

Iowa DOT Bridges and Structures Bureau Consultant Coordinator:
Lili Yang

Standard Road Plans

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

Design Data Rural

Refer to Situation Plan for Traffic Data Information



PLANS OF PROPOSED IMPROVEMENT ON THE
**INTERSTATE ROAD SYSTEM
CLARKE COUNTY**
Reconstruction - Bridge Deck Replacement

**N.B./S.B. I-35 over White Breast Creek
1.2 miles South of US 34 Jct. in Osceola**

Refer to the Plan Sheets for list of applicable specifications.

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



Revisions

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A.2	Location Map Sheet
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V.20	Estimated Quantities - Design No.227
V.21 - V.40	Design No.227
Road Sheets	
Road Plan	
A.3	Road Title Sheet
C.2	Estimated Roadway Quantities
B.1 - J.12	Roadway Sheets

TOTAL	
80	
PROJECT IDENTIFICATION NUMBER	
22-20-035-010	
PROJECT NUMBER	
IMX-035-1(198)32--02-20	
R.O.W. PROJECT NUMBER	
PROJECT DIRECTORY NUMBER	
2003501022	

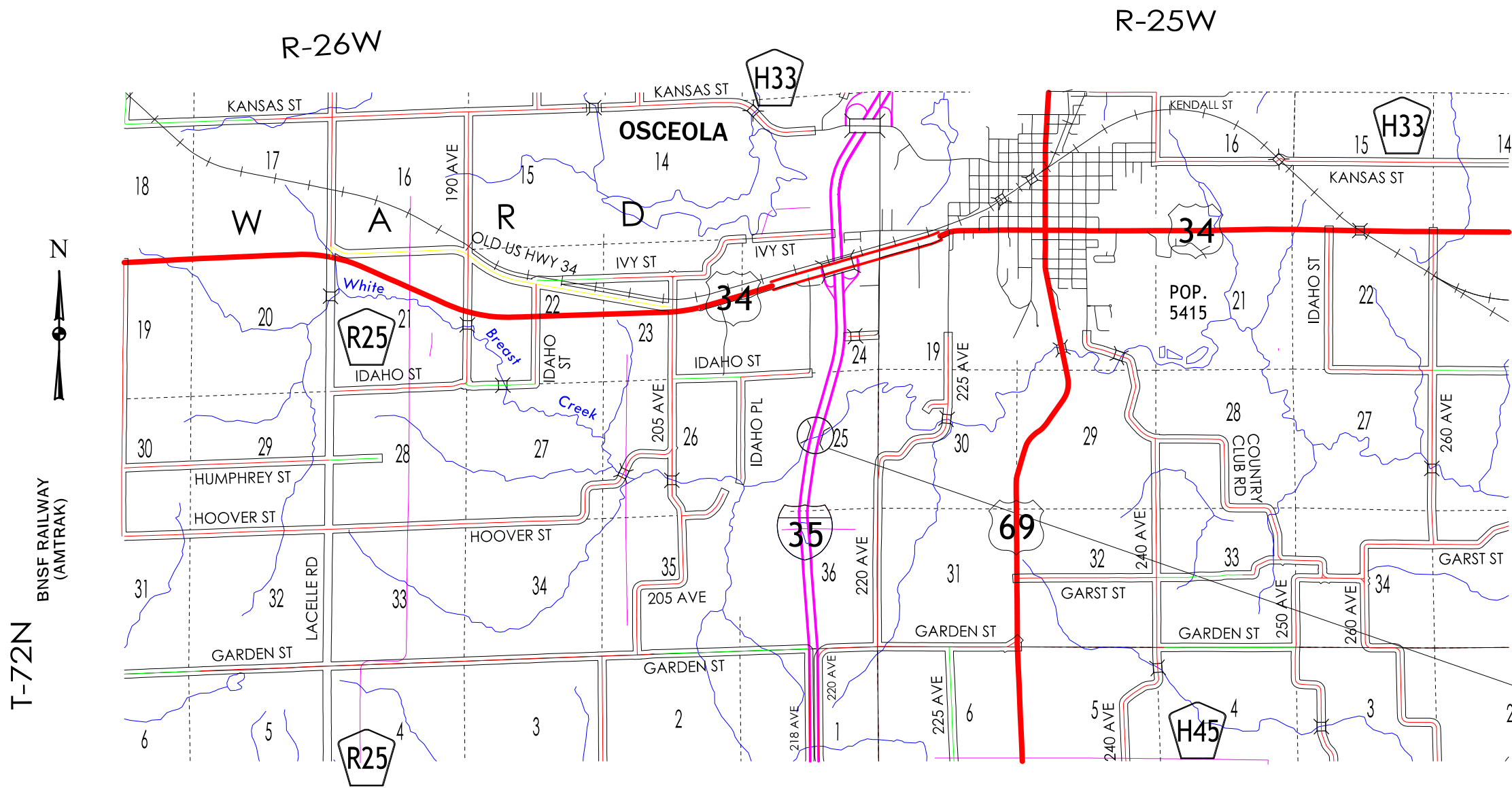
Index of Seals		
Sheet No.	Name	Type
A.1	Matt Johnson	Structural Design
A.3	Doug Parke	Roadway Design

Structural Design

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

Matthew J. Johnson 07-10-2026
Signature Date
Matthew J. Johnson
Printed or Typed Name
My license renewal date is December 31, 2027

Pages or sheets covered by this seal: A.1 through V.40



LEGEND

INTERSTATE HIGHWAY

PRIMARY HIGHWAY-DIVIDED

PRIMARY HIGHWAY

PORTLAND CEMENT CONCRETE ROAD

ASPHALT ROAD

BITUMINOUS ROAD

GRAVEL ROAD

EARTHEN ROAD

INTERSTATE HIGHWAY

UNITED STATES HIGHWAY

STATE HIGHWAY

COUNTY HIGHWAY

RAILROAD

PIPELINE

AIRPORT

HYDROLOGY

BRIDGE

STATE BOUNDARY

COUNTY BOUNDARY

CORPORATE BOUNDARY

TOWNSHIP LINE

SECTION LINE

ROAD NAMES

UNINCORPORATED PLACE

80

65

175

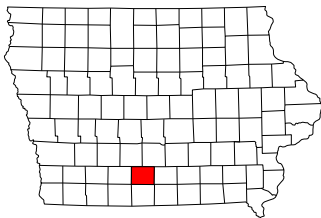
27

Abbey Road

Elwood

Clarke County Location Map

Not To Scale



Estimated Bridge Reconstruction Quantities and Reference Notes - Design #127					
Item No.	Item Code	Item	Unit	Quantities Estimated Design No. 127	Estimate Reference Notes
1	2401-6750001	Removals, As Per Plan	LS	1	Includes all costs associated with removing the existing bridge deck, curbs, barrier rails, and wings. Removal of scheduled items shall be in accordance with Section 2401 of the Standard Specifications. Any damage to any steel or concrete not to be removed shall be the responsibility of the Contractor and repaired at no extra cost to the State.
2	2403-0100010	Structural Concrete (Bridge)	CY	181.3	--
3	2403-1000005	Fiber Reinforcement for Structural Concrete	CY	170.3	Fiber Reinforcing shall be used in bridge deck concrete. Refer to Developmental Specifications for Fiber Reinforcement for Structural Concrete for additional information.
4	2403-1000010	Trial Batch and Test Placement (Fiber Reinforced Concrete)	LS	1	Refer to Developmental Specifications for Fiber Reinforcement for Structural Concrete for additional information.
5	2404-7775005	Reinforcing Steel, Epoxy Coated	LB	60411	--
6	2404-7775009	Reinforcing Steel, Stainless Steel	LB	3804	--
7	2414-6424038	Concrete Barrier Railing, 3'-8"	LF	320.6	Includes material and labor associated with providing and installing the rigid steel conduit, junction boxes and fittings. Includes approximately 158 lf of 2" diameter rigid steel conduit. If placement of concrete is done by the slipforming method, Class BR concrete is required. Cast-in-place barrier rails shall use Class C mix. Price bid for this item shall include the cost of cast-in-place forms if required for placement of the concrete.
8	2499-2300001	Deck Drains	LS	1	Includes all new deck drains. Refer to design sheet 3 for location and design sheet 19 for materials and details of construction. Measurement will be lump sum for all deck drains required as specified in the plans. They payment shall be full compensation for furnishing all material, equipment and labor needed for fabricating and installing the deck drains.
9	2526-8285040	Construction Survey, Location Survey	LS	1	--
10	2533-4980005	Mobilization	LS	1	--
Note: Roadway Quantities shown elsewhere in these plans.					
FILE NO. 32400	ENGLISH	DESIGN TEAM GFT	Clarke COUNTY		
3:03:34 PM	8/25/2026	AJDINKEL	pw:\\projectwise.dot.int.lan:PWMMain\Documents\Projects\2003501022\Bridge\198_Reconstruction - Bridge Deck Replacement\TranSystems\20035198_BR.dgn		

Design For Repair To 27°14'42" (RA)
**143'-0" x 40'-0" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE**
47'-5" & 39'-1" End Spans56'-6" Interior Span
Estimated Quantities
STA. 401+48.04 (I-35 NB)Turn-In Date: August 2026
Clarke County
IOWA DEPARTMENT OF TRANSPORTATION
Design No. 127Design Sheet No. 1 of 19FHWA No. 20140

General Notes:

This design is for repairs to the existing 143'-0 x 40'-0 Pretensioned Prestressed Concrete Beam Bridge. Electronic copies of original design plans will be made available to the Contractor as part of the E-Files supplied with the contract documents.

See Situation Plan for list of repair items.

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

Faint lines on plans indicate existing portions of the bridge.

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

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

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

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

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.

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

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

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

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

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

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

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

Traffic Control Plan

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

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

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

Deck Removal Notes:

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

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

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

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

Specifications:

Design:

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

Construction:

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

Developmental Specifications for Fiber Reinforcement for Structural Concrete.

Design Stresses:

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

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

Stainless reinforce steel in accordance with AASHTO LRFD Section 5, Grade 60 or 75.

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

Working Drawing and Calculation Submittals

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

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

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

No.	Working Drawing Description	Working Drawing File Name Convention For Submittal	Certified by Iowa P.E. (Yes/No)
1	Demolition Plan	198_Clarke_Design127_Demolition Plan.pdf	Yes
2	Beam Survey after Deck Removal	198_Clarke_Design127_Beam Survey after Deck Removal.pdf	No
3	Deck Drains	198_Clarke_Design127_Deck Drains.pdf	No

Design History
at this Site
(Including this design)

Design. No.	Type of Work
2467	Original Design
890	Barrier Rail Retrofit
409	Bridge Overlay and Paving Notch Retrofit
127	Bridge Deck Replacement

Design For Repair To 27°14'42" RA

143'-0" x 40'-0" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE

47'-5" & 39'-1" End Spans56'-6" Interior Span

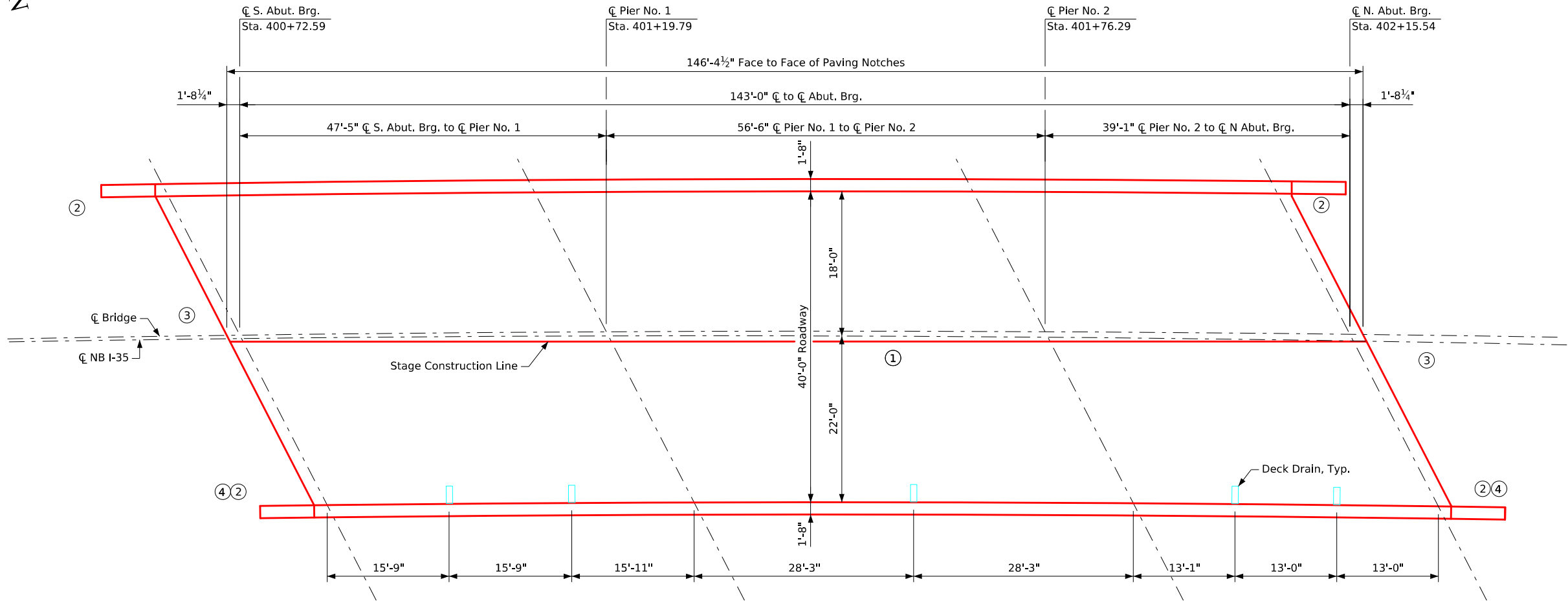
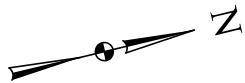
General Notes

STA. 401+48.04 (I-35 NB)Turn-In Date: August 2026

Clarke County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 127Design Sheet No. 2 of 19FHWA No. 20140

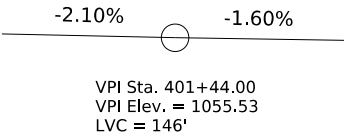


Situation Plan

Repairs shall consist of:

- ① Remove bridge deck and barrier rails and construct new 8½" thick bridge deck and TL-5 single-slope barrier railings.
- ② Remove and replace wings.
- ③ Remove and replace approach pavement as shown in roadway plans.
- ④ Add paved shoulder next to guardrail as shown in roadway plans.

See Design Sheet No. 4 for Construction Staging



Proposed P.G.L.
on $\overline{\text{CL}}$ NB Bridge

Note:
Proposed P.G.L. is on different location than the
existing P.G.L. and differs from existing P.G.L.
based on survey and due to overlay.

Location:

On NB I-35 over White Breast Creek
T-72N R-26W
Section 25
Ward Twp.
Clarke County
Bridge Maint. No. 2031.9R035
FHWA #20140
Latitude 41.009003
Longitude -93.797306

Traffic Estimate

2024 AADT 9,157 V.P.D.
Trucks 33%

Design For Repair To 27°14'42" RA

143'-0" x 40'-0" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE

47'-5" & 39'-1" End Spans 56'-6" Interior Span

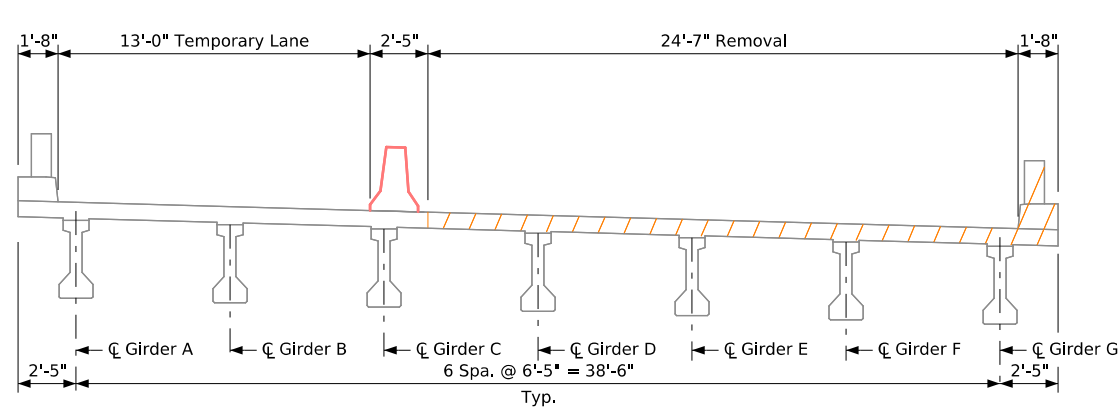
Situation Plan

STA. 401+48.04 (I-35 NB) Turn-In Date: August 2026

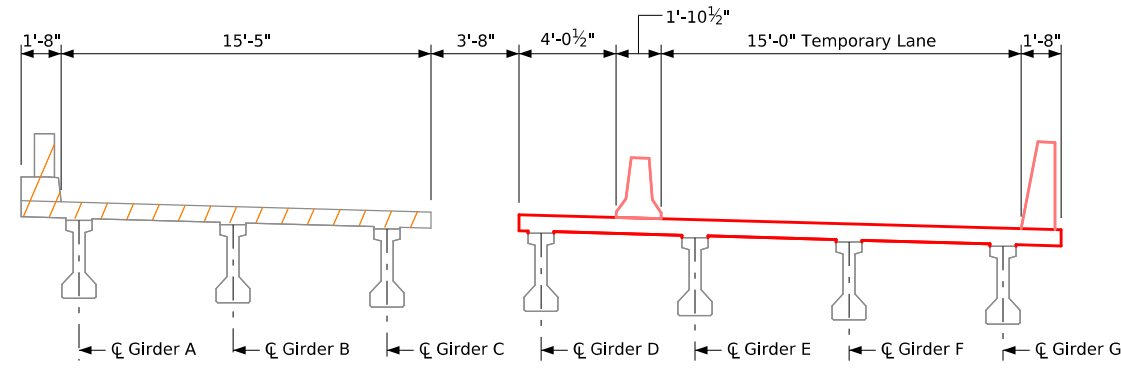
Clarke County

IOWA DEPARTMENT OF TRANSPORTATION

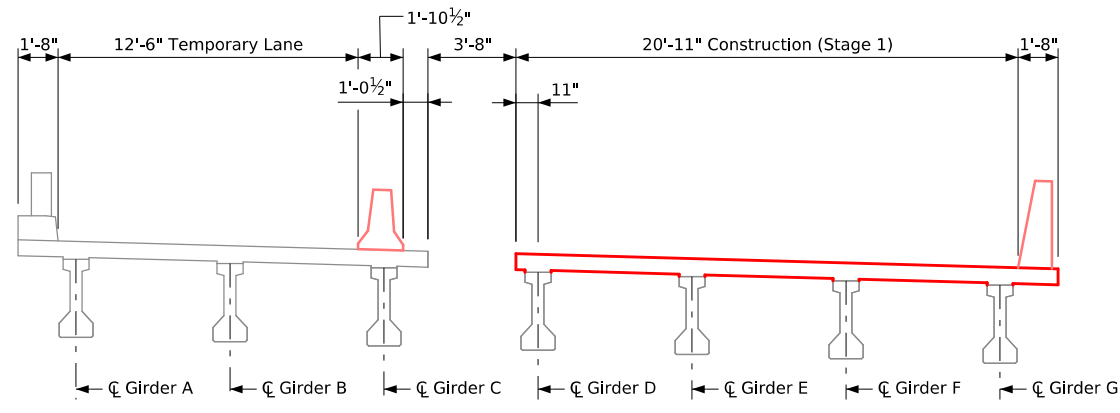
Design No. 127 Design Sheet No. 3 of 19 FHWA No. 20140



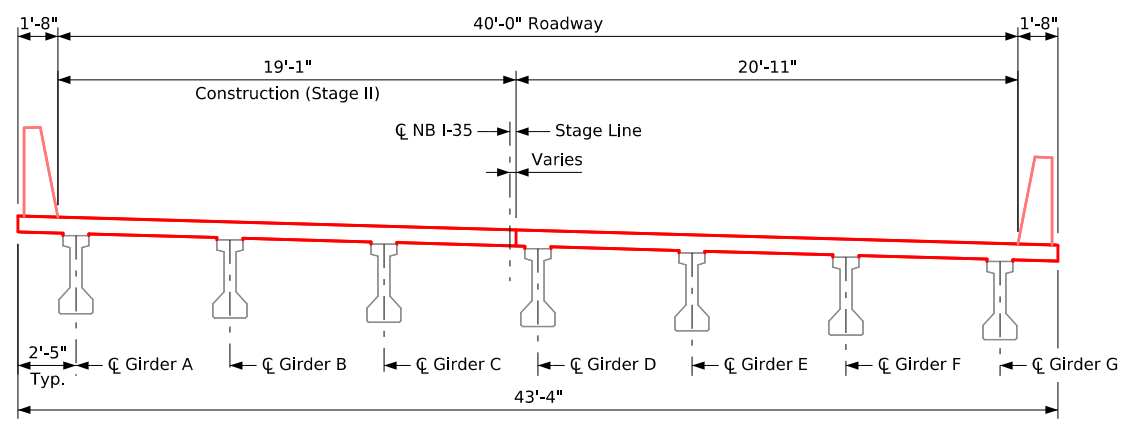
Stage 1 Removal
(Looking North)



Stage 2 Removal
(Looking North)



Stage 1 Construction
(Looking North)



Stage 2 Construction
(Looking North)

Legend

 Removal

Note: Temporary barrier rail shall be pinned to existing bridge deck in Stage 1 only.

Design For Repair To 27°14'42" RA

143'-0" x 40'-0" PRETENSIONED

PRESTRESSED CONCRETE BEAM BRIDGE

47'-5" & 39'-1" End Spans56'-6" Interior Span

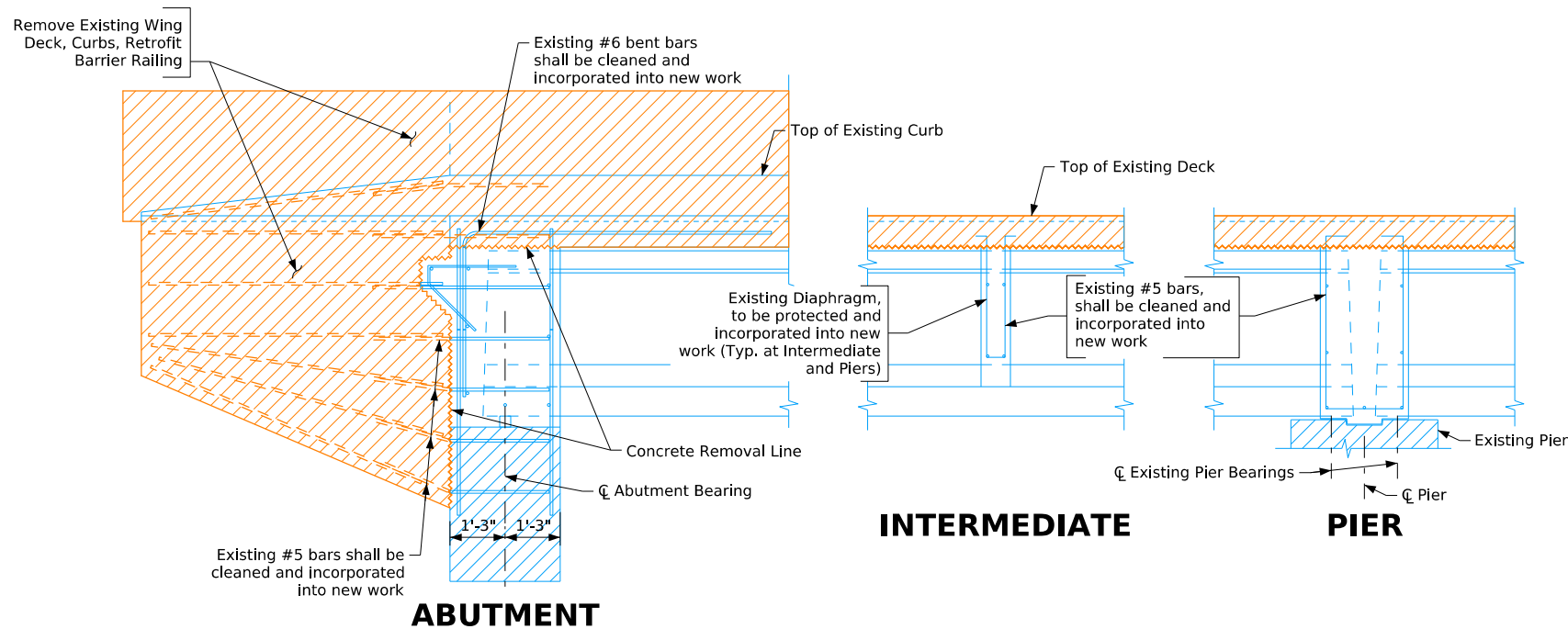
Stage Construction

STA. 401+48.04 (I-35 NB)Turn-In Date: August 2026

Clarke County

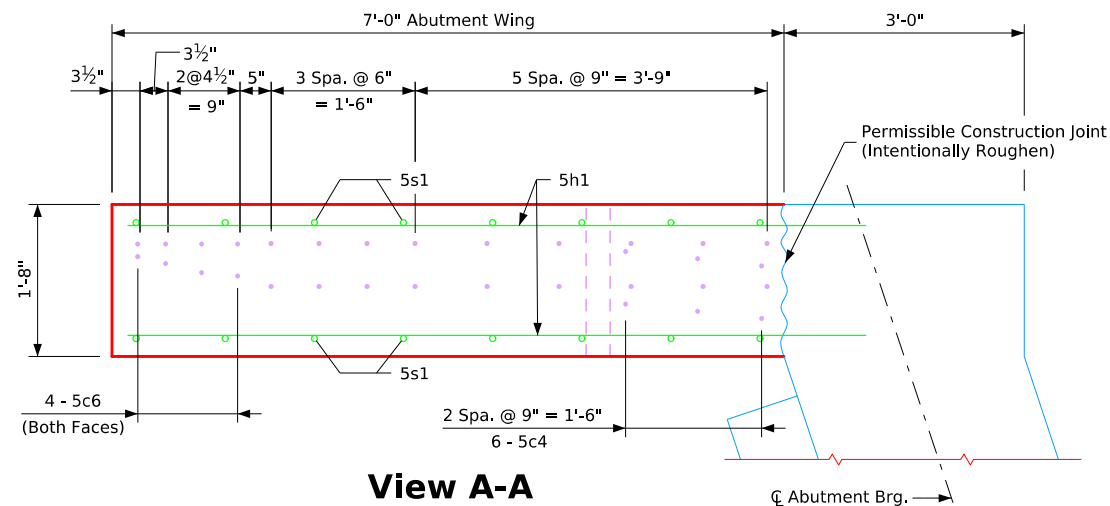
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 127Design Sheet No. 4 of 19FHWA No. 20140

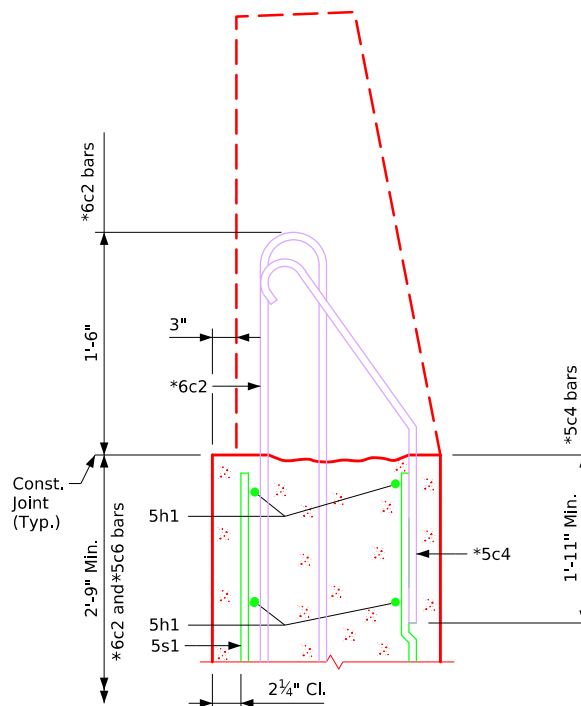


Notes:
For deck removal notes, see Design Sheet 2.

Design For Repair To 27°14'42" RA		
143'-0" x 40'-0" PRETENSIONED		
PRESTRESSED CONCRETE BEAM BRIDGE		
47'-5" & 39'-1" End Spans	56'-6" Interior Span	
Removal Details		
STA. 401+48.04 (I-35 NB)	Turn-In Date: August 2026	
Clarke County		
IOWA DEPARTMENT OF TRANSPORTATION		
Design No. 127	Design Sheet No. 5 of 19	FHWA No. 20140



Note:
Plug 3"Ø PVC Pipe with
Expanding Foam prior
to backfilling behind
Abutments.



* Barrier Rail End Section bars to be placed with Abutment Wing.

See Barrier Rail End Section
Sheet in these plans for
details of reinforcing bars
6c2, 5c4 & 5c6.

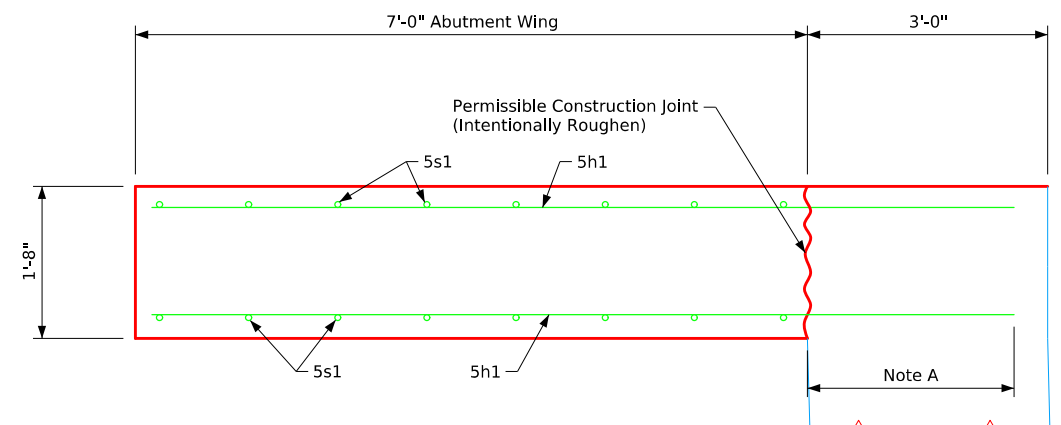
Reinforcing Bar List - One Abut. Wing

Bar	Location	Shape	No.	Length	Weight
5s1	Vertical both faces		14	6'-0	100
5h1	Horizontal both faces		14	7'-7"	111
Reinforcing Steel Epoxy Coated - Total (lbs.)					211

Concrete Placement Summary

Concrete	Total
One abutment wing	2.7
Total Structural Concrete, Bridge (CY)	10.9

Note A:
5h1 shall be set as Dowels
in drilled holes in Existing Concrete.
Holes are to be a minimum of 10" deep.
See "Dowel Setting Note".



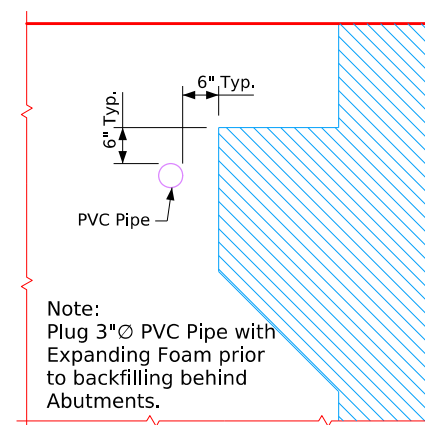
Section C-C

DOWEL SETTING NOTE:

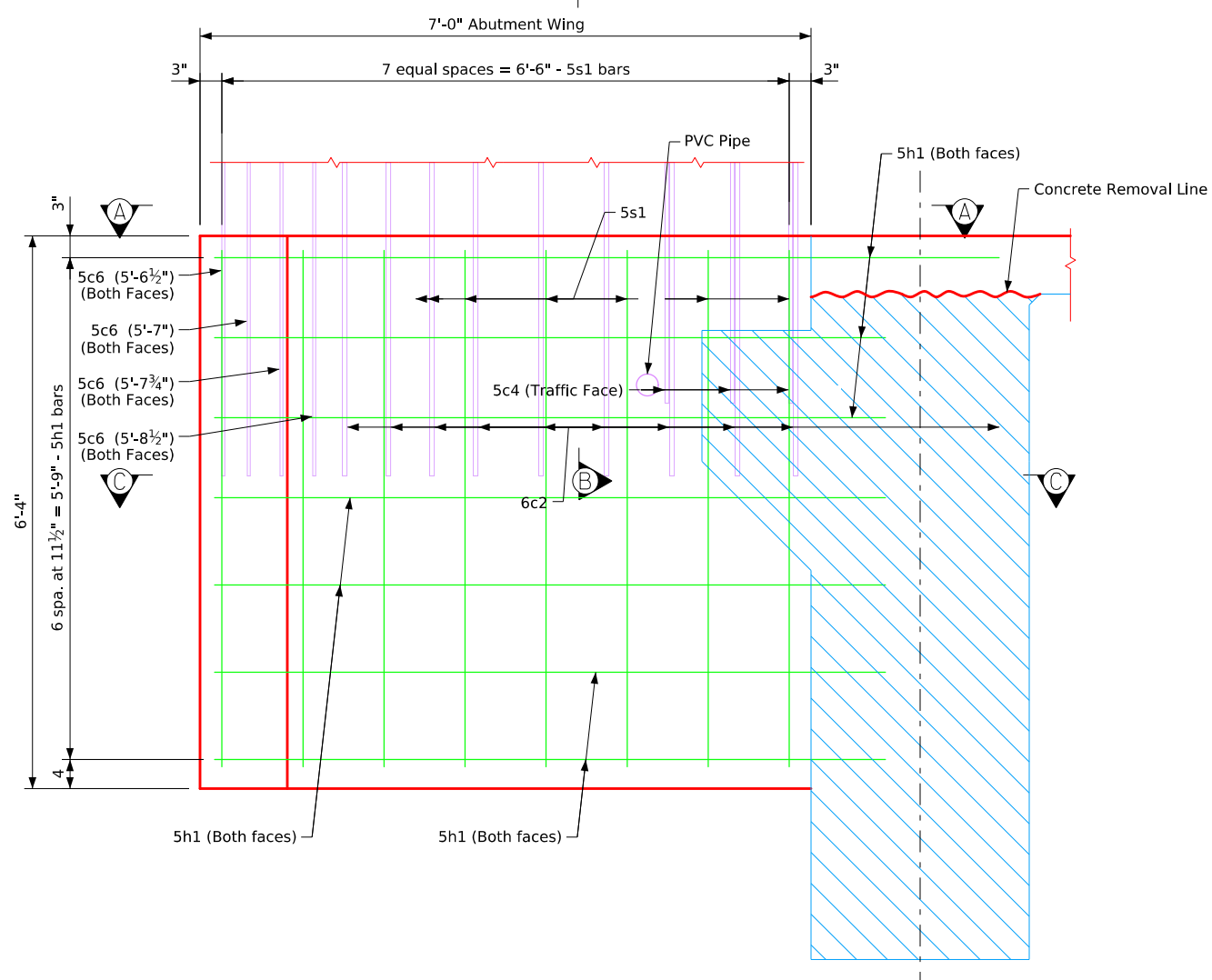
The 5h1 in the abutment wing and 6c2 and 5c4 bars in the barrier rail end section shall be set as dowels in drilled holes. Holes are to be 10" deep. The dowels shall be installed in accordance with the manufacturer's recommendations. Either of the following shall be used as a bonding agent for the vertical dowels, but only System "A" may be used for the horizontal dowels:

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

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

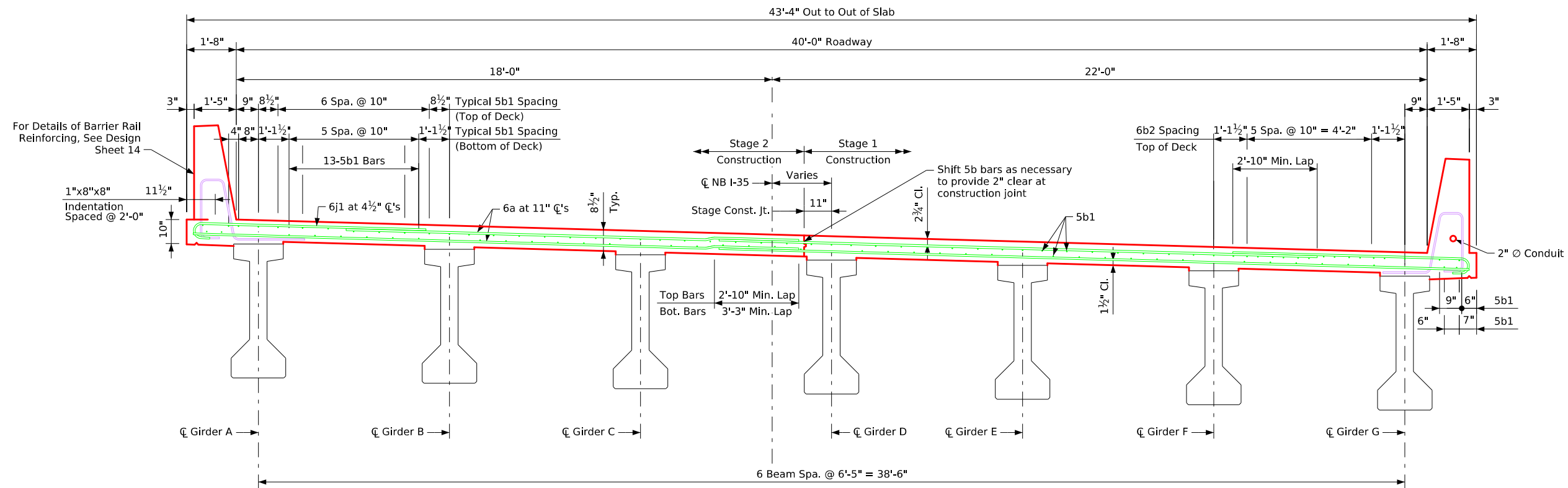


PVC Pipe Location



Abutment Wing - Elevation View

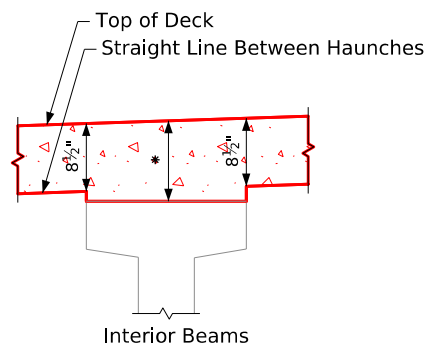
FILE NO. 32400	ENGLISH	DESIGN TEAM GFT	Clarke COUNTY	PROJECT NUMBER IMX-035-1(198)32--02-20	SHEET NUMBER V.6	
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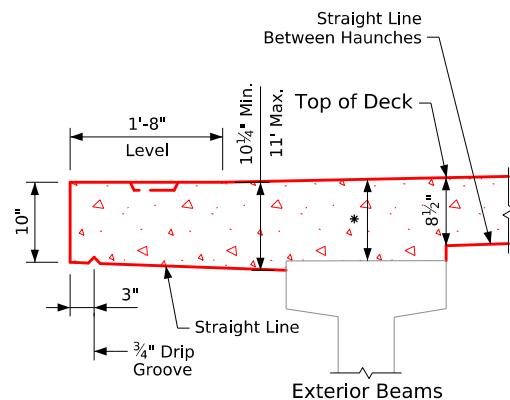
Near Abutment

Transverse Section

Near Pier



Deck area = 31.17 Sq. Ft.
Deck area does not
include the haunch.



