

Standard Road Plans

Standard Road Plans are listed on Sheet No. C.10

Design Data Urban			
2022 AADT	7100	V.P.D.	
TRUCKS		12 %	

Iowa DOT Bridges and Structures
Consultant Coordinator Contact:
Lili Yang

Index of Seals		
Sheet No.	Name	Type
A.1	Matthew K. Rasmussen	Structural Design
A.3	Adam W. Sleeper	Roadway Design
J.6	Devendra Tamrakar	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.

Signature

Matthew K. Rasmussen

Date

7-13-2026

Printed or Typed Name

My license renewal date is December 31, 2026

Pages or sheets covered by this seal: A.1, A.2, V.1 - V.21

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A.1	Title Sheet
A.2	Location Map Sheet
V.1	Estimated Quantities - Design 0127
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A.3-U.3	Road Plans
C.1-C.2	Estimated Quantities - Road
C.10	Standard Plans - Road
C.4, C.5, & C.7	Estimated Quantities - Erosion Control



PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

Humboldt COUNTY

Bridge Deck Replacement

US 169 over W. Fork Des Moines River
0.6 Mi. S. of IA 3 in City of Humboldt

Refer to the Plan Sheets for list of applicable specifications.

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



Revisions

	TOTAL
	68
PROJECT IDENTIFICATION NUMBER	
22-46-169-010	
PROJECT NUMBER	
BRF-169-7(049)--38-46	
R.O.W. PROJECT NUMBER	
PROJECT DIRECTORY NUMBER	
4616901022	

T-92N
T-91N

3

3

10

Design No. 0127
FHWA No. 028871

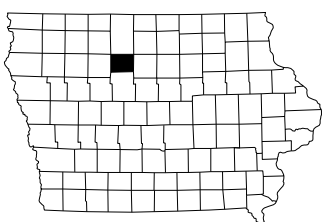
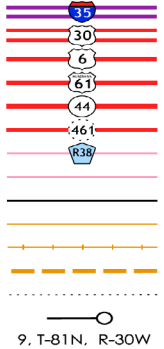
City of Humboldt Location Map

Not To Scale

R-29W R-28W

LEGEND

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



Estimated Bridge Repair Quantities				
Item No.	Item Code	Item	Unit	Total
1	2104-2710020	Excavation, Class 10, Channel	CY	291.8
2	2104-6750001	Removals, as Per Plan	LS	1
3	2402-2720000	Excavation, Class 20	CY	33.0
4	2403-0100010	Structural Concrete (Bridge)	CY	13.2
5	2403-1000005	Fiber Reinforcement for Structural Concrete	CY	527.2
6	2403-1000010	Trial Batch and Test Placement (Fiber Reinforced Concrete)	LS	1
7	2403-7000210	High Performance Structural Concrete	CY	527.2
8	2404-7775005	Reinforcing Steel, Epoxy Coated	LB	186,551
9	2404-7775009	Reinforcing Steel, Stainless Steel	LB	5952
10	2414-6424110	Concrete Barrier Railing	LF	720.1
11	2499-0800000	Paving Notch Replacement	LF	112.0
12	2499-2300001	Deck Drains	LS	1
13	2507-3250005	Engineering Fabric	SY	531.9
14	2507-6800061	Revetment, Class E	TON	437.7
15	2520-3350015	Field Office	EA	1
16	2526-8285040	Construction Survey, Location Survey	LS	1
17	2533-4980005	Mobilization	LS	1

Estimate Reference Information		
Item No.	Item Code	Description
1	2104-2710020	Excavation, Class 10, Channel Includes excavation for revetment for the north and south berms and berm toes as shown on Design Sheet No. 4. All waste must be removed from the project site. Dispose of excess material according to Article 1106.07 of the current specifications.
2	2104-6750001	Removals, as Per Plan Includes all work for removal and off-site disposal of the existing bridge deck, barrier rails, and wings. 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. Contractor to add the following information when submitting the Iowa DNR "Notification of Bridge Demolition and Renovation" form: Name of Asbestos Inspector: Brad Azeltine Date Inspected: 9/27/2022 IA License Number: Iowa DOT Inspector Phone: 515-290-2687 Procedure used to detect the presence of asbestos materials: Polarized Light Microscopy (PLM)
3	2402-2720000	Excavation, Class 20 Includes excavation for the abutment wings.
4	2403-0100010	Structural Concrete (Bridge) This bid item includes concrete for the abutment wings.
5	2403-1000005	Fiber Reinforcement for Structural Concrete Includes the cost of fiber reinforcement for 527.2 CY of concrete for the deck. The concrete is to be paid for in the bid item "High Performance Structural Concrete". Refer to the Developmental Specifications for Fiber Reinforcement for Structural Concrete for additional information.
6	2403-1000010	Trial Batch and Test Placement (Fiber Reinforced Concrete) Refer to the Developmental Specifications for Fiber Reinforcement for Structural Concrete for additional information.
7	2403-7000210	High Performance Structural Concrete Includes 527.2 CY of concrete that is to have fiber reinforcement. The fiber reinforcement is to be paid for in the bid item "Fiber Reinforcement for Structural Concrete". This bid item includes the concrete for the deck. Refer to the Developmental Specifications for High Performance Concrete for Structures for additional information.
8	2404-7775005	Reinforcing Steel, Epoxy Coated Includes the cost of drilling holes for dowel bars and polymer grout material. See Design Sheet 2 for Dowel Setting Notes.
9	2404-7775009	Reinforcing Steel, Stainless Steel Includes the cost of drilling holes for dowel bars and polymer grout material. See Design Sheet 2 for Dowel Setting Notes.
10	2414-6424110	Concrete Barrier Railing Includes material and labor associated with providing and installing rigid steel conduit, junction boxes and fittings. Includes 365 LF of 2" diameter rigid steel conduit. If placement of concrete is done by the slipforming method, Class BR concrete is required. Cast-in-place 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.
11	2499-0800000	Paving Notch Replacement Includes 7.8 cu yd of structural concrete Class C, 1792 lbs of epoxy-coated reinforcing steel, excavation, removing and disposing of the existing paving notch and concrete removed to form the shear keyways, drilling holes for dowel bars, and polymer grout material. See Design Sheet 2 for Dowel Setting Notes.

Estimate Reference Information		
Item No.	Item Code	Description
12	2499-2300001	Deck Drains Includes 14 new deck drains. Refer to Design Sheets 4 and 9 for locations, materials and the details of their construction. Measurement will be the lump sum for all deck drains required as specified in the plans. The payment shall be full compensation for furnishing all materials, equipment, and labor, and for performance of all work necessary for fabricating and installing the deck drains as per plan.
13	2507-3250005	Engineering Fabric Engineering fabric shall be material as specified for embankment erosion control in accordance with Article 4196.01,B,3, of the Standard Specifications. Material shall be measured in sq. yards. of actual area covered. Refer to details on Design Sheet 4.
14	2507-6800061	Revetment, Class E Estimated at 1.5 ton/cu. yd. Class E revetment shall meet requirements of Article 4130, except that broken concrete revetment shall not be allowed.
15	2520-3350015	Field Office --
16	2526-8285040	Construction Survey, Location Survey 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.
17	2533-4980005	Mobilization --

Roadway Quantities shown elsewhere in these plans.

Design For Repairs to a 0 Degree Skew

333'-0" x 56'-0" Prestensioned
Prestressed Concrete Beam Bridge

110'-9" End Spans111'-6" Interior Span

Bridge Quantities

STA. 281+90.02 (US 169)Turn-in Date: Aug. 2026

Humboldt County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0127Design Sheet No. 1 of 21FHWA No. 028871

General Notes:

This design is for the repair of the existing 333'-0" x 56'-0" Pretensioned Prestressed Concrete Beam Bridge on US 169 over West Fork Des Moines River (Design No. 196) with a year of construction of 1996. Electronic plans of the existing structure are 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.

The lump sum bid for "Removals, as Per Plan" shall include all costs associated with removing the existing bridge deck, barrier rails, paving notches, and wings. Removal of scheduled items shall be in accordance with Section 2401 of the Standard Specifications. Any damage to other portions of the existing structure not noted for removal shall be the responsibility of the Bridge Contractor and repaired at no extra cost to the State.

This bridge is designed for HS20-44 Loading, plus 20 lbs. per square foot of roadway for future wearing surface.

All plan dimensions are horizontal unless noted otherwise.

Faint lines on plans indicate the existing structure.

The City and 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. The Bridge Contractor shall also contact the Iowa DOT Utility Coordinator for this project, Sean Passick, at 515-986-5476, prior to notifying the City and Utility Companies.

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 Contractor shall reconstruct the slopes around the wings which are disturbed during construction. This work shall be considered incidental and no extra payment will be made.

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.

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

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

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

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).

Longitudinal grooving of the bridge deck will be required in accordance with Article 2412.03, D of the Standard Specifications. Longitudinal grooving quantities for this project are included in the roadway plans.

General Notes (Cont'd):

The Contractor shall be responsible for ensuring stability of prestressed concrete beams during erection and 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.

Sovereign Lands Construction Permit 2026-0514SL-01 shall apply to work on this project. The Iowa DNR Conservation Officer for the area shall be contacted. At least 1 week prior to commencing work contact Scott Grummer at 641-357-3517 and Clayton Vorland at parksdept@ci.humboldt.ia.us.

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 ½" 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 ½" diameter hoop bars are an integral part of the existing beam top flange. All damage sustained to the top flange and/or ½" diameter hoop bars shall be identified and repaired.

If one or more 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 detrmine 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 replacment shall be considered incidental to the bid item "Removals, as Per Plan".

Dowel Setting Notes:

The 5h2, 5h5, 5h7, 5c3, 5c7, 6c8, 5k2, & 5k3 bars shall be set as dowels in drilled holes. Holes are to be 10" deep.

Contractor shall take care to avoid existing reinforcing when drilling holes for dowels.

A polymer grout system shall be used to install the deformed dowel bars in accordance with Article 2301.03,E, of the Standard Specifications and the manufacturer's recommendations.

Specifications:
Design:

AASHTO series of 2002.

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

Developmental Specifications for High Performance Concrete for Structures

Design Stresses:

Design stresses for the following materials are in accordance with the AASHTO Standard Specifications for Highway Bridges, Series of 2002.

Reinforcing steel in accordance with Section 8, Grade 60.
Concrete in accordance with Section 8, 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	Deck Drains	(049)_Humboldt_Design127_DeckDrains.pdf	No
2	Demolition Plan	(049)_Humboldt_Design127_DemolitionPlan.pdf	Yes
No.	Calculation Description	Calculation File Name Convention For Submittal	Certified by Iowa P.E. (Yes/No)
3	Demolition Plan	(049)_Humboldt_Design127_DemolitionPlanCalcs.pdf	Yes

Bridge Deck Dimension Table

No.	Item	Unit	Quantity
1	Deck Length	L.F.	336.1
2	Minimum Deck Width	L.F.	59.2
3	Maximum Deck Width	L.F.	59.2
4	Deck Area	S.F.	19,897

1. Deck length is measured from face-to-face of paving notches along the centerline of the roadway.
- 2, 3. Deck widths are measured from out-to-out of deck perpendicular to the centerline of roadway.
4. Deck area is to be based on the face-to-face paving notch distance and out-to-out deck dimensions.

Design History
at this Site

(Includes this Design)

Des. No.	Type of Work
196	Original PPCB Bridge
106	Bridge Deck Overlay
120	Bridge Approach Repairs
127	Bridge Deck Replacement

Traffic Control Plan

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

404 Permit shown elsewhere in these plans.

Design For Repairs to a 0 Degree Skew

333'-0" x 56'-0" Pretensioned Prestressed Concrete Beam Bridge

110'-9" End Spans111'-6" Interior Span

General Notes

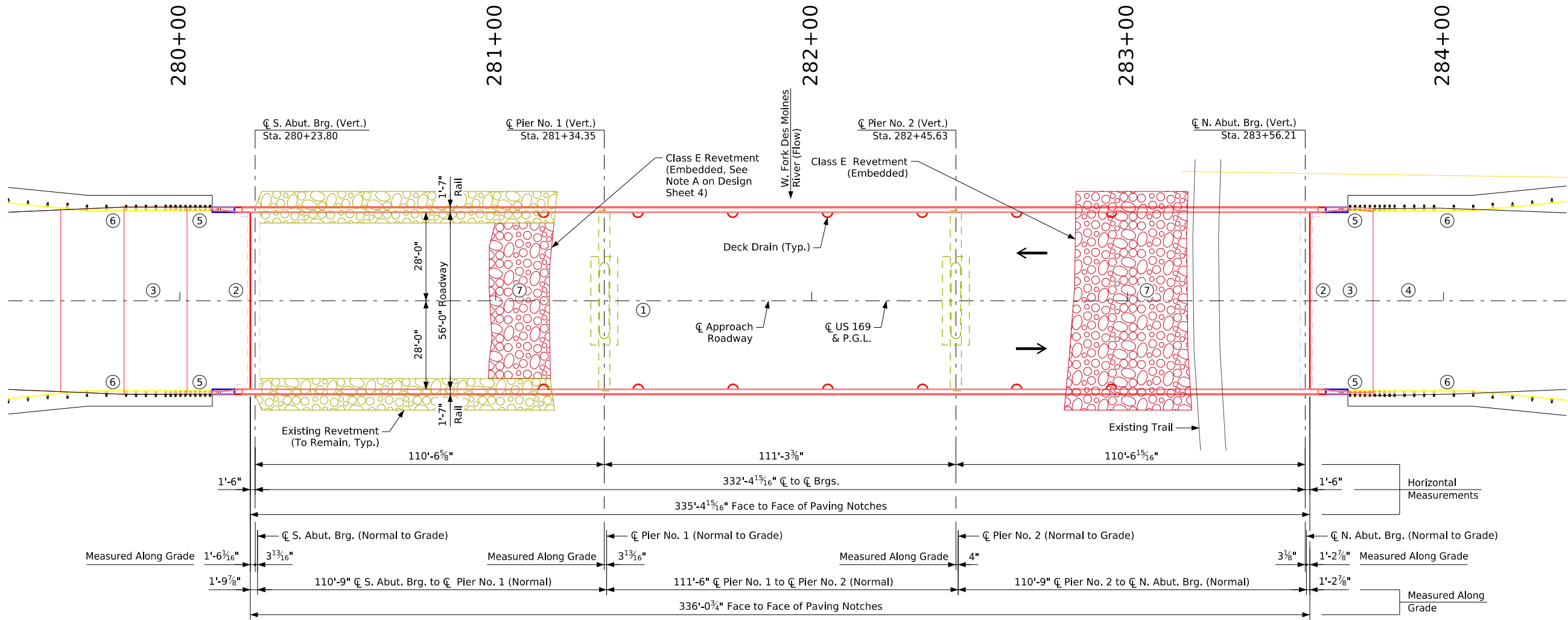
STA. 281+90.02 (US 169)Turn-in Date: Aug. 2026

Humboldt County

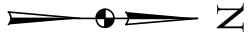
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0127Design Sheet No. 2 of 21FHWA No. 028871

Control Point 100:
Northing: 8669882.957 Easting: 14663018.860 Elev.: 1079.752
5/8" Rebar with Cap Approx. 1126' North of Existing Bridge



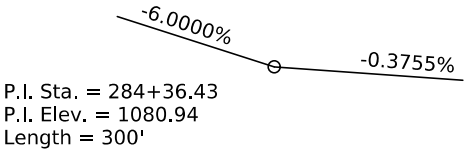
Situation Plan



Repairs Shall Consist of:

- 1. Remove and replace bridge deck and barrier rails.
- * 2. Remove and Replace paving notches at abutments.
- * 3. Remove and replace existing approach pavement.
- * 4. Grind existing approach panel to transition from new approach pavement to existing grade.
- * 5. Remove and replace existing guardrails.
- * 6. Construct gravel shoulders next to guardrail.
- 7. Place slope protection on berms.

* See Roadway plans for additional information.



Proposed Profile US 169

Note: Vertical profile shown is for bridge only (paving notch to paving notch). See Roadway plans for vertical profile for approaches.

Location

US 169 over W. Fork Des Moines River
T-91N R-29W
Section 1/2
Corinth Township
City of Humboldt
Humboldt County
Bridge Maint. No. 4673.75169
FHWA No. 028871
Latitude 42.721694°
Longitude -94.226882°

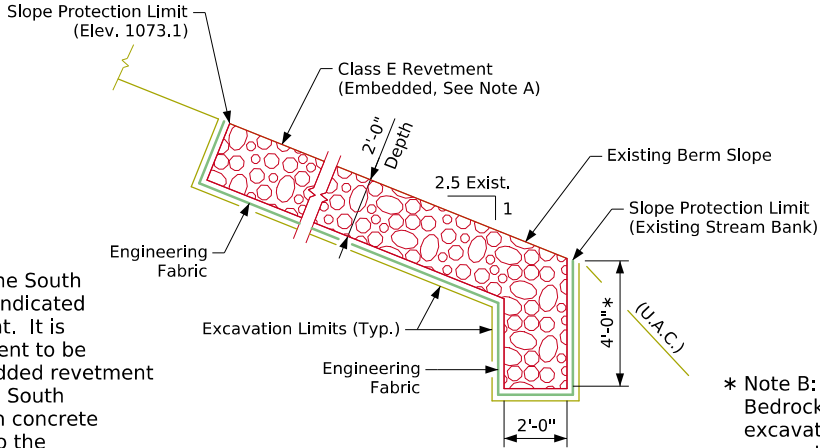
Traffic Estimate

2022 AADT 7100 V.P.D.
Trucks 12 %

Design For Repairs to a 0 Degree Skew
333'-0" x 56'-0" Prestressed Concrete Beam Bridge
110'-9" End Spans 111'-6" Interior Span
Situation Plan
STA. 281+90.02 (US 169) Turn-in Date: Aug. 2026
Humboldt County
IOWA DEPARTMENT OF TRANSPORTATION
Design No. 0127 Design Sheet No. 3 of 21 FHWA No. 028871

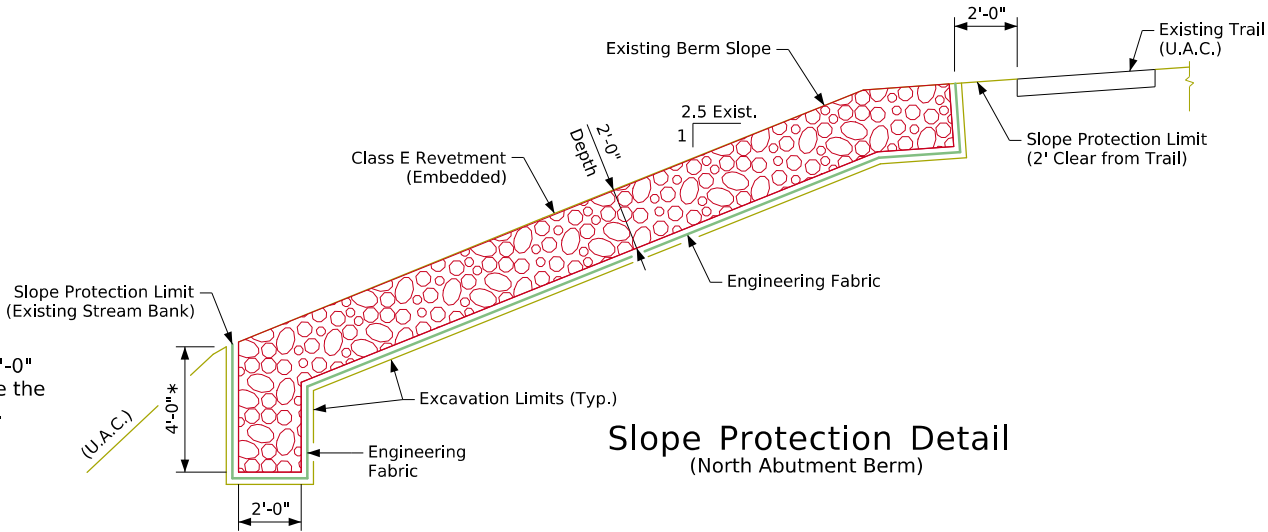
Control Point 100:
Northing: 8669882.957 Easting: 14663018.860 Elev.: 1079.752
5/8" Rebar with Cap Approx. 1126' North of Existing Bridge

Note A:
There is existing revetment on the South Abutment slope within the area indicated on these plans for new revetment. It is intended for the existing revetment to be incorporated into the new embedded revetment placement area indicated for the South Abutment, except that no broken concrete is allowed to be incorporated into the revetment. Any broken concrete revetment encountered shall be removed from the site. Any excess revetment shall become the property of the Iowa DOT.

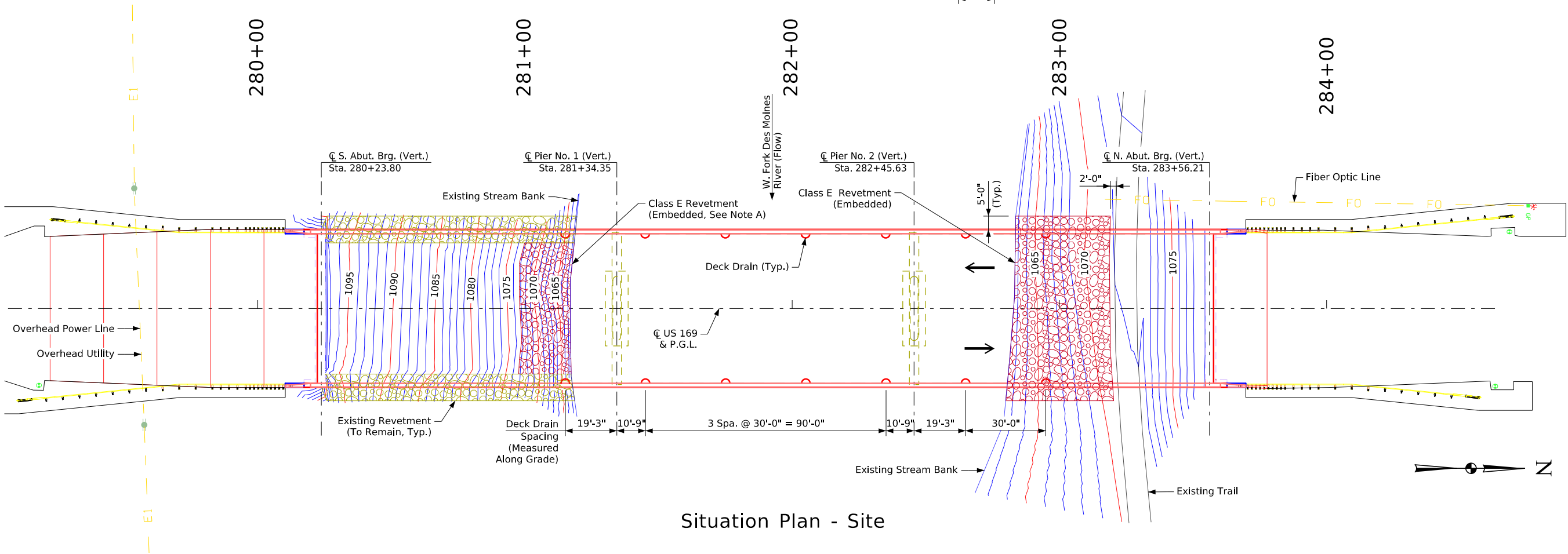


Slope Protection Detail
(South Abutment Berm)

* Note B:
Bedrock may be encountered prior to achieving 4'-0" excavation depth for revetment toe, in which case the excavation may be stopped at the top of bedrock.



Slope Protection Detail
(North Abutment Berm)



Situation Plan - Site

Utilities Note:

Utilities shown on this sheet are for information only.
See Road Design sheets for utility information.

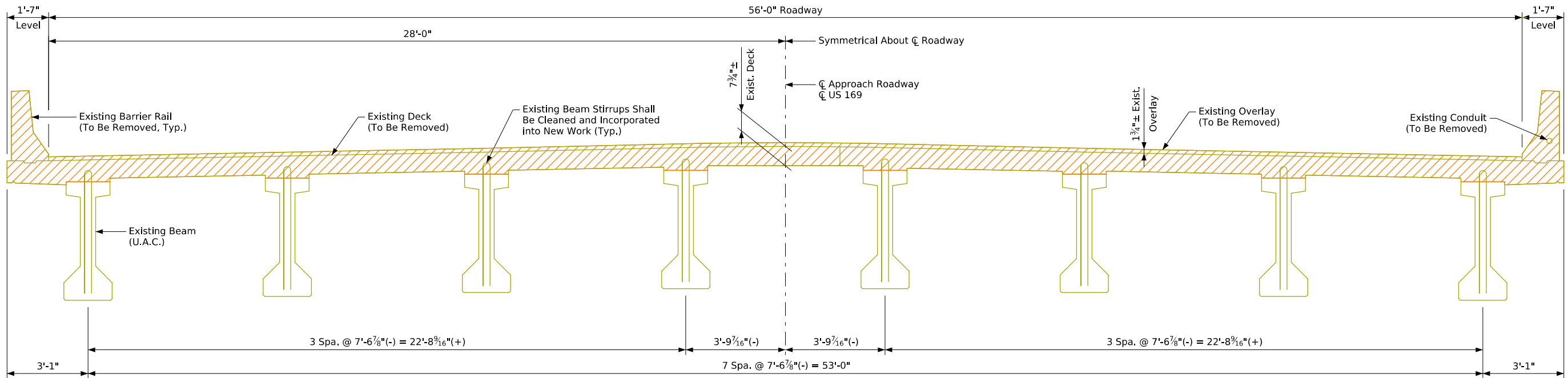
Utilities Legend:

- - Power Poles
- E1 — - Overhead Power Line & Overhead Utility
- FO — - Fiber Optic Line

Estimated Berm Armoring Quantities			
Location	Revetment Class "E" (Ton)	Engineering Fabric (SY)	Excavation, Class 10, Channel (CY)
Berm Lining - South Abutment	111.2	189.1	74.1
Berm Lining - North Abutment	326.5	342.8	217.7
Totals	437.7	531.9	291.8

Excavation quantity calculated from existing surveyed surface.

Design For Repairs to a 0 Degree Skew
333'-0" x 56'-0" Prestressed Concrete Beam Bridge
110'-9" End Spans 111'-6" Interior Span
Site Plan
STA. 281+90.02 (US 169) Turn-in Date: Aug. 2026
Humboldt County
IOWA DEPARTMENT OF TRANSPORTATION
Design No. 0127 Design Sheet No. 4 of 21 FHWA No. 028871



Typical Cross Section

Removal Notes:

Design Sheets 5 and 6 show details of the partial removal of portions of the existing bridge. All partial removals shall be in accordance with Section 2401 of the Standard Specifications. All such removals shall be to neat saw cuts to provide clean straight surfaces at interfaces between new concrete and remaining concrete. The removal shall be done in a manner which will prevent any damage to the existing structure to remain. The Contractor shall assume full responsibility for any damage caused, and shall repair any damaged area to its original condition, as directed by the Engineer, at the Contractor's expense.

For Deck Removal Notes, see Design Sheet 2.

