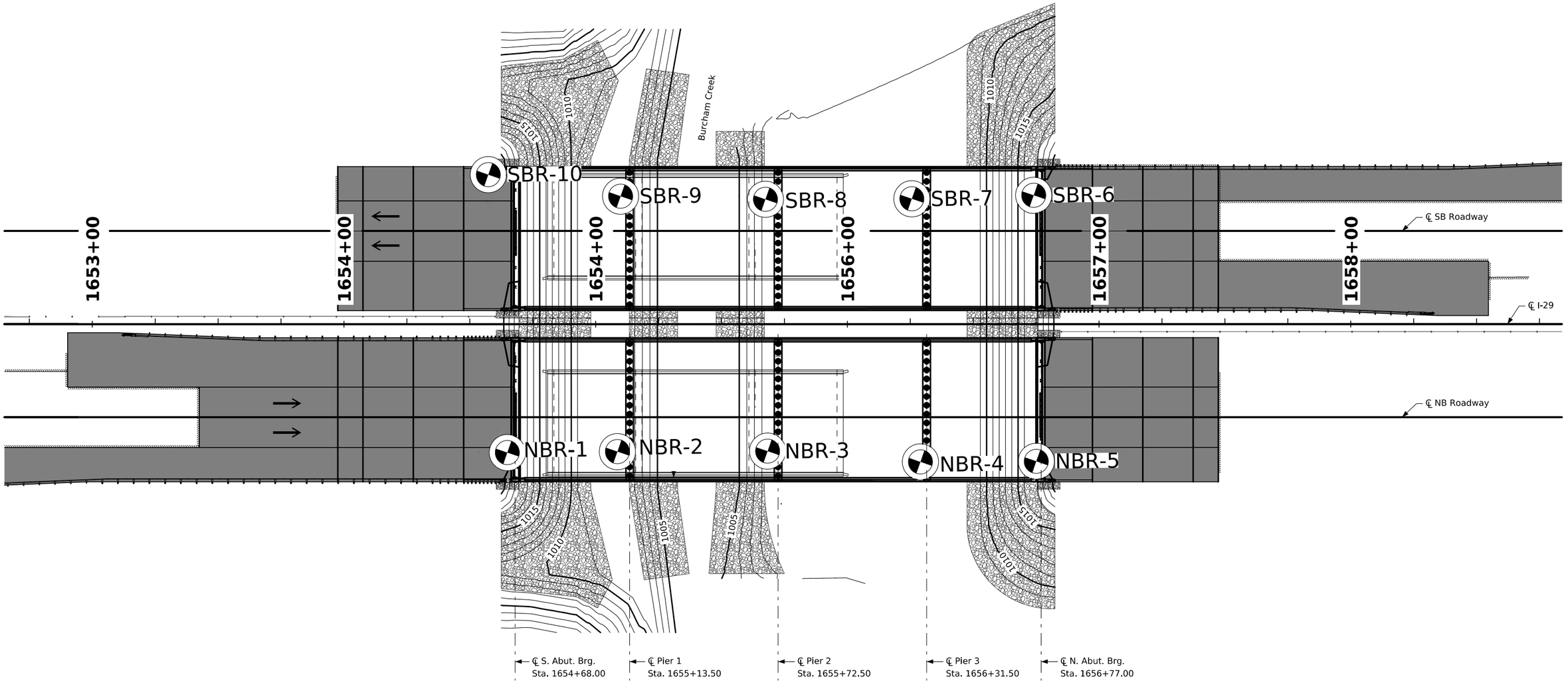
Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0227 — Design Sheet No. 23 of 23 — FHWA No. 28251

FILE NO. 32382	ENGLISH	DESIGN TEAM TLP\FG\EES	HARRISON COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER V.46

9:06:52 AM 8/17/2026 ESORENS pw:\\pwhdruscen02.intranet.hdr:HDR_US_Central_02\Documents\IADOT\IDOT-I29_Burcham_Creek_Br_Des\6.0_CAD_BIM\6.2_WIP\0227 - Drafting\Final Design SB I29 Design 0227 209 x 54 CCS Bridge



THIS SHEET IS INCLUDED TO SHOW SOIL INFORMATION.
DETAILS AND NOTES SHOWN ELSEWHERE IN THESE PLANS SHALL BE USED FOR STRUCTURE CONSTRUCTION.

GEOTECHNICAL DESIGN

LICENSED PROFESSIONAL ENGINEER
GOPALAKRISHNA ALLAM
P28087
IOWA

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 — Date: 02/02/2026

GOPALAKRISHNA ALLAM
Printed or Typed Name

My license renewal date is December 31, 2026

Pages or sheets covered by this seal: SPS.1, SPS.2, SPS.3 AND SPS.4

N

0 20
Scale In Feet

Location

NB I-29 over Burcham Creek
T-79N R-45W
Section 12
Clay Township
Harrison County
FHWA No. 28241
Bridge Maint. No. 4386.5R029
Latitude 41.671643°
Longitude -96.036161°

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans (2) 59'-0" Interior Spans

Soil Profile Sheet

STA. 1655+72.50, 37' Rt. (I-29)

Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 127 Design Sheet No. 1 of 2 FHWA No. 28241

FILE NO. 32382	ENGLISH	DESIGN TEAM HDR	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER SPS.1

11:15:29 AM 2/2/2026 DKOZAK pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\4302911022\Bridge\(275)_Bridge Replacement-CCS\HDR\SPS\SPS_43029275_0127_028241_Z06.dgn

SHELBY TUBE CORE DATA

CORE NO.	NBR-1-B3	NBR-1-C4	NBR-1-C6	NBR-2-C3	NBR-3-C4	NBR-4-C2	NBR-4-C4	NBR-5-C1	NBR-5-D1	NBR-5-E1
DEPTH IN FEET	6.0'-7.5'	16.0'-17.5'	21.0'-22.5'	16.0'-17.5'	21.0'-22.5'	11.0'-12.5'	16.0'-17.5'	6.0'-7.5'	11.0'-12.5'	16.0'-17.5'
CLASSIFICATION (AASHTO)	A-7-6(20)	A-7-6(64)	A-7-6(58)	A-7-6(43)	-	-	A-7-6(65)	A-6(20)	A-7-5(49)	-
COEFF.CONSOL. (SQ.FT /DAY)	-	-	-	-	-	-	-	-	-	-
TRIAXIAL COMPRESSION	UC	UC	UU	UU	UU	UC	UU	UC	UU	UC
COHESION - PSF	1040	750	1720	670	770	1090	930	1540	2450	220
FRICTION COEFF.	-	-	-	-	-	-	-	-	-	-
MOISTURE CONTENT %	24	40	44	38	45	44	45	34	30	42
DRY DENSITY - PCF	96	79	79	83	79	77	78	88	93	75

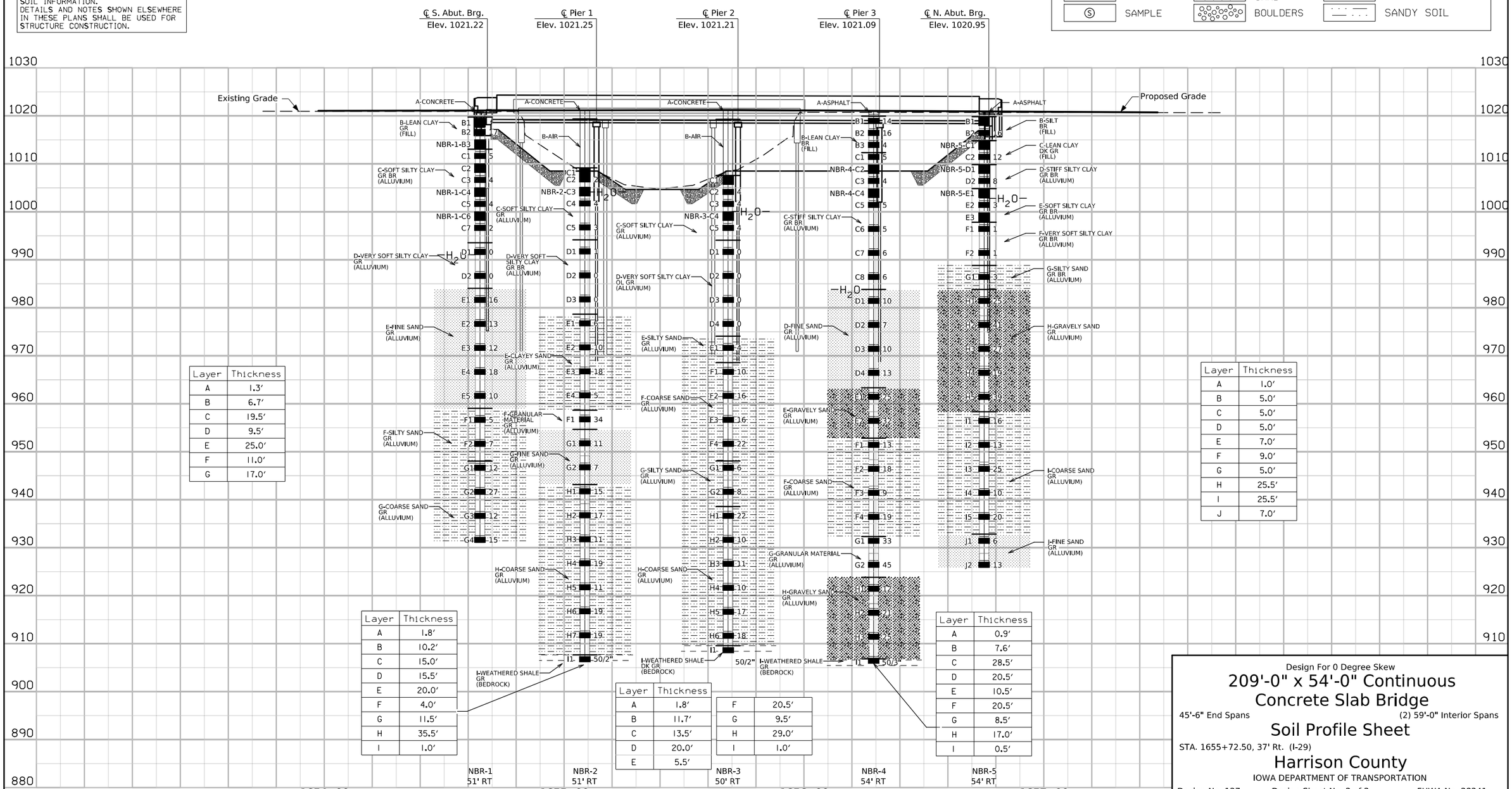
CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

Water Level Observations (Ft.)				
Boring No.	Date Drilled	While Drilling	End of Drilling	After 24 Hours
NBR-1	10/16/2025	30.0	-	-
NBR-2	10/14/2025	17.0	-	-
NBR-3	10/15/2025	21.0	-	-
NBR-4	10/15/2025	37.0	-	17.7
NBR-5	10/13/2025	18.0	-	-

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LEGEND

WATER, DRY, PLUGGED, MOISTURE, SHELBY, BLOW COUNT, DENS. CORE, SAMPLE
BLOW COUNT: LAYER - NO. BLOWS (B2 ■ 5)
DIAMOND CORE, SAND, GRAVELLY SAND, BOULDERS
SOILS BOOK NO. _ _ _ _ _
SOIL REMEDIATION AREA, LIMESTONE (LS.), BROKEN & WEATHERED LS., SANDSTONE, SHALE, SANDY SOIL



Layer	Thickness
A	1.3'
B	6.7'
C	19.5'
D	9.5'
E	25.0'
F	11.0'
G	17.0'

NBR-1 51' RT

Layer	Thickness
A	1.8'
B	10.2'
C	15.0'
D	15.5'
E	20.0'
F	4.0'
G	11.5'
H	35.5'
I	1.0'

NBR-2 51' RT

Layer	Thickness
A	1.8'
B	11.7'
C	13.5'
D	20.0'
E	5.5'

F	20.5'
G	9.5'
H	29.0'
I	1.0'

NBR-3 50' RT

NBR-4 54' RT

Layer	Thickness
A	0.9'
B	7.6'
C	28.5'
D	20.5'
E	10.5'
F	20.5'
G	8.5'
H	17.0'
I	0.5'

NBR-5 54' RT

Layer	Thickness
A	1.0'
B	5.0'
C	5.0'
D	5.0'
E	7.0'
F	9.0'
G	5.0'
H	25.5'
I	25.5'
J	7.0'

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans (2) 59'-0" Interior Spans

Soil Profile Sheet

STA. 1655+72.50, 37' Rt. (I-29)

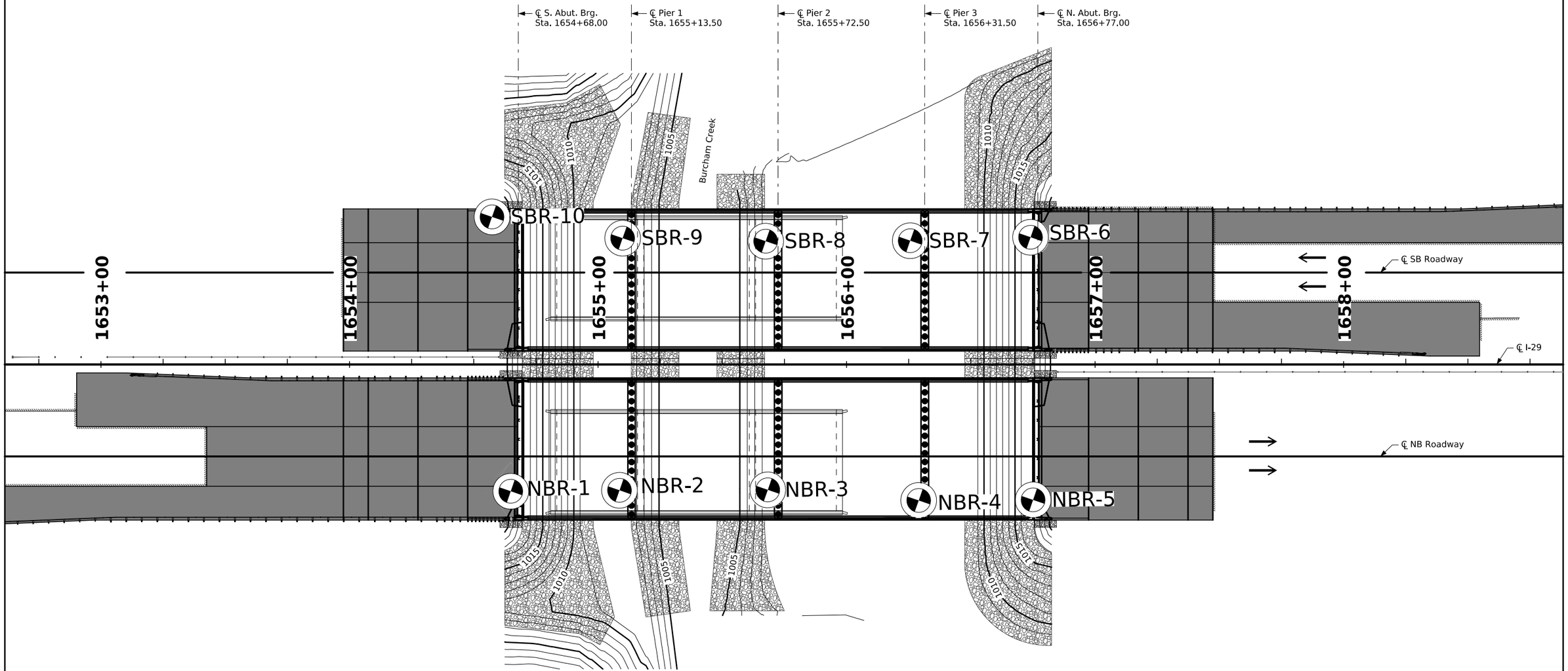
Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 127 | Design Sheet No. 2 of 2 | FHWA No. 28241

FILE NO. 32382	ENGLISH	DESIGN TEAM HDR	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER SPS.2

9:48:21 AM 1/29/2026 DKOZAK pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\4302911022\Bridge\(275)_Bridge Replacement-CCS\HDR\SPS\SPS_43029275_0127_028241_Z06.dgn



THIS SHEET IS INCLUDED TO SHOW SOIL INFORMATION.
DETAILS AND NOTES SHOWN ELSEWHERE IN THESE PLANS SHALL BE USED FOR STRUCTURE CONSTRUCTION.

N

0 20
Scale In Feet

Location

SB I-29 over Burcham Creek
T-79N R-45W
Section 12
Clay Township
Harrison County
FHWA No. 28251
Bridge Maint. No. 4386.5L029
Latitude 41.671575°
Longitude -96.036416°

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans (2) 59'-0" Interior Spans

Soil Profile Sheet

STA. 1655+72.50, 37' Lt. (I-29)

Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227 Design Sheet No. 1 of 2 FHWA No. 28251

FILE NO. 32382	ENGLISH	DESIGN TEAM HDR	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER SPS.3

9:48:10 AM 1/7/2026 DKOZAK pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\4302911022\Bridge\(275)_Bridge Replacement-CCS\HDR\SPS\SPS_43029275_0227_028251_Z06.dgn

SHELBY TUBE CORE DATA

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DEPTH IN FEET	6.0'-7.5'	16.0'-17.5'	21.0'-22.5'	16.0'-17.5'	21.0'-22.5'	13.0'-14.5'	18.5'-20.0'	6.0'-7.5'	11.0'-12.5'	16.0'-17.5'
CLASSIFICATION (AASHTO)	A-6(15)	A-7-6(54)	-	A-7-6(33)	A-7-6(70)	-	A-7-6(43)	A-7-6(30)	A-7-6(54)	-
COEFF.CONSOL. (SQ.FT /DAY)	-	-	-	-	-	-	-	-	-	-
TRIAXIAL COMPRESSION	UC	UU	UC	UU	UU	UC	UU	UC	UU	UC
COHESION - PSF	2730	570	610	800	880	710	560	1350	960	580
FRICTION COEFF.	-	-	-	-	-	-	-	-	-	-
MOISTURE CONTENT %	20	49	45	44	43	42	33	32	40	47
DRY DENSITY - PCF	108	74	77	77	78	78	83	88	83	74

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

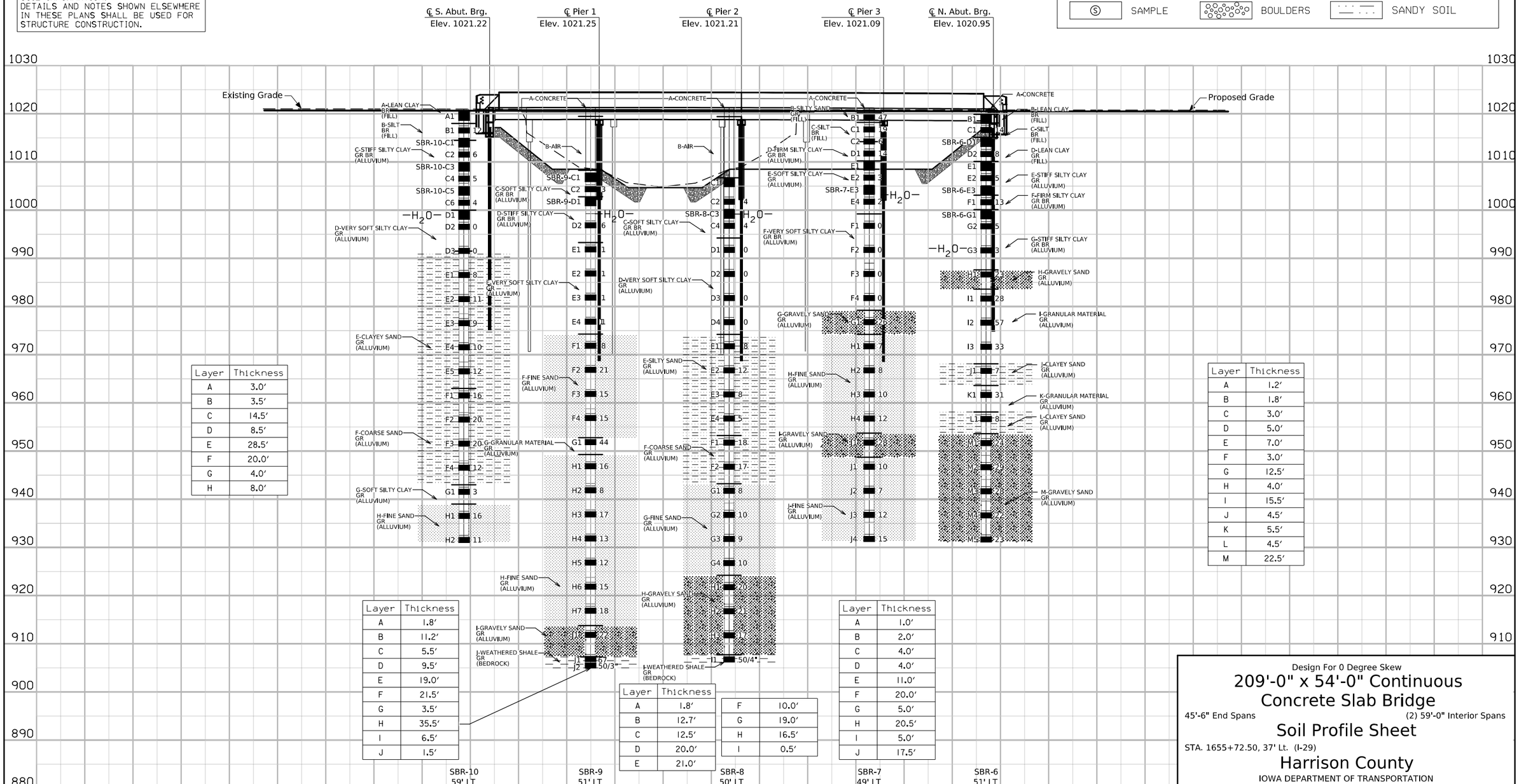
Water Level Observations (Ft.)				
Boring No.	Date Drilled	While Drilling	End of Drilling	After 24 Hours
SBR-6	10/21/2025	29.0	-	-
SBR-7	10/23/2025	18.0	-	-
SBR-8	10/22/2025	22.0	-	-
SBR-9	10/21/2025	22.0	-	-
SBR-10	10/20/2025	22.0	-	15.4

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DETAILS AND NOTES SHOWN ELSEWHERE IN THESE PLANS SHALL BE USED FOR STRUCTURE CONSTRUCTION.

LEGEND

SOILS BOOK NO. _ _ _ _ _

−H_2O−	WATER	BLOW COUNT LAYER - NO. BLOWS (B2 ■ 5)	SOIL REMEDIATION AREA
— DRY	DRY		LIMESTONE (LS.)
-◁	PLUGGED	DIAMOND CORE	BROKEN & WEATHERED LS.
M——	MOISTURE	SAND	SANDSTONE
■	SHELBY	GRAVELLY SAND	SHALE
■	BLOW COUNT	BOULDERS	SANDY SOIL
▬	DENS. CORE		
Ⓢ	SAMPLE		



Layer	Thickness
A	3.0'
B	3.5'
C	14.5'
D	8.5'
E	28.5'
F	20.0'
G	4.0'
H	8.0'

Layer	Thickness
A	1.8'
B	11.2'
C	5.5'
D	9.5'
E	19.0'
F	21.5'
G	3.5'
H	35.5'
I	6.5'
J	1.5'

Layer	Thickness
A	1.8'
B	12.7'
C	12.5'
D	20.0'
E	21.0'
F	10.0'
G	19.0'
H	16.5'
I	0.5'

Layer	Thickness
A	1.0'
B	2.0'
C	4.0'
D	4.0'
E	11.0'
F	20.0'
G	5.0'
H	20.5'
I	5.0'
J	17.5'

Layer	Thickness
A	1.2'
B	1.8'
C	3.0'
D	5.0'
E	7.0'
F	3.0'
G	12.5'
H	4.0'
I	15.5'
J	4.5'
K	5.5'
L	4.5'
M	22.5'

Design For 0 Degree Skew

209'-0" x 54'-0" Continuous Concrete Slab Bridge

45'-6" End Spans (2) 59'-0" Interior Spans

Soil Profile Sheet

STA. 1655+72.50, 37' Lt. (I-29)

Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227 Design Sheet No. 2 of 2 FHWA No. 28251

FILE NO. 32382	ENGLISH	DESIGN TEAM HDR	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER SPS.4

11:51:35 AM 2/2/2026 DKOZAK pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\4302911022\Bridge\(275)_Bridge Replacement-CCS\HDR\SPS\SPS_43029275_0227_028251_Z06.dgn

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ROADWAY DESIGN

LICENSED PROFESSIONAL ENGINEER
Ryan R. Miller
18421
IOWA

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.

Ryan R. Miller 07-21-2026
Signature Date

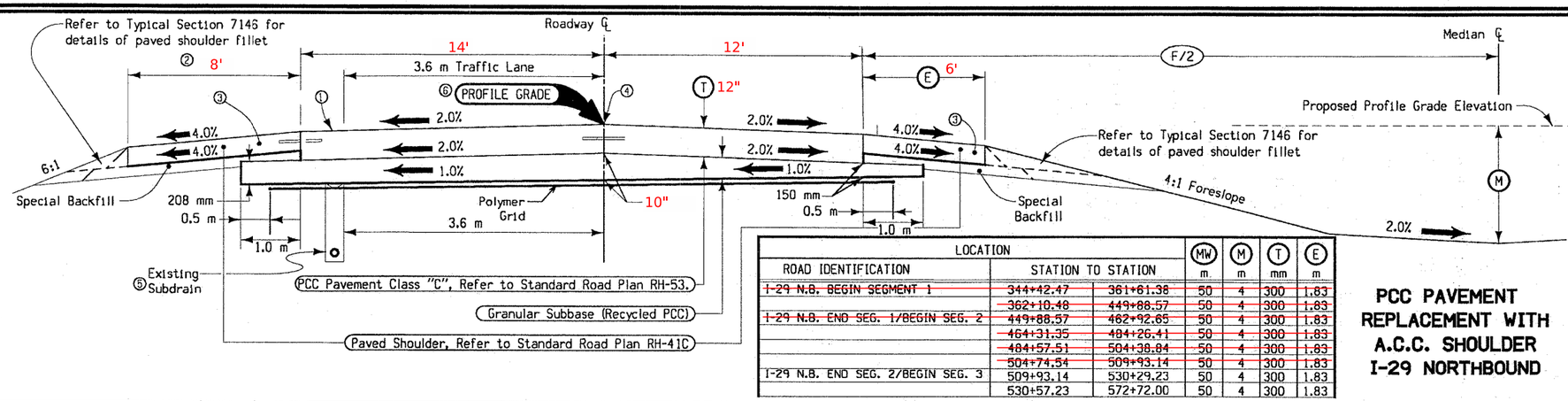
Ryan R. Miller
Printed or Typed Name

My license renewal date is December 31, 2026

Pages or sheets covered by this seal: A.3, B.1-6, C.1-31, D.1-3, F.1-2, G.1-3, J.1-11, T.1-6, U.1-4, W.1-35

FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER A.3	

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LOCATION			MW	M	T	E
ROAD IDENTIFICATION	STATION TO STATION		m	m	mm	m
~~I-29 N.B. BEGIN SEGMENT 1~~	~~344+42.47~~	~~361+61.38~~	~~50~~	~~4~~	~~300~~	~~1.83~~
	~~362+10.48~~	~~449+88.57~~	~~50~~	~~4~~	~~300~~	~~1.83~~
~~I-29 N.B. END SEG. 1/BEGIN SEG. 2~~	~~449+88.57~~	~~462+92.65~~	~~50~~	~~4~~	~~300~~	~~1.83~~
	~~464+31.35~~	~~484+26.41~~	~~50~~	~~4~~	~~300~~	~~1.83~~
	~~484+57.51~~	~~504+38.84~~	~~50~~	~~4~~	~~300~~	~~1.83~~
	~~504+74.54~~	~~509+93.14~~	~~50~~	~~4~~	~~300~~	~~1.83~~
I-29 N.B. END SEG. 2/BEGIN SEG. 3	509+93.14	530+29.23	50	4	300	1.83
	530+57.23	572+72.00	50	4	300	1.83

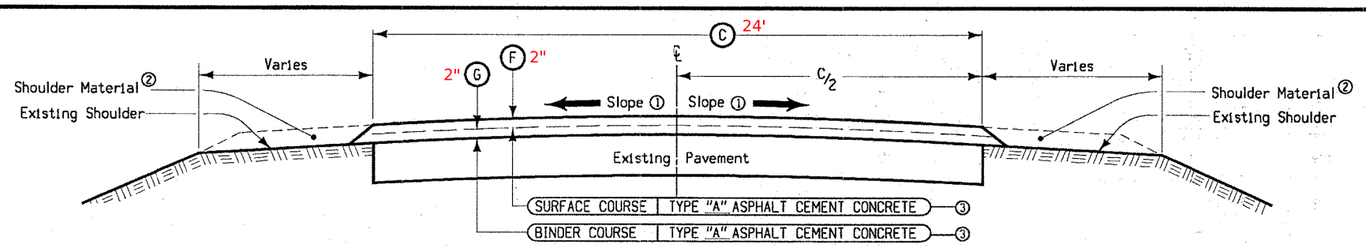
PCC PAVEMENT REPLACEMENT WITH A.C.C. SHOULDER I-29 NORTHBOUND

INLAY
MODIFIED
DIMENSIONS IN MM UNLESS NOTED.

Notes:

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

① Refer to Standard Road Plan RH-41D for Rumble Pattern.
② Variable width thru Ramp Taper.
③ Refer to Modified Typical Section 7119 & Typ. 7126 & ML-SHLD for details of shoulder construction.
④ "L-2" or "KT-2" Joint, see Detail Sheet RH-51.
⑤ Use as Constructed Existing Subdrain.
⑥ The proposed centerline profile grade shall be equal to the elevation of the existing centerline profile grade which includes a nominal 80mm ACC overlay on existing pavement.
⑦ See table S-1 on sheet C.10 for other grade adjustments sites



DESIGN RATES	
ITEM	RATE
Surface Course	2325 kg/m^3
Binder Course	2325 kg/m^3
Tack Coat	0.20 L/m^2

TABLE OF DESIGN QUANTITIES Per Station

LOCATION			F	G	C	PRIME & TACK COAT	ASPHALT CEMENT	ASPHALT CEMENT CONCRETE Mg	
ROAD IDENTIFICATION	STATION TO STATION		mm	mm	m	L ③	Mg	SURFACE	BINDER
~~I-29 S.B.~~	~~344+42.468~~	~~361+61.38~~	~~50~~	~~50~~	~~7.3~~	~~298~~	~~9.5~~	~~85.4~~	~~86.6~~
~~I-29 S.B.~~	~~362+10.48~~	~~482+92.650~~	~~50~~	~~50~~	~~7.3~~	~~298~~	~~9.5~~	~~85.4~~	~~86.6~~
~~I-29 S.B.~~	~~464+31.350~~	~~484+26.409~~	~~50~~	~~50~~	~~7.3~~	~~298~~	~~9.5~~	~~85.4~~	~~86.6~~
~~I-29 S.B.~~	~~484+57.51~~	~~504+38.84~~	~~50~~	~~50~~	~~7.3~~	~~298~~	~~9.5~~	~~85.4~~	~~86.6~~
I-29 S.B.	504+74.541	530+29.229	50	50	7.3	298	9.5	85.4	86.6
I-29 S.B.	530+57.229	574+79.297	50	50	7.3	298	9.5	85.4	86.6

2602
MODIFIED
DIMENSIONS IN MM UNLESS NOTED.

Notes:

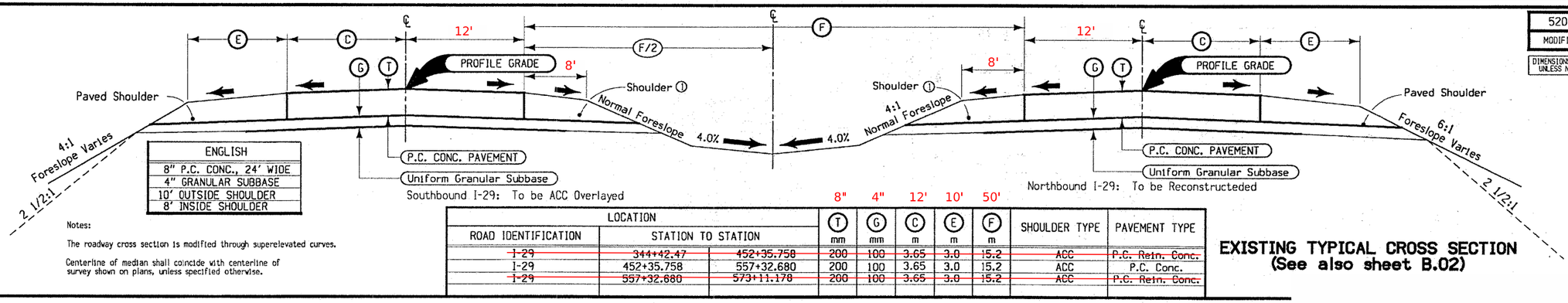
① Finished slope shall match existing pavement except that the maximum allowable slope is 3.0 %, minimum allowable slope is 2.0 %. Section may be modified as directed by the Engineer through areas of special shaping.

Refer to tabulation listing of superelevated curves and Standard Road Plans for additional requirements through superelevated curves.

② Shoulder material to be ACC. See Typ. 7137

③ Tack Coat estimated for 2 applications. See note 223-19(1) on sheet c.04 for pavement determination.

TYPICAL CROSS SECTION ACC RESURFACING: I-29 SOUTHBOUND



ENGLISH
8" P.C. CONC., 24' WIDE
4" GRANULAR SUBBASE
10' OUTSIDE SHOULDER
8' INSIDE SHOULDER

Notes:

The roadway cross section is modified through superelevated curves.

Centerline of median shall coincide with centerline of survey shown on plans, unless specified otherwise.

LOCATION			T	G	C	E	F	SHOULDER TYPE	PAVEMENT TYPE
ROAD IDENTIFICATION	STATION TO STATION		8" mm	4" mm	12' m	10' m	50' m		
~~I-29~~	~~344+42.47~~	~~452+35.758~~	~~200~~	~~100~~	~~3.65~~	~~3.0~~	~~15.2~~	~~ACC~~	~~P.C. Rein. Conc.~~
I-29	452+35.758	557+32.680	200	100	3.65	3.0	15.2	ACC	P.C. Conc.
~~I-29~~	~~557+32.680~~	~~573+11.178~~	~~200~~	~~100~~	~~3.65~~	~~3.0~~	~~15.2~~	~~ACC~~	~~P.C. Rein. Conc.~~

EXISTING TYPICAL CROSS SECTION (See also sheet B.02)

5201
MODIFIED
DIMENSIONS IN MM UNLESS NOTED.

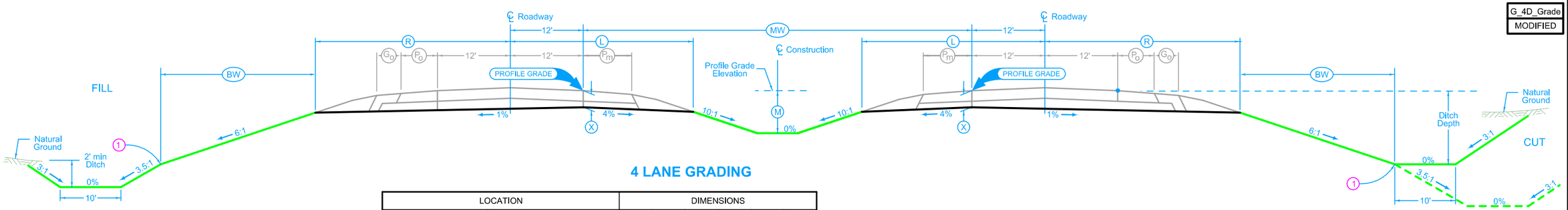
EXISTING PAVEMENT TYPICAL SECTIONS (FOR INFORMATION ONLY)

c:\mjs\98273\cadd\98273_b01 07 FEB 99 | DESIGN TEAM **SKOGERBOE/SNYDER & ASSOCIATES** | METRIC | IOWA DOT * OFFICE OF DESIGN 1999 | HARRISON COUNTY | PROJECT NUMBER IM-29-4(52)72

FILE NO. **32382**	ENGLISH	DESIGN TEAM **Miller/Koch**	**Harrison** COUNTY	PROJECT NUMBER **IMX-029-5(275)86--02-43**	SHEET NUMBER **B.1**

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G_4D_Grade
MODIFIED



4 LANE GRADING

LOCATION			DIMENSIONS					
ROAD IDENTIFICATION	STATION TO STATION		(L) Feet	(R) Feet	(X) Inches	(BW) Feet	(MW) Feet	(M) Feet
I-29 NB	2653+42.58	2653+97.58	N/A	38.5	24	7.5	50	1.3

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.

(1) Refer to project plan and cross sections for specific location of foreslope change.

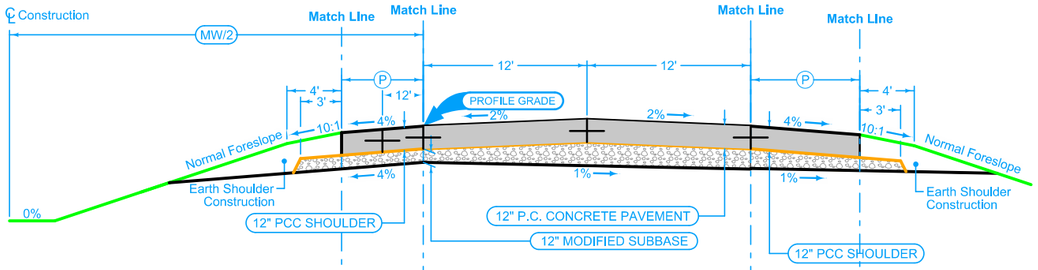
FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER B.2	

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Full Depth PCC Shoulder

Shoulder Jointing:
Longitudinal joints: BT-2, or L-2
Transverse joints: C at 17' spacing or Matching Existing

Direction of Travel	BEGIN STATION	END STATION	(P) Feet
NB	1652+90.00	1653+97.58	18.3
SB	1657+47.42	1658+54.77	18.3



Section shown in the direction of traffic.

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

Direction of Travel	BEGIN STATION	END STATION	(MW) Feet
NB	1653+42.58	1653+97.58	50

Full Depth PCC Shoulder

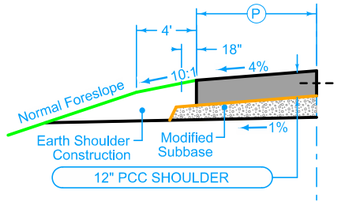
Shoulder Jointing:
Longitudinal joint: BT-2, or L-2
Transverse joints: C at 17' spacing

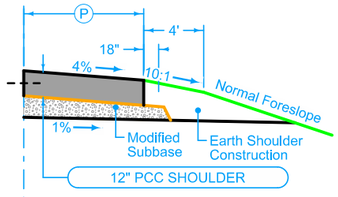
Direction of Travel	BEGIN STATION	END STATION	(P) Feet
NB	1652+27.60	1653+97.58	12.3
SB	1657+47.42	1659+17.28	12.3

Paved Shoulder at Guardrail

PCC Shoulder Jointing:
Longitudinal joint: BT-2 or BT-3
Transverse joints: C at mainline spacing

Direction of Travel	BEGIN STATION	END STATION	(P) Feet
NB	1652+90.00	1653+97.58	3.3
SB	1657+47.42	1659+17.28	3.3





Paved Shoulder at Guardrail

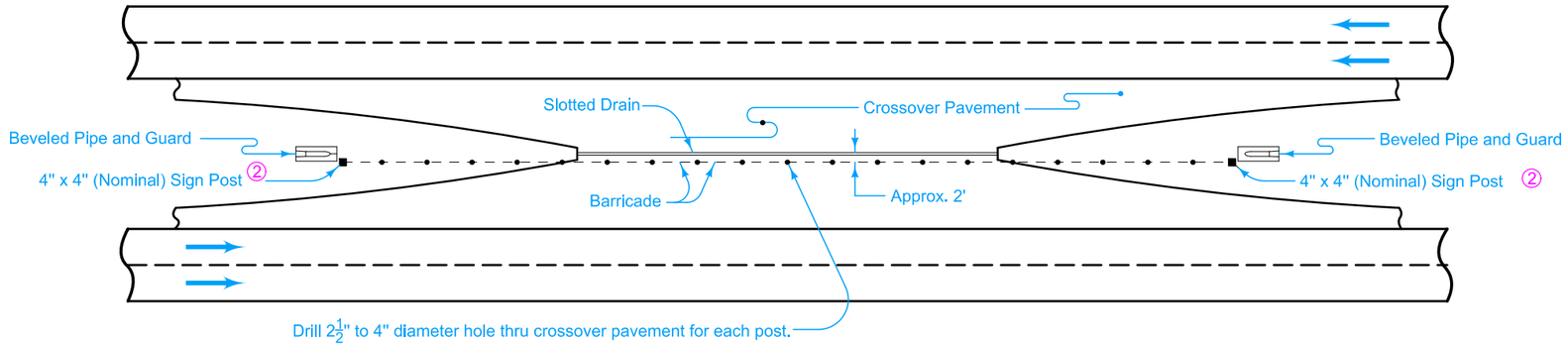
PCC Shoulder Jointing:
Longitudinal joint: BT-2 or BT-3
Transverse joints: C at mainline spacing

Direction of Travel	BEGIN STATION	END STATION	(P) Feet
NB	1652+27.60	1653+97.58	3.3
SB	1657+47.42	1659+17.28	3.3

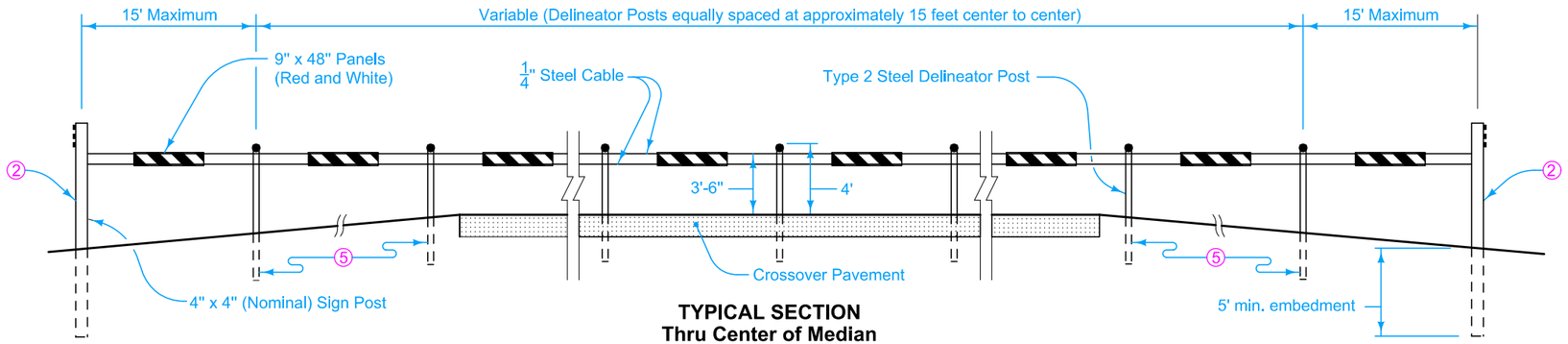
See Tab. 100-24 for pavement quantities.

See Tab. 112-9 for shoulder quantities.

I-29 NB



PLAN VIEW



TYPICAL SECTION Thru Center of Median

The price bid for "Crossover Barricade", each, is considered full compensation for furnishing all materials and work necessary to construct the barricade as detailed hereon.

① 3 1/4" center mount yellow reflector, attached to sign post with 0.190 x 1.25 slotted pan head screws.

② Extend the barricade to within 2 feet from the top end of the concrete collar.

③ 0.125 inch aluminum panel with Type III or IV retroreflective sheeting on both sides.

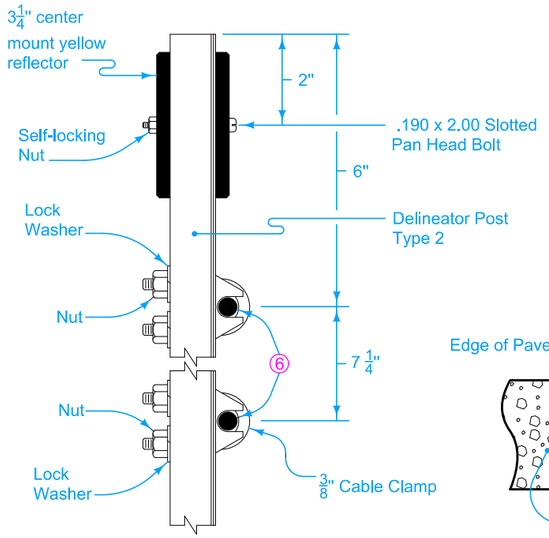
④ Reflectorized red stripes on both sides shall slope from upper left to lower right of panel.

⑤ Embed all delineator posts a minimum of 2'-6".

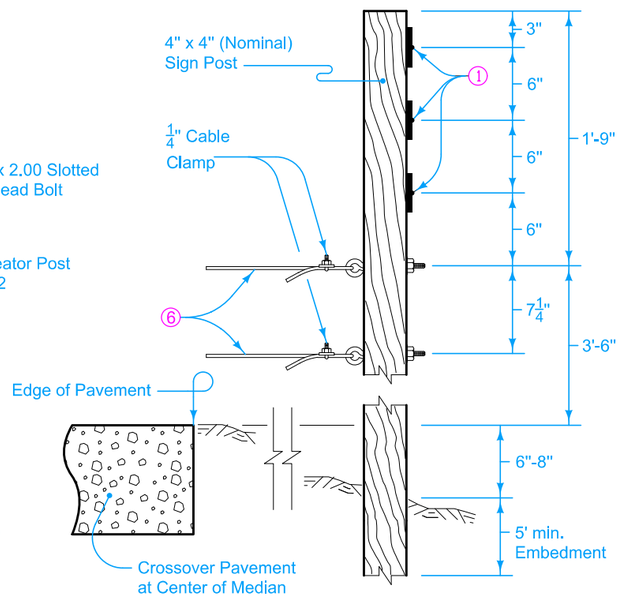
⑥ 1/4" inch diameter steel cable.

List Of Materials For Barricading At Median Crossovers

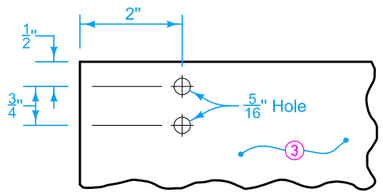
Quantities for Standard Road Plans			Items
PV-500	PV-503	PV-506	
25	19	18	Type 2 Steel Delineator Posts
2	2	2	4" x 4" (Nominal) Sign Post
56	44	42	3 ¼" Yellow Reflectors, center mounted
25	19	18	0.190 x 2.00 slotted pan head bolts and self-locking nuts
6	6	6	0.190 x 1.25 slotted pan head screws
26	20	19	9" x 48" Aluminum panels (red on white)
50	38	36	⅜" Cable clamps, lock washers and nuts
104	80	76	¼" Cable clamps, neoprene washers and self-locking nuts
4	4	4	⅜" x 6" Eye bolts, washers and nuts
4	4	4	¼" Cable clamps
820'	640'	610'	Approximate length of ¼" diameter Steel Cable
405'	315'	300'	Distance from Sign Post to Sign Post based on Note ②



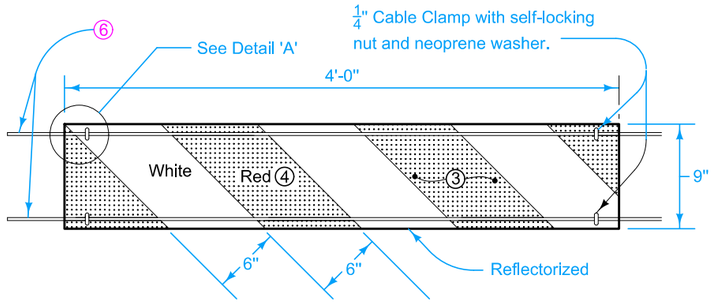
DELINEATOR POST ATTACHMENT DETAILS



SIGN POST ATTACHMENT DETAILS



TYPICAL HOLE LOCATION DETAIL 'A'



PANEL ATTACHMENT DETAILS

IOWA DOT

ROAD DESIGN DETAIL

REVISION	
9	10-19-10

540-13

SHEET 1 of 1

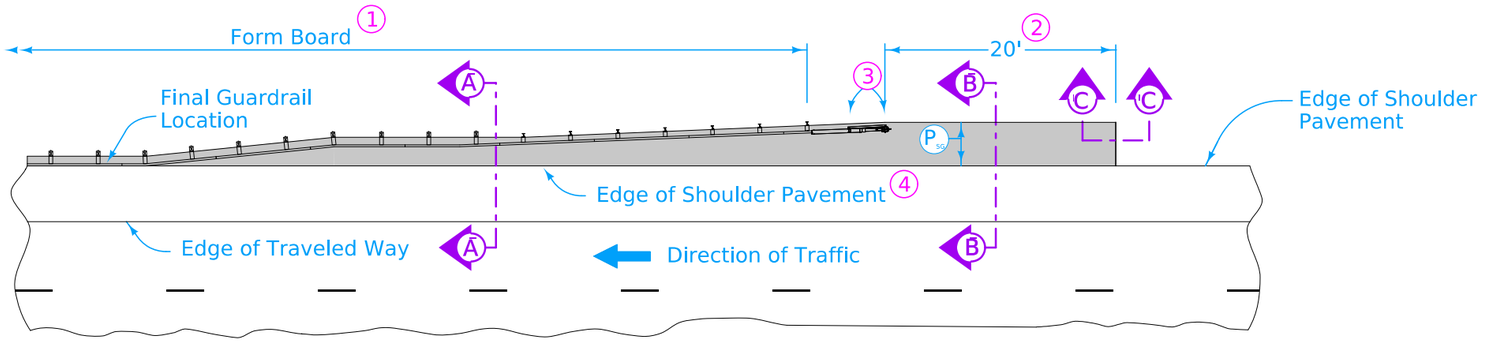
REVISIONS: Changed RV designation to PV.

