

Iowa DOT Bridges and Structures Consultant
Coordinator Contact:
Lili Yang

Standard Road Plans

Standard Road Plans are listed on
Sheet No. C.4

Deisgn Data Rural

2024 AADT 7,684 V.P.D.
Trucks 9%



PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM
MUSCATINE COUNTY
Reconstruction - Bridge Deck Replacement

IA 38 over Mad Creek
0.6 miles N. of JCT US 61

Refer to the Plan Sheets for list of applicable specifications.

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



Revisions

Index of Sheets	
No.	Description
Sheets	
Bridge Plan	
A.1	Title Sheet
A.2	Location Map Sheet
V.1	Estimated Quantities - Design 227
V.2 - V.19	Design 227
Road Sheets	
Road Plan	
A.3 - J.8	Road Plans
A.3	Road Title Sheet
C.2	Estimated Quantities - Road
C.4	Standard Plans - Road

	TOTAL
	48
PROJECT IDENTIFICATION NUMBER	
22-70-038-010	
PROJECT NUMBER	
BRF-038-1(019)--38-70	
R.O.W. PROJECT NUMBER	
PROJECT DIRECTORY NUMBER	
7003801022	

Index of Seals

Sheet No.	Name	Type
A.1	Matthew J. Johnson	Structural Design
A.3	Doug Parke	Roadway Design

Structural 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.

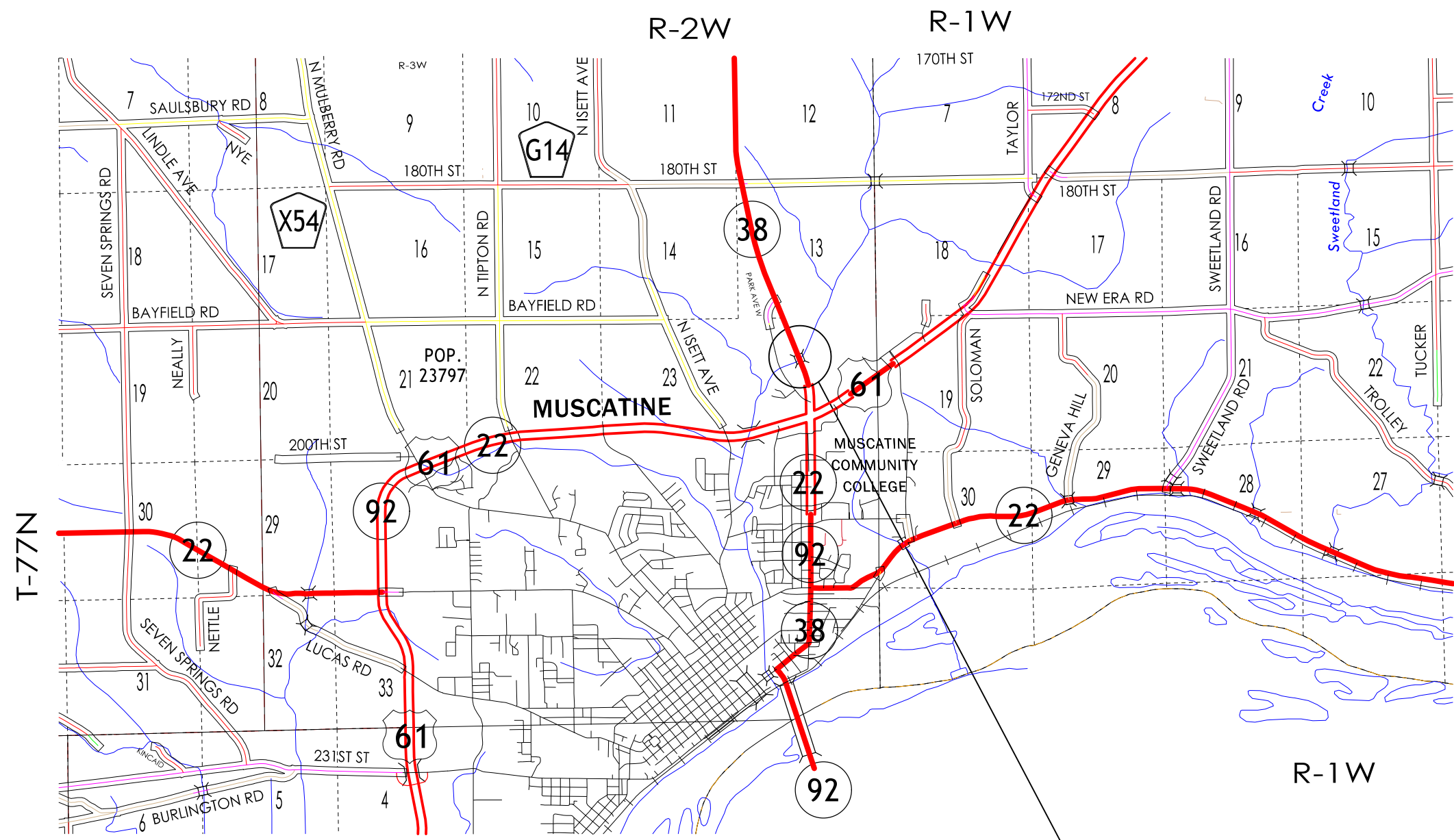
Matthew J. Johnson

Signature Date 08-10-2026

Printed or Typed Name Matthew J. Johnson

My license renewal date is December 31, 2027

Pages or sheets covered by this seal: A.1, A.2, V.1-V.19



LEGEND

INTERSTATE HIGHWAY

PRIMARY HIGHWAY-DIVIDED

PRIMARY HIGHWAY

PORTLAND CEMENT CONCRETE ROAD

ASPHALT ROAD

BITUMINOUS ROAD

GRAVEL ROAD

EARTHEN ROAD

INTERSTATE HIGHWAY

UNITED STATES HIGHWAY

STATE HIGHWAY

COUNTY HIGHWAY

RAILROAD

PIPELINE

AIRPORT

HYDROLOGY

BRIDGE

STATE BOUNDARY

COUNTY BOUNDARY

CORPORATE BOUNDARY

TOWNSHIP LINE

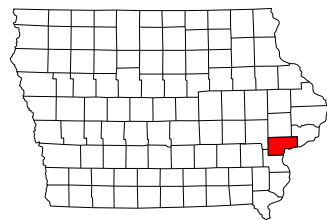
SECTION LINE

ROAD NAMES

UNINCORPORATED PLACE

ABBEY ROAD

ELWOOD



Muscatine County Location Map

Not To Scale

DESIGN NO. 227

FHWA # 38151

Estimate Project Quantities and Reference Notes - Design #227

Item No.	Item Code	Item	Unit	Quantities Estimated Design No. 227	Estimate Reference Notes
1	2401-6750001	Removals, As Per Plan	LS	1	Includes all work for removal and off-site disposal of bridge deck. Removal of scheduled items shall be in accordance with Section 2401, of the Standard Specifications. Any damage to material not to be removed shall be the responsibility of the Contractor and repaired at no extra cost to the state. Procedure used to detect the presence of asbestos materials; Polarized Light Microscopy (PLM)
2	2403-0100010	Structural Concrete (Bridge)	CY	234.9	Includes cost of furnishing and placing splash basins (including excavation, erosion stone or Class E revetment, and engineering fabric).
3	2403-1000005	Fiber Reinforcement for Structural Concrete	CY	234.9	Fiber Reinforcing shall be used in bridge deck concrete. Refer to Developmental Specifications for Fiber Reinforcement for Structural Concrete for additional information.
4	2403-1000010	Trial Batch and Test Placement (Fiber Reinforced Concrete)	LS	1	Refer to Developmental Specifications for Fiber Reinforcement for Structural Concrete for additional information.
5	2404-7775005	Reinforcing Steel, Epoxy Coated	LB	72860	- -
6	2404-7775009	Reinforcing Steel, Stainless Steel	LB	3164	- -
7	2414-6424110	Concrete Barrier Railing	LF	396	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.
8	2426-6772016	Concrete Repairs	SF	4	See Design Sheet No. 17 for location of repairs
9	2499-2300001	Deck Drains	LS	1	Includes all new deck drains. Refer to design sheet 16 for location, materials, and details of construction. Measurement will be lump sum for all deck drains required as specified in the plans. The payment shall be full compensation for furnishing all material, equipment and labor needed for fabricating and installing the deck drains.
10	2526-8285040	Contruction Survey, Location Survey	LS	1	- -
11	2533-4980005	Mobilization	LS	1	- -

Note:
Roadway Quantities shown
elsewhere in these plans.

Design For Repair to 30° Skew (RA)

180'-6" x 44' Postensioned
Prestressed Concrete Beam Bridge

64'-1" & 51'-7" End Spans64'-10" Interior Span

Estimated Quantities

STA. 64+30.00 (IA 38)Turn-In Date: August 2026

Muscatine County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227Design Sheet No. 1 of 19FHWA No. 38151

General Notes

This design is for repairs to the existing 180'-6" x 44'-0" Prestensioned Prestressed Concrete Beam Bridge. Electronic copies of original design plans will be made available to the Contractor as part of the E-Files supplied with the contract documents.

See Situation Plan for list of repair items.

All alignment, stationing, connecting dimensions, and elevations used in the new details in these plans were developed based on the existing bridge plans "and field survey". The Bridge Contractor shall field verify these details before starting construction.

Faint lines on plans indicate existing portions of the bridge.

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 starting date.

This bridge deck is designed for HS-20 Loading, plus 20 lbs. per square foot of roadway for future wearing surface.

Construction shall be done in stages with at least one lane traffic maintained at all times in accordance with "Traffic Control Plan" note.

The lump sum bid for "Removals, as Per Plan" shall include all costs associated with removing the existing bridge deck, curbs, and barrier rails. Removal of scheduled items shall be in accordance with Section 2401 of the Standard Specifications. Any damage to any steel or concrete not to be removed shall be the responsibility of the Contractor and repaired at no extra cost to the State.

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).

The Contractor shall be responsible for ensuring stability of prestressed concrete beams during construction up through the concrete bridge deck reaching its full 28-day strength. The Contractor shall provide sufficient temporary anchor bracing at beam ends and temporary intermediate bracing as needed to ensure prestressed beam stability. Partially or fully installed permanent bracing as shown in these design plans shall not be assumed sufficient to brace prestressed beams during erection and construction. Temporary bracing shall not be welded to prestressed beam stirrups.

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

If one or more of the existing beams or hoop bars are damaged during removals, the contractor shall repair or replace the damaged beam or beams. Adjacent bearings shall also be replaced. The Engineer will determine what repairs and/or replacements are required.

All material, equipment, and labor associated with removal of the deck and repair of any damage or beam and bearing replacement shall be considered incidental to the bid item "Removals, as per plan"

All dimensions and details shown on these plans pertinent to new construction shall be verified in the field by the Contractor before starting construction.

Minimum clear distance from face of concrete to near reinforcing bar is to be 2" 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.

These bridge plans label all reinforcing steel with english notation (5a1 is 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

Deck Removal Notes:

The bridge Contractor is to use extreme care when removing the deck concrete at the beam locations to avoid damaging the top flange and 1/2" diameter hoop bars of the beam. Prior to commencing any deck removal work, the Contractor shall submit a demolition plan to the Engineer for approval. The Contractor shall notify the Engineer of the start date for deck removal work in order to demonstrate the removal procedure on a small portion of the deck while the inspector is present. Damage may require the Contractor to modify the removal process prior to approval to proceed.

Once the deck concrete over the beam is removed, all remaining debris shall be cleaned from the beams to provide a suitable bond to the concrete deck.

The existing 1/2" diameter hoop bars are an integral part of the existing beam top flange. All damage sustained to the top flange and/or 1/2" diameter hoop bars shall be identified and repaired.

Specifications:

Design:
AASHTO LRFD 8th Ed., 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 shall apply to construction work on this project.
Developmental Specifications for Fiber Reinforcement for Structural Concrete

Design Stresses:

Design stresses for the following materials are in accordance with the AASHTO LRFD Bridge Design Specifications, 8th Ed., 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 stainless steel reinforcing.

Concrete in accordance with AASHTO LRFD Section 5, f'c = 4.0 ksi.

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	Demolition Plan	019_Muscatine_Design 227_Demolition Plan.pdf	Yes
2	Beam Survey after Deck Removal	019_Muscatine_Design 227_Beam Survey after Deck Removal.pdf	No
3	Deck Drains	019_Muscatine_Design 227_Deck Drains.pdf	No

Design History at this Site (Including this design)	
Design. No.	Type of Work
1269	Original Design
294	Barrier Rail Retrofit
114	Bridge Deck Overlay
227	Bridge Deck Replacement

TRAFFIC CONTROL PLAN

The roadway will be open to thru traffic. Refer to the Traffic Control Plan shown elsewhere in these plans.

Design For Repair to 30° Skew (RA)

180'-6" x 44' Postensioned Prestressed Concrete Beam Bridge

64'-1" & 51'-7" End Spans64'-10" Interior Span

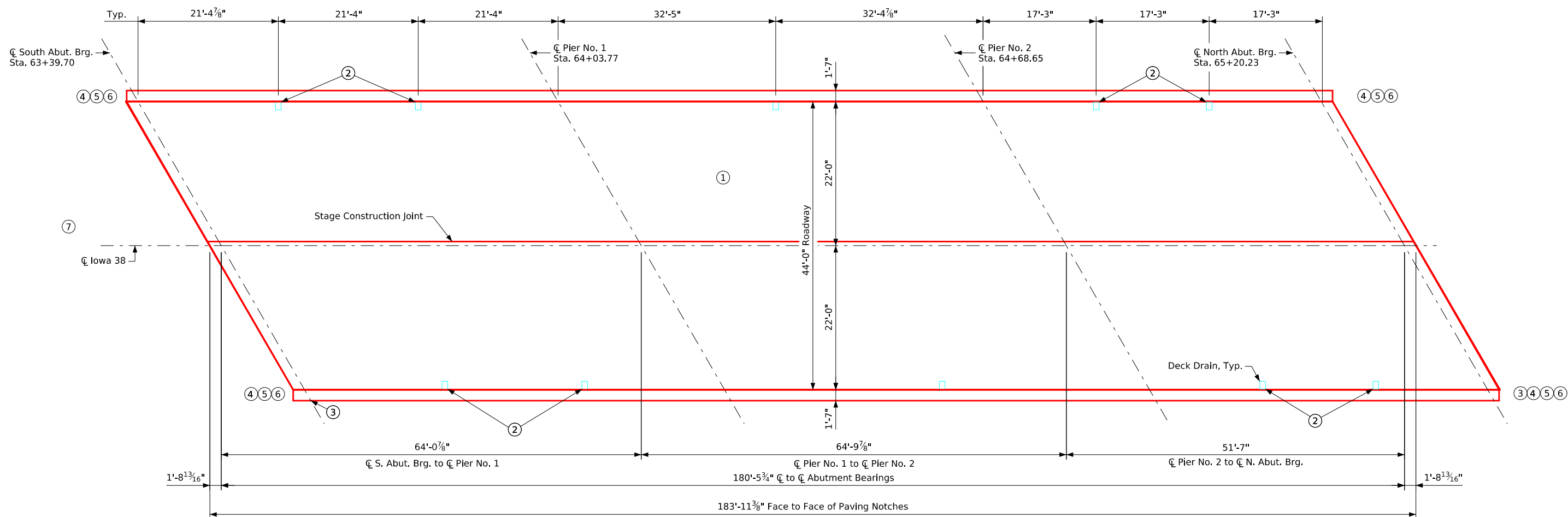
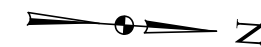
General Notes

STA. 64+30.00 (IA 38)Turn-in Date: August 2026

Muscatine County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227Design Sheet No. 2 of 19FHWA No. 38151



Situation Plan

Repairs shall consist of:

- 1 Remove bridge deck and barrier rails and construct new 8½" thick deck and single-slope barrier railings.
- 2 Install splash basins below deck drains as shown on Design Sheet No. 18.
- 3 Repair abutment concrete diaphragm.
- 4 Replace the existing guardrail as shown in the roadway sheets.
- 5 Add paved shoulder next to guardrail as shown in the roadway sheets.
- 6 Add shoulder strengthening as shown in the roadway sheets.
- 7 Remove and replace pavement south of the bridge as shown in the roadway sheets.

Location:

IA 38 over Mad Creek
T-77N, R-2W
Section 24
Bloomington TWP
Muscatine County
Maintenance No. 7002.4S038
FHWA # 38151
Latitude 41.459949
Longitude -91.031450

Design For Repair to 30° Skew (RA)

**180'-6" x 44' Postensioned
Prestressed Concrete Beam Bridge**

64'-1" & 51'-7" End Spans 64'-10" Interior Span

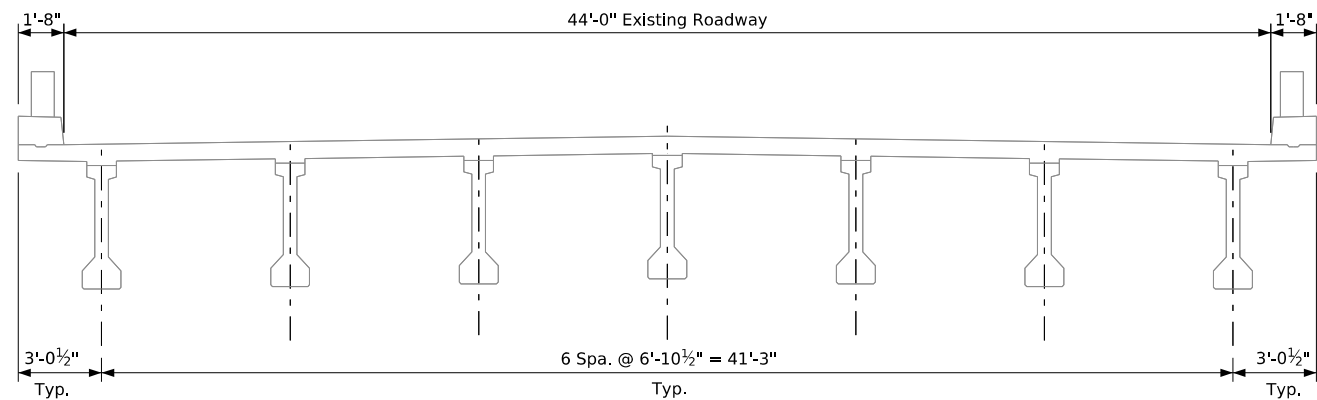
Situation Plan

STA. 64+30.00 (IA 38) Turn-in Date: August 2026

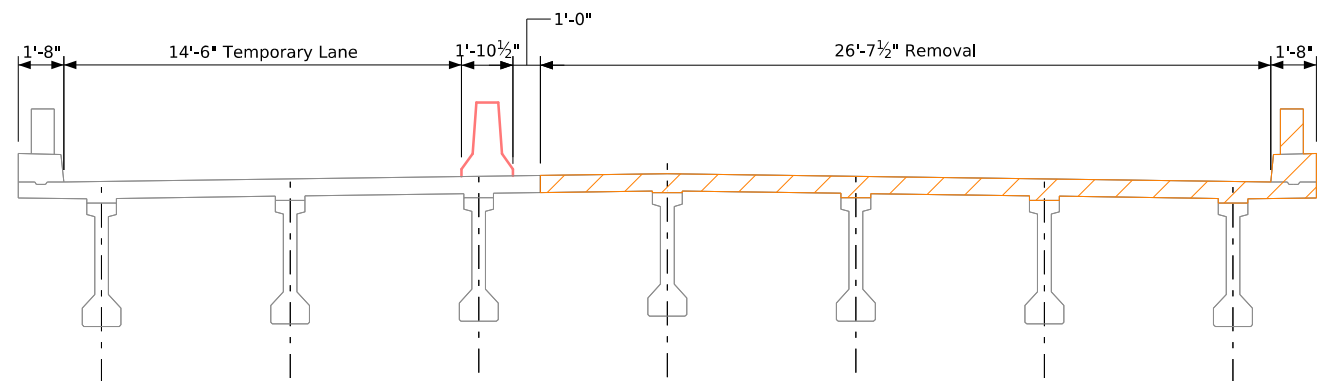
Muscatine County

IOWA DEPARTMENT OF TRANSPORTATION

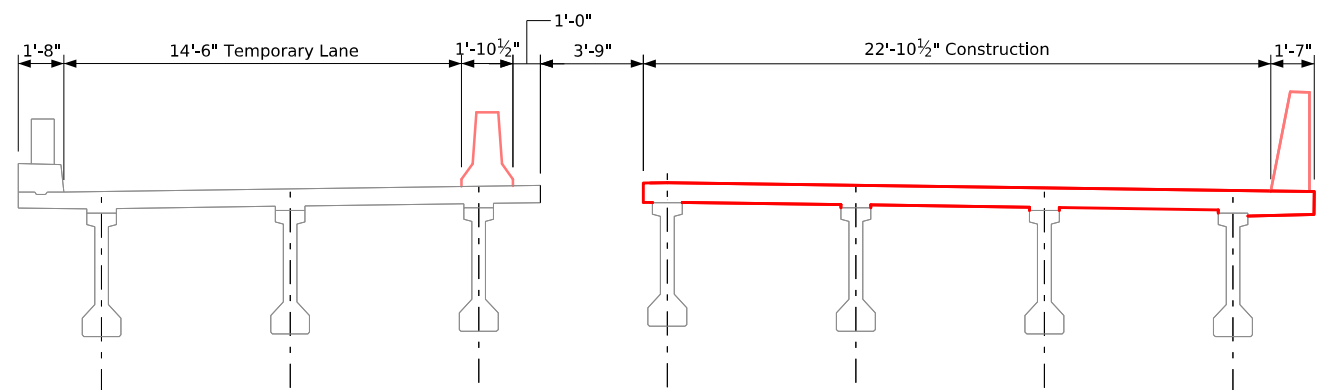
Design No. 227 Design Sheet No. 3 of 19 FHWA No. 38151