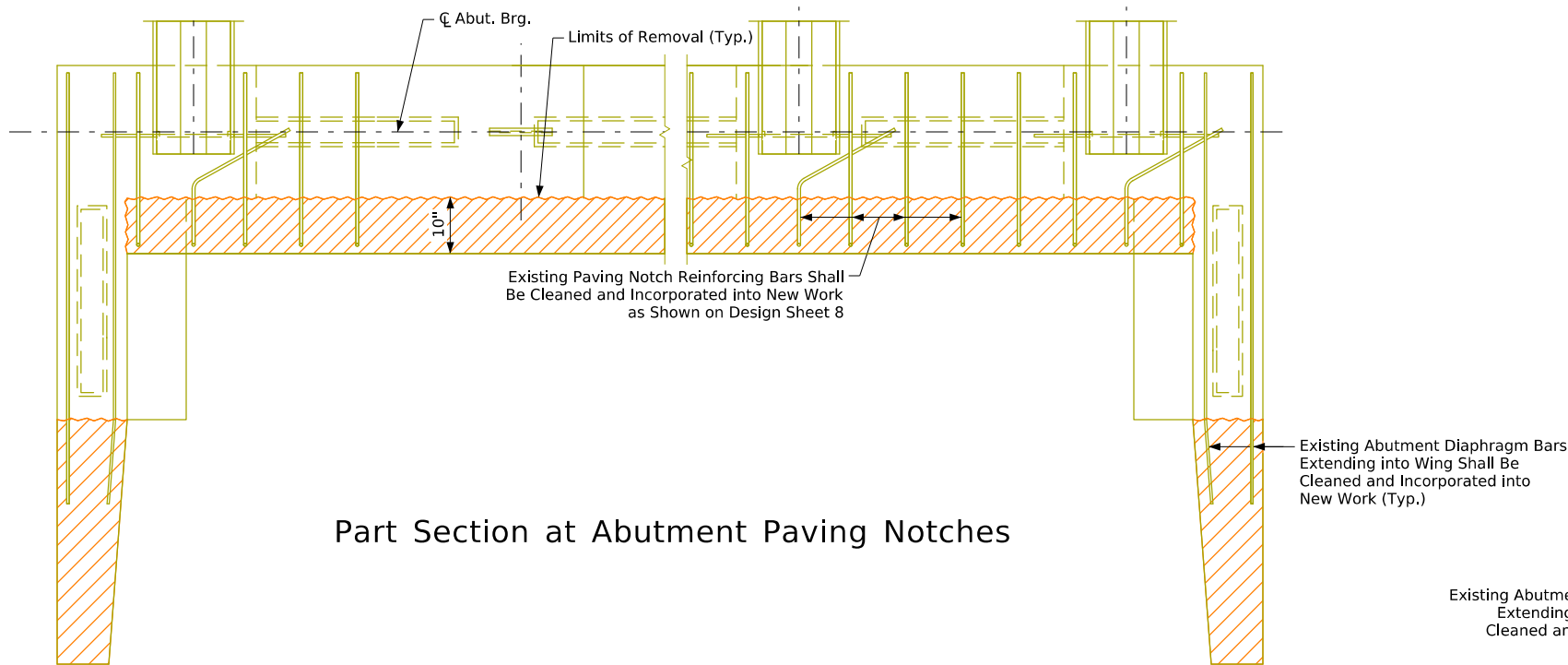
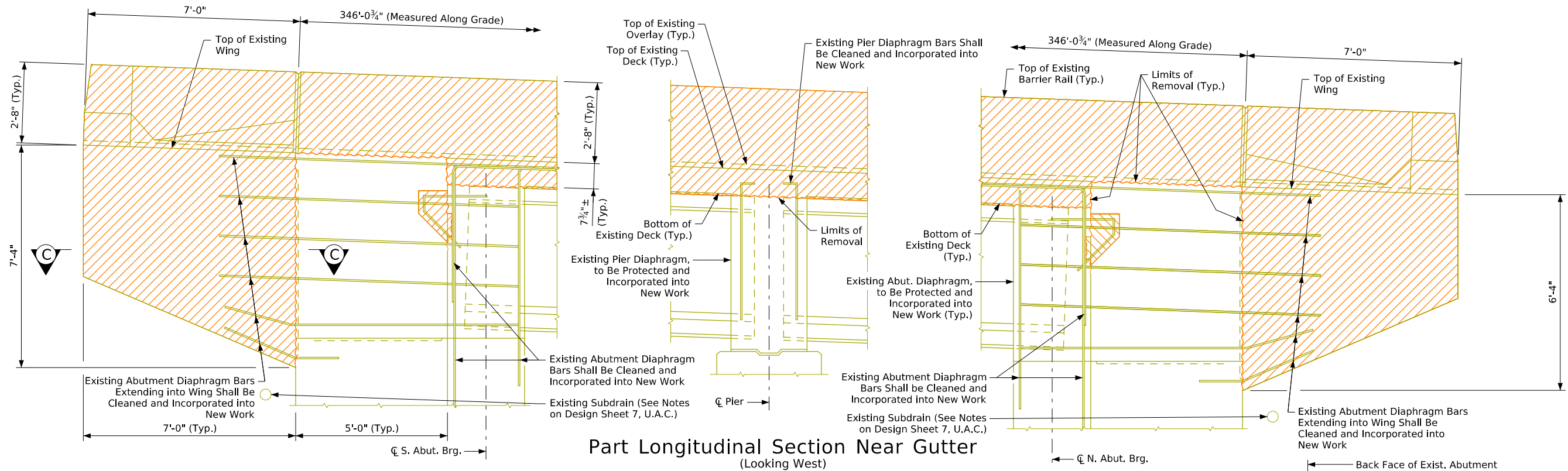
Any existing reinforcing steel which is to be "saved" that is exposed during removal operations is to be carefully protected, cleaned and incorporated into new construction unless noted otherwise.

Start all removals with 3/4" saw cut.

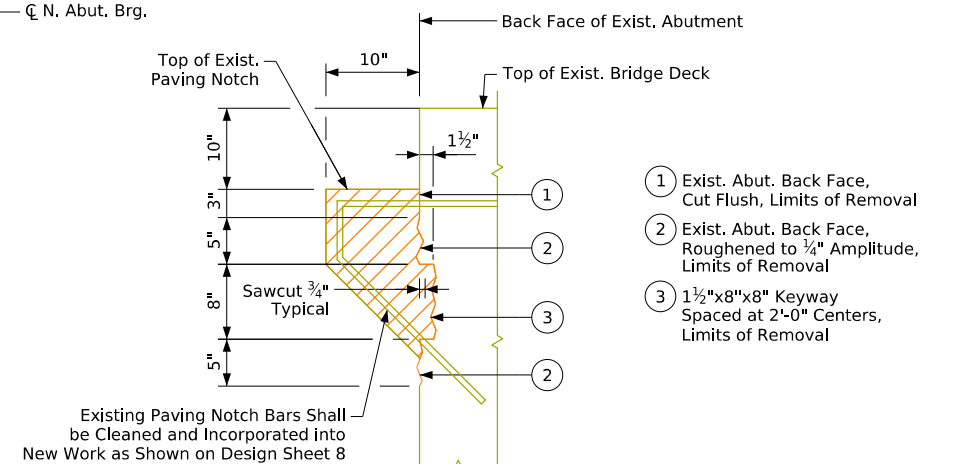
Legend



Design For Repairs to a 0 Degree Skew
**333'-0" x 56'-0" Prestensioned
Prestressed Concrete Beam Bridge**
110'-9" End Spans 111'-6" Interior Span
Removal Details (1 of 2)
STA. 281+90.02 (US 169) Turn-in Date: Aug. 2026
Humboldt County
IOWA DEPARTMENT OF TRANSPORTATION
Design No. 0127 Design Sheet No. 5 of 21 FHWA No. 028871



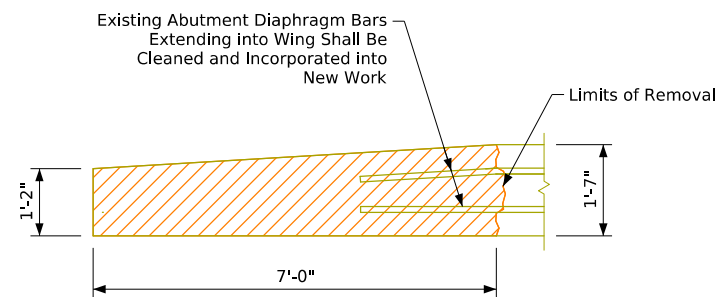
Part Section at Abutment Paving Notches



Paving Notch Removal Detail

NOTES:
See Design Sheet 5 for Removal Notes.

Any reinforcing exposed during removals of the existing bridge components that does not extend into new concrete as shown in these plans shall be cut off flush with the removal line and given two coats of zinc-rich paint.



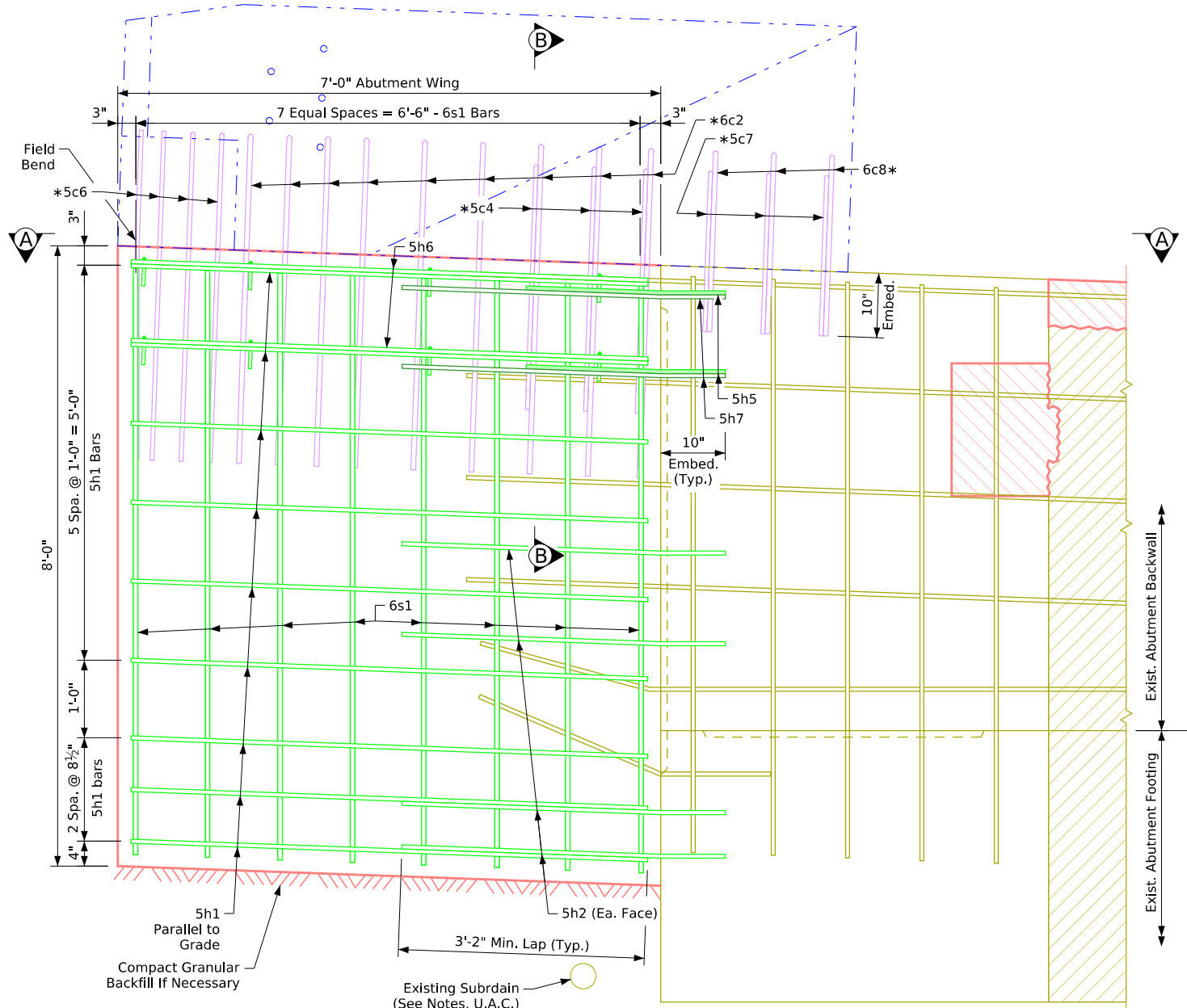
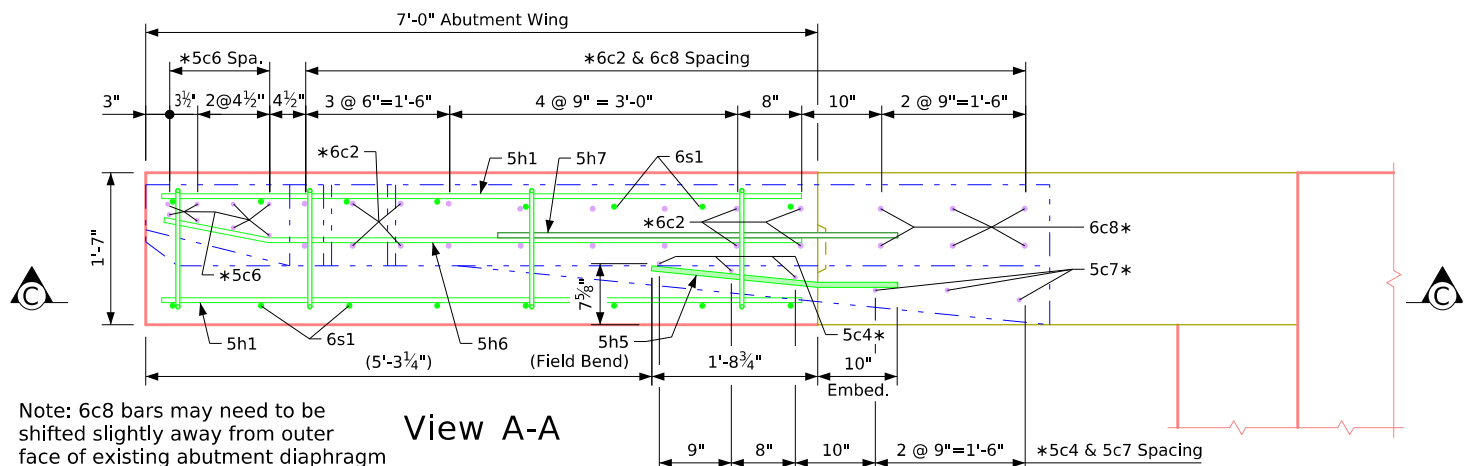
Part Section C-C

Legend

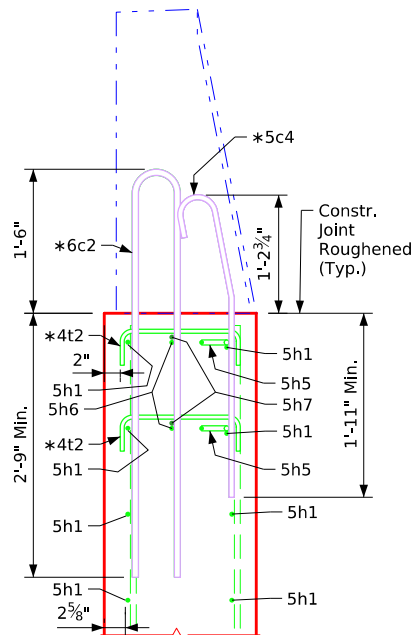
Removals

Design For Repairs to a 0 Degree Skew
333'-0" x 56'-0" Prestressed Concrete Beam Bridge
 110'-9" End Spans 111'-6" Interior Span
Removal Details (2 of 2)
 STA. 281+90.02 (US 169) Turn-in Date: Aug. 2026
Humboldt County
 IOWA DEPARTMENT OF TRANSPORTATION
 Design No. 0127 Design Sheet No. 6 of 21 FHWA No. 028871

Revised 08-2024: Removed improperly placed bar label 6c1 in "Section B-B" details.
Revised 06-2025: Changed 5h6 bar length and quantity (was 6'-0" and 3 bars). Updated 4t2 bar shape and quantity shown. Flipped/switched orientation of horizontal and vertical bars in outside face of wingwall.
MiscellaneousBridges.dgn - 2113 - This Sheet Re-Issued 11-2023. Sheet Format Update.



Section C-C Abutment Wing - Elevation



Section B-B

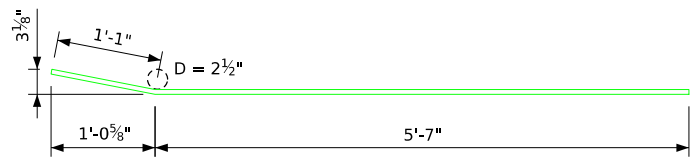
*Barrier rail end section bars to be placed with abutment wing and abutment.

See Barrier Rail End Section sheet on Design Sheet No. 17 for details of reinforcing bars 6c2, 5c4, 5c6, 5c7, 6c8, and 4t2.

Reinforcing Bar List - One Abut. Wing

Bar	Location	Shape	No.	Length	Weight
5h1	Horizontal Both Faces		18	6'-8"	125
5h2	Horizontal Wingwall Dowel		8	4'-2"	35
5h5	Horizontal Wingwall Dowel		2	2'-7"	5
5h6	Horizontal Wingwall		2	6'-8"	14
5h7	Horizontal Wingwall Dowel		2	4'-2"	9
6s1	Vertical Both Faces		16	7'-8"	184

Epoxy Reinforcing Total Weight (lbs.) 372



Bent Bar Details

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

Concrete Placement Summary

Section	Total
One Abutment Wing	3.3
Total (cu. yds.)	3.3

Note: Concrete and reinforcing steel quantities are included on the Bridge Quantities Sheet.

Wing Replacement Notes:

The Abutment Wing is to be Class "C" structural concrete.

The bid item "Structural Concrete (Bridge)" shall include all costs for labor and materials associated with excavation, granular backfill, and compaction as needed.

The 5h2, 5h5, & 5h7 bars shall be set as dowels in drilled holes. See Design Sheet 2 for Dowel Setting Notes.

Field bend 5h2, 5h5, and 5h7 bars to match grade.

5h2 bars shall be placed to correspond with bottom two sets of 5h1 bars and centered between middle three sets of 5h1 bars as shown. 5h5 and 5h7 bars shall be placed to facilitate barrier reinforcing placement.

The Contractor shall shift placement of 5h5 and 5h7 bars as necessary to avoid conflict with holes drilled for barrier bars.

As-builts indicate the existing subdrains are routed around the existing abutment extensions as shown in these details, below where the bottom of the proposed wings intersect with the existing abutment extensions. If the existing subdrain placement is not in accordance with the as-builts and interferes with placement of the proposed wings, the existing subdrain may be cast into the proposed wings by wrapping the portion of the existing subdrain within the proposed wings in filter fabric to prevent bonding of the wing concrete to the existing subdrain. Reinforcing shall be shifted to maintain 1 1/2" clear from the existing subdrain as necessary. The existing subdrain shall be protected during construction from damage and used as constructed. Positive drainage of the existing subdrains must be maintained for the entire length of subdrain. All costs associated with protecting the existing subdrain and casting it into the proposed wing (if required) shall be considered incidental to the bid item "Removals, as Per Plan".

Design For Repairs to a 0 Degree Skew

333'-0" x 56'-0" Prestressed

Prestressed Concrete Beam Bridge

110'-9" End Spans 111'-6" Interior Span

Wing Details

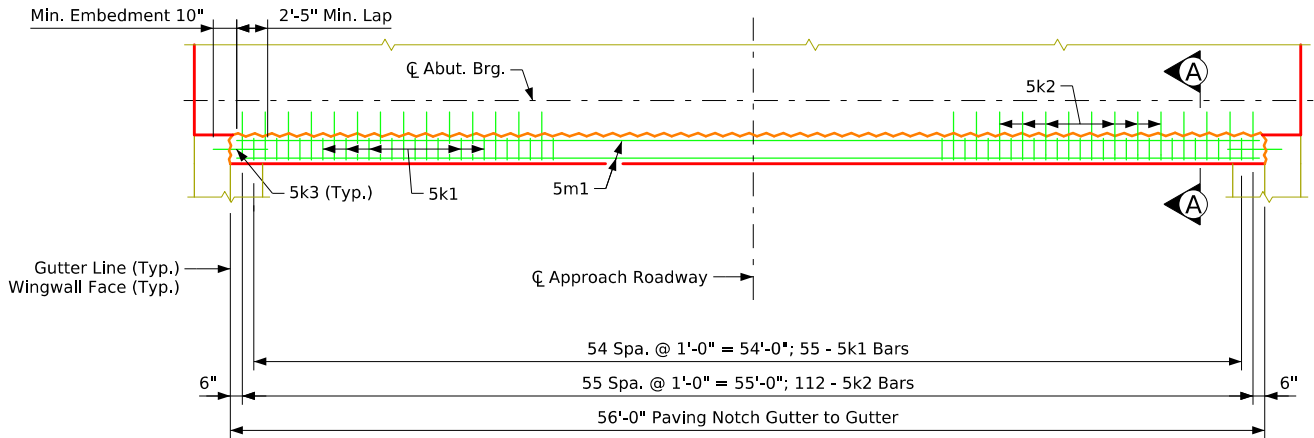
STA. 281+90.02 (US 169) Turn-in Date: Aug. 2026

Humboldt County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0127 Design Sheet No. 7 of 21 FHWA No. 028871

Revised 07-2019: Changed Bent Ends (Hook Leg) of 5k1 Bar to 6" (Was 4 1/2"). Changed All References of "Slab" to "Deck".
MiscellaneousBridges.dgn - 1068 - This Sheet Re-Issued 11-2023. Sheet Format Update.



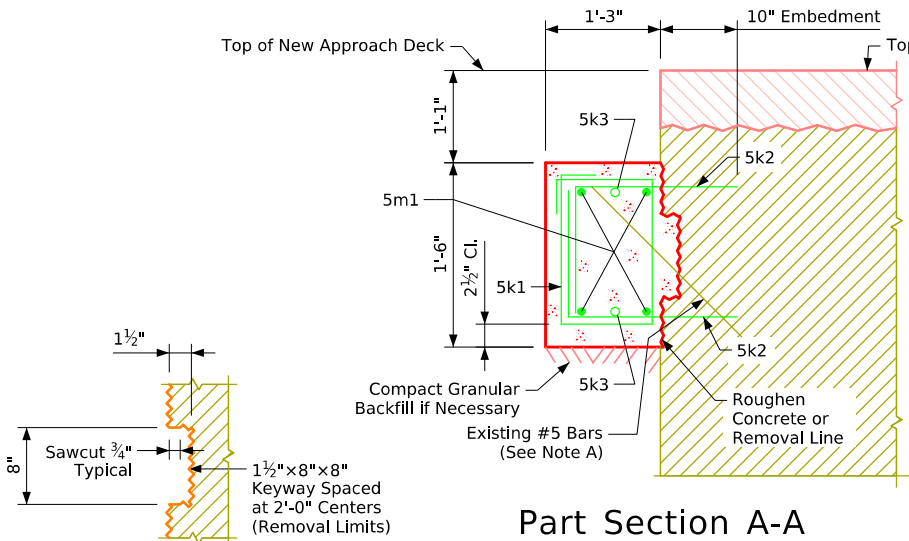
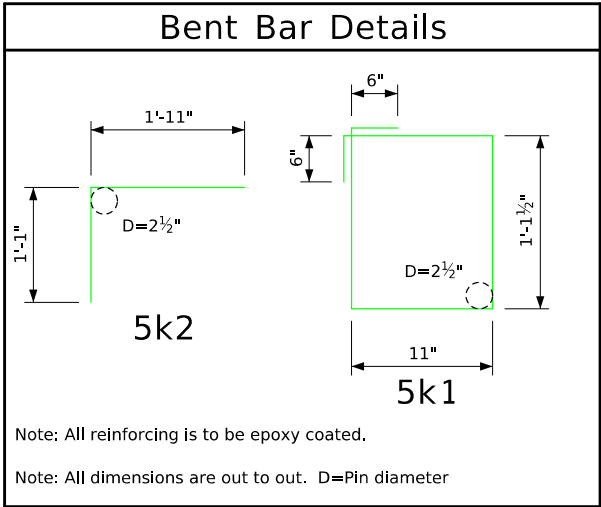
Part Section at Abutment
(Shown at Level of Paving Notch)

Note: 5k3 bars shall be set as dowels embedding 10" minimum into the existing bridge wingwalls and extending a minimum of 2'-7" into the new paving notch replacement.

Paving Notch Replacement Notes:

The Paving Notch Replacement is to be Class "C" structural concrete. Minimum clear distance from face of concrete to near reinforcing bar is to be 2", unless otherwise noted or shown. The bid item "Paving Notch Replacement" linear feet, shall include all costs of labor and materials associated with excavation, removing, and disposing of the existing paving notch, granular backfill and compaction as needed, and installing the new paving notch. This work shall include, cutting of the existing #5 bars, removing the concrete for the shear keyways, drilling the holes for the deformed dowels, and constructing the new notch to the dimensions shown. The new notch is estimated at 0.07 cubic yards per foot of structural concrete and 16.0 pounds of epoxy coated reinforcing steel per foot. Removals shall be in accordance with Section 2401, of the Standard Specifications.

See Design Sheet 2 for Dowel Setting Notes.



Note A: The bottom portion of the existing #5 bars shall be carefully exposed and incorporated into new work. The bar shall be cut off to provide 2 inches of cover from the top of the new paving notch. The top portion of the bar shall be cut off flush or slightly below the concrete surface and the ends painted with 2 coats of zinc rich paint.

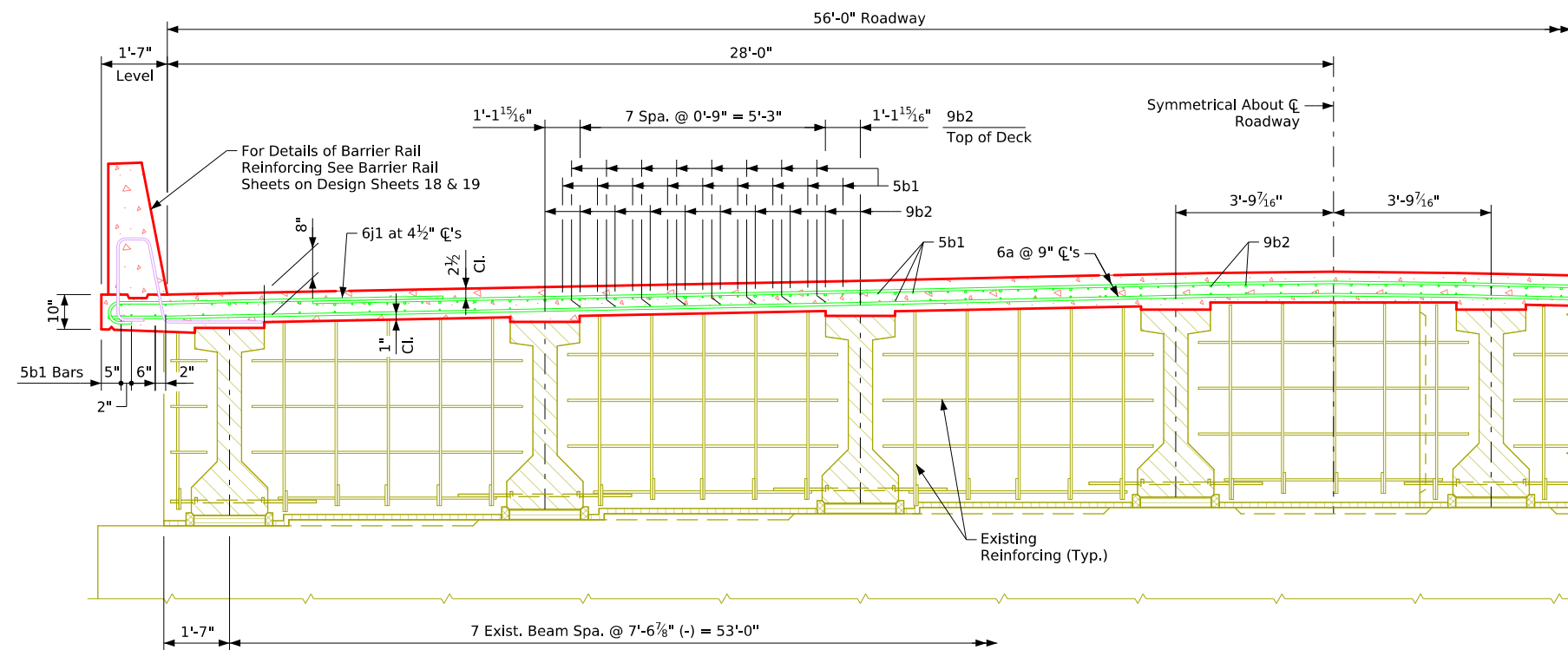
Part Section A-A

Note: Dowels shall be placed to miss any existing reinforcing steel exposed during removals.