DETAILS OF BARRICADE AT CROSSOVER

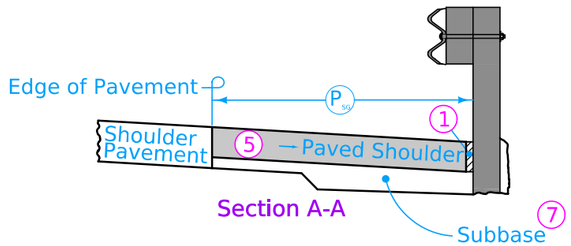
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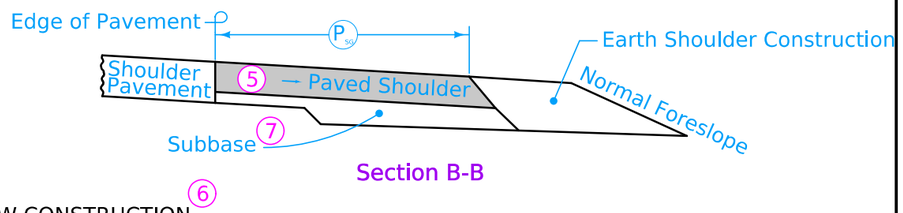
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Modified

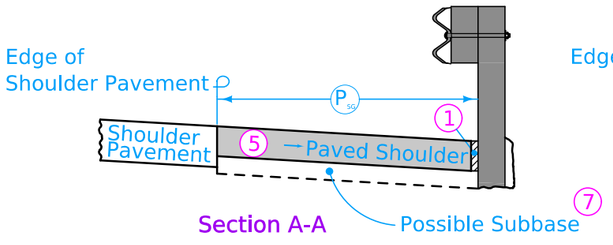


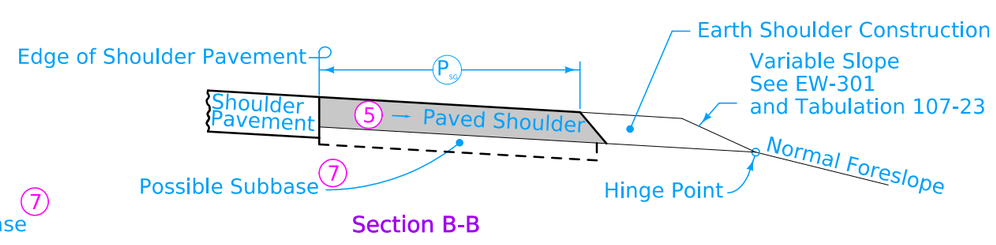
PLAN VIEW





NEW CONSTRUCTION
6





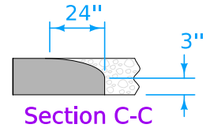
EXISTING SHOULDER

12" 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.

Refer to Tabulation 112-9 for shoulder quantities.

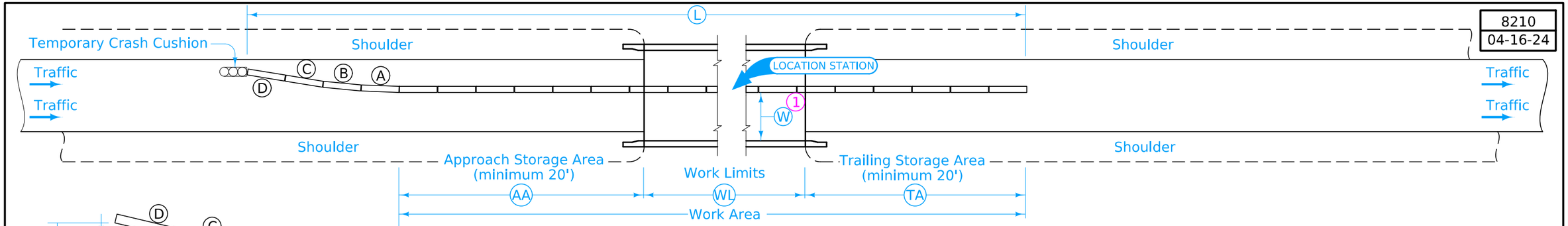
1. When guardrail posts are installed prior to construction of PCC paved shoulder, fasten form board to the face of guardrail posts for the length shown.
2. Continue paved shoulder 20 feet beyond the center of the first post.
3. Shoulder may be notched for first 2 posts or post sleeves may be installed through pavement. Do not drive posts through pavement.
4. 'BT' (per PV-101) joint for PCC shoulder.
5. Match shoulder slope.
6. The Contractor has the option to pave the paved shoulder at guardrail and the full width paved shoulder as one operation.
7. Refer to other details in the plan.

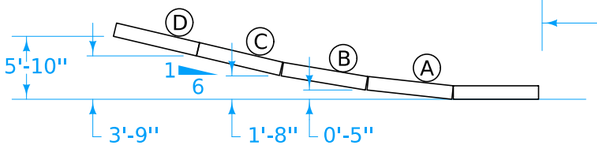


Roll down at granular shoulder or earth.

PAVED SHOULDER AT GUARDRAIL
(ADJACENT TO FULL WIDTH PAVED SHOULDER)

8210
04-16-24



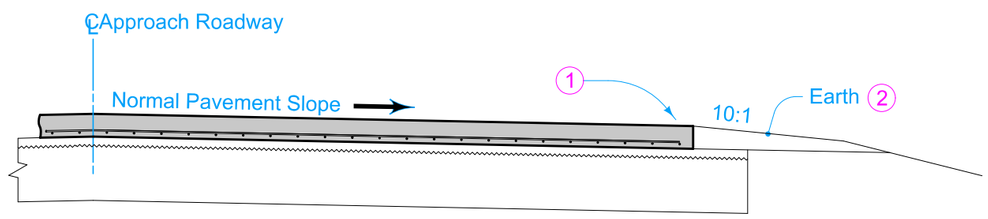


BARRIER OFFSETS FOR FLARE SECTIONS

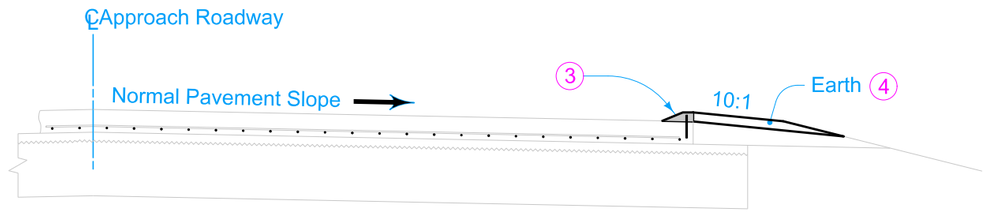
Station	Side	AA	WL	TA	L	Anchored	W (1)	Remarks
		Ft.	Ft.	Ft.	Ft.	X	Ft-Inches	
1629+50.00	Lt	25	937.5	25	1037.5		15'-6"	Stage 1 NB
1629+50.00	Lt	25	937.5	25	1037.5		15'-6"	Stage 1 SB
1678+00.00	Lt	25	937.5	25	1037.5		15'-6"	Stage 1 NB
1678+00.00	Lt	25	937.5	25	1037.5		15'-6"	Stage 1 SB

(1) Where (W) is less than 15'-6", install restricted width signing as per Standard Road Plan TC-81.

TEMPORARY CONCRETE BARRIER LAYOUT
for One-Way Traffic



**APPROACH PAVEMENT SECTION
WITHOUT CURB
Stage 2**



**APPROACH PAVEMENT SECTION
WITH CURB
Stage 3**

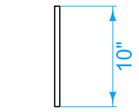
(1) Omit curb on bridge approach until Stage 3 is completed. See J Sheets for details.

(2) Grade to match approach pavement without curb.

(3) Construct concrete curb, without runout, according to Section 2512 of the Standard Specifications and the details herein.

The curb shall extend 15 feet from the concrete bridge rail on either side of the bridge, to the joint between the double and single reinforced bridge approach sections.

(4) Complete grading to match the top of the curb along with any seeding and erosion control necessary. This work shall be included in the appropriate bid items.



NO. 3
TIE BAR

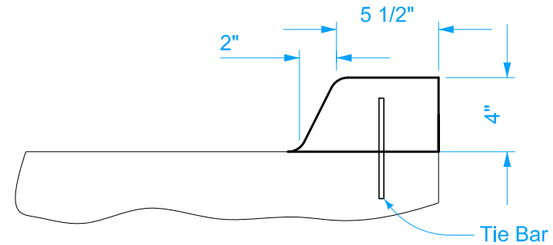
Notes:

See Standard Road Plans BR-101 and BR-205 for bridge approach details.

Drill holes in approach pavement at 12" intervals and install tie bars using epoxy grout, as provided in Article 2301.03, E. of the Standard Specifications. Maintain 2" curb surface clearance.

Use tie bars cut from epoxy coated reinforcement bars as specified in Article 4151.03, C. of the Standard Specifications.

Installation of the concrete curb and all labor and materials necessary to complete the work shall be included in the cost of the Bridge Approach, BR-205 bid item.



DETAIL 'D'

**CURB DETAIL
North Side of Northbound Bridge
Stages 2 and 3**

ESTIMATED PROJECT QUANTITIES AND REFERENCE NOTES

Roadway Items : Roadway Items
Non-Participating :

Item no.	Item Code	Item	Unit	Quantities			Estimate Reference Notes
				Estimated			
				Roadway Items	Non-Participating	Total	
1	2102-0425070	SPECIAL BACKFILL	TON	5,198.8		5,198.8	Refer to Tab. 112-08 and Modified Standard Road Plan PV-500 in the U Sheets.
2	2102-2625000	EMBANKMENT-IN-PLACE	CY	39.6		39.6	Quantities are for widening for crash cushions. Provide borrow material according to Section 2102 of the Standard Specifications. Material shall be provided by the Contractor.
3	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW	CY	438		438	Refer to T Sheets.
4	2102-2710090	EXCAVATION, CLASS 10, WASTE	CY	3,269		3,269	Refer to T Sheets. Dispose of excess material according to Article 1106.07 of the current specifications.
5	2102-2712015	EXCAVATION, CLASS 12, BOULDERS OR ROCK FRAGMENTS	CY	10		10	A. Refer to Tab. 103-07 on the CS Sheet. B. Dispose of excess material according to Article 1106.07 of the current specifications.
6	2105-8425015	TOPSOIL, STRIP, SALVAGE AND SPREAD	CY	766		766	Refer to the T Sheets and Tab. 103-10 on the CS Sheet. Quantity will be computed on the basis of a uniform 8 inch cut, or the depth as specified in the contract documents over the area involved. Sufficient field measurements will be taken to assure reasonable conformity with the required depth of cut. 493 cubic yards of excess topsoil will be available and may be used for earth shoulder construction.
7	2107-0875100	COMPACTION WITH MOISTURE CONTROL	CY	334		334	Refer to Tab. 103-06 on the CS Sheet. Cubic yards shown on the contract documents as determined by the template fill volume. Shrinkage will not be included in the moisture control quantity.
8	2115-0100000	MODIFIED SUBBASE	CY	533.3		533.3	Refer to Typicals on B Sheets and Tabs. 100-24 and 112-09.
9	2121-7425010	GRANULAR SHOULDERS, TYPE A	TON	550		550	Refer to Tab. 112-08 and Modified Standard Road Plan PV-500 in the U Sheets.
10	2122-5190012	PAVED SHOULDER, P.C. CONCRETE, 12 IN.	SY	1,047.4		1,047.4	Refer to Typicals on B Sheets and Tab. 112-09.

Item no.	Item Code	Item	Unit	Quantities			Estimate Reference Notes
				Estimated			
				Roadway Items	Non-Participating	Total	
11	2123-7450000	SHOULDER CONSTRUCTION, EARTH	STA	5.6		5.6	Requires 191.9 cu.yds. for Earth Shoulder Fill. Requires a minimum of 4 inches of topsoil. Place according to Article 2105.03,B of the Standard Specifications. Refer to Tab. 112-09.
12	2301-0690205	BRIDGE APPROACH, BR-205	SY	1,780.8		1,780.8	Refer to Tab. 112-06.
13	2301-1033120	STANDARD OR SLIP FORM PORTLAND CEMENT CONCRETE PAVEMENT, CLASS C, CLASS 3 DURABILITY, 12 IN.	SY	146.7		146.7	Refer to Typicals on B Sheets and Tab. 100-24.
14	2304-0100000	DETOUR PAVEMENT	SY	5,390		5,390	This bid item is for Median Crossovers. Refer to Tab. 112-08, the F Sheets, and Modified Standard Road Plan PV-500 in the U Sheets for details.
15	2412-0000100	LONGITUDINAL GROOVING IN CONCRETE, BRIDGE DECK AND/OR APPROACHES	SY	4,146.5		4,146.5	Refer to Tab. 100-28.
16	2417-2307036	DRAIN, CORRUGATED METAL SLOTTED PIPE, 36 IN., W/6 IN. GRATE	LF	232		232	Refer to Tab. 112-08 and Modified Standard Road Plan PV-500 in the U Sheets.
17	2417-5895018	BEVELED PIPE AND GUARD, 18 INCH	EACH	4		4	
18	2422-1723018	CULVERT, UNCLASSIFIED ROADWAY PIPE, 18 IN. DIA.	LF	264		264	
19	2503-0500401	BRIDGE END DRAIN, DR-401	EACH	8		8	Refer to Tab. 104-08A.
20	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL	LF	825		825	Refer to Tab. 110-07A.
21	2505-4008130	REMOVAL OF CABLE GUARDRAIL	LF	1,780		1,780	Refer to Tab. 110-07B and the J Sheets for details.
22	2505-4008300	STEEL BEAM GUARDRAIL	LF	375		375	Refer to Tab. 108-08A.
23	2505-4008415	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION, BA-209	EACH	4		4	
24	2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED	EACH	4		4	
25	2505-4021720	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-205	EACH	4		4	
26	2505-6000111	HIGH TENSION CABLE GUARDRAIL	LF	450		450	Refer to Tab. 108-9A and the J Sheets for details.
27	2505-6000121	HIGH TENSION CABLE GUARDRAIL, END ANCHOR	EACH	11		11	Refer to Tab. 108-9A and the J Sheets.
28	2505-6000131	HIGH TENSION CABLE GUARDRAIL, SPARE PARTS KIT	EACH	1		1	
29	2510-6745850	REMOVAL OF PAVEMENT	SY	5,770.1		5,770.1	Refer to Tabs. 110-01 and 102-05. Includes 5443.6 LF of saw cuts.
30	2527-9263005	RAISED PAVEMENT MARKERS	EACH	618		618	Refer to Standard Road Plan TC-61 for details.
31	2527-9263137	PAINTED SYMBOLS AND LEGENDS, WATERBORNE OR SOLVENT-BASED	EACH	24		24	Refer to Tab. 108-29.

Item no.	Item Code	Item	Unit	Quantities			Estimate Reference Notes
				Estimated			
				Roadway Items	Non-Participating	Total	
32	2527-9263181	PAVEMENT MARKINGS REMOVED	STA	337		337	Refer to Tab. 108-22.
33	2527-9263190	SYMBOLS AND LEGENDS REMOVED	EACH	24		24	Refer to Tab. 108-29.
34	2527-9263209	PAINTED PAVEMENT MARKINGS, WATERBORNE OR SOLVENT-BASED	STA	448.5		448.5	Refer to Tab. 108-22.
35	2527-9263216	PAINTED PAVEMENT MARKINGS, MULTI-COMPONENT LIQUID	STA	456.6		456.6	Refer to Tab. 108-22 and DS-23090.
36	2527-9263231	REMOVABLE TAPE MARKINGS, WET RETROREFLECTIVE	STA	147.9		147.9	Refer to Tab. 108-22.
37	2527-9270112	GROOVES CUT FOR PAVEMENT MARKINGS	STA	456.6		456.6	
38	2528-2518000	SAFETY CLOSURE	EACH	4		4	Refer to Tab. 108-13A and the J Sheets for details.
39	2528-2518005	CROSSOVER BARRICADE	EACH	2		2	Refer to Road Design Detail 540-13 in the B Sheets. Method of Measurement: Each crossover barricade installed will be counted. Basis of Payment: The price bid for "CROSSOVER BARRICADE", EACH, is considered full compensation for furnishing all materials and work necessary to install the barricades as detailed.
40	2528-8400048	TEMPORARY BARRIER RAIL, CONCRETE	LF	5,712.5		5,712.5	Refer to Tab. 108-33, B Sheets, J Sheets, and U Sheets for details. All temporary barrier rail shall be nominal 12'-6 long concrete units.
41	2528-8400055	TEMPORARY TO PERMANENT BARRIER CONNECTION	EACH	6		6	Refer to J Sheets and U Sheets for details. Method of Measurement: Each Temporary to Permanent Barrier Connection will be counted. Basis of Payment: The price bid for "TEMPORARY TO PERMANENT BARRIER CONNECTION", EACH, is considered full compensation for furnishing all materials and work necessary to install and remove the barrier connections as detailed.
42	2528-8400157	TEMPORARY FLOODLIGHTING LUMINAIRE	EACH	8		8	Refer to Tab. 108-27 and Standard Road Plan TC-61 for details.
43	2528-8445110	TRAFFIC CONTROL	LS	1		1	Refer to J Sheets for details.

Item no.	Item Code	Item	Unit	Quantities			Estimate Reference Notes
				Estimated			
				Roadway Items	Non-Participating	Total	
44	2528-9109020	TEMPORARY LANE SEPARATOR SYSTEM	LF	2,855		2,855	Refer to Tab. 108-35 and Standard Road Plan TC-61 for details.
45	2548-0000200	MILLED SHOULDER RUMBLE STRIPS, PCC SURFACE	STA	5.6		5.6	Refer to Tab. 112-10.
46	2551-0000130	TEMP CRASH CUSHION, SEVERE USE (SU)	EACH	10		10	Refer to Tab. 108-30 and the J Sheets for details.
47	2555-0000010	DELIVER AND STOCKPILE SALVAGED MATERIALS	LS		1	1	Refer to Tab. 110-13. Federal-Aid non-participating.

STANDARDS

The following Standards apply to construction work on this project.

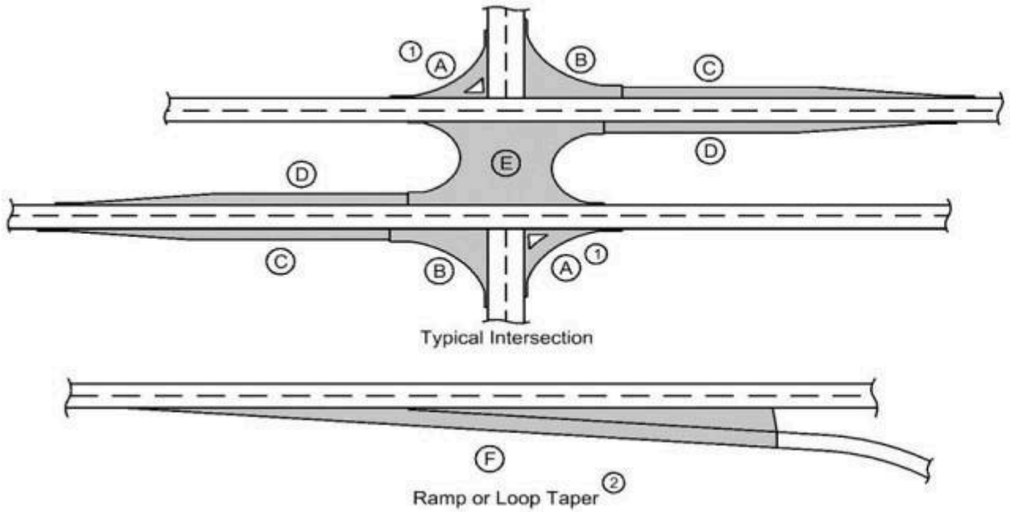
Number	Date	Title
BA-200	10-20-26	Steel Beam Guardrail Components
BA-201	10-18-22	Steel Beam Guardrail Barrier Transition Section (MASH TL-3)
BA-202	10-20-26	Steel Beam Guardrail Bolted End Anchor
BA-205	10-17-23	Steel Beam Guardrail Tangent End Terminal (MASH TL-3)
BA-250	10-20-26	Steel Beam Guardrail Installation at Concrete Barrier or Bridge End Post (MASH TL-3)
BA-351	10-19-21	High Tension Cable Guardrail
BA-401	04-20-21	Temporary Barrier Rail (Precast Concrete)
BA-500	04-20-21	Temporary Crash Cushions Sand Barrel
BR-101	10-20-26	Bridge Approach Section (General Details)
BR-205	10-20-26	Double Reinforced 12in Approach (Slab Bridge)
BR-211	04-21-26	Bridge Approach (Abutting PCC or Composite Pavement)
BR-213	10-19-21	Bridge Approach (Abutting Pavement)
DR-212	04-21-20	Beveled Pipe and Guard
DR-306	10-17-23	Precast Concrete Headwall for Subdrain Outlets
DR-401	04-16-24	Scour Protection for Bridge End Drain
DR-502	10-21-25	Slotted Drain for Median Crossovers
EC-104	04-17-18	Turf Reinforced Mat (TRM)
EC-105	04-17-18	Transition Mat
EC-201	04-20-21	Silt Fence
EW-301	10-20-26	Guardrail Grading
LI-104	10-21-14	Junction box (cast Iron)
LI-130	10-17-17	Temporary Floodlighting Luminaires
PM-110	10-15-24	Line Types
PM-111	04-21-20	Symbols and Legends
PM-115	10-20-26	Grooving for Line Types
PV-12	10-20-26	Milled Shoulder Rumble Strips
PV-101	10-20-26	Joints
PV-102	10-21-25	PCC Curb Details
SI-173	04-19-16	Object Markers
SI-211	10-18-22	Object Marker and Delineator Placement with Guardrail
SI-881	10-20-26	Special Signs for Workzones
TC-1	10-15-19	Work Not Affecting Traffic (Two-Lane or Multi-Lane)
TC-61	10-21-25	Two-Lane, Two-way Operation
TC-202	04-18-23	Work Within 15 ft of Traveled Way
TC-252	10-20-26	Routes Closed to Traffic
TC-283	04-18-23	Surveying Operations
TC-402	04-18-23	Work Within 15 ft of Traveled Way
TC-415	04-18-23	Stort Term Lane Closure with TMA
TC-421	10-21-25	Lane Closure with TBR
TC-433	10-17-17	Pavement Marking Operations

111_25
10/20/26

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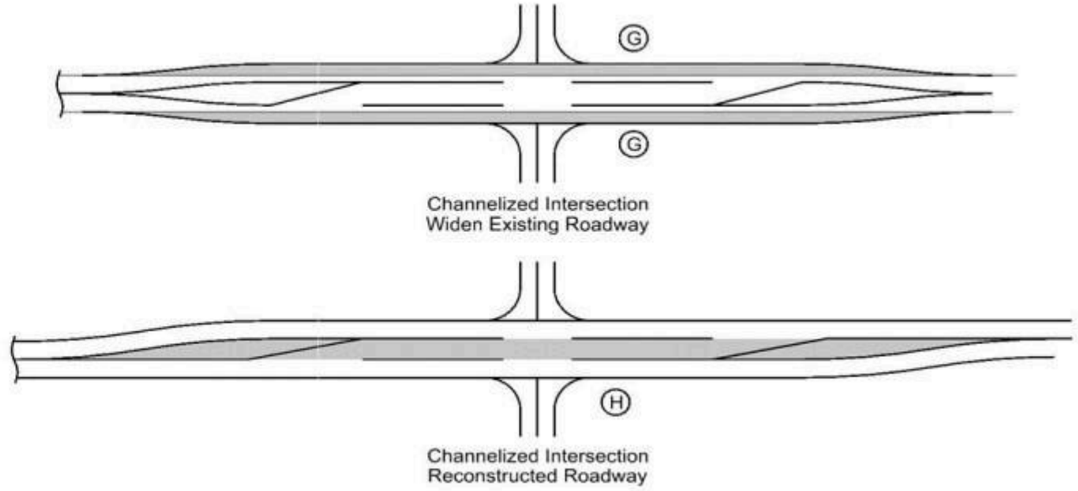
Line No.	Tabulation	Tabulation Title	Sheet No.
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2.0	111_25	INDEX OF TABULATIONS	C.6
3.0	100_24	PCC PAVEMENT	C.7
4.0	100_27	PROPOSED POSTED SPEED LIMIT	C.8
5.0	100_28	LONGITUDINAL GROOVING	C.9
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8.0	107_23	GRADING FOR GUARDRAIL INSTALLATIONS	C.12
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15.0	108_29	PAVEMENT MARKING SYMBOLS AND LEGENDS	C.20
16.0	108_30	CRASH CUSHIONS	C.21
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21.0	110_07B	REMOVAL OF CABLE GUARDRAIL	C.26
22.0	110_13	DELIVERY AND STOCKPILING	C.27
23.0	112_06	BRIDGE APPROACH SECTION	C.28
24.0	112_08	MEDIAN CROSSOVERS	C.29
25.0	112_09	SHOULDERS	C.30
26.0	112_10	MILLED RUMBLE STRIPS	C.31

PCC PAVEMENT



Typical Intersection

Ramp or Loop Taper



Channelized Intersection
Widen Existing Roadway

Channelized Intersection
Reconstructed Roadway

(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.

Line No.	Road Identification	Direction of Travel	Station From	Station To	Width (FT)	Length (FT)	Area (SY)	Area A(1) (SY)(3)	Area B (SY)(3)	Area C (SY)(3)	Area D (SY)(3)	Area E (SY)(3)	Area F(2) (SY)(3)	Area G (SY)(3)	Area H (SY)(3)	Area by Thickness - Thickness(IN)	Area by Thickness - Area (SY)	Polymer Grid (SY)	Special Backfill (TON)	Modified Subbase (CY)	Granular Subbase (SY)	Remarks
1.0	I-29	NB	1653+42.58	1653+97.58	24.0	55.00	146.70									12.0	146.7			131.08		Stage 2
																	146.7		0	131.08		
Remarks : Stage 2																						
Grand Totals																	146.7		0	131.08		

Bid Items:
STANDARD OR SLIP FORM PORTLAND CEMENT CONCRETE PAVEMENT, CLASS C, CLASS 3 DURABILITY, 12 IN. 146.7 SY
MODIFIED SUBBASE 131.1 CY

100_27
8/15/22

PROPOSED POSTED SPEED LIMIT

Line No.	Roadway Identification	Station From	Station To	Proposed Posted Speed	Remarks
1.0	I-29	1653+42.58	1654+67.58	over 45	NB Lanes
2.0	I-29	1653+97.58	1654+67.58	over 45	SB Lanes
3.0	I-29	1656+77.42	1657+47.42	over 45	NB Lanes
4.0	I-29	1656+77.42	1657+47.42	over 45	SB Lanes

100_28

8/15/22

LONGITUDINAL GROOVING

Line No.	Location	Total (SY)	Remarks
1.0	1653+97.58	444.9	Stage 2 NB Lanes South Approach Pavement
2.0	1656+77.42	444.9	Stage 2 NB Lanes North Approach Pavement
3.0	1655+72.50	1183.4	Stage 2 NB Bridge Deck
4.0	1653+97.58	444.9	Stage 3 SB Lanes South Approach Pavement
5.0	1656+77.42	444.9	Stage 3 SB Lanes North Approach Pavement
6.0	1655+72.50	1183.4	Stage 3 SB Bridge Deck
		4146.48	

Bid Item:
LONGITUDINAL GROOVING IN CONCRETE BRIDGE DECK AND/OR APPROACHES 4146.5 SY

EXISTING PAVEMENT

Line No.	County	Route	Direction of Travel	Begin Ref. Location Sign	End Ref. Location Sign	Year	Type	Project Number	Surface Type	Surface Depth (IN)	Base Type	Base Depth (IN)	Subbase Type	Subbase Depth (IN)	Removal Type	Removal Depth (IN)	Coarse Aggregate Source	Coarse Aggregate Type	Course Aggregate Durability Class	Reinforcement Type	Remarks
1.0	Harrison	I-29		76.54	90.72	1967		EACI-29-5(19)91	PCC	8.0			Agg	4.0							
2.0	Harrison	I-29		76.54	90.72	1999		IM-29-4(52)72--13-43	PCC	12.0	GSB	4.0					Dells Rapids-S	Quartz	I		
3.0	Harrison	I-29		76.54	90.72	2017	M	IMN-029-5(235)72--0E-43	PCC	18.0											PCC Patching
4.0	Harrison	I-29		76.54	90.72	2018	M	IMN-029-5(240)72--0E-43	PCC												PCC Patching
5.0	Harrison	I-29		76.54	90.72	2021	M	MPIN-029-3(721)72--0N-43													PCC Patching
6.0	Harrison	I-29		76.54	90.72	2022	S	MPIN-029-4(725)77--0N-43	SS												

104_08A
8/15/22

SCOUR PROTECTION OR ROCK FLUME FOR BRIDGE END DRAIN

Refer to Standard Road Plan DR-401 and DR-402

Line No.	Bridge Station	Bridge Corner	Distance DI-1 or DI-2 (FT)	Bridge End Drain Type	Special Ditch Control, Wood Excelsior Mat EC-101 (SQ)	Turf Reinforced Mat (TRM) Type 2 EC-104 (SQ)	Transition Mat EC-105 (SF)	Macadam Stone Base (TONS)	Engineering Fabric (SY)	Erosion Stone (TON)	Remarks
1.0	1655+72.50	SW	46.9	DR-401	0.4	0.8	32.0				Stage 2 NB Lanes
2.0	1655+72.50	SE	46.9	DR-401	1.8	2.1	32.0				Stage 2 NB Lanes
3.0	1655+72.50	NW	20.4	DR-401	0.4	0.8	32.0				Stage 2 NB Lanes
4.0	1655+72.50	NE	20.4	DR-401	4.2	4.6	32.0				Stage 2 NB Lanes
5.0	1655+72.50	SW	20.4	DR-401	1.7	2.0	32.0				Stage 3 SB Lanes
6.0	1655+72.50	SE	20.4	DR-401	0.4	0.8	32.0				Stage 3 SB Lanes
7.0	1655+72.50	NW	46.9	DR-401	6.5	6.8	32.0				Stage 3 SB Lanes
8.0	1655+72.50	NE	46.9	DR-401	0.4	0.8	32.0				Stage 3 SB Lanes
					15.8	18.7	256.0				

Bid Item:
BRIDGE END DRAIN, DR-401 8 EA.

GRADING FOR GUARDRAIL INSTALLATIONS

Refer to EW-301.

(1) Lane(s) to which the installation is adjacent.

Line No.	Direction of Traffic (1)	Station	Side	Foreslope at Guardrail	X1 (FT)	Y1 (FT)	X2 (FT)	Y2 (FT)	X3 (FT)	Y3 (FT)	X4 (FT)	Y4 (FT)	Z (FT)	Excavation Class 10 (CY)	Embankment-in-Place (CY)	Remarks
1.0	NB	1654+16.50	Right			18.6			156.4		212.5	20.6	95.0			Class 10 and EIP included in T Sheets
2.0	NB	1654+16.50	Median			24.6			93.9		150.0	26.6	95.0			Class 10 and EIP included in T Sheets
3.0	SB	1657+47.42	Right			18.6			156.4		212.5	20.6	95.0			Class 10 and EIP included in T Sheets
4.0	SB	1657+47.42	Median			24.6			93.9		150.0	26.6	95.0			Class 10 and EIP included in T Sheets

GRADING FOR HIGH TENSION CABLE GUARDRAIL INSTALLATIONS

Refer to Standard Road Plan EW-302

(1) Lane(s) to which installation is adjacent.

Line No.	Direction of Traffic (1)	Station	Side	Foreslope at Guardrail	CA (FT)	CO (FT)	CT (FT)	Protection Length (CA+CO+CT) (FT)	Earthwork Type (CY)	Remarks
1.0	NB	1657+24.00	Median	10:1	140.0			140.0		Earthwork included in the T Sheets
2.0	SB	1654+20.00	Median	10:1	160.0			160.0		Earthwork included in the T Sheets

STEEL BEAM GUARDRAIL AT CONCRETE BARRIER OR BRIDGE RAIL END SECTION

Possible Standards: BA-200, BA-201, BA-202, BA-205, BA-206, BA-209, BA-210, BA-211, BA-221, BA-225, BA-250, BA-260, LS-625, LS-626, LS-630, LS-635, SI-172, SI-173 and SI-211.

(1) Lane(s) to which the obstacle is adjacent.
(2) Not a bid item. Incidental to guardrail installation.

Line No.	Direction of Travel (1)	Side	Station	Offset (FT)	Barrier Transition Section	Barrier Transition Section (EA)	End Terminal	End Terminal Count (EA)	VT1 (LF)	VF (LF)	VT2 (LF)	ET (LF)	BA-211 Station	BA-211 (Type)	SI-211 (Type) (2)	Delineator SI-172 Type 1 (EA) (2)	Object Marker Type 2 (EA) (2)	Object Marker Type 3 Lt (EA)(2)	Object Marker Type 3 Rt (EA)(2)	Bolted End Anchor BA-202 (Type)	Bolted End Anchor BA-202 (EA)	Post Adapter BA-210 (EA)	Steel Beam Guardrail BA-200 (LF)	Remarks
1.0	NB	Outside	1654+16.50	13.6	BA-209	1	BA-205	1	150.000		12.50	47.70			3				1	D	1		125.0	Stage 2
2.0	NB	Median	1654+16.50	19.6	BA-209	1	BA-205	1	50.000		12.50	47.70						1		D	1		62.5	Stage 2
3.0	SB	Outside	1657+47.42	13.6	BA-209	1	BA-205	1	112.500		12.50	47.70							1	D	1		125.0	Stage 3
4.0	SB	Median	1657+47.42	19.6	BA-209	1	BA-205	1	50.000		12.50	47.70						1		D	1		62.5	Stage 3
						4		4										2	2		4		375.0	

Note:
All references are in direction of travel.

Bid Items:
STEEL BEAM GUARDRAIL 375 LF
STEEL BEAM GUARDRAIL END ANCHOR, BOLTED 4 EA.
STEEL BEAM GUARDRAIL TRANSITION SECTION, BA-209 4 EA.
STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-205 4 EA.

HIGH TENSION CABLE GUARDRAIL

Refer to BA-351.

1. Lane(s) to which the installation is adjacent.

Line No.	Lane (1)	Station	Side	Offset DO (FT)	Approach CA (FT)	Obstacle CO (FT)	Trailing CT (FT)	Protection Length (CA+CO+CT) (FT)	End Anchor (EA)	Remarks
1.0	SB	1625+98.00	Median						1	Stage 1 SB Lanes South Crossover
2.0	SB	1633+08.00	Median						1	Stage 1 SB Lanes South Crossover
3.0	SB	1674+48.00	Median						1	Stage 1 SB Lanes North Crossover
4.0	SB	1681+58.00	Median						1	Stage 1 SB Lanes North Crossover
5.0	NB	1657+24.00	Median	16.0				140.0	2	Stage 2 NB Lanes
6.0	NB	1645+77.35	Median					150.0	1	Stage 3 NB Lanes at Overpass
7.0	SB	1654+20.00	Median	16.0				160.0	2	Stage 3 SB Lanes
8.0	SB	1653+30.00	Median						1	Stage 3 SB Lanes
9.0	SB	1659+83.00	Median						1	Stage 3 SB Lanes
								450.0	11	

Notes:
Lines 1 and 2, remove 710 ft of existing cable guardrail through proposed south crossover from Sta. 1625+98 to 1633+08. Install end anchors.
Lines 3 and 4, remove 710 ft of existing cable guardrail through proposed north crossover from Sta. 1674+48 to 1681+58. Install end anchors.
Line 6, remove existing end anchor and extend cable guardrail to the north for staged two-lane, two way traffic. This extension shall remain in place when the project is complete.
Line 8, remove 140 ft of existing cable guardrail from Sta. 1653+30 to 1654+70, install end anchor.
Line 9, remove 170 ft of existing cable guardrail from Sta. 1658+13 to 1659+83, install end anchor.

Bid Items:
HIGH TENSION CABLE GUARDRAIL 450 LF
HIGH TENSION CABLE GUARDRAIL, END ANCHOR 11 EA

108_13A
3/27/25

SAFETY CLOSURES

Station	Road Closure Qty.	Hazard Closure Qty.	Remarks
1629+50.00	1		Stage 2 NB Lanes at South Crossover
1678+00.00	1		Stage 2 NB Lanes at North Crossover
1629+50.00	1		Stage 3 SB Lanes at South Crossover
1678+00.00	1		Stage 3 SB Lanes at North Crossover
	4		

Bid Item:
SAFETY CLOSURE 4 EA

PAVEMENT MARKING LINE TYPES

Line factors based on 6-inch wide continuous line.
*BCY4 - Place on the same side of the roadway to match existing markings near the project.
**NPY4 - Estimating purposes only. No Passing Zone Lines will be located in the field.
***MNY6 - Factor of 1.00 includes number of 6-inch passes to cover median nose area.

BCY4: Broken Centerline (Yellow) @ 0.17 | BCY6: Broken Centerline (Yellow) @ 0.25 | BLC6: Broken Line Contrast (White/Black) @ 0.50 | BLW4: Broken Lane Line (White) @ 0.17 | BLW6: Broken Lane Line (White) @ 0.25
CBW6: Crosswalk Bar (White) @ 10.00 | CHW8: Channelizing Line (White) @ 1.33 | CHW10: Channelizing Line (White) @ 1.67 | CHY8: Channelizing Line (Yellow) @ 1.33 | CHY10: Channelizing Line (Yellow) @ 1.67
CLW6: Crosswalk Line (White) @ 2.00 | DCY4: Double Centerline (Yellow) @ 1.34 | DCY6: Double Centerline (Yellow) @ 2.00 | DDY4: Double Dotted Line (Yellow) @ 0.44 | DDY6: Double Dotted Line (Yellow) @ 0.67
DLW4: Dotted Line (White) @ 0.22 | DLW6: Dotted Line (White) @ 0.33 | DLY4: Dotted Line (Yellow) @ 0.22 | DLY6: Dotted Line (Yellow) @ 0.33 | ELW4: Edge Line Right (White) @ 0.67
ELW6: Edge Line Right (White) @ 1.00 | ELY4: Edge Line Left (Yellow) @ 0.67 | ELY6: Edge Line Left (Yellow) @ 1.00 | LDW8: Lane Drop (White) @ 0.33 | LDW10: Lane Drop (White) @ 0.42
MNY6: Median Nose (Yellow) @ 1.00 | NPY4: No Passing Zone Line (Yellow) @ 0.84 | NPY6: No Passing Zone Line (Yellow) @ 1.25 | RLW4: Ramp Edge Line Right (White) @ 0.67 | RLW6: Ramp Edge Line Right (White) @ 1.00
RLY4: Ramp Edge Line Left (Yellow) @ 0.67 | RLY6: Ramp Edge Line Left (Yellow) @ 1.00 | SLW2: Stop Line (White) @ 4.00 | SLW4: Solid Lane Line (White) @ 0.67 | SLW6: Solid Lane Line (White) @ 1.00
SPW4: Sloped Curb 4" (White) @ 2.16 | SPW6: Sloped Curb 6" (White) @ 2.28 | SPY4: Sloped Curb 4" (Yellow) @ 2.16 | SPY6: Sloped Curb 6" (Yellow) @ 2.28 | STW6: Standard Curb 6" (Yellow) @ 2.03
STY6: Standard Curb 6" (Yellow) @ 2.03 | YLW2: Yield Line (White) @ 1.15

Line No.	Station From	Station To	Line Length (STA)	Marking Type	Left	Center	Right	Groove Marking Needed?	Groove Qty. (STA)	BLC6 (STA)	BLC6 Factored (STA)	BLW4 (STA)	BLW4 Factored (STA)	CHW8 (STA)	CHW8 Factored (STA)	CHY8 (STA)	CHY8 Factored (STA)	DCY6 (STA)	DCY6 Factored (STA)	ELW6 (STA)	ELW6 Factored (STA)	ELY4 (STA)	ELY4 Factored (STA)	ELY6 (STA)	ELY6 Factored (STA)	Remarks
49.0	1604+20.00	1678+95.06	74.75	Multi-Component Liquid Material		X		Yes	37.38	74.75	37.38															Permanent NB Lanes
50.0	1622+31.31	1702+85.72	80.54	Multi-Component Liquid Material		X		Yes	40.27	80.54	40.27															Permanent SB Lanes
28.0	1599+50.00	1604+20.00	4.70	Multi-Component Liquid Material		X		Yes	2.35	4.70	2.35															Stage 3 NB Lanes Permanent
48.0	1593+87.69	1685+18.69	91.31	Multi-Component Liquid Material	X		X	Yes	182.62											91.31	91.31			91.31	91.31	Permanent NB Lanes
51.0	1622+31.31	1713+65.72	91.34	Multi-Component Liquid Material	X		X	Yes	182.68											91.34	91.34			91.34	91.34	Permanent SB Lanes
37.0	1678+95.06	1685+18.69	6.24	Multi-Component Liquid Material		X		Yes	3.12	6.24	3.12															Stage 3 NB Lanes Permanent
13.0	1593+88.15	1599+51.15	5.63	Multi-Component Liquid Material		X		Yes	2.81	5.63	2.81															Stage 2 NB Lanes Permanent
21.0	1702+85.72	1713+65.72	10.80	Multi-Component Liquid Material		X		Yes	5.40	10.80	5.40															Stage 2 SB Lanes Permanent
Marking Type : Multi-Component Liquid Material									456.63		91.33		0		0		0		0		182.65		0		182.65	
1.0	1593+88.15	1615+48.15	21.60	Removal of Paint		X						21.60	3.67													Stage 1 NB Lanes
2.0	1692+05.72	1713+65.72	21.60	Removal of Paint		X						21.60	3.67													Stage 1 SB Lanes
22.0	1614+81.31	1626+48.59	11.67	Removal of Paint		X														11.67	11.67					Stage 3 NB Lanes from Stage 2
23.0	1682+68.69	1685+18.69	2.50	Removal of Paint		X														2.50	2.50					Stage 3 NB Lanes from Stage 2
7.0	1615+48.15	1683+03.97	67.56	Removal of Paint		X																		67.56	67.56	Stage 2 NB Lanes from Stage 1
24.0	1624+71.63	1632+51.41	7.80	Removal of Paint																		7.80	5.23			Stage 3 SB Lanes from Stage 2
25.0	1632+51.41	1673+31.31	40.80	Removal of Paint		X												40.80	81.60							Stage 3 SB Lanes from Stage 2
43.0	1619+50.00	1634+18.69	14.69	Removal of Paint		X																		14.69	14.69	Post Stage 3 Removal NB Lanes
26.0	1632+51.41	1673+31.31	40.80	Removal of Paint	X															40.80	40.80					Stage 3 SB Lanes from Stage 2
44.0	1634+18.69	1674+99.21	40.81	Removal of Paint		X													40.81							Post Stage 3 Removal NB Lanes
27.0	1673+31.31	1688+00.00	14.69	Removal of Paint		X																		14.69	14.69	Stage 3 SB Lanes from Stage 2
45.0	1674+99.21	1678+95.06	3.96	Removal of Paint		X																		3.96	3.96	Post Stage 3 Removal NB Lanes
8.0	1626+48.59	1629+50.00	3.01	Removal of Paint	X																	3.01	2.02			Stage 2 NB Lanes
9.0	1678+00.00	1682+68.69	4.69	Removal of Paint	X																	4.69	3.14			Stage 2 NB Lanes
10.0	1628+54.94	1632+51.41	3.96	Removal of Paint	X																	3.96	2.65			Stage 2 SB Lanes
11.0	1673+31.31	1695+80.00	22.49	Removal of Paint	X																	22.49	15.07			Stage 2 SB Lanes
46.0	1622+31.31	1624+81.31	2.50	Removal of Paint		X														2.50	2.50					Post Stage 3 Removal SB Lanes
12.0	1688+00.00	1697+10.00	9.10	Removal of Paint		X																		9.10	9.10	Stage 2 SB Lanes from Stage 1
47.0	1681+02.02	1692+69.00	11.67	Removal of Paint		X														11.67	11.67					Post Stage 3 Removal SB Lanes
Marking Type : Removal of Paint									0		0		7.34		0		0		122.41		69.14		28.11		110.00	
4.0	1615+48.15	1683+03.97	67.56	Waterborne/Solvent Paint		X		No																67.56	67.56	Stage 1 NB Lanes
5.0	1624+46.03	1692+05.72	67.60	Waterborne/Solvent Paint		X		No																67.60	67.60	Stage 1 SB Lanes
30.0	1619+50.00	1634+18.69	14.69	Waterborne/Solvent Paint		X		No																14.69	14.69	Stage 3 NB Lanes
32.0	1634+18.69	1674+99.21	40.81	Waterborne/Solvent Paint		X		No										40.81	81.62							Stage 3 NB Lanes
34.0	1674+99.21	1678+95.06	3.96	Waterborne/Solvent Paint		X		No														3.96	2.65			Stage 3 NB Lanes
35.0	1652+27.74	1657+47.58	5.20	Waterborne/Solvent Paint			X	No												5.20	5.20					Stage 3 NB Lanes
33.0	1634+18.69	1674+99.21	40.81	Waterborne/Solvent Paint	X			No												40.81	40.81					Stage 3 NB Lanes
39.0	1622+31.31	1624+81.31	2.50	Waterborne/Solvent Paint		X		No												2.50	2.50					Stage 3 SB Lanes
40.0	1680+65.66	1692+69.00	12.03	Waterborne/Solvent Paint		X		No												12.03	12.03					Stage 3 SB Lanes
42.0	1681+02.02	1695+74.00	14.72	Waterborne/Solvent Paint	X			No																14.72	14.72	Stage 3 SB Lanes

PAVEMENT MARKING LINE TYPES

Line factors based on 6-inch wide continuous line.
*BCY4 - Place on the same side of the roadway to match existing markings near the project.
**NPY4 - Estimating purposes only. No Passing Zone Lines will be located in the field.
***MNY6 - Factor of 1.00 includes number of 6-inch passes to cover median nose area.

BCY4: Broken Centerline (Yellow) @ 0.17 | BCY6: Broken Centerline (Yellow) @ 0.25 | BLC6: Broken Line Contrast (White/Black) @ 0.50 | BLW4: Broken Lane Line (White) @ 0.17 | BLW6: Broken Lane Line (White) @ 0.25
CBW6: Crosswalk Bar (White) @ 10.00 | CHW8: Channelizing Line (White) @ 1.33 | CHW10: Channelizing Line (White) @ 1.67 | CHY8: Channelizing Line (Yellow) @ 1.33 | CHY10: Channelizing Line (Yellow) @ 1.67
CLW6: Crosswalk Line (White) @ 2.00 | DCY4: Double Centerline (Yellow) @ 1.34 | DCY6: Double Centerline (Yellow) @ 2.00 | DDY4: Double Dotted Line (Yellow) @ 0.44 | DDY6: Double Dotted Line (Yellow) @ 0.67
DLW4: Dotted Line (White) @ 0.22 | DLW6: Dotted Line (White) @ 0.33 | DLY4: Dotted Line (Yellow) @ 0.22 | DLY6: Dotted Line (Yellow) @ 0.33 | ELW4: Edge Line Right (White) @ 0.67
ELW6: Edge Line Right (White) @ 1.00 | ELY4: Edge Line Left (Yellow) @ 0.67 | ELY6: Edge Line Left (Yellow) @ 1.00 | LDW8: Lane Drop (White) @ 0.33 | LDW10: Lane Drop (White) @ 0.42
MNY6: Median Nose (Yellow) @ 1.00 | NPY4: No Passing Zone Line (Yellow) @ 0.84 | NPY6: No Passing Zone Line (Yellow) @ 1.25 | RLW4: Ramp Edge Line Right (White) @ 0.67 | RLW6: Ramp Edge Line Right (White) @ 1.00
RLY4: Ramp Edge Line Left (Yellow) @ 0.67 | RLY6: Ramp Edge Line Left (Yellow) @ 1.00 | SLW2: Stop Line (White) @ 4.00 | SLW4: Solid Lane Line (White) @ 0.67 | SLW6: Solid Lane Line (White) @ 1.00
SPW4: Sloped Curb 4" (White) @ 2.16 | SPW6: Sloped Curb 6" (White) @ 2.28 | SPY4: Sloped Curb 4" (Yellow) @ 2.16 | SPY6: Sloped Curb 6" (Yellow) @ 2.28 | STW6: Standard Curb 6" (Yellow) @ 2.03
STY6: Standard Curb 6" (Yellow) @ 2.03 | YLW2: Yield Line (White) @ 1.15

Line No.	Station From	Station To	Line Length (STA)	Marking Type	Left	Center	Right	Groove Marking Needed?	Groove Qty. (STA)	BLC6 (STA)	BLC6 Factored (STA)	BLW4 (STA)	BLW4 Factored (STA)	CHW8 (STA)	CHW8 Factored (STA)	CHY8 (STA)	CHY8 Factored (STA)	DCY6 (STA)	DCY6 Factored (STA)	ELW6 (STA)	ELW6 Factored (STA)	ELY4 (STA)	ELY4 Factored (STA)	ELY6 (STA)	ELY6 Factored (STA)	Remarks
38.0	1678+95.06	1682+68.69	3.74	Waterborne/Solvent Paint	X			No														3.74	2.51			Stage 3 NB Lanes
15.0	1614+81.31	1626+48.59	11.67	Waterborne/Solvent Paint				No												11.67	11.67					Stage 2 NB Lanes
17.0	1682+68.69	1685+18.69	2.50	Waterborne/Solvent Paint		X		No												2.50	2.50					Stage 2 NB Lanes
18.0	1632+51.41	1673+31.31	40.80	Waterborne/Solvent Paint	X	X		No										40.80	81.60	40.80	40.80					Stage 2 SB Lanes
Marking Type : Waterborne/Solvent Paint									0.00		0.00		0.00		0.00		0.00		163.22		115.51		5.16		164.57	
3.0	1606+38.15	1615+48.15	9.10	Wet Retroreflective Removable Tape	X			No								9.10	12.10									Stage 1 NB Lanes Taper
6.0	1692+05.72	1701+15.72	9.10	Wet Retroreflective Removable Tape	X			No								9.10	12.10									Stage 1 SB Lanes Taper
29.0	1611+70.00	1619+50.00	7.80	Wet Retroreflective Removable Tape	X									7.80	10.37											Stage 3 NB Lanes Taper
31.0	1624+81.31	1634+18.69	9.37	Wet Retroreflective Removable Tape				No						9.40	12.50	9.40	12.50									Stage 3 South Crossover
36.0	1674+99.21	1681+02.02	6.03	Wet Retroreflective Removable Tape				No						6.07	8.07	6.07	8.07									Stage 3 North Crossover
41.0	1692+69.00	1700+52.00	7.83	Wet Retroreflective Removable Tape			X	No						7.83	10.41											Stage 3 SB Lanes Taper
14.0	1607+01.31	1614+81.31	7.80	Wet Retroreflective Removable Tape			X	No						7.80	10.37											Stage 2 NB Lanes Taper
16.0	1626+48.59	1632+51.41	6.03	Wet Retroreflective Removable Tape				No						6.07	8.07	6.07	8.07									Stage 2 South Crossover
19.0	1673+31.31	1682+68.69	9.37	Wet Retroreflective Removable Tape				No						9.37	12.46	9.37	12.46									Stage 2 North Crossover
20.0	1688+00.00	1695+80.00	7.80	Wet Retroreflective Removable Tape	X			No								7.80	10.37									Stage 2 SB Lanes Taper
Marking Type : Wet Retroreflective Removable Tape									0		0		0		72.25		75.67		0		0		0		0	
Grand Totals									456.63		91.33		7.34		72.25		75.67		285.63		367.30		33.27		457.22	

Notes:
Lane references are in direction of travel.
Refer to Standard Road Plans TC-415 for installation of Temporary Concrete Barrier, TC-421 for Stage 1 crossover construction, and TC-61 for Stages 2 and 3. Refer to J Sheets for additional details.
Lines 13, 21, 28, and 36 replace the centerline pavement markings removed from previous stages, which created large gaps in the centerline markings. These centerlines are scheduled as final broken lane line markings, since there will be no other temporary markings installed in those areas.
"Pavement Markings Removed" are not scheduled in areas where "Grooves Cut For Pavement Markings" will remove the existing or temporary markings.
Removing wet, retroreflective removable tape markings will not be measured separately for payment, per Article 2527.04 A.3. of the Standard Specifications.