Typical Deck and Haunch Detail

* For Deck Thickness Over Beams See
"Haunch And Camber Details" on
Design Sheet No. 12 and 13.

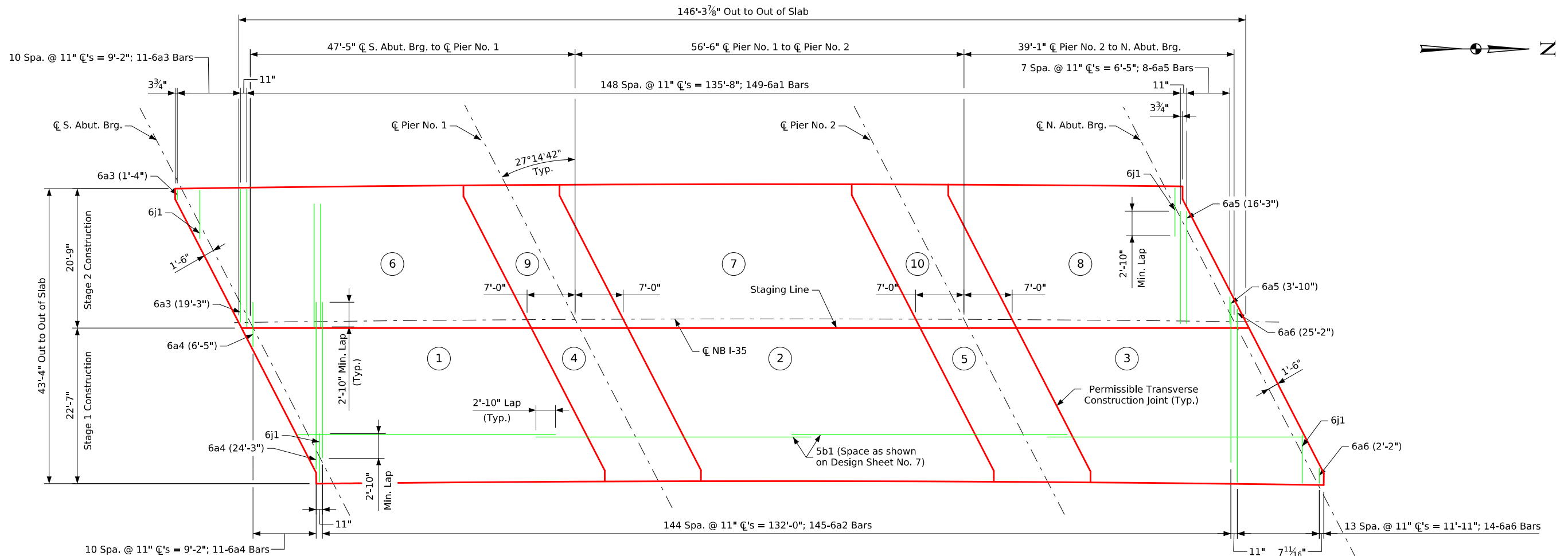
Superstructure Notes:

The bridge deck as shown includes $\frac{3}{4}$ " integral wearing surface.
Forms for the deck and barrier rail are to be supported by the prestressed concrete beams.
Clear distance from face of concrete to near reinforcing bar shall be 2" unless otherwise noted or shown.
All deck reinforcing is to be wired in place and adequately supported before concrete is placed.
Top transverse reinforcing steel is to be parallel to and $2\frac{3}{4}$ " clear below top of deck. Bottom transverse reinforcing steel is to be parallel to and $1\frac{1}{2}$ " clear above bottom of deck. Top and bottom reinforcing steel is to be supported by individual bar chairs spaced at not more than 3'-0" centers longitudinally and transversely, or by continuous rows of bar high chairs or deck bolsters spaced 4'-0" apart. I.M. 451.01 requirements shall apply for bar chairs, bar high chairs, and deck bolsters.
Transverse deck reinforcing may be spliced with one lap located as follows:
Top bar - lap midway between beams (min. lap = 2'-10").
Bottom bars - lap over beams (min. lap = 3'-7").
Payment for reinforcing bars shall be based on no splices, and no allowance shall be made for the additional length of bar required for the use of splices.

Note:

Incorporate existing diaphragm steel into slab.

Design For Repair To 27°14'42" RA
**143'-0" x 40'-0" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE**
43'-3" & 39'-1" End Spans 56'-6" Interior Span
Transverse Section
STA. 401+48.04 (I-35 NB) Turn-In Date: August 2026
Clarke County
IOWA DEPARTMENT OF TRANSPORTATION
Design No. 127 Design Sheet No. 7 of 19 FHWA No. 20140



Top Deck Reinforcing Layout and Concrete Placement Diagram

Note: Concrete deck shall be placed in sections and sequences indicted. (An approved alternate procedure is to place the concrete deck in one continuous pour beginnning at the 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 placment.

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

For transverse and longitudinal slab construction joint details, see Design Sheet No. 10.

Design For Repair To 27°14'42" RA

**143'-0" x 40'-0" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE**

47'-5" & 39'-1" End Spans56'-6" Interior Span

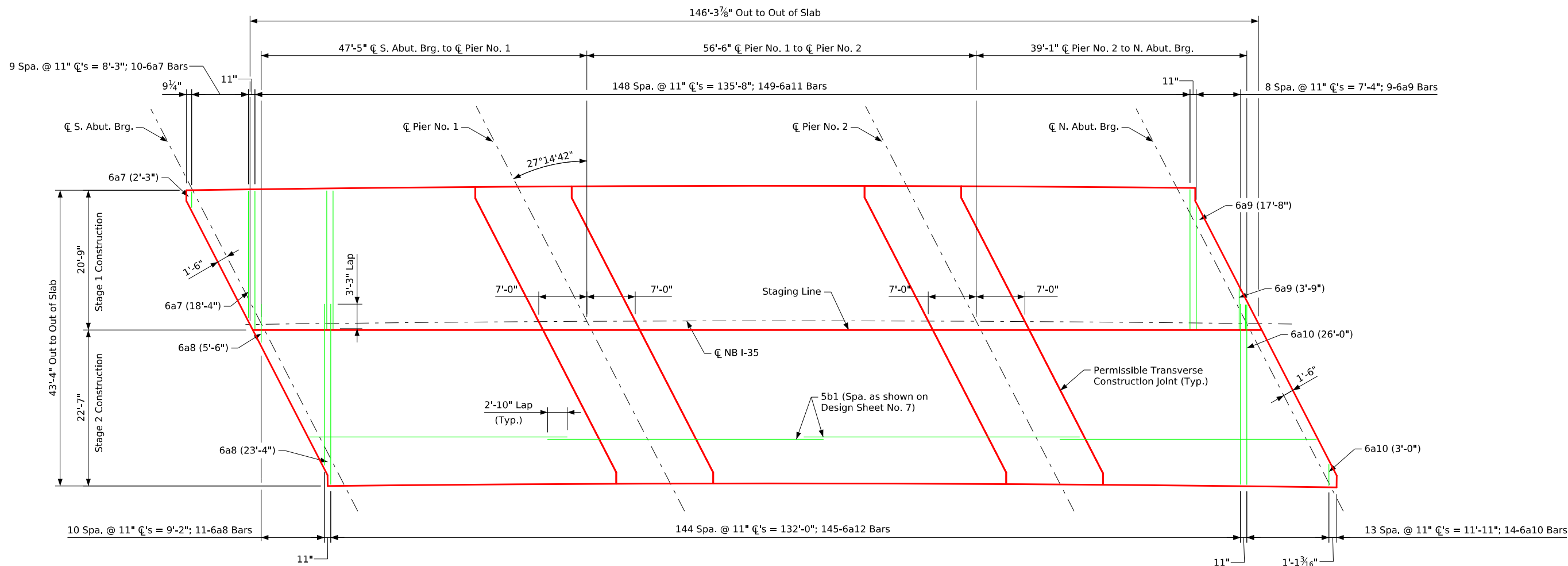
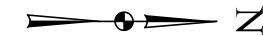
Deck Reinforcing Layout

STA. 401+48.04 (I-35 NB)Turn-In Date: August 2026

Clarke County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 127Design Sheet No. 8 of 19FHWA No. 20140



Bottom Deck Reinforcing Layout

Design For Repair To 27°14'42" RA

143'-0" x 40'-0" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE

47'-5" & 39'-1" End Spans56'-6" Interior Span

Deck Reinforcing Layout

STA. 401+48.04 (I-35 NB)Turn-In Date: August 2026

Clarke County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 127Design Sheet No. 9 of 19FHWA No. 20140

Technical drawings of two pipe fittings:

- 5a13:** A side view of a pipe fitting. The pipe has a diameter of $D=2\frac{1}{2}"$. The total length is $1'-0"$, and the central section is $9"$ long. The drawing shows a pipe with a flange on one end and a coupling on the other.
- 6j1:** A top view of a pipe fitting. The pipe has a diameter of $D=5\frac{1}{4}"$. The total length is $8'-2"$. The drawing shows a pipe with a flange on one end and a coupling on the other.

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

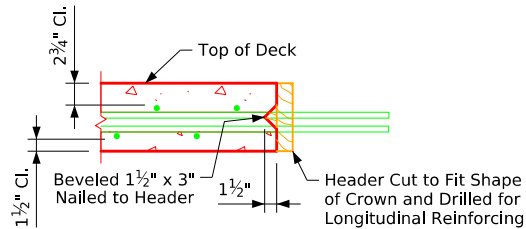


Diagram illustrating the connection of a beveled header to the deck structure. The header is labeled "Beveled 1 1/2" x 3" Nailed to Header". The connection is shown with a "Header Cut to Fit Shape of Crown and Drilled for Longitudinal Reinforcing". The diagram includes dimensions for the header height (2 3/4" Cl.) and the header width (1 1/2" Cl.). The top of the deck is labeled "Top of Deck".

5a13 (Tie to existing reinforcement)

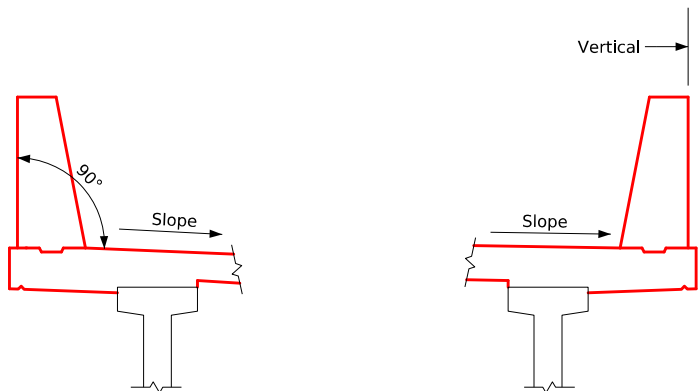
Existing Beam Stirrup

Top of Deck

8 1/2"

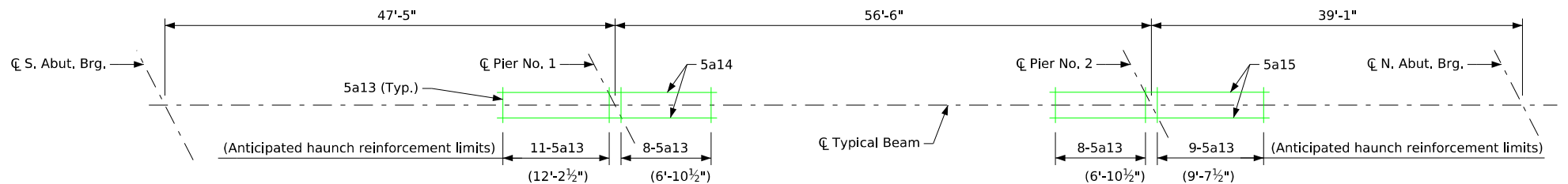
1 1/2" Cl.

(Required where deck plus haunch exceeds 9½")



(Showing "Deck Slopes
Away From the Barrier Rail")

(Showing "Deck Slopes
Toward the Barrier Rail")



Bar	Location	Shape	No.	Length	Weight
6a1	Deck Transv. Top		149	15'-3"	3413
6a2	Deck Transv. Top		145	20'-8"	4501
6a3	Deck Transv. Top		11	Var.	170
6a4	Deck Transv. Top		11	Var.	253
6a5	Deck Transv. Top		8	Var.	121
6a6	Deck Transv. Top		14	Var.	287
6a7	Deck Transv. Bott.		10	Var.	155
6a8	Deck Transv. Bott.		11	Var.	238
6a9	Deck Transv. Bott.		9	Var.	143
6a10	Deck Transv. Bott.		14	Var.	305
6a11	Deck Transv. Bott.		149	20'-5"	4569
6a12	Deck Transv. Bott.		145	25'-10"	5626
5a13	Haunch, Transverse		260	3'-7"	972
5a14	Haunch, Longit.		14	20'-1"	293
5a15	Haunch, Longit.		14	17'-11"	262
5b1	Deck Longit. Top & Bott.		360	38'-9"	14550
6b2	Deck Longit. Top & Bott.		86	13'-6"	1744
6j1	Transv. Barrier Bars		758	8'-10"	10057
5z1	Drain Bars		20	3'-0"	63
Epoxy Reinf. Total Weight (lbs.)					47722

Section	Total
Section 1	25.5
Section 2	25.6
Section 3	20.6
Section 4	8.4
Section 5	8.5
Section 6	23.2
Section 7	23.9
Section 8	18.8
Section 9	7.8
Section 10	7.9
Total (cu. yd.)	170.3

Design For Repair To 27°14'42" RA

143'-0" x 40'-0" PRETENSIONED

PRESTRESSED CONCRETE BEAM BRIDGE

47'-5" & 39'-1" End Spans 56'-6" Interior Span

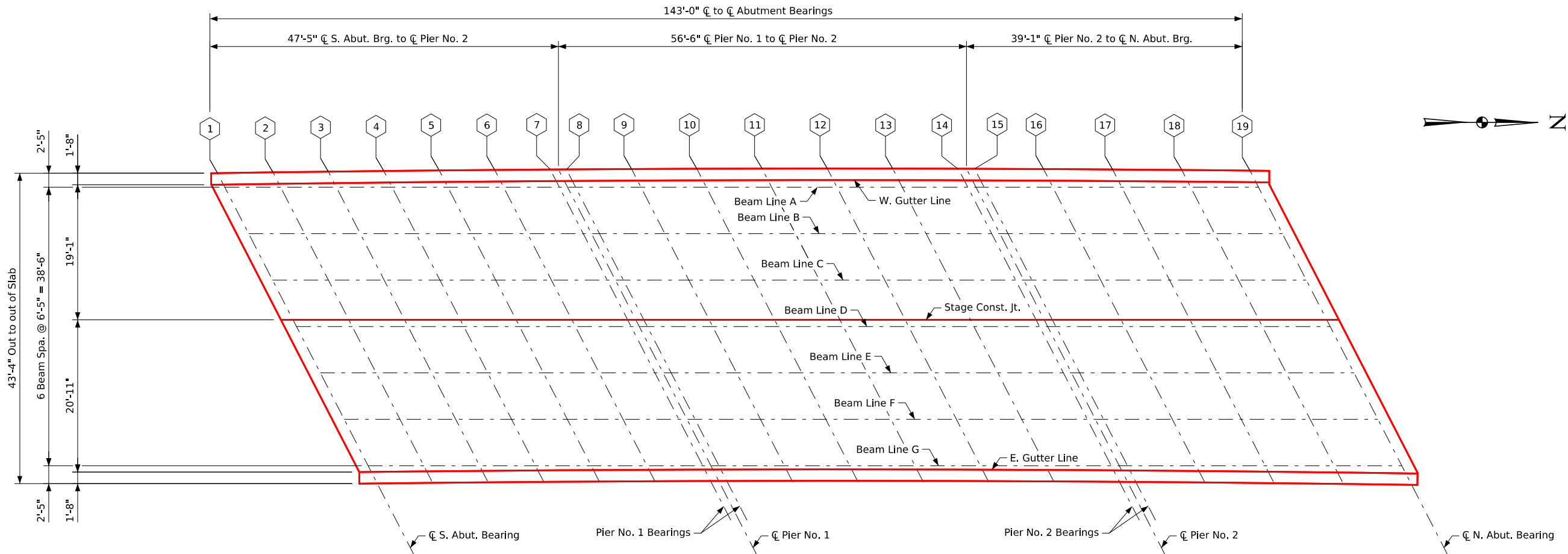
Superstructure Details

STA. 401+48.04 (I-35 NB) Turn-in Date: August 2026

Clarke County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 127 Design Sheet No. 10 of 19 FHWA No. 20140



Deck Elevation Plan

TOP OF DECK ELEVATIONS																			
Beam Line	CL S. Abut. Brg.						CL Pier 1 Brg.							CL Pier 2 Brg.					CL N. Abut. Brg.
	Line 1	Line 2	Line 3	Line 4	Line 5	Line 6	Line 7	Line 8	Line 9	Line 10	Line 11	Line 12	Line 13	Line 14	Line 15	Line 16	Line 17	Line 18	Line 19
W. Gutter Line	1057.82	1057.66	1057.5	1057.33	1057.17	1057.01	1056.85	1056.81	1056.64	1056.47	1056.3	1056.13	1055.96	1055.79	1055.76	1055.61	1055.45	1055.3	1055.14
Beam A	1057.78	1057.62	1057.46	1057.29	1057.12	1056.96	1056.8	1056.77	1056.59	1056.42	1056.25	1056.08	1055.91	1055.75	1055.72	1055.57	1055.42	1055.27	1055.11
Beam B	1057.54	1057.38	1057.22	1057.05	1056.87	1056.71	1056.56	1056.53	1056.34	1056.17	1056.01	1055.84	1055.69	1055.53	1055.51	1055.35	1055.2	1055.05	1054.86
Beam C	1057.26	1057.11	1056.95	1056.78	1056.6	1056.44	1056.29	1056.26	1056.09	1055.92	1055.75	1055.58	1055.43	1055.27	1055.24	1055.08	1054.93	1054.79	1054.6
Stage Line	1057.02	1056.89	1056.72	1056.54	1056.37	1056.22	1056.07	1056.04	1055.87	1055.7	1055.53	1055.36	1055.2	1055.04	1055.01	1054.86	1054.72	1054.57	1054.39
Beam D	1056.99	1056.84	1056.69	1056.51	1056.34	1056.19	1056.05	1056.01	1055.84	1055.67	1055.5	1055.32	1055.16	1055.00	1054.97	1054.83	1054.69	1054.53	1054.35
Beam E	1056.74	1056.59	1056.44	1056.28	1056.12	1055.97	1055.82	1055.79	1055.61	1055.43	1055.26	1055.08	1054.91	1054.76	1054.73	1054.59	1054.45	1054.29	1054.14
Beam F	1056.51	1056.36	1056.21	1056.09	1055.91	1055.76	1055.61	1055.59	1055.4	1055.21	1055.04	1054.86	1054.69	1054.53	1054.51	1054.37	1054.24	1054.11	1053.95
Beam G	1056.47	1056.31	1056.14	1055.96	1055.78	1055.6	1055.42	1055.39	1055.21	1055.03	1054.85	1054.67	1054.49	1054.31	1054.29	1054.17	1054.05	1053.94	1053.82
E. Gutter Line	1056.48	1056.30	1056.12	1055.94	1055.77	1055.56	1055.42	1055.38	1055.2	1055.02	1054.84	1054.65	1054.48	1054.29	1054.27	1054.15	1054.03	1053.91	1053.8

Note: Calculated top of deck elevations match existing.

Design For Repair To 27°14'42" RA

143'-0" x 40'-0" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE

47'-5" & 39'-1" End Spans56'-6" Interior Span

Deck Elevations

STA. 401+48.04 (I-35 NB)Turn-in Date: August 2026

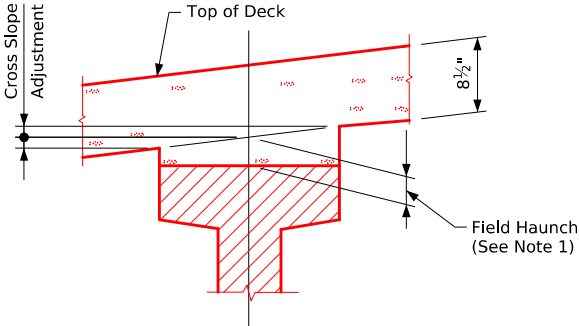
Clarke County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 127Design Sheet No. 11 of 19FHWA No. 20140

TABLE OF BEAM LINE DECK HAUNCH ELEVATIONS																			
Beam Line	CL S. Abut. Brg.						CL Pier 1 Brg.							CL Pier 2 Brg.					CL N. Abut. Brg.
	Line 1	Line 2	Line 3	Line 4	Line 5	Line 6	Line 7	Line 8	Line 9	Line 10	Line 11	Line 12	Line 13	Line 14	Line 15	Line 16	Line 17	Line 18	Line 19
Beam Line A	1057.07	1056.92	1056.76	1056.59	1056.42	1056.26	1056.09	1056.06	1055.90	1055.73	1055.56	1055.39	1055.22	1055.04	1055.01	1054.86	1054.71	1054.56	1054.40
Beam Line B	1056.83	1056.68	1056.52	1056.35	1056.17	1056.01	1055.85	1055.82	1055.65	1055.48	1055.32	1055.15	1055.00	1054.82	1054.80	1054.64	1054.49	1054.34	1054.15
Beam Line C	1056.55	1056.41	1056.25	1056.08	1055.90	1055.74	1055.58	1055.55	1055.40	1055.23	1055.06	1054.89	1054.74	1054.56	1054.53	1054.37	1054.22	1054.08	1053.89
Beam Line D	1056.28	1056.14	1055.99	1055.81	1055.64	1055.49	1055.34	1055.30	1055.15	1054.98	1054.81	1054.63	1054.47	1054.29	1054.26	1054.12	1053.98	1053.82	1053.64
Beam Line E	1056.03	1055.89	1055.74	1055.58	1055.42	1055.27	1055.11	1055.08	1054.92	1054.74	1054.57	1054.39	1054.22	1054.05	1054.02	1053.88	1053.74	1053.58	1053.43
Beam Line F	1055.80	1055.66	1055.51	1055.39	1055.21	1055.06	1054.90	1054.88	1054.71	1054.52	1054.35	1054.17	1054.00	1053.82	1053.80	1053.66	1053.53	1053.40	1053.24
Beam Line G	1055.76	1055.61	1055.44	1055.26	1055.08	1054.90	1054.71	1054.68	1054.52	1054.34	1054.16	1053.98	1053.80	1053.60	1053.58	1053.46	1053.34	1053.23	1053.11

Miscellaneous Data Table																					
	Beam Line		℄ S. Abut. Bearing						℄ Pier No. 1 Bearing							℄ Pier No. 2 Bearings					℄ N. Abut. Bearing
			Line 1	Line 2	Line 3	Line 4	Line 5	Line 6	Line 7	Line 8	Line 9	Line 10	Line 11	Line 12	Line 13	Line 14	Line 15	Line 16	Line 17	Line 18	Line 19
Anticipated Deflection Due to Deck (in.)	All		0	1⁄16"	1⁄8"	1⁄4"	1⁄8"	1⁄16"	0	0	3⁄16"	1⁄4"	7⁄16"	1⁄4"	3⁄16"	0	0	1⁄16"	1⁄8"	1⁄16"	0
Cross Slope Adjustments (in.)	A, B, C, D, E, F & G		3⁄8" (0.031')																		
Allowable Field Haunch (in. & ft.)	Max.	All	2½" (0.208')																		
	Min.	All	-3⁄8" (Embedment) (-0.031')																		



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

Design For Repair To 27°14'42" RA

143'-0" x 40'-0" PRETENSIONED

PRESTRESSED CONCRETE BEAM BRIDGE

47'-5" & 39'-1" End Spans56'-6" Interior Span

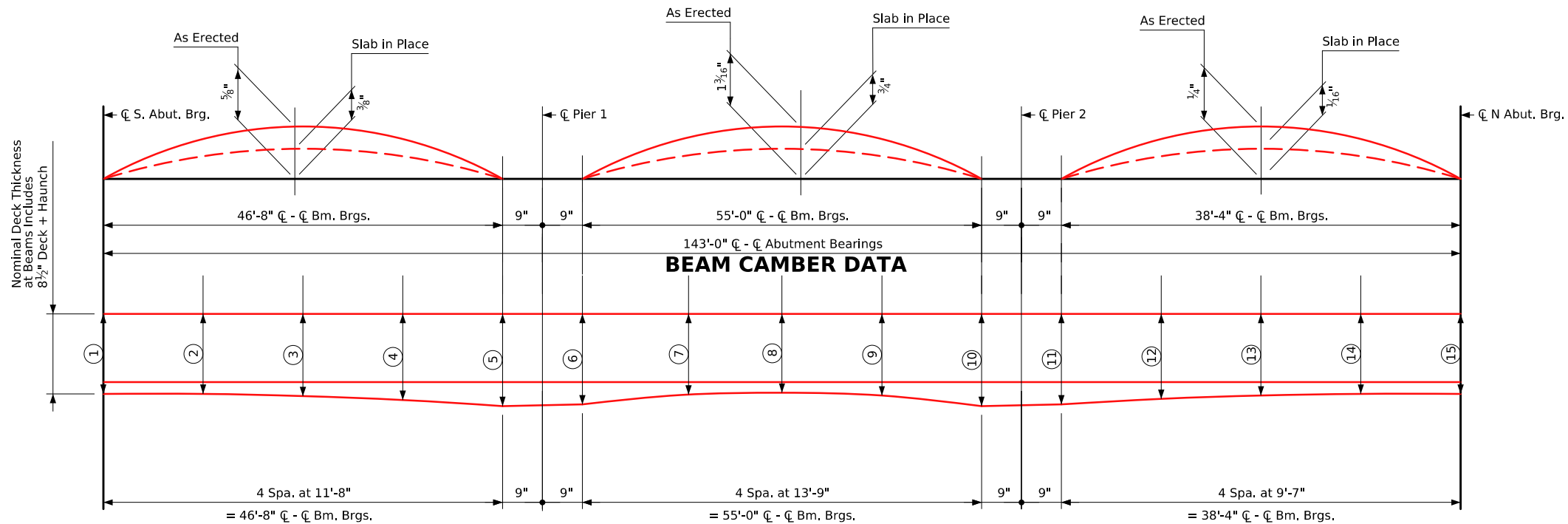
Deck Haunch Data Details

STA. 401+48.04 (I-35 NB)Turn-In Date: August 2026

Clarke County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 127Design Sheet No. 12 of 19FHWA No. 20140



DECK THICKNESS AT BEAM-LINE

THEORETICAL DECK AND HAUNCH THICKNESS

Location	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
Beam A	9"	9"	9 1/16"	9 3/16"	10 3/8"	10"	9 3/16"	8 7/8"	9 1/2"	10 3/8"	10"	9 9/16"	9 3/16"	9"	8 3/4"
Beam B	9"	9"	9 1/16"	9 3/16"	10 3/8"	10"	9 1/8"	8 3/4"	9 7/16"	10 3/8"	10 1/8"	9 1 1/16"	9 3/8"	9 1/4"	8 3/4"
Beam C	9"	9 1/8"	9 1/2"	9 1/2"	10 3/8"	10"	9 1/4"	8 13/16"	9 1/2"	10 3/8"	10"	9 9/16"	9 1/4"	9 1/4"	8 3/4"
Beam D	9"	9 3/16"	9"	9 3/16"	10 1/2"	10"	9 7/16"	8 15/16"	9 7/16"	10 3/8"	10"	9 3/4"	9 1/2"	9 3/16"	8 3/4"
Beam E	9"	9 1/16"	9 1/16"	9 5/8"	10 3/8"	10"	9 1/4"	8 3/16"	9 3/8"	10 3/8"	10"	9 5/8"	9 5/16"	8 15/16"	8 3/4"
Beam F	9"	9"	9 7/16"	9 1 1/16"	10 3/8"	10 1/8"	9 5/16"	8 13/16"	9 7/16"	10 3/8"	10 1/8"	9 5/8"	9 5/16"	9 3/16"	8 3/4"
Beam G	9"	9 1/4"	9 1/4"	9 3/4"	10 3/8"	10"	9 3/8"	9"	9 9/16"	10 3/8"	10 1/8"	9 5/8"	9 1/8"	9"	8 3/4"

Note: Place 5a13 haunch reinforcement bars where deck plus haunch exceeds 9 1/2". See Design Sheet 10 for haunch reinforcement details.

Design For Repair To 27°14'42" RA

143'-0" x 40'-0" PRETENSIONED

PRESTRESSED CONCRETE BEAM BRIDGE

47'-5" & 39'-1" End Spans56'-6" Interior Span

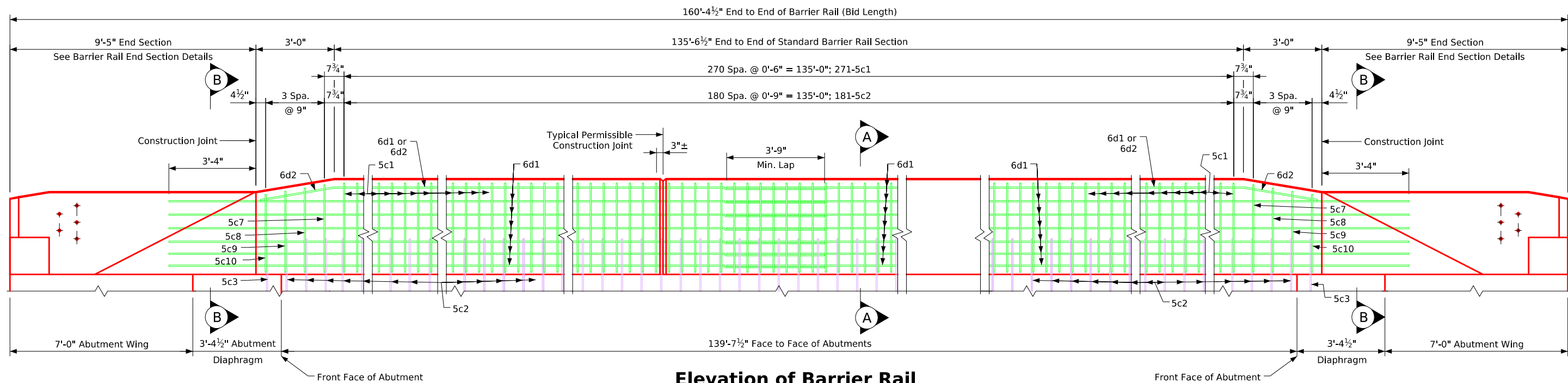
Deck Haunch Data Details (Cont.)

STA. 401+48.04 (I-35 NB)Turn-In Date: August 2026

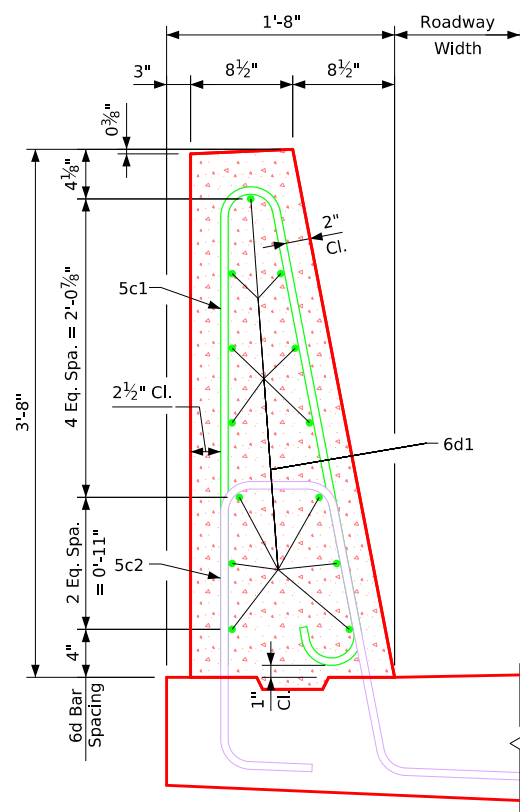
Clarke County

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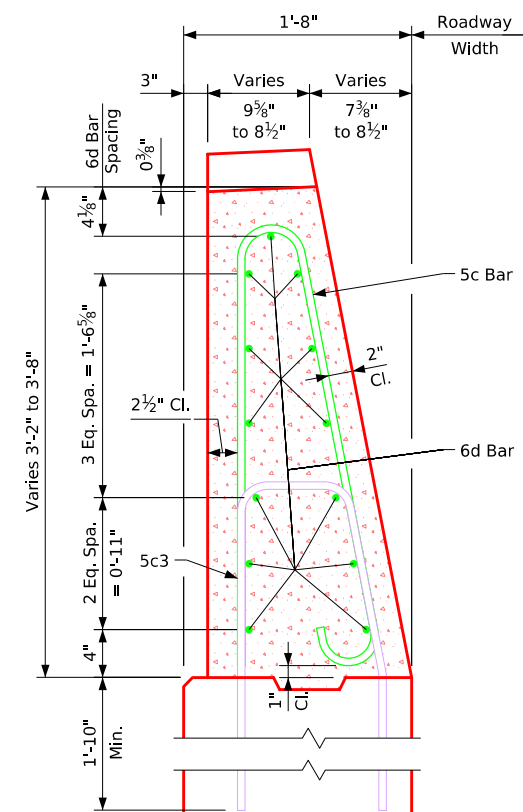
Design No. 127Design Sheet No. 13 of 19FHWA No. 20140



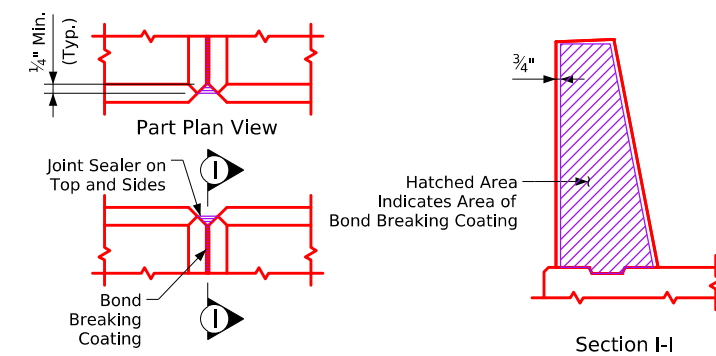
Elevation of Barrier Rail



Part Section A-A



Part Section B-B



Barrier Rail Joint Details

See Barrier Rail Details on Design Sheet 15 for notes, reinforcing steel details, and quantities.