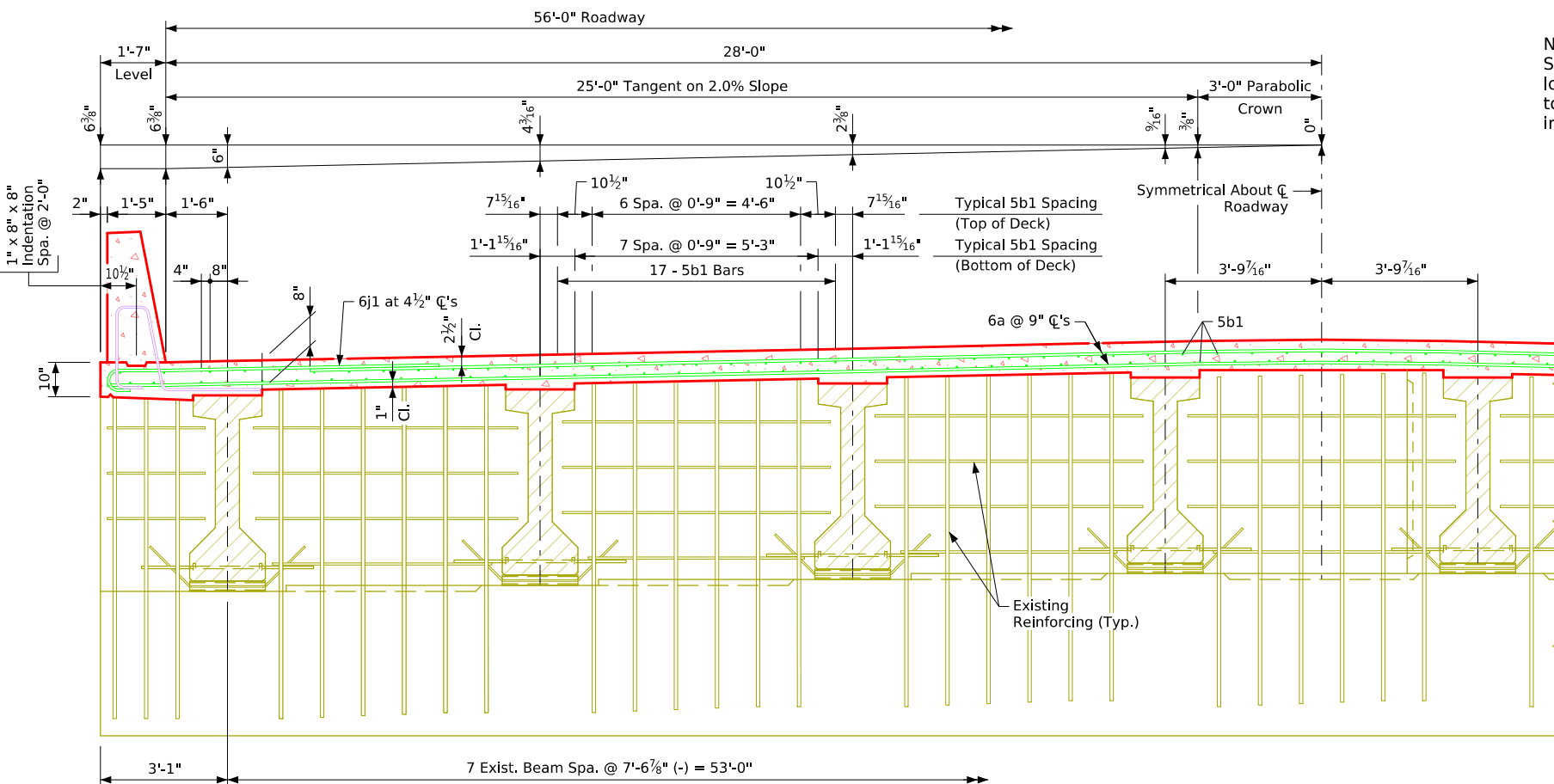
1 1/2" x 8" Keyway Detail

Design For Repairs to a 0 Degree Skew
333'-0" x 56'-0" Prestressed Concrete Beam Bridge
110'-9" End Spans 111'-6" Interior Span
Paving Notch Replacement
STA. 281+90.02 (US 169) Turn-in Date: Aug. 2026
Humboldt County
IOWA DEPARTMENT OF TRANSPORTATION
Design No. 0127 Design Sheet No. 8 of 21 FHWA No. 028871

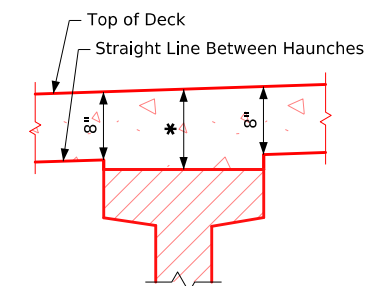
FILE NO. 32362	ENGLISH	DESIGN TEAM Schemmer	Paving Notch Replacement	Standard Sheet 1068 (Mod.)	Humboldt COUNTY	PROJECT NUMBER BRF-169-7(049)--38-46	SHEET NUMBER V.8
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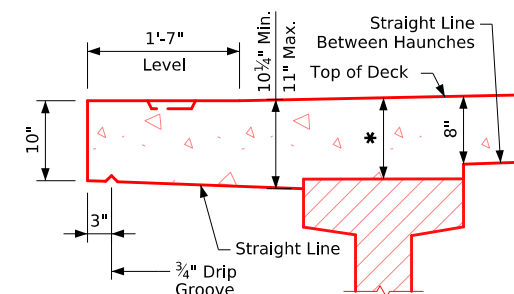
Part Section Near Pier



Part Section Near Abutment



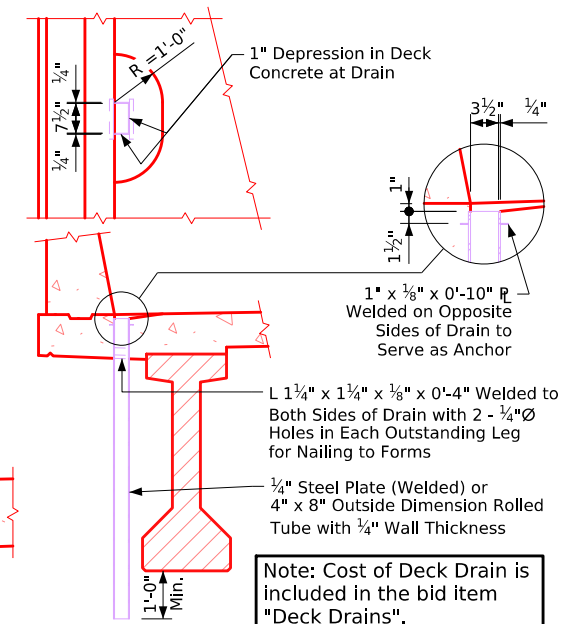
Interior Beams



Exterior Beams

Typical Deck and Haunch Detail

* For Deck Thickness Over Beams See "Haunch And Camber Details" on Design Sheet No. 14.



Drain Details

Note: Drains are to be galvanized. 14 Drains required. See "Site Plan" on Design Sheet No. 4 for location. Weight is based on rolled tube.

Data for One Drain	
Beam Size	D
Drain Weight (lbs.)	120
Drain Length (ft.)	6'-3 3/4"

Superstructure Notes:

- The bridge deck as shown includes 1/2" 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 and diaphragm 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 1/2" clear below top of deck. Bottom transverse reinforcing steel is to be parallel to and 1" 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.

Deck Area = 40.38 Sq. Ft.
Deck Area Does Not Include The Nominal 1/2" Haunch.

Design For Repairs to a 0 Degree Skew

333'-0" x 56'-0" Prestressed Concrete Beam Bridge

110'-9" End Spans 111'-6" Interior Span

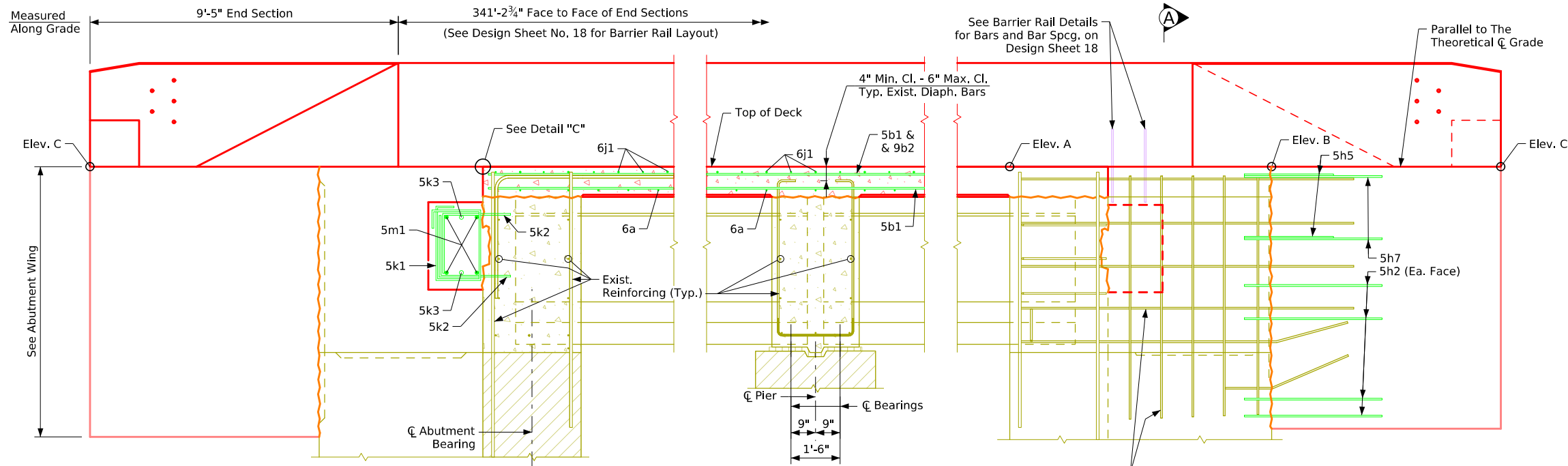
Bridge Deck Cross-Section

STA. 281+90.02 (US 169) Turn-in Date: Aug. 2026

Humboldt County

IOWA DEPARTMENT OF TRANSPORTATION

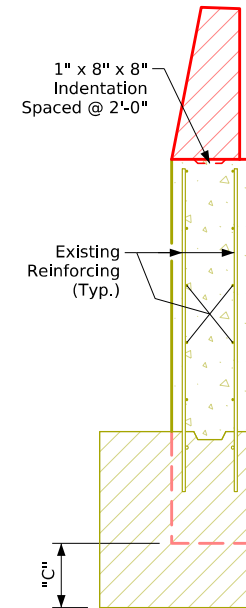
Design No. 0127 Design Sheet No. 9 of 21 FHWA No. 028871



Part Longitudinal Section Near Gutter

Part End View at Abutment

Control Point 100:
Northing: 8669882.957 Easting: 14663018.860 Elev.: 1079.752
5/8" Rebar with Cap Approx. 1126' North of Existing Bridge

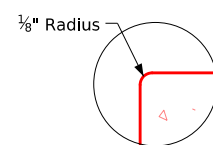


Section A-A

Table of Wingwall Elevations

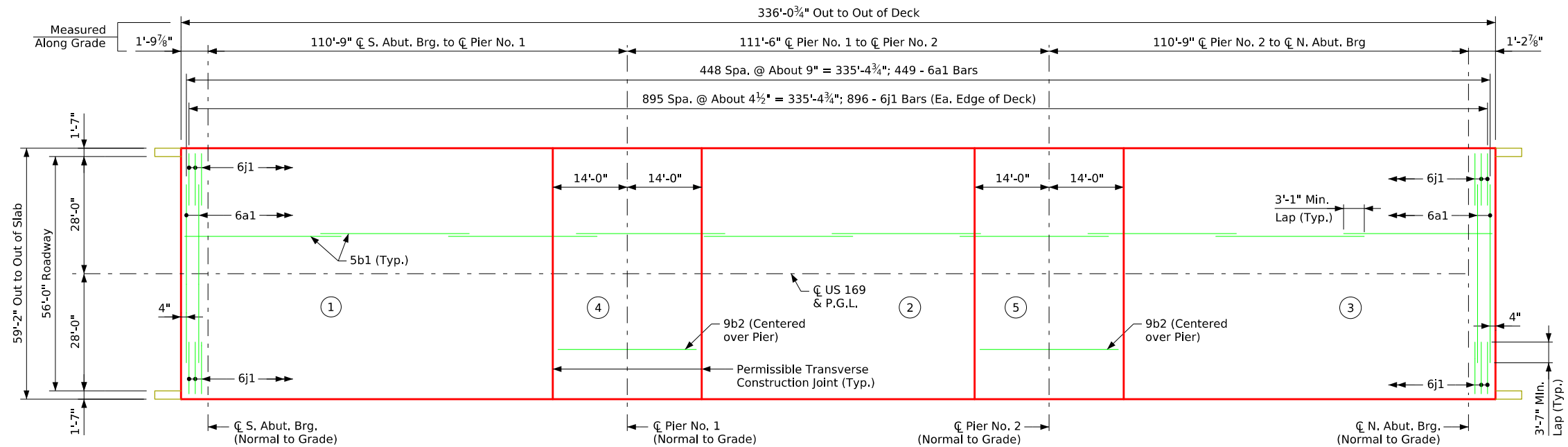
Location	Dim "C"	Elev. A	Elev. B	Elev. C
S.W. Corner	1'-5 1/8"±	1105.05	1105.53	1105.95
N.W. Corner	11 3/8"±	1085.72	1085.35	1085.03
S.E. Corner	1'-5 1/8"±	1105.05	1105.53	1105.95
N.E. Corner	11 3/8"±	1085.72	1085.35	1085.03

Note: Table of Wingwall Elevations is based upon as-built elevations and the proposed profile. Adjustment in the field may be necessary to match the proposed vertical profile and wing dimensions given on the Wing Details sheet.

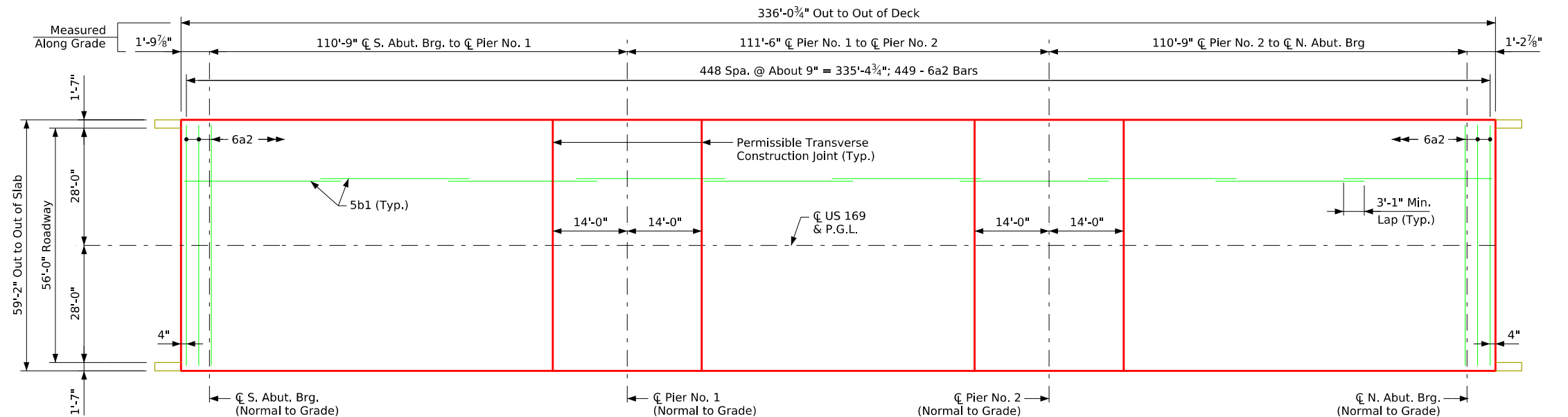


Detail "C"

Design For Repairs to a 0 Degree Skew
333'-0" x 56'-0" Prestressed Concrete Beam Bridge
110'-9" End Spans 111'-6" Interior Span
Abut. & Pier Diaphragm Details
STA. 281+90.02 (US 169) Turn-in Date: Aug. 2026
Humboldt County
IOWA DEPARTMENT OF TRANSPORTATION
Design No. 0127 Design Sheet No. 10 of 21 FHWA No. 028871



Top Reinforcing Layout



Bottom Reinforcing Layout

Concrete Placement 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 one end of the bridge. Alternate procedures for placing deck 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 deck concrete strength prior to removing deck headers and beginning an adjacent pour.

Design For Repairs to a 0 Degree Skew

333'-0" x 56'-0" Prestressed Concrete Beam Bridge

110'-9" End Spans 111'-6" Interior Span

Deck Reinforcing Layout

STA. 281+90.02 (US 169) Turn-in Date: Aug. 2026

Humboldt County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0127 Design Sheet No. 11 of 21 FHWA No. 028871

Bent Bar Details

Technical drawings of bent bar details for five different reinforcement configurations:

- 5k1:** A bent bar with a horizontal segment of 1'-11" and a vertical segment of 1'-0". The pin diameter is $D = 2\frac{1}{2}"$.
- 5k2:** A bent bar with a horizontal segment of 1'-0" and a vertical segment of 1'-0". The pin diameter is $D = 2\frac{1}{2}"$. Additional dimensions include 1'-4" for the horizontal offset, 11 $\frac{5}{16}"$ for the vertical offset, and 1'-0" for the horizontal offset from the vertical segment.
- 5k4:** A bent bar with a horizontal segment of 11" and a vertical segment of 1'-0". The pin diameter is $D = 2\frac{1}{2}"$. Additional dimensions include 6" for the horizontal offset and 6" for the vertical offset.
- 6j1:** A bent bar with a horizontal segment of 8'-9" and a vertical segment of 8". The pin diameter is $D = 4\frac{1}{2}"$. Additional dimensions include 8" for the horizontal offset and 8" for the vertical offset.
- 6j2:** A bent bar with a horizontal segment of 1'-6" and a vertical segment of 1'-4". The pin diameter is $D = 2\frac{1}{2}"$. Additional dimensions include 1'-6" for the horizontal offset and 1'-4" for the vertical offset.

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

Concrete Placement Quantities	
Location	Quantity
Section 1, Deck & Abut. Diaph.	151.4
Section 2, Deck	132.2
Section 3, Deck & Abut. Diaph.	154.2
Section 4, Deck & Pier Diaph.	43.7
Section 5, Deck & Pier Diaph.	45.7
Total (Cu. Yds.)	527.2

[illegible]

Haunch Reinforcing Data										
Beam Line	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩
Beams A & H	14-5a7 over 12'-4"	12'-8"	14-5a7 over 12'-4"	19-5a7 over 19'-0"	32'-10"	27-5a7 over 36'-0"; 19-5a8 over 19'-0"	19-5a8 over 19'-0"; 13-5a7 over 17'-4"	92'-10"	11-5a7 over 14'-8"; 14-5a8 over 12'-4"	27'-4"
Beams B - G	19-5a7 over 19'-0"	19'-4"	19-5a7 over 19'-0"	19-5a7 over 19'-0"	39'-6"	34-5a7 over 45'-4"; 19-5a8 over 19'-0"	19-5a8 over 19'-0"; 13-5a7 over 17'-4"	102'-2"	11-5a7 over 14'-8"; 14-5a8 over 12'-4"	27'-4"

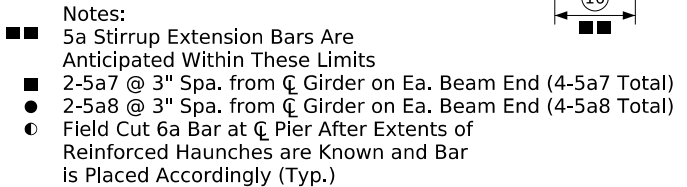


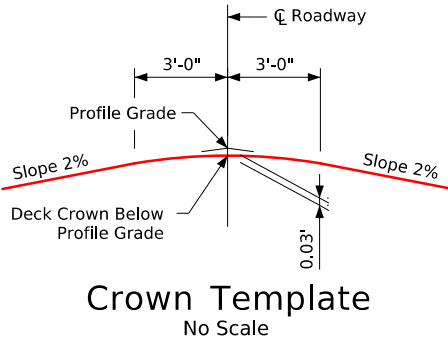
Diagram illustrating the connection of a Beveled $1\frac{1}{2} \times 3$ Nailer to a Header. The header is cut to fit the shape of the crown and drilled for longitudinal reinforcing. The diagram shows the top of the deck, the beveled nailer, and the header. Dimensions include $2\frac{1}{2}$ inch clearance, 1 inch clearance, and $1\frac{1}{2}$ inch dimensions.

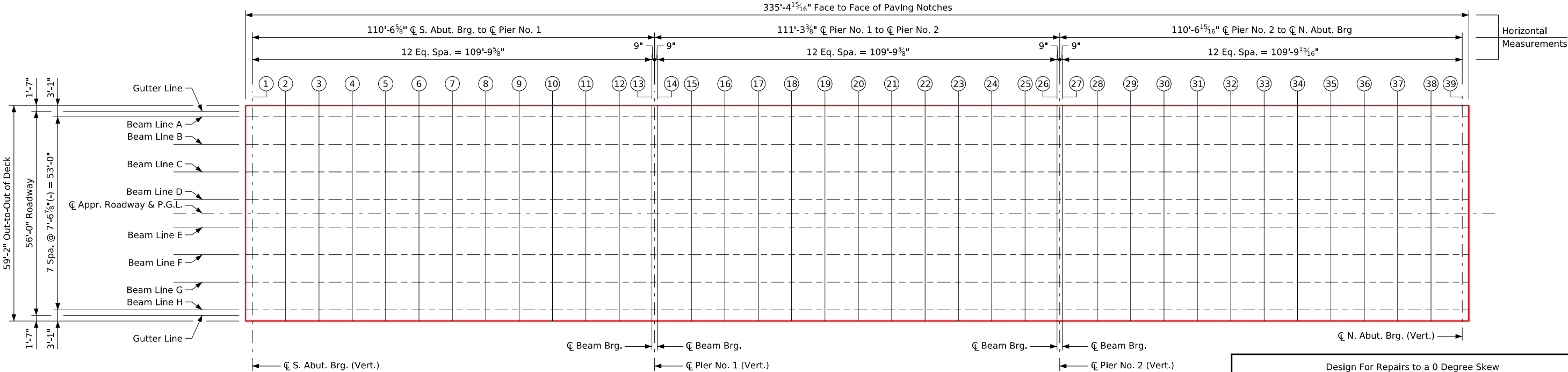
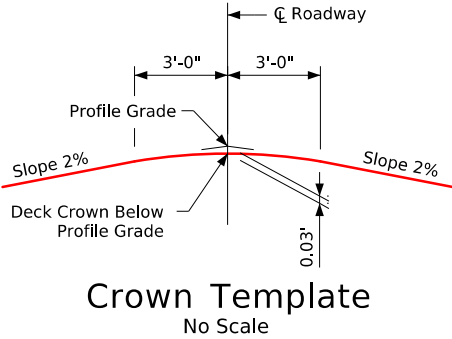
Note:
Rotate 5a bar about
axis of bottom leg
as needed to
maintain top
clearance.