Bid Items:
PAINTED PAVEMENT MARKINGS, MULTI-COMPONENT LIQUID 456.6 STA
GROOVES CUT FOR PAVEMENT MARKINGS 456.6 STA
PAINTED PAVEMENT MARKINGS, WATERBORNE OR SOLVENT-BASED 448.5 STA
REMOVABLE TAPE MARKINGS, WET RETROREFLECTIVE 147.9 STA
PAVEMENT MARKINGS REMOVED 337 STA

TEMPORARY FLOODLIGHTING LUMINAIRES

Possible Standard: LI-130

Line No.	Item No.	Station	Offset (FT)	Number Luminaires	Remarks
1.0	1	1629+49.36		4	Stages 2 and 3
2.0	2	1678+00.00		4	Stages 2 and 3
				8	

Note:
For Offsets, see Article 2528.03 H.2 of the Standard Specifications.

Bid Item:
TEMPORARY FLOODLIGHTING LUMINAIRE 8 EA

PAVEMENT MARKING SYMBOLS AND LEGENDS

Refer to PM-111

Line No.	Roadway Identification	Station	Side	Pavement Symbol	Quantity (EA)	Groove Marking Needed?	Remarks
1.0	I-29	1583+88.00	Left	LLRW	1	No	Stage 1 NB Lanes
2.0	I-29	1584+88.00	Left	LLRW	1	No	Stage 1 NB Lanes
3.0	I-29	1593+88.00	Left	LLRW	1	No	Stage 1 NB Lanes
4.0	I-29	1594+88.00	Left	LLRW	1	No	Stage 1 NB Lanes
5.0	I-29	1712+62.00	Left	LLRW	1	No	Stage 1 SB Lanes
6.0	I-29	1713+62.00	Left	LLRW	1	No	Stage 1 SB Lanes
7.0	I-29	1722+62.00	Left	LLRW	1	No	Stage 1 SB Lanes
8.0	I-29	1723+62.00	Left	LLRW	1	No	Stage 1 SB Lanes
9.0	I-29	1584+51.00	Right	RLRW	1	No	Stage 2 NB Lanes
10.0	I-29	1585+51.00	Right	RLRW	1	No	Stage 2 NB Lanes
11.0	I-29	1594+51.00	Right	RLRW	1	No	Stage 2 NB Lanes
12.0	I-29	1595+51.00	Right	RLRW	1	No	Stage 2 NB Lanes
13.0	I-29	1707+30.00	Left	LLRW	1	No	Stage 2 SB Lanes
14.0	I-29	1708+30.00	Left	LLRW	1	No	Stage 2 SB Lanes
15.0	I-29	1717+30.00	Left	LLRW	1	No	Stage 2 SB Lanes
16.0	I-29	1718+30.00	Left	LLRW	1	No	Stage 2 SB Lanes
17.0	I-29	1589+20.00	Left	LLRW	1	No	Stage 3 NB Lanes
18.0	I-29	1590+20.00	Left	LLRW	1	No	Stage 3 NB Lanes
19.0	I-29	1599+20.00	Left	LLRW	1	No	Stage 3 NB Lanes
20.0	I-29	1600+20.00	Left	LLRW	1	No	Stage 3 NB Lanes
21.0	I-29	1712+00.00	Right	RLRW	1	No	Stage 3 SB Lanes
22.0	I-29	1713+00.00	Right	RLRW	1	No	Stage 3 SB Lanes
23.0	I-29	1722+00.00	Right	RLRW	1	No	Stage 3 SB Lanes
24.0	I-29	1723+00.00	Right	RLRW	1	No	Stage 3 SB Lanes
					24		

Note:
Lane references are in direction of travel.
Refer to Standard Road Plans TC-421 for Stage 1 crossover construction and TC-61 for Stages 2 and 3.

Bid Item:
PAINTED SYMBOLS AND LEGENDS, WATERBORNE OR SOLVENT-BASED 24 EA
SYMBOLS AND LEGENDS REMOVED 24 EA

CRASH CUSHIONS

* Bid Item
1. Lane(s) to which the installation is adjacent.
2. Complete this section when using the Temporary Crash Cushion bid item and Earthwork is needed for Sand Barrel placement. Refer to BA-500.

Line No.	Lane	Station	Side	Obstacle Width (FT)	Crash Cushion Type	Crash Cushion Quantity	V (FT) (2)	W (FT) (2)	X (FT) (2)	Y (FT) (2)	Z (FT) (2)	Excavation Class 10* (CY)	Embankment in Place* (CY)	Obstacle Description	Remarks
1.0	NB	1624+05.71	Left	1.9	Temporary Severe Use	1								Temporary Concrete Barrier	Stage 1 NB Lanes at Crossover
2.0	NB	1672+55.92	Left	1.9	Temporary Severe Use	1								Temporary Concrete Barrier	Stage 1 NB Lanes at Crossover
3.0	SB	1634+94.29	Left	1.9	Temporary Severe Use	1								Temporary Concrete Barrier	Stage 1 SB Lanes at Crossover
4.0	SB	1683+34.55	Left	1.9	Temporary Severe Use	1								Temporary Concrete Barrier	Stage 1 SB Lanes at Crossover
5.0	SB	1643+99.69	Right	1.9	Temporary Severe Use	1		24.25	5.25	3.25	12.00		6.6	Temporary Concrete Barrier	Stage 2 SB Lanes at Overpass
6.0	SB	1653+31.11	Right	1.9	Temporary Severe Use	1		24.25	5.25	3.25	12.00		6.6	Temporary Concrete Barrier	Stage 2 SB Lanes SW Corner of Bridge
7.0	SB	1649+56.53	Left	1.9	Temporary Severe Use	1		24.25	5.25	3.25	12.00		6.6	Temporary Concrete Barrier	Stage 2 SB Lanes SE Corner of Bridge
8.0	NB	1645+53.91	Right	1.9	Temporary Severe Use	1		24.25	5.25	3.25	12.00		6.6	Temporary Concrete Barrier	Stage 3 NB Lanes at Overpass
9.0	NB	1658+32.50	Right	1.9	Temporary Severe Use	1		24.25	5.25	3.25	12.00		6.6	Temporary Concrete Barrier	Stage 3 NB Lanes NE Corner of Bridge
10.0	NB	1661+15.65	Left	1.9	Temporary Severe Use	1		24.25	5.25	3.25	12.00		6.6	Temporary Concrete Barrier	Stage 3 NB Lanes NW Corner of Bridge
						10						0	39.6		

Note:
Lane references are in direction of travel.

Bid Item:
TEMP CRASH CUSHION, SEVERE USE (SU) 10 EA
EMBANKMENT IN PLACE 39.6 CY

TEMPORARY BARRIER RAIL

Possible Standard: BA-401 Possible Detail: 560-7

* Not a bid item. Anchorage requirements are based on TBR locations shown in the plans. TBR alignments that vary from what is shown in the plans may result in additional TBR sections requiring anchorage.

Line No.	Station From	Station To	Length (FT)	Barrier Rail Type	Anchored*	Modular Glare Screen System	Remarks
1.0	1624+05.71	1633+93.21	1037.5	Concrete BA-401	No	No	[1] Stage 1 NB Lanes at Crossover
2.0	1672+55.92	1682+93.42	1037.5	Concrete BA-401	No	No	[1] Stage 1 NB Lanes at Crossover
3.0	1624+56.79	1634+94.29	1037.5	Concrete BA-401	No	No	[1] Stage 1 SB Lanes at Crossover
4.0	1672+97.05	1683+34.55	1037.5	Concrete BA-401	No	No	[1] Stage 1 SB Lanes at Crossover
5.0	1642+49.69	1643+99.69	150.0	Concrete BA-401	Yes	No	Stage 2 SB Lanes at Overpass
6.0	1653+31.11	1654+81.11	150.0	Concrete BA-401	Yes	No	Stage 2 SB Lanes SW Corner of Bridge
7.0	1649+57.16	1654+81.11	525.0	Concrete BA-401	Yes	No	Stage 2 SB Lanes SE Corner of Bridge
8.0	1644+03.91	1645+53.91	150.0	Concrete BA-401	Yes	No	Stage 3 NB Lanes at Overpass
9.0	1656+82.50	1658+32.50	150.0	Concrete BA-401	Yes	No	Stage 3 NB Lanes NE Corner of Bridge
10.0	1656+82.50	1661+16.13	437.5	Concrete BA-401	Yes	No	Stage 3 NB Lanes NW Corner of Bridge
			5712.5				

Notes:
See U Sheets for details for temporary to permanent barrier connections.
There are only (4) sections of anchored temporary barrier rail per location noted. See U Sheets for details.
[1] See Detail 8210 in the B Sheets for Temporary Concrete Barrier Layout for One-Way Traffic.

Bid Item:
TEMPORARY BARRIER RAIL, CONCRETE 5712.5 LF
TEMPORARY TO PERMANENT BARRIER CONNECTION 6 EA (Lines 5-10)

108_35
8/15/22

TEMPORARY LANE SEPARATOR SYSTEM

See TC-61

Line No.	Station From	Station To	Length (LF)	Remarks
1.0	1628+54.94	1635+68.69	713.8	NB Closure
2.0	1671+81.31	1678+95.06	713.8	NB Closure
3.0	1628+54.94	1635+68.69	713.8	SB Closure
4.0	1671+81.31	1678+95.06	713.8	SB Closure
			2855.2	

Bid Item:
TEMPORARY LANE SEPARATOR SYSTEM 2855 LF

110_01
4/5/24

REMOVAL OF PAVEMENT

Refer to Tabulation 102-5.

* Not a bid item.

Line No.	Station From	Station To	Side	Pavement Type	Area (SY)	Saw Cut* (LF)	Remarks
1.0	1624+81.31	1634+18.69	NB	HMA	624.9	950.0	Stage 1 shoulder removal for crossover
2.0	1673+31.31	1682+68.69	NB	HMA	624.9	950.0	Stage 1 shoulder removal for crossover
3.0	1624+81.31	1634+18.69	SB	PCC	624.9	950.0	Stage 1 shoulder removal for crossover
4.0	1673+31.31	1682+68.69	SB	PCC	624.9	950.0	Stage 1 shoulder removal for crossover
5.0	1651+98.13	1654+81.01	NB	PCC	300.1	296.9	Stage 2 median shoulder
6.0	1652+27.74	1654+62.34	NB	HMA	209.7	127.9	Stage 2 outside shoulder
7.0	1653+42.58	1654+41.90	NB	PCC	310.7	166.7	Stage 2 roadway pavement
8.0	1654+41.90	1654+81.01	NB	PCC	129.3		Stage 2 approach pavement
9.0	1655+98.77	1656+37.84	NB	PCC	145.9	80.3	Stage 2 approach pavement
10.0	1656+37.84	1657+47.42	NB	PCC	314.3	244.9	Stage 2 roadway pavement
11.0	1656+17.61	1657+47.42	NB	HMA	118.6		Stage 2 outside shoulder
12.0	1656+17.61	1657+47.42	NB	HMA	88.3		Stage 2 median shoulder
13.0	1653+97.58	1654+27.53	SB	PCC	81.1	48.2	Stage 3 roadway pavement
14.0	1654+27.53	1654+81.06	SB	PCC	207.8		Stage 3 approach pavement
15.0	1653+97.58	1654+81.06	SB	PCC	34.7	42.2	Stage 3 median shoulder
16.0	1653+97.58	1654+81.06	SB	PCC	55.2	42.2	Stage 3 outside shoulder
17.0	1655+97.96	1656+37.58	SB	PCC	182.0	41.1	Stage 3 approach pavement
18.0	1656+37.58	1657+47.42	SB	PCC	295.3	24.4	Stage 3 roadway pavement
19.0	1656+37.58	1658+70.88	SB	PCC	323.1	249.1	Stage 3 median shoulder
20.0	1656+37.58	1659+17.28	SB	PCC	474.4	279.7	Stage 3 outside shoulder
					5770.1	5443.6	

Note:
Locations where a quantity for saw cut is not given, the saw cut was calculated with an adjacent section of pavement removal.

Bid Item:
REMOVAL OF PAVEMENT 5770.1 SY

110_07A

8/15/22

REMOVAL OF STEEL BEAM GUARDRAIL

(1) Lane(s) to which the installation is adjacent.
(2) Includes length of End Terminals and End Anchors.

Line No.	Direction of Traffic (1)	Station From	Station To	Side	Removal of Guardrail (2) (LF)
1.0	NB	1654+23.00	1654+83.00	Right	61.0
2.0	NB	1652+18.00	1654+83.00	Median	266.0
3.0	SB	1655+96.00	1658+37.00	Right	241.0
4.0	SB	1655+96.00	1658+53.00	Median	257.0
					825.0

Bid Item:
REMOVAL OF STEEL BEAM GUARDRAIL 825 LF

110_07B
5/22/24

REMOVAL OF CABLE GUARDRAIL

* Not a bid item
(1) Lane(s) to which the installation is adjacent.

Line No.	Direction of Traffic (1)	Station From	Station To	Side	Cable Type	Cable Remove (LF)	Post Footings Concrete Remove* (Yes/No)	End Terminal Remove* (No.)	Remarks
1.0	SB	1625+98.00	1633+08.00	Median	High Tension	710.00	Yes	0	Through Proposed South Crossover
2.0	SB	1674+48.00	1681+58.00	Median	High Tension	710.00	Yes	0	Through Proposed North Crossover
3.0	NB	1645+77.35		Median	High Tension	50.00	Yes	1	Removal of End Anchor
4.0	SB	1653+30.00	1654+70.00	Median	High Tension	140.00	Yes	0	
5.0	SB	1658+13.00	1659+83.00	Median	High Tension	170.00	Yes	0	
						1780.00			

Note:
Coordinate removal of cable guardrail with installation of new cable guardrail. Refer to Tab. 108-09A for further details.

Bid Item:
REMOVAL OF CABLE GUARDRAIL 1780 LF

110_13
8/15/22

DELIVERY AND STOCKPILING

Line No.	Item Description	Quantity	Quantity Units	Delivery Location	Contact Name	Contact Number	Remarks
1.0	Steel Beam Guardrail	825	LF	See Notes	Rick Fink	712-642-2178	

Notes:

Deliver to:
IaDOT Missouri Valley Maintenance Garage
2308 U.S. 30
Missouri Valley, IA 51555

BRIDGE APPROACH SECTION

Refer to the BR Series.

* Not a bid item
** Verify layout of bridge approach does not conflict with guardrail posts.

Line No.	Bridge Station	End	Skew Ahead Left (Degrees)	Skew Ahead Right (Degrees)	(T) Thickness (IN)	Pay Length (FT)	Non-Reinf. Area (SY)	Single-Reinf. Area (SY)	Double-Reinf. Area (SY)	SRP Approach	SRP Abutment Type	SRP Abutting Pavement	Perforated * 4" Subdrain (LF)	Subdrain * Outlet (STA)	Subdrain * Outlet Side	Porous * Backfill (CY)	Modified * Subbase (TON)	Polymer * Grid (SY)	Special * Backfill (TON)	Remarks
1.0	1655+72.50	SE			12.0	70.0	190.8	127.2	127.2	BR-205	Movable	BR-213	76.0	1654+07.58	Right	3.3	400.610	476.2		Stage 2 NB Lanes
2.0	1655+72.50	NE			12.0	70.0	190.8	127.2	127.2	BR-205	Movable	BR-213	76.0	1657+37.42	Right	3.3	400.610	476.2		Stage 2 NB Lanes
3.0	1655+72.50	SW			12.0	70.0	190.8	127.2	127.2	BR-205	Movable	BR-213	76.0	1654+07.58	Right	3.3	400.610	476.2		Stage 3 SB Lanes
4.0	1655+72.50	NW			12.0	70.0	190.8	127.2	127.2	BR-205	Movable	BR-213	76.0	1657+37.42	Right	3.3	400.610	476.2		Stage 3 SB Lanes
Total							763.2	508.8	508.8				304.0			13.2	1602.440	1904.8		

Bid Item:
BRIDGE APPROACH, BR-205 1780.8 SY (Non-Reinf. + Single Reinf. + Double Reinf.)

MEDIAN CROSSOVERS

Refer to PV-500 Series.

* Not a bid item

Line No.	Road Identification	Station	Standard Road Plan	Detour Pavement (SY)	Special Backfill (TON)	Granular Shoulder (TON)	Embankment in Place (CY)	Class 10 Excavation (CY)	Class 13 Excavation (CY)	Removal of Pavement (SY)	Saw Cut* (LF)	18" Unclassified Roadway Pipe (LF)	36" CMP Slotted Drain/6" Grate (LF)	Beveled Pipe and Guard (No.)	Remarks
1.0	I-29	1629+50.00		2695.0	2599.400	275.000					1898.8	132.0	116.0	2	See Modified SRP PV-500 in the U Sheets
2.0	I-29	1678+00.00		2695.0	2599.400	275.000					1898.8	132.0	116.0	2	See Modified SRP PV-500 in the U Sheets
				5390	5198.8	550.0					3797.52	264	232	4	

Note:
Crossovers to remain in place at the completion of the project.
Quantity for Special Backfill includes 138.8 Ton for the Slotted Drains.

Bid Items:
DETOUR PAVEMENT 5390 SY
SPECIAL BACKFILL 5198.8 TON
GRANULAR SHOULDERS, TYPE A 550 TON
CULVERT, UNCLASSIFIED ROADWAY PIPE, 18 INCH DIA. 264 LF
DRAIN, CORRUGATED METAL SLOTTED PIPE, 36 IN., W/6 IN. GRATE 232 LF
BEVELED PIPE AND GUARD, 18 INCH 4 EA

SHOULDERS

(1) Lane(s) to which the shoulder is adjacent.
(2) See Typ. 7156, 7157, or 7158.
(3) Bid Item.
(4) Applies only for Paved Shoulders constructed on project with existing granular shoulders.
(5) Bid Item. Typ. 7156, 7157, or 7158.
(6) Does not include shrink.
(7) Paved shoulder thickness specified in Remarks.
(8) Subbase type specified in Remarks.

Roadway Identification	Direction of Travel (1)	Station From	Station To	Side	P Width (FT)	P SG Width (2) (FT)	G Width (FT)	L Length (FT)	Class 13 Excavation (CY)(3)(4)	Paved Shoulder (3) (SY)	Paved Shoulder at Grdrail (5)(7) (SY)	Reinforced Paved Shoulder(3) (SY)	Special Backfill HMA Alt. (3) (TON)	Special Backfill HMA Alt. (TON/STA)	Special Backfill PCC Alt. (3) (TON)	Special Backfill PCC Alt. (TON/STA)	Pavement Scarification (SY)	Polymer Grid (SY)	Subbase (3) (8) (CY)	Granular Shoulder (3) (TON)	Granular Shoulder (TON/STA)	Earth Shoulder Const. Alt (3) (STA)	Earth Shoulder Const. Alt HMA (6) (CY)	Earth Shoulder Const. Alt PCC (6) (CY)	Remarks
I-29	NB	1652+27.60	1653+97.58	Right	12.34	3.27		169.98		232.3	43.4								107.86			1.70		58.80	Stage 2
I-29	NB	1652+90.00	1653+97.58	Median	18.4	3.27		107.58		219.9	27.5								93.25			1.08		37.21	Stage 2
I-29	SB	1657+47.42	1659+17.28	Right	12.4	3.27		169.86		234.0	43.4								107.86			1.70		58.76	Stage 3
I-29	SB	1657+47.42	1658+54.77	Median	18.4	3.27		107.35		219.5	27.4								93.25			1.07		37.14	Stage 3
										905.7	141.7								402.22			5.55		191.91	

Note:
Side references are in direction of travel.
(7) Paved Shoulder at Guardrail thickness 12".
(8) Subbase type is Modified Subbase.

Bid Items:
PAVED SHOULDER, P.C. CONCRETE, 12 IN. 1047.4 SY (Paved Shoulder + Shoulder at Guardrail)
MODIFIED SUBBASE 402.2 CY
SHOULDER CONSTRUCTION, EARTH 5.6 STA

RUMBLE STRIPS

* Calculated at 18" width for Shoulder.
** For use with penetrating Engineered Fog Seal. Calculated at 2" wider than rumble strips.

Line No.	Road Identification	Station From	Station To	Surface Type	Rumble Strip Lane	Rumble Strip Type	L (IN)	PCC Length (STA)	HMA Length (STA)	Effective Shoulder Width PCC (FT)	Effective Shoulder Width HMA (FT)	Effective Shoulder Width Granular\Earth (FT)	Remarks
1.0	I-29 NB	1652+90.24	1653+97.58	PCC	Left Shoulder	Milled Shoulder Rumble Strips	12"	1.07		21.6			Stage 2
2.0	I-29 NB	1652+27.74	1653+97.58	PCC	Right Shoulder	Milled Shoulder Rumble Strips	12"	1.70		15.6			Stage 2
3.0	I-29 SB	1657+47.42	1658+54.77	PCC	Left Shoulder	Milled Shoulder Rumble Strips	12"	1.07		21.6			Stage 3
4.0	I-29 SB	1657+47.42	1659+17.28	PCC	Right Shoulder	Milled Shoulder Rumble Strips	12"	1.70		15.6			Stage 3
								5.54					

Note:
Lane references in direction of travel.

Bid Items:
MILLED SHOULDER RUMBLE STRIPS, PCC SURFACE 5.6 STA

103_10
4/30/25

TOPSOIL STRIPPING AND PLACEMENT

Line No.	Road Identification	Dir. of Traffic	Station From	Station To	Topsoil Stripping Thickness (IN)	Topsoil Placement Thickness (IN)	Remarks
1.0	I-29	NB	1652+27.74	1654+67.58	8.0	8.0	
2.0	I-29	NB	1656+77.42	1657+47.42	8.0	8.0	
3.0	I-29	SB	1653+97.58	1654+67.58	8.0	8.0	
4.0	I-29	SB	1656+77.42	1659+17.28	8.0	8.0	

103_07
8/15/22

SHRINKAGE DATA

Material	%	Remarks
Topsoil	40.0	
Class 10	30.0	
Boulder Estimate		10 CY

103_06
8/15/22

EMBANKMENT WITH MOISTURE CONTROL

Moisture Control is required for all Class 10 fill placed in all locations and depths. Topsoil will not require Moisture Control.

GEOTECHNICAL DESIGN

LICENSED PROFESSIONAL ENGINEER
GOPALAKRISHNA ALLAM
P28087
IOWA

I hereby certify that this plan was prepared under my supervision and that engineering decisions with regard to the design were made by me or by other duly licensed Professional Engineers under the laws of the State of Iowa.

Signature — Date: 01-16-2026

GOPALAKRISHNA ALLAM
Printed or Typed Name

My license renewal date is December 31, 2026

Pages or sheets covered by this seal: CS.1

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
- WH Water Hydrant (Rural)
- ST Septic Tank
- C Cistern
- LP L.P. Gas Tank (No Footing)
- UST Underground Storage Tank
- Latrine
- Satellite TV Dish
- WHU Water Hook Up
- RT Radio Tower
- TA Tower Anchor
- Guardrail (Beam or Cable)
- GP Guard Post (one or two)
- Guard Post (over two)
- FP Filler Pipe
- GV Gas Valve
- WV Water Valve
- SL Speed Limit Sign
- MM Mile Marker Post
- SIGN Sign
- TCB Traffic Signal Control Box
- RRB Rail Road Signal Control Box
- TSB Telephone Switch Box
- EB 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.**		**Transparency**
Pink, Dark	(13)		Temporary Pavement Shading — 50%
Yellow	(4)		Proposed Pavement Shading — 50%
Orange	(6)		Proposed Granular Shading — 50%
Orange	(70)		Proposed Shoulder Granular Shading — 50%
Yellow	(68)		Proposed Shoulder Paved Full Depth Shading — 50%
Yellow	(132)		Proposed Shoulder Paved Partial Depth Shading — 50%
Brown, Light	(236)		Grading Shading — 50%
Orange, Light	(134)		Proposed Granular Entrance Shading — 50%
Yellow	(220)		Proposed Paved Entrance Shading — 50%
Tan	(8)		Proposed Sidewalk Shading — 50%
Blue, Light	(230)		Proposed Sidewalk Landing Shading — 50%
Pink	(11)		Proposed Sidewalk Ramp Shading — 50%
Red	(3)		Proposed Structure Shading — 50%
Red	(3)		Delineates Restricted Areas — 0%

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design Color No.	
Green	(10)	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 Symbol
- Proposed Right-of-Way Line
- Existing Right of Way
- Existing and Proposed Right-of-Way
- Easement and Existing Right-of-Way
- Easement (Temporary) Symbol
- Easement (Temporary) Line
- Easement
- C/A Access Control
- Property Line Symbol
- Property Line

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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

FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER D.1

8:14:45 AM 5/7/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_LGD.dgn

Clay TWP.
T-79N R-45W
SEC. 12

Sta. 1655+39.58
Twin 115'x39' Continuous
Conc Slab Bridge
D.A.=5250 A-F
(REMOVE)

STA 1653+97.58 (ML029)
BEGIN CONSTRUCTION

Bridge End Drains, DR-401

STA 1657+47.42 (ML029)
END CONSTRUCTION

1650+00

1655+00

1660+00

24"x43.1' C.M.P. (REMOVE)

24"x40' C.M.P. (REMOVE)

Bridge End Drains, DR-401

0 50
FEET

ML029
(median chain and profile)

STA 1653+97.58 (ML029)
BEGIN CONSTRUCTION
Elev. 1020.84

STA 1657+47.42 (ML029)
END CONSTRUCTION
Elev. 1020.52

VPI = +20.00
EL = 1021.21
L = 225.00'
K = 372

+0.30% **-0.30%**

MED +95 1018.80
MED +43 1018.87
MED +68 1019.02

+0.15% DGM
+0.12% DGM

RT +43 1016.67
LT +98 1016.38
-4.75% RT Ditch Grade
-7.15% LT Ditch Grade
RT +05 1008.95
LT +05 1008.70

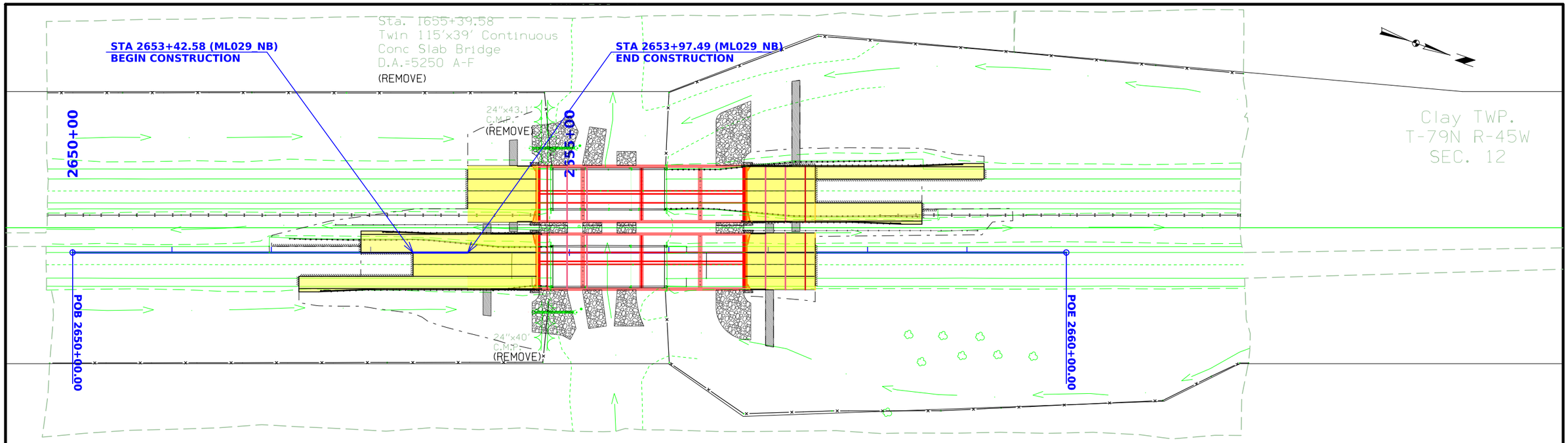
1035 1030 1025 1020 1015 1010 1005 1000 995 990

1020.84 1020.92 1020.97 1021.01 1021.03 1021.04 1021.03 1021.00 1020.95 1020.89 1020.82 1020.74 1020.66 1020.59 1020.52

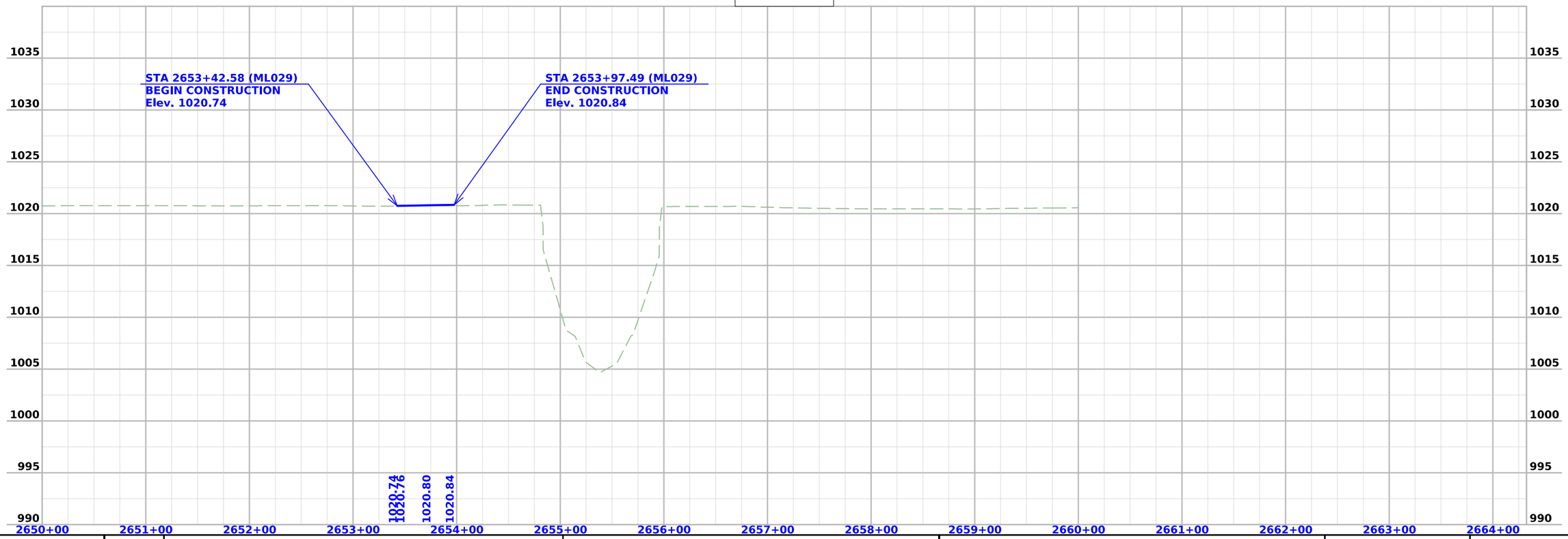
1648+00 1649+00 1650+00 1651+00 1652+00 1653+00 1654+00 1655+00 1656+00 1657+00 1658+00 1659+00 1660+00 1661+00

FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER D.2

7:34:39 AM 6/25/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_D02.dgn



ML029_NB
(EOP chain and profile)



FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER D.3

7:38:08 AM 6/25/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_D03.dgn

Clay TWP.
T-79N R-45W
SEC. 12

1621+00 1622+00 1623+00 1624+00 1625+00 1626+00 1627+00 1628+00 1629+00 1630+00 1631+00 1632+00 1633+00 1634+00 1635+00 1636+00

Proposed Crossover
Sta. 1629+50.00

Beveled Pipe and Guard
Sta. 1627+44.67

Culvert, Unclassified Roadway Pipe, 18" Dia.

Drain, Corrugated Metal Pipe Slotted, 36", w/6" Grate

Beveled Pipe and Guard
Sta. 1631+55.33

Culvert, Unclassified Roadway Pipe, 18" Dia.

See Modified Standard Road Plan PV-500.

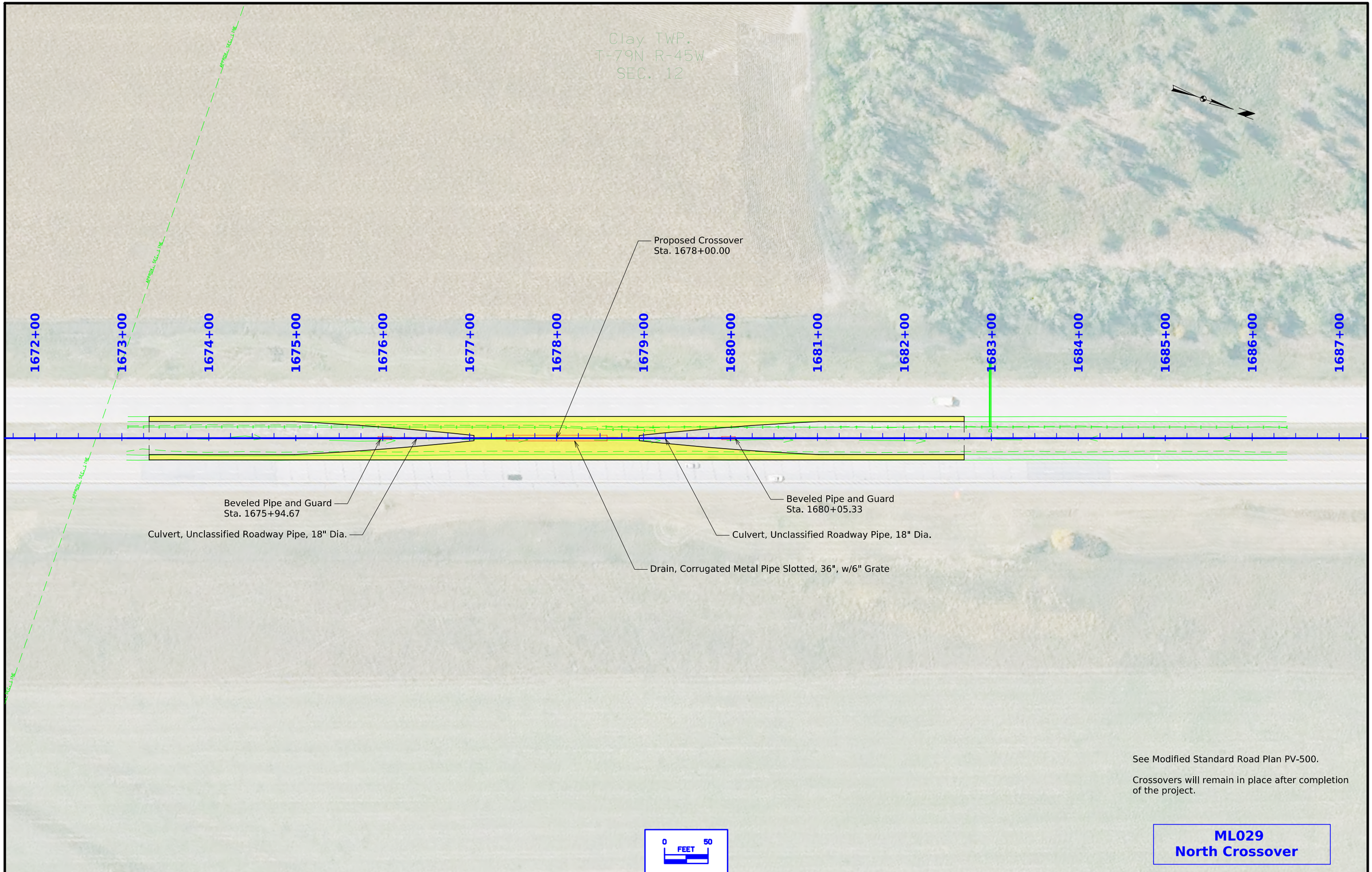
Crossovers will remain in place after completion of the project.

0 FEET 50

ML029
South Crossover

FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER F.1	

7:45:39 AM 6/25/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_F01.dgn



See Modified Standard Road Plan PV-500.

Crossovers will remain in place after completion of the project.

ML029
North Crossover

FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER F.2	

7:45:41 AM 6/25/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_F01.dgn

SURVEY INDEX

County: Harrison
PIN: 22-43-029-110
Project Number: IMX-029-5(275)86--02-43
Location: Burcham Creek 2.7 mi S of IA 127 (NB/SB)
Type of Work: Bridge Replacement
Project Directory: 4302911022

Survey Personnel

Clayton Henningsen – Survey Party Chief
Jason Arn – Survey Party Chief

Date(s) of Survey

Begin Date	12/16/2024
End Date	02/05/2025

General Information

This survey is for I-29 bridge replacement at Burcham Creek 2.7 mi S of IA 127 (NB/SB). This survey request was for the I-29 corridor only. This project is a Full Field DTM survey.

Utility Information

For logging data and other utility details see Utility Survey and Ownership Report in the Utility folder of the PrelimSurvey project directory.

Project Control

Coordinates were determined for primary project control points by conducting concurrent six-hour static observations. Post processing is constrained to nearby Iowa Real Time Network reference stations. For additional details of the control survey, contact the Preliminary Survey department.

PROJECT DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 ADJUSTMENT)
COORDINATE SYSTEM: IOWA REGIONAL COORDINATE SYSTEM ZONE 06 (U.S. SURVEY FOOT)
VERTICAL DATUM: NAVD88
GEOID MODEL: 2018u2

Alignment Information

The horizontal alignment for I-29 has been provided by the district 4 survey office.

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) for EPOCH 2010.00 (IaRTN 2019 Adjustment) - Iowa RCS Zone 06 (U.S. Survey Foot)

VERT. DATUM: NAVD88 - Geoid Model: 2018u2

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

HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING
HORIZ. DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 Adjustment)
Ia. Regional Coordinate System Zone 06 (U.S. Survey Foot)
VERT. DATUM: NAVD88
Geoid Model: 2018u2

Point Name	Northing	Easting	Elevation	Feature Definition-Description
43I290857	7114170.65	16418505.62	1016.50	CP FENO MONUMENT IN WEST I-29 ROW DITCH
43I290865	7117991.79	16417157.41	1018.89	CP FENO MONUMENT IN WEST I-29 ROW NEAR SW CORNER OF SOUTHBOUND BRG
43I290871	7121368.46	16416244.25	1017.23	CP CONC MONUMENT IN EAST I-29 ROW FENCELINE
M181	7124580.50	16421655.75	1017.82	CP NGS MONUMENT AS DESCRIBED IN GOOD CONDITION

108_23A
8/15/22

TRAFFIC CONTROL PLAN

1. Traffic control will be completed in three stages utilizing median crossovers.

2. The crossovers will be constructed in the year prior to bridge construction.

3. The crossovers will be left in place at the completion of this project.

511 TRAVEL RESTRICTIONS

Line No.	Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No. or Structure ID or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
								None					

No restrictions expected.

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
IMX-029-5(266)78--02-43	Bridge Deck Replacement
IMX-029-4(138)76--02-43	Bridge Deck Replacement

108_26A
8/15/22

STAGING NOTES

1. Stage 1 will consist of the construction of the median crossovers.
   a. Both northbound and southbound inside lanes will be closed.
   b. It will be necessary to place temporary barrier rail and crash cushions at each crossover location.

2. Stage 2 will consist of the closure of the northbound lanes and construction of the northbound bridge and roadway.
   a. Traffic will utilize the median crossovers to maintain two-lane, two way traffic on the southbound lanes.
   b. It will be necessary to place temporary barrier rail and crash cushions at the departing end of the southbound bridge and at the 235th St. overpass.

3. Stage 3 will consist of the closure of the southbound lanes and construction of the southbound bridge and roadway.
   a. Traffic will utilize the median crossovers to maintain two-lane, two way traffic on the northbound lanes.
   b. It will be necessary to place temporary barrier rail and crash cushions at the departing end of the northbound bridge and at the 235th St. overpass.

CROSS SECTION VIEW COLOR LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

SHADING	Design Color No.	
Green, Light	(225)	Existing Pavement Shading
Gray, Light	(48)	Previously Constructed Pavement Shading
Gray, Med	(80)	Previously Constructed Granular Surface Shading
Blue, Light	(230)	Proposed Pavement Shading
Lavender	(9)	Temporary Pavement Shading
Brown, Med	(237)	Future Proposed Pavement Shading

CROSS SECTION VIEW PATTERN AND SYMBOL LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

- Pavement Removal
- Proposed Granular Subbase
- Proposed Special Backfill
- Temporary Barrier Rail
- Proposed Granular Shoulder
- Temporary Shoulder
- Existing Shoulder Strengthening
- Permanent Barrier Rail
- Channelizing Device

PLAN VIEW COLOR LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Magenta	(5)	Pavement Marking Call Outs
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Yellow	(4)	Pavement Markings, Yellow
Off White	(254)	Pavement Markings, White
Violet	(15)	Temporary barrier rail, Unpinned
Flush Orange	(228)	Temporary barrier rail, Pinned

SHADING	Design Color No.	
Green, Light	(225)	Existing Pavement Shading
Gray, Light	(48)	Previously Constructed Pavement Shading
Orange	(6)	Proposed Granular Surface Shading
Gray, Med	(80)	Previously Constructed Granular Surface Shading
Blue, Light	(230)	Proposed Pavement Shading
Pink, Dark	(13)	Temporary Pavement Shading
Brown, Light	(236)	Proposed Grading Limits Shading
Cyan	(7)	Proposed MSE or CIP Wall Shading
Red	(3)	Proposed Bridge Shading and Sign Trusses
Black w/Gray, Light Fill	(0,48)	Previously Constructed Structure

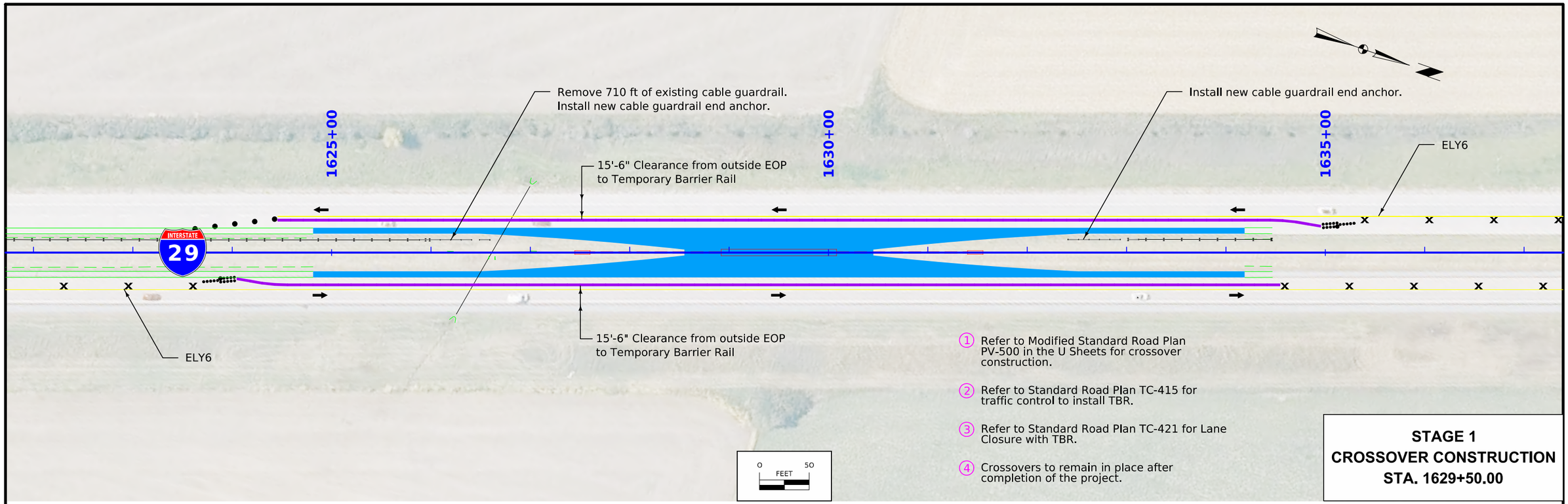
PLAN VIEW PATTERN AND SYMBOL LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

- Channelizing Device
- Drum
- Temporary Lane Separator
- Tubular Marker
- Channelizer Marker
- Concrete Barrier Marker
- Delineator
- Temporary Barrier Rail
- Pavement Removal
- Sand Barrel Layout
- Crash Cushion (Temp or Perm)
- Traffic Signal
- Flagger
- Temporary Floodlighting
- Traffic Sign
- Type III Barricade
- Type A Warning Light
- Direction of Traffic
- Safety Closure
- Lane Identification

NOTE: Device spacing according to Standard Road Plans unless specifically dimensioned.

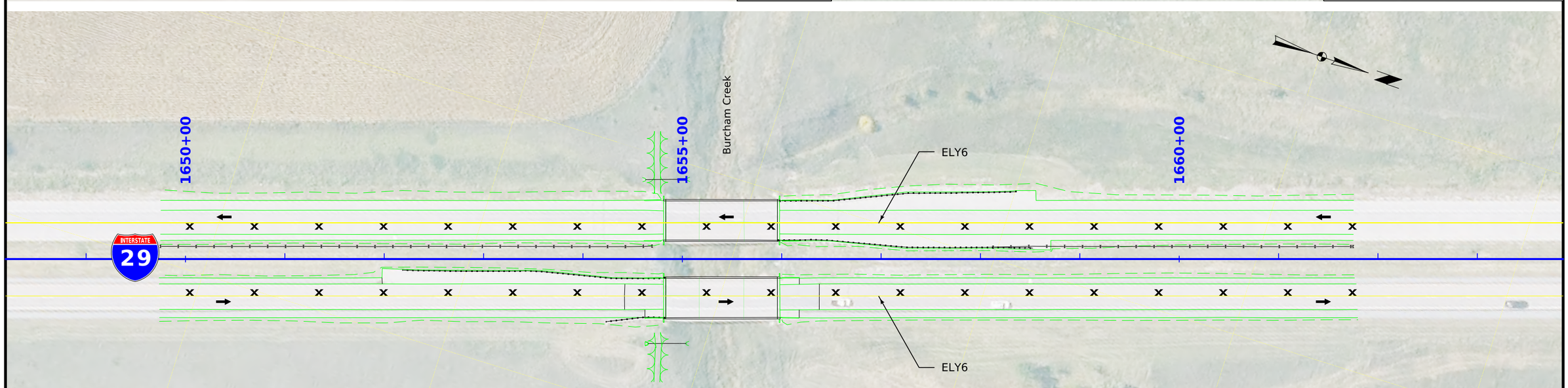
TRAFFIC CONTROL AND STAGING LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES J)



1. Refer to Modified Standard Road Plan PV-500 in the U Sheets for crossover construction.
2. Refer to Standard Road Plan TC-415 for traffic control to install TBR.
3. Refer to Standard Road Plan TC-421 for Lane Closure with TBR.
4. Crossovers to remain in place after completion of the project.

