

PROGRESS PLANS, NOT FOR CONSTRUCTION

BRIDGE DECK REPLACEMENT
BRFN-018-9(103)--39-22

CLAYTON COUNTY

CLAYTON COUNTY - DESIGN 117

LETTING DATE
12-22-2022

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	



PLANS OF PROPOSED IMPROVEMENTS ON THE
PRIMARY ROAD SYSTEM
CLAYTON COUNTY
BRIDGE DECK REPLACEMENT
US 18 OVER NATURAL STREAM
LOCATED 0.6 MILES W. OF E JCT. US 52

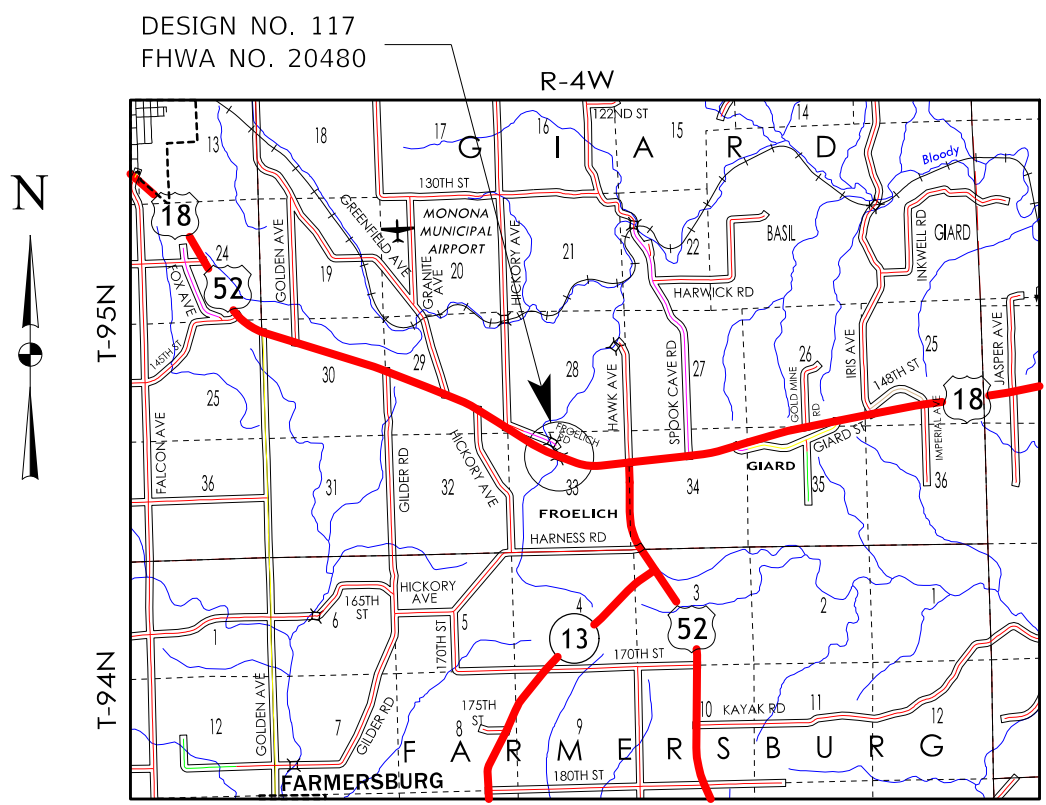
THE IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2015, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

REVISIONS

TOTAL SHEETS	35
PROJECT NUMBER	BRFN-018-9(103)--39-22
R.O.W. PROJECT NUMBER	
PROJECT IDENTIFICATION NUMBER	12-22-018-020

INDEX OF SHEETS	
NO.	DESCRIPTION
1	TITLE SHEET
2	ESTIMATE SHEET - DESIGN 117
2-23	DESIGN 117 - BRIDGE PLANS
C.1	ESTIMATE SHEET FOR ROADWAY
A.1-J.1	ROADWAY SHEETS

IOWA ONE CALL
 1-800-292-8989
 www.iowaonecall.com
 811 Know what's below. Call before you dig.



LOCATION MAP

STANDARD ROAD PLANS	
STANDARD ROAD PLANS ARE LISTED ON SHEET NUMBER <u>C.2</u>	
DESIGN DATA RURAL	
2020 AADT	<u>3040</u> V.P.D.
TRUCKS	<u>27</u> %

INDEX OF SEALS		
SHEET NO.	NAME	TYPE
1	ANTHONY J. BOWER	STRUCTURAL DESIGN
A.1	TAYLOR R. THEULEN	ROADWAY DESIGN

STRUCTURAL DESIGN

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

Signature: Anthony J. Bower Date: x/xx/20xx

Printed or Typed Name: Anthony J. Bower

My license renewal date is December 31, 20xx

Pages or sheets covered by this seal: SHEETS 1 THRU 23



PROJECT DIRECTORY NAME: 2201802012

PROGRESS PLANS, NOT FOR CONSTRUCTION

Specifications:

Design: AASHTO series of 2002.

Construction: Iowa Department of Transportation Standard Specifications for Highway and Bridge Construction, series 2015, plus applicable General Supplemental Specifications, Developmental Specifications, Supplemental Specifications, and Special Provisions shall apply to construction work on this project.

Concrete removal shall be initiated with a 3/4" saw cut wherever possible.

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

Design Stresses:

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

Reinforcing steel in accordance with section 8, grade 60.
 Concrete in accordance with section 8, f'c = 4.0 ksi, including bridge deck concrete.
 Structural steel in accordance with section 10 ASTM A709 grade 36.

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

The existing guardrail at this bridge is to remain the property of the Iowa DOT. The Contractor shall remove the existing guardrail and deliver to the Iowa DOT Elkader maintenance yard. See the road plans for bid item, tabulation and note.

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

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

General Notes:

This design is for the bridge deck replacement of the existing 292'-0" x 32'-0" continuous welded plate girder bridge on US18 over a natural stream. Electronic plans of the existing structure are available to the Contractor as part of the E-Files supplied with the contract documents.

Dimensions shown on these plans are based on the original design plans (Design No. 165). All dimensions and details shown in these plans pertinent to new construction shall be verified in the field by the Contractor before starting construction. The Contractor shall note that the bench mark is located on the portion of the structure that will be removed during construction. Therefore, the benchmark will need to be relocated by the contractor prior to removal operations.

The bridge deck is designed for HS-20 loading with no allowance for future wearing surface.

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.

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.

The road will be closed to traffic during construction. See traffic control plan note.

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

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

The Contractor is responsible to provide sufficient temporary bracing to minimize lateral deflection and rotation of exterior steel beams during deck placement. Lateral deflection and rotation of exterior beams may result in thin decks and an upwards shift in bar mats which can decrease concrete cover. Partially or fully installed permanent bracing as shown in these design plans shall not be assumed sufficient to minimize lateral deflection and rotation of exterior beams during deck placement. Temporary bracing shall not be welded to the steel beams or its attachments including the studs.

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

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

SHOP DRAWING SUBMITTALS

SHOP DRAWINGS SHALL BE SUBMITTED FOR THE FOLLOWING ITEMS SHOWN IN THE TABLE BELOW. (NOTE ADDITIONAL SHOP DRAWINGS MAY BE REQUIRED IN ACCORDANCE WITH ARTICLE 1105.03 OF THE STANDARD SPECIFICATIONS.) SUBMITTAL REQUIREMENTS FOR SHOP DRAWINGS SHOULD BE IN ACCORDANCE WITH 1105.03 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION OF THE IOWA DEPARTMENT OF TRANSPORTATION. SHOP DRAWINGS SHALL BE SUBMITTED WITH THE FOLLOWING NAMING CONVENTION: (Paren)_County_DesignNumber_SubmittalDescription.pdf
 Example: (090)_Blackhawk_Design915_DeckDrains.pdf

1	
2	

Shop Drawing Submittals

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

Submittal requirements for shop drawings should be in accordance with Article 1105.03, of the Standard Specifications, for Highway and Bridge Construction of the Iowa DOT.

Shop drawings shall be submitted with the following naming convention:
 (Paren)_County_DesignNumber_SubmittalDescription.pdf
 Example: (090)_BlackHawk_Design915_DeckDrains.pdf

1	Demolition plan
2	Temporary bracing
3	
4	

DESIGN HISTORY AT THIS SITE

Des. No.	Type of work
165	Original design
186	Retrofit rails

Traffic control plan

Note: US18 will be closed to thru traffic. Refer to the traffic control plan shown on roadway sheet J.1.

Design For 45° Skew (RA)
292'-0" X 32'-0" CONTINUOUS WELDED GIRDER BRIDGE

64'-0" End Spans 82'-0" Interior Span

GENERAL NOTES

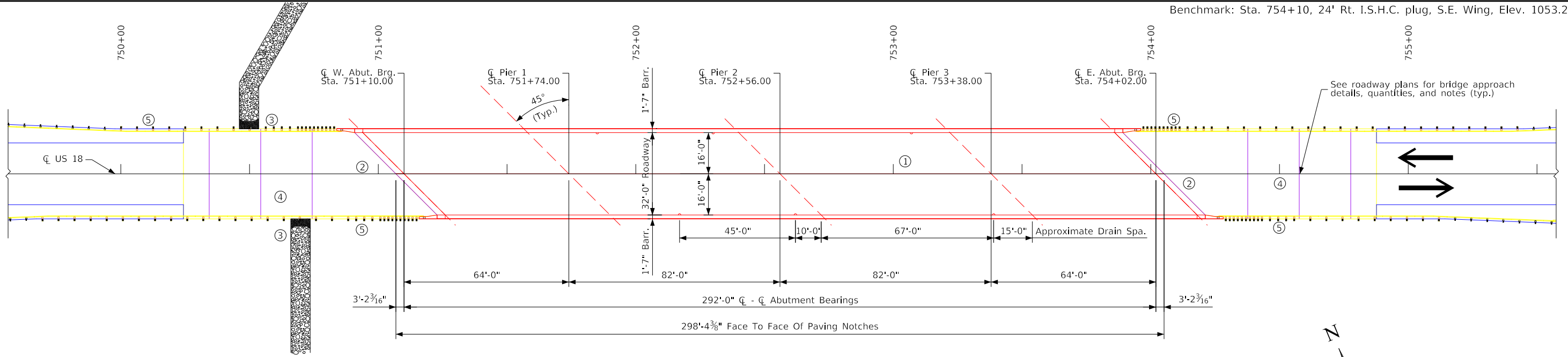
STA. 752+56.00 (US 18) Letting Date December 22, 2022

CLAYTON County

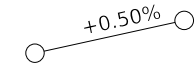
IOWA DEPARTMENT OF TRANSPORTATION
 Design No. 117 Design Sheet No. 2 of 22 FHWA No. 20480

PROGRESS PLANS, NOT FOR CONSTRUCTION

Benchmark: Sta. 754+10, 24' Rt. I.S.H.C. plug, S.E. Wing, Elev. 1053.29



SITUATION PLAN



VPI Sta. = 750+00
VPI Elev. = 1050.93

PROPOSED PROFILE GRADE US 18
(FROM EXISTING PLANS)

Repair shall consist of:

- ① Remove and reconstruct the bridge deck.
- ② Remove existing backwalls and expansion joints and replace with semi-integral abutments at both ends of bridge. Include construction of new wings for new barrier rail end sections. Include new subdrain behind the abutment diaphragms.
- ③ Place bridge end drains at the west end of the bridge.
- ④ Remove and replace approaches with 70' standard bridge approaches.
- ⑤ Remove and replace the existing guardrails and install paved shoulders at guardrails in accordance with current standards.

LOCATION

US 18 Over Natural Stream
T-95N R-4W
Section 33
Giard Twp.
Clayton County
Bridge Maint. No. 2296.05018
FHWA No. 20480
Latitude: 43.005381°
Longitude: -91.321463°

TRAFFIC ESTIMATE

2020 AADT 3040 V.P.D.
TRUCKS 27%

Design For 45° Skew (RA)
292'-0" X 32'-0" CONTINUOUS
WELDED GIRDER BRIDGE

64'-0" End Spans 82'-0" Interior Span

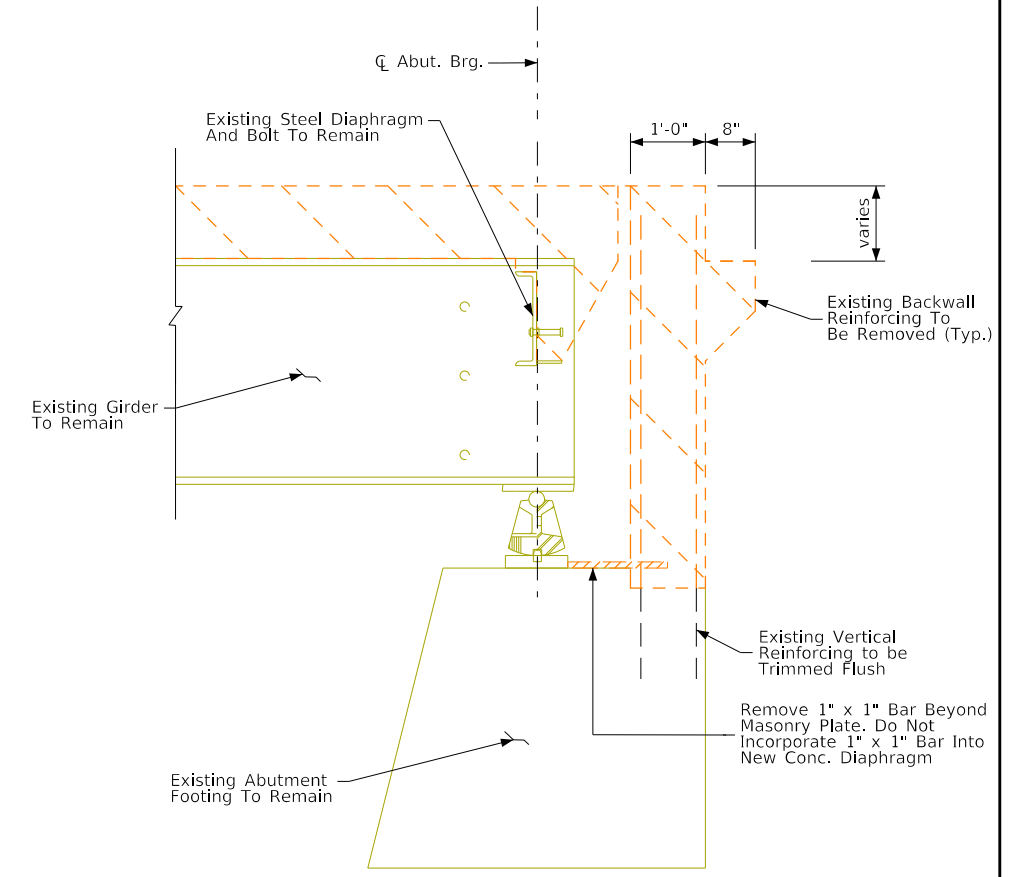
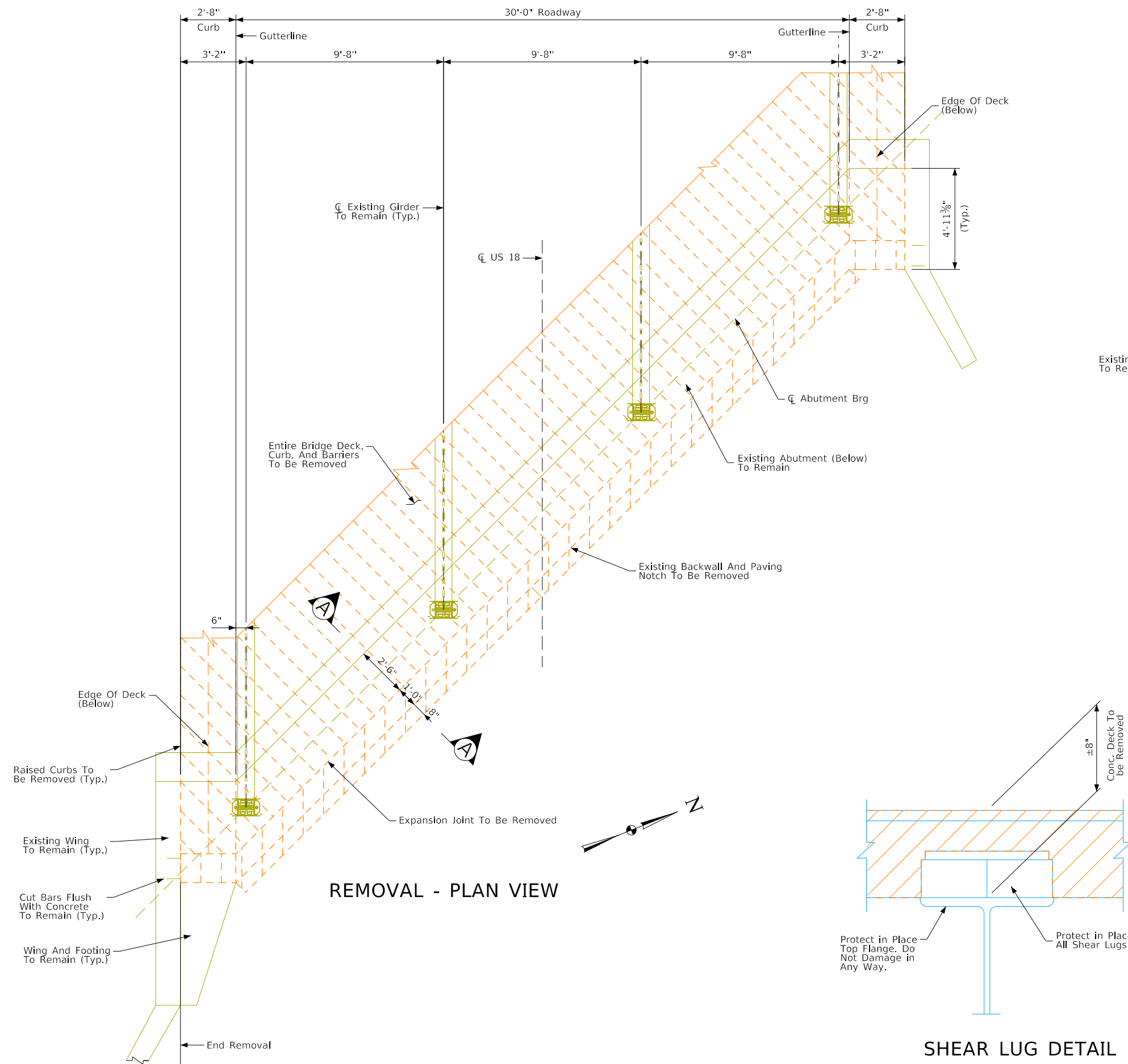
SITUATION PLAN