FILE NO. 32362	ENGLISH	DESIGN TEAM Schemmer
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Humboldt COUNTY	PROJECT NUMBER	BRF-169-7(049)--38-46
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Control Point 100:
Northing: 8669882.957 Easting: 14663018.860 Elev.: 1079.752
5/8" Rebar with Cap Approx. 1126' North of Existing Bridge

Table of Top of Deck Elevations																										
Beam Line	☐ S. Abut. Bearing													☐ Pier No. 1 Bearings												
	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	Line 22	Line 23	Line 24		
West Gutter Line	1105.14	1104.59	1104.04	1103.49	1102.94	1102.39	1101.84	1101.29	1100.75	1100.20	1099.65	1099.10	1098.55	1098.46	1097.91	1097.36	1096.81	1096.26	1095.72	1095.17	1094.62	1094.07	1093.52	1092.97		
Beam A	1105.17	1104.62	1104.07	1103.52	1102.97	1102.42	1101.87	1101.32	1100.78	1100.23	1099.68	1099.13	1098.58	1098.49	1097.94	1097.39	1096.84	1096.29	1095.75	1095.20	1094.65	1094.10	1093.55	1093.00		
Beam B	1105.32	1104.77	1104.22	1103.67	1103.12	1102.57	1102.03	1101.48	1100.93	1100.38	1099.83	1099.28	1098.73	1098.64	1098.09	1097.54	1096.99	1096.45	1095.90	1095.35	1094.80	1094.25	1093.70	1093.15		
Beam C	1105.47	1104.92	1104.37	1103.82	1103.27	1102.73	1102.18	1101.63	1101.08	1100.53	1099.98	1099.43	1098.88	1098.79	1098.24	1097.69	1097.15	1096.60	1096.05	1095.50	1094.95	1094.40	1093.85	1093.30		
Beam D	1105.62	1105.07	1104.52	1103.98	1103.43	1102.88	1102.33	1101.78	1101.23	1100.68	1100.13	1099.58	1099.03	1098.94	1098.40	1097.85	1097.30	1096.75	1096.20	1095.65	1095.10	1094.55	1094.00	1093.45		
☐ Approach Rdwy.	1105.67	1105.12	1104.57	1104.02	1103.47	1102.92	1102.37	1101.82	1101.28	1100.73	1100.18	1099.63	1099.08	1098.99	1098.44	1097.89	1097.34	1096.79	1096.25	1095.70	1095.15	1094.60	1094.05	1093.50		
Beam E	1105.62	1105.07	1104.52	1103.98	1103.43	1102.88	1102.33	1101.78	1101.23	1100.68	1100.13	1099.58	1099.03	1098.94	1098.40	1097.85	1097.30	1096.75	1096.20	1095.65	1095.10	1094.55	1094.00	1093.45		
Beam F	1105.47	1104.92	1104.37	1103.82	1103.27	1102.73	1102.18	1101.63	1101.08	1100.53	1099.98	1099.43	1098.88	1098.79	1098.24	1097.69	1097.15	1096.60	1096.05	1095.50	1094.95	1094.40	1093.85	1093.30		
Beam G	1105.32	1104.77	1104.22	1103.67	1103.12	1102.57	1102.03	1101.48	1100.93	1100.38	1099.83	1099.28	1098.73	1098.64	1098.09	1097.54	1096.99	1096.45	1095.90	1095.35	1094.80	1094.25	1093.70	1093.15		
Beam H	1105.17	1104.62	1104.07	1103.52	1102.97	1102.42	1101.87	1101.32	1100.78	1100.23	1099.68	1099.13	1098.58	1098.49	1097.94	1097.39	1096.84	1096.29	1095.75	1095.20	1094.65	1094.10	1093.55	1093.00		
East Gutter Line	1105.14	1104.59	1104.04	1103.49	1102.94	1102.39	1101.84	1101.29	1100.75	1100.20	1099.65	1099.10	1098.55	1098.46	1097.91	1097.36	1096.81	1096.26	1095.72	1095.17	1094.62	1094.07	1093.52	1092.97		
		☐ Pier No. 2 Bearings															☐ N. Abut. Bearing									
	Line 25	Line 26	Line 27	Line 28	Line 29	Line 30	Line 31	Line 32	Line 33	Line 34	Line 35	Line 36	Line 37	Line 38	Line 39											
West Gutter Line	1092.42	1091.87	1091.78	1091.23	1090.68	1090.14	1089.59	1089.04	1088.51	1087.99	1087.49	1087.01	1086.54	1086.09	1085.65											
Beam A	1092.45	1091.90	1091.81	1091.26	1090.71	1090.17	1089.62	1089.07	1088.54	1088.02	1087.52	1087.04	1086.57	1086.12	1085.68											
Beam B	1092.60	1092.05	1091.96	1091.42	1090.87	1090.32	1089.77	1089.22	1088.69	1088.17	1087.67	1087.19	1086.72	1086.27	1085.83											
Beam C	1092.75	1092.21	1092.12	1091.57	1091.02	1090.47	1089.92	1089.37	1088.84	1088.33	1087.83	1087.34	1086.87	1086.42	1085.98											
Beam D	1092.91	1092.36	1092.27	1091.72	1091.17	1090.62	1090.07	1089.52	1088.99	1088.48	1087.98	1087.49	1087.02	1086.57	1086.13											
☐ Approach Rdwy.	1092.95	1092.40	1092.31	1091.76	1091.21	1090.67	1090.12	1089.57	1089.04	1088.52	1088.02	1087.54	1087.07	1086.62	1086.18											
Beam E	1092.91	1092.36	1092.27	1091.72	1091.17	1090.62	1090.07	1089.52	1088.99	1088.48	1087.98	1087.49	1087.02	1086.57	1086.13											
Beam F	1092.75	1092.21	1092.12	1091.57	1091.02	1090.47	1089.92	1089.37	1088.84	1088.33	1087.83	1087.34	1086.87	1086.42	1085.98											
Beam G	1092.60	1092.05	1091.96	1091.42	1090.87	1090.32	1089.77	1089.22	1088.69	1088.17	1087.67	1087.19	1086.72	1086.27	1085.83											
Beam H	1092.45	1091.90	1091.81	1091.26	1090.71	1090.17	1089.62	1089.07	1088.54	1088.02	1087.52	1087.04	1086.57	1086.12	1085.68											
East Gutter Line	1092.42	1091.87	1091.78	1091.23	1090.68	1090.14	1089.59	1089.04	1088.51	1087.99	1087.49	1087.01	1086.54	1086.09	1085.65											



Top of Deck Elevations Layout

Design For Repairs to a 0 Degree Skew

333'-0" x 56'-0" Prestensioned
Prestressed Concrete Beam Bridge

110'-9" End Spans111'-6" Interior Span

Top of Deck Elevations

STA. 281+90.02 (US 169)Turn-in Date: Aug. 2026

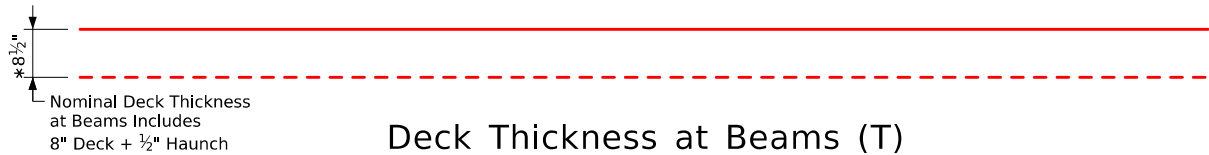
Humboldt County

IOWA DEPARTMENT OF TRANSPORTATION

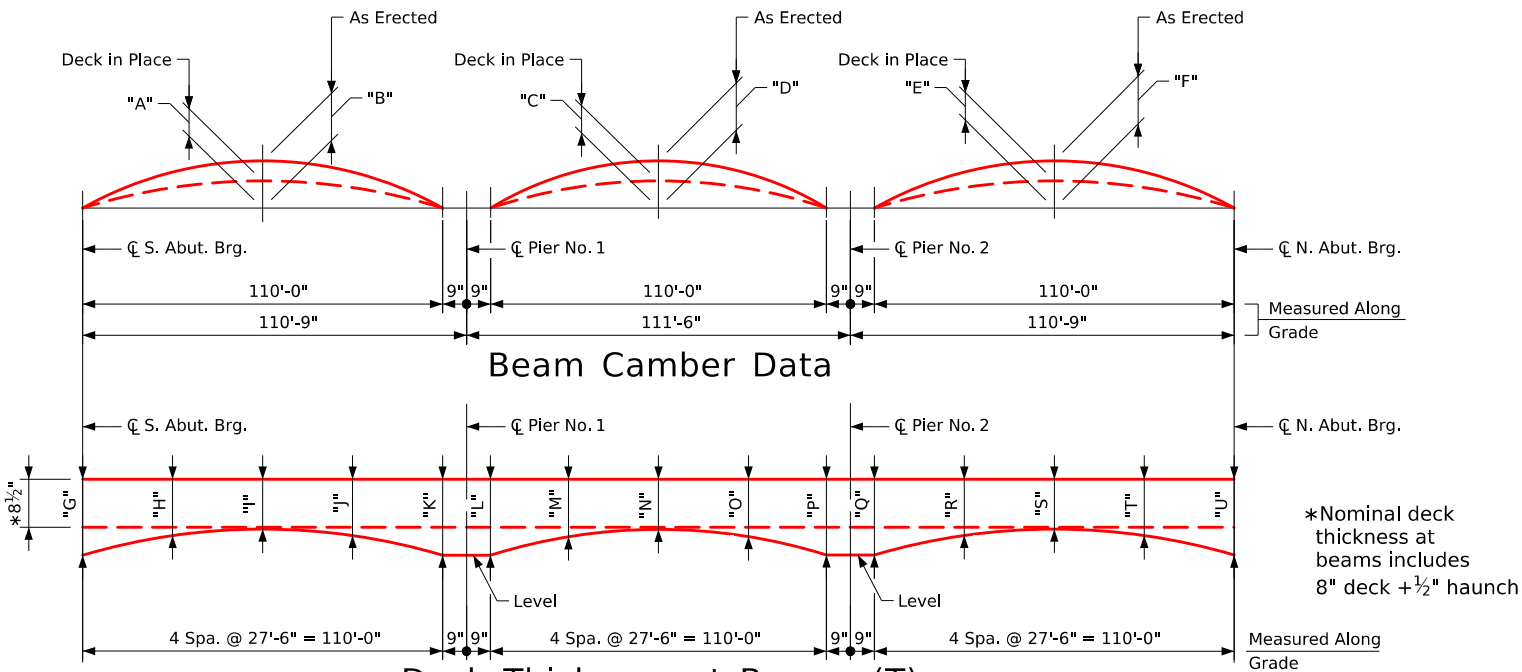
Design No. 0127Design Sheet No. 13 of 21FHWA No. 028871

Revised 07-2019: Changed All References of "Slab" to "Deck".
MiscellaneousBridges.dgn - 1065 - This Sheet Re-Issued 11-2023. Sheet Format Update.

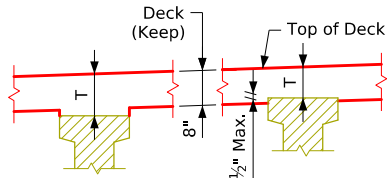
Beam Camber and Deck Thickness Data																					
Beam Line	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"J"	"K"	"L"	"M"	"N"	"O"	"P"	"Q"	"R"	"S"	"T"	"U"
Beams A & H	1 ¹ / ₁₆ "	4"	1 ¹³ / ₁₆ "	4"	1 ¹¹ / ₁₆ "	4"	10"	8 ³ / ₄ "	8 ⁵ / ₁₆ "	8 ³ / ₄ "	10"	9 ¹⁵ / ₁₆ "	9 ¹ / ₄ "	9 ⁷ / ₁₆ "	10 ⁹ / ₁₆ "	12 ⁹ / ₁₆ "	12 ¹ / ₂ "	9 ⁷ / ₈ "	8 ⁵ / ₁₆ "	9 ¹ / ₈ "	12 ¹ / ₂ "
Beams B - G	1 ⁷ / ₁₆ "	4"	1 ⁵ / ₈ "	4"	1 ¹ / ₁₆ "	4"	10"	8 ⁷ / ₈ "	8 ⁹ / ₁₆ "	8 ⁷ / ₈ "	10"	9 ¹⁵ / ₁₆ "	9 ³ / ₈ "	9 ⁵ / ₈ "	10 ¹ / ₁₆ "	12 ⁹ / ₁₆ "	12 ¹ / ₂ "	10"	8 ⁹ / ₁₆ "	9 ⁵ / ₁₆ "	12 ¹ / ₂ "



Deck Thickness at Beams (T)



Deck Thickness at Beams (T)



Deck Thickness Details

Note: The deck thickness (T) at beams is based on the anticipated beam camber and deflections. These values are used by the Designer to set beam elevations and estimate concrete quantities. Refer to the Deck Haunch Data Details sheet for additional information to aid the Contractor in setting the field haunches required for construction.

Design For Repairs to a 0 Degree Skew

333'-0" x 56'-0" Prestensioned
Prestressed Concrete Beam Bridge

110'-9" End Spans111'-6" Interior Span

Deck Thickness Details

STA. 281+90.02 (US 169)Turn-in Date: Aug. 2026

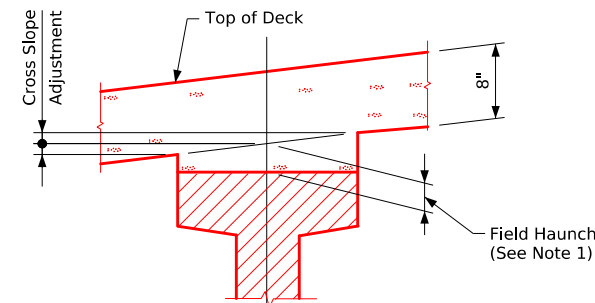
Humboldt County

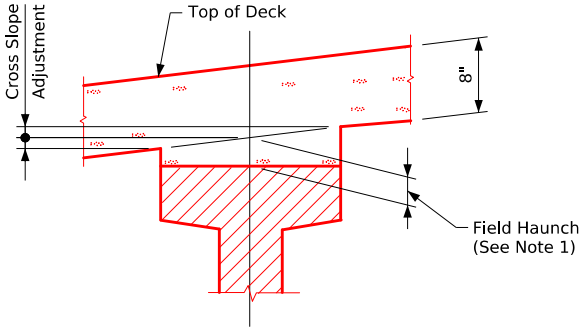
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0127Design Sheet No. 14 of 21FHWA No. 028871

Issued 02-2008.
Revised 06-2012: The Allowable Field Haunch Max. & Min. Were Changed to Inches and Decimals of Feet. Note & Note 1 Were Changed. The Slab Haunch Locations Example was Replaced With a Note.
Revised 07-2019: Changed all References of "Slab" to "Deck".
MiscellaneousBridges.dgn - 1066 - This Sheet Re-Issued 11-2023. Sheet Format Update.

Control Point 100:
Northing: 8669882.957 Easting: 14663018.860 Elev.: 1079.752
5/8" Rebar with Cap Approx. 1126' North of Existing Bridge

Beam Line Deck Haunch Elevations																									
Beam Line	☐ S. Abut. Bearing												☐ Pier No. 1 Bearings												
	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	Line 22	Line 23	Line 24	
Beam A	1104.50	1104.01	1103.51	1103.00	1102.48	1101.95	1101.40	1100.85	1100.28	1099.71	1099.12	1098.52	1097.91	1097.82	1097.33	1096.83	1096.31	1095.79	1095.26	1094.71	1094.16	1093.60	1093.02	1092.44	
Beam B	1104.65	1104.17	1103.67	1103.17	1102.65	1102.11	1101.57	1101.02	1100.45	1099.87	1099.28	1098.68	1098.06	1097.97	1097.49	1096.99	1096.48	1095.96	1095.43	1094.88	1094.33	1093.76	1093.19	1092.60	
Beam C	1104.80	1104.32	1103.82	1103.32	1102.80	1102.27	1101.72	1101.17	1100.60	1100.02	1099.43	1098.83	1098.22	1098.13	1097.64	1097.14	1096.63	1096.11	1095.58	1095.03	1094.48	1093.91	1093.34	1092.75	
Beam D	1104.96	1104.47	1103.98	1103.47	1102.95	1102.42	1101.87	1101.32	1100.75	1100.17	1099.58	1098.98	1098.37	1098.28	1097.79	1097.29	1096.78	1096.26	1095.73	1095.19	1094.63	1094.07	1093.49	1092.90	
Beam E	1104.96	1104.47	1103.98	1103.47	1102.95	1102.42	1101.87	1101.32	1100.75	1100.17	1099.58	1098.98	1098.37	1098.28	1097.79	1097.29	1096.78	1096.26	1095.73	1095.19	1094.63	1094.07	1093.49	1092.90	
Beam F	1104.80	1104.32	1103.82	1103.32	1102.80	1102.27	1101.72	1101.17	1100.60	1100.02	1099.43	1098.83	1098.22	1098.13	1097.64	1097.14	1096.63	1096.11	1095.58	1095.03	1094.48	1093.91	1093.34	1092.75	
Beam G	1104.65	1104.17	1103.67	1103.17	1102.65	1102.11	1101.57	1101.02	1100.45	1099.87	1099.28	1098.68	1098.06	1097.97	1097.49	1096.99	1096.48	1095.96	1095.43	1094.88	1094.33	1093.76	1093.19	1092.60	
Beam H	1104.50	1104.01	1103.51	1103.00	1102.48	1101.95	1101.40	1100.85	1100.28	1099.71	1099.12	1098.52	1097.91	1097.82	1097.33	1096.83	1096.31	1095.79	1095.26	1094.71	1094.16	1093.60	1093.02	1092.44	
		☐ Pier No. 2 Bearings														☐ N. Abut. Bearing									
	Line 25	Line 26	Line 27	Line 28	Line 29	Line 30	Line 31	Line 32	Line 33	Line 34	Line 35	Line 36	Line 37	Line 38	Line 39										
Beam A	1091.84	1091.24	1091.15	1090.66	1090.16	1089.65	1089.12	1088.59	1088.07	1087.55	1087.03	1086.52	1086.01	1085.51	1085.01										
Beam B	1092.00	1091.39	1091.30	1090.81	1090.32	1089.81	1089.29	1088.76	1088.24	1087.71	1087.20	1086.68	1086.17	1085.67	1085.16										
Beam C	1092.15	1091.54	1091.45	1090.96	1090.47	1089.96	1089.44	1088.91	1088.39	1087.87	1087.35	1086.83	1086.32	1085.82	1085.32										
Beam D	1092.30	1091.69	1091.60	1091.12	1090.62	1090.11	1089.59	1089.06	1088.54	1088.02	1087.50	1086.99	1086.48	1085.97	1085.47										
Beam E	1092.30	1091.69	1091.60	1091.12	1090.62	1090.11	1089.59	1089.06	1088.54	1088.02	1087.50	1086.99	1086.48	1085.97	1085.47										
Beam F	1092.15	1091.54	1091.45	1090.96	1090.47	1089.96	1089.44	1088.91	1088.39	1087.87	1087.35	1086.83	1086.32	1085.82	1085.32										
Beam G	1092.00	1091.39	1091.30	1090.81	1090.32	1089.81	1089.29	1088.76	1088.24	1087.71	1087.20	1086.68	1086.17	1085.67	1085.16										
Beam H	1091.84	1091.24	1091.15	1090.66	1090.16	1089.65	1089.12	1088.59	1088.07	1087.55	1087.03	1086.52	1086.01	1085.51	1085.01										



Haunch Detail

Miscellaneous Data Table																									
	Beam Line		☐ S. Abut. Bearing											☐ Pier No. 1 Bearings											
			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	Line 22	Line 23
Anticipated Deflection Due to Deck (in.)	Beams A & H		0	1¼16"	1⅝16"	1¾"	2¼16"	2¼"	2⅝16"	2¾"	2½16"	1¾"	1⅝16"	1¼16"	0	0	1¼16"	1¼"	11¼16"	2"	2⅝8"	2¾16"	2⅝8"	2"	11¼16"
	Beams B - G		0	¾"	1⅞16"	1⅝16"	2¼"	2½2"	2⅝16"	2½2"	2¼"	11⅝16"	1⅞16"	¾"	0	0	¾"	1⅝8"	11¾16"	2⅝8"	2⅝8"	2⅞16"	2⅝8"	2⅝8"	11¾16"
Cross Slope Adjustments (in.)	All		¾16"																						
Allowable Field Haunch (in. & ft.)	Max.	Beams A & H	4" (0.333)	2" (0.167)										4" (0.333)			2" (0.167)					4" (0.333)			
		Beams B - G	4" (0.333)		2" (0.167)									4" (0.333)				2" (0.167)				4" (0.333)			
	Min.	Beams A & H	1" (0.083)	-⅝16" (-0.026)										1" (0.083)			-⅝16" (-0.026)					1" (0.083)			
		Beams B - G	1" (0.083)		-⅝16" (-0.026)									1" (0.083)				-⅝16" (-0.026)				1" (0.083)			
	Beam Line				☐ Pier No. 2 Bearings													☐ N. Abut. Bearing	Note: Haunch locations are at the same location as the encircled letters and numbers shown on deck elevations sheet.						
			Line 24	Line 25	Line 26	Line 27	Line 28	Line 29	Line 30	Line 31	Line 32	Line 33	Line 34	Line 35	Line 36	Line 37	Line 38	Line 39							
Anticipated Deflection Due to Deck (in.)	Beams A & H	1¼"	1¼16"	0	0	1¼16"	1⅝16"	1¾"	2¼16"	2¼"	2⅝16"	2¼"	2¼16"	1¾"	1⅝16"	1¼16"	0								
	Beams B - G	1⅝8"	¾"	0	0	¾"	1⅞16"	11⅝16"	2¼"	2½2"	2⅝16"	2¼2"	2¼4"	11⅝16"	1⅞16"	¾"	0								
Cross Slope Adjustments (in.)	All		¾16"																						
Allowable Field Haunch (in. & ft.)	Max.	Beams A & H	4" (0.333)	5½" (0.458)				4" (0.333)		2" (0.167)					4" (0.333)			5½" (0.458)							
		Beams B - G	4" (0.333)	5½" (0.458)				4" (0.333)		2" (0.167)					4" (0.333)			5½" (0.458)							
	Min.	Beams A & H	1" (0.083)	2½2" (0.208)				1" (0.083)		-⅝16" (-0.026)					1" (0.083)			2½2" (0.208)							
		Beams B - G	1" (0.083)	2½2" (0.208)				1" (0.083)		-⅝16" (-0.026)					1" (0.083)			2½2" (0.208)							

Note: Allowable Field Haunch values listed assume hat bars are placed as detailed in the Haunch Reinforcing Layout on Design Sheet 12. It is intended for 5a7 hat bars to be placed at each existing stirrup location where the field haunch is between 1 1/2" and 3 1/2", and 5a8 to be placed at each existing stirrup location where the field haunch exceeds 3 1/2".

Note: Survey and existing plan data were used to determine existing top of beam elevations. Theoretical camber and beam deflections are based upon existing plan data. 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.

Note: Haunch locations are at the same location as the encircled letters and numbers shown on deck elevations sheet.

Design For Repairs to a 0 Degree Skew

333'-0" x 56'-0" Pretensioned Prestressed Concrete Beam Bridge

110'-9" End Spans111'-6" Interior Span

Deck Haunch Data Details

STA. 281+90.02 (US 169)Turn-in Date: Aug. 2026

Humboldt County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0127Design Sheet No. 15 of 21FHWA No. 028871

Technical drawing of a gutter section. The drawing shows a cross-section of a gutter with a 9'-5" End Section. Key dimensions include a total width of 1'-7" and a depth of 3". The gutter is divided into sections with lengths of 4", 1'-2", 1'-9", and 6'-2". The gutter is labeled with "Standard Rail" and "Construction Joint". The gutter is shown with a "Gutter Line" and "1"Ø Holes". The gutter is shown with a "Gutter Line" and "1"Ø Holes". The gutter is shown with a "Gutter Line" and "1"Ø Holes".

Technical drawing of a wing wall cross-section. The drawing includes the following dimensions and labels:

- Overall Dimensions:**
 - Top width: 9'-5" End Section
 - Right height: 3'-2"
- Vertical Dimensions (Left Side):**
 - Top corner offset: 2'-10⁷/₈"
 - Below top corner: 1'-6¹/₂"
 - Below that: 1'-5"
 - Bottom section: 2'-0"
- Horizontal Dimensions (Top):**
 - From left face to center of first hole: 1'-10³/₄"
 - Distance between holes: 8"
 - From left face to second hole: 1'-2"
 - From left face to third hole: 4"
- Labels and Features:**
 - Vertical
 - Slope Face of Wall
 - Top of Wing
 - Wing
 - Abutment
 - 1"Ø Holes (three locations)
- Other Dimensions:**
 - Horizontal distance from left face to start of slope: 1'-6"
 - Horizontal distance from start of slope to end of wing: 1'-9"
 - Horizontal distance from end of wing to abutment: 6'-2"
 - Vertical distance from top of wing to top of wall: 7⁵/₈"
 - Vertical distance from top of wing to top of wall: 7⁵/₈"
 - Vertical distance from top of wing to top of wall: 3¹³/₁₆"
 - Vertical distance from top of wing to top of wall: 3¹³/₁₆"
 - Vertical distance from top of wing to top of wall: 2⁵/₁₆"

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

9'-5" End Section

12 - 6c1, 6c2, or 6c8

3 1/2"

2 @ 4 1/2" = 9"

5"

3 Spa. @ 6" = 1'-6"

8 Spa. @ 9" = 6'-0"

2" Cl.

5d4

5d2, 5d3, 5d5

5d1, 5d5

4 - 5c6 (Both Faces)

1" Ø Holes

2 @ 9" = 1'-6"

3 - 5c3

5 Spa. @ 9" = 3'-9"

6 - 5c4 or 5c7

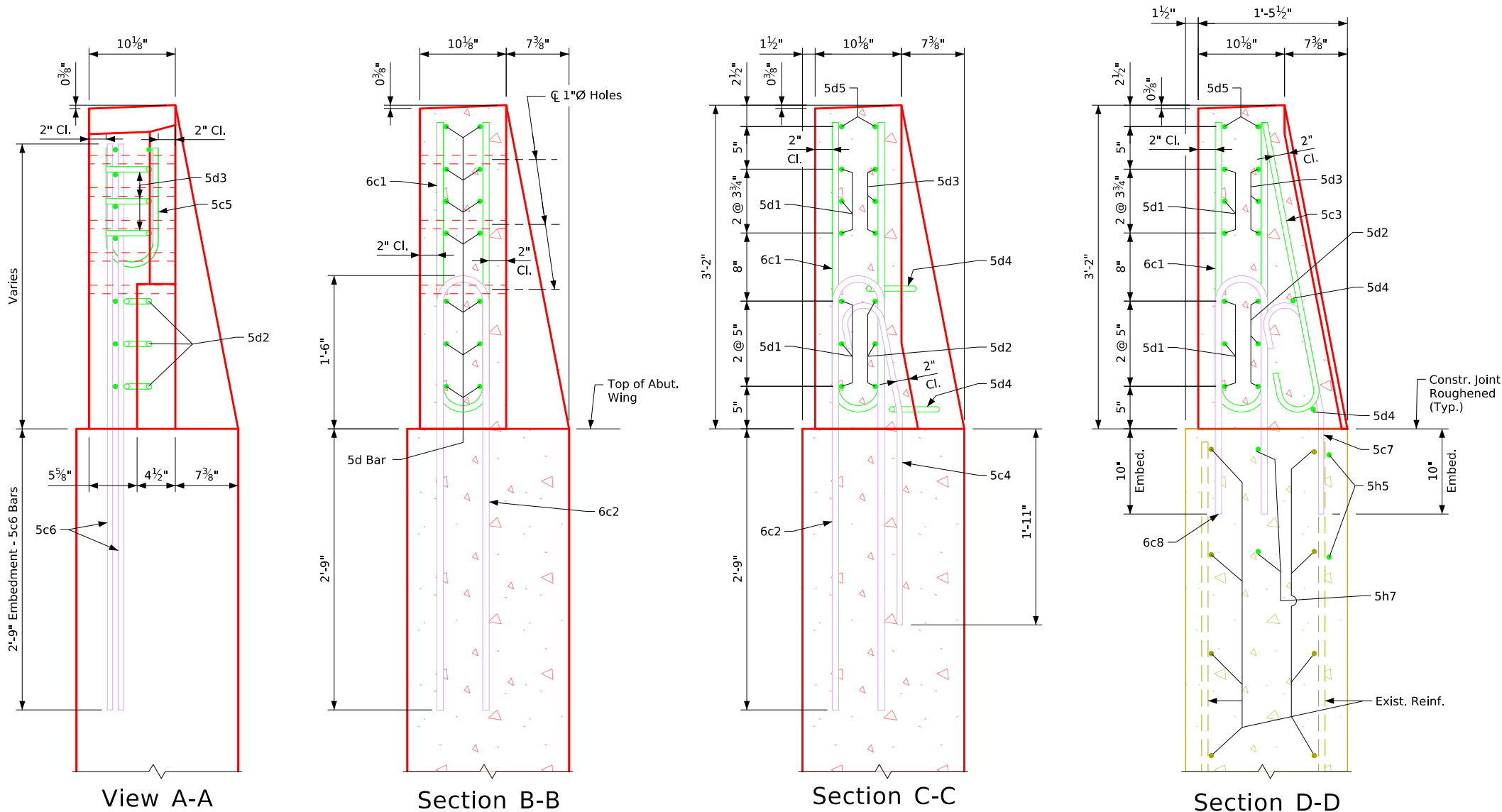
3 13/16"

Section Lines: A-A, B-B, C-C, D-D

Part View F-F

Design For Repairs to a 0 Degree Skew
**333'-0" x 56'-0" Pretensioned
Prestressed Concrete Beam Bridge**
110'-9" End Spans 111'-6" Interior Span
Barrier Rail End Section (Stainless)
STA. 281+90.02 (US 169) Turn-in Date: Aug. 2026
Humboldt County
IOWA DEPARTMENT OF TRANSPORTATION
Design No. 0127 Design Sheet No. 16 of 21 FHWA No. 028871

DeckRailBridges.dgn - 1017S-2 - This Sheet Issued 05-2024. Revised to Single Slope Barrier Shape. Additional Sheet for Clarity. (Sheet Number was Originally 1017S).