STAGE 1
CROSSOVER CONSTRUCTION
STA. 1629+50.00

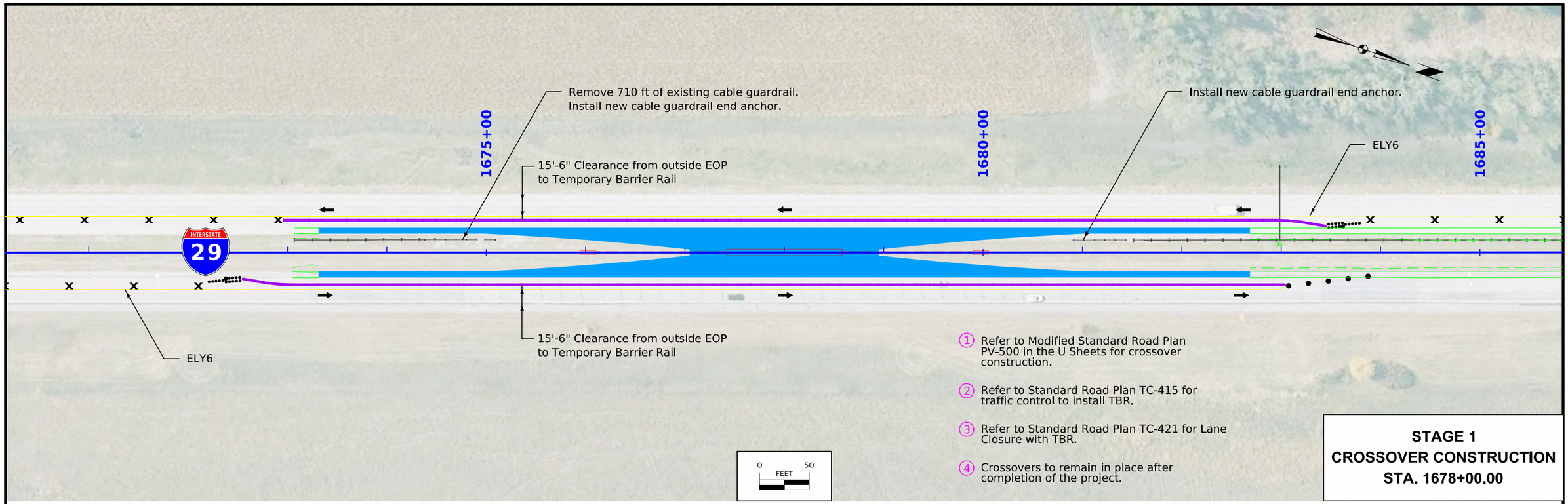


1. Inside lanes shall be completely closed between north and south crossovers.

STAGE 1
CROSSOVER CONSTRUCTION

FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER J.6

11:03:14 AM 8/11/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_J01.dgn

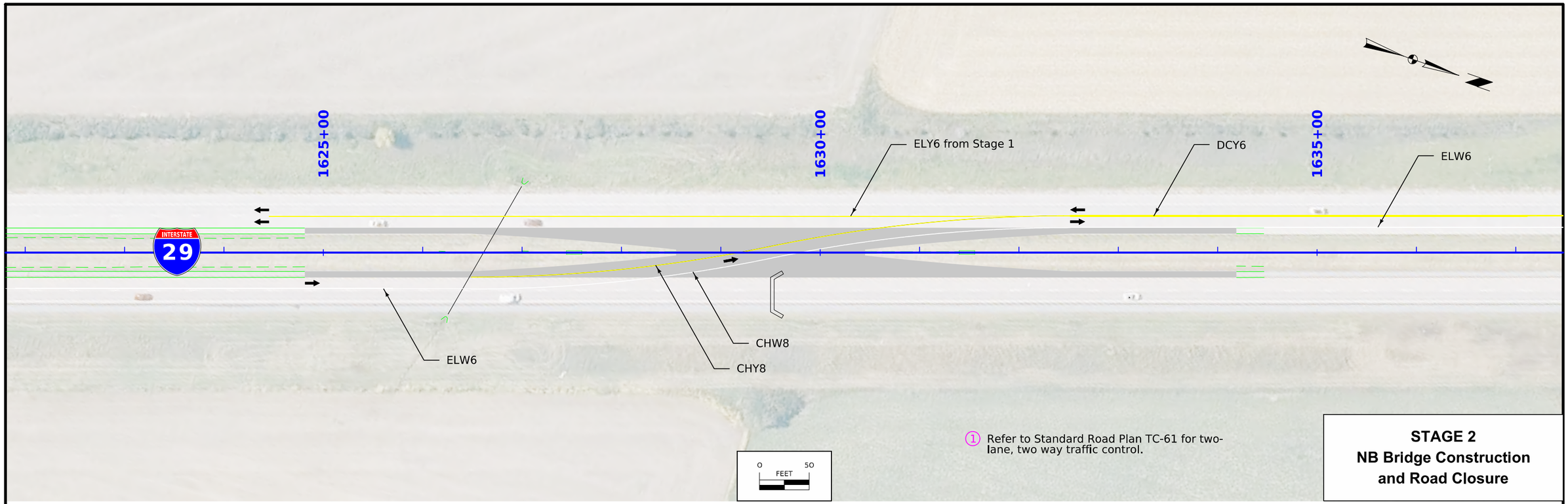


1. Refer to Modified Standard Road Plan PV-500 in the U Sheets for crossover construction.
2. Refer to Standard Road Plan TC-415 for traffic control to install TBR.
3. Refer to Standard Road Plan TC-421 for Lane Closure with TBR.
4. Crossovers to remain in place after completion of the project.

STAGE 1
CROSSOVER CONSTRUCTION
STA. 1678+00.00

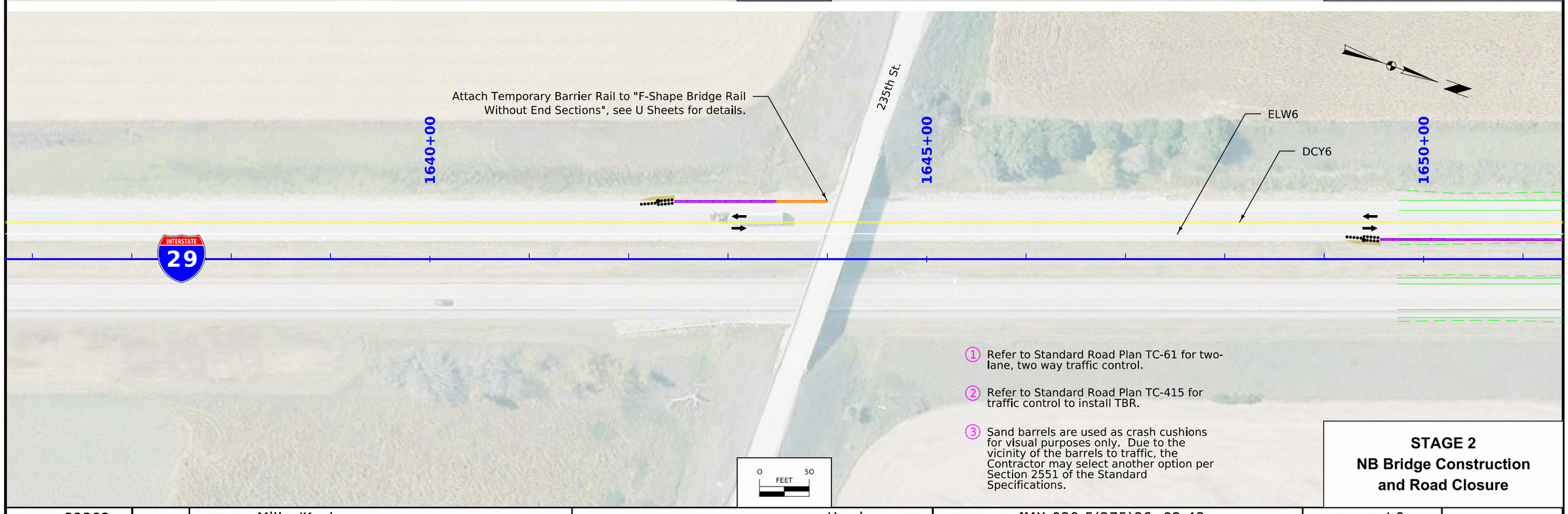
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① Refer to Standard Road Plan TC-61 for two-lane, two way traffic control.

STAGE 2
NB Bridge Construction and Road Closure



① Refer to Standard Road Plan TC-61 for two-lane, two way traffic control.

② Refer to Standard Road Plan TC-415 for traffic control to install TBR.

③ Sand barrels are used as crash cushions for visual purposes only. Due to the vicinity of the barrels to traffic, the Contractor may select another option per Section 2551 of the Standard Specifications.

STAGE 2
NB Bridge Construction and Road Closure

FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER J.8

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Remove existing curbs on bridge approaches by grinding them flat.
Attach Temporary Barrier Rail to existing "NJ-Shape Bridge Rail With Flared End Sections". See U Sheets for details.
After the first section, taper (2) sections of TBR to the back of the existing paved shoulder.

1650+00

1655+00

Burcham Creek

ELW6

DCY6

Install 140 ft of High Tension Cable Guardrail.

1660+00

INTERSTATE 29

The proposed curb on the bridge approach shall not be constructed during this stage so TBR can be installed for Stage 3.
See B Sheets for details.

1. Refer to Standard Road Plan TC-61 for two-lane, two way traffic control.
2. Refer to Standard Road Plan TC-415 for traffic control to install TBR.
3. Sand barrels are used as crash cushions for visual purposes only. Due to the vicinity of the barrels to traffic, the Contractor may select another option per Section 2551 of the Standard Specifications.

0 50 FEET

STAGE 2
NB Bridge Construction and Road Closure

DCY6

ELW6

1675+00

ELY6 from Stage 1

1680+00

1685+00

INTERSTATE 29

CHY8

CHW8

ELW6

1. Refer to Standard Road Plan TC-61 for two-lane, two way traffic control.

0 50 FEET

STAGE 2
NB Bridge Construction and Road Closure

FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER J.9	

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1625+00

1630+00

1635+00

ELW6

INTERSTATE 29

ELY6

CHW8

CHY8

ELW6

DCY6

0 50 FEET

① Refer to Standard Road Plan TC-61 for two-lane, two way traffic control.

STAGE 3
SB Bridge Construction and Road Closure

1640+00

1645+00

1650+00

235th St.

Remove existing cable guardrail end anchor.

Install 150 ft of High Tension Cable Guardrail to the existing cable guardrail. Match existing offset.

Install new cable guardrail End Anchor.

INTERSTATE 29

ELW6

DCY6

Attach Temporary Barrier Rail to "F-Shape Bridge Rail Without End Sections", see U Sheets for details.

0 50 FEET

① Refer to Standard Road Plan TC-61 for two-lane, two way traffic control.

② Refer to Standard Road Plan TC-415 for traffic control to install TBR.

③ The Proposed High Tension Cable Guardrail extension is to be left in place at the completion of the project.

STAGE 3
SB Bridge Construction and Road Closure

FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER J.10

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Install 160 ft High Tension Cable Guardrail.

Remove 40 ft of existing cable guardrail.
Install new cable guardrail end anchor.

Remove 170 ft of existing cable guardrail.
Install new cable guardrail end anchor.

1650+00

1655+00

Burcham Creek

1660+00

INTERSTATE 29

ELW6

DCY6

Attach TBR to "F-Shape Bridge Rail With End Sections", see U Sheets for details.
After the first section, taper TBR to the back of the existing paved shoulder.
Construct curbs on bridge approach at the completion of Stage 3, see B Sheets for details.

1. Refer to Standard Road Plan TC-61 for two-lane, two way traffic control.

2. Refer to Standard Road Plan TC-415 for traffic control to install the TBR and the concrete curb on the bridge approaches.

3. Sand barrels are used as crash cushions for visual purposes only. Due to the vicinity of the barrels to traffic, the Contractor may select another option per Section 2551 of the Standard Specifications.

0 50
FEET

STAGE 3
SB Bridge Construction and Road Closure

1675+00

1680+00

1685+00

INTERSTATE 29

ELW6

ELY6

ELW6

DCY6

CHW8

CHY8

ELY6

BLW6

1. Refer to Standard Road Plan TC-61 for two-lane, two way traffic control.

0 50
FEET

STAGE 3
SB Bridge Construction and Road Closure

FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER J.11	

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LANDSCAPE DESIGN

STATE OF IOWA
Rachel
A. Harris
LA000775
PROFESSIONAL LANDSCAPE ARCHITECT

I hereby certify that the portion of this technical submission described below was prepared by me or under my direct supervision and responsible charge. I am a duly licensed professional landscape architect under the laws of the state of Iowa.

Signature 08-03-2026 Date

Rachel A. Harris
Printed or Typed Name

My license renewal date is June 30, 2028

Pages or sheets covered by this seal: RC.1 - RC.12; RR.1 - RR.7

FILE NO. **32382**	ENGLISH	DESIGN TEAM **Harris/Pohlen/McDonald**	**Harrison** COUNTY	PROJECT NUMBER **IMX-029-5(275)86--02-43**	SHEET NUMBER **RC.1**	

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ESTIMATED PROJECT QUANTITIES AND REFERENCE NOTES

Item no.	Item Code	Item	Unit	Quantities Estimated Roadside Items	Estimate Reference Notes
1	2507-3250005	ENGINEERING FABRIC	SY	418.2	Refer to Tab. 100-23 for locations. Refer to Standard Road Plan EC-301. Use material specified for embankment erosion control according to Article 4196.01, B, 3. of the Standard Specifications. Material will be measured in sq. yds. of actual area covered. Refer to details. The tabulation includes estimated locations for placement of "Engineering Fabric" to address erosion at culvert outlets. The bid quantity includes an additional 30% for other locations as needed. Verify additional locations with the Engineer prior to placement.
2	2507-6800061	REVETMENT, CLASS E	TON	294.1	Refer to Tab. 100-23 for locations. Refer to Standard Road Plan EC-301. The tabulation includes estimated locations for placement of "Revetment, Class E" to address erosion to be encountered during construction. The bid quantity includes an additional 30% for other locations as needed. Verify additional locations with the Engineer prior to placement. Estimated at 1.5 ton/cu yd. Class E revetment shall meet requirements of Article 4130 of the Standard Specifications.
3	2601-2634100	MULCHING	ACRE	1.6	Perform mulching according to Article 2601.03, E, 2, of the Standard Specifications. Anchor mulch into the soil using mulch anchoring equipment with a minimum of two passes. Item is included for areas requiring reshaping and seedbed preparation except where slope protection has been applied. Use mulch that is Certified Noxious Weed Seed Free Mulch as certified by the Iowa Crop Improvement Association or adjacent states Crop Improvement Associations. Mulch Rate: 1 1/2 tons of dry cereal straw or native grass straw per acre.
4	2601-2636060	SALT TOLERANT SEEDING	ACRE	1.3	Refer to sheets RR.5 - RR.7 for seeding locations. Seed and fertilize in accordance with 2601.03, C, 9, of the Standard Specifications.
5	2601-2642100	STABILIZING CROP - SEEDING AND FERTILIZING	ACRE	1.6	Item is included for disturbed areas. Seed and fertilize all disturbed areas according to Article 2601.03, C, 1, of the Standard Specifications. If permanent seeding cannot be placed due to the restrictive planting dates, stabilizing crop will need to be placed on all disturbed areas as temporary erosion control. When stabilizing crop must be used, place immediately following completions of finished grading. Reseeding of these areas will be required at contractors expense if damage occurs due to contractors negligence during the contract period.
6	2602-0000150	STABILIZED CONSTRUCTION ENTRANCE, EC-303	LF	200	Refer to Standard Road Plan EC-303.

Item no.	Item Code	Item	Unit	Quantities	Estimate Reference Notes
				Estimated	
				Roadside Items	
7	2602-0000212	FLOATING SILT CURTAIN (HANGING)	LF	500	Refer to Tab 100-10 for locations. Refer to Standard Road Plan EC-202.
8	2602-0000240	MAINTENANCE OF FLOATING SILT CURTAIN	LF	250	
9	2602-0000312	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA.	LF	2,080	Refer to Tab. 100-19 for locations. Refer to Standard Road Plan EC-204. The tabulation includes estimated locations for placement of "Perimeter and Slope Sediment Control Device, 12 in. dia." to address erosion to be encountered during construction. Verify the specific locations with the Engineer prior to beginning placement. Bid item includes 25% additional quantity for field adjustments and replacements.
10	2602-0000320	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 20 IN. DIA.	LF	2,080	Refer to Standard Road Plan EC-204. Item is included for temporary perimeter sediment control, inlet protection, and water velocity reduction on slopes or ditches at locations to be determined during construction. Verify specific locations with the Engineer prior to beginning placement. Item may be used in addition to, or as a direct replacement for "Perimeter and Slope Sediment Control Device, 12 in. dia." upon Engineer approval.
11	2602-0000351	REMOVAL OF PERIMETER AND SLOPE OR DITCH CHECK SEDIMENT CONTROL DEVICE	LF	4,160	
12	2602-0010010	MOBILIZATIONS, EROSION CONTROL	EACH	1	
13	2602-0010020	MOBILIZATIONS, EMERGENCY EROSION CONTROL	EACH	1	

232_03C
8/28/24

EROSION CONTROL (NATIVE GRASS SEEDING)

Area to be seeded is estimated to be less than 1 acre. If the Contractor determines the area exceeds 2 acres, notify the Engineer. Approved quantity in excess of 2 acres will be paid for as extra work according to Article 1109.03,B of the Standard Specifications.

Following the completion of work in a disturbed area and according to the seeding dates in Section 2601 of the Standard Specifications, place seed and mulch on the disturbed area lying 8 feet or more beyond the shoulder as follows:

SEED MIX:

Big bluestem (Andropogon geradii)	6 lbs. PLS/Acre (7.0 kg/ha)
Indiangrass (Sorghastrum nutans)	6 lbs. PLS/Acre (7.0 kg/ha)
Little bluestem (Schizachyrium scoparium)	6 lbs. PLS/Acre (7.0 kg/ha)
Partridge Pea (Chamaecrista fasciculata)	4 lbs. PLS/Acre (4.5 kg/ha)
Sideoats grama (Bouteloua curtipendula)	4 lbs. PLS/Acre (4.5 kg/ha)
Canada wildrye (Elymus canadensis)	2 lbs. PLS/Acre (2.2 kg/ha)
Switchgrass (Panicum virgatum)	1 lbs. PLS/Acre (1.1 kg/ha)
Oats (Avena sativa)	32 lbs./Acre (36.0 kg/ha)

Furnish Big bluestem, Indiangrass, Canada wildrye and Little bluestem that is debearded or equal to facilitate the application of seed.

Furnish seed certified as Source Identified Class (Yellow Tag) Source G0-Iowa. Oats are excluded from this requirement. Place seed according to the requirements of Article 4169.02 of the Standard Specifications.

Place mulch according to the requirements of Articles 2601.03,E,2,a and 4169.07,A of the Standard Specifications.

Preparing the seedbed, furnishing and applying seed and mulch are incidental to mobilization and will not be paid for separately.

281_01
9/28/22

SECTION 404 PERMIT AND CONDITIONS

Construct this project according to the requirements of U.S. Army Corps of Engineers Nationwide, Permit No. 3. A copy of this permit is available from the Iowa DOT website (http://www.envpermits.iowadot.gov/). The U.S. Army Corps of Engineers reserves the right to visit the site without prior notice.

281_03
11/9/23

STORM WATER BEST MANAGEMENT PRACTICES

When the following best management practices are used, they are intended to account for disturbed areas where storage volume cannot be provided: Floating Silt Curtains, Perimeter and Slope Sediment Control Devices, Rock Ditch and Seeding.

282_03
9/28/22

TEMPORARY STREAM CROSSING, CAUSEWAY, OR EQUIPMENT PAD

Standard Road Plan EW-401 is listed in Tabulation 105-4; however, it is included for information purposes only since it is an option. No quantities associated with constructing EW-401 are included in any bid items.

111_25
10/20/26

INDEX OF TABULATIONS

Tabulation	Tabulation Title	Sheet No.
111_25	INDEX OF TABULATIONS	RC.5
105_04	STANDARD ROAD PLANS	RC.6
100_10	FLOATING SILT CURTAINS	RC.7
100_19	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE	RC.8
100_23	ROCK EROSION CONTROL	RC.9
100_34	STORMWATER DRAINAGE BASIN	RC.10
110_12	POLLUTION PREVENTION PLAN	RC.11 - RC.12

STANDARDS

The following Standards apply to construction work on this project.

Number	Date	Title
EC-202	10-21-14	Floating Silt Curtain
EC-204	10-19-21	Perimeter, Slope and Ditch Check Sediment Control Devices
EC-301	10-18-22	Rock Erosion Control (REC)
EC-303	10-19-21	Stabilized Construction Entrance
EC-502	04-21-15	Seeding in Rural Areas
EW-401	10-20-15	Temporary Stream Crossing, Causeway, or Equipment Pad

100_10

8/15/22

FLOATING SILT CURTAINS

Refer to EC-202

Station	Hanging (LF)	Containment (LF)	Clean-out (Containment) (LF)	Maintenance of Floating Silt Curtain (LF)	Remarks
1655+34.00	250.0			125.0	
1655+45.00	250.0			125.0	
	500.0	0	0.0	250.0	

PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE

Possible Standards: EC-204

Station From	Station To	Side	Sediment Control Device Type	Diameter Size	Length (LF)	Remarks
1653+98.00	1654+40.00	Left	Perimeter and Slope	12 inch	50.00	
1654+50.00	1654+60.00	Left	Perimeter and Slope	12 inch	20.00	
1654+07.00	1654+67.00	Left	Perimeter and Slope	12 inch	60.00	37' Offset
1656+85.00	1657+22.00	Left	Perimeter and Slope	12 inch	40.00	
1657+31.00	1659+17.00	Left	Perimeter and Slope	12 inch	190.00	
1652+60.00	1654+40.00	Median	Perimeter and Slope	12 inch	180.00	
1654+48.00	1654+60.00	Median	Perimeter and Slope	12 inch	20.00	
1652+60.00	1654+11.00	Median	Perimeter and Slope	12 inch	160.00	
1654+21.00	1654+60.00	Median	Perimeter and Slope	12 inch	40.00	
1656+83.00	1657+25.00	Median	Perimeter and Slope	12 inch	40.00	
1657+32.00	1659+23.00	Median	Perimeter and Slope	12 inch	200.00	
1656+83.00	1656+97.00	Median	Perimeter and Slope	12 inch	20.00	
1657+05.00	1659+15.00	Median	Perimeter and Slope	12 inch	210.00	
1652+27.00	1654+13.00	Right	Perimeter and Slope	12 inch	190.00	
1654+21.00	1654+62.00	Right	Perimeter and Slope	12 inch	40.00	
1653+47.00	1654+62.00	Right	Perimeter and Slope	12 inch	130.00	50' Offset
1656+84.00	1656+97.00	Right	Perimeter and Slope	12 inch	20.00	
1657+05.00	1657+46.00	Right	Perimeter and Slope	12 inch	50.00	
Total:					**1660**	

ROCK EROSION CONTROL

Refer to EC-301 and Detail 570-8

Road Identification	Station From	Station To	Side	Length (FT)	Width (FT)	Rock Erosion Control Type	Engineering Fabric (SY)	Class E Revetment (TON)	Erosion Stone (TON)	Remarks
I 29	1653+98.00	1654+62.00	Left	65.00	11.0	Type 2 - Rock Ditch	115.0	79.500		
I 29	1653+43.00	1654+63.00	Right	120.00	11.0	Type 2 - Rock Ditch	206.7	146.700		
Total:							**321.7**	**226.2**		

STORMWATER DRAINAGE BASIN

Refer to EC Standards and 570s Details.

Basin No.	Station From	Station To	Side	Discharge Station	Discharge Direction	Total Disturbed Area (ACRES)	Disturbed Area with Storage Provided (ACRES)	Disturbed Area without Storage Provided (ACRES)	Best Management Practice	Total Storage Volume Provided (CF)	Total Storage Volume Required (CF)	Storage Volume Met	Remarks
1	1624+82.00	1634+20.00	Median	1626+23.00	SE	0.6	0.6				2160.0	No	
2	1653+97.00	1655+35.00	L/M	1655+07.00	NW	0.3	0.3				1080.0	No	
3	1652+00.00	1654+67.00	Median	1652+60.00	SE	0.3	0.3				1080.0	No	
4	1652+30.00	1655+35.00	R/M	1654+67.00	NW	0.5	0.5				1800.0	No	
5	1655+48.00	1659+16.00	L/M	1656+32.00	S	0.4	0.4				1440.0	No	
6	1656+75.00	1659+47.00	Median	1659+47.00	NW	0.3	0.3				1080.0	No	
7	1655+48.00	1657+48.00	L/M	1656+42.00	SE	0.3	0.3				1080.0	No	
8	1673+31.00	1682+69.00	Median	1683+00.00	SW	0.6	0.6				2160.0	No	

POLLUTION PREVENTION PLAN

This project is regulated by the requirements of the Iowa Department of Natural Resources (DNR) National Pollutant Discharge Elimination System (NPDES) General Permit No. 2 OR an Iowa Department of Natural Resources (DNR) National Pollutant Discharge Elimination System (NPDES) individual storm water permit. The Contractor shall carry out the terms and conditions of this permit and the Pollution Prevention Plan (PPP).

This Base PPP includes information on Roles and Responsibilities, Project Site Description, Controls, Maintenance Procedures, Inspection Requirements, Non-Storm Water Controls, Potential Sources of Off Right-of-Way Pollution, and Definitions. This plan references other documents rather than repeating the information contained in the documents. A copy of this Base Pollution Prevention Plan, amended as needed during construction, will be readily available for review.

All contractors shall conduct their operations in a manner that controls pollutants, minimizes erosion, and prevents sediments from entering waters of the state and leaving the highway right-of-way. The Contractor shall be responsible for compliance and implementation of the PPP for their entire contract. This responsibility shall be further shared with subcontractors whose work is a source of potential pollution as defined in this PPP.

I. ROLES AND RESPONSIBILITES

A. Designer:
1. Prepares Base PPP included in the project plan.
2. Prepares Notice of Intent (NOI) submitted to Iowa DNR.
3. Is signature authority on the Base PPP. If consultant designed, signature from Contracting Authority is also required.

B. Contractor:
1. Signs a co-permittee certification statement adhering to the requirements of the NPDES permit and this PPP. All co-permittees are legally required under the Clean Water Act and the Iowa Administrative Code to ensure compliance with the terms and conditions of this PPP.
2. Designates a Water Pollution Control Manager (WPCM), who has the duties and responsibilities as defined in Section 2602 of the Standard Specifications.
3. Submits an Erosion Control Implementation Plan (ECIP) and ECIP updates according to Section 2602 of the Standard Specifications.
4. Installs and maintains appropriate controls. This work may be subcontracted as documented through Subcontractor Request Forms (Form 830231).
5. Supervises and implements good housekeeping practices according to Paragraph III, C, 2.
6. Conducts joint required inspections of the site with inspection staff. When Contractor is not mobilized on site, Contractor may delegate this responsibility to a trained or certified subcontractor. Contracting Authority also may waive joint inspection requirement during winter shutdown. In both circumstances, WPCM (or trained or certified delegate from the Contractor) is still responsible to review and sign inspection reports.
7. Complies with training and certification requirements of Section 2602 of the Standard Specifications.
8. Submits amended PPP site map according to Section 2602 of the Standard Specifications.

C. Subcontractors:
1. Sign a co-permittee certification statement adhering to the requirements of the NPDES permit and this PPP if: responsible for sediment or erosion controls; involved in land disturbing activities; or perorming work that is a source of potential pollution as defined in this PPP. Subcontracted work items are identified in Subcontractor Request Forms (Form 830231). All co-permittees are legally required under the Clean Water Act and the Iowa Administrative Code to ensure compliance with the terms and conditions of this PPP.
2. Implement good housekeeping practices according to Paragraph III, C, 2.

D. RCE/Project Engineer:
1. Is Project Storm Water Manager.
2. On projects where DOT is the Contracting Authority, is current with erosion control training or certification.
3. Takes actions necessary to ensure compliance with storm water requirements including, where appropriate, issuing stop work orders, and directing additional inspections at construction project sites that are experiencing problems with achieving permit compliance.
4. Orders the taking of measures to cease, correct, prevent, or minimize the consequences of non-compliance with the storm water requirements of the Applicable Permit.
5. Supervises all work necessary to meet storm water requirements at the Project, including work performed by contractors and subcontractors.
6. Requires employees, contractors, and subcontractors to take appropriate responsive action to comply with storm water requirements, including requiring any such person to cease or correct a violation of storm water requirements, and to order or recommend such other actions as necessary to meet storm water requirements.
7. Is familiar with the Project PPP and storm water site map.
8. On projects where DOT is Contracting Authority, is responsible for periodically monitoring inspection reports to determine whether deficiencies identified in inspection reports were adequately and timely addressed, and if not, has the authority and responsibility to direct immediate actions to correct the deficiencies.
9. Is the point of contact for the Project for regulatory officials, Inspector, contractors, and subcontractors regarding storm water requirements.
10. Is signature authority on Notice of Discontinuation.
11. Maintains an up-to-date record of contractors, subcontractors, and subcontracted work items through Subcontractor Request Forms (Form 830231).
12. Makes information to determine permit compliance available to the DNR upon their request.

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POLLUTION PREVENTION PLAN

E. Inspector:
1. Updates PPP through fieldbook entries and storm water site inspection reports if there is a change in design, construction, operation, or maintenance which has a significant effect on the discharge of pollutants from the project.
2. Makes information to determine permit compliance available to the DNR upon their request.
3. Conducts joint required inspections of the site with the contractor/subcontractor.
4. Completes an inspection report after each inspection.
5. Is signature authority on storm water inspection reports.

II. PROJECT SITE DESCRIPTION

A. This Pollution Prevention Plan (PPP) is for a Bridge Replacement - CCS in Harrison County

B. This PPP covers approximately 37.5 acres with an estimated 3.2 acres being disturbed. The portion of the PPP covered by this contract has 3.2 acres disturbed.

C. The PPP is located in an area of Albaton-Luton-Onawa soil association.
The estimated weighted average runoff coefficient number for this PPP after completion will be 0.46.

D. Storm Water Site Map is located in the R sheets. Proposed slopes are shown in cross sections, details, or standard road plans. Supplemental information is located in the Tabulations in the C or CE sheets.

E. The base storm water site map is amended by contract modifications and progress payments (fieldbook entries) of completed erosion control work. Also, due to project phasing, erosion and sediment controls shown on project plans may not be installed until needed, based on site conditions. For example, silt fence ditch checks will typically not be installed until the ditch has been installed. Installed locations may also be modified from tabulation locations by field staff. Installed locations will be documented by fieldbook entries and amended PPP site map.

F. Runoff from this work will flow into Burcham Ditch to Old Soldier River to the Missouri River.

III. CONTROLS

A. The Contractor’s ECIP specified in Article 2602.03 of the Standard Specifications for accomplishment of storm water controls should clearly describe the intended sequence of major activities, and for each activity define the control measure and the timing during the construction process that the measure will be implemented.

B. Preserve vegetation in areas not needed for construction.

C. Sections 2601 and 2602 of the Standard Specifications define requirements to implement erosion and sediment control measures. Actual quantities used and installed locations may vary from the Base PPP and amendment of the plan will be documented via fieldbook entries, amended PPP site map, or by contract modification. Additional erosion and sediment control items may be required as determined by the inspector and/or contractor during storm water site inspections. If the work involved is not applicable to any contract items, the work will be paid for according to Article 1109.03 paragraph B of the Standard Specifications.

1. EROSION AND SEDIMENT CONTROLS

a. Stabilization Practices
1) Site plans will ensure that existing vegetation or natural buffers are preserved where attainable and disturbed portions of the site will be stabilized.
2) Initialize stabilization of disturbed areas immediately after clearing, grading, excavating, or other earth disturbing activities have:
a) Permanently ceased on any portion of the site, or
b) Temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days.
3) Staged permanent and/or temporary stabilizing seeding and mulching shall be completed as the disturbed areas are completed. Incomplete areas shall be stabilized according to paragraph III, C, 1, a, 2, b above.
4) Permanent and Temporary Stabilization practices to be used for this project are located in the storm water site map, Estimated Project Quantities (100-0A, 100-1A, or 100-1C), and Estimate Reference Information (100-4A) located in the C or R sheets. Typical drawings detailing construction of the practices to be used on this project are referenced in the Standard Road Plans Tabulation (105-4) in the C or R sheets.
5) Preservation of existing vegetation within right-of-way or easements will act as vegetative buffer strips.
6) Preservation of topsoil: Bid items to be used for this project are located in the Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located in the C or R sheets. Additional information may be found in the Tabulations in the C or T Tabulation sheets, or is referenced in Section 2105 of the Standard Specifications.

b. Structural Practices
1) Structural practices will be implemented to divert flows from exposed soils and detain or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Additionally, structural practices may include: silt basins that provide 3600 cubic feet of storage per acre drained or equivalent sediment controls, outlet structures that withdraw water from surface when discharging basins, and controls to direct storm water to vegetated areas.
2) Structural practices to be used for this project are located in the storm water site map, Estimated Project Quantities (100-0A, 100-1A, or 100-1C), and Estimate Reference Information (100-4A) located in the C or R sheets, as well as all other item specific Tabulations. Typical drawings detailing construction of the devices to be used on this project can be found on the B or R sheets or are referenced in the Standard Road Plans Tabulation (105-4) located in the C or R sheets.

POLLUTION PREVENTION PLAN

c. Storm Water Management
Measures shall be installed during the construction process to control pollutants in storm water discharges that will occur after construction operations have been completed. This may include velocity dissipation devices at discharge locations and along length of outfall channel as necessary to provide a non-erosion velocity flow from structure to water course. If included with this project, these items are located in the storm water site map and Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located in the C or R sheets, as well as all other item specific Tabulations. Typical drawings detailing construction of the practices to be used on this project are referenced in the Standard Road Plans Tabulation. The installation of these devices may be subject to Section 404 of the Clean Water Act.

2. OTHER CONTROLS
Contractor disposal of unused construction materials and construction material wastes shall comply with applicable state and local waste disposal, sanitary sewer, or septic system regulations. In the event of a conflict with other governmental laws, rules and regulations, the more restrictive laws, rules or regulations shall apply.

a. Vehicle Entrances and Exits - Construct and maintain entrances and exits to prevent tracking of sediments onto roadways.
b. Material Delivery, Storage and Use - Implement practices to prevent discharge of construction materials during delivery, storage, and use.
c. Stockpile Management - Install controls to reduce or eliminate pollution of storm water from stockpiles of soil and paving.
d. Waste Disposal - Do not discharge any materials, including building materials, into waters of the state, except as authorized by a Section 404 permit.
e. Spill Prevention and Control - Implement chemical spill and leak prevention and response procedures to contain and clean up spills and prevent material discharges to the storm drain system and waters of the state.
f. Concrete Residuals and Washout Wastes - Waste shall not be discharged to a surface water and is not allowed to adversely affect a water of the state. Designate temporary concrete washout facilities for rinsing out concrete trucks. Provide directions to truck drivers where designated washout facilities are located. Designated washout areas should be located at least 50 feet away from storm drains, streams or other water bodies. Care should be taken to ensure these facilities do not overflow during storm events.
g. Concrete Grooving/Grinding Slurry – Do not discharge slurry to a waterbody or storm drain. Slurry may be applied on foreslopes or removed from the project.
h. Vehicle and Equipment Storage and Maintenance Areas - Perform on site fueling and maintenance in accordance with all environment laws such as proper storage of onsite fuels and proper disposal of used engine oil or other fluids on site. Employ washing practices that prevent contamination of surface and ground water from wash water. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge.
i. Litter Management - Ensure employees properly dispose of litter. Minimize exposure of trash if exposure to precipitation or storm water would result in a discharge of pollutants.
j. Dewatering – Properly treat water to remove suspended sediment before it re-enters a waterbody or discharges off-site. Measures are also to be taken to prevent scour erosion at dewatering discharge point.

3. APPROVED STATE OR LOCAL PLANS
During the course of this construction, it is possible that situations will arise where unknown materials will be encountered. When such situations are encountered, they will be handled according to all federal, state, and local regulations in effect at the time.

IV. MAINTENANCE PROCEDURES
The Contractor is required to maintain all temporary erosion and sediment control measures in proper working order, including cleaning, repairing, or replacing them throughout the contract period. This shall begin when the features have lost 50% of their capacity.

V. INSPECTION REQUIREMENTS
A. Inspections shall be made jointly by the Contractor and the Contracting Authority's inspector at least once every seven calendar days. Storm water site inspections will include:
1. Date of the inspection.
2. Summary of the scope of the inspection.
3. Name and qualifications of the personnel making the inspection.
5. Review of erosion and sediment control measures within disturbed areas for the effectiveness in preventing impacts to receiving waters.
6. Major observations related to the implementation of the PPP.
7. Identification of corrective actions required to maintain or modify erosion and sediment control measures.

B. Include storm water site inspection reports in the Amended PPP. Incorporate any additional erosion and sediment control measures determined as a result of the inspection. Immediately begin corrective actions on all deficiencies found within 3 calendar days of the inspection and complete within 7 calendar days following the inspection. If it is determined that making the corrections less than 72 hours after the inspection is impracticable, it should be documented why it is impracticable and indicate an estimated date by which the corrections will be made.

VI. NON-STORM WATER DISCHARGES

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POLLUTION PREVENTION PLAN

This includes subsurface drains (i.e. longitudinal and standard subdrains) and slope drains. The velocity of the discharge from these features may be controlled by the use of headwalls or blocks, Class A stone, erosion stone or other appropriate materials. This also includes uncontaminated groundwater from dewatering operations, which will be controlled as discussed in Section III of the PPP.

VII. POTENTIAL SOURCES OF OFF RIGHT-OF-WAY (ROW) POLLUTION
Silts, sediment, and other forms of pollution may be transported onto highway right-of-way (ROW) as a result of a storm event. Potential sources of pollution located outside highway ROW are beyond the control of this PPP. Pollution within highway ROW will be conveyed and controlled per this PPP.

VIII. DEFINITIONS
A. Base PPP - Initial Pollution Prevention Plan.
B. Amended PPP - Base PPP amended during construction. May include Plan Revisions or Contract Modifications for new items, storm water site inspection reports, fieldbook entries made by the inspector, amended PPP site map by the Contractor, ECIP, NOI, co-permittee certifications, and Subcontractor Request Forms. Items amending the PPP are stored electronically and are readily available upon request.
C. Fieldbook Entries – This contains the inspector’s daily diary and bid item postings.
D. Controls - Methods, practices, or measures to minimize or prevent erosion, control sedimentation, control storm water, or minimize contaminants from other types of waste or materials. Also called Best Management Practices (BMPs).
E. Signature Authority - Representative authorized to sign various storm water documents.

CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Nathan Pohlen
Signature

Nathan J. Pohlen
Print Name

PLAN VIEW CELL LEGEND

CELL	Design Element
	Clearing & Grubbing

CELL LEGEND OF EROSION CONTROL

CELL	Design Element
	Temporary Sediment Control basin
	Erosion Control for Circular Intake or Manhole Well
6 FT	Erosion Control for Rectangular Intake or Manhole Well
12 FT	Grate Intake Sediment Filter Bag
	Silt Basin
18 FT	Silt Fence Tail
	Stormwater Drainage Basin Discharge Point
30 FT	

CELL LEGEND OF LANDSCAPING

CELL	Design Element	Plant Diameter
Overstory-#	Overstory Tree	30 FT
Evergreen-#	Evergreen Tree	18 FT
Understory-#	Understory Tree	12 FT
Shrub-# Shrub-#	Shrub	6 FT

PLAN VIEW PATTERN LEGEND

PATTERN	Design Element	PATTERN	Design Element
	Seeding and Fertilizing		Turf Reinforcement Mat Type 1
R	Seeding and Fertilizing (Rural)		Turf Reinforcement Mat Type 2
U	Seeding and Fertilizing (Urban)		Turf Reinforcement Mat Type 3
N	Native Grass Seeding		Turf Reinforcement Mat Type 4
ST	Salt Tolerant Seeding		Slope Protection, Wood Excelsior Mat
WL	Wetland Grass Seeding		Transition Mat
WF	Wildflower Seeding		Rock Features, Permanent
SOD	Sodding		Rock Features, Temporary

PLAN VIEW COLOR LEGEND

LINEWORK	Design	Color No.	
Green	(2)		Existing Topographic Features and Labels
Blue	(1)		Proposed Alignment, Stationing, Tic Marks, and Annotation
Magenta	(5)		Existing Utilities
Black	(0)		Permanent Erosion Control Features
Blaze Orange	(222)		Temporary Erosion Control Features

SHADING	Design	Color No.		Transparency
Citron	(234)		Mulching, All Types	50%
Light Brown	(238)		Special Ditch Control, Wood Excelsior Mat	0%
Grass Green	(233)		8FT Mow Strip	50%

HATCHING	Design	Color No.	
Red	(3)		Delineates Restricted Areas
Yellow	(4)		Brush Clearing
Yellow	(4)		Clearing & Grubbing
Orange	(228)		Spray Area

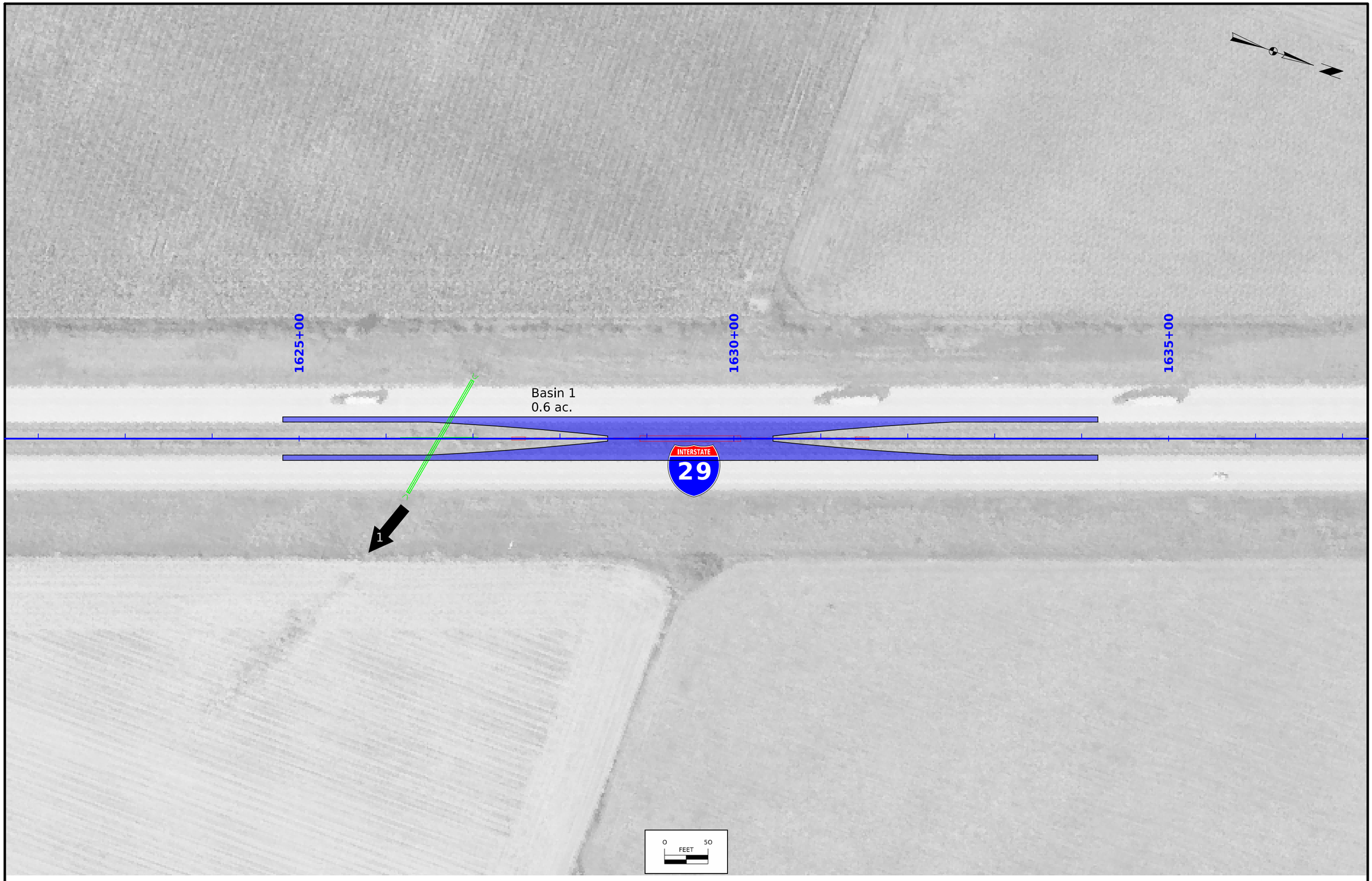
LINE STYLE LEGEND OF EROSION CONTROL SHEETS

LINESTYLE	Design Element
	Silt Fence
9	Perimeter and Slope Sediment Control Device (9")
12	Perimeter and Slope Sediment Control Device (12")
20	Perimeter and Slope Sediment Control Device (20")
	Open-Throat Curb Intake Sediment Filter
	Concentrated Flow
	Rock Check and Rock Check Dam
	Sheet Flow

LINE STYLE LEGEND OF LANDSCAPE SHEETS

LINESTYLE	Design Element
	Living Snow Fence Single Row
	Living Snow Fence Double Row
	Mechanical Edge

