LETTING DATE
Oct 15 2024

Bridge Deck Replacement
BRF-002-9(40)--38-89

Van Buren COUNTY

Index of Sheets	
No.	Description
Sheets	Bridge Plan
A.1	Title Sheet
A.2	Location Map Sheet
V.1	Estimated Quantities - Design 121
V.2 - V.26	Design 121
Road Sheets	Road Plan
B.1-U.3	Road Plans
C.2	Estimated Quantities - Road

IOWA DOT

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

Van Buren COUNTY

Bridge Deck Replacement

IA 2 over Fox River
1.5 mi E of Jct SR V64

Refer to the Plan Sheets for list of applicable specifications.

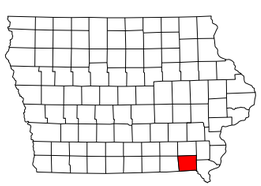
Value Engineering Saves. Refer to Article 1105.14 of the Specifications.

	TOTAL
	64
PROJECT IDENTIFICATION NUMBER	
19-89-002-010	
CONTRACT ID NUMBER	
89-0029-040	
PROJECT NUMBER	
BRF-002-9(40)--38-89	
R.O.W. PROJECT NUMBER	

PROJECT DIRECTORY NUMBER	
8900201019	

Preliminary
Not For Construction

Revisions to this Design Plan and/or Project Specifications should be submitted by _____



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

Design Data Rural	
2022 AADT	1130 V.P.D.
TRUCKS	23 %
Total Design ESALs	800,000

Index Of Seals		
Sheet No.	Name	Type
A.1	Kevin M. Placzek	Structural Design
B.1	Jeff Tardy	Roadway Design

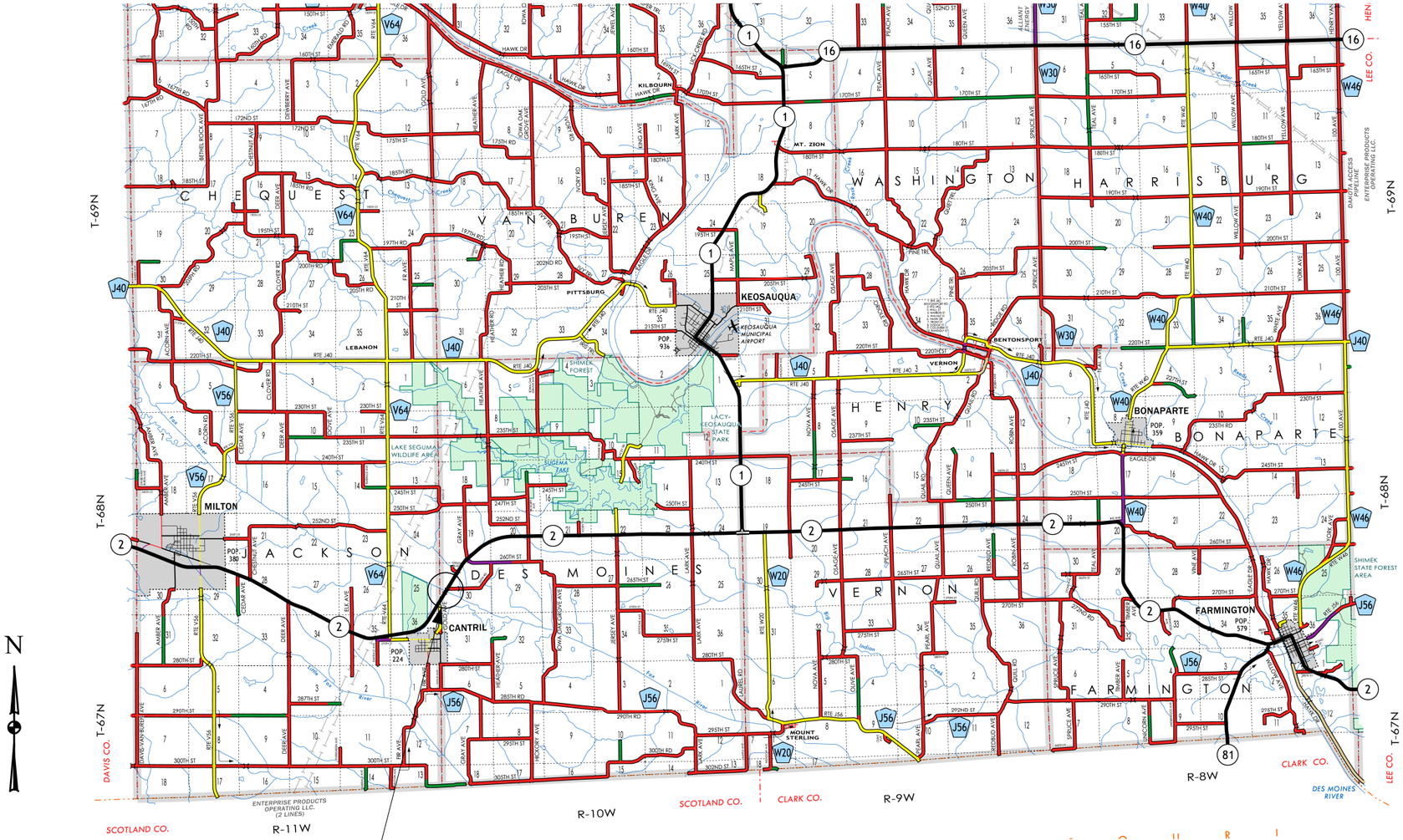
Structural Design

LICENSED PROFESSIONAL ENGINEER
Kevin M. Placzek
19175
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.

3/29/2024
Signature Date
Kevin M. Placzek
Printed or Typed Name
My license renewal date is December 31, 2025

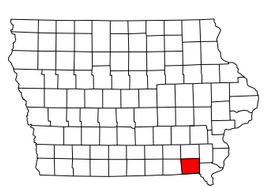
Pages or sheets covered by this seal: Sheets A.1, A.2, V.1 thru V.26



Design No. 121
FHWA No. 50210

Van Buren County Location Map

Not To Scale



LEGEND

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

- INTERSTATE HIGHWAY
- UNITED STATES HIGHWAY
- STATE HIGHWAY
- COUNTY HIGHWAY

- RAILROAD
- PIPELINE
- AIRPORT
- HYDROLOGY
- BRIDGE

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

- STATE PARKS
- STATE INSTITUTIONS
- FEDERAL LAND

FILE NO. 31862	ENGLISH	DESIGN TEAM Benesch		Van Buren COUNTY	PROJECT NUMBER BRF-002-9(40)--38-89	SHEET NUMBER A.2

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Working Drawing and Calculation Submittals

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

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

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

No.	Working Drawing Description	Working Drawing File Name Convention for Submittal	Certified by Iowa P.E. (Yes/No)
1	Demolition Plan	040_VanBuren_Design121_Demolition Plan.pdf	Yes
2	Beam Survey after Deck Removal	040_VanBuren_Design121_Beam Survey after Deck Removal.pdf	No
3	Deck Drains	040_VanBuren_Design121_Deck Drains.pdf	No
4	Temporary Shoring	040_VanBuren_Design121_Temporary Shoring.pdf	No
5	Expansion Device	040_VanBuren_Design121_Expansion Device.pdf	No

No.	Calculation Description	Calculation File Name Convention for Submittal	Certified by Iowa P.E. (Yes/No)
1	Demolition Plan Calculation	040_VanBuren_Design121_Demolition Plan_Calc.pdf	Yes

Design History at this Site

(Includes this Design)

Des. No.	Type of Work
5067	Original Design
290	Bridge Railing Retrofit
194	Bridge Deck Overlay
121	Bridge Deck Replacement

Estimate Project Quantities and Reference Notes - Design #121

Item No.	Item Code	Item	Unit	Quantities Estimated Design No. 121	Estimate Reference Notes
1	2401-6750001	Removals, As Per Plan	LS	1	Includes items as described in the general notes and as shown on the removal details sheet.
2	2403-0100010	Structural Concrete (Bridge)	CY	249.4	Includes all resilient joint filler required. Includes installation of RWIS sensor.
3	2404-7775005	Reinforcing Steel, Epoxy Coated	LB	119674	----
4	2404-7775009	Reinforcing Steel, Stainless Steel	LB	4433	----
5	2408-7800000	Structural Steel	LB	557	Includes new shear studs and bolts.
6	2413-1200000	Steel Extrusion Joint With Neoprene	LF	71	Includes all necessary hardway and accessories including the anchorage system, temporary erection material and the $\frac{3}{8}$" barrier plates with their anchorage system. Excludes installation of neoprene gland.
7	2413-1200100	Neoprene Gland Installation and Testing	LF	71	Includes installation of neoprene gland and water testing of joint.
8	2414-6424110	Concrete Barrier Railing	LF	567	If placement of concrete is done by slipforming method, Class BR Concrete is required. Cast-in-place barrier rails shall use Class C mix. Price bid for this item shall include the cost of cast-in-place forms if required for placement of the concrete.
9	2426-6772016	Concrete Repair	SF	9.7	----
10	2499-2300001	Deck Drains	LS	1	Includes all new deck drains. Refer to design sheets 4 and 10 for location, 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 material, equipment and labor and for performance of all work necessary for fabricating and installing the deck drains as per plan.
11	2507-3250005	Engineering Fabric	SY	993.7	Engineering fabric shall be material as specified for embankment erosion control in accordance with Article 4196.01, B, 3, of the Standard Specifications. Engineering Fabric shall be material as speficied for embankment erosion control, Article 4196.01C. Material shall be measured in Sq Yd. of actual area covered. Refer to details on Design Sheet 24.
12	2507-6799000	Bank Shaping	LS	1	----
13	2507-6800061	Revetment, Class E	Ton	1002.4	Estimated at 1.6 ton/cu. yd. Class E revetment shall meet the requirements Article 4130. Broken concrete and granite is not allowed.
14	2508-0804000	Bridge Cleaning for Painting	LS	1	----
15	2508-0805000	Blast Cleaning of Structural Steel	LS	1	----
16	2508-0970000	Containment	LS	1	----
17	2508-0991000	Painting of Structural Steel	LS	1	The total area of structural steel to be painted is estimated to be 14700 Sq. Ft.
18	2533-4980005	Mobilization	LS	1	----

Design For 15 Degree RA

250'-0" x 32'-0" Continuous Welded Girder Bridge

76'-3" End Spans 97'-6" Interior Span

Estimated Quantities

STA. 368+70.00 (IA 2) Turn-in Date: Mar 2024

Van Buren County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 121 Design Sheet No. 1 of 26 FHWA No. 50210

General Notes:

This design is for repair to the existing 250'-0" x 32'-0" Continuous Welded Girder Bridge on IA #2 over Fox River in Van Buren County.

Electronic copies of original design plans are available to the contractor as part of the e-files supplied with the contract documents. Dimensions shown on these plans are based on design plans (original Design No. 5067).

See design sheet 4 for list of repair items.

Faint lines on plans indicate the existing structure.

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

The bridge is designed for HS20-44 loading, plus 19 lbs. per square foot of roadway for future wearing surface.

It is the intent of this design to use the existing girders, existing intermediate diaphragms, existing abutment diaphragms and existing pier diaphragms as constructed.

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

The three utility conduits running along the west overhang and curb for the full length of the bridge will need to be removed and reinstalled.

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

These bridge plans label all reinforcing steel with english notation (5a1 is ⅝ inch diameter bar). English reinforcing steel received in the field may display the following "Bar Designation". The "Bar Designation" is the stamped impression on the reinforcing bars, and is equivalent to the bar diameter in millimeters.

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

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

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

The lump sum bid for "Bridge Cleaning for Painting" shall include the costs of removal of accumulated foreign material, loose paint and water washing in accordance with Section 2508 of the Standard Specifications.

The lump sum bid for "Blast cleaning of structural steel" shall include all costs for the preparation of steel surfaces that require painting in accordance with Section 2508 of the Standard Specifications.

The lump sum bid for "Painting of Structural Steel" shall include all costs for painting the structural steel in accordance with Section 2508 of the Standard Specifications. An epoxy paint system shall be used. Before cleaning the existing structural steel, the bridge contractor shall remove any attachments not being reused. In addition, any existing steel inaccessible after reassembly will be given the full paint system before final assembly of the structure.

Containment and disposal of waste shall be in accordance with Section 2508 of the Standard Specifications. All costs associated with hauling and depositing of waste at the designated site/facility shall be the responsibility of the contractor and included in the contract price bid for the "Containment" item.

A scrape sample was taken from an abutment bearing to get an indication of the existence of and level of total lead and total chromium. Analysis of total lead on this sample was 450 PPM parts per million (PPM). Analysis of total chromium on this sample was 83 PPM. These analyses show the existence of these two toxic constituents. Levels indicated by these tests could create conditions above the regulatory limits for health and safety requirements. No other constituents were analyzed. The bidder should not rely on the department's testing and analysis for any purpose other than as an indication of the existence of these two toxic constituents.

Concrete removal shall be initiated with a ¾ saw cut wherever possible.

"Removals as per plan" include all costs associated with removing the full deck, barrier rails, abutment backwalls and expansion joints. Removals shall be in accordance with Section 2401 of the Specifications. Any damage to other portions of the existing structure not noted for removal shall be the responsibility of the bridge Contractor and shall be repaired at no extra cost to the State.

It is the intent of these plans to reuse the existing steel shear lugs on top of the beams. The Contractor shall exercise care not to damage these lugs during the concrete deck removal operation. Any replacement of damaged shear lugs will be as directed by the Engineer and repaired at no cost to the State.

The Road and Weather Information System (RWIS) sensor embedded in the deck shall be removed and replaced. Cost included in the unit bid item "Structural Concrete (Bridge)".

In addition to the requirements of Article 2413.03, G, of the Standard Specifications, both abutment bridge seats and wash surfaces shall have an application of concrete sealer in accordance with Article 2403.03, P, 3, of the Standard Specifications. Sealing the abutment shall be included in the unit bid price of "Concrete Repair."

Swallow nests are presently attached to the girders. Section 1107.18.C of the standard specifications applies.

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 slipform method).

The Contractor shall provide temporary shoring (sheet pile or other) to prevent the earth under the traffic lane, from sloughing in during construction. All cost of shoring, will be considered incidental to construction and no direct payment will be made. All material used for shoring shall remain the property of the contractor. Shoring is to be removed only after backfilling has been completed. The contractor shall submit shoring plans for review. In addition to the requirements noted above, Article 1107.07 of the Standard Specifications still applies.

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

Construction Stages 1 & 2 as detailed on these plans may be reversed at the contractor's option subject to the Engineer's approval.

Refer to title sheet for traffic data.

Specifications:

Design:

AASHTO LRFD 8th Edition, Series of 2017 (Bridge Deck) and AASHTO Standard Specifications for Highway Bridges, Series of 2002 (Structural Steel), except as noted in the current Iowa Bridge Design Manual.

Construction:

Iowa Department of Transportation Standard Specifications for Highway and Bridge Construction, Series 2023 shall apply to construction work on this project.

Design Stresses:

Design stresses for the following materials are in accordance with the AASHTO Standard Specifications for Highway Bridges, Series of 2002 and AASHTO LRFD 8th Edition, Series of 2017.

Reinforcing steel in accordance with Section 8, Grade 60.

Concrete in accordance with Section 8, f'c = 4.0 ksi.

Structural steel in accordance with AASHTO LRFD Section 6, ASTM A709, Grade 36 and AASHTO M270 Grade 36.

Roadway Quantities shown elsewhere in these plans.

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

Design For 15 Degree RA

250'-0" x 32'-0" Continuous Welded Girder Bridge

76'-3" End Spans 97'-6" Interior Span

General Notes

STA. 368+70.00 (IA 2) Turn-in Date: Mar 2024

Van Buren County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 121 Design Sheet No. 2 of 26 FHWA No. 50210

Removal Notes:

The Contractor shall submit for approval by the Engineer a Demolition Plan that includes a step-by-step description of the methods to be used for the duration of the removal work and the details of the equipment. The cost of the Demolition Plan submittal shall be included in the price bid for "Removals, as Per Plan". The review period will be 30 calendar days.

The design Engineer has evaluated the existing bridge for a construction live load of one 50 kip vehicle with a 15 kip payload during the staged deck removal. Uplift at the abutments and piers will need to be addressed. The design construction vehicle is an excavation with two 10'-0" x 1'-8" tracks spaced at 8'-0" with load distributed 2:1 between tracks and linearly variable load distribution longitudinally along the tracks. If the equipment detailed in the Contractor's demolition plan exceeds the weight, size or any other parameters of the design excavator, the Contractor shall submit for approval calculations prepared and sealed by a Professional Engineer licensed in the state of Iowa that verify the capacity of the existing bridge under the proposed construction equipment loading during removal of the deck.

Design Sheet 5 shows details of the deck removal on the existing bridge. All 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 damaged to the existing structure to remain. The Contractor shall assume full responsibility for any damaged caused, and shall repair any damaged area to its original condition, as directed by the Engineer, at the Contractor's expense. Any reinforcing steel which is to be "saved" that is exposed during removal operations is to be carefully protected, cleaned and incorporated into new work unless noted otherwise.

The Bridge Contractor is to use extreme care when removing the deck concrete at the girder locations to avoid damaging the top flange and shear connectors of the girder. 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 girder is removed, all remaining debris shall be cleaned from the girders to provide a suitable bond to the concrete deck.

The existing shear connectors are an integral part of the existing girder top flange. All damage sustained to the top flange and/ or shear connectors shall be identified and repaired. In addition to being repaired, any damage located in a negative moment region shall undergo magnetic particle testing for cracks.

Acceptable repair methods:

Girder top flange:
- Gouges - Grind out on a 10:1 taper
- Bends of Tears - To be evaluated by the engineer

Angle and bar shear lugs:
- Minor gouges - Grind Smooth
- Bends and gouges to angle - grind sharp corners and, if in negative moment region, magnetic particle test angle to flange weld, Any crack detected will necessitate the removal of the angle as noted below.
- Tears to angle - If in a negative moment region, remove angle by mechanically cutting to just above the top flange, grind surface of flange smooth and perform magnetic particle testing on repair area. If in a positive moment region, remove angle by mechanically cutting to location of tear and grind sharp edges smooth.
- Bend or tear to bar - Remove bar and grind top of angle smooth.

Magnetic particle testing is to be done at the Contractor's expense by an approved third party. Any cracks identified shall be repaired or the section of damaged girder replaced at the Engineers direction at no additional cost to the state.

Existing angle and bar shear lugs are considered for future structural capacity. Any damaged shear lugs shall be replaced at the Contractor's expense within a group of 10-⅞"x5" diameter shear studs. The centroid of the stud group is to be in the approximate location of the angle lug replaced. Maximum spacing between stud rows is to be 24" and where the angle lug spacing exceeds 24" the equivalent studs are to be located in two or more rows so that the maximum spacing is not exceeded. Refer to plan details for dimensions.

In the event that one or more existing girders are damaged during the deck removal, the contractor shall repair or replace the damaged girder or girders deemed unacceptable by the Engineer. Adjacent bearings shall also be replaced. All material, labor, equipment and traffic control required for the removal and replacement or repair of the damaged girder or girders and bearings shall be considered incidental to the lump sum bid for "Removals, as Per Plan". Any damaged girders, which are not to be reused, shall become the property of the Contractor.

Design For 15 Degree RA

250'-0" x 32'-0" Continuous Welded Girder Bridge

76'-3" End Spans 97'-6" Interior Span

General Notes

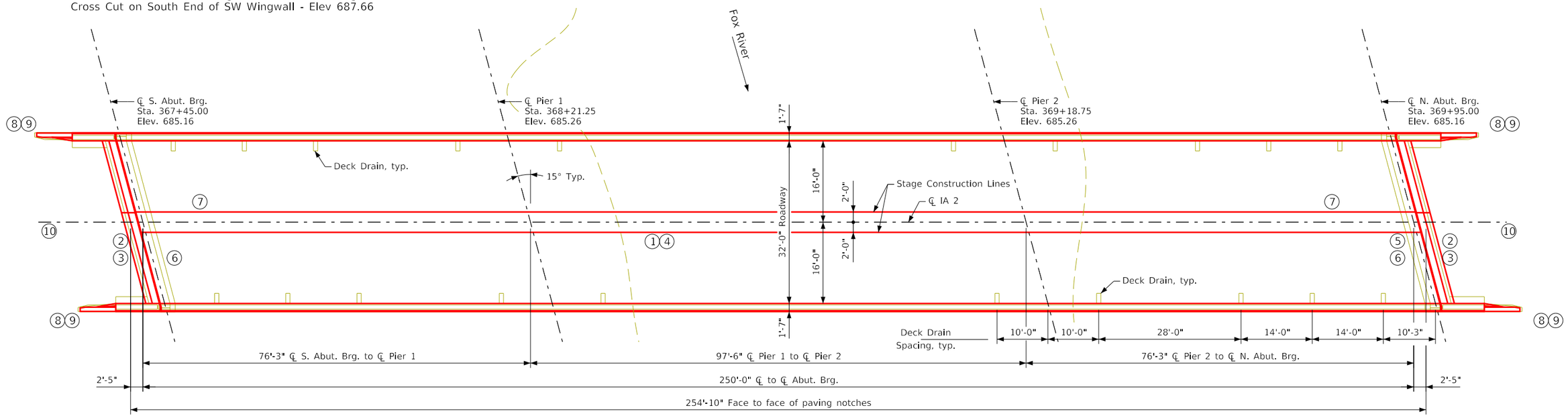
STA. 368+70.00 (IA 2) Turn-in Date: Mar 2024

Van Buren County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 121 Design Sheet No. 3 of 26 FHWA No. 50210

Bench Mark: BM #1, 2039476.566 Easting, 243282.099 Northing,
Cross Cut on South End of SW Wingwall - Elev 687.66

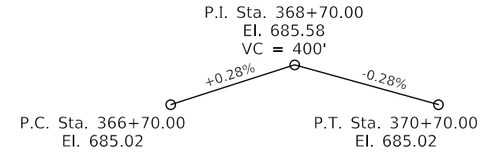


Situation Plan

Top of bridge deck crown 0.03 feet below profile grade.

Utilities

Relocation of Utilities to be coordinated.



Proposed Profile Grade IA 2

Repairs shall consist of:

1. Remove bridge deck, joints and barrier rails and construct new 8½" thick bridge deck with 32-foot roadway and standrd TL-4, single-slope barrier railings.
2. Remove and reconstruct top of backwall to original construction joint below paving support.
3. Install new strip seal joints.
4. Repaint superstructure.
5. Perform concrete repairs to North Abutment seat.
6. Clean and seal abutments.
7. Install berm armoring.
* 8. Remove and replace the guardrail.
* 9. Construct HMA paved shoulders in from the the guardrail as per Typical Detail 7156.
* 10. Remove and replace double reinforced section of bridge approach at both ends.

* Refer to roadway plans for additional information.

Location

IA #2 over Fox River
Section 30
T-68N & R-10W
Des Moines Township
City of Cantril
Van Buren County
Maintenance No 8918.7S002
FHWA No. 50210
Latitude 40.658723°
Longitude -92.061577°

Design For 15 Degree RA

250'-0" x 32'-0" Continuous Welded Girder Bridge

76'-3" End Spans — 97'-6" Interior Span

Situation Plan

STA. 368+70.00 (IA 2)

Turn-in Date: Mar 2024

Van Buren County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 121 | Design Sheet No. 4 of 26 | FHWA No. 50210

FILE NO. 31862	ENGLISH	DESIGN TEAM Benesch	Van Buren COUNTY	PROJECT NUMBER BRF-002-9(40)--38-89	SHEET NUMBER V.4

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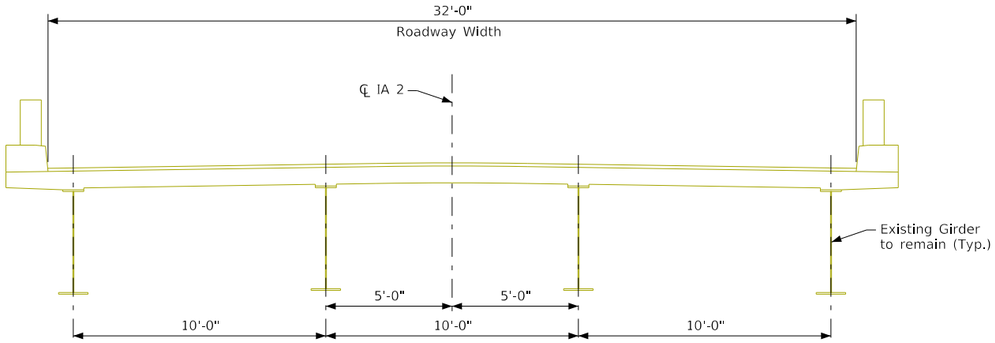
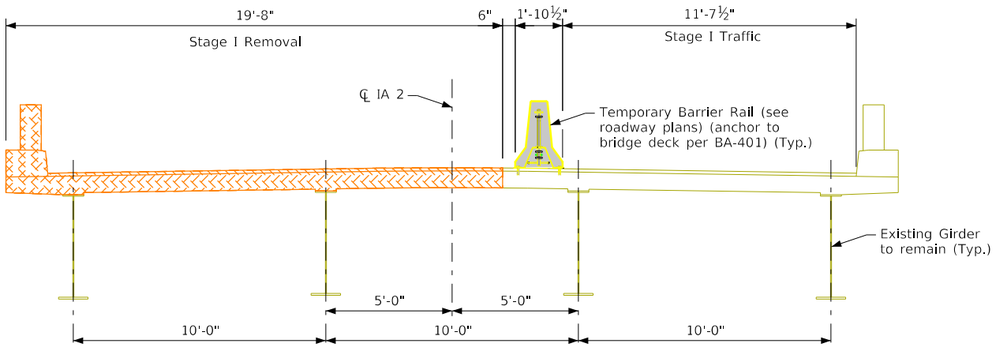
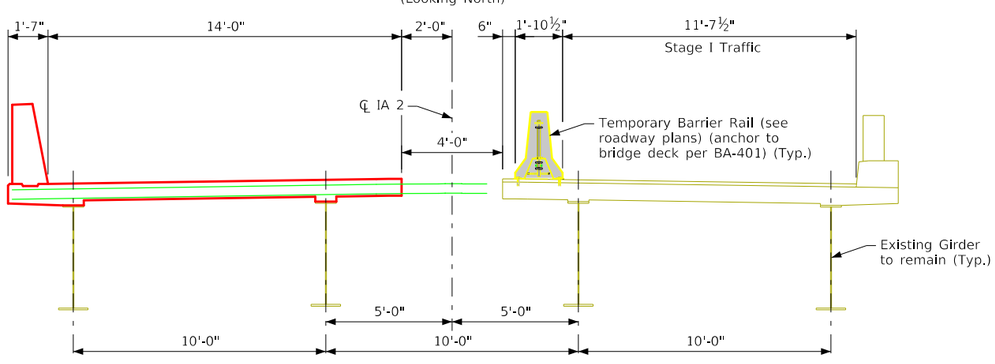


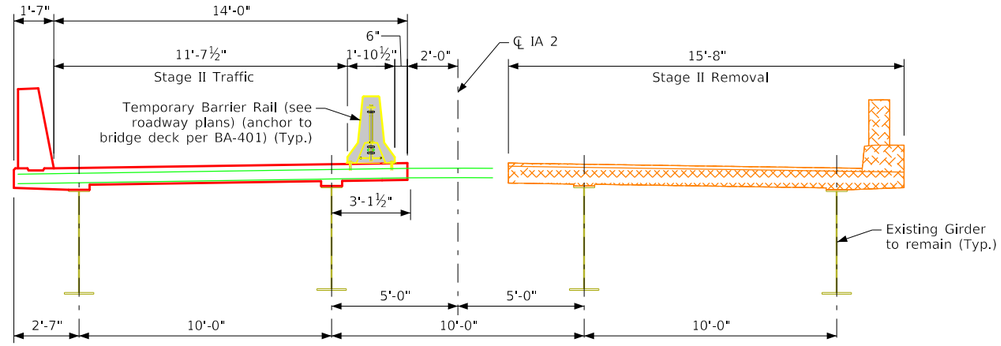
Existing Structure
(Looking North)