STA. 752+56.00 (US 18) Letting Date December 22, 2022

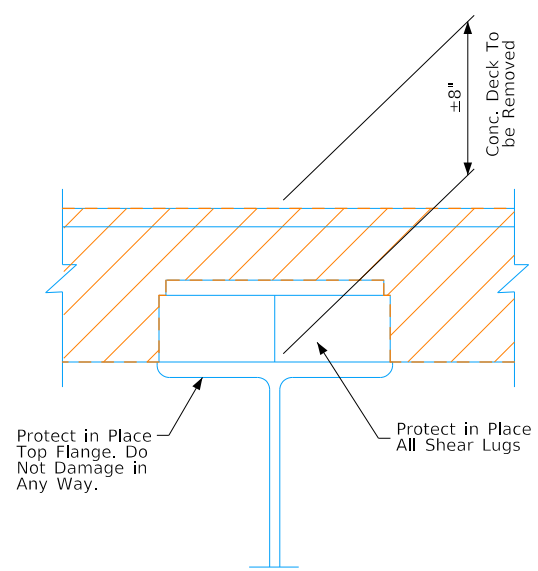
CLAYTON County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 117 Design Sheet No. 3 of 22 FHWA No. 20480



SECTION A-A

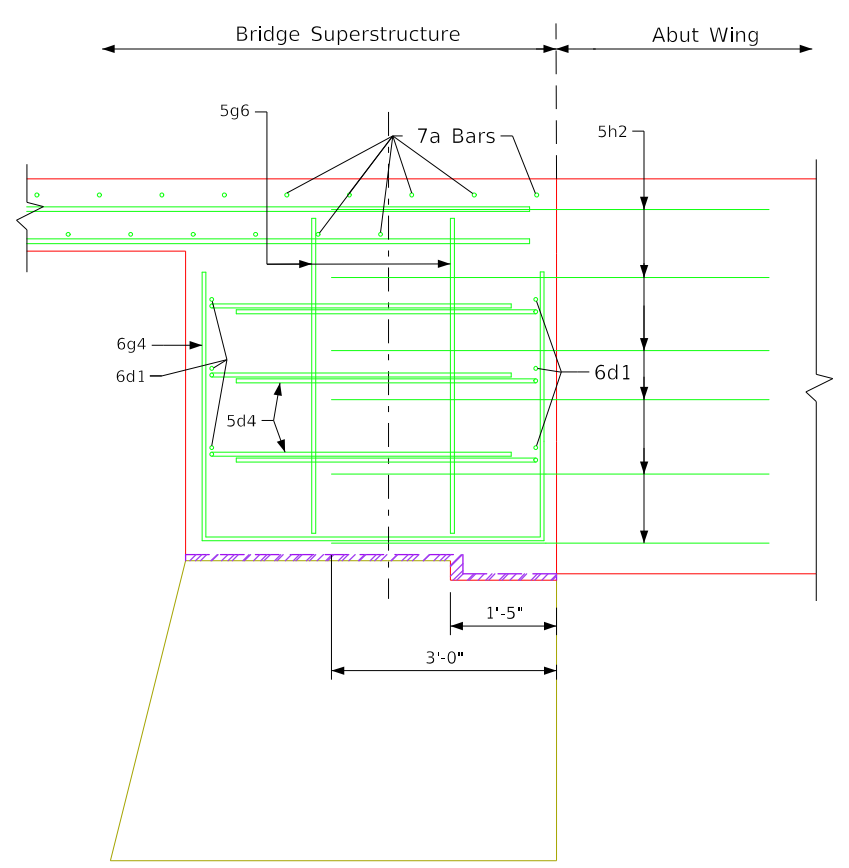
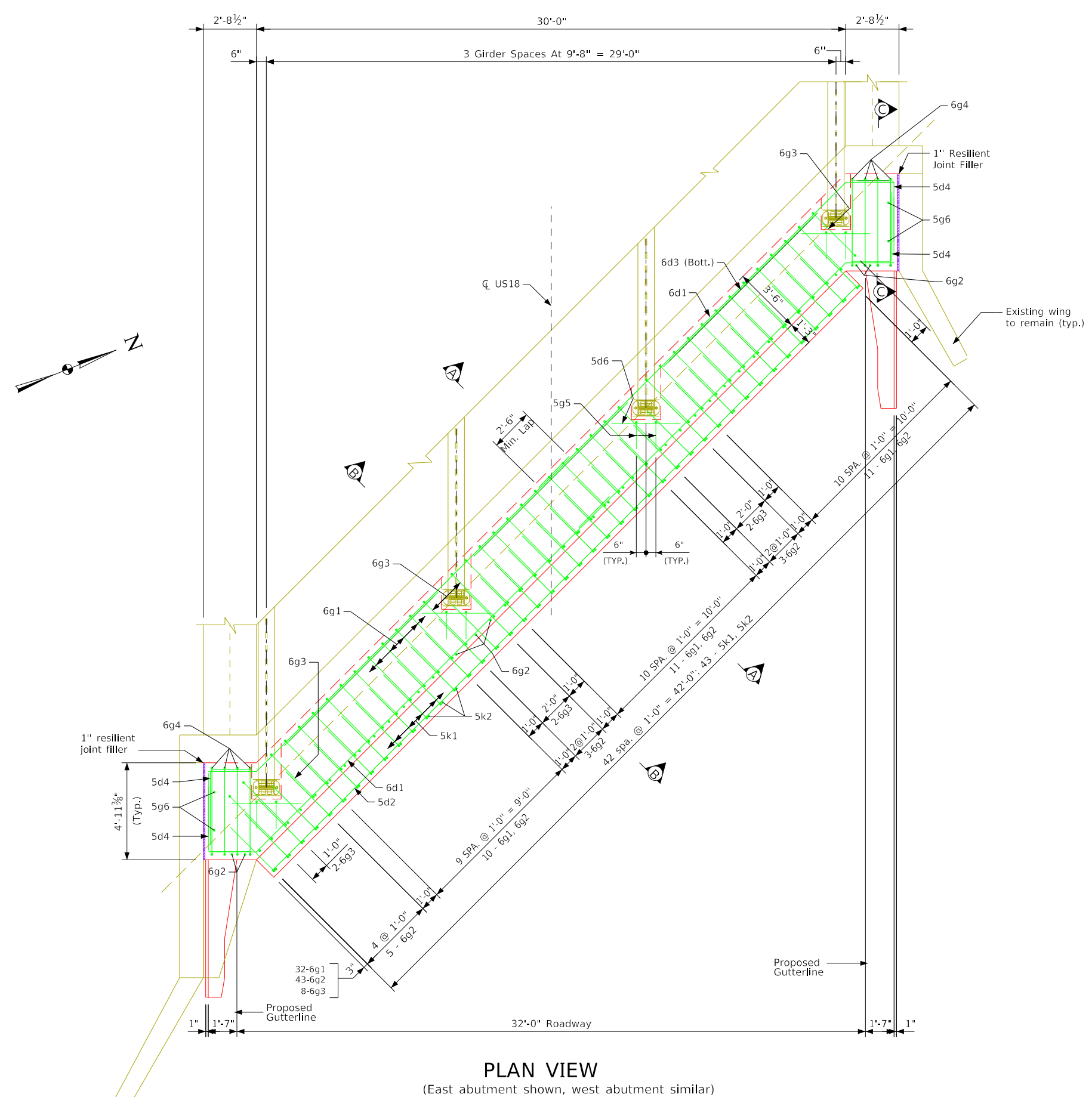


SHEAR LUG DETAIL

Note:
See Design Sheet 4 for Removal Notes.

Design For 45° Skew (RA)
292'-0" X 32'-0" CONTINUOUS WELDED GIRDER BRIDGE
 64'-0" End Spans 82'-0" Interior Span
REMOVAL DETAILS
 STA. 752+56.00 (US 18) Letting Date December 22, 2022
CLAYTON County
 IOWA DEPARTMENT OF TRANSPORTATION
 Design No. 117 Design Sheet No. 5 of 22 FHWA No. 20480

PROGRESS PLANS, NOT FOR CONSTRUCTION



Notes:

- See Design Sheet 7 for Rear Elevation View.
- See Design Sheet 8 for Sections A-A and B-B.
- See Design Sheet 9 for Abutment Notes, Bent Bar Details, and Bar List.
- Place 5h2 bar at 1:6 slope to match traffic side of each abutment wing traffic face.
- Barrier rail not shown in details.

Design For 45° Skew (RA)

292'-0" X 32'-0" CONTINUOUS WELDED GIRDER BRIDGE

64'-0" End Spans 82'-0" Interior Span

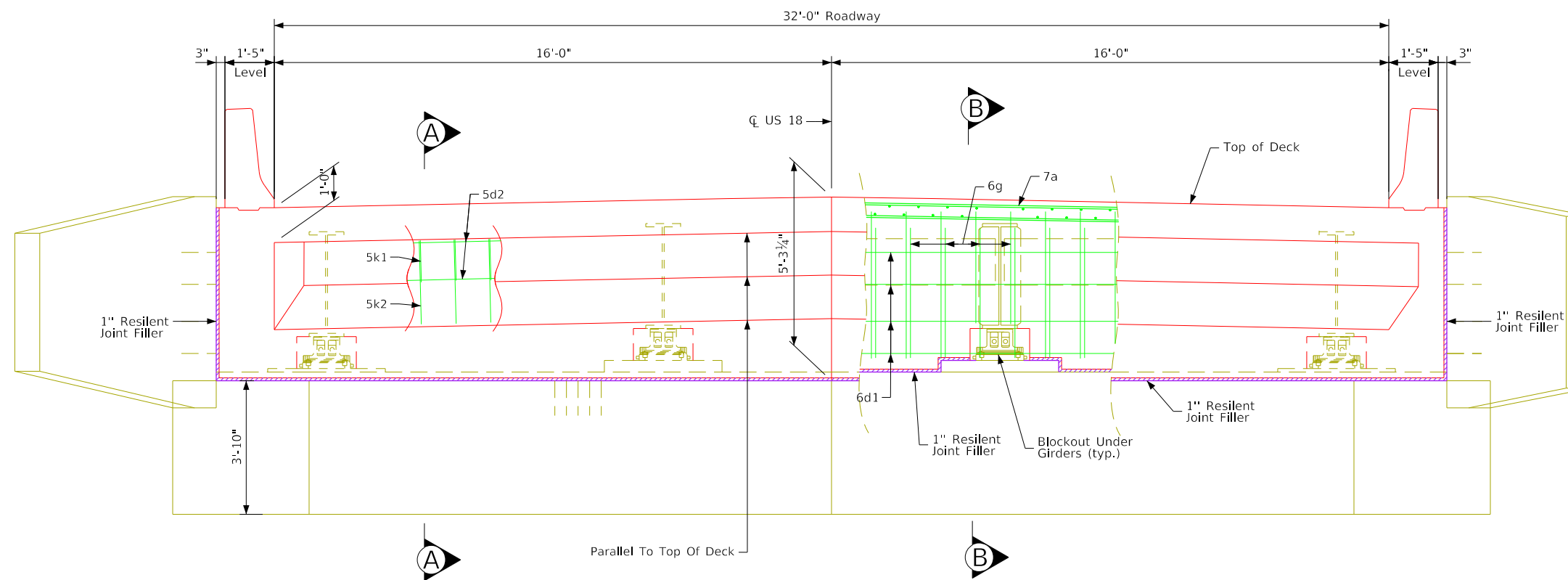
ABUTMENT DETAILS

STA. 752+56.00 (US 18) Letting Date December 22, 2022

CLAYTON County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 117 Design Sheet No. 6 of 22 FHWA No. 20480



REAR ELEVATION AT ABUTMENT

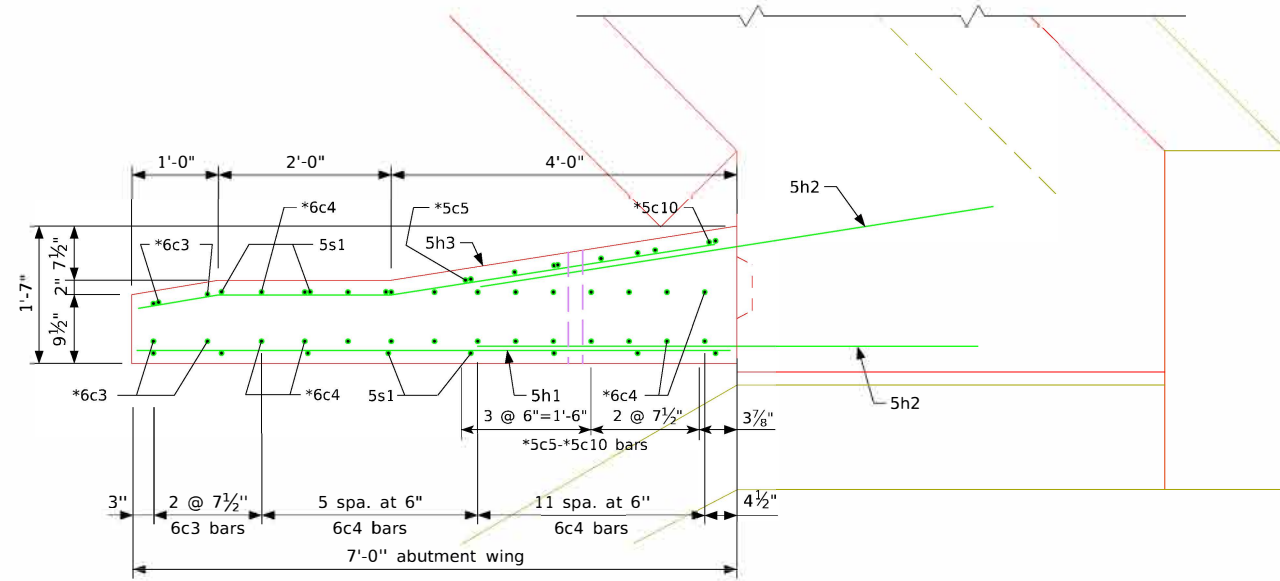
Notes:

No diaphragm concrete shall be placed under steel girders. Bearings shall be free to slide and rotate.