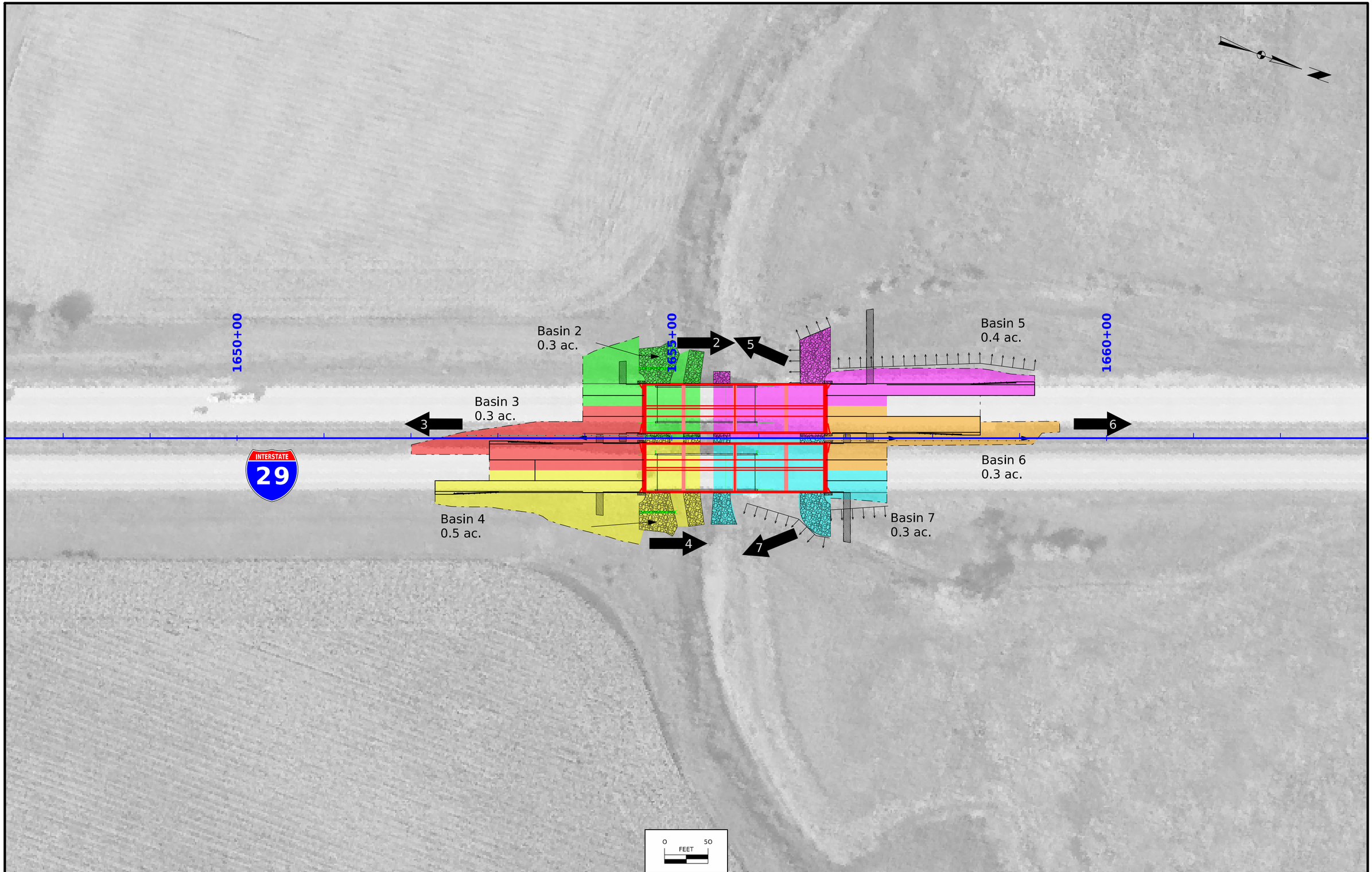
LEGEND AND SYMBOL INFORMATION SHEET



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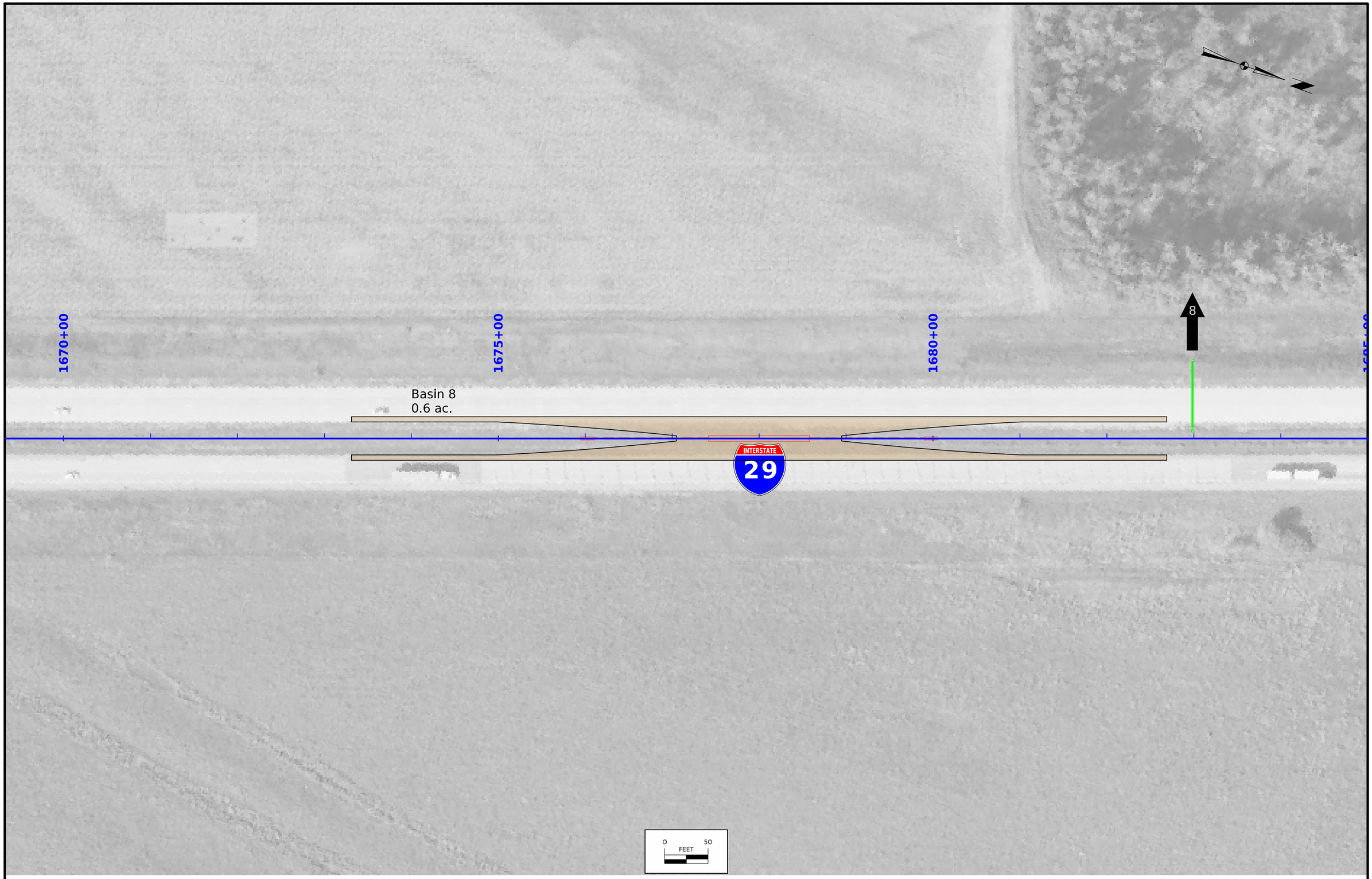
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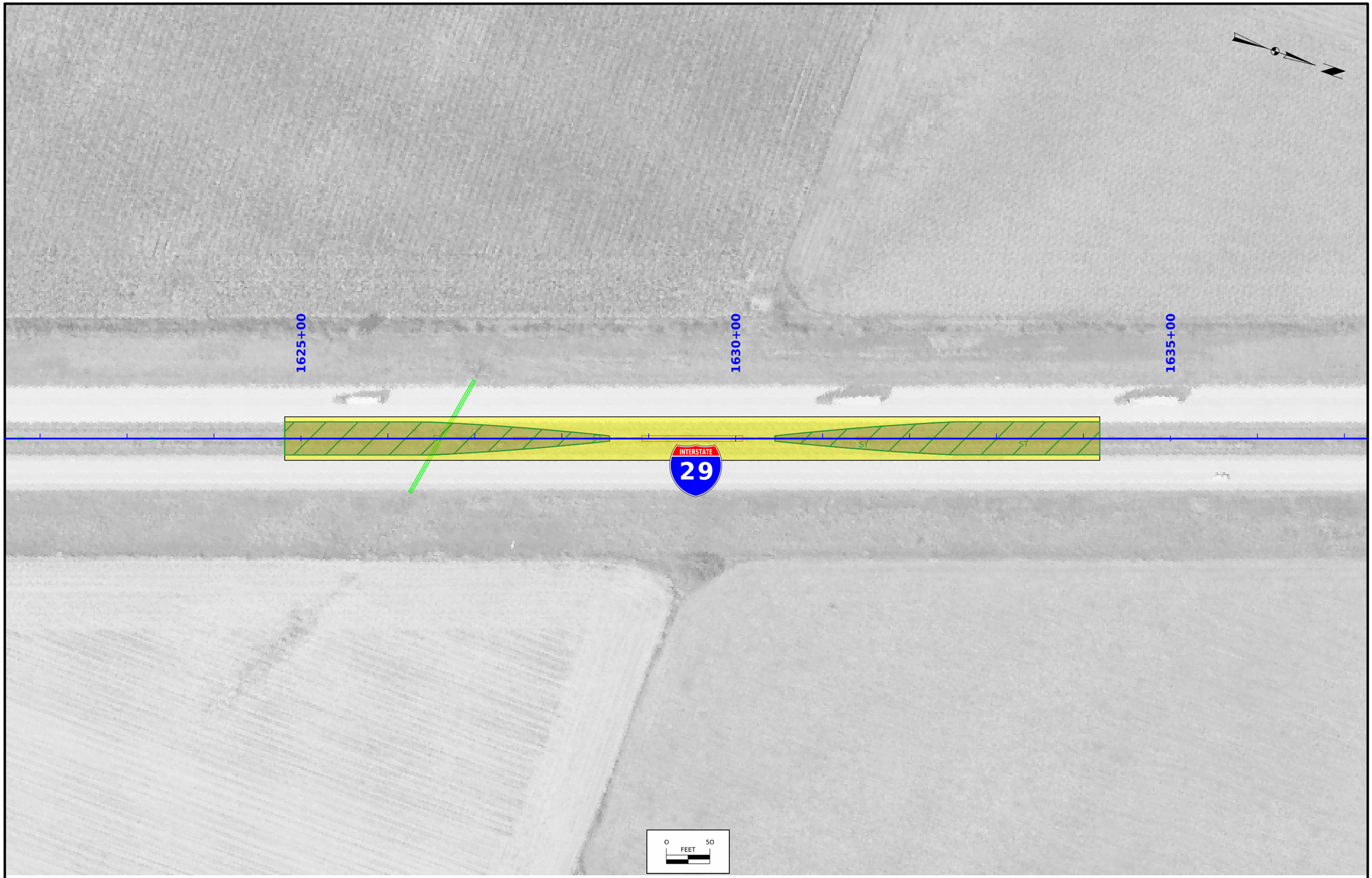
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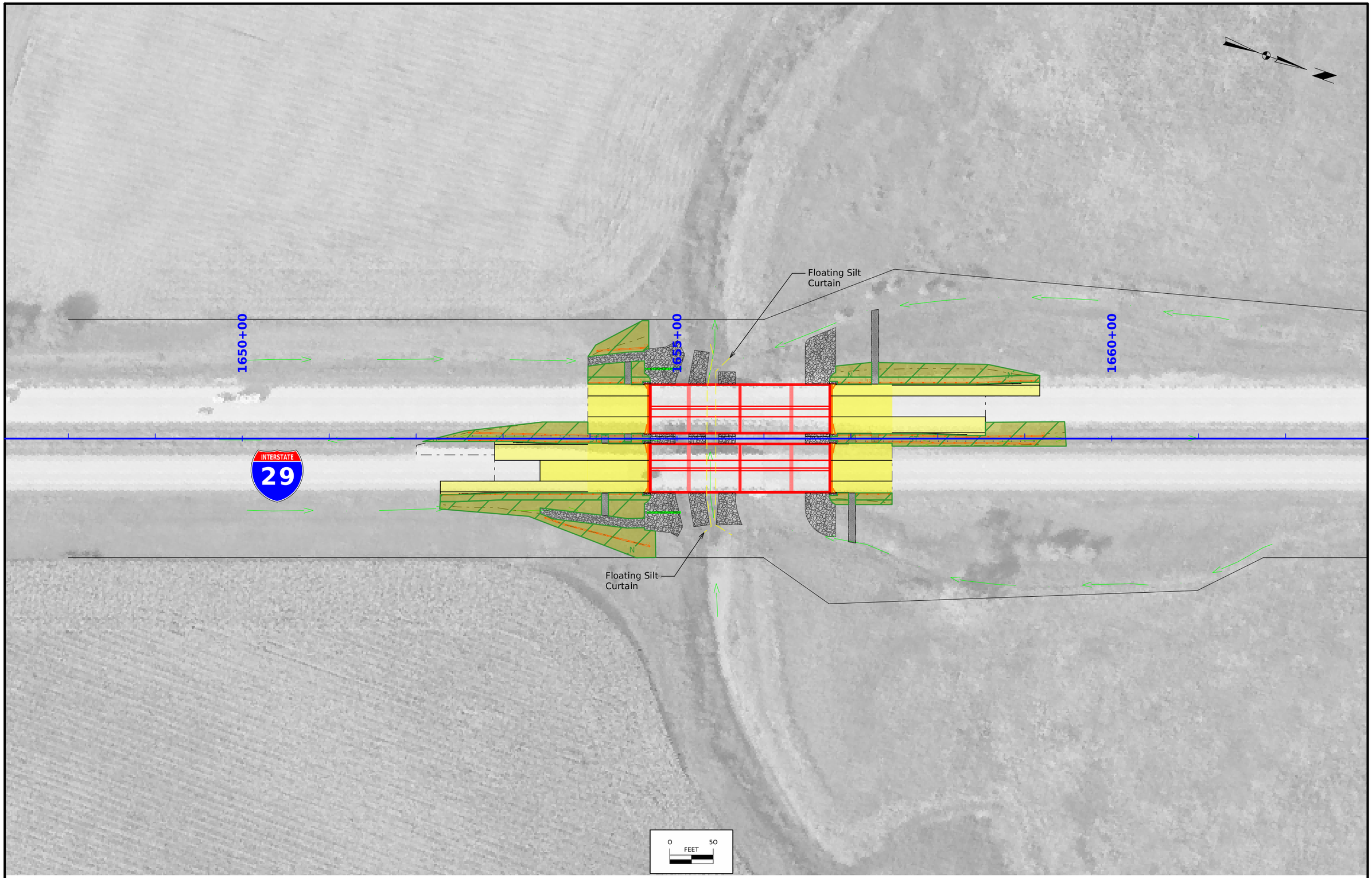
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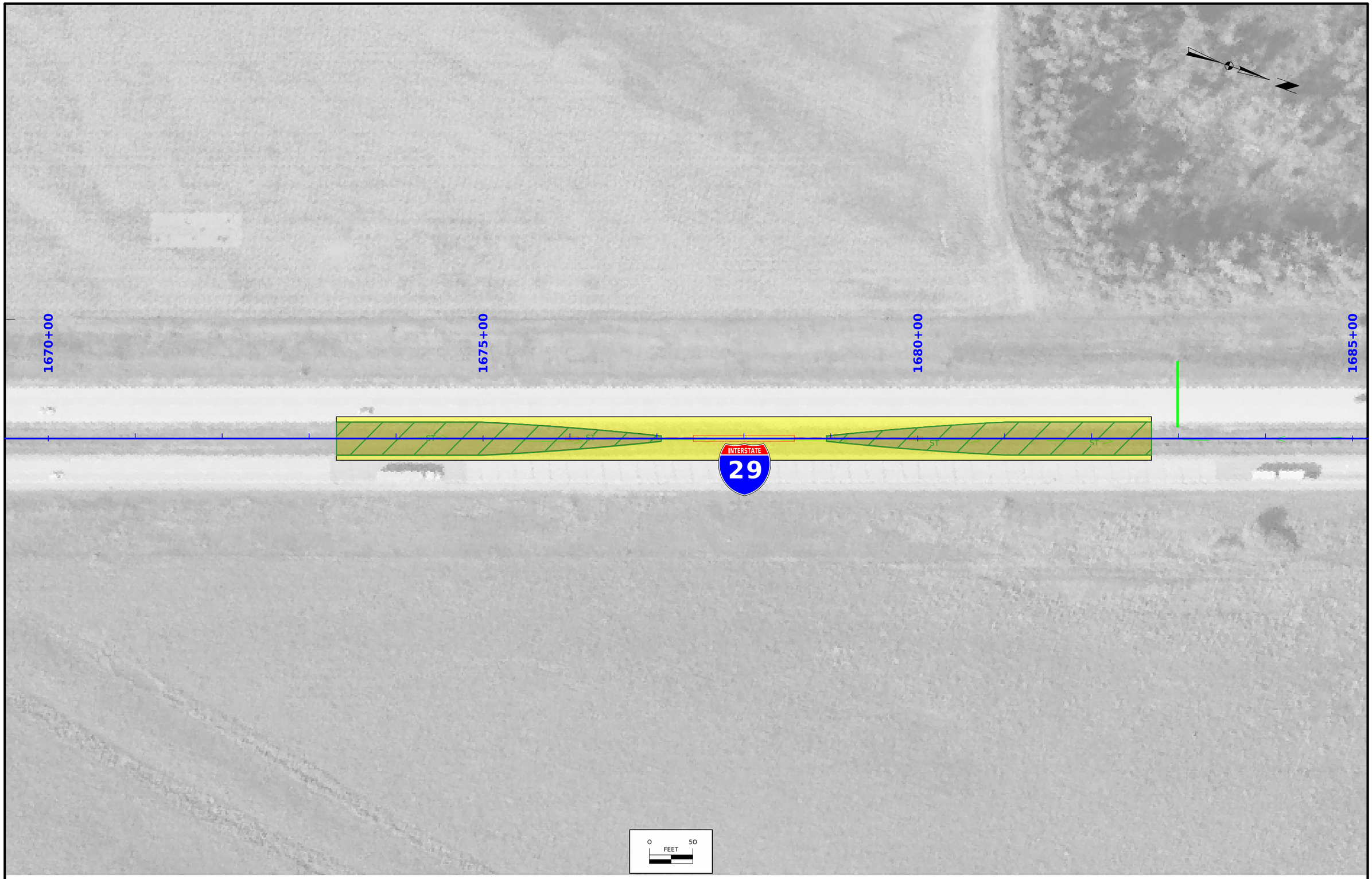
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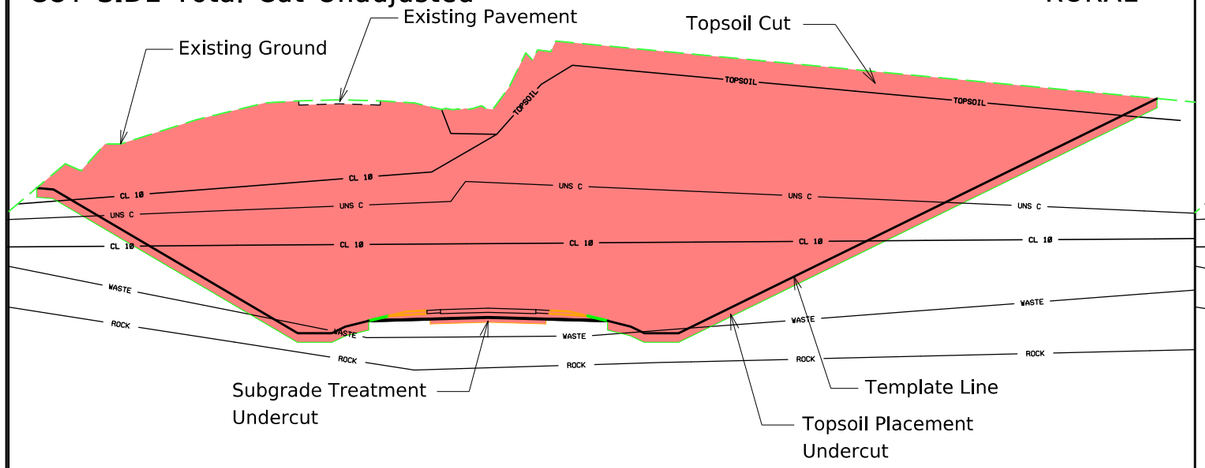


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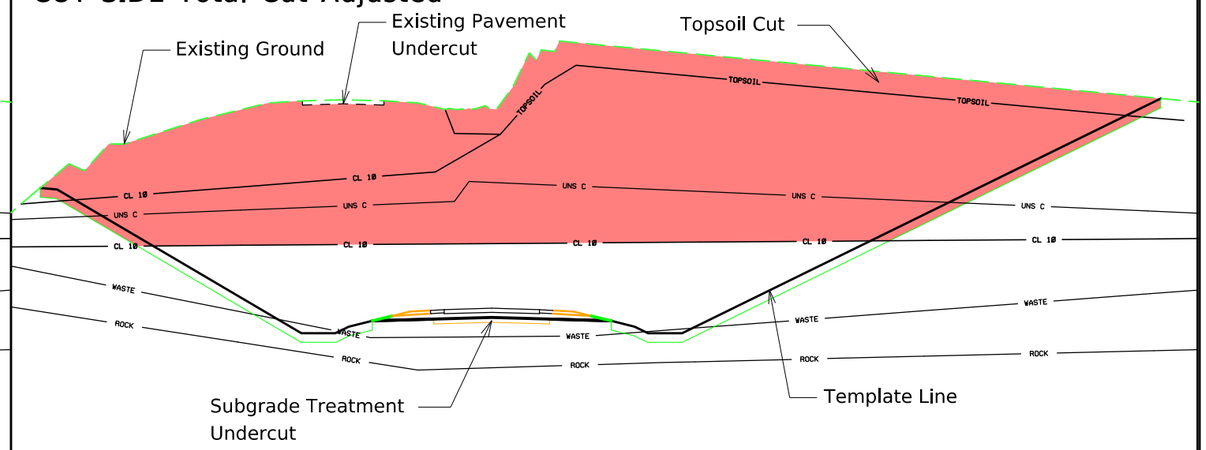
CUT SIDE Total Cut Unadjusted — RURAL



Notes:

1. "Total Cut Unadjusted" Column includes all cut values in the Station Range based on Typical, Topsoil and Subgrade Treatment needs.
2. "Total Cut Unadjusted" does not include and Existing Pavement values inside or outside the cut template as shown on cross sections.
3. Tabulated Plowing and Shaping operations are included in the "Total Cut Unadjusted" values.

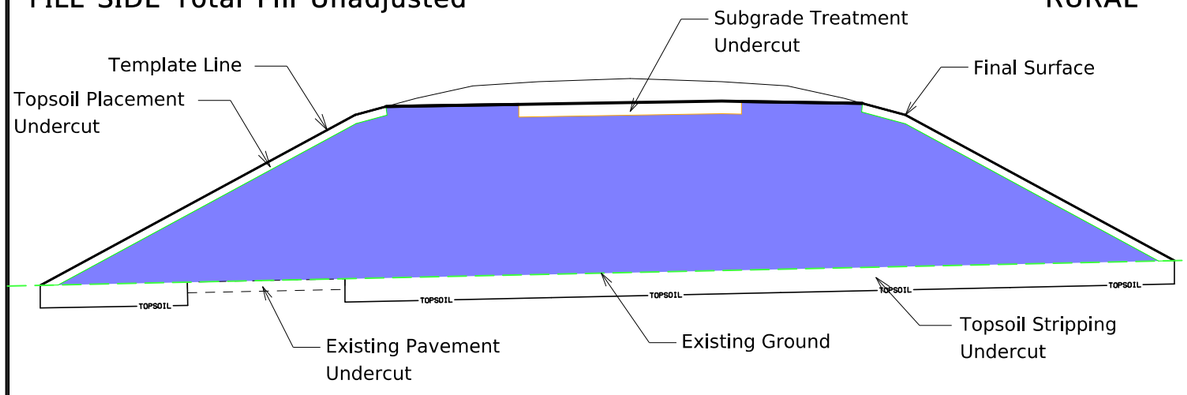
CUT SIDE Total Cut Adjusted



Notes:

1. "Total Cut Adjusted" Column includes all cut values usable as Class 10 material.
2. "Total Cut Adjusted" does not include and Existing Pavement , Existing Topsoil, or material to be wasted.

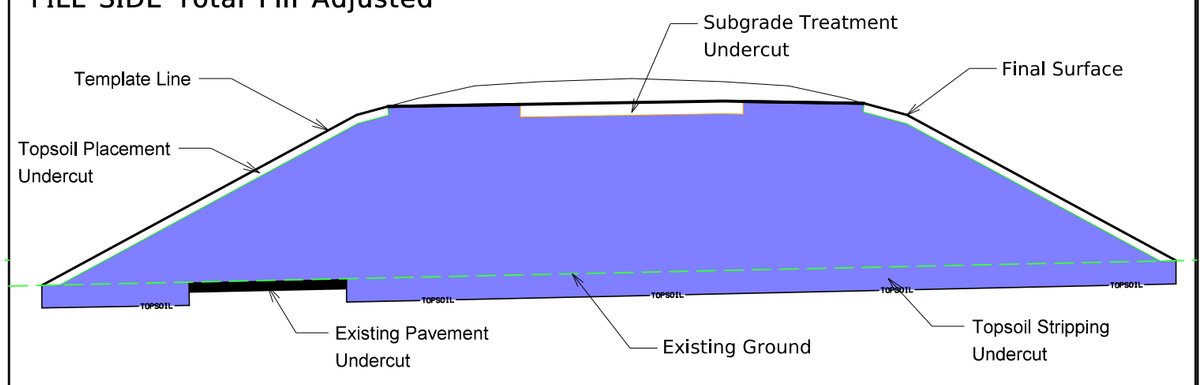
FILL SIDE Total Fill Unadjusted — RURAL



Notes:

1. "Total Fill Unadjusted" Column includes all Class 10, 12, and 13 fill. This excludes the topsoil, subgrade treatment, subbase, new pavement, and shoulder fill needs in that station range.
2. "Total Fill Unadjusted" Column does not include adjustments for additional fill from cuts such as existing pavement removed, plowing and shaping operations, entrances, dikes, or topsoil stripping.

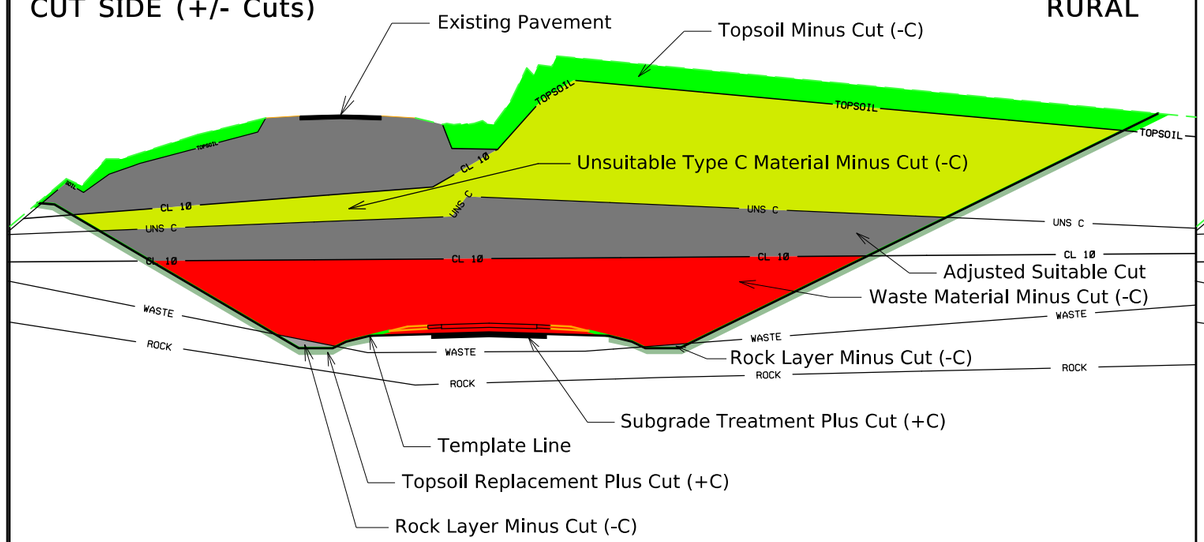
FILL SIDE Total Fill Adjusted



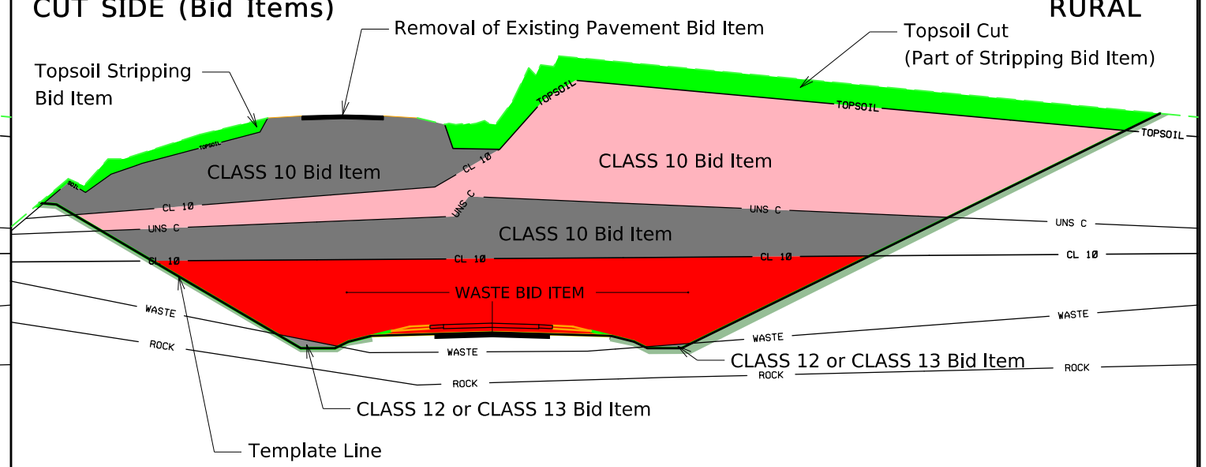
Notes:

1. "Total Fill Adjusted" Column includes all Class 10, 12, and 13 fill and adjustments for additional fill from cuts such as existing pavement, plowing and shaping operations, entrances, dikes, and topsoil stripping.
2. The available area to place unsuitable materials in the T Sheet tabulation does not include the undercut values from the topsoil stripping, existing pavement, or plowing and shaping

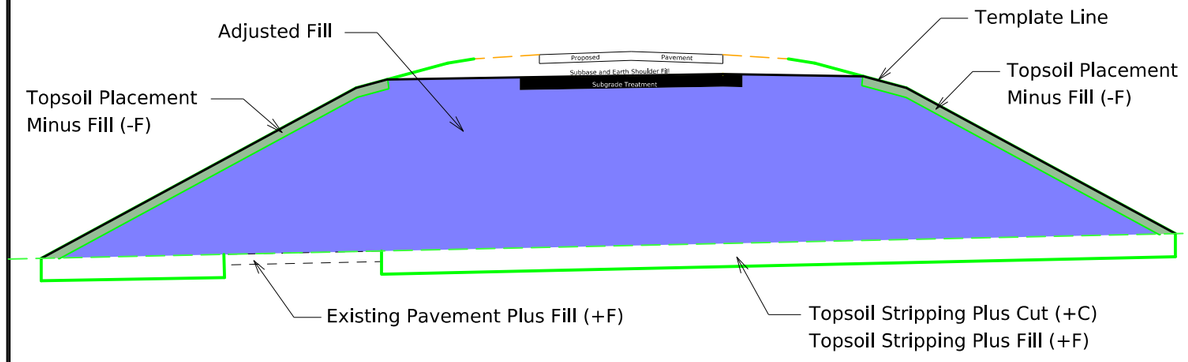
CUT SIDE (+/- Cuts) — RURAL



CUT SIDE (Bid Items) — RURAL



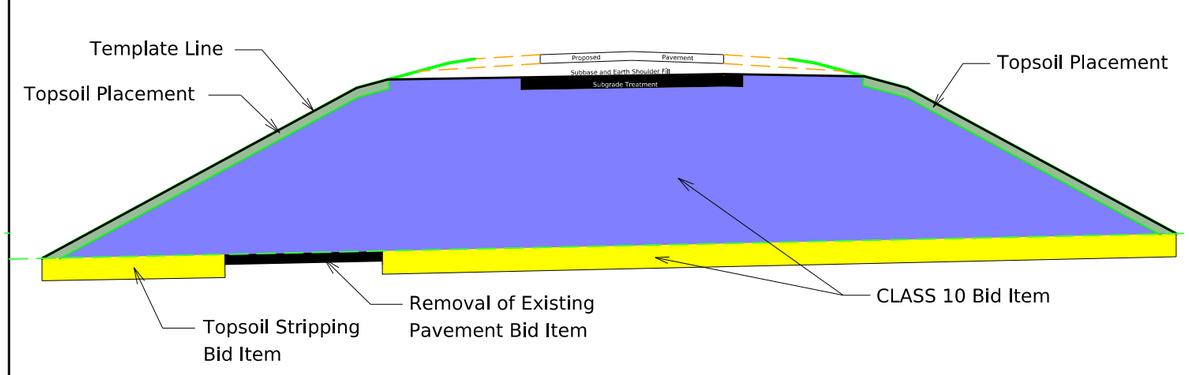
FILL SIDE (+/- Fills) — RURAL



Notes:

1. "Add Quantity +C" columns are additional cut encountered that is not Typical, Topsoil, or Subgrade Treatment Based. (Entrance, Dike, Etc.)
2. "-C" columns are either soil types or Class 10, 12, or 13 designated material that is encountered in the cut station range that is paid for by other bid items.
3. The "(SoilType) Cut" columns are soil types encountered in the cut that are paid by either Class 10, 12, or 13.
4. The "Adjusted Clas (10,12 or 13)" columns are the sum of all various soil types encountered in that station range, that are paid by Class 10, 12, or 13 bid items.
5. Refer to Standard Road Plan EW-102 for placement of unsuitable soil types.

FILL SIDE (Bid Items) — RURAL



Notes:

1. Refer to Standard Road Plan EW-102 for placement of unsuitable soil types.

FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER T.1B

11:15:01 AM 6/19/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_LGD.dgn

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

Station	Cut					Fill				Checks (EW-102)		Topsoil										
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Template Pavement Removal Volume	Total Cut Adjusted	Total Fill Unadjusted Volume	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink							
SouthCrossover																						
1624+81.31	36	20	0	17	20	3	3	4	16	0	0	0	0	0	0							
1625+00.00	47	25	0	22	25	5	5	6	19	0	0	0	0	0	0							
1625+25.00	46	24	0	22	24	5	5	7	17	0	0	0	0	0	0							
1625+50.00	45	23	0	22	23	5	5	7	16	0	0	0	0	0	0							
1625+75.00	46	23	0	22	23	6	6	8	16	0	0	0	0	0	0							
1626+00.00	47	25	0	22	25	3	3	4	21	0	0	0	0	0	0							
1626+25.00	47	25	0	22	25	1	1	1	24	0	0	0	0	0	0							
1626+50.00	47	25	0	22	25	2	2	3	23	0	0	0	0	0	0							
1626+75.00	49	27	0	22	27	3	3	4	23	0	0	0	0	0	0							
1627+00.00	48	26	0	22	26	5	5	7	19	0	0	0	0	0	0							
1627+25.00	47	25	0	22	25	9	9	12	14	0	0	0	0	0	0							
1627+50.00	48	25	0	22	25	11	11	14	12	0	0	0	0	0	0							
1627+75.00	49	26	0	23	26	11	11	14	12	0	0	0	0	0	0							
1628+00.00	49	26	0	23	26	9	9	12	14	0	0	0	0	0	0							
1628+25.00	49	26	0	22	26	9	9	11	15	0	0	0	0	0	0							
1628+50.00	50	28	0	22	28	8	8	10	18	0	0	0	0	0	0							
1628+75.00	50	29	0	22	29	7	7	9	20	0	0	0	0	0	0							
1629+00.00	51	29	0	22	29	6	6	8	20	0	0	0	0	0	0							
1629+25.00	51	28	0	22	28	6	6	9	20	0	0	0	0	0	0							
1629+50.00	50	28	0	22	28	7	7	9	19	0	0	0	0	0	0							
1629+75.00	50	28	0	22	28	7	7	9	19	0	0	0	0	0	0							
1630+00.00	52	30	0	22	30	6	6	8	22	0	0	0	0	0	0							
1630+25.00	52	31	0	22	31	5	5	6	25	0	0	0	0	0	0							
1630+50.00	53	31	0	22	31	4	4	5	26	0	0	0	0	0	0							
1630+75.00	53	32	0	22	32	3	3	4	28	0	0	0	0	0	0							
1631+00.00	54	32	0	22	32	3	3	3	29	0	0	0	0	0	0							
1631+25.00	54	32	0	22	32	3	3	5	27	0	0	0	0	0	0							
1631+50.00	52	30	0	22	30	5	5	6	24	0	0	0	0	0	0							
1631+75.00	50	28	0	22	28	4	4	5	23	0	0	0	0	0	0							
1632+00.00	48	26	0	22	26	2	2	3	23	0	0	0	0	0	0							
1632+25.00	46	24	0	22	24	1	1	2	23	0	0	0	0	0	0							
1632+50.00	46	24	0	22	24	1	1	1	23	0	0	0	0	0	0							
1632+75.00	48	25	0	22	25	0	0	0	25	0	0	0	0	0	0							
1633+00.00	49	27	0	22	27	0	0	0	27	0	0	0	0	0	0							
1633+25.00	51	28	0	22	28	0	0	0	28	0	0	0	0	0	0							
1633+50.00	52	30	0	22	30	0	0	0	30	0	0	0	0	0	0							
1633+75.00	54	32	0	22	32	0	0	0	32	0	0	0	0	0	0							
1634+00.00	41	24	0	16	24	0	0	0	24	0	0	0	0	0	0							
1634+18.69																						
SouthCrossover Totals:	1,859	1,028	0	831	1,028	166	166	217	813	0	0	0	0	0	0							

#

FILE NO. 32382	ENGLISH	DESIGN TEAM	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER T.2

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut					Fill				Checks (EW-102)		Topsoil										
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Template Pavement Removal Volume	Total Cut Adjusted	Total Fill Unadjusted Volume	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink							
I-29S.ofBridge																						
1651+97.87	11	0	3	8	0	0	0	0	0	0	0	3	0	0	3							
1652+00.00	31	6	13	12	6	2	2	2	3	0	0	13	2	4	10							
1652+25.00	51	12	23	16	12	3	3	4	7	0	0	23	5	7	16							
1652+50.00	70	24	27	19	24	3	3	4	20	0	0	27	5	8	19							
1652+75.00	89	37	30	22	37	5	5	7	30	0	0	30	5	7	23							
1653+00.00	128	61	35	33	61	7	7	9	52	0	0	35	4	6	28							
1653+25.00	179	94	41	43	94	6	6	8	86	0	0	41	7	9	32							
1653+50.00	276	158	59	60	158	6	6	8	150	0	0	59	15	20	38							
1653+75.00	399	245	78	76	245	4	4	5	240	0	0	78	25	36	43							
1654+00.00	486	322	89	75	322	1	1	1	321	0	0	89	36	50	39							
1654+25.00	316	183	59	74	183	0	0	0	182	0	0	59	20	29	30							
1654+50.00	12	0	3	9	0	0	0	0	0	0	0	3	0	0	3							
1654+75.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
1654+81.19																						
I-29S.ofBridge																						
Totals:	2,048	1,140	460	449	1,140	38	38	50	1,092	0	0	460	126	176	286							

FILE NO. 32382	ENGLISH	DESIGN TEAM	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER T.3

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut					Fill				Checks (EW-102)		Topsoil										
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Template Pavement Removal Volume	Total Cut Adjusted	Total Fill Unadjusted Volume	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink							
I-29N.ofBridge																						
1655+97.67																						
1656+00.00	98	0	23	75	0	0	0	0	0	0	0	23	0	0	23							
1656+25.00	98	0	23	75	0	0	0	0	0	0	0	23	0	0	23							
1656+50.00	100	0	22	78	0	0	0	0	0	0	0	22	0	0	22							
1656+75.00	171	61	28	83	61	1	1	1	60	0	0	28	4	6	22							
1657+00.00	245	123	34	87	123	2	2	2	121	0	0	34	9	13	21							
1657+25.00	170	84	27	60	84	1	1	1	82	0	0	27	9	13	14							
1657+50.00	92	42	20	30	42	0	0	0	42	0	0	20	9	12	8							
1657+75.00	93	43	20	30	43	0	0	1	42	0	0	20	9	12	7							
1658+00.00	92	42	19	31	42	0	0	1	42	0	0	19	9	12	7							
1658+25.00	92	42	18	32	42	0	0	1	41	0	0	18	9	12	6							
1658+50.00	71	28	22	21	28	0	0	0	28	0	0	22	7	10	12							
1658+75.00	49	14	26	9	14	0	0	0	14	0	0	26	4	6	20							
1659+00.00	28	7	17	5	7	0	0	0	7	0	0	17	2	2	15							
1659+25.00	6	0	6	0	0	0	0	0	0	0	0	6	0	0	6							
1659+45.97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
I-29N.ofBridge																						
Totals:	1,407	485	306	617	485	6	6	8	479	0	0	306	71	100	207							

FILE NO. 32382	ENGLISH	DESIGN TEAM	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER T.4

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

	Cut					Fill				Checks (EW-102)		Topsoil										
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
Station	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Template Pavement Removal Volume	Total Cut Adjusted	Total Fill Unadjusted Volume	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink							
NorthCrossover																						
1673+31.31	38	22	0	16	22	0	0	0	21	0	0	0	0	0	0							
1673+50.00	49	28	0	21	28	0	0	0	28	0	0	0	0	0	0							
1673+75.00	46	26	0	20	26	0	0	1	26	0	0	0	0	0	0							
1674+00.00	46	26	0	20	26	0	0	1	25	0	0	0	0	0	0							
1674+25.00	46	26	0	20	26	0	0	1	26	0	0	0	0	0	0							
1674+50.00	46	26	0	20	26	1	1	1	25	0	0	0	0	0	0							
1674+75.00	46	25	0	20	25	1	1	2	24	0	0	0	0	0	0							
1675+00.00	46	26	0	20	26	2	2	2	24	0	0	0	0	0	0							
1675+25.00	49	28	0	21	28	2	2	2	26	0	0	0	0	0	0							
1675+50.00	52	31	0	21	31	2	2	3	28	0	0	0	0	0	0							
1675+75.00	54	33	0	21	33	2	2	3	30	0	0	0	0	0	0							
1676+00.00	57	37	0	21	37	1	1	1	35	0	0	0	0	0	0							
1676+25.00	60	39	0	21	39	0	0	0	39	0	0	0	0	0	0							
1676+50.00	59	38	0	21	38	0	0	0	38	0	0	0	0	0	0							
1676+75.00	57	36	0	21	36	0	0	0	36	0	0	0	0	0	0							
1677+00.00	58	36	0	22	36	0	0	0	36	0	0	0	0	0	0							
1677+25.00	57	35	0	22	35	0	0	0	35	0	0	0	0	0	0							
1677+50.00	55	32	0	22	32	0	0	0	32	0	0	0	0	0	0							
1677+75.00	52	29	0	23	29	1	1	1	28	0	0	0	0	0	0							
1678+00.00	50	28	0	23	28	2	2	3	25	0	0	0	0	0	0							
1678+25.00	50	27	0	22	27	3	3	4	24	0	0	0	0	0	0							
1678+50.00	50	27	0	22	27	4	4	5	23	0	0	0	0	0	0							
1678+75.00	50	27	0	23	27	4	4	5	23	0	0	0	0	0	0							
1679+00.00	51	27	0	23	27	4	4	5	23	0	0	0	0	0	0							
1679+25.00	51	27	0	23	27	4	4	5	22	0	0	0	0	0	0							
1679+50.00	50	27	0	23	27	5	5	6	21	0	0	0	0	0	0							
1679+75.00	48	24	0	23	24	7	7	9	16	0	0	0	0	0	0							
1680+00.00	47	24	0	23	24	8	8	10	14	0	0	0	0	0	0							
1680+25.00	48	25	0	23	25	7	7	9	16	0	0	0	0	0	0							
1680+50.00	46	23	0	23	23	7	7	9	14	0	0	0	0	0	0							
1680+75.00	45	22	0	23	22	7	7	9	13	0	0	0	0	0	0							
1681+00.00	44	21	0	23	21	7	7	9	12	0	0	0	0	0	0							
1681+25.00	44	21	0	23	21	7	7	9	12	0	0	0	0	0	0							
1681+50.00	45	22	0	23	22	7	7	10	12	0	0	0	0	0	0							
1681+75.00	46	23	0	23	23	8	8	10	14	0	0	0	0	0	0							
1682+00.00	47	25	0	23	25	7	7	10	15	0	0	0	0	0	0							
1682+25.00	48	25	0	23	25	8	8	10	15	0	0	0	0	0	0							
1682+50.00	36	20	0	17	20	6	6	8	11	0	0	0	0	0	0							
1682+68.69																						
NorthCrossover Totals:	1,868	1,046	0	823	1,046	124	124	163	885	0	0	0	0	0	0							

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut					Fill				Checks (EW-102)		Topsoil										
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Template Pavement Removal Volume	Total Cut Adjusted	Total Fill Unadjusted Volume	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink							
Summary:																						
SouthCrossover	1,859	1,028	0	831	1,028	166	166	217	813	0	0	0	0	0	0							
I-29S.ofBridge	2,048	1,140	460	449	1,140	38	38	50	1,092	0	0	460	126	176	286							
I-29N.ofBridge	1,407	485	306	617	485	6	6	8	479	0	0	306	71	100	207							
NorthCrossover	1,868	1,046	0	823	1,046	124	124	163	885	0	0	0	0	0	0							
Project Totals:	7,182	3,699	766	2,720	3,699	334	334	438	3,269	0	0	766	197	276	493							

Excavation, Class 10, Roadway & Borrow

438 cy [8]

Excavation, Class 10, Waste

3269 cy [9]

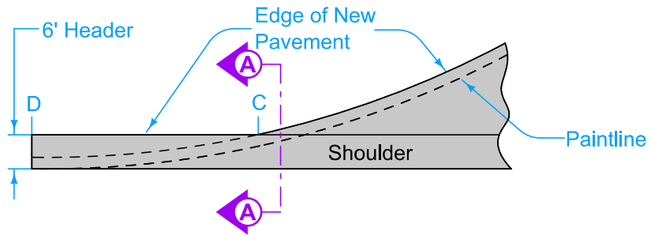
Topsoil, Strip, Salvage, & Spread

766 cy [12]

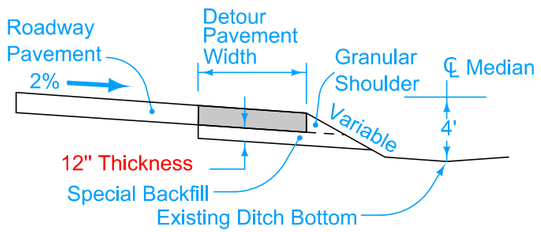
Compaction with Moisture Control

334 cy [6]

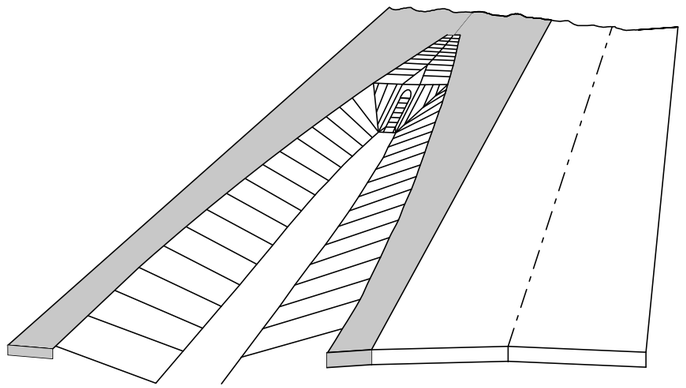
FILE NO. 32382	ENGLISH	DESIGN TEAM	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER T.6



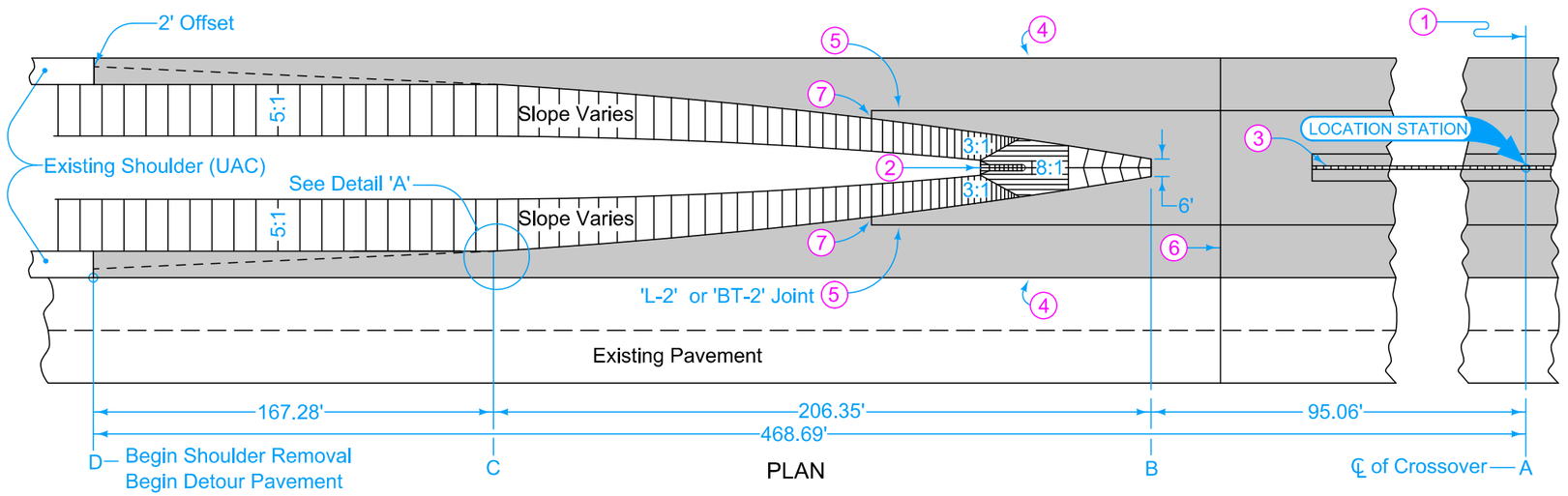
DETAIL 'A'



SECTION A-A



PERSPECTIVE VIEW
DITCH SLOPE AND BEVELED PIPE



PLAN

Detour Pavement shall consist of 10" PCC.

For joint details, see PV-101.

1. Median crossover is symmetrical about centerline.
2. Beveled pipe and guard. See DR-212.
3. Slotted drain for median crossover. See DR-502.
4. 'BT-2' or 'L-2' joint if mainline pavement is new construction. Bend bars out.
   'BT-3' joint if mainline pavement is existing.
5. For PCC Detour Pavement, 'BT-2' or 'L-2' spaced at one-quarter median width.
6. For PCC Detour Pavement, match existing roadway joints. 'CD' joints are required.
7. For PCC Detour Pavement, 2 foot 'C' Joint.

DESIGN QUANTITY TABLE		
Detour Pavement Sq. Yds.	Special Backfill Tons	Granular Shoulder Tons
2695	2530	275

Detour Pavement

Possible Contract Items:
- Granular Shoulders, Type A
- Detour Pavement
- Embankment In Place
- Excavation, Class 10, Roadway and Borrow
- Excavation, Class 13, Roadway and Borrow
- Removal of Pavement
- Special Backfill

Possible Tabulation:
- 112-8

TABLE OF OFFSETS AND DROPS (PAVED SHOULDERS)																				
Distance from Location Station (Feet)	468.69	450	425	400	375	350	325	301.41	300	275	250	225	200	175	150	125	100	95.06	75.0	0
Offset from inside edge of Pavement (Feet)	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.07	7.36	8.84	10.49	12.33	14.34	16.54	18.92	21.47	22.00	25.00	25.00
Cross-Slope from inside edge of NB Pav't	4.00%	3.57%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Drop from inside edge of NB Pav't (Feet)	0.24	0.21	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.22	0.27	0.32	0.37	0.43	0.50	0.57	0.64	0.66	0.75	0.75
Cross-Slope from inside edge of SB Pav't	4.00%	3.53%	2.90%	2.26%	1.63%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%
Drop from inside edge of SB Pav't (Feet)	0.24	0.21	0.17	0.14	0.10	0.06	0.06	0.06	0.06	0.07	0.09	0.11	0.12	0.14	0.17	0.19	0.22	0.22	0.25	0.25
POINT LOCATION	D							C										B		A

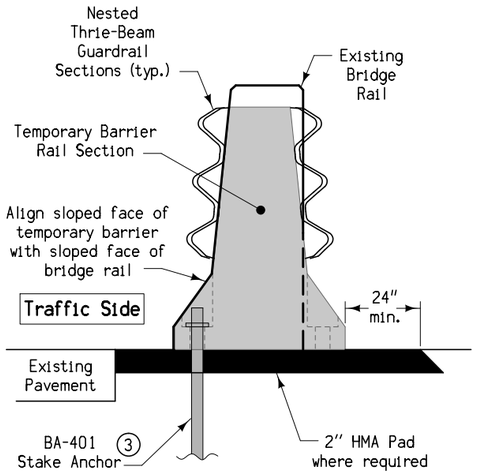
MODIFIED
STANDARD ROAD PLAN

PV-500
SHEET 1 of 2

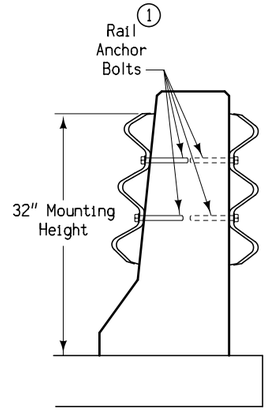
MODIFICATIONS: Revised notes for detour pavement and special backfill.
Revised Table of Offsets and Drops.