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

Notes:

- 4t2 placement - 4 bars each at top two rows of 5h1/d bars in abutment wing.
- Construction joint between top of abutment wing and abutment wing extension with barrier rail is roughened concrete.
- The 6c2, 5c4, 5c6, 5c7, 6c8, and 4t2 bars are to be placed with the abutment wing and at abutment wing extension. The details for placement are shown on the Abutment Wing Sheet.
- Dashed lines below the top of wing are the abutment wing reinforcing steel.
- See Abutment Wing Sheet for placement.
- For Plan and Elevation see Design Sheet No. 16.
- The 5c7 and 6c8 bars are to be set as dowels in drilled holes. See Design Sheet 2 for Dowel Setting Notes.
- The Contractor shall coordinate placement of 5c7 and 6c8 bars with placement of 5h5 and 5h7 bars to avoid conflict when drilling. See Design Sheet 7 for additional notes.

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		8	2'-0"	11

Epoxy Reinforcing Total Weight (lbs.) 290

Stainless Steel Reinforcing Steel -
One End Section

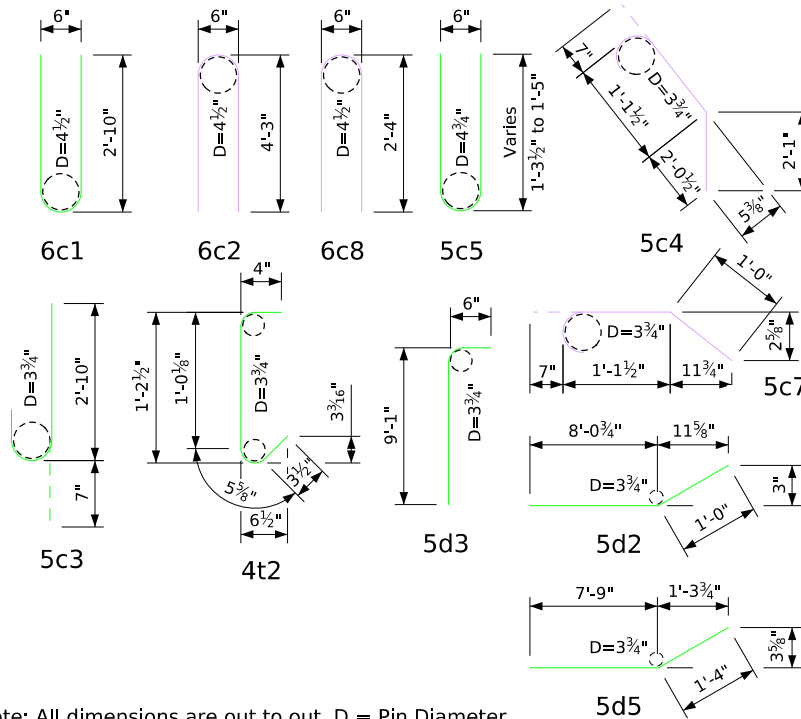
Bar	Location	Shape	No.	Length	Weight
6c2	Rail, Vertical		9	8'-9"	118
5c4	Rail, Vertical (Traffic Face)		3	3'-10"	12
5c6	Rail, Vertical (End)		8	Varies	47
5c7	Rail, Vertical (Traffic Face)		3	2'-9"	9
6c8	Rail, Vertical		3	4'-11"	22

Stainless Steel Reinforcing Total Weight (lbs.) 208

Concrete Placement Summary

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

Bent Bar Details

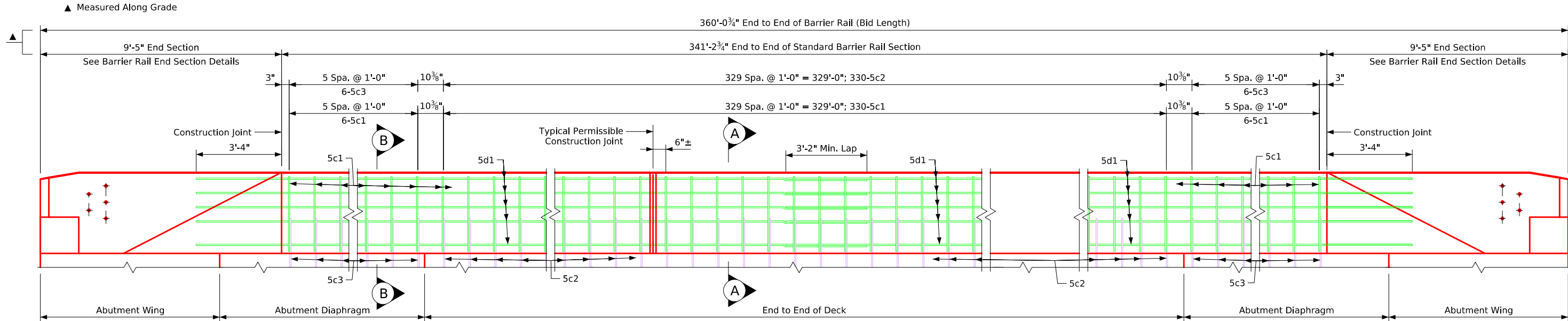


Note: All dimensions are out to out. D = Pin Diameter

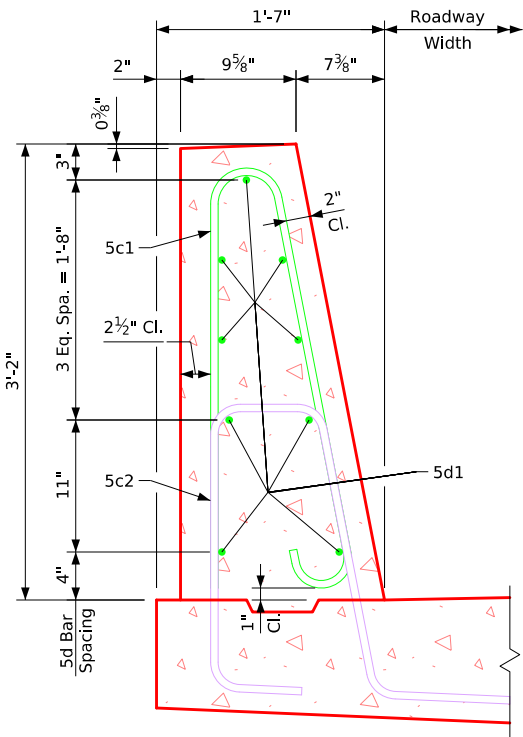
Note: Reinforcing steel quantities are included on the Bridge Quantities Sheet.

Design For Repairs to a 0 Degree Skew
333'-0" x 56'-0" Prestressed Concrete Beam Bridge
110'-9" End Spans 111'-6" Interior Span
Barrier Rail End Section (Stainless)
STA. 281+90.02 (US 169) Turn-in Date: Aug. 2026
Humboldt County
IOWA DEPARTMENT OF TRANSPORTATION
Design No. 0127 Design Sheet No. 17 of 21 FHWA No. 028871

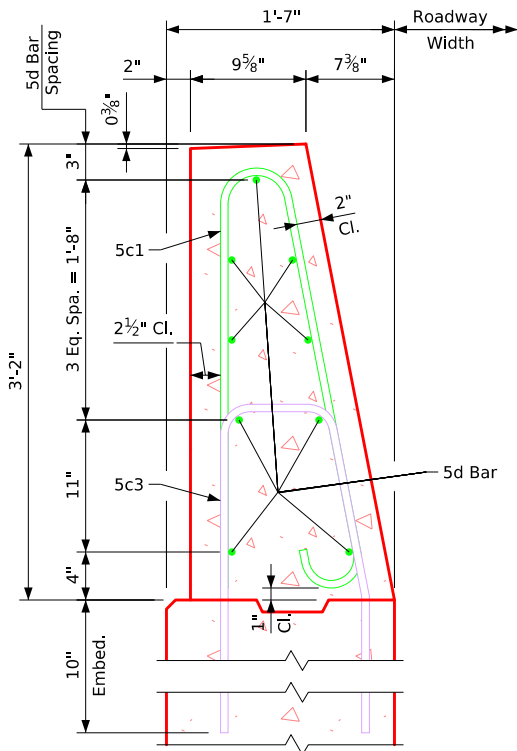
Issued 04-14; Added Stainless Steel Reinforcing Bar List and Changed 5c2, 5c3, 5c14 Bars to Stainless Steel.
DeckRailBridges.dgn - 10205C-1 -This Sheet Re-Issued 05-2024. Revised to Single Slope Barrier Shape. Sheet Format Update. (Sheet Number was Originally 10205C).



Elevation of Barrier Rail



Part Section A-A



Part Section B-B

Notes:
The 5c3 bars are to be set as dowels in drilled holes. See Design Sheet 2 for Dowel Setting Notes.

See Barrier Rail Details on Design Sheet No. 19 for notes, reinforcing steel details, and quantities.

Design For Repairs to a 0 Degree Skew

333'-0" x 56'-0" Prestressed Concrete Beam Bridge

110'-9" End Spans 111'-6" Interior Span

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

STA. 281+90.02 (US 169) Turn-in Date: Aug. 2026

Humboldt County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0127 Design Sheet No. 18 of 21 FHWA No. 028871

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

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.

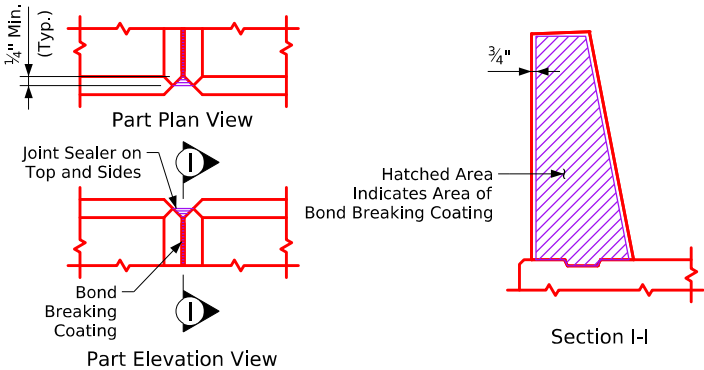
The concrete barrier rail is to be bid on a lineal foot basis. The number of linear feet of barrier rail installed will be paid for at the contract price per lineal foot based on plan quantities. Price bid for concrete barrier railing shall be full compensation for furnishing all material, excluding 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 and junction boxes 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		684	6'-8"	4756
	5d1	Rail, Longitudinal		180	37'-8"	7072
Epoxy Reinf. Total Weight (lbs.)						11,828
Stainless Steel Reinf. Steel - Two Rails						
Section	Bar	Location	Shape	No.	Length	Weight
Standard Sections	5c2	Rail, Vertical		660	7'-3"	4991
	5c3	Rail, Vertical		24	5'-2"	129
Stainless Steel Reinf. Total Weight (lbs.)						5120

Concrete Placement Summary		
Section	Total	
Standard Section 682'-5½" at 0.130 cu. yd. per ft.	88.7	
Total (cu. yd.)	88.7	
Concrete Barrier Rail Quantities		
Item	Unit	Quantity
Concrete Barrier Railing	L.F.	720.1

Bent Bar Details

Diagram showing bent bar details for sections 5c1, 5c2, and 5c3. Dimensions are provided for each section, including overall height, width, and bend dimensions. Section 5c1 has a height of 2'-11" and a width of 11 3/4". Section 5c2 has a height of 2'-0" and a width of 9 1/2". Section 5c3 has a height of 2'-3 1/2" and a width of 9 1/2".

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

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

See Barrier Rail Details on Design Sheet No. 18 for details and sections.

Design For Repairs to a 0 Degree Skew

333'-0" x 56'-0" Prestressed

Prestressed Concrete Beam Bridge

110'-9" End Spans111'-6" Interior Span

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

STA. 281+90.02 (US 169)Turn-in Date: Aug. 2026

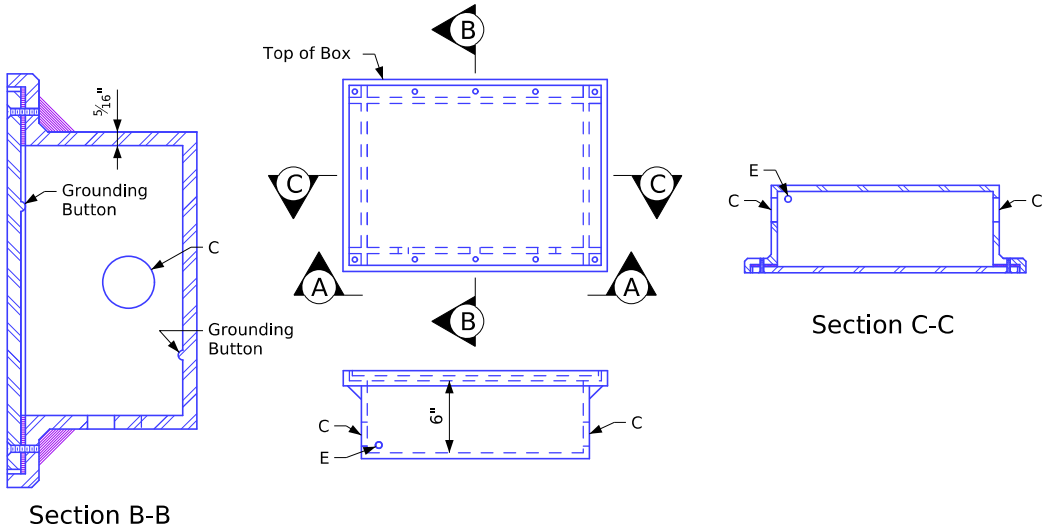
Humboldt County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0127Design Sheet No. 19 of 21FHWA No. 028871

Revised 09-16: Added Standard Specifications 4185.02,B,2 in Lighting Notes. Changed Bar Mark from "x" to "p".
Redrawn 09-08-88.
DeckRailBridges.dgn - 1030As1 -This Sheet Re-Issued 05-2024. Sheet Format Update.

Bossed For	Hole	For Conduit Size
5 Threads	C	2" Ø Rigid Steel
None	E	½" Ø Rigid Steel
Note: The grounding buttons are to be blind drilled and tapped for ⅜"Ø x 0'-0¾" bolts.		



View A-A
LI-104 Junction Box
Watertight, Cast Iron - Flush Mount

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 and junction boxes including labor and any additional work to do the installation is considered incidental to the cost of the railing.
All reinforcing steel is to be epoxy coated and grade 60.
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.

Design For Repairs to a 0 Degree Skew

333'-0" x 56'-0" Prestensioned
Prestressed Concrete Beam Bridge

110'-9" End Spans111'-6" Interior Span

Lighting Details (1 of 2)

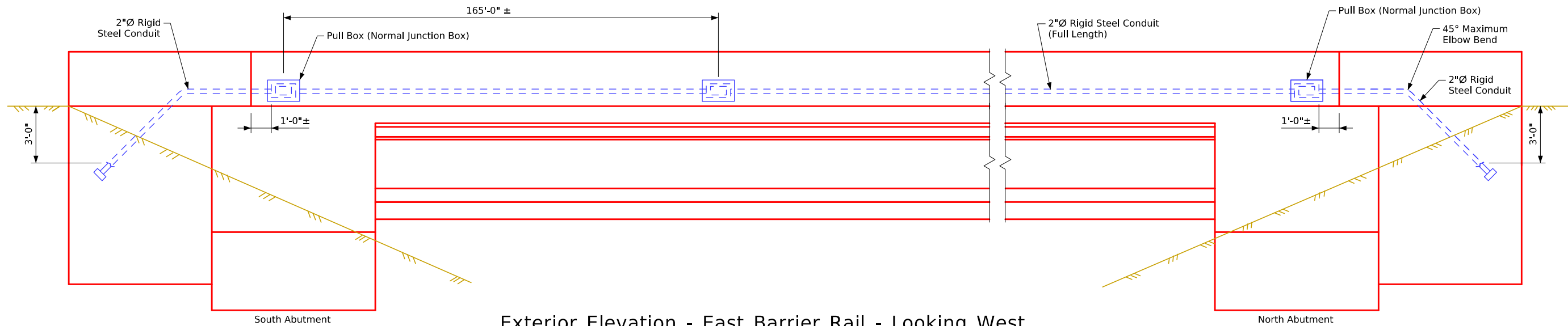
STA. 281+90.02 (US 169)Turn-in Date: Aug. 2026

Humboldt County

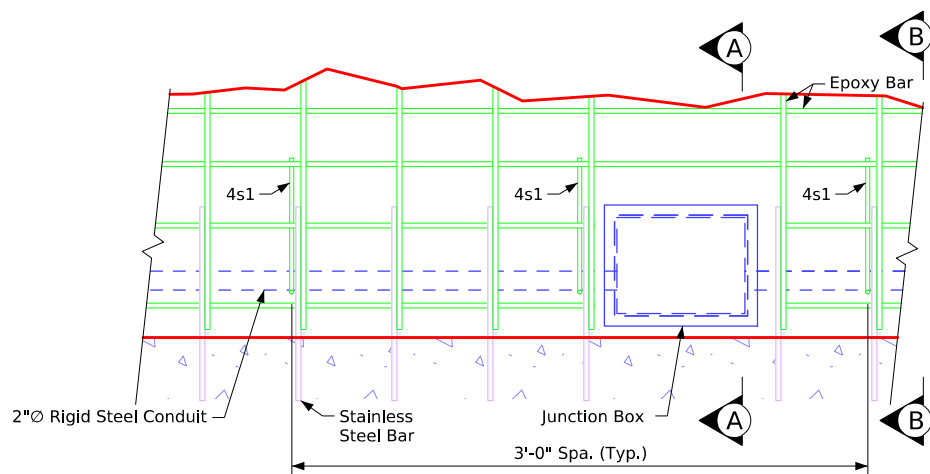
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0127Design Sheet No. 20 of 21FHWA No. 028871

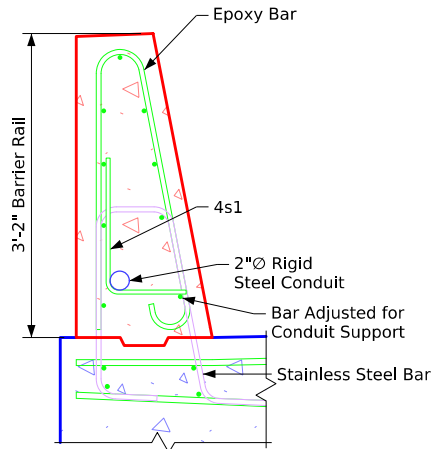
Revised 09-16: Added Conduit Support Rail Detail to Keep Conduit Isolated from the Stainless Steel Reinforcing.
Issued 09-03: DeckRailBridges.dgn - 1030As2 -This Sheet Re-Issued 05-2024. Sheet Format Update.



Exterior Elevation - East Barrier Rail - Looking West

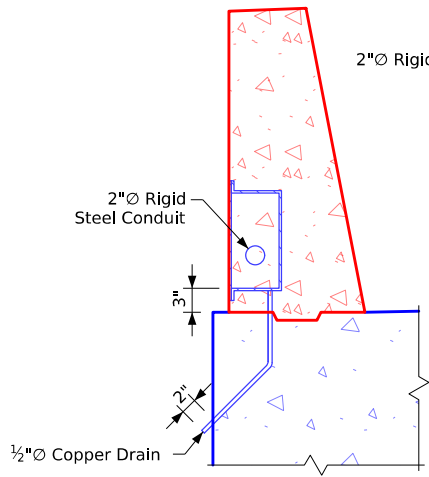


Conduit Support - Rail Elev. Detail
Junction Box Detail - Adjust reinforcing to clear junction box.

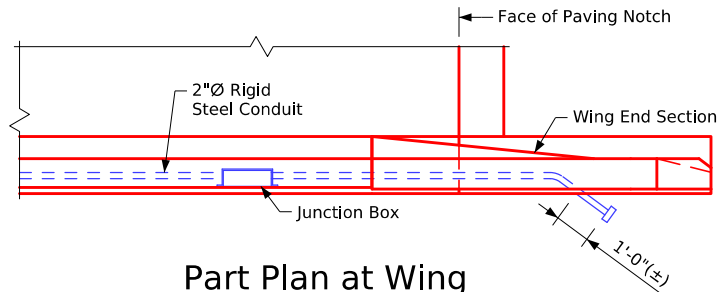


Section B-B - Conduit Support

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



Section A-A
Thru Junction Box

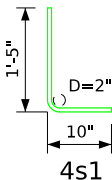


Part Plan at Wing

Epoxy Coated Reinf. Steel - One Rail

Bar	Location	Shape	No.	Length	Weight
4s1	Rail Conduit		115	2'-3"	173
Epoxy Reinforcing Total Weight (lbs.)					173

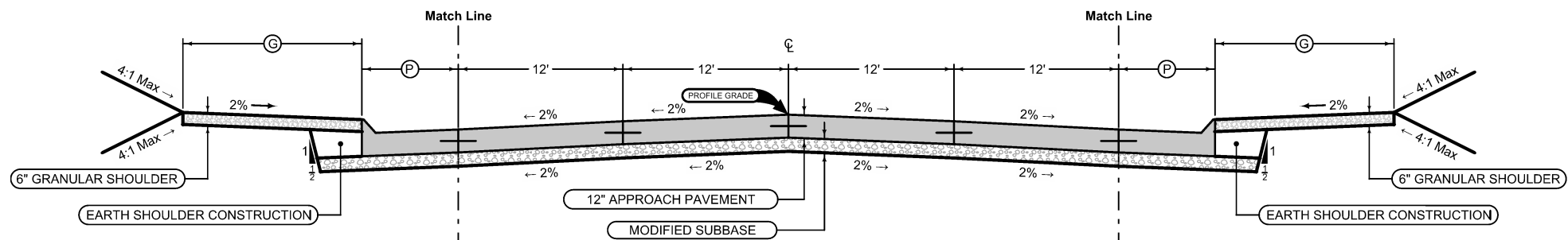
Bent Bar Details



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

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

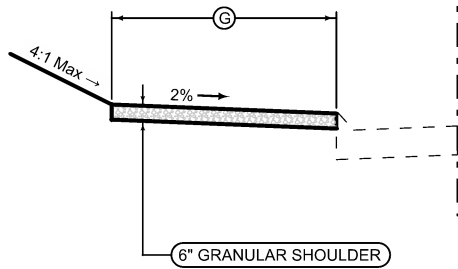
Design For Repairs to a 0 Degree Skew
333'-0" x 56'-0" Prestressed Concrete Beam Bridge
110'-9" End Spans 111'-6" Interior Span
Lighting Details (2 of 2)
STA. 281+90.02 (US 169) Turn-in Date: Aug. 2026
Humboldt County
IOWA DEPARTMENT OF TRANSPORTATION
Design No. 0127 Design Sheet No. 21 of 21 FHWA No. 028871



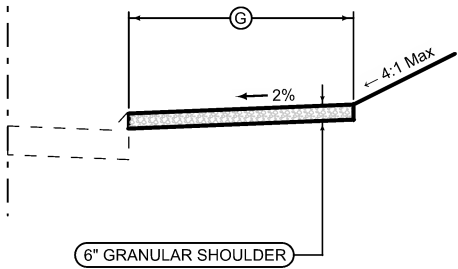
Curbed Shoulder					2_Curb_04-15-25
BEGIN STATION	END STATION	(P) Feet	(G) Feet	Curb Type	See U Sheets
279+22.30	279+82.30	3 - 5.62	11 - 3.72	4"	
279+82.30	280+10.30	5.62	3.72	4"	
283+69.71	283+77.71	5.62-5.14	3.7 - 4.3	4"	

Bridge Approach	
BEGIN STATION	END STATION
279+22.30	280+22.30
283+57.71	283+77.71

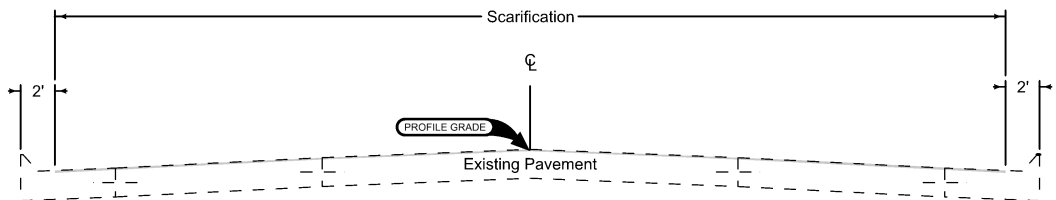
Curbed Shoulder					2_Curb_04-15-25
BEGIN STATION	END STATION	(P) Feet	(G) Feet	Curb Type	See U Sheets
279+22.30	279+82.30	3 - 5.62	12 - 3.72	4"	
279+82.30	280+10.30	5.62	3.72	4"	
283+69.71	283+77.71	4 - 6	3.7 - 3.5	4"	



Granular Shoulder			2_G_SR_04-21-20
BEGIN STATION	END STATION	(G) Feet	
279+03.03	279+22.30	11	
283+77.71	284+89.51	4.2 - 12.4	



Granular Shoulder			2_G_SR_04-21-20
BEGIN STATION	END STATION	(G) Feet	
278+90.54	279+22.30	12.4-11.2	
283+77.71	284+77.05	3.4-10.8	



Pavement Scarification		
BEGIN STATION	END STATION	DEPTH Inches
283+77.71	283+97.71	0.75" - 0.00"

ESTIMATED PROJECT QUANTITIES AND REFERENCE NOTES

Roadway Items : Roadway Items

Item no.	Item Code	Item	Unit	Quantities	Estimate Reference Notes
				Estimated	
				Roadway Items	
1	2101-0850001	CLEARING AND GRUBBING	ACRE	0.45	
2	2102-2625000	EMBANKMENT-IN-PLACE	CY	78	Provide borrow material according to Section 2102 of the Standard Specifications. Refer to Tabulation 107-23. Material shall be provided by the Contractor.
3	2102-2713090	EXCAVATION, CLASS 13, WASTE	CY	58.5	Dispose of excess material according to Article 1106.07 of the current specifications.
4	2121-7425010	GRANULAR SHOULDERS, TYPE A	TON	47.3	Refer to Tab. 112-9 on C Sheets and Typical on Sheet B.1. Tab. 112-09 used to quantify placement of granular shoulder material.
5	2123-7450000	SHOULDER CONSTRUCTION, EARTH	STA	4.6	Item is for earth shoulder construction adjacent to the envelope of the bridge approaches. Place according to Article 2105.03, B of the Standard Specifications. Refer to Tab. 112-09 for details.
6	2214-5145154	PAVEMENT SCARIFICATION, PROFILE	SY	122.4	Refer to Tab. 102-16 and Sheet U.2 for details.
7	2301-0690203	BRIDGE APPROACH, BR-203	SY	763.8	Refer to Tab. 112-06.
8	2412-0000100	LONGITUDINAL GROOVING IN CONCRETE, BRIDGE DECK	SY	2,859.3	Refer to Tab. 100-28.
9	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL	LF	288.5	Refer to Tab. 110-07A.
10	2505-4008300	STEEL BEAM GUARDRAIL	LF	50	Refer to Tab. 108-08A.
11	2505-4008415	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION, BA-209	EACH	4	
12	2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED	EACH	4	
13	2505-4021720	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-205	EACH	2	
14	2505-4021721	STEEL BEAM GUARDRAIL FLARED END TERMINAL, BA-206	EACH	2	
15	2510-6745850	REMOVAL OF PAVEMENT	SY	761.4	Refer to Tabs. 110-1 and 102-5.
16	2527-9263209	PAINTED PAVEMENT MARKINGS, WATERBORNE OR SOLVENT-BASED	STA	12.32	Refer to Tab. 108-22.
17	2527-9270112	GROOVES CUT FOR PAVEMENT MARKINGS	STA	12.32	
18	2528-2518000	SAFETY CLOSURE	EACH	2	Refer to Tab. 108-13A and J Sheets for additional information and locations.
19	2528-8445110	TRAFFIC CONTROL	LS	1	Refer to Traffic Control Plans in J Sheets.
20	2602-0000020	SILT FENCE	LF	712.5	Refer to Tab. 100-17. The tabulation includes estimated locations for placement of "Silt Fence" to address erosion to be encountered during construction. Verify the specific locations with the Engineer prior to beginning placement. See Standard Road Plan EC-201. The engineer may adjust silt fence locations to fit field conditions. This item includes 25% overrun.