Design For Repair To 27°14'42" RA

143'-0" x 40'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

47'-5" & 39'-1" End Spans 56'-6" Interior Span

Barrier Rails Details

STA. 401+48.04 (I-35 NB) Turn-In Date: August 2026

Clarke County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 127 Design Sheet No. 14 of 19 FHWA No. 20140

Barrier Rail Notes:

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

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

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

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

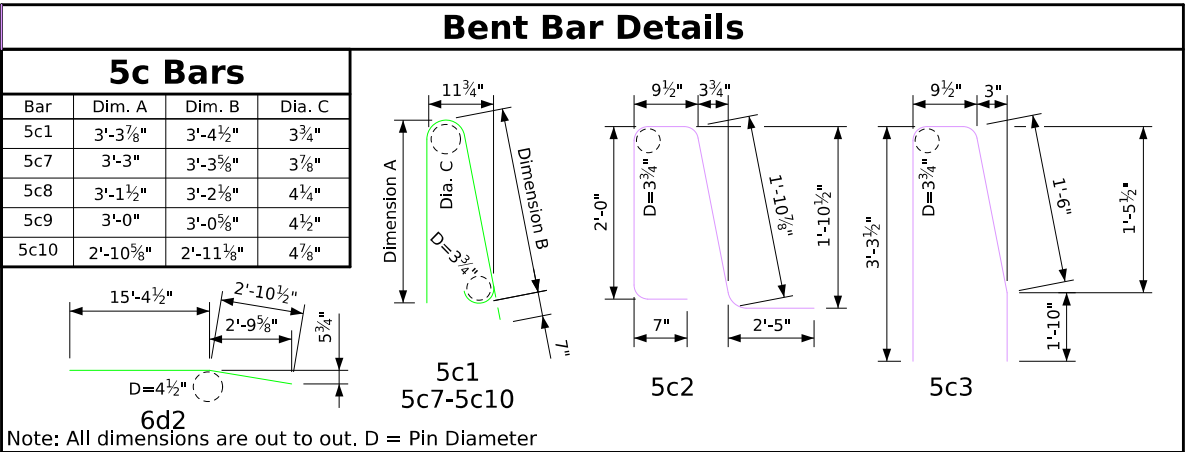
The concrete barrier rail is to be bid on a lineal foot basis. The number of linear feet of barrier rail installed will be paid for at the contract price per lineal foot based on plan quantities. Price bid for concrete barrier railing shall be full compensation for furnishing all material, excluding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

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

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

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

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



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

Epoxy Coated Reinf. Steel - Two Rails

Section	Bar	Location	Shape	No.	Length	Weight
Standard Sections	5c1	Rail, Vertical		542	7'-6"	4240
	5c7	Rail, Vertical, Sloped Ends		4	7'-4"	31
	5c8	Rail, Vertical, Sloped Ends		4	7'-1"	30
	5c9	Rail, Vertical, Sloped Ends		4	6'-10"	29
	5c10	Rail, Vertical, Sloped Ends		4	6'-7"	27
	6d1	Rail, Longitudinal		102	40'-0"	6128
	6d2	Rail, Longitudinal, Top		4	18'-3"	110

Epoxy Reinf. Total Weight (lbs.) 10594

Stainless Steel Reinf. Steel - Two Rails

Section	Bar	Location	Shape	No.	Length	Weight
Standard Sections	5c2	Rail, Vertical		378	7'-3"	2858
	5c3	Rail, Vertical		4	7'-2"	30

Stainless Steel Reinf. Total Weight (lbs.) 2888

Concrete Placement Summary

Section	Total
Δ Standard Section 283'-1" at 0.144 cu. yd. per ft.	40.7
Total (cu. yd.)	40.7
Note: Δ Deduct 0.021 cu. yd. for one sloped end.	

Concrete Barrier Rail Quantities

Item	Unit	Quantity
Concrete Barrier Railing, 3'-8"	L.F.	320'-9"

See Barrier Rail Details on Design Sheet No. 14 for details and sections.

Design For Repair To 27°14'42" RA

143'-0" x 40'-0" PRETENSIONED

PRESTRESSED CONCRETE BEAM BRIDGE

43'-3" & 39'-1" End Spans56'-6" Interior Span

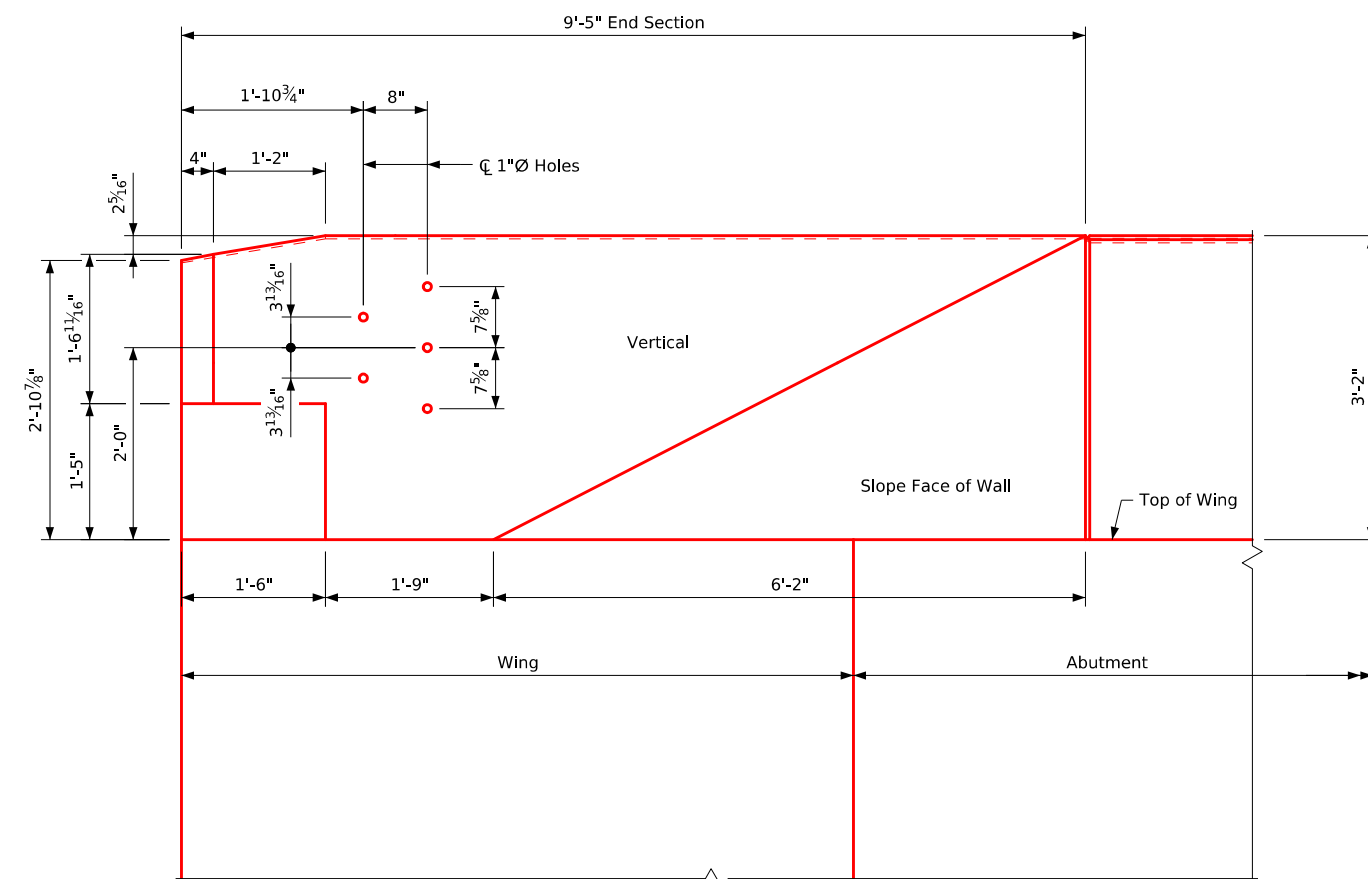
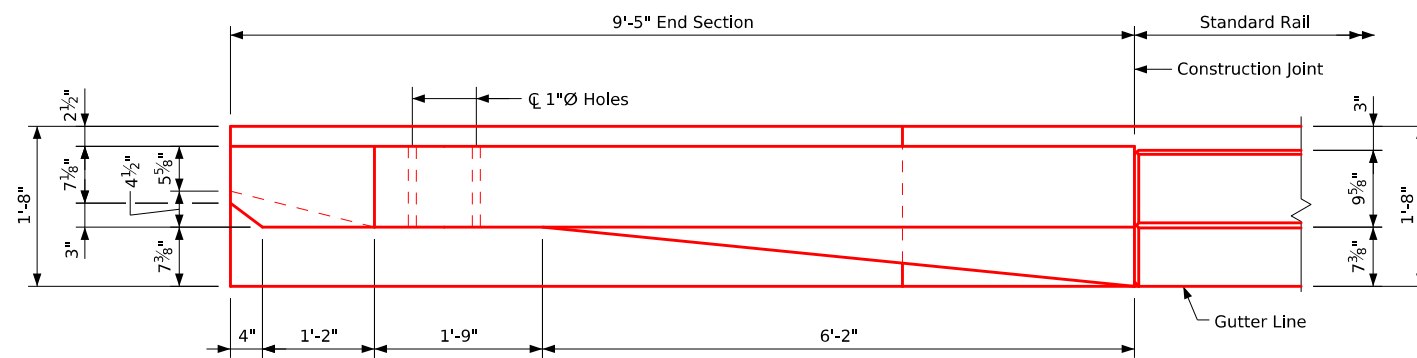
Barrier Rail Details (Cont.)

STA. 401+48.04 (I-35 NB)Turn-in Date: Dec, 2026

Clarke County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 127Design Sheet No. 15 of 19FHWA No. 20140



Part Elevation View

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

Notes:

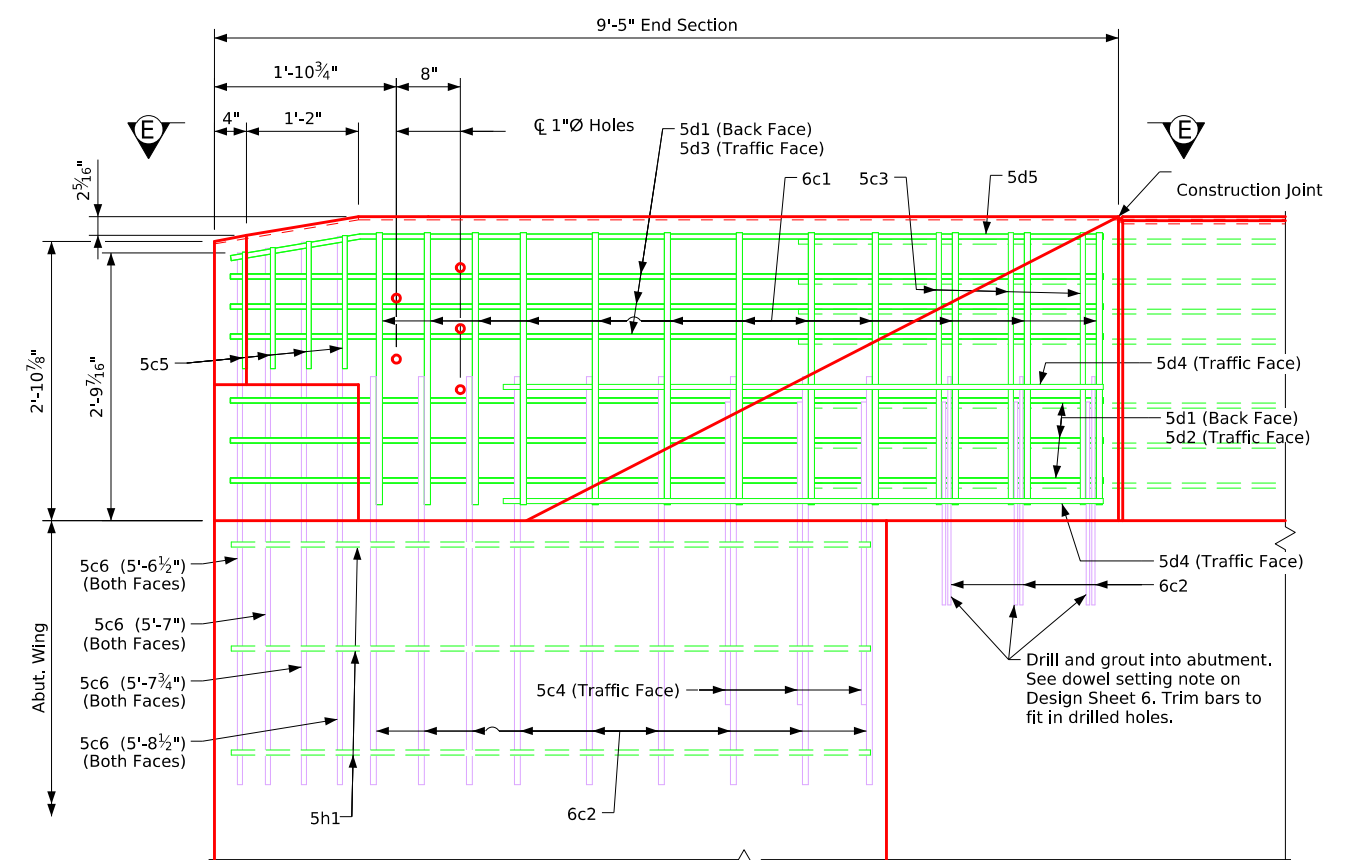
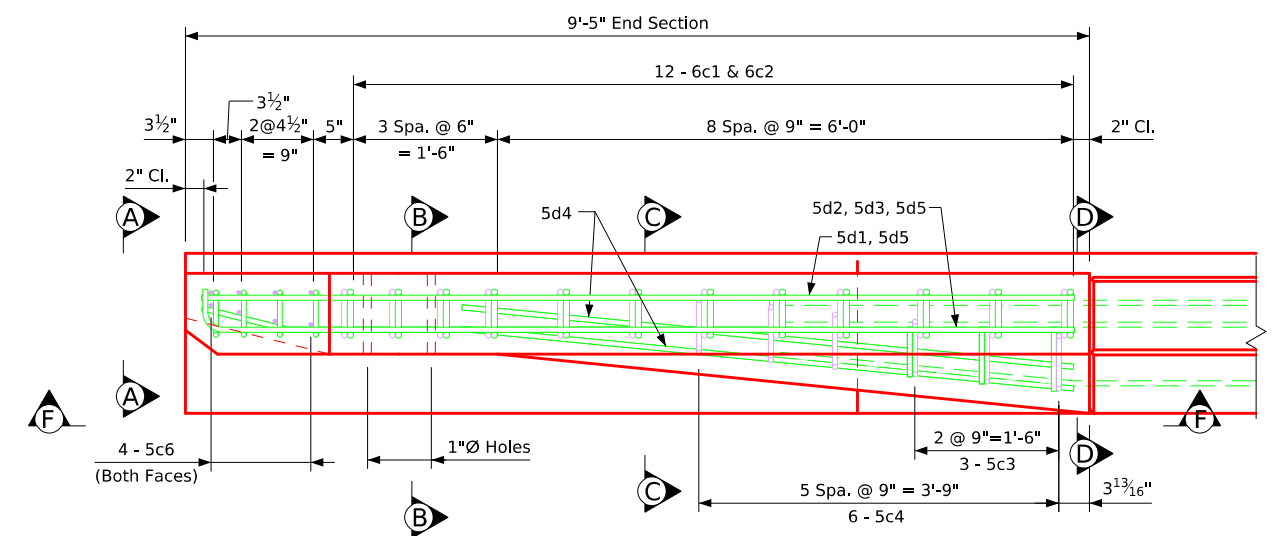
Construction joint between top of abutment wing and barrier rail is roughened concrete.

The 6c2, 5c4, and 5c6 bars are to be placed with the abutment wing, except those grouted into existing abutment. The details for placement are shown on the Abutment Wing Details Sheet.

Dashed lines below the top of wing are the abutment wing reinforcing steel.

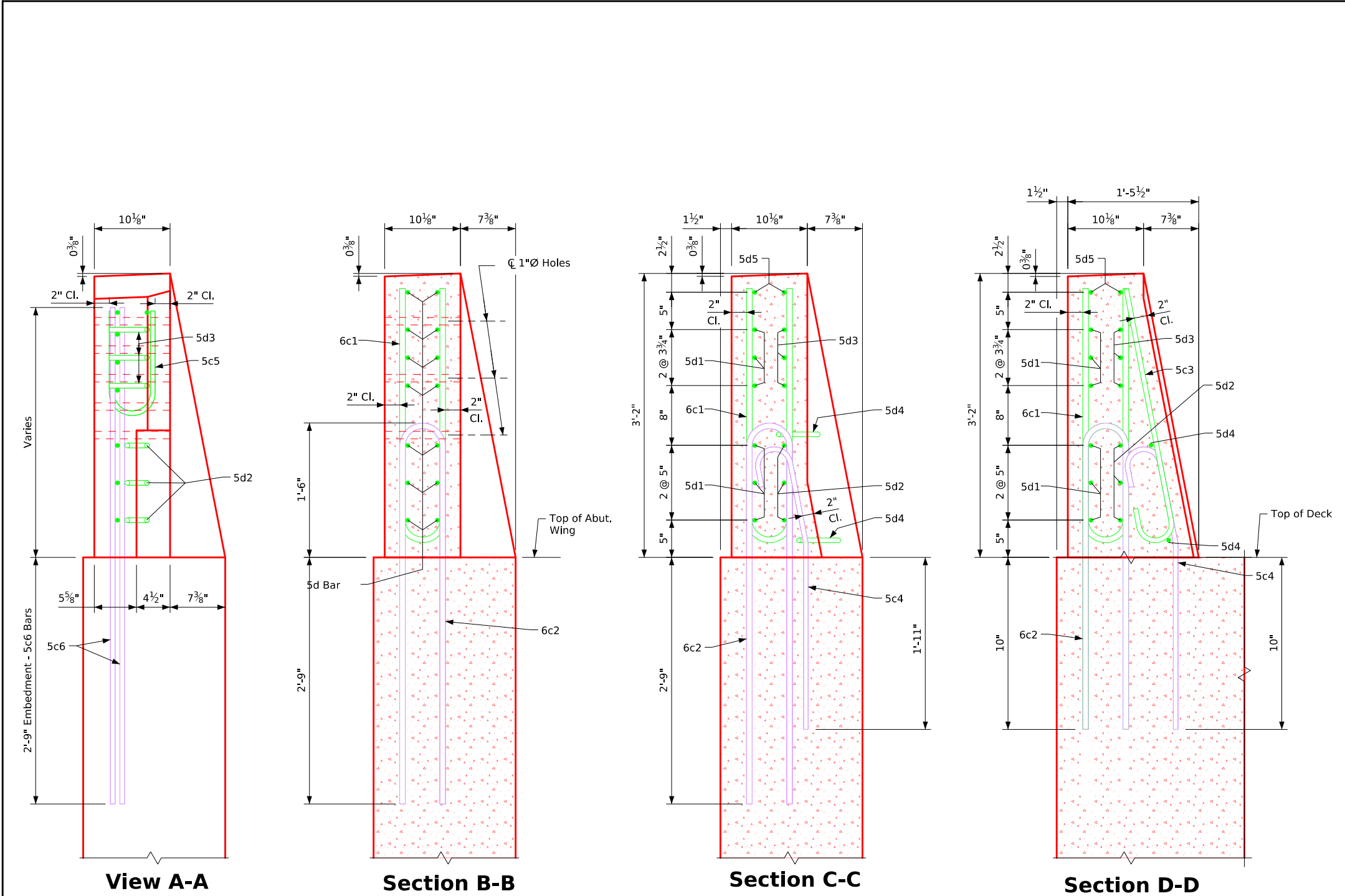
See Abutment Wing Detail Sheet for placement.

For Bar List, Bent Bar Details, View A-A, Sections B-B, C-C, and D-D see Design Sheet No. 17.



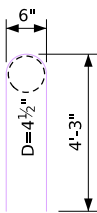
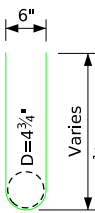
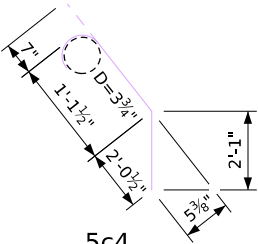
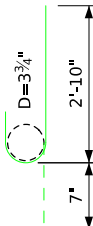
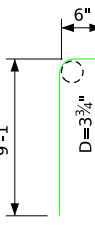
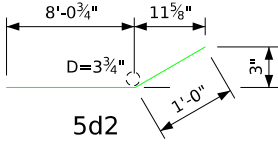
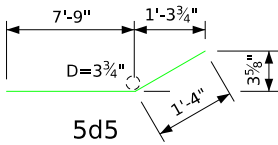
Part View F-F

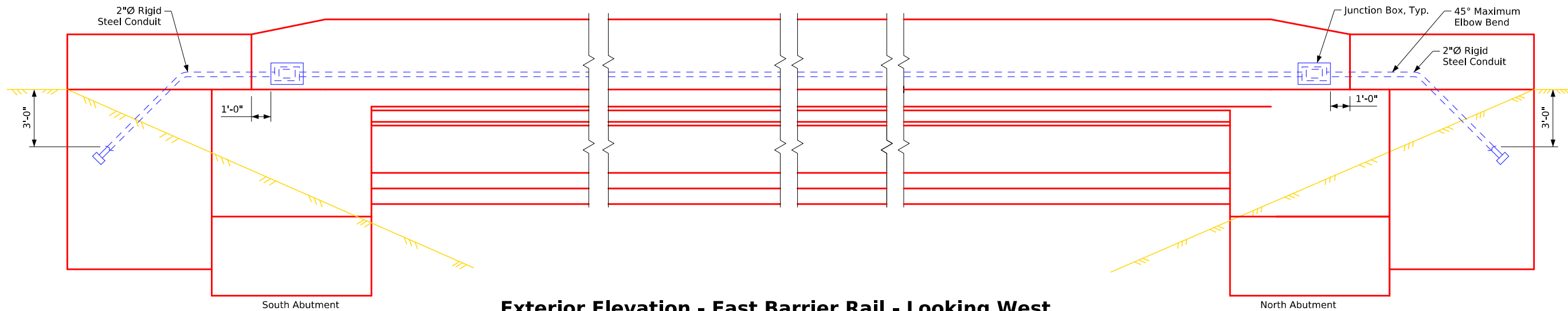
Design For Repair To 27°14'42" RA
**143'-0" x 40'-0" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE**
47'-5" & 39'-1" End Spans 56'-6" Interior Span
Barrier Rail End Section Details
STA. 401+48.04 (I-35 NB) Turn-In Date: August 2026
Clarke County
IOWA DEPARTMENT OF TRANSPORTATION
Design No. 127 Design Sheet No. 16 of 19 FHWA No. 20140



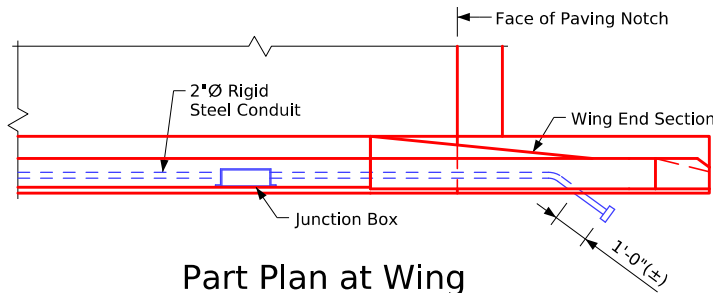
Abutment wing bars in View A-A and Sections B-B & C-C are not shown for clarity.

Notes:
Construction joint between top of abutment wing and barrier rail is roughened concrete.
The 6c2, 5c4, and 5c6 bars are to be placed with the abutment wing. The details for placement are shown on the Abutment Wing Detail Sheet.
Dashed lines below the top of wing are the abutment wing reinforcing steel.
See Abutment Wing Detail Sheet for placement.
For Plan and Elevation see Design Sheet No. 16.
6c2 and 5c4 bars in existing abutment (see Section D-D) shall be set as dowels and field trimmed for 10" embedment. See Dowel Setting Note on Design Sheet 6.

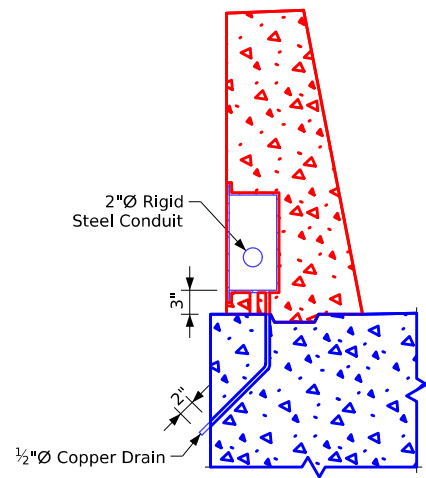
Epoxy Coated Reinforcing Steel - One End Section					
Bar	Location	Shape	No.	Length	Weight
6c1	Rail, Vertical		12	5'-11"	107
5c3	Rail, Vertical (Traffic Face)		3	3'-5"	11
5c5	Rail, Vertical (End)		4	Varies	14
5d1	Rail, Horizontal (Back Face)		6	9'-1"	57
5d2	Rail, Horizontal (Traffic Face)		3	9'-1"	28
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 (lbs.)					279
Stainless Steel Reinforcing Steel - One End Section					
Bar	Location	Shape	No.	Length	Weight
6c2	Rail, Vertical		12	8'-9"	158
5c4	Rail, Vertical (Traffic Face)		6	3'-10"	24
5c6	Rail, Vertical (End)		8	Varies	47
Stainless Steel Reinforcing Total Weight (lbs.)					229
Concrete Placement Summary					
Section				Total	
Barrier Rail, One End Section				1.0 cu. yd.	
Bent Bar Details					
       					
Note: All dimensions are out to out. D = Pin Diameter					
Note: Reinforcing steel quantities are included on the Bridge Quantities Sheet.					



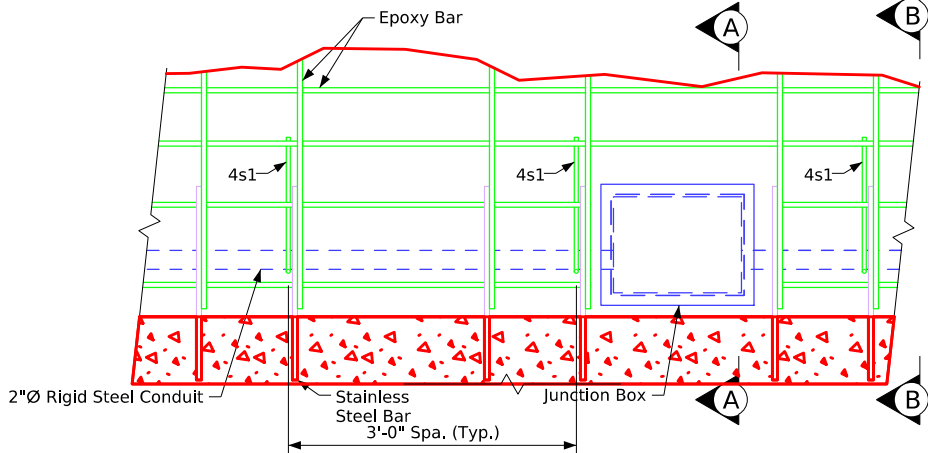
Exterior Elevation - East Barrier Rail - Looking West



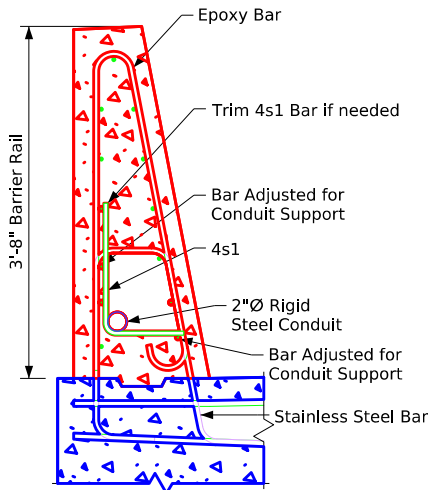
Part Plan at Wing



Section A-A
Thru Junction Box



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



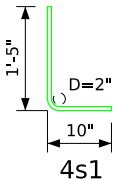
Section B-B - Conduit Support

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

Epoxy Coated Reinf. Steel - One Rail

Bar	Location	Shape	No.	Length	Weight
4s1	Rail Conduit		49	2'-3"	74
Epoxy Reinforcing Total Weight (lbs.)					74

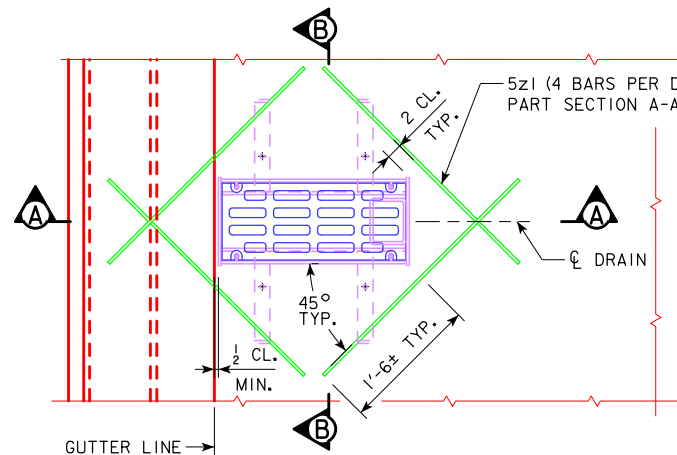
Bent Bar Details



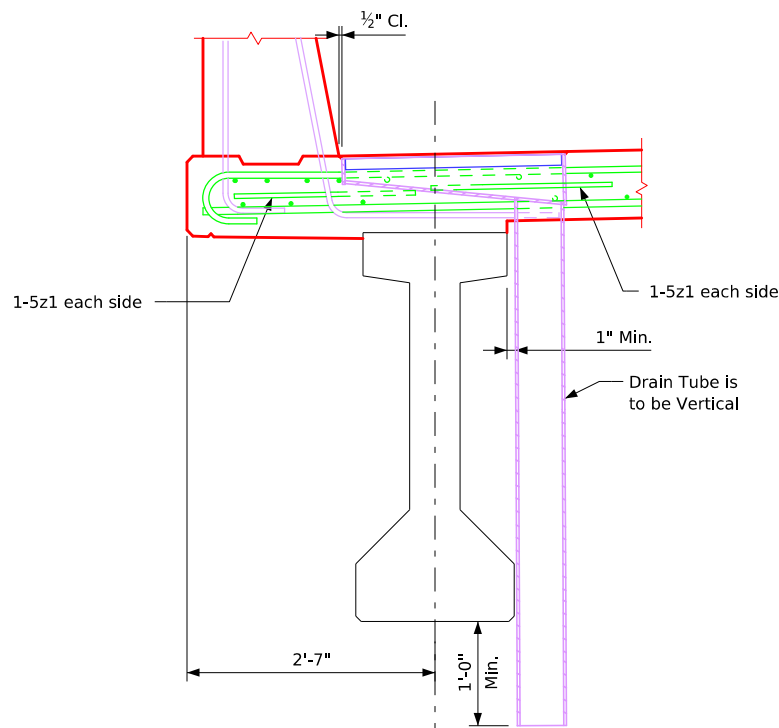
Note: All Dimensions are out to out. D = Pin Diameter

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

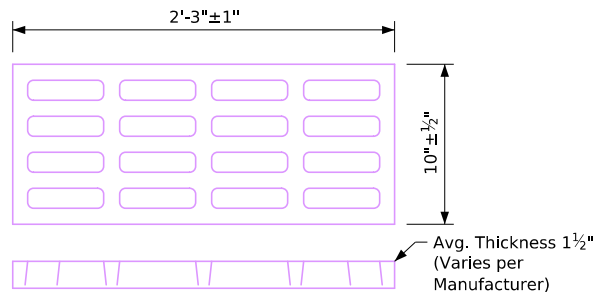
Design For Repair To 27°14'42" RA
**143'-0" x 40'-0" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE**
47'-5" & 39'-1" End Spans 56'-6" Interior Span
Lighting Details
STA. 401+48.04 (I-35 NB) Turn-in Date: August 2026
Clarke County
IOWA DEPARTMENT OF TRANSPORTATION
Design No. 127 Design Sheet No. 18 of 19 FHWA No. 20140



Part Plan At Drain

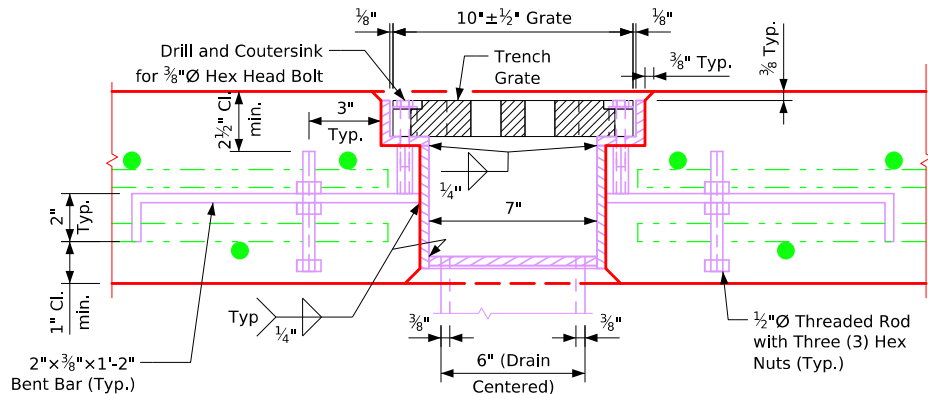


Part Section A-A



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

Drain Notes

The drains shall be 3/8" 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.

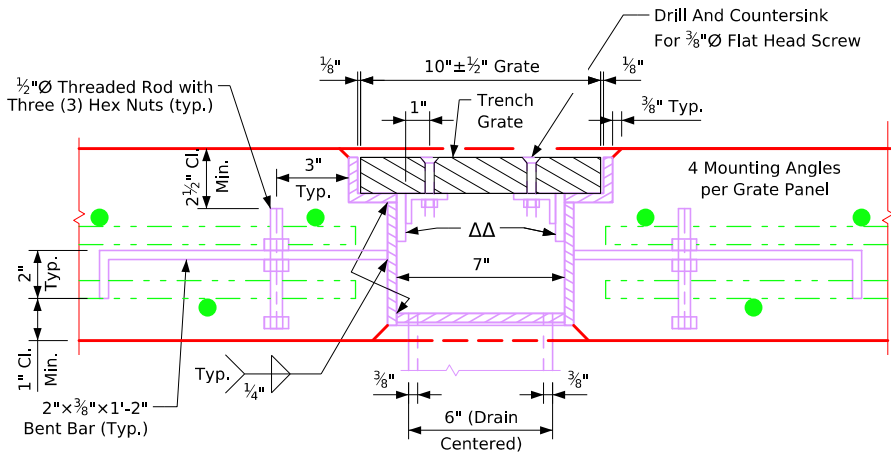
Drains may be relocated to miss existing shear stirrups and shall be centered over the nearest bottom transverse deck reinforcing bar from the location designated on the situation plan. The bottom transverse deck reinforcing bar shall be cut off to provide 1" clearance from the drain. The top transverse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

Materials

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.

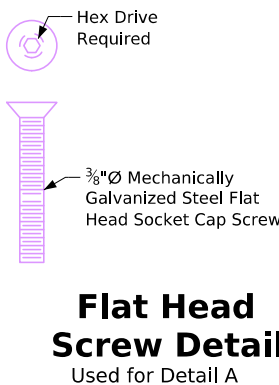
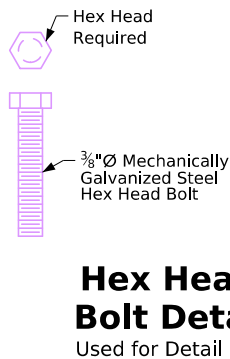
3/8" Ø mechanically galvanized steel flat head screw shall meet the requirements of ASTM B695-04 (2009) and ASTM F835-12.

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

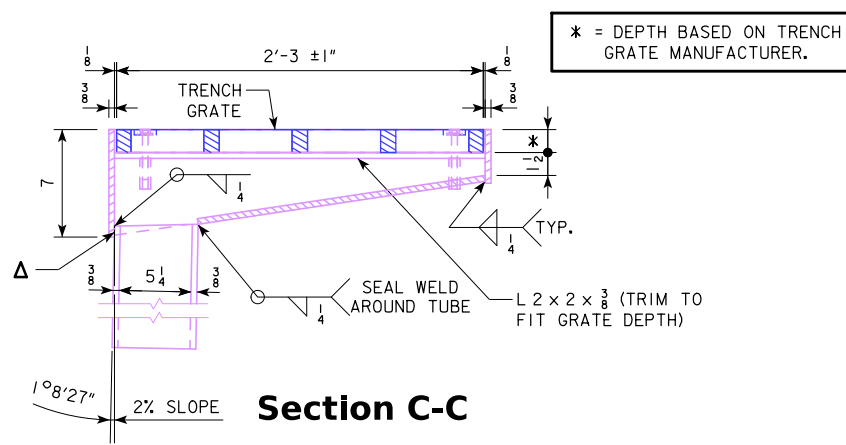


Part Section B-B - Showing Detail A Option

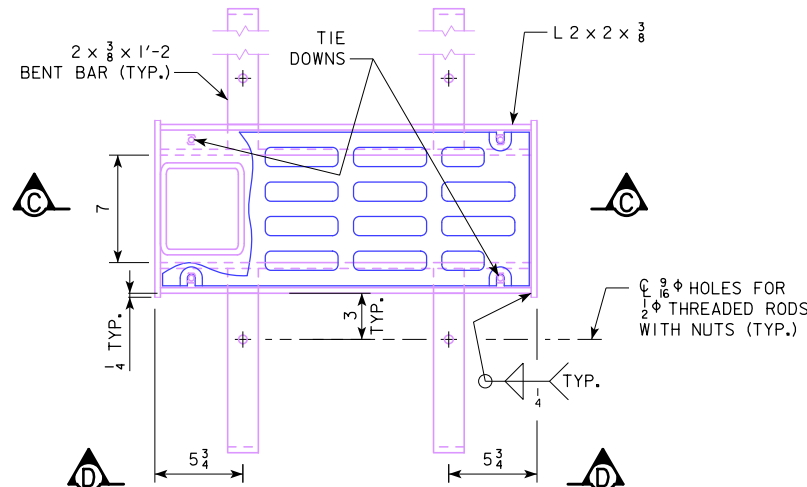
Note: 5 Deck Drains Required.