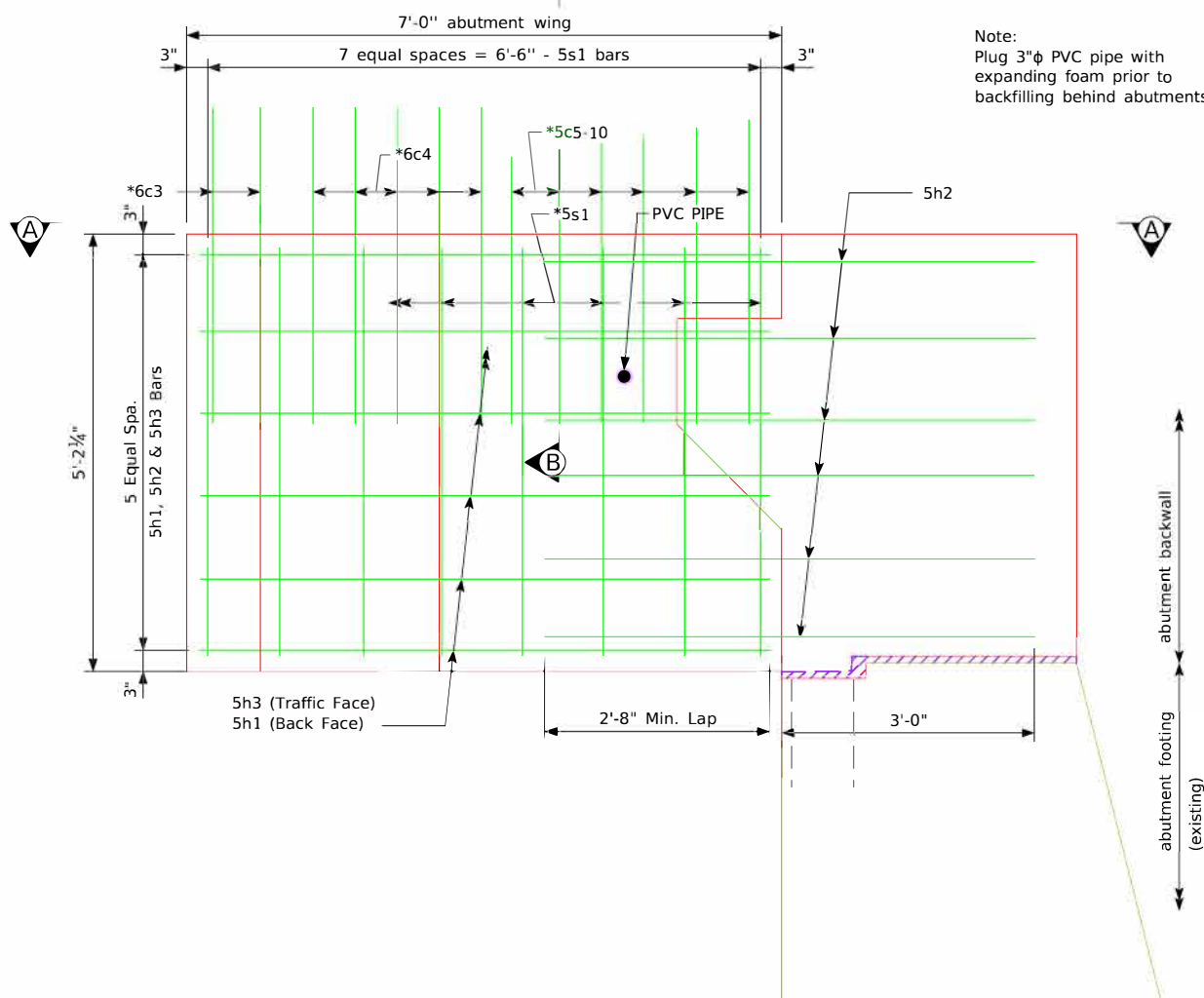
See Design Sheet 8 for Sections A-A and B-B.

See Design Sheet 9 for Abutment Notes, Bent Bar Details, and Bar List.

Design For 45° Skew (RA)	
292'-0" X 32'-0" CONTINUOUS WELDED GIRDER BRIDGE	
64'-0" End Spans	82'-0" Interior Span
ABUTMENT DETAILS	
STA. 752+56.00 (US 18)	Letting Date December 22, 2022
CLAYTON County	
IOWA DEPARTMENT OF TRANSPORTATION	
Design No. 117	Design Sheet No. 7 of 22 FHWA No. 20480

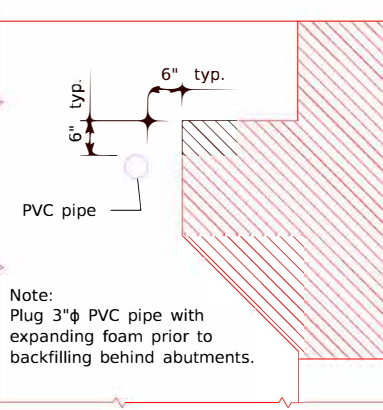


VIEW A-A

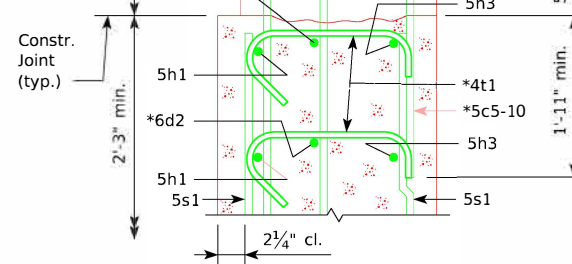


ABUTMENT WING - ELEVATION VIEW

Note:
Plug 3"φ PVC pipe with
expanding foam prior to
backfilling behind abutments.



PVC PIPE LOCATION



SECTION B-B

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

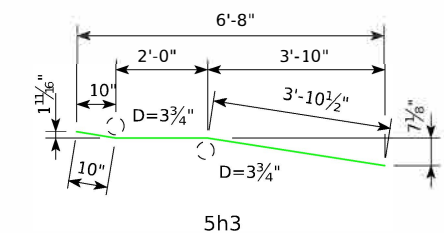
See end section details on
sheet 17 for details
of barrier rail end section.
Reinforcing bars 6c3, 6c4,
5c5-10, 6d2 & 4t1 are
included in the Abutment
bar list.

REINFORCING BAR LIST - N.W & S.E. WING

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5h1	Horizontal back face		12	6'-8"	83
5h3	Horizontal traffic face		12	6'-9"	84
5s1	Vertical both faces		32	7'-7"	253

REINFORCING STEEL EPOXY COATED - TOTAL (LBS.) 420

BENT BAR DETAILS



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

CONCRETE PLACEMENT SUMMARY

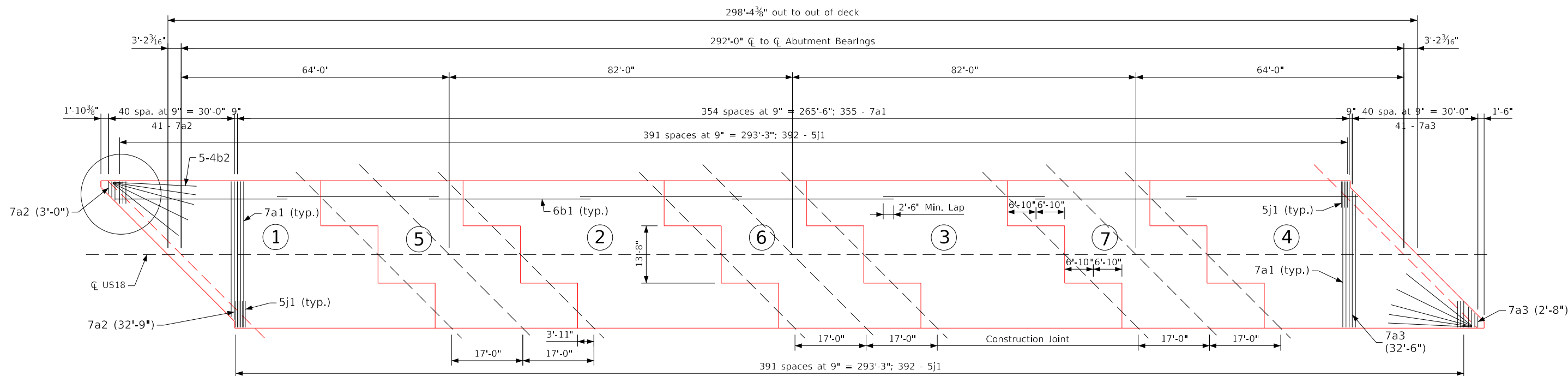
CONCRETE	TOTAL
One abutment wing	2.3
TOTAL (CU. YDS.)	2.3

NOTES:

This sheet pertains to the S.W. and N.E. wingwalls only. See Design Sheet 8 for details of other abutment wingwalls.

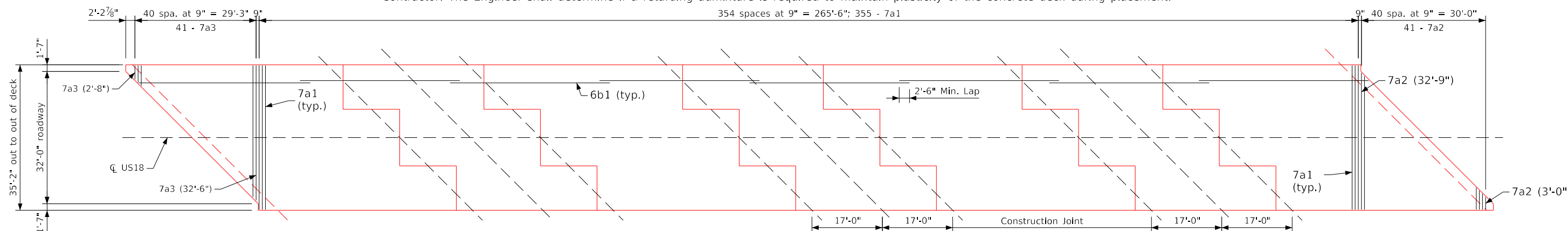
Excavation for wingwalls shall be backfilled with special backfill. The cost of furnishing and placing special backfill is to be included in the price bid for "Excavation, Class 20". No extra payment will be made.

Design For 45° Skew (RA)
**292'-0" X 32'-0" CONTINUOUS
 WELDED GIRDER BRIDGE**
 64'-0" End Spans 82'-0" Interior Span
S.E. & N.W. ABUT. WING DETAILS
 STA. 752+56.00 (US 18) Letting Date December 22, 2022
CLAYTON County
 IOWA DEPARTMENT OF TRANSPORTATION
 Design No. 117 Design Sheet No. 11 of 22 FHWA No. 20480

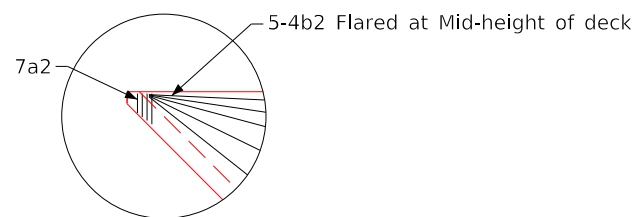


TOP SLAB REINFORCING LAYOUT AND CONCRETE PLACEMENT DIAGRAM

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

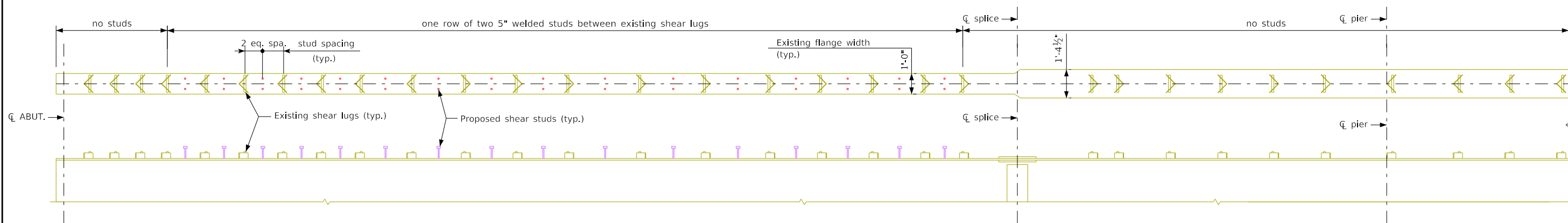


BOTTOM SLAB REINFORCING LAYOUT

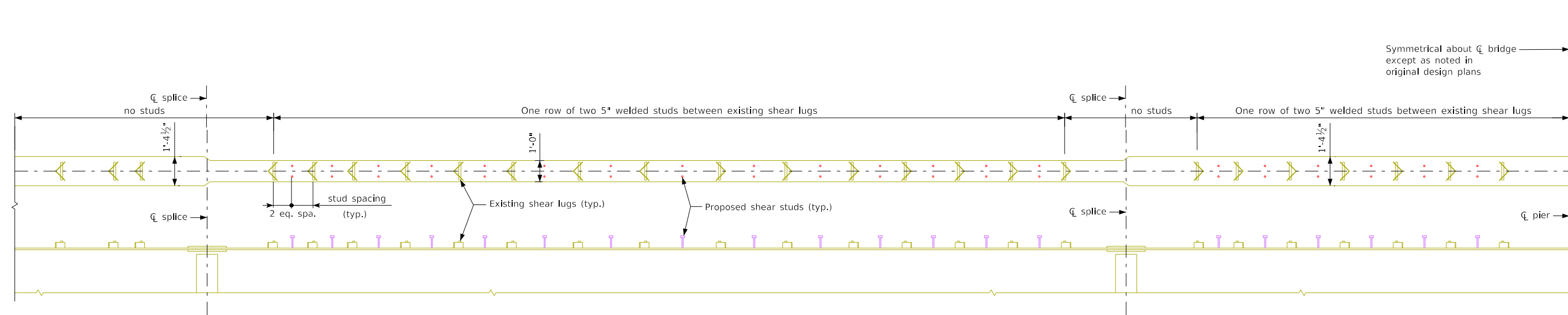


Design For 45° Skew (RA)
292'-0" X 32'-0" CONTINUOUS WELDED GIRDER BRIDGE
 64'-0" End Spans 82'-0" Interior Span
SUPERSTRUCTURE DETAILS
 STA. 752+56.00 (US 18) Letting Date December 22, 2022
CLAYTON County
 IOWA DEPARTMENT OF TRANSPORTATION
 Design No. 117 Design Sheet No. 13 of 22 FHWA No. 20480

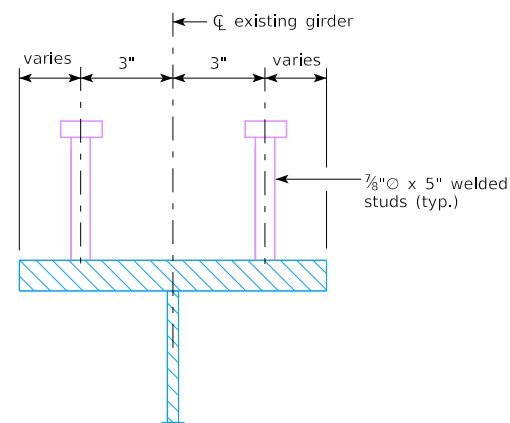
PROGRESS PLANS, NOT FOR CONSTRUCTION



INTERIOR GIRDER



INTERIOR GIRDER



SHEAR STUD DETAIL

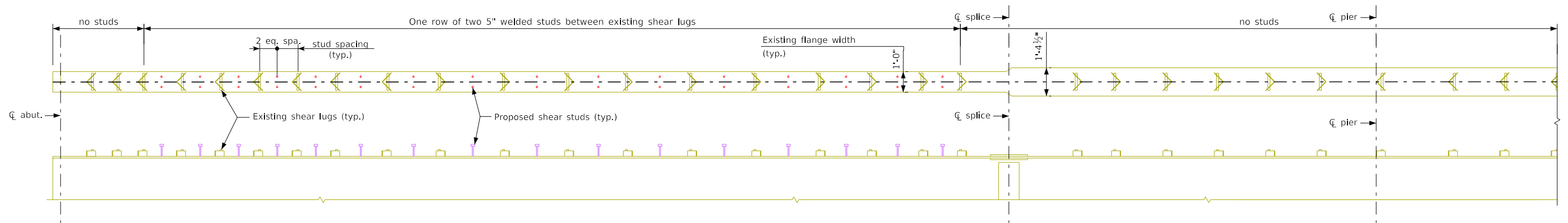
Notes:
As built existing shear lug spacing may vary from construction details. Contractor to verify all dimensions in the field. See original construction drawings for details.