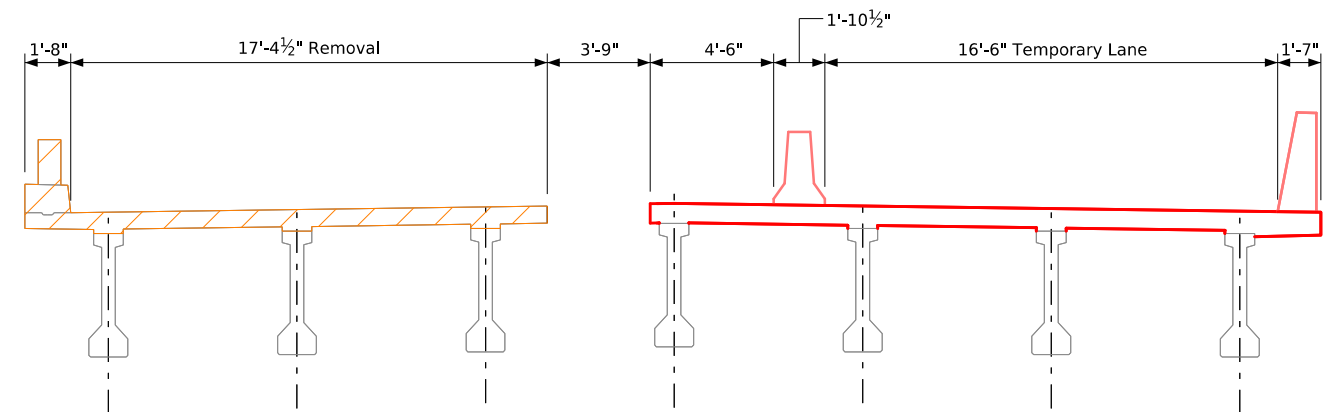
Existing Structure



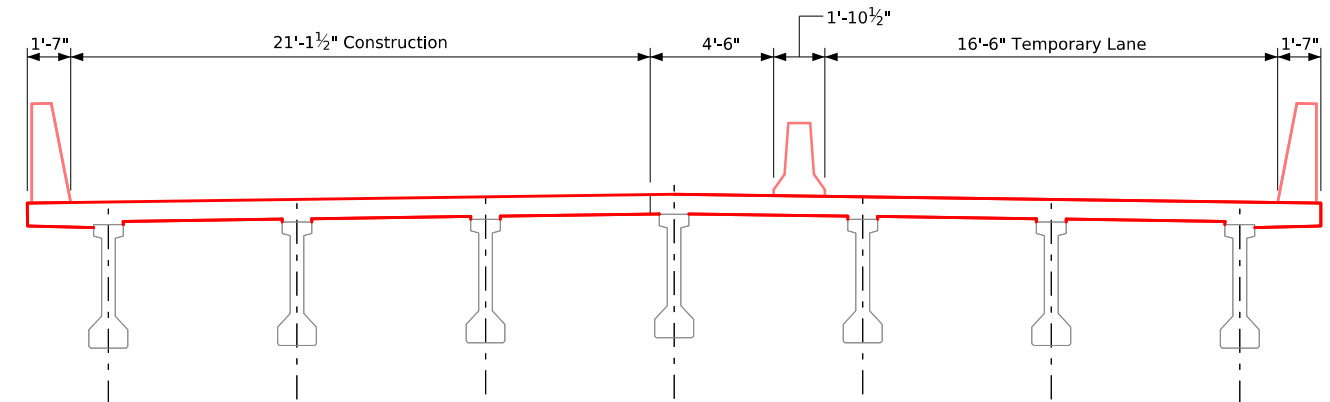
Stage I Removal



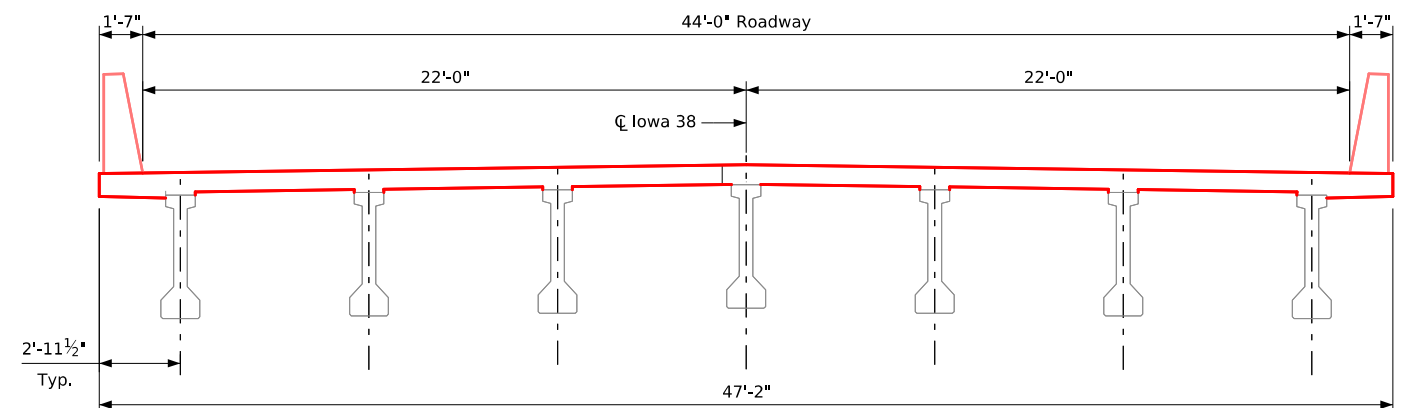
Stage I Construction



Stage II Removal



Stage II Construction



Final Structure

Legend



Removal

Notes:
For deck removal notes see Design Sheet No. 2.

Design For Repair to 30° Skew (RA)

**180'-6" x 44' Postensioned
Prestressed Concrete Beam Bridge**

64'-1" & 51'-7" End Spans 64'-10" Interior Span

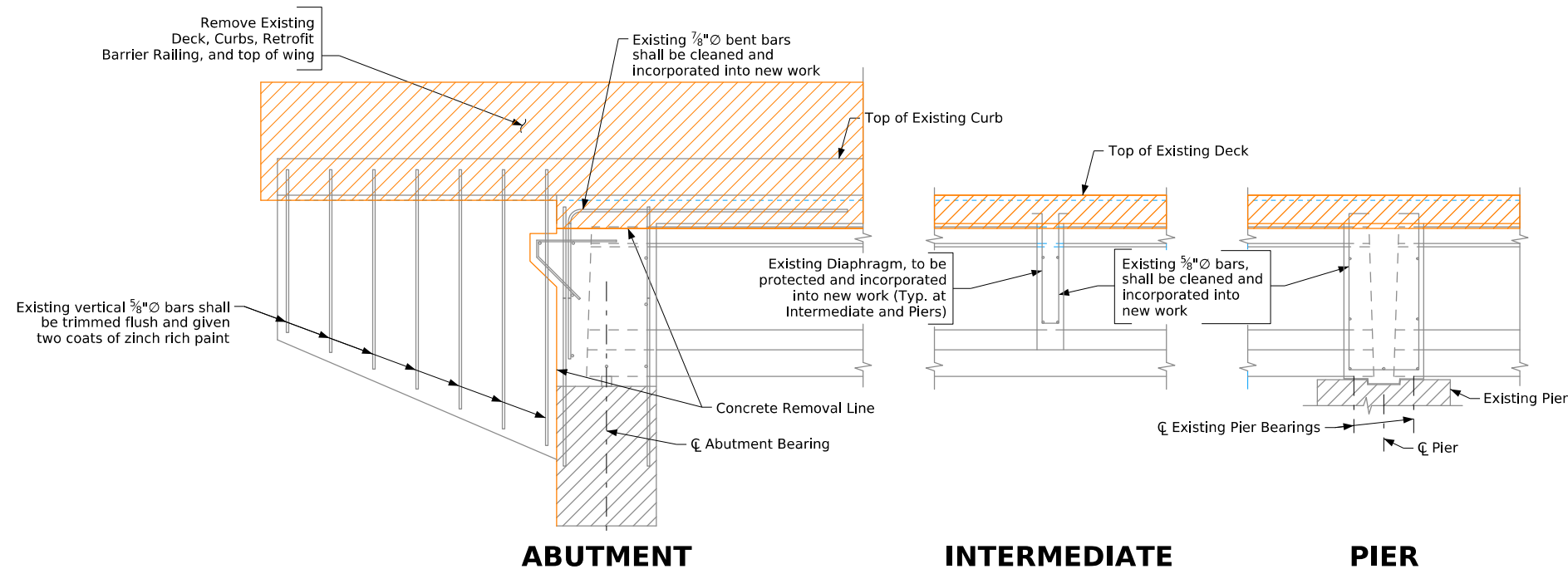
Staging Details

STA. 64+30.00 (IA 38) Turn-in Date: August 2026

Muscatine County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227 Design Sheet No. 4 of 19 FHWA No. 38151

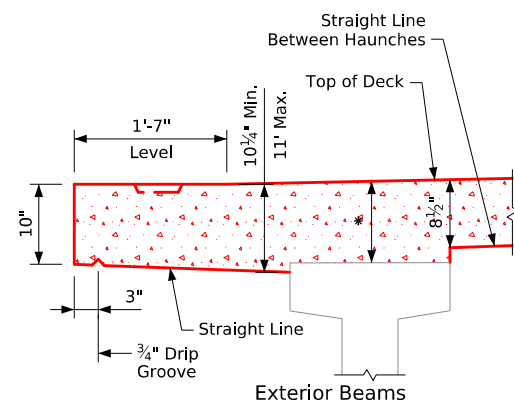
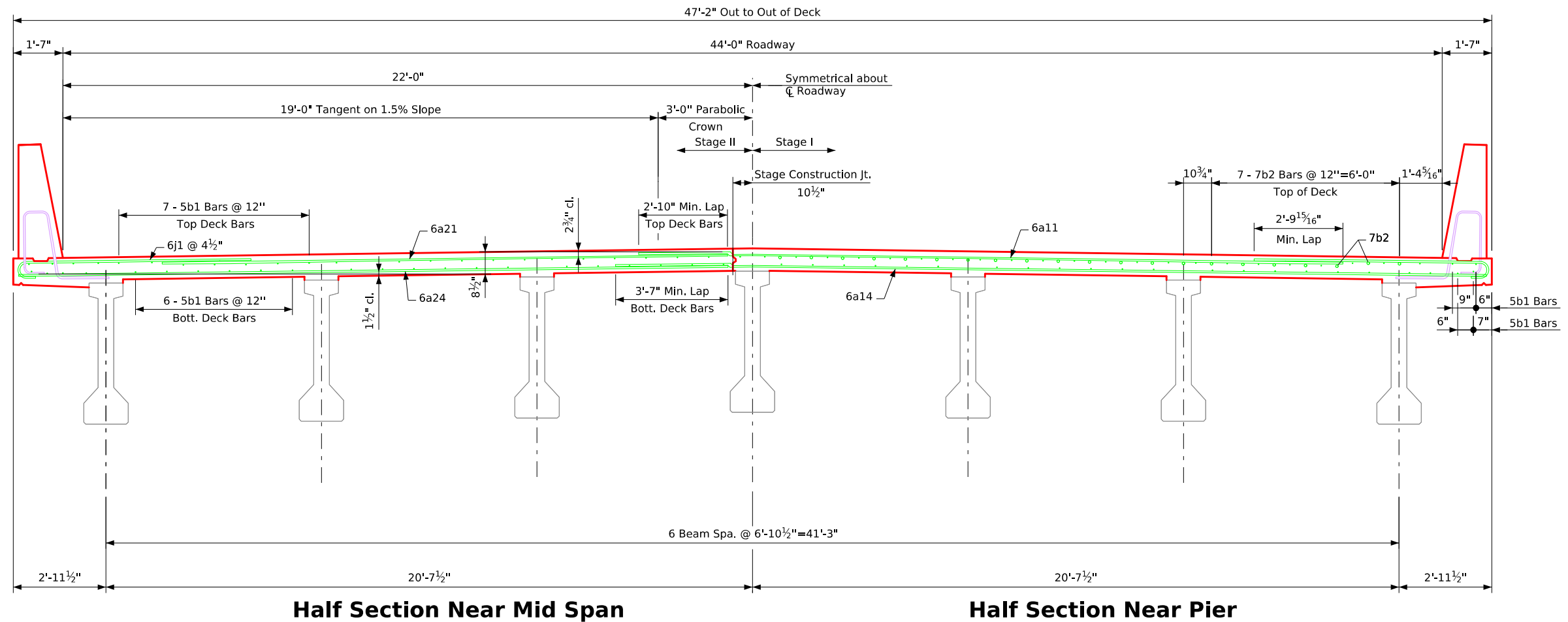


PART LONGITUDINAL REMOVAL SECTION OF DECK AT DIAPHRAGMS

(Deck Reinforcing not shown for clarity)

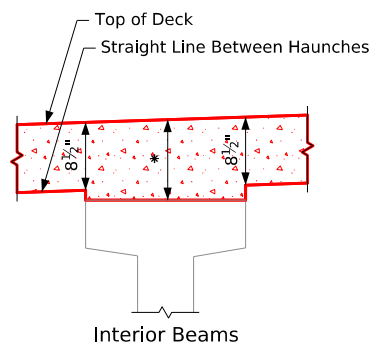
Notes:
For deck removal notes, see Design Sheet No. 2.

Design For Repair to 30° Skew (RA)	
180'-6" x 44' Postensioned	
Prestressed Concrete Beam Bridge	
64'-1" & 51'-7" End Spans	64'-10" Interior Span
Removal Details	
STA. 64+30.00 (IA 38)	Turn-in Date: August 2026
Muscatine County	
IOWA DEPARTMENT OF TRANSPORTATION	
Design No. 227	Design Sheet No. 5 of 19 FHWA No. 38151



Typical Slab and Haunch Detail

* For Deck Thickness Over Beams See "Haunch And Camber Data Details" on Design Sheet No. 12.



Superstructure Notes:

The bridge deck as shown includes $\frac{3}{4}$ " integral wearing surface. Forms for the deck and barrier rail are to be supported by the prestressed concrete beams.

Clear distance from face of concrete to near reinforcing bar shall be 2" unless otherwise noted or shown.

All deck reinforcing is to be wired in place and adequately supported before concrete is placed.

Top transverse reinforcing steel is to be parallel to and $2\frac{3}{4}$ " clear below top of slab. Bottom transverse reinforcing steel is to be parallel to and $1\frac{1}{2}$ " clear above bottom of deck. Top and bottom reinforcing steel is to be supported by individual bar chairs spaced at not more than 3'-0" centers longitudinally and transversely, or by continuous rows of bar high chairs or deck bolsters spaced 4'-0" apart. I.M. 451.01 requirements shall apply for bar chairs, bar high chairs, and deck bolsters.

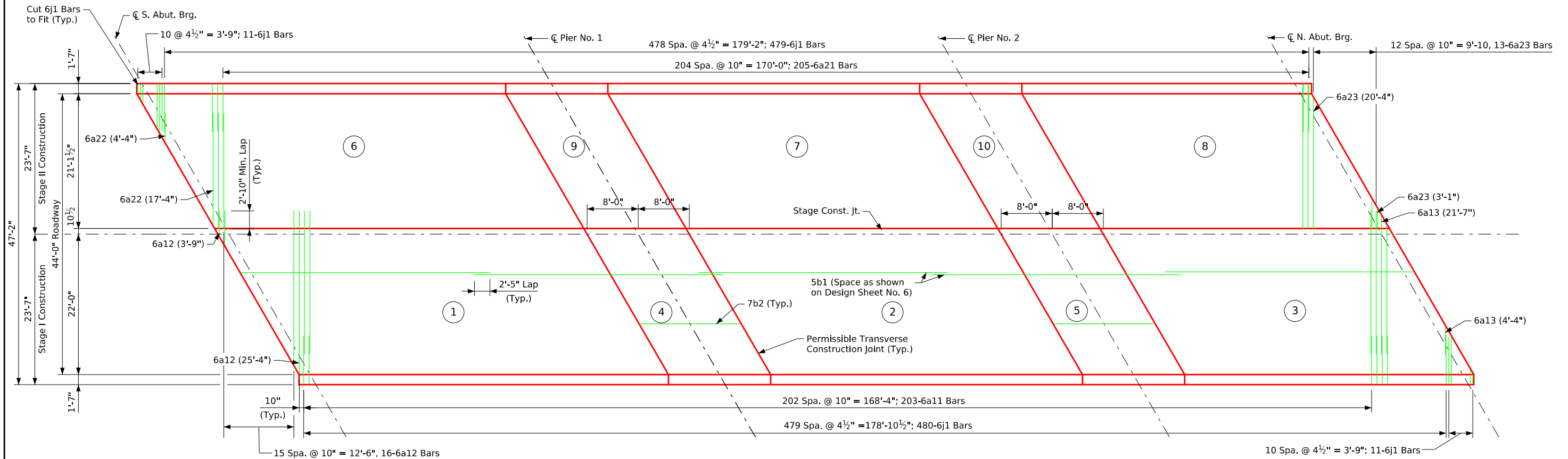
Transverse deck reinforcing may be spliced with one lap located as follows:

Top bar - lap midway between beams (min. lap = 2'-10").