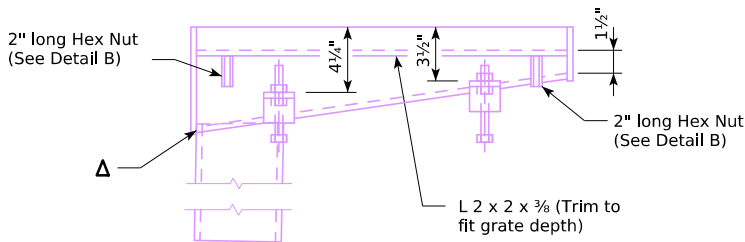
ΔΔ = Adjust shim plate according to width of grate.



Section C-C



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



Side View D-D

Design For Repair To 27°14'42" RA
143'-0" x 40'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE
 47'-5" & 39'-1" End Spans 56'-6" Interior Span
Deck Drain Details
 STA. 401+48.04 (I-35 NB) Turn-In Date: August 2026
Clarke County
 IOWA DEPARTMENT OF TRANSPORTATION
 Design No. 127 Design Sheet No. 19 of 19 FHWA No. 20140

Estimated Bridge Reconstruction Quantities and Reference Notes - Design #227					
Item No.	Item Code	Item	Unit	Quantities Estimated Design No. 227	Estimate Reference Notes
1	2401-6750001	Removals, As Per Plan	LS	1	Includes all costs associated with removing the existing bridge deck, curbs, barrier rails, and wings. Removal of scheduled items shall be in accordance with Section 2401 of the Standard Specifications. Any damage to any steel or concrete not to be removed shall be the responsibility of the Contractor and repaired at no extra cost to the State.
2	2403-0100010	Structural Concrete (Bridge)	CY	235.4	--
3	2403-1000005	Fiber Reinforcement for Structural Concrete	CY	224.4	Fiber Reinforcing shall be used in bridge deck concrete. Refer to Developmental Specifications for Fiber Reinforcement for Structural Concrete for additional information.
4	2403-1000010	Trial Batch and Test Placement (Fiber Reinforced Concrete)	LS	1	Refer to Developmental Specifications for Fiber Reinforcement for Structural Concrete for additional information.
5	2404-7775005	Reinforcing Steel, Epoxy Coated	LB	71191	--
6	2404-7775009	Reinforcing Steel, Stainless Steel	LB	3771	--
7	2414-6424038	Concrete Barrier Railing, 3'-8"	LF	320.6	Includes material and labor associated with providing and installing the rigid steel conduit, junction boxes and fittings. Includes approximately 158 lf of 2" diameter rigid steel conduit. If placement of concrete is done by the slipforming method, Class BR concrete is required. Cast-in-place barrier rails shall use Class C mix. Price bid for this item shall include the cost of cast-in-place forms if required for placement of the concrete.
8	2499-2300001	Deck Drains	LS	1	Includes all new deck drains. Refer to design sheet 3 for location and design sheet 21 for materials and details of construction. Measurement will be lump sum for all deck drains required as specified in the plans. They payment shall be full compensation for furnishing all material, equipment and labor needed for fabricating and installing the deck drains.
9	2526-8285040	Construction Survey, Location Survey	LS	1	--
10	2533-4980005	Mobilization	LS	1	--

Roadway Quantities are shown elsewhere in these plans.

Design For Repair To 30° RA

138'-10" x 55'-6" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE

43'-3" & 39'-1" End Spans56'-6" Interior Span

Estimated Quantities

STA. 1402+63.87 (I-35 SB)Turn-In Date: August 2026

Clarke County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227Design Sheet No. 1 of 21FHWA No. 20150

General Notes:

This design is for repairs to the existing 138'-10" x 55'-6" Pretensioned Prestressed Concrete Beam Bridge. Electronic copies of original design plans will be made available to the Contractor as part of the E-Files supplied with the contract documents.

See Situation Plan for list of repair items.

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

Faint lines on plans indicate existing portions of the bridge.

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

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

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

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

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.

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

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

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

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

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

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

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

Traffic Control Plan

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

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

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

Deck Removal Notes:

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

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

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

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

Specifications:

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

Construction:

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

Design Stresses:

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

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

Stainless reinforce steel in accordance with AASHTO LRFD Section 5, Grade 60 or 75.

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

Working Drawing and Calculation Submittals

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

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

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

No.	Working Drawing Description	Working Drawing File Name Convention For Submittal	Certified by Iowa P.E. (Yes/No)
1	Demolition Plan	198_Clarke_Design227_Demolition Plan.pdf	Yes
2	Beam Survey after Deck Removal	198_Clarke_Design227_Beam Survey after Deck Removal.pdf	No
3	Deck Drains	198_Clarke_Design227_Deck Drains.pdf	No

Design History
at this Site
(Including this design)

Design. No.	Type of Work
2467	Original Design
890	Barrier Rail Retrofit
108	Bridge Overlay and Paving Notch Retrofit
227	Bridge Deck Replacement

Design For Repair To 30° RA

138'-10" x 55'-6" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

43'-3" & 39'-1" End Spans56'-6" Interior Span

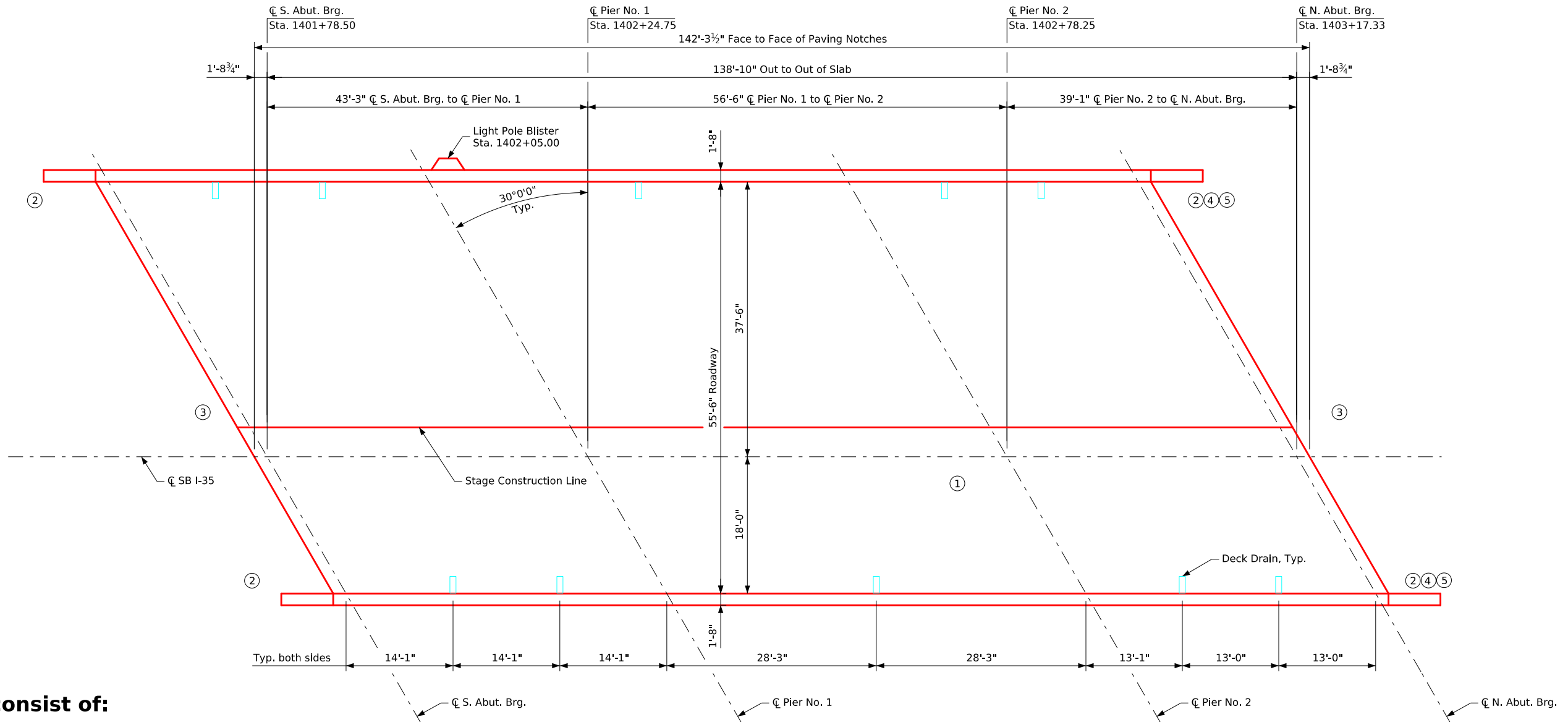
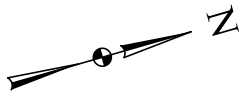
General Notes

STA. 1402+63.87 (I-35 SB)Turn-in Date: August 2026

Clarke County

IOWA DEPARTMENT OF TRANSPORTATION

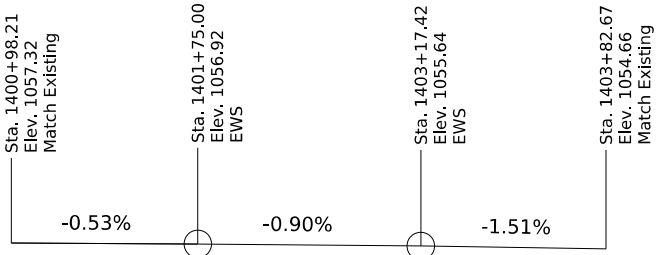
Design No. 227Design Sheet No. 2 of 21FHWA No. 20150



Repairs shall consist of:

- ① Remove bridge deck and barrier rails and construct new 8½" thick bridge deck and TL-5 single-slope barrier railings.
- ② Remove and replace wings.
- ③ Remove and replace approach pavement as shown in roadway plans.
- ④ Remove and replace the guardrail as shown in roadway plans.
- ⑤ Add paved shoulder next to guardrail as shown in roadway plans.

Situation Plan



Proposed P.G.L.
on $\overline{\text{C}}$ SB Bridge

Note:
Proposed P.G.L. is on different location than the existing P.G.L. and differs from existing P.G.L. based on survey and due to overlay.

Location:

On SB I-35 over White Breast Creek
T-72N, R-26W
Section 25
Ward Twp.
Clarke County
Bridge Maint. No. 2031.9L035
FHWA #20150
Latitude 41.008981
Longitude -93.797678

Traffic Estimate

2024 AADT 9,157 V.P.D.
Trucks 33%

Note:
See Design Sheet No. 4 & 5 for
Construction Staging.

Design For Repair To 30° RA

138'-10" x 55'-6" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE

43'-3" & 39'-1" End Spans 56'-6" Interior Span

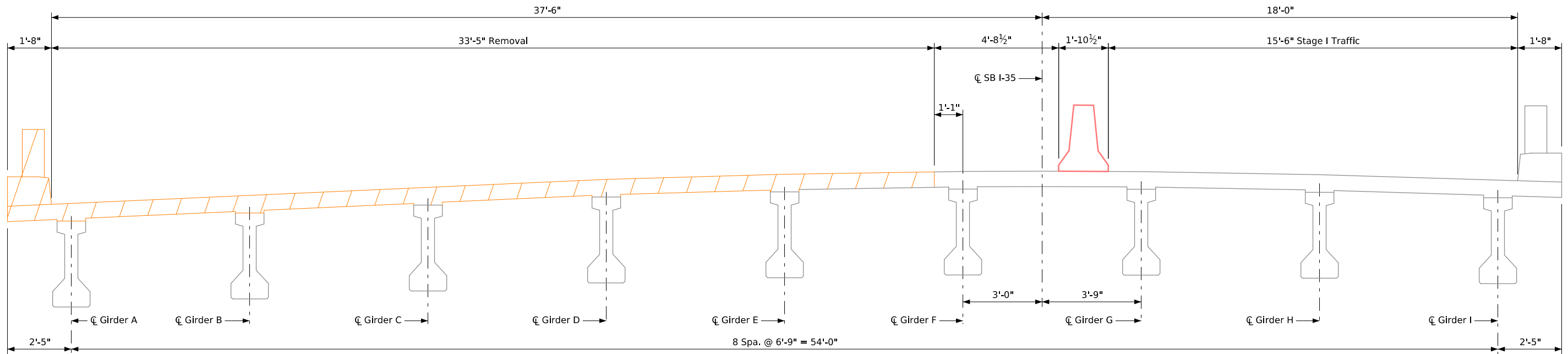
Situation Plan

STA. 1402+63.87 (I-35 SB) Turn-in Date: August 2026

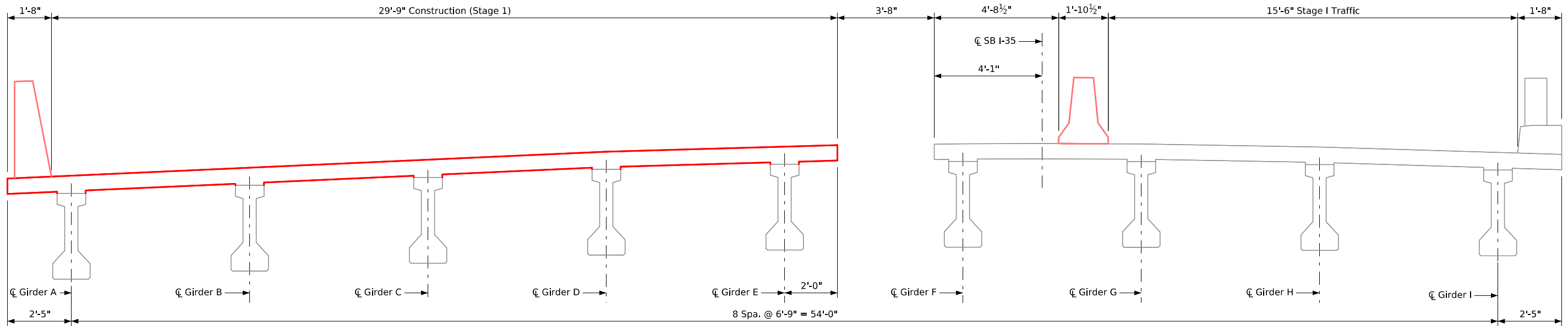
Clarke County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227 Design Sheet No. 3 of 21 FHWA No. 20150



Stage 1 Removal
(Looking North)



Stage 1 Construction
(Looking North)

Legend



Removal

Design For Repair To 30° RA

138'-10" x 55'-6" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE

43'-3" & 39'-1" End Spans56'-6" Interior Span

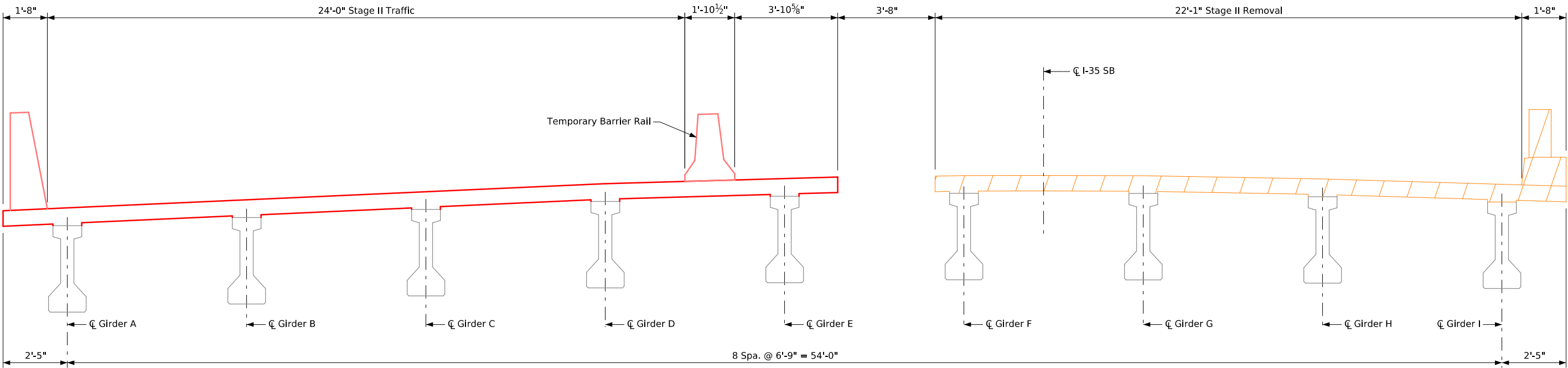
Deck Removal Details

STA. 1402+63.87 (I-35 SB)Turn-In Date: August 2026

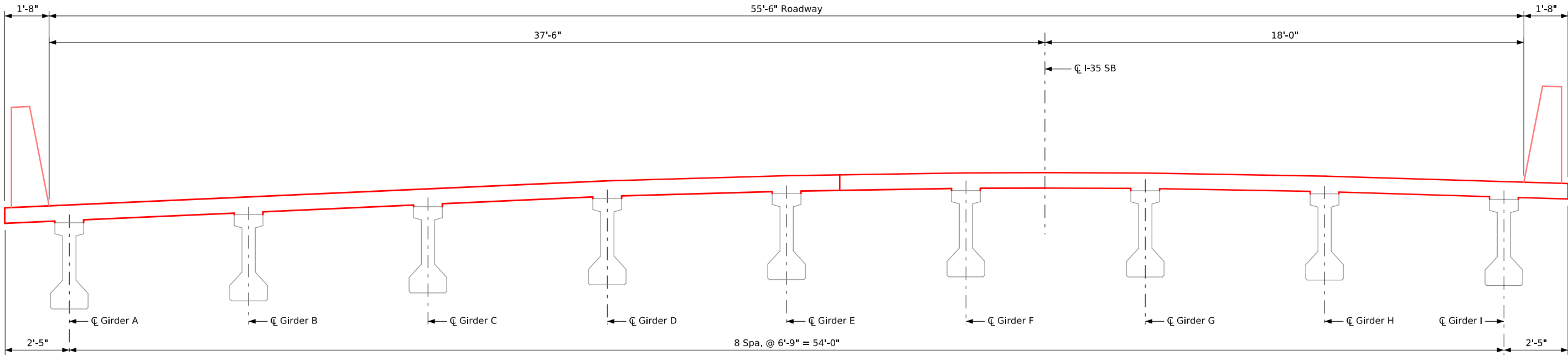
Clarke County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227Design Sheet No. 4 of 21FHWA No. 20150



Stage 2 Removal
(Looking North)



Stage 2 Construction
(Looking North)

Legend



Removal

Note:

Stage II temporary barrier rail shall be anchored to bridge deck.

Design For Repair To 30° RA

138'-10" x 55'-6" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE

43'-3" & 39'-1" End Spans56'-6" Interior Span

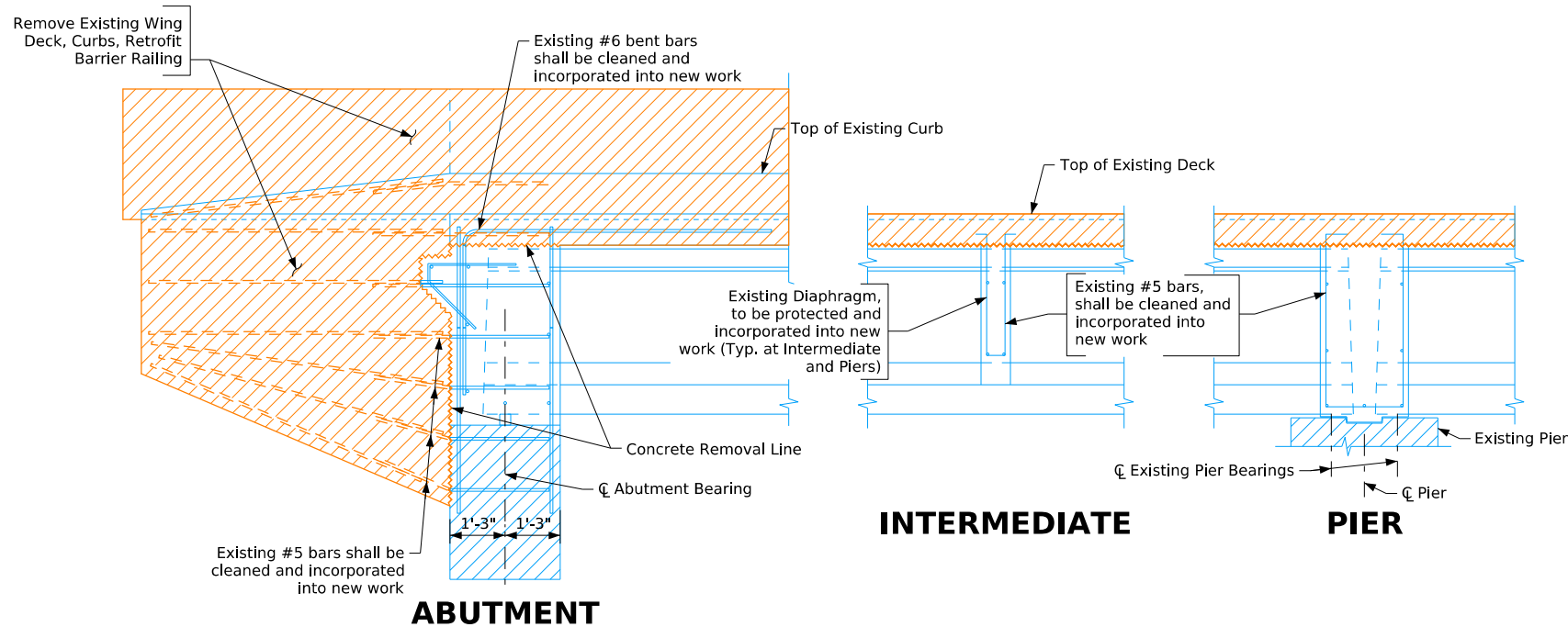
Deck Removal Details (Cont.)

STA. 1402+63.87 (I-35 SB)Turn-In Date: August 2026

Clarke County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227Design Sheet No. 5 of 22FHWA No. 20150



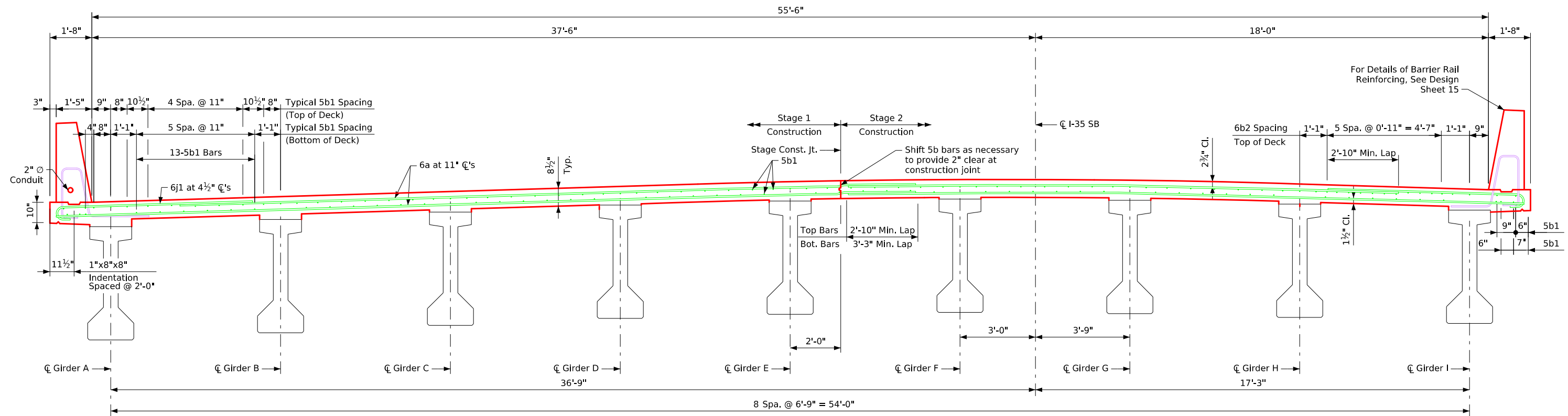
PART LONGITUDINAL REMOVAL SECTION OF DECK AT DIAPHRAGMS

(Deck Reinforcing not shown for clarity)

Notes:
For deck removal notes, see Design Sheet 2.

Design For Repair To 30° RA
**138'-10" x 55'-6" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE**
43'-3" & 39'-1" End Spans 56'-6" Interior Span
Removal Details
STA. 1402+63.87 (I-35 SB) Turn-In Date: August 2026
Clarke County
IOWA DEPARTMENT OF TRANSPORTATION
Design No. 227 Design Sheet No. 6 of 21 FHWA No. 20150

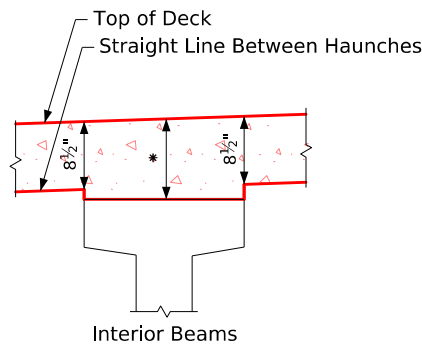
FILE NO. 32400	ENGLISH	DESIGN TEAM GFT	Clarke COUNTY	PROJECT NUMBER IMX-035-1(198)32--02-20	SHEET NUMBER V.25
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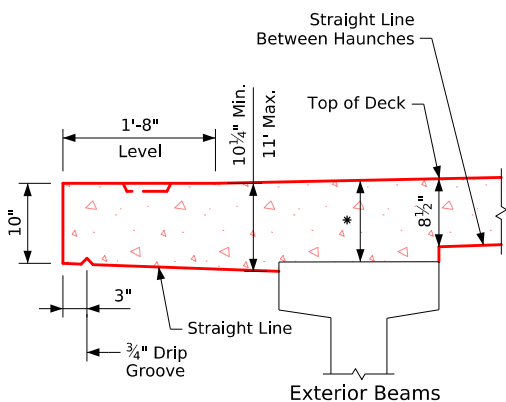
Near Abutment

Near Pier

Transverse Section



Deck area = 41.70 Sq. Ft.
Deck area does not
include the haunch.



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

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

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

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

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

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

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

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

Note:

Incorporate existing diaphragm
steel into slab.

Design For Repair To 30° RA

**138'-10" x 55'-6" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE**

43'-3" & 39'-1" End Spans 56'-6" Interior Span

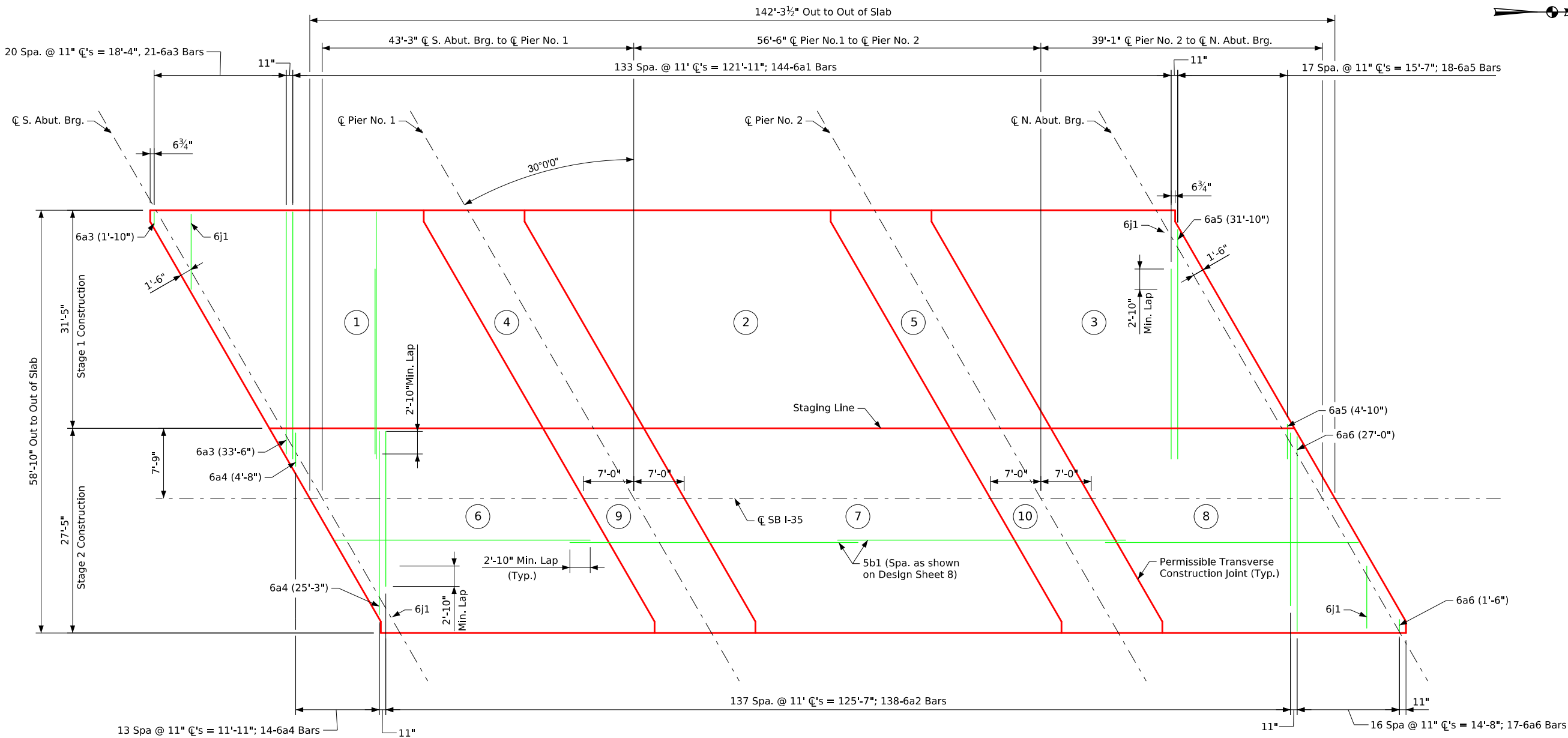
Transverse Section

STA. 1402+63.87 (I-35 SB) Turn-In Date: August 2026

Clarke County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227 Design Sheet No. 8 of 22 FHWA No. 20150



Top Deck Reinforcing Layout and Concrete Placing Diagram

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

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

For transverse and longitudinal slab construction joint details, see Design Sheet No. 11.

Design For Repair To 30° RA

138'-10" x 55'-6" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE

43'-3" & 39'-1" End Spans56'-6" Interior Span

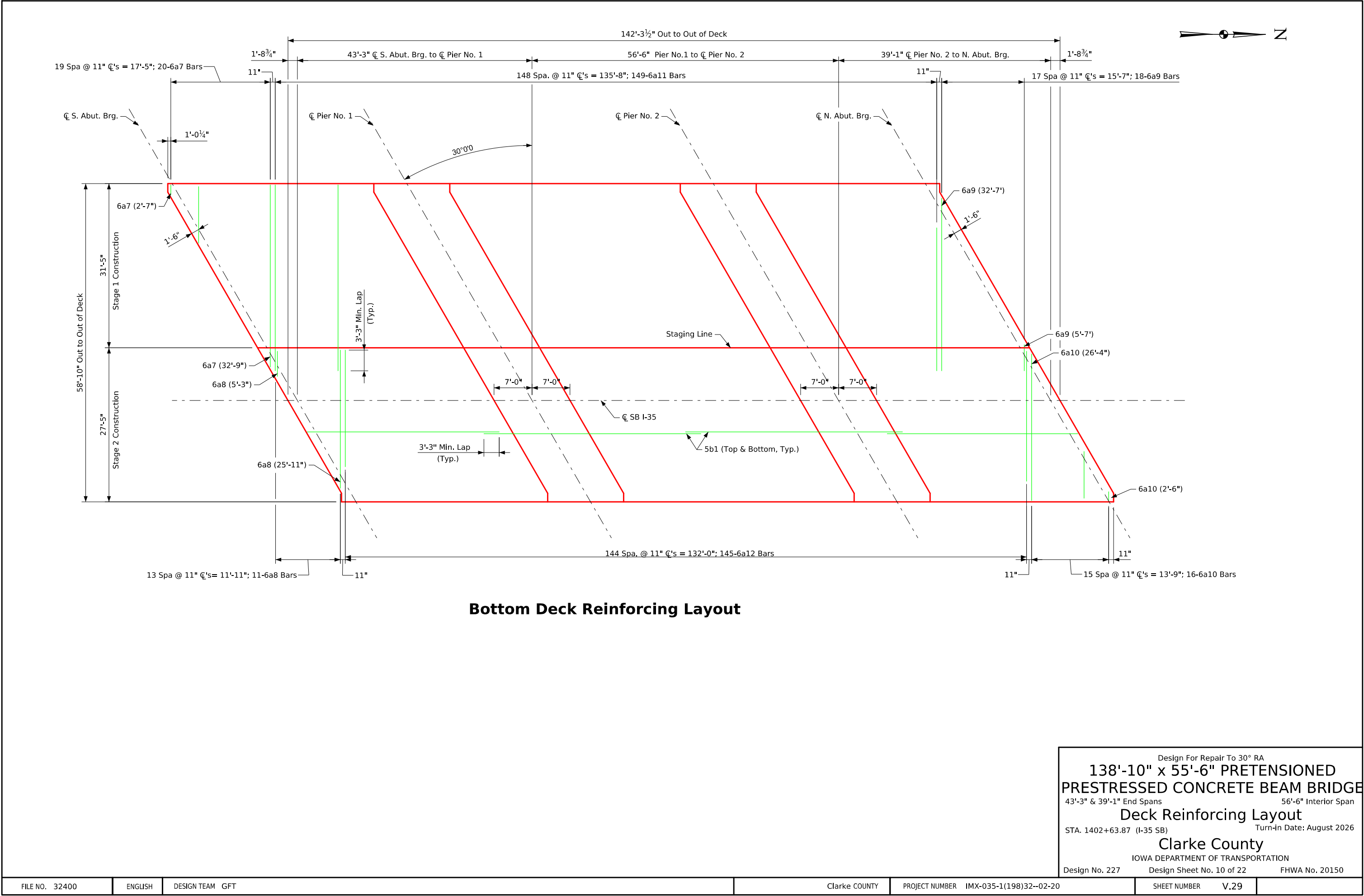
Deck Reinforcing Layout

STA. 1402+63.87 (I-35 SB)Turn-In Date: August 2026

Clarke County

IOWA DEPARTMENT OF TRANSPORTATION

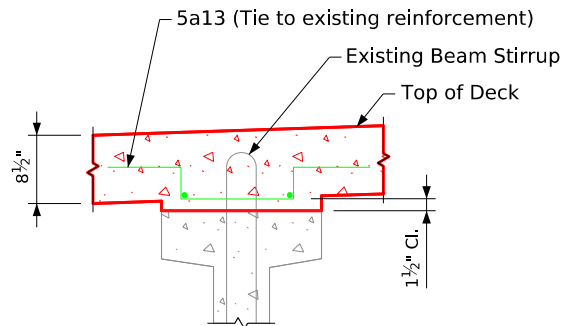
Design No. 227Design Sheet No. 9 of 21FHWA No. 20150



Technical drawings of two pipe fittings:

- 5a13:** A side view of a pipe fitting. The pipe has a diameter of $D=2\frac{1}{2}"$. The total length is $1'-0"$, and there is a $9"$ section. The drawing shows a pipe with a flange on one end and a coupling on the other.
- 6j1:** A top view of a pipe fitting. The pipe has a diameter of $D=5\frac{1}{4}"$. The total length is $8'-2"$. The drawing shows a pipe with a flange on one end and a coupling on the other.

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



(Required where deck plus haunch exceeds 9½")

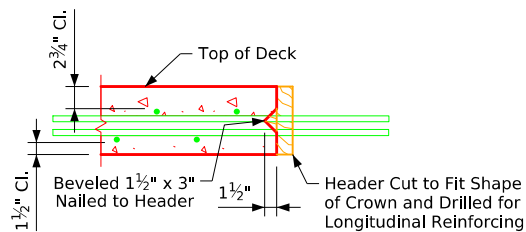


Diagram illustrating the connection of a Beveled $1\frac{1}{2} \times 3$ " Header Nailed to Header. The diagram shows the header cut to fit the shape of the crown and drilled for longitudinal reinforcing. Dimensions include $2\frac{3}{4}$ " Cl. (Clearance) and $1\frac{1}{2}$ " Cl. (Clearance).

Figure 10: Reinforcement details for the bridge deck. The diagram shows a cross-section of the bridge deck with reinforcement bars (5a13, 5a14, 5a15) and dimensions. Key dimensions include 43'-3" for the span from the S. Abut. Brg. to Pier No. 1, 56'-6" for the span from Pier No. 1 to Pier No. 2, and 39'-1" for the span from Pier No. 2 to the N. Abut. Brg. Reinforcement details include 10-5a13 bars (11'-8 1/2" length) and 8-5a13 bars (6'-10 1/2" length) for Pier No. 1, and 8-5a13 bars (6'-10 1/2" length) and 9-5a13 bars (9'-7 1/2" length) for Pier No. 2. Anticipated haunch reinforcement limits are also indicated.