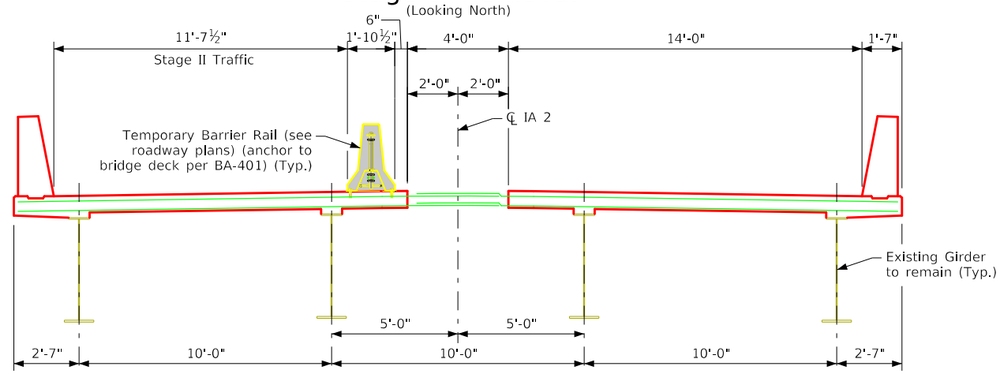
Stage I Removal
(Looking North)



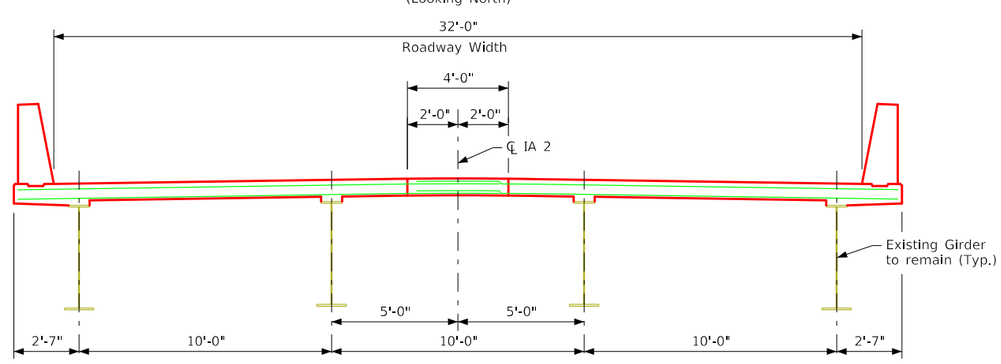
Stage I Construction
(Looking North)



Stage II Removal
(Looking North)



Stage II Construction
(Looking North)



Closure Pour
(Looking North)

Design For 15 Degree RA

250'-0" x 32'-0" Continuous Welded Girder Bridge

76'-3" End Spans 97'-6" Interior Span

Staging Details

STA. 368+70.00 (IA 2) Turn-in Date: Mar 2024

Van Buren County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 121 Design Sheet No. 5 of 26 FHWA No. 50210

FILE NO. 31862	ENGLISH	DESIGN TEAM Benesch	Van Buren COUNTY	PROJECT NUMBER BRF-002-9(40)--38-89	SHEET NUMBER V.5	

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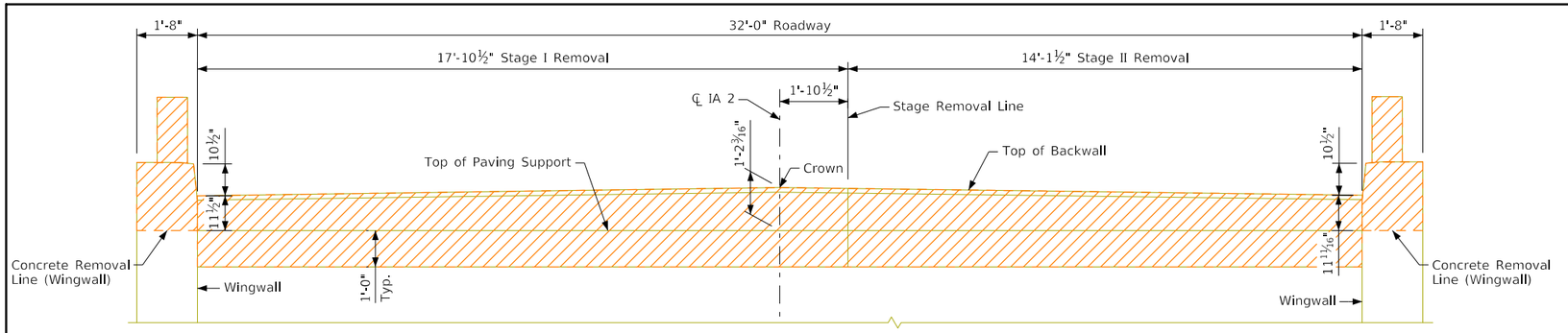
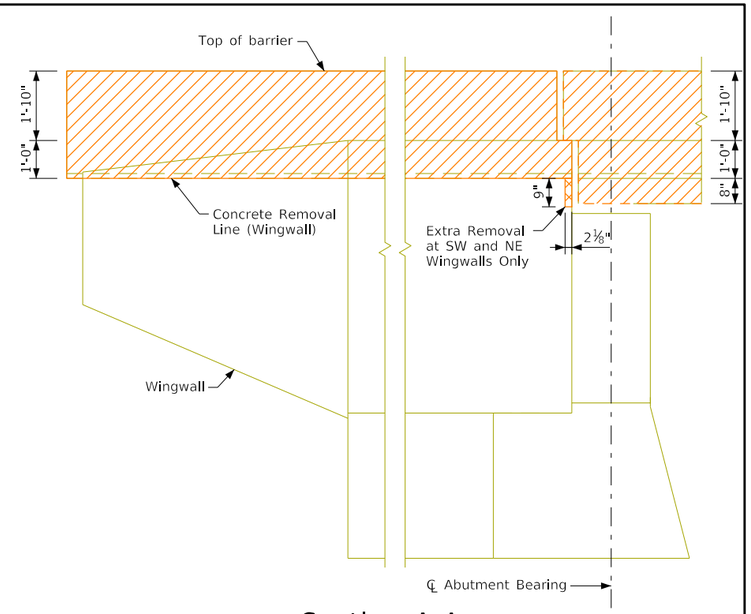
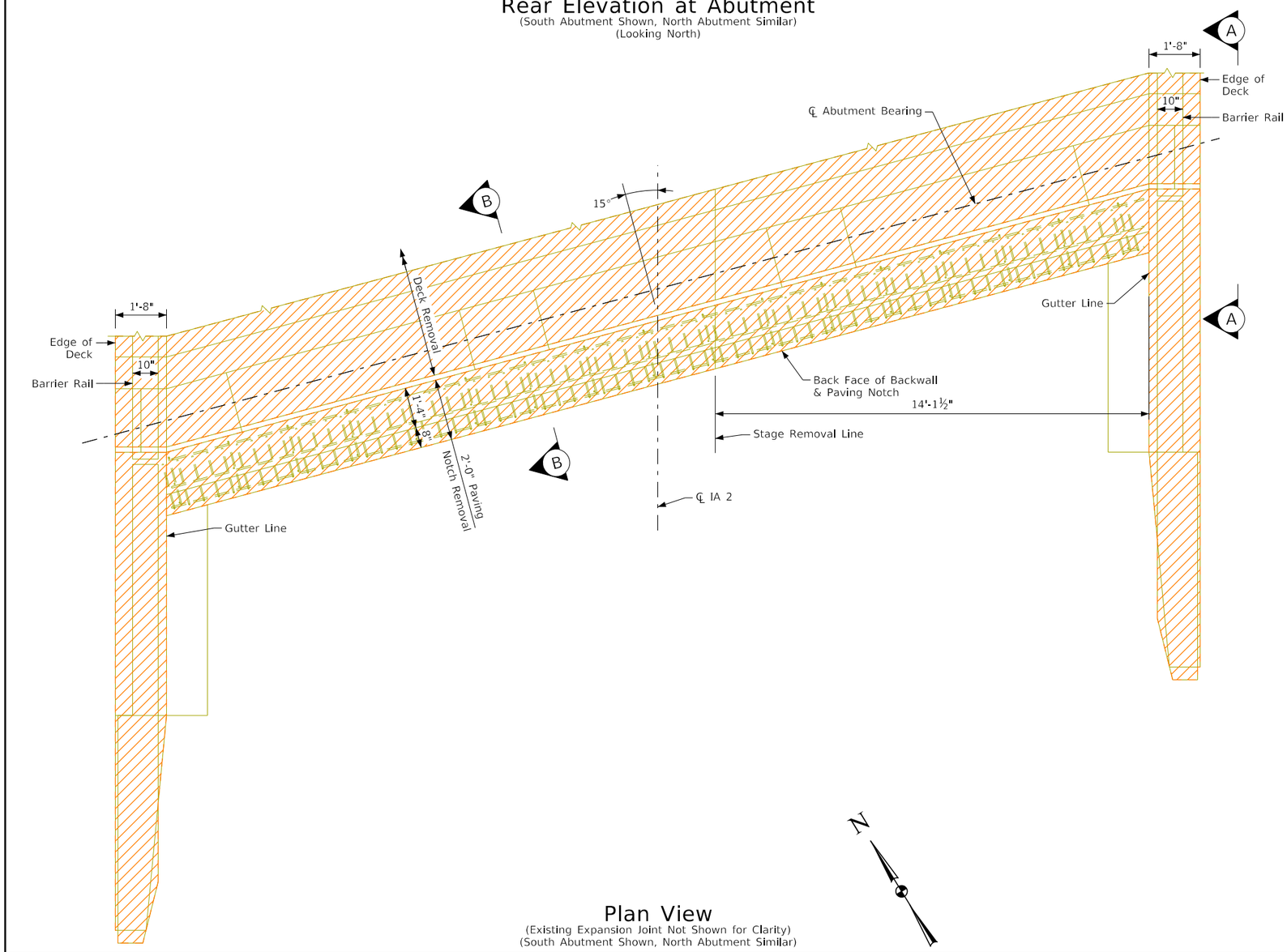


Rear Elevation at Abutment

(South Abutment Shown, North Abutment Similar)
(Looking North)

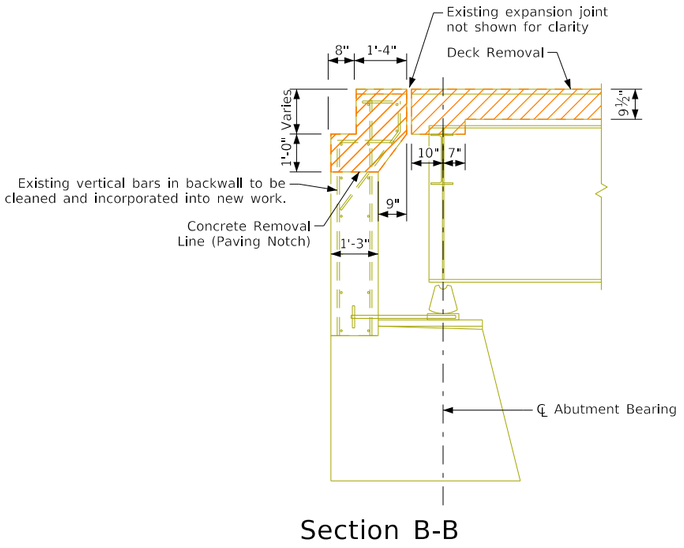


Section A-A



Plan View

(Existing Expansion Joint Not Shown for Clarity)
(South Abutment Shown, North Abutment Similar)



Section B-B

Design For 15 Degree RA

250'-0" x 32'-0" Continuous Welded Girder Bridge

76'-3" End Spans — 97'-6" Interior Span

Removal Details

STA. 368+70.00 (IA 2)

Turn-in Date: Mar 2024

Van Buren County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 121 — Design Sheet No. 6 of 26 — FHWA No. 50210

FILE NO. 31862	ENGLISH	DESIGN TEAM Benesch	Van Buren COUNTY	PROJECT NUMBER BRF-002-9(40)--38-89	SHEET NUMBER V.6	

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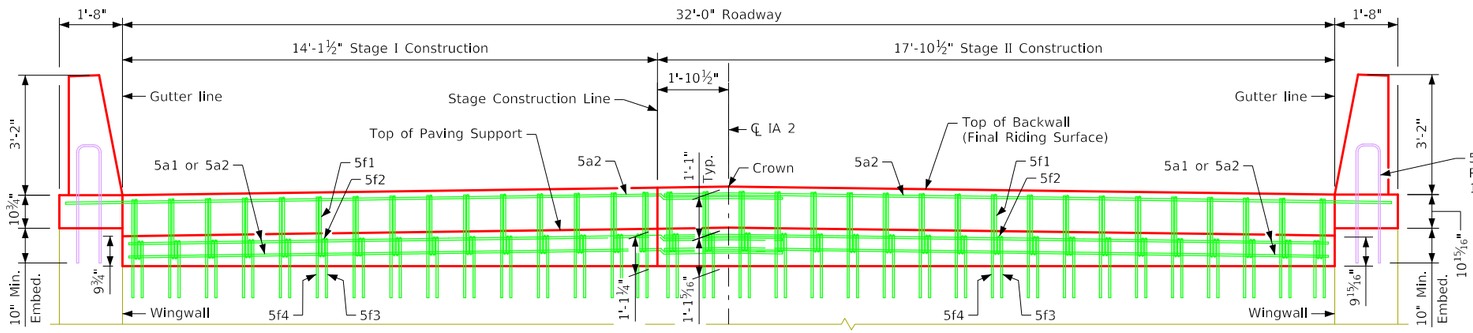
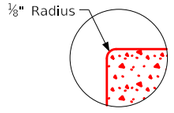
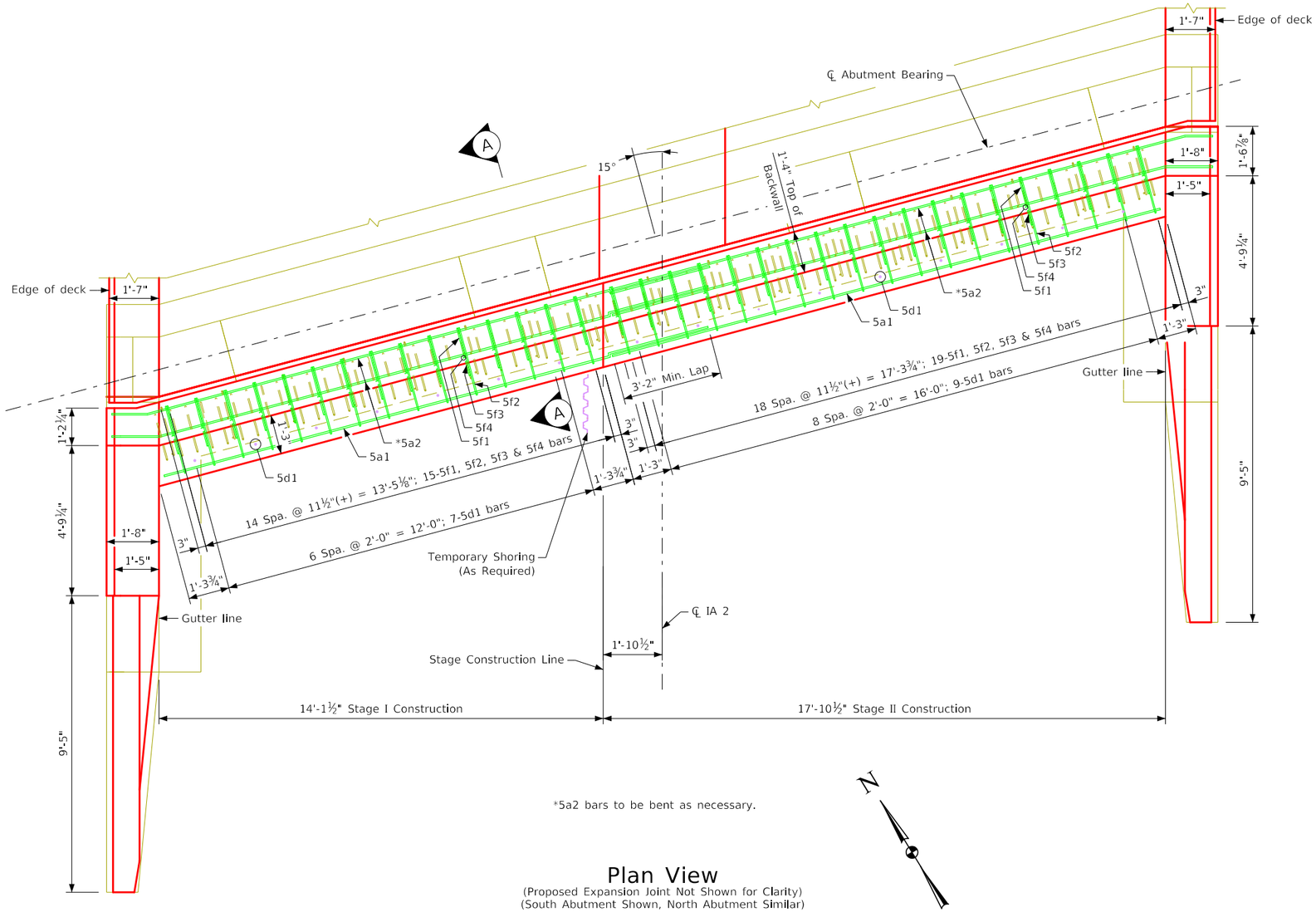


Rear Elevation at Abutment

(South Abutment Shown, North Abutment Similar)
(Looking North)



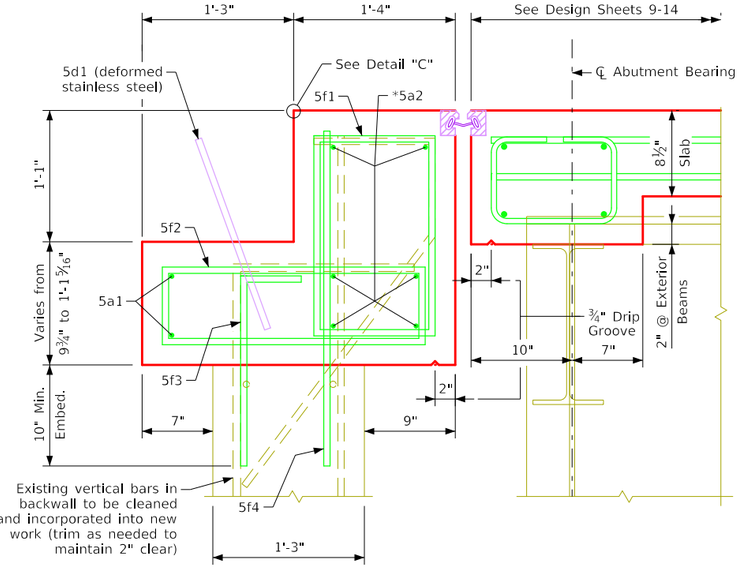
Detail "C"



*5a2 bars to be bent as necessary.

Plan View

(Proposed Expansion Joint Not Shown for Clarity)
(South Abutment Shown, North Abutment Similar)



Section A-A

Design For 15 Degree RA

250'-0" x 32'-0" Continuous Welded Girder Bridge

76'-3" End Spans — 97'-6" Interior Span

Repair Details

STA. 368+70.00 (IA 2) — Turn-in Date: Mar 2024

Van Buren County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 121 — Design Sheet No. 7 of 26 — FHWA No. 50210

FILE NO. 31862	ENGLISH	DESIGN TEAM Benesch	Van Buren COUNTY	PROJECT NUMBER BRF-002-9(40)--38-89	SHEET NUMBER V.7	

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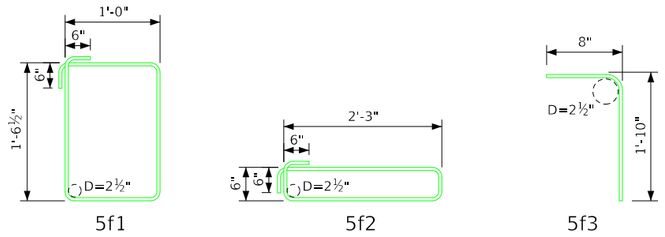
Bent Bar Details



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

Epoxy Coated Reinforcing Steel Bar List – Both Abutments

Bar	Location	Shape	No.	Length	Weight
5a1	Horizontal, Paving Notch		8	18'-2"	152
5a2	Horizontal, Backwall		24	19'-8"	492
5f1	Vertical, Hoop, Backwall		68	6'-1"	431
5f2	Horizontal, Hoop, Backwall		68	6'-6"	461
5f3	Vertical, Dowel, Backwall		68	2'-6"	177
5f4	Vertical Dowel, Backwall		68	2'-11"	207
	Epoxy Coated Reinforcing Steel – Total Weight (lbs.)				1920

Stainless Steel Bar List – Both Abutments

Bar	Location	Shape	No.	Length	Weight
5d1	Paving Notch Dowels		32	1'-8"	56
	Stainless Steel – Total Weight (lbs.)				56

Concrete Placement Quantities

Location	South Abut.	North Abut.
Backwalls	1.8	1.8
Paving Notches	3.1	3.1
Wingwalls	0.2	0.2
Total (cu. yd.)	5.1	5.1

Dowel Setting Note:

The 5f3 & 5f4 bars shall be set as dowels in drilled holes. Holes are to be 10" deep. The dowels shall be installed in accordance with the Manufacturer's recommendations. Either of the following systems may be used as a bonding agent for vertical dowels, but only System "A" may be used for horizontal dowels:

A. Polymer grout system in accordance with Article 2301.03, E, of the Standard Specifications.
B. Hydraulic cement grout systems. Drilled holes are to be 2½ times the dowel diameter and are to be blown clean with compressed air immediately prior to placing grout. The hydraulic cement grout shall be one of those approved in Materials I.M. 491.13 and shall be used in accordance with the Manufacturer's recommendations.

Design For 15 Degree RA

250'-0" x 32'-0" Continuous Welded Girder Bridge

76'-3" End Spans 97'-6" Interior Span

Repair Details

STA. 368+70.00 (IA 2) Turn-in Date: Mar 2024

Van Buren County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 121 Design Sheet No. 8 of 26 FHWA No. 50210

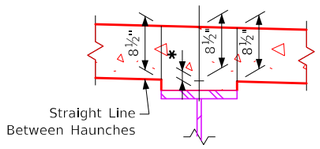
Superstructure Notes:

The bridge deck as shown includes ¾" integral wearing surface.

Forms for the bridge deck and barrier rail are to be supported by the girders.

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

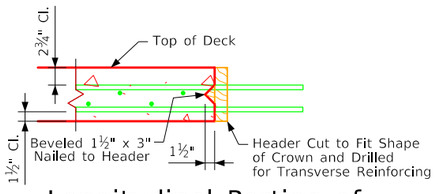
Top transverse reinforcing steel is to be parallel to and 2¾" clear below top of deck. Bottom transverse reinforcing steel is to be parallel to and 1½" clear above bottom of deck. Top and bottom reinforcing steel is to be supported by individual bar chairs spaced at not more than 3'-0" centers longitudinally 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, high bar chairs, and deck bolsters.



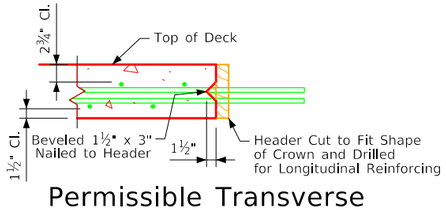
Typ. Deck & Haunch Detail

✱ Concrete haunch dimension measured between bottom of deck and top of top flange plate. Refer to haunch details shown elsewhere in these plans.

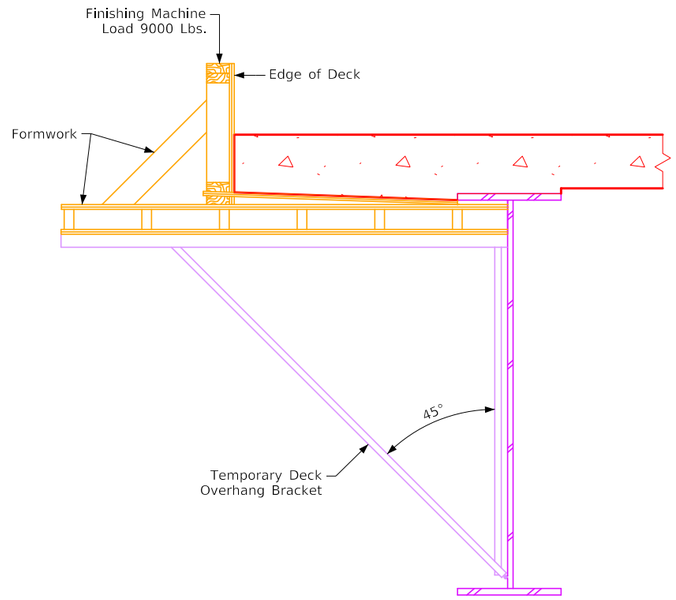
The maximum embedment of the edge of the top flange in the deck shall be ½". Shear studs are to have a minimum penetration of 2" into the deck and be at least 2½" clear of the top of the deck. These requirements were used in setting the maximum and minimum allowable field haunch values shown in the "Miscellaneous Data Table" shown elsewhere on these plans.



Longitudinal Portion of Deck Construction Joint



Permissible Transverse Deck Construction Joint



Temporary Deck Overhang Bracket Detail

Overhang Bracket Notes:

A maximum finishing machine load and the angle of the diagonal member of the overhang bracket shown were assumed by the Designer. These assumptions, in addition to other construction loadings, were used to check the strength of the exterior girder during critical stages of construction. If the finishing machine load or angle of the diagonal member of the overhang bracket deviate significantly from values shown, the Contractor shall submit to the Engineer this information on proposed construction equipment to be used.

If the vertical height of the overhang bracket is adjustable, the base of the bracket is to be located as close as possible to the bottom flange of the girder.

Design For 15 Degree RA

250'-0" x 32'-0" Continuous Welded Girder Bridge

76'-3" End Spans 97'-6" Interior Span

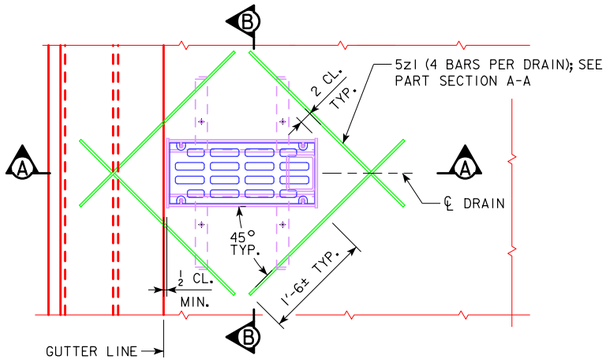
Superstructure Details

STA. 368+70.00 (IA 2) Turn-in Date: Mar 2024

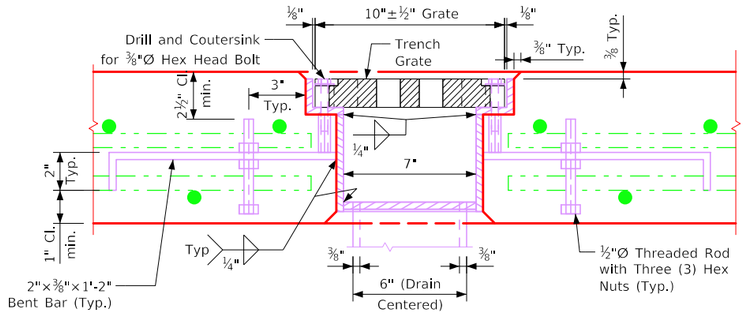
Van Buren County

IOWA DEPARTMENT OF TRANSPORTATION

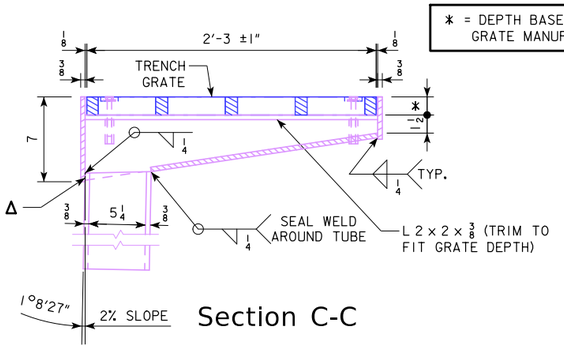
Design No. 121 Design Sheet No. 9 of 26 FHWA No. 50210



Part Plan At Drain



Part Section B-B - Showing Detail B Option



Section C-C

Drain Notes

The drains shall be ⅜" thick steel. The drain assemblies shall be galvanized after fabrication. The bid item "Deck Drain" shall include all costs associated with fabricating and installing the deck drains as per plan.