Bottom bars - lap over beams (min. lap = 3'-7").

Payment for reinforcing bars shall be based on no splices, and no allowance shall be made for the additional length of bar required for the use of splices.

Design For Repair to 30° Skew (RA)		
180'-6" x 44' Postensioned Prestressed Concrete Beam Bridge		
64'-1" & 51'-7" End Spans	64'-10" Interior Span	
Transverse Section		
STA. 64+30.00 (IA 38)	Turn-In Date: August 2026	
Muscatine County		
IOWA DEPARTMENT OF TRANSPORTATION		
Design No. 227	Design Sheet No. 6 of 19	FHWA No. 38151



**Top Deck Reinforcing Layout and Concrete
Placing Diagram**

Note: Concrete deck shall be placed in sections and sequences indicated. (An approved alternate procedure is to place the concrete deck in one continuous pour beginning at the end of the bridge.) Alternate procedures for placing concrete may 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 results. The Bridge Engineer shall review any alternate procedures. The cost of any additional analysis and plan modifications shall be paid for by the Contractor. The Engineer shall determine if a retarding admixture is required to maintain plasticity of the concrete deck during placement.

Deck Concrete sections shall cure for a minimum of 48 hours and shall achieve a minimum strength of 75% of the 28 day justify deck concrete strength prior to removing deck headers and beginning an adjacent pour.

For transverse and longitudinal slab construction joint details, see Detail Sheet No. 9.

Design For Repair to 30° Skew (RA)

**180'-6" x 44' Postensioned
Prestressed Concrete Beam Bridge**

64'-1" & 51'-7" End Spans 64'-10" Interior Span

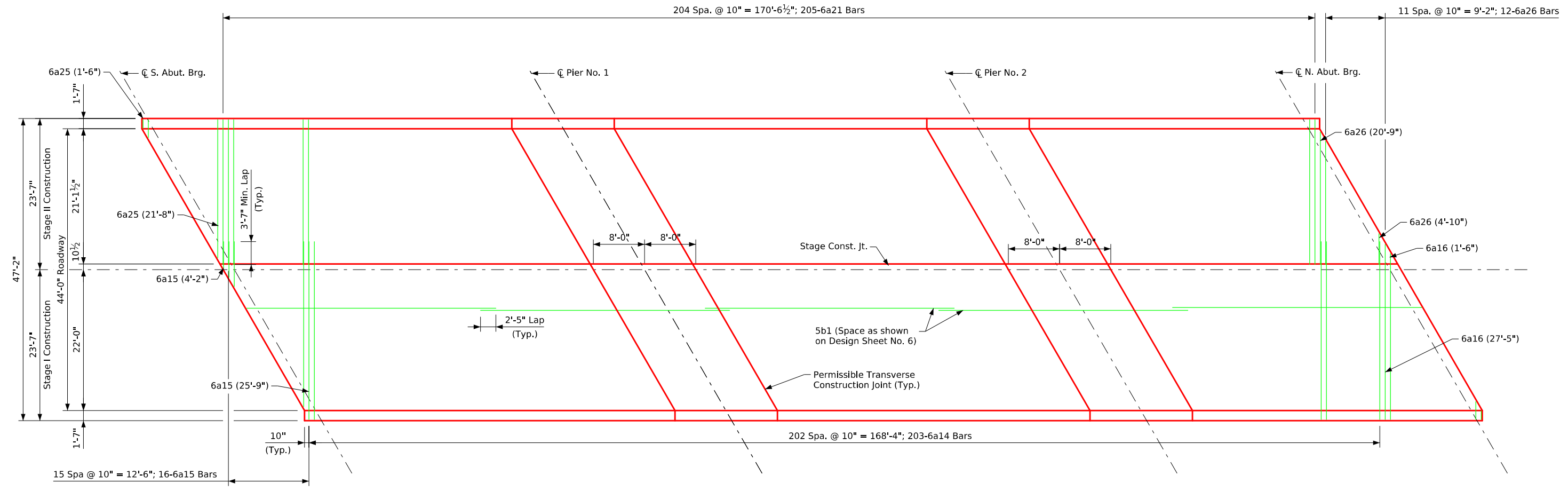
Deck Reinforcing Layout

STA. 64+30.00 (IA 38) Turn-in Date: August 2026

Muscatine County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227 Design Sheet No. 7 of 19 FHWA No. 38151



Bottom Deck Reinforcing Layout

Design For Repair to 30° Skew (RA)

**180'-6" x 44' Postensioned
Prestressed Concrete Beam Bridge**

64'-1" & 51'-7" End Spans 64'-10" Interior Span

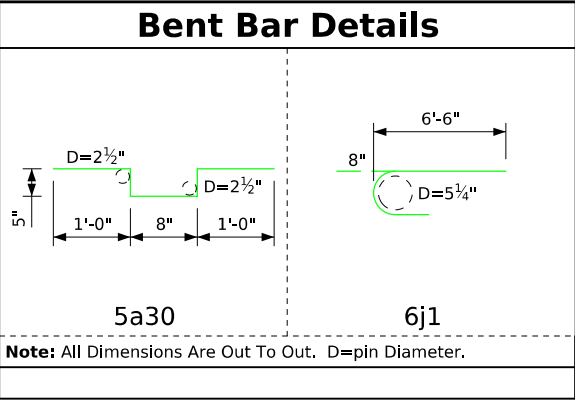
Deck Reinforcing Layout

STA. 64+30.00 (IA 38) Turn-In Date: August 2026

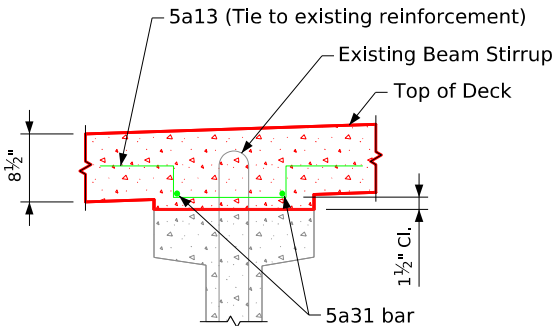
Muscatine County

IOWA DEPARTMENT OF TRANSPORTATION

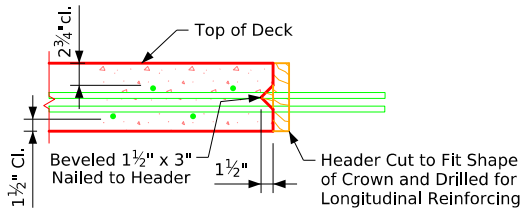
Design No. 227 Design Sheet No. 8 of 19 FHWA No. 38151



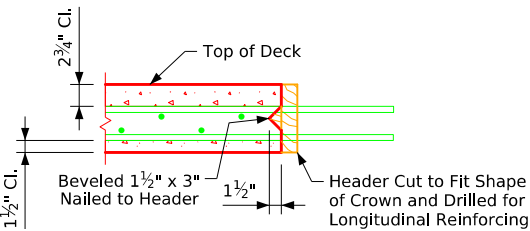
Reinforcing Bar List-Superstructure					
Bar	Location	Shape	No.	Length	Weight
6a11	Deck Transv. Top (Stage I)		203	22'-5"	6840
6a12	Deck Transv. Top (End Stage I)		16	Var.	350
6a13	Deck Transv. Top (End Stage I)		13	Var.	260
6a14	Deck Transv. Bott. (Stage I)		203	27'-11"	8520
6a15	Deck Transv. Bott. (End Stage I)		16	Var.	360
6a16	Deck Transv. Bott. (End Stage I)		19	Var.	420
6a21	Deck Transv. Top (Stage II)		203	18'-2"	5540
6a22	Deck Transv. Top (End Stage II)		10	Var.	170
6a23	Deck Transv. Top (End Stage II)		13	Var.	230
6a24	Deck Transv. Bott. (Stage II)		203	22'-9"	6940
6a25	Deck Transv. Bott. (End Stage II)		14	Var.	250
6a26	Deck Transv. Bott. (End Stage II)		12	Var.	240
5a30	Haunch, Transverse		364	3'-6"	1330
5a31	Haunch, Longit.		28	26'-0"	760
5b1	Deck Longit. Top & Bott.		460	38'-11"	18680
8b2	Deck Longit. Top & Bott.		84	15'-8"	2690
6j1	Transv. Barrier Bars		980	8'-2"	12030
5z1	Drain Bars		24	3'-0"	80
				Epoxy Reinf. Total Weight (lbs.)	65690



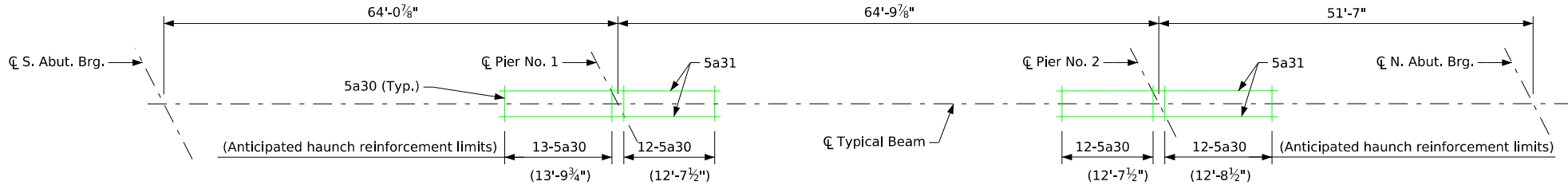
Section Thru Deck Haunch
(Required where deck plus haunch exceeds 9 1/2")



Permissible Transverse Deck Construction Joint



Longitudinal Deck Construction Joint



Haunch Reinforcing Layout

Concrete Placement Quantity-Superstr.	
Section	Total
Section 1	37.9
Section 2	32
Section 3	29.7
Section 4	10.5
Section 5	10.5
Section 6	35.9
Section 7	30.3
Section 8	28.2
Section 9	10
Section 10	10
Total (cu. yd.)	234.9

Design For Repair to 30° Skew (RA)

**180'-6" x 44' Postensioned
Prestressed Concrete Beam Bridge**

64'-1" & 51'-7" End Spans 64'-10" Interior Span

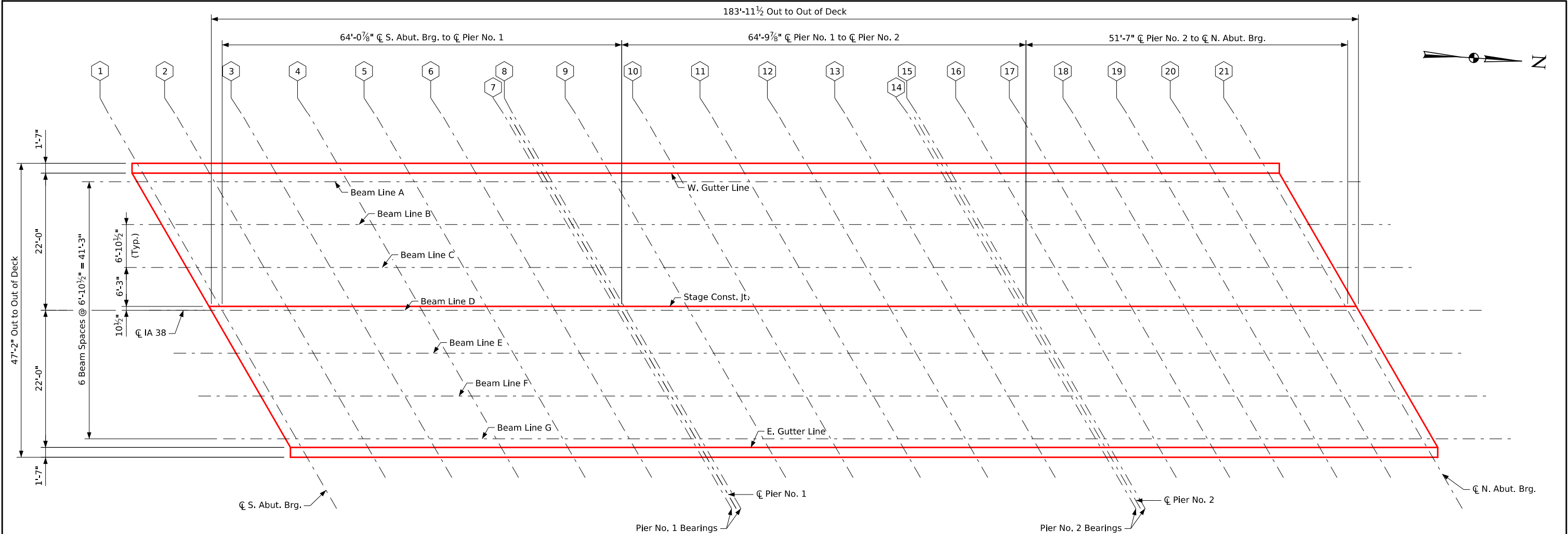
Superstructure Details

STA. 64+30.00 (IA 38) Turn-In Date: August 2026

Muscatine County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227 Design Sheet No. 9 of 19 FHWA No. 38151



Top of Deck Elevations																					
Location	☐ S. Abut. Brg.						☐ Pier No. 1 Bearings							☐ Pier No. 2 Bearings							☐ N. Abut. Brg.
	Line 1	Line 2	Line 3	Line 4	Line 5	Line 6	Line 7	Line 8	Line 9	Line 10	Line 11	Line 12	Line 13	Line 14	Line 15	Line 16	Line 17	Line 18	Line 19	Line 20	Line 21
WEST GUTTER LINE	617.94	617.70	617.46	617.23	616.99	616.76	616.53	616.50	616.27	616.05	615.82	615.60	615.42	615.21	615.18	615.02	614.86	614.71	614.55	614.40	614.24
BEAM LINE A	617.98	617.74	617.50	617.27	617.03	616.80	616.57	616.54	616.31	616.08	615.86	615.64	615.45	615.25	615.22	615.06	614.90	614.74	614.59	614.43	614.28
BEAM LINE B	618.18	617.93	617.69	617.46	617.22	616.99	616.76	616.73	616.50	616.27	616.05	615.83	615.61	615.43	615.40	615.24	615.08	614.92	614.76	614.61	614.45
BEAM LINE C	618.37	618.13	617.89	617.65	617.41	617.18	616.95	616.91	616.69	616.46	616.23	616.01	615.79	615.61	615.58	615.42	615.26	615.10	614.94	614.78	614.63
STAGE CONST. JT.	618.54	618.30	618.06	617.82	617.58	617.35	617.11	617.08	616.85	616.62	616.40	616.18	615.96	615.77	615.74	615.57	615.41	615.25	615.09	614.94	614.78
BEAM LINE D/CROWN LINE	618.57	618.32	618.08	617.84	617.60	617.37	617.14	617.10	616.87	616.65	616.42	616.20	615.98	615.79	615.76	615.60	615.43	615.27	615.11	614.96	614.80
BEAM LINE E	618.56	618.31	618.07	617.83	617.59	617.35	617.12	617.09	616.86	616.63	616.40	616.18	615.96	615.74	615.71	615.57	615.41	615.25	615.09	614.93	614.77
BEAM LINE F	618.54	618.30	618.06	617.82	617.58	617.34	617.11	617.07	616.84	616.61	616.38	616.16	615.94	615.72	615.69	615.54	615.38	615.22	615.06	614.90	614.74
BEAM LINE G	618.53	618.29	618.04	617.80	617.56	617.33	617.09	617.06	616.82	616.59	616.37	616.14	615.92	615.70	615.67	615.49	615.35	615.19	615.03	614.87	614.71
EAST GUTTER LINE	618.53	618.29	618.04	617.80	617.56	617.32	617.09	617.05	616.82	616.59	616.36	616.14	615.91	615.69	615.66	615.49	615.35	615.18	615.02	614.86	614.71

Design For Repair to 30° Skew (RA)

180'-6" x 44' Postensioned
Prestressed Concrete Beam Bridge

64'-1" & 51'-7" End Spans64'-10" Interior Span

Deck Elevations

STA. 64+30.00 (IA 38)Turn-In Date: August 2026

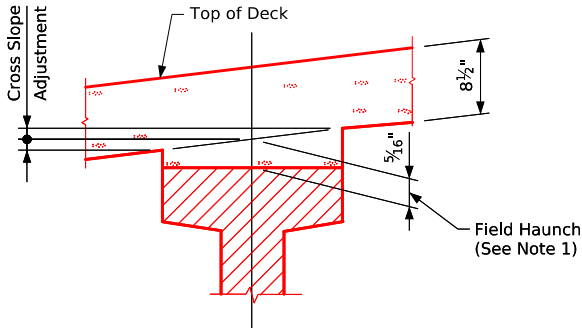
Muscatine County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227Design Sheet No. 10 of 19FHWA No. 38151

BEAM LINE HAUNCH ELEVATIONS																					
Location	☐ S. Abut. Bearing						☐ Pier No. 1 Bearings							☐ Pier No. 2 Bearings							☐ N. Abut. Brg.
	LINE 1	LINE 2	LINE 3	LINE 4	LINE 5	LINE 6	LINE 7	LINE 8	LINE 9	LINE 10	LINE 11	LINE 12	LINE 13	LINE 14	LINE 15	LINE 16	LINE 17	LINE 18	LINE 19	LINE 20	LINE 21
BEAM LINE A	617.27	617.07	616.85	616.63	616.38	616.13	615.86	615.83	615.63	615.43	615.22	614.99	614.78	614.54	614.51	614.37	614.23	614.08	613.91	613.74	613.57
BEAM LINE B	617.47	617.26	617.05	616.82	616.57	616.32	616.05	616.02	615.82	615.62	615.40	615.17	614.93	614.72	614.69	614.55	614.41	614.25	614.09	613.92	613.74
BEAM LINE C	617.66	617.45	617.24	617.01	616.76	616.51	616.24	616.21	616.01	615.81	615.59	615.36	615.12	614.90	614.87	614.73	614.58	614.43	614.27	614.09	613.92
BEAM LINE D	617.86	617.65	617.43	617.20	616.96	616.70	616.43	616.40	616.20	616.00	615.78	615.55	615.30	615.08	615.05	614.91	614.76	614.61	614.44	614.27	614.09
BEAM LINE E	617.85	617.64	617.42	617.19	616.94	616.68	616.41	616.38	616.18	615.98	615.76	615.53	615.28	615.03	615.00	614.88	614.74	614.58	614.41	614.24	614.06
BEAM LINE F	617.84	617.63	617.41	617.18	616.93	616.67	616.40	616.36	616.17	615.96	615.74	615.51	615.26	615.01	614.98	614.86	614.71	614.55	614.39	614.21	614.03
BEAM LINE G	617.82	617.61	617.40	617.16	616.91	616.65	616.38	616.35	616.15	615.94	615.72	615.49	615.24	614.99	614.96	614.80	614.68	614.52	614.36	614.18	614.00

Miscellaneous Data Table																							
	Beam Line		☐ S. Abut. Bearing					☐ Pier No. 1 Bearing							☐ Pier No. 2 Bearings							☐ N. Abut. Bearing	
			Line 1	Line 2	Line 3	Line 4	Line 5	Line 6	Line 7	Line 8	Line 9	Line 10	Line 11	Line 12	Line 13	Line 14	Line 15	Line 16	Line 17	Line 18	Line 19	Line 20	Line 21
Anticipated Deflection Due to Deck (in.)	All		0	¼"	⅝"	1⅜"	⅝"	¼"	0	0	¼"	⅝"	1⅜"	⅝"	¼"	0	0	⅝"	⅝"	½"	⅝"	⅝"	0
Cross Slope Adjustments (in.)	A, B, C, D, E, F & G		⅝"																				
Allowable Field Haunch (in. & ft.)	Max.	All	2" (0.1667')																				
	Min.	All	-⅝" (Embedment) (0.0313')																				



Note: Bridge seat elevations are set based on theoretical camber and beam deflections. These bridge seats will provide a theoretical beam haunch within design parameters. Field haunches are determined using surveyed top of beam elevations and "Beam Line Haunch Elevation" data. Allowable maximum and minimum "Field Haunch" values are given in inches and decimals of feet in the "Miscellaneous Data" table. "Cross slope adjustment" values will aid the Contractor in determining actual formed haunch dimensions at the edges of the top flange.