Bar	Location	Shape	No.	Length	Weight
6a1	Deck Transv. Top		133	30'-0"	5993
6a2	Deck Transv. Top		137	21'-10"	4493
6a3	Deck Transv. Top		21	Var.	557
6a4	Deck Transv. Top		14	Var.	315
6a5	Deck Transv. Top		18	Var.	496
6a6	Deck Transv. Top		17	Var.	364
6a7	Deck Transv. Bott.		20	Var.	531
6a8	Deck Transv. Bott.		14	Var.	328
6a9	Deck Transv. Bott.		18	Var.	516
6a10	Deck Transv. Bott.		16	Var.	346
6a11	Deck Transv. Bott.		149	34'-7"	7740
6a12	Deck Transv. Bott.		145	27'-1"	5898
5a13	Haunch, Transverse		330	3'-7"	1233
5a14	Haunch, Longit.		18	19'-4"	363
5a15	Haunch, Longit.		18	17'-11"	336
5b1	Deck Longit. Top & Bott.		464	34'-1"	16495
6b2	Deck Longit. Top & Bott.		114	13'-6"	2312
6j1	Transv. Barrier Bars		740	8'-10"	9818
5z1	Drain Bars		40	3'-0"	125
Epoxy Reinf. Total Weight (lbs.)					58258

Section	Total
Section 1	31.2
Section 2	34.9
Section 3	27.9
Section 4	11.5
Section 5	11.5
Section 6	28.4
Section 7	31.9
Section 8	25.5
Section 9	10.5
Section 10	10.5
Total (cu. yd.)	223.9

Design For Repair To 30° RA

**138'-10" x 55'-6" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE**

43'-3" & 39'-1" End Spans 56'-6" Interior Span

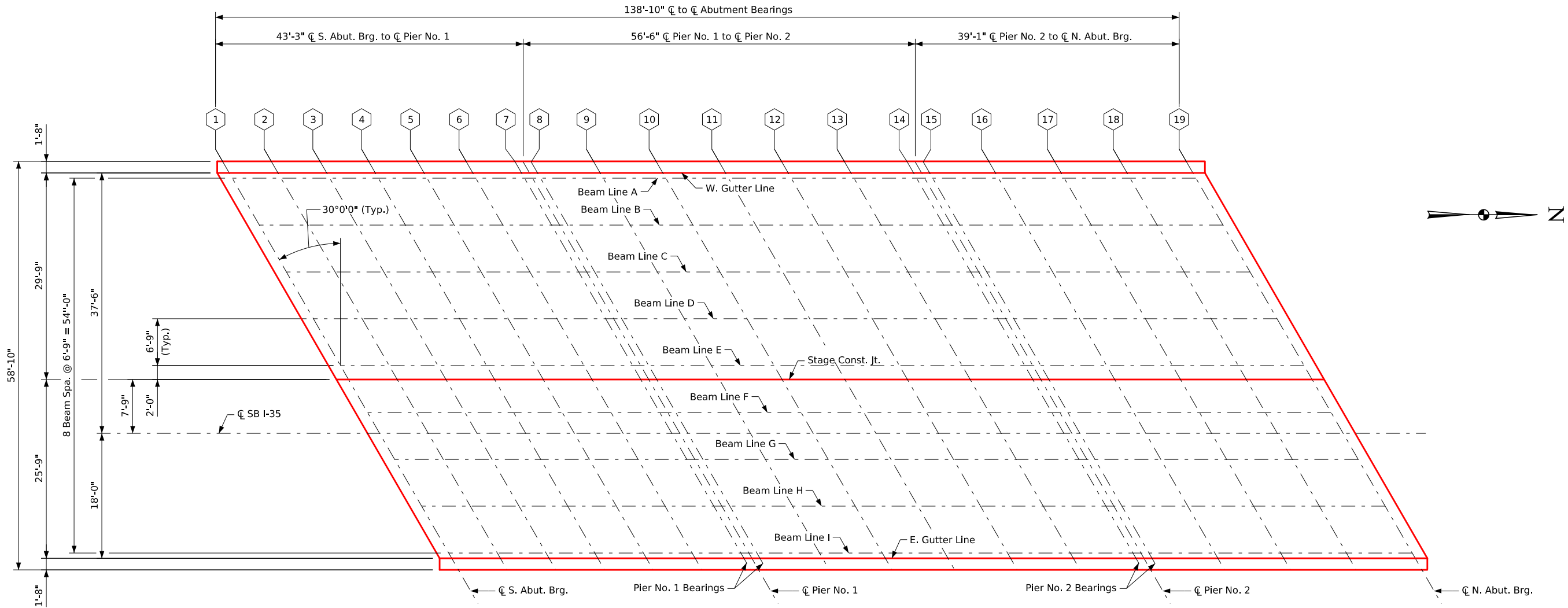
Superstructure Details

STA. 1402+63.87 (I-35 SB) Turn-in Date: August 2026

Clarke County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227 Design Sheet No. 11 of 21 FHWA No. 20150



Top of Deck Elevations																			
Location	☿ S. Abut. Brg.						Pier No. 1 Bearings							Pier No. 2 Bearings					☿ N. Abut. Brg.
	Line 1	Line 2	Line 3	Line 4	Line 5	Line 6	Line 7	Line 8	Line 9	Line 10	Line 11	Line 12	Line 13	Line 14	Line 15	Line 16	Line 17	Line 18	Line 19
W. Gutter Line	1056.23	1056.17	1056.11	1056.05	1055.99	1055.91	1055.84	1055.82	1055.72	1055.63	1055.53	1055.43	1055.34	1055.24	1055.22	1055.09	1054.97	1054.84	1054.71
Beam A	1056.24	1056.18	1056.12	1056.06	1055.99	1055.92	1055.85	1055.83	1055.73	1055.64	1055.53	1055.44	1055.34	1055.25	1055.23	1055.10	1054.98	1054.85	1054.73
Beam B	1056.34	1056.29	1056.24	1056.18	1056.11	1056.05	1055.98	1055.96	1055.87	1055.77	1055.68	1055.58	1055.49	1055.40	1055.38	1055.27	1055.17	1055.05	1054.96
Beam C	1056.51	1056.45	1056.42	1056.36	1056.29	1056.22	1056.15	1056.13	1056.04	1055.96	1055.87	1055.78	1055.70	1055.60	1055.58	1055.48	1055.38	1055.29	1055.20
Beam D	1056.66	1056.63	1056.60	1056.54	1056.46	1056.40	1056.33	1056.32	1056.24	1056.15	1056.07	1055.98	1055.89	1055.80	1055.79	1055.69	1055.60	1055.51	1055.42
Beam E	1056.80	1056.78	1056.72	1056.66	1056.60	1056.54	1056.47	1056.45	1056.37	1056.28	1056.20	1056.12	1056.02	1055.93	1055.91	1055.82	1055.72	1055.64	1055.54
Stage Line	1056.86	1056.83	1056.77	1056.72	1056.66	1056.59	1056.52	1056.51	1056.42	1056.33	1056.25	1056.16	1056.07	1055.97	1055.96	1055.87	1055.79	1055.70	1055.61
Beam F	1056.88	1056.85	1056.79	1056.73	1056.67	1056.61	1056.54	1056.52	1056.43	1056.35	1056.26	1056.17	1056.08	1055.98	1055.97	1055.88	1055.80	1055.72	1055.63
Beam G	1056.84	1056.79	1056.74	1056.68	1056.62	1056.55	1056.48	1056.46	1056.38	1056.29	1056.21	1056.12	1056.03	1055.93	1055.92	1055.85	1055.77	1055.69	1055.60
Beam H	1056.69	1056.64	1056.59	1056.53	1056.46	1056.39	1056.32	1056.31	1056.23	1056.14	1056.06	1055.98	1055.89	1055.81	1055.80	1055.73	1055.65	1055.57	1055.49
Beam I	1056.54	1056.48	1056.42	1056.36	1056.30	1056.24	1056.17	1056.16	1056.07	1056.00	1055.91	1055.83	1055.75	1055.66	1055.65	1055.58	1055.51	1055.44	1055.36
E. Gutter Line	1056.52	1056.45	1056.39	1056.33	1056.27	1056.21	1056.15	1056.13	1056.05	1055.97	1055.89	1055.8	1055.72	1055.64	1055.62	1055.55	1055.48	1055.41	1055.34

Note: Calculated top of deck elevations match existing.

Design For Repair To 30° RA

138'-10" x 55'-6" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE

43'-3" & 39'-1" End Spans56'-6" Interior Span

Deck Elevations

STA. 1402+63.87 (I-35 SB)Turn-In Date: August 2026

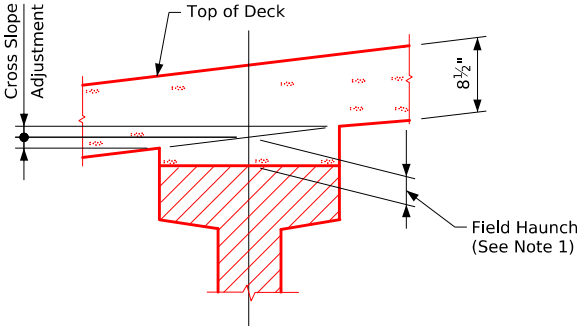
Clarke County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227Design Sheet No. 12 of 21FHWA No. 20150

Beam Line Haunch Elevations																			
	☐ S. Abut. Bearing						☐ Pier No. 1 Bearings							☐ Pier No. 2 Bearings					☐ N. Abut. Bearing
Location	Line 1	Line 2	Line 3	Line 4	Line 5	Line 6	Line 7	Line 8	Line 9	Line 10	Line 11	Line 12	Line 13	Line 14	Line 15	LINE 16	Line 17	Line 18	Line 19
Beam Line A	1055.53	1055.47	1055.41	1055.35	1055.28	1055.21	1055.14	1055.12	1055.03	1054.94	1054.83	1054.74	1054.64	1054.54	1054.52	1054.39	1054.27	1054.14	1054.02
Beam Line B	1055.63	1055.58	1055.53	1055.47	1055.40	1055.34	1055.27	1055.25	1055.17	1055.07	1054.98	1054.88	1054.79	1054.69	1054.67	1054.56	1054.46	1054.34	1054.25
Beam Line C	1055.80	1055.74	1055.71	1055.65	1055.58	1055.51	1055.44	1055.42	1055.34	1055.26	1055.17	1055.08	1055.00	1054.89	1054.87	1054.77	1054.67	1054.58	1054.49
Beam Line D	1055.95	1055.92	1055.89	1055.83	1055.75	1055.69	1055.62	1055.61	1055.54	1055.45	1055.37	1055.28	1055.19	1055.09	1055.08	1054.98	1054.89	1054.80	1054.71
Beam Line E	1056.09	1056.07	1056.01	1055.95	1055.89	1055.83	1055.76	1055.74	1055.67	1055.58	1055.50	1055.42	1055.32	1055.22	1055.20	1055.11	1055.01	1054.93	1054.83
Beam Line F	1056.17	1056.14	1056.08	1056.02	1055.96	1055.90	1055.83	1055.81	1055.73	1055.65	1055.56	1055.47	1055.38	1055.27	1055.26	1055.17	1055.09	1055.01	1054.92
Beam Line G	1056.13	1056.08	1056.03	1055.97	1055.91	1055.84	1055.77	1055.75	1055.68	1055.59	1055.51	1055.42	1055.33	1055.22	1055.21	1055.14	1055.06	1054.98	1054.89
Beam Line H	1055.98	1055.93	1055.88	1055.82	1055.75	1055.68	1055.61	1055.60	1055.53	1055.44	1055.36	1055.28	1055.19	1055.10	1055.09	1055.02	1054.94	1054.86	1054.78
Beam Line I	1055.83	1055.77	1055.71	1055.65	1055.59	1055.53	1055.46	1055.45	1055.37	1055.30	1055.21	1055.13	1055.05	1054.95	1054.94	1054.87	1054.80	1054.73	1054.65

Miscellaneous Data Table																					
	Beam Line		☐ S. Abut. Bearing						☐ Pier No. 1 Bearing							☐ Pier No. 2 Bearings					☐ N. Abut. Bearing
			Line 1	Line 2	Line 3	Line 4	Line 5	Line 6	Line 7	Line 8	Line 9	Line 10	Line 11	Line 12	Line 13	Line 14	Line 15	Line 16	Line 17	Line 18	Line 19
Anticipated Deflection Due to Deck (in.)	All		0"	3⁄16"	5⁄16"	3⁄8"	5⁄16"	3⁄16"	0"	0"	1⁄2"	7⁄8"	1 1⁄16"	7⁄8"	1⁄2"	0"	0"	3⁄16"	1⁄4"	3⁄16"	0"
Cross Slope Adjustments (in.)	ALL		Varies																		
Allowable Field Haunch (in. & ft.)	Max.	All	2 1⁄2" (0.2083')																		
	Min.	All	-3⁄8" (Embedment) (-0.0313')																		



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

Design For Repair To 30° RA

138'-10" x 55'-6" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE

43'-3" & 39'-1" End Spans56'-6" Interior Span

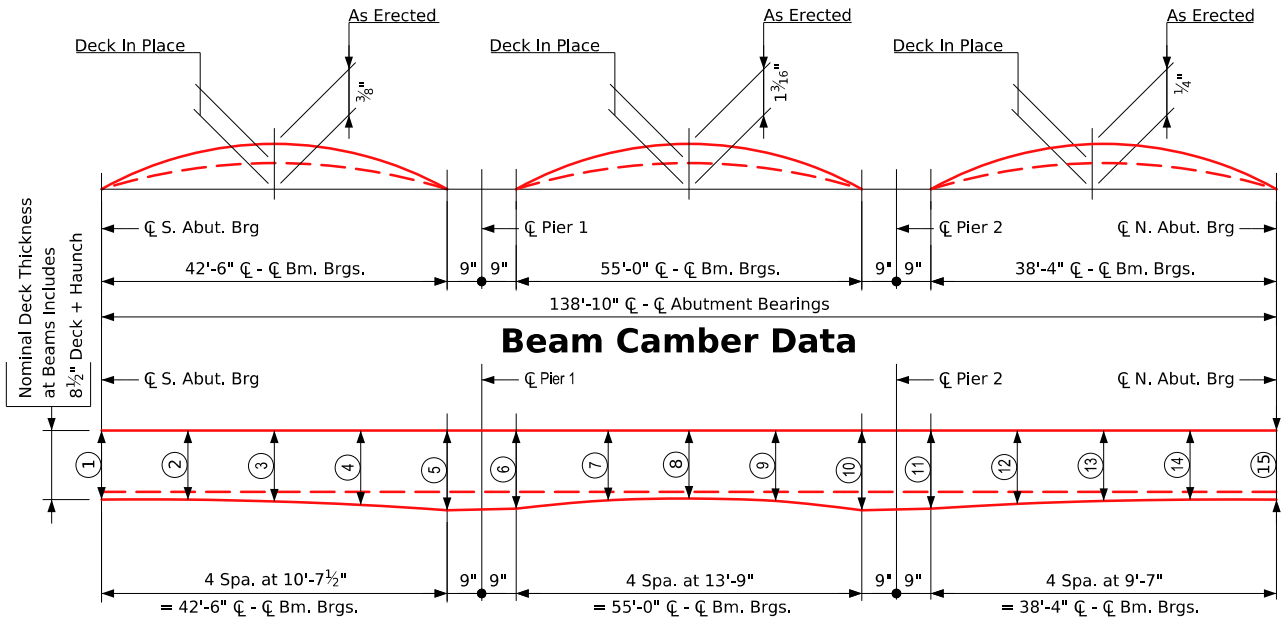
Deck Haunch Data Details

STA. 1402+63.87 (I-35 SB)Turn-In Date: August 2026

Clarke County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227Design Sheet No. 13 of 21FHWA No. 20150



Deck Thickness At Beam-line

Theoretical Deck And Haunch Thickness

Location	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
Girder A	9"	9 1/8"	9 5/16"	9 11/16"	10"	9 3/4"	9 3/16"	8 5/8"	9 1/4"	10 1/8"	9 7/8"	9 1/2"	9 3/16"	9 1/16"	9"
Girder B	9"	9 1/4"	9 3/8"	9 5/8"	10"	9 3/4"	9 1/8"	8 3/4"	9 5/16"	10 1/8"	9 7/8"	9 1/2"	9 3/16"	8 15/16"	9"
Girder C	9"	9 1/4"	9 1/2"	9 3/4"	10"	9 3/4"	9 3/16"	8 13/16"	9 3/8"	10 1/8"	9 7/8"	9 1/2"	9 1/16"	9 1/16"	9"
Girder D	9"	9 1/2"	9 5/8"	9 1 1/16"	9 15/16"	9 13/16"	9 5/16"	8 7/8"	9 3/8"	10 1/16"	9 15/16"	9 1/2"	9 3/16"	9 1/16"	9"
Girder E	9"	9 7/16"	9 7/16"	9 3/4"	10"	9 3/4"	9 1/4"	8 7/8"	9 7/16"	10 1/8"	9 7/8"	9 9/16"	9 1/8"	9 3/16"	9"
Girder F	9"	9 5/16"	9 3/8"	9 11/16"	10"	9 3/4"	9 3/16"	8 13/16"	9 7/16"	10 1/16"	9 15/16"	9 1/2"	9 1/4"	9 3/16"	9"
Girder G	9"	9 1/4"	9 3/8"	9 3/4"	10"	9 3/4"	9 1/4"	8 7/8"	9 1/2"	10 1/16"	9 15/16"	9 11/16"	9 5/16"	9 1/4"	9"
Girder H	9"	9 1/4"	9 3/8"	9 1 1/16"	9 15/16"	9 13/16"	9 1/4"	8 3/4"	9 3/8"	10 1/16"	9 15/16"	9 11/16"	9 1/4"	9 1/8"	9"
Girder I	9"	9 1/16"	9 1/8"	9 9/16"	9 15/16"	9 13/16"	9 1/4"	8 3/4"	9 3/8"	10 1/16"	9 15/16"	9 5/8"	9 1/4"	9 3/16"	9"

Note: Place 5a13 haunch reinforcement bars where deck plus haunch exceeds 9 1/2". See Design Sheet 11 for haunch reinforcement details.

Design For Repair To 30° RA

138'-10" x 55'-6" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE

43'-3" & 39'-1" End Spans56'-6" Interior Span

Deck Haunch Data Details (Cont.)

STA. 1402+63.87 (I-35 SB)Turn-In Date: August 2026

Clarke County

IOWA DEPARTMENT OF TRANSPORTATION

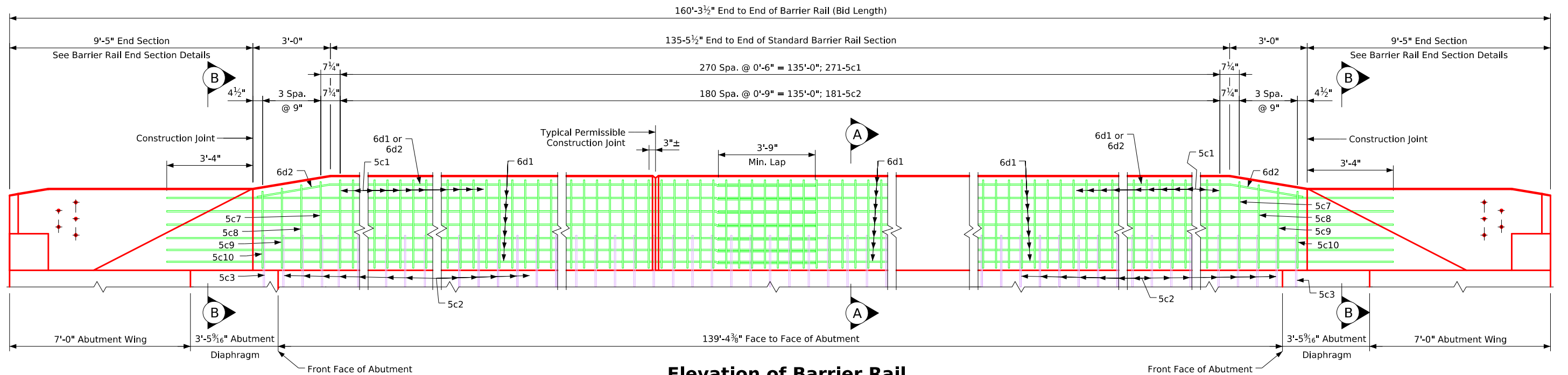
Design No. 227Design Sheet No. 14 of 21FHWA No. 20150

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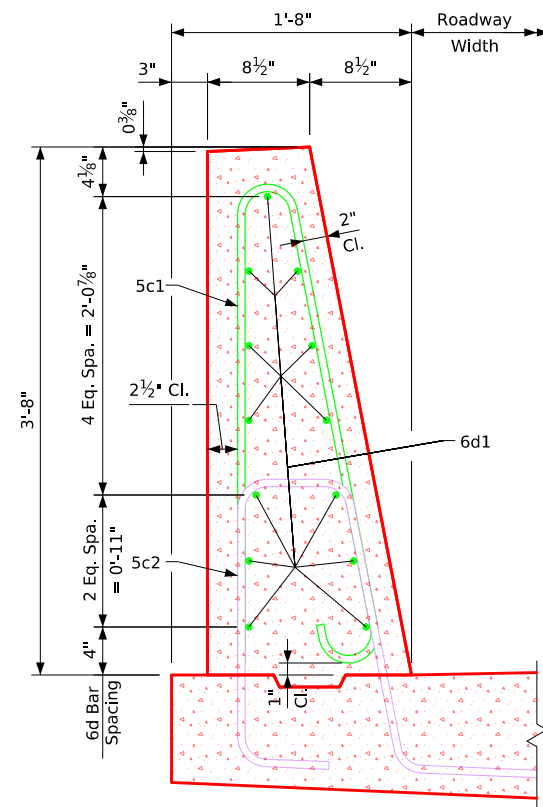
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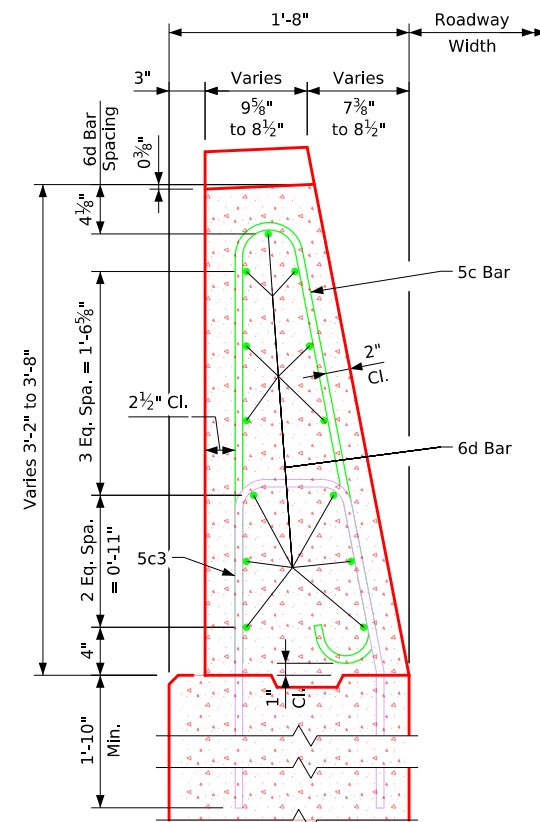
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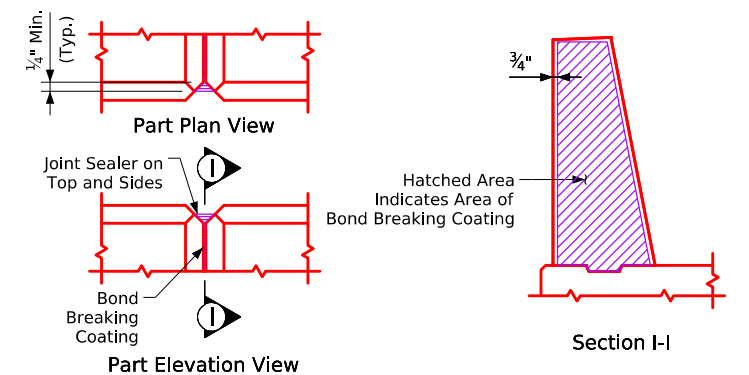
Elevation of Barrier Rail



Part Section A-A



Part Section B-B



Barrier Rail Joint Details

See Barrier Rail Details on Design Sheet 16 for notes, reinforcing steel details, and quantities.

Design For Repair To 30° RA

138'-10" x 55'-6" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

43'-3" & 39'-1" End Spans 56'-6" Interior Span

Barrier Rail Details

STA. 1402+63.87 (I-35 SB) Turn-In Date: August 2026

Clarke County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227 Design Sheet No. 15 of 21 FHWA No. 20150

Barrier Rail Notes:

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

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

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

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

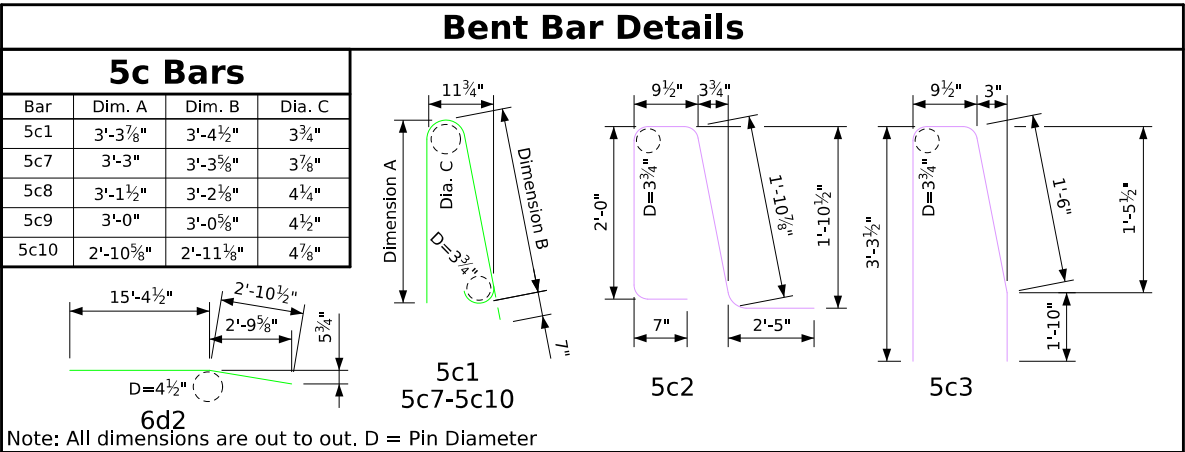
The concrete barrier rail is to be bid on a lineal foot basis. The number of linear feet of barrier rail installed will be paid for at the contract price per lineal foot based on plan quantities. Price bid for concrete barrier railing shall be full compensation for furnishing all material, excluding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

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

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

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

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



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

Epoxy Coated Reinf. Steel - Two Rails

Section	Bar	Location	Shape	No.	Length	Weight
Standard Sections	5c1	Rail, Vertical		542	7'-6"	4240
	5c7	Rail, Vertical, Sloped Ends		4	7'-4"	31
	5c8	Rail, Vertical, Sloped Ends		4	7'-1"	30
	5c9	Rail, Vertical, Sloped Ends		4	6'-10"	29
	5c10	Rail, Vertical, Sloped Ends		4	6'-7"	28
	6d1	Rail, Longitudinal		102	40'-0"	6128
	6d2	Rail, Longitudinal, Top		4	18'-3"	110
Epoxy Reinf. Total Weight (lbs.)						10594

Stainless Steel Reinf. Steel - Two Rails

Section	Bar	Location	Shape	No.	Length	Weight
Standard Sections	5c2	Rail, Vertical		378	7'-3"	2828
	5c3	Rail, Vertical		4	7'-2"	30
Stainless Steel Reinf. Total Weight (lbs.)						2858

Concrete Placement Summary

Section	Total
Δ Standard Section 282'-11" at 0.144 cu. yd. per ft.	40.7
Total (cu. yd.)	40.7
Note: Δ Deduct 0.021 cu. yd. for one sloped end.	

Concrete Barrier Rail Quantities

Item	Unit	Quantity
Concrete Barrier Railing, 3'-8"	L.F.	320'-7"

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

Design For Repair To 30° RA

138'-10" x 55'-6" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE

43'-3" & 39'-1" End Spans56'-6" Interior Span

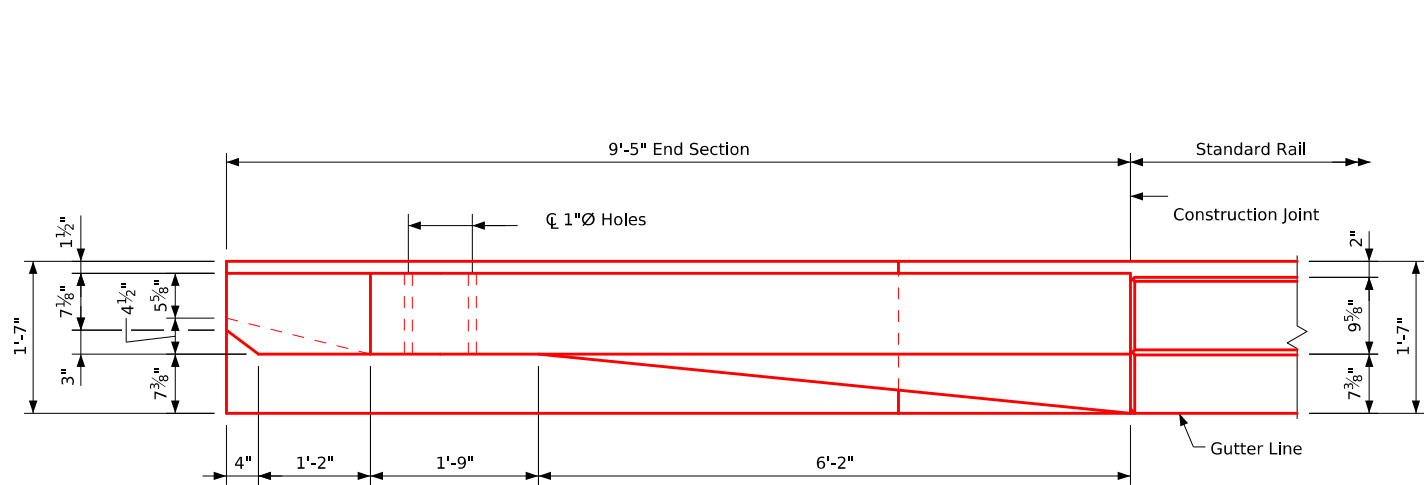
Barrier Rail Details (Cont.)

STA. 1402+63.87 (I-35 SB)Turn-In Date: August 2026

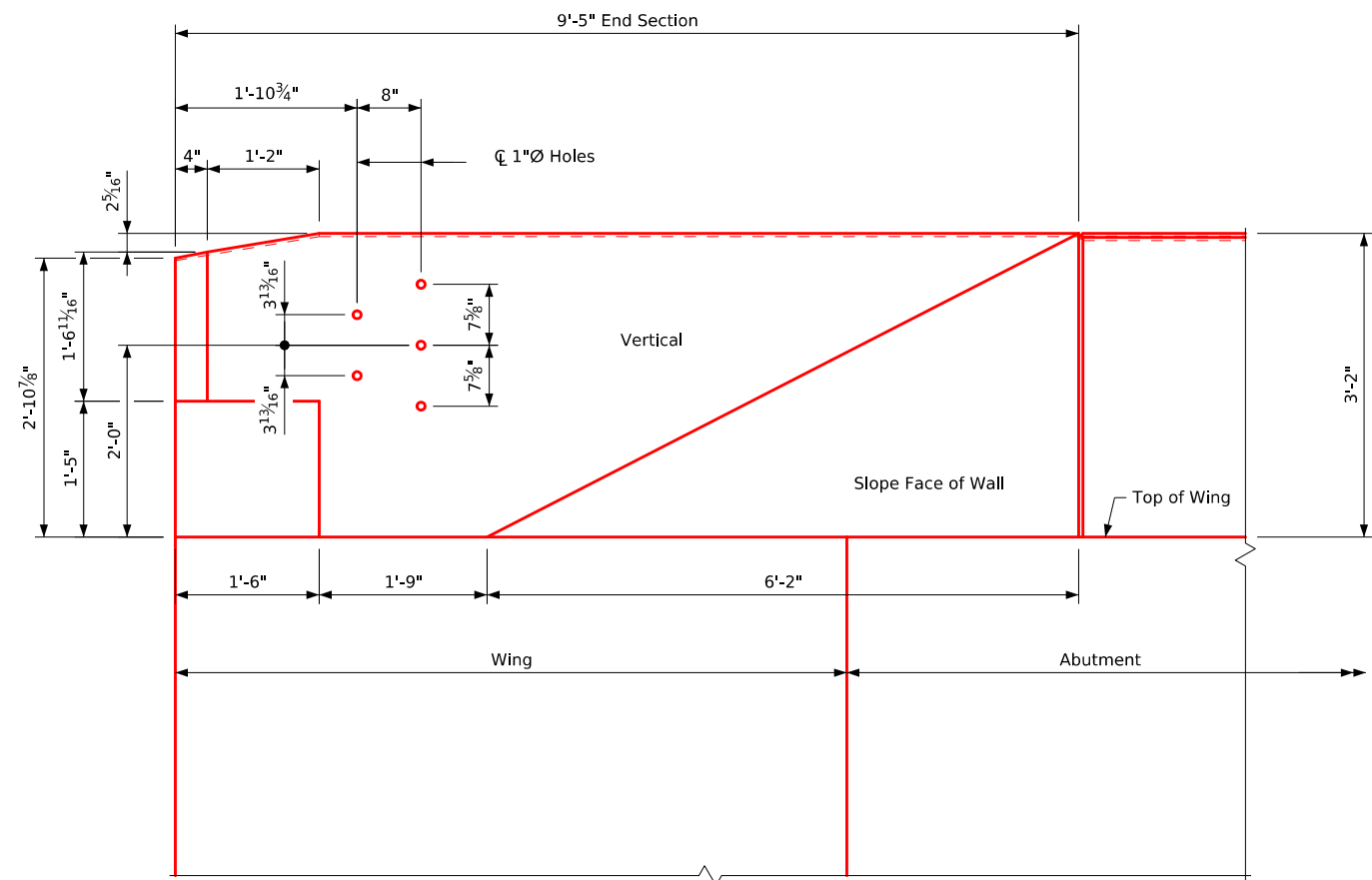
Clarke County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227Design Sheet No. 16 of 21FHWA No. 20150

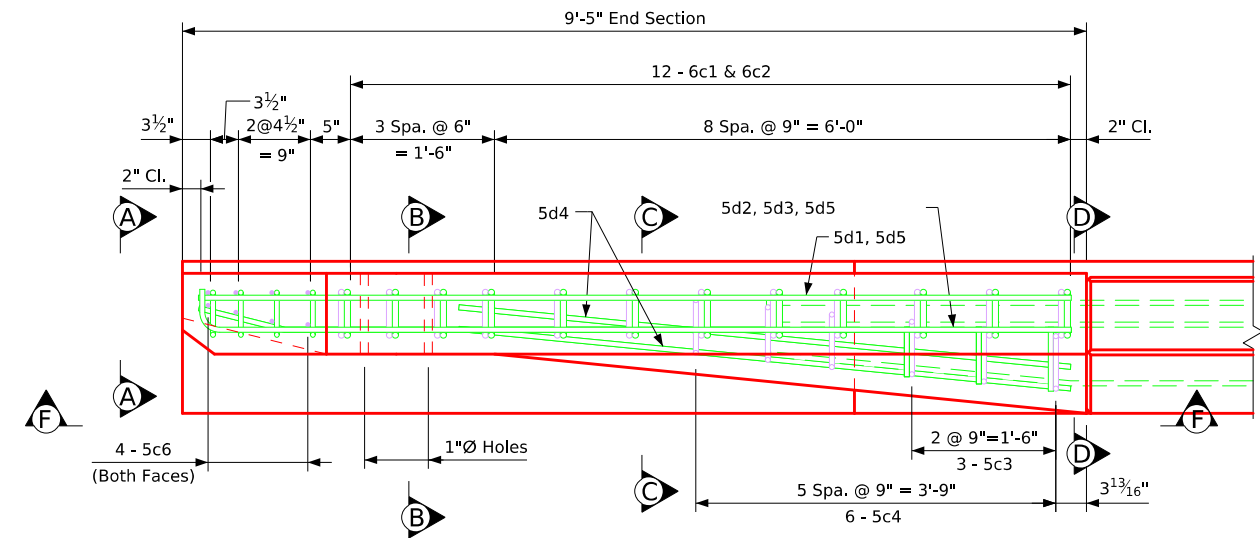


Part Plan View

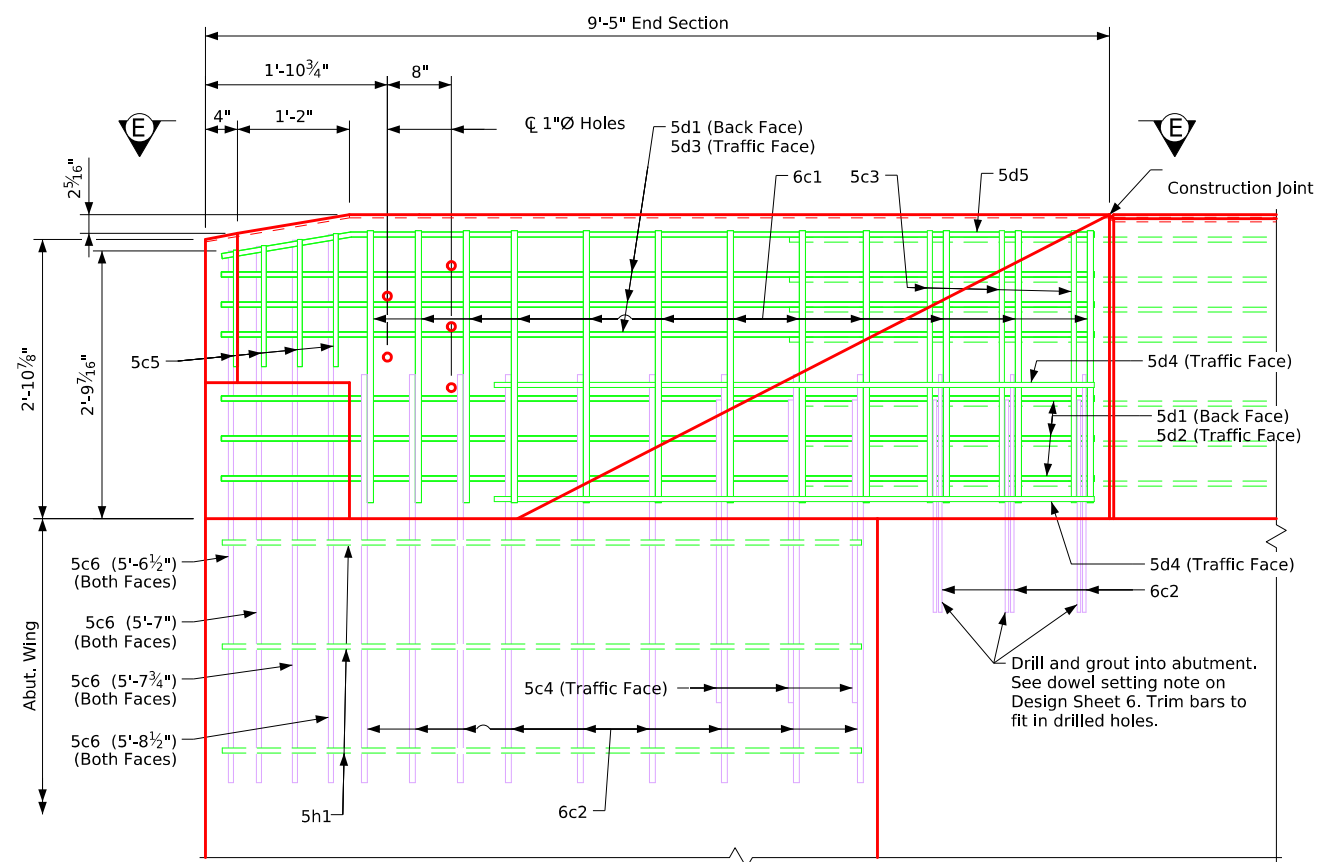


Part Elevation View

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



Part View E-E



Part View F-F

Notes:
Construction joint between top of abutment wing and barrier rail is roughened concrete.
The 6c2, 5c4, and 5c6 bars are to be placed with the abutment wing, except those grouted into existing abutment. The details for placement are shown on the Abutment Wing Details Sheet.
Dashed lines below the top of wing are the abutment wing reinforcing steel.
See Abutment Wing Details Sheet for placement.
For Bar List, Bent Bar Details, View A-A, Sections B-B, C-C, and D-D see Design Sheet No. 18.