APPROVED BY DESIGN METHODS ENGINEER

MEDIAN CROSSOVER
(50' MEDIAN)



SECTION A-A



SECTION B-B

Install temporary barrier rail on a flat, level surface. Removal of curb adjacent to bridge end posts may be necessary. Where anchored TBR sections are not located on existing pavement, construct a 2" minimum thickness HMA pad as shown. When required, removal of curb and construction of HMA pad will be considered incidental to this contract item.

Lap the traffic-side face of guardrail in the direction of adjacent traffic.

Upon removal of Temporary to Permanent Barrier Connection, use non-shrink grout complying with Materials I.M. 491.13 to fill any holes that were drilled for attachment of Terminal Connectors to bridge rail.

Contract Item: Temporary to Permanent Barrier Connection

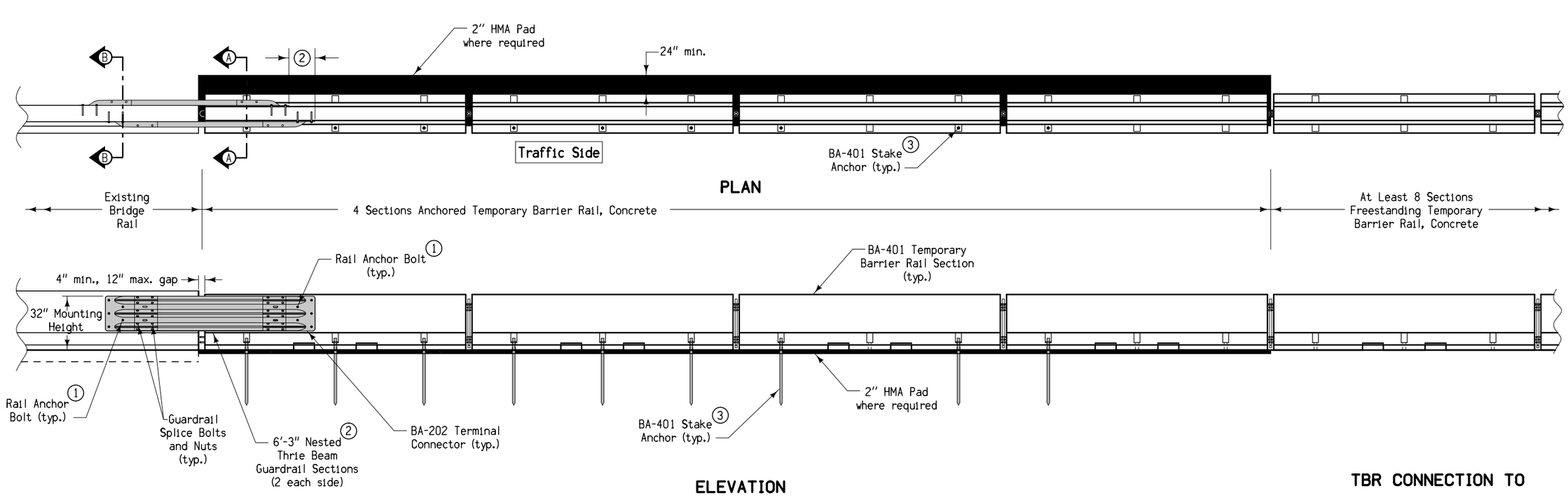
Item includes: 4 - 6'-3" Thrie-Beam Guardrail Sections
4 - BA-202 Terminal Connectors
48 - 5/8" dia. Guardrail Splice Bolts and Nuts
20 - 3/4" dia. Rail Anchor Bolts: Powers Fasteners Wedge-Bolt Anchor OR Red Head Large Diameter Tapcon OR Simpson Titen HD Screw Anchor

The number of Temporary to Permanent Barrier Connections will be counted. The Contractor will be paid the contract unit price for each Temporary to Permanent Barrier Connection measured as provided above.

(1) Install five (5) Rail Anchor Bolts in each Terminal Connector as shown. Ensure a minimum embedment depth of 6". Drill pilot holes with a core bit. Avoid drilling or cutting through reinforcing steel within TBR sections.

(2) Install thrie-beam sections so they are approximately centered on the gap between the TBR and the permanent barrier. Shift non-traffic-side thrie-beam sections 16" upstream or downstream in order to prevent anchor bolt interference.

(3) Each connection requires nine (9) BA-401 stake anchors as shown. Use of the strap anchorage is not allowed.



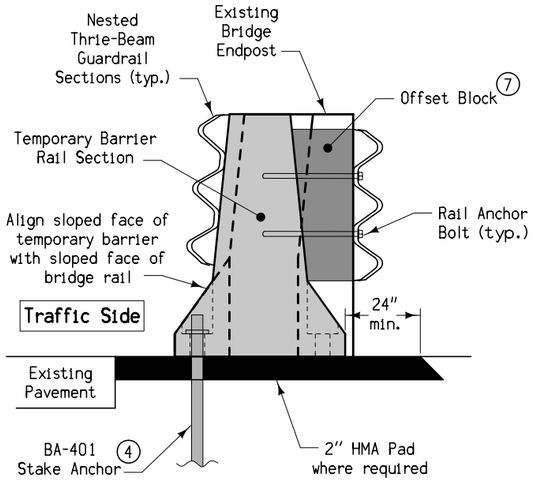
PLAN

ELEVATION

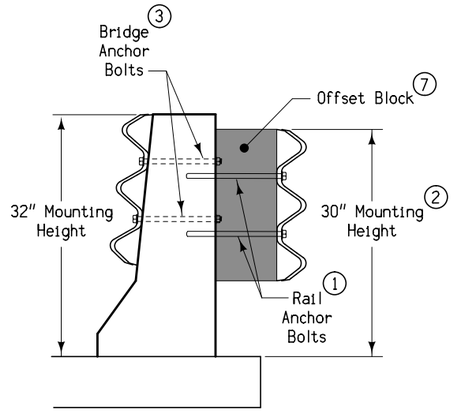
TBR CONNECTION TO F-SHAPE BRIDGE RAIL WITHOUT END SECTIONS

FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER U.2

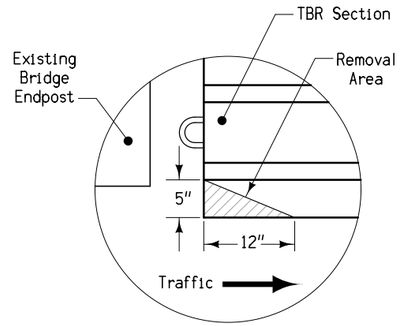
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SECTION A-A



SECTION B-B



DETAIL 'A'

Where TBR is installed on the trailing end of a bridge, remove the toe of the first TBR section to the dimensions shown above.

Install temporary barrier rail on a flat, level surface. Removal of curb adjacent to bridge end posts may be necessary. Where anchored TBR sections are not located on existing pavement, construct a 2" minimum thickness HMA pad as shown. When required, removal of curb and construction of HMA pad will be considered incidental to this contract item.

Upon removal of Temporary to Permanent Barrier Connection, use non-shrink grout complying with Materials I.M. 491.13 to fill any holes that were drilled for attachment of Terminal Connectors to bridge rail.

Contract Item: Temporary to Permanent Barrier Connection

Item includes:
- 4 - 6'-3" Thrie-Beam Guardrail Sections
- 4 - BA-202 Terminal Connectors
- 48 - 5/8" dia. Guardrail Splice Bolts and Nuts
- 5 - 7/8" dia. x 12" Bridge Anchor Bolts and Nuts
- 10 - Washers for Bridge Anchor Bolts
- 19 - 3/4" dia. Rail Anchor Bolts: Powers Fasteners Wedge-Bolt Anchor OR Red Head Large Diameter Tapcon OR Simpson Titen HD Screw Anchor

The number of Temporary to Permanent Barrier Connections will be counted. The Contractor will be paid the contract unit price for each Temporary to Permanent Barrier Connection measured as provided above.

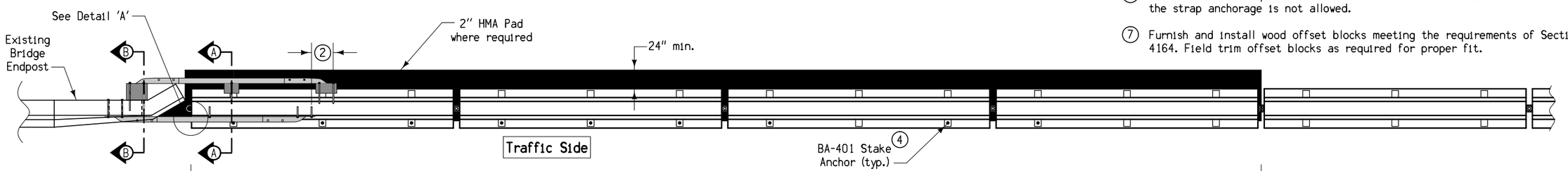
(1) Install five (5) Rail Anchor Bolts in each Terminal Connector as shown. Ensure a minimum embedment depth of 6". Drill pilot holes with a core bit. Avoid drilling or cutting through reinforcing steel within TBR sections.

(2) Shift non-traffic-side thrie-beam sections 16" farther from bridge and 2" lower in order to prevent interference with Bridge Anchor Bolts.

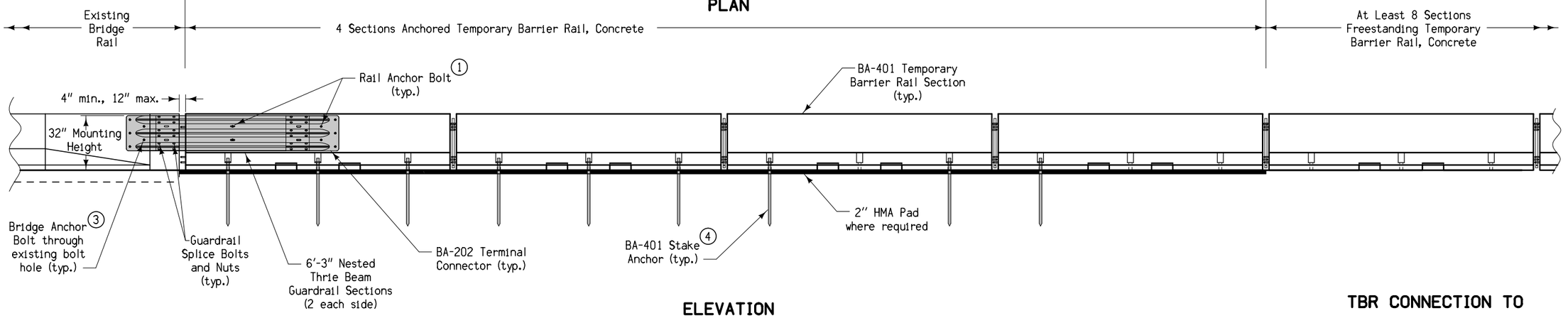
(3) Attach traffic-side Terminal Connector to bridge endpost through existing holes. Use Bridge Anchor Bolts, Nuts, and Washers complying with Article 4155.02 for connecting steel beam guardrail to bridge barrier rail.

(4) Each connection requires nine (9) BA-401 stake anchors as shown. Use of the strap anchorage is not allowed.

(7) Furnish and install wood offset blocks meeting the requirements of Section 4164. Field trim offset blocks as required for proper fit.



PLAN

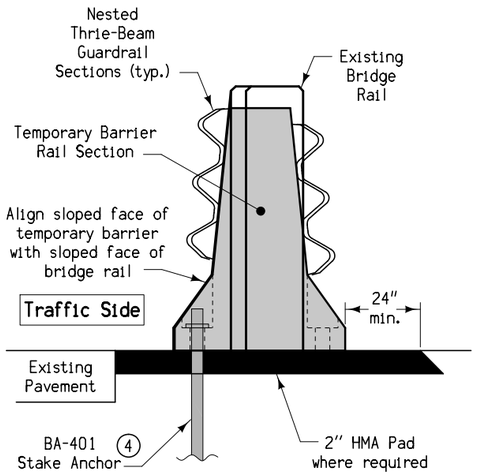


ELEVATION

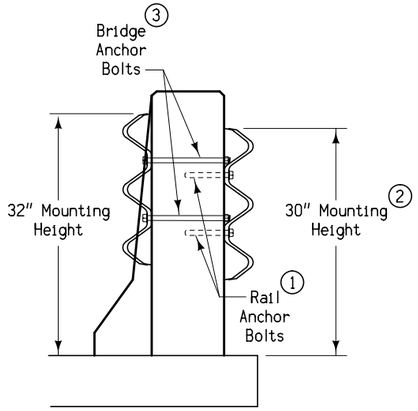
TBR CONNECTION TO NJ-SHAPE BRIDGE RAIL WITH FLARED END SECTIONS

FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER U.3

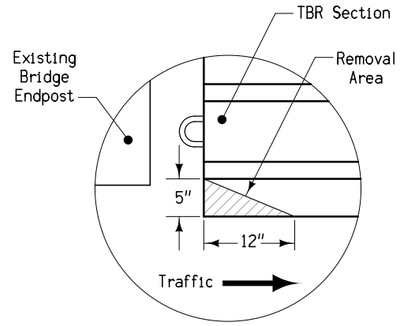
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SECTION A-A



SECTION B-B



DETAIL 'A'

Where TBR is installed on the trailing end of a bridge, remove the toe of the first TBR section to the dimensions shown above.

Install temporary barrier rail on a flat, level surface. Removal of curb adjacent to bridge end posts may be necessary. Where anchored TBR sections are not located on existing pavement, construct a 2" minimum thickness HMA pad as shown. When required, removal of curb and construction of HMA pad will be considered incidental to this contract item.

Upon removal of Temporary to Permanent Barrier Connection, use non-shrink grout complying with Materials I.M. 491.13 to fill any holes that were drilled for attachment of Terminal Connectors to bridge rail.

Contract Item: Temporary to Permanent Barrier Connection

Item includes:
- 4 - 6'-3" Thrie-Beam Guardrail Sections
- 4 - BA-202 Terminal Connectors
- 48 - 5/8" dia. Guardrail Splice Bolts and Nuts
- 5 - 7/8" dia. x 12" Bridge Anchor Bolts and Nuts
- 10 - Washers for Bridge Anchor Bolts
- 15 - 3/4" dia. Rail Anchor Bolts: Powers Fasteners Wedge-Bolt Anchor OR Red Head Large Diameter Tapcon OR Simpson Titen HD Screw Anchor

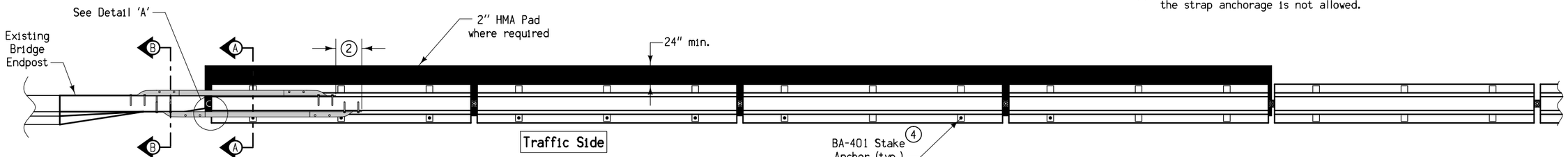
The number of Temporary to Permanent Barrier Connections will be counted. The Contractor will be paid the contract unit price for each Temporary to Permanent Barrier Connection measured as provided above.

(1) Install five (5) Rail Anchor Bolts in each Terminal Connector as shown. Ensure a minimum embedment depth of 6". Drill pilot holes with a core bit. Avoid drilling or cutting through reinforcing steel within TBR sections.

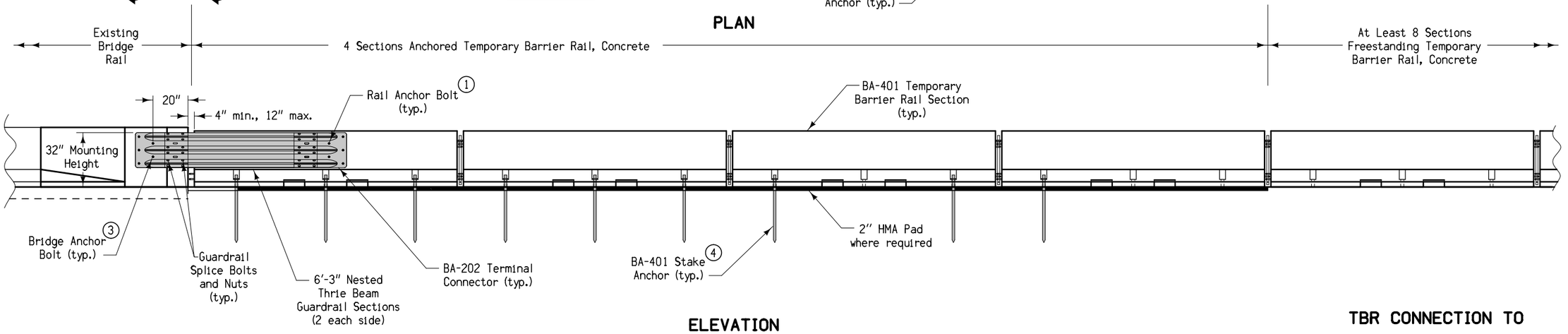
(2) Shift non-traffic-side thrie-beam sections 16" closer to bridge and 2" lower in order to prevent interference with Bridge Anchor Bolts.

(3) Attach traffic-side Terminal Connector to bridge endpost through existing holes. Use Bridge Anchor Bolts, Nuts, and Washers complying with Article 4155.02 for connecting steel beam guardrail to bridge barrier rail.

(4) Each connection requires nine (9) BA-401 stake anchors as shown. Use of the strap anchorage is not allowed.



PLAN



ELEVATION

TBR CONNECTION TO F-SHAPE BRIDGE RAIL WITH END SECTIONS

FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER U.4

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CROSS SECTION VIEW COLOR LEGEND

Design Color No.	Feature
Aggregate	
(64)	Choke Stone
(42)	Engineering Fabric
(8)	Flooded Backfill
(92)	Macadam Stone
(20)	Modified
(12)	Plowing Shaping
(14)	Porous Backfill
(8)	Revetment Class A
(6)	Revetment Class B
(62)	Revetment Class C
(188)	Revetment Class D
(28)	Revetment Class E
(12)	Shoulder Special Backfill
(12)	Special Backfill
(20)	Subbase
(20)	Subbase Lower
(20)	Subbase Upper
(118)	Subgrade Treatment
Asphalt	
(207)	HMA Base Course
(207)	HMA Interim Course
(207)	HMA Surface Course
Bridge	
(0)	Bridge
Concrete	
(0)	Barrier Concrete
(0)	Barrier Concrete Footing
(0)	Curb Gutter
(48)	Flowable Mortar
(0)	Median Concrete
(0)	PCC Pavement
(0)	Sidewalk
Existing	
(0)	Existing Pavement
Shoulder	
(209)	Shoulder HMA
(0)	Shoulder PCC
(6)	Shoulder Granular
Structural	
(112)	Noise Wall
(112)	Noise Wall Footing
(112)	Retaining Wall Back
(112)	Retaining Wall Back Excavate
(112)	Retaining Wall Face
(112)	Retaining Wall Front Excavate
(112)	Retaining Wall Front Footing
(112)	Retaining Wall MSE Gutter
(112)	Retaining Wall Reinforced Earth

Design Color No.	Feature
Grading	
(8)	Behind Curb Cut
(6)	Granular
(13)	Granular Back Fill
(48)	Rock Undercut
(8)	Shoulder Earth Fill
(2)	Side Slopes
(226)	Side Slopes Dressing
Substrata	
(128)	Boulder
(209)	Boulder Removed
(48)	Broken Weathered
(210)	Broken Weathered Removed
(3)	Core Out
(115)	Core Out Remove Only
(195)	Core Out Remove and Replace
(203)	Existing Pavement
(184)	Existing Pavement Remove Only
(200)	Existing Pavement Remove and Replace
(6)	Loam
(211)	Loam Removed
(80)	Rock
(212)	Rock Removed
(4)	Select Sand
(214)	Select Sand Removed
(3)	Shale
(215)	Shale Removed
(10)	Topsoil
(2)	Topsoil Remove Only
(4)	Topsoil Remove and Replace
Unsuitable / Waste	
(3)	Unsuitable Type A
(216)	Unsuitable Type A Removed
(13)	Unsuitable Type B
(217)	Unsuitable Type B Removed
(11)	Unsuitable Type C
(218)	Unsuitable Type C Removed
(3)	Waste
(219)	Waste Removed

NOTES:

Text

NOTES:

Text

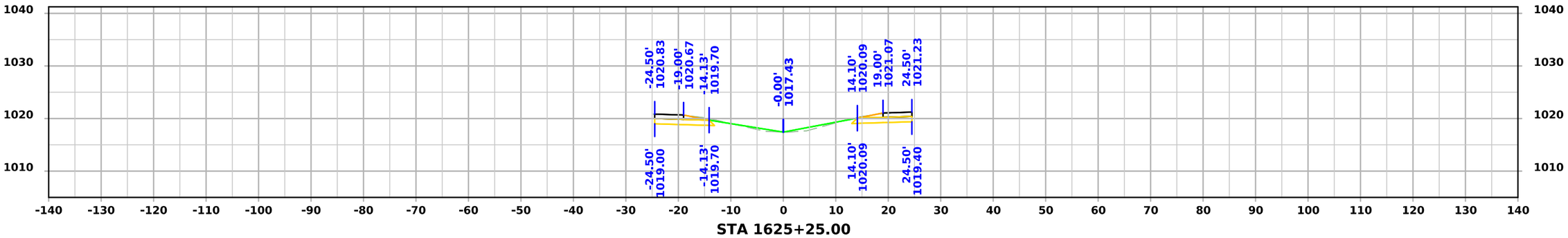
CROSS SECTIONS
LEGEND AND INFORMATION SHEET

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

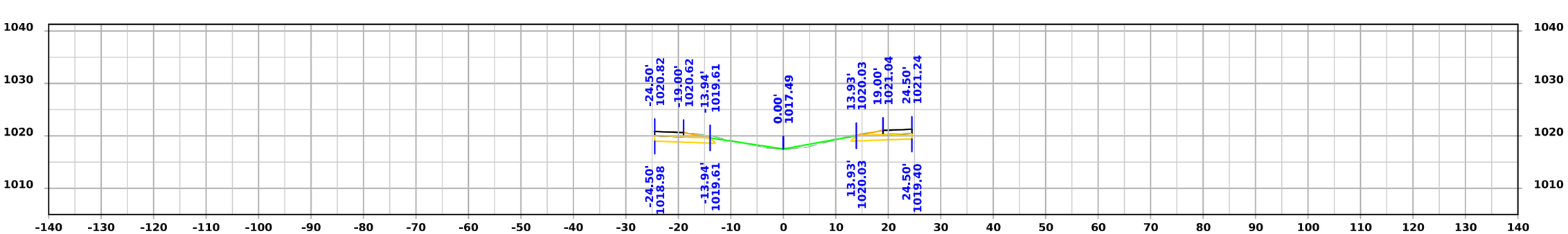
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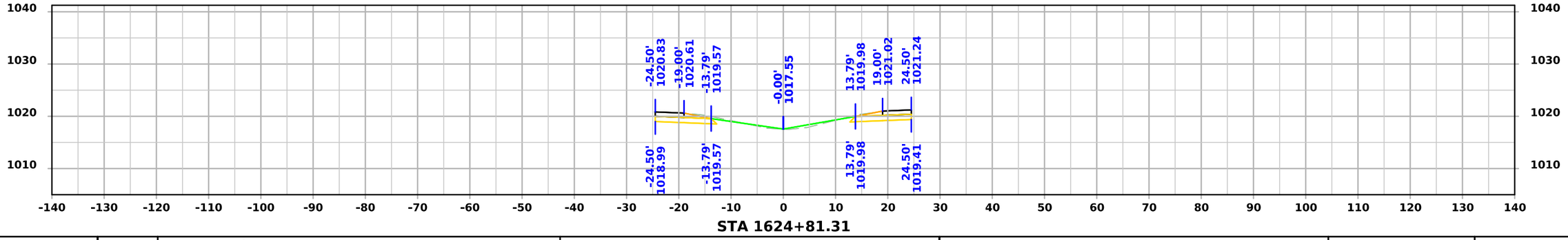
ML - I-29
South Crossover



STA 1625+25.00



STA 1625+00.00

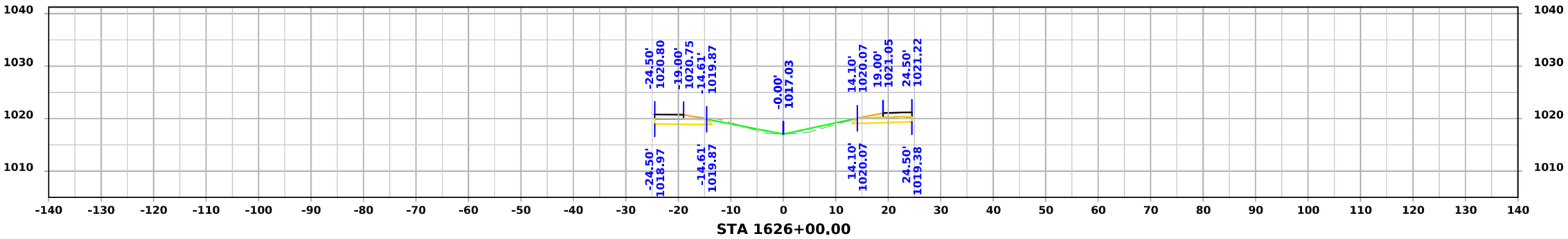


STA 1624+81.31

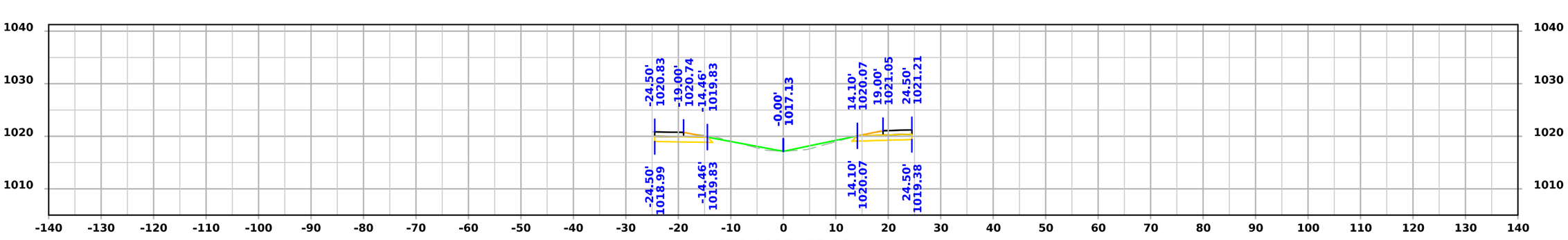
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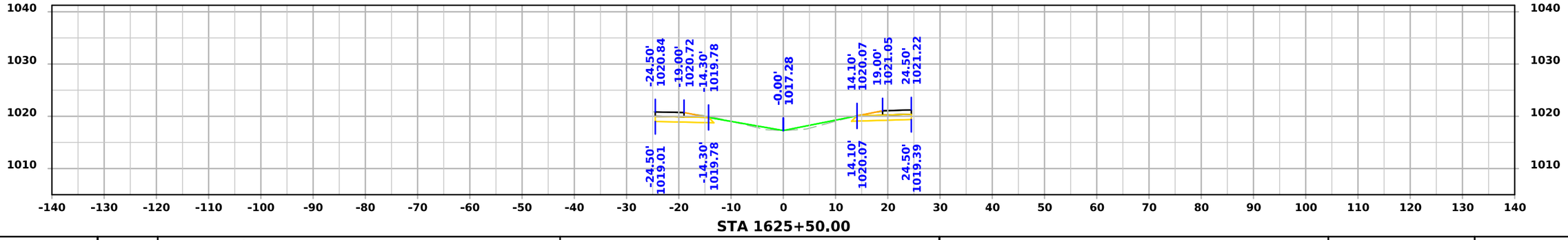
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South Crossover



STA 1626+00.00



STA 1625+75.00

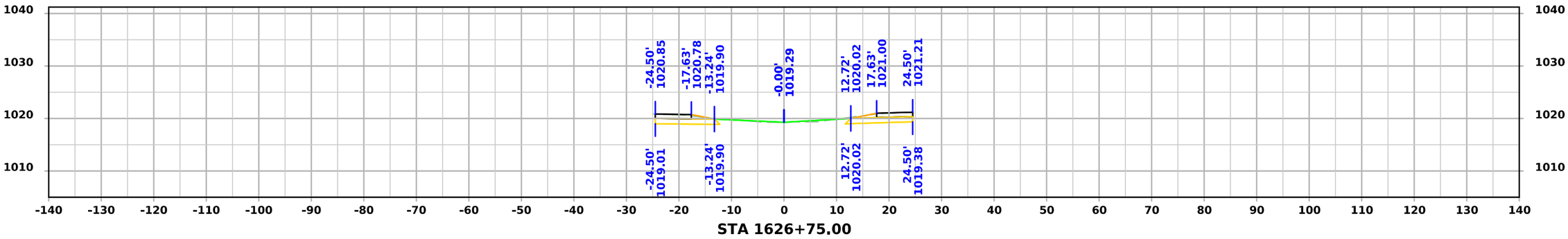


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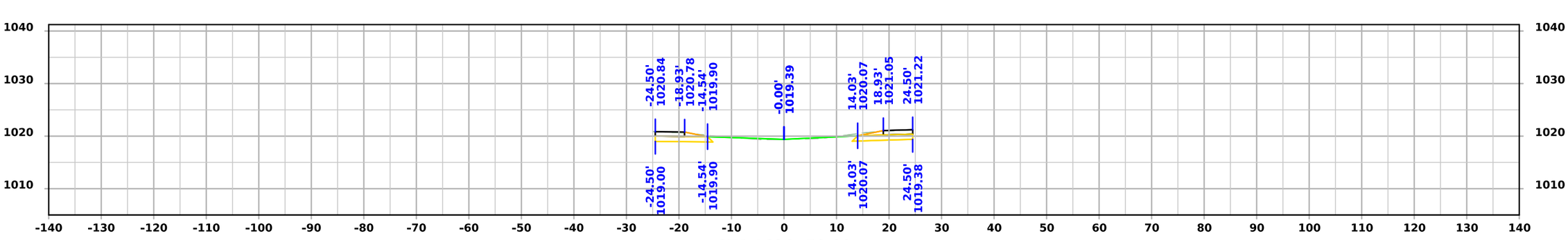
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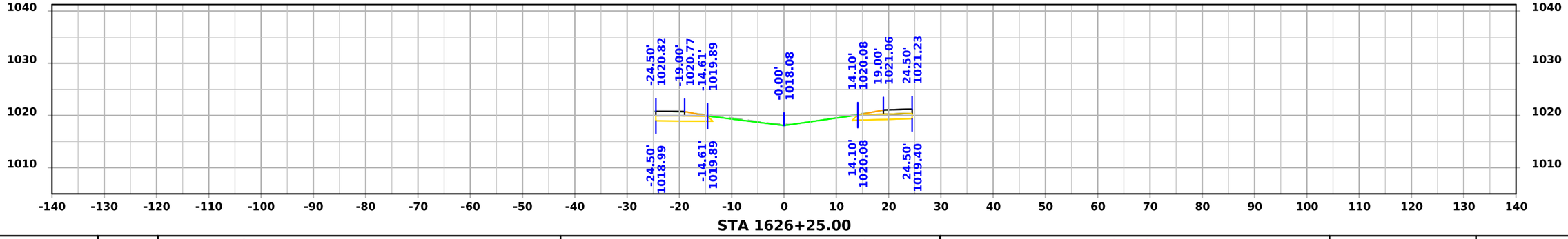
ML - I-29
South Crossover



STA 1626+75.00



STA 1626+50.00

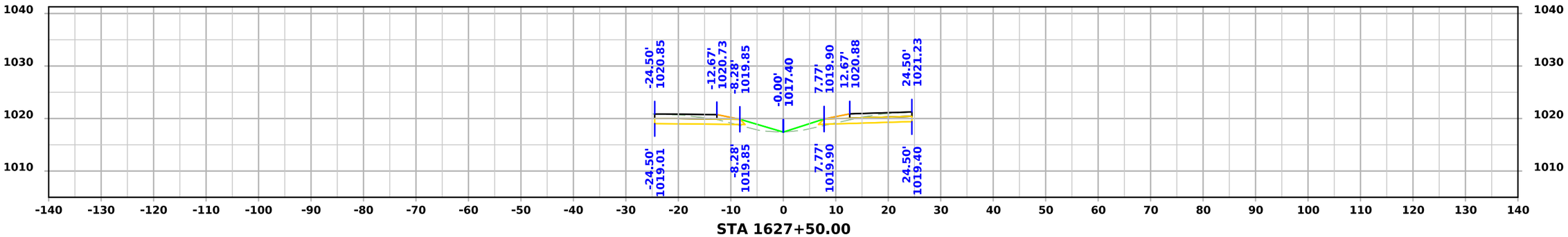


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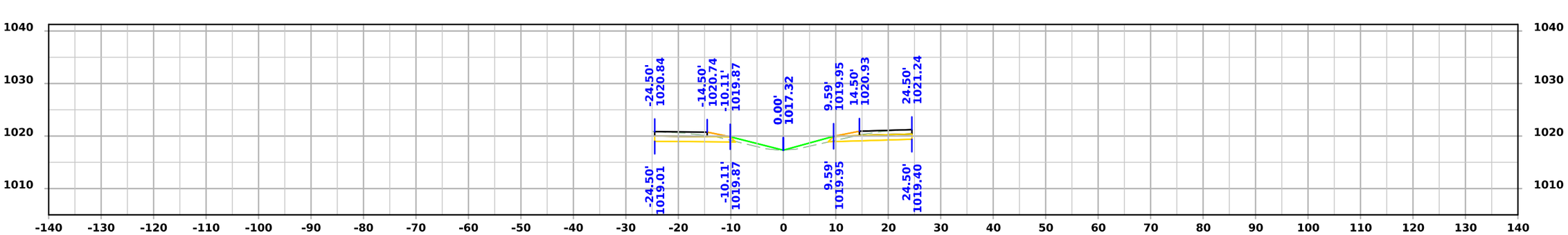
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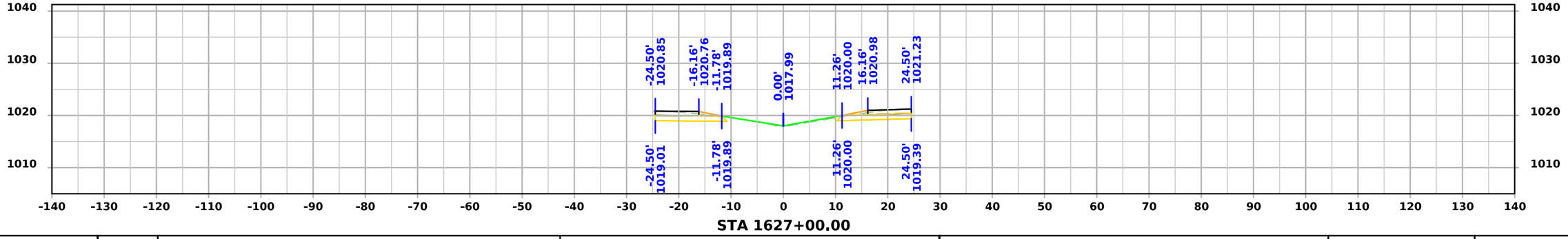
ML - I-29
South Crossover



STA 1627+50.00



STA 1627+25.00

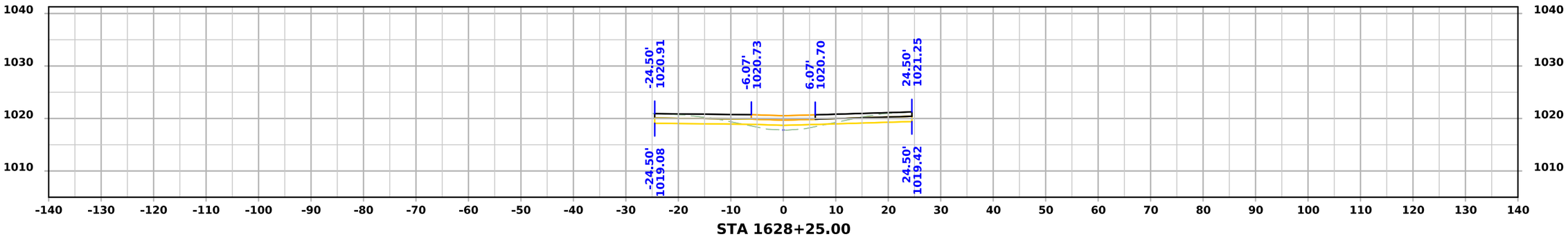


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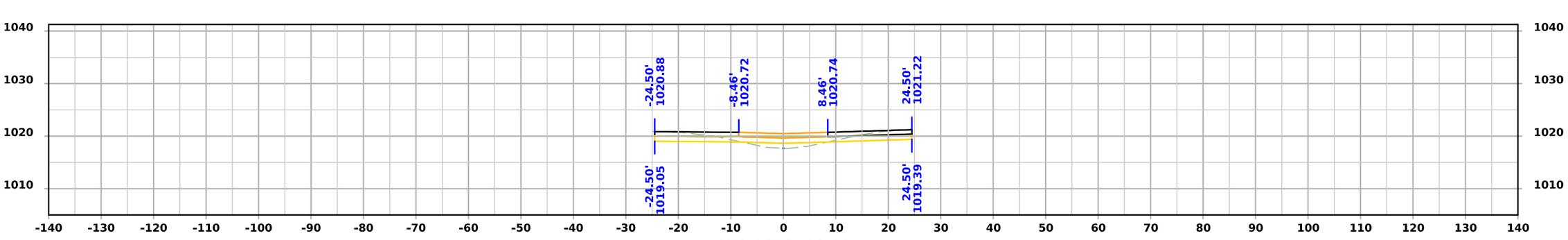
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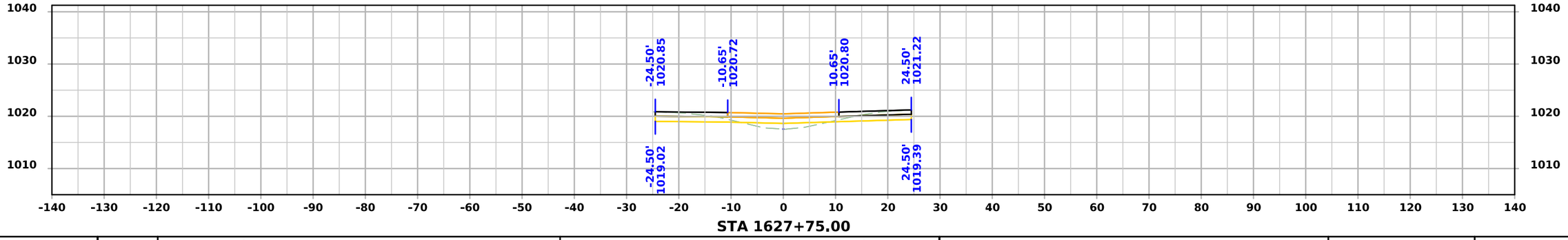
ML - I-29
South Crossover



STA 1628+25.00



STA 1628+00.00

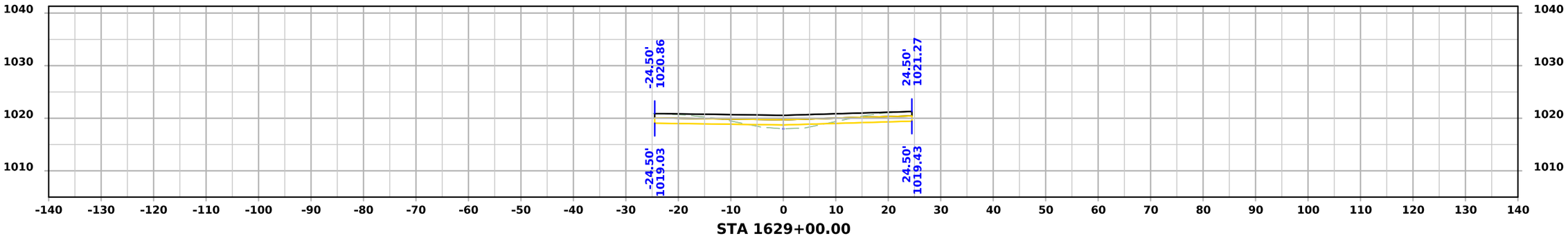


STA 1627+75.00

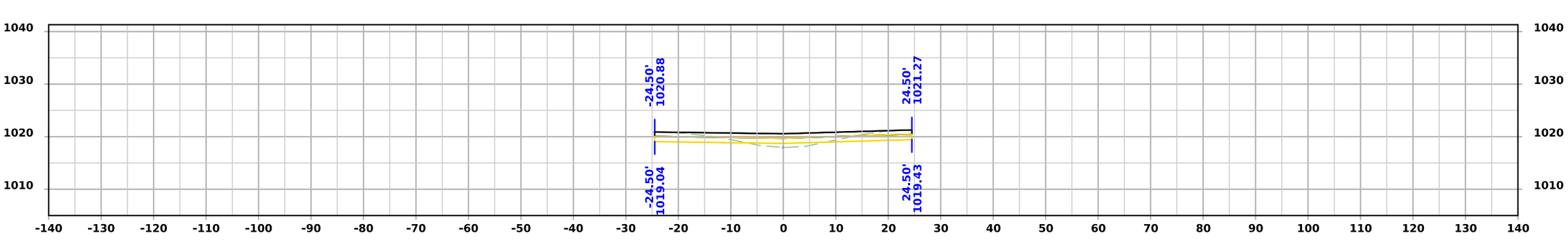
FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER W.6

9:47:42 AM 6/24/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_W02.dgn

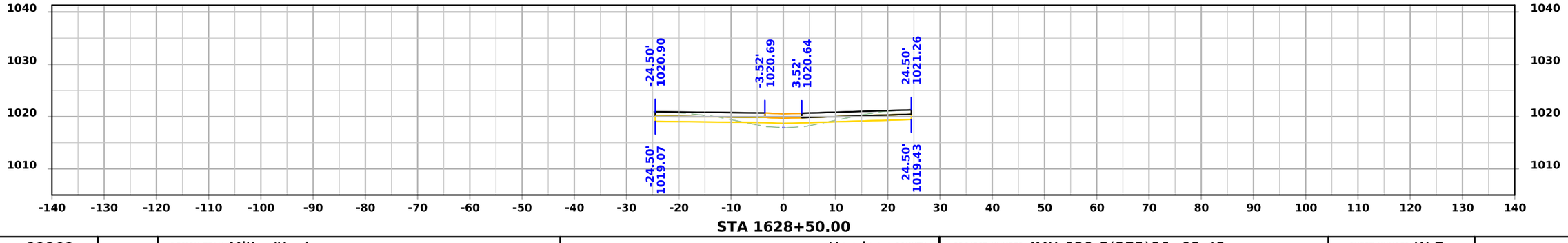
ML - I-29
South Crossover



STA 1629+00.00



STA 1628+75.00

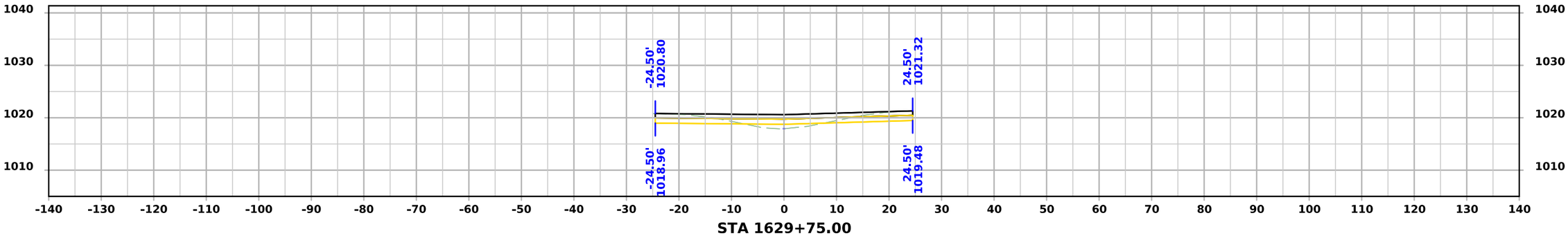


STA 1628+50.00

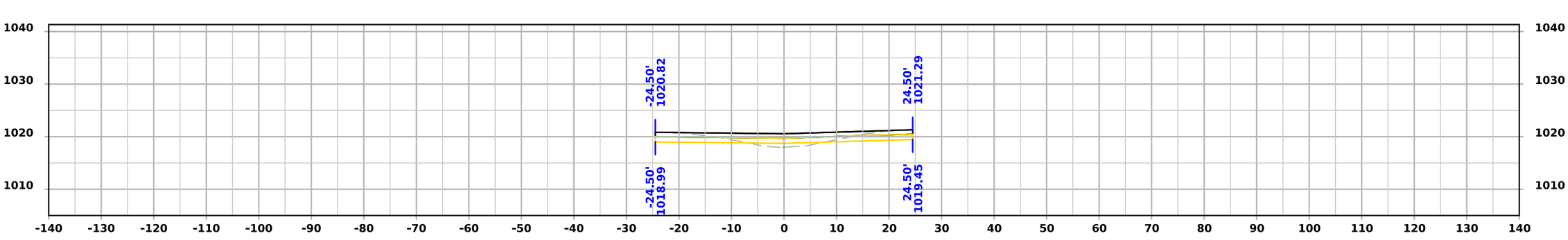
FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER W.7	

9:47:43 AM 6/24/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_W02.dgn

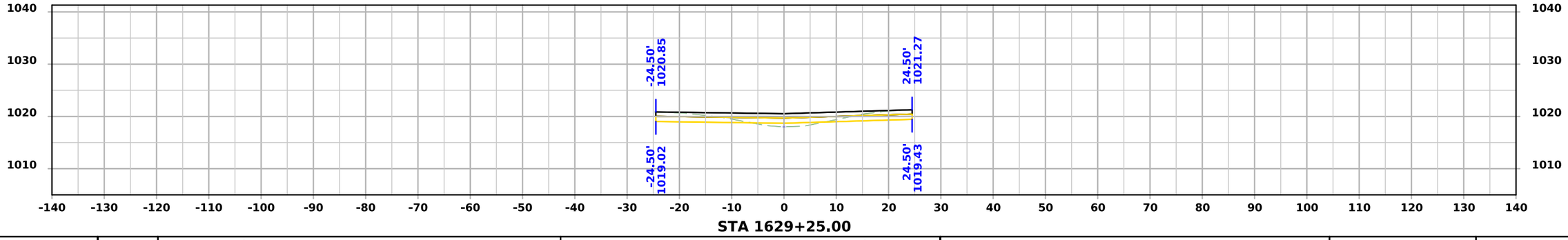
ML - I-29
South Crossover



STA 1629+75.00



STA 1629+50.00

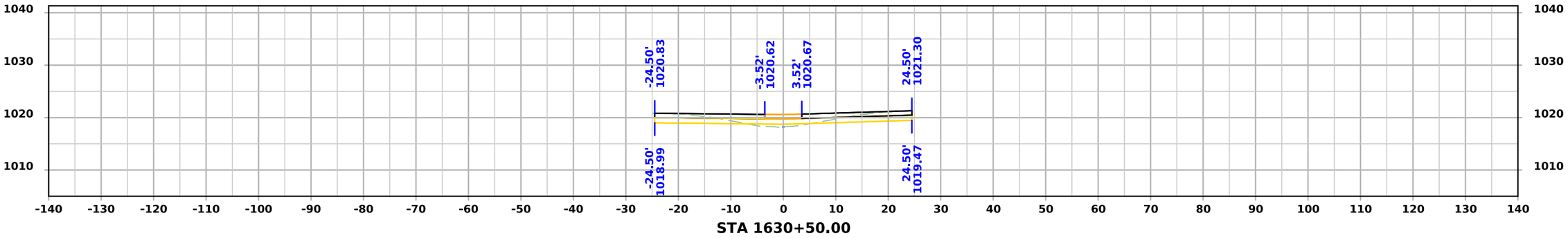


STA 1629+25.00

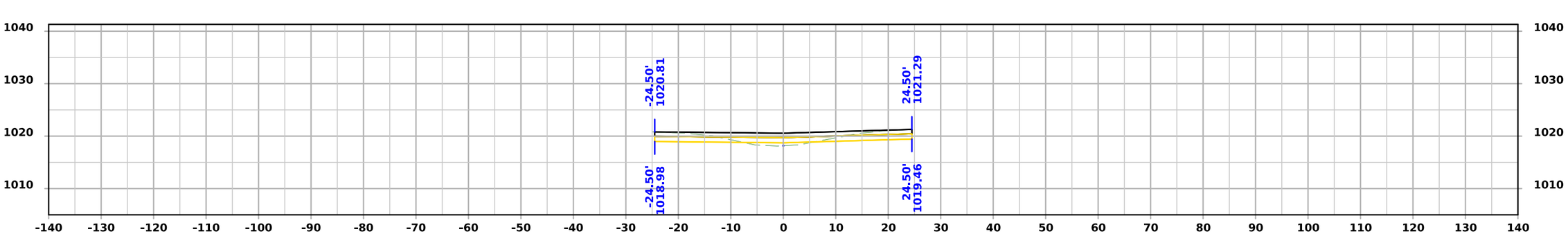
FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER W.8	