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

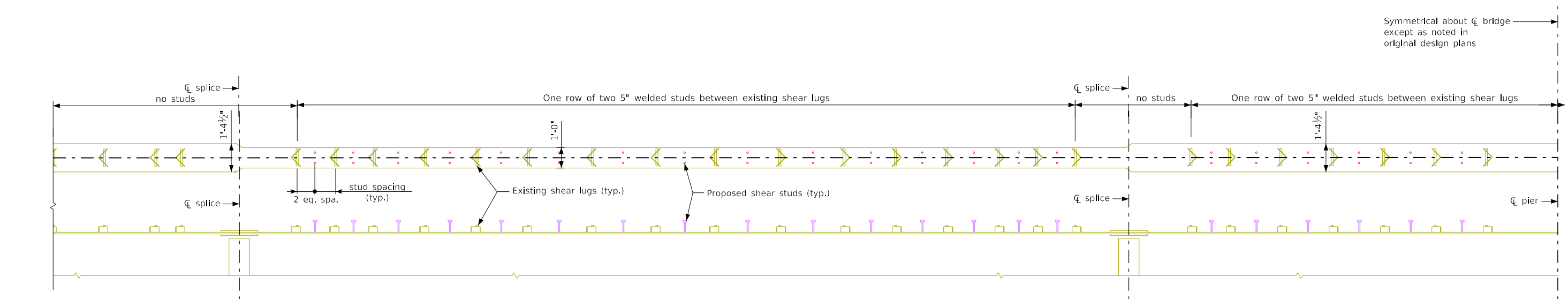
Welded shear studs shall be of an approved type listed in Materials I.M. 453.10, Appendix A.

Design For 45° Skew (RA)	
292'-0" X 32'-0" CONTINUOUS WELDED GIRDER BRIDGE	
64'-0" End Spans	82'-0" Interior Span
SUPERSTRUCTURE DETAILS	
STA. 752+56.00 (US 18)	Letting Date December 22, 2022
CLAYTON County	
IOWA DEPARTMENT OF TRANSPORTATION	
Design No. 117	Design Sheet No. 14 of 22
FHWA No. 20480	

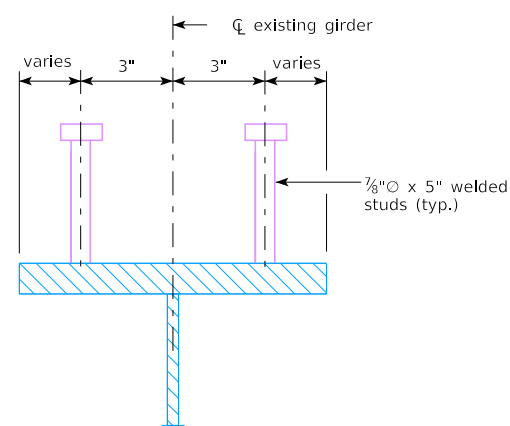
PROGRESS PLANS, NOT FOR CONSTRUCTION



EXTERIOR GIRDER



EXTERIOR GIRDER



SHEAR STUD DETAIL

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

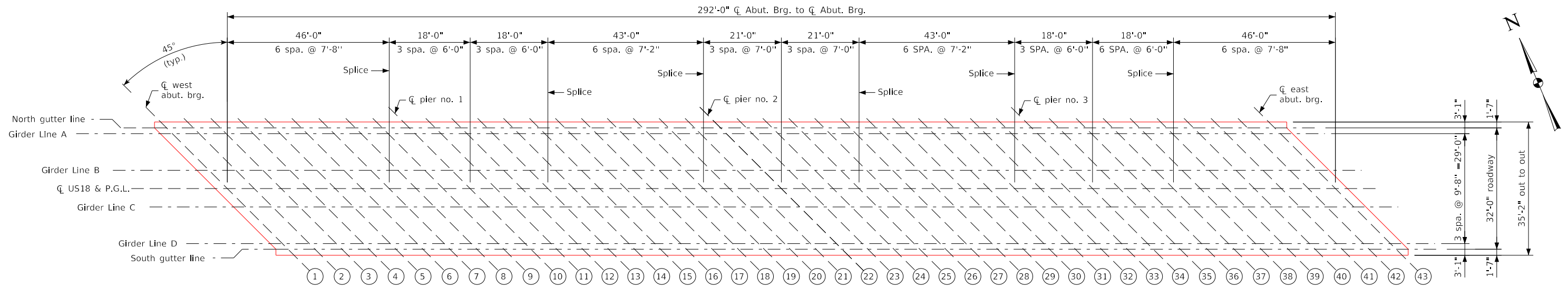
Place new welded shear studs where distance between existing lugs exceeds 2'-0".

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

Design For 45° Skew (RA)
292'-0" X 32'-0" CONTINUOUS WELDED GIRDER BRIDGE
 64'-0" End Spans 82'-0" Interior Span
SUPERSTRUCTURE DETAILS
 STA. 752+56.00 (US 18) Letting Date December 22, 2022
CLAYTON County
 IOWA DEPARTMENT OF TRANSPORTATION
 Design No. 117 Design Sheet No. 15 of 22 FHWA No. 20480

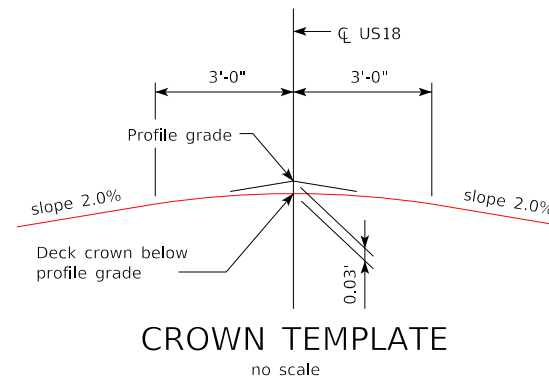
PROGRESS PLANS, NOT FOR CONSTRUCTION

Benchmark: Sta. 754+10, 24' Rt. I.S.H.C. plug, S.E. Wing, Elev. 1053.29



LOCATION OF TOP OF SLAB ELEVATIONS

TOP OF SLAB ELEVATIONS																						
LOCATION	\bar{C} W. ABUT. BRG.						SPLICE	\bar{C} PIER NO. 1						SPLICE	\bar{C} PIER NO. 2						\bar{C} PIER NO. 2	
	1	2	3	4	5	6		7	8	9	10	11	12		13	14	15	16	17	18		19
NORTH GUTTER LINE	1050.95	1050.99	1051.03	1051.07	1051.11	1051.15	1051.18	1051.21	1051.24	1051.27	1051.30	1051.33	1051.36	1051.40	1051.44	1051.47	1051.51	1051.54	1051.58	1051.61	1051.65	1051.68
GIRDER LINE A	1050.99	1051.03	1051.07	1051.11	1051.14	1051.18	1051.22	1051.25	1051.28	1051.31	1051.34	1051.37	1051.40	1051.44	1051.47	1051.51	1051.54	1051.58	1051.62	1051.65	1051.69	1051.72
GIRDER LINE B	1051.23	1051.27	1051.31	1051.35	1051.39	1051.42	1051.46	1051.49	1051.52	1051.55	1051.58	1051.61	1051.64	1051.68	1051.71	1051.75	1051.79	1051.82	1051.86	1051.89	1051.93	1051.96
CROWN LINE	1051.28	1051.32	1051.36	1051.39	1051.43	1051.47	1051.51	1051.54	1051.57	1051.60	1051.63	1051.66	1051.69	1051.72	1051.76	1051.80	1051.83	1051.87	1051.90	1051.94	1051.97	1052.01
\bar{C} US 18	1051.45	1051.49	1051.53	1051.57	1051.60	1051.64	1051.68	1051.71	1051.74	1051.77	1051.80	1051.83	1051.86	1051.90	1051.93	1051.97	1052.00	1052.04	1052.08	1052.11	1052.15	1052.18
CROWN LINE	1051.31	1051.35	1051.39	1051.42	1051.46	1051.50	1051.54	1051.57	1051.60	1051.63	1051.66	1051.69	1051.72	1051.75	1051.79	1051.83	1051.86	1051.90	1051.93	1051.97	1052.00	1052.04
GIRDER LINE C	1051.28	1051.32	1051.36	1051.40	1051.43	1051.47	1051.51	1051.54	1051.57	1051.60	1051.63	1051.66	1051.69	1051.73	1051.76	1051.80	1051.83	1051.87	1051.91	1051.94	1051.98	1052.01
GIRDER LINE D	1051.14	1051.17	1051.21	1051.25	1051.29	1051.33	1051.37	1051.40	1051.43	1051.46	1051.49	1051.52	1051.55	1051.58	1051.62	1051.65	1051.69	1051.73	1051.76	1051.80	1051.83	1051.87
SOUTH GUTTER LINE	1051.11	1051.15	1051.19	1051.23	1051.27	1051.31	1051.34	1051.37	1051.40	1051.43	1051.46	1051.49	1051.52	1051.56	1051.60	1051.63	1051.67	1051.70	1051.74	1051.77	1051.81	1051.84
			SPLICE							SPLICE			\bar{C} PIER NO. 3								\bar{C} N. ABUT. BRG.	
LOCATION	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	--
NORTH GUTTER LINE	1051.71	1051.74	1051.77	1051.81	1051.85	1051.88	1051.92	1051.95	1051.99	1052.02	1052.06	1052.09	1052.13	1052.17	1052.21	1052.25	1052.29	1052.32	1052.35	1052.38	1052.41	
GIRDER LINE A	1051.75	1051.78	1051.81	1051.85	1051.88	1051.92	1051.95	1051.99	1052.03	1052.06	1052.10	1052.13	1052.17	1052.21	1052.25	1052.28	1052.32	1052.36	1052.39	1052.42	1052.45	
GIRDER LINE B	1051.99	1052.02	1052.05	1052.09	1052.12	1052.16	1052.20	1052.23	1052.27	1052.30	1052.34	1052.37	1052.41	1052.45	1052.49	1052.53	1052.56	1052.60	1052.63	1052.66	1052.69	
CROWN LINE	1052.04	1052.07	1052.10	1052.13	1052.17	1052.21	1052.24	1052.28	1052.31	1052.35	1052.38	1052.42	1052.46	1052.50	1052.53	1052.57	1052.61	1052.65	1052.68	1052.71	1052.74	
\bar{C} US 18	1052.21	1052.24	1052.27	1052.31	1052.34	1052.38	1052.41	1052.45	1052.49	1052.52	1052.56	1052.59	1052.63	1052.67	1052.71	1052.74	1052.78	1052.82	1052.85	1052.88	1052.91	
CROWN LINE	1052.07	1052.10	1052.13	1052.16	1052.20	1052.24	1052.27	1052.31	1052.34	1052.38	1052.41	1052.45	1052.49	1052.53	1052.56	1052.60	1052.64	1052.68	1052.71	1052.74	1052.77	
GIRDER LINE C	1052.04	1052.07	1052.10	1052.14	1052.17	1052.21	1052.24	1052.28	1052.32	1052.35	1052.39	1052.42	1052.46	1052.50	1052.54	1052.57	1052.61	1052.65	1052.68	1052.71	1052.74	
GIRDER LINE D	1051.90	1051.93	1051.96	1051.99	1052.03	1052.06	1052.10	1052.14	1052.17	1052.21	1052.24	1052.28	1052.31	1052.35	1052.39	1052.43	1052.47	1052.51	1052.54	1052.57	1052.60	
SOUTH GUTTER LINE	1051.87	1051.90	1051.93	1051.97	1052.01	1052.04	1052.08	1052.11	1052.15	1052.18	1052.22	1052.25	1052.29	1052.33	1052.37	1052.41	1052.45	1052.48	1052.51	1052.54	1052.57	



Note:
Elevations along " \bar{C} US18" are located at "Deck crown below profile grade" as shown in "Crown template" detail.

Design For 45° Skew (RA)
292'-0" X 32'-0" CONTINUOUS WELDED GIRDER BRIDGE
 64'-0" End Spans 82'-0" Interior Span
TOP OF SLAB ELEVATIONS
 STA. 752+56.00 (US 18) Letting Date December 22, 2022
CLAYTON County
 IOWA DEPARTMENT OF TRANSPORTATION
 Design No. 117 Design Sheet No. 16 of 22 FHWA No. 20480