Note 1: To calculate field haunch required at each location, survey the beam tops consistent with the spacings shown on the "Top of Deck Elevations Layout". Subtract the surveyed beam shot from the "Beam Line Haunch Elevation". This value will be the haunch needed (see "Field Haunch" in haunch detail). The "Beam Line Haunch Elevation" includes adjustments for deck thicknesses and anticipated deflections. No additional calculations are required. If the field haunch exceeds the maximums and minimums shown in inches and decimals of feet in the miscellaneous data table, adjustments to the grade or additional haunch reinforcement will be required.

Design For Repair to 30° Skew (RA)

180'-6" x 44' Postensioned
Prestressed Concrete Beam Bridge

64'-1" & 51'-7" End Spans64'-10" Interior Span

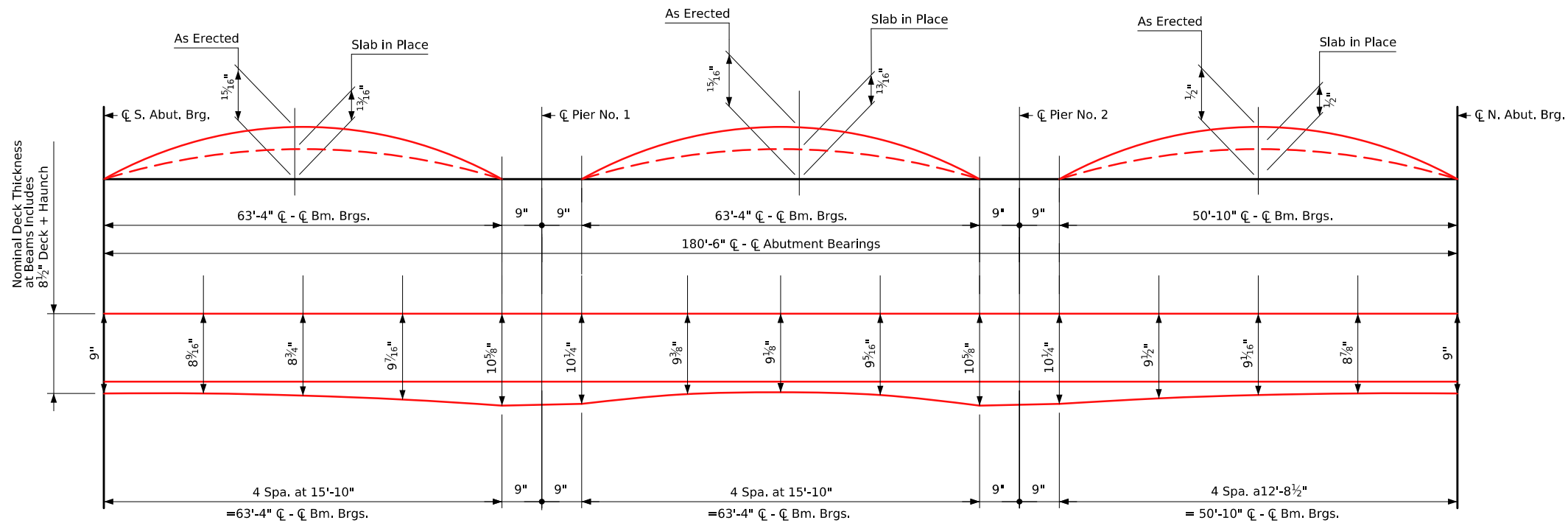
Deck Haunch Data Details

STA. 64+30.00 (IA 38)Turn-in Date: August 2026

Muscatine County

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Design No. 227Design Sheet No. 11 of 19FHWA No. 38151



Beam Camber Data

Design For Repair to 30° Skew (RA)

180'-6" x 44' Postensioned
Prestressed Concrete Beam Bridge

64'-1" & 51'-7" End Spans64'-10" Interior Span

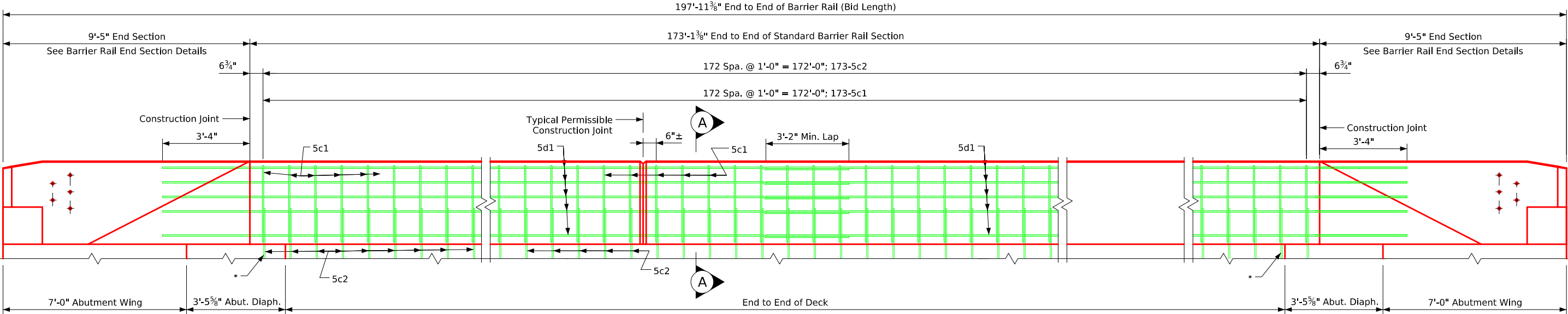
Deck Haunch Data Details Cont.

STA. 64+30.00 (IA 38)Turn-In Date: August 2026

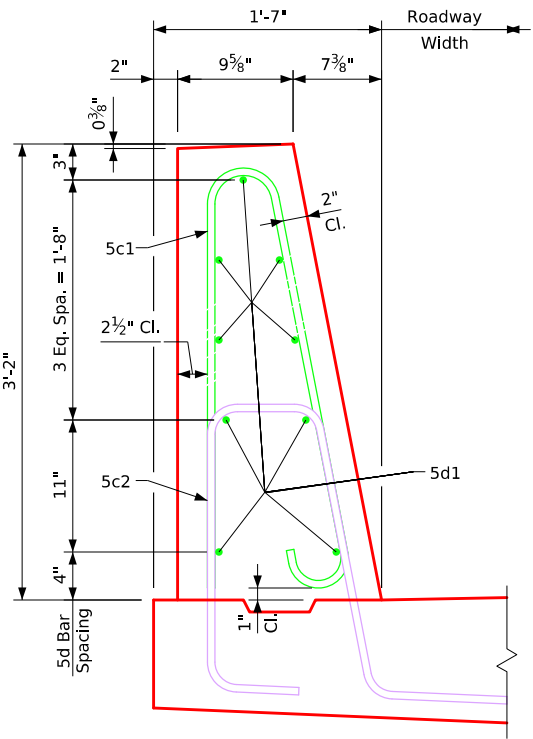
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IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227Design Sheet No. 12 of 19FHWA No. 38151



Elevation of Barrier Rail



Part Section A-A

* Cut off horizontal legs of 5c2 bar and set as dowel in existing abutment. See dowel setting notes on Design Sheet No. 15.

See Barrier Rail Details on Design Sheet No. 14 for notes, reinforcing steel details, and quantities.

Design For Repair to 30° Skew (RA)

**180'-6" x 44' Postensioned
Prestressed Concrete Beam Bridge**

64'-1" & 51'-7" End Spans 64'-10" Interior Span

Barrier Rail (TL-4) (Stainless)-Integral Abut.

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Muscatine County

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Design No. 227 Design Sheet No. 13 of 19 FHWA No. 38151

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. The stainless steel reinforcing steel shall be deformed bar grade 60 meeting the requirements of Construction and Materials I.M. 452.

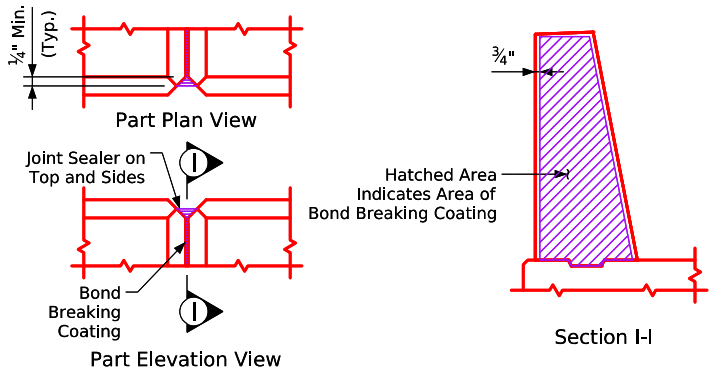
The concrete barrier rail is to be bid on a lineal foot basis. The number of linear feet of barrier rail installed will be paid for at the contract price per lineal foot based on plan quantities. Price bid for concrete barrier railing shall be full compensation for furnishing all material, excluding reinforcing steel, and all of the equipment and labor required to erect the rail in accordance with these plans and current specifications. If conduit is required in this plan 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 railing.

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 C grade.

All exposed corners on the top of the barrier and all other corners 90° or sharper to be filleted with a 3/4" dressed and beveled strip.

Cross sectional area of the Standard Sections of the barrier rail = 3.50 square feet.



Barrier Rail Joint Details

Epoxy Coated Reinf. Steel - Two Rails

Section	Bar	Location	Shape	No.	Length	Weight
Standard Sections	5c1	Rail, Vertical		346	6'-8"	2406
	5d2	Rail, Longitudinal		90	38'-6"	3614

Epoxy Reinf. Total Weight (lbs.)

6020

Stainless Steel Reinf. Steel - Two Rails

Section	Bar	Location	Shape	No.	Length	Weight
Standard Sections	5c2	Rail, Vertical		346	7'-3"	2616

Stainless Steel Reinf. Total Weight (lbs.)

2616

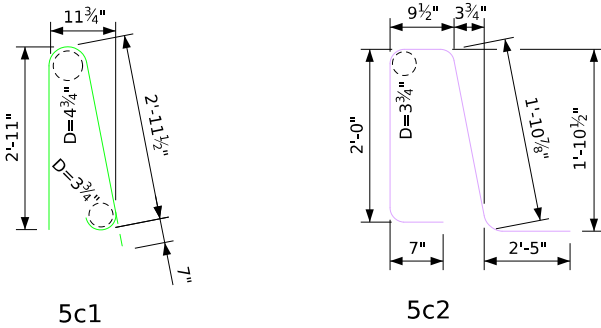
Concrete Placement Summary

Section	Total
Standard Section 347'-4 1/2" at 0.130 cu. yd. per ft.	45.2
Total (cu. yd.)	45.2

Concrete Barrier Rail Quantities

Item	Unit	Quantity
Concrete Barrier Railing	L.F.	395'-11"

Bent Bar Details



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

See Barrier Rail Details on Design Sheet No. 13 for details and sections.

Design For Repair to 30° Skew (RA)

180'-6" x 44' Postensioned Prestressed Concrete Beam Bridge

64'-1" & 51'-7" End Spans 64'-10" Interior Span

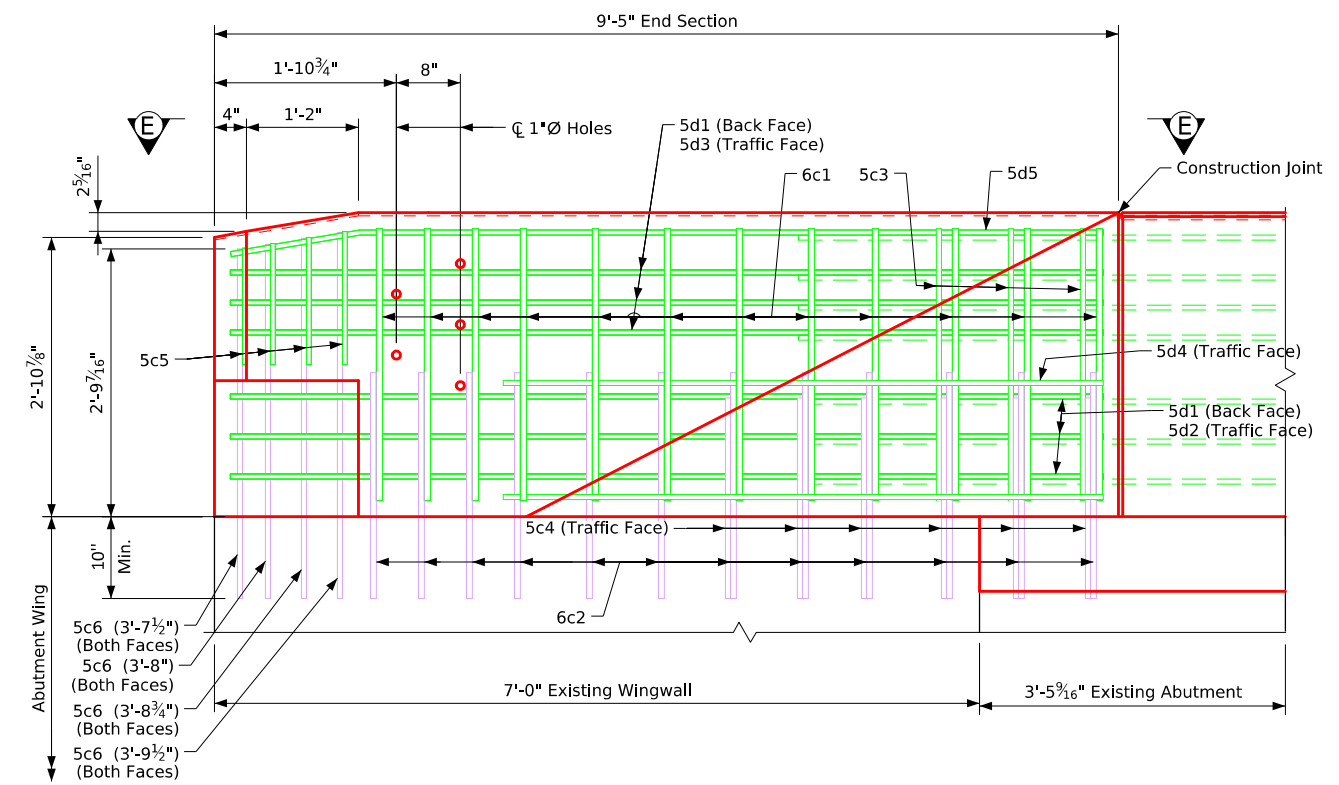
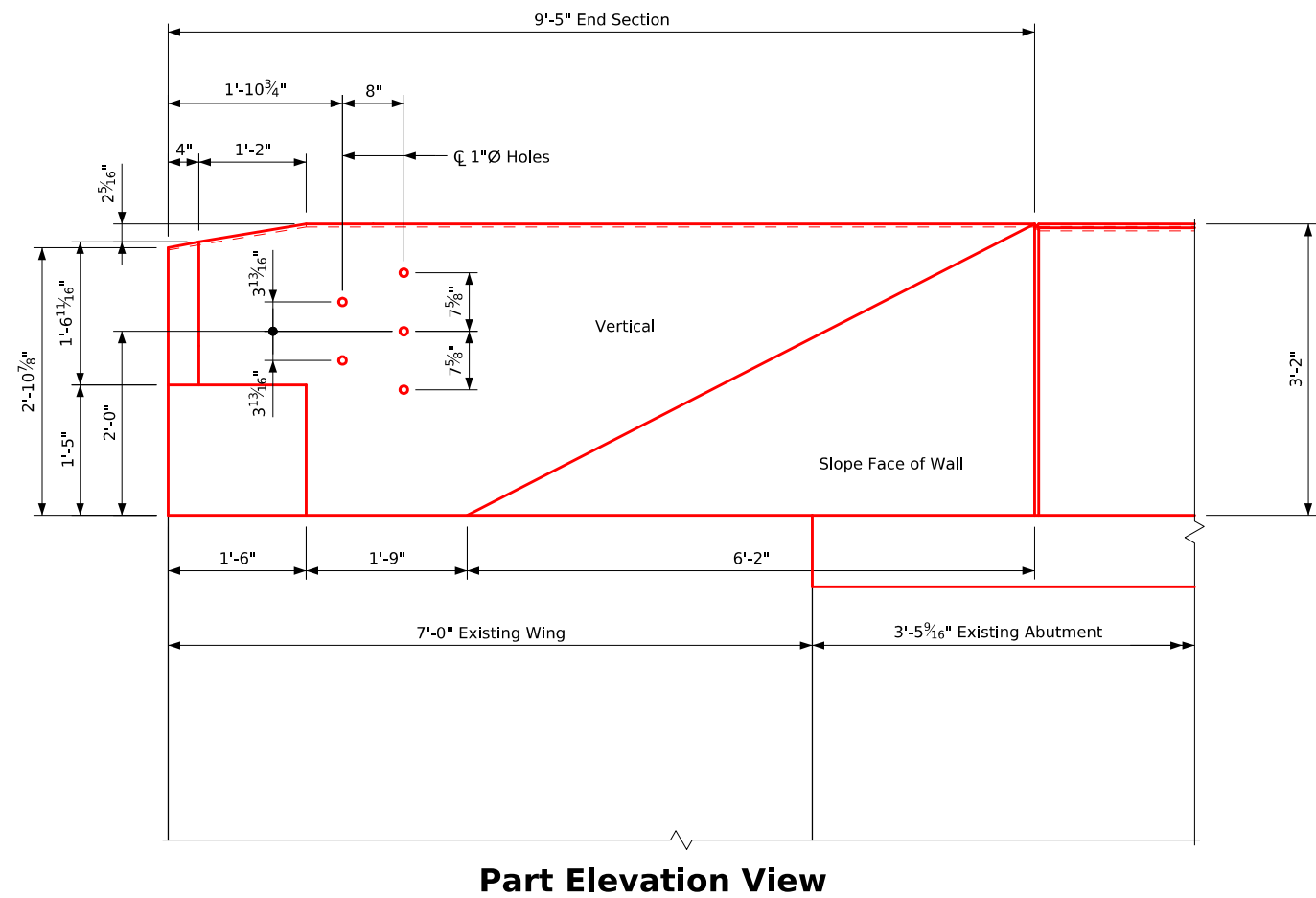
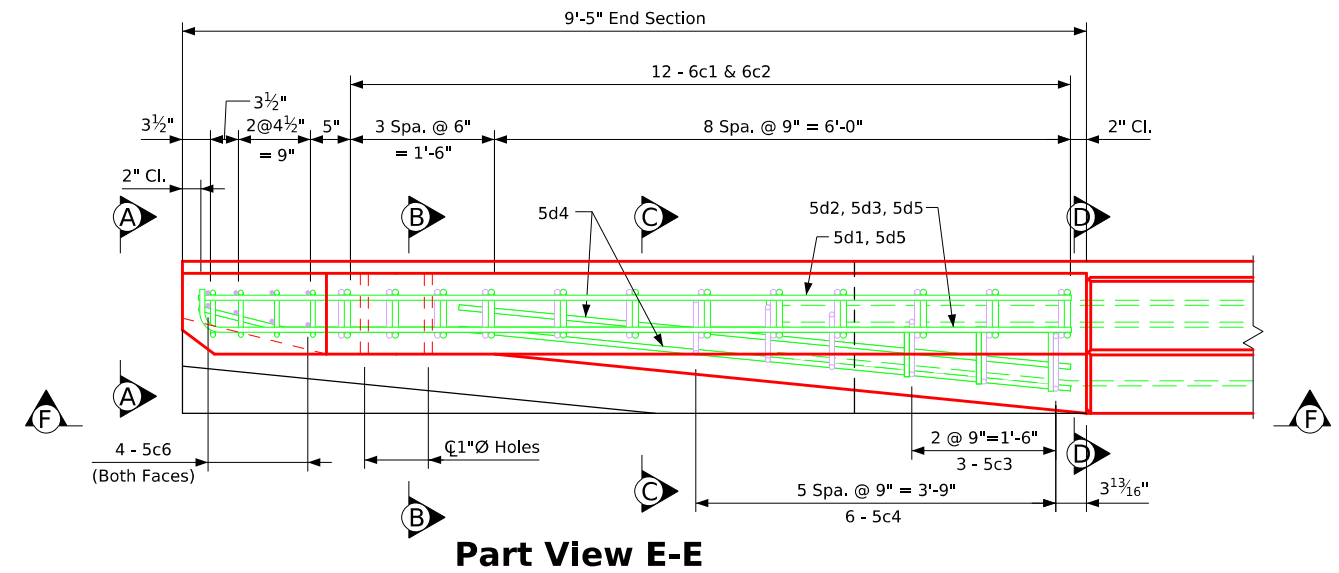
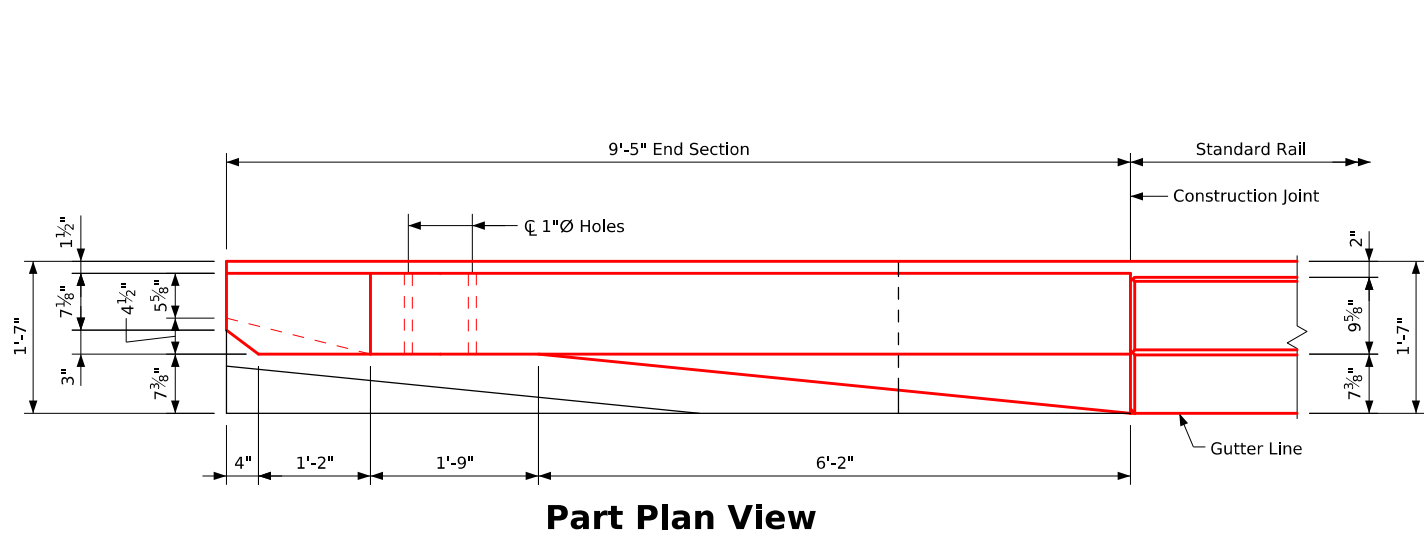
Barrier Rail Details Cont.