9:47:43 AM 6/24/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_W02.dgn

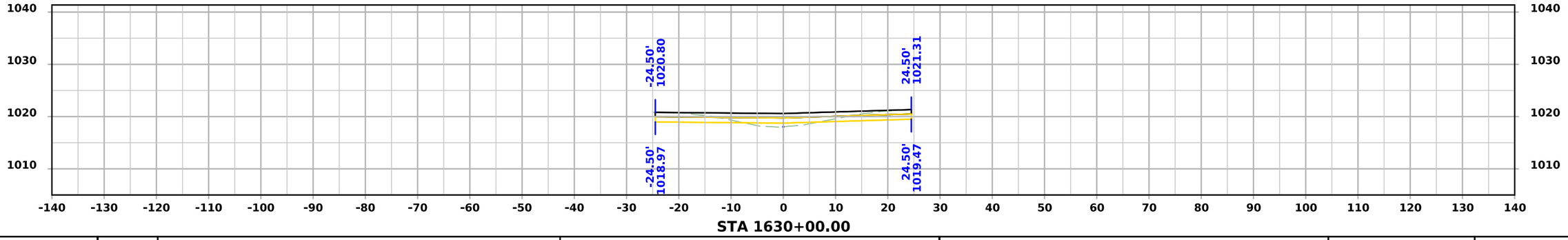
ML - I-29
South Crossover



STA 1630+50.00



STA 1630+25.00

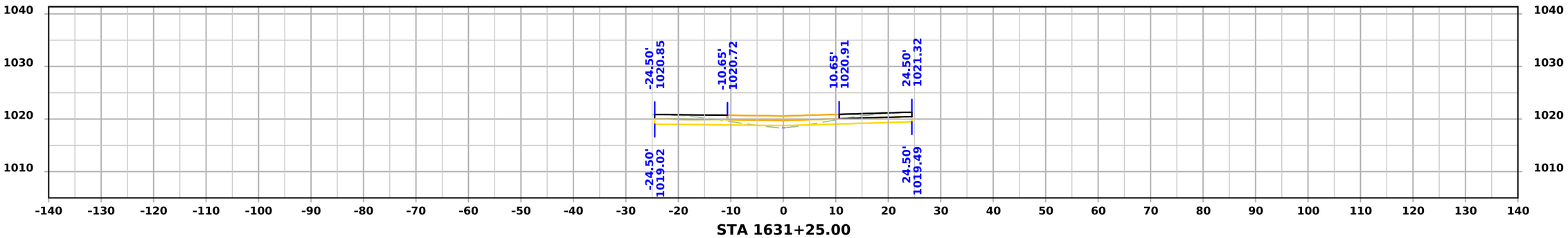


STA 1630+00.00

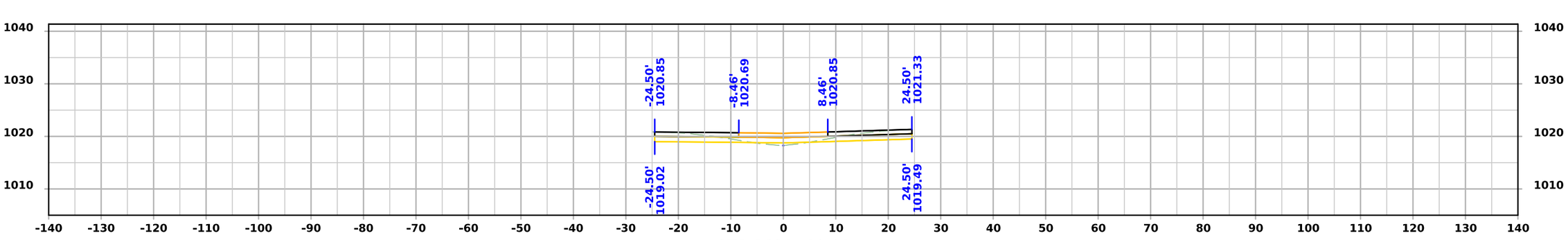
FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER W.9

9:47:44 AM 6/24/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_W02.dgn

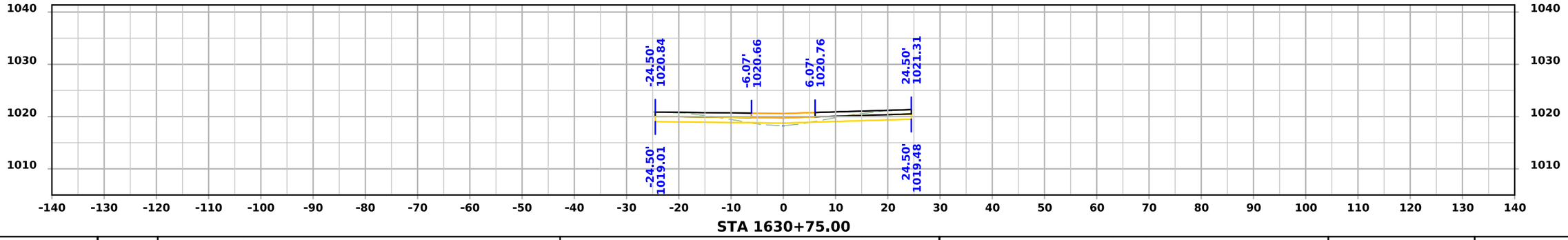
ML - I-29
South Crossover



STA 1631+25.00



STA 1631+00.00

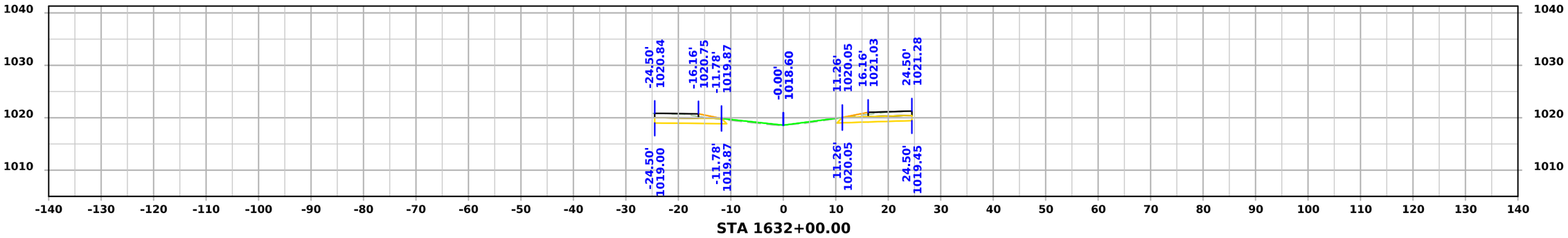


STA 1630+75.00

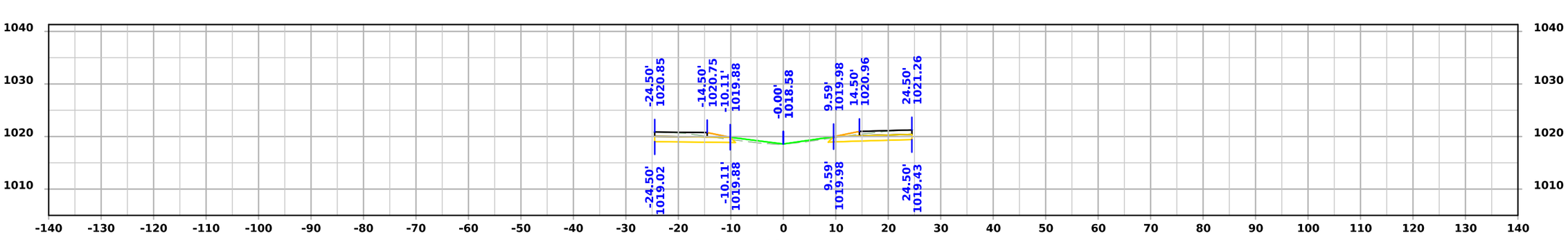
FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER W.10

9:47:45 AM 6/24/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_W02.dgn

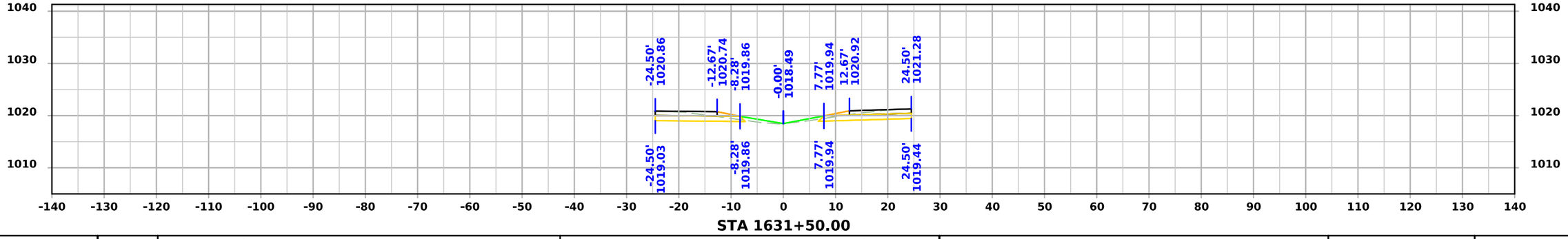
ML - I-29
South Crossover



STA 1632+00.00



STA 1631+75.00

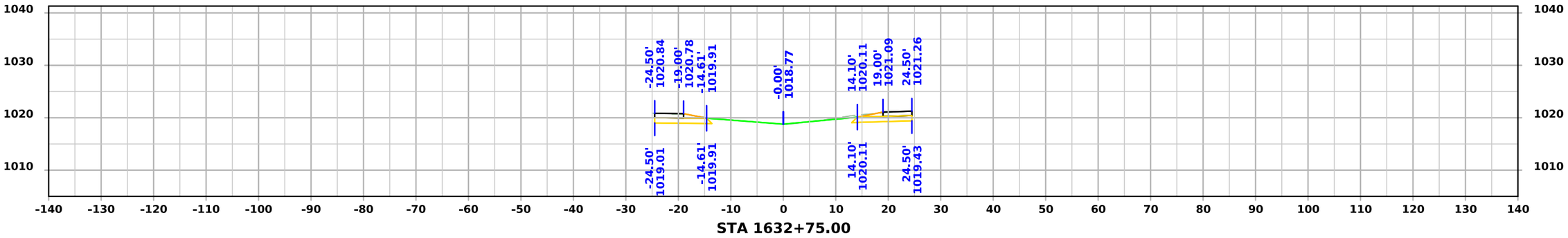


STA 1631+50.00

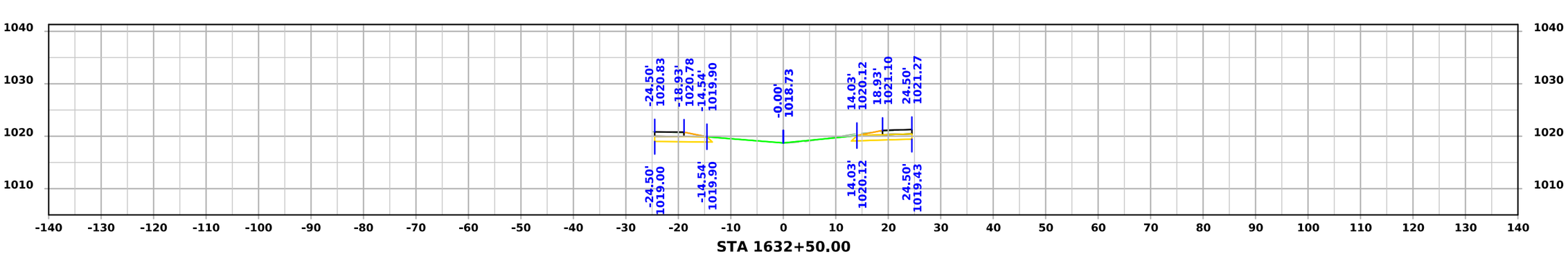
FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER W.11

9:47:45 AM 6/24/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_W02.dgn

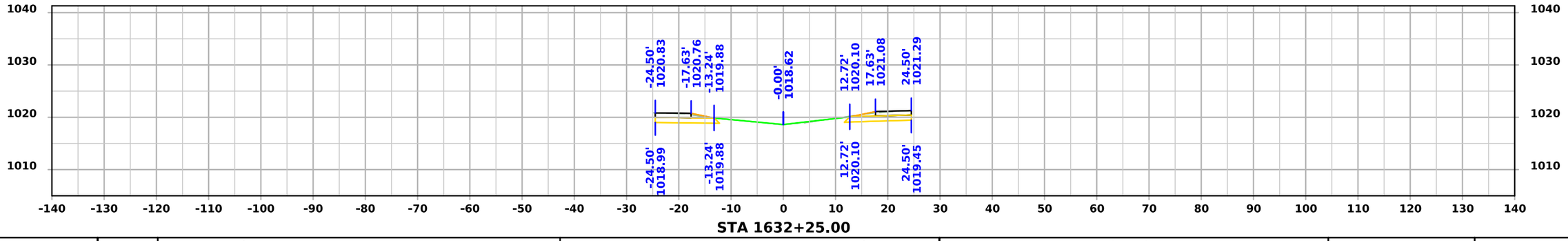
ML - I-29
South Crossover



STA 1632+75.00



STA 1632+50.00

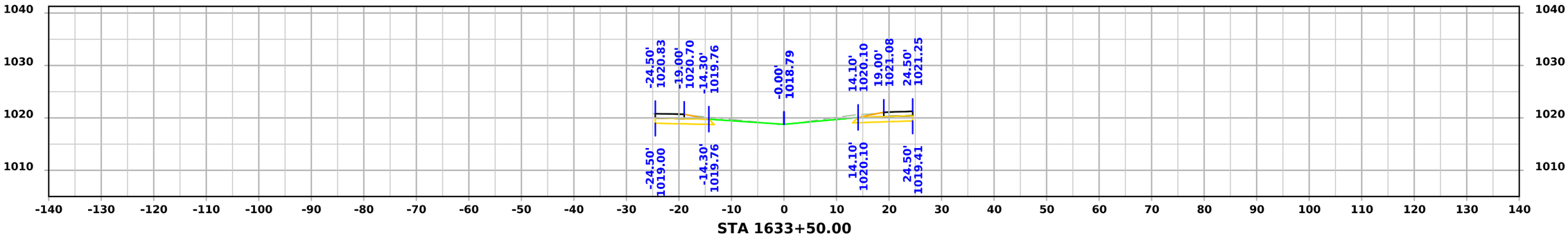


STA 1632+25.00

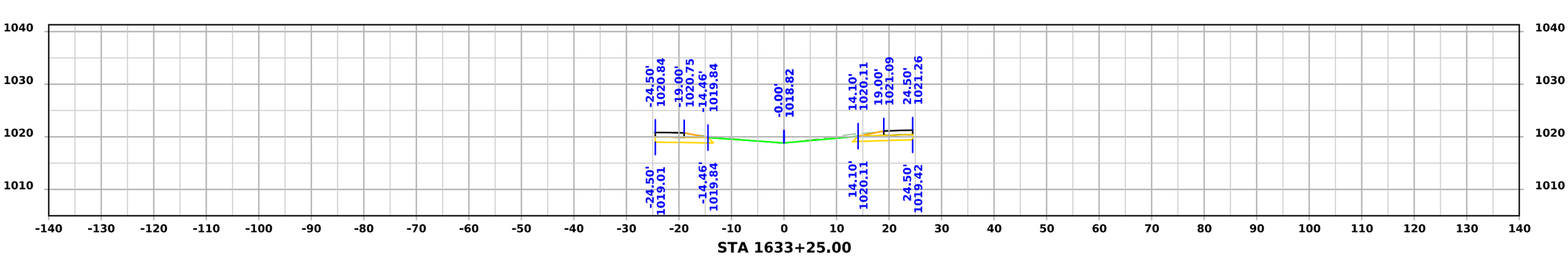
FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER W.12

9:47:46 AM 6/24/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_W02.dgn

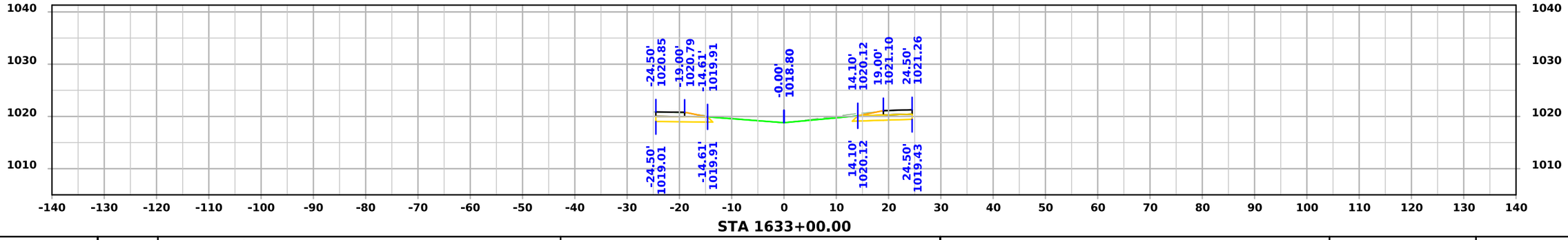
ML - I-29
South Crossover



STA 1633+50.00



STA 1633+25.00

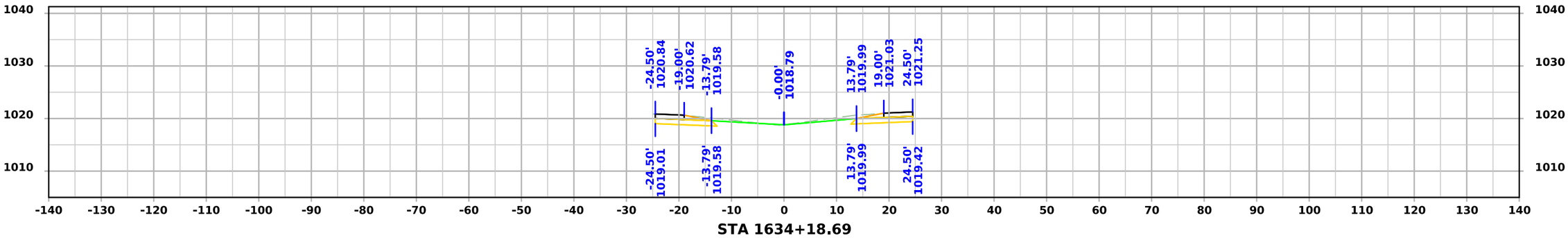


STA 1633+00.00

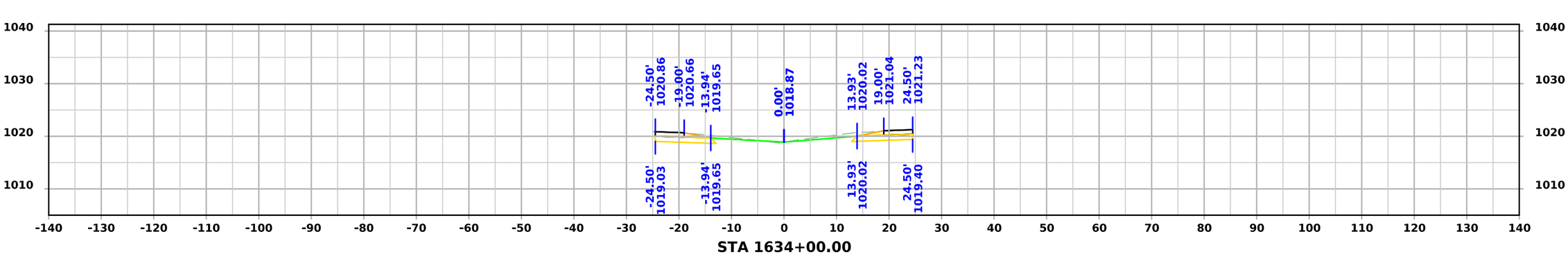
FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER W.13

9:47:47 AM 6/24/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_W02.dgn

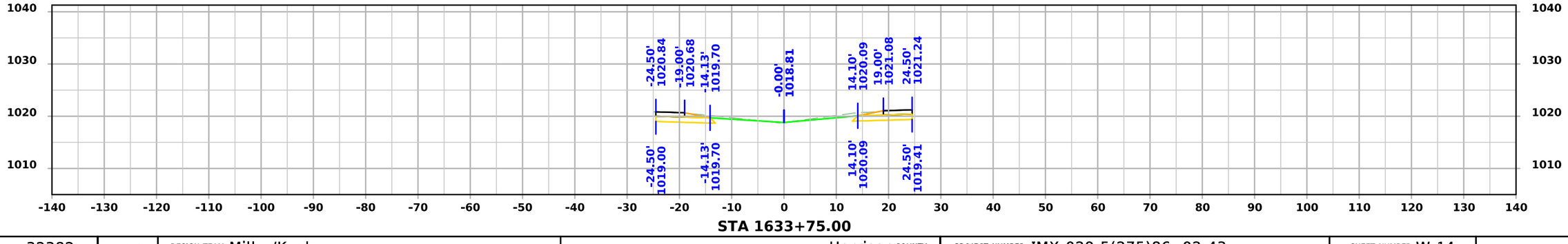
ML - I-29
South Crossover



STA 1634+18.69



STA 1634+00.00

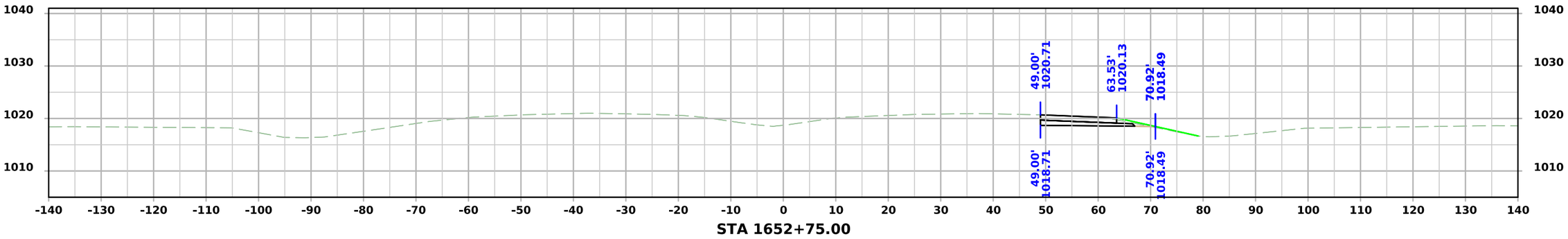


STA 1633+75.00

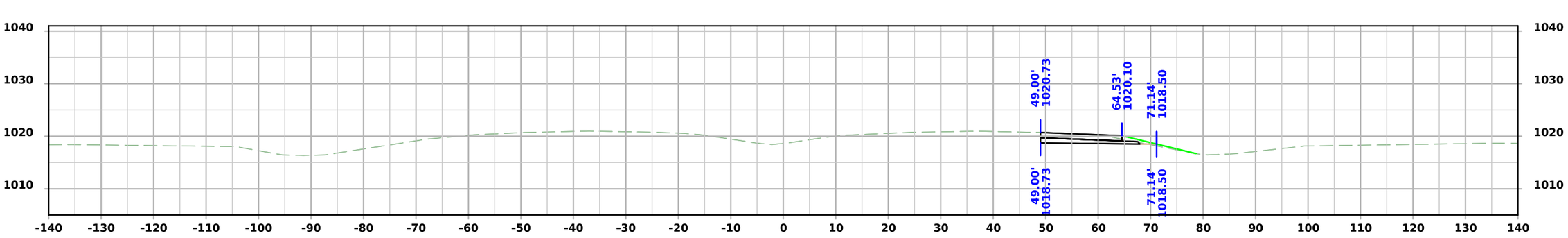
FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER W.14

9:47:47 AM 6/24/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_W02.dgn

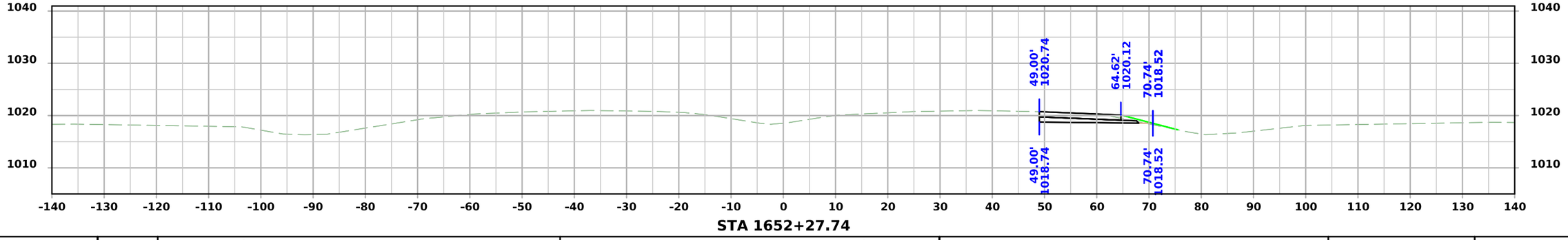
ML - I-29



STA 1652+75.00



STA 1652+50.00

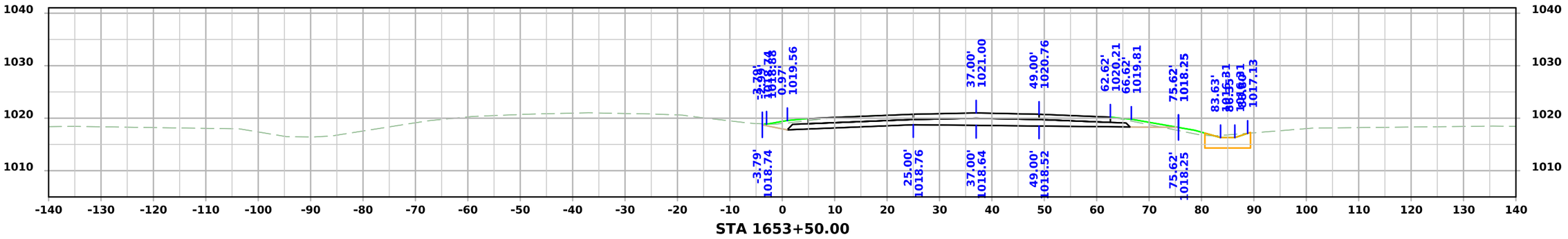


STA 1652+27.74

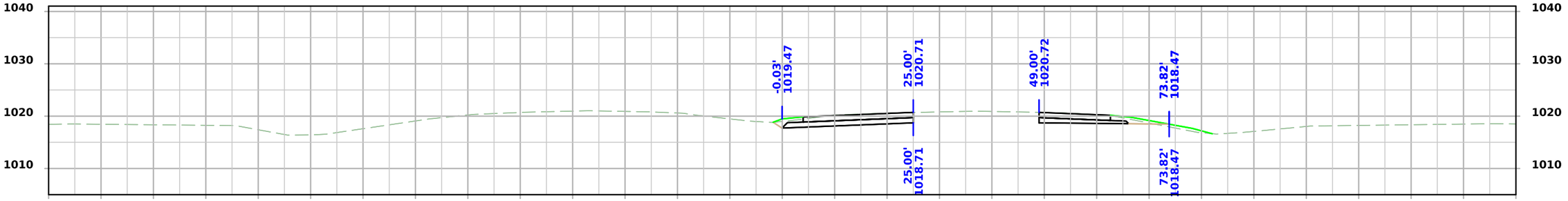
FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER W.15

3:42:20 PM 7/25/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_W02.dgn

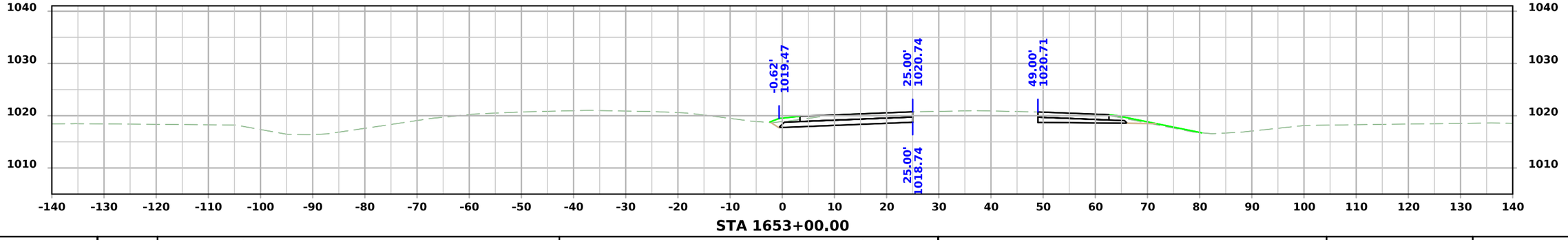
ML - I-29



STA 1653+50.00



STA 1653+25.00

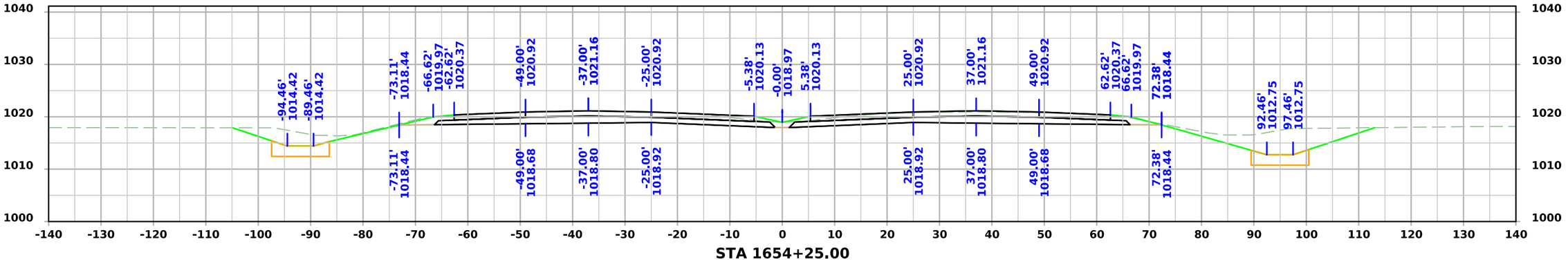


STA 1653+00.00

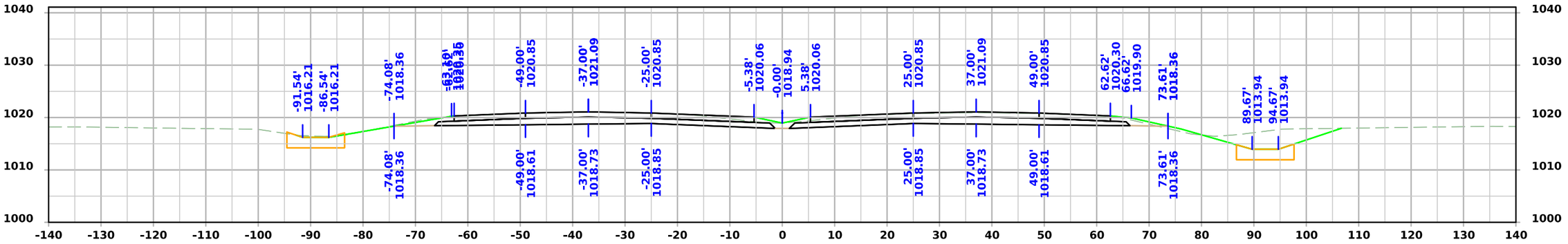
FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER W.16

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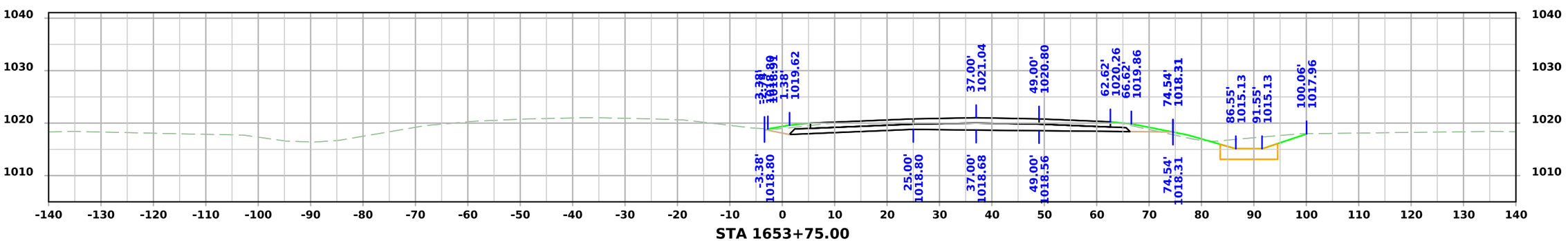
ML - I-29



STA 1654+25.00



STA 1654+00.00

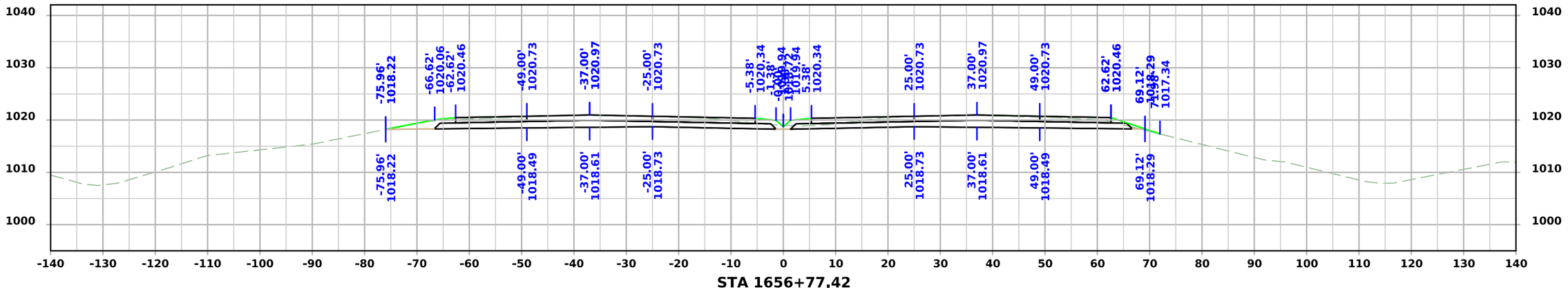


STA 1653+75.00

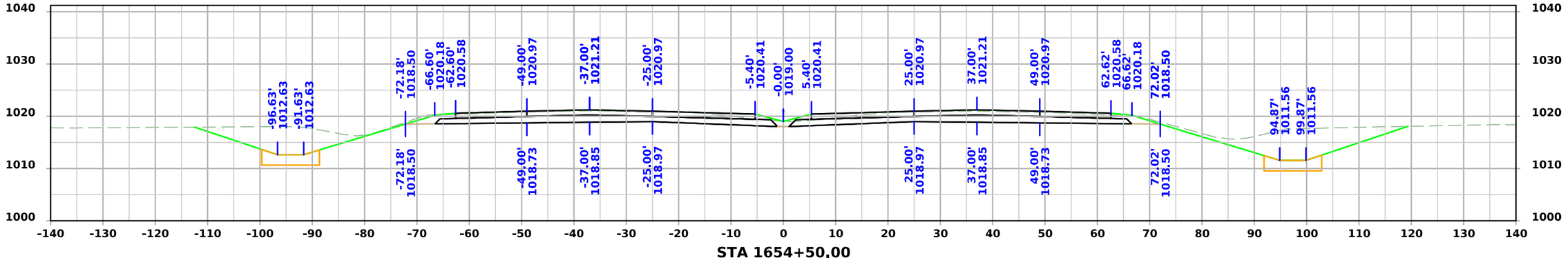
FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER W.17

3:42:21 PM 7/25/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_W02.dgn

ML - I-29



STA 1656+77.42

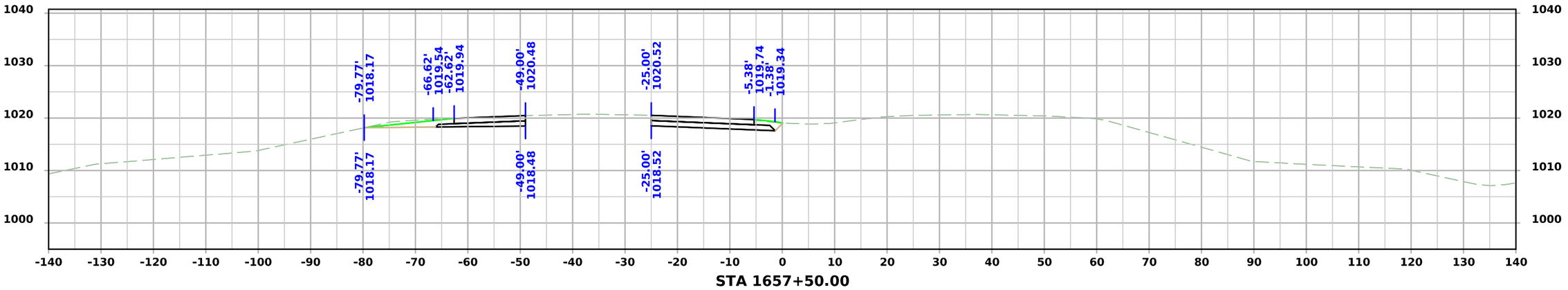


STA 1654+50.00

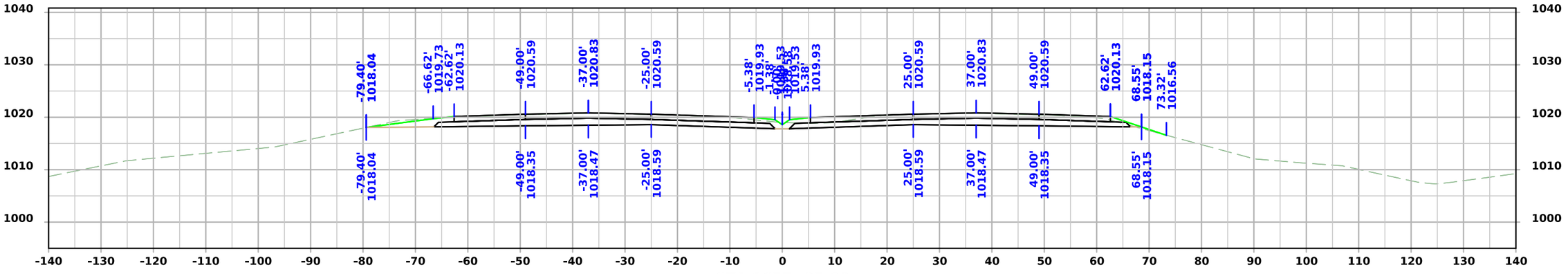
FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER W.18

3:42:22 PM 7/25/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_W02.dgn

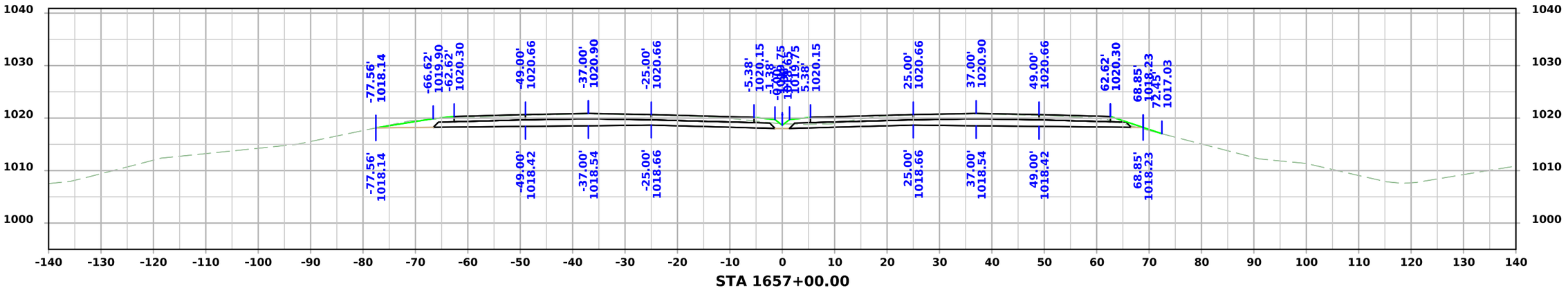
ML - I-29



STA 1657+50.00



STA 1657+25.00

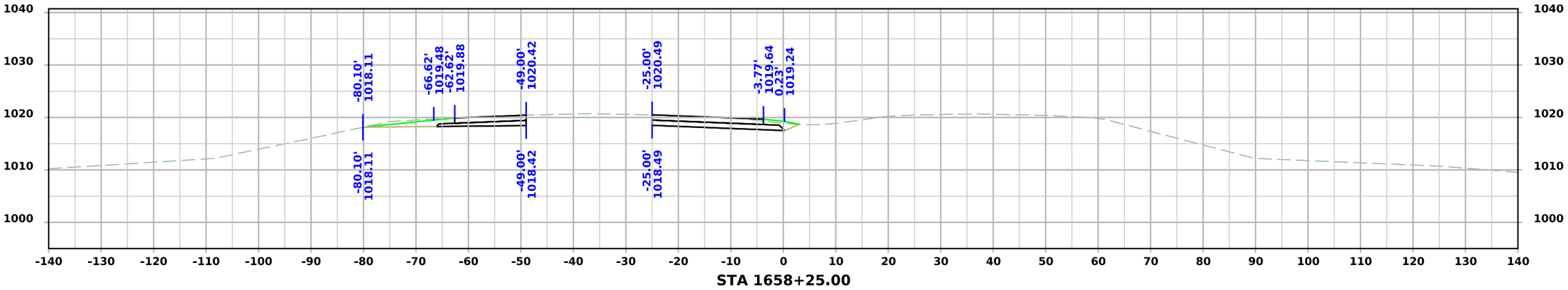


STA 1657+00.00

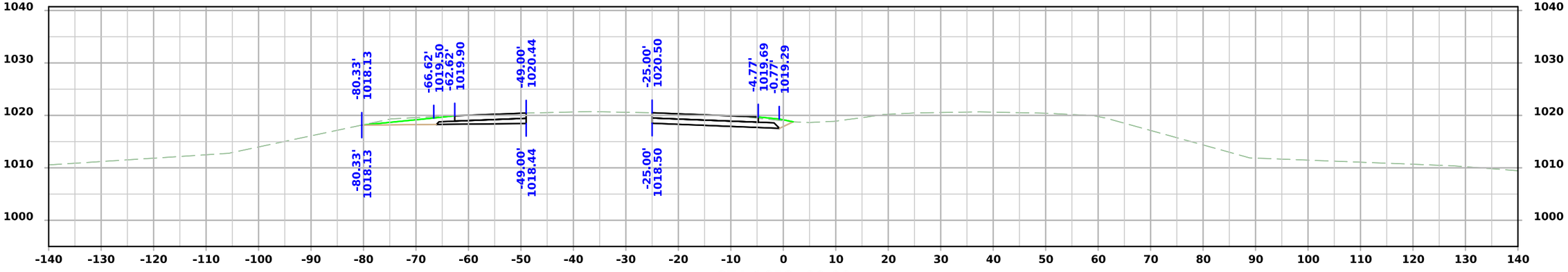
FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER W.19

3:42:23 PM 7/25/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_W02.dgn

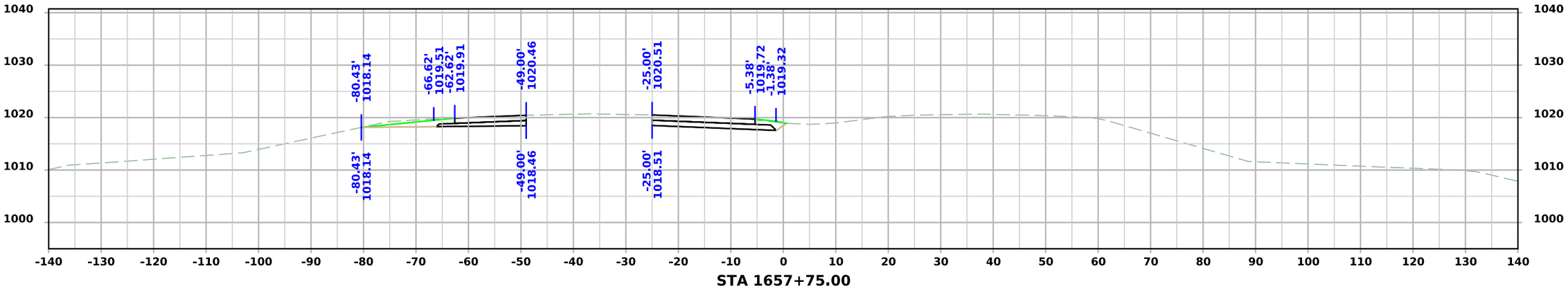
ML - I-29



STA 1658+25.00



STA 1658+00.00

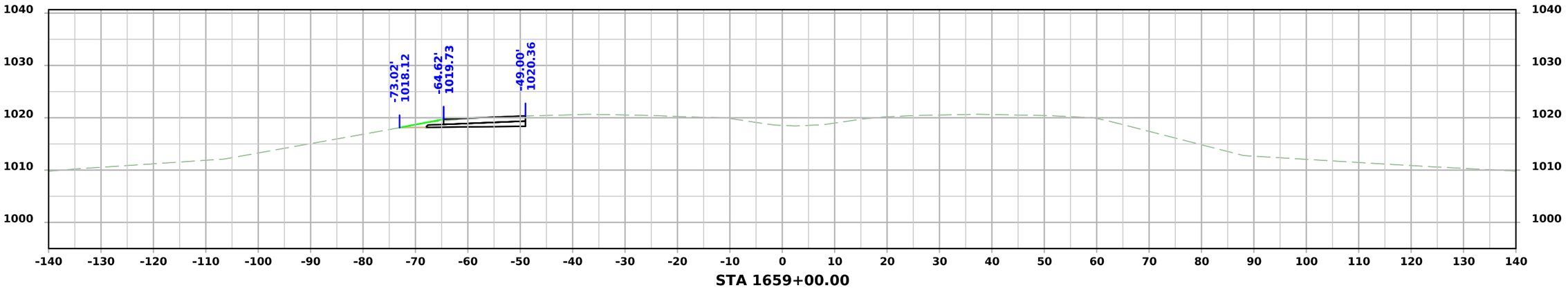


STA 1657+75.00

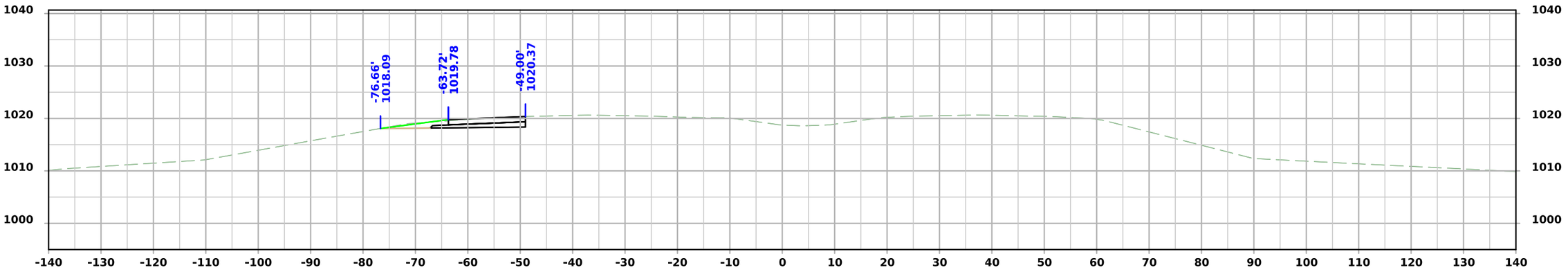
FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER W.20

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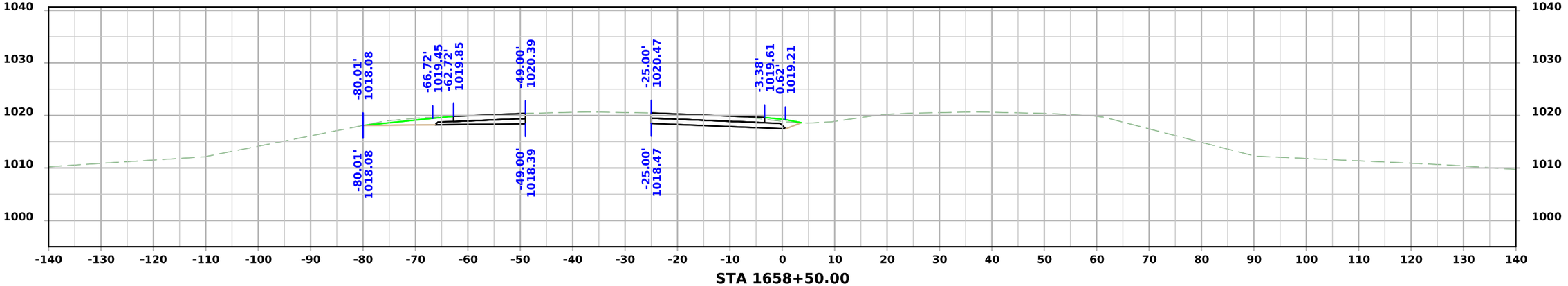
ML - I-29