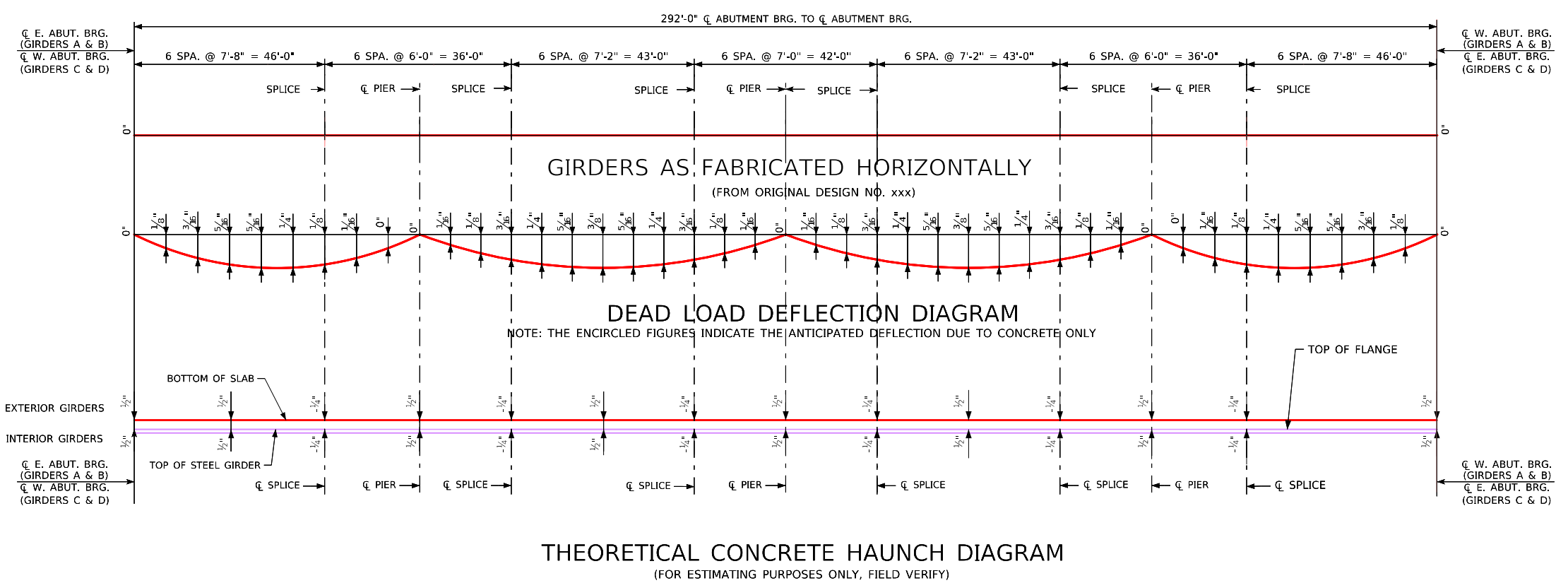
TABLE OF GIRDER LINE HAUNCH ELEVATIONS

GIRDER LINE	CL W. ABUT. BRG.		LINE 2	LINE 3	LINE 4	LINE 5	LINE 6	SPLICE	LINE 7	LINE 8	LINE 9	LINE 10	CL PIER NO. 1		LINE 12	LINE 13	LINE 14	LINE 15	LINE 16	LINE 17	LINE 18	SPLICE	LINE 19	LINE 20	LINE 21	LINE 22	CL PIER NO. 2			
	LINE 1	LINE 2											LINE 10	LINE 11																
GIRDER LINE A	1050.32	1050.37	1050.42	1050.47	1050.50	1050.54	1050.57	1050.59	1050.61	1050.64	1050.68	1050.72	1050.75	1050.79	1050.83	1050.87	1050.90	1050.93	1050.97	1051.00	1051.02	1051.05	1051.09	1051.12	1051.15	1051.18	1051.21	1051.24	1051.27	1051.30
GIRDER LINE B	1050.57	1050.62	1050.66	1050.66	1050.75	1050.78	1050.81	1050.83	1050.86	1050.89	1050.92	1050.96	1050.99	1051.03	1051.07	1051.12	1051.15	1051.18	1051.18	1051.24	1051.27	1051.30	1051.34	1051.37	1051.40	1051.43	1051.46	1051.49	1051.52	1051.55
GIRDER LINE C	1050.61	1050.66	1050.71	1050.71	1050.79	1050.83	1050.83	1050.88	1050.90	1050.93	1050.93	1051.01	1051.04	1051.08	1051.12	1051.16	1051.19	1051.22	1051.26	1051.29	1051.31	1051.34	1051.38	1051.41	1051.44	1051.47	1051.50	1051.53	1051.56	1051.59
GIRDER LINE D	1050.47	1050.52	1050.56	1050.56	1050.65	1050.68	1050.71	1050.73	1050.76	1050.79	1050.79	1050.86	1050.90	1050.94	1050.98	1051.02	1051.05	1051.08	1051.11	1051.14	1051.17	1051.20	1051.24	1051.27	1051.30	1051.33	1051.36	1051.39	1051.42	1051.45
GIRDER LINE	CL W. ABUT. BRG.		LINE 23	LINE 24	LINE 25	LINE 26	LINE 27	LINE 28	SPLICE	LINE 29	LINE 30	LINE 31	LINE 32	CL PIER NO. 3		LINE 34	LINE 35	LINE 36	LINE 37	LINE 38	LINE 39	SPLICE	LINE 40	LINE 41	LINE 42	LINE 43	CL N. ABUT. BRG.			
	LINE 23	LINE 24												LINE 32	LINE 33															
GIRDER LINE A	1051.09	1051.14	1051.18	1051.22	1051.26	1051.30	1051.33	1051.36	1051.39	1051.42	1051.44	1051.46	1051.50	1051.55	1051.59	1051.64	1051.68	1051.72	1051.74	1051.77	1051.78	1051.81	1051.84	1051.87	1051.90	1051.93	1051.96	1051.99	1052.02	
GIRDER LINE B	1051.34	1051.38	1051.42	1051.46	1051.50	1051.54	1051.57	1051.60	1051.63	1051.66	1051.68	1051.71	1051.74	1051.79	1051.83	1051.88	1051.92	1051.96	1051.98	1052.01	1052.03	1052.06	1052.09	1052.12	1052.15	1052.18	1052.21	1052.24	1052.27	
GIRDER LINE C	1051.38	1051.43	1051.47	1051.51	1051.55	1051.59	1051.62	1051.65	1051.68	1051.71	1051.73	1051.75	1051.79	1051.84	1051.88	1051.93	1051.97	1052.01	1052.03	1052.06	1052.07	1052.10	1052.13	1052.16	1052.19	1052.22	1052.25	1052.28	1052.31	
GIRDER LINE D	1051.24	1051.28	1051.32	1051.36	1051.40	1051.44	1051.47	1051.50	1051.54	1051.56	1051.58	1051.61	1051.65	1051.69	1051.74	1051.78	1051.83	1051.87	1051.89	1051.91	1051.93	1051.96	1051.99	1052.02	1052.05	1052.08	1052.11	1052.14	1052.17	

MISCELLANEOUS DATA TABLE

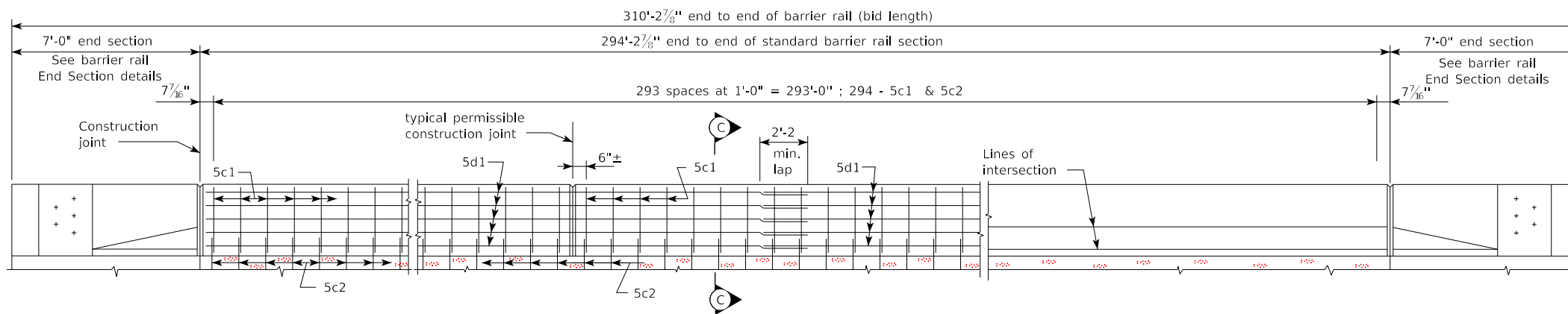
	GIRDER LINE	CL W. ABUT. BRG.		LINE 2	LINE 3	LINE 4	LINE 5	LINE 6	SPLICE	LINE 7	LINE 8	LINE 9	LINE 10	CL PIER NO. 1		LINE 12	LINE 13	LINE 14	LINE 15	LINE 16	LINE 17	LINE 18	SPLICE	LINE 19	LINE 20	LINE 21	LINE 22	CL PIER NO. 2
		LINE 1	LINE 2											LINE 10	LINE 11													
ANTICIPATED DEFLECTION DUE TO SLAB ('IN.')	ALL	0	1/8	3/16	5/16	5/16	1/4	1/8	1/16	0	0	1/16	1/8	3/16	1/4	5/16	3/8	5/16	1/4	3/16	1/8	1/16	0	0	1/16	1/8	1/16	0
CROSS SLOPE ADJUSTMENTS ('IN.')	ALL	1/16																										
ALLOWABLE FIELD HAUNCH ('IN. & FT.')	MIN.	0 (0.000)																										
	MAX.	3 (0.250)																										
	GIRDER LINE	CL W. ABUT. BRG.		LINE 23	LINE 24	LINE 25	LINE 26	LINE 27	LINE 28	LINE 29	LINE 30	LINE 31	LINE 32	LINE 33	LINE 34	LINE 35	LINE 36	LINE 37	LINE 38	LINE 39	LINE 40	LINE 41	LINE 42	LINE 43	CL N. ABUT. BRG.			
		LINE 23	LINE 24																							LINE 32	LINE 33	
ANTICIPATED DEFLECTION DUE TO SLAB ('IN.')	ALL	1/16	1/8	3/16	1/4	5/16	3/8	5/16	1/4	3/16	1/8	1/16	0	0	1/16	1/8	1/4	5/16	5/16	3/16	1/8	0	0	1/16	1/8	1/16	0	
CROSS SLOPE ADJUSTMENTS ('IN.')	ALL	1/16																										
ALLOWABLE FIELD HAUNCH ('IN. & FT.')	MIN.	0 (0.000)																										
	MAX.	3 (0.250)																										

PROGRESS PLANS, NOT FOR CONSTRUCTION

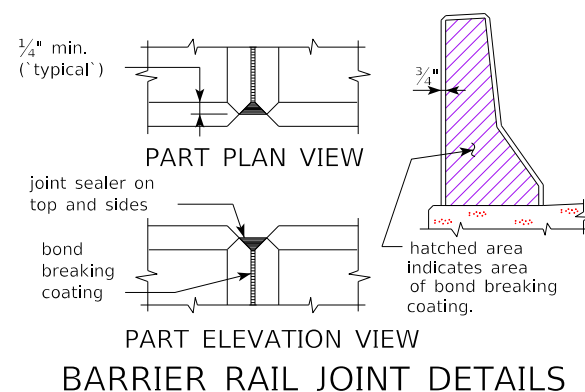


Note:
Haunch locations are at the same location as the encircled numbers and letters shown on "Location of Top of Slab Elevations" on Design Sheet no. 12.

Design For 45° Skew (RA)
292'-0" X 32'-0" CONTINUOUS WELDED GIRDER BRIDGE
 64'-0" End Spans 82'-0" Interior Span
GIRDER LINE HAUNCH ELEVATIONS
 STA. 752+56.00 (US 18) Letting Date December 22, 2022
CLAYTON County
 IOWA DEPARTMENT OF TRANSPORTATION
 Design No. 117 Design Sheet No. 17 of 22 FHWA No. 20480

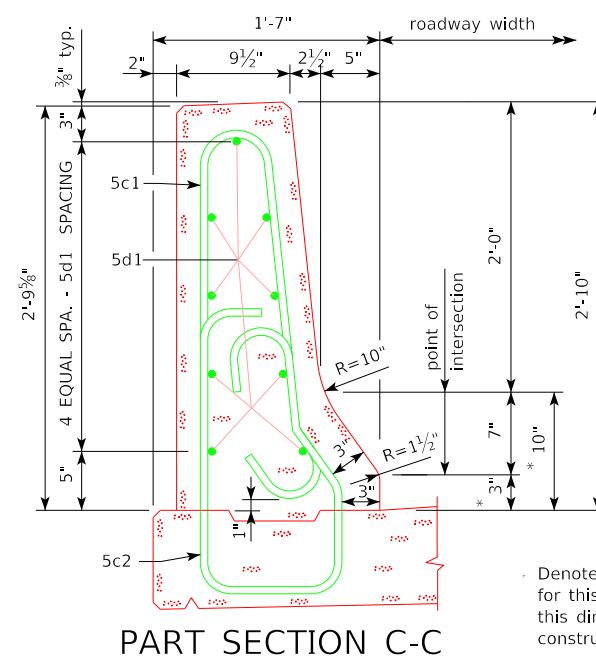


ELEVATION OF BARRIER RAIL LAYOUT



BARRIER RAIL NOTES:

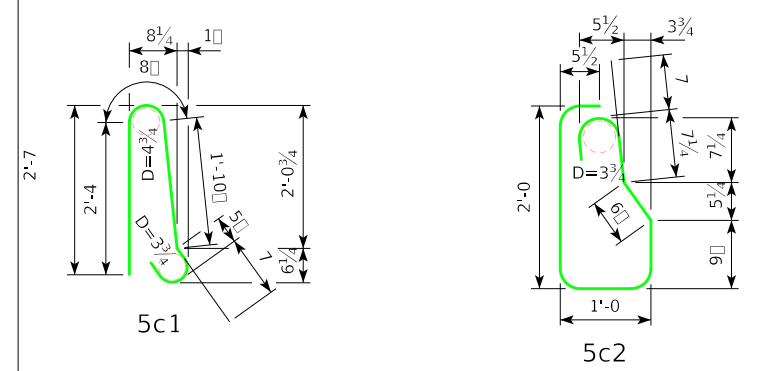
1. Minimum clear distance from face of concrete to near reinforcing bar is to be 2" unless otherwise noted or shown.
2. The permissible construction joints are to be placed between vertical bars at a minimum spacing of 20 feet. Construction joint contact surfaces are to be coated with an approved bond breaker.
3. Cost of the joint sealer and bond breaker shall be considered incidental to other construction.
4. All barrier rail reinforcing steel is to be epoxy coated as shown or noted.
5. The concrete barrier rail is to be bid on a lineal foot basis. The number of lineal 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.
6. The joint sealer shall be light gray nonsag latex caulking sealer marketed for outdoor use. No testing or certification is required.
7. Top of the barrier rail is to be parallel to the theoretical \bar{c} grade.
8. Cross sectional area of the standard section of the barrier rail = 2.84 square feet.
9. Concrete barrier rails placed using the slipform method will require the use of a Class BR concrete in accordance with Article 2513.03a of the Standard Specification. 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').



EPOXY REINF. STEEL-TWO BARRIER RAILS

SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTION	5c1	Vertical		588	5'-11"	3,629
	5c2	Vertical		588	6'-0"	3,679
	5d1	Longitudinal		144	39'-0"	5,857
TOTAL (LBS.)						13,165

BENT BAR DETAILS



CONCRETE PLACEMENT SUMMARY

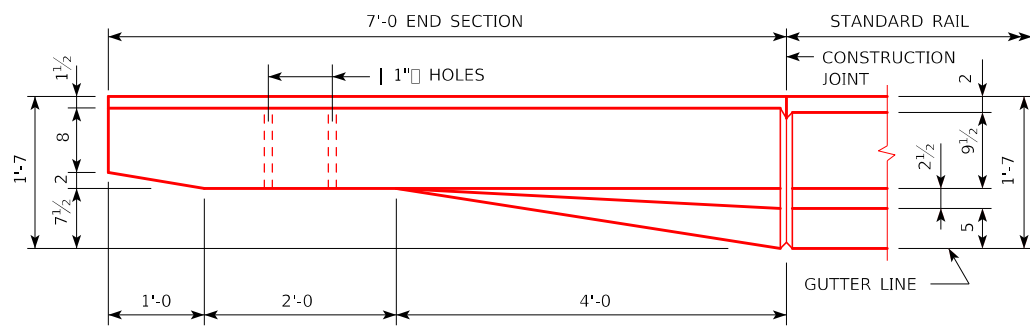
SECTION	TOTAL
STANDARD SECTION 2 @ 294.2' @ 0.1052 CU. YD. PER FT.	61.9
BARRIER RAIL END SECTION 4 @ 0.65 CU. YD.	2.6
TOTAL ('CU. YD.')	64.5

CONCRETE BARRIER RAIL QUANTITIES

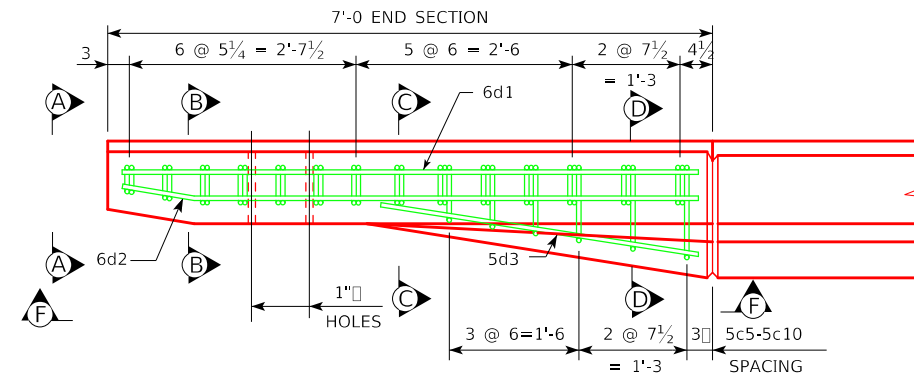
ITEM	UNIT	QUANTITY
CONCRETE BARRIER RAILING	L.F.	620.5

Design For 45° Skew (RA)
292'-0" X 32'-0" CONTINUOUS WELDED GIRDER BRIDGE
 64'-0" End Spans 82'-0" Interior Span
BARRIER RAIL DETAILS
 STA. 752+56.00 (US 18) Letting Date December 22, 2022
CLAYTON County
 IOWA DEPARTMENT OF TRANSPORTATION
 Design No. 117 Design Sheet No. 18 of 22 FHWA No. 20480

