LETTING DATE
Nov 18, 2025

Bridge Deck Replacement
BRF-063-8(070)--38-19

CHICKASAW COUNTY

Index of Sheets

IOWA DOT

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

CHICKASAW COUNTY

Bridge Deck Replacement

US 63 over E. Fork Wapsipinicon River
2.1 Miles N. of Jct. US 18

Refer to the Plan Sheets for list of applicable specifications.

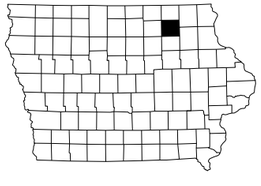
Value Engineering Saves. Refer to Article 1105.14 of the Specifications.

Revisions

	TOTAL
	45
PROJECT IDENTIFICATION NUMBER	
21-19-063-010	
CONTRACT ID NUMBER	
PROJECT NUMBER	
BRF-063-8(070)--38-19	
R.O.W. PROJECT NUMBER	
PROJECT DIRECTORY NUMBER	
1906301021	

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 C.4

Design Data Rural

2023 AADT	4280	V.P.D.
TRUCKS	27	%

Index Of Seals

Sheet No.	Name	Type
A.1	J. Scott Ingersoll	Structural Design
B.1	Adam D. Schott	Roadway Design

Structural Design

LICENSED PROFESSIONAL ENGINEER
J. Scott Ingersoll
17556
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 XX-XX-XXXX

Printed or Typed Name: J. Scott Ingersoll, P.E.

My license renewal date is December 31, 2026

Pages or sheets covered by this seal: A.1 thru A.2 & V.1 thru V.21

FILE NO. 32190	ENGLISH	DESIGN TEAM FOTH	CHICKASAW COUNTY	PROJECT NUMBER BRF-063-8(070)--38-19	SHEET NUMBER A.1

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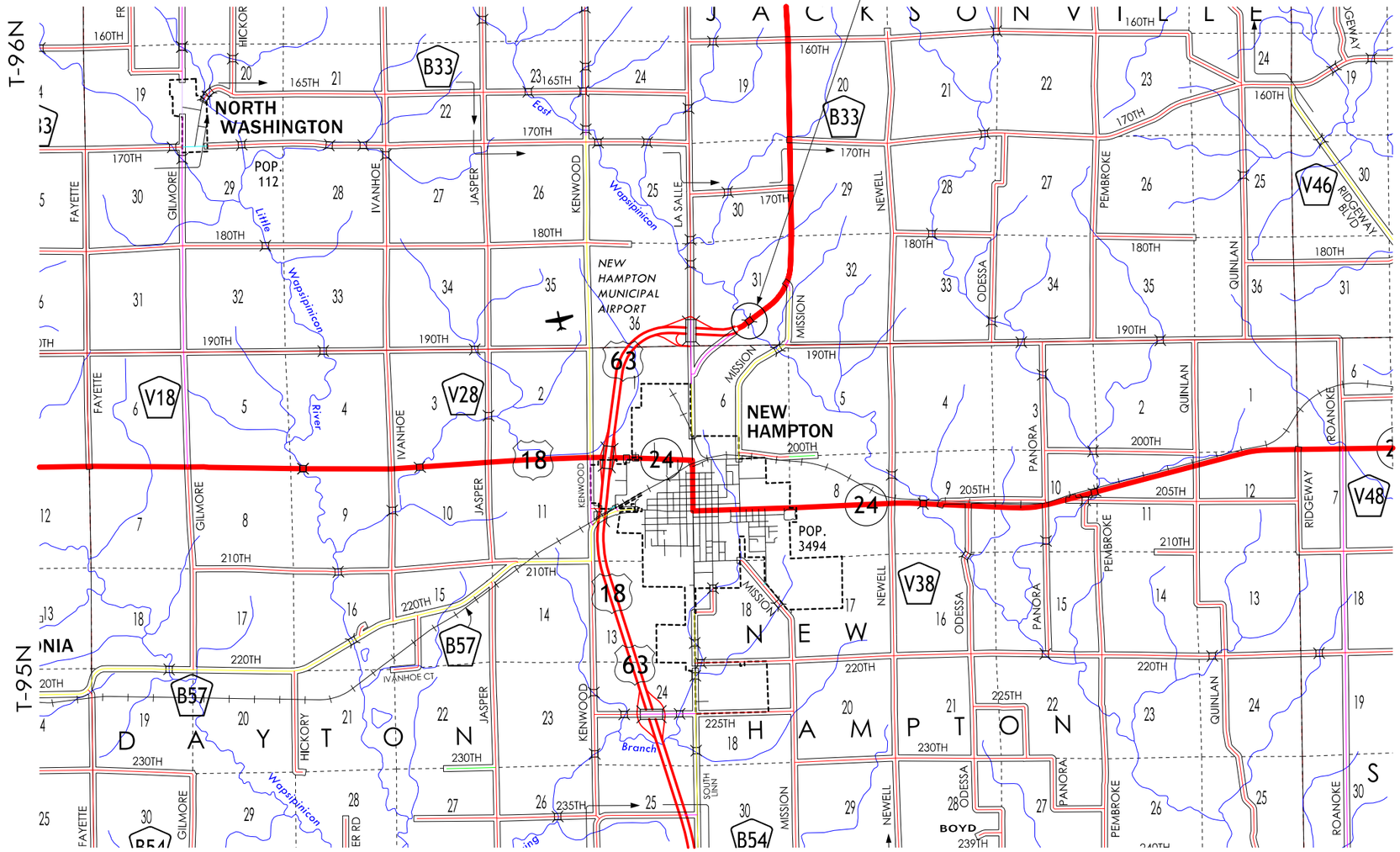
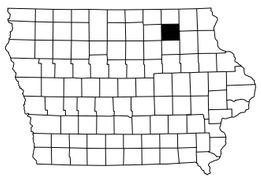
Design No. 126
FHWA No. 19780



Chickasaw County Location Map

Not To Scale



LEGEND

- INTERSTATE HIGHWAY
- PRIMARY HIGHWAY-DIVIDED
- PRIMARY HIGHWAY
- PORTLAND CEMENT CONCRETE ROAD
- ASPHALT ROAD
- BITUMINOUS ROAD
- GRAVEL ROAD
- EARTHEN ROAD
- INTERSTATE HIGHWAY (80)
- UNITED STATES HIGHWAY (65)
- STATE HIGHWAY (237)
- COUNTY HIGHWAY (S27)
- RAILROAD
- PIPELINE
- AIRPORT
- HYDROLOGY
- BRIDGE
- STATE BOUNDARY
- COUNTY BOUNDARY
- CORPORATE BOUNDARY
- TOWNSHIP LINE
- SECTION LINE
- ROAD NAMES (ABBEY ROAD)
- UNINCORPORATED PLACE (ELWOOD)
- STATE PARKS
- STATE INSTITUTIONS
- FEDERAL LAND

FILE NO. 32190	ENGLISH	DESIGN TEAM FOTH	CHICKASAW COUNTY	PROJECT NUMBER BRF-063-8(070)--38-19	SHEET NUMBER A.2

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Estimated Bridge Repair Quantities and Reference Notes - Design #126

Item No.	Item Code	Item	Unit	Quantities Estimated Design No. 126	Estimate Reference Notes
1	2401-6745636	REMOVAL OF EXISTING HANDRAIL AND END POSTS	LS	1	---
2	2401-6750001	REMOVALS, AS PER PLAN	LS	1	Includes all work for removal and off-site disposal of the bridge deck, curbs, retrofit barrier rails, abutment diaphragms and portion of abutment backwalls. Removal of scheduled items shall be in accordance with Section 2401, of the Standard Specifications. Any damage to material not to be removed shall be the responsibility of the Contractor and repaired at no extra cost to the State. Contractor to add the following information when submitting the Iowa DNR "Notification of Bridge Demolition and Renovation" form: Name of Asbestos Inspector: Brad Azeltine Date Inspected: 3/29/2021 IA License Number: Iowa DOT Inspector Phone: (515) 239-1938 Procedure used to detect the presence of asbestos materials: Polarized Light Microscopy (PLM)
3	2402-2720000	EXCAVATION, CLASS 20	CY	10	---
4	2403-0100010	STRUCTURAL CONCRETE (BRIDGE)	CY	2.6	Includes all resilient joint filler required.
5	2403-7000210	HIGH PERFORMANCE STRUCTURAL CONCRETE	CY	175.2	This bid item includes the concrete for the deck and abutment diaphragms. Refer to the Developmental Specification for High Performance Concrete for Structures for additional information.
6	2404-7775005	REINFORCING STEEL, EPOXY-COATED	LB	55,733	Includes mechanical splicers in the abutment diaphragm and backwall.
7	2404-7775009	REINFORCING STEEL, STAINLESS STEEL	LB	3367	---
8	2408-7800000	STRUCTURAL STEEL	LB	234	---
9	2414-6424110	CONCRETE BARRIER RAILING	LF	369.7	If placement of concrete is done by the slipforming method, Class BR concrete is required. Cast-in-place barrier rails shall use Class C mix. Price bid for this item shall include the cost of cast-in-place forms if required for placement of the concrete.
10	2426-6772013	REPAIR BEAM ENDS	EACH	5	----
11	2426-6772016	CONCRETE REPAIR	SF	13	----
12	2499-2300001	DECK DRAINS	LS	1	Includes all new deck drains. Refer to Design Sheet No.'s 4 and 12 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.
13	2508-0970000	CONTAINMENT	LS	1	----
14	2508-0991000	PAINTING OF STRUCTURAL STEEL	LS	1	Includes cost of cleaning and painting existing beam bearings at abutments.
15	2526-8285000	CONSTRUCTION SURVEY	LS	1	Includes field verifying existing elevations and dimensions in accordance with the General Notes.
16	2533-4980005	MOBILIZATION	LS	1	----
17	2536-6745045	REMOVAL OF ASBESTOS	LS	1	Identified in the joint filler under the base plates for the aluminum handrails.

Roadway Quantities shown elsewhere in these plans.

Design For Repairs To 0° Skew

180'-0" x 31'-6" Pretensioned Prestressed Concrete Beam Bridge

59'-9½" End Spans 60'-5" Interior Span

Estimated Quantities

STA. 121+90.00 (℄ US 63) Turn-in Date: Sept 2025

Chickasaw County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 126 Design Sheet No. 1 of 21 FHWA No. 19780

General Notes:

This design is for repairs the existing 180'-0" x 30'-0" Pretensioned Prestressed Concrete Beam Bridge on US 63 over East Fork Wapsipinicon River. The bridge has previously been overlaid and had retrofit barrier rails and end posts added. Electronic copies of original and repair design plans will be made available to the Contractor as part of the E-files supplied with the contract documents.

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

See Situation Plan on Design Sheet No. 4 for list of repair items.

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

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

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

"Removals as Per Plan" include all costs associated with removing the bridge deck, curbs, retrofit barrier rails, abutment diaphragms and portion of abutment backwalls. Removals shall be in accordance with Section 2401, of the Standard Specifications. Any damage to other portions of the existing structure not noted for removal shall be the responsibility of the Bridge Contractor and shall be repaired at no extra cost to the State.

The bid item "Removal of Existing Handrail + End Post" shall include all cost associated with dismantling the existing aluminum handrail (approximately 348 L.F. and 46 posts). The handrails are to become the property of the Contractor.

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

The Contractor shall 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 two lanes of traffic maintained in each direction at all times in accordance with "Traffic Control Plan" note.

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

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

Abutment bearings (sole plates and masonry plates) are to be cleaned and painted. Cleaning by vacuum blasting or by a non-blasting method is required. Surface to be painted shall be prepared in accordance with Steel Structures Painting Council (SSPC) SP3. Surfaces of the abutment bearings are to be given one coat of both a rust inhibitor type primer and final coat as approved by the Engineer. The color of the dry paint should approximate the color of concrete. This work shall be measured and paid for at the contract unit price per lump sum for the bid item, "Painting of Structural Steel".

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.

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

Scrape samples were taken from an area of this bridge to get an indication of the existence of and level of total lead and total chromium. Analysis of total lead and total chromium on this sample was:

Location:	Total Lead	Total Chromium
Abutment Bearing	<49.9 PPM	<30.0 PPM

These analyses show the existence of these two toxic constituents. Levels indicated by these tests could create conditions above regulatory limits for health and safety requirements. No other constituents were analyzed. The bidder should not rely on the Iowa DOT's testing and analysis for any purpose other than as an indication of the existence of these two toxic constituents.

Laboratory analysis has identified asbestos at this site. Asbestos shall be removed prior to bridge demolition operations. Removal, transport, and disposal shall be in accordance with Section 2536, of the Standard Specifications.

Required DNR information includes:

Year Constructed	- 1962
Asbestos Location	- Gray caulk under base plates for aluminum handrails (46 locations)
FHWA Number (Existing)	- Information provided elsewhere in plans
Road/Route (City)	- Information provided elsewhere in plans
County	- Information provided elsewhere in plans
Direction to Bridge	- Information provided elsewhere in plans
Bridge Size	- Information provided elsewhere in plans
Number of Decks	- 1
Asbestos Inspector/Amounts	- Brad Azeltine; approx. 21 Sq. Ft.; 5% Chrysotile Asbestos

Faint lines on plans indicate the existing structure.

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

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

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

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

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

Bridge Deck Dimension Table

No.	Item	Unit	Quantity
1	Deck Length	L.F.	182.3
2	Minimum Deck Width	L.F.	34.7
3	Maximum Deck Width	L.F.	34.7
4	Deck Area	S.F.	6321

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

Working Drawing and Calculation Submittals

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

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

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

No.	Working Drawing Description	Working Drawing File Name Convention For Submittal	Certified by Iowa P.E. (Yes/No)
1	Deck Drains	(70)_Chickasaw_Design0126_Deck Drains.pdf	No
2	Temporary Shoring Plan	(70)_Chickasaw_Design0126_TemporaryShoringPlan.pdf	No
3			
No.	**Calculation Description**	**Calculation File Name Convention For Submittal**	**Certified by Iowa P.E. (Yes/No)**
4			

Specifications:

Design:

AASHTO LRFD 8th Ed., Series of 2017, except as noted in the current Iowa Bridge Design Manual.

Construction:

Iowa Department of Transportation Standard Specifications for Highway and Bridge Construction, Series 2023, plus applicable General Supplemental Specifications, Developmental Specifications, Supplemental Specifications and Special Provisions shall apply to construction work on this project, including:

- Developmental Specifications for High Performance Concrete for Structures

Design Stresses:

Design stresses for the following materials are in accordance with the AASHTO LRFD Bridge Design Specifications, 8th Ed., Series of 2017, except as noted in the current Iowa Bridge Design Manual.

Reinforcing steel in accordance with AASHTO LRFD Section 5, Grade 60 for epoxy coated and non-coated, and Grade 60 or 75 for stainless.

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

Structural steel in accordance with AASHTO LRFD Section 6. ASTM A709 Grade 36 (AASHTO M270 Grade 36).