Design For Repair To 30° RA

**138'-10" x 55'-6" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE**

43'-3" & 39'-1" End Spans 56'-6" Interior Span

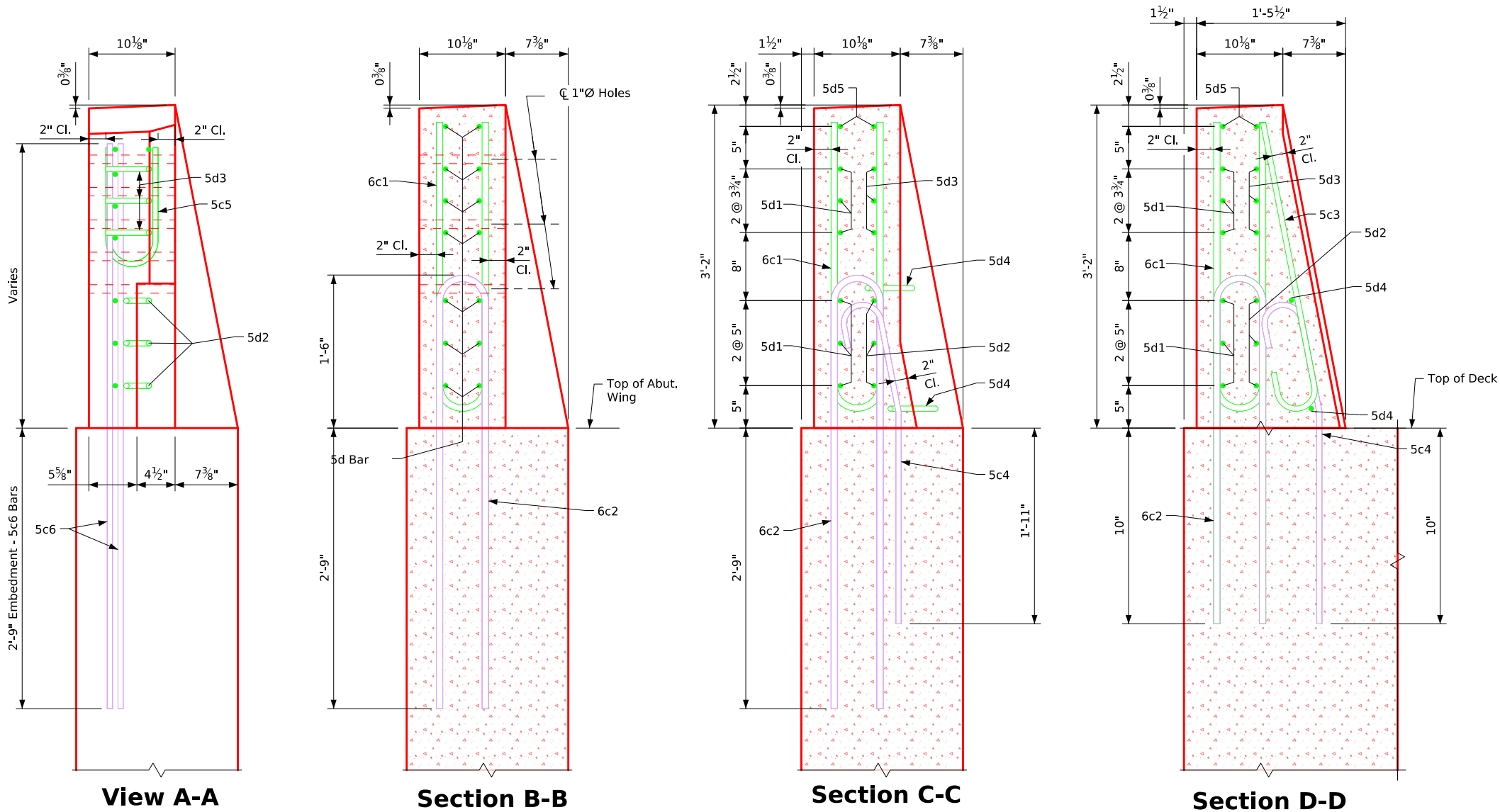
Barrier Rail End Section Details

STA. 1402+63.87 (I-35 SB) Turn-In Date: August 2026

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IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227 Design Sheet No. 17 of 21 FHWA No. 20150



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

Notes:
Construction joint between top of abutment wing and barrier rail is roughened concrete.
The 6c2, 5c4, and 5c6 bars are to be placed with the abutment wing. The details for placement are shown on the Abutment Wing Detail Sheet.
Dashed lines below the top of wing are the abutment wing reinforcing steel.
See Abutment Wing Detail Sheet for placement.
For Plan and Elevation see Design Sheet No. 17.
6c2 and 5c4 bars in existing abutment (see Section D-D) shall be set as dowels and field trimmed for 10" embedment. See Dowel Setting Note on Design Sheet 7.

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 (lbs.)					279

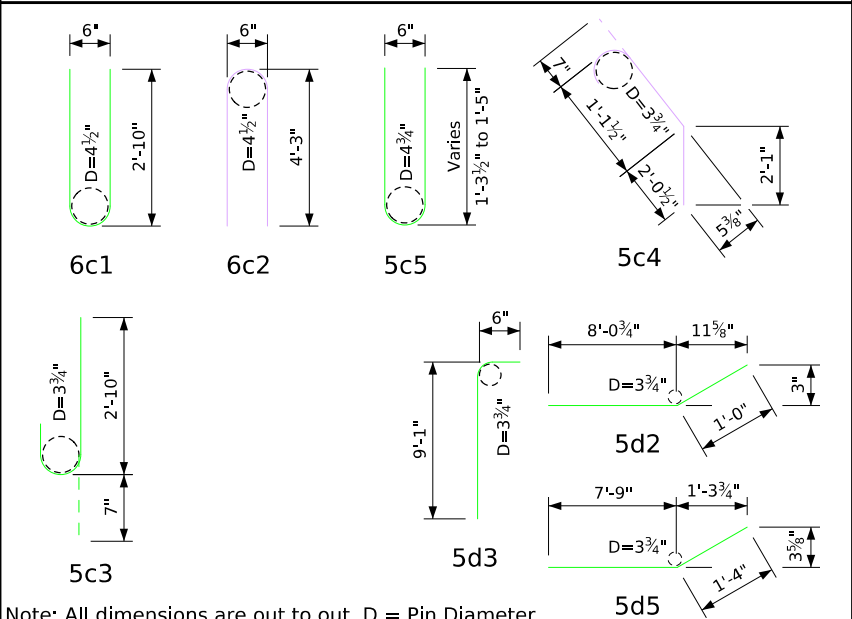
Stainless Steel Reinforcing Steel - One End Section

Bar	Location	Shape	No.	Length	Weight
6c2	Rail, Vertical		12	8'-9"	158
5c4	Rail, Vertical (Traffic Face)		6	3'-10"	24
5c6	Rail, Vertical (End)		8	Varies	47
Stainless Steel Reinforcing Total Weight (lbs.)					229

Concrete Placement Summary

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

Bent Bar Details



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

Design For Repair To 30° RA

138'-10" x 55'-6" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE

43'-3" & 39'-1" End Spans56'-6" Interior Span

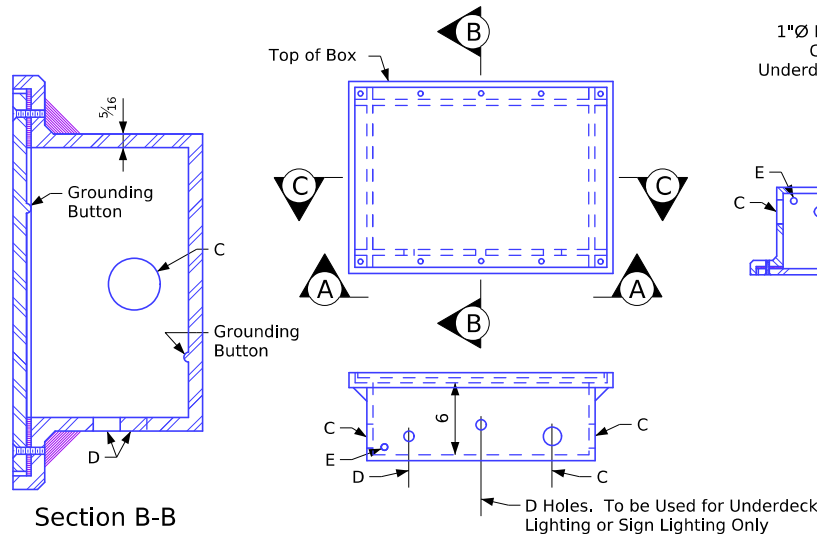
Barrier Rail End Section Details (Cont.)

STA. 1402+63.87 (I-35 SB)Turn-In Date: August 2026

Clarke County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227Design Sheet No. 18 of 21FHWA No. 20150



Section B-B

View A-A

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

Section C-C

Lighting Notes:

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

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

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

All "C" entrance holes in junction boxes shall be drilled and tapped for the specified conduit size. All other holes shall have a concrete - tight slip fit. Conduit ends shall not protrude into junction box more than 1/4". Drain pipe end shall be flush with inside surface of box. Grounding buttons shall be located approximately 3" from the inside surface of the box wall, and not closer than 3" to the edge of any hole in the box floor. Holes for drain pipe shall be placed in the low corner of the box, with a minimum clearance of 1" between the edge of the hole and the inside surface of the box wall. Typical details are shown on this sheet.

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

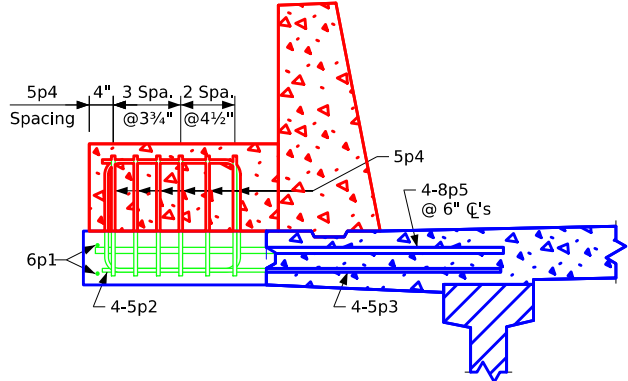
Cost of furnishing and installing poles, lights, and lighting conductor is not a part of this contract.

All anchor bolt material shall comply with the requirements of Iowa DOT Construction and Materials I.M. 453.08 and Standard Specifications 4185.02,B,2.

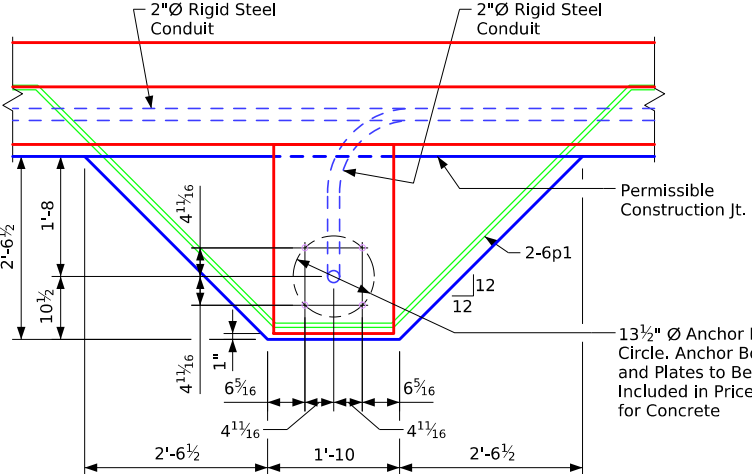
Welding of anchor bolts shall not be allowed. The Contractor shall obtain a template from the Manufacturer / Fabricator for proper placement of the anchor bolts.

All reinforcing steel is to be epoxy coated and grade 60.

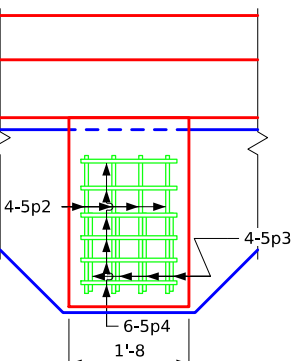
Stainless-steel reinforcement shall not be allowed to be in contact with the uncoated reinforcement, bare metal forming hardware, or to galvanized attachments or galvanized conduit.



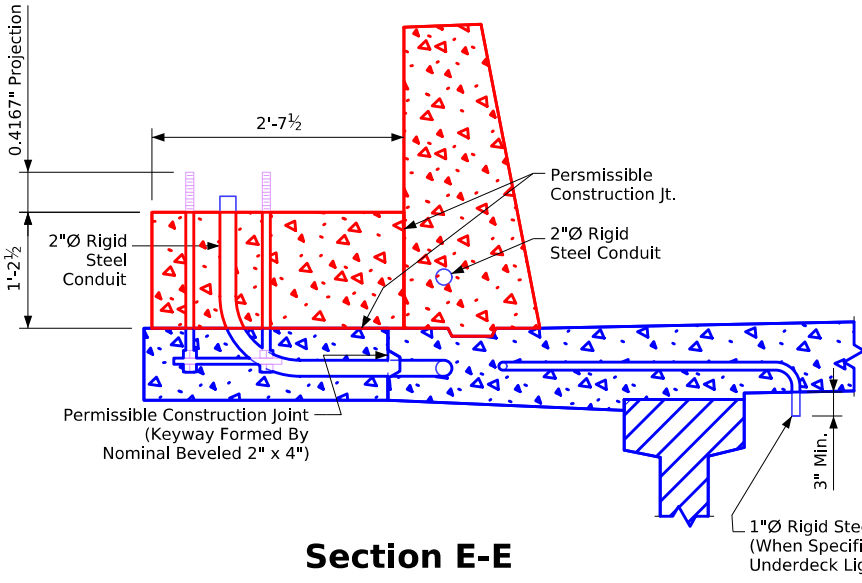
Section Through Base Showing Reinforcing



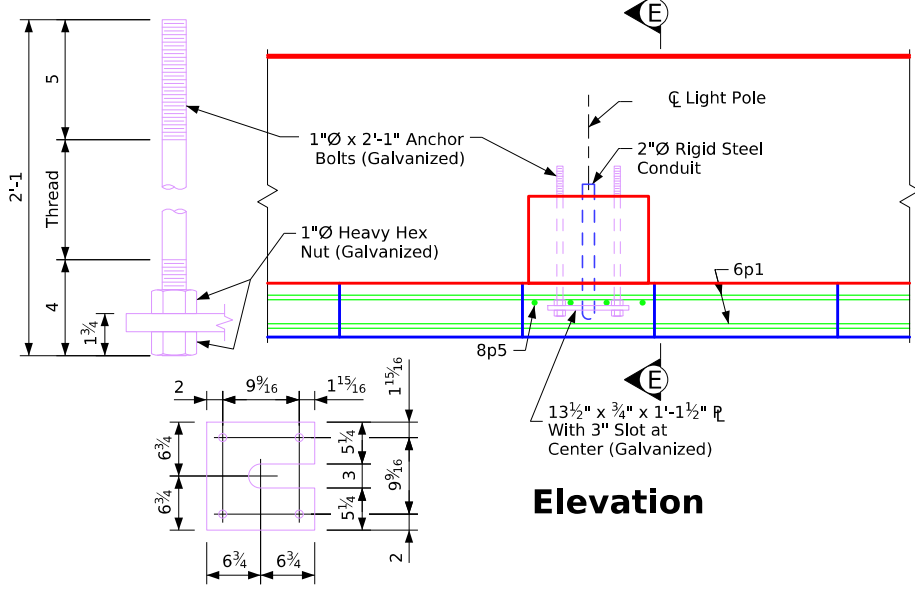
Plan of Pole Base
Base Reinforcing Bars Not Shown



Plan of Pole Base Reinforcing
See Concrete Barrier Rail Details in These Plans.



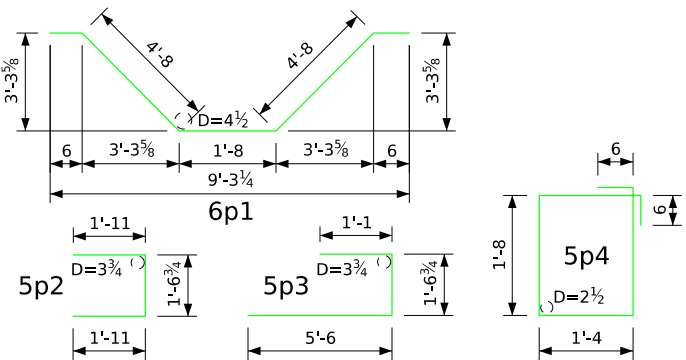
Section E-E



Elevation

Epoxy Coated Reinf. Steel - One Base						
Bar	Location	Shape	No.	Length	Weight	
6p1	Deck Anchors		2	12'-0	36	
5p2	Pole Base to Deck		4	5'-5	23	
5p3	Pole Base to Deck		4	8'-2	34	
5p4	Pole Base Hoop		6	7'-0	44	
8p5	Deck Transverse		4	5'-8	61	
Epoxy Reinforcing Total Weight (lbs.)					198	

Bent Bar Details



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

Lighting Quantities

Section	Total
Structural Concrete (Bridge)	0.5 cu. yd.
Reinforcing Steel - Epoxy Coated	198 lbs.

Design For Repair To 30° RA

138'-10" x 55'-6" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

43'-3" & 39'-1" End Spans 56'-6" Interior Span

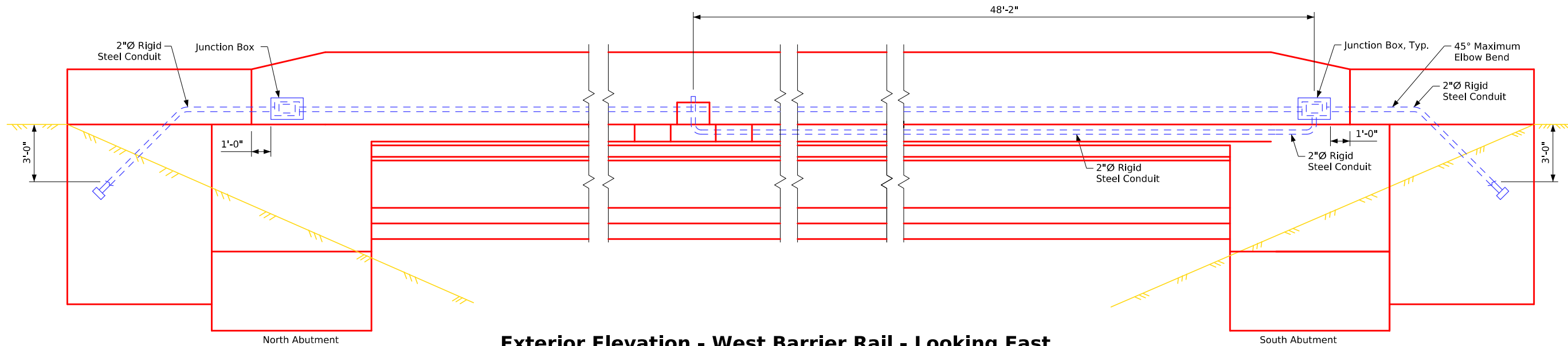
Lighting Details

STA. 1402+63.87 (I-35 SB) Turn-in Date: August 2026

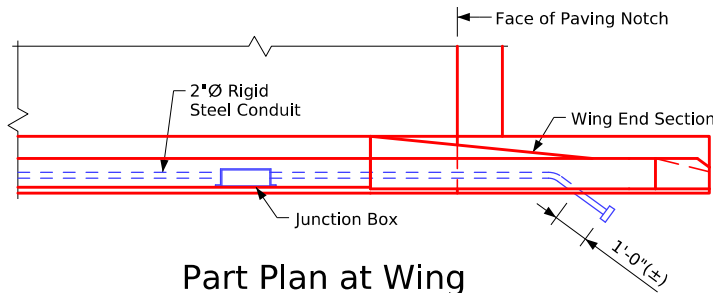
Clarke County

IOWA DEPARTMENT OF TRANSPORTATION

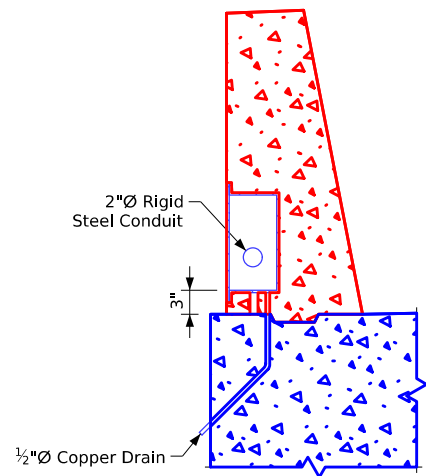
Design No. 227 Design Sheet No. 19 of 21 FHWA No. 20150



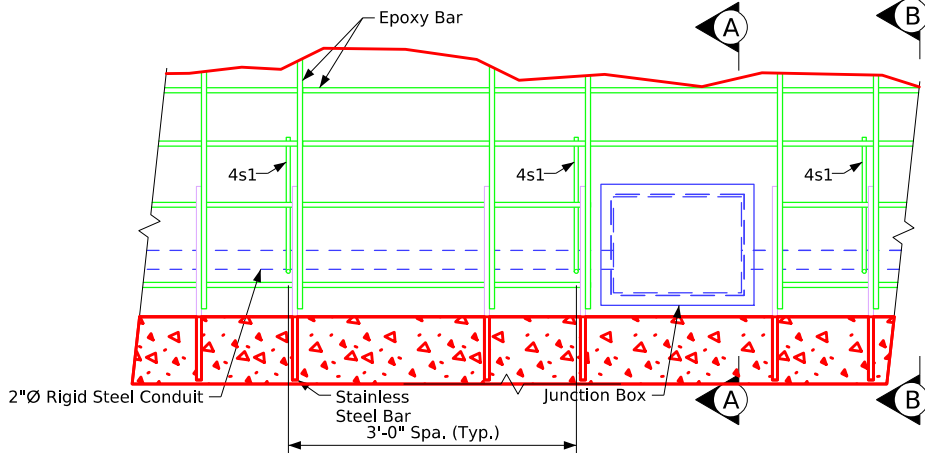
Exterior Elevation - West Barrier Rail - Looking East



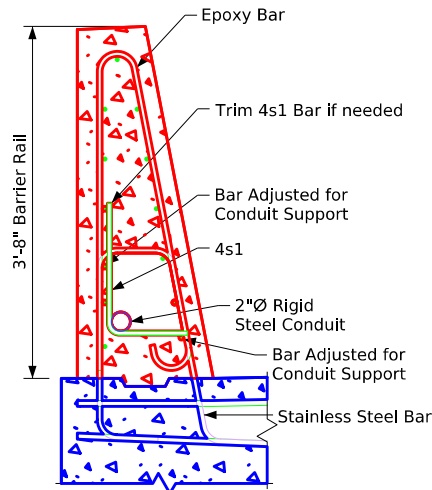
Part Plan at Wing



Section A-A
Thru Junction Box



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



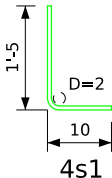
Section B-B - Conduit Support

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

Epoxy Coated Reinf. Steel - One Rail

Bar	Location	Shape	No.	Length	Weight
4s1	Rail Conduit		49	2'-3	74
Epoxy Reinforcing Total Weight (lbs.)					74

Bent Bar Details



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

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

Design For Repair To 30° RA

**138'-10" x 55'-6" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE**

43'-3" & 39'-1" End Spans 56'-6" Interior Span

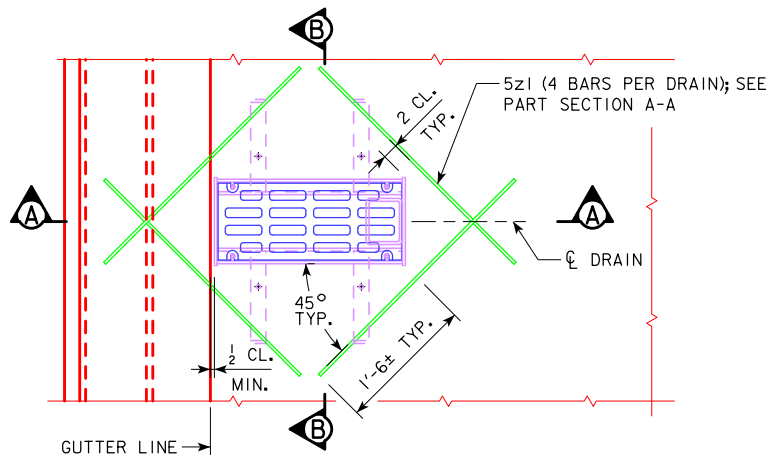
Lighting Details (Cont.)

STA. 1402+63.87 (I-35 SB) Turn-In Date: August 2026

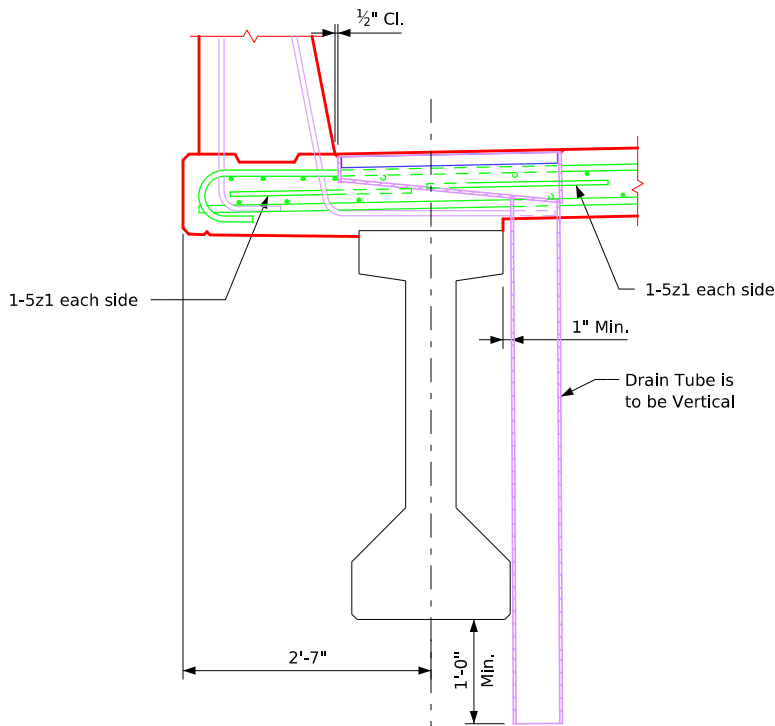
Clarke County

IOWA DEPARTMENT OF TRANSPORTATION

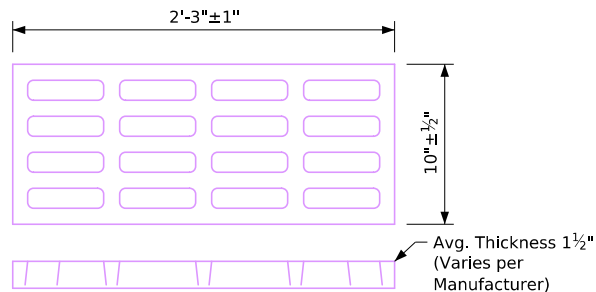
Design No. 227 Design Sheet No. 20 of 21 FHWA No. 20150



Part Plan At Drain

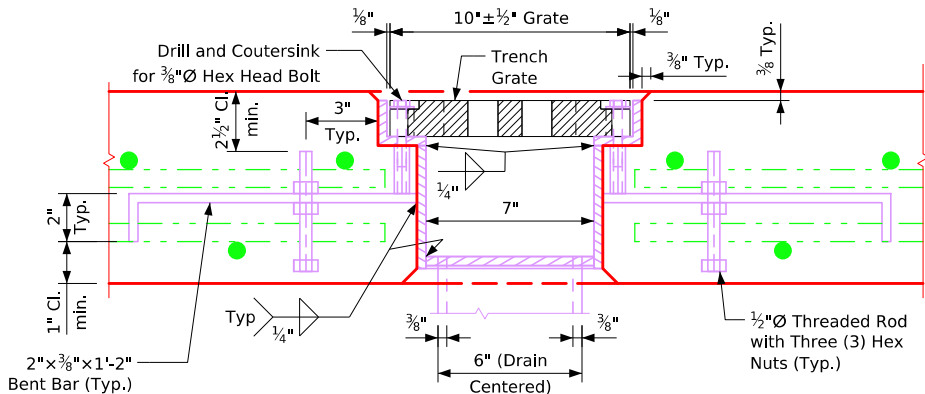


Part Section A-A



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

Drain Notes

The drains shall be 3/8" 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.

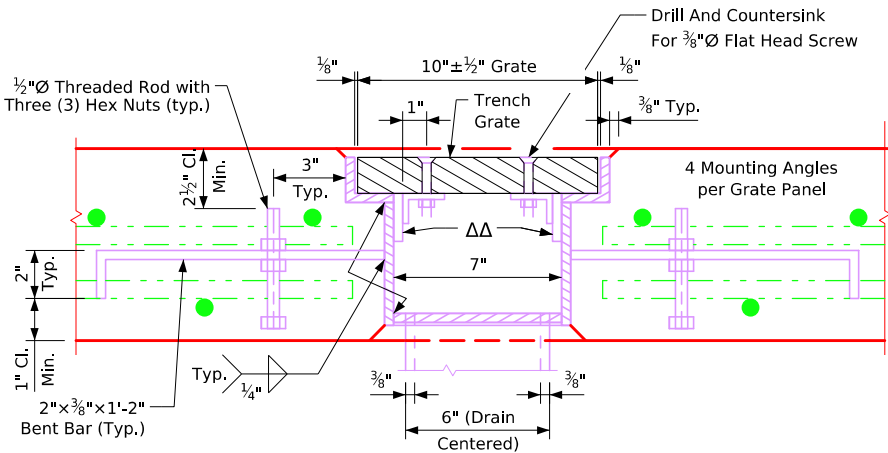
Drains may be relocated to miss existing shear stirrups and shall be centered over the nearest bottom transverse deck reinforcing bar from the location designated on the situation plan. The bottom transverse deck reinforcing bar shall be cut off to provide 1" clearance from the drain. The top transverse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

Materials

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.

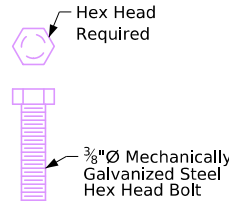
3/8"Ø mechanically galvanized steel flat head screw shall meet the requirements of ASTM B695-04 (2009) and ASTM F835-12.

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

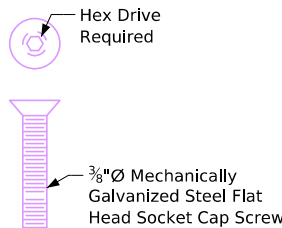


Part Section B-B - Showing Detail A Option

Note: 10 Deck Drains Required.

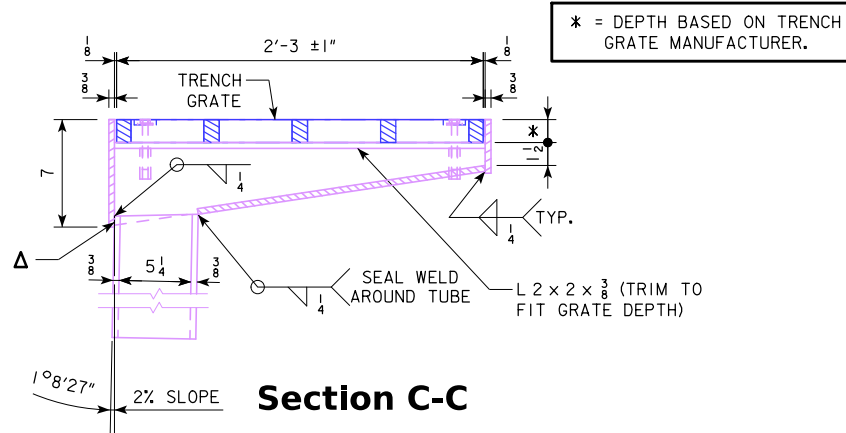


Hex Head Bolt Detail
Used for Detail B

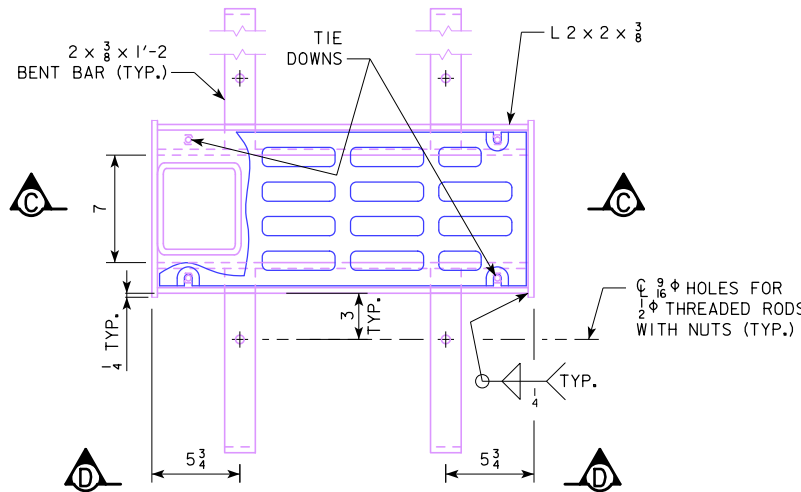


Flat Head Screw Detail
Used for Detail A

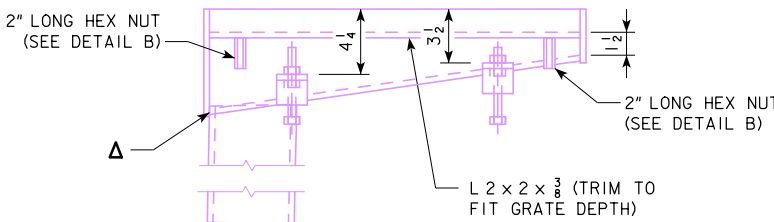
ΔΔ = Adjust shim plate according to width of grate.