Item no.	Item Code	Item	Unit	Quantities	Estimate Reference Notes
				Estimated	
				Roadway Items	
21	2602-0000071	REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS	LF	356.25	This item is included for silt fence removal required for staging reasons, removal to allow for replacement (replacement to be paid separately), or for areas that have achieved 70% permanent growth.
22	2602-0000101	MAINTENANCE OF SILT FENCE OR SILT FENCE FOR DITCH CHECK	LF	71.25	This item is included for maintaining the new silt fence installed for this project.
23	2602-0000212	FLOATING SILT CURTAIN (HANGING)	LF	250	Refer to Tab 100-10.
24	2602-0000240	MAINTENANCE OF FLOATING SILT CURTAIN	LF	125	
25	2602-0000500	OPEN-THROAT CURB INTAKE SEDIMENT FILTER, EC-602	LF	52	Refer to Tab. 100-36.
26	2602-0000510	MAINTENANCE OF OPEN-THROAT CURB INTAKE SEDIMENT FILTER	EACH	4	
27	2602-0000520	REMOVAL OF OPEN-THROAT CURB INTAKE SEDIMENT FILTER	EACH	4	

100_01D
8/15/22

PROJECT DESCRIPTION

This project is for a bridge deck replacement for a 333'-0" x 56'-0" pretensioned prestressed concrete beam bridge on US 169 over West Fork Des Moines River, located 0.6 miles south of IA 3 in City of Humboldt.

FLOATING SILT CURTAINS Refer to EC-202						100.10 8/15/22
Line No.	Station	Hanging (LF)	Containment (LF)	Clean-out (Containment) (LF)	Maintenance of Floating Silt Curtain (LF)	Remarks
1.0	281+25.00	100.0			50.0	
2.0	282+65.00	150.0			75.0	
Total:		250			125	

100_17 8/15/22					TABULATION OF SILT FENCES Refer to EC-201
Line No.	Station From	Station To	Side	Length (FT)	Remarks
1.0	279+00.00	280+15.00	Left	135.00	South End
1.0	278+85.00	280+15.00	Right	150.00	South End
3.0	283+65.00	284+95.00	Left	150.00	North End
4.0	283+65.00	284+80.00	Right	135.00	North End
Total:				570	

LONGITUDINAL GROOVING				100_28 8/15/22
Line No.	Location	Total (SY)	Remarks	
1.0	281+90.02	578.8	South Approach	
2.0	281+90.02	2043.6	Bridge	
3.0	281+90.02	236.9	North Approach	
Total:		2859.3		

100_36
8/15/22

OPEN-THROAT CURB INTAKE SEDIMENT FILTER						
Possible Standard: EC-602						
Line No.	Station	Side	Installation (LF)	Maintenance (Each)	Removal (Each)	Remarks
1.0	279+15.00	Left	18.0	1	1.0	
2.0	279+15.00	Right	18.0	1	1.0	
3.0	284+66.50	Left	8.0	1	1.0	
4.0	284+66.50	Right	8.0	1	1.0	
Total:			52	4	4	

102_05 9/29/23																					
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	Humboldt	US 169	Both	172.33	172.73	1997		NHS-169-7(35)--19--46	AAC	1.5							Hodges	C. LST.			
2.0	Humboldt	US 169	Both	172.33	172.73	1997		NHS-169-7(35)--19--46			TBB	11.0					Hodges	C. LST.			Outside Lanes + C&G
3.0	Humboldt	US 169	Both			2006		BRFN-169-7(40)--39-46	HMA/PCC	1.8					Scarify	0.3					Bridge/Approach Overlay Surface Raise
4.0	Humboldt	US 169	Both			2020		MB-169-2(500)174--77-46	HMA/PCC			10.0									Bridge Approaches

NOTCHES AND RUNOUTS FOR RESURFACING Refer to PR-201 and PR-202. (1) Bid item. Applies only to Types 'N1' and 'N3' on PR-202. Refer to 100-25 for remaining values.									102_16 11/1/24
Line No.	Station	Type of Notch or Runout	S (IN)	I (IN)	DI (IN)	L (FT)	M (IN)	Pavement Scarification (SY) (1)	Remarks
1.0	283+77.71	Type N1				20.0	0.8	122.4	Scarify from 0.75 to 0
Total:								122.4	

105_04 4/21/26 STANDARDS The following Standards apply to construction work on this project.		
Number	Date	Title
BA-200	4/21/2026	Steel Beam Guardrail Components
BA-202	4/15/2025	Steel Beam Guardrail Bolted End Anchor
BA-205	10/17/2023	Steel Beam Guardrail Tangent End Terminal (MASH TL-3)
BA-206	10/17/2023	Steel Beam Guardrail Flared End Terminal For Cable Connection
BA-209	10/15/2024	Steel Beam Guardrail Barrier Transition Section (Mash TL-3, 34in Mounting Height)
BA-250	10/21/2025	Steel Beam Guardrail Installation at Concrete Barrier or Bridge End Post (MASH TL-3)
BR-211	4/21/2026	Bridge Approach (Abutting PCC or Composite Pavement)
BR-212	4/21/2026	Bridge Approach (Abutting HMA Pavement)
EC-201	4/20/2021	Silt Fence
EC-202	10/21/2014	Floating Silt Curtain
EC-602	10/15/2024	Open-Throat Curb Intake Sediment Filter
EW-301	4/16/2024	Guardrail Grading
EW-401	10-20-15	Temporary Stream Crossing, Causeway, or Equipment Pad
PR-202	10/21/2014	Notches for Resurfacing (with or without Runout)
PV-101	10/21/2025	Joints
SI-211	10-18-22	Object Marker and Delineator Placement with Guardrail
TC-252	10/21/2025	Routes Closed to Traffic
TC-601	10/15/2019	Pedestrian Detour

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	SB	280+10.30	Left	1:6	39.8	5.0	39.8	5.0	39.8	5.0	86.8	9.8	66.8		17.0	South End	
2.0	NB	280+10.30	Right	1:6	39.8	5.0	39.8	5.0	39.8	5.0	99.8	9.8	66.2		16.0	South End	
3.0	SB	283+69.71	Left	1:6	39.8	5.0	39.8	5.0	39.8	5.0	99.5	11.0	66.0		22.0	North End	
4.0	NB	283+69.71	Right	1:6	39.8	5.0	39.8	5.0	39.8	5.0	87.1	8.5	61.5		23.0	North End	
Total:															78		

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	Right	280+11.13	28.6	BA-209	1	BA-205	1	53.125			47.67			3				1	D	1		12.5	
2.0	SB	Left	280+11.13	28.6	BA-209	1	BA-206	1	53.125			37.50			3			1		D	1		12.5	
3.0	NB	Right	283+68.88	28.6	BA-209	1	BA-206	1	53.125			37.50			3			1		D	1		12.5	
4.0	SB	Left	283+68.88	28.6	BA-209	1	BA-205	1	53.125			47.70			3			1		D	1		12.5	

Total:					4		4														4		50	
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108_13A 3/27/25 SAFETY CLOSURES Refer to Section 2528 of the Standard Specifications			
Station	Road Closure Qty.	Hazard Closure Qty.	Remarks
277+00.00	1		US 169 S. Side of Bridge
286+50.00	1		US 169 N. Side of Bridge
Total:	2		

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	YLV2: Yield Line (White) @ 1.15			

Line No.	Road ID	Station From	Station To	Lane	Marking Type	Left	Center	Right	Groove Marking Needed?	Groove Qty. (STA)	BLW6 (STA)	BLW6 Factored (STA)	DCY6 (STA)	DCY6 Factored (STA)	Remarks
1.0	US 169	279+22.30	284+15.21	NB	Waterborne/Solvent Paint			X	Yes	1.23	4.93	1.23			Final
2.0	US 169	279+22.30	284+15.21	Center	Waterborne/Solvent Paint		X		Yes	9.86			4.93	9.86	Final
3.0	US 169	279+22.30	284+15.21	SB	Waterborne/Solvent Paint	X			Yes	1.23	4.93	1.23			Final
Total:										12.32		2.46		9.86	

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	279+22.30	280+22.30	Both	HMA/PCC	634.3	54.0	South Bridge Approach
2.0	283+57.72	283+77.71	Both	HMA/PCC	127.1	59.1	North Bridge Approach
Total:					761.4	113.1	

REMOVAL OF EXISTING STRUCTURES			
Line No.	Location	Description	Remarks
1.0	US 169	STA. 281+90.02	Bridge Deck and Concrete Barrier Rails

110_02
8/15/22

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.	No.	Direction of Traffic (1)	Station From	Station To	Side	Removal of Guardrail (2) (LF)
1.0		NB	279+29.20	280+13.07	Right	84.0
2.0		SB	279+54.07	280+13.17	Left	59.5
3.0		NB	283+65.88	284+25.76	Right	60.0
4.0		SB	283+65.85	284+50.34	Left	85.0
Total:						288.5

FILE NO. 32362

ENGLISH

DESIGN TEAM

Schemmer

HUMBOLDT COUNTY

PROJECT NUMBER

BRF-169-7(049)--38-46

SHEET NUMBER

C.17

7/13/2026 2:16:26 PMBRANDT.WALLA@IOWAID

INDEX OF TABULATIONS				111_25 4/21/26
Line No.	Tabulation	Tabulation Title	Sheet No.	
3.0	100_01D	PROJECT DESCRIPTION	C.3	
4.0	100_10	FLOATING SILT CURTAINS	C.4	
5.0	100_17	TABULATION OF SILT FENCES	C.5	
6.0	100_28	LONGITUDINAL GROOVING	C.6	
7.0	100_36	OPEN-THROAT CURB INTAKE SEDIMENT FILTER	C.7	
8.0	102_05	EXISTING PAVEMENT	C.8	
9.0	102_16	NOTCHES AND RUNOUTS FOR RESURFACING	C.9	
10.0	105_04	STANDARD ROAD PLANS	C.10	
11.0	107_23	GRADING FOR GUARDRAIL INSTALLATIONS	C.11	
12.0	108_08A	STEEL BEAM GUARDRAIL AT CONCRETE BARRIER OR BRIDGE RAIL END SECTION	C.12	
13.0	108_13A	SAFETY CLOSURES	C.13	
14.0	108_22	PAVEMENT MARKING LINE TYPES	C.14	
15.0	110_01	REMOVAL OF PAVEMENT	C.15	
16.0	110_02	REMOVAL OF EXISTING STRUCTURES	C.16	
17.0	110_07A	REMOVAL OF STEEL BEAM GUARDRAIL	C.17	
18.0	111_25	INDEX OF TABULATIONS	C.18	
19.0	112_06	BRIDGE APPROACH SECTION	C.19	
20.0	112_09	SHOULDERS	C.20	
21.0	232_03B	EROSION CONTROL (URBAN SEEDING)	C.21	
22.0	232_03C	EROSION CONTROL (NATIVE GRASS SEEDING)	C.21	
23.0	232_11	EROSION CONTROL (STABILIZING CROP SEEDING)	C.21	
24.0	262_06	UTILITIES (NOT A POINT 25 PROJECT)	C.21	
25.0	281_01	SECTION 404 PERMIT AND CONDITIONS	C.21	
26.0	281_03	STORM WATER BEST MANAGEMENT PRACTICES	C.21	
27.0	282_01	RESTRICTED STREAM ACCESS	C.21	
28.0	108_23A	TRAFFIC CONTROL PLAN	J.1	
29.0	108_25	511 TRAVEL RESTRICTIONS	J.2	
30.0	108_26A	STAGING NOTES	J.3	
31.0	111_01	COORDINATED OPERATIONS	J.4	
32.0	113_02	PEDESTRIAN PATH CLOSURES	J.5	

BRIDGE APPROACH SECTION Refer to the BR Series. * Not a bid item																					112_06 2/22/24
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)	Class 'A' * Crushed Stone Backfill (CY)	Modified * Subbase (TON)	Polymer * Grid (SY)	Special * Backfill (TON)	Remarks
1.0	281+90.02	S			12.0	100.0	377.6	131.6	127.3	BR-203	Movable	BR-212						652.925	685.3		US-169, See Sheets U.1-U.3
2.0	281+90.02	N			12.0	20.0			127.3	BR-203	Movable	BR-211						167.757	140.4		US-169, See Sheets U.1-U.3
Total:							377.6	131.6	254.6									820.682	825.7		

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 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)	Shoulder Const. Alt (3) (STA)	Shoulder Const. Alt PCC (6) (CY)	Remarks
US 169	NB	278+90.54	280+10.30	Right				119.76	16.2												13.700		1.20		
US 169	SB	279+03.06	280+10.30	Left				107.24	13.0												9.600		1.10		
US 169	NB	283+69.71	284+77.05	Right				107.34	16.6												14.000		1.10		
US 169	SB	283+69.71	284+89.51	Left				119.80	12.7												10.000		1.20		
Total:									58.5											47.3				4.6	

112_09
4/21/26

232_038
9/28/22

EROSION CONTROL (URBAN 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, fertilizer, and mulch on the disturbed area as follows:

Place seed and fertilize according to the requirements of Article 2601.03,C,4 and Section 4169 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, fertilizer, and mulch are incidental to mobilization and will not be paid for separately.

232_030
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 debarbed 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.

232_11
6/21/23

EROSION CONTROL (STABILIZING CROP 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.

If outside of permanent seeding dates in Section 2601 of the Standard Specifications, or if required by a storm water permit, place stabilizing crop, fertilizer, and mulch on the disturbed area as follows:

Place seed and fertilize according to the requirements of Article 2601.03,C,1 and Section 4169 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, fertilizer, and mulch are incidental to mobilization and will will not be paid for separately.

262_06
9/28/22

UTILITIES (NOT A POINT 25 PROJECT)

This is NOT a POINT 25 project and is not subject to the provisions of IAC 761-115.25.

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, silt fence, open-throat curb intake sediment filter 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.

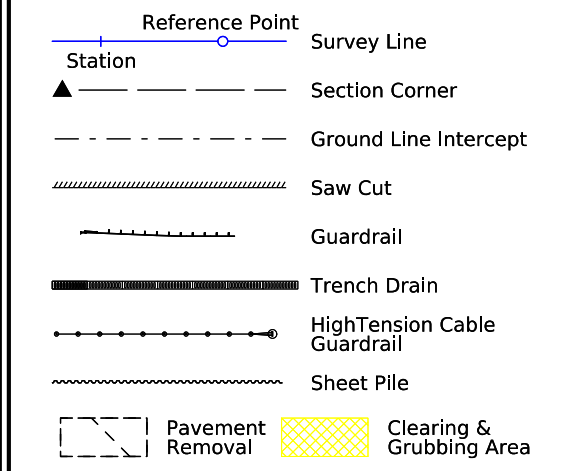
	Interstate Highway Symbol
	U.S. Highway Symbol
	Iowa Highway Symbol
	County Road Highway Symbol
	Evergreen Tree
	Deciduous Tree
	Fruit Tree
	Shrub (Bushes)
	Timber
	Hedge
	Stump
	Swamp
	Rock Outcrop
	Broken Concrete
	Revetment (Rip Rap)
	Cemetery
	Grave
	Cave
	Sink Hole
	Board Fence
	Chain Link or Security Fence
	Wire Fence
	Terrace
	Earth Dam or Dike (Existing)
	Tile Outlet
	Edge of Water
	Existing Drainage
	Right of Way Rail or Lot Corner
	Concrete Monument
	Well
	Windmill
	Beehive Intake
	Existing Intake
	Existing Utility Access (Manhole)
	Fire Hydrant
	Water Hydrant (Rural)

	Septic Tank
	Cistern
	L.P. Gas Tank (No Footing)
	Underground Storage Tank
	Latrine
	Satellite TV Dish
	Water Hook Up
	Radio Tower
	Tower Anchor
	Guardrail (Beam or Cable)
	Guard Post (one or two)
	Guard Post (over two)
	Filler Pipe
	Gas Valve
	Water Valve
	Speed Limit Sign
	Mile Marker Post
	Sign
	Traffic Signal Control Box
	Rail Road Signal Control Box
	Telephone Switch Box
	Electric Box

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

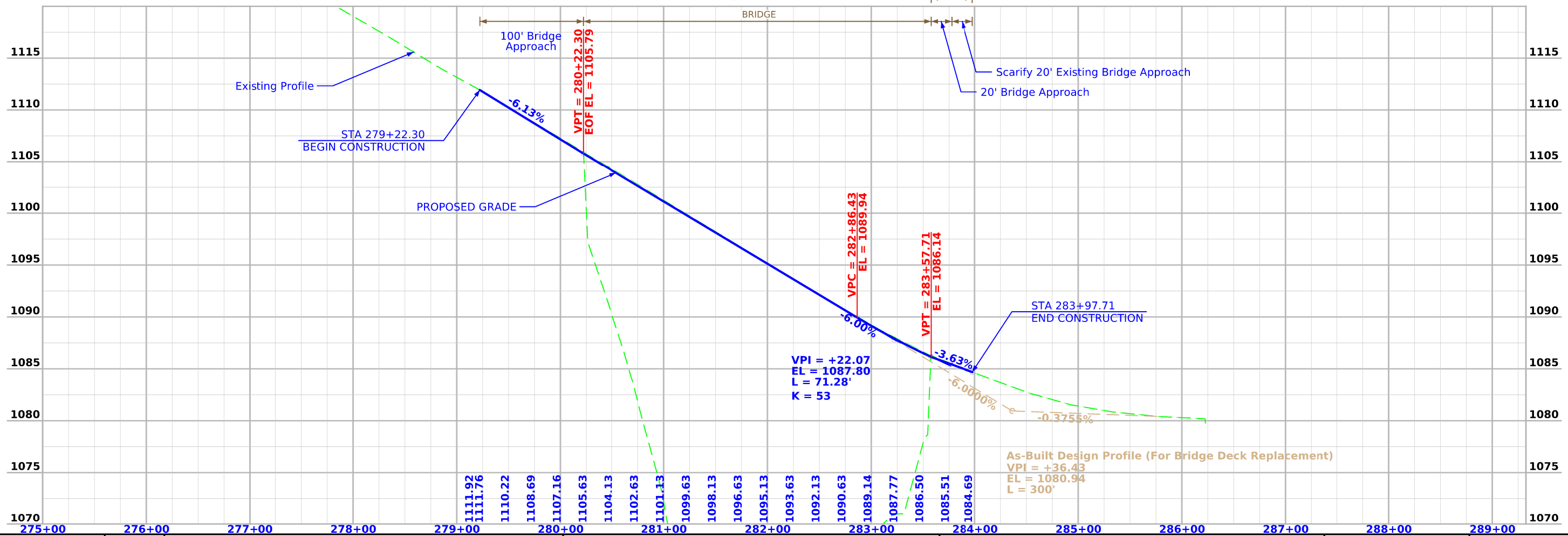
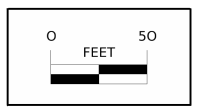
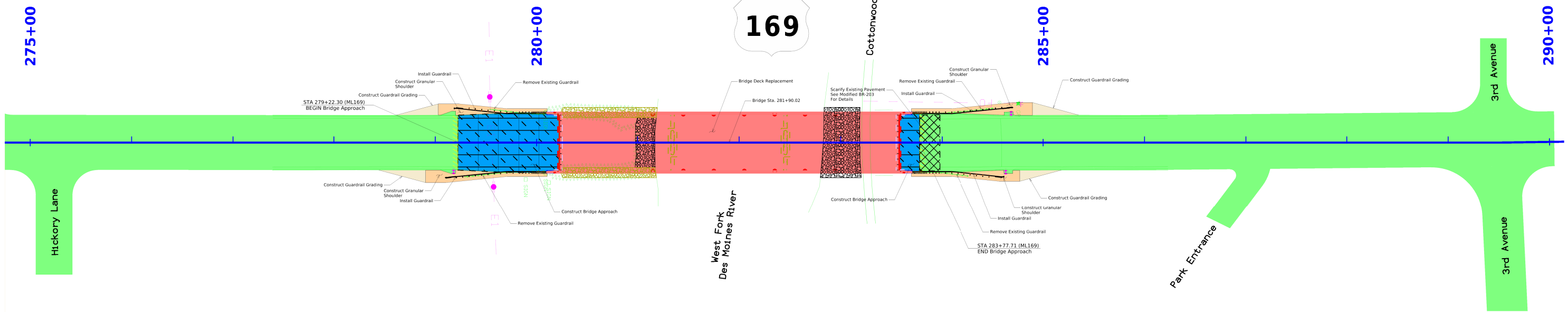
SHADING	Design Color No.	Transparency
Pink, Dark	(13)	Temporary Pavement Shading 50%
Yellow	(4)	Proposed Pavement Shading 50%
Orange	(6)	Proposed Granular Shading 50%
Orange	(70)	Proposed Shoulder Granular Shading 50%
Yellow	(68)	Proposed Shoulder Paved Full Depth Shading 50%
Yellow	(132)	Proposed Shoulder 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%

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



- 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
- Access Control
- Property Line Symbol
- Property Line

(COVERS SHEET SERIES D)



Survey Information

SURVEY INDEX

County: Humboldt
PIN: 22-46-169-010
Project Number: BRF-169-7(049)—38-46
Location: HWY 169 & Des Moines River crossing
Type of Work: Bridge Deck Replacement
Project Directory: 4616901022

Survey Personnel

Ray Flock – Survey Party Chief
Ian Rau – Survey Technician

Date(s) of Survey

Begin Date 08/06/2025
End Date 08/08/2025

General Information

This survey is for US Hwy 169 bridge replacement of 333'-0 x 56' ppcb bridge, located over the Des Moines River approximately 733 feet south of the intersection of 3rd Avenue and Hwy 169 in Humboldt, Iowa. 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

Nearby Iowa Real Time Network reference stations were utilized to obtain horizontal and vertical control on primary project control points. Control point was held for 180 epochs. 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 4
(U.S. SURVEY FOOT)
VERTICAL DATUM: NAVD88
GEOID MODEL: 18

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 04 (U.S. Survey Foot)

VERT. DATUM: NAVD88 - Geoid Model: 2018u3 or 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 04 (U.S. Survey Foot)
VERT. DATUM: NAVD88
Geoid Model: 2018u3 or 2018u2

Point Name	Northing	Easting	Elevation	Feature Definition-Description
100	8669882.957	14663018.860	1079.752	CP 5/8 RB W/ CAP
101	8669575.810	14662947.512	1084.797	CP 5/8 RB W/ CAP
102	8669172.044	14663010.721	1108.906	CP 5/8 RB W/ CAP
103	8669537.206	14662940.215	1071.556	CP 60D
104	8669516.422	14662751.256	1073.886	CP MAGNAIL
105	8669537.282	14662980.546	1071.091	CP 60D
106	8669557.306	14663034.245	1076.320	CP 60D
107	8669293.165	14662984.452	1076.893	CP 60D
108	8669304.959	14663029.406	1071.124	CP 60D
109	8669300.701	14662939.284	1075.990	CP 60D

TRAFFIC CONTROL PLAN		108_23A 8/15/22
US 169: Bridge over West Fork Des Moines River shall be closed to traffic in accordance with Standard Road Plans listed on Tab. 105-4 on C Sheets. For additional information, refer to Part 6 of the Manual on Uniform Traffic Control Devices and the current Standard specifications. Refer to Tab. 108-26A for Staging Notes J Sheets for detour route. Trail/Sidewalk: All Trail/Sidewalk along, under, and connecting to US 169 within the project area will be closed during construction. Access: The contractor shall provide access to adjacent property owners at all times. Use Iowa DNR's warning signage and requirements as stated and defined on roadway J Sheets to help paddling public avoid injury during removal and reconstruction of US 169 bridge deck. See chapter six on signage in "Developing Water Trails in Iowa" found at this link: https://www.iowadnr.gov/things-to-do/canoeing-kayaking/water-trail-development [iowadnr.gov]. Additionally, based on the DNR Signage Requirements Addendum dated April 2, 2021.		

511 TRAVEL RESTRICTIONS													108_25 3/28/24
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
1.0	US 169	Both	Humboldt	W Fork Des Moines River 0.6mi S of IA 3	West Fork Des Moines River	Traffic Control Device	FHWA No. 028871	Horizontal	56'-0	Closed	Closed	56'-0	Detour

STAGING NOTES		108_26A 8/15/22
Traffic: Close US 169 bridge over West Fork Des Moines River to traffic in accordance with Standard Road Plan TC-252. Northbound US 169 traffic shall be closed to through traffic at Wildcat Rd./4th Ave. SW and detoured using C44 to P33 to IA 3 as shown on J Sheets. Southbound US 169 traffic shall be closed to through traffic at IA 3 and detoured using IA 3 to P33 to C44 as shown on J Sheets. Existing entrances between Wildcat Rd./4th Ave. and IA 3 shall remain open to local traffic only during construction. Construction: Replace bridge deck and concrete barrier rail. Replace 100' of south bridge approach. Replace 20' of north bridge approach. Scarify 20' north of proposed north approach to accommodate lowering bridge profile based on PR-201. See Detail 'X' on sheet U.2 Remove and replace guardrail on the north and south side of the bridge and construct granular shoulders at guardrail. Complete other construction as noted on Sheet D.2. Complete final pavement markings. Final Traffic: Open both lanes to traffic.		