Design History at this Site
(Includes this Design)

Des. No.	Type of Work
159	Original Design
286	Retrofit Barrier Rail
1599	Repair and Overlay
126	Deck Replacement

Traffic Control Plan

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

Design For Repairs To 0° Skew

180'-0" x 31'-6" Pretensioned Prestressed Concrete Beam Bridge

59'-9½" End Spans — 60'-5" Interior Span

General Notes

STA. 121+90.00 (℄ US 63)

Turn-in Date: Sept 2025

Chickasaw County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 126 — Design Sheet No. 2 of 21 — FHWA No. 19780

FILE NO. 32190	ENGLISH	DESIGN TEAM Foth	Chickasaw COUNTY	PROJECT NUMBER BRF-063-8(070)--38-19	SHEET NUMBER V.2

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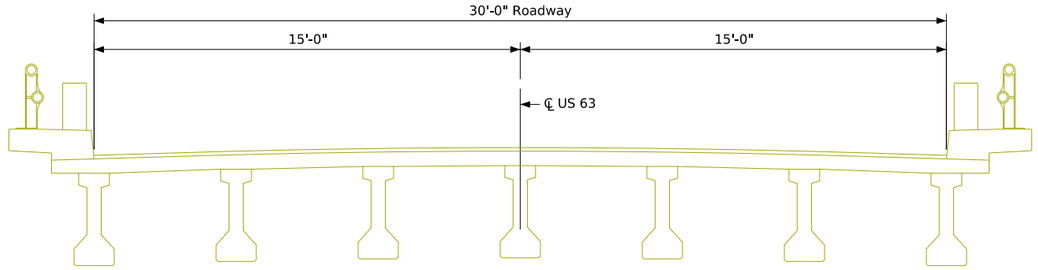
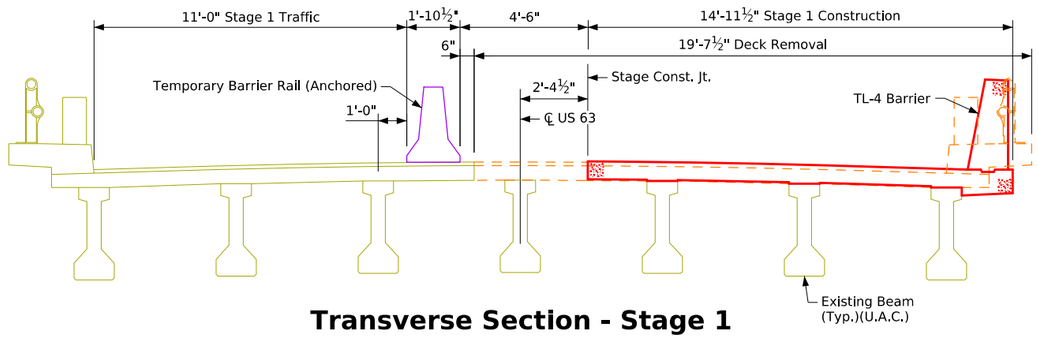
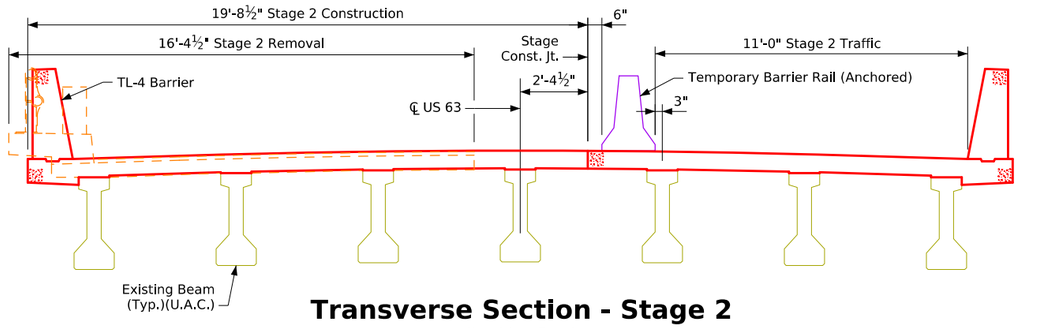


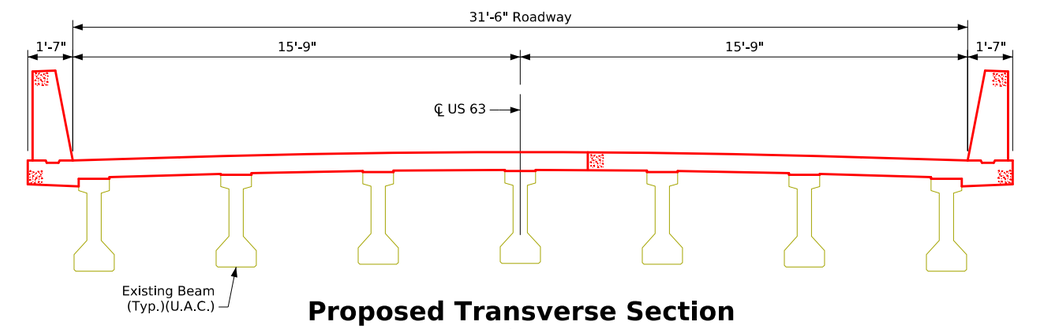
Existing Transverse Section
(Looking East)



Transverse Section - Stage 1
(Looking East)



Transverse Section - Stage 2
(Looking East)



Proposed Transverse Section
(Looking East)

Note:
1. The plans show a layout for TBR for both Stage 1 and Stage 2 construction. The temporary barrier rail sections adjacent to the work area for Stage 1 traffic are to remain in place until traffic is shifted to the Stage 2 traffic lane. The temporary barrier rail sections adjacent to the work area for Stage 2 traffic are to be in place prior to shifting traffic to the Stage 2 traffic lane.
2. The Contractor shall exercise care during installation of the TBR anchors during Stage 1 and 2 to avoid interference with or damage to the deck reinforcing.

Design For Repairs To 0° Skew

180'-0" x 31'-6" Pretensioned Prestressed Concrete Beam Bridge

59'-9½" End Spans — 60'-5" Interior Span

Construction Staging & Notes

STA. 121+90.00 (℄ US 63) — Turn-in Date: Sept 2025

Chickasaw County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 126 — Design Sheet No. 3 of 21 — FHWA No. 19780

FILE NO. 32190	ENGLISH	DESIGN TEAM Foth	Chickasaw COUNTY	PROJECT NUMBER BRF-063-8(070)--38-19	SHEET NUMBER V.3	

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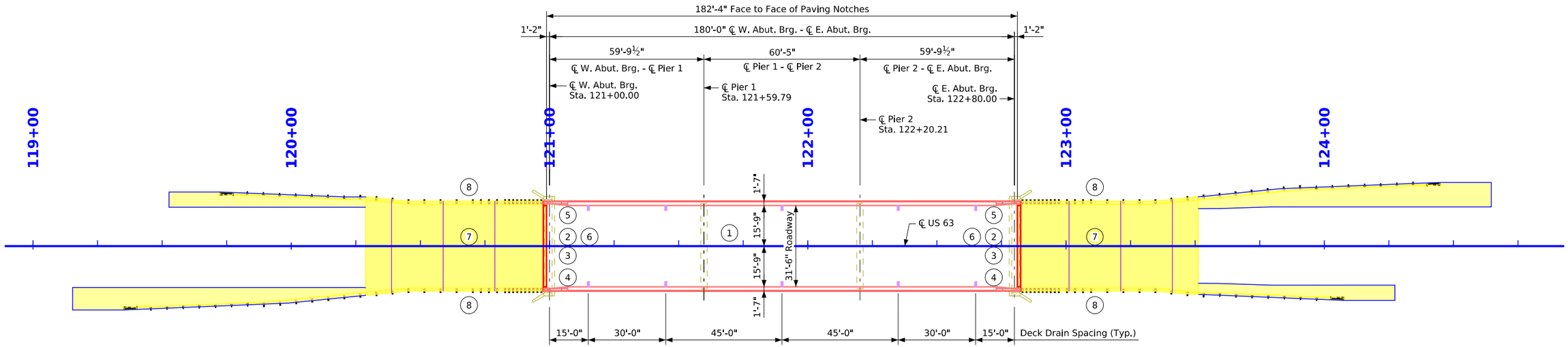
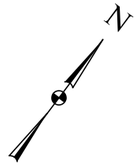
Control Point 100: 9770411.39 N, 12617562.78 E, FENO Monument, Elev. 1150.76

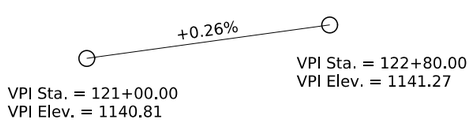


Situation Plan



Repairs Shall Consist Of:

1. Remove and reconstruct the bridge deck and barrier rails.
2. Remove and replace portions of the existing backwall and construct a semi-integral abutment diaphragm.
3. Replace the abutment bearing anchorage bars.
4. Clean and paint abutment bearings.
5. Perform concrete repair on areas of the existing abutment footing.
6. Repair the exposed portions of beam ends below the new semi-integral diaphragm.
7. Replace approach pavement at both bridge ends.
8. Replace guardrails at both bridge ends.



Proposed Profile Grade US 63

Location

US 63 over E. Fork
Wapsipinicon River
T-96N R-12W
Section 31
Jacksonville Township
Chickasaw County
FHWA No. 19780
Bridge Maint. No. 1905.4S063
Latitude 43.086300°
Longitude -92.306559°

Design For Repairs To 0° Skew

180'-0" x 31'-6" Pretensioned Prestressed Concrete Beam Bridge

59'-9½" End Spans — 60'-5" Interior Span

Situation Plan

STA. 121+90.00 (℄ US 63)

Turn-in Date: Sept 2025

Chickasaw County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 126 | Design Sheet No. 4 of 21 | FHWA No. 19780

FILE NO. 32190	ENGLISH	DESIGN TEAM Foth	Chickasaw COUNTY	PROJECT NUMBER BRF-063-8(070)--38-19	SHEET NUMBER V.4	

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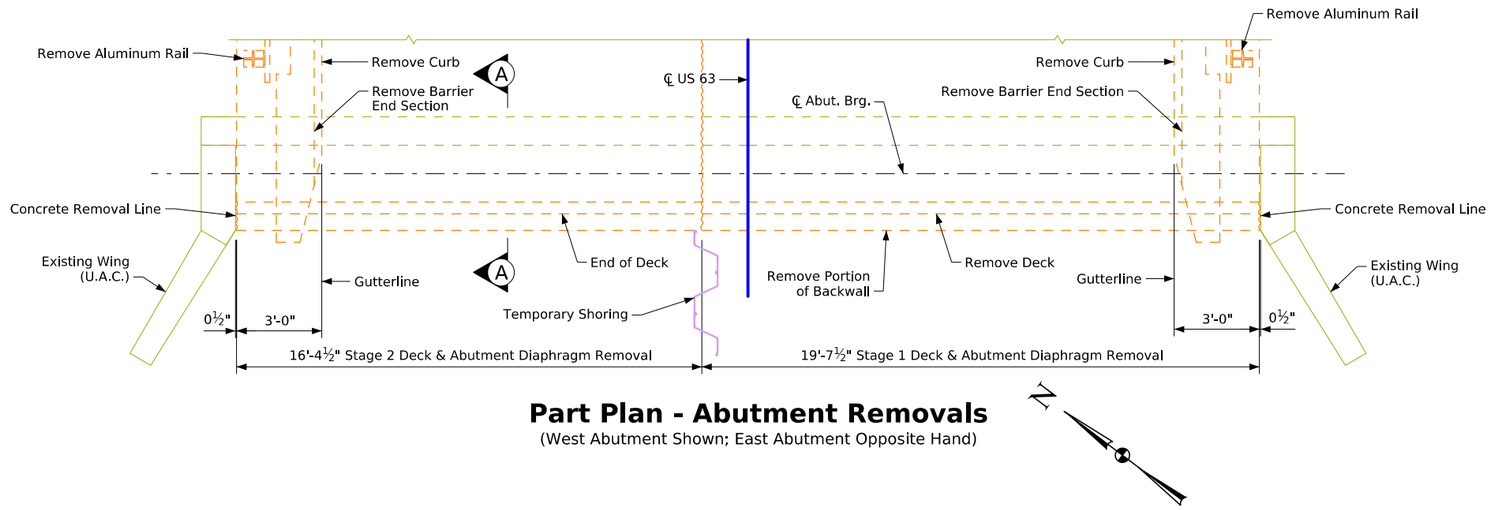
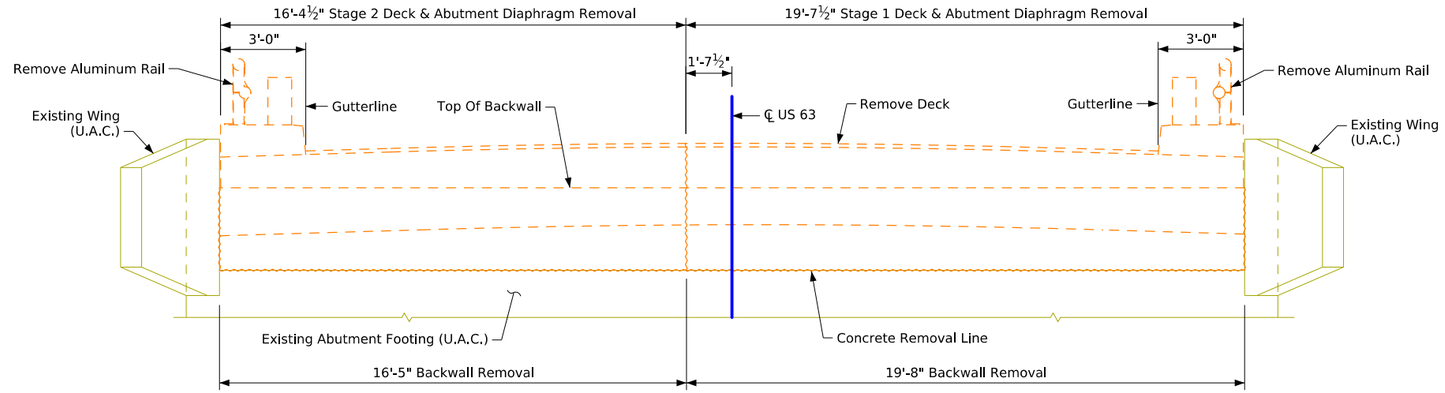


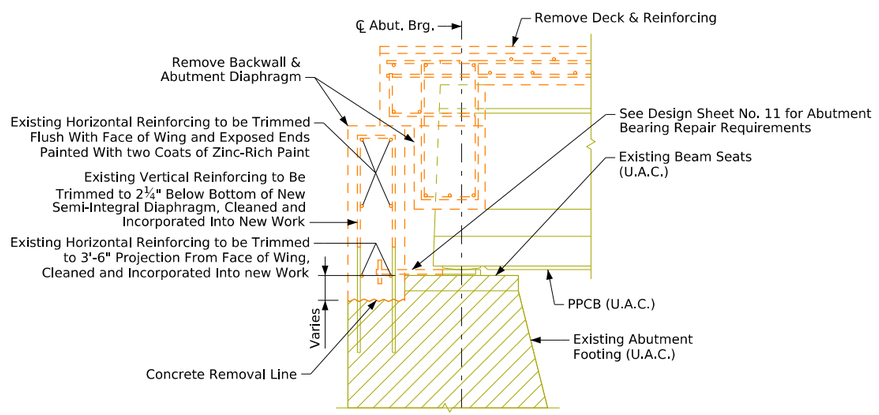
Part Plan - Abutment Removals

(West Abutment Shown; East Abutment Opposite Hand)



Abutment Rear Elevation

(West Abutment Shown; East Abutment Opposite Hand)



Section A-A

Design For Repairs To 0° Skew

180'-0" x 31'-6" Pretensioned Prestressed Concrete Beam Bridge

59'-9½" End Spans — 60'-5" Interior Span

Removal Details

STA. 121+90.00 (℄ US 63) — Turn-in Date: Sept 2025

Chickasaw County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 126 | Design Sheet No. 5 of 21 | FHWA No. 19780

FILE NO. 32190	ENGLISH	DESIGN TEAM Foth	Chickasaw COUNTY	PROJECT NUMBER BRF-063-8(070)--38-19	SHEET NUMBER V.5	

10:58:19 AM 11/11/2024 scd pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\1906301021\Bridge\(70)_Reconstruction - Bridge Deck Replacement\SHT_19063070_126_19780_Z02.dgn

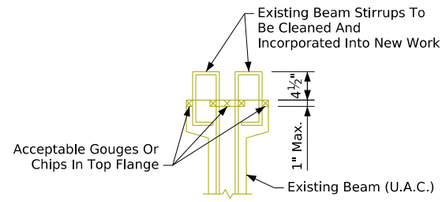
Removal Notes:

This sheet & Des. Sheet No. 5 show details of the superstructure removal on the existing bridge. All partial removals shall be in accordance with Section 2401 of the Standard Specifications. All such removals shall be to neat saw cuts to provide clean straight surfaces at interfaces between new concrete and remaining concrete. The removal shall be done in a manner which will prevent any damage to the existing structure to remain. The Contractor shall assume full responsibility for any damage caused, and shall repair any damaged area to its original condition, as directed by the Engineer, at the Contractor's expense. Any existing reinforcing steel which is to be "saved" that is exposed during removal operations is to be carefully protected, cleaned and incorporated into new construction unless noted otherwise.