STA. 64+30.00 (IA 38) Turn-In Date: August 2026

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IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227 Design Sheet No. 14 of 19 FHWA No. 38151



Notes:
The 6c2, 5c4, and 5c6 bars are to be placed and doweled in the abutment wing. See Dowel setting note on this sheet.
For Bar List, Bent Bar Details, View A-A, Sections B-B, C-C, and D-D see Design Sheet No. 16.

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

DOWEL SETTING NOTE:
The 6c2, 5c4, and 5c6 bars in the barrier rail end section shall be set as dowels in drilled holes. Holes are to be 10" deep. The dowels shall be installed in accordance with the manufacturer's recommendations. Either of the following shall be used as a bonding agent for the vertical dowels, but only System "A" may be used for the horizontal dowels.

A. Polymer Grout System shall be in accordance with article 2301.03,E of the standard specifications.

B. Hydraulic cement grout systems. Drilled holes are to be 2½" times the dowel diameter and are to be blown clean with compressed air immediately prior to placing grout. The hydraulic cement grout shall be one of those approved in materials I.M, 491.13 and shall be used in accordance with the manufacturer's recommendations.

Design For Repair to 30° Skew (RA)

180'-6" x 44' Postensioned
Prestressed Concrete Beam Bridge

64'-1" & 51'-7" End Spans
64'-10" Interior Span

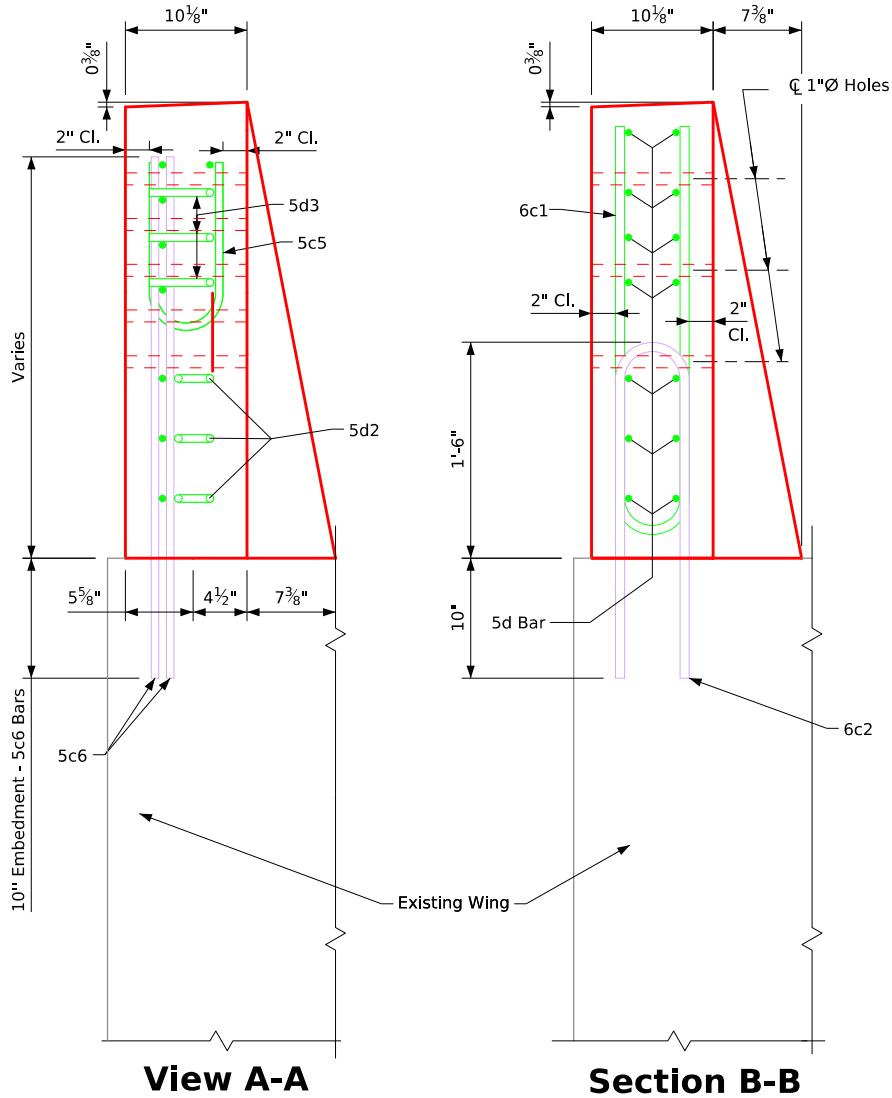
Barrier Rail End Section Details

STA. 64+30.00 (IA 38)
Turn-In Date: August 2026

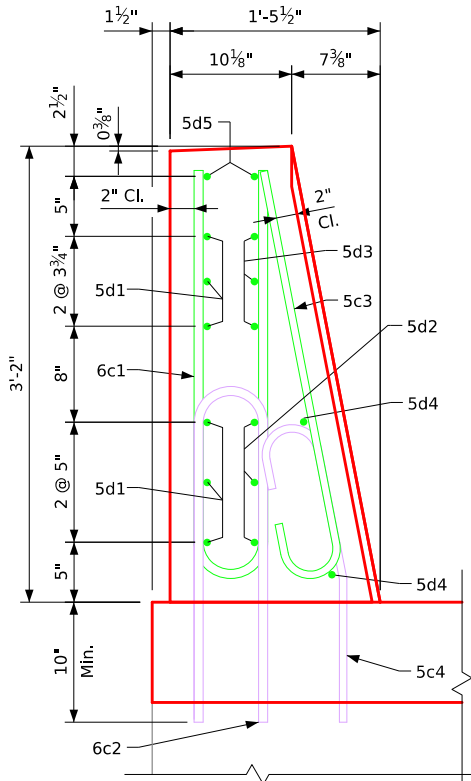
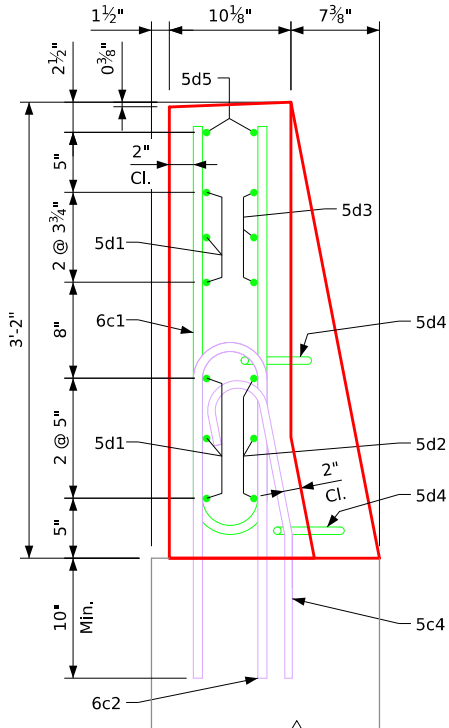
Muscatine County

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Design No. 227
Design Sheet No. 15 of 19
FHWA No. 38151



Abutment wing bars in View A-A and Sections B-B & C-C are not shown for clarity.



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	Varies	14
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
4t2	Rail, Abutment Wing Tie Bars		6	2'-0"	8
Epoxy Reinforcing Total Weight (lbs.)					287

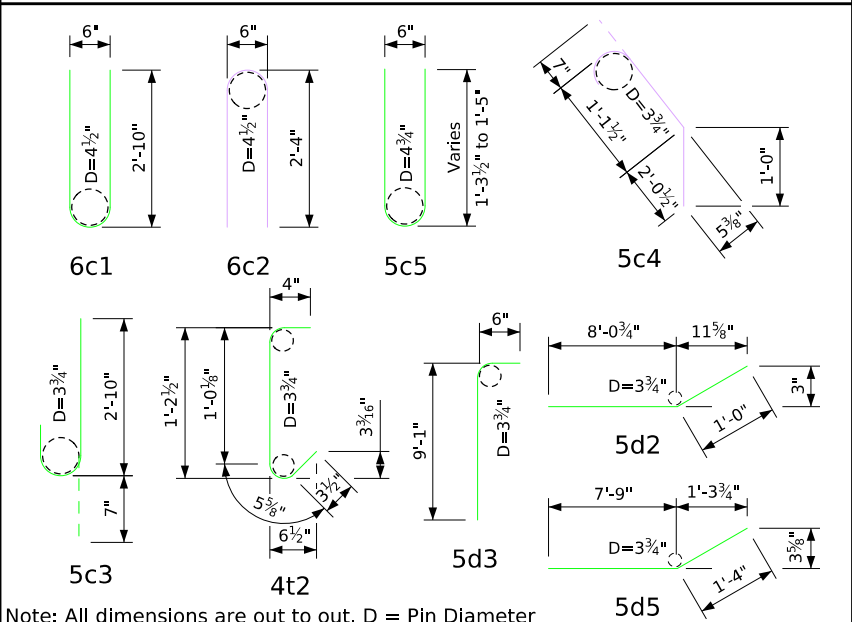
Stainless Steel Reinforcing Steel - One End Section

Bar	Location	Shape	No.	Length	Weight
6c2	Rail, Vertical		12	4'-11"	89
5c4	Rail, Vertical (Traffic Face)		6	2'-9"	17
5c6	Rail, Vertical (End)		8	Varies	31
Stainless Steel Reinforcing Total Weight (lbs.)					137

Concrete Placement Summary

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

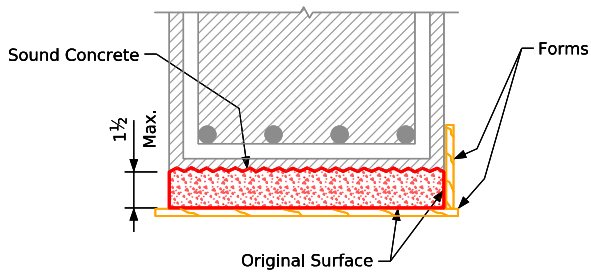
Bent Bar Details



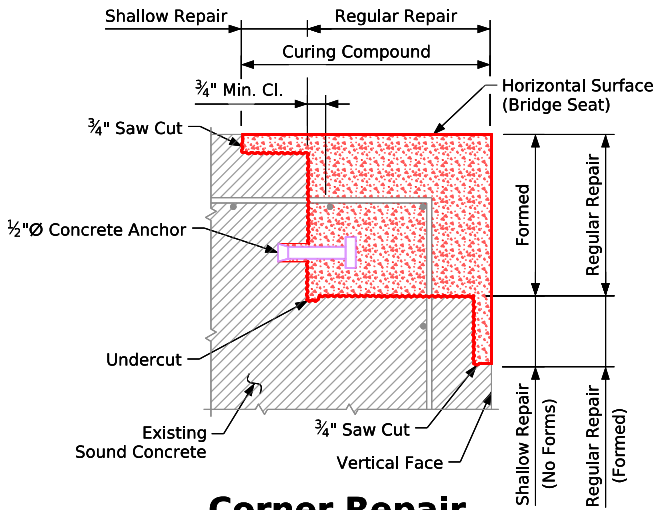
Note: All dimensions are out to out. D = Pin Diameter

Notes:
The 6c2, 5c4, and 5c6 bars are to be placed and doweled in the abutment or abutment wing. See Dowel setting note on Design Sheet No. 15.
For location of View A-A, Sections B-B, C-C, and D-D see Design Sheet No. 15.

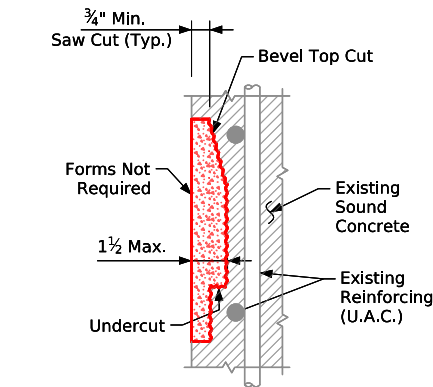
Design For Repair to 30° Skew (RA)
**180'-6" x 44' Postensioned
Prestressed Concrete Beam Bridge**
64'-1" & 51'-7" End Spans 64'-10" Interior Span
Barrier Rail End Section Details Cont.
STA. 64+30.00 (IA 38) Turn-in Date: August 2026
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IOWA DEPARTMENT OF TRANSPORTATION
Design No. 227 Design Sheet No. 16 of 19 FHWA No. 38151



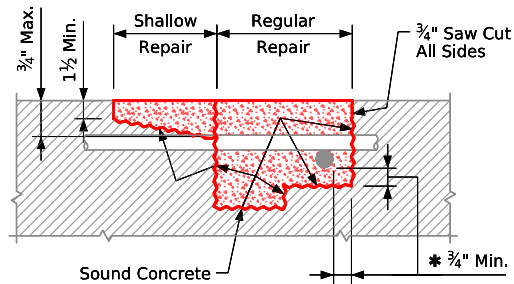
Shallow Repair
Bottom Surface



Corner Repair

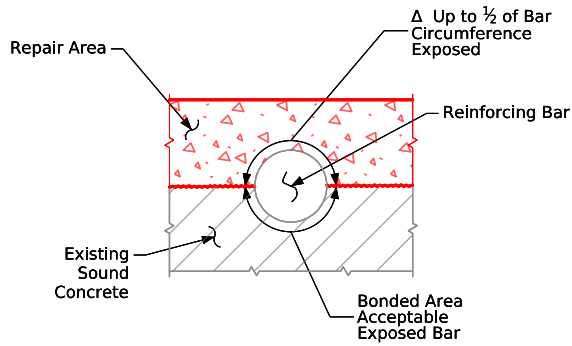


Shallow Repair
Vertical Face

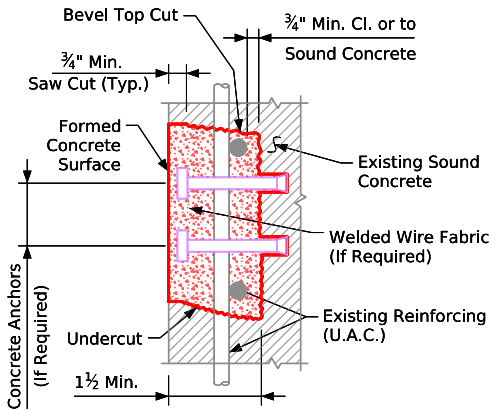


Repair Definition

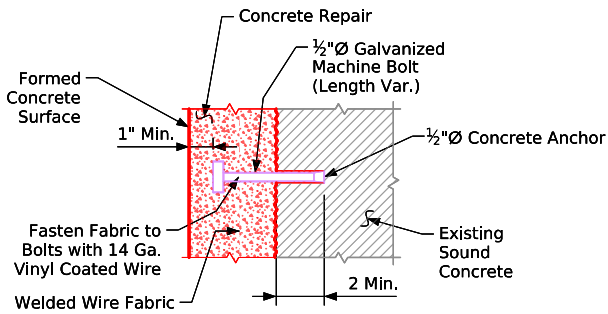
* Indicates Clearance for an Un-Bonded Rebar.