The drain trench grates shall be ferrous castings. Metal used in the manufacture of castings shall conform to ASTM A48-83 Class 35B or better gray iron castings in accordance with current Iowa D.O.T. Standard Specifications. Finish of castings shall be smooth and free of defects. Trench grates shall be capable of carrying AASHTO HL-93 loading. Galvanizing of the trench grates is not required.

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

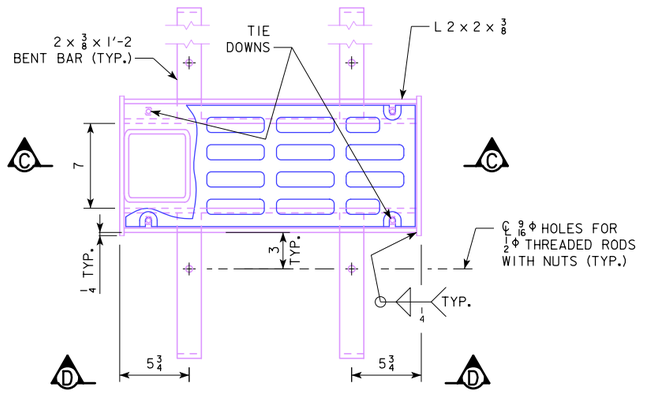
Materials

Plates, bars, threaded rods and angles shall meet the requirements ASTM A709 Grade 36. The tube steel shall meet the requirements ASTM A500 Grade B.

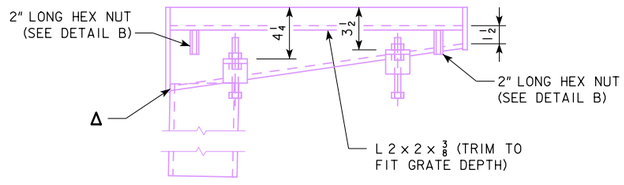
⅜"Ø mechanically galvanized steel flat head screw shall meet the requirements of ASTM B695-04 (2009) and ASTM F835-12.

⅜"Ø mechanically galvanized steel hex head bolt and hex nut shall meet the requirements of ASTM B695-04 (2009) and ASTM A307-12 Grade A.

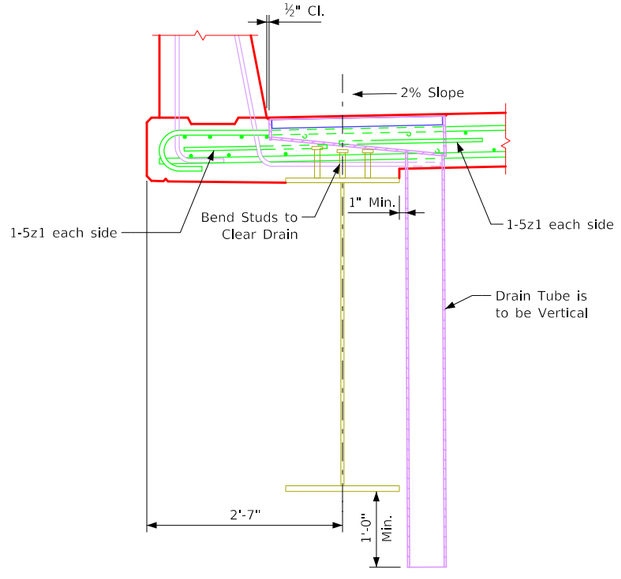
Note: 20 Deck Drains Required.



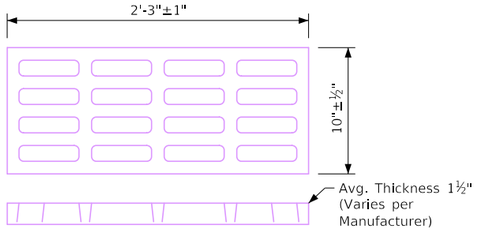
Plan View of Drain Trench
Grate Tie Downs Show Both Detail B



Side View D-D

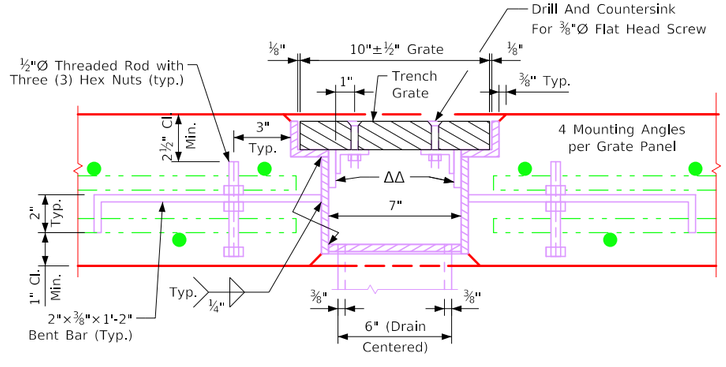


Part Section A-A



Drain Trench Grate Details
1 Grate Required Per Drain

Note: Pattern and direction of grate openings shall be similar to the pattern shown.



Part Section B-B - Showing Detail A Option

ΔΔ = Adjust shim plate according to width of grate.

Design For 15 Degree RA
250'-0" x 32'-0" Continuous Welded Girder Bridge
76'-3" End Spans 97'-6" Interior Span
Deck Drain Details
STA. 368+70.00 (IA 2) Turn-in Date: Mar 2024
Van Buren County
IOWA DEPARTMENT OF TRANSPORTATION
Design No. 121 Design Sheet No. 10 of 26 FHWA No. 50210

FILE NO. 31862	ENGLISH	DESIGN TEAM Benesch	Aesthetic Deck Drain Details	Standard Sheet 1054 (Modified)	Van Buren COUNTY	PROJECT NUMBER BRF-002-9(40)--38-89	SHEET NUMBER V.10

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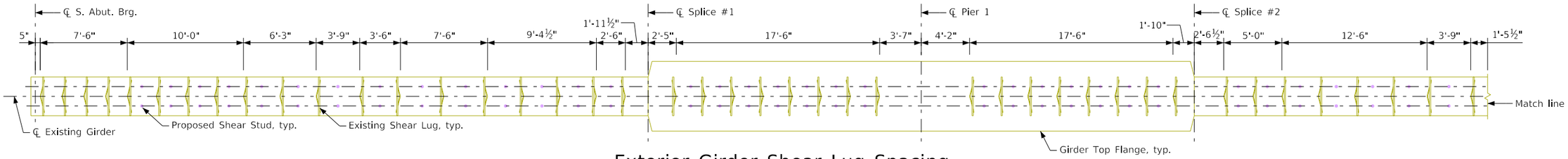
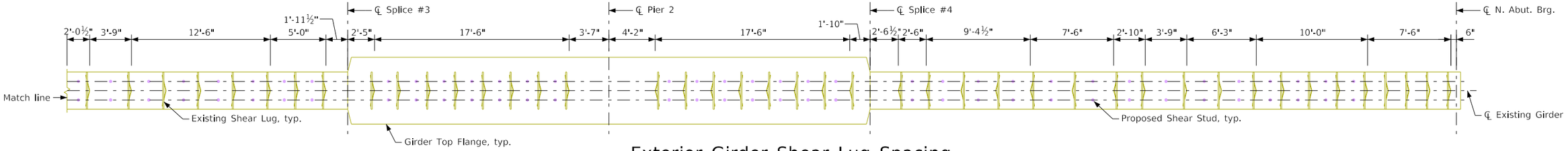
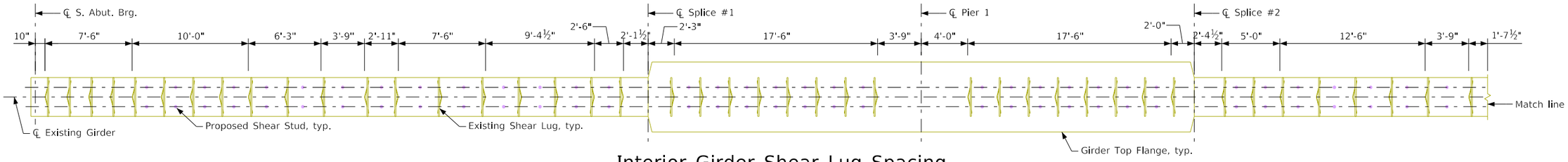


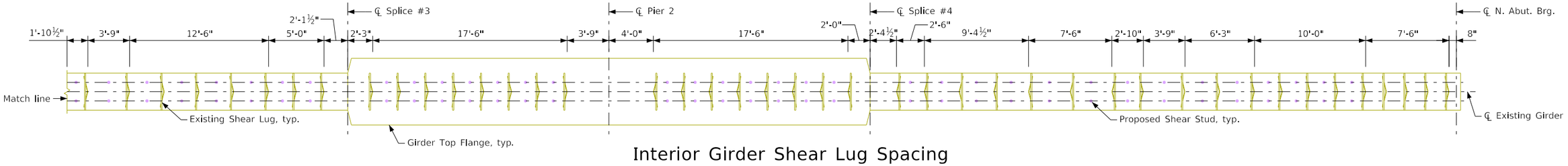
Exterior Girder Shear Lug Spacing



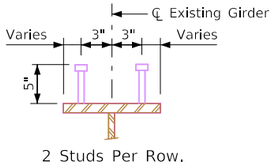
Exterior Girder Shear Lug Spacing



Interior Girder Shear Lug Spacing



Interior Girder Shear Lug Spacing



2 Studs Per Row.
Note: All Studs to be ⅞"

Shear Stud Details

Notes:

As built existing shear lug spacing may vary from construction details. Contractor to verify all dimensions in the field. See original construction drawings for details.

Place new welded shear studs where distance between existing shear lugs exceeds 2'-0".

Welded shear studs shall be of an approved type listed in Materials I.M. 453.10, Appendix A.

Design For 15 Degree RA

250'-0" x 32'-0" Continuous Welded Girder Bridge

76'-3" End Spans 97'-6" Interior Span

Superstructure Details

STA. 368+70.00 (IA 2) Turn-in Date: Mar 2024

Van Buren County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 121 Design Sheet No. 11 of 26 FHWA No. 50210

FILE NO. 31862	ENGLISH	DESIGN TEAM Benesch	Van Buren COUNTY	PROJECT NUMBER BRF-002-9(40)--38-89	SHEET NUMBER V.11

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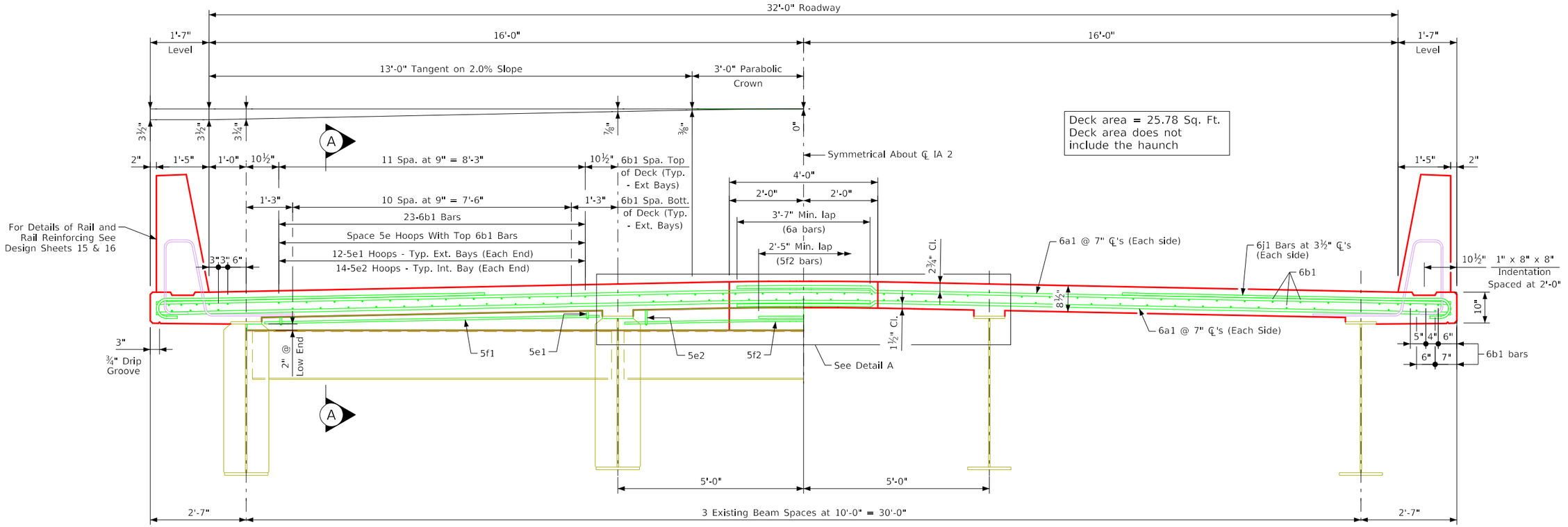
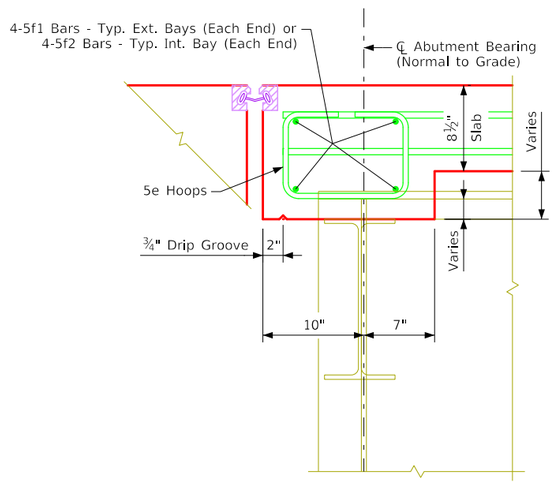


Deck area = 25.78 Sq. Ft.
Deck area does not include the haunch

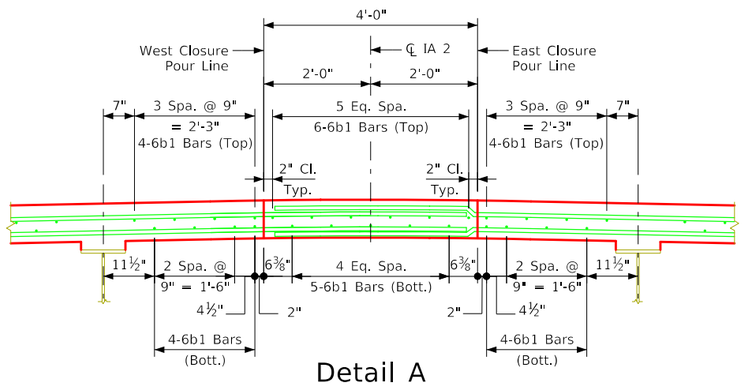
Half Section Near Abutment

Half Section Midspan



Section A-A

(Normal to abutment)
Note: Transverse deck reinforcement not shown.
Place 5e hoops parallel to longit. 6b1 bars.



Detail A

Design For 15 Degree RA

250'-0" x 32'-0" Continuous Welded Girder Bridge

76'-3" End Spans — 97'-6" Interior Span

Superstructure Details

STA. 368+70.00 (IA 2) — Turn-in Date: Mar 2024

Van Buren County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 121 — Design Sheet No. 12 of 26 — FHWA No. 50210

FILE NO. 31862	ENGLISH	DESIGN TEAM Benesch	Van Buren COUNTY	PROJECT NUMBER BRF-002-9(40)--38-89	SHEET NUMBER V.12

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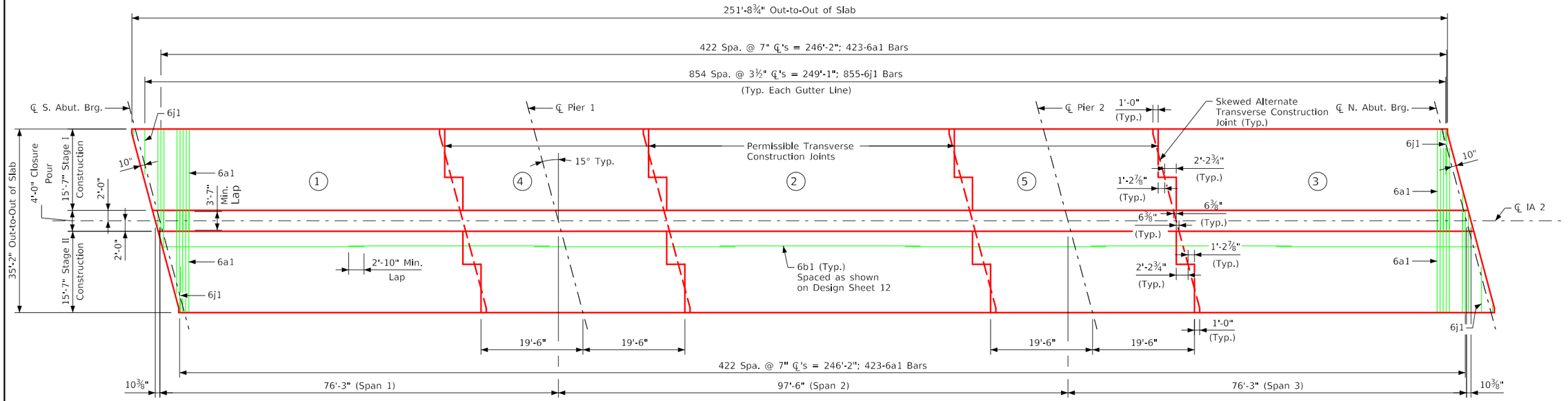
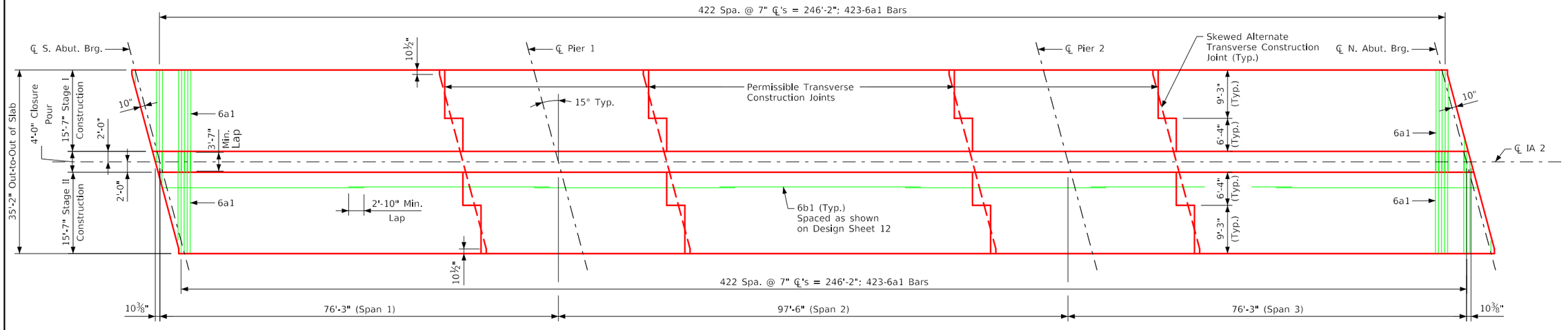


Top Slab Reinforcing Layout and Concrete Placement Diagram

Note:
Concrete deck slab shall be placed in sections and sequences indicated. Alternate procedures for placing slab 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.



Bottom Slab Reinforcing Layout

Note:
Longitudinal grooving will be a part of this project. See Roadway sheet for quantity

Design For 15 Degree RA

250'-0" x 32'-0" Continuous Welded Girder Bridge

76'-3" End Spans — 97'-6" Interior Span

Superstructure Details

STA. 368+70.00 (IA 2)

Turn-in Date: Mar 2024

Van Buren County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 121 | Design Sheet No. 13 of 26 | FHWA No. 50210

FILE NO. 31862	ENGLISH	DESIGN TEAM Benesch	Van Buren COUNTY	PROJECT NUMBER BRF-002-9(40)--38-89	SHEET NUMBER V.13

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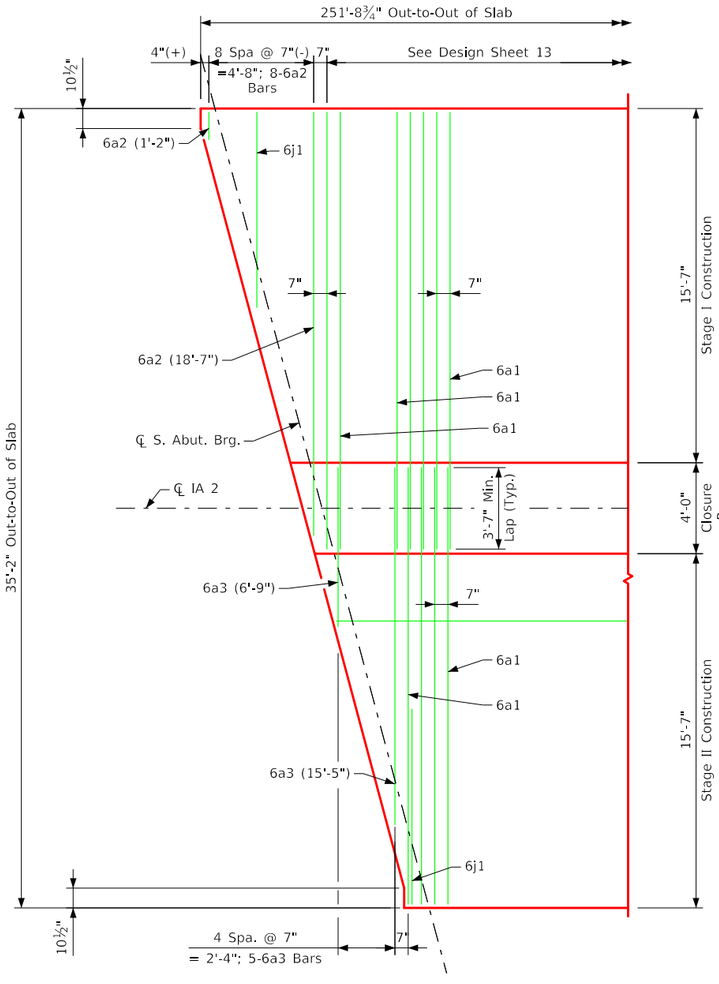
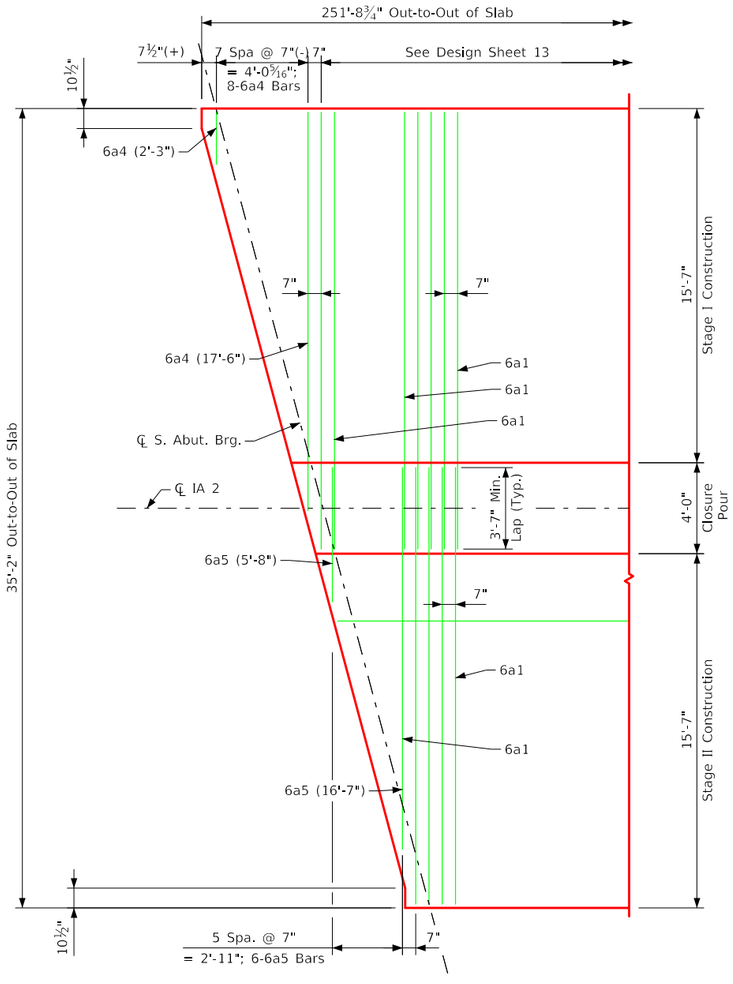


Top Transverse Reinforcing Layout

(South Abutment shown, North Abutment similar)



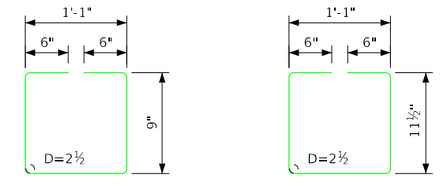
Bottom Transverse Reinforcing Layout

(South Abutment shown, North Abutment similar)

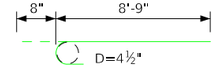
Epoxy Coated Reinforcing Steel - Deck

Bar	Location	Shape	No.	Length	Weight
6a1	Deck Transv. Top & Bott.	—	1692	19'-3	48922
6a2	Deck Transv. Top	—	18	Var.	267
6a3	Deck Transv. Top	—	10	Var.	166
6a4	Deck Transv. Bott.	—	16	Var.	237
6a5	Deck Transv. Bott.	—	12	Var.	200
6b1	Deck Longit. Top & Bott.	—	623	38'-5	35948
5e1	Abut. Diaph. Hoops	□	48	3'-7	179
5e2	Abut. Diaph. Hoops	□	28	4'-0	117
5f1	Abut. Diaph. Transv.	—	16	9'-0	150
5f2	Abut. Diaph. Transv.	—	16	6'-1	102
6j1	Transverse Barrier Bars	⌐	1710	9'-5	24186
5z1	Drain Bars	—	80	3'-0	250
Epoxy Coated Reinforcing Steel - Total Weight (Lbs.)					110724