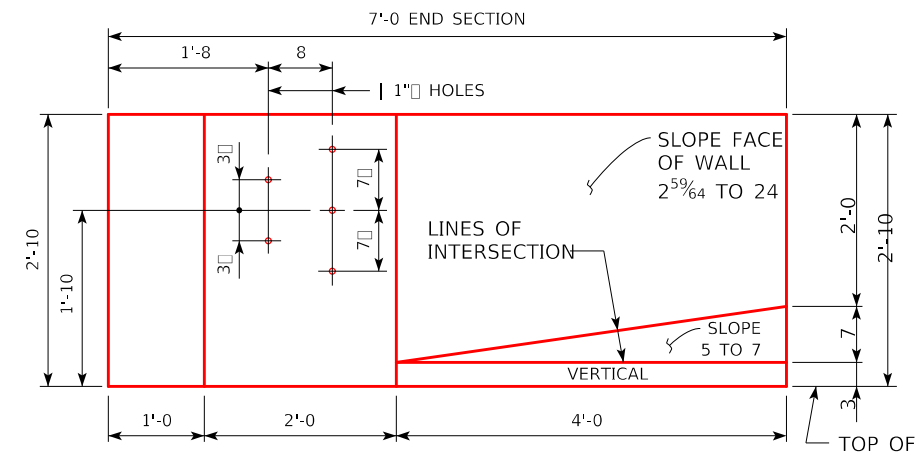
PROGRESS PLANS, NOT FOR CONSTRUCTION



PART PLAN VIEW

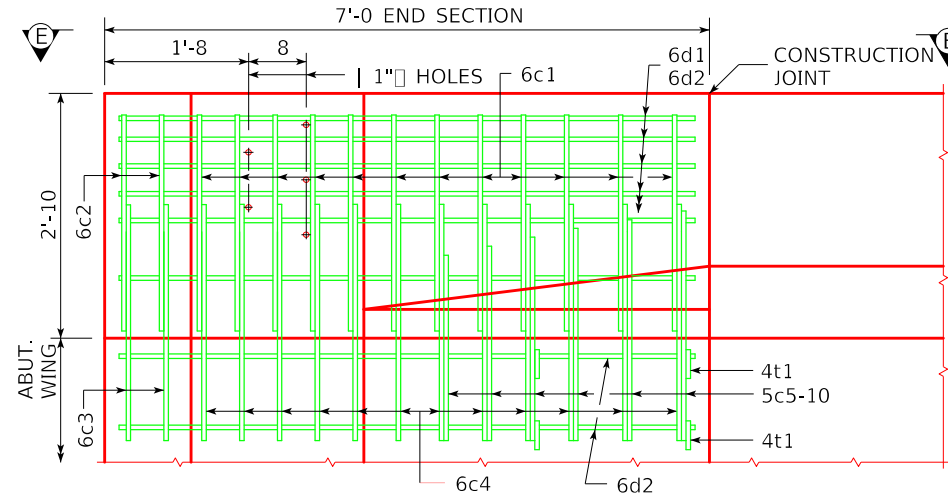


PART VIEW E-E

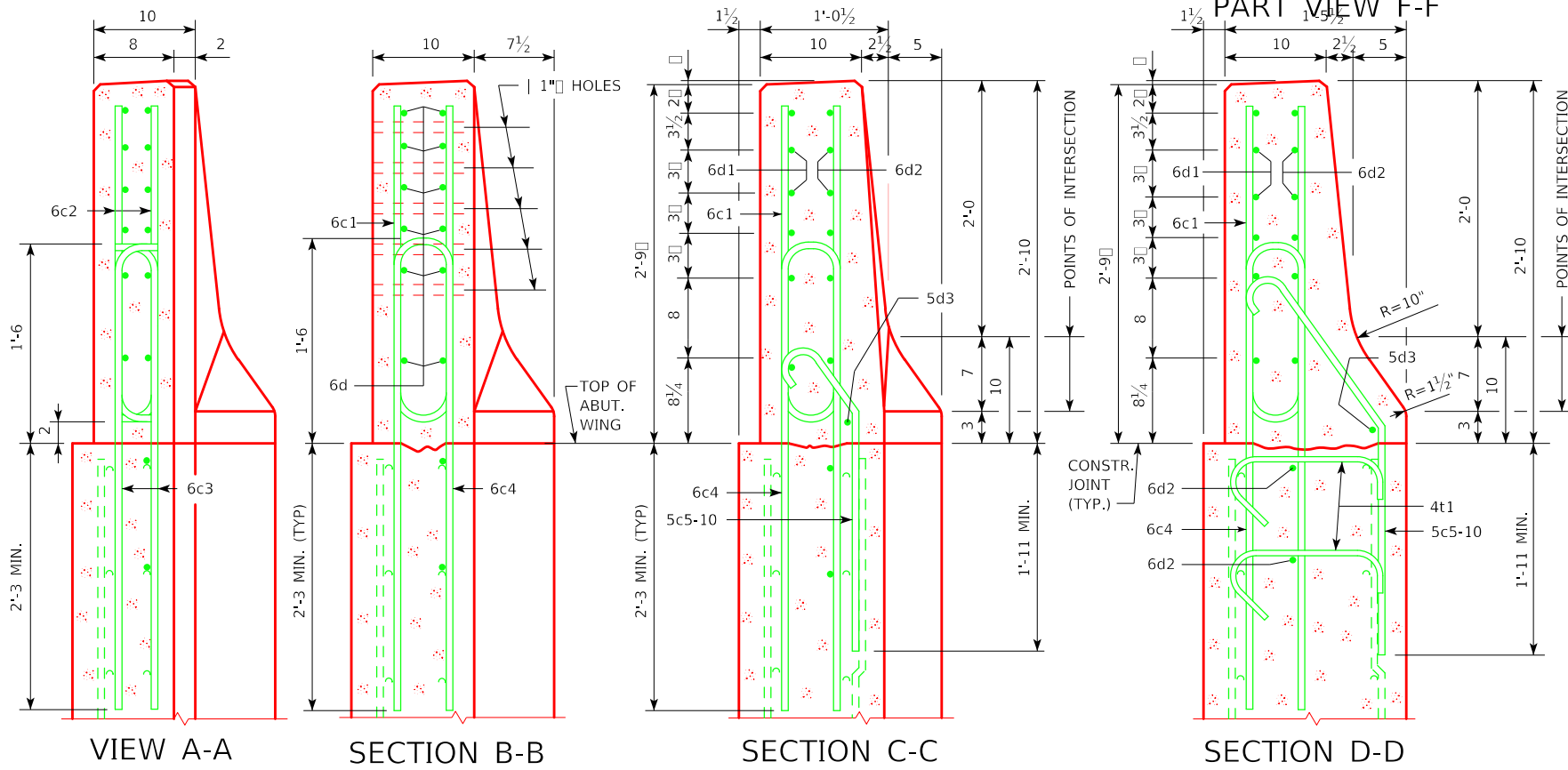


PART ELEVATION VIEW

PROVIDE 5 HOLES FORMED WITH 1" PLASTIC CONDUIT. COST TO BE INCLUDED IN PRICE BID FOR CONCRETE BARRIER RAILING.



PART VIEW F-F



NOTE:
THE 6c4, 6c3, 5c5-10, 2'-6" 6d2 AND 4t1 BARS ARE TO BE PLACED WITH THE ABUTMENT WING. THE DETAILS FOR PLACEMENT ARE SHOWN ON THE WING ABUTMENT SHEET.

NOTE:
DASHED LINES BELOW THE TOP OF WING ARE THE ABUTMENT WING REINFORCING STEEL. SEE WING ABUTMENT SHEET FOR PLACEMENT.

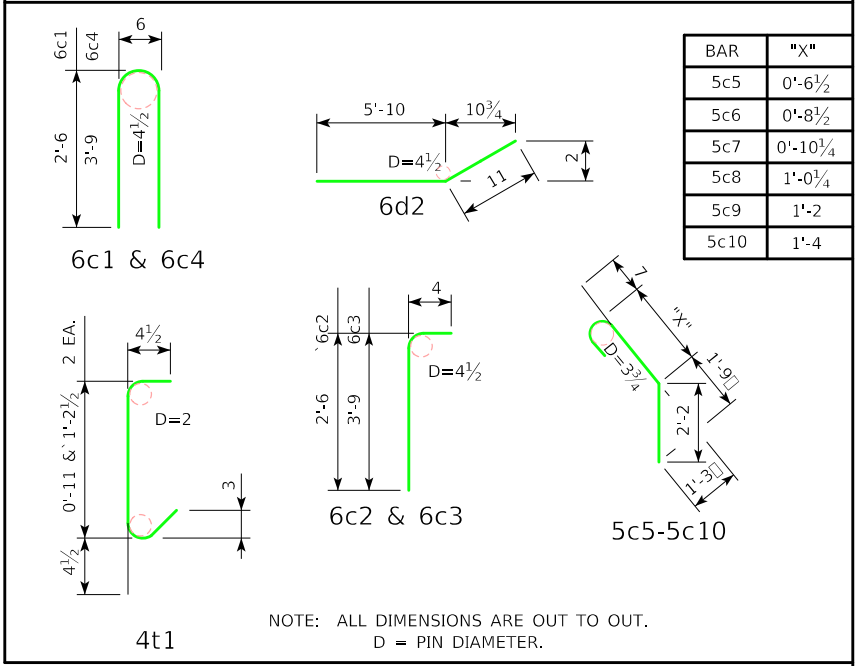
EPOXY REINFORCING STEEL - ONE END SECTION

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6c1	VERTICAL		12	5'-6"	99
6c2	VERTICAL		4	2'-10"	17
6c3	VERTICAL		4	4'-1"	25
6c4	VERTICAL		12	8'-0"	144
5c5-10	VERTICAL		6	VARIABLES	23
6d1	HORIZONTAL		6	6'-8"	60
6d2	HORIZONTAL		8	6'-9"	81
5d3	HORIZONTAL		1	3'-9"	4
4t1	ABUTMENT WING TIE BARS		4	VARIABLES	5
(INCLUDE WITH BARRIER RAIL REINFORCING)				TOTAL WEIGHT (LBS.)	458

CONCRETE PLACEMENT SUMMARY

SECTION	TOTAL
BARRIER RAIL ONE END SECTION	0.65 CU. YD.

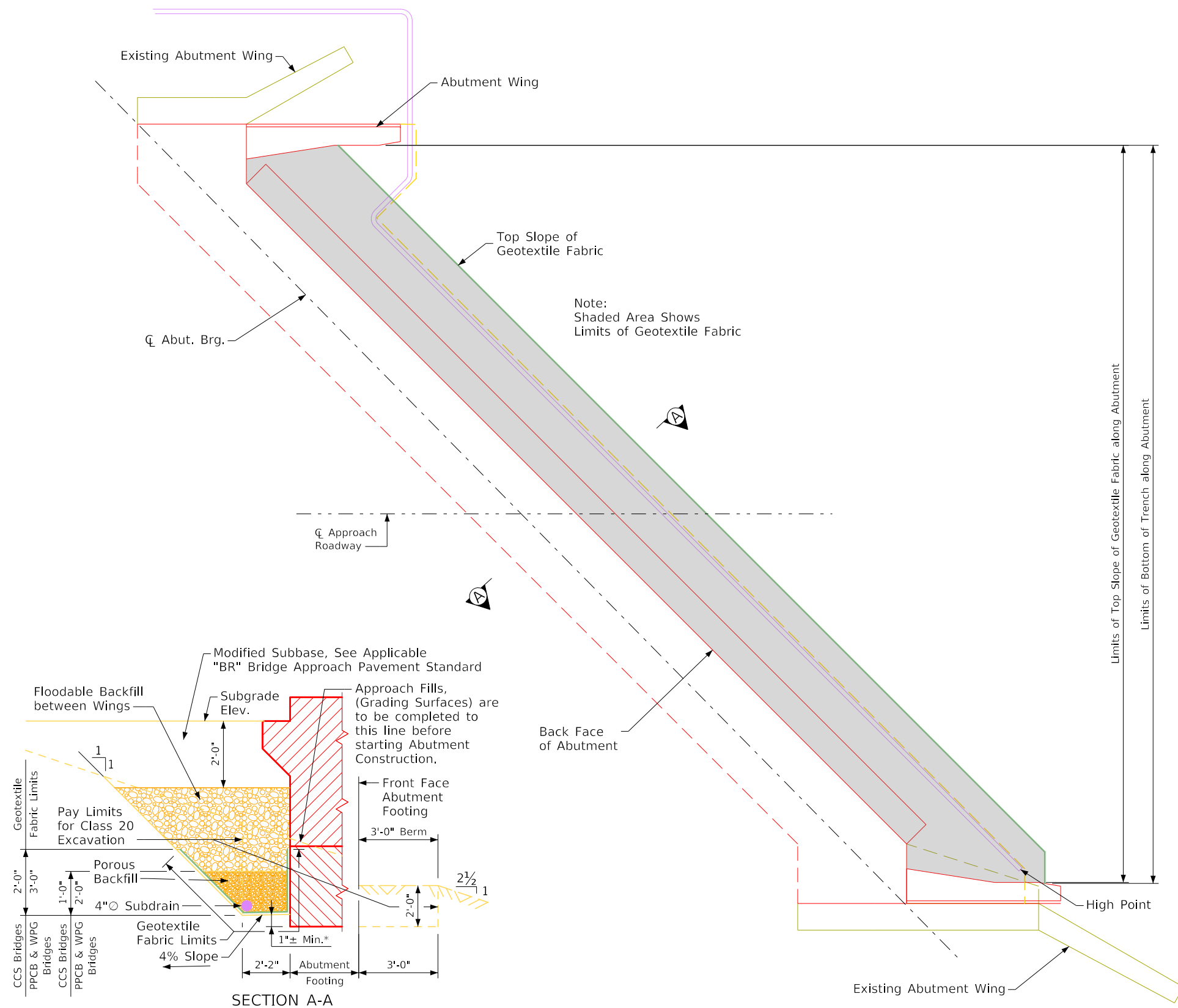
BENT BAR DETAILS



BAR	"X"
5c5	0'-6 1/2"
5c6	0'-8 1/2"
5c7	0'-10 1/4"
5c8	1'-0 1/4"
5c9	1'-2"
5c10	1'-4"

NOTE: ALL DIMENSIONS ARE OUT TO OUT.
D = PIN DIAMETER.

Design For 45° Skew (RA)
292'-0" X 32'-0" CONTINUOUS WELDED GIRDER BRIDGE
 64'-0" End Spans 82'-0" Interior Span
BARRIER RAIL DETAILS
 STA. 752+56.00 (US 18) Letting Date December 22, 2022
CLAYTON County
 IOWA DEPARTMENT OF TRANSPORTATION
 Design No. 117 Design Sheet No. 19 of 22 FHWA No. 20480



NOTE:

Subdrain shall slope downward 2% from high end when outletting at one end of the Abutment.

The Geotextile Fabric shall be in accordance with Article 4196.01, B, 6 of the Standard Specifications. If the engineering fabric is lapped the laps shall be a minimum of one foot in length, shingle fashion with up slope lap piece on top and stapled for continuity.

ABUTMENT BACKFILL PROCESS:

The base of the excavation subgrade behind the abutment is to be graded with a 4% slope away from the abutment footing and a 2% cross slope in the direction of the subdrain outlet. This excavation shaping is to be done prior to beginning installation of the geotextile and backfill material.

After the subgrade has been shaped, the geotextile fabric shall be installed in accordance with the details shown. The fabric is intended to be installed in the base of the excavation and extended vertically up the abutment backwall, abutment wing walls, and excavation face to a height that will be approximately 1 To 2 foot higher than the height of the porous backfill placement as shown in the "Backfill Details" on this sheet. The strips of the fabric placed shall overlap approximately 1 foot and shall be pinned in place. The fabric shall be attached to the abutment by using lath folded in the fabric and secured to the concrete with shallow concrete nails. The fabric placed against the excavation face shall be pinned.