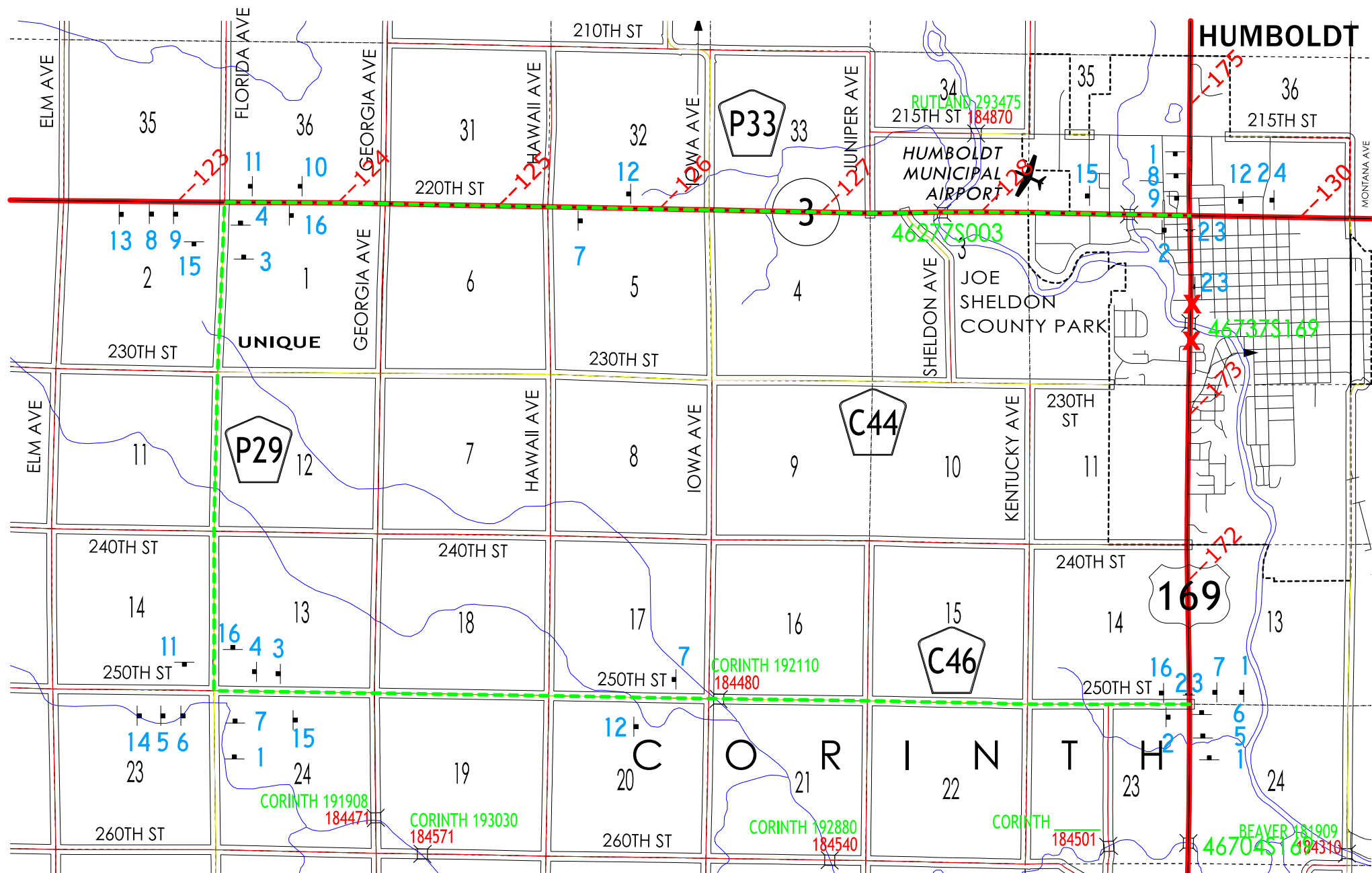
111_01
10/14/22

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
None Provided	

113_02 8/15/22 PEDESTRIAN PATH CLOSURES Refer to TC-601. *Assumes 6 foot wide barricade. Closures may need to be removed and re-established.					
Line No.	Location	Side	Width of Closure (FT)	Type III Barricades* (No.)	Remarks
1.0	283+25		8.0	1	Cottonwood Trail E. Side of Bridge
2.0	283+25		8.0	1	Cottonwood Trail W. Side of Bridge
3.0	286+50		8.0	1	Cottonwood Trail NW. of Bridge at Trail Ent.
Total:				3	



1

2

3

4

5

6

7

8

9

10

11

12

13

14

DETOUR AHEAD

1500 FEET

END DETOUR

DETOUR NORTH 169

DETOUR NORTH 169

DETOUR NORTH 169

DETOUR NORTH 169

DETOUR NORTH 169

DETOUR SOUTH 169

DETOUR SOUTH 169

DETOUR SOUTH 169

DETOUR SOUTH 169

DETOUR SOUTH 169

DETOUR SOUTH 169

JCT 169 SOUTH

JCT 169 NORTH

15

16

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18

19

20

21

22

23

24

DETOUR SOUTH 169

DETOUR NORTH 169

SOUTH 169

SOUTH 169

NORTH 169

DETOUR SOUTH 169

DETOUR SOUTH 169

R11-4 60" x 30" ROAD CLOSED TO THRU TRAFFIC

R11-2 48" x 30" ROAD CLOSED

US 169 CLOSED FROM C46 TO IA-3 FOLLOW DETOUR

TWO SPECIAL SIGNS REQUIRED FOR DETOUR

ROADWAY DESIGN

Devendra Tamrakar

26062

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

Devendra Tamrakar

Printed or Typed Name

My license renewal date is December 31, 20 27

Pages or sheets covered by this seal: J.6

X

LEGEND

DETOUR ROUTE

Closed

X

DETOUR FOR

US 169

FILE NO. --

ENGLISH

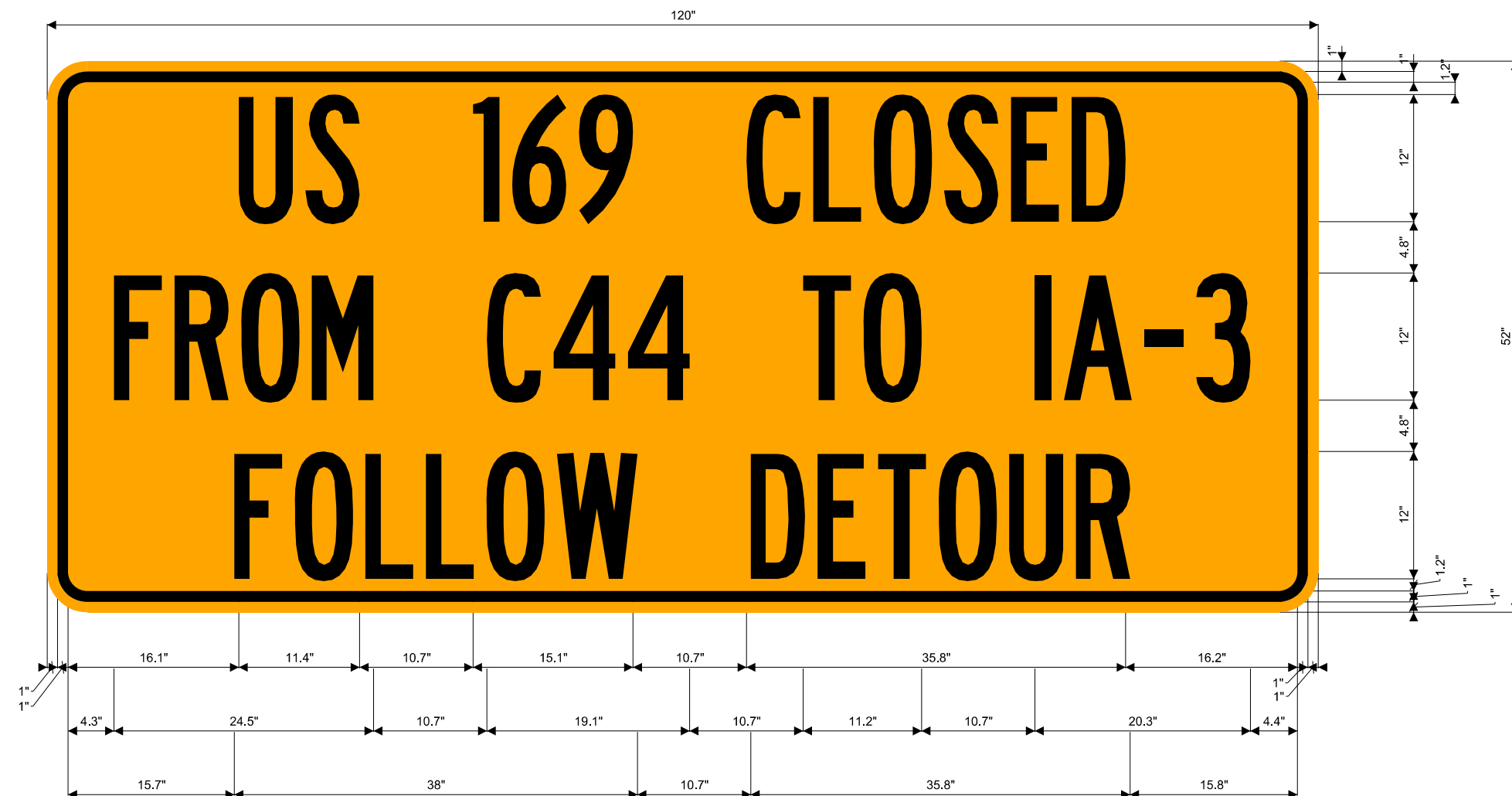
DESIGN TEAM ADEY/TAMRAKAR

HUMBOLDT COUNTY

PROJECT NUMBER BRF-169-7(049)--38-46

SHEET NUMBER J.6

8:07:44 AM 7/15/2026 dtamrak pw:\NTP\wint1.dot.int.lan:PWMain\Documents\Projects\4616901022\DistrictDesign\DET_46169049.dgn



border, Black on Fluorescent orange
No border, Black on Fluorescent orange;
[US 169 CLOSED] Arial; [FROM C44 TO IA-3] Arial; [FOLLOW DETOUR] Arial;

SIGN 4

Addendum A: Sign Placements and Language for the US 169 Bridge Over the West Fork Des Moines River

Notifications to be Included in Plans:

- 1) Ensure plan set requires notification to John Wenck via e-mail at John.Wenck@dnr.iowa.gov when temporary channel obstruction is placed and removed so that hazard symbol can be added to the DNR’s interactive river mapping system and removed once project is complete.
- 2) Notify and coordinate with Conservation Officer Bill Spece (515-571-0127; Bill.Spece@dnr.iowa.gov) for advice on placements as crew install signs.
- 3) Contact manager of the access, City of Humboldt Parks & Sanitation Department (515-332-4280, parksdept@ci.humboldt.ia.us) regarding sign placement for the Des Moines River Dam and Sumner Bridge Accesses.

Use color coding for all in this color style according to Water Trail Development Manual (<https://www.iowadnr.gov/Things-to-Do/Canoeing-Kayaking/Water-Trail-Development>) criteria:

For placement at Des Moines River Dam Access

Sign #1 Facing toward parking lot from water access

[[[Style of Sign]]]



[[[3"Letterheight: Use this text.]]]
Warning

[[[2"Letterheight Use this text.]]]
Construction Hazard
at US 169 Bridge

Don't Launch Here
For Downstream Trip

For placement at Sumner Bridge Access

Sign #2 Facing to parking lot from water access

[[[Style of Sign]]]



[[[3"Letterheight: Use this text.]]]
Warning

[[[2"Letterheight Use this text.]]]
Construction Hazard
at US 169 Bridge

Don't Launch Here
For Upstream Trip

[[[Placement: Near top of boat ramp facing parking area]]]

For placement at the Construction Site

Sign #3-6 Adjacent River Banks/Center of Bridge Decks (facing upstream and downstream)

[[[Style of Sign]]]



River Width 131'

[[[6"Letterheight: Use this text.]]]
Danger

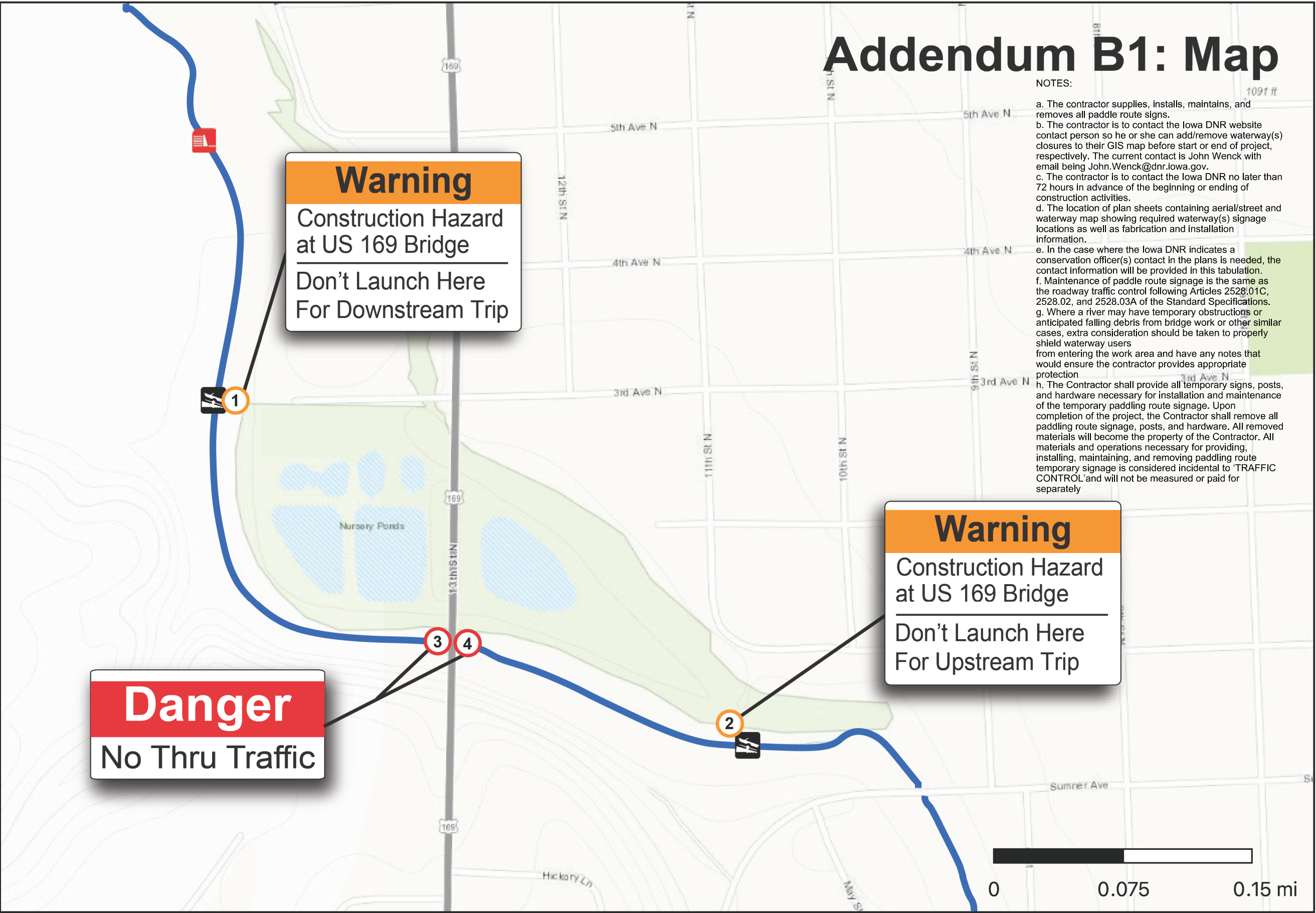
[[[4"Letterheight Use this text.]]]
No Thru Traffic

[[[Placement: When no structure is present, install along adjacent river banks facing upstream and downstream (Addendum B1; See Addendum C for limb-mounted installation option). When structure is present, may be installed on center of bridge facing upstream and downstream (Addendum B2). Signage must be present throughout the entirety of the project.]]]

Addendum B1: Map

NOTES:

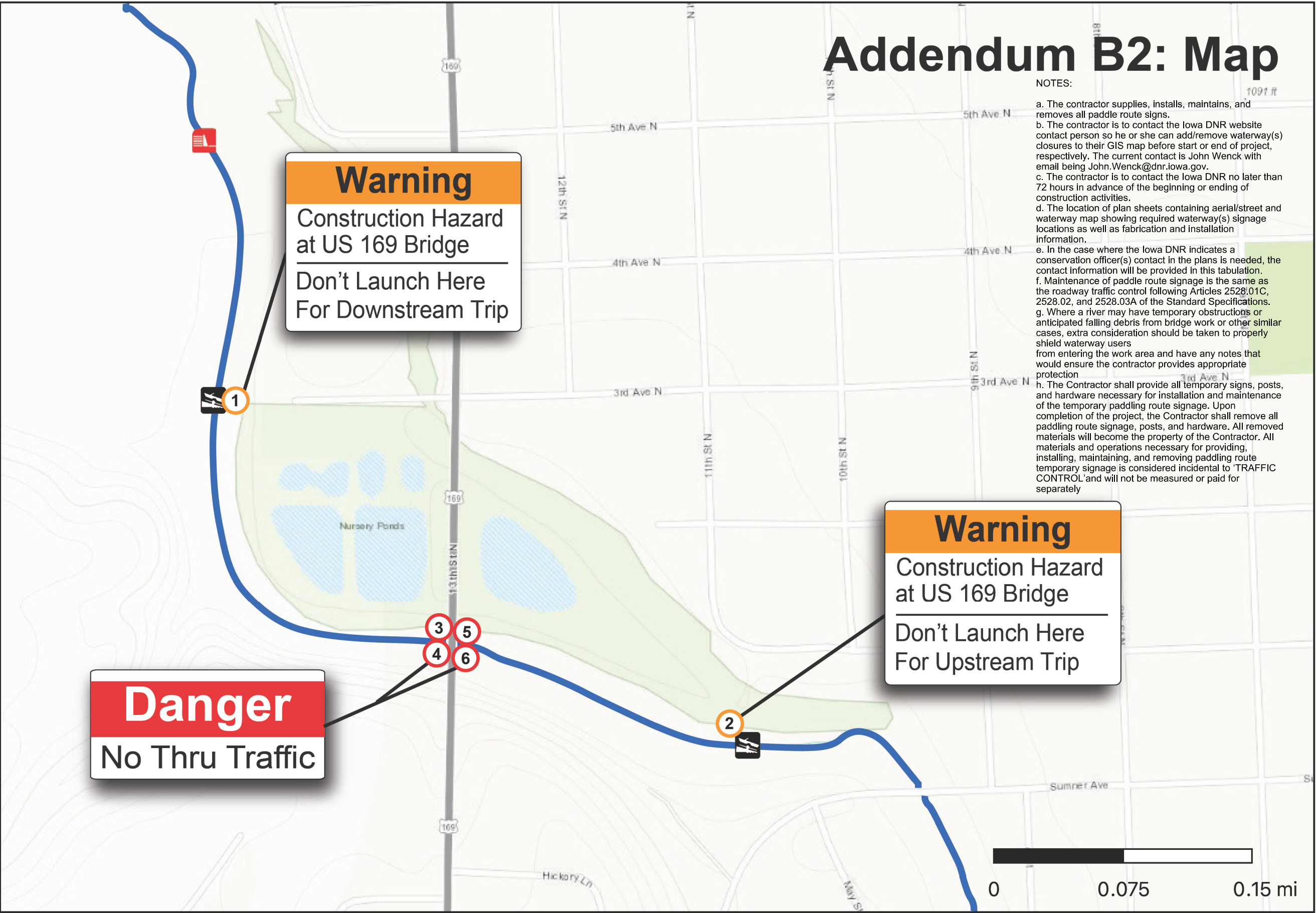
- a. The contractor supplies, installs, maintains, and removes all paddle route signs.
- b. The contractor is to contact the Iowa DNR website contact person so he or she can add/remove waterway(s) closures to their GIS map before start or end of project, respectively. The current contact is John Wenck with email being John.Wenck@dnr.iowa.gov.
- c. The contractor is to contact the Iowa DNR no later than 72 hours in advance of the beginning or ending of construction activities.
- d. The location of plan sheets containing aerial/street and waterway map showing required waterway(s) signage locations as well as fabrication and installation information.
- e. In the case where the Iowa DNR indicates a conservation officer(s) contact in the plans is needed, the contact information will be provided in this tabulation.
- f. Maintenance of paddle route signage is the same as the roadway traffic control following Articles 2528.01C, 2528.02, and 2528.03A of the Standard Specifications.
- g. Where a river may have temporary obstructions or anticipated falling debris from bridge work or other similar cases, extra consideration should be taken to properly shield waterway users from entering the work area and have any notes that would ensure the contractor provides appropriate protection.
- h. The Contractor shall provide all temporary signs, posts, and hardware necessary for installation and maintenance of the temporary paddling route signage. Upon completion of the project, the Contractor shall remove all paddling route signage, posts, and hardware. All removed materials will become the property of the Contractor. All materials and operations necessary for providing, installing, maintaining, and removing paddling route temporary signage is considered incidental to 'TRAFFIC CONTROL' and will not be measured or paid for separately.



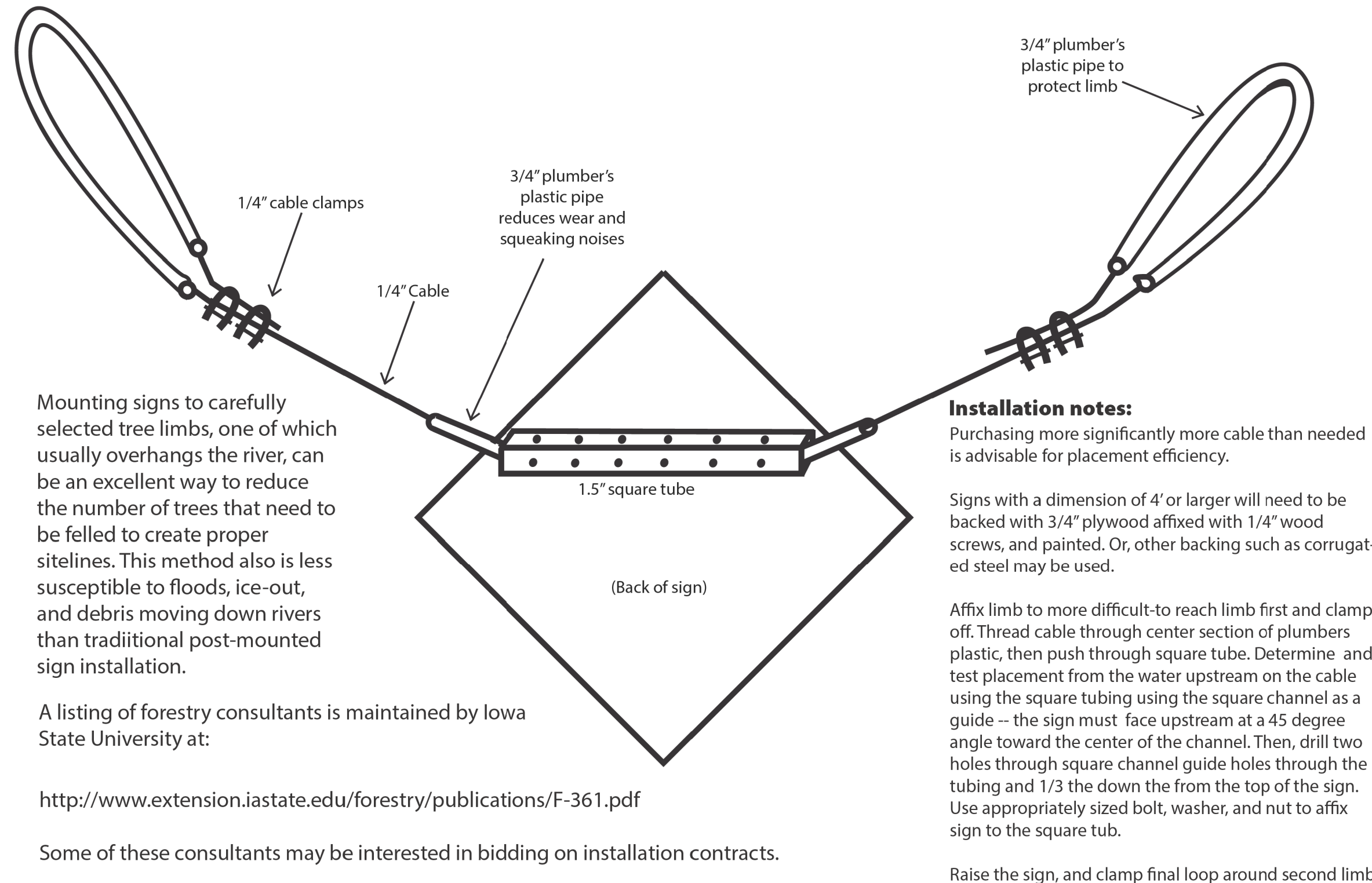
Addendum B2: Map

NOTES:

- a. The contractor supplies, installs, maintains, and removes all paddle route signs.
- b. The contractor is to contact the Iowa DNR website contact person so he or she can add/remove waterway(s) closures to their GIS map before start or end of project, respectively. The current contact is John Wenck with email being John.Wenck@dnr.iowa.gov.
- c. The contractor is to contact the Iowa DNR no later than 72 hours in advance of the beginning or ending of construction activities.
- d. The location of plan sheets containing aerial/street and waterway map showing required waterway(s) signage locations as well as fabrication and installation information.
- e. In the case where the Iowa DNR indicates a conservation officer(s) contact in the plans is needed, the contact information will be provided in this tabulation.
- f. Maintenance of paddle route signage is the same as the roadway traffic control following Articles 2528.01C, 2528.02, and 2528.03A of the Standard Specifications.
- g. Where a river may have temporary obstructions or anticipated falling debris from bridge work or other similar cases, extra consideration should be taken to properly shield waterway users from entering the work area and have any notes that would ensure the contractor provides appropriate protection.
- h. The Contractor shall provide all temporary signs, posts, and hardware necessary for installation and maintenance of the temporary paddling route signage. Upon completion of the project, the Contractor shall remove all paddling route signage, posts, and hardware. All removed materials will become the property of the Contractor. All materials and operations necessary for providing, installing, maintaining, and removing paddling route temporary signage is considered incidental to 'TRAFFIC CONTROL' and will not be measured or paid for separately.