STA 1659+00.00



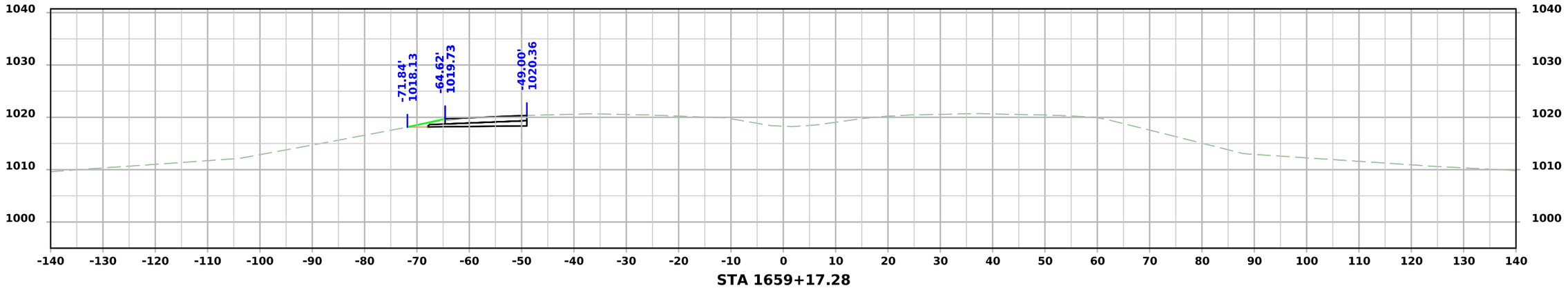
STA 1658+75.00



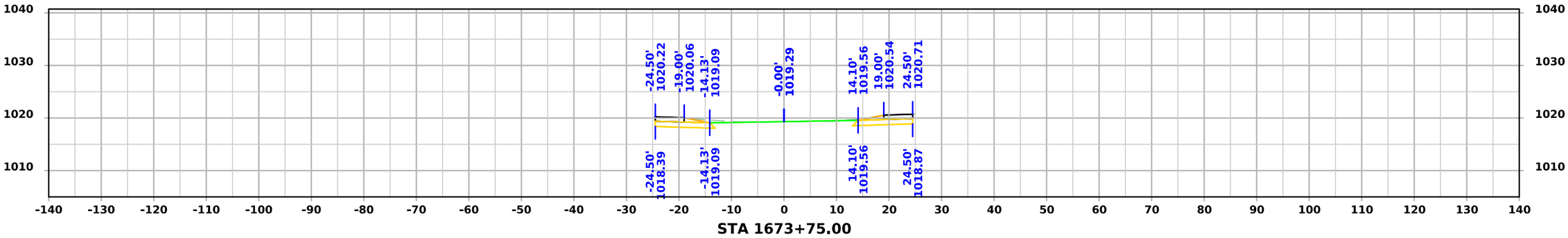
STA 1658+50.00

FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER W.21

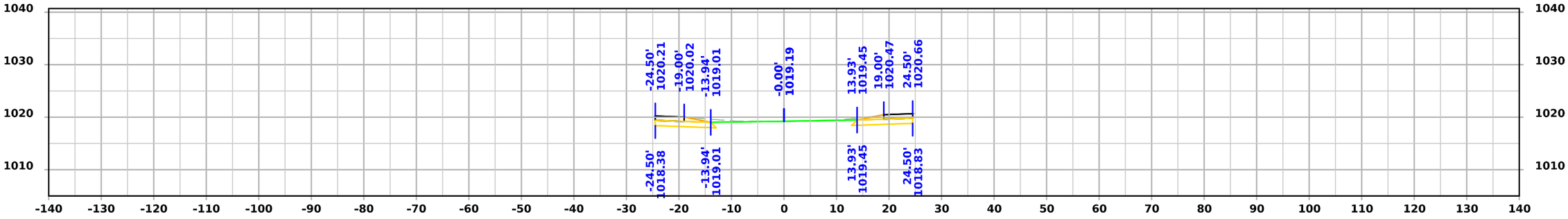
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1040
1030
1020
1010
1000
-71.84'
1018.13
-64.62'
1019.73
-49.00'
1020.36
-140 -130 -120 -110 -100 -90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
STA 1659+17.28

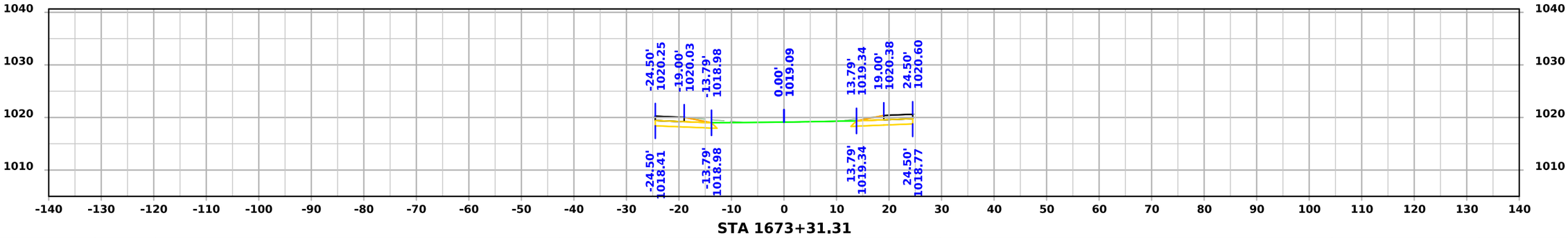
ML - I-29
North Crossover



STA 1673+75.00



STA 1673+50.00

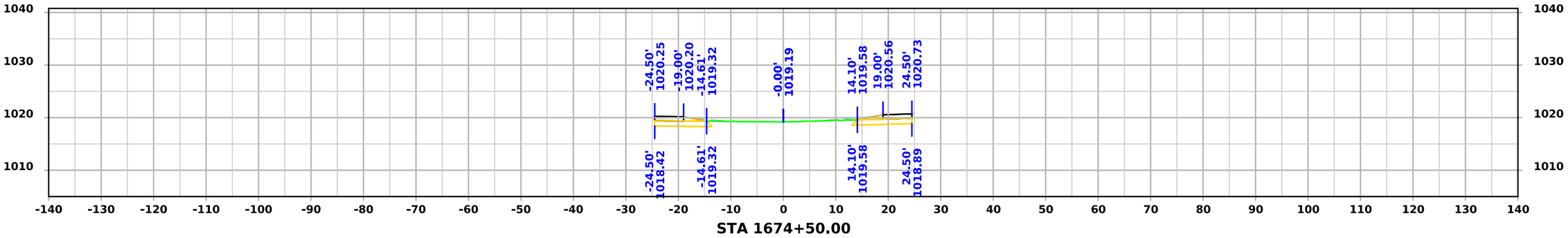


STA 1673+31.31

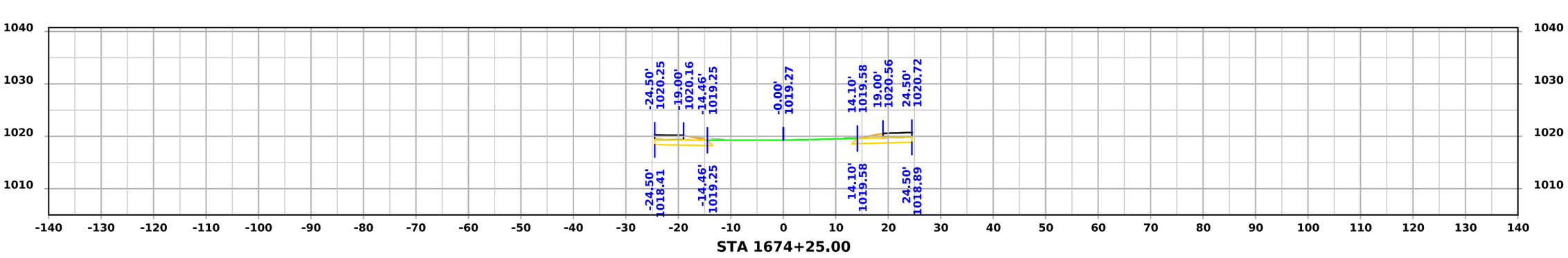
FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER W.23

9:47:53 AM 6/24/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_W02.dgn

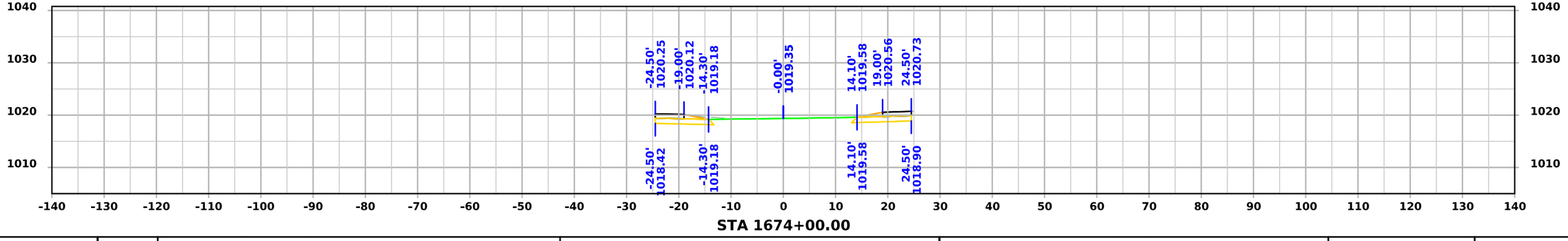
ML - I-29
North Crossover



STA 1674+50.00



STA 1674+25.00

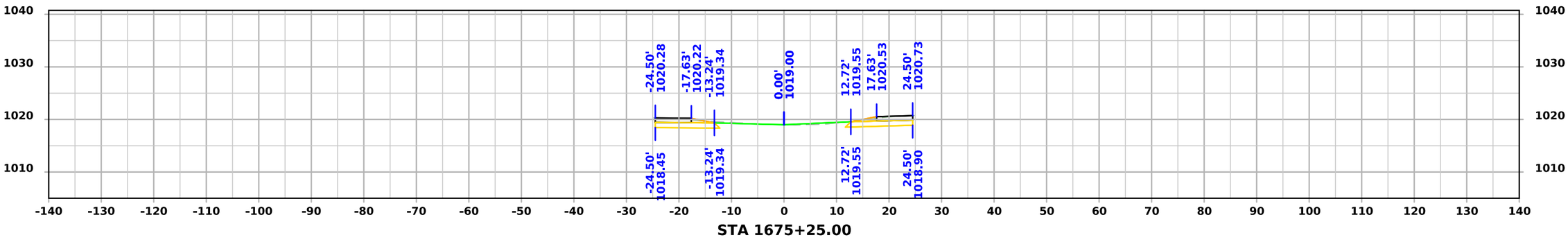


STA 1674+00.00

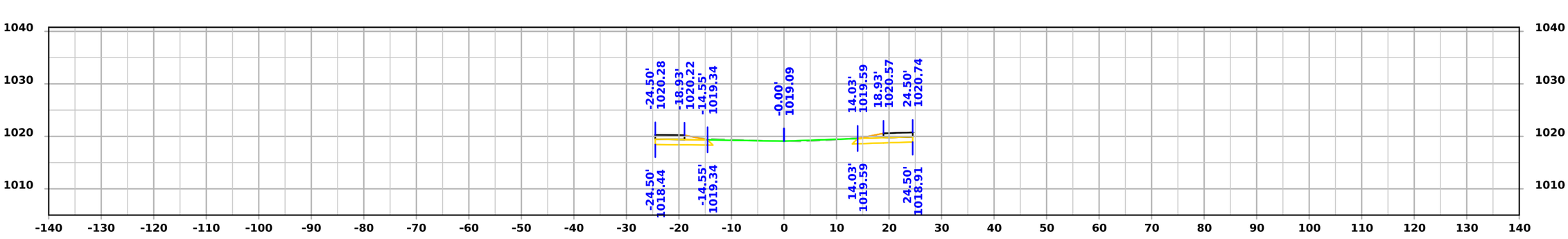
FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER W.24

9:47:54 AM 6/24/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_W02.dgn

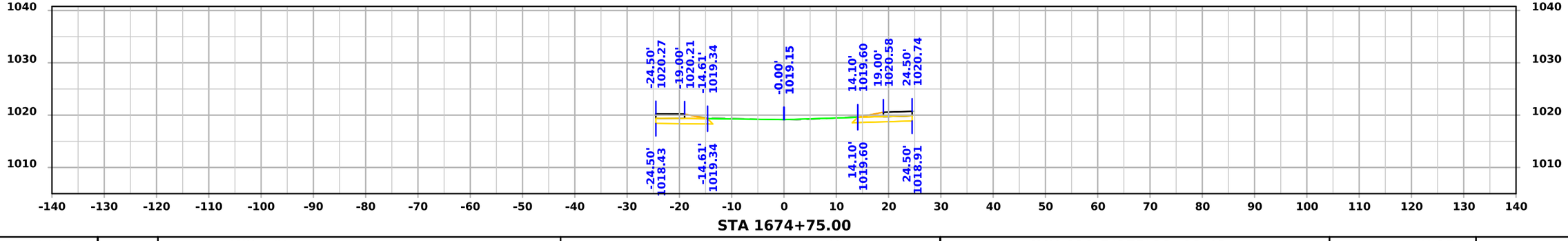
ML - I-29
North Crossover



STA 1675+25.00



STA 1675+00.00

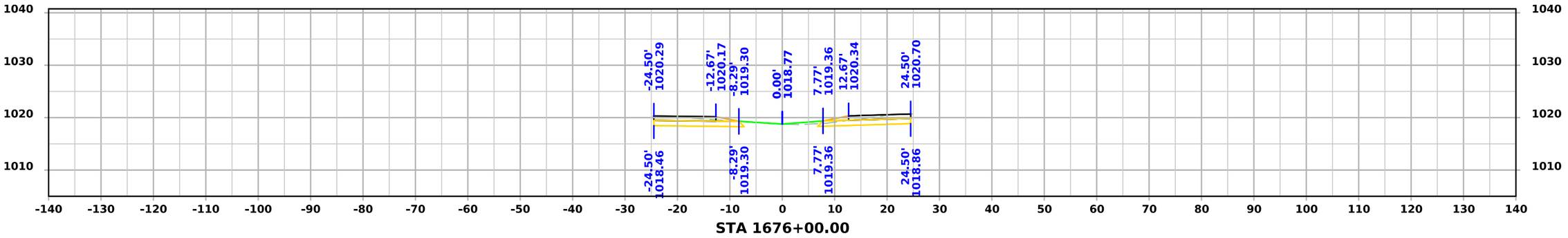


STA 1674+75.00

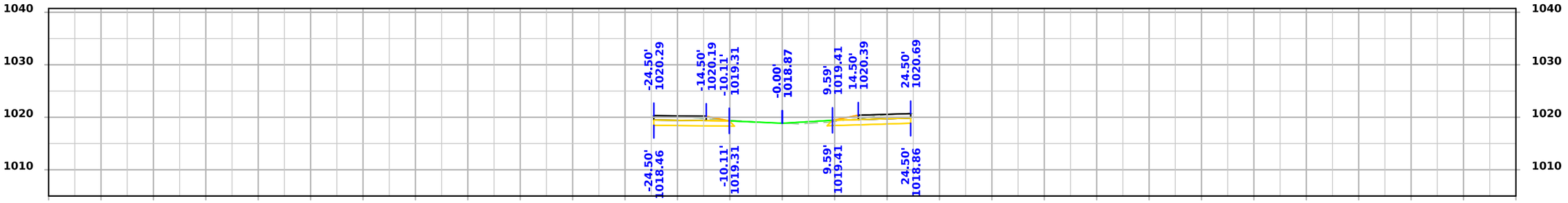
FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER W.25

9:47:55 AM 6/24/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_W02.dgn

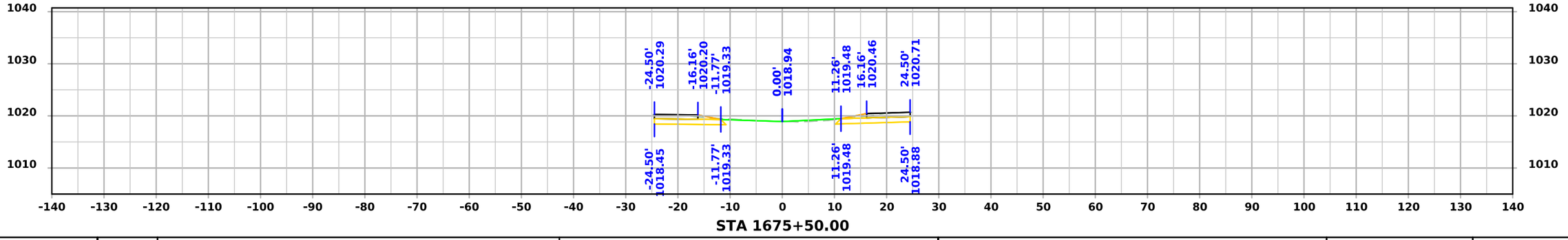
ML - I-29
North Crossover



STA 1676+00.00



STA 1675+75.00

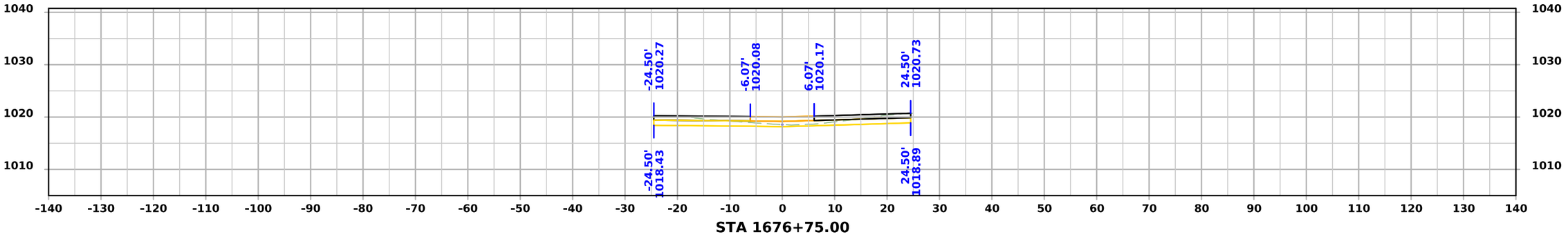


STA 1675+50.00

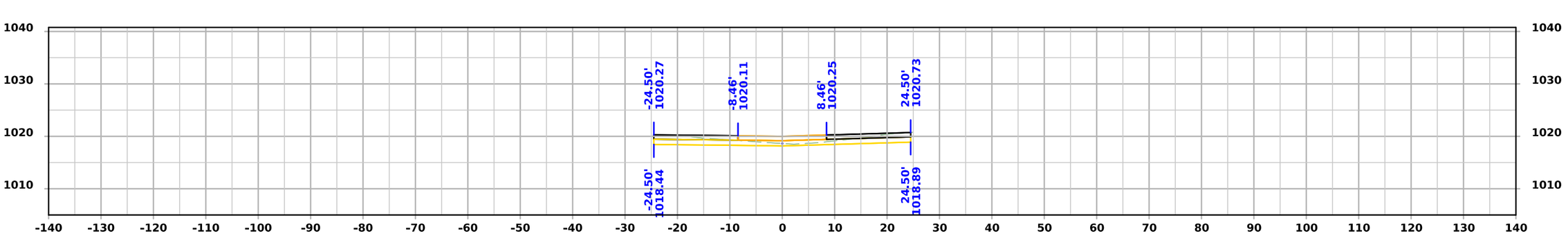
FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER W.26

9:47:55 AM 6/24/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_W02.dgn

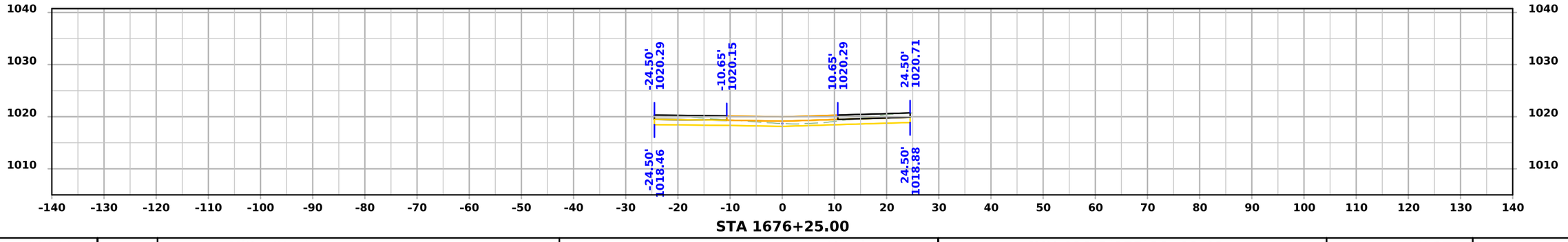
ML - I-29
North Crossover



STA 1676+75.00



STA 1676+50.00

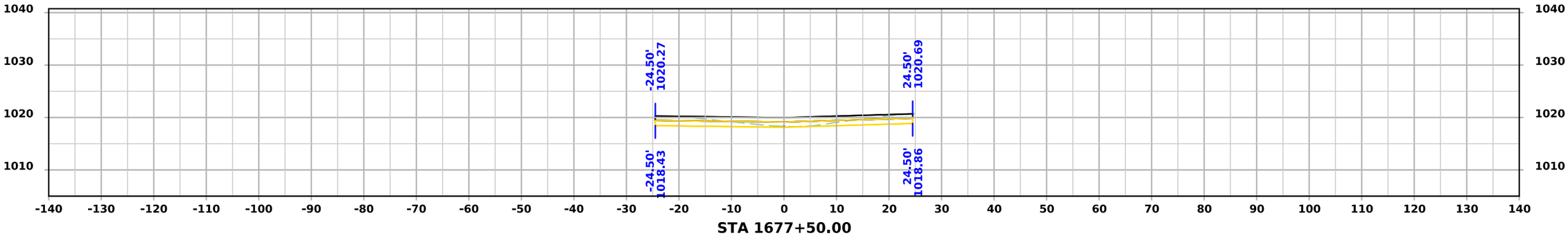


STA 1676+25.00

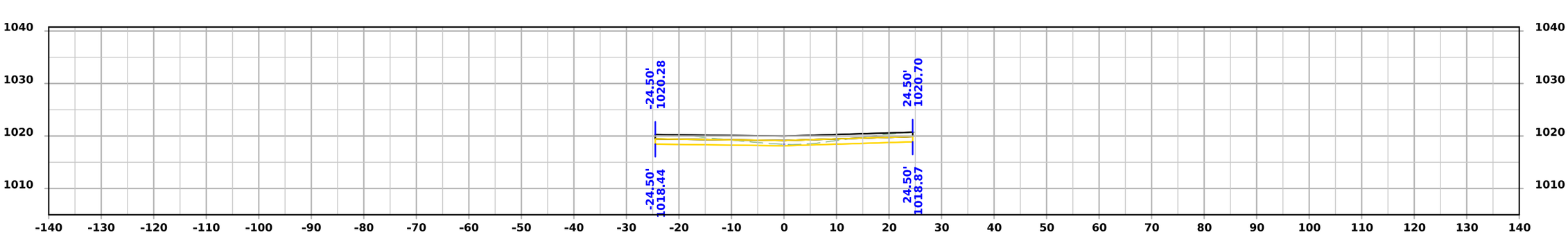
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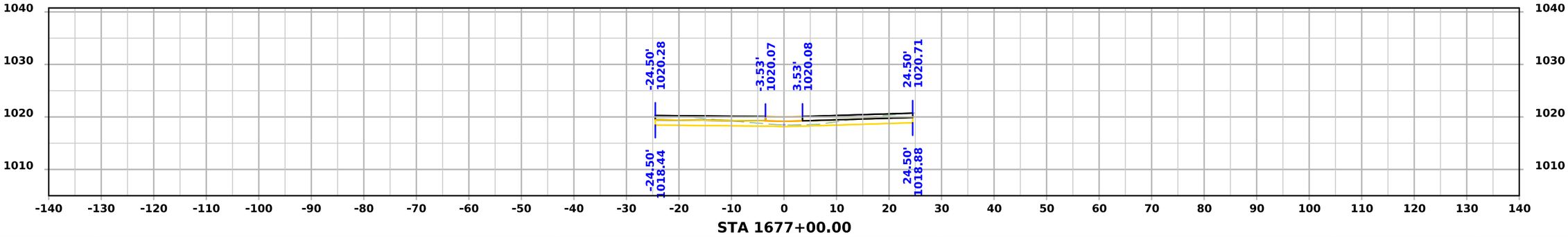
ML - I-29
North Crossover



STA 1677+50.00



STA 1677+25.00

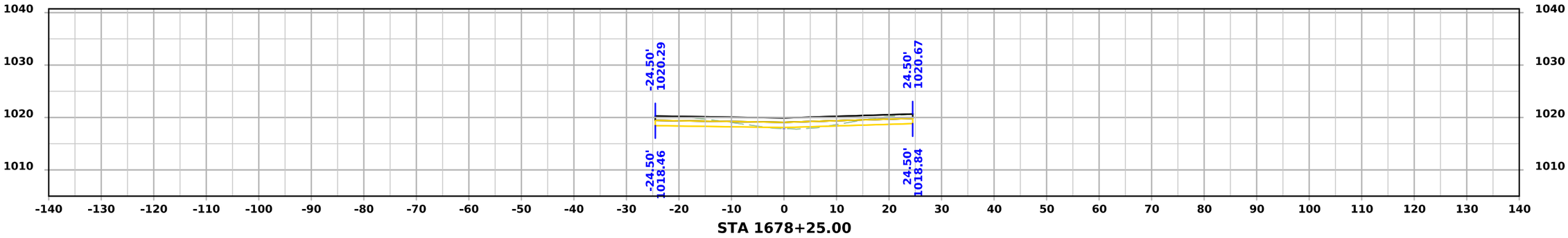


STA 1677+00.00

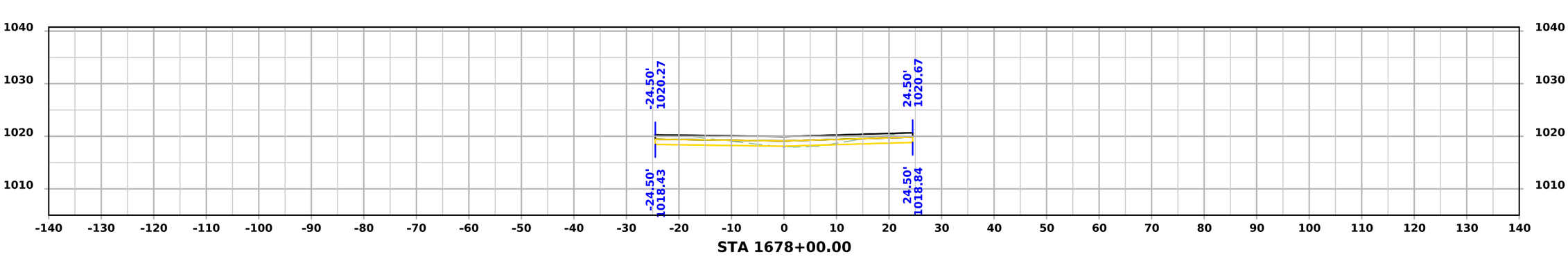
FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER W.28

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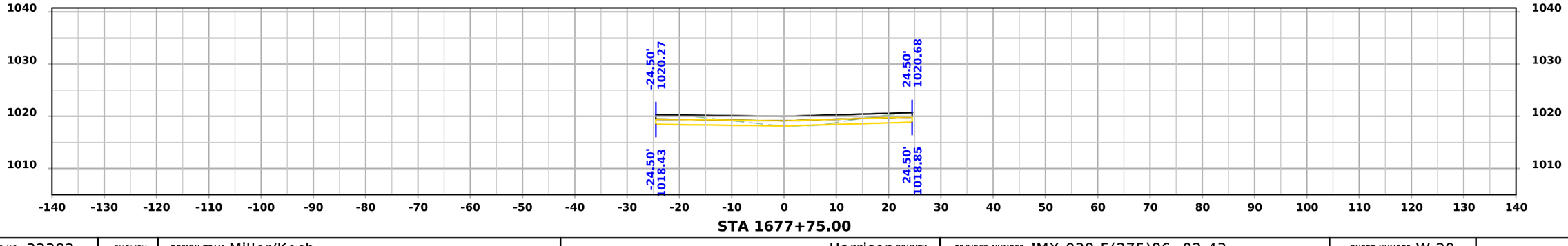
ML - I-29
North Crossover



STA 1678+25.00



STA 1678+00.00

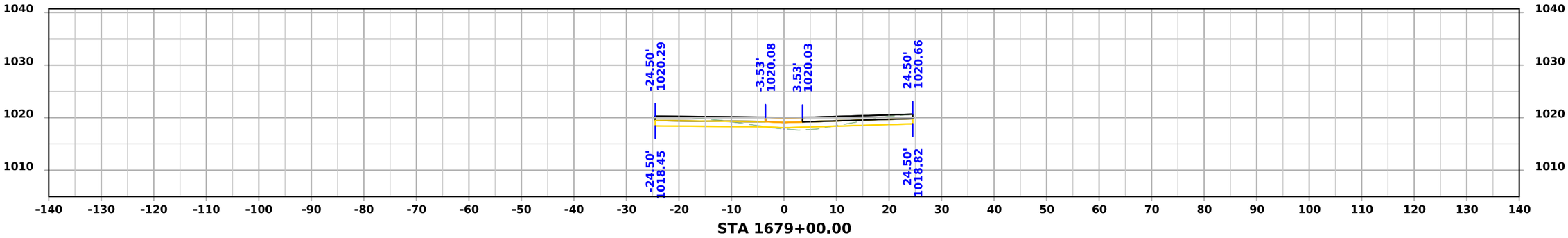


STA 1677+75.00

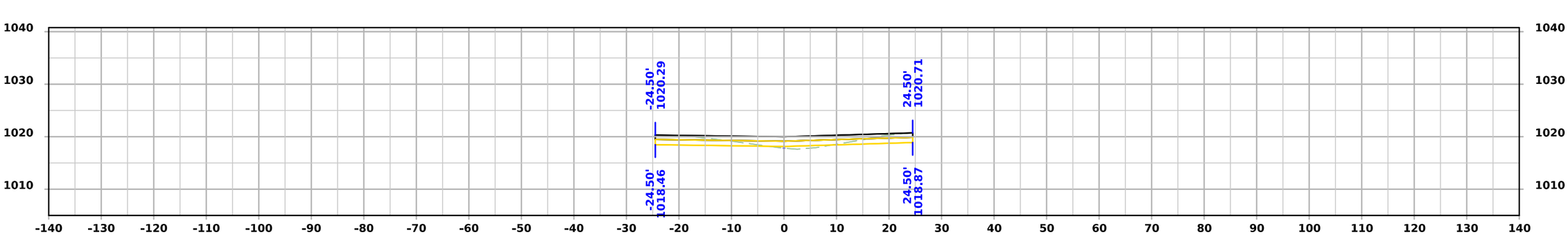
FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER W.29

9:47:57 AM 6/24/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_W02.dgn

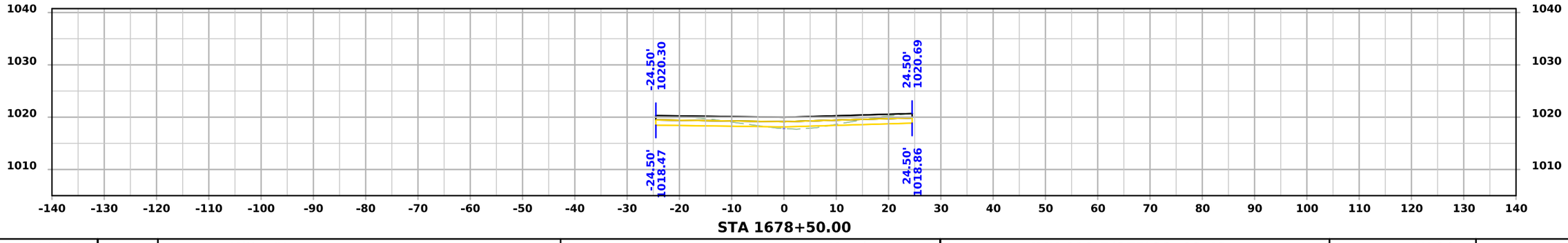
ML - I-29
North Crossover



STA 1679+00.00



STA 1678+75.00

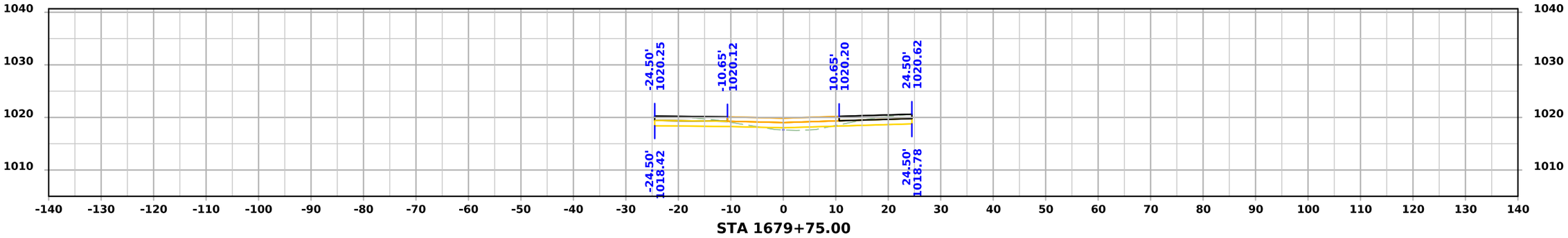


STA 1678+50.00

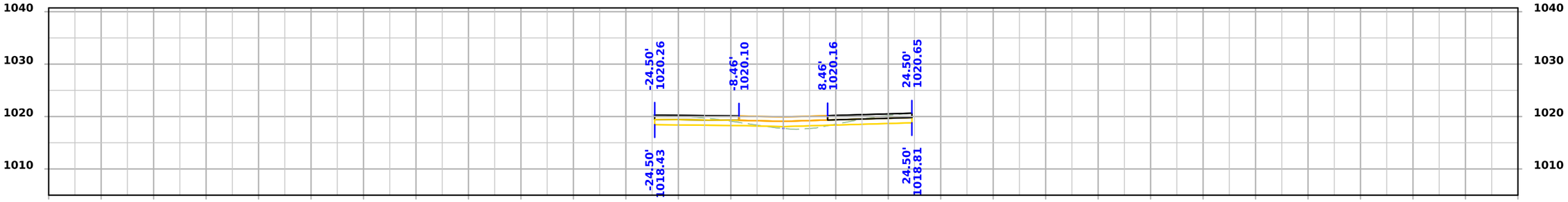
FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER W.30

9:47:58 AM 6/24/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_W02.dgn

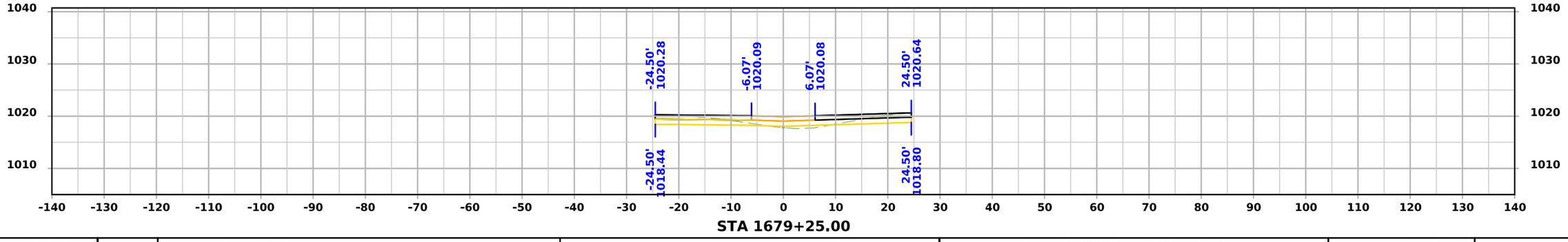
ML - I-29
North Crossover



STA 1679+75.00



STA 1679+50.00

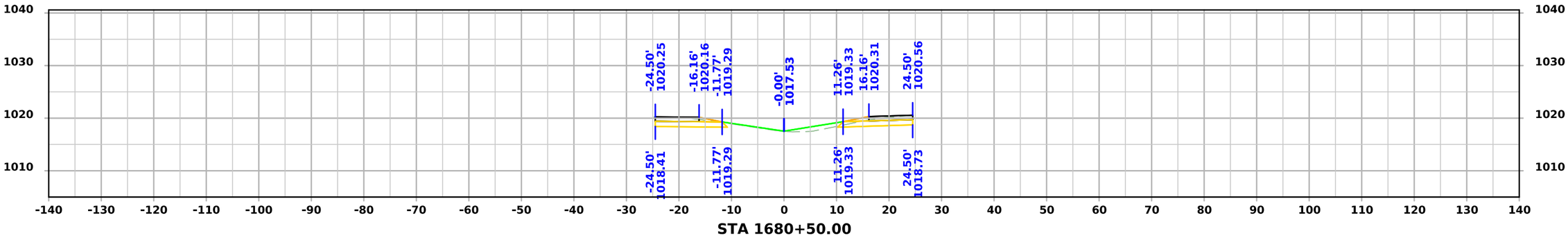


STA 1679+25.00

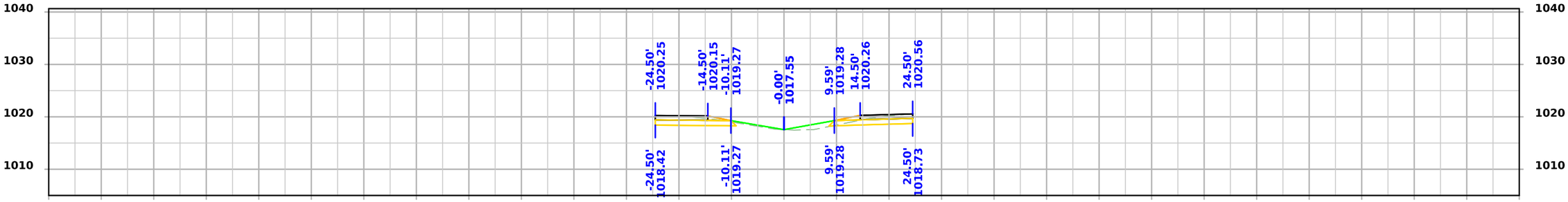
FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER W.31

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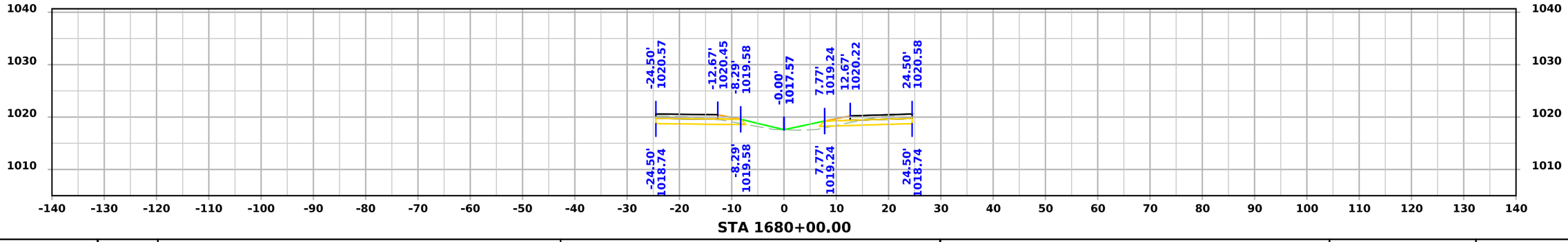
ML - I-29
North Crossover



STA 1680+50.00



STA 1680+25.00

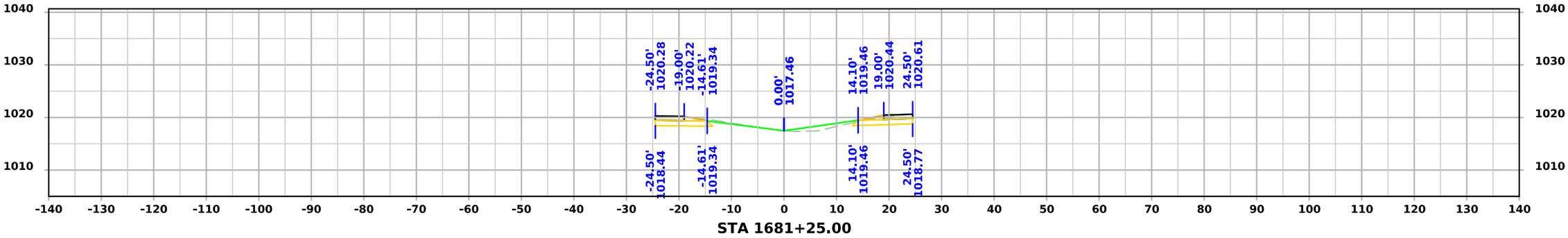


STA 1680+00.00

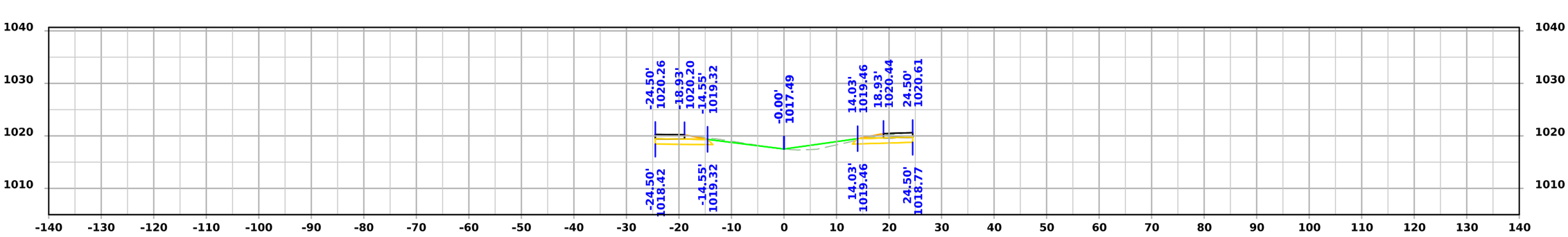
FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER W.32

9:47:59 AM 6/24/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_W02.dgn

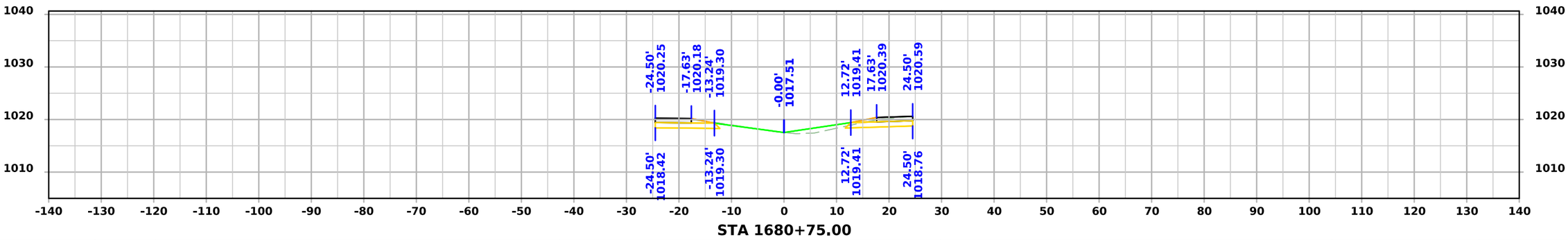
ML - I-29
North Crossover



STA 1681+25.00



STA 1681+00.00

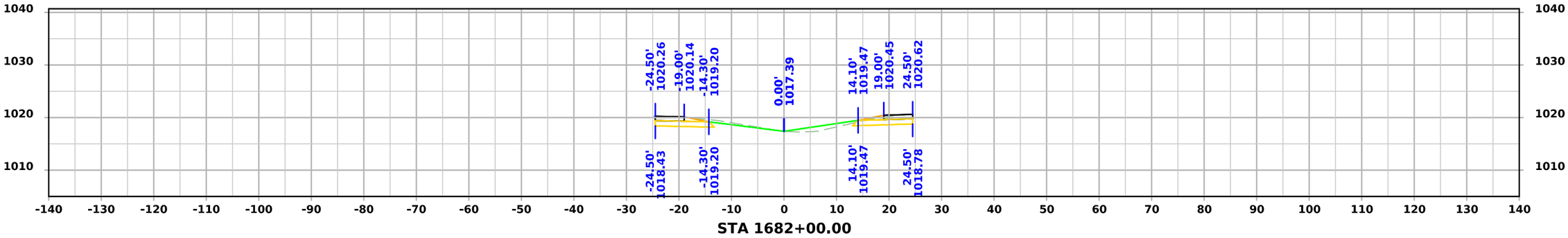


STA 1680+75.00

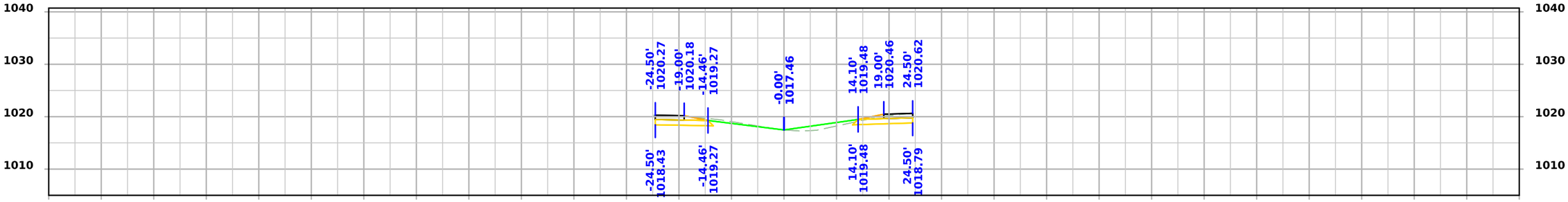
FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER W.33

9:48:00 AM 6/24/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_W02.dgn

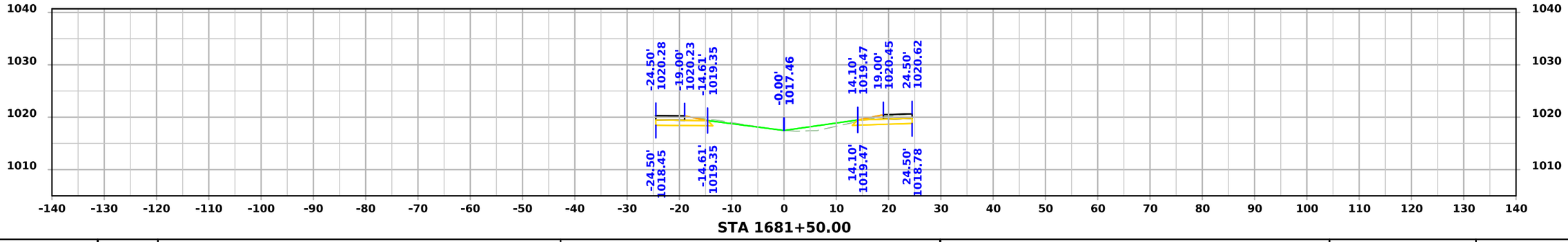
ML - I-29
North Crossover



STA 1682+00.00



STA 1681+75.00

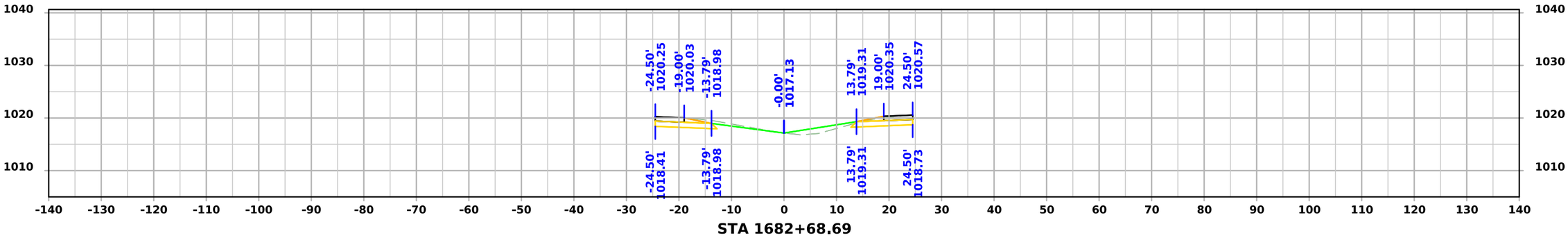


STA 1681+50.00

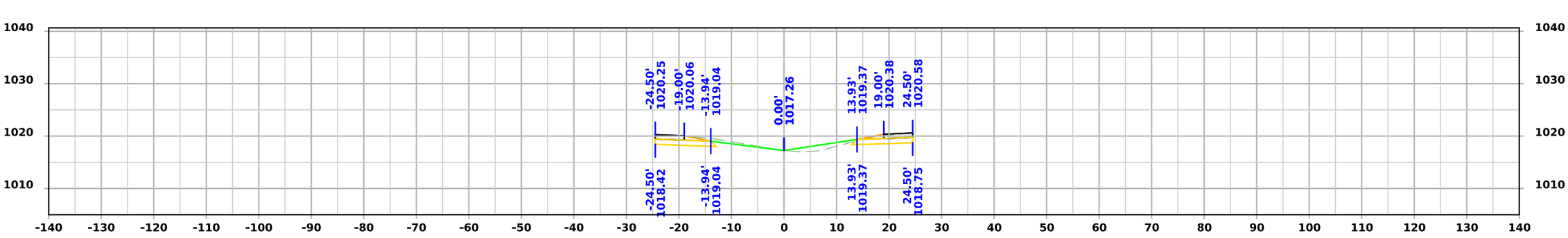
FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER W.34

9:48:01 AM 6/24/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_W02.dgn

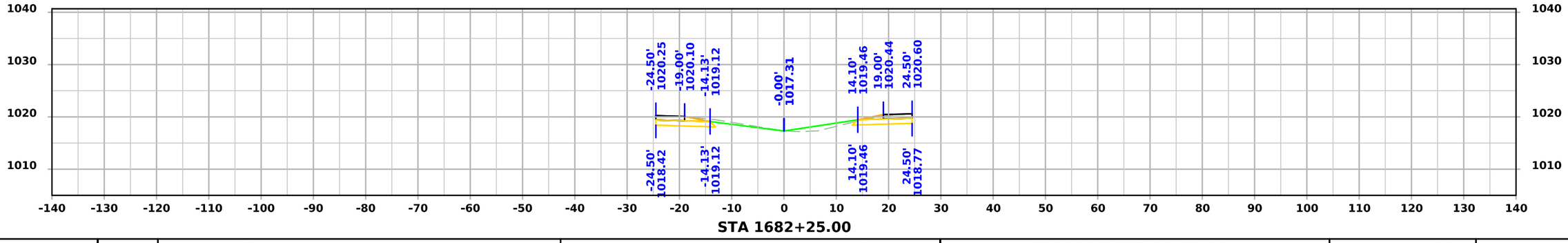
ML - I-29
North Crossover



STA 1682+68.69



STA 1682+50.00



STA 1682+25.00

FILE NO. 32382	ENGLISH	DESIGN TEAM Miller/Koch	Harrison COUNTY	PROJECT NUMBER IMX-029-5(275)86--02-43	SHEET NUMBER W.35

9:48:01 AM 6/24/2026 jkoch pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4302911022\Design\CADD_Files\Sheet_Files\SHT_43029275_W02.dgn