When the fabric is in place, the subdrain shall be installed directly on the fabric at the toe of the rear excavation slope. A slot will need to be cut in the fabric at the point where the subdrain exits the fabric near the end of the abutment wing wall.

Porous backfill is then placed and leveled, no compaction is required.

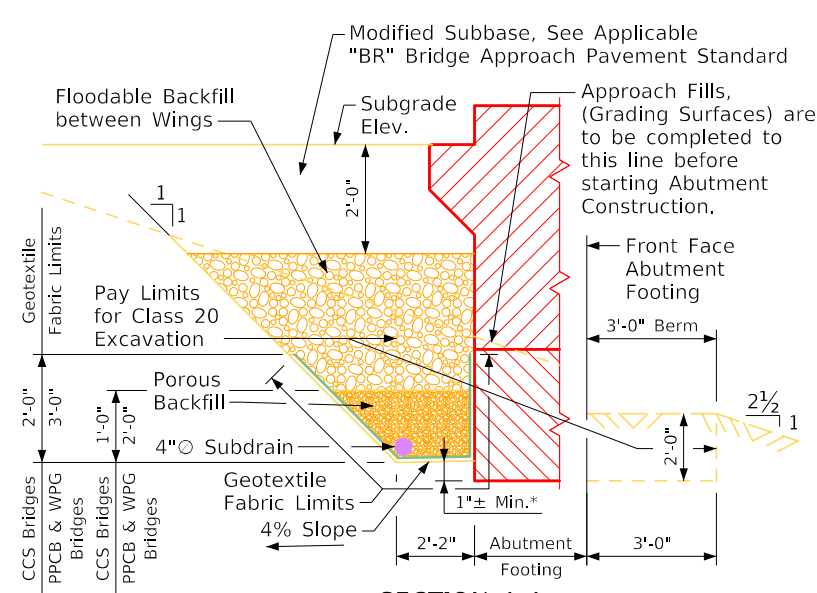
The remaining work involves backfilling with floodable backfill, surface flooding, and vibratory compaction. The floodable backfill material shall be in accordance with the Standard Specifications. The floodable backfill shall be placed in individual lifts, surface flooded, and compacted with vibratory compaction to ensure full consolidation. Limit the loose lifts to no more than 2 feet of thickness.

Start surface flooding for each floodable backfill lift at the high point of the subdrain and progress to the low point where the subdrain exits the fabric. To ensure uniform surface flooding, water running full in a 2-inch diameter hose should be sprayed in successive 6-foot to 8-foot increments for 5 minutes within each increment.

Floodable backfill lift placement, flooding, and compaction shall progress until the required full thickness of the abutment backfill has been completed.

Water required for flooding, subdrains, porous backfill, floodable backfill, and geotextile fabric furnished at the bridge abutments will not be measured separately for payment.

The cost of water required for flooding, subdrains, porous backfill, floodable backfill, and geotextile fabric furnished at the bridge abutments shall be included in the contract unit price bid for Structural Concrete.



**SECTION A-A
BACKFILL DETAILS**

Note: Geotextile Fabric will be attached to face of Abutment Footing and Wings.

* Dimensions varies due to 2% Subdrain Slope.

ABUTMENT PLAN

Note:
See Subdrain Details Sheet for details not shown on this sheet which are pertinent to this structure.

Design For 45° Skew (RA)
292'-0" X 32'-0" CONTINUOUS WELDED GIRDER BRIDGE
 64'-0" End Spans 82'-0" Interior Span
Abutment Backfill Details
 STA. 752+56.00 (US 18) Letting Date December 22, 2022
CLAYTON County
 IOWA DEPARTMENT OF TRANSPORTATION
 Design No. 117 Design Sheet No. 20 of 22 FHWA No. 20480

SUBDRAIN NOTES:

This Plan Sheet shows Details for placing all Subdrains and Subdrain Outlets required for this structure.

The Subdrains shall be 4" in diameter and shall be in accordance with Article 4143.01, B, of the Standard Specifications.

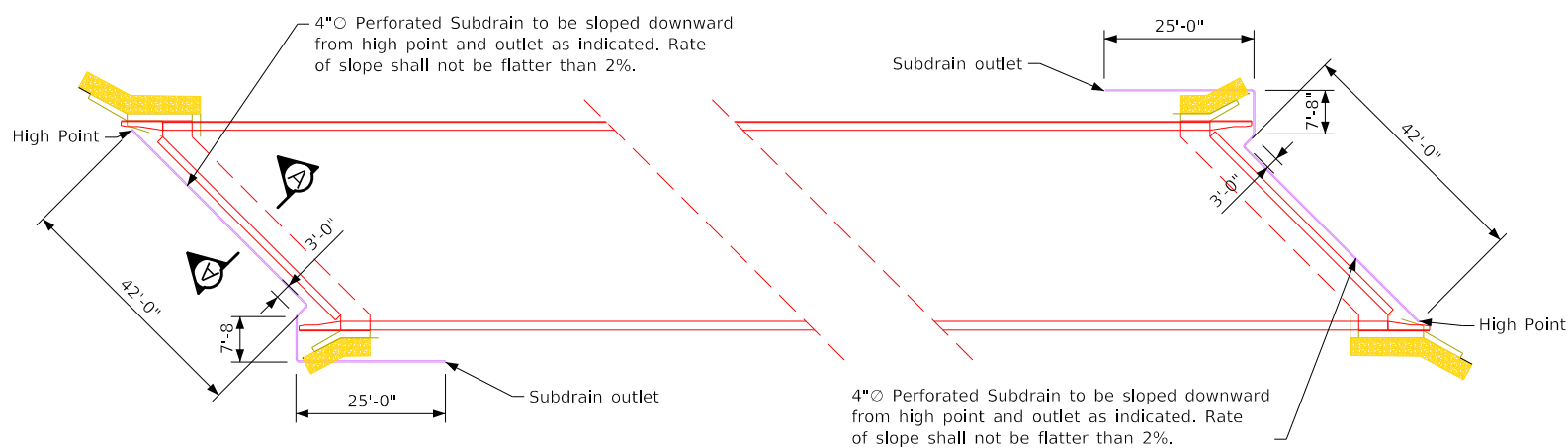
The Subdrain Outlet shall consist of a length of pipe with a Removable Rodent Guard as detailed on this sheet. The length of the Outlet Pipe shall be determined by the Revetment and it's placement location. The Contractor is to insure the Outlet Pipe is adequately strong enough and will not be damaged when Revetment is placed. A check will be made at the Subdrain Outlet to insure that the Subdrain is not damaged and is draining properly during the Backfill Flooding Process. If a metal Outlet Pipe is used, it shall be 6 inches in diameter and coupled to the 4 inch diameter Subdrain in one of the two following ways.

1. Use an inside fit reducer coupler (coupler must be inserted a minimum of 1'-0 into the metal outlet pipe).
2. Insert 1'-0 of the 4"Ø Subdrain into the 6"Ø metal Outlet Pipe, then fully seal the entire opening with grout.

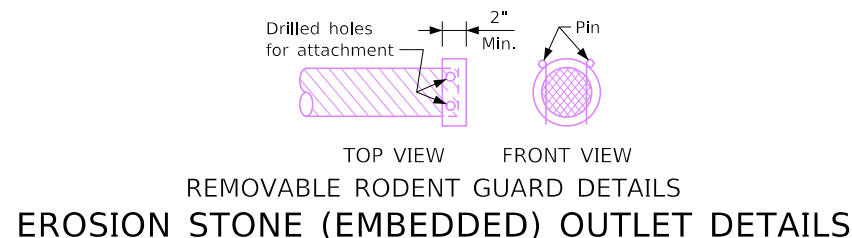
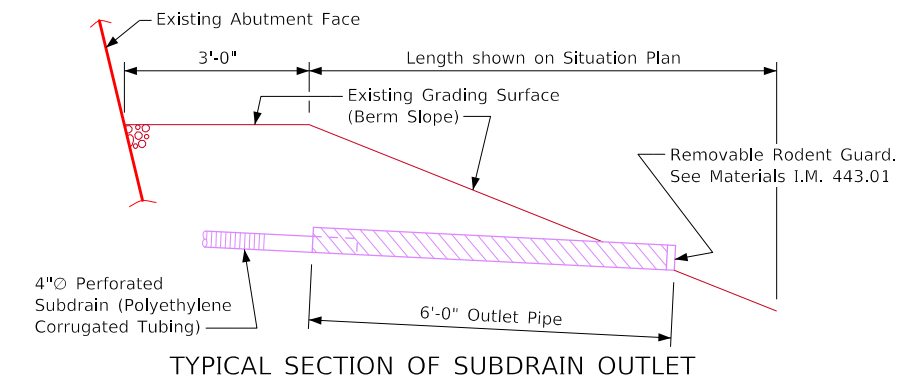
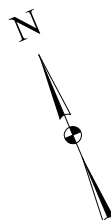
The cost of furnishing and placing Subdrain (including Excavation), Granular Backfill, Porous Backfill, and Subdrain Outlet is to be included in the price bid for "Structural Concrete (Bridge)". No extra payment will be made.

The dimensions shown for the proposed Subdrains are based on the proposed grading layout of Bridge Berms. The dimensions shown are for estimating only. Required lengths and general locations of Subdrains are subject to change due to field adjustments of the grading layout.

SUBDRAIN OUTLET ELEVATION	
Location	Elevation
West Abutment	1042.4±
East Abutment	1043.8±



SITUATION PLAN
(showing subdrain locations)

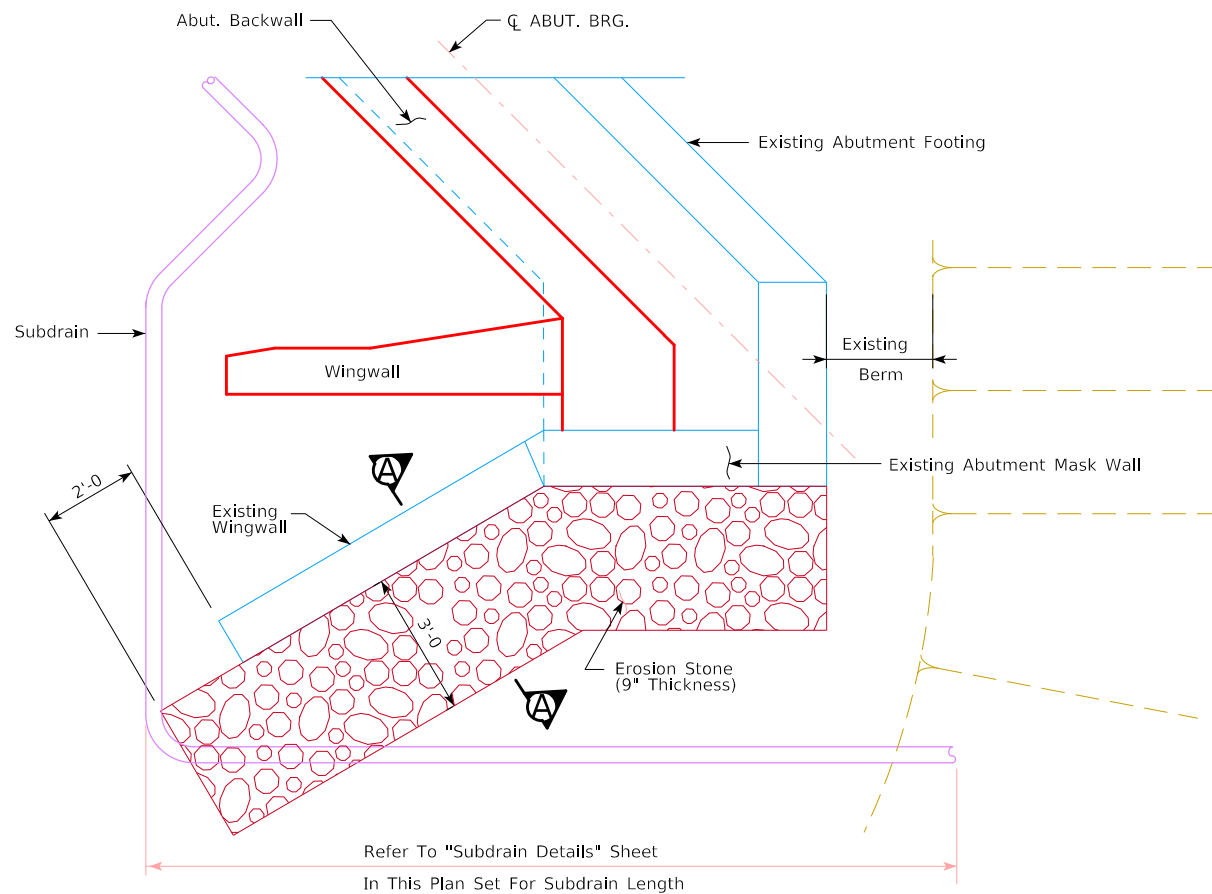


Note:
Section A-A is shown on Abutment
Backfill Details Sheet.

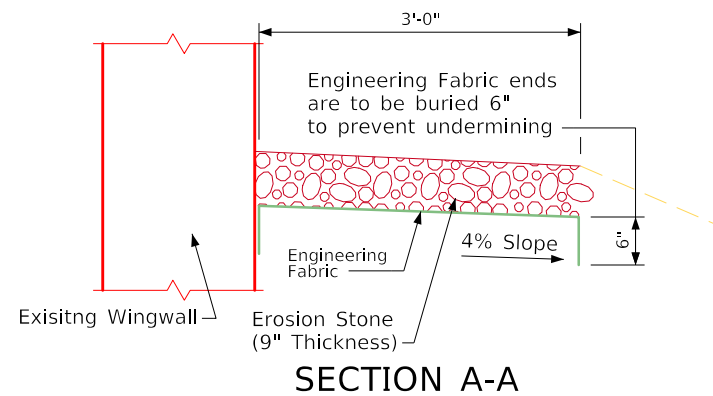
Design For 45° Skew (RA)
292'-0" X 32'-0" CONTINUOUS WELDED GIRDER BRIDGE
 64'-0" End Spans 82'-0" Interior Span
Subdrain Details
 STA. 752+56.00 (US 18) Letting Date December 22, 2022
CLAYTON County
 IOWA DEPARTMENT OF TRANSPORTATION
 Design No. 117 Design Sheet No. 21 of 22 FHWA No. 20480

PROGRESS PLANS, NOT FOR CONSTRUCTION

PROGRESS PLANS, NOT FOR CONSTRUCTION



TOP VIEW OF WING ARMORING



A CHECK SHALL BE MADE AT THE SUBDRAIN OUTLET TO INSURE THAT IT IS DRAINING PROPERLY DURING THE BACKFILL FLOODING PROCESS.

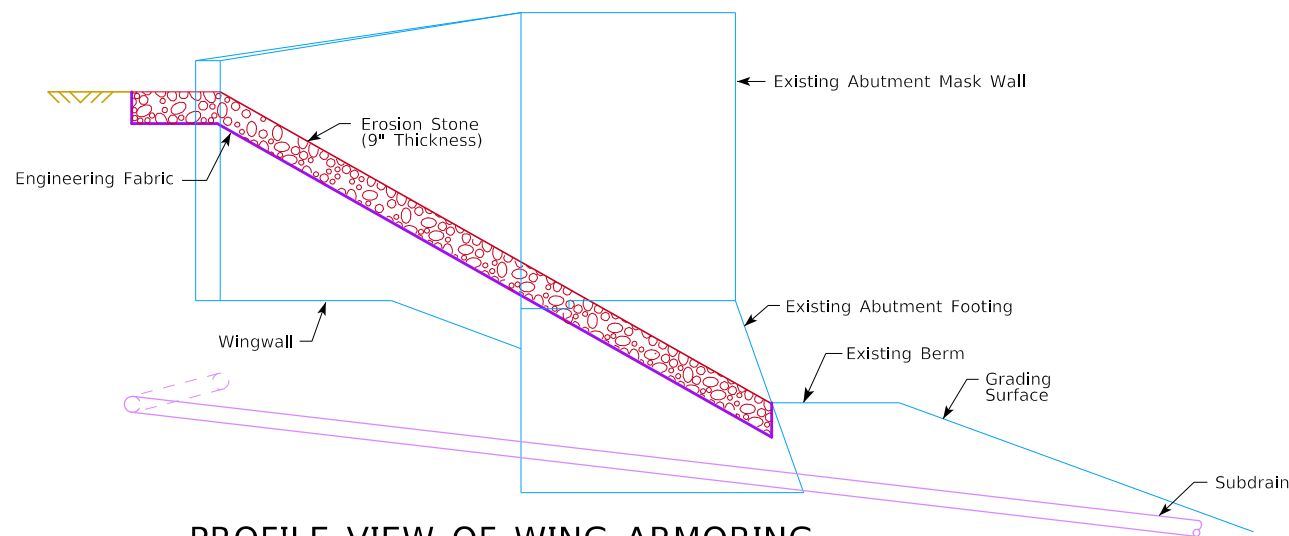
GENERAL NOTES:

Erosion Stone shall be placed along the sides of the wings and abutment footing as shown in Section A-A. This is typical at each corner of the bridge unless otherwise noted in the plans. The Erosion Stone at these locations shall be underlaid with Engineering Fabric in accordance with Article 4196.01, B, 3, of the Standard Specifications.