Bent Bar Details



5e1 5e2



6j1

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

Design For 15 Degree RA

250'-0" x 32'-0" Continuous Welded Girder Bridge

76'-3" End Spans 97'-6" Interior Span

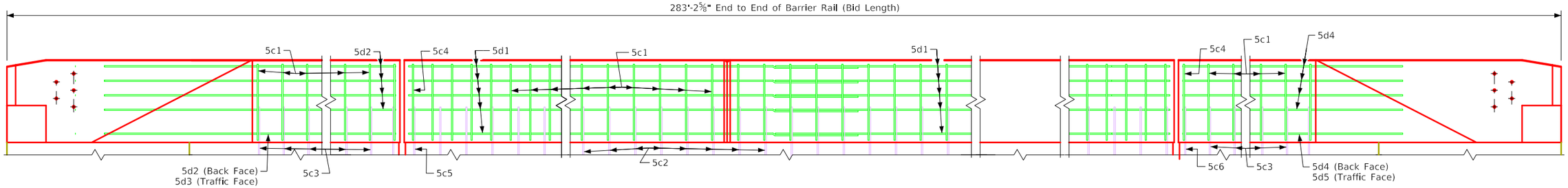
Superstructure Details

STA. 368+70.00 (IA 2) Turn-in Date: Mar 2024

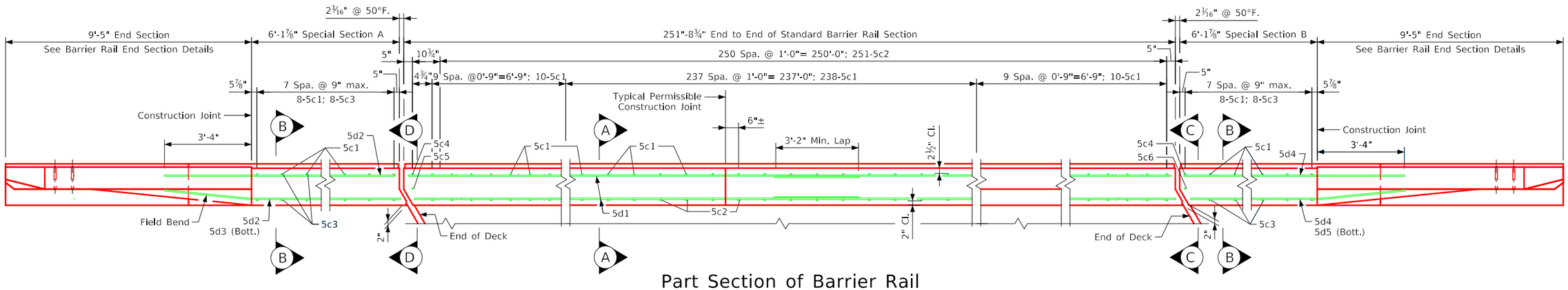
Van Buren County

IOWA DEPARTMENT OF TRANSPORTATION

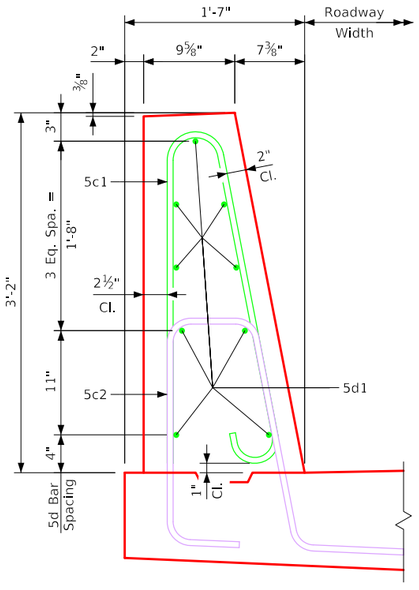
Design No. 121 Design Sheet No. 14 of 26 FHWA No. 50210



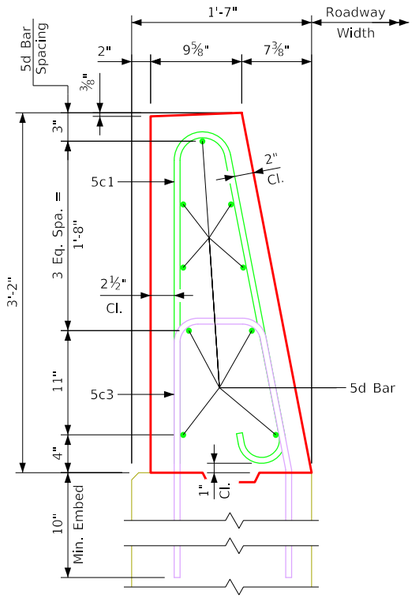
Elevation of Barrier Rail



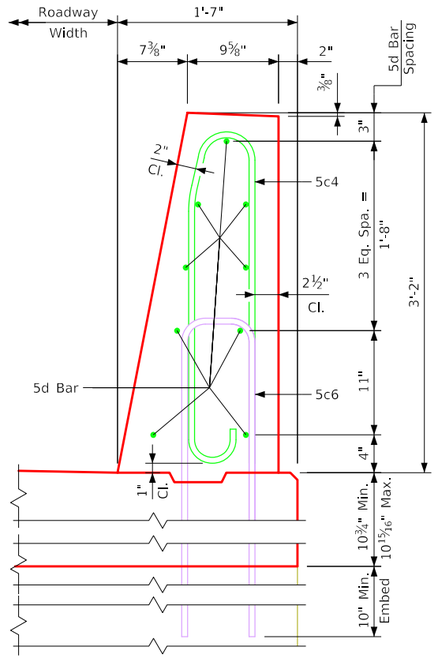
Part Section of Barrier Rail



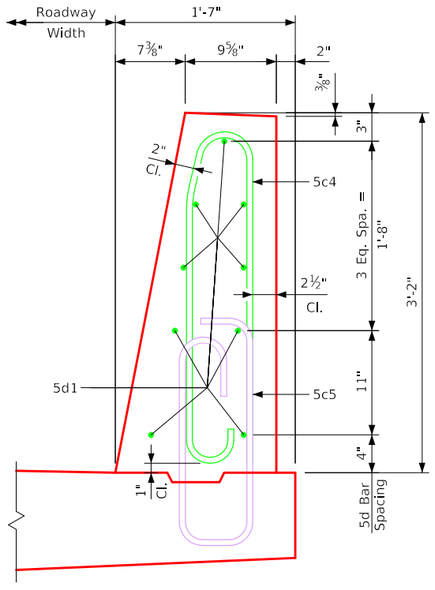
Part Section A-A



Part Section B-B



Part Section C-C



Part Section D-D

Note: Verify Once IowaDOT Base Sheets are Officially Published

See Barrier Rail Details on Design Sheet No. 16 for notes, reinforcing steel details, and quantities.

Design For 15 Degree RA

250'-0" x 32'-0" Continuous Welded Girder Bridge

76'-3" End Spans 97'-6" Interior Span

Barrier Rail Details (1 of 2)

STA. 368+70.00 (IA 2) Turn-in Date: Mar 2024

Van Buren County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 121 Design Sheet No. 15 of 26 FHWA No. 50210

FILE NO. 31862	ENGLISH	DESIGN TEAM Benesch	Barrier Rail (TSS TL-4) - RA Skew Stub Abut. w/Wing Ext. (1 of 2)	Standard Sheet 1018SA-1 (Modified)	Van Buren COUNTY	PROJECT NUMBER BRF-002-9(40)--38-89	SHEET NUMBER V.15

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Barrier Rail Notes:

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

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

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

All barrier rail reinforcing steel is to be either epoxy coated or stainless steel as shown. The stainless steel reinforcing steel shall be deformed bar grade 60 meeting the requirements of Construction and Materials I.M. 452.

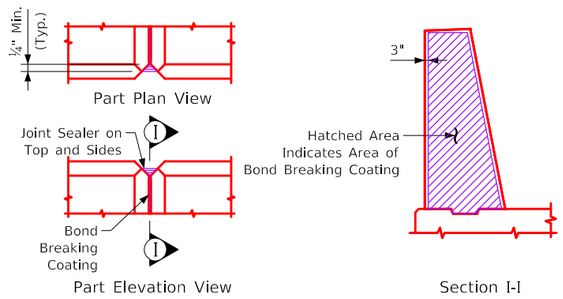
The concrete barrier rail is to be bid on a linear foot basis. The number of linear feet of barrier rail installed will be paid for at the contract price per linear foot based on plan quantities. Price bid for concrete barrier railing shall be full compensation for furnishing all material, excluding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

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

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

All exposed corners 90° or sharper are to be filleted with a ¾" dressed and beveled strip.

Cross sectional area of the Standard and Special Sections of the barrier rail = 3.90 square feet.



Barrier Rail Joint Details

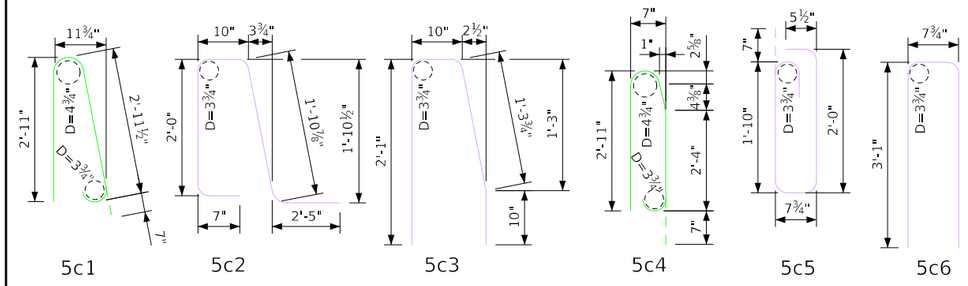
Epoxy Coated Reinf. Steel - Two Rails

Section	Bar	Location	Shape	No.	Length	Weight
Standard Sections	5c1	Rail, Vertical		516	6'-8"	3588
	5c4	Rail, Vertical		2	6'-8"	14
	5d1	Rail, Longitudinal		63	38'-9"	2546
Special Section A	5c1	Rail, Vertical		16	6'-8"	111
	5d2	Rail, Longitudinal		16	9'-4"	156
	5d3	Rail, Longitudinal, Traffic Face, Bott.		2	9'-4"	19
Special Section B	5c1	Rail, Vertical		16	6'-8"	111
	5c4	Rail, Vertical		2	6'-8"	14
	5d4	Rail, Longitudinal		16	9'-4"	156
	5d5	Rail, Longitudinal, Traffic Face, Bott.		2	9'-4"	19
					Epoxy Reinf. Total Weight (lbs.)	6734

Stainless Steel Reinf. Steel - Two Rails

Section	Bar	Location	Shape	No.	Length	Weight
Standard Sections	5c2	Rail, Vertical		502	7'-9"	4058
	5c5	Rail, Vertical		2	5'-7"	12
Special Section A	5c3	Rail, Vertical		16	5'-2"	86
Special Section B	5c3	Rail, Vertical		16	5'-2"	86
	5c6	Rail, Vertical		2	6'-10"	14
					Stainless Steel Total Weight (lbs.)	4256

Bent Bar Details



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

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

Concrete Placement Summary

Section	Total
Standard Section 503'-5½" at 0.130 cu. yd. per ft.	65.5
Standard Section A 12'-3¾" at 0.130 cu. yd. per ft.	1.6
Standard Section B 12'-3¾" at 0.130 cu. yd. per ft.	1.6
Total (cu. yd.)	68.7

Concrete Barrier Rail Quantities

Item	Unit	Quantity
Concrete Barrier Railing	lin. ft.	567

Note: Verify Once IowaDOT Base Sheets are Officially Published

Dowel Setting Note:

The 5c2, 5c3, 5c5, and 5c6 bars shall be set as dowels in drilled holes as needed. Holes are to be 10" deep. The dowels shall be installed in accordance with manufacturer's recommendations. Either of the following systems may be used as a bonding agent for vertical dowels, but only system "A" may be used for horizontal dowels:

A. Polymer grout system shall be in accordance with Article 2301.03, E, of the Standard Specifications.

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

See Barrier Rail Details on Design Sheet No. 15 for details and sections.

Design For 15 Degree RA

250'-0" x 32'-0" Continuous Welded Girder Bridge

76'-3" End Spans 97'-6" Interior Span

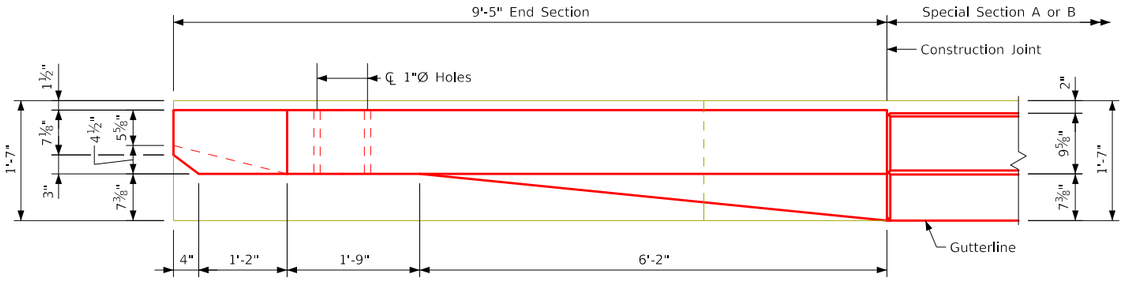
Barrier Rail Details (2 of 2)

STA. 368+70.00 (IA 2) Turn-in Date: Mar 2024

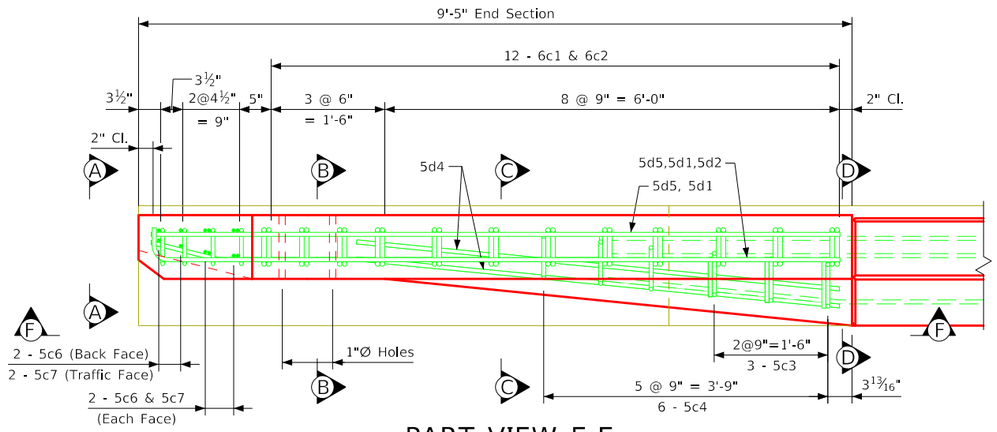
Van Buren County

IOWA DEPARTMENT OF TRANSPORTATION

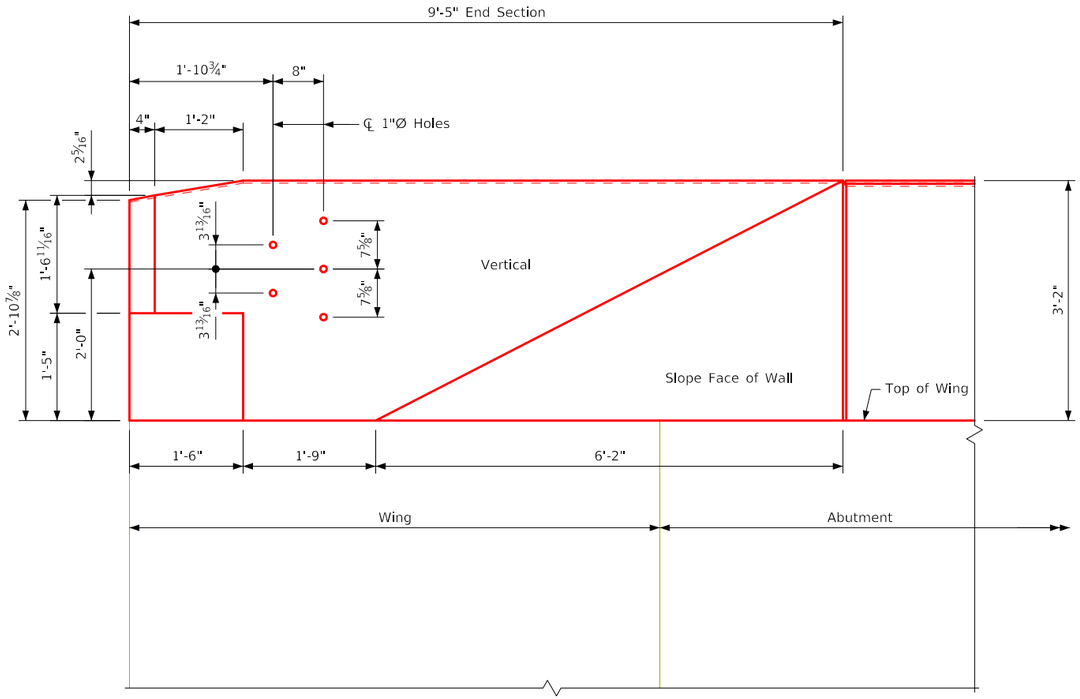
Design No. 121 Design Sheet No. 16 of 26 FHWA No. 50210



PART PLAN VIEW

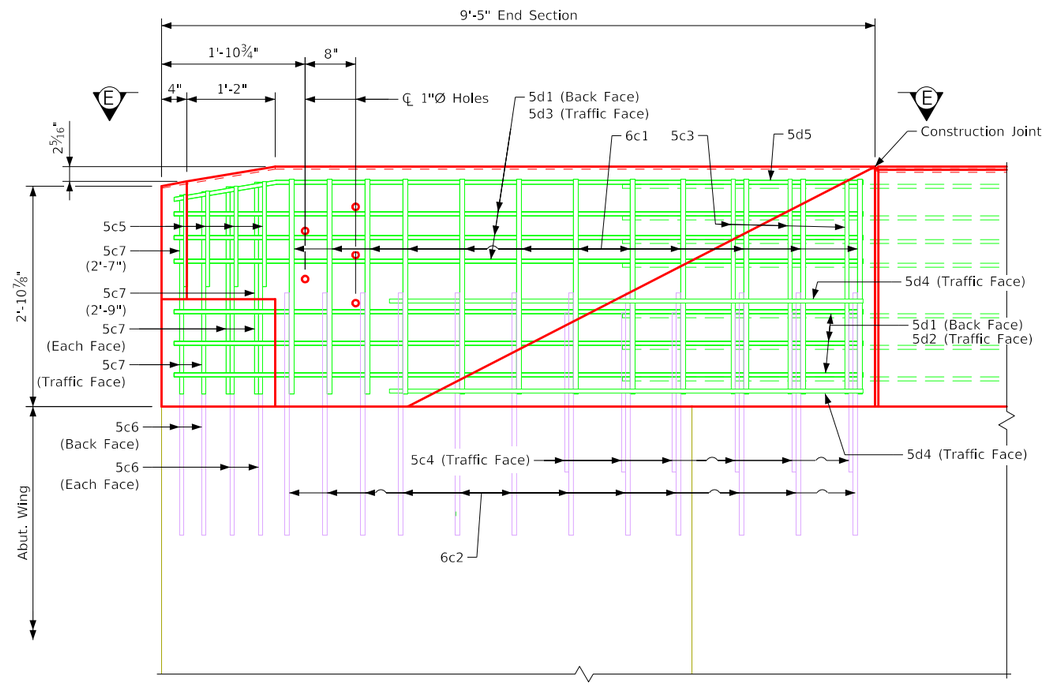


PART VIEW E-E



PART ELEVATION VIEW

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



PART VIEW F-F

Note:
Construction joint between top of abutment wing with barrier rail is roughened concrete.
For Bar List, Bent Bar Details, Sections A-A, B-B. C-C, and D-D see Design Sheet No. 18

Note: Verify Once IowaDOT Base Sheets are Officially Published

Design For 15 Degree RA

250'-0" x 32'-0" Continuous Welded Girder Bridge

76'-3" End Spans 97'-6" Interior Span

End Section Details (1 of 2)

STA. 368+70.00 (IA 2) Turn-in Date: Mar 2024

Van Buren County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 121 Design Sheet No. 17 of 26 FHWA No. 50210

FILE NO. 31862	ENGLISH	DESIGN TEAM Benesch	Barrier End Section (1 of 2)	Standard Sheet 1017S-1 (Modified)	Van Buren COUNTY	PROJECT NUMBER BRF-002-9(40)--38-89	SHEET NUMBER V.17	

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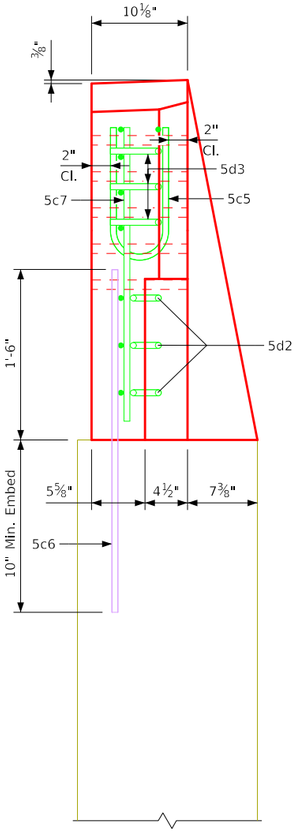
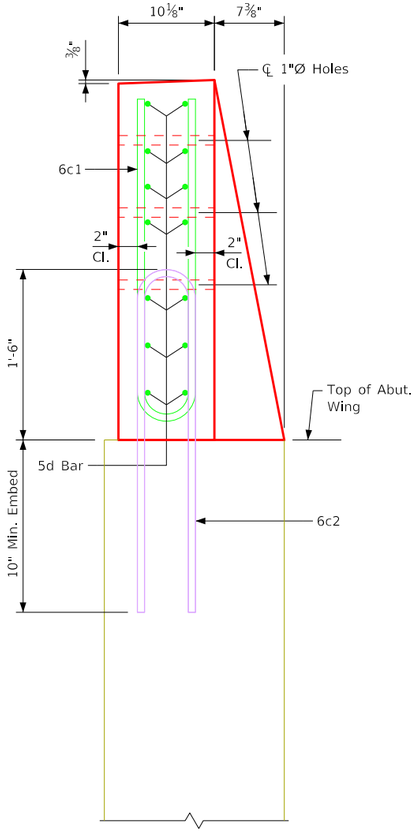
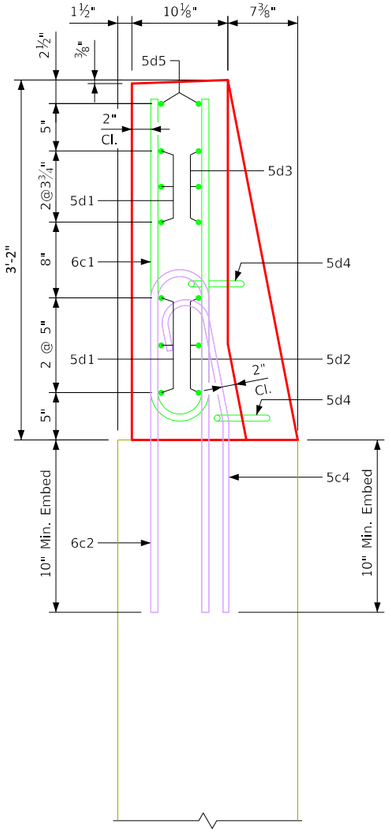


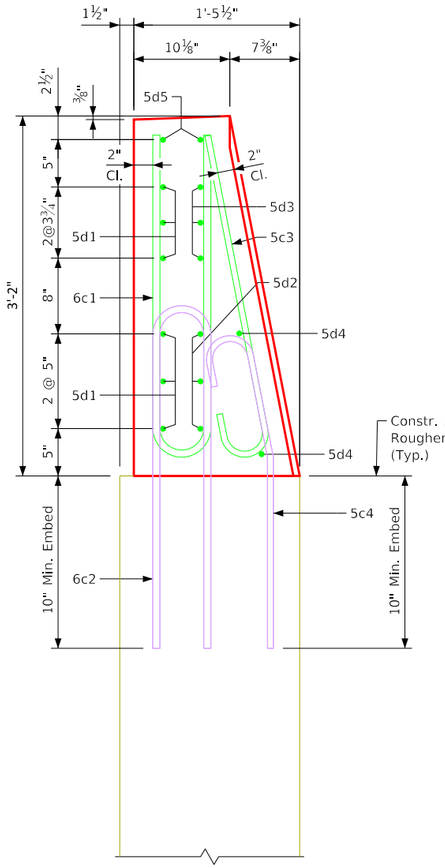
View A-A



Section B-B



Section C-C



Section D-D

Epoxy Coated Reinforcing Steel - One End Section

Bar	Location	Shape	No.	Length	Weight
6c1	Rail, Vertical		12	5'-11"	107
5c3	Rail, Vertical (Traffic Face)		3	3'-5"	11
5c5	Rail, Vertical (End)		4	Varies	14
5c7	Rail, Vertical (End)		6	Varies	18
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'-5"	29
5d4	Rail, Horizontal (Traffic Face)		2	6'-3"	13
5d5	Rail, Horizontal (Top)		2	9'-1"	19
	Epoxy Reinforcing Total Weight (lbs.)				296

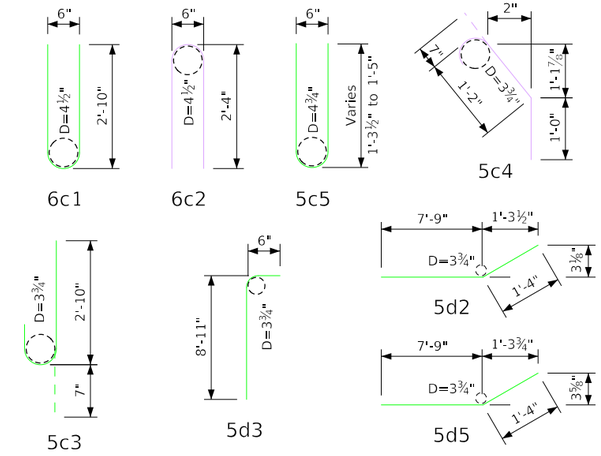
Stainless Steel Reinforcing Steel - One End Section

Bar	Location	Shape	No.	Length	Weight
6c2	Rail, Vertical		12	4'-11"	89
5c4	Rail, Vertical (Traffic Face)		6	2'-9"	17
5c6	Rail, Vertical (End)		6	2'-4"	15
	Stainless Steel Reinforcing Total Weight (lbs.)				121

Concrete Placement Summary

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

Bent Bar Details



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

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

Note:
Construction joint between top of abutment wing with barrier rail is roughened concrete.
For Elevations and other details see Design Sheet No. 17

Dowel Setting Note:

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

A. Polymer grout system shall be in accordance with Article 2301.03, E, of the Standard Specifications.

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

Note: Verify Once IowaDOT Base Sheets are Officially Published

Design For 15 Degree RA

250'-0" x 32'-0" Continuous Welded Girder Bridge

76'-3" End Spans 97'-6" Interior Span

End Section Details (2 of 2)

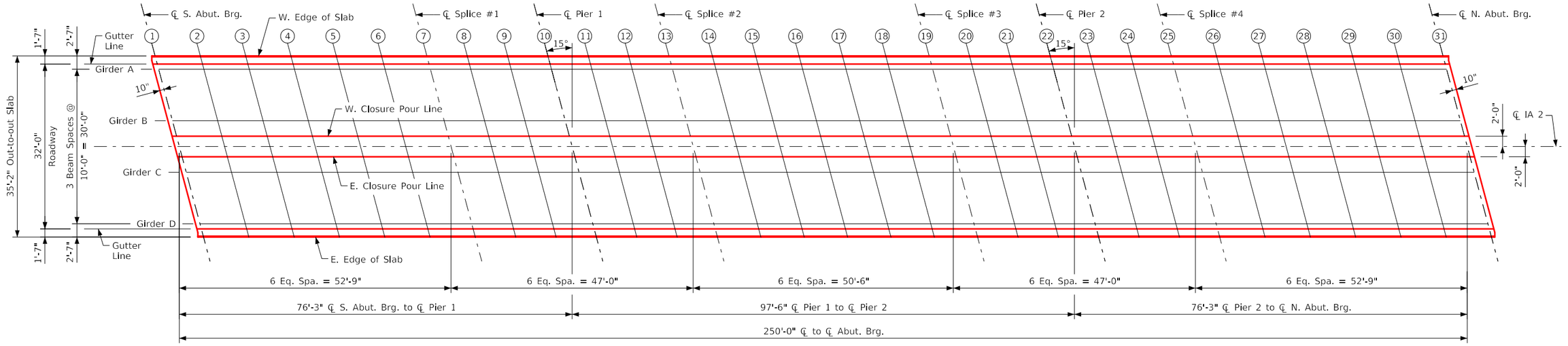
STA. 368+70.00 (IA 2) Turn-in Date: Mar 2024

Van Buren County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 121 Design Sheet No. 18 of 26 FHWA No. 50210

Bench Mark: BM #1, 2039476.566 Easting, 243282.099 Northing,
Cross Cut on South End of SW Wingwall - Elev 687.66



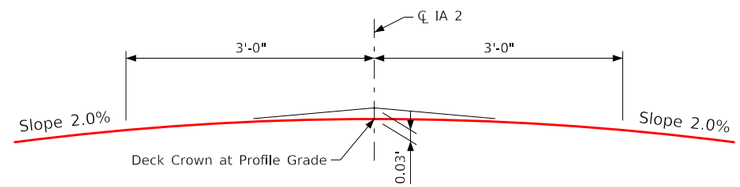
Top of Slab Elevation Plan

Top of Slab Elevations

	℄ S. Abut. Bearing						℄ Splice #1			℄ Pier 1			℄ Splice #2			
	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
W. Edge of Slab	684.86	684.88	684.89	684.91	684.92	684.93	684.94	684.95	684.95	684.96	684.97	684.97	684.97	684.98	684.98	684.98
W. Gutter Line	684.86	684.88	684.89	684.91	684.92	684.93	684.94	684.95	684.95	684.96	684.97	684.97	684.97	684.98	684.98	684.98
Girder A	684.88	684.90	684.91	684.93	684.94	684.95	684.96	684.97	684.98	684.98	684.99	684.99	684.99	685.00	685.00	685.00
Girder B	685.09	685.10	685.12	685.13	685.14	685.15	685.16	685.17	685.18	685.18	685.19	685.19	685.20	685.20	685.20	685.20
W. Closure Pour Line	685.15	685.16	685.18	685.19	685.20	685.21	685.22	685.23	685.24	685.24	685.25	685.25	685.25	685.26	685.26	685.26
℄ IA 2	685.16	685.18	685.19	685.20	685.22	685.23	685.24	685.24	685.25	685.26	685.26	685.26	685.27	685.27	685.27	685.27
E. Closure Pour Line	685.15	685.16	685.18	685.19	685.20	685.21	685.22	685.23	685.24	685.24	685.25	685.25	685.25	685.26	685.26	685.26
Girder C	685.09	685.11	685.12	685.13	685.15	685.16	685.17	685.17	685.18	685.19	685.19	685.19	685.20	685.20	685.20	685.20
Girder D	684.90	684.91	684.93	684.94	684.95	684.96	684.97	684.98	684.98	684.99	684.99	684.99	685.00	685.00	685.00	685.00
E. Gutter Line	684.88	684.89	684.91	684.92	684.93	684.94	684.95	684.96	684.96	684.97	684.97	684.97	684.98	684.98	684.98	684.98
E. Edge of Slab	684.88	684.89	684.91	684.92	684.93	684.94	684.95	684.96	684.96	684.97	684.97	684.98	684.98	684.98	684.98	684.98

Top of Slab Elevations

			℄ Splice #3			℄ Pier 2			℄ Splice #4						℄ N. Abut. Bearing
	Line 17	Line 18	Line 19	Line 20	Line 21	Line 22	Line 23	Line 24	Line 25	Line 26	Line 27	Line 28	Line 29	Line 30	Line 31
W. Edge of Slab	684.98	684.98	684.98	684.98	684.97	684.97	684.96	684.96	684.95	684.94	684.93	684.92	684.91	684.89	684.88
W. Gutter Line	684.98	684.98	684.98	684.97	684.97	684.97	684.96	684.96	684.95	684.94	684.93	684.92	684.91	684.89	684.88
Girder A	685.00	685.00	685.00	684.99	684.99	684.99	684.98	684.98	684.97	684.96	684.95	684.94	684.93	684.91	684.90
Girder B	685.20	685.20	685.20	685.19	685.19	685.19	685.18	685.17	685.17	685.16	685.15	685.13	685.12	685.11	685.09
W. Closure Pour Line	685.26	685.26	685.25	685.25	685.25	685.24	685.24	685.23	685.22	685.21	685.20	685.19	685.18	685.16	685.15
℄ IA 2	685.27	685.27	685.27	685.26	685.26	685.26	685.25	685.24	685.24	685.23	685.22	685.20	685.19	685.18	685.16
E. Closure Pour Line	685.26	685.26	685.25	685.25	685.25	685.24	685.24	685.23	685.22	685.21	685.20	685.19	685.18	685.16	685.15
Girder C	685.20	685.20	685.20	685.19	685.19	685.18	685.18	685.17	685.16	685.15	685.14	685.13	685.12	685.10	685.09
Girder D	685.00	685.00	684.99	684.99	684.99	684.98	684.98	684.97	684.96	684.95	684.94	684.93	684.91	684.90	684.88
E. Gutter Line	684.98	684.98	684.97	684.97	684.97	684.96	684.95	684.95	684.94	684.93	684.92	684.91	684.89	684.88	684.86
E. Edge of Slab	684.98	684.98	684.97	684.97	684.97	684.96	684.95	684.95	684.94	684.93	684.92	684.91	684.89	684.88	684.86



Crown Template
No Scale

Notes:
Elevations along ℄ IA 2 are located at deck crown at profile grade as shown in the Crown Template Detail.