Δ If more than 1/2 of the rebar is exposed it shall be treated as an un-bonded rebar.

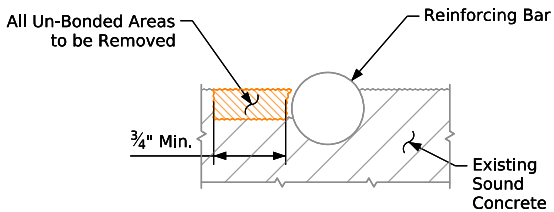


Regular Repair
Vertical Face



Anchor Detail

For Spacing and Use of Concrete Anchors and WWF See the Repair Notes.



Concrete Removal
Adjacent to Reinforcing

Repair Notes:

- The spalled and hollow areas of this bridge as noted and shown in these plans shall be repaired as follows:
- All the costs of equipment and materials required to repair the spalled and hollow areas of this bridge shall be included in the price bid for "Concrete Repair".
 - The price bid for "Concrete Repair" shall include the cost of all concrete anchors and welded wire fabric required by the plans.
 - The Engineer shall determine and outline by visual and audible inspection the actual areas of the concrete repairs. The Contractor shall be paid for the actual amount of repairs made on a square foot basis based on the price bid per square foot.
 - All existing reinforcing bars that are exposed by the concrete removal shall be cleaned and carefully incorporated into the new work, except badly deteriorated existing reinforcing which shall be replaced as directed by the Engineer.
 - The concrete anchors required shall have a minimum pull out of 5,000 lbs based on 4,000 psi concrete. An anchor meeting the requirements of Iowa D.O.T. Materials I.M. 453.09 and the pull out load above is required. The anchors shall be galvanized and shall be installed according to recommendations of the Manufacturer. The cost of furnishing and installing the concrete anchors shall be included in the price bid for "Concrete Repair".
 - The welded wire fabric shall be ASTM A185 and galvanized as per ASTM A-641. The WWF wires shall be spaced 3x3 or 4x4 and the wires shall have a nominal area of 0.014 to 0.029 square inch inclusive, example "WWF 3x3 - W1.4xW2.9".
- Where reinforcement has been exposed and clearance around the periphery of the existing bar is provided, no supplemental reinforcing is required, except where existing reinforcement density and pattern are such that individual open spaces between bars are of 1.5 square feet or larger. For this condition 1/2 inch diameter concrete anchors and welded wire fabric shall be installed at the rate of one concrete anchor with WWF per each 1.5 square feet of area within each open space.
- Repairing the structural concrete shall be in accordance with Section 2426 of the Standard Specifications.

Concrete Placement Quantities			
Mark	Type	Units	Quantity
①	Shallow Repair	Sq. Ft.	4
②	Regular Repair	Sq. Ft.	-
		Total (Sq. Ft.)	4

Estimated Concrete Repair Quantities		
Description	Units	Amount
Concrete Repair	Sq. Ft.	4

Design For Repair to 30° Skew (RA)

180'-6" x 44' Postensioned
Prestressed Concrete Beam Bridge

64'-1" & 51'-7" End Spans64'-10" Interior Span

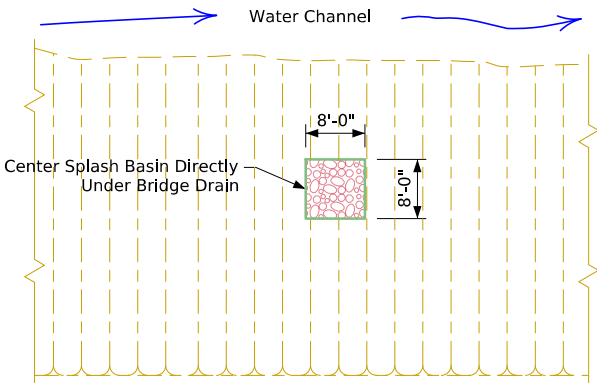
Concrete Repair Details

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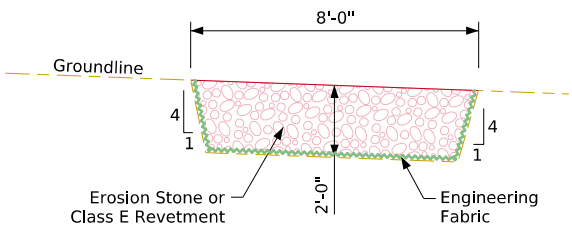
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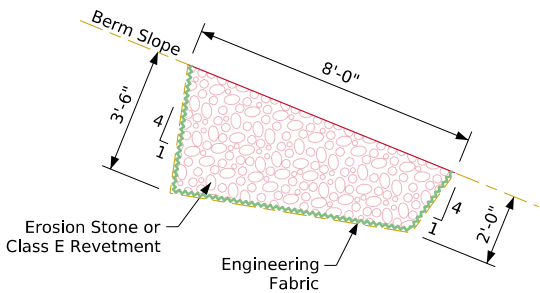
Design No. 227Design Sheet No. 17 of 19FHWA No. 38151



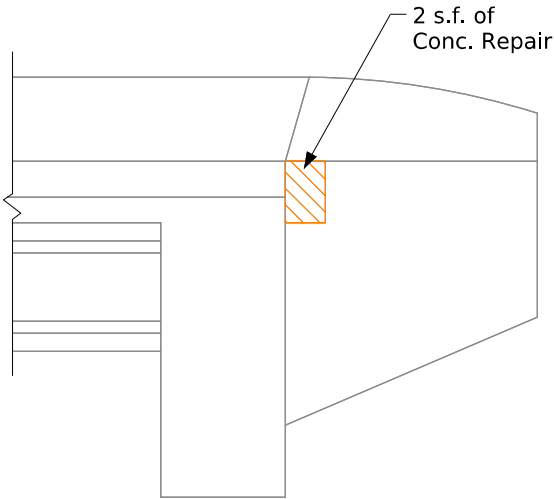
**Splash Basin Under Bridge Drain
Plan View**
(8 each)



**Splash Basin Under Bridge Drain
Typical Section for Existing Grades**



**Splash Basin Under Bridge Drain
Typical Section for Berm Slopes**



North and South Wing - East face
(Looking West)

Legend:

 Concrete Repair

Repair Definition

* Indicates Clearance for an Un-Bonded Rebar.

Notes:
See Design Sheet No. 3 for deck drain locations.

Design For Repair to 30° Skew (RA)

180'-6" x 44' Postensioned

Prestressed Concrete Beam Bridge

64'-1" & 51'-7" End Spans64'-10" Interior Span

Concrete Repair Details & Splash Basins

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Muscatine County

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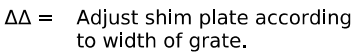
Design No. 227Design Sheet No. 18 of 19FHWA No. 38151



Drains may be relocated to miss existing shear stirrups and shall be centered over the nearest bottom transverse deck reinforcing bar from the location designated on the situation plan. The bottom transverse deck reinforcing bar shall be cut off to provide 1" clearance from the drain. The top transverse deck reinforcing bars on each side of the drain, shall be spaced as necessary to provide 1" clearance from the drain. Longitudinal deck reinforcing bars that conflict with the drain shall be cut off to provide 2" clearance from the drain. All cut ends of bars shall be coated with epoxy patching material supplied by the Manufacturer of the epoxy coating. Longitudinal deck reinforcing bars shall be shifted as necessary to accommodate anchor bars.

Materials

$\frac{3}{8}$ "Ø mechanically galvanized steel hex head bolt and hex nut shall meet the requirements of ASTM B695-04 (2009) and ASTM A307-12 Grade A.



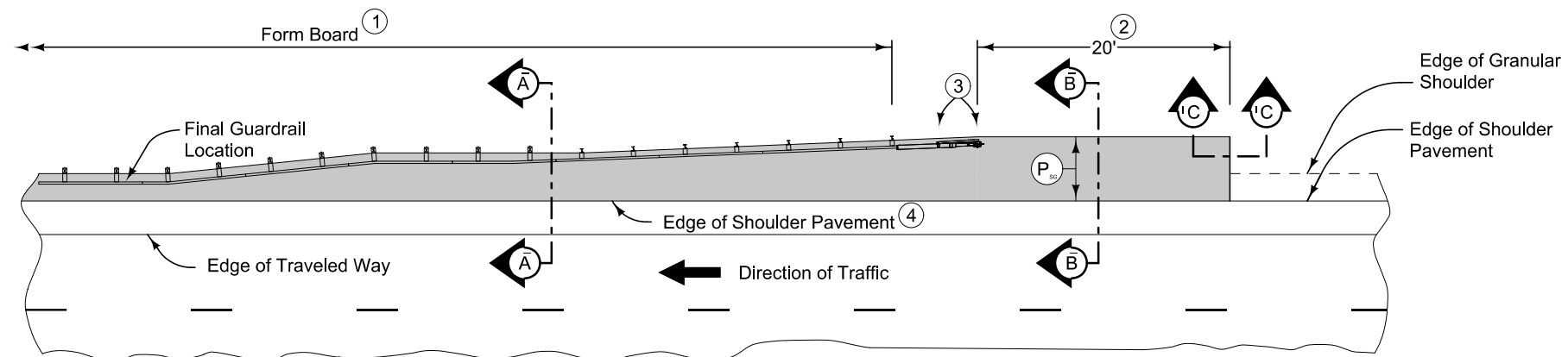
1 Grate Required Per Drain
Note: Pattern and direction of grate openings shall be similar to the pattern shown.



FILE NO. 32043	ENGLISH	DESIGN TEAM GFT	Muscatine COUNTY	PROJECT NUMBER BRF-038-1(019)--38-70	SHEET NUMBER V.19
12:28:43 PM 10/8/2026	AJDINKEL	pw:\projectwise.dot.int.lan:PWMMain\Documents\Projects\7003801022\Bridge\019_Reconstruction - Bridge Deck Replacement\TranSystems\70038019_BR.dgn			

INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	Title Sheets
A.3	Index of Sheets
B Sheets	Typical Cross Sections and Details
B.1 - 2	Typical Cross Sections and Details
C Sheets	Quantities and General Information
C.1	Project Description
C.2	Estimated Project Quantities
C.3	Estimate Reference Information
C.4	Standard Road Plans
C.5	Index of Tabulations
C.6 - 18	Tabulations (beg. with tab. of incidentals if needed)
D Sheets	Mainline Plan and Profile Sheets
D.1	Plan & Profile Legend & Symbol Information Sheet
D.2	Iowa Route 38
J Sheets	Traffic Control and Staging Sheets
J.1	Traffic Control Plan
J.2 - 4	Staging Notes, Coordinated Operations, 511 Travel Restrict.
J.5	Traffic Control & Staging Legend & Symbol Info. Sheet
J.6 - 7	Staging and Traffic Control Sheets Stage 1
J.8	Staging and Traffic Control Sheets Stage 2

ROADWAY DESIGN	
	I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.  08-07-2026 Signature Douglas B. Parke Printed or Typed Name My license renewal date is December 31, 2027
Pages or sheets covered by this seal: A.3, B.1-B.2, C.1-C.18, D.1-D.2, J.1-J.8	



PLAN VIEW

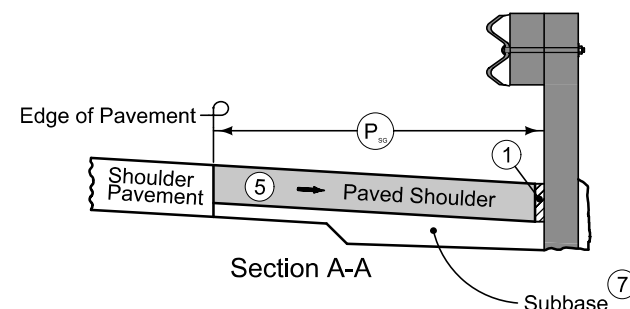
9" HMA Paved Shoulder at guardrail. 8" PCC may be substituted with the following jointing layout:

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

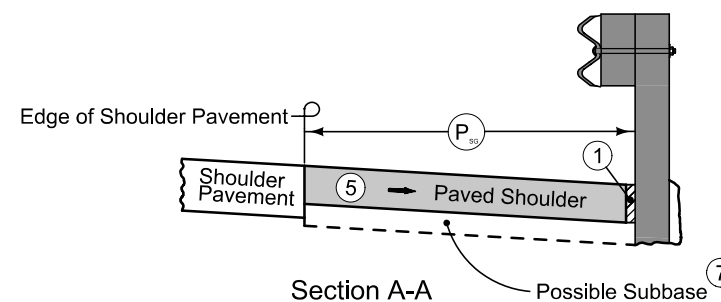
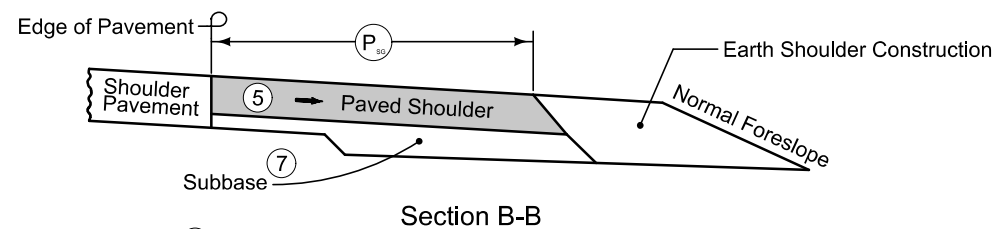
Compaction of HMA is required to face of guardrail post. Hand compaction will be allowed under guardrail. Removal and reinstallation of guardrail will be allowed with no additional payment.

Refer to Tabulation 112-9 for shoulder quantities.

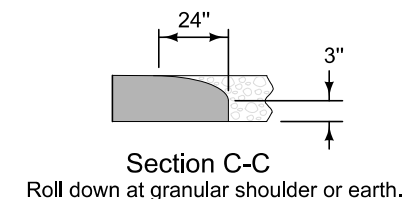
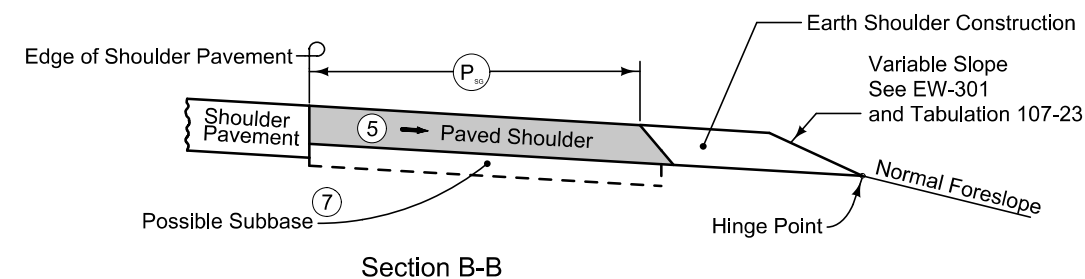
- ① PCC option only: When guardrail posts are installed prior to construction of PCC paved shoulder, fasten form board to the face of guardrail posts for the length shown.
- ② Continue paved shoulder 20 feet beyond the center of the first post.
- ③ Shoulder may be notched for first 2 posts or post sleeves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



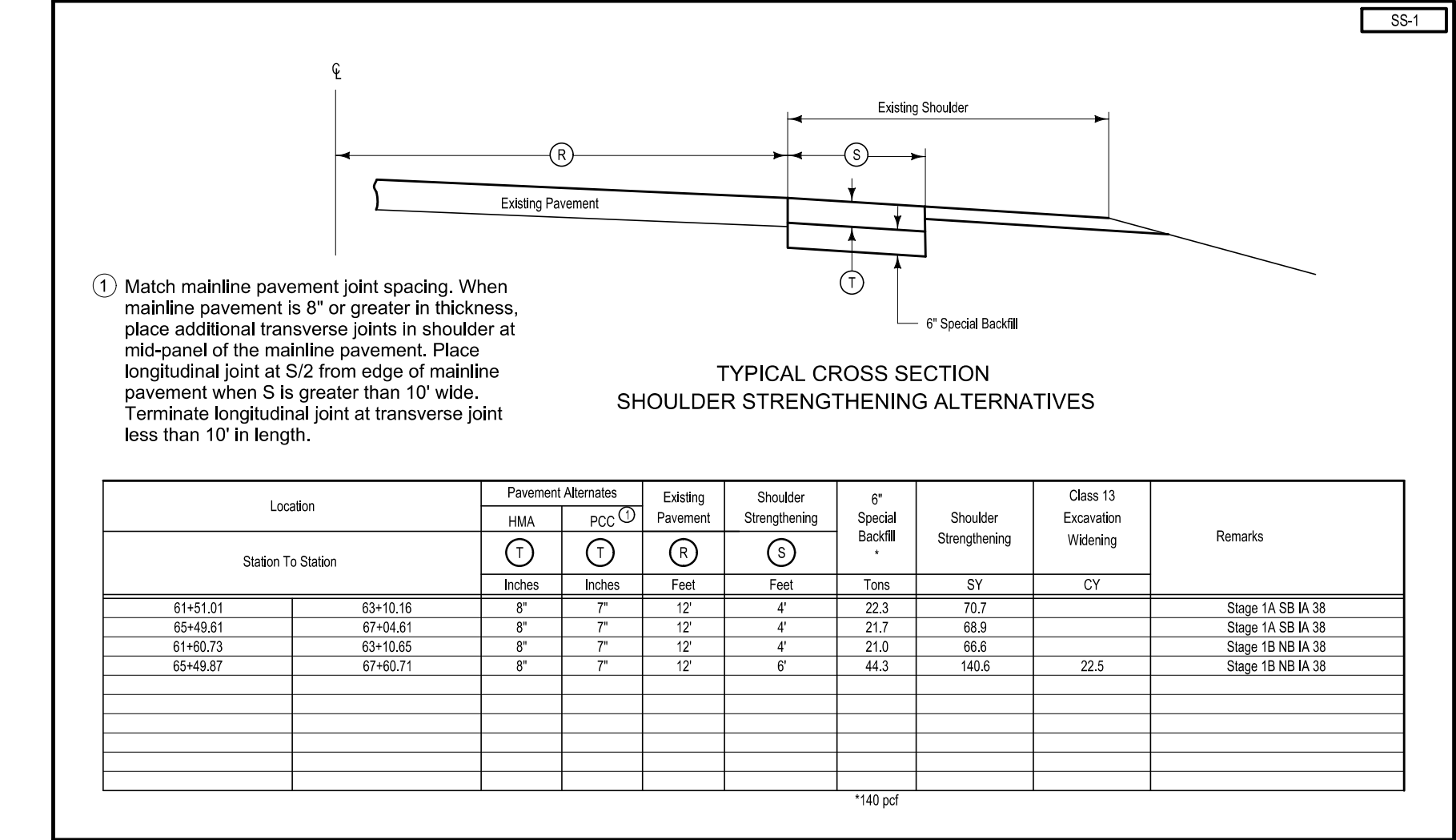
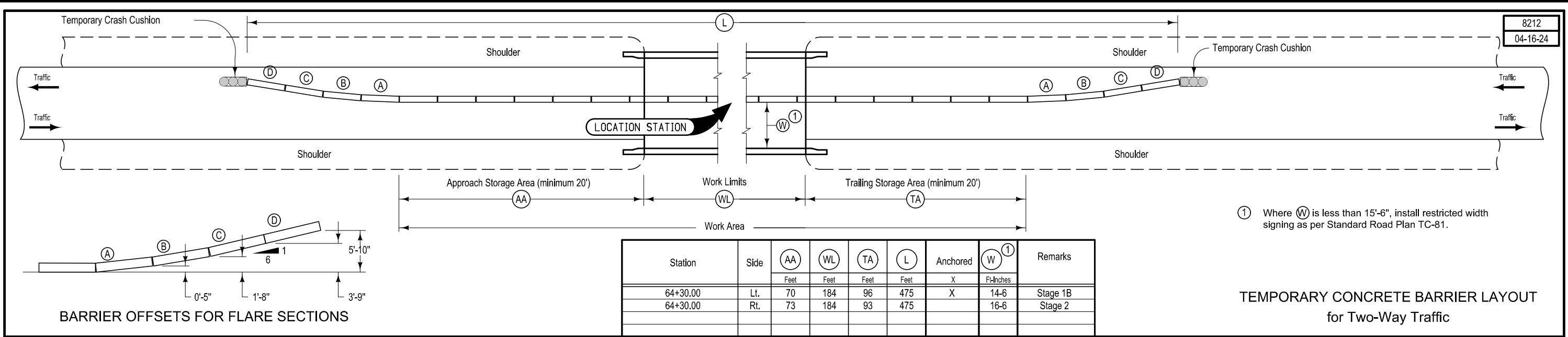
NEW CONSTRUCTION



EXISTING SHOULDER



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



100_01D
8/15/22

PROJECT DESCRIPTION

This project is for the replacement of bridge approach pavement and guardrails for a bridge deck replacement project on Iowa Route 38 over Mad Creek in Muscatine County.