Section C-C



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



Side View D-D

Design For Repair To 30° RA

138'-10" x 55'-6" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

43'-3" & 39'-1" End Spans 56'-6" Interior Span

Deck Drain Details

STA. 1402+63.87 (I-35 SB) Turn-In Date: August 2026

Clarke County

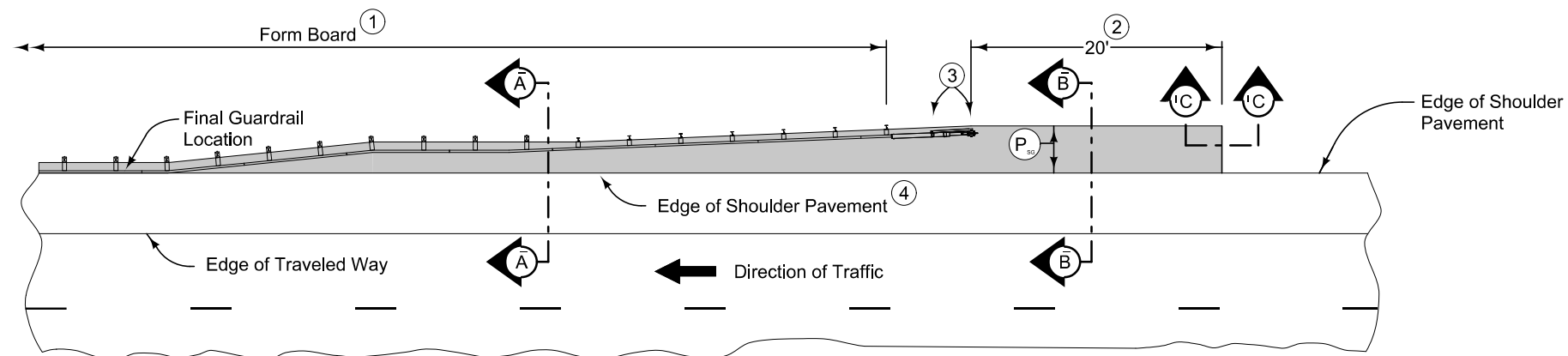
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227 Design Sheet No. 21 of 21 FHWA No. 20150

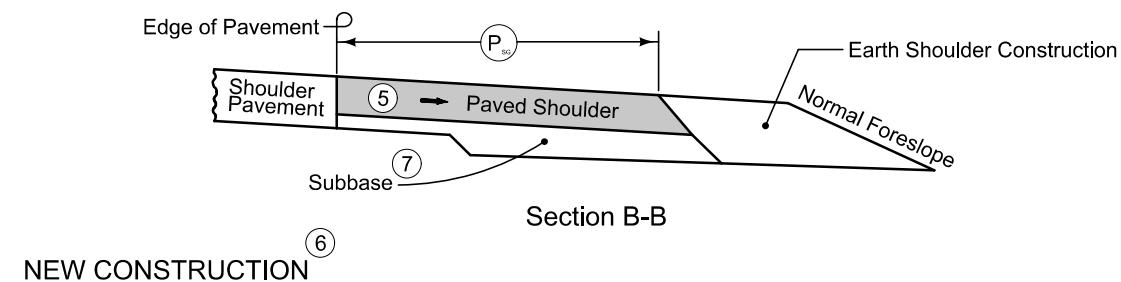
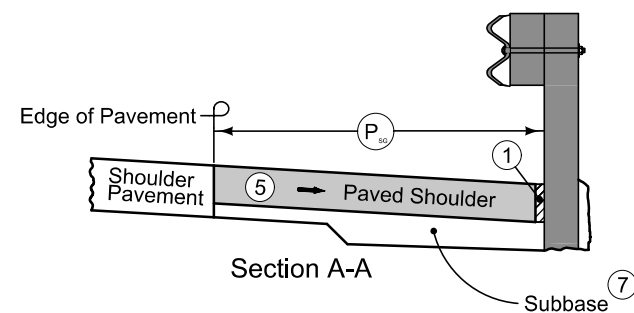
INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	Title Sheets
A.3	Index of Sheets
B Sheets	Typical Cross Sections and Details
B.1 - 2	Typical Cross Sections and Details
C Sheets	Quantities and General Information
C.1	Project Description
C.2	Estimated Project Quantities
C.3	Estimate Reference Information
C.4	Standard Road Plans
C.5	Index of Tabulations
C.6 - 19	Tabulations
D Sheets	Mainline Plan and Profile Sheets
D.1	Plan & Profile Legend & Symbol Information Sheet
D.2 - 4	Interstate 35
J Sheets	Traffic Control and Staging Sheets
J.1	Traffic Control Plan
J.2 - 4	Staging Notes, Coordinated Operations, 511 Travel Restrict.
J.5	Traffic Control & Staging Legend & Symbol Info. Sheet
J.6	Staging Typicals
J.7 - 9	Staging and Traffic Control Sheets Stage 1
J.10 - 12	Staging and Traffic Control Sheets Stage 2



ROADWAY DESIGN	
	I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.  07-09-2026 Signature Douglas B. Parke Printed or Typed Name My license renewal date is December 31, 2027
Pages or sheets covered by this seal: A.3, B.1-B.2, C.1-C.19, D.1-D.4, J.1-J.12	



PLAN VIEW



NEW CONSTRUCTION

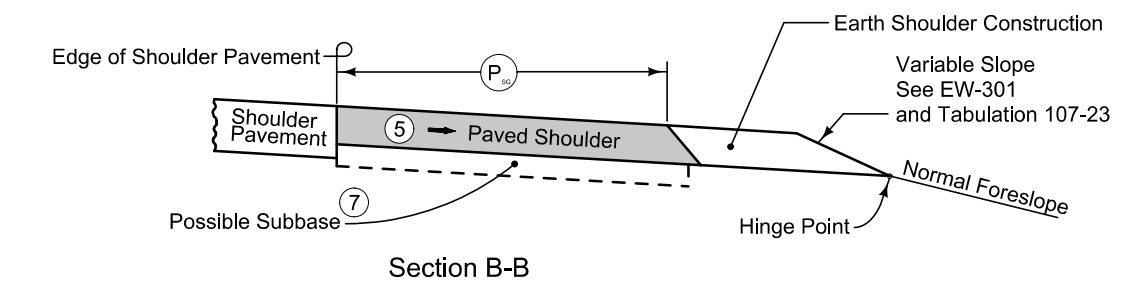
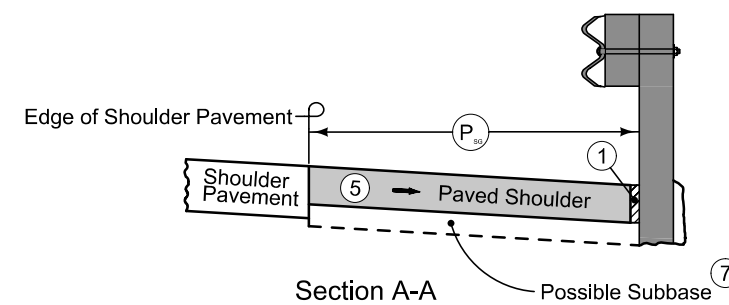
9" HMA Paved Shoulder at guardrail. 8" PCC may be substituted with the following jointing layout:

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

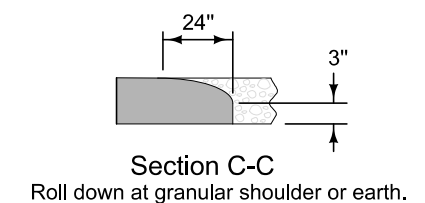
Compaction of HMA is required to face of guardrail post. Hand compaction will be allowed under guardrail. Removal and reinstallation of guardrail will be allowed with no additional payment.

Refer to Tabulation 112-9 for shoulder quantities.

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



EXISTING SHOULDER



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

100_01D
8/15/22

PROJECT DESCRIPTION

This project is for the removal and replacement of bridge double reinforced approach pavement, guardrail, and paved shoulders for a bridge deck replacement and repairs project on I-35 over White Breast Creek in Clarke County.

ESTIMATED PROJECT QUANTITIES						
Line No.	Item No.	Item Code	Item	Unit	Total	As Built Qty.
1.0	1	2102-0425070	SPECIAL BACKFILL	TON	91.14	
2.0	2	2122-5190008	PAVED SHOULDER, P.C. CONCRETE, 8 IN.	SY	280.50	
3.0	3	2213-2713300	EXCAVATION, CLASS 13, FOR WIDENING	CY	112.60	
4.0	4	2301-0690203	BRIDGE APPROACH, BR-203	SY	1275.60	
5.0	5	2412-0000100	LONGITUDINAL GROOVING IN CONCRETE, BRIDGE DECK	SY	1548.10	
6.0	6	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL	LF	465.80	
7.0	7	2505-4008300	STEEL BEAM GUARDRAIL	LF	400.00	
8.0	8	2505-4008420	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION, BA-221	EACH	2.00	
9.0	9	2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED	EACH	2.00	
10.0	10	2505-4021720	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-205	EACH	2.00	
11.0	11	2505-6765006	REMOVE AND REINSTALL FORMED STEEL BEAM GUARDRAIL	LF	50.00	
12.0	12	2510-6745850	REMOVAL OF PAVEMENT	SY	1721.10	
13.0	13	2527-9263152	PRE-CUT SYMBOLS AND LEGENDS, REGULAR MARKING TAPE	EACH	16.00	
14.0	14	2527-9263181	PAVEMENT MARKINGS REMOVED	STA	137.90	
15.0	15	2527-9263190	SYMBOLS AND LEGENDS REMOVED	EACH	16.00	
16.0	16	2527-9263209	PAINTED PAVEMENT MARKINGS, WATERBORNE OR SOLVENT-BASED	STA	50.72	
17.0	17	2527-9263231	REMOVABLE TAPE MARKINGS WET RETROREFLECTIVE	STA	102.60	
18.0	18	2528-2518000	SAFETY CLOSURE	EACH	2.00	
19.0	19	2528-8400048	TEMPORARY BARRIER RAIL, CONCRETE	LF	1562.50	
20.0	20	2528-8445110	TRAFFIC CONTROL	LS	1.00	
21.0	21	2551-0000110	TEMP CRASH CUSHION	EACH	4.00	
22.0	22	2557-0000100	LONGITUDINAL GROOVING IN CONCRETE, PAVEMENT	SY	1721.50	

100_01A
3/24/25

ESTIMATE REFERENCE INFORMATION				100_04A 6/2/23
Line No.	Item No.	Item Code	Description	
1.0	1	2102-0425070	SPECIAL BACKFILL	
1.1			Refer to Typical SS-1 on Sheet B.2 for details.	
2.0	2	2122-5190008	PAVED SHOULDER, P.C. CONCRETE, 8 IN.	
2.1			Refer to Typical 7158 on Sheet B.1 and Tab. 112-9 on Sheet C.7 for details.	
3.0	3	2213-2713300	EXCAVATION, CLASS 13, FOR WIDENING	
3.1			Refer to Tab. 112-9 on Sheet C.7 for details.	
4.0	4	2301-0690203	BRIDGE APPROACH, BR-203	
4.1			Refer to Tab. 112-6 on Sheet C.9 for details.	
5.0	5	2412-0000100	LONGITUDINAL GROOVING IN CONCRETE, BRIDGE DECK	
5.1			Refer to Tab. 100-28 on Sheet C.15 for details.	
6.0	6	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL	
6.1			Refer to Tab. 110-7A on Sheet C.8 for details.	
7.0	7	2505-4008300	STEEL BEAM GUARDRAIL	
8.0	8	2505-4008420	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION, BA-221	
9.0	9	2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED	
10.0	10	2505-4021720	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-205	
10.1			Refer to Tab. 108-8A on Sheet C.10 for details.	
11.0	11	2505-6765006	REMOVE AND REINSTALL FORMED STEEL BEAM GUARDRAIL	
11.1			Remove 25' of guardrail on each side of north approach of SB lanes. Reinstall guardrail.	
12.0	12	2510-6745850	REMOVAL OF PAVEMENT	
12.1			Refer to Tab. 110-1 on Sheet C.6 for details.	
13.0	13	2527-9263152	PRE-CUT SYMBOLS AND LEGENDS, REGULAR MARKING TAPE	
13.1			Refer to Tab.	
14.0	14	2527-9263181	PAVEMENT MARKINGS REMOVED	
14.1			Refer to Tab. 108-22 on Sheets C.13 and C.14 for details.	
15.0	15	2527-9263190	SYMBOLS AND LEGENDS REMOVED	
15.1			Remove 16 symbols required for traffic control following completion of respective stage of construction.	
16.0	16	2527-9263209	PAINTED PAVEMENT MARKINGS, WATERBORNE OR SOLVENT-BASED	
17.0	17	2527-9263231	REMOVEABLE TAPE MARKINGS, WET RETROREFLECTIVE	
17.1			Refer to Tab. 108-22 on Sheets C.13 and C.14 for details.	
18.0	18	2528-2518000	SAFETY CLOSURE	
18.1			Refer to Tab. 108-13A on Sheet C.17 for details.	
19.0	19	2528-8400048	TEMPORARY BARRIER RAIL, CONCRETE	
19.1			Includes 2 Tapered End Sections, Refer to Tab. 108-33 on Sheet C.12 for details.	
20.0	20	2528-8445110	TRAFFIC CONTROL	
20.1			Refer to Tab. 108-23A on Sheet J.1 and Tab. 108-26A on Sheet J.2.	
21.0	21	2551-0000110	TEMP CRASH CUSHION	
21.1			Refer to Tab. 108-30 on C.11 for details.	
22.0	22	2557-0000100	LONGITUDINAL GROOVING IN CONCRETE, PAVEMENT	
22.1			Refer to Tab. 100-28 on Sheet C.15 for details.	

105_04 10/20/26 STANDARDS The following Standards apply to construction work on this project.		
Number	Date	Title
BA-200	04-15-25	Steel Beam Guardrail Components
BA-201	10-18-22	Steel Beam Guardrail Barrier Transition Section (MASH TL-3)
BA-202	04-15-25	Steel Beam Guardrail Bolted End Anchor
BA-204	10-18-22	Steel Beam Guardrail Thrie-Beam End Anchor
BA-205	10-17-23	Steel Beam Guardrail Tangent End Terminal (MASH TL-3)
BA-221	10-18-22	Steel Beam Guardrail Barrier Transition Section (MASH TL-2)
BA-401	04-20-21	Temporary Barrier Rail (Precast Concrete)
BA-500	04-20-21	Temporary Crash Cushions Sand Barrel
BR-203	10-21-25	Double Reinforced 12in Approach
BR-211	10-21-25	Bridge Approach (Abutting PCC or Composite Pavement)
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-402	04-18-23	Work Within 15 ft of Traveled Way
TC-417	04-21-20	Ramp Closure
TC-419	04-18-23	Lane Closure on Undivided Highway
TC-420	10-16-18	Lane Closure at Ramps
TC-421	10-21-25	Lane Closure with TBR
PM-110	10-15-24	Line Types
PV-101	10-21-25	Joints

INDEX OF TABULATIONS				111_25 10/20/26
Line No.	Tabulation	Tabulation Title	Sheet No.	
1.0	100_01D	PROJECT DESCRIPTION	C.1	
2.0	100_01A	ESTIMATED PROJECT QUANTITIES	C.2	
3.0	100_04A	ESTIMATE REFERENCE INFORMATION	C.3	
4.0	100_28	LONGITUDINAL GROOVING	C.14	
5.0	105_04	STANDARD ROAD PLANS	C.4	
6.0	108_08A	STEEL BEAM GUARDRAIL AT CONCRETE BARRIER OR BRIDGE RAIL END SECTION	C.9	
7.0	108_13A	SAFETY CLOSURES	C.16	
8.0	108_22	PAVEMENT MARKING LINE TYPES	C.12	
9.0	108_29	PAVEMENT MARKING SYMBOLS AND LEGENDS	C.13	
10.0	108_30	CRASH CUSHIONS	C.10	
11.0	108_33	TEMPORARY BARRIER RAIL	C.11	
12.0	110_01	REMOVAL OF PAVEMENT	C.6	
13.0	111_25	INDEX OF TABULATIONS	C.5	
14.0	111_26	UTILITIES	C.15	
15.0	112_06	BRIDGE APPROACH SECTION	C.8	
16.0	112_09	SHOULDERS	C.7	

REMOVAL OF PAVEMENT Refer to Tabulation 102-5.							110_01 4/5/24
* Not a bid item.							
Line No.	Station From	Station To	Side	Pavement Type	Area (SY)	Saw Cut* (LF)	Remarks
1.0	399+96.51	400+70.90	Both	PCC	346.3	40.0	South NB Approach Pavement
2.0	402+17.53	402+93.60	Both	PCC	350.8	40.3	North NB Approach Pavement
3.0	1400+88.35	1401+68.35	Both	PCC	503.1	54.8	South SB Approach Pavement
4.0	1403+10.66	1403+90.66	Both	PCC	520.9	62.1	North SB Approach Pavement
Totals:					1721.1	197.2	

112.09
4/21/26

SHOULDERS

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

Roadway Identification	Direction of Travel (1)	Station From	Station To	Side	P Width (FT)	P SG Width (2) (FT)	L Length (FT)	Class 13 Excavation (CY)(3)(4)	HMA (TON)	HMA (TON/ STA)	Binder (TONS)	Paved Shoulder (3) (SY)	Shoulder at Grd rail (5)(7)	Reinforced Paved Shoulder(3) (SY)	Special Backfill HMA Alt. (3) (TON)	Special Backfill HMA Alt. (TON/STA)	Special Backfill PCC Alt. (3) (TON)	Special Backfill PCC Alt. (TON/STA)	Pavement Scarification (SY)	Polymer Grid (SY)	Subbase (3) (8) (CY)	Shoulder Const. Alt (3) (STA)	Shoulder Const. Alt HMA (6) (CY)	Shoulder Const. Alt PCC (6) (CY)	Remarks
I-35	SB	1403+92.98	1405+57.05	Left	Var.		164.07	45.7				117.6			36.981	22.540	36.981	22.540				1.64			8 In. Thickness, Typ 7158
I-35	SB	1403+92.98	1406+64.46	Right	Var.		271.48	66.9				162.9			54.160	19.950	54.160	19.950				2.71			8 In. Thickness, Typ 7158
Total:							112.6					280.5			91.141		91.141				4.35				

REMOVAL OF STEEL BEAM GUARDRAIL (1) Lane(s) to which the installation is adjacent. (2) Includes length of End Terminals and End Anchors.						110_07A 8/15/22
Line No.	No.	Direction of Traffic (1)	Station From	Station To	Side	Removal of Guardrail (2) (LF)
1.0	1	SB	1402+99.16	1405+20.55	Right	222.4
2.0	2	SB	1403+35.32	1405+78.00	Left	243.4
Total:						465.8

112_06

10/20/26

BRIDGE APPROACH SECTION

Refer to the BR Series.

* Not a bid item

** Verify layout of bridge approach does not conflict with guardrail posts.

Line No.	Bridge Station	End	Skew Ahead Left (Degrees)	Skew Ahead Right (Degrees)	(T) Thickness (IN)	Pay Length (FT)	Right Edge Offset (FT) **	Left Edge Offset (FT) **	Non-Reinf. Area (SY)	Single-Reinf. Area (SY)	Double-Reinf. Area (SY)	SRP Approach	SRP Abutment Type	SRP Abutting Pavement	Perforated * 4" Subdrain (LF)	Subdrain * Outlet (STA)	Subdrain * Outlet Side	Porous * Backfill (CY)	Modified * Subbase (TON)	Polymer * Grid (SY)	Special * Backfill (TON)	Remarks
1.0	1402+43.00	N	29.5		12.0	71.0	20	40	110.7	109.1	204.1	BR-203	Movable	BR-211					107.175	510.4		BR-211, BR-203
2.0	1402+43.00	S	29.2		12.0	71.4	18	36	98.1	97.6	194.2	BR-203	Movable	BR-211					99.640	474.5		BR-211, BR-203
3.0	401+43.00	N	27.4		12.0	66.0	22	20	59.6	59.0	114.8	BR-203	Movable	BR-211					68.264	325.1		BR-211, BR-203
4.0	401+43.00	S	25.1		12.0	64.1	22	20	54.7	57.0	116.7	BR-203	Movable	BR-211					68.896	328.1		BR-211, BR-203

Total:
Bridge Approach, BR-203: 1,275.6 SY

108_08A
4/25/25

STEEL BEAM GUARDRAIL AT CONCRETE BARRIER OR BRIDGE RAIL END SECTION

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

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

Line No.	Direction of Travel (1)	Side	Station	Offset (FT)	Barrier Transition Section	Barrier Transition Section (EA)	End Terminal	End Terminal Count (EA)	VT1 (LF)	VF (LF)	VT2 (LF)	ET (LF)	BA-211 Station	BA-211 (Type)	SI-211 (Type) (2)	Delineator SI-172 Type 1 (EA) (2)	Object Marker Type 2 (EA) (2)	Object Marker Type 3 Lt (EA)(2)	Object Marker Type 3 Rt (EA)(2)	Bolted End Anchor BA-202 (Type)	Bolted End Anchor BA-202 (EA)	Post Adapter BA-210 (EA)	Steel Beam Guardrail BA-200 (LF)	Remarks			
1.0	SB	Outside	1403+02.27	38.0	BA-221	1	BA-205	1	37.500	87.50	62.50	47.70			3				1	A	1		162.5	SB R, 34" Mounting Height			
2.0	SB	Median	1403+34.37	19.0	BA-221	1	BA-205	1	37.500	62.50	162.50	47.70			3			1		A	1		237.5	SB L, 34" Mounting Height			
Total:						2		2																2	400.0		

FILE NO. 32400

ENGLISH

DESIGN TEAM GFT

CLARKE COUNTY

PROJECT NUMBER IMX-035-1(198)32--02-20

SHEET NUMBER C.10

8/11/2026 9:44:07 AM

AMKLUVER@IOWAID

CRASH CUSHIONS

108_30
4/16/24

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

Line No.	Lane	Station	Side	Obstacle Width (FT)	Crash Cushion Type	Crash Cushion Quantity	V (FT) (2)	W (FT) (2)	X (FT) (2)	Y (FT) (2)	Z (FT) (2)	Excavation Class 10* (CY)	Embankment in Place* (CY)	Obstacle Description	Remarks
1.0	SB	1404+49.21	Right	2.0	Temporary	1								TBR	Stage 1
2.0	NB	399+23.72	Right	2.0	Temporary	1								TBR	Stage 1
3.0	SB	1404+76.00	Left	2.0	Temporary	1								TBR	Stage 2
4.0	NB	399+23.93	Left	2.0	Temporary	1								TBR	Stage 2
Total:						4									

108_33 8/15/22 TEMPORARY BARRIER RAIL Possible Standard: BA-401 Possible Detail: 560-7 * Not a bid item. Anchorage requirements are based on TBR locations shown in the plans. TBR alignments that vary from what is shown in the plans may result in additional TBR sections requiring anchorage.								
Line No.	No.	Station From	Station To	Length (FT)	Barrier Rail Type	Anchored*	Modular Glare Screen System	Remarks
1.0	1	1400+74.21	1404+49.21	375.0	Concrete BA-401	No	No	SB I-35 Stage 1, Refer to Typical 8210
2.0	2	399+23.72	403+11.36	387.5	Concrete BA-401	Yes	No	NB I-35 Stage 1, Refer to Typical 8210
3.0	3	1400+76.00	1404+76.00	400.0	Concrete BA-401	Yes	No	SB I-35 Stage 2, Refer to Typical 8210
4.0	4	399+23.93	403+12.66	400.0	Concrete BA-401	No	No	NB I-35 Stage 2, Refer to Typical 8210
Total:				1562.5				

PAVEMENT MARKING LINE TYPES

Line factors based on 6-inch wide continuous line.

*BCY4 - Place on the same side of the roadway to match existing markings near the project.

**NPY4 - Estimating purposes only. No Passing Zone Lines will be located in the field.

***MNY6 - Factor of 1.00 includes number of 6-inch passes to cover median nose area.

BCY4: Broken Centerline (Yellow) @ 0.17

BCY6: Broken Centerline (Yellow) @ 0.25

BLC6: Broken Line Contrast (White/Black) @ 0.50

BLW4: Broken Lane Line (White) @ 0.17

BLW6: Broken Lane Line (White) @ 0.25

CBW6: Crosswalk Bar (White) @ 10.00

CHW8: Channelizing Line (White) @ 1.33

CHW10: Channelizing Line (White) @ 1.67

CHY8: Channelizing Line (Yellow) @ 1.33

CHY10: Channelizing Line (Yellow) @ 1.67

CLW6: Crosswalk Line (White) @ 2.00

DCY4: Double Centerline (Yellow) @ 1.34

DCY6: Double Centerline (Yellow) @ 2.00

DDY4: Double Dotted Line (Yellow) @ 0.44

DDY6: Double Dotted Line (Yellow) @ 0.67

DLW4: Dotted Line (White) @ 0.22

DLW6: Dotted Line (White) @ 0.33

DLY4: Dotted Line (Yellow) @ 0.22

DLY6: Dotted Line (Yellow) @ 0.33

ELW4: Edge Line Right (White) @ 0.67

ELW6: Edge Line Right (White) @ 1.00

ELY4: Edge Line Left (Yellow) @ 0.67

ELY6: Edge Line Left (Yellow) @ 1.00

LDW8: Lane Drop (White) @ 0.33

LDW10: Lane Drop (White) @ 0.42

MNY6: Median Nose (Yellow) @ 1.00

NPY4: No Passing Zone Line (Yellow) @ 0.84

NPY6: No Passing Zone Line (Yellow) @ 1.25

RLW4: Ramp Edge Line Right (White) @ 0.67

RLW6: Ramp Edge Line Right (White) @ 1.00

RLY4: Ramp Edge Line Left (Yellow) @ 0.67

RLY6: Ramp Edge Line Left (Yellow) @ 1.00

SLW2: Stop Line (White) @ 4.00

SLW4: Solid Lane Line (White) @ 0.67

SLW6: Solid Lane Line (White) @ 1.00

SPW4: Sloped Curb 4" (White) @ 2.16

SPW6: Sloped Curb 6" (White) @ 2.28

SPY4: Sloped Curb 4" (Yellow) @ 2.16

SPY6: Sloped Curb 6" (Yellow) @ 2.28

STW6: Standard Curb 6" (Yellow) @ 2.03

STY6: Standard Curb 6" (Yellow) @ 2.03

YLW2: Yield Line (White) @ 1.15

Line No.	Road ID	Station From	Station To	Lane	Marking Type	Left	Center	Right	Groove Marking Needed?	BLW6 (STA)	BLW6 Factored (STA)	CHW8 (STA)	CHW8 Factored (STA)	CHW10 (STA)	CHW10 Factored (STA)	CHY8 (STA)	CHY8 Factored (STA)	DLW4 (STA)	DLW4 Factored (STA)	ELW6 (STA)	ELW6 Factored (STA)	ELY6 (STA)	ELY6 Factored (STA)	RLW6 (STA)	RLW6 Factored (STA)	Remarks
1.0	I-35	383+86.00	407+85.00	NB	Waterborne/Solvent Paint		X		No	23.99	4.08															
1.1	I-35	1398+78.00	1420+78.00	SB	Waterborne/Solvent Paint		X		No	22.00	3.74															
1.2	I-35	1399+38.00	1400+20.00	SB	Waterborne/Solvent Paint			X	No	0.82	0.14															
2.0	I-35	1393+20.00	1394+12.00	SB	Waterborne/Solvent Paint			X	No											0.92	0.62					
2.1	I-35	1400+20.00	1406+06.00	SB	Waterborne/Solvent Paint			X	No					5.86	7.79											
2.2	I-35	395+75.00	402+24.00	NB	Waterborne/Solvent Paint			X	No											6.49	4.35					
2.3	I-35	405+53.00	406+67.00	NB	Waterborne/Solvent Paint			X	No					1.14	1.52											
3.0	I-35	397+22.00	407+83.00	NB	Waterborne/Solvent Paint	X			No													10.61	7.11			
3.1	I-35	1398+67.00	1406+68.00	SB	Waterborne/Solvent Paint	X			No													8.01	5.37			
3.2	Ramp	1394+12.00	1403+83.00	SB	Waterborne/Solvent Paint			X	No															9.71	6.51	Rest Area Exit
3.3	Ramp	1400+20.00	1404+74.00	SB	Waterborne/Solvent Paint	X			No					4.53	6.02											Rest Area Exit
3.4	I-35	402+24.00	405+54.00	NB	Waterborne/Solvent Paint			X	No																	Rest Area Entrance
3.5	Ramp	402+24.00	403+64.00	NB	Waterborne/Solvent Paint			X	No															1.40	0.94	Rest Area Entrance
3.6	I-35	1406+01.00	1408+18.00	SB	Waterborne/Solvent Paint			X	No											2.17	1.45					
4.0	Total									46.81	7.96			11.53	15.33					9.58	6.42	18.62	12.48	11.11	7.44	
10.0	I-35	383+76.00	397+22.00	NB	Removal of Paint		X			13.46	2.29															Stage 1
10.1	I-35	1406+67.00	1420+78.00	SB	Removal of Paint		X			14.11	2.40															Stage 1
10.2	I-35	397+24.00	407+84.00	NB	Removal of Paint	X																10.60	7.10			Stage 1
10.3	I-35	1398+78.00	1406+67.00	SB	Removal of Paint	X																7.89	5.29			Stage 1
10.4	I-35	395+72.00	400+07.00	NB	Removal of Paint			X												4.35	2.91					Stage 2
10.5	I-35	402+84.00	403+64.00	NB	Removal of Paint			X												0.80	0.80					Stage 2 Ramp
10.6	I-35	402+84.00	405+51.00	NB	Removal of Paint			X																		Stage 2
10.7	I-35	405+51.00	406+67.00	NB	Removal of Paint			X												1.16	1.16					Stage 2
10.8	I-35	1393+20.00	1400+98.00	SB	Removal of Paint			X												7.78	5.21					Stage 2
10.9	I-35	1399+37.00	1400+98.00	SB	Removal of Paint		X			1.61	0.27															Stage 2
11.0	I-35	1405+28.00	1408+18.00	SB	Removal of Paint	X		X												2.90	1.94					Stage 2
11.1	I-35	1400+19.00	1400+98.00	SB	Removal of Paint			X												0.76	0.76					Stage 2
11.2	I-35	1400+19.00	1400+98.00	SB	Removal of Paint	X														0.76	0.76					Stage 2 Ramp
11.3	I-35	1403+83.00	1405+91.00	SB	Removal of Paint			X												2.08	2.08					Stage 2
11.4	I-35	1403+83.00	1404+74.00	SB	Removal of Paint	X														0.91	0.91					Stage 2 Ramp
11.5	I-35	1405+91.00	1408+18.00	SB	Removal of Paint			X												2.27	1.52					Stage 2
11.9	Total									29.18	4.96									23.77	18.05	18.49	12.39			
12.0	I-35	383+74.00	403+04.00	NB	Wet Retroreflective Removable Tape			X				19.30	12.93													Stage 1
12.1	I-35	1398+78.00	1420+78.00	SB	Wet Retroreflective Removable Tape			X				22.00	14.74													Stage 1
12.2	I-35	397+22.00	407+84.00	NB	Wet Retroreflective Removable Tape	X										10.62	7.12									Stage 1
12.3	I-35	405+83.00	407+83.00	NB	Wet Retroreflective Removable Tape			X				2.00	1.34													Stage 1
12.4	I-35	1398+78.00	1406+68.00	SB	Wet Retroreflective Removable Tape	X										7.90	5.29									Stage 1
12.5	I-35	381+62.00	406+63.00	NB	Wet Retroreflective Removable Tape	X										25.01	16.76									Stage 2
12.6	I-35	395+72.00	402+12.00	NB	Wet Retroreflective Removable Tape			X				6.40	4.29													Stage 2
12.7	I-35	402+24.00	405+53.00	NB	Wet Retroreflective Removable Tape			X										6.58	1.45							Stage 2
12.8	I-35	405+83.00	406+64.00	NB	Wet Retroreflective Removable Tape			X				0.81	0.54													Stage 2
12.9	I-35	1393+20.00	1403+30.00	SB	Wet Retroreflective Removable Tape			X				10.10	6.77													Stage 2
13.0	I-35	1397+25.00	1408+18.00	SB	Wet Retroreflective Removable Tape	X										10.93	7.32									Stage 2

PAVEMENT MARKING LINE TYPES

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

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

Line No.	Road ID	Station From	Station To	Lane	Marking Type	Left	Center	Right	Groove Marking Needed?	BLW6 (STA)	BLW6 Factored (STA)	CHW8 (STA)	CHW8 Factored (STA)	CHW10 (STA)	CHW10 Factored (STA)	CHY8 (STA)	CHY8 Factored (STA)	DLW4 (STA)	DLW4 Factored (STA)	ELW6 (STA)	ELW6 Factored (STA)	ELY6 (STA)	ELY6 Factored (STA)	RLW6 (STA)	RLW6 Factored (STA)	Remarks
13.1	I-35	1397+25.00	1422+28.00	SB	Wet Retroreflective Removable Tape	X										25.03	16.77									Stage 2
13.2	I-35	1397+25.00	1408+18.00	SB	Wet Retroreflective Removable Tape		X					10.93	7.32													Stage 2
13.9	Total											71.54	47.93			79.49	53.26	6.58	1.45							
14.0	I-35	383+74.00	403+04.00	NB	Removal of Removable Tape			X				19.30	12.93													Stage 2
14.1	I-35	1398+78.00	1420+78.00	SB	Removal of Removable Tape			X				22.00	14.74													Stage 2
14.2	I-35	397+22.00	407+84.00	NB	Removal of Removable Tape	X										10.62	7.12									Stage 2
14.3	I-35	405+83.00	407+83.00	NB	Removal of Removable Tape			X				2.00	1.34													Stage 2
14.4	I-35	1398+78.00	1406+68.00	SB	Removal of Removable Tape	X										7.90	5.29									Stage 2
14.5	I-35	381+62.00	406+63.00	NB	Removal of Removable Tape	X										25.01	16.76									Stage 3
14.6	I-35	395+72.00	402+12.00	NB	Removal of Removable Tape			X				6.40	4.29													Stage 3
14.7	I-35	402+24.00	405+53.00	NB	Removal of Removable Tape			X										6.58	1.45							Stage 3
14.8	I-35	405+83.00	406+64.00	NB	Removal of Removable Tape			X				0.81	0.54													Stage 3
14.9	I-35	1393+20.00	1403+30.00	SB	Removal of Removable Tape			X				10.10	6.77													Stage 3
15.0	I-35	1397+25.00	1408+18.00	SB	Removal of Removable Tape	X										10.93	7.32									Stage 3
15.1	I-35	1397+25.00	1422+28.00	SB	Removal of Removable Tape	X										25.03	16.77									Stage 3
15.2	I-35	1397+25.00	1408+18.00	SB	Removal of Removable Tape		X					10.93	7.32													Stage 3
16.0	Total											71.54	47.93			79.49	53.26	6.58	1.45							

Notes:
Removal of removable tape marking is incidental to Removable Tape Markings, Wet Retroreflective.
Wet retroreflective removable tape markings are to be 8" wide, consisting of two side-by-side 4" tapes.
Totals (Factored):
Painted Pavement Markings, Waterborne or Solvent-based: 50.7
Pavement Markings Removed: 137.9
Removable Tape Markings, Wet Retroreflective: 102.6
Incidental Removal of Removable Tape: 102.6

PAVEMENT MARKING SYMBOLS AND LEGENDS							108 29 4/15/25
Refer to PM-111							
Line No.	Roadway Identification	Station	Side	Pavement Symbol	Quantity (EA)	Groove Marking Needed?	Remarks
1.0	NB I-35	378+82.00	Right	RLRW	2	No	Temporary
1.1	NB I-35	379+82.00	Right	RLRW	2	No	Temporary
2.0	SB I-35	1424+72.00	Left	RLRW	2	No	Temporary
2.1	SB I-35	1425+72.00	Left	RLRW	2	No	Temporary
3.0	NB I-35	377+73.00	Left	LLRW	2	No	Temporary
3.1	NB I-35	378+73.00	Left	LLRW	2	No	Temporary
4.0	SB I-35	1425+15.00	Right	LLRW	2	No	Temporary
4.1	SB I-35	1426+15.00	Right	LLRW	2	No	Temporary
Total:					16		

LONGITUDINAL GROOVING				100_28 8/15/22
Line No.	Location	Total (SY)	Remarks	
1.0	1402+43.00	888.6	SB Bridge Deck	
2.0	401+43.00	659.5	NB Bridge Deck	
3.0	1402+43.00	520.9	North SB Approach Slab Pavement	
4.0	1402+43.00	503.1	South SB Approach Slab Pavement	
5.0	401+43.00	351.3	North NB Approach Slab Pavement	
6.0	401+43.00	346.2	South NB Approach Slab Pavement	
Total:		3269.6		

UTILITIES					111_26 4/15/25
Line No.	Company	Contact	Phone	Email	
1.0	IA DOT	Todd Netley	6417642755	Todd.Netley@iowadot.us	
2.0	OSCEOLA, CITY OF	Brandon Patterson	6413421435	osceolawaterworks@windstream.net	
3.0	OSCEOLA WATER WORKS	Brandon Patterson	6413421435	osceolawaterworks@windstream.net	

SAFETY CLOSURES			
Station	Road Closure Qty.	Hazard Closure Qty.	Remarks
1406+00.00	1		Rest Area Exit Stage 1
	1		Rest Area Entrance Stage 1

108_13A
3/27/25

281.01
9/28/22

SECTION 404 PERMIT AND CONDITIONS

Construct this project according to the requirements of U.S. Army Corps of Engineers nationwide, Permit No. 3. A copy of this permit is available from the Iowa DOT website (<http://www.envpermits.iowadot.gov/>). The U.S. Army Corps of Engineers reserves the right to visit the site without prior notice.