The Contractor is to use extreme care when removing the deck concrete at the prestressed beam locations to avoid damaging the top flange of the beam. Prior to commencing any deck removal work, the Contractor shall submit a demolition plan to the Engineer for approval. The Contractor shall notify the Engineer of the start date for deck removal work in order to demonstrate the removal procedure on a small portion of the deck while the inspector is present. For details, see "Detail A" on this sheet.

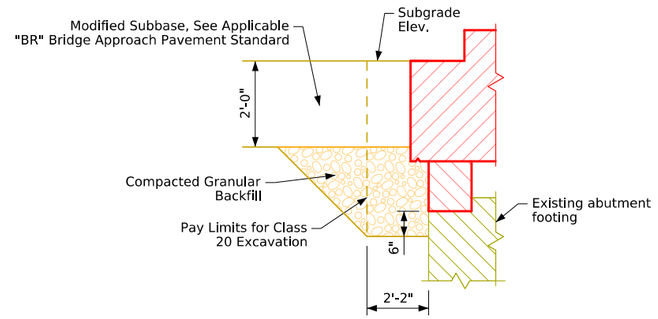
Once the deck concrete over the beam is removed, the top surface of the beam along the entire span shall be cleaned by sandblasting or other approved methods to prove a suitable bond between the beam and concrete deck in accordance with Article 2403.03, I, of the Standard Specifications.

In the event that one or more of the existing prestressed beams is damaged during the deck removal, the Contractor shall replace the damaged beam or beams deemed unacceptable. Bearings shall also be replaced. All material, labor, equipment and traffic control required for the removal and replacement of the damaged beam or beams, and bearings shall be considered incidental to the lump sum bid for "Removals, as per Plan". Any damaged beams, which are not to be reused, shall become the property of the Contractor.

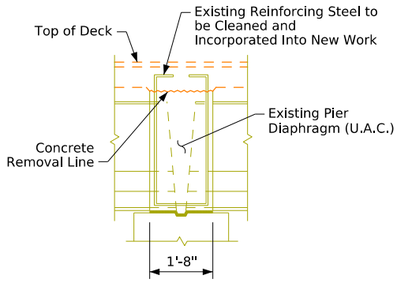


Detail A

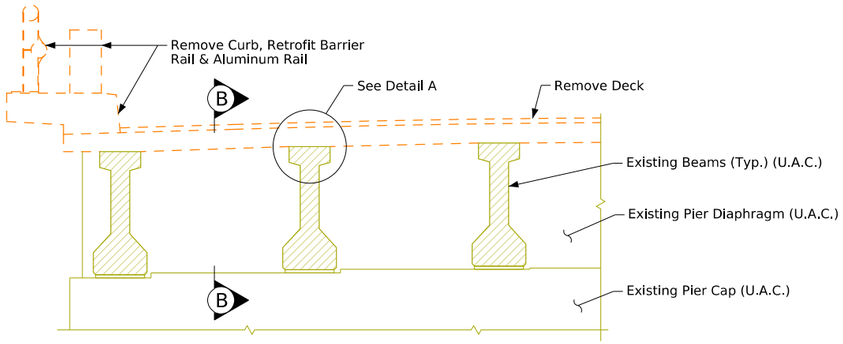
(Allowable Damage Detail for Existing Prestressed Beams)



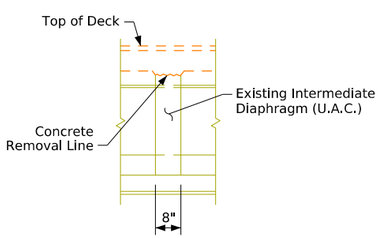
Backfill Details



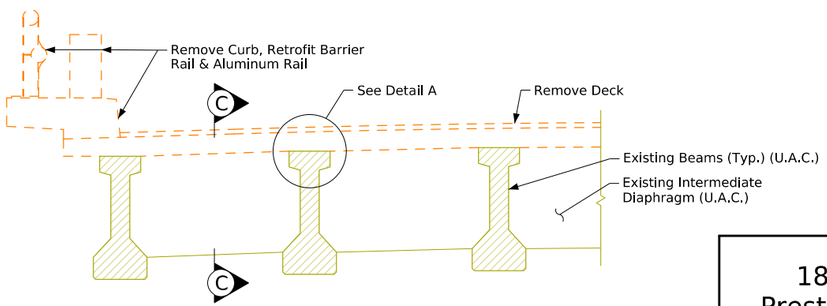
Section B-B



Part Section At Pier Diaphragm



Section C-C



Part Section At Intermediate Diaphragms

Design For Repairs To 0° Skew

180'-0" x 31'-6" Pretensioned Prestressed Concrete Beam Bridge

59'-9½" End Spans — 60'-5" Interior Span

Removal Details

STA. 121+90.00 (℄ US 63)

Turn-in Date: Sept 2025

Chickasaw County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 126 | Design Sheet No. 6 of 21 | FHWA No. 19780

FILE NO. 32190	ENGLISH	DESIGN TEAM Foth	Chickasaw COUNTY	PROJECT NUMBER BRF-063-8(070)--38-19	SHEET NUMBER V.6

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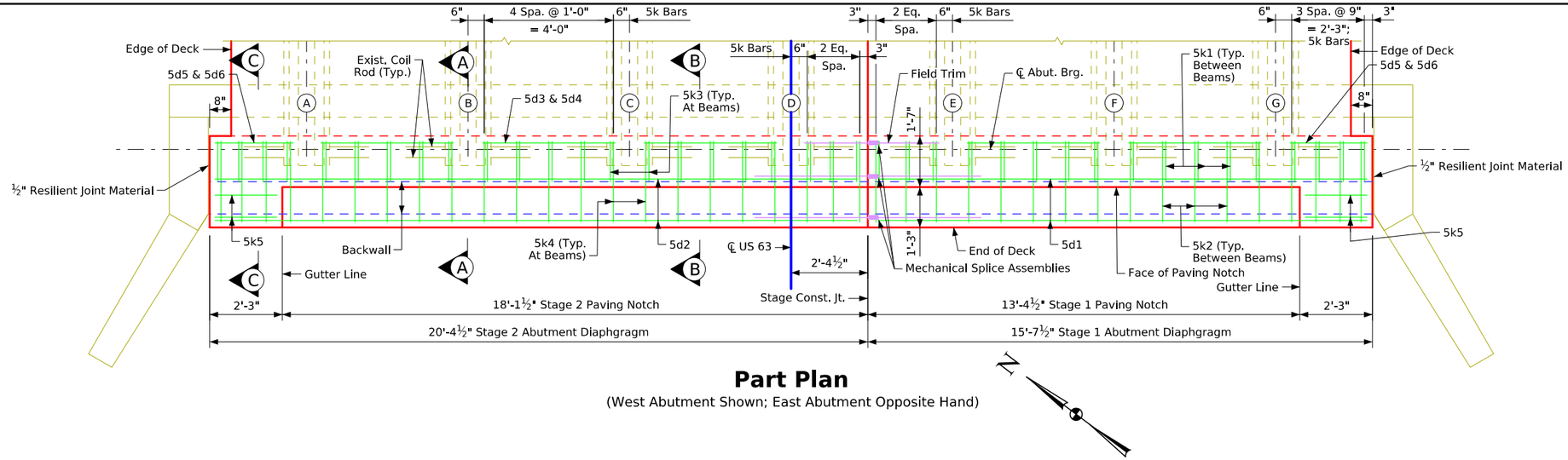
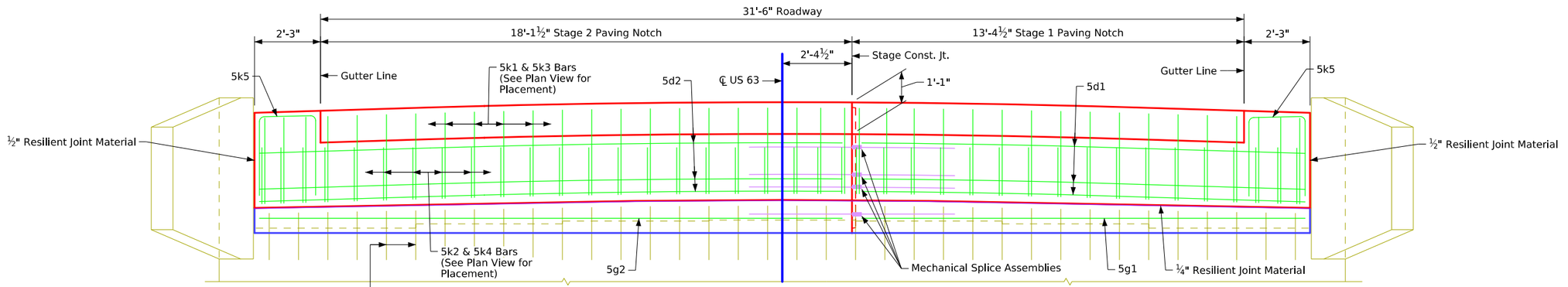


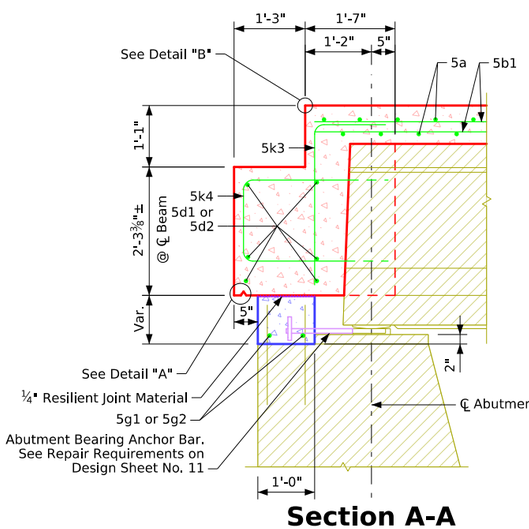
Part Plan

(West Abutment Shown; East Abutment Opposite Hand)

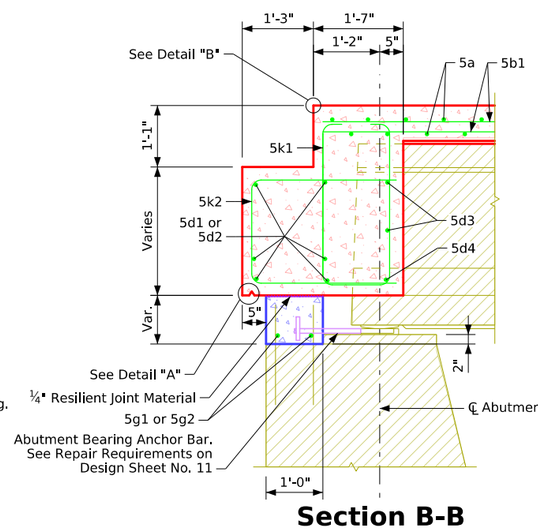


Rear Elevation

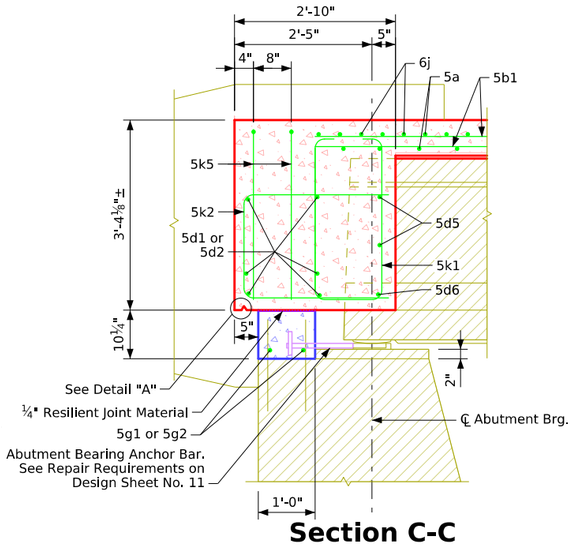
(West Abutment Shown; East Abutment Opposite Hand)



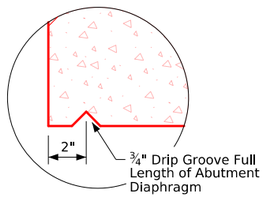
Section A-A



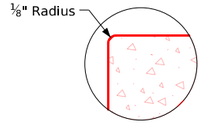
Section B-B



Section C-C



Detail "A"



Detail "B"

Note:
See Design Sheet No. 17 for placement of additional barrier rail end section reinforcing.

Design For Repairs To 0° Skew

180'-0" x 31'-6" Pretensioned Prestressed Concrete Beam Bridge

59'-9½" End Spans — 60'-5" Interior Span

Abutment Diaphragm Details

STA. 121+90.00 (℄ US 63) — Turn-in Date: Sept 2025

Chickasaw County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 126 — Design Sheet No. 7 of 21 — FHWA No. 19780

FILE NO. 32190	ENGLISH	DESIGN TEAM Foth	Chickasaw COUNTY	PROJECT NUMBER BRF-063-8(070)--38-19	SHEET NUMBER V.7

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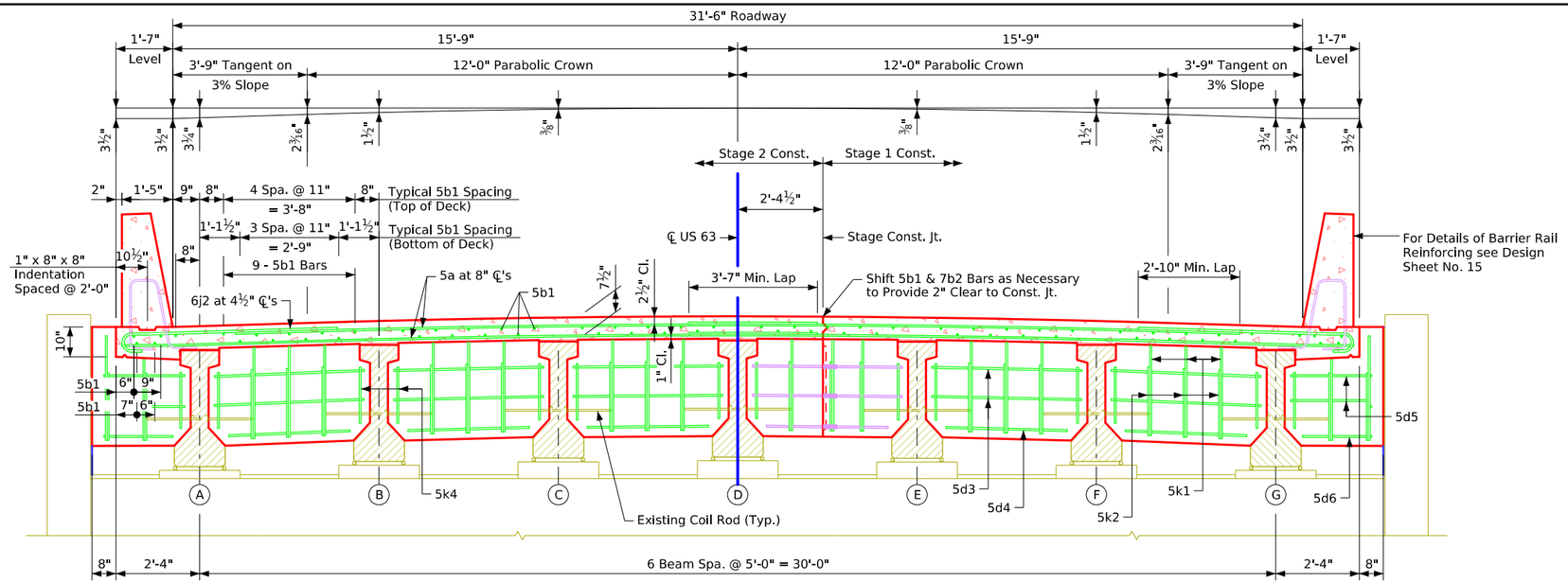
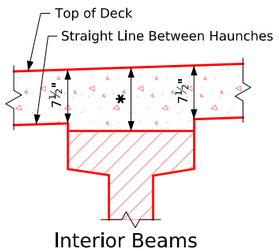


Section Near Abutment

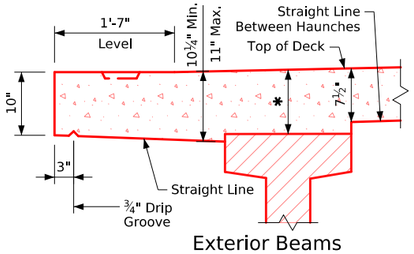
(Looking East)

Note:
For details of abutment diaphragms, see Design Sheet No. 7.