Addendum C: Limb-mounted method for riverside signage





No border, White on White;
No border, White on Fluorescent orange;
[Warning] Black Arial;
No border, Black on White;
[Construction Hazard] Arial; [at US 169 Bridge] Arial; [Do Not Launch Here] Arial; [for Downstream Trip] Arial;

SIGN 1



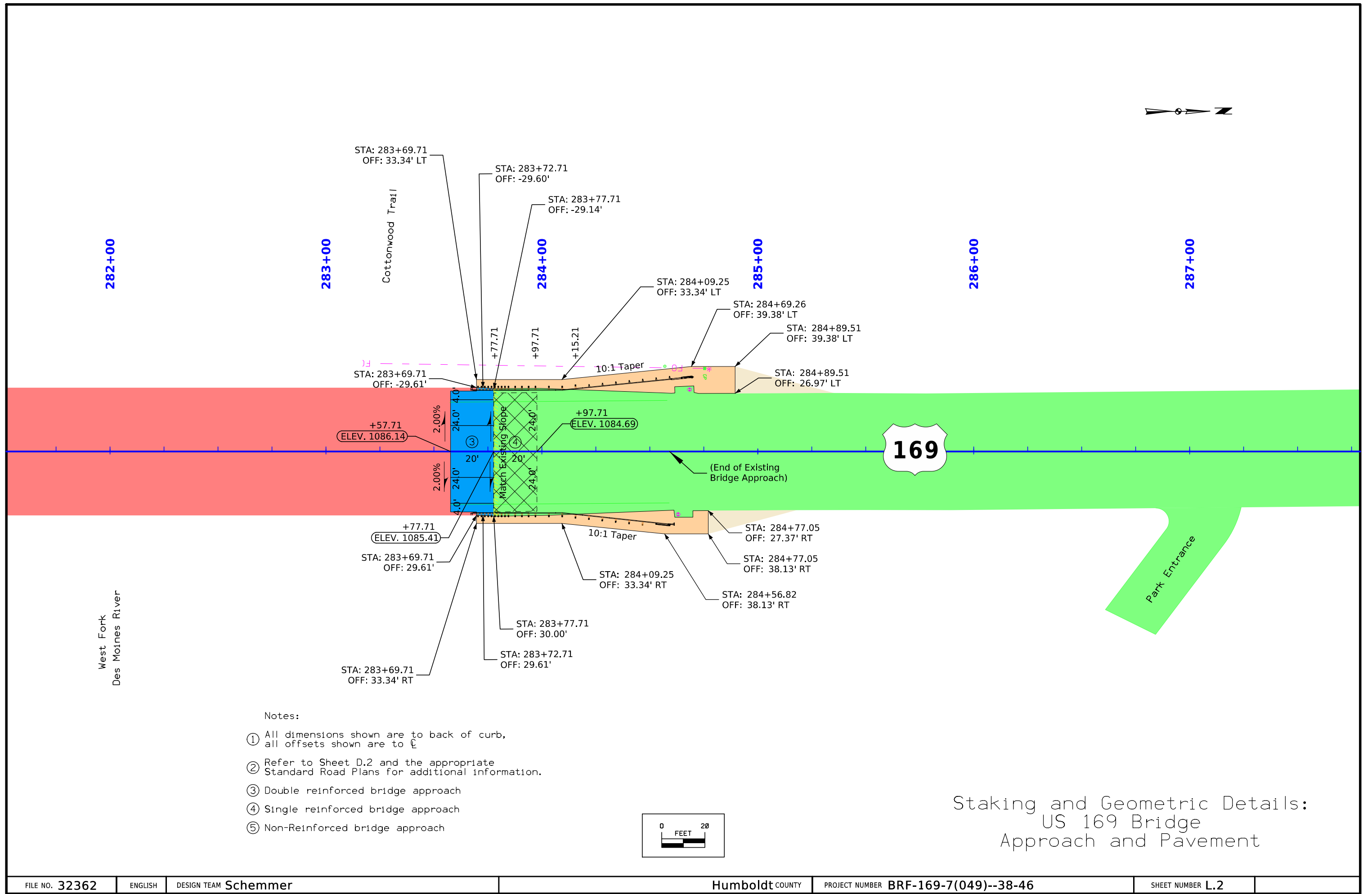
No border, White on White;
No border, White on Fluorescent orange;
[Warning] Black Arial;
No border, Black on White;
[Construction Hazard] Arial; [at US 169 Bridge] Arial; [Do Not Launch Here] Arial; [for Upstream Trip] Arial;

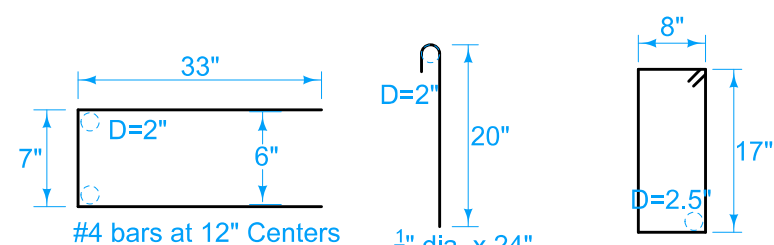
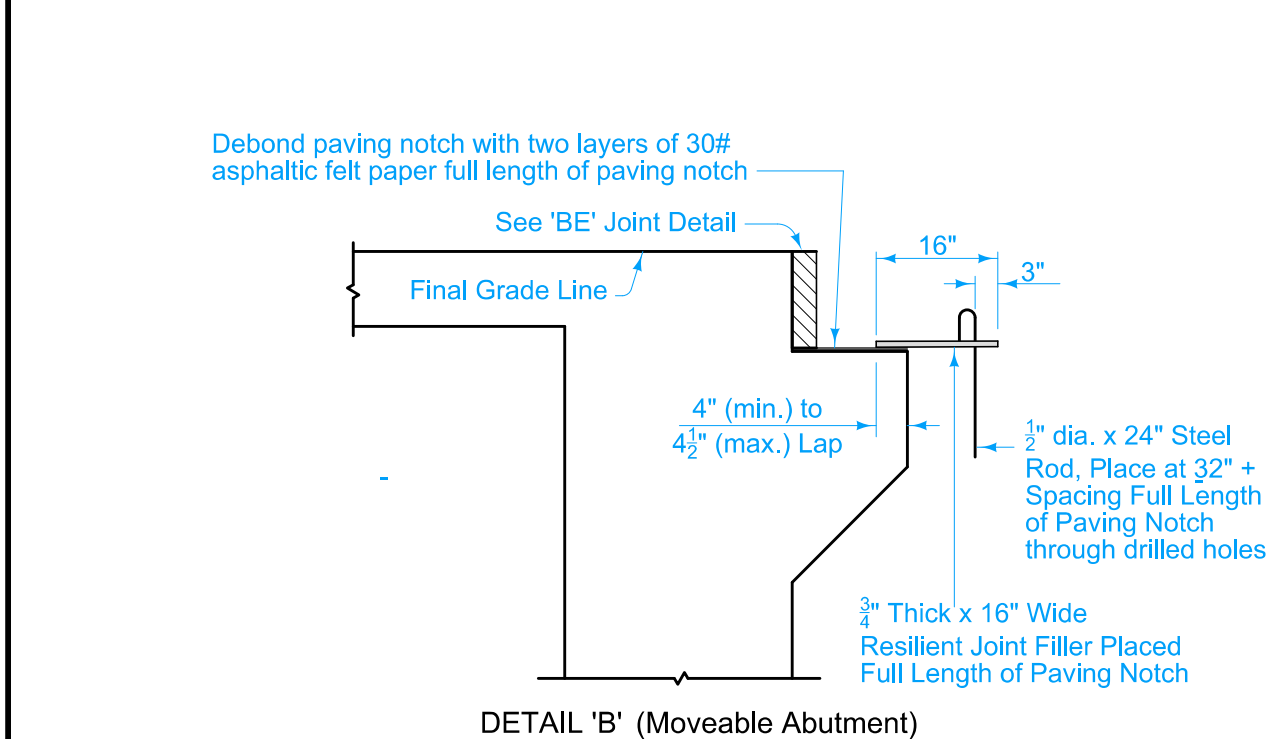
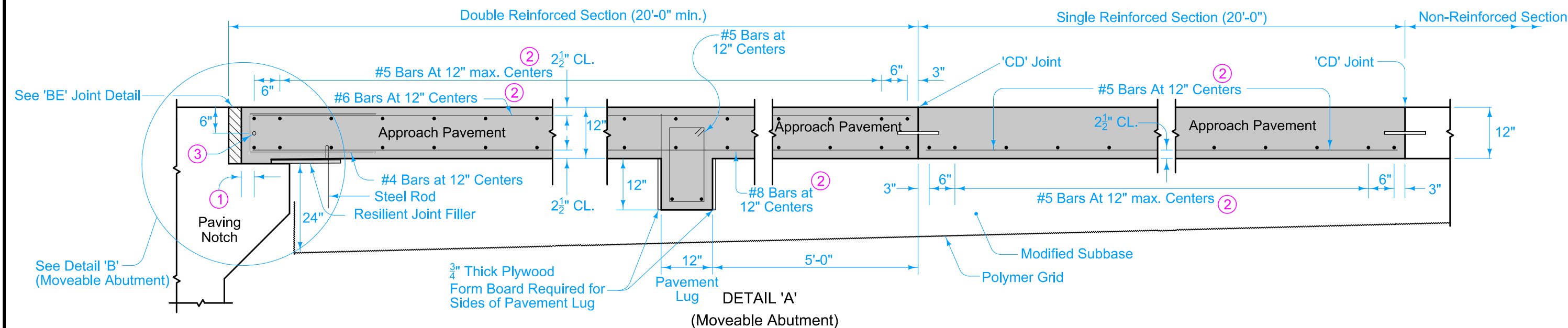
SIGN 2



No border, White on White;
No border, White on Red;
[Danger] Arial;
No border, Black on White;
[No Thru Traffic] Arial;

SIGN 3





BENT BAR SHAPES

- ① 2" min. to 2 1/2" max. clear to bent bar.
- ② Minimum lap length: #5 Bars - 18"
#6 Bars - 27"
#8 Bars - 48"
- ③ If bridge is skewed, place additional #5 bar parallel to skewed face.

For joint details, refer to PV-101.

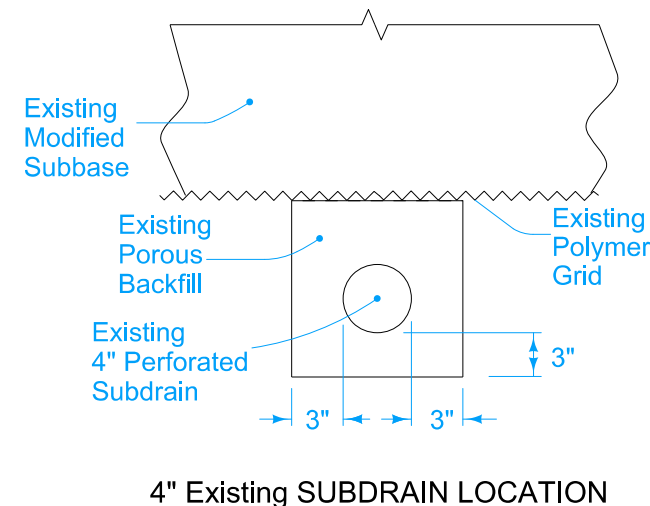
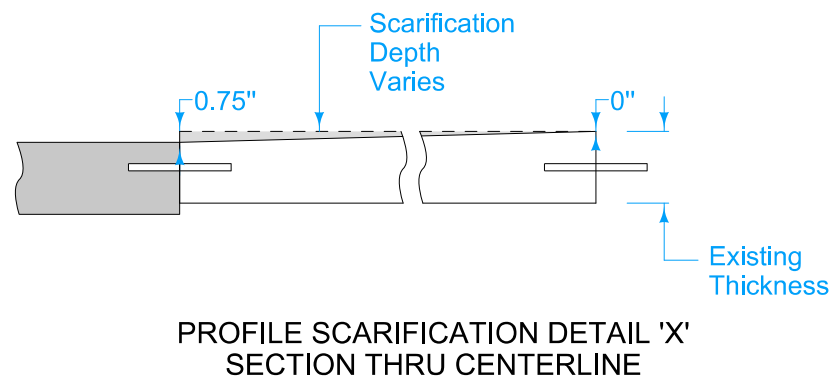
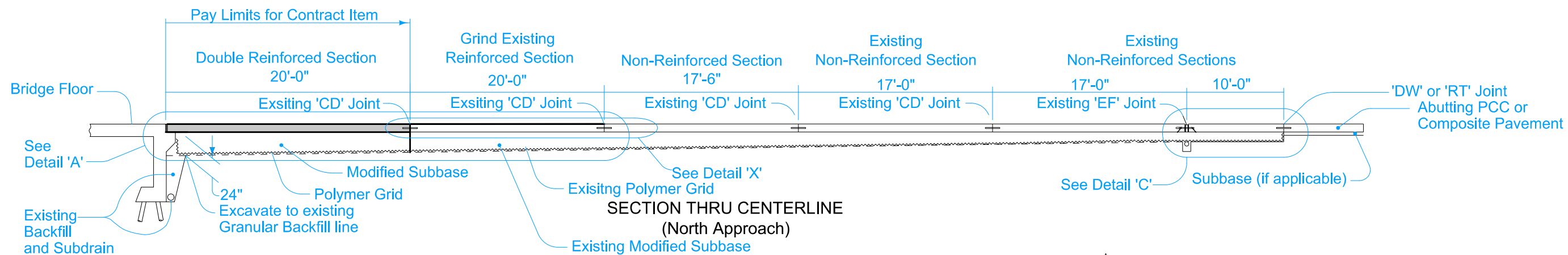
For curb details, see Detail 'G'.

All transverse bars are #5.

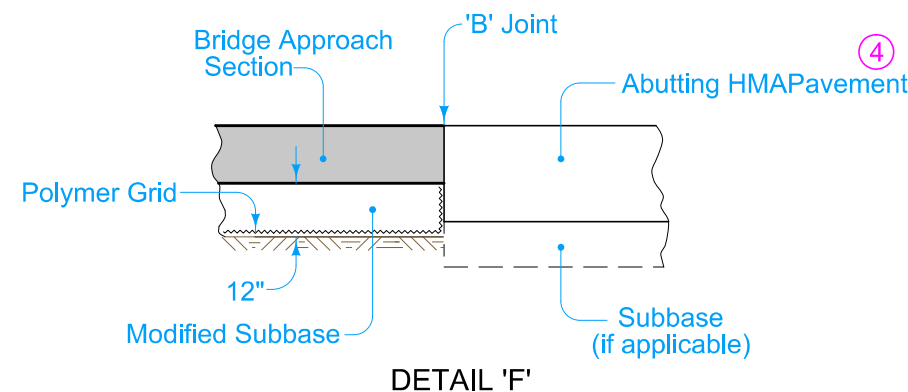
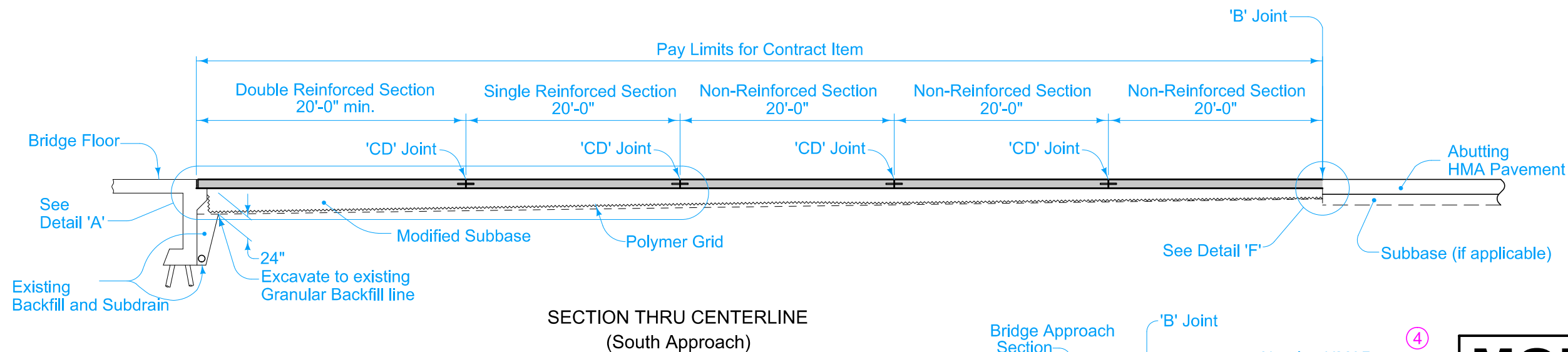
Possible Contract Item:
Bridge Approach, BR-203
Longitudinal Grooving in Concrete, Bridge Deck
Longitudinal Grooving in Concrete, Pavement

Possible Tabulation:
112-6

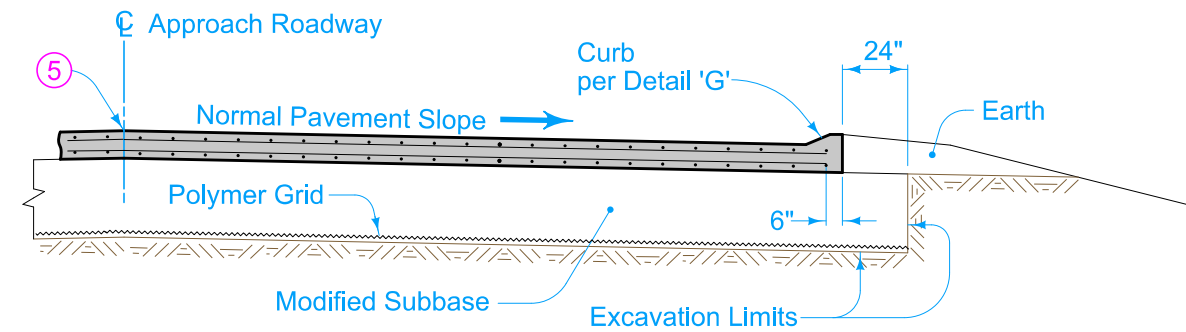
MODIFIED		REVISION
STANDARD ROAD PLAN		BR-203
REVISIONS: Modified curb design from sloped to vertical.		SHEET 1 of 3
APPROVED BY DESIGN METHODS ENGINEER		
DOUBLE REINFORCED 12" APPROACH		



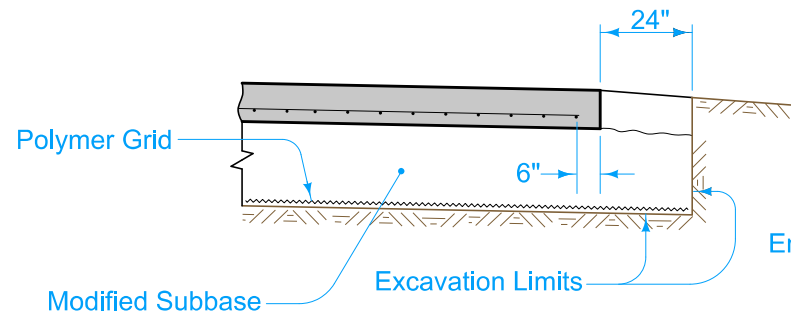
④ If abutting pavement (PCC or HMA) is not in place, refer to BR-213.



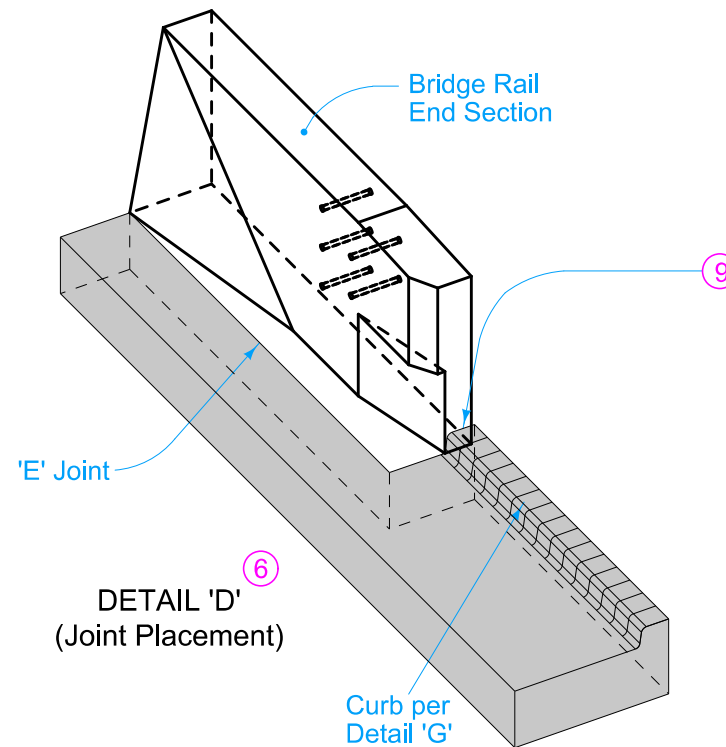
MODIFIED STANDARD ROAD PLAN		REVISION
		BR-203
		SHEET 2 of 3
REVISIONS:		Modified curb design from sloped to vertical. Added scarification detail (PROFILE SCARIFICATION DETAIL 'X')
		APPROVED BY DESIGN METHODS ENGINEER
DOUBLE REINFORCED 12" APPROACH		



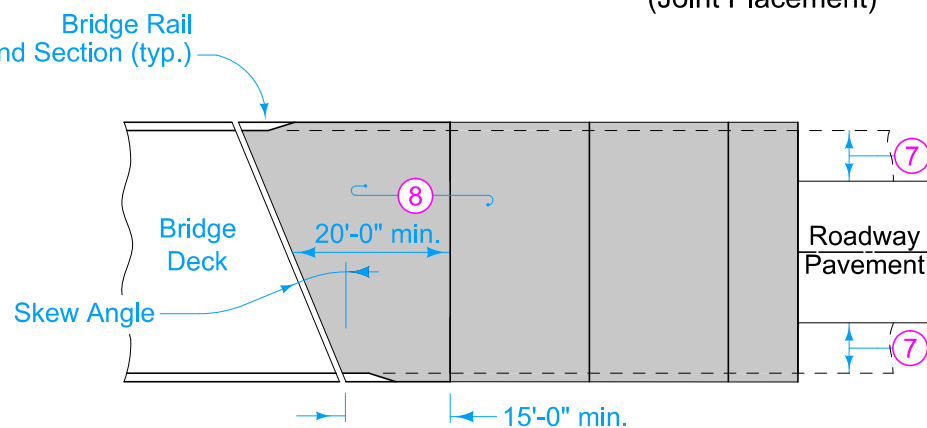
SECTION A-A



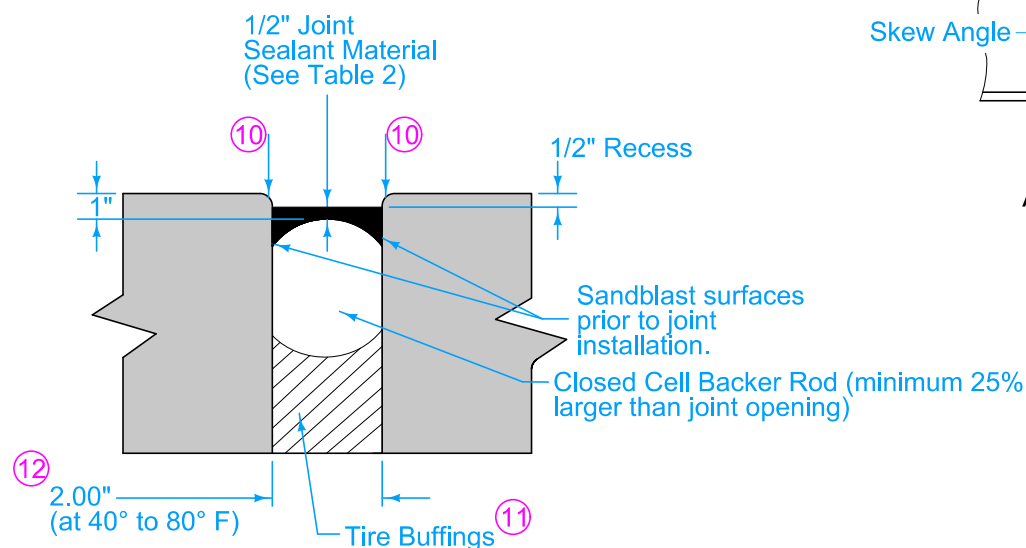
SECTION B-B



DETAIL 'D'
(Joint Placement)

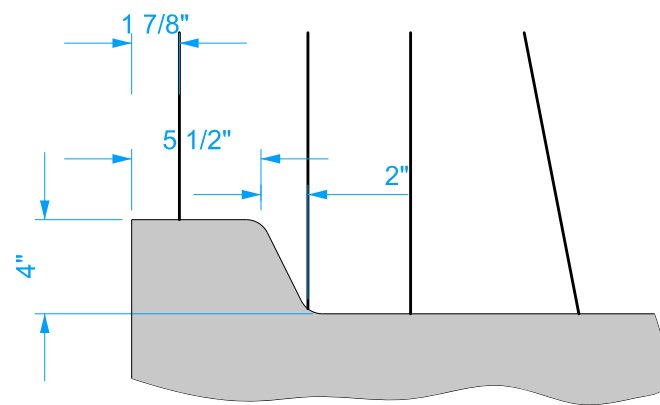


APPROACH PAVEMENT
LAYOUT AT A SKEW

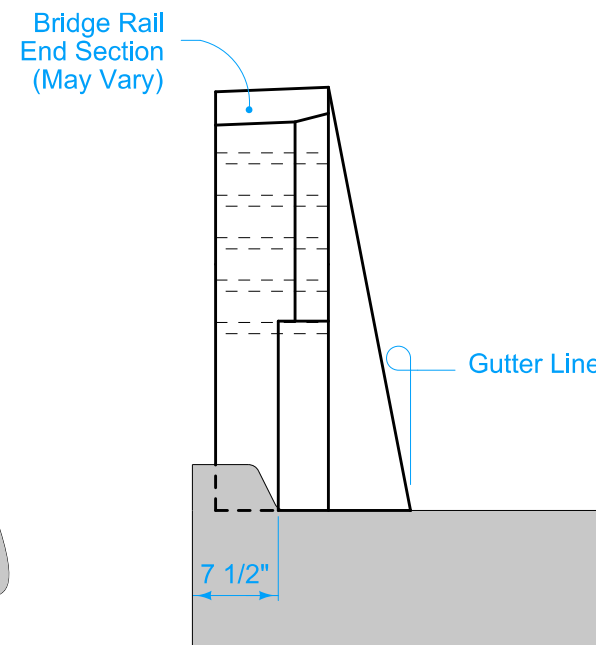


'BE' JOINT
DETAIL

Table 2
Approved List of Sealant
Dow - Dowsil 902 RCS
Sika - Sikasil 728 RCS
Watson Bowman Acme - Wabo SiliconeSeal
Pecora - 322FC



DETAIL 'G'



DETAIL 'E'

- ⑤ Longitudinal Joint (PV-101):
Single pour - Saw cut joint per Detail B.
Two pours - Use 'BT-2' Joint.
- ⑥ Refer to BR-231.
- ⑦ Design shoulder width.
- ⑧ Reinforced bridge approach section.
- ⑨ Joint at end of Bridge Rail End Section: Place joint filler the full depth of the bridge approach pavement. In areas with curb, place full depth of pavement plus curb and shape material to fit the shape of the curb per Section B-B of PV-101. Seal joint per Detail F of PV-101.
- Fixed Abutment Bridges: Type 'E' Joint.
- Moveable Abutment Bridges: Flexible Foam Expansion Joint Filler complying with Section 4136 of the Standard Specifications. Set width of gap to 2 inches. Joint length as required to completely fill from back side of curb to front face of bridge wing.
- ⑩ Edge with 1/4 inch tool for length of joint indicated if formed edging not required when cut with diamond blade saw.
- ⑪ Compact tire buffings by spading with a square-nose shovel. Tire buffings shall not be larger than 1/2 inch.
- ⑫ Setting Width Notes:
 - Width is perpendicular to abutment.
 - Temperature of concrete deck on the underside or shaded portion of the deck shall be between 40 to 80 degrees Fahrenheit when placing approach slab concrete.
 - This 'BE' joint and the setting temperatures may be used for all concrete beam or slab bridges up to 575' in length and for all steel girder bridges up to 400' in length.

MODIFIED STANDARD ROAD PLAN		REVISION
		BR-203
		SHEET 3 of 3
REVISIONS:		Modified curb design from sloped to vertical. Modified DETAIL 'D-2' to carry standard curb 3', then match existing to standard (see note 13)
APPROVED BY DESIGN METHODS ENGINEER		
DOUBLE REINFORCED 12" APPROACH		