Design For 15 Degree RA

250'-0" x 32'-0" Continuous Welded Girder Bridge

76'-3" End Spans 97'-6" Interior Span

Top of Slab Elevations

STA. 368+70.00 (IA 2) Turn-in Date: Mar 2024

Van Buren County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 121 Design Sheet No. 19 of 26 FHWA No. 50210

Table of Beam Line Deck Haunch Elevations

Beam Line	℄ S. Abut. Bearing						℄ Splice #1			℄ Pier 1			℄ Splice #2			
	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
A	684.18	684.21	684.25	684.27	684.28	684.28	684.28	684.28	684.27	684.27	684.28	684.30	684.32	684.34	684.35	684.35
B	684.38	684.42	684.46	684.48	684.49	684.49	684.49	684.48	684.47	684.47	684.49	684.50	684.52	684.54	684.55	684.55
C	684.39	684.43	684.46	684.48	684.49	684.49	684.49	684.48	684.48	684.48	684.49	684.50	684.52	684.54	684.55	684.55
D	684.19	684.23	684.26	684.28	684.29	684.29	684.29	684.28	684.28	684.28	684.29	684.30	684.32	684.34	684.35	684.35

Bench Mark: BM #1, 2039476.566 Easting, 243282.099 Northing,
Cross Cut on South End of SW Wingwall - Elev 687.66

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

Table of Beam Line Deck Haunch Elevations

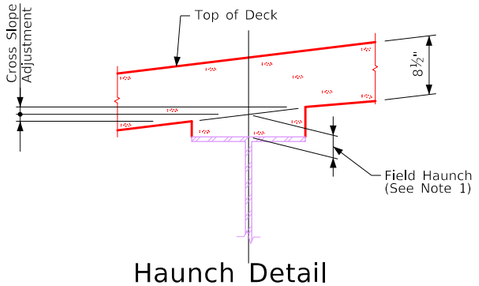
Beam Line			℄ Splice #3			℄ Pier 2			℄ Splice #4						℄ N. Abut. Bearing
	Line 17	Line 18	Line 19	Line 20	Line 21	Line 22	Line 23	Line 24	Line 25	Line 26	Line 27	Line 28	Line 29	Line 30	Line 31
A	684.35	684.34	684.32	684.30	684.29	684.28	684.28	684.28	684.29	684.29	684.29	684.28	684.26	684.23	684.19
B	684.55	684.54	684.52	684.50	684.49	684.48	684.48	684.48	684.49	684.49	684.49	684.48	684.46	684.43	684.39
C	684.55	684.54	684.52	684.50	684.49	684.47	684.47	684.48	684.49	684.49	684.49	684.48	684.46	684.42	684.38
D	684.35	684.34	684.32	684.30	684.28	684.27	684.27	684.28	684.28	684.28	684.28	684.27	684.25	684.21	684.18

Miscellaneous Data Table

	Beam Line		℄ S. Abut. Bearing						℄ Splice #1			℄ Pier 1			℄ Splice #2			
			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
Anticipated Deflection Due to Deck (in.)	A & D		0	1/4	3/8	1/2	1/2	3/8	1/4	1/8	1/16	0	1/16	1/8	1/4	3/8	1/2	9/16
	B & C		0	1/4	7/16	9/16	9/16	7/16	5/16	3/16	1/16	0	1/16	1/8	5/16	7/16	9/16	5/8
Cross Slope Adjustments (in.)	All		1/8						3/16						1/8			
Allowable Field Haunch (in. & ft.)	Max.	All	2 7/8 (0.240)						2 13/16 (0.234)						2 7/8 (0.240)			
	Min.	All	-3/8 (0.031)						-5/16 (0.026)						-3/8 (0.031)			

Miscellaneous Data Table

	Beam Line				℄ Splice #2			℄ Pier 2			℄ Splice #4						℄ N. Abut. Bearing
			Line 17	Line 18	Line 19	Line 20	Line 21	Line 22	Line 23	Line 24	Line 25	Line 26	Line 27	Line 28	Line 29	Line 30	Line 31
Anticipated Deflection Due to Deck (in.)	A & D		1/2	3/8	1/4	1/8	1/16	0	1/16	1/8	1/4	3/8	1/2	1/2	3/8	1/4	0
	B & C		9/16	7/16	5/16	3/16	1/16	0	1/16	3/16	5/16	7/16	9/16	9/16	7/16	1/4	0
Cross Slope Adjustments (in.)	All		1/8		3/16							1/8					
Allowable Field Haunch (in. & ft.)	Max.	All	2 7/8 (0.240)		2 13/16 (0.234)							2 7/8 (0.240)					
	Min.	All	-3/8 (0.031)		-5/16 (0.026)							-3/8 (0.031)					



Haunch Detail

Note:
Bridge seat elevations were assumed based on the existing plans and adjusted per the elevation data recorded from a preliminary survey of the top of deck. 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 Slab Elevation Plan". Subtract the surveyed beam shot from the "Beam Line Deck Haunch Elevation". This value will be the haunch needed (see "Field Haunch" in Haunch Detail). The "Beam Line Deck Haunch Elevation" includes adjustments for slab 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:
See Design Sheet 19 for locations of tabulated values.

Design For 15 Degree RA

250'-0" x 32'-0" Continuous Welded Girder Bridge

76'-3" End Spans 97'-6" Interior Span

Beam Line Haunch Data

STA. 368+70.00 (IA 2) Turn-in Date: Mar 2024

Van Buren County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 121 Design Sheet No. 20 of 26 FHWA No. 50210

Revised 07-19: Changed all References of "Slab" to "Deck"
Issued 02-08.
MiscellaneousBridges.dgn - 1066 - This Sheet Re-Issued 11-2023. Sheet Format Update.

FILE NO. 31862 | ENGLISH | DESIGN TEAM Benesch | Van Buren COUNTY | PROJECT NUMBER BRF-002-9(40)--38-89 | SHEET NUMBER V.20

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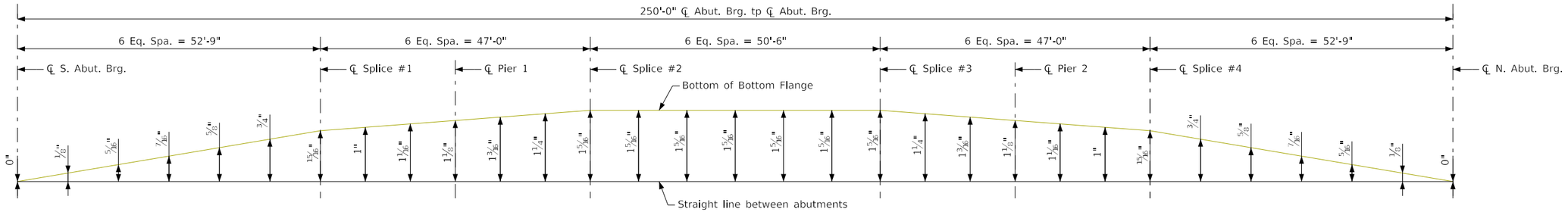
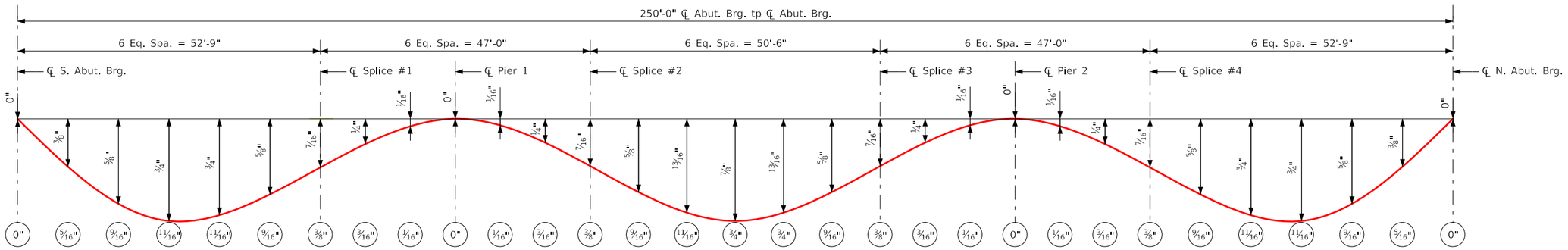


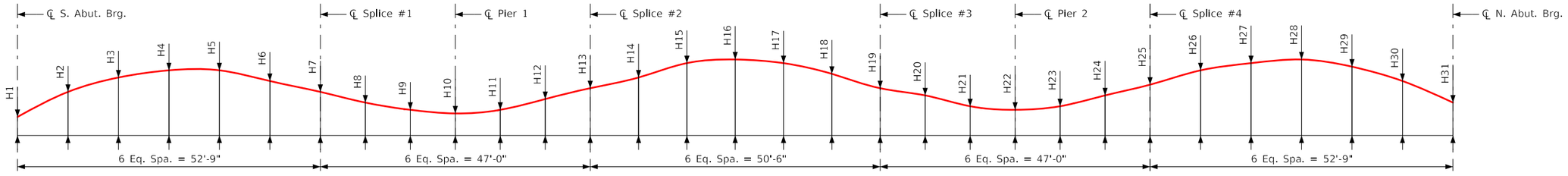
Beams as Fabricated Horizontally

(From original plans, Design No. 5067)



Dead Load Deflection Diagram

(Note: The encircled figures indicated anticipated deflection due to concrete only)



Theoretical Concrete Haunch Diagram

(For estimating purposes only, field verify)

Theoretical Concrete Haunch

Beam Line	℄ S.Abut. Brg.						℄ Splice #1			℄ Pier 1			℄ Splice #2						℄ Splice #3			℄ Pier 2		℄ Splice #4						℄ N. Abut. Brg.
	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12	H13	H14	H15	H16	H17	H18	H19	H20	H21	H22	H23	H24	H25	H26	H27	H28	H29	H30	H31
A	3/8	3/4	1	1 3/16	1 3/16	1	1 3/16	1 1/16	9/16	1/2	5/8	1 3/16	1	1 3/16	1 3/8	1 7/16	1 3/8	1 1/4	1 1/16	1 5/16	3/4	3/4	1 3/16	1 5/16	1 1/16	1 5/16	1 1/2	1 9/16	1 7/16	1 3/16	7/8
B	1 1/8	1 9/16	1 13/16	1 15/16	1 15/16	1 13/16	1 9/16	1 7/16	1 1/4	1 3/16	1 1/4	1 7/16	1 5/8	1 7/8	2 1/16	2 1/8	2 1/16	1 7/8	1 11/16	1 1/2	1 3/8	1 5/16	1 3/8	1 9/16	1 11/16	1 15/16	2 1/8	2 1/8	2	1 3/4	1 3/8
C	1	1 7/16	1 11/16	1 13/16	1 13/16	1 5/8	1 7/16	1 1/4	1 1/16	1	1 1/8	1 3/16	1 7/16	1 11/16	1 7/8	1 15/16	1 7/8	1 11/16	1 7/16	1 5/16	1 1/8	1 1/16	1 1/8	1 5/16	1 7/16	1 11/16	1 7/8	1 7/8	1 3/4	1 1/2	1 1/8
D	1 1/16	1	1 1/4	1 3/8	1 5/16	1 3/16	1 5/16	3/4	5/8	9/16	5/8	3/4	1 5/16	1 1/8	1 1/4	1 5/16	1 1/4	1 1/16	7/8	1 1/16	1/2	1 7/16	1/2	9/16	1 1/16	1 5/16	1 1/16	1 1/16	1 5/16	1 1/16	5/16

Note:
See Design Sheet 19 for locations of tabulated values.

Design For 15 Degree RA

250'-0" x 32'-0" Continuous Welded Girder Bridge

76'-3" End Spans 97'-6" Interior Span

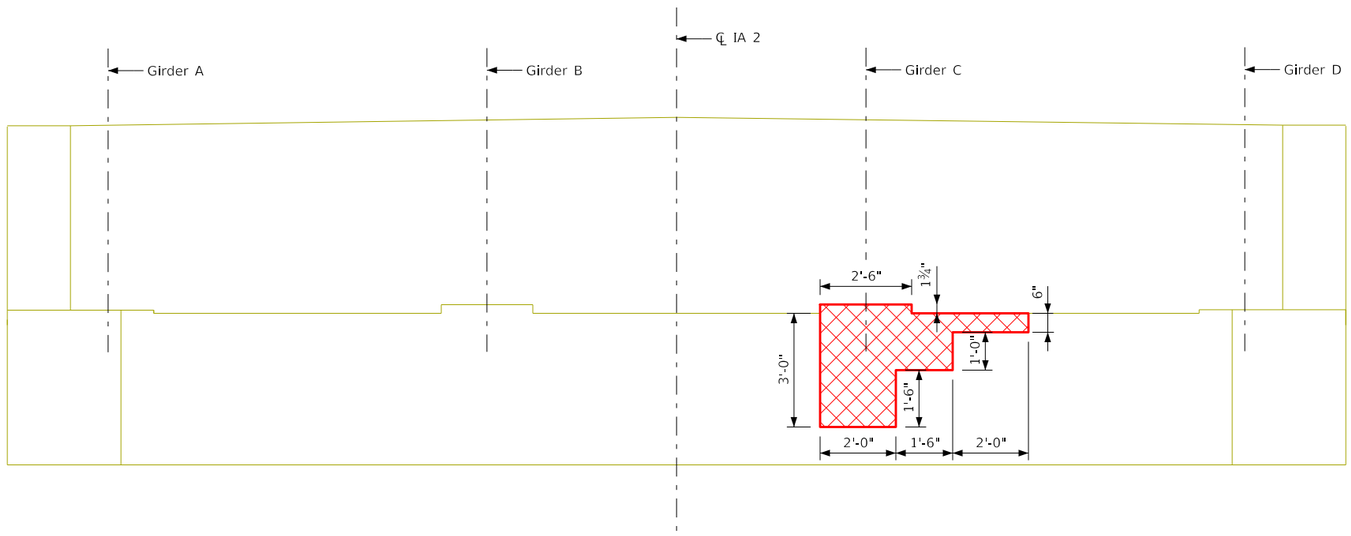
Beam Line Haunch Data

STA. 368+70.00 (IA 2) Turn-in Date: Mar 2024

Van Buren County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 121 Design Sheet No. 21 of 26 FHWA No. 50210



North Abutment Repair Elevation

(Looking North)

Concrete Repair Quantities		
Location	Shallow	Regular
Concrete Repair (SF)	0	9.7

Concrete repair locations for estimating purposes. The actual quantity is determined at the time of repair. Actual spalled and hollow areas as determined by the engineer shall be repaired.

Legend

Regular Repair

Design For 15 Degree RA

250'-0" x 32'-0" Continuous Welded Girder Bridge

76'-3" End Spans 97'-6" Interior Span

Concrete Repair

STA. 368+70.00 (IA 2) Turn-in Date: Mar 2024

Van Buren County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 121 Design Sheet No. 22 of 26 FHWA No. 50210

FILE NO. 31862 | ENGLISH | DESIGN TEAM Benesch | Van Buren COUNTY | PROJECT NUMBER BRF-002-9(40)--38-89 | SHEET NUMBER V.22

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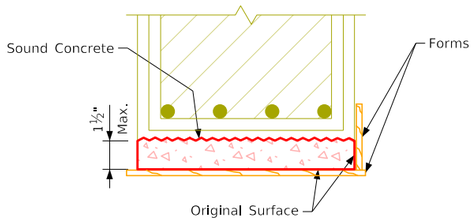
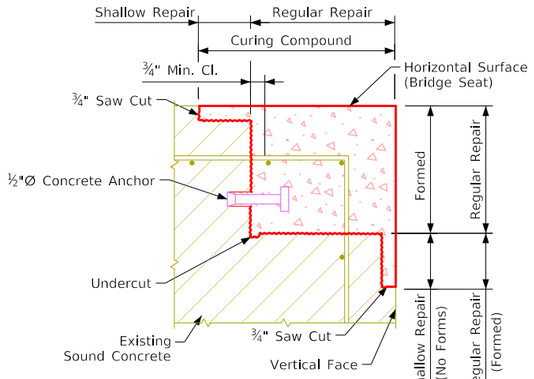
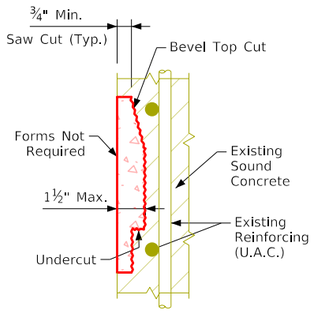


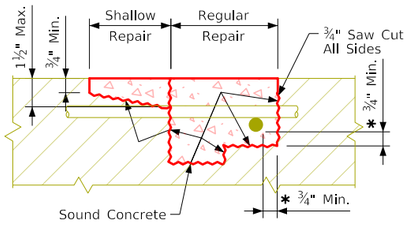
Shallow Repair Bottom Surface



Corner Repair

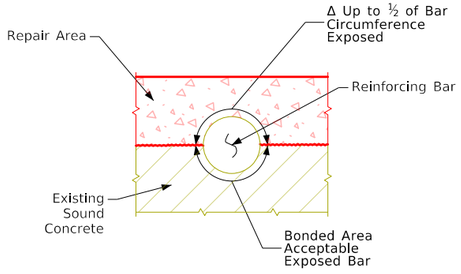


Shallow Repair Vertical Face

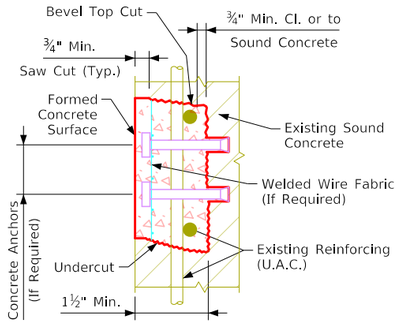


Repair Definition

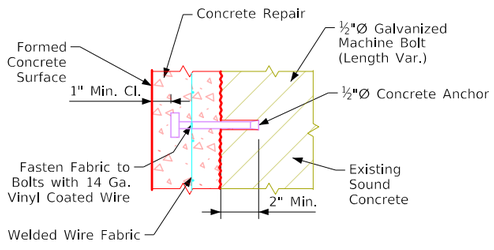
✱ Indicates Clearance for an Un-Bonded Rebar.



Δ If more than ½ of the rebar is exposed it shall be treated as an un-bonded rebar.

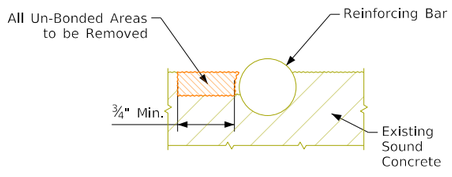


Regular Repair Vertical Face



Anchor Detail

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



Concrete Removal Adjacent to Reinforcing

Repair Notes:

The spalled and hollow areas of this bridge as noted and shown in these plans shall be repaired as follows:

- All the costs of equipment and materials required to repair the spalled and hollow areas of this bridge shall be included in the price bid for "Concrete Repair".
- The price bid for "Concrete Repair" shall include the cost of all concrete anchors and welded wire fabric required by the plans.
- The Engineer shall determine and outline by visual and audible inspection the actual areas of the concrete repairs. The Contractor shall be paid for the actual amount of repairs made on a square foot basis based on the price bid per square foot.
- All existing reinforcing bars that are exposed by the concrete removal shall be cleaned and carefully incorporated into the new work, except badly deteriorated existing reinforcing which shall be replaced as directed by the Engineer.
- The concrete anchors required shall have a minimum pull out of 5,000 lbs based on 4,000 psi concrete. An anchor meeting the requirements of Iowa D.O.T. Materials I.M. 453.09 and the pull out load above is required. The anchors shall be galvanized and shall be installed according to recommendations of the Manufacturer. The cost of furnishing and installing the concrete anchors shall be included in the price bid for "Concrete Repair".
- The welded wire fabric shall be ASTM A185 and galvanized as per ASTM A-641. The WWF wires shall be spaced 3x3 or 4x4 and the wires shall have a nominal area of 0.014 to 0.029 sq in inclusive, example "WWF 3x3 - W1.4xW2.9".

Where reinforcement has been exposed and clearance around the periphery of the existing bar is provided, no supplemental reinforcing is required, except where existing reinforcement density and pattern are such that individual open spaces between bars are of 1.5 sq ft or larger. For this condition ½"Ø concrete anchors and welded wire fabric shall be installed at the rate of one concrete anchor with WWF per each 1.5 sq ft of area within each open space.

Repairing the structural concrete shall be in accordance with Section 2426, of the Standard Specifications.

Concrete Placement Quantities

Mark	Type	Units	Quantity
①	Shallow repair	Sq. Ft.	0
②	Regular repair	Sq. Ft.	9.7
		Total (Sq. Ft.)	9.7

Estimated Concrete Repair Quantities

Description	Units	Amount
Concrete Repair	Sq. Ft.	9.7

Design For 15 Degree RA

250'-0" x 32'-0" Continuous Welded Girder Bridge

76'-3" End Spans 97'-6" Interior Span

Concrete Repair

STA. 368+70.00 (IA 2) Turn-in Date: Mar 2024

Van Buren County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 121 Design Sheet No. 23 of 26 FHWA No. 50210

FILE NO. 31862	ENGLISH	DESIGN TEAM Benesch	Concrete Repairs	Standard Sheet 1045	Van Buren COUNTY	PROJECT NUMBER BRF-002-9(40)--38-89	SHEET NUMBER V.23	

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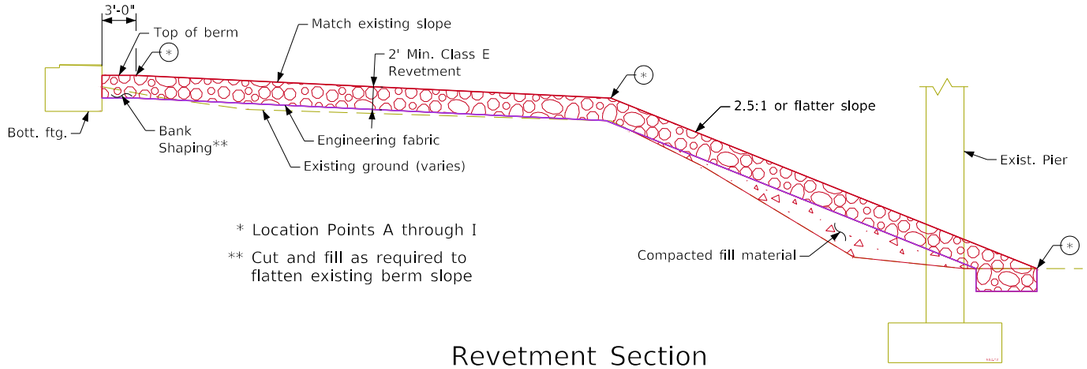
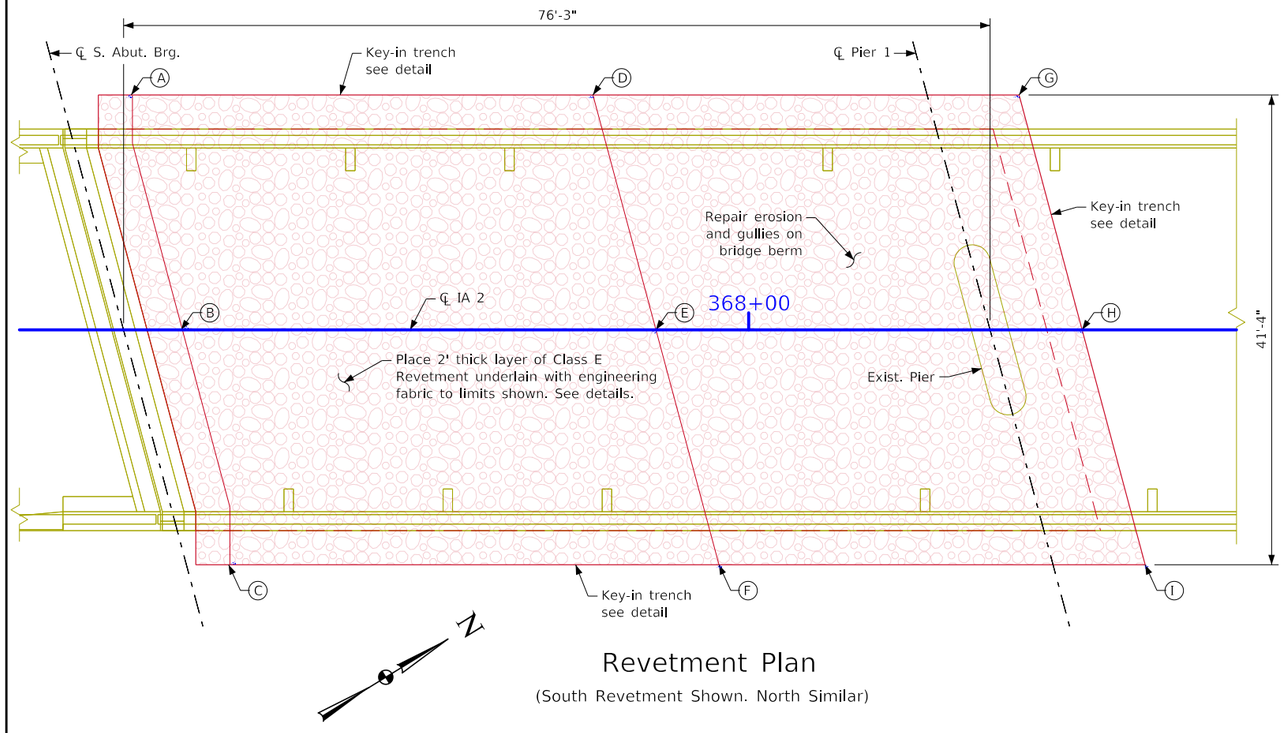


* Location Points A through I

** Cut and fill as required to flatten existing berm slope

Revetment Section

(South Revetment Shown. North Similar)



Revetment Plan

(South Revetment Shown. North Similar)

Revetment Notes:

This plan sheet shows details for placing Class E Revetment under overhead structures.