The Erosion Stone shall be in accordance with Section 4130, of the Standard Specifications. Material passing the 3 inch screen but 100% retained on a 1 inch screen may be used as choke stone.

The Erosion Stone shall be deposited, spread, consolidated and shaped by mechanical or hand methods that will provide uniform 9" depth and density and provide uniform surface appearance.

Payment for the Bridge Wing Armoring will be bid per Square Yard. Cost will include Engineering Fabric, Erosion Stone, Excavation, Shaping, and Compaction to dimensions shown in these plans. Bid item shall be "Bridge Wing Armoring - Erosion Stone".



PROFILE VIEW OF WING ARMORING
 (SHOWN FOR INTEGRAL ABUTMENT)

Design For 45° Skew (RA)
292'-0" X 32'-0" CONTINUOUS WELDED GIRDER BRIDGE
 64'-0" End Spans 82'-0" Interior Span
Bridge Wing Armoring
 STA. 752+56.00 (US 18) Letting Date December 22, 2022
CLAYTON County
 IOWA DEPARTMENT OF TRANSPORTATION
 Design No. 117 Design Sheet No. 22 of 22 FHWA No. 20480

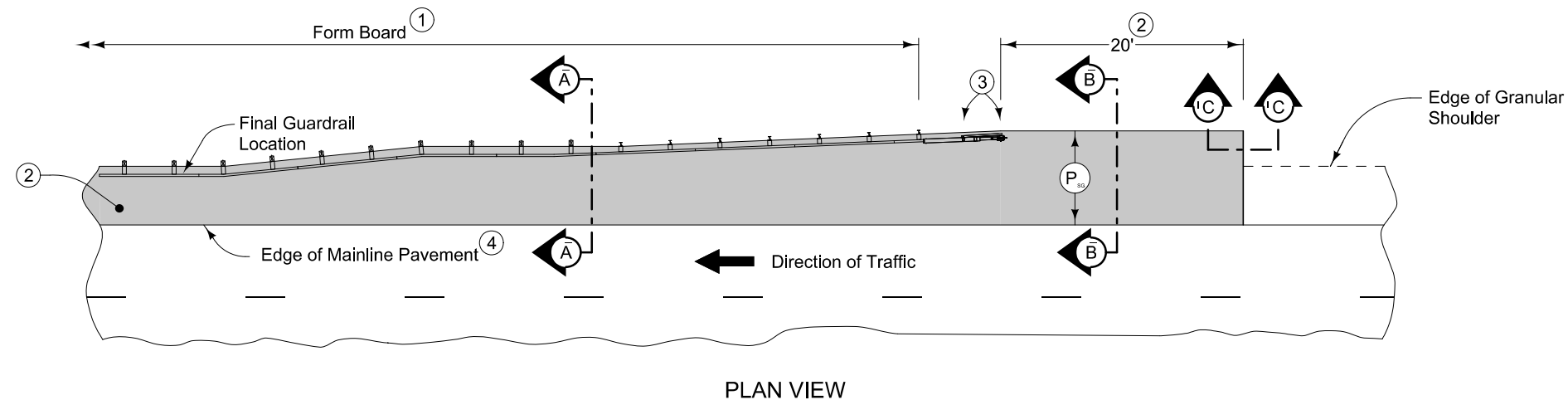
INDEX OF SHEETS

NO.	DESCRIPTION
A Sheets	Title Sheets
A.1	Index of Tabulations and Index of Sheets
B Sheets	Typical Cross Sections and Details
B.1	Typical Cross Sections and Details
C Sheets	Quantities and General Information
C.1	Project Description
C.1	Estimated Roadway Quantities
C.1	Estimate Reference Information
C.2	Standard Road Plans
C.1 - C.5	Tabulations
G Sheets	Survey Sheets
G.1	Survey Information
G.2	Control Point Vicinity Map
G.3	Horiz. And Vert. Project Control Coordinate Listing
G.4	Alignment and Curve Data
J Sheets	Traffic Control and Staging Sheets
J.1	Traffic Control Plan & Staging Notes

INDEX OF TABULATIONS

Tabulation	Tabulation Title	Sheet No.
C Sheets		
100-0A	ESTIMATED ROADWAY QUANTITIES (1 DIVISION PROJECT)	C.1
100-1D	PROJECT DESCRIPTION	C.1
100-4A	ESTIMATE REFERENCE INFORMATION	C.1
100-19	PERIMETER, SLOPE AND DITCH CHECK SEDIMENT CONTROL DEVICES	C.3
100-28	LONGITUDINAL GROOVING	C.2
102-5	EXISTING PAVEMENT	C.2
104-8A	SCOUR PROTECTION OR ROCK FLUME FOR BRIDGE END DRAIN	C.3
105-4	STANDARD ROAD PLANS	C.2
107-23	GRADING FOR GUARDRAIL INSTALLATIONS	C.3
108-8A	STEEL BEAM GUARDRAIL AT CONCRETE BARRIER OR BRIDGE RAIL END SECTION	C.3
108-13A	SAFETY CLOSURES	C.2
108-22	PAVEMENT MARKING LINE TYPES	C.5
110-1	REMOVAL OF PAVEMENT	C.2
110-7A	REMOVAL OF STEEL BEAM GUARDRAIL	C.2
110-13	DELIVERY AND STOCKPILING	C.2
111-25	INDEX OF TABULATIONS	A.1
112-6	BRIDGE APPROACH SECTION	C.4
112-9	SHOULDERS	C.4
112-10	MILLED RUMBLE STRIPS	C.4

	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.	
	4/11/2022	
	Signature	Date
	Printed or Typed Name	
My license renewal date is December 31, 20 <u>23</u>		
Pages or sheets covered by this seal: <u>A.1, B.1, C.1 - C.5, G.1 - G.4, and J.1</u>		



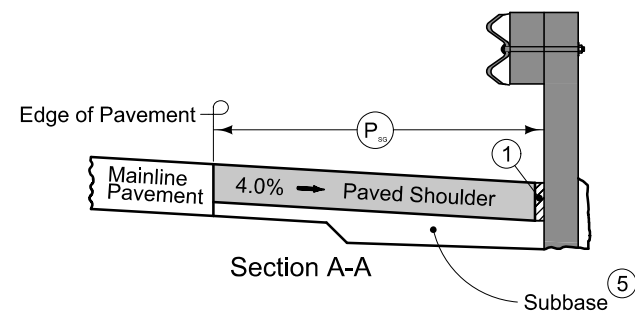
9" HMA Paved Shoulder at guardrail. 8" PCC may be substituted with the following jointing layout:

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

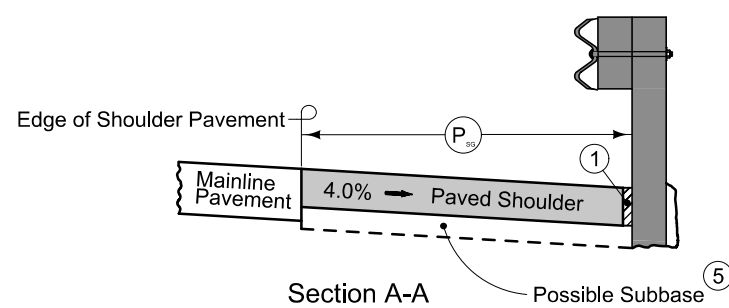
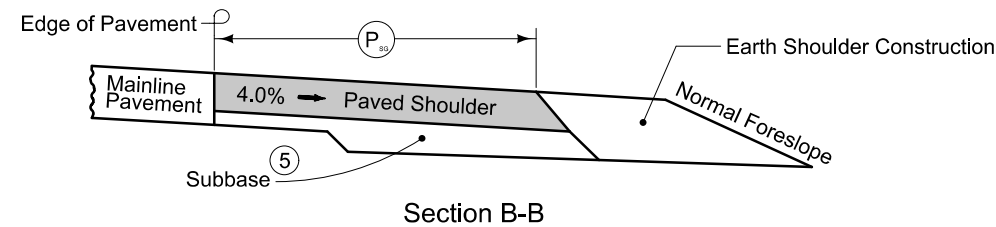
Compaction of HMA is required to face of guardrail post. Hand compaction will be allowed under guardrail. Removal and reinstallation of guardrail will be allowed with no additional payment.

Refer to Tabulation 112-9 for shoulder quantities.

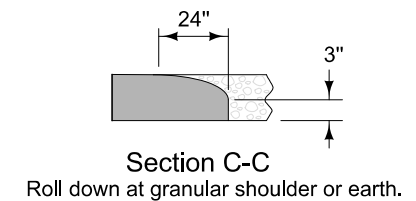
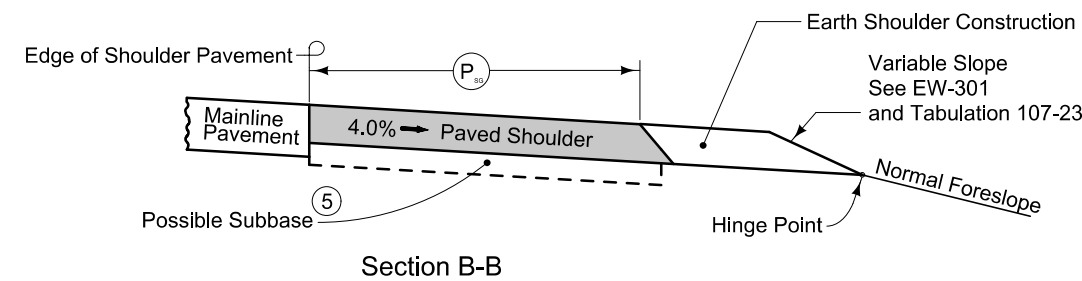
- ① PCC option only: When guardrail posts are installed prior to construction of PCC paved shoulder, fasten form board to the face of guardrail posts for the length shown.
- ② Continue paved shoulder 20 feet beyond the center of the first post.
- ③ Shoulder may be notched for first 2 posts or post sleeves may be installed through pavement. Do not drive posts through pavement.
- ④ 'KT' joint (per PV-101) for PCC shoulder. 'B' joint (per PV-101) for HMA shoulder.
- ⑤ Refer to other details in the plan.



NEW CONSTRUCTION



EXISTING SHOULDER



PAVED SHOULDER AT GUARDRAIL
(GRANULAR SHOULDER ADJACENT TO MAINLINE)

PROJECT DESCRIPTION

This project involves the replacement of the bridge (Maint. No. 2296.05018) on US 18 over Dry Run Creek, located 0.6 miles west of East Junction US 52.

**ESTIMATED ROADWAY QUANTITIES
(1 DIVISION PROJECT)**

Item No.	Item Code	Item	Unit	Total	As Built Qty.
1	2102-0425070	SPECIAL BACKFILL	TON	131.7	
2	2102-2625000	EMBANKMENT-IN-PLACE	CY	162.1	
3	2102-2713090	EXCAVATION, CLASS 13, WASTE	CY	98.8	
4	2122-5500090	PAVED SHOULDER, HOT MIX ASPHALT MIXTURE, 9 IN.	SY	317.6	
5	2123-7450000	SHOULDER CONSTRUCTION, EARTH	STA	4.97	
6	2301-0690203	BRIDGE APPROACH, BR-203	SY	638.4	
7	2412-0000100	LONGITUDINAL GROOVING IN CONCRETE	SY	1483.9	
8	2503-0500402	BRIDGE END DRAIN, DR-402	EACH	2	
9	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL	LF	520.0	
10	2505-4008300	STEEL BEAM GUARDRAIL	LF	325.0	
11	2505-4008410	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION, BA-201	EACH	4	
12	2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED	EACH	4	
13	2505-4021720	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-205	EACH	4	
14	2510-6745850	REMOVAL OF PAVEMENT	SY	886.4	
15	2527-9263109	PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED	STA	10.44	
16	2528-2518000	SAFETY CLOSURE	EACH	2	
17	2528-8445110	TRAFFIC CONTROL	LS	1.00	
18	2548-0000100	MILLED SHOULDER RUMBLE STRIPS, HMA SURFACE	STA	4.51	
19	2548-0000110	ASPHALT EMULSION FOR FOG SEAL (SHOULDER RUMBLE STRIPS)	GAL	5.0	
20	2548-0000200	MILLED SHOULDER RUMBLE STRIPS, PCC SURFACE	STA	0.92	
21	2548-0000320	MILLED CENTERLINE RUMBLE STRIPS, PCC SURFACE	STA	0.14	
22	2555-0000010	DELIVER AND STOCKPILE SALVAGED MATERIALS	LS	1.00	
23	2602-0000312	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA.	LF	1280.0	
24	2602-0000351	REMOVAL OF PERIMETER AND SLOPE OR DITCH CHECK SEDIMENT CONTROL DEVICE	LF	1280.0	

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
1	2102-0425070	SPECIAL BACKFILL Refer to Tab 112-9 on Sheet C.4 for locations and details.
2	2102-2625000	EMBANKMENT-IN-PLACE This item is for grading guardrail blisters and paved shoulder areas. Refer to Tab 107-23 on Sheet C.3 for locations and additional details. Material shall be provided by the Contractor.
3	2102-2713090	EXCAVATION, CLASS 13, WASTE Refer to Tab 112-9 on Sheet C.4 for locations and details. Excavated material may be used as embankment-in-place.
4	2122-5500090	PAVED SHOULDER, HOT MIX ASPHALT MIXTURE, 9 IN. Refer to Tab 112-9 on Sheet C.4 for locations and details. Refer to Detail 7156 on Sheet B.1 for additional details.
5	2123-7450000	SHOULDER CONSTRUCTION, EARTH Refer to Tab 112-9 on Sheet C.4 for locations and details. Also refer to Detail 7156 on Sheet B.1 for additional details. Requires a minimum of 4 inches of topsoil. Place according to Article 2105.03,B of the Standard Specifications.
6	2301-0690203	BRIDGE APPROACH, BR-203 Refer to Tab 112-6 on Sheet C.4 for details and locations.
7	2412-0000100	LONGITUDINAL GROOVING IN CONCRETE Refer to Tab 100-28 on Sheet C.2 for locations and additional details.
8	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL Refer to Tab 110-7A on Sheet C.2 for locations and additional details.
9	2503-0500402	BRIDGE END DRAIN, DR-402 Refer to Tab 104-8A on Sheet C.3 for locations and additional details.
10	2505-4008300	STEEL BEAM GUARDRAIL
11	2505-4008410	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION, BA-201
12	2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED
13	2505-4021720	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-205 Refer to Tab 108-8A on Sheet C.3 for locations and additional details.
14	2510-6745850	REMOVAL OF PAVEMENT Refer to Tab 110-1 on Sheet C.2 for locations and additional details.
15	2527-9263109	PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED Refer to Tab 108-22 on Sheet C.5 for locations and additional details.
16	2528-2518000	SAFETY CLOSURE Refer to Tab 108-13A on Sheet C.2 for locations and additional details.
17	2528-8445110	TRAFFIC CONTROL Refer to Tab 108-23A on Sheet J.1 for