Deck Area (Stage 1) = 9.82 Sq. Ft.
Deck Area (Stage 2) = 12.80 Sq. Ft.
Deck Area does not include the haunch.



Interior Beams



Exterior Beams

Typical Deck and Haunch Detail

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

Superstructure Notes:

The bridge deck as shown includes ½" integral wearing surface.

The abutment concrete is to be placed monolithically with the bridge deck.

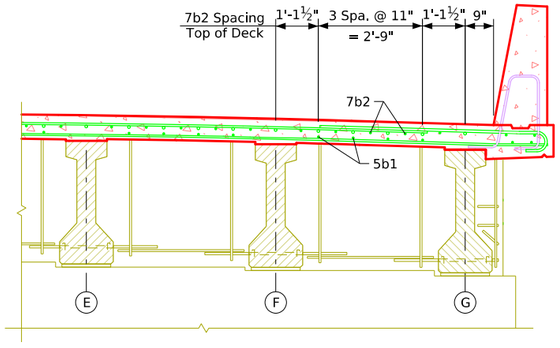
Cost of all resilient joint filler material is to be included in the price bid for "Structural Concrete (Bridge)".

Forms for the deck and barrier rail are to be supported by the prestressed concrete beams.

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

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

Top transverse reinforcing steel is to be parallel to and 2½" clear below top of deck. Bottom transverse reinforcing steel is to be parallel to and 1" clear above bottom of deck. Top and bottom reinforcing steel is to be supported by individual bar chairs spaced at not more than 3'-0" centers longitudinally and transversely, or by continuous rows of bar high chairs or deck bolsters spaced 4'-0" apart. I.M. 451.01 requirements shall apply for bar chairs, bar high chairs, and deck bolsters.



Part Section Near Pier

(Looking East)

Design For Repairs To 0° Skew

180'-0" x 31'-6" Pretensioned Prestressed Concrete Beam Bridge

59'-9½" End Spans — 60'-5" Interior Span

Bridge Deck Cross Section

STA. 121+90.00 (℄ US 63) — Turn-in Date: Sept 2025

Chickasaw County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 126 — Design Sheet No. 8 of 21 — FHWA No. 19780

FILE NO. 32190	ENGLISH	DESIGN TEAM Foth	44' Roadway PPCB (A, B, C, D Beams - Integral Abut.) Cross Section	Standard Sheet 4384 (Mod.)	Chickasaw COUNTY	PROJECT NUMBER BRF-063-8(070)--38-19	SHEET NUMBER V.8	

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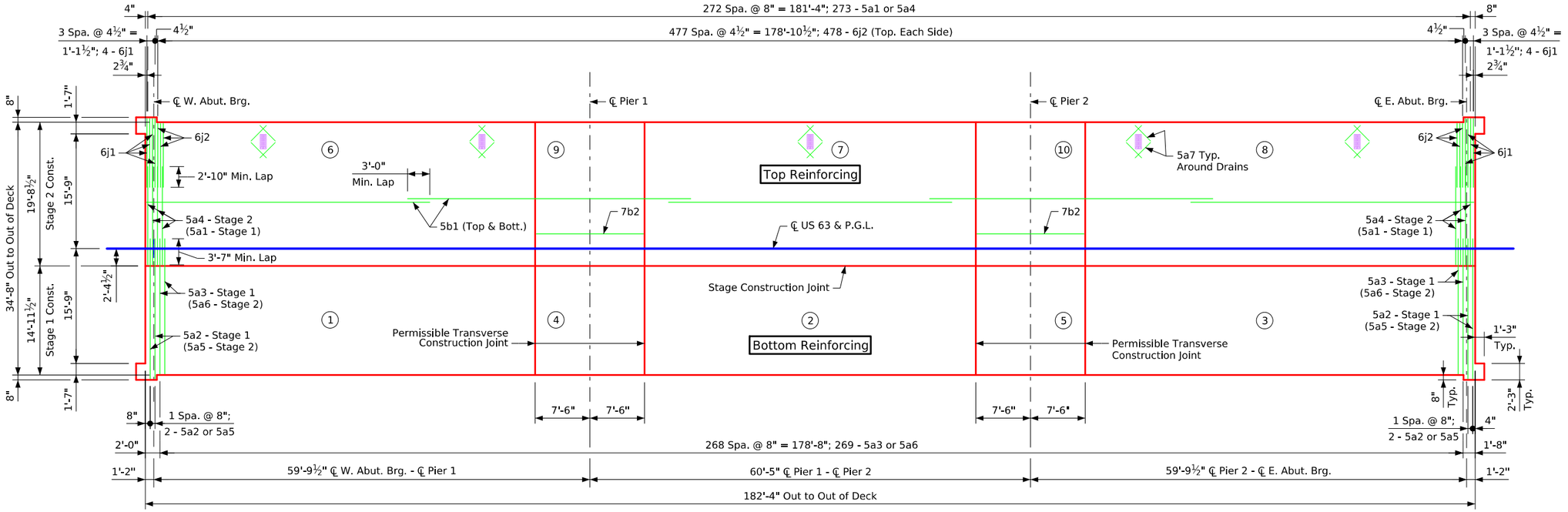


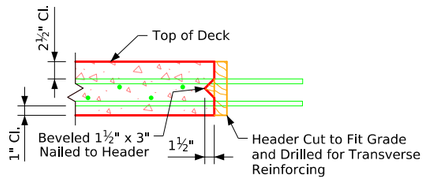
Deck Reinforcing Layout & Concrete Placement Diagram

(Diaphragm Reinforcing Not Shown for Clarity)

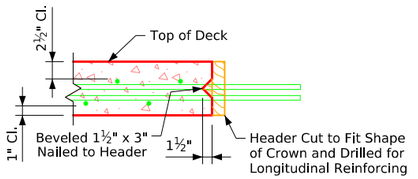
Note:
Concrete deck shall be placed in sections and sequences indicated. An approved alternate procedure is to place the concrete deck for each stage in one continuous pour beginning at one end of the bridge. Alternate procedures for placing deck concrete may be submitted for approval together with a statement of the proposed method and evidence that the Contractor possesses the necessary equipment and facilities to accomplish the required results. The Bridge Engineer shall review any alternate procedures. The cost of any additional analysis and plan modifications shall be paid for by the Contractor. The Engineer shall determine if a retarding admixture is required to maintain plasticity of the concrete deck during placement.

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

Bridge deck finishing machine screed rails shall not be placed on previously poured stages of the deck or on the decks of existing structures. Screed rails shall ordinarily be placed on beam overhang formwork or, when necessary due to space limitations, directly over a beam. The Contractor is responsible for the structural adequacy and functionality of the support system for the screed rail and finishing machine.



Stage Construction Joint



Permissible Transverse Deck Construction Joint

Design For Repairs To 0° Skew

180'-0" x 31'-6" Pretensioned Prestressed Concrete Beam Bridge

59'-9½" End Spans — 60'-5" Interior Span

Bridge Deck Plan

STA. 121+90.00 (℄ US 63)

Turn-in Date: Sept 2025

Chickasaw County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 126 | Design Sheet No. 9 of 21 | FHWA No. 19780

FILE NO. 32190	ENGLISH	DESIGN TEAM Foth	Chickasaw COUNTY	PROJECT NUMBER BRF-063-8(070)--38-19	SHEET NUMBER V.9

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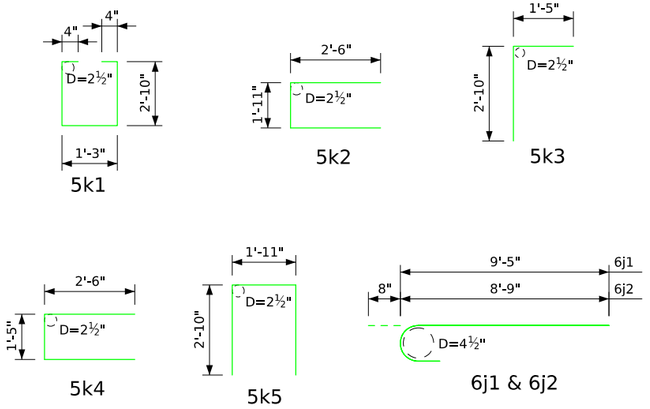
Bent Bar Details



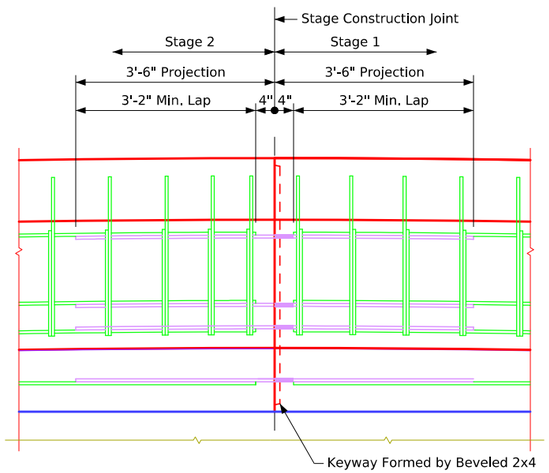
Note: All dimensions are out to out. D= Pin diameter

Concrete Placement Quantities

Location	Structural Concrete	HPC Structural Concrete
Backwall, Stage 1 2 @ 0.6	1.2	---
Backwall, Stage 2 2 @ 0.7	1.4	---
Section 1, Deck & Abut. Diaph.	---	24.0
Section 2, Deck	---	16.8
Section 3, Deck & Abut. Diaph.	---	24.0
Section 4, Deck	---	5.6
Section 5, Deck	---	5.6
Section 6, Deck & Abut. Diaph.	---	31.3
Section 7, Deck	---	22.0
Section 8, Deck & Abut. Diaph.	---	31.3
Section 9, Deck	---	7.3
Section 10, Deck	---	7.3
Total (CY)	2.6	175.2

Epoxy Coated Reinforcing Steel Bar List Deck, Abut. Backwall & Abut. Diaphragms

Bar	Location	Shape	No.	Length	Weight
5a1	Deck, Transv. Top, Stage 1		273	12'-8"	3607
5a2	Deck, Transv. Bottom, Stage 1		4	19'-3"	80
5a3	Deck, Transv. Bottom, Stage 1		269	18'-7"	5214
5a4	Deck, Transv. Top, Stage 2		273	13'-6"	3844
5a5	Deck, Transv. Bottom, Stage 2		4	20'-0"	83
5a6	Deck, Transv. Bottom, Stage 2		269	19'-4"	5424
5a7	Deck, at Drains		40	3'-0"	125
5b1	Deck, Longit. Top & Bott.		320	38'-10"	12,961
7b2	Deck, Longit. Top at Piers		62	14'-8"	1859
5d1	Abut. Diaph. Longit., Stage 1		12	15'-1"	189
5d2	Abut. Diaph. Longit., Stage 2		12	19'-10"	248
5d3	Abut. Diaph. Longit		20	4'-2"	87
5d4	Abut. Diaph. Longit.		10	3'-7"	37
5d5	Abut. Diaph. Longit., Ends		8	2'-5"	20
5d6	Abut. Diaph. Longit., Ends		4	2'-1"	9
5g1	Abut. Backwall, Longit., Stage 1		4	15'-1"	63
5g2	Abut. Backwall, Longit., Stage 2		4	19'-10"	83
6j1	Top of Deck Transv. (At Rail)		16	10'-1"	242
6j2	Top of Deck Transv. (At Rail)		956	9'-5"	13,522
5k1	Abut. Diaph. Vert., Between Beams		50	7'-7"	395
5k2	Abut. Diaph. Vert., Between Beams		50	6'-11"	361
5k3	Abut. Diaph. Vert. at Beams		28	4'-3"	124
5k4	Abut. Diaph. Vert. at Beams		28	6'-5"	187
5k5	Abut. Diaph. Vert., Ends		8	7'-7"	63
				Epoxy Reinforcing Total Weight (LB)	48,827



Detail of Mechanical Splice Assemblies

Mechanical Splice Assemblies:

The 5d1 & 5d2 bars in the abutment diaphragms and 5g1 & 5g2 bars in the backwall shall be spliced at the locations shown using mechanical splice assemblies. Mechanical splice assemblies shall also be used in place of the 5d3 & 5d4 bars at the stage construction joint in the abutment diaphragms. Mechanical splice assemblies consist of mechanical splicers and reinforcing splice bars as required to facilitate the use of the mechanical splicer. The mechanical splice assembly used shall meet the requirements of Materials IM 451 Appendix E. Reinforcing splice bars shall be a minimum of ⅝ inch diameters.

All mechanical splice assemblies to be used in the abutment diaphragms and backwall shall be epoxy coated.

The cost of all splice assemblies is to be included in the price bid for "Reinforcing Steel Epoxy Coated" and no separate payment will be made. The weight of mechanical splice assemblies is not included in the quantity shown for "Reinforcing Steel Epoxy Coated". A total of 22 epoxy coated splice assemblies will be required.

Design For Repairs To 0° Skew

180'-0" x 31'-6" Pretensioned Prestressed Concrete Beam Bridge

59'-9½" End Spans 60'-5" Interior Span

Superstructure Quantities

STA. 121+90.00 (℄ US 63) Turn-in Date: Sept 2025

Chickasaw County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 126 Design Sheet No. 10 of 21 FHWA No. 19780

FILE NO. 32190	ENGLISH	DESIGN TEAM Foth	Intergal Abut. "A", "B" Beams - Bar List & Super. Details - 0° Skew	Standard Sheet 4514 (Mod.)	Chickasaw COUNTY	PROJECT NUMBER BRF-063-8(070)--38-19	SHEET NUMBER V.10	

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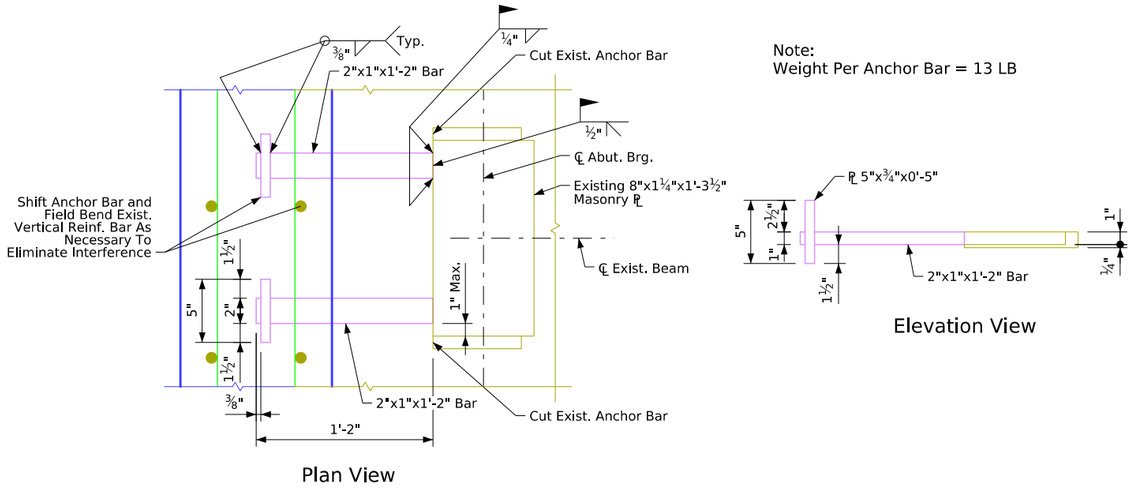
Revision 01-23: Sheet format update.
IntegralBridges.dgn - 4514 - This Sheet Re-Issued 09-2023.