SURVEY SYMBOLS

- ▲▲▲▲

▼▼▼▼

Revetment (Rip Rap)
- Guardrail (Beam or Cable)
- SIGN

Sign
- Existing Drainage

UTILITY LEGEND

- E2 —

(ID2) IA DOT
Contact Name: Todd Netley
Contact Phone: (641)764-2755
Contact Email: Todd.Netley@iowadot.us
- SAN. —

(OCA) OSCELA, CITY OF
Contact Name: BRANDON PATTERSON
Contact Phone: (641)342-1435
Contact Email: OSCEOLAWATERWORKS@WINDSTREAM.NET
- W —

(OCR4) OSCEOLA WATER WORK
Contact Name: BRANDON PATTERSON
Contact Phone: (641)342-1435
Contact Email: OSCEOLAWATERWORKS@WINDSTREAM.NET

PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK		Design Color No.	
Green	(2)		Existing Topographic Features and Labels
Blue	(1)		Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Magenta	(5)		Existing Utilities
SHADING		Design Color No.	Transparency
Pink, Dark	(13)		Temporary Pavement Shading
Yellow	(4)		Proposed Pavement Shading
Orange	(6)		Proposed Granular Shading
Orange	(70)		Proposed Shoulder Granular Shading
Yellow	(68)		Proposed Shoulder Paved Full Depth Shading
Yellow	(132)		Proposed Shoulder Paved Partial Depth Shading
Brown, Light	(236)		Grading Shading
Orange, Light	(134)		Proposed Granular Entrance Shading
Yellow	(220)		Proposed Paved Entrance Shading
Tan	(8)		Proposed Sidewalk Shading
Blue, Light	(230)		Proposed Sidewalk Landing Shading
Pink	(11)		Proposed Sidewalk Ramp Shading
Red	(3)		Proposed Structure Shading
Red	(3)		Delineates Restricted Areas

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK		Design Color No.	
Green	(10)		Existing Ground Line Profile
Blue	(1)		Proposed Profile and Annotation
Magenta	(5)		Existing Utilities
Blue, Light	(230)		Proposed Ditch Grades, Left
Black	(0)		Proposed Ditch Grades, Median
Rust	(14)		Proposed Ditch Grades, Right

- Reference Point

Station

—○—

Survey Line
- ▲

Section Corner
- - - - -

Ground Line Intercept
- ////

Saw Cut
- ~~~~~

Guardrail
- =====

Trench Drain
- HighTension Cable
Guardrail
- ~~~~~

Sheet Pile
- ////

Pavement
Removal
- XXXX

Clearing &
Grubbing Area

RIGHT-OF-WAY LEGEND

- ▲

Proposed Right-of-Way Symbol
- Proposed Right-of-Way Line
- ▲

Existing Right of Way
- ▲

Existing and Proposed Right-of-Way
- ▲

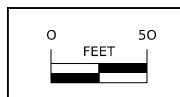
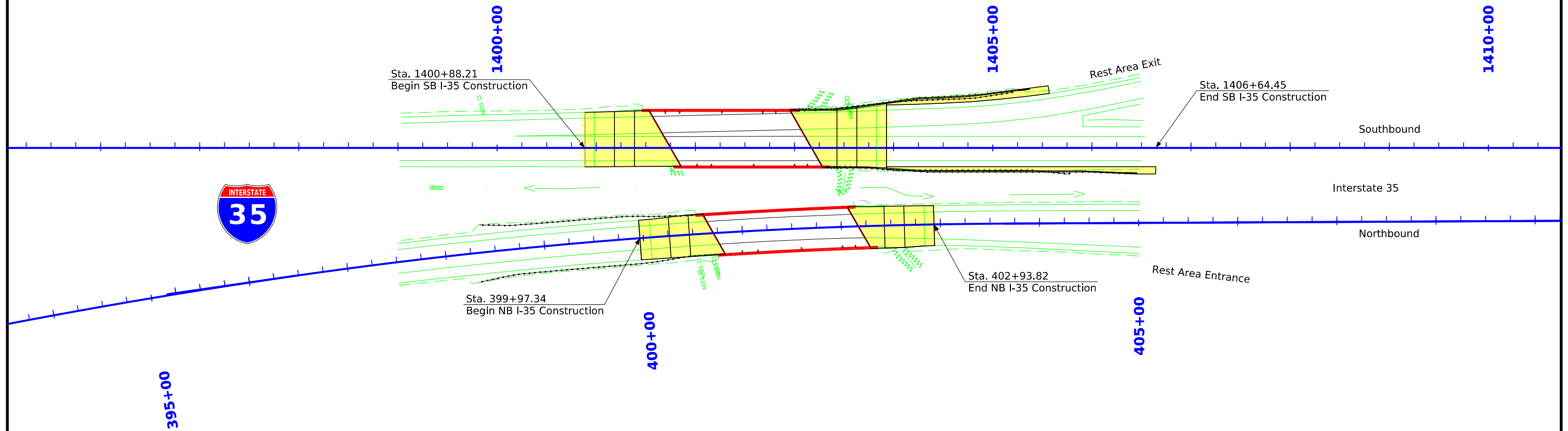
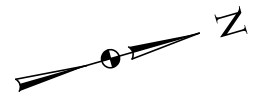
Easement and Existing Right-of-Way
- Easement (Temporary) Symbol
- Easement (Temporary) Line
- Easement
- C/A

Access Control
- X—X—

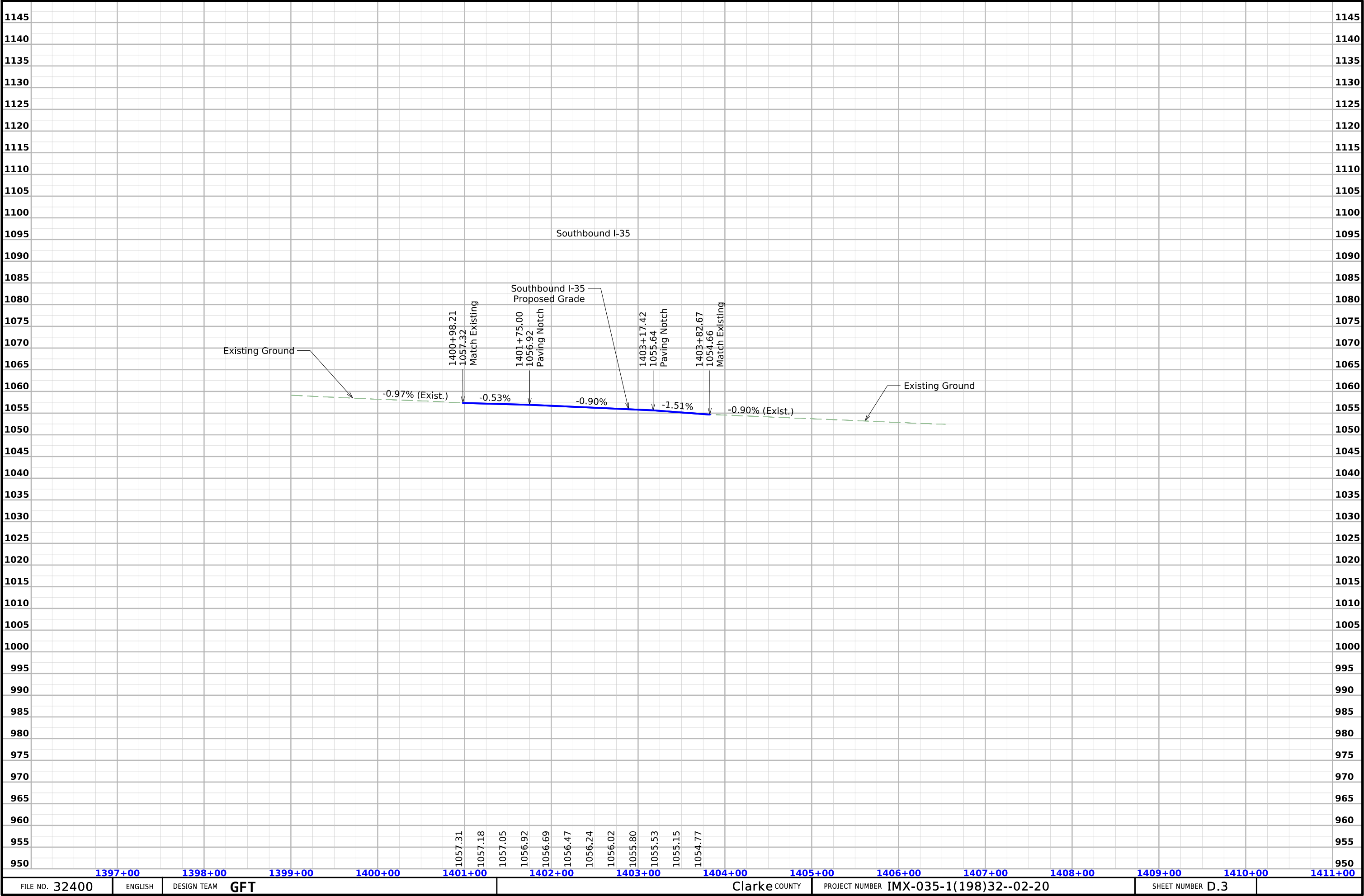
Property Line Symbol
- Property Line

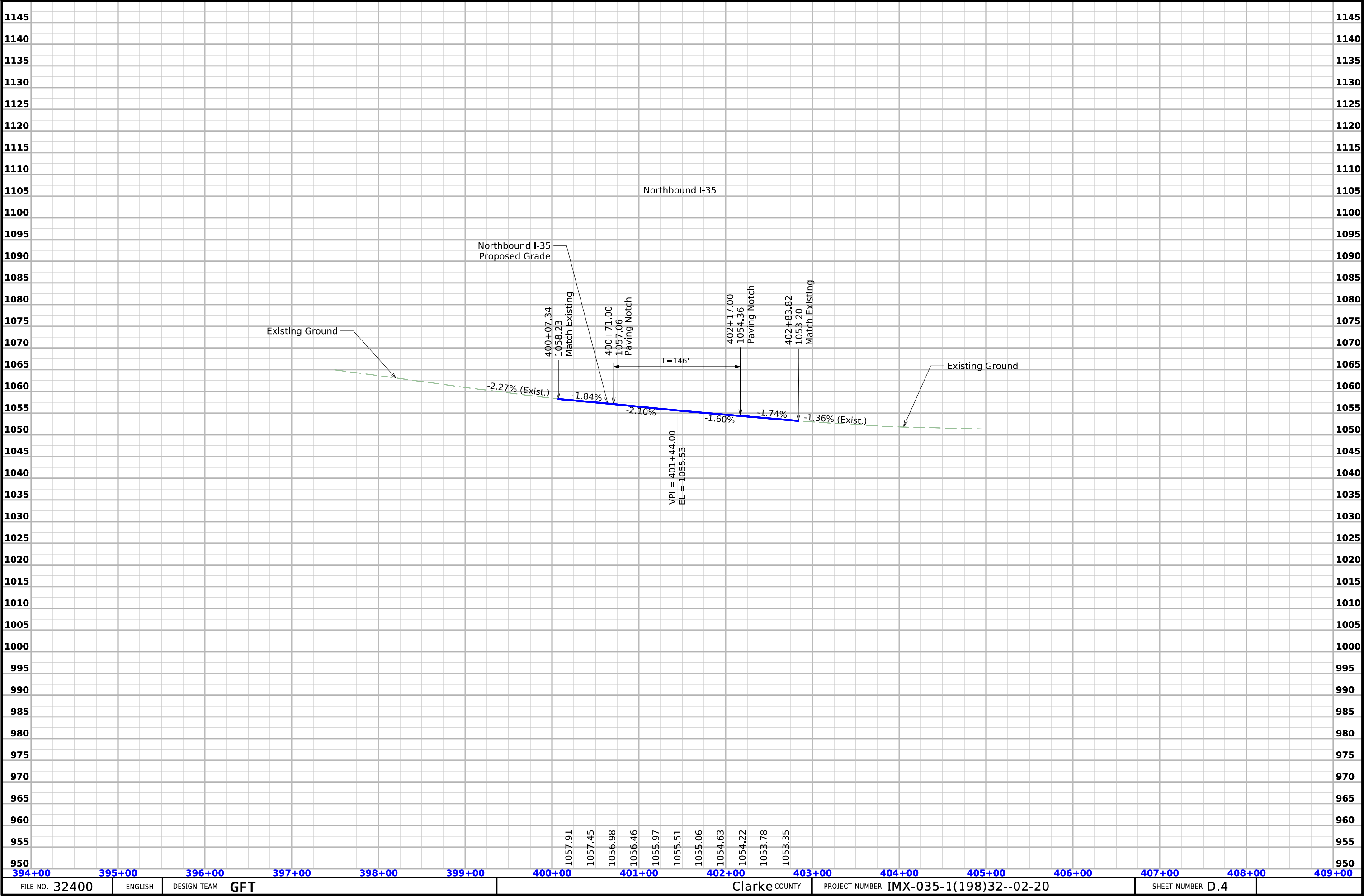
PLAN AND PROFILE
LEGEND AND SYMBOL
INFORMATION SHEET

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



Interstate 35





TRAFFIC CONTROL PLAN

1.
All Traffic Control items shall be installed prior to Contractor starting roadway work operations. Staging Traffic Control items shall be installed prior to beginning each stage’s work. Items to be installed per the roadway plans, Standard Road Plan sheets, or as directed by the field engineer. Additional items may be necessary to accommodate field conditions. Contractor is responsible for field locating utilities.

2.
All lane closures and notifications shall be submitted and approved a minimum of 14 days prior to related roadway work operations.

3.
Traffic Control shall be in accordance with Standard Road Plans and following J sheets. For additional information, refer to Part 6 of the Manual on the Uniform Traffic Control Devices and the current Standard and Supplemental Specifications

4.
Traffic will be maintained on I-35 at all times. Access to Southbound ramp to Rest Area will be closed in Stage 1. Access to Northbound ramp to Rest Area will be maintained at all times.

5.
Contractor shall coordinate traffic control with other projects in the area.

I-35
Maintain a minimum of one lane of traffic in each direction at all times

Rest Area Ramps
NB I-35: Traffic shall be maintained at all times.
SB I-35: Ramp to rest area closed in Stage 1. Maintain access to rest area in Stage 2.

STAGING NOTES

Stage 1

Traffic:

- Close SB I-35 outside lanes per TC-420 and TC-421.
- Close SB I-35 entrance ramp to Rest Area using TC-417.
- Close NB I-35 outside lane per TC-420 and TC-421.
- Maintain access to NB I-35 entrance ramp to Rest Area per TC-420.
- Place TBR per typical 8210.

Construction:

- Construct SB I-35 outside lanes and bridge deck and double-reinforced bridge approach.
- Install guardrail on outside shoulder
- Construct NB I-35 outside lanes and bridge deck and double-reinforced bridge approach.
- Remove and reinstall guardrail on NB I-35 outside shoulder where necessary.

Stage 2

Traffic:

- Close SB I-35 inside lanes per TC-420 and TC-421.
- Close NB I-35 inside lane per TC-421.
- Maintain access from Rest Area exit ramp to SB I-35 per TC-420.
- Place TBR per typical 8210.

Construction:

- Construct SB I-35 inside lanes and bridge deck and double-reinforced bridge approach.
- Install guardrail on inside shoulder.
- Construct NB I-35 inside lanes and bridge deck and double-reinforced bridge approach.
- Remove and reinstall guardrail on NB I-35 inside shoulder where necessary.

Stage 3

Traffic:

- All traffic lanes return to normal operations.

111_01
10/14/22

COORDINATED OPERATIONS

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

Project	Type of Work
None	

511 TRAVEL RESTRICTIONS													108_25 3/28/24
Line No.	Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No. or Structure ID or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
1.0	I-35	NB	Clarke	I-35 NB bridge	White Breast Creek	Barrier	N/A	Horizontal	40'-0"	12'-6"	11'-6"	N/A	Stage 1 & 2
2.0	I-35	SB	Clarke	I-35 SB bridge	White Breast Creek	Barrier	N/A	Horizontal	55'-6"	12'-0"	11'-0"	N/A	Stage 1 & 2

CROSS SECTION VIEW COLOR LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS		
SHADING	Design Color No.	
Green, Light	(225)	Existing Pavement Shading
Gray, Light	(48)	Previously Constructed Pavement Shading
Gray, Med	(80)	Previously Constructed Granular Surface Shading
Blue, Light	(230)	Proposed Pavement Shading
Lavender	(9)	Temporary Pavement Shading
Brown, Med	(237)	Future Proposed Pavement Shading

CROSS SECTION VIEW PATTERN AND SYMBOL LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS			
	Pavement Removal		Proposed Granular Shoulder
	Proposed Granular Subbase		Temporary Shoulder
	Proposed Special Backfill		Existing Shoulder Strengthening
	Temporary Barrier Rail		Permanent Barrier Rail
			Channelizing Device

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

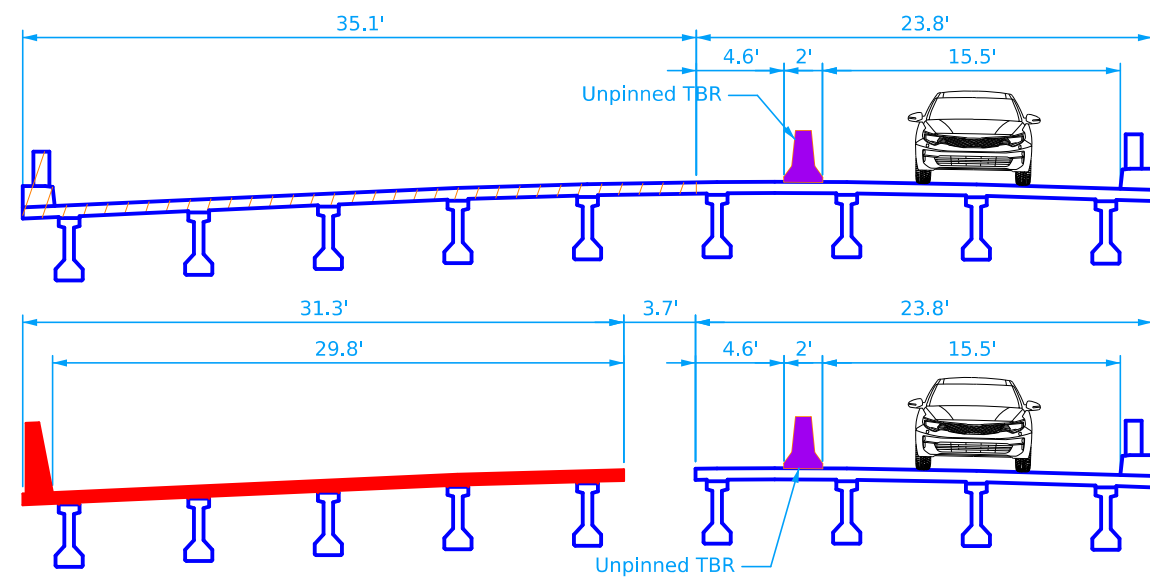
SHADING	Design Color No.	
Green, Light	(225)	Existing Pavement Shading
Gray, Light	(48)	Previously Constructed Pavement Shading
Orange	(6)	Proposed Granular Surface Shading
Gray, Med	(80)	Previously Constructed Granular Surface Shading
Blue, Light	(230)	Proposed Pavement Shading
Pink, Dark	(13)	Temporary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

PLAN VIEW PATTERN AND SYMBOL LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS			
	Channelizing Device		Crash Cushion (Temp or Perm)
	Drum		Traffic Signal
	Temporary Lane Separator		Flagger
	Tubular Marker		Temporary Floodlighting
	Channelizer Marker		Traffic Sign
	Concrete Barrier Marker		Type III Barricade
	Delineator		Type A Warning Light
	Temporary Barrier Rail		Direction of Traffic
	Pavement Removal		Safety Closure
	Sand Barrel Layout		Lane Identification

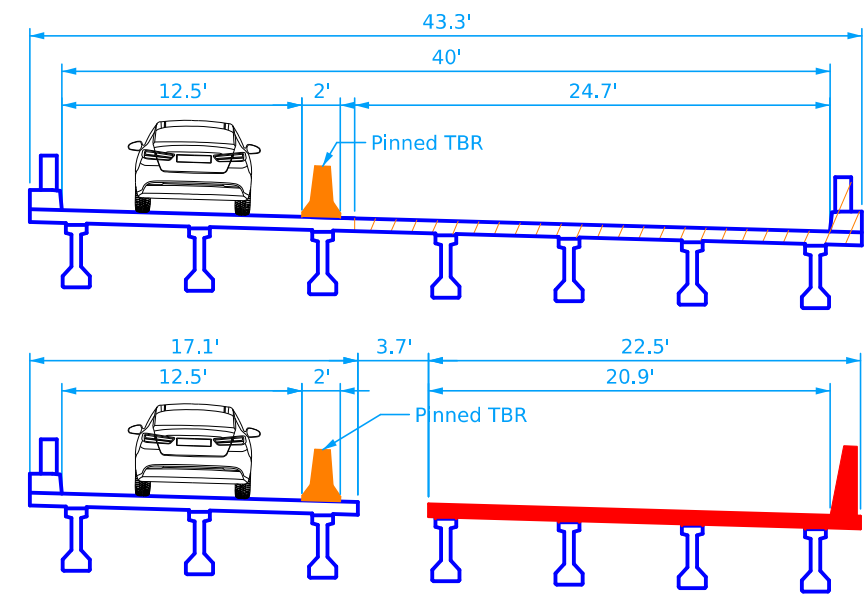
NOTE: Device spacing according to Standard Road Plans unless specifically dimensioned.

TRAFFIC CONTROL
AND
STAGING
LEGEND AND SYMBOL
INFORMATION SHEET

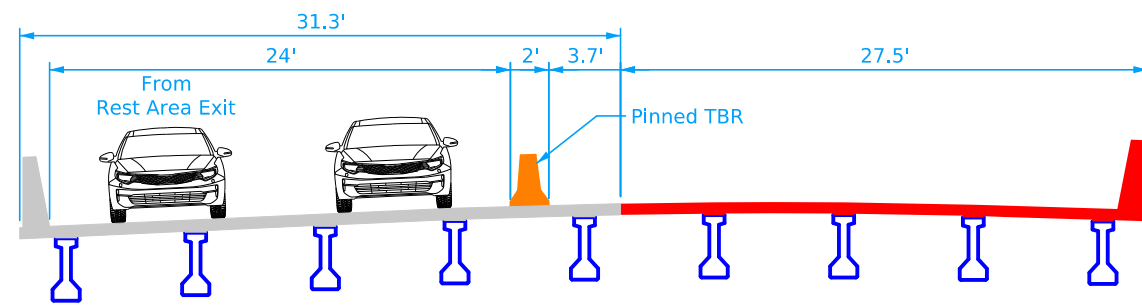
(COVERS SHEET SERIES J)



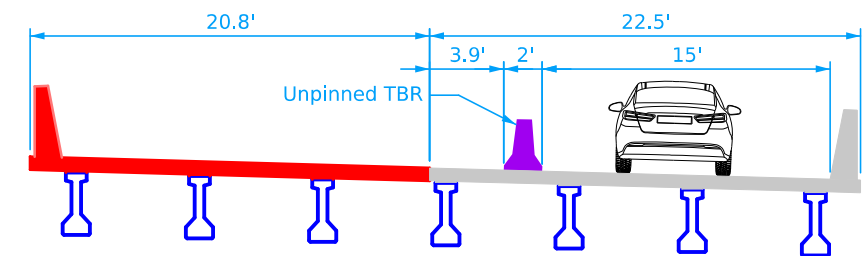
Stage 1



Stage 1



Stage 2

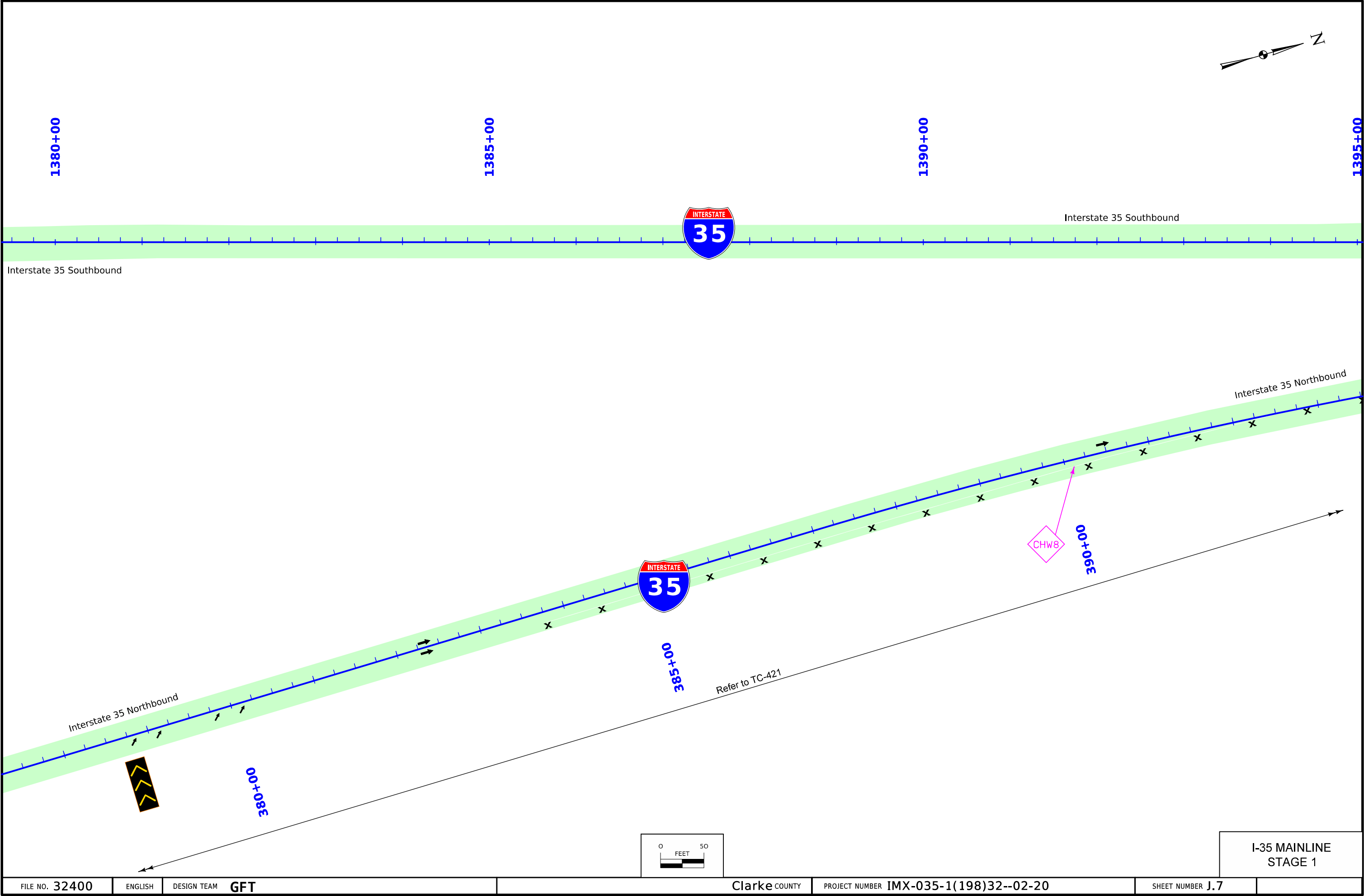


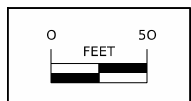
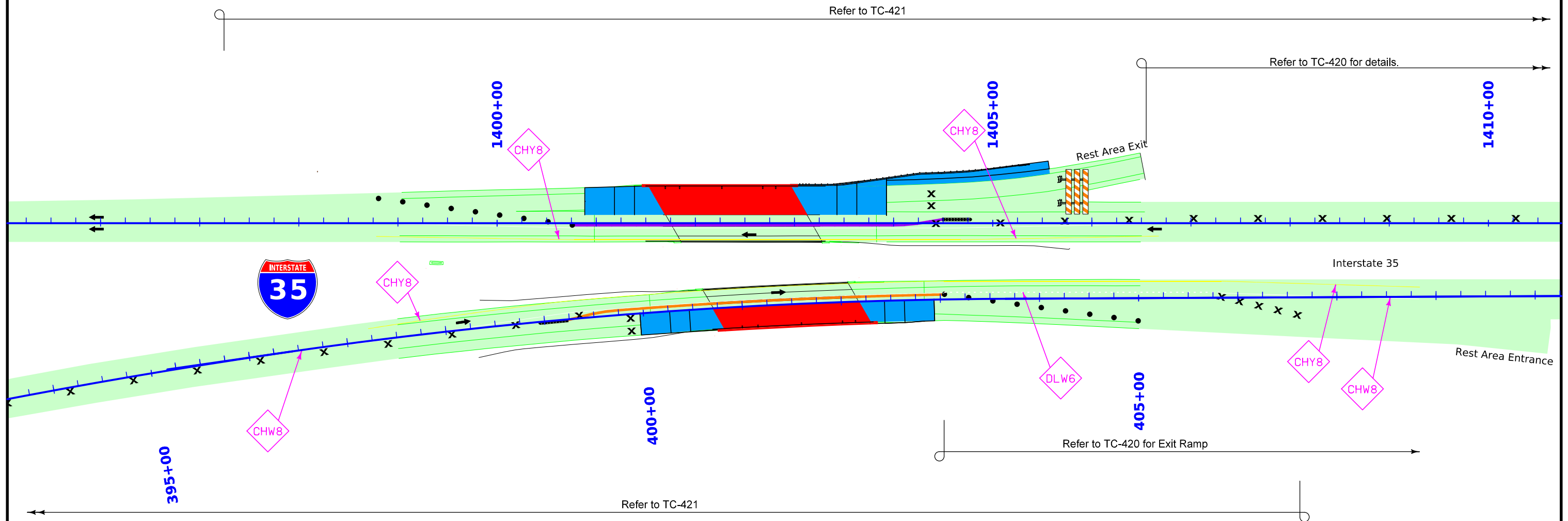
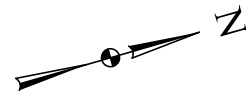
Stage 2

**Southbound I-35
(Looking Upstation)**

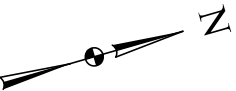
**Northbound I-35
(Looking Upstation)**

STAGING
TYPICALS





I-35 MAINLINE
STAGE 1



Rest Area Entrance Ramp from Southbound I-35
is closed in Stage 1. Refer to TC-417 for details.

Refer to TC-421

Refer to TC-420 for Ramp Sholder work

1415+00

CHW8

1420+00

1425+00



Interstate 35

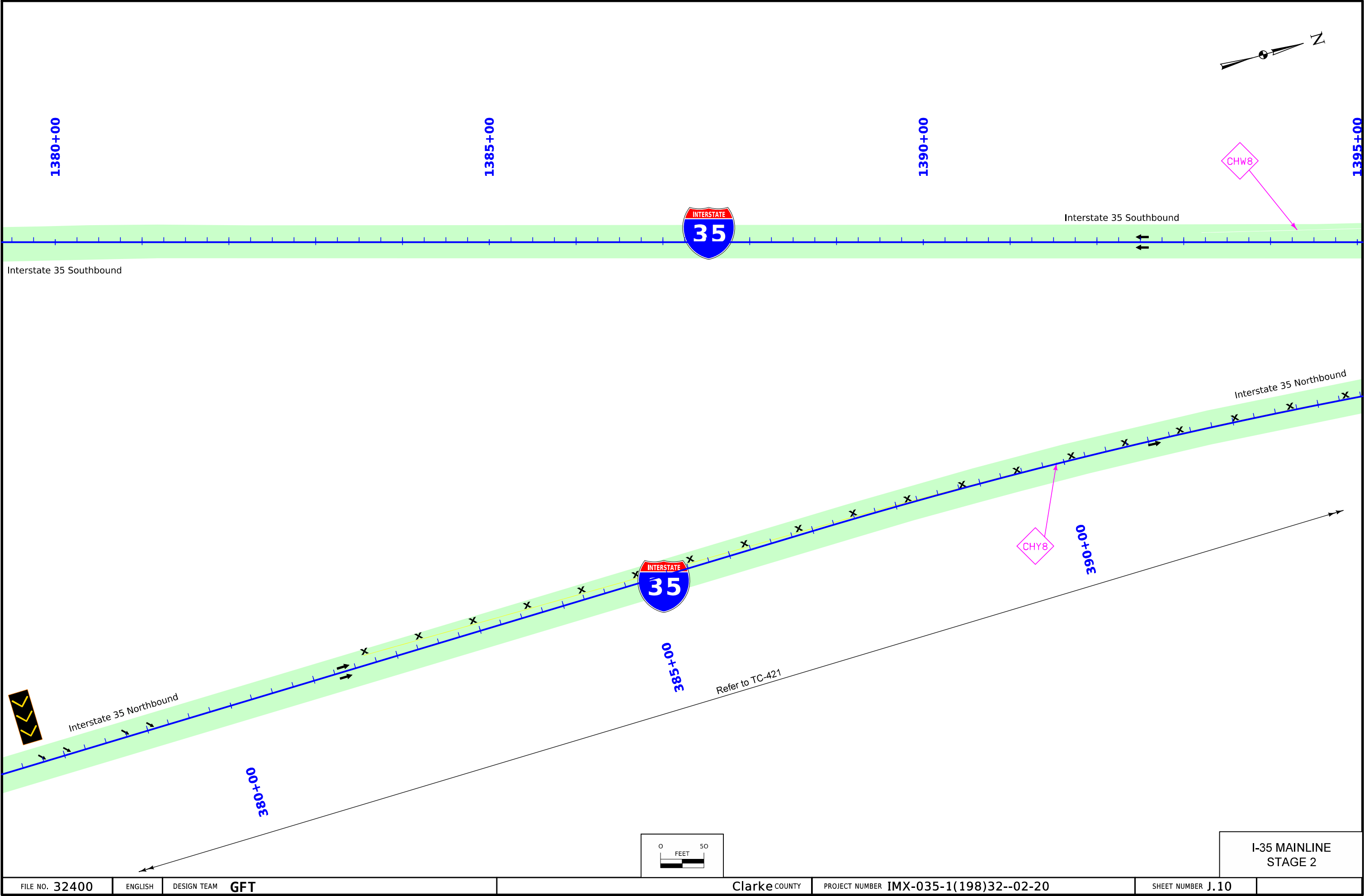
410+00

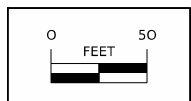
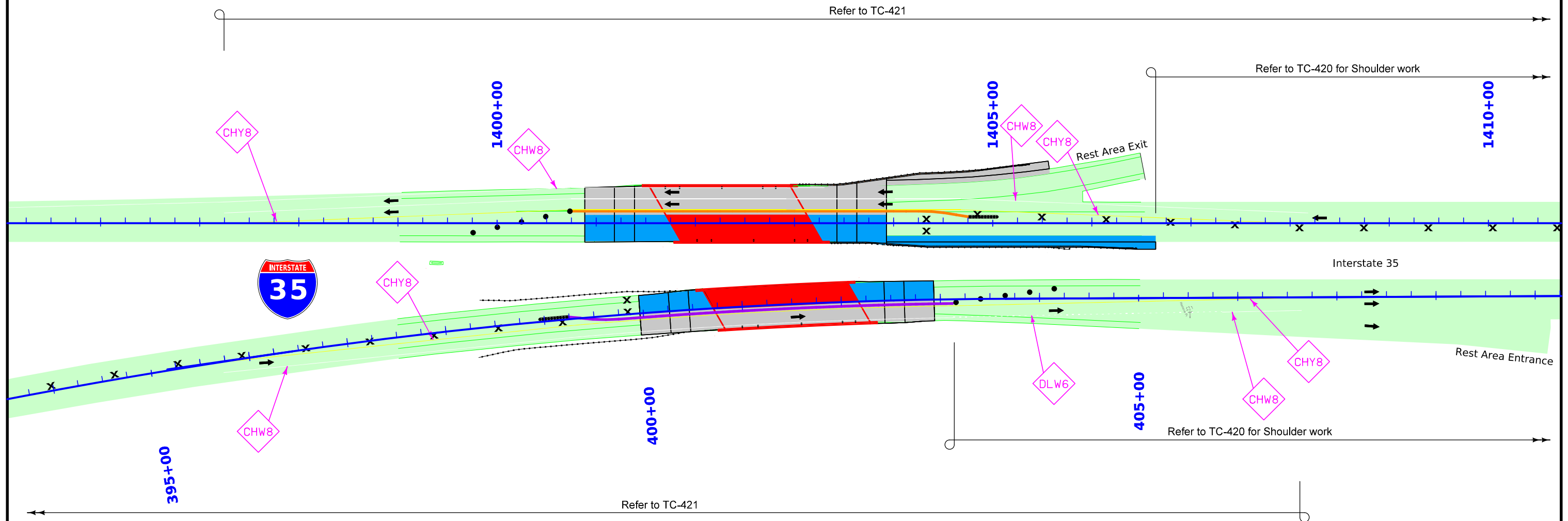
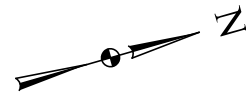
415+00

420+00

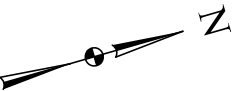


I-35 MAINLINE
STAGE 1





I-35 MAINLINE
STAGE 2



Refer to TC-421

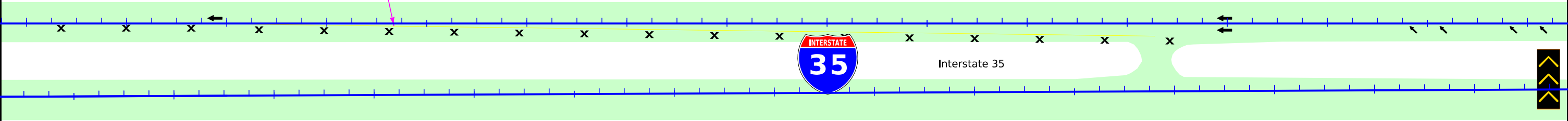
Refer to TC-420 for Shoulder work

CHY8

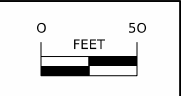
1415+00

1420+00

1425+00



Interstate 35



I-35 MAINLINE
STAGE 2