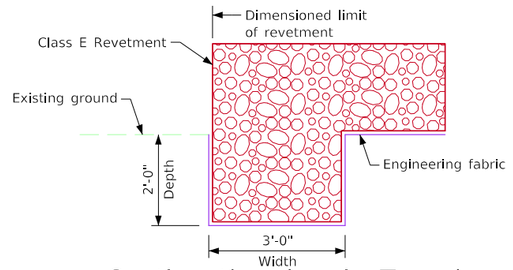
The bridge berm foreslope shall be compacted and shaped as shown on this sheet. Shaping will include excavation from the grading surface as directed by the Engineer. The berm foreslope shall be firm when the engineering fabric and revetment stone are placed.

The engineering fabric shall be in accordance with Article 4196.01, B, 3, of the Standard Specifications. If the engineering fabric is lapped, the laps shall be a minimum of 1 ft in length, shingle fashion with up slope lap piece on top and stapled for continuity.

The Class E Revetment shall be in accordance with Section 4130, of the Standard Specifications.

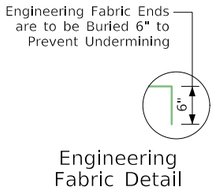
The Class E Revetment shall be deposited, spread, consolidated and shaped by mechanical or hand methods that will provide uniform 2'-0" depth and density and provide uniform surface appearance.

Where erosion control work is completed, the Contractor shall be responsible for any plant materials destroyed adjacent to the slope protection area. The Contractor shall replant, reseed and remulch all disturbed areas, designated by the Engineer, in accordance with Section 2601, of the Standard Specifications, at the Contractor's expense.



Section thru key-in Trench

Note:
If there is insufficient fill material generated from the key-in trench to repair the berm erosion, granular material shall be used to complete the grading.



Engineering Fabric Detail

Slope Protection Locations:

South Abut.

- Ⓐ Sta. 367+45.78, 20.67 Lt. N 243302.192, E 2039484.760 Elev. 678.00
- Ⓑ Sta. 367+50.07, 0.00 N. 243295.064, E 2039504.627 Elev. 678.00
- Ⓒ Sta. 367+54.36, 20.67 Rt. N 243287.936, E 2039524.493 Elev. 678.00
- Ⓓ Sta. 367+86.31, 20.67 Lt. N 243336.765, E 2039505.911 Elev. 676.00
- Ⓔ Sta. 367+91.85, 0.00 N 243330.703, E 2039526.430 Elev. 676.00
- Ⓕ Sta. 367+97.39, 20.67 Rt. N 243324.642, E 2039546.949 Elev. 676.00
- Ⓖ Sta. 368+23.81, 20.67 Lt. N 243368.753, E 2039525.480 Elev. 661.00
- Ⓗ Sta. 368+29.35, 0.00 N 243362.692, E 2039545.999 Elev. 661.00
- Ⓘ Sta. 368+34.89, 20.67 Rt. N 243356.630, E 2039566.519 Elev. 661.00

North Abut.

- Ⓐ Sta.369+85.64, 20.67 Lt. N 243506.799, E 2039609.932 Elev. 678.00
- Ⓑ Sta. 369+89.93, 0.00 N 243499.671, E 2039629.799 Elev. 678.00
- Ⓒ Sta. 369+94.22, 20.67 Rt. N 243492.543, E 2039649.666 Elev. 678.00
- Ⓓ Sta. 369+37.52, 20.67 N 243465.746, E 2039584.818 Elev. 676.00
- Ⓔ Sta. 369+43.05, 0.00 N 243459.685, E 2039605.337 Elev. 676.00
- Ⓕ Sta. 369+48.59, 20.67 Rt. N 243453.624, 2039625.856 Elev. 676.00
- Ⓖ Sta. 369+00.02, 20.67 Lt. N 243433.758, E 2039565.248 Elev. 661.00
- Ⓗ Sta. 369+05.55, 0.00 N 243427.696, E 2039585.767 Elev. 661.00
- Ⓘ Sta. 369+11.09, 20.67 Rt. N 243421.635, E 2039606.286 Elev. 661.00

ENGINEERING FABRIC ESTIMATED QUANTITIES

Description	Location	Quantity
Engineering Fabric	South Abut.	482.9 Sq. Yds.
Engineering Fabric	North Abut.	510.8 Sq. Yds.
	Total	993.7 Sq. Yds.

REVETMENT ESTIMATED QUANTITIES

Description	Location	Quantity
Revetment, Class E	South Abut.	486.9 Tons
Revetment, Class E	North Abut.	515.5 Tons
	Total	1002.4 Tons

Design For 15 Degree RA

250'-0" x 32'-0" Continuous Welded Girder Bridge

76'-3" End Spans — 97'-6" Interior Span

Revetment Slope Protection

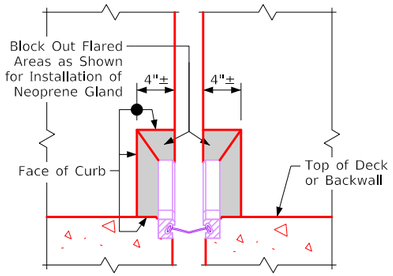
STA. 368+70.00 (IA 2)

Turn-in Date: Mar 2024

Van Buren County

IOWA DEPARTMENT OF TRANSPORTATION

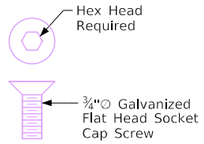
Design No. 121 — Design Sheet No. 24 of 26 — FHWA No. 50210



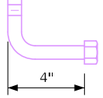
Blockout Detail

(Drawn for 0° Skew for Illustrative Purposes)

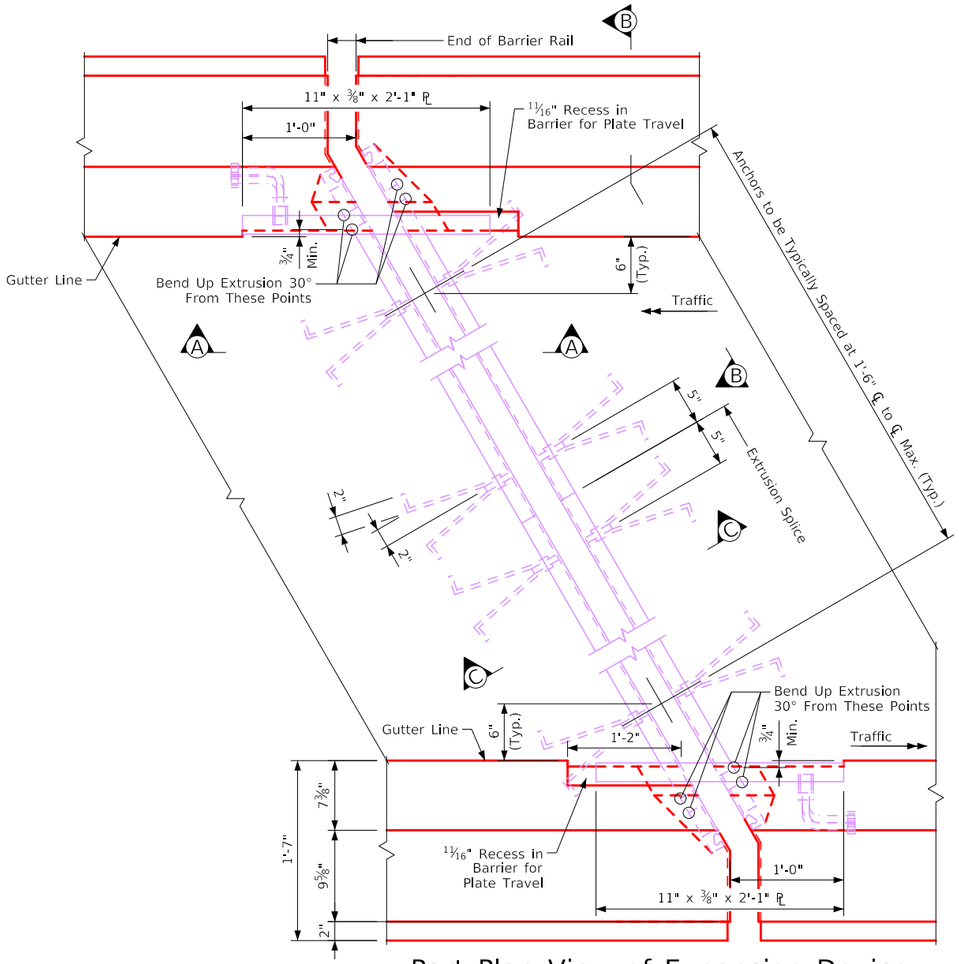
Contractor to note that the cap screw anchorage system for the ⅜" barrier plates are always to be placed on the oncoming traffic side.



Cap Screw Detail

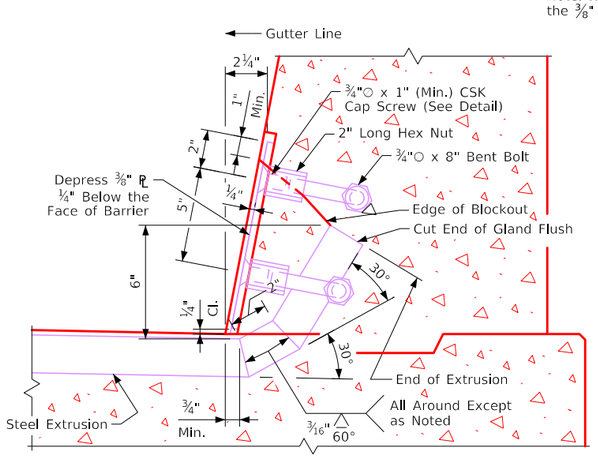


Bent Bolt Detail

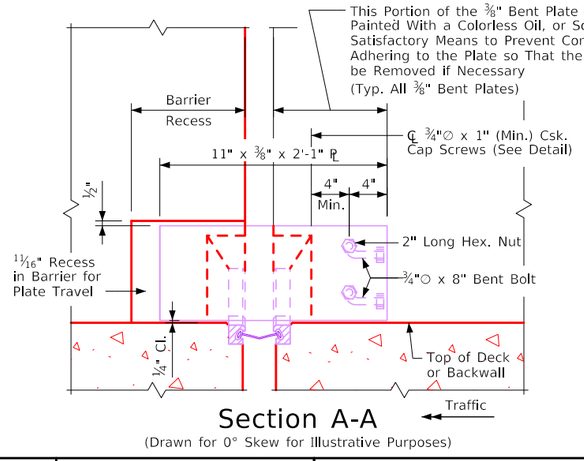


Part Plan View of Expansion Device
R.A. Skew

Note: It is intended that the 11/16" recessed area be formed so that when the ⅜" bent plate is installed the plate will be able to move freely in this recessed area.



Section B-B

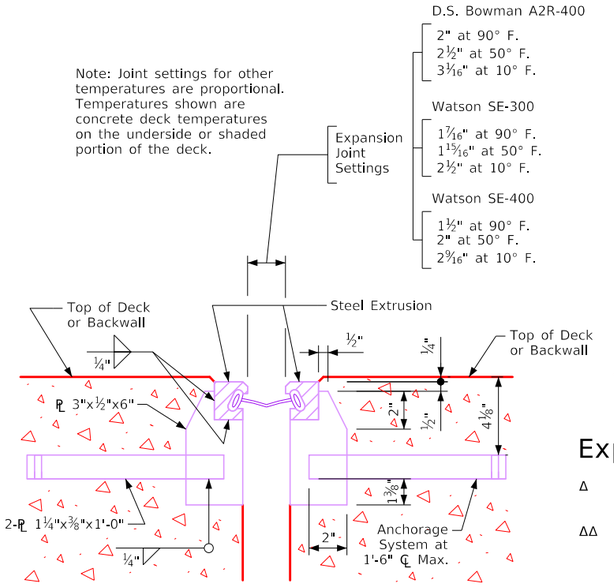


Section A-A

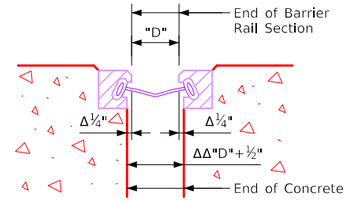
(Drawn for 0° Skew for Illustrative Purposes)

Barrier Plate Note:

The material used for the barrier plates is to be ASTM A36 steel. The bolts shall meet the requirements of ASTM A307. The plates, bolts, nuts and cap screws are to be galvanized in accordance with Article 4100.07 of the Standard Specifications.



Section C-C



Expansion Opening Detail

Δ This dimension may vary slightly depending on manufacturer furnishing the joint.

ΔΔ Used for all out to out dimensions of deck. The dimensions may vary slightly depending manufacturer furnishing the joint.

Table of Approved Expansion Devices

Manufacturer	Type of Steel Extrusion	Neoprene Gland	Minimum Opening for Gland Installation	Corresponding Maximum Deck Temperature
Watson–Bowman & Acme Corp.	A	SE-300	1½"	85°F
Watson–Bowman & Acme Corp.	A	SE-400	1½"	90°F
D.S. Brown Co.	SSA2	A2R-400	2"	90°F
Approved Equal				

Design For 15 Degree RA

250'-0" x 32'-0" Continuous Welded Girder Bridge

76'-3" End Spans — 97'-6" Interior Span

Expansion Joint Details

STA. 368+70.00 (IA 2) — Turn-in Date: Mar 2024

Van Buren County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 121 — Design Sheet No. 25 of 26 — FHWA No. 50210

FILE NO. 31862	ENGLISH	DESIGN TEAM Benesch	Expansion Device Details - Steel Extrusion w/Neoprene Gland (1 of 2)	Standard Sheet 1026s1	Van Buren COUNTY	PROJECT NUMBER BRF-002-9(40)--38-89	SHEET NUMBER V.25	

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Steel Extrusion Notes:

The Contractor shall submit for approval shop drawings of the expansion devices showing layout, material to be used, and provisions for the holding device during placement of concrete.

The expansion device shall be galvanized after welding. All curb plates including their anchorages shall be galvanized.

The expansion device is to be parallel to grade.

Cap screws shall be countersunk $\frac{1}{16}$" below top of the plate. The minimum grade of structural steel for the expansion device shall be ASTM A36.

Blockout details may be altered from those shown provided the gland may be installed and removed if necessary and the curb area remains watertight.

Shop splices of the steel extrusion will be permitted. Prior to making shop splices steel extrusion pieces shall have a minimum length of 15 feet. The individual length of pieces shall be chosen so that a minimum number of splices is required. All pieces shall be joined with a prequalified partial penetration single groove weld detailed on the shop drawing. All surfaces not in contact with concrete are to be ground flush. No weld shall be permitted in the internal section of the extrusion where the neoprene gland is to be installed.

The number of feet of steel extrusion installed shall be paid for at the contract price per foot based on plan quantities. The price bid for "Steel Extrusion Joint w/Neoprene" shall include the cost of furnishing but not the cost of installing the neoprene gland. The contract price bid for "Steel Extrusion Joint w/Neoprene" shall be full compensation for furnishing and installing steel extrusions. This work will consist of furnishing all required materials, (including the $\frac{3}{8}$" plates at the curbs and their anchorage systems), and the installation and adjustment of the expansion joints in accordance with the details shown on the plans and as directed by the Engineer. The furnishing and installation of all necessary hardware and accessories as supplied by the Expansion Joint Manufacturer are to be included in this work, including the anchorage system and any temporary erection material. All work and materials for the installation of the expansion joints are to comply with the written recommendations of the Expansion Joint Manufacturer.

Neoprene Gland Notes:

The neoprene gland is to be placed as one continuous piece from end to end of the steel extrusion.

The neoprene gland shall conform to ASTM-2628 modified to exclude recover test and compression set.

The Contractor shall install the gland above the minimum temperature of 45° and the minimum joint opening and corresponding maximum deck temperature shown in these plans. The deck temperature shall be measured by recording the surface temperatures on the underside of the deck adjacent to the joints. If the deck temperature does not fall within the specified temperature range before the Contractor has completed all other required work, it will be necessary for the Contractor to return to the project site after all other required work has been completed, the Contractor shall complete installation and testing of neoprene gland at no extra charge to the State.

The number of feet of neoprene gland installed shall be paid for at the contract price per foot based on plan quantities. The price for "Neoprene Gland Installation and Testing" shall be full compensation for installing and testing of the new neoprene gland. This work will consist of cleaning the extrusion, installation of the neoprene gland and water tight testing of the expansion joint system. All work and materials necessary for the installation of the neoprene gland shall comply with the recommendations of the Expansion Joint Manufacturer. The price bid for "Neoprene Gland Installation and Testing" shall include all watertight integrity testing, leak repairs as directed by the Engineer, and subsequent watertight testing until a leak free installation is achieved.

Watertight Integrity Testing And Repair Notes:

After installation of each neoprene gland, the Contractor shall perform watertight integrity tests at the deck level to detect any leakage. The tests are to check for leakage at the upturned ends of the expansion device and for leakage along the expansion device across the deck and any medians or sidewalks. The Contractor may conduct a single test of the entire device including upturned ends or may conduct separate tests of upturned ends and one or more tests of overlapping lengths between the upturned ends.

At each upturned end of the expansion device, the Contractor shall block out on the deck at least 3 feet of the expansion device leading to the upturned end and flood the area. A minimum water depth of 3" shall be maintained at the gutterline for at least 30 minutes. During the test, the Inspector shall observe for any overflow at the upturned end. At the conclusion of the test the Inspector will examine the underside of the joint for leakage. The expansion device is considered watertight if the Inspector observes no overflow during the test and if no dripping water or water droplets are visible in the underdeck areas near the upturned end.

The Contractor shall test the expansion device between upturned ends by blocking out and covering the device with ponded or flowing water to a depth of at least 1" at all points, for at least 30 minutes. Vertical curb surfaces may be tested with an unnozzled hose delivering approximately one gallon per minute directed to flow over the entire curb height for 30 minutes. At the conclusion of the test, the inspector will examine the underside of the joint for leakage. The expansion device is considered watertight if no dripping water or water droplets are visible in the underdeck areas along the full length of the expansion joint. Damp concrete that does not show dripping water or water droplets is not considered a sign of leakage.

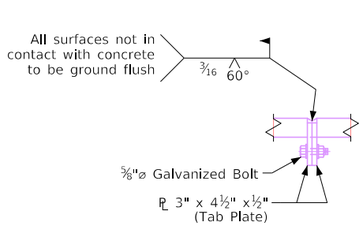
If the expansion device leaks at an upturned end or along its length, the Contractor shall locate the leak(s) and take repair measures to stop the leakage. The repair measures shall be as recommended by the Manufacturer and approved by the Engineer prior to beginning corrective work.

If measures to eliminate leakage are taken, the Contractor shall perform subsequent watertight integrity tests subject to the same conditions as the original test.

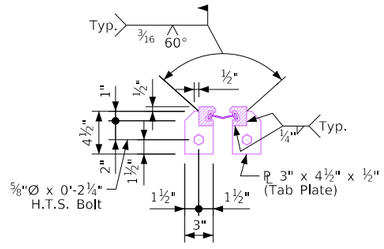
Field Construction Notes:

If the steel extrusion is spliced in the field, the splice location shall be detailed on the shop drawings. The connection details shall include tab plates and prepared ends to accommodate the necessary welding. See details in these plans.

Galvanized coating damage by field welding shall be repaired in accordance with Construction and Materials I.M. 410.



End View



Section Thru Extrusion

Field Splice Detail

Design For 15 Degree RA

250'-0" x 32'-0" Continuous Welded Girder Bridge

76'-3" End Spans 97'-6" Interior Span

Expansion Joint Details

STA. 368+70.00 (IA 2) Turn-in Date: Mar 2024

Van Buren County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 121 Design Sheet No. 26 of 26 FHWA No. 50210

FILE NO. 31862	ENGLISH	DESIGN TEAM Benesch	Expansion Device Details - Steel Extrusion w/Neoprene Gland (2 of 2)	Standard Sheet 1026s2	Van Buren COUNTY	PROJECT NUMBER BRF-002-9(40)--38-89	SHEET NUMBER V.26	

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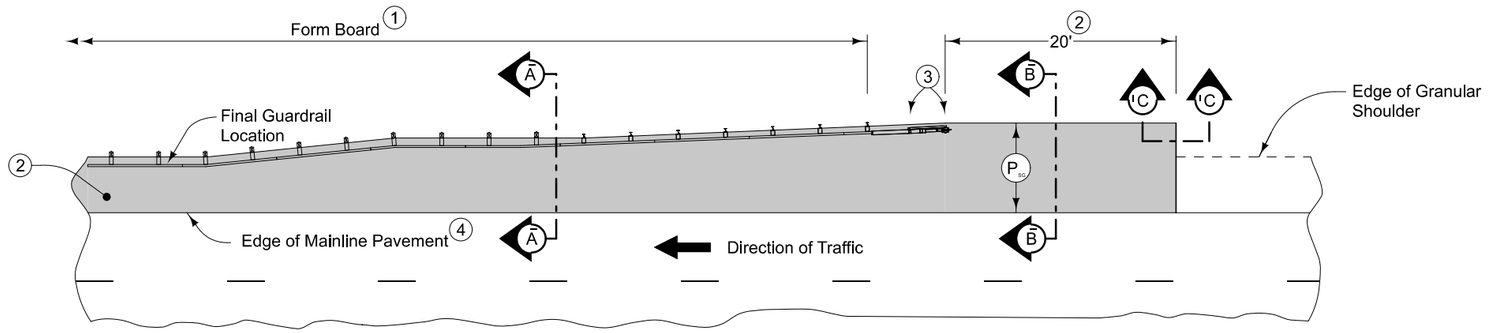
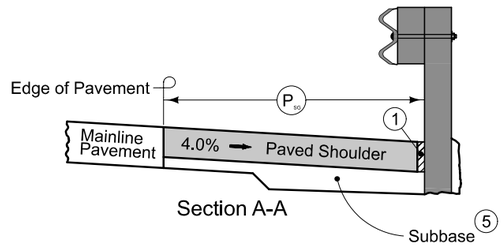
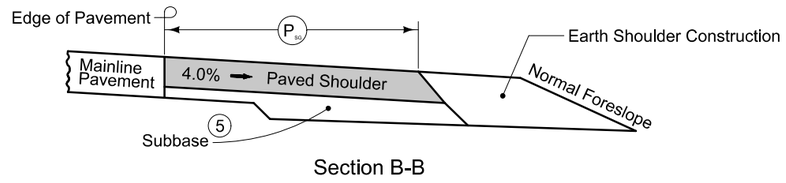
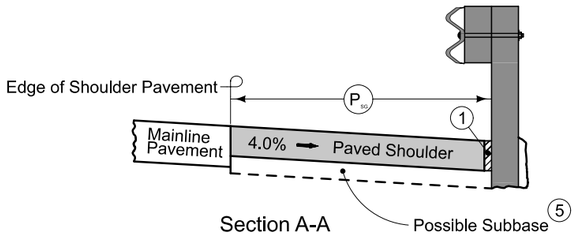


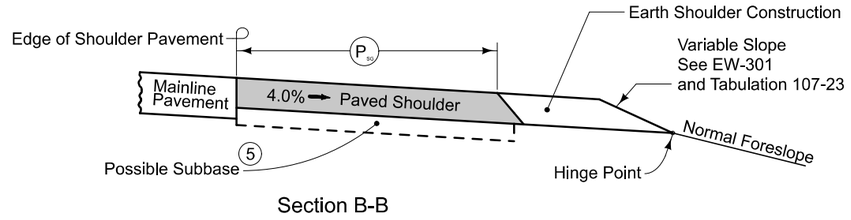
PLAN VIEW





NEW CONSTRUCTION





EXISTING SHOULDER

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

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

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

Refer to Tabulation 112-9 for shoulder quantities.

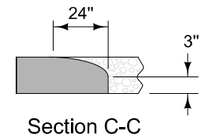
(1) PCC option only: When guardrail posts are installed prior to construction of PCC paved shoulder, fasten form board to the face of guardrail posts for the length shown.

(2) Continue paved shoulder 20 feet beyond the center of the first post.

(3) Shoulder may be notched for first 2 posts or post sleeves may be installed through pavement. Do not drive posts through pavement.

(4) 'KT' joint (per PV-101) for PCC shoulder.
'B' joint (per PV-101) for HMA shoulder.

(5) Refer to other details in the plan.



PAVED SHOULDER AT GUARDRAIL
(GRANULAR SHOULDER ADJACENT TO MAINLINE)

ROADWAY DESIGN

LICENSED PROFESSIONAL ENGINEER
JEFFREY J. TARDY
21284
IOWA

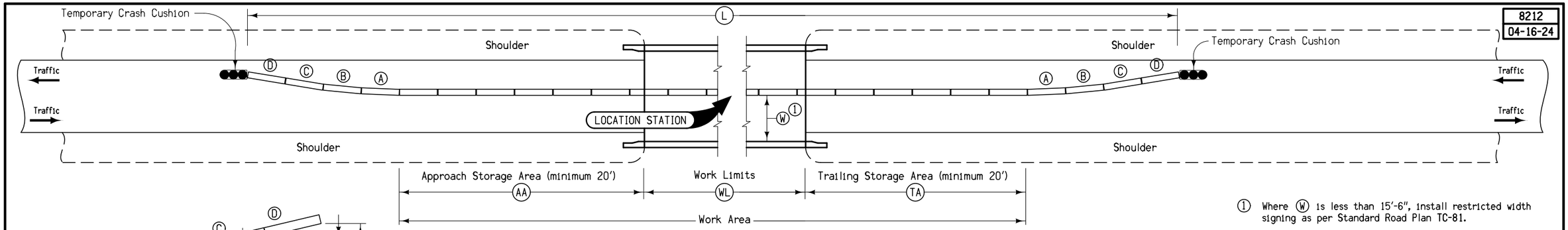
I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature Date

Jeffrey J. Tardy
Printed or Typed Name

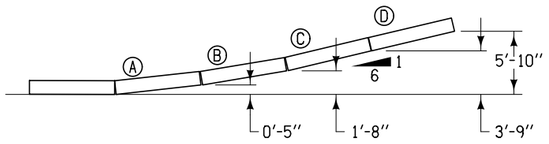
My license renewal date is December 31, 2025

Pages or sheets covered by this seal: B.1-B.2, C.1-C.20, D.1-D.2, G.1-G.4, J.1-J.5, U.1-U.3



8212
04-16-24

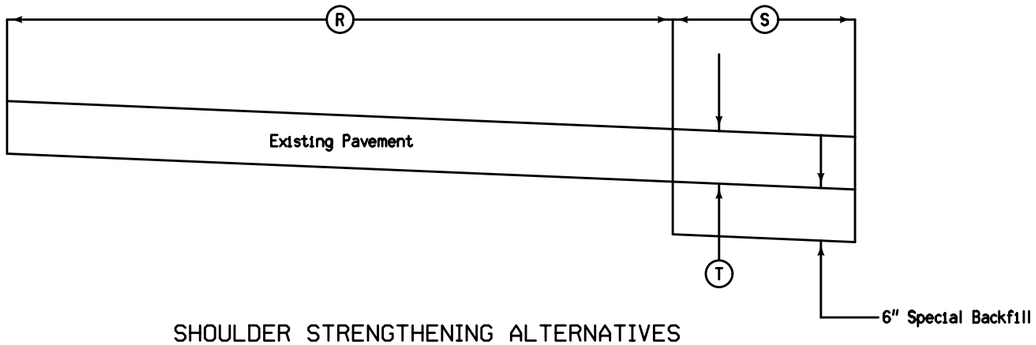
1 Where W is less than 15'-6", install restricted width signing as per Standard Road Plan TC-81.