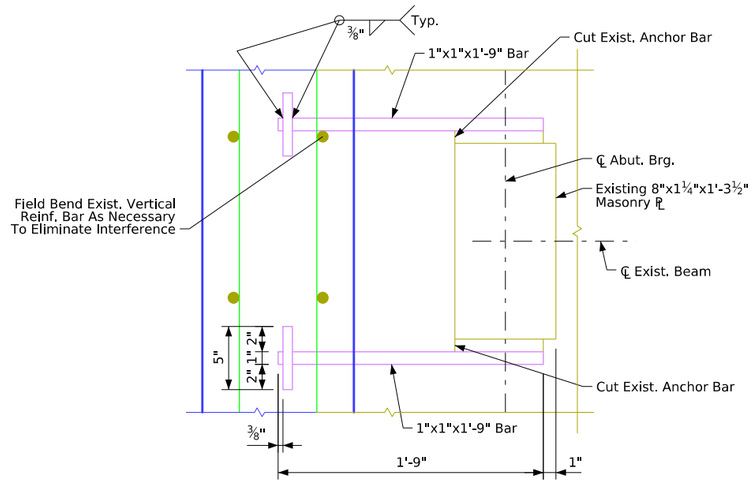


Plan View

Note:
Weight Per Anchor Bar = 13 LB

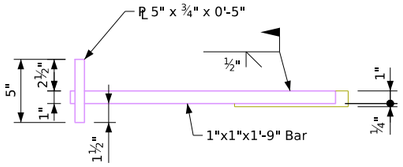
Elevation View

Abutment Bearing Anchorage Repair Details



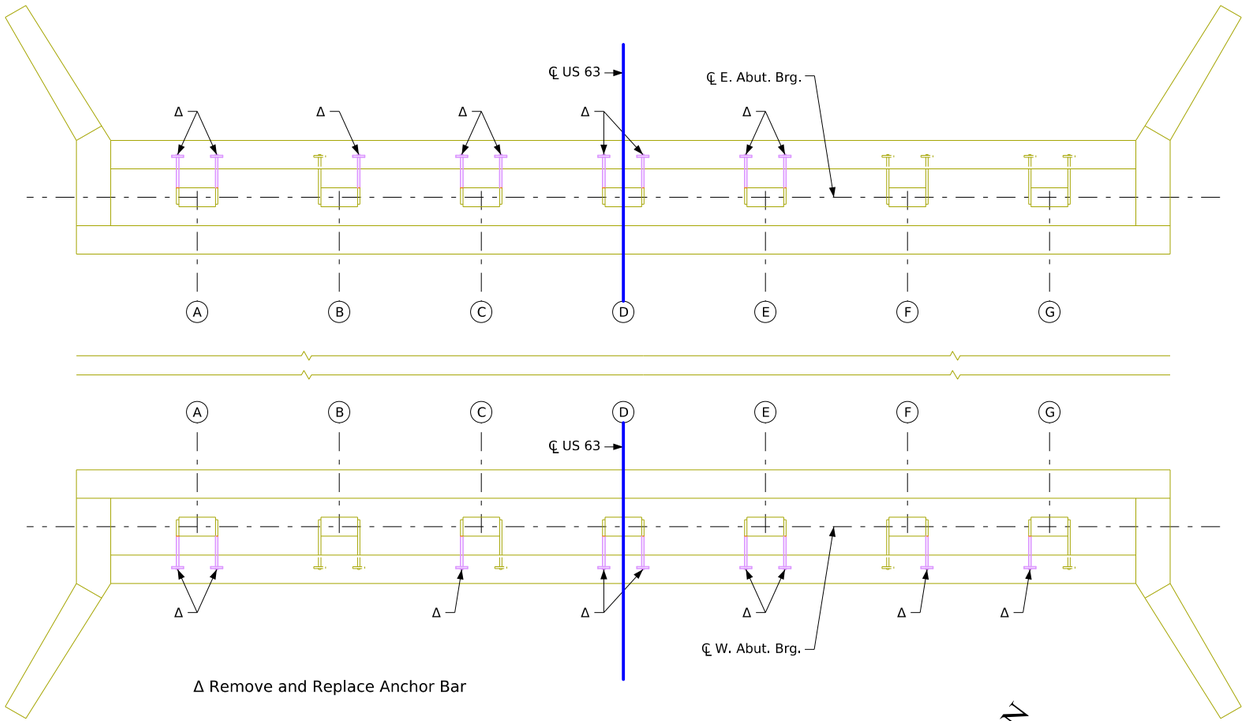
Plan View

Note:
Weight Per Anchor Bar = 11 LB



Elevation View

Abutment Bearing Anchorage Alternate Repair Details



Δ Remove and Replace Anchor Bar

Abutment Bearing Anchorage Repair Plan

Structural Steel	
Weight (18 Anchor Bars)	234 LB
Weight - Alternate Detail (18 Anchor Bars)	198 LB

Notes:
Material for anchor bars and plates shall conform to ASTM A36.

Anchor bars shall be galvanized after fabrication.

New anchor bars shall be welded following cleaning and blasting of the existing steel bearings and prior to painting.

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

Design For Repairs To 0° Skew

180'-0" x 31'-6" Pretensioned Prestressed Concrete Beam Bridge

59'-9½" End Spans — 60'-5" Interior Span

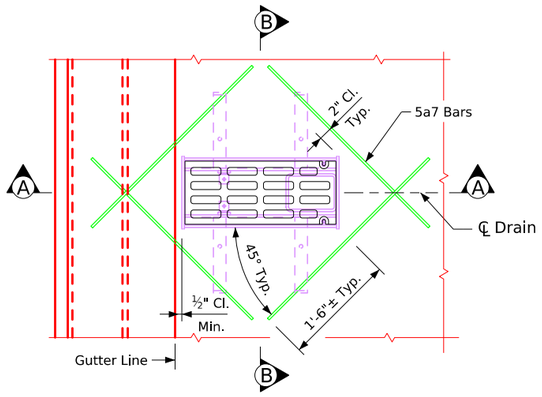
Abutment Bearing Repair Details

STA. 121+90.00 (℄ US 63) — Turn-in Date: Sept 2025

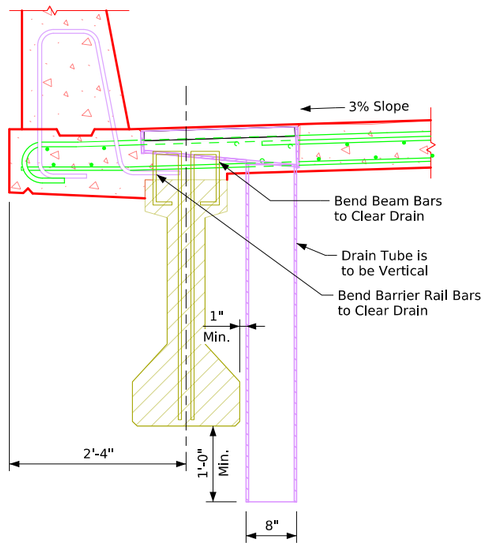
Chickasaw County

IOWA DEPARTMENT OF TRANSPORTATION

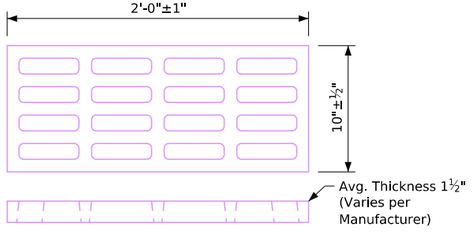
Design No. 126 — Design Sheet No. 11 of 21 — FHWA No. 19780



Part Plan At Drain



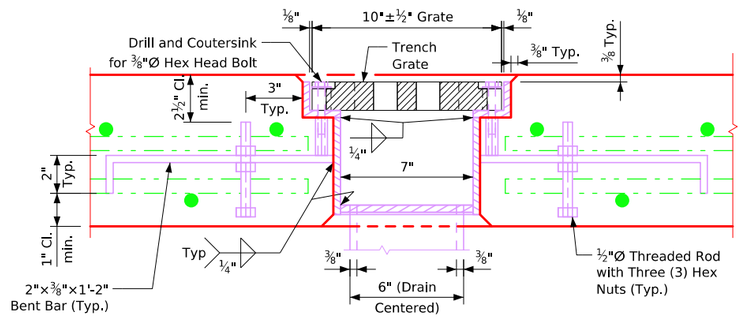
Part Section A-A



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 B Option

(Detail is Shown Using 10" Wide Grate)

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.

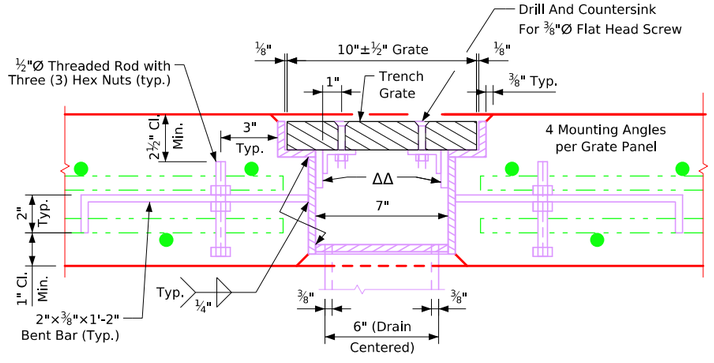
Drains shall be centered over the nearest bottom transverse deck reinforcing bar from the location designated on the situation plan. The bottom transverse deck reinforcing bar shall be cut off to provide 1" clearance from the drain. The top transverse deck reinforcing bars on each side of the drain, 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.



Part Section B-B - Showing Detail A Option

(Detail is Shown Using 10" Wide Grate)

Hex Head Bolt Detail

(Used for Detail B)

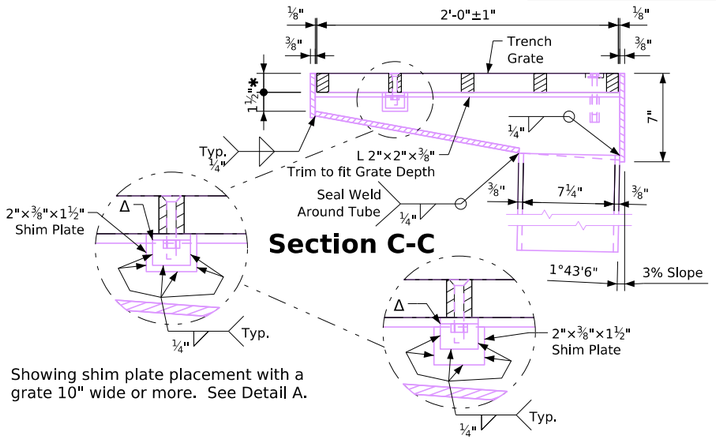
Flat Head Screw Detail

(Used for Detail A)

ΔΔ = Adjust shim plate according to width of grate.

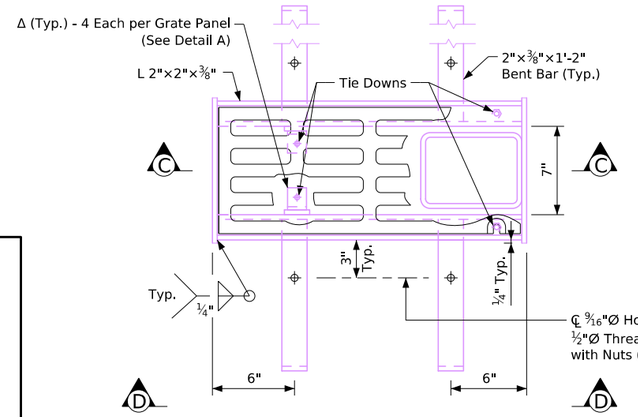
✱ = Depth based on trench grate manufacturer.

Δ = L 1¾"×1¼"×¼"×0'-1½" long (Typ. - See Detail A).



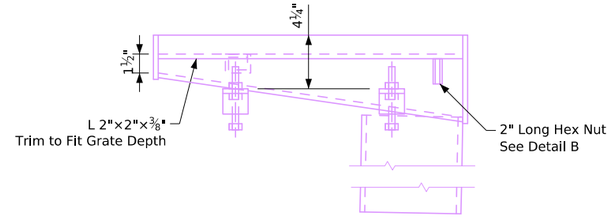
Showing shim plate placement with a grate 10" wide or more. See Detail A.

Showing shim plate placement with a grate less than 10" wide. See Detail A.



Plan View of Drain Trench

(Grate Tie Downs Show Both Detail A and Detail B)



Side View D-D

Design For Repairs To 0° Skew

180'-0" x 31'-6" Pretensioned Prestressed Concrete Beam Bridge

59'-9½" End Spans — 60'-5" Interior Span

Aesthetic Drain Details

STA. 121+90.00 (℄ US 63)

Turn-in Date: Sept 2025

Chickasaw County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 126 — Design Sheet No. 12 of 21 — FHWA No. 19780

FILE NO. 32190	ENGLISH	DESIGN TEAM Foth	Aesthetic Deck Drain Details	Standard Sheet 1054 (Mod.)	Chickasaw COUNTY	PROJECT NUMBER BRF-063-8(070)--38-19	SHEET NUMBER V.12

Redrawn 11-00.
MiscellaneousBridges.dgn - 1054 - This Sheet Re-Issued 11-2023. Sheet format update.

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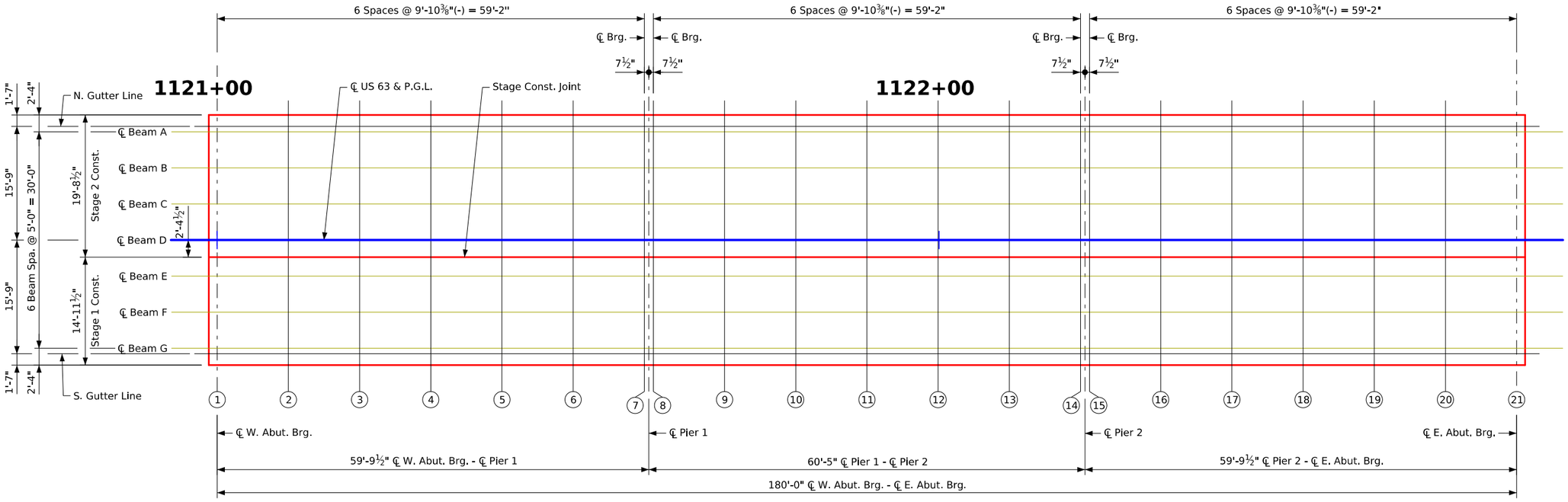
Control Point 100: 9770411.39 N, 12617562.78 E, FENO Monument, Elev. 1150.76

Top of Deck Elevations

	℄ W. Abut. Brg.						℄ Pier 1 Bearings							℄ Pier 2 Bearings							℄ E. Abut. Brg.
Location	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
N. Gutter Line	1140.49	1140.51	1140.54	1140.56	1140.59	1140.62	1140.64	1140.64	1140.67	1140.70	1140.72	1140.75	1140.77	1140.80	1140.80	1140.83	1140.85	1140.88	1140.90	1140.93	1140.96
Beam A	1140.53	1140.56	1140.59	1140.61	1140.64	1140.66	1140.69	1140.69	1140.72	1140.74	1140.77	1140.79	1140.82	1140.85	1140.85	1140.87	1140.90	1140.93	1140.95	1140.98	1141.00
Beam B	1140.68	1140.71	1140.73	1140.76	1140.78	1140.81	1140.83	1140.84	1140.86	1140.89	1140.91	1140.94	1140.97	1140.99	1140.99	1141.02	1141.05	1141.07	1141.10	1141.12	1141.15
Beam C	1140.77	1140.80	1140.83	1140.85	1140.88	1140.90	1140.93	1140.93	1140.96	1140.98	1141.01	1141.03	1141.06	1141.08	1141.09	1141.11	1141.14	1141.16	1141.19	1141.22	1141.24
Δ Beam D, ℄ Rdwy, & P.G.L.	1140.81	1140.83	1140.86	1140.88	1140.91	1140.93	1140.96	1140.96	1140.99	1141.01	1141.04	1141.06	1141.09	1141.12	1141.12	1141.14	1141.17	1141.20	1141.22	1141.25	1141.27
Stage Const. Joint	1140.80	1140.83	1140.85	1140.88	1140.90	1140.93	1140.95	1140.96	1140.98	1141.01	1141.03	1141.06	1141.09	1141.11	1141.11	1141.14	1141.17	1141.19	1141.22	1141.24	1141.27
Beam E	1140.77	1140.80	1140.83	1140.85	1140.88	1140.90	1140.93	1140.93	1140.96	1140.98	1141.01	1141.03	1141.06	1141.08	1141.09	1141.11	1141.14	1141.16	1141.19	1141.22	1141.24
Beam F	1140.68	1140.71	1140.73	1140.76	1140.78	1140.81	1140.83	1140.84	1140.86	1140.89	1140.91	1140.94	1140.97	1140.99	1140.99	1141.02	1141.05	1141.07	1141.10	1141.12	1141.15
Beam G	1140.53	1140.56	1140.59	1140.61	1140.64	1140.66	1140.69	1140.69	1140.72	1140.74	1140.77	1140.79	1140.82	1140.85	1140.85	1140.87	1140.90	1140.93	1140.95	1140.98	1141.00
S. Gutter Line	1140.49	1140.51	1140.54	1140.56	1140.59	1140.62	1140.64	1140.64	1140.67	1140.70	1140.72	1140.75	1140.77	1140.80	1140.80	1140.83	1140.85	1140.88	1140.90	1140.93	1140.96



Top Of Deck Elevations Layout

Note:
Δ Crown line elevation matches profile grade elevation.

Design For Repairs To 0° Skew

180'-0" x 31'-6" Pretensioned Prestressed Concrete Beam Bridge

59'-9½" End Spans — 60'-5" Interior Span

Top of Deck Elevations

STA. 121+90.00 (℄ US 63) — Turn-in Date: Sept 2025

Chickasaw County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 126 — Design Sheet No. 13 of 21 — FHWA No. 19780

FILE NO. 32190	ENGLISH	DESIGN TEAM Foth	Chickasaw COUNTY	PROJECT NUMBER BRF-063-8(070)--38-19	SHEET NUMBER V.13	

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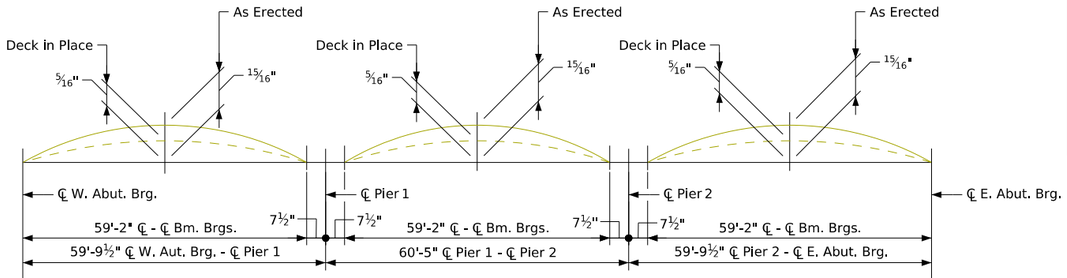
Table of Beam Line Deck Haunch Elevations

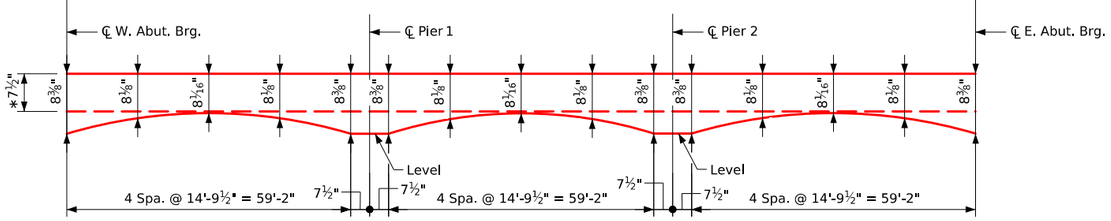
	℄ W. Abut. Brg.						℄ Pier 1 Bearings							℄ Pier 2 Bearings							℄ E. Abut. Brg.
Location	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Beam A	1139.91	1139.96	1140.01	1140.04	1140.06	1140.07	1140.06	1140.07	1140.12	1140.17	1140.20	1140.22	1140.22	1140.22	1140.22	1140.28	1140.32	1140.35	1140.37	1140.38	1140.38
Beam B	1140.06	1140.11	1140.15	1140.19	1140.21	1140.21	1140.21	1140.21	1140.27	1140.31	1140.34	1140.36	1140.37	1140.37	1140.37	1140.42	1140.47	1140.50	1140.52	1140.53	1140.52
Beam C	1140.15	1140.20	1140.25	1140.28	1140.30	1140.31	1140.30	1140.31	1140.36	1140.41	1140.44	1140.46	1140.46	1140.46	1140.46	1140.52	1140.56	1140.59	1140.61	1140.62	1140.62
Beam D	1140.18	1140.24	1140.28	1140.31	1140.33	1140.34	1140.33	1140.34	1140.39	1140.44	1140.47	1140.49	1140.50	1140.49	1140.49	1140.55	1140.59	1140.63	1140.64	1140.65	1140.65
Beam E	1140.15	1140.20	1140.25	1140.28	1140.30	1140.31	1140.30	1140.31	1140.36	1140.41	1140.44	1140.46	1140.46	1140.46	1140.46	1140.52	1140.56	1140.59	1140.61	1140.62	1140.62
Beam F	1140.06	1140.11	1140.15	1140.19	1140.21	1140.21	1140.21	1140.21	1140.27	1140.31	1140.34	1140.36	1140.37	1140.37	1140.37	1140.42	1140.47	1140.50	1140.52	1140.53	1140.52
Beam G	1139.91	1139.96	1140.01	1140.04	1140.06	1140.07	1140.06	1140.07	1140.12	1140.17	1140.20	1140.22	1140.22	1140.22	1140.22	1140.28	1140.32	1140.35	1140.37	1140.38	1140.38

Miscellaneous Data Table

	Beam Line		℄ W. Abut. Brg.						℄ Pier 1 Bearings							℄ Pier 2 Bearings							℄ E. Abut. Brg.
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Anticipated Deflection Due To Deck (In.)	All		0	3/8	9/16	5/8	9/16	3/8	0	0	3/8	9/16	5/8	9/16	3/8	0	0	3/8	9/16	5/8	9/16	3/8	0
Cross Slope Adjustments (In.)	A, B, F & G		±3/16																				
	C & E		±1/16																				
	D		0																				
Allowable Field Haunch (In. & Ft.)	A, B, F & G	Max.	2 (0.167)																				
		Min.	- 5/16 (-0.026)																				
	C & E	Max.	2 (0.167)																				
		Min.	- 7/16 (-0.036)																				
	D	Max.	2 (0.167)																				
		Min.	- ½ (-0.042)																				



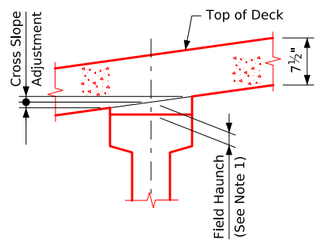
Existing Beam Camber Data



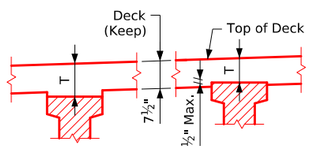
Deck Thickness at Existing Beams (T)

∗Nominal deck thickness

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



Haunch Detail



Deck Thickness Details

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

Note:
Survey and existing plan data were used to determine existing top of beam elevations. Theoretical camber and beam deflections are based on existing plan data. The proposed top of deck elevations will provide a theoretical beam haunch within design parameters. Actual haunches are determined using surveyed top of beam elevations and "Beam Line Haunch Elevations" data. Allowable maximum and minimum "Field Haunch" values shown in inches and decimals feet are given in the "Miscellaneous Data" table. "Cross Slope Adjustment" values will aid the Contractor in determining actual formed haunch dimensions at the edges of the top flange.

Note 1:
To calculate field haunch required at each location, survey the beam tops consistent with the spacings shown on the "Top of Deck Elevations Layout" on Design Sheet No. 13. Subtract the surveyed beam shot from the "Beam Line Haunch Elevation". This value will be the haunch needed (see "Field Haunch" in Haunch Detail). The "Beam Line Haunch Elevation" includes adjustments for deck thicknesses and anticipated deflections. No additional calculations are required. If the field haunch exceeds the maximums and minimums, shown in inches and decimals feet in the miscellaneous data table, adjustments to the grade or additional haunch reinforcement will be required.

Design For Repairs To 0° Skew

180'-0" x 31'-6" Pretensioned Prestressed Concrete Beam Bridge

59'-9½" End Spans — 60'-5" Interior Span

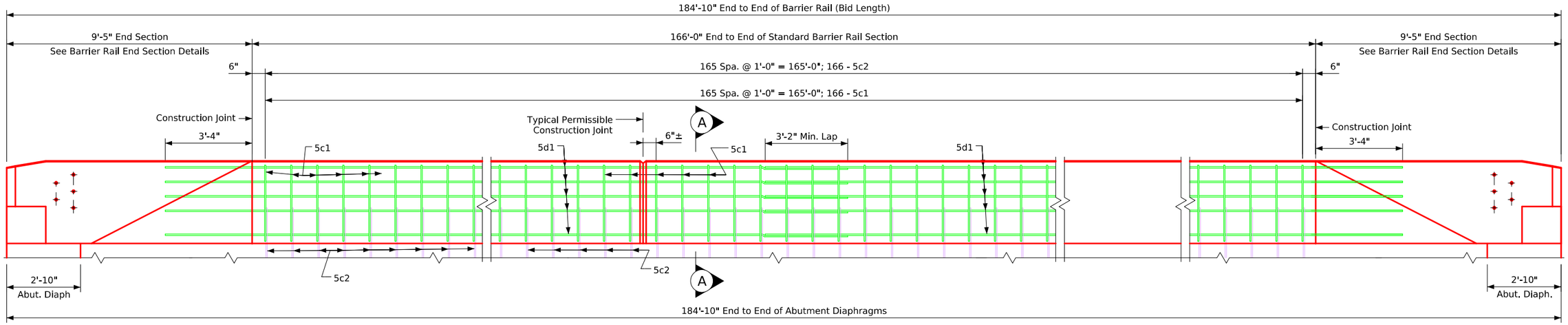
Deck Haunch Data Details

STA. 121+90.00 (℄ US 63) — Turn-in Date: Sept 2025

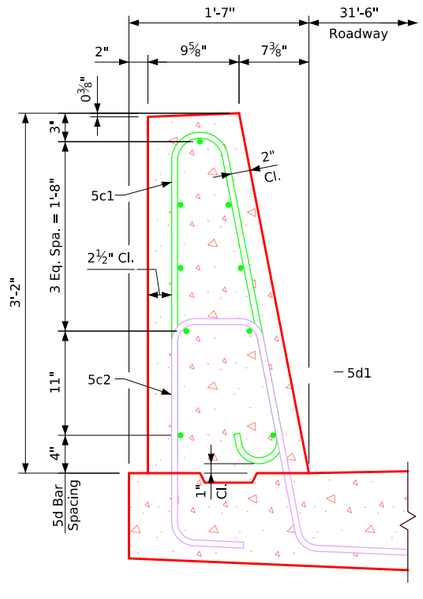
Chickasaw County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 126 — Design Sheet No. 14 of 21 — FHWA No. 19780



Elevation of Barrier Rail



Part Section A-A

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

Design For Repairs To 0° Skew

180'-0" x 31'-6" Pretensioned Prestressed Concrete Beam Bridge

59'-9½" End Spans — 60'-5" Interior Span

Barrier Rail (TL-4) Details

STA. 121+90.00 (℄ US 63)

Turn-in Date: Sept 2025

Chickasaw County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 126 | Design Sheet No. 15 of 21 | FHWA No. 19780

Issued 04-14. Added Stainless Steel Reinforcing Bar List and Changed 5c2 Bars to Stainless Steel.
DeckRailBridges.dgn - 1020SA-1 -This Sheet Re-Issued 05-2024. Revised to Single Slope Barrier Shape. Sheet Format Update. (Sheet Number was Originally 1020SA).

FILE NO. 32190	ENGLISH	DESIGN TEAM Foth	Barrier Rail (TSS TL-4) (Stainless) - Integral Abut. (1 of 2)	Standard Sheet 1020SA-1 (Mod.)	Chickasaw COUNTY	PROJECT NUMBER BRF-063-8(070)--38-19	SHEET NUMBER V.15	

10:58:27 AM 11/11/2024 scd pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\1906301021\Bridge\(70)_Reconstruction - Bridge Deck Replacement\SHT_19063070_126_19780_Z02.dgn

Barrier Rail Notes:

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

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

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

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

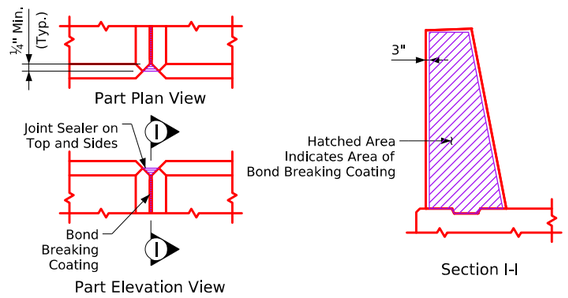
The concrete barrier rail is to be bid on a lineal foot basis. The number of linear feet of barrier rail installed will be paid for at the contract price per lineal foot based on plan quantities. Price bid for concrete barrier railing shall be full compensation for furnishing all material, excluding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

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

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

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

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



Barrier Rail Joint Details

Epoxy Coated Reinf. Steel - Two Rails

Section	Bar	Location	Shape	No.	Length	Weight
Standard Sections	5c1	Rail, Vertical		332	6'-8"	2309
	5d2	Rail, Longitudinal		90	37'-1"	3481
					Epoxy Reinf. Total Weight (LB)	5790

Stainless Steel Reinf. Steel - Two Rails

Section	Bar	Location	Shape	No.	Length	Weight
Standard Sections	5c2	Rail, Vertical		332	7'-3"	2511
					Stainless Steel Reinf. Total Weight (LB)	2511

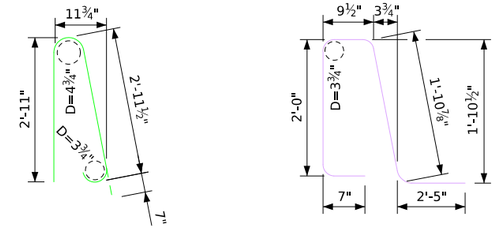
Concrete Placement Summary

Section	Total
Standard Section 332'-0" at 0.130 cu. yd. per ft.	43.2
Total (CY)	43.2

Concrete Barrier Rail Quantities

Item	Unit	Quantity
Concrete Barrier Railing	L.F.	369.7

Bent Bar Details



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

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

Design For Repairs To 0° Skew

180'-0" x 31'-6" Pretensioned Prestressed Concrete Beam Bridge

59'-9½" End Spans — 60'-5" Interior Span

Barrier Rail (TL-4) Details

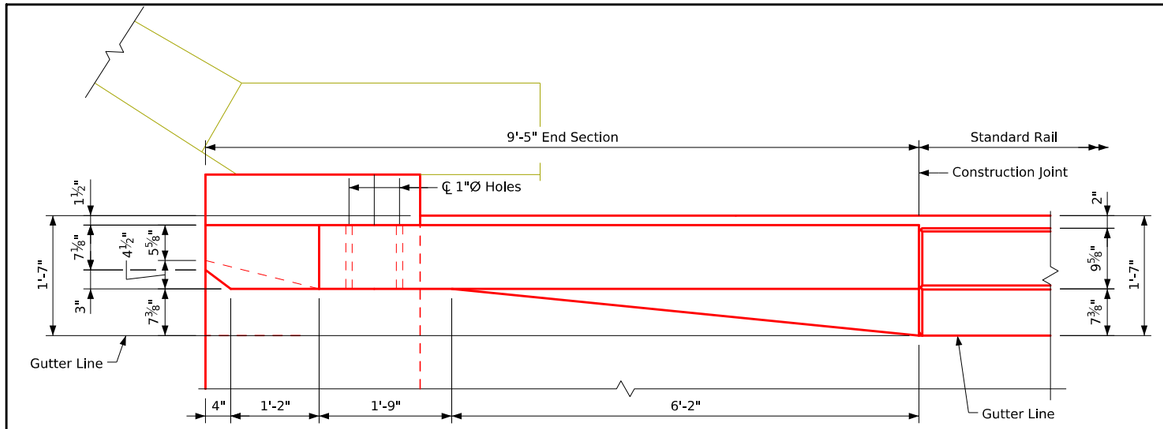
STA. 121+90.00 (℄ US 63) — Turn-in Date: Sept 2025

Chickasaw County

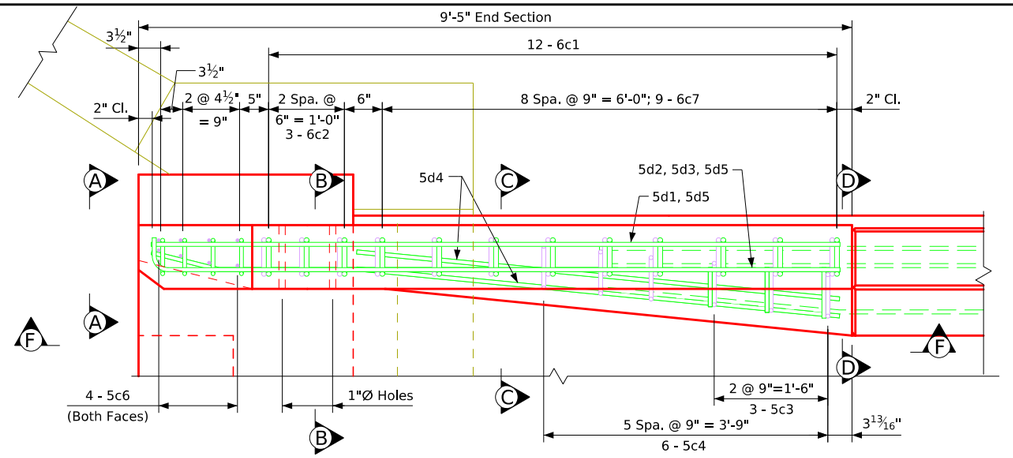
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 126 — Design Sheet No. 16 of 21 — FHWA No. 19780

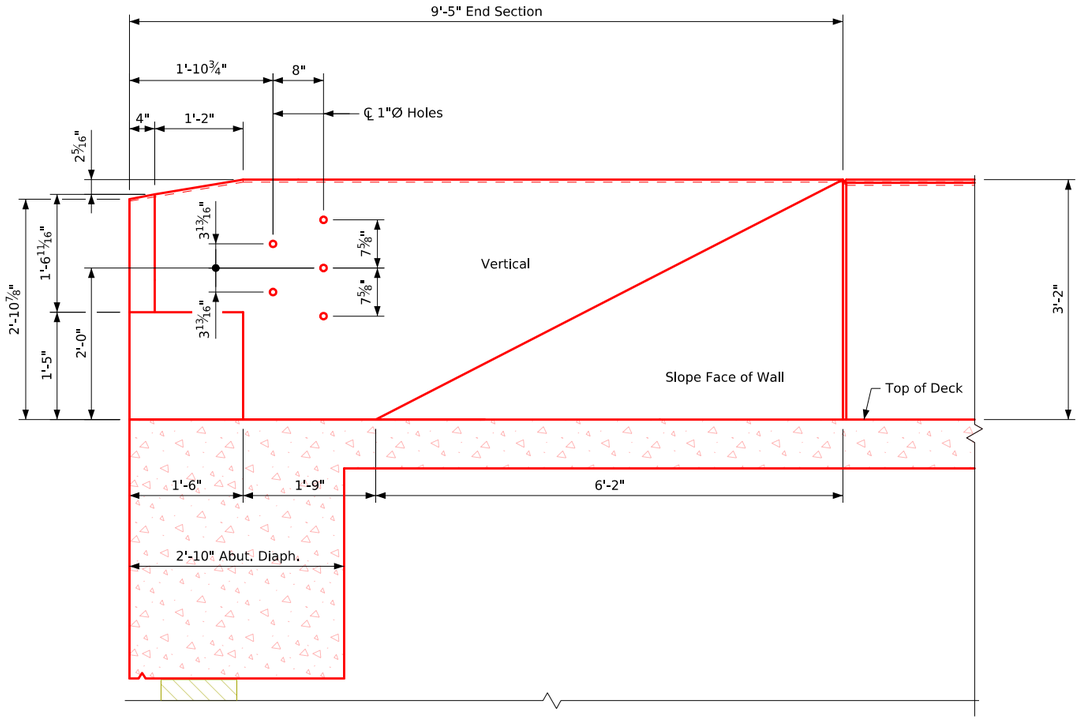
DeckRailBridges.dgn - 1020SA-2 -This Sheet Issued 05-2024. Additional Sheet for Clarity. (Sheet Number was Originally 1020SA).



Part Plan View

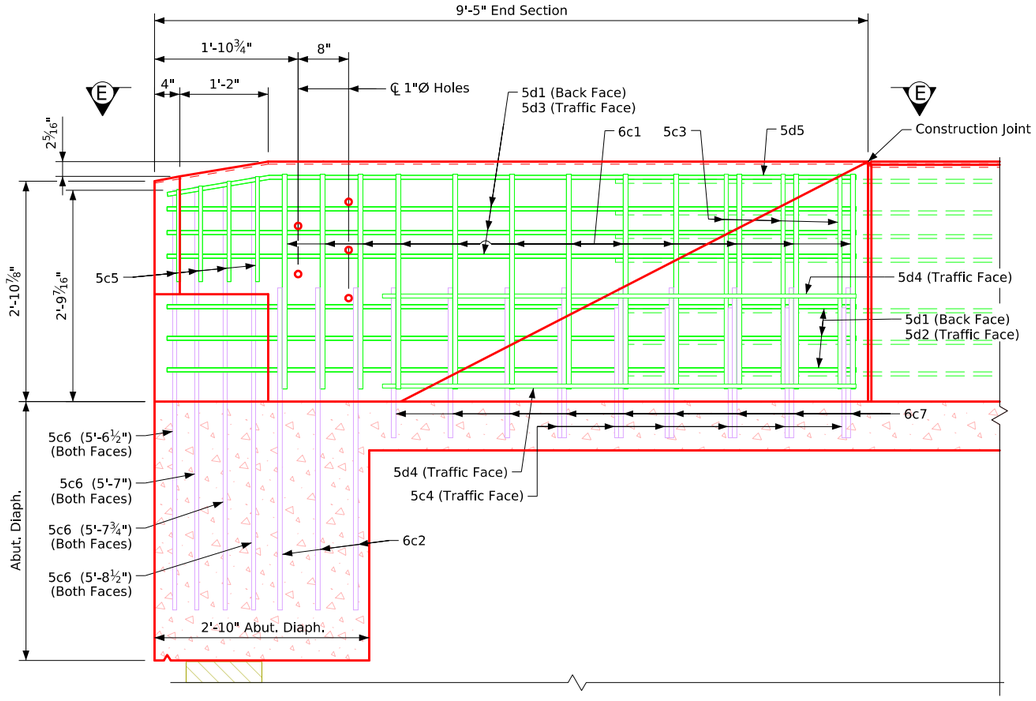


Part View E-E



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

Notes:
For Bar List, Bent Bar Details, View A-A, Sections B-B, C-C, and D-D see Design Sheet No. 18.

The 6c2, 5c4, 5c6 and 6c7 bars are to be placed with the abutment diaphragm and deck.

Design For Repairs To 0° Skew

180'-0" x 31'-6" Pretensioned Prestressed Concrete Beam Bridge

59'-9½" End Spans — 60'-5" Interior Span

Barrier Rail End Section Details

STA. 121+90.00 (℄ US 63) — Turn-in Date: Sept 2025

Chickasaw County

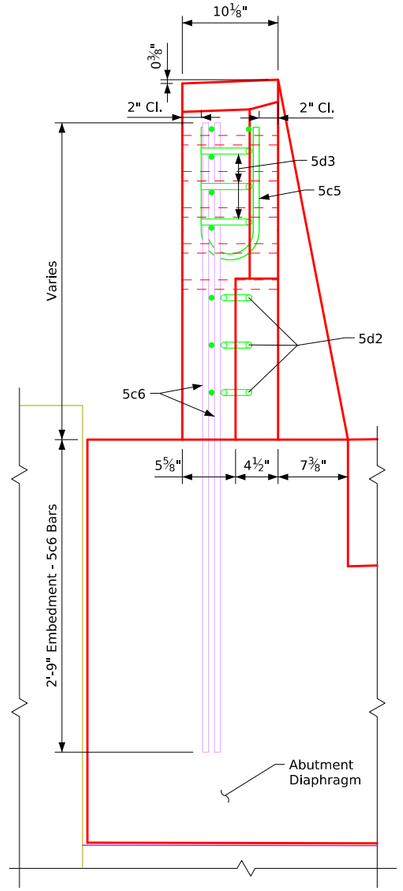
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 126 — Design Sheet No. 17 of 21 — FHWA No. 19780

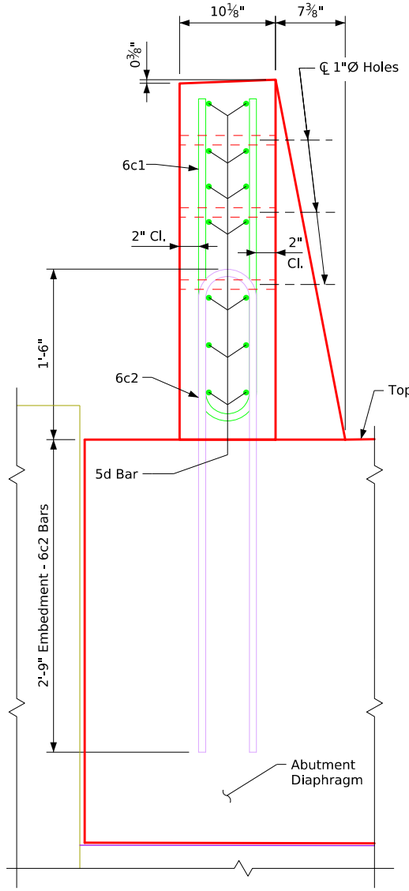
FILE NO. 32190	ENGLISH	DESIGN TEAM Foth	Barrier Rail End Section (Stainless) - (1 of 2)	Standard Sheet 1017S-1 (Mod.)	Chickasaw COUNTY	PROJECT NUMBER BRF-063-8(070)--38-19	SHEET NUMBER V.17	

10:58:28 AM 11/11/2024 scd pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\1906301021\Bridge\(70)_Reconstruction - Bridge Deck Replacement\SHT_19063070_126_19780_Z02.dgn

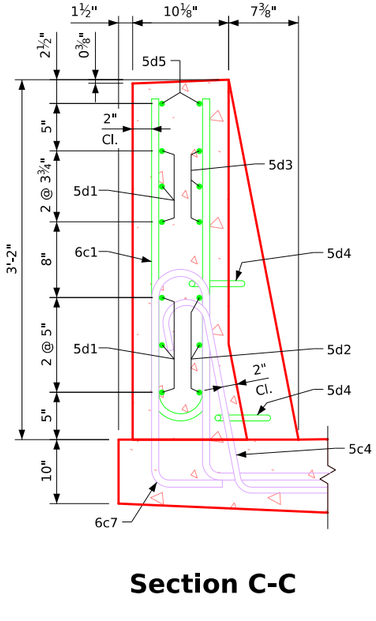
Issued 04-14. Added Stainless Steel Reinforcing Bar List and Changed 6c3, 6c4 & 5c5-10 Bars to Stainless Steel.
DeckRailBridges.dgn - 1017 S-1 - This Sheet Re-Issued 05-2024. Sheet Format Update. (Sheet Number was Originally 1017S).



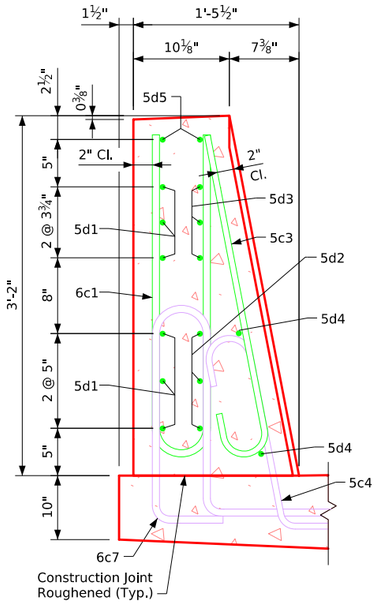
View A-A



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
5d1	Rail, Horizontal (Back Face)		6	9'-1"	57
5d2	Rail, Horizontal (Traffic Face)		3	9'-1"	28
5d3	Rail, Horizontal (Traffic Face)		3	9'-7"	30
5d4	Rail, Horizontal (Traffic Face)		2	6'-3"	13
5d5	Rail, Horizontal (Top)		2	9'-1"	19
				Epoxy Reinforcing Total Weight (LB)	279

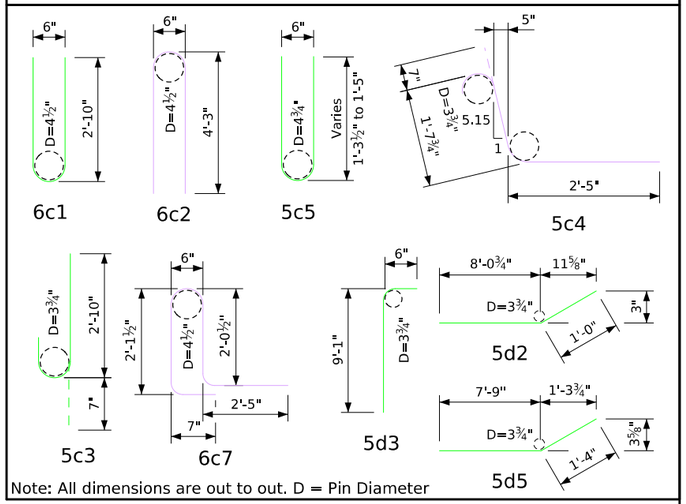
Stainless Steel Reinforcing Steel - One End Section

Bar	Location	Shape	No.	Length	Weight
6c2	Rail, Vertical, at Diaphragm		3	8'-9"	39
5c4	Rail, Vertical (Traffic Face)		6	4'-8"	29
5c6	Rail, Vertical (End)		8	Varies	47
6c7	Rail, Vertical, at Deck		9	7'-4"	99
				Stainless Steel Reinforcing Total Weight (LB)	214

Concrete Placement Summary

Section	Total
Barrier Rail, One End Section	1.0 CY

Bent Bar Details



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

Notes:
For Plan and Elevation see Design Sheet No. 17.

The 6c2, 5c4, 5c6 and 6c7 bars are to be placed with the abutment diaphragm and deck.