ESTIMATED PROJECT QUANTITIES						100_01A 3/24/25
Line No.	Item No.	Item Code	Item	Unit	Total	As Built Qty.
1.0	1	2102-0425070	SPECIAL BACKFILL	TON	230.51	
2.0	2	2111-8174100	GRANULAR SUBBASE	SY	61.78	
3.0	3	2122-7450080	SHOULDER STRENGTHENING, OPTIONAL HOT MIX ASPHALT MIXTURE OR PORTLAND CEMENT CONCRETE, 8 IN.	SY	346.80	
4.0	4	2213-2713300	EXCAVATION, CLASS 13, FOR WIDENING	CY	51.70	
5.0	5	2301-0685550	BRIDGE APPROACH PAVEMENT, AS PER PLAN	SY	92.60	
6.0	6	2301-1004100	STANDARD OR SLIP FORM PORTLAND CEMENT CONCRETE PAVEMENT, QM-C, CLASS 3I DURABILITY, 10 IN.	SY	61.78	
7.0	7	2412-0000100	LONGITUDINAL GROOVING IN CONCRETE, BRIDGE DECK	SY	1055.20	
8.0	8	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL	LF	461.00	
9.0	9	2505-4008300	STEEL BEAM GUARDRAIL	LF	150.00	
10.0	10	2505-4008410	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION, BA-201	EACH	4.00	
11.0	11	2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED	EACH	4.00	
12.0	12	2505-4021720	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-205	EACH	4.00	
13.0	13	2510-6745850	REMOVAL OF PAVEMENT	SY	783.80	
14.0	14	2527-9263181	PAVEMENT MARKINGS REMOVED	STA	16.80	
15.0	15	2527-9263209	PAINTED PAVEMENT MARKINGS, WATERBORNE OR SOLVENT-BASED	STA	21.90	
16.0	16	2527-9263231	REMOVABLE TAPE MARKINGS, WET RETROREFLECTIVE	STA	5.04	
17.0	17	2528-8400048	TEMPORARY BARRIER RAIL, CONCRETE	LF	950.00	
18.0	18	2528-8400256	TEMPORARY TRAFFIC SIGNALS	EA	1.00	
19.0	19	2528-8445110	TRAFFIC CONTROL	LS	1.00	
20.0	20	2551-0000110	TEMP CRASH CUSHION	EA	4.00	

ESTIMATE REFERENCE INFORMATION				100_04A 6/2/23
Line No.	Item No.	Item Code	Description	
1.0	1	2102-0425070	SPECIAL BACKFILL	
1.1			Refer to Typical SS-1 on Sheet B.2 and Tab. 112-9 on Sheet C.7 for details.	
2.0	2	2111-8174100	GRANULAR SUBBASE	
2.1			Refer to Tab. 100-24 on Sheet C.9 for details.	
3.0	3	2122-7450080	SHOULDER STRENGTHENING, OPTIONAL HOT MIX ASPHALT MIXTURE OR PORTLAND CEMENT CONCRETE, 8 IN.	
3.1			Use PG-22 asphalt binder at 6% or PG 58-26 asphalt binder at 6%	
3.2			Refer to Typical 7156 on Sheet B.1 for details.	
4.0	4	2213-2713300	EXCAVATION, CLASS 13, FOR WIDENING	
4.1			Quantity is based on HMA option. If PCC is used, on-site grading adjustment may be required.	
4.2			Refer to Typical SS-1 on Sheet B.2 and Tab. 112-9 on Sheet C.7 for details.	
5.0	5	2301-0685550	BRIDGE APPROACH PAVEMENT, AS PER PLAN	
5.1			Refer to Tab. 112-6 on Sheet C.8 for details.	
6.0	6	2301-1004100	STANDARD OR SLIP FORM PORTLAND CEMENT CONCRETE PAVEMENT, QM-C, CLASS 3I DURABILITY, 10 IN.	
6.1			Refer to Tab. 100-24 on Sheet C.9 for details.	
7.0	7	2412-0000100	LONGITUDINAL GROOVING IN CONCRETE, BRIDGE DECK	
7.1			Refer to Tab. 100-28 on Sheet C.15 for details.	
8.0	8	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL	
8.1			Refer to Tab. 110-7A on Sheet C.17 for details.	
9.0	9	2505-4008300	STEEL BEAM GUARDRAIL	
10.0	10	2505-4008410	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION, BA-201	
11.0	11	2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED	
12.0	12	2505-4021720	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-205	
12.1			Refer to Tab. 108-8A on Sheet C.10 for details.	
13.0	13	2510-6745850	REMOVAL OF PAVEMENT	
13.1			Refer to Tab. 110-1 on Sheet C.6 for details.	
14.0	14	2527-9263181	PAVEMENT MARKINGS REMOVED	
15.0	15	2527-9263209	PAINTED PAVEMENT MARKINGS, WATERBORNE OR SOLVENT-BASED	
16.0	16	2527-9263231	REMOVABLE TAPE MARKINGS, WET RETROREFLECTIVE	
16.1			Refer to Tab. 108-22 on Sheet C.14 for details.	
17.0	17	2528-8400048	TEMPORARY BARRIER RAIL, CONCRETE	
17.1			Includes 4 Tapered End Sections, Refer to Tab. 108-33 on Sheet C.12 for details.	
18.0	18	2528-8400256	TEMPORARY TRAFFIC SIGNALS	
18.1			Refer to Tab. 108-28 on Sheet C.13 for details.	
19.0	19	2528-8445110	TRAFFIC CONTROL	
19.1			Refer to Tab. 108-23A on Sheet J.1 and Tab. 108-26A on Sheet J.2.	
20.0	20	2551-0000110	TEMP CRASH CUSHION	
20.1			Refer to Tab. 108-30 on Sheet C.11 for details.	

105_04 10/20/26 STANDARDS The following Standards apply to construction work on this project.		
Number	Date	Title
BA-201	10-18-22	Steel Beam Guardrail Barrier Transition Section (MASH TL-3)
BA-205	10-17-23	Steel Beam Guardrail Tangent End Terminal (MASH TL-3)
BA-401	4/20/2021	Temporary Barrier Rail (Precast Concrete)
BA-500	4/20/2021	Temporary Crash Cushions Sand Barrel
BR-203	04-21-26	Double Reinforced 12in Approach
BR-211	04-21-26	Bridge Approach (Abutting PCC or Composite Pavement)
TC-1	10/15/2019	Work Not Affecting Traffic (Two-Lane or Multi-Lane)
TC-81	4/18/2023	Restricted Width Signing (Less Than 14.5 Feet)
TC-202	4/18/2023	Work Within 15 ft of Traveled Way
TC-211	10/15/2019	Lane Closure on Low Volume Roadway
TC-216	4/18/2023	Lane Closure with Signals
TC-217	10/21/2025	Lane Closure with Signals and TBR
PM-110	10/15/2024	Line Types
PV-101	10-21-25	Joints

INDEX OF TABULATIONS				111_25 10/20/26
Line No.	Tabulation	Tabulation Title	Sheet No.	
1.0	100_01D	PROJECT DESCRIPTION	C.1	
2.0	100_01A	ESTIMATED PROJECT QUANTITIES	C.2	
3.0	100_04A	ESTIMATE REFERENCE INFORMATION	C.3	
4.0	100_24	PCC PAVEMENT	C.9	
5.0	100_28	LONGITUDINAL GROOVING	C.15	
6.0	105_04	STANDARD ROAD PLANS	C.4	
7.0	107_23	GRADING FOR GUARDRAIL INSTALLATIONS	C.16	
8.0	108_08A	STEEL BEAM GUARDRAIL AT CONCRETE BARRIER OR BRIDGE RAIL END SECTION	C.10	
9.0	108_22	PAVEMENT MARKING LINE TYPES	C.14	
10.0	108_28	TEMPORARY TRAFFIC SIGNALS	C.13	
11.0	108_30	CRASH CUSHIONS	C.11	
12.0	108_33	TEMPORARY BARRIER RAIL	C.12	
13.0	110_01	REMOVAL OF PAVEMENT	C.6	
14.0	110_07A	REMOVAL OF STEEL BEAM GUARDRAIL	C.17	
15.0	111_25	INDEX OF TABULATIONS	C.5	
16.0	111_26	UTILITIES	C.18	
17.0	112_06	BRIDGE APPROACH SECTION	C.8	
18.0	112_09	SHOULDERS	C.7	

REMOVAL OF PAVEMENT Refer to Tabulation 102-5.							110_01 4/5/24
* Not a bid item.							
Line No.	Station From	Station To	Side	Pavement Type	Area (SY)	Saw Cut* (LF)	Remarks
1.0	61+51.01	63+10.16	Left	Asphalt	122.0	117.2	SW shoulder
2.0	61+60.73	63+11.01	Right	Asphalt	177.0	110.0	SE Shoulder
3.0	62+37.29	62+88.15	Center	PCC	154.8	55.0	South Approach Pavement
4.0	65+49.61	67+04.61	Left	Asphalt	163.6	165.2	NW shoulder
5.0	65+49.84	67+60.71	Right	Asphalt	166.4	222.4	NE shoulder
Totals:					783.8	669.8	

112_09
4/21/26

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)	HMA (TON)	HMA (TON/STA)	Binder (TONS)	Paved Shoulder (3) (SY)	Shoulder at Grd rail (5)(7)	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)	Shoulder Const. Alt (3) (STA)	Shoulder Const. Alt HMA (6) (CY)	Shoulder Const. Alt PCC (6) (CY)	Remarks
IA-38	NB	61+60.82	63+11.01	Right		Var.		150.36	2.7					106.9		30.944	20.580	30.944	20.580				1.50			9 In. Thickness, Typ 7157
IA-38	SB	61+97.78	63+10.28	Left		Var.		112.63	9.8					78.8		24.441	21.700	24.441	21.700				1.13			9 In. Thickness, Typ 7157
IA-38	SB	65+49.59	66+74.00	Left		Var.		124.59	1.8					100.4		30.001	24.080	30.001	24.080				1.25			9 In. Thickness, Typ 7157
IA-38	NB	65+49.87	66+62.03	Right		Var.		112.23	14.9					117.2		35.824	31.920	35.824	31.920				1.12			9 In. Thickness, Typ 7157
Total:									29.2					403.3		121.210		121.210					5.00			

112_06

10/20/26

BRIDGE APPROACH SECTION

Refer to the BR Series.

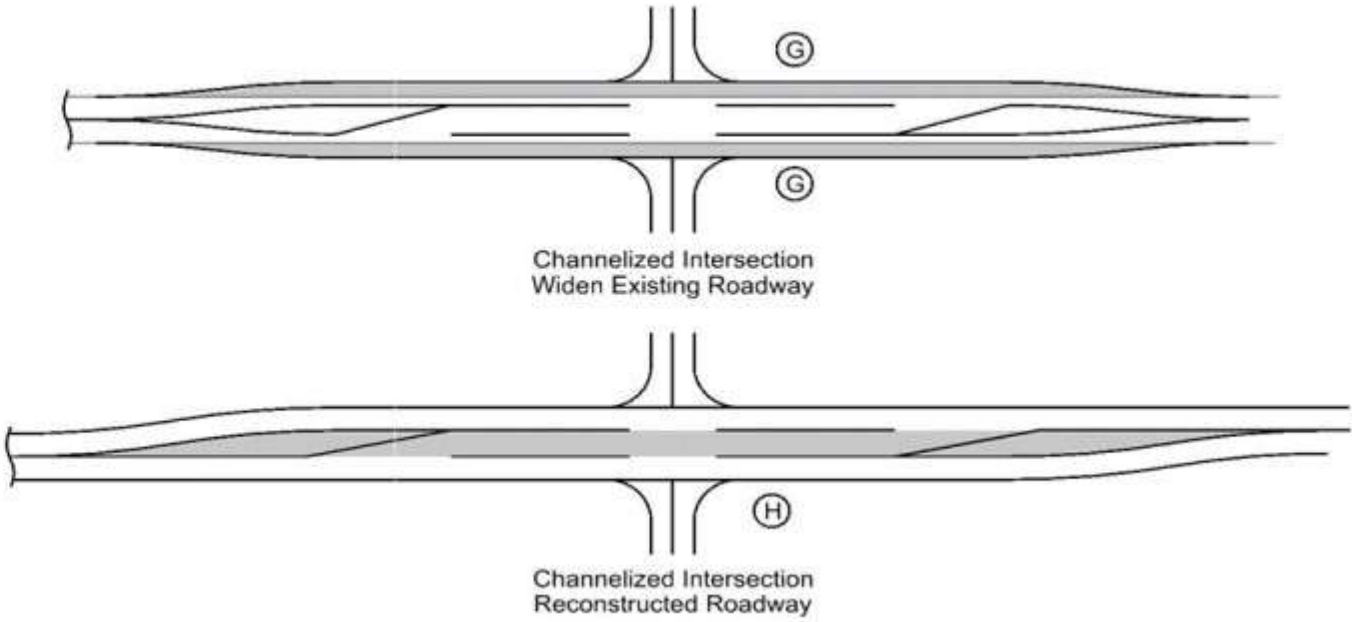
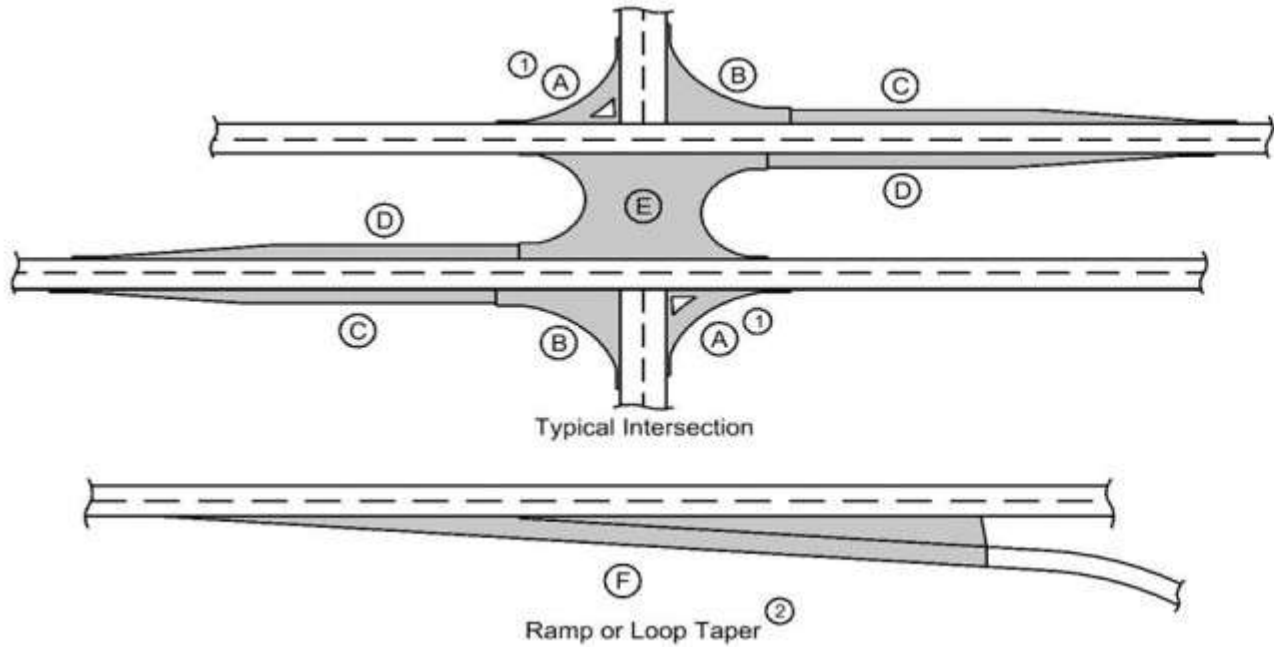
* Not a bid item

** 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)	Right Edge Offset (FT) **	Left Edge Offset (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	64+30.00	S			12.0	30.0	23	23	92.6										71.464	106.3		BR-203, BR-211

Total:
Bridge Approach Pavement, As Per Plan: 92.6 SY

PCC PAVEMENT



(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	IA-38	Both	62+37.77	62+57.77	28.0	20.00	61.78									10.0	61.8				61.78	
Total:							61.78														61.78	

108 08A

4/25/25

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	63+18.81	22.5	BA-201	1	BA-205	1	53.125			47.70			3			1		A	1		12.5	NB L, 34 Mounting Height	
2.0	NB	Outside	63+44.33	22.5	BA-201	1	BA-205	1	115.625			47.70			3				1	A	1		75.0	NB R, 34 Mounting Height	
3.0	SB	Outside	65+15.67	22.5	BA-201	1	BA-205	1	90.625			47.70			3				1	A	1		50.0	SB R, 34 Mounting Height	
4.0	SB	Outside	65+41.19	22.5	BA-201	1	BA-205	1	53.125			47.70			3			1		A	1		12.5	SB L, 34 Mounting Height	
Total:					4		4													4		150.0			

CRASH CUSHIONS

108_30
4/16/24

- * 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	SB	62+03.00	Right	2.0	Temporary	1								Temporary Barrier Rail	Stage 1B
2.0	SB	66+80.00	Right	2.0	Temporary	1								Temporary Barrier Rail	Stage 1B
3.0	NB	62+03.00	Left	2.0	Temporary	1								Temporary Barrier Rail	Stage 2
4.0	NB	66+80.00	Left	2.0	Temporary	1								Temporary Barrier Rail	Stage 2
Total:						4									

108_33

8/15/22

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.	No.	Station From	Station To	Length (FT)	Barrier Rail Type	Anchored*	Modular Glare Screen System	Remarks
1.0	1	62+03.54	66+79.72	475.0	Concrete BA-401	No	No	Stage 1B
2.0	2	62+04.36	66+80.55	475.0	Concrete BA-401	No	No	Stage 2
Total:				950.0				