BARRIER OFFSETS FOR FLARE SECTIONS

Station	Side	AA	WL	TA	L	Anchored	W 1	Remarks
		Feet	Feet	Feet	Feet	X	Ft-Inches	
368+70.00	LT	35	292	35	462.5	X	11-7.5	STAGE 1
368+70.00	RT	35	292	35	462.5	X	11-7.5	STAGE 2

TEMPORARY CONCRETE BARRIER LAYOUT for Two-Way Traffic



BENESCH-2

SHOULDER STRENGTHENING ALTERNATIVES

Direction of Travel	Location		Pavement Alternates HMA T	Pavement Alternates PCC T	Existing Pavement R	Shoulder Strengthening S	6" Special Backfill	Shoulder Strengthening	Class 13 Excavation Waste	Remarks
	Station to Station		Inches	Inches	Feet	Feet	Tons	SY	CY	
NB	363+19.14	367+24.14	8	7	2	2.0-6.1	74.5	236.46	92.0	Stage 1
NB	370+15.86	372+65.86	8	7	2	2.0-6.1	40.7	129.16	50.2	Stage 1
SB	363+19.14	366+04.03	8	7	2	2.0-6.1	48.6	154.39	60.0	Stage 2
SB	371+77.39	372+65.86	8	7	2	2.0-4.0	9.0	28.45	11.1	Stage 2
						TOTALS	172.8	548.46	213.3	

100_01D
8/15/22

PROJECT DESCRIPTION

This project is for the construction of approach pavement, paved shoulders and guardrail and the traffic control associated with a bridge deck replacement project on IA 2 over Fox River in Van Buren County.

ESTIMATED PROJECT QUANTITIES

Line No.	Item No.	Item Code	Item	Unit	Total	As Built Qty.
	1	2102-0425070	SPECIAL BACKFILL	TON	172.800	
	2	2102-2625001	EMBANKMENT-IN-PLACE, CONTRACTOR FURNISHED	CY	162.200	
	3	2102-2713090	EXCAVATION, CLASS 13, WASTE	CY	338.500	
	4	2105-8425005	TOPSOIL, FURNISH AND SPREAD	CY	54.000	
	5	2115-0100000	MODIFIED SUBBASE	CY	250.400	
	6	2122-5500090	PAVED SHOULDER, HOT MIX ASPHALT MIXTURE, 9 IN.	SY	375.600	
	7	2122-7450080	SHOULDER STRENGTHENING, OPTIONAL HOT MIX ASPHALT MIXTURE OR PORTLAND	SY	548.460	
			CEMENT CONCRETE, 8 IN.			
	8	2123-7450000	SHOULDER CONSTRUCTION, EARTH	STA	5.640	
	9	2301-0690203	BRIDGE APPROACH, BR-203	SY	153.600	
	10	2412-0000100	LONGITUDINAL GROOVING IN CONCRETE, BRIDGE DECK	SY	931.100	
	11	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL	LF	270.800	
	12	2505-4008300	STEEL BEAM GUARDRAIL	LF	150.000	
	13	2505-4008410	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION, BA-201	EACH	4.000	
	14	2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED	EACH	4.000	
	15	2505-4021720	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-205	EACH	4.000	
	16	2510-6745850	REMOVAL OF PAVEMENT	SY	305.200	
	17	2527-9263180	PAVEMENT MARKINGS REMOVED	STA	30.210	
	18	2527-9263209	PAINTED PAVEMENT MARKINGS, WATERBORNE OR SOLVENT-BASED	STA	30.210	
	19	2527-9263231	REMOVABLE TAPE MARKINGS, WET RETROREFLECTIVE	STA	2.220	
	20	2528-8400048	TEMPORARY BARRIER RAIL, CONCRETE	LF	925.000	
	21	2528-8400256	TEMPORARY TRAFFIC SIGNALS	EACH	1.000	
	22	2528-8445110	TRAFFIC CONTROL	LS	1.000	
	23	2528-8445113	FLAGGERS	EACH	See Proposal.	
	24	2551-0000110	TEMP CRASH CUSHION	EACH	4.000	
	25	2602-0000020	SILT FENCE	LF	1042.000	
	26	2602-0000071	REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS	LF	1042.000	
	27	2602-0000101	MAINTENANCE OF SILT FENCE OR SILT FENCE DITCH CHECKS	LF	104.000	
	28	2602-0000312	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA.	LF	200.000	
	29	2602-0000320	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 20 IN. DIA.	LF	200.000	
	30	2602-0000351	REMOVAL OF PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE	LF	400.000	

ESTIMATE REFERENCE INFORMATION

Line No.	Item No.	Item Code	Description
	1	2102-0425070	SPECIAL BACKFILL
			See Benesch-1 on sheet B.2 for details.
	------	----------	----------
	2	2102-2625001	EMBANKMENT-IN-PLACE, CONTRACTOR FURNISHED
			Assume average depth of 1 foot. Contractor to furnish borrow. See Tab 107-23 on C sheets.
	------	----------	----------
	3	2102-2713090	EXCAVATION, CLASS 13, WASTE
			Assume average depth of 1 foot. Excavated material may be used as embankment in place. See Tab 112-9 on C
			sheets and Benesch-1 on Sheet B.2 for details.
	------	----------	----------
	4	2105-8425005	TOPSOIL, FURNISH AND SPREAD
			See Tab 103-10 on C sheets for location and details.
	------	----------	----------
	5	2115-0100000	MODIFIED SUBBASE
			Item is for roadway subgrade underneath paved shoulder
			See typical detail 7156 on sheet B.1 and Tab 112-9 on C Sheets.
	------	----------	----------
	6	2122-5500090	PAVED SHOULDER, HOT MIX ASPHALT MIXTURE, 9 IN.
			Item is for paved shoulder adjacent to guardrail. See Tab 112-9 on C sheets.
	------	----------	----------
	7	2122-7450080	SHOULDER STRENGTHENING, OPTIONAL HOT MIX ASPHALT MIXTURE OR PORTLAND CEMENT CONCRETE, 8 IN.
			See BENESCH-1 on sheet B.2 for details.
	------	----------	----------
	8	2123-7450000	SHOULDER CONSTRUCTION, EARTH
			See Tab 112-9 on C sheets.
	------	----------	----------
	9	2301-0690203	BRIDGE APPROACH, BR-203
			See Tab 112-6 on C sheets and Modified Standard Road Plan BR-203 on U sheets.
	------	----------	----------
	10	2412-0000100	LONGITUDINAL GROOVING IN CONCRETE, BRIDGE DECK
			See Tab 100-28 on C sheets.
	------	----------	----------
	11	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL
			See Tab 110-7A on C sheets.
	------	----------	----------
	12	2505-4008300	STEEL BEAM GUARDRAIL
	13	2505-4008410	STEEL BEAM GUARDRAIL TRANSITION SECTION, BA-201
	14	2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED
	15	2505-4021720	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-205
			See Tab 108-8A on C sheets.
	------	----------	----------
	16	2510-6745850	REMOVAL OF PAVEMENT
			See Tab 110-1 on C sheets.
	------	----------	----------
	17	2527-9263180	PAVEMENT MARKINGS REMOVED
	18	2527-9263209	PAINTED PAVEMENT MARKINGS, WATERBORE OR SOLVENT-BASED
	19	2527-9263231	REMOVABLE TAPE MARKINGS, WET RETROREFLECTIVE
			See Tab 108-22 on C Sheets for locations and details. Painted pavement markings, waterborne or solvent-
			based are for use on temporary longitudinal markings and all final markings. Wet retroreflective tape
			markings are for use on all diagonal temporary markings.
	------	----------	----------
	20	2528-8400048	TEMPORARY BARRIER RAIL, CONCRETE
			See Tab 108-33 on C Sheets for locations and details.
	------	----------	----------
	21	2528-8400256	TEMPORARY TRAFFIC SIGNALS
			See Tab 108-28 on C Sheets for locations and details.
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100_04A
6/2/23

ESTIMATE REFERENCE INFORMATION

Line No.	Item No.	Item Code	Description
	22	2528-8445110	TRAFFIC CONTROL
			See Traffic Control Plan on J Sheets.
	------	----------	----------
	23	2528-8445113	FLAGGERS
			See Proposal.
	------	----------	----------
	24	2551-0000110	TEMP CRASH CUSHION
			See Tab 108-30 on C sheets for locations.
	------	----------	----------
	25	2602-0000020	SILT FENCE
			Refer to Tab 100-17 on C sheets. The Tabulation includes estimated locations for placement of silt fence
			to address possible erosion during construction. Verify the specific locations with the Engineer prior to
			beginning placement. Bid item includes 25% additional quantity for field adjustments and replacements.
			Verify the specific locations with the Engineer prior to beginning placement.
	------	----------	----------
	26	2602-0000071	REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS
			This item is included for silt fence and silt fence ditch check removal required for
			staging reasons, for replacement (replacement to be paid separately), or for areas that have achieved 70%
			permanent growth. This item is for 100% of the silt fence Bid quantity.
	------	----------	----------
	27	2602-0000101	MAINTENANCE OF SILT FENCE OR SILT FENCE DITCH CHECKS
			This item is included for cleanout and repair of the silt fence for ditch checks during the project.
			This item is for 10% of the silt fence Bid quantity.
	------	----------	----------
	28	2602-0000312	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA.
	29	2602-0000320	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 20 IN. DIA.
			See Tab 100-19 on C sheets. Specific locations not determined.
	------	----------	----------
	30	2602-0000351	REMOVAL OF PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE
			See Tab 100-19 on C sheets. Specific locations not determined.

STANDARDS

The following Standards apply to construction work on this project.

Number	Date	Title
BA-200	04-20-21	Steel Beam Guardrail Components
BA-201	10-18-22	Steel Beam Guardrail Barrier Transition Section (MASH TL-3)
BA-202	04-16-24	Steel Beam Guardrail Bolted End Anchor
BA-205	10-17-23	Steel Beam Guardrail Tangent End Terminal (MASH TL-3)
BA-250	04-20-21	Steel Beam Guardrail Installation at Concrete Barrier or Bridge End Post (MASH TL-3)
BA-401	04-20-21	Temporary Barrier Rail (Precast Concrete)
BA-500	04-20-21	Temporary Crash Cushions Sand Barrel
BR-212	10-18-22	Bridge Approach (Abutting HMA Pavement)
EC-201	04-20-21	Silt Fence
EC-204	10-19-21	Perimeter Slope and Ditch Check Sediment Control Devices
EW-301	04-16-24	Guardrail Grading
PM-110	04-16-24	Line Types
PV-101	04-19-22	Joints
SI-173	04-19-16	Object Markers
SI-211	10-18-22	Object Marker and Delineator Placement with Guardrail
SI-882	10-18-16	Special Signs for Restricted Width Traffic Control Zones
TC-1	10-15-19	Work Not Affecting Traffic (Two-Lane or Multi-Lane)
TC-81	04-18-23	Restricted Width Signing (Less Than 14.5 Feet)
TC-202	04-18-23	Work Within 15 ft of Traveled Way
TC-213	04-18-23	Lane Closure with Flaggers
TC-233	10-17-17	Pavement Marking Operations Two-Lane

INDEX OF TABULATIONS

Line No.	Tabulation	Tabulation Title	Sheet No.
	100_01A	ESTIMATED PROJECT QUANTITIES	C.2
	100_01D	PROJECT DESCRIPTION	C.1
	100_04A	ESTIMATE REFERENCE INFORMATION	C.3
	100_17	TABULATION OF SILT FENCES	C.7
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232_03A
9/28/22

EROSION CONTROL (RURAL 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 lying 8 feet adjacent to shoulder and median as follows:

Place seed and fertilize according to the requirements of Article 2601.03,C,3 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 all 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 <<_____>>, Permit No. <<_____>>. 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.

100_17
8/15/22

TABULATION OF SILT FENCES

Refer to EC-201

Line No.	Station From	Station To	Side	Length (FT)	Remarks
	365+16.08	367+50.10	Right	234.02	
	365+57.52	367+39.85	Left	182.33	
	370+00.15	371+82.47	Right	182.32	
	369+89.89	372+24.72	Left	234.83	
	+.00			833.50	TAB QUANTITY
	+.00			1042.00	BID QUANTITY (25% INC.)

PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE

Possible Standards: EC-204

Line No.	Station From	Station To	Side	Sediment Control Device Type	Diameter Size	Length (LF)	Remarks
	365+16.08	367+50.10	Right	Perimeter and Slope	12 inch	50.00	SPECIFIC LOCATION NOT DETERMINED
	365+57.52	367+39.85	Left	Perimeter and Slope	12 inch	50.00	SPECIFIC LOCATION NOT DETERMINED
	370+00.15	371+82.47	Right	Perimeter and Slope	12 inch	50.00	SPECIFIC LOCATION NOT DETERMINED
	369+89.89	372+24.72	Left	Perimeter and Slope	12 inch	50.00	SPECIFIC LOCATION NOT DETERMINED
						200	
Diameter Size 12 inch:							
	365+16.08	**367+50.10**	**Right**	**Perimeter and Slope**	20 inch	50.00	SPECIFIC LOCATION NOT DETERMINED
	365+57.52	367+39.85	Left	Perimeter and Slope	20 inch	50.00	SPECIFIC LOCATION NOT DETERMINED
	370+00.15	371+82.47	Right	Perimeter and Slope	20 inch	50.00	SPECIFIC LOCATION NOT DETERMINED
	369+89.89	372+24.72	Left	Perimeter and Slope	20 inch	50.00	SPECIFIC LOCATION NOT DETERMINED
						200	
Diameter Size 20 inch:							
Total:						**400**	

LONGITUDINAL GROOVING

Line No.	Location	Total (SY)	Remarks
	367+24.14	64.4	SOUTH APPROACH
	327+44.14	802.3	BRIDGE DECK
	369+95.86	64.4	NORTH APPROACH
Total:		**931.1**	

TOPSOIL STRIPPING AND PLACEMENT

Line No.	Road Identification	Dir. of Traffic	Station From	Station To	Topsoil Stripping Thickness (IN)	Topsoil Placement Thickness (IN)	Remarks
	IA 2	NB	365+16.08	367+50.10	4	4	15.1 CY
	IA 2	SB	365+57.52	367+39.85	4	4	11.9 CY
	IA 2	NB	370+00.15	371+82.47	4	4	11.9 CY
	IA 2	SB	369+89.89	372+24.72	4	4	15.1 CY
	TOTAL		+.00				54.0 CY

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
	NB	365+16.08	Right	3:1	109.3	10.3					166.2	12.5	66.1		45.3	
	SB	365+57.52	Left	3:1	59.3	10.3					116.2	12.5	66.1		35.8	
	NB	370+00.15	Right	3:1	59.3	10.3					116.2	12.5	66.1		35.8	
	SB	369+89.89	Left	3:1	109.3	10.3					166.2	12.5	66.1		45.3	
Total:															**162.2**	

STEEL BEAM GUARDRAIL AT CONCRETE BARRIER OR BRIDGE RAIL END SECTION

Possible Standards: BA-200, BA-201, BA-202, BA-205, BA-206, 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 Traffic (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
	NB	Right	367+33.87	16.0	BA-201	1	BA-205	1	103.125			47.7			3				1	B	1		62.5	
	SB	Left	367+25.29	16.0	BA-201	1	BA-205	1	53.125			47.7			3			1		B	1		12.5	
	NB	Right	370+14.71	16.0	BA-201	1	BA-205	1	53.125			47.7			3				1	B	1		12.5	
	SB	Left	370+06.13	16.0	BA-201	1	BA-205	1	103.125			47.7			3			1		B	1		62.5	
Total:						**4**		**4**										**2**	**2**		**4**		**150**	

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 - For estimating purposes only. No Passing Zone Lines will be located in the field.
***MNY6 - Factor of 1.00 as value 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" (Y

Line No.	Road ID	Station From	Station To	Lane	Marking Type	Left	Center	Right	BCY4* Factored	ELW4 Factored	SLW2 Factored	Remarks
	IA 2	363+19.14	372+65.86	NB	Removal of Paint			X		6.34		REMOVAL OF EXISTING MARKINGS
	IA 2	363+19.14	372+65.86	Both	Removal of Paint		X		1.61			REMOVAL OF EXISTING MARKINGS
	IA 2	363+19.14	372+65.86	SB	Removal of Paint	X				6.34		REMOVAL OF EXISTING MARKINGS
	IA 2	364+84.14	371+00.86	SB	Removal of Paint	X				4.13		REMOVAL OF STAGE 1 TEMP MARKINGS
	IA 2	364+84.14	371+00.86	NB	Removal of Paint			X		10.83		REMOVAL OF STAGE 2 TEMP MARKINGS
	IA 2	363+19.14	363+19.14	NB	Removal of Paint			X			0.48	REMOVAL OF NB STOP BAR
	IA 2	372+65.86	372+65.86	SB	Removal of Paint	X					0.48	REMOVAL OF SB STOP BAR
									1.61	27.64	0.96	
Marking Type Removal of Paint:												
	IA 2	**371+00.86**	**372+65.86**	**SB**	Removal of Removable Tape	X				1.11		REMOVAL OF STAGE 1 TEMP MARKINGS
	IA 2	363+19.14	364+84.14	NB	Removal of Removable Tape			X		1.11		REMOVAL OF STAGE 2 TEMP MARKINGS
										2.22		
Marking Type Removal of Removable Tape:												
	IA 2	**364+84.14**	**371+00.86**	**NB**	Waterborne/Solvent Paint			X		10.83		STAGE 2 TEMP MARKINGS
	IA 2	363+19.14	363+19.14	NB	Waterborne/Solvent Paint			X			0.48	NB STOP BAR
	IA 2	372+65.86	372+65.86	SB	Waterborne/Solvent Paint	X					0.48	SB STOP BAR
	IA 2	364+84.14	371+00.86	SB	Waterborne/Solvent Paint	X				4.13		STAGE 1 TEMP MARKINGS
	IA 2	363+19.14	372+65.86	NB	Waterborne/Solvent Paint			X		6.34		FINAL MARKINGS
	IA 2	363+19.14	372+65.86	Both	Waterborne/Solvent Paint		X		1.61			FINAL MARKINGS
	IA 2	363+19.14	372+65.86	SB	Waterborne/Solvent Paint	X				6.34		FINAL MARKINGS
									1.61	27.64	0.96	
Marking Type Waterborne/Solvent Paint:												
	IA 2	**371+00.86**	**372+65.86**	**SB**	Wet Retroreflective Removable Tape	X				1.11		STAGE 1 TEMP MARKINGS
	IA 2	363+19.14	364+84.14	NB	Wet Retroreflective Removable Tape			X		1.11		STAGE 2 TEMP MARKINGS
										2.22		
Marking Type Wet Retroreflective Removable Tape:												
Total:									**3.22**	**59.72**	**1.92**	

TEMPORARY TRAFFIC SIGNALS

Line No.	Item No.	Station	Signal Type	Remarks
	1	368+70.00	One Lane Traffic	To control NB and SB traffic in Stage 1 and 2.

CRASH CUSHIONS

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

Line No.	Lane	Station	Side	Obstacle Width (FT)	Crash Cushion Type	Crash Cushion Quantity	V (FT) (2)	W (FT) (2)	X (FT) (2)	Y (FT) (2)	Z (FT) (2)	Excavation Class 10* (CY)	Embankment in Place* (CY)	Obstacle Description	Remarks
	NB	366+39.14	Left	1.9	Temporary	1								STAGE 1 TBR	
	SB	371+00.86	Left	1.9	Temporary	1								STAGE 1 TBR	
	NB	366+39.14	Right	1.9	Temporary	1								STAGE 2 TBR	
	SB	371+00.86	Right	1.9	Temporary	1								STAGE 2 TBR	
Total:						**4**									

TEMPORARY BARRIER RAIL

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

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

Line No.	No.	Station From	Station To	Length (FT)	Barrier Rail Type	Anchored*	Modular Glare Screen System	Remarks
		366+39.14	371+00.86	462.5	Concrete BA-401	Yes	No	STAGE 1
		366+39.14	371+00.86	462.5	Concrete BA-401	Yes	No	STAGE 2
Total:				**925**				

REMOVAL OF PAVEMENT

Refer to Tabulation 102-5.

* Not a bid item.

Line No.	Station From	Station To	Side	Pavement Type	Area (SY)	Saw Cut* (LF)	Remarks
	366+35.90	367+24.14	Right	HMA	29.4		NB SHOULDER
	366+35.90	367+24.14	Left	HMA	29.4		SB SHOULDER
	367+24.14	367+44.14	Median	PCC	76.7	24.0	SOUTH APPROACH
	369+95.86	370+15.86	Median	PCC	76.7	24.0	NORTH APPROACH
	370+15.86	371+55.49	Right	HMA	46.5		NB SHOULDER
	370+15.86	371+55.49	Left	HMA	46.5		SB SHOULDER
Total:					**305.2**	**48**	

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)
		NB	365+16.08	367+34.26	Right	66.9
		SB	366+60.43	367+25.69	Left	65.4
		NB	370+14.31	370+82.29	Right	68.0
		SB	370+05.74	370+76.12	Left	70.5
Total:						**270.8**

BRIDGE APPROACH SECTION

Refer to the BR Series.

* Not a bid item

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
	368+70.00	SW		15.0	12.0	20.0			76.8	BR-203	Fixed	BR-212						83.200	98.3		
	368+70.00	NE		15.0	12.0	20.0			76.8	BR-203	Fixed	BR-212						83.200	98.3		
Total:									**153.6**									**166.4**			

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 Traffic (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 Grdrail (3)(7)	Reinforced Paved Shoulder(3) (SY)	Special Backfill HMA Alt. (3) (TON)	Special Backfill HMA Alt. (TON/STA)	Special Backfill PCC Alt. (3) (TON)	Special Backfill PCC Alt. (TON/STA)	Subbase (3) (8) (CY)	Granular Shoulder (3) (TON)	Granular Shoulder (TON/STA)	Shoulder Const. Alt (3) (STA)	Remarks
IA 2	NB	365+62.61	367+24.14	Right	5.3-7.5			161.53	35.3				106.0							70.70			1.62	MODIFIED SUBBASE
IA 2	SB	366+04.03	367+24.14	Left	5.3-7.5			120.11	27.3				81.8							54.50			1.20	MODIFIED SUBBASE
IA 2	NB	370+15.86	371+35.97	Right	5.3-7.5			120.11	27.3				81.8							54.50			1.20	MODIFIED SUBBASE
IA 2	SB	370+15.86	371+77.39	Left	5.3-7.5			161.53	35.3				106.0							70.70			1.62	MODIFIED SUBBASE
Total:									**125.2**				**375.6**							**250.4**			**5.64**	

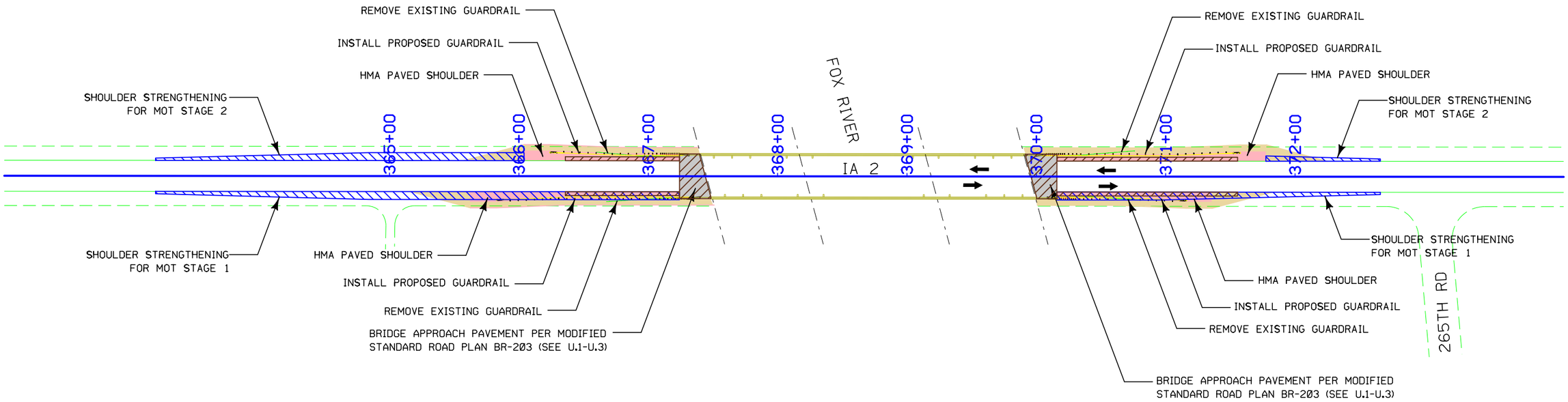
PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS (ROAD)

LINE WORK	Design Color No.		
Green	(2)		Existing Topographic Features and Labels
Blue	(1)		Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Magenta	(5)		Existing Utilities

SHADING	Design Color No.		
Yellow	(4)		Highlight for Critical Notes or Features
Red	(3)		Delineates Restricted Areas
Lavender	(9)		PCC Paved Shoulder Shading
Gray, Light	(48)		Proposed Pavement and Bridge Shading
Gray, Dark	(112)		Pavement Scarification and HMA Overlay Shading
Brown, Light	(236)		Proposed Grading Shading
Tan	(8)		Proposed Sidewalk Shading
Pink	(11)		HMA Paved Shoulder Shading
Gray, Dark	(112)		HMA Shoulder Runout
Brown, Dark	(216)		Pavement Removal
Blue	(216)		Shoulder Strengthening and Pavement Removal

Legend And Symbol Information Sheet

D SHEETS



ENGLISH	IOWA DOT	DESIGN TEAM **BENESCH**	**VAN BUREN** COUNTY	PROJECT NUMBER **BRF-002-9(40)--38-89**	SHEET NUMBER **D.2**

SYSTEMTIME USERNAME DGNSPEC

SURVEY INDEX

COUNTY: VAN BUREN
PIN: 19-89-002-010
PROJECT NUMBER: BRF-002-9(40)–38-89
LOCATION: IA 2 OVER FOX RIVER
TYPE OF WORK: BRIDGE DECK REPLACEMENT
PROJECT DIRECTORY: 8900201019

SURVEY PERSONNEL

Tom Obecny - Survey Party Chief

DATE(S) OF SURVEY

Begin Date 11/13/2023
End Date 11/16/2023

GENERAL INFORMATION

This survey is for existing conditions data collection on the bridge (Maintenance No 8918.7S002)

PROJECT CONTROL

Coordinates were determined using the Iowa Real-Time Network. For additional details of the control survey, contact Benesch.

PROJECT DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 Adjustment)
Coordinate system: Iowa South Zone State Plane Coordinates (US Survey Foot)
Vertical Datum: NAVD88
GEOID MODEL: GEOID 18

ALIGNMENT INFORMATION

The horizontal alignment for IA 2 is a retrace of As-Built Plans Nos. F-2-9(5)--20-89 and BRFN-2-9(15)--39-89. Survey Stationing was equated to the Center of Bridge equated between Pier's 1 and 2 at STA 368+70.00 and run back/ahead without equation throughout the survey.

Survey stationing relates to As-Built plan stationing at follows:

Center of Bridge STA 368+70.00 As-Built Plans Project Nos. F-2-9(5)--20-89 and BRFN-2-9(15)--39-89
Survey Center of Bridge STA 368+70.00

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 survey applications.

HORIZONTAL DATUM: NAD83(2011) for EPOC 2010.00 (IaRTN 2019 Adjustment) - Iowa South Zone State Plane Coordinates (US Survey Foot)
VERTICAL DATUM: NAVD88 - Geoid Model: 18

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

FILE NO. 31862	ENGLISH	DESIGN TEAM BENESCH	VAN BUREN COUNTY	PROJECT NUMBER BRF-002-9(40)--38-89	SHEET NUMBER G.2	

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING

HORIZONTAL DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 Adjustment)
Iowa South Zone State Plane Coordinates (US Survey Foot)
VERTICAL DATUM: NAVD88
Geoid Model: 18

POINT NAME	NORTHING	EASTING	ELEVATION	FEATURE DEFINITION - DESCRIPTION
BM #1	243282.1	2039476.6	687.66'	Cross Cut in concrete on top of the southwest wingwall at the south end of said wingwall. Northing and Easting is approximate for location purposes.
CP 100	243258.20	2039507.33	684.90'	5/8" iron rebar with cap.
CP 101	243518.59	2039665.15	684.49'	5/8" iron rebar.

ALIGNMENT COORDINATES

101-16
10-20-09

Name	Location	Point on Tangent			Begin Spiral			Begin Curve			Simple Curve PI or Master PI of SCS			End Curve			End Spiral		
		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates	
			Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)
1	IA 2	356+31.77	242341.004	2038921.902															
2	IA 2	376+76.77	244086.167	2039987.946															

FILE NO. 31862	ENGLISH	DESIGN TEAM BENESCH	VAN BUREN COUNTY	PROJECT NUMBER BRF-002-9(40)--38-89	SHEET NUMBER G.4	REVISED

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

108-23A
08-01-08

TRAFFIC CONTROL PLAN

Traffic will be maintained on IA 2 Bridge over Fox River at all times. Construction will be performed in 2 stages of single lane closures. See Sheets J.2-J.5 for details. NB and SB traffic will share a single lane on the bridge and traffic will be controlled using temporary traffic signals. Restricted width signing per TC-81 will be required. Use TC-213 while setting up the TBR used in Stages 1 and 2. Use TC-202 while constructing shoulder strengthening in Prestage. Access to all driveways and cross streets shall be maintained at all times.

108-26A
08-01-08

STAGING NOTES

Prestage
Install temporary traffic signals to be used in Stage 1 and Stage 2 using TC-213. Construct shoulder strengthening on the east side using TC-202.

Stage 1
Close the SB lane of IA 2. NB and SB traffic will share a single 11'-7.5" lane on the east half of the bridge and traffic will be controlled using the temporary traffic signals installed in the Prestage. Remove the west half of the existing bridge, construct the west half of the proposed bridge, perform all approach pavement and paved shoulder construction, guardrail removal and replacement, and shoulder strengthening on the west side of the bridge.

Stage 2
Close the NB lane of IA 2. NB and SB traffic will share a single 11'-7.5" lane on the west half of the bridge and traffic will be controlled using the temporary traffic signals installed in the Prestage. Remove the east half of the existing bridge, construct the east half of the proposed bridge, perform all approach pavement and paved shoulder construction and guardrail removal and replacement on the east side of the bridge.

111-01
04-17-12

COORDINATED OPERATIONS

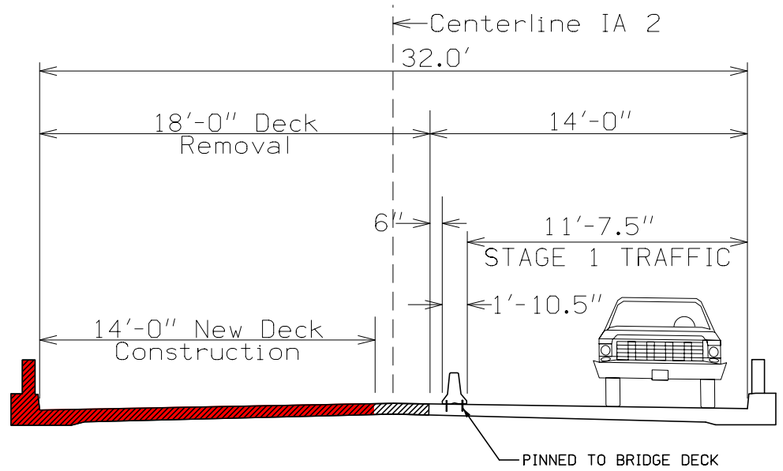
Other work in progress during the same period of time will include the construction of the projects listed. Coordinate operations with those of other contractors working within the same area.

Project	Type of Work
None Anticipated	

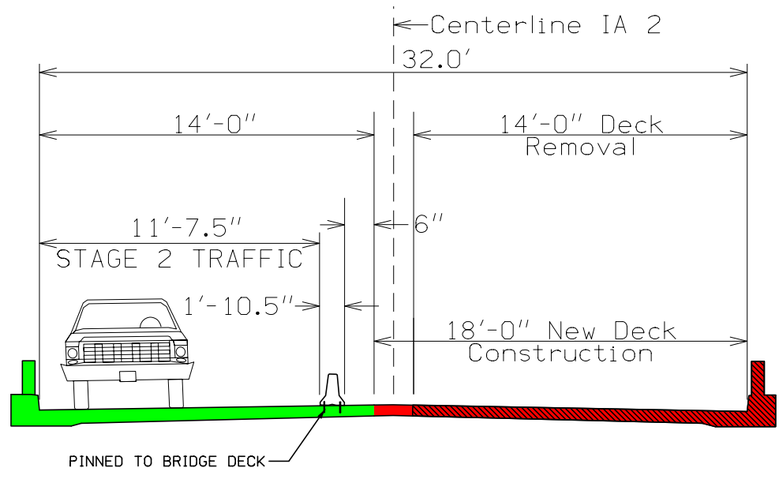
108-25
10-21-14

511 TRAVEL RESTRICTIONS

Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No., Structure ID, or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
IA 2	NB	Van Buren	1.5 miles E of Jct SR V64	Fox River	Barrier	8918.7S002	Horizontal	32'-0"	11'-7.5"	10'-7.5"	32'-0"	
IA 2	SB	Van Buren	1.5 miles E of Jct SR V64	Fox River	Barrier	8918.7S002	Horizontal	32'-0"	11'-7.5"	10'-7.5"	32'-0"	



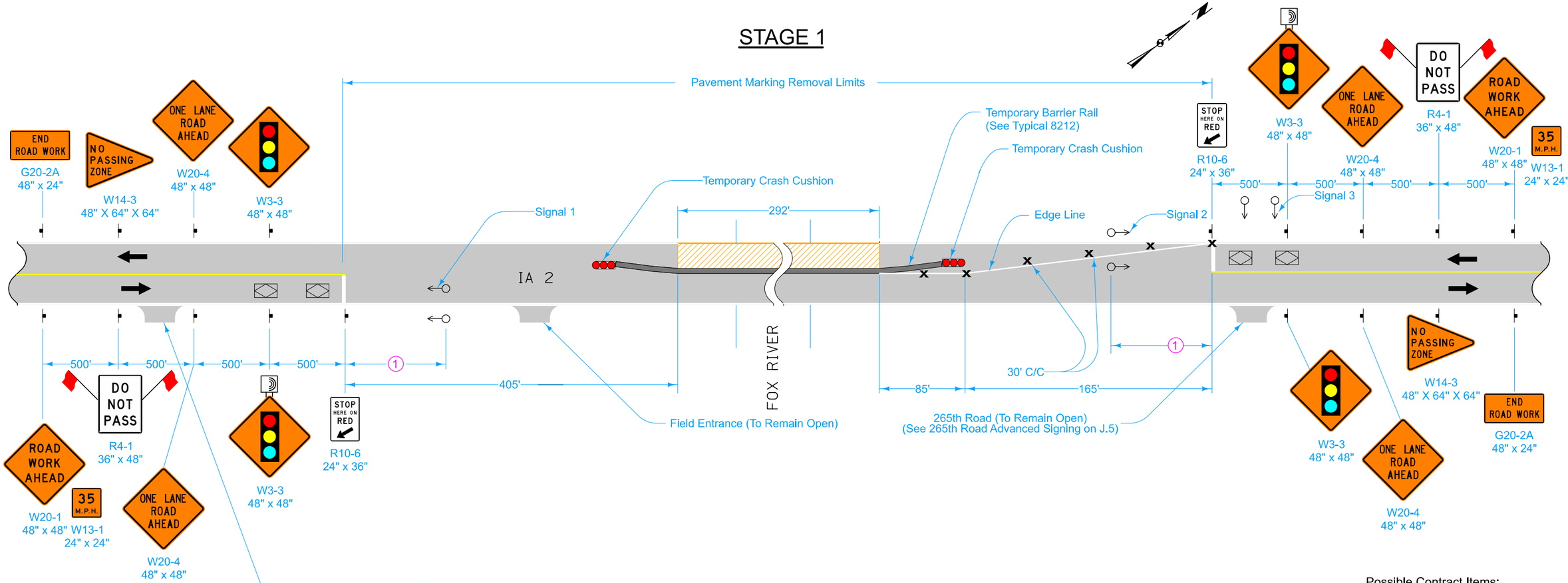
STAGE 1
(Looking Ahead Station)



STAGE 2
(Looking Ahead Station)

TYPICAL CONSTRUCTION SECTIONS

STAGE 1



TO BE UPDATED ONCE TIMING PROVIDED BY IOWA DOT

RECOMMENDED TIMING (sec)

Signal Phase	1	2	3	4
Initial Green	X.X	X.X	X.X	-
Extension	X.X	X.X	X.X	-
Maximum Green	X.X	X.X	X.X	-
Yellow	X.X	X.X	X.X	-
All Red	X.X	X.X	X.X	X.X

*All Red clearance value based on an operating speed of 20 mph.
**All Red clearance value based on an operating speed of 30 mph.

LEGEND

- Vehicle Detection Area
- Temporary Crash Cushion
- Direction of Traffic
- Traffic Sign
- Drum
- Type 'B' High-Intensity Flashing Warning Light
- Work Area
- Temporary Traffic Signal

Place Concrete Barrier Markers at 10 ft C/C on bridge rail.

(1) Locate signal heads 70 to 100 feet beyond stop bar. Adjust location of signal heads as field conditions warrant.

Possible Contract Items:
- Pavement Marking Items
- Pavement Markings Removed
- Temporary Barrier Rail
- Temporary Crash Cushions
- Temporary Traffic Signals
- Traffic Control

Possible Tabulations:
- 108-22
- 108-28
- 108-30
- 108-33

MODIFIED STANDARD ROAD PLAN

REVISION

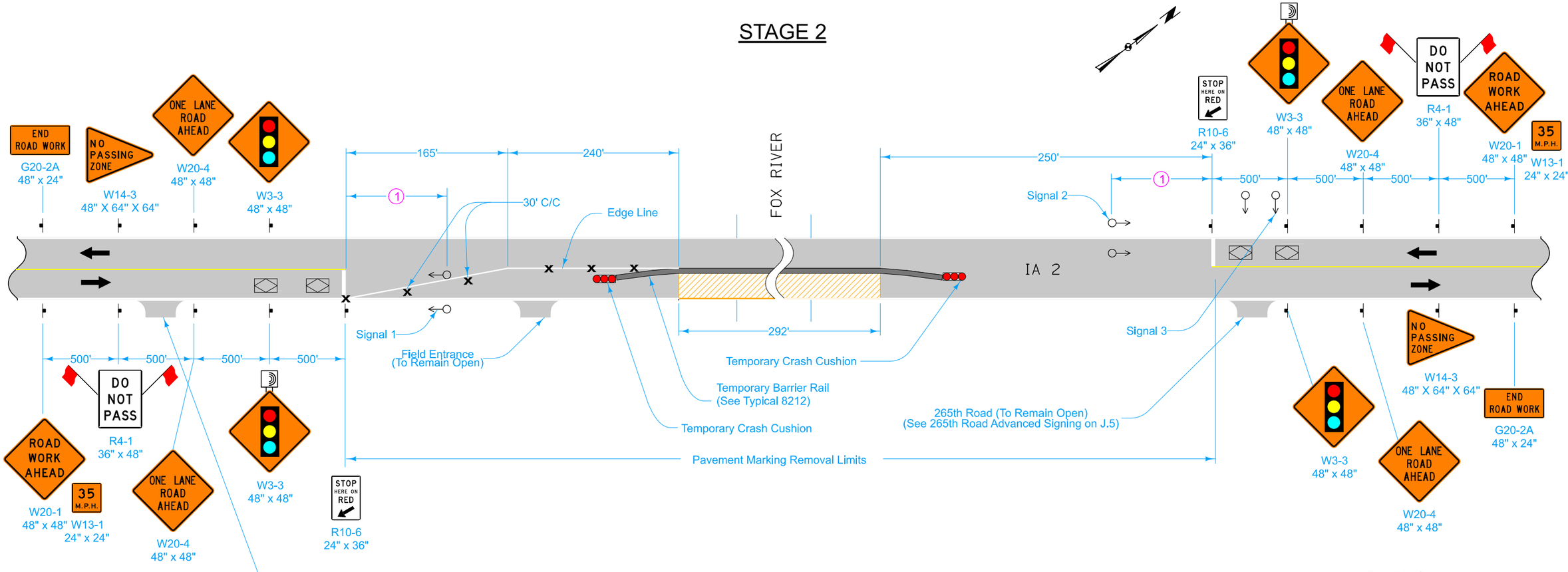
TC-217

SHEET 1 of 1

MODIFICATIONS: Added roads near work zone including 3-phase signal and extended south approach tangent.

LANE CLOSURE WITH SIGNALS AND TBR

STAGE 2



TO BE UPDATED ONCE TIMING PROVIDED BY IOWA DOT

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- Temporary Crash Cushion
- Direction of Traffic
- Traffic Sign
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Maximum Green	X.X	X.X	X.X	-
Yellow	X.X	X.X	X.X	-
All Red	X.X	X.X	X.X	X.X

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- 108-28
- 108-30
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MODIFIED STANDARD ROAD PLAN

REVISION

TC-217

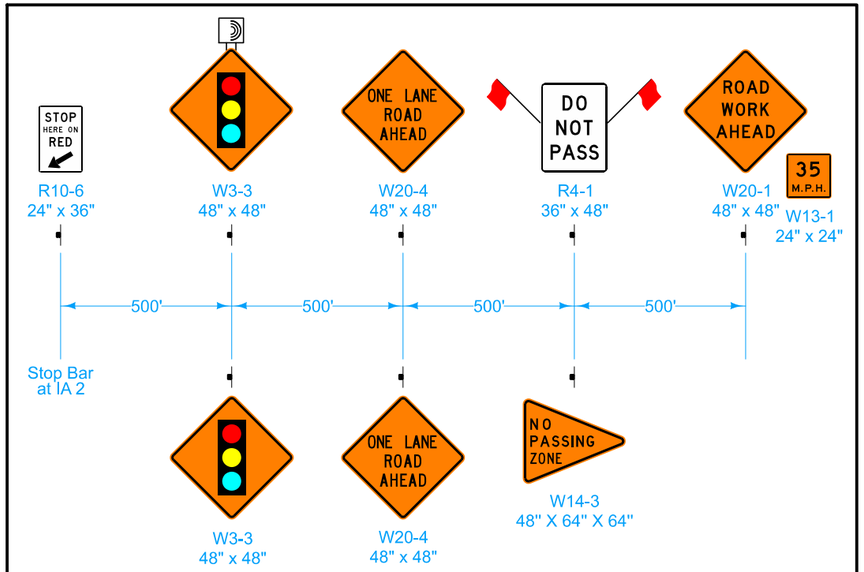
SHEET 1 of 1

MODIFICATIONS: Added roads near work zone including 3-phase signal and extended south approach tangent.

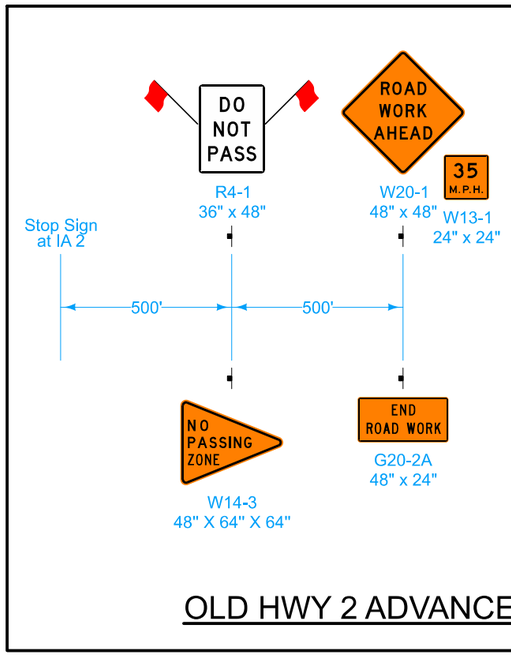
LANE CLOSURE WITH SIGNALS AND TBR

ENGLISH	IOWA DOT	DESIGN TEAM BENESCH	VAN BUREN COUNTY	PROJECT NUMBER BRF-002-9(40)--38-89	SHEET NUMBER J.4

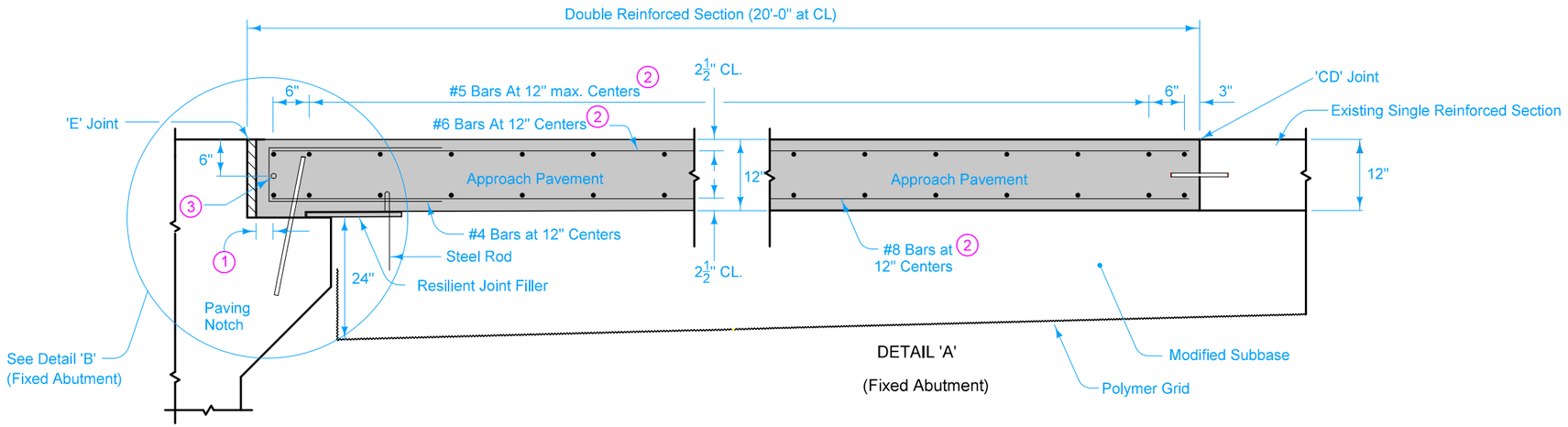
SYSTEMTIME USERNAME DGNSPEC



265TH ROAD ADVANCED SIGNING

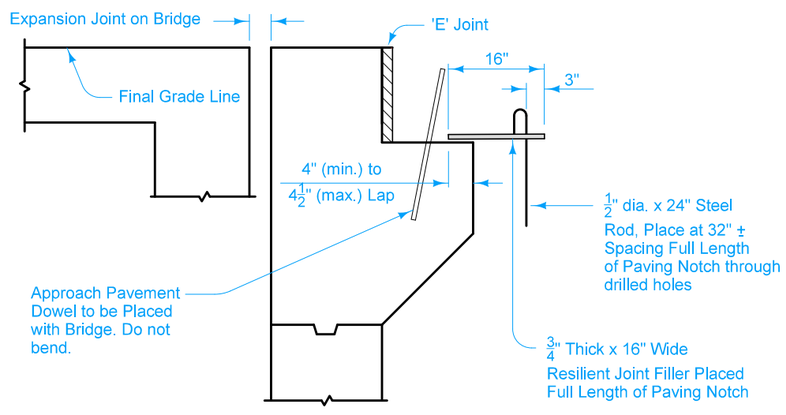


OLD HWY 2 ADVANCED SIGNING



DETAIL 'A'

(Fixed Abutment)



DETAIL 'B' (Fixed Abutment)

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

Possible Tabulation:
112-6

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.

MODIFIED

STANDARD ROAD PLAN

REVISION

BR-203

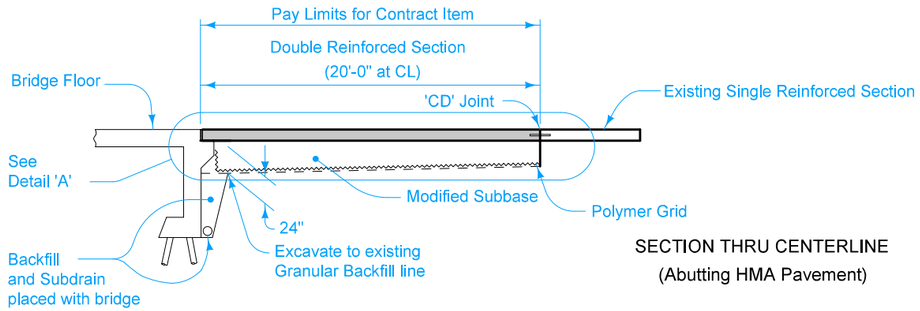
SHEET 1 of 3

REVISIONS: Modified Standard to only show replacement of only the double reinforced section.

DOUBLE REINFORCED 12" APPROACH

ENGLISH	IOWA DOT	DESIGN TEAM BENESCH	VAN BUREN COUNTY	PROJECT NUMBER BRF-002-9(40)--38-89	SHEET NUMBER U.1

SYSTEMTIME USERNAME DGNSPEC



SECTION THRU CENTERLINE
(Abutting HMA Pavement)

MODIFIED
STANDARD ROAD PLAN

REVISION

BR-203

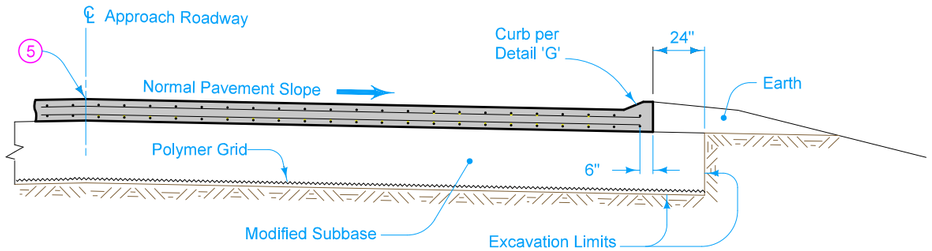
SHEET 2 of 3

REVISIONS: Modified Standard to only show replacement of only the double reinforced section.

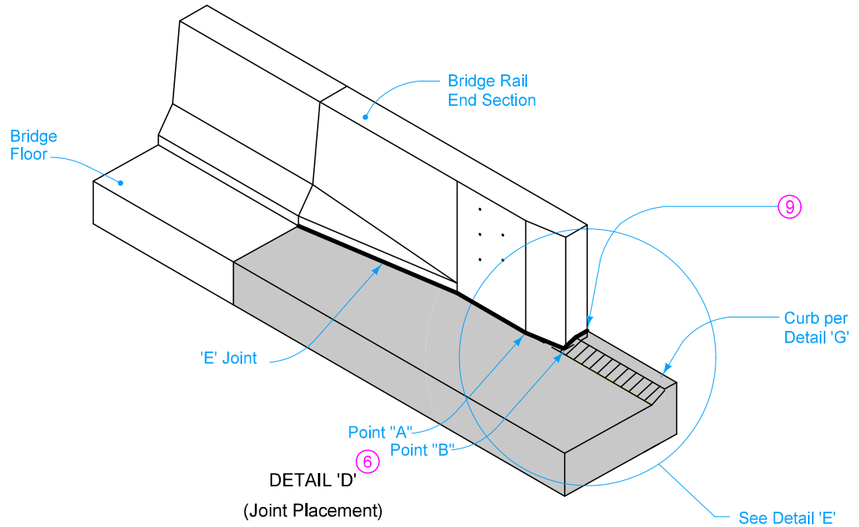
DOUBLE REINFORCED 12" APPROACH

ENGLISH	IOWA DOT	DESIGN TEAM **BENESCH**	**VAN BUREN** COUNTY	PROJECT NUMBER **BRF-002-9(40)--38-89**	SHEET NUMBER **U.2**	

SYSTEMTIME USERNAME DGNSPEC

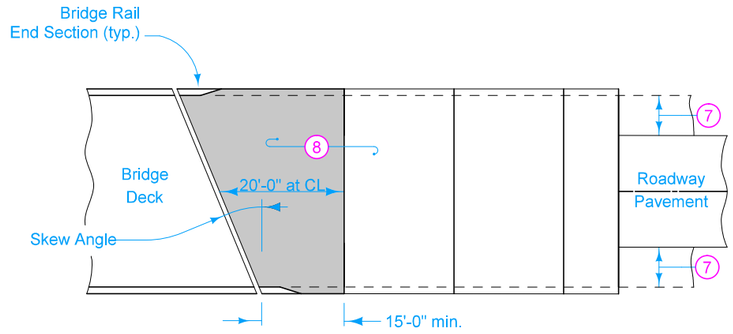


SECTION A-A (6)



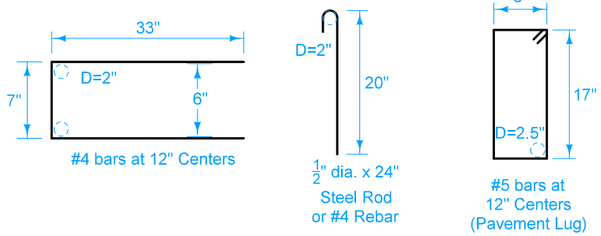
DETAIL 'D'

(Joint Placement)

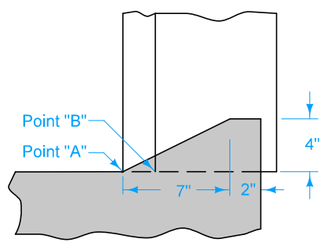


APPROACH PAVEMENT

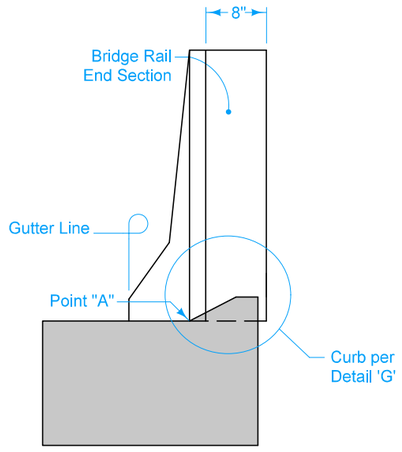
LAYOUT AT A SKEW



BENT BAR SHAPES



DETAIL 'G'



DETAIL 'E'

(Back of Curb Placement)

(5) Longitudinal Joint (PV-101):
Single pour - Saw cut joint per Detail B.
Two pours - Use 'KS-2' joint.

(6) Refer to BR-212.

(7) Design shoulder width.

(8) Reinforced bridge approach section.

(9) Expansion 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.

MODIFIED

STANDARD ROAD PLAN

REVISION

BR-203

SHEET 3 of 3

REVISIONS: Modified Standard to only show replacement of only the double reinforced section.

DOUBLE REINFORCED 12" APPROACH

ENGLISH	IOWA DOT	DESIGN TEAM BENESCH	VAN BUREN COUNTY	PROJECT NUMBER BRF-002-9(40)--38-89	SHEET NUMBER U.3
SYSTEMTIME	USERNAME	DGNSPEC			