Design For Repairs To 0° Skew

180'-0" x 31'-6" Pretensioned Prestressed Concrete Beam Bridge

59'-9½" End Spans — 60'-5" Interior Span

Barrier Rail End Section Details

STA. 121+90.00 (℄ US 63) — Turn-in Date: Sept 2025

Chickasaw County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 126 — Design Sheet No. 18 of 21 — FHWA No. 19780

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

FILE NO. 32190	ENGLISH	DESIGN TEAM Foth	Barrier Rail End Section (Stainless) - (2 of 2)	Standard Sheet 1017S-2 (Mod.)	Chickasaw COUNTY	PROJECT NUMBER BRF-063-8(070)--38-19	SHEET NUMBER V.18	

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Beam End Repair Notes:

It is estimated that 5 beam ends will be repaired. The final quantity and limits of beam end areas shall be determined by the Engineer.

The Contractor shall notify the Engineer when concrete removals are complete by each location to allow inspection by the Engineer prior to placement of concrete or repair mortar.

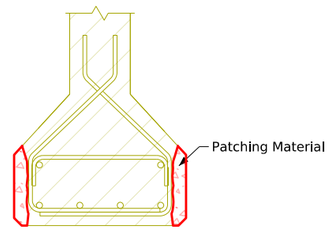
The Contractor shall report tendon or reinforcing bar section loss, exposed during removal work, to the Engineer prior to performing any repair work. The Engineer shall be given adequate time (7 days max.) to determine whether beam reinforcing is required. The Contractor shall incorporate this time into the construction schedule with work in other areas of the project in order to not delay the project.

Removal tools shall be limited to 15 lb chipping hammers and to hand tools without power.

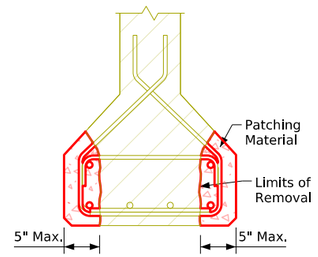
The Contractor shall perform the concrete repair work in accordance with the following procedures and/or as directed by the Engineer:

1. Initiate removal of unsound concrete with ½" saw cuts at perimeter. Do not cross cut at corners. Stop saw cuts short of corners and remove concrete by hand. Adjust depth of saw cut as required to prevent cutting of existing reinforcing steel or strands. Extreme care shall be exercised during concrete removal so that exposed strands and reinforcing bars are not damaged. Any damage done to the strands or bars by the Contractor shall be repaired by the Contractor at no additional cost to the State.
2. Remove deteriorated areas to sound concrete and chip square. Boundaries to be square with no feathered edges. Sandblast concrete surfaces in the repair area and the exposed steel to bare metal. Remove all dust and debris resulting from chipping and blasting by using clean compressd air.
3. If concrete removal results in more than half the diameter of any reinforcing bar or prestressing strand being exposed, then removal shall continue to a minimum of ¾" behind the first interior strand. If removals could exceed the 5" maximum horizontal depth, contact the Engineer prior to removal.
4. Report to the Engineer, prior to repair, section loss of tendons or reinforcing steel exposed during removals.
5. Apply two coats of protective coating/bonding agent (products are listed in the table on this sheet) to exposed prestressing strands and reinforcing bars according to manufacturer's recommendations.
6. Apply patching material. Type of material and application of material depends upon the extent of concrete removal and the two types of repair are to be as follows:
   A. Shallow repair: Shallow repair areas are those where concrete removal did not result in reinforcing bars or prestressing strands being exposed for more than half their diameters. Patching material shall be as listed in the table on this sheet. Patching materials contain corrosion inhibitors. Apply patching material to match original beam surface. Patch need not be formed. Follow manufacturer's instructions and recommendations for mixing, placing and curing.
   B. Regular repair: Regular repair areas are those where concrete removal extended behind the reinforcing bars and/or prestressing strands. These areas are to be placed using forms to match the original beam surface. Patching material shall be one of the grouts as listed in the table on this sheet. Patching materials contain corrosion inhibitors. Follow manufacturer's instructions and recommendations for mixing, placing and curing. Forms are to remain in place for seven days.
7. Sandblast 6' of the ends of the repaired beams as shown on this sheet. The sandblasting shall be a light blast just enough to expose the fine aggregates. Do not sandblast patching material. All costs associated with sandblasting are to be included in the price bid for "Repair Beam Ends".
8. Apply concrete sealer to sandblasted portions of beams ends. Do not seal patching material.

All costs include equipment and materials required to repair deteriorated beam ends as detailed in these plans. These details shall be included in the price bid for "Repair Beam Ends". The Engineer will count each end of each beam properly repaired, and the Contractor will be paid the contract unit price per each repair.

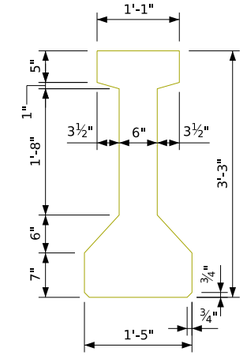


Shallow Repair Areas

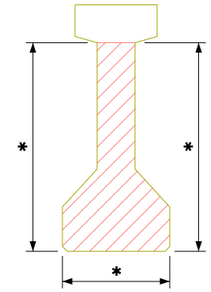


Regular Repair Areas

Note: The repair areas shown are schematic only. The actual area to be repaired will be determined by the Engineer. For location of beam ends to be repaired see beam layout below.

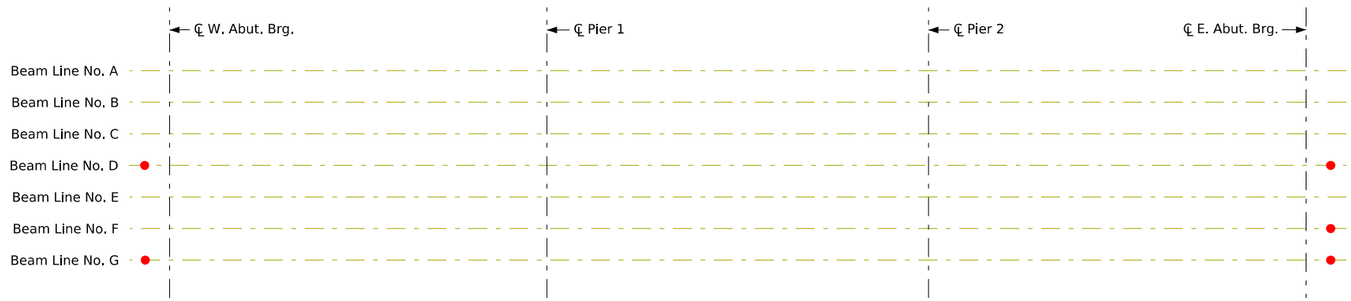


Beam Section



Limits of Sandblasting

✱ Sandblast the surfaces of the bottom flange and web within the limits shown to 6 feet of the beam ends.



● - Regular Beam End Repair Locations

S - Shallow Beam End Repair Locations

Beam Layout

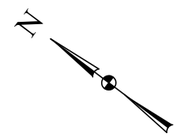


Table of Manufacturers

Manufacturer	Bonding Agent	Shallow Repair	Regular Repair
BASF	Mastermaco P 124	Masteremaco N 350 CI	Masteremaco S 477CI
Euclid	Duralprep A.C.	Verticoat Supreme	Eucorepair
Sika	Sika Armatec 110 Epocem	Sikatop 123 Plus	Sikatop 111 Plus

Design For Repairs To 0° Skew

180'-0" x 31'-6" Pretensioned Prestressed Concrete Beam Bridge

59'-9½" End Spans — 60'-5" Interior Span

Beam End Repair Details

STA. 121+90.00 (℄ US 63) — Turn-in Date: Sept 2025

Chickasaw County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 126 — Design Sheet No. 19 of 21 — FHWA No. 19780

FILE NO. 32190	ENGLISH	DESIGN TEAM Foth	Concrete Beam Repair Details	Standard Sheet 1055	Chickasaw COUNTY	PROJECT NUMBER BRF-063-8(070)--38-19	SHEET NUMBER V.19

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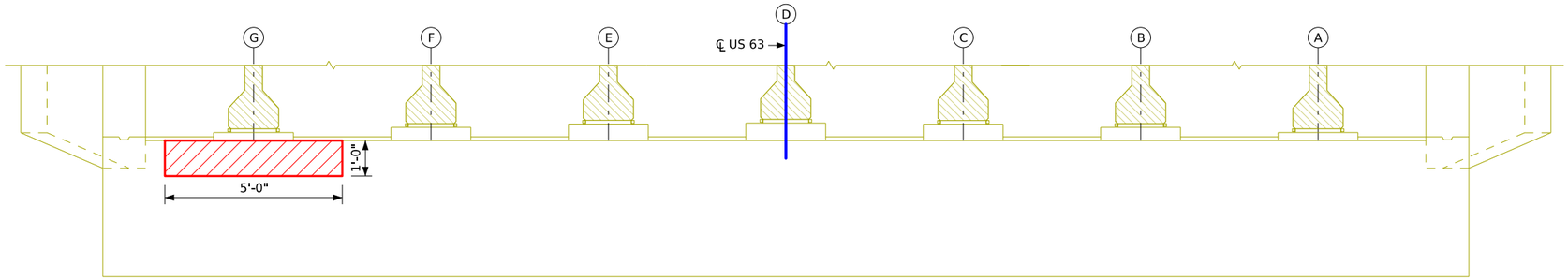
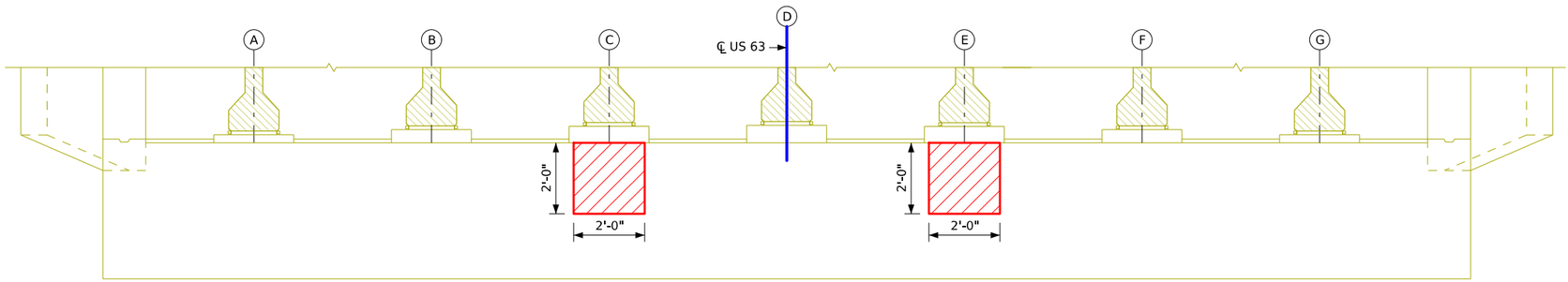


West Abutment Front Elevation

(Looking West)



East Abutment Front Elevation

(Looking East)

Legend

= Shallow Repair

= Regular Repair

See Design Sheet No. 21 for concrete repair details.

Design For Repairs To 0° Skew

180'-0" x 31'-6" Pretensioned Prestressed Concrete Beam Bridge

59'-9½" End Spans — 60'-5" Interior Span

Abutment Footing Repair Details

STA. 121+90.00 (℄ US 63) — Turn-in Date: Sept 2025

Chickasaw County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 126 — Design Sheet No. 20 of 21 — FHWA No. 19780

FILE NO. 32190	ENGLISH	DESIGN TEAM Foth	Chickasaw COUNTY	PROJECT NUMBER BRF-063-8(070)--38-19	SHEET NUMBER V.20	

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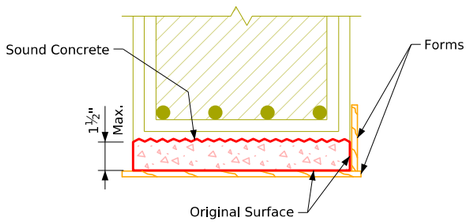
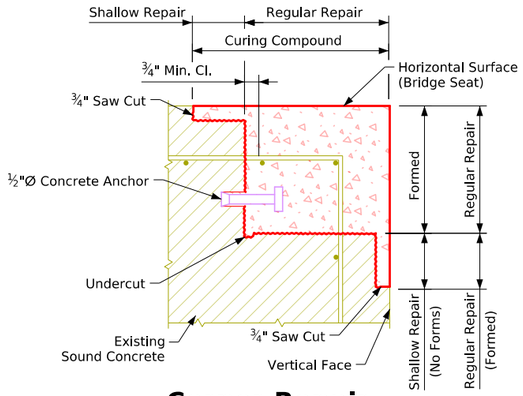
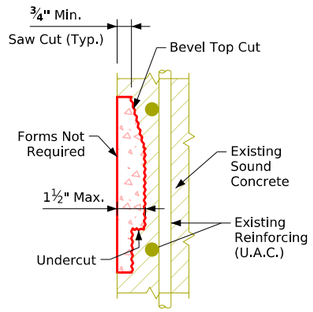


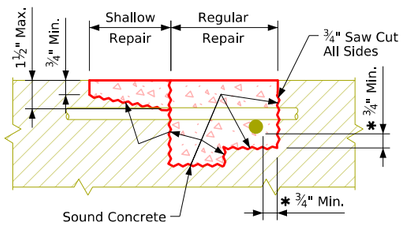
Shallow Repair Bottom Surface



Corner Repair

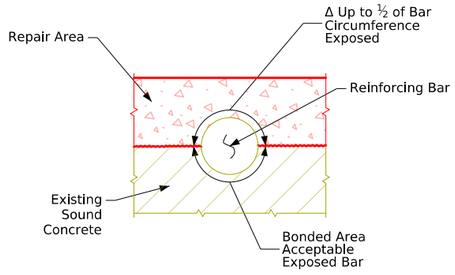


Shallow Repair Vertical Face

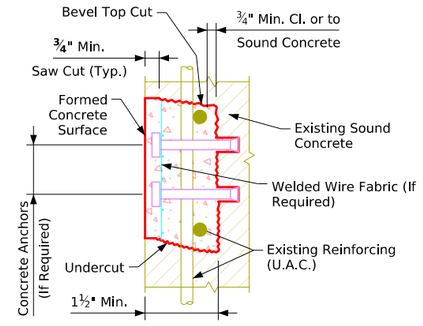


Repair Definition

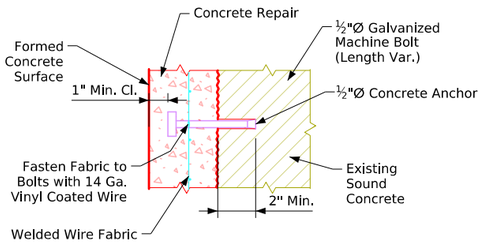
✱ Indicates Clearance for an Un-Bonded Rebar.



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

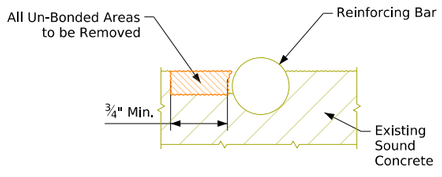


Regular Repair Vertical Face



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"∅ 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.	13
②	Regular repair	Sq. Ft.	0
		Total (SF)	13

Estimated Concrete Repair Quantities

Description	Units	Amount
Concrete Repair	SF	13

Design For Repairs To 0° Skew

180'-0" x 31'-6" Pretensioned Prestressed Concrete Beam Bridge

59'-9½" End Spans — 60'-5" Interior Span

Concrete Repair Details

STA. 121+90.00 (℄ US 63) — Turn-in Date: Sept 2025

Chickasaw County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 126 — Design Sheet No. 21 of 21 — FHWA No. 19780

FILE NO. 32190	ENGLISH	DESIGN TEAM Foth	Concrete Repairs	Standard Sheet 1045	Chickasaw COUNTY	PROJECT NUMBER BRF-063-8(070)--38-19	SHEET NUMBER V.21

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RepairRetrofitBridges.dgn - Drawing - This Sheet Redrawn 09-27-1990.
RepairRetrofitBridges.dgn - Drawing - This Sheet Re-Issued 07-23.