TEMPORARY TRAFFIC SIGNALS				
Line No.	Item No.	Station	Signal Type	Remarks
1.0	1	64+30.00	One Lane Traffic	See TC-216, TC-217
Total:		1		

108_28
8/15/22

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.	Road ID	Station From	Station To	Lane	Marking Type	Left	Center	Right	Groove Marking Needed?	CHW8 (STA)	CHW8 Factored (STA)	CHY10 (STA)	CHY10 Factored (STA)	DCY6 (STA)	DCY6 Factored (STA)	ELW6 (STA)	ELW6 Factored (STA)	ELY6 (STA)	ELY6 Factored (STA)	NPY6** (STA)	NPY6** Factored (STA)	SLW2 (STA)	SLW2 Factored (STA)	Remarks
1.0	IA 38	59+90.81	62+37.28	SB	Removal of Paint	X												2.47	1.65					Stage 1B
1.1	IA 38	59+90.82	62+17.23	Both	Removal of Paint		X					1.61	2.14											Stage 1B
1.2	IA 38	59+90.85	62+37.29	NB	Removal of Paint	X												2.47	1.65					Stage 1B
1.3	IA 38	61+50.99	67+04.61	SB	Removal of Paint			X								5.54	3.71							Stage 1B
1.4	IA 38	65+22.03	67+34.67	Both	Removal of Paint		X							2.13	2.85									Stage 1B
1.5	IA 38	67+34.67	69+74.59	Both	Removal of Paint		X													2.40	2.02			Stage 1B
1.6	IA 38	61+60.70	63+44.82	NB	Removal of Paint			X								1.84	1.23							Stage 2
1.7	IA 38	65+28.84	67+60.71	NB	Removal of Paint			X								2.32	1.55							Stage 2
1.8	Total											1.61	2.14	2.13	2.85	9.70	6.50	4.94	3.31	2.40	2.02			
2.0	IA 38	59+90.85	59+90.85	NB	Wet Retroreflective Removable Tape			X														0.12	0.48	Stage 1A
2.1	IA 38	69+74.59	69+74.59	SB	Wet Retroreflective Removable Tape			X														0.12	0.48	Stage 1A
2.2	IA 38	59+90.88	62+67.04	NB	Wet Retroreflective Removable Tape			X		2.77	1.86													Stage 1B
2.3	IA 38	66+42.82	69+74.59	SB	Wet Retroreflective Removable Tape			X		3.32	2.22													Stage 2
2.4	Total									6.09	4.08											0.24	0.96	
3.0	IA 38	59+90.81	62+57.38	SB	Waterborne/Solvent Paint	X			No									2.67	1.79					
3.1	IA 38	59+90.82	62+57.38	Both	Waterborne/Solvent Paint		X		No			1.61	2.14											
3.2	IA 38	59+90.85	62+57.38	NB	Waterborne/Solvent Paint	X			No									2.67	1.79					
3.3	IA 38	61+50.99	67+04.61	SB	Waterborne/Solvent Paint			X	No							5.54	3.71							
3.4	IA 38	61+60.70	67+60.71	NB	Waterborne/Solvent Paint			X	No							6.00	4.02							
3.5	IA 38	62+57.38	67+34.67	Both	Waterborne/Solvent Paint		X		No					4.77	6.39									
3.6	IA 38	67+34.67	69+74.59	Both	Waterborne/Solvent Paint		X		No											2.40	2.02			
3.7	Total											1.61	2.14	4.77	6.39	11.54	7.73	5.34	3.58	2.40	2.02			
4.0	IA 38	59+90.88	62+67.04	NB	Removal of Removable Tape			X		2.77	1.86													Stage 2
4.1	IA 38	59+90.85	59+90.85	NB	Removal of Removable Tape			X														0.12	0.48	Stage 3
4.2	IA 38	66+42.82	69+74.59	SB	Removal of Removable Tape			X		3.32	2.22													Stage 3
4.3	IA 38	69+74.59	69+74.59	SB	Removal of Removable Tape			X														0.12	0.48	Stage 3
4.4	Total									6.09	4.08											0.24	0.96	

Notes:

Removal of removable tape marking is incidental to Removable Tape Markings, Wet Retroreflective.

Wet retroreflective removable tape markings are to be 8" wide, consisting of two side-by-side 4" tapes.

Totals (Factored):

Painted Pavement Markings, Waterborne or Solvent-based: 21.9

Pavement Markings Removed: 16.8

Removable Tape Markings, Wet Retroreflective: 5.04

Incidental Removal of Removable Tape: 5.04

LONGITUDINAL GROOVING			
Line No.	Location	Total (SY)	Remarks
1.0	64+30.00	899.6	Bridge Deck
2.0	64+30.00	155.6	South Approach Slab Pavement
Total:		1055.2	

100_28
8/15/22

107_23

8/15/22

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	63+18.81	Left	10:01					444.7	10.7	100.9	11.9	63.8			EW-301
2.0	NB	63+44.33	Right	10:01					107.2	10.4	163.4	9.7	57.0			EW-301
3.0	SB	65+15.67	Left	15:01					82.2	11.3	138.4	12.9	67.4			EW-301
4.0	SB	65+41.19	Right	10:01					44.7	13.2	100.9	15.6	78.5			EW-301

REMOVAL OF STEEL BEAM GUARDRAIL (1) Lane(s) to which the installation is adjacent. (2) Includes length of End Terminals and End Anchors.						110_07A 8/15/22
Line No.	No.	Direction of Traffic (1)	Station From	Station To	Side	Removal of Guardrail (2) (LF)
1.0	1	NB	61+89.61	63+46.49	Right	157.0
2.0	2	NB	62+38.86	63+18.81	Left	80.0
3.0	3	SB	65+15.74	66+57.94	Right	142.0
4.0	4	SB	65+39.64	66+21.64	Left	82.0
Total:						461.0

UTILITIES					111_26 4/15/25
Line No.	Company	Contact	Phone	Email	
1.0	CENTURYLINK	Sadie Hull	9185470147	sadie.hull@lumen.com	
2.0	IOWA COMMUNICATIONS NETWORK	Doug Ebelsheiser	5157254742	doug.ebelsheiser@icn.state.ia.us	
3.0	AUREON NETWORK SERVICES	Jeff Klocko	5158300445	jeff.klocko@aureon.com	
4.0	MUSCATINE POWER AND WATER	Gabriel Jones / Mark Nelson	5632623298	designinfo@mpw.org	
5.0	CITY OF MUSCATINE	Office	5632638933	sewerlocates@muscatineiowa.gov	
6.0	WINDSTREAM COMMUNICATIONS	Locate Desk	8002891901	locate.desk@windstream.com	

SURVEY SYMBOLS

- Guardrail (Beam or Cable)
- SIGN Sign

UTILITY LEGEND

- FO

(CTLIA01) CENTURYLINK
Contact Name: SADIE HULL
Contact Phone: 9185470147
Contact Email: sadie.hull@lumen.com
- FO

(ICN) IOWA COMMUNICATIONS NETWORK
Contact Name: Doug Ebelsheiser
Contact Phone: 5157254742
Contact Email: doug.ebelsheiser@icn.state.ia.us
- FO

(INS) AUREON NETWORK SERVICES
Contact Name: Jeff Klocko
Contact Phone: 5158300445
Contact Email: jeff.klocko@aureon.com
- (MPW) MUSCATINE POWER AND WATER
Contact Name: Gabriel Jones/Mark Nelson
Contact Phone: 5632623298
Contact Email: designinfo@mpw.org
- (MUS01) CITY OF MUSCATINE
Contact Name: Office
Contact Phone: 5632638933
Contact Email: sewerlocates@muscatineiowa.gov
- FO

(WINIA) WINDSTREAM COMMUNICATIONS
Contact Name: LOCATE DESK
Contact Phone: 8002891901
Contact Email: LOCATE.DESK@WINDSTREAM.COM

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
Yellow	(4)		Proposed Pavement Shading
Orange	(6)		Proposed Granular Shading
Orange	(70)		Proposed Shoulder Granular Shading
Yellow	(68)		Proposed Shoulder Paved Full Depth Shading
Yellow	(132)		Proposed Shoulder Paved Partial Depth Shading
Brown, Light	(236)		Grading Shading
Orange, Light	(134)		Proposed Granular Entrance Shading
Yellow	(220)		Proposed Paved Entrance Shading
Tan	(8)		Proposed Sidewalk Shading
Blue, Light	(230)		Proposed Sidewalk Landing Shading
Pink	(11)		Proposed Sidewalk Ramp Shading
Red	(3)		Proposed Structure Shading
Red	(3)		Delineates Restricted Areas

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)

FILE NO. 32043

ENGLISH

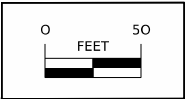
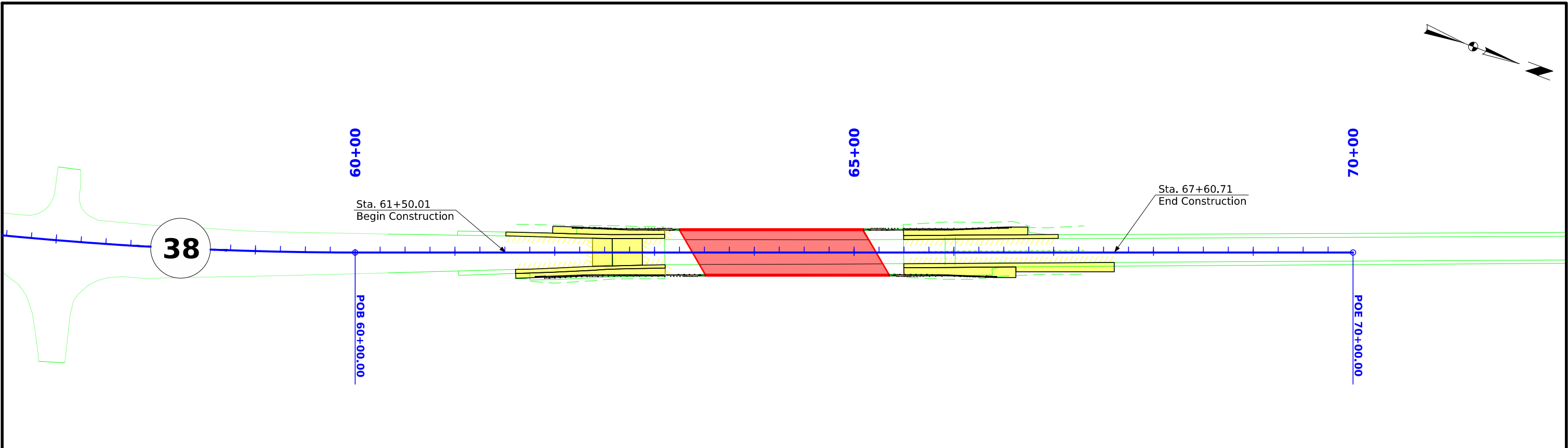
DESIGN TEAM GFT

Muscatine COUNTY

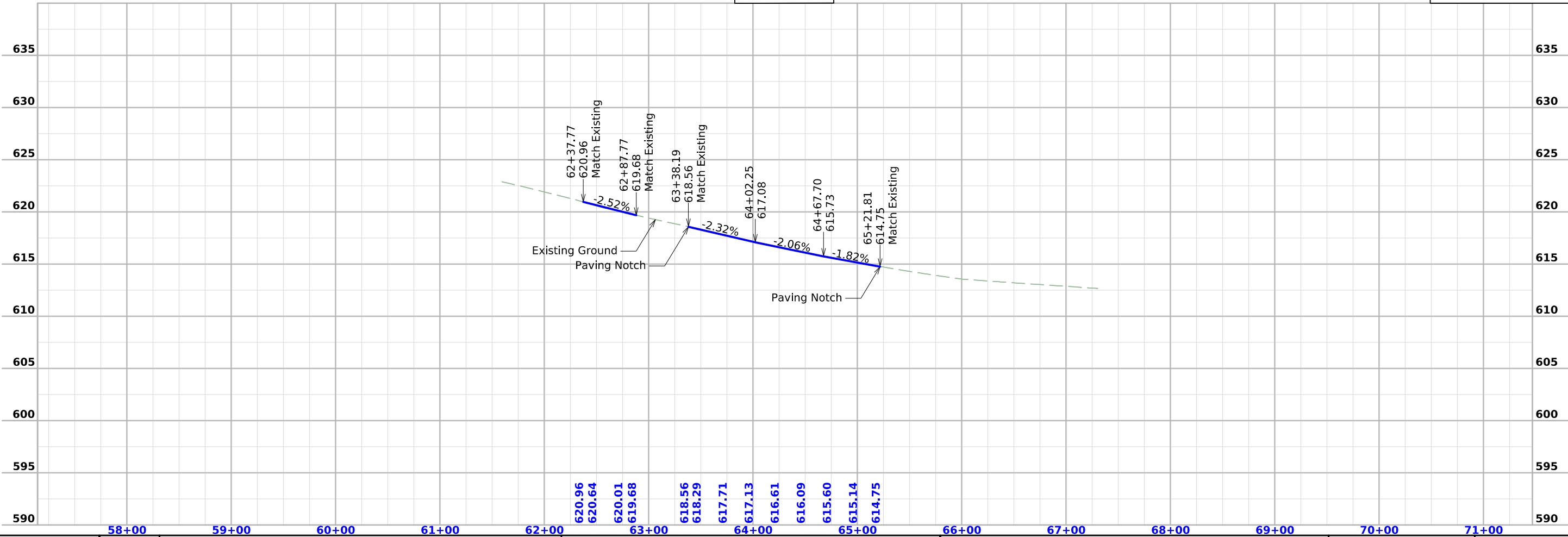
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SHEET NUMBER D.1

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IOWA 38



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 Shoulder
	Proposed Granular Subbase		Temporary Shoulder
	Proposed Special Backfill		Existing Shoulder Strengthening
	Temporary Barrier Rail		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	

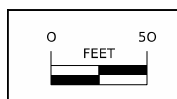
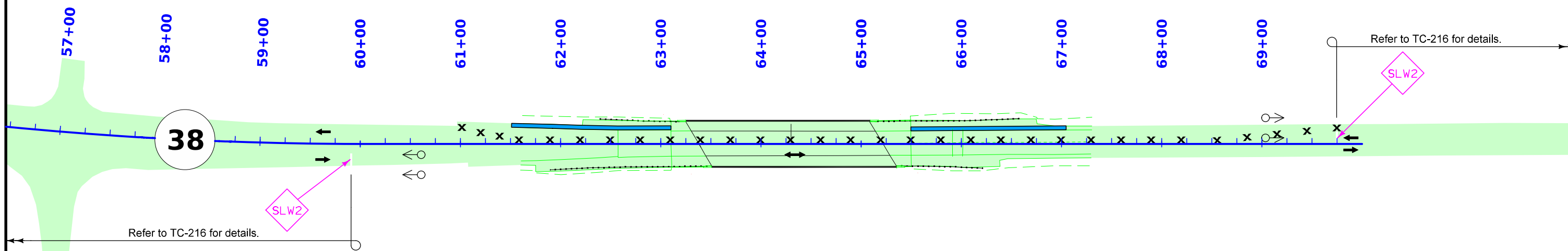
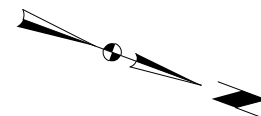
SHADING	Design Color No.		
Green, Light	(225)	Existing Pavement Shading	
Gray, Light	(48)	Previously Constructed Pavement Shading	
Orange	(6)	Proposed Granular Surface Shading	
Gray, Med	(80)	Previously Constructed Granular Surface Shading	
Blue, Light	(230)	Proposed Pavement Shading	
Pink, Dark	(13)	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		Crash Cushion (Temp or Perm)
	Drum		Traffic Signal
	Temporary Lane Separator		Flagger
	Tubular Marker		Temporary Floodlighting
	Channelizer Marker		Traffic Sign
	Concrete Barrier Marker		Type III Barricade
	Delineator		Type A Warning Light
	Temporary Barrier Rail		Direction of Traffic
	Pavement Removal		Safety Closure
	Sand Barrel Layout		Lane Identification

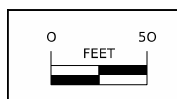
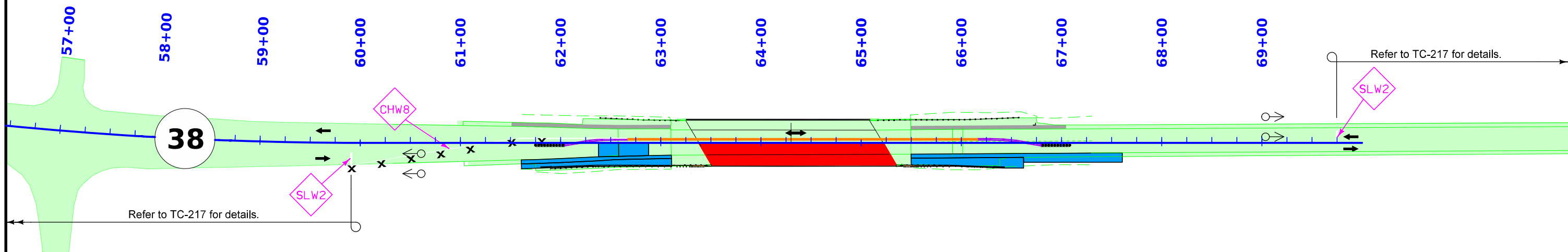
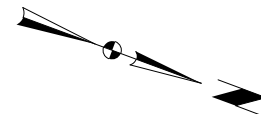
NOTE: Device spacing according to Standard Road Plans unless specifically dimensioned.

TRAFFIC CONTROL
AND
STAGING
LEGEND AND SYMBOL
INFORMATION SHEET

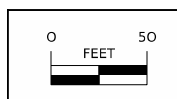
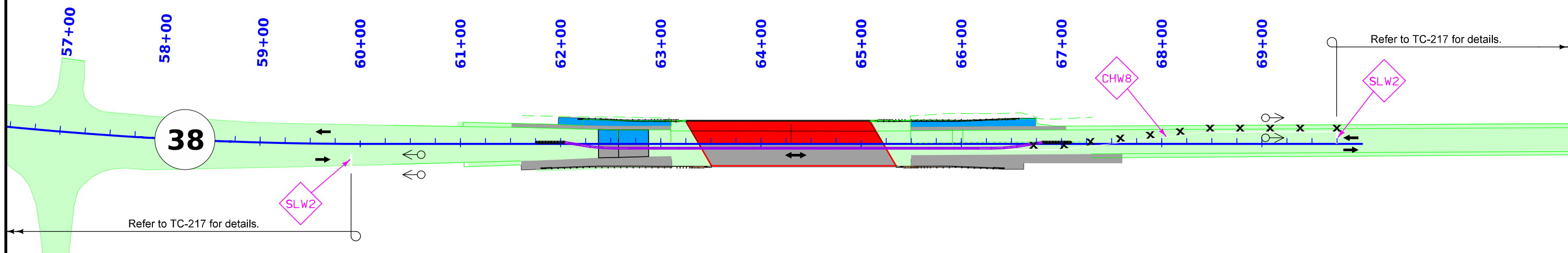
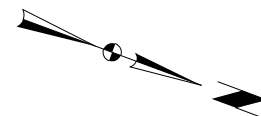
(COVERS SHEET SERIES J)



IA 38 MAINLINE
STAGE 1A



IA 38 MAINLINE
STAGE 1B



IA 38 MAINLINE
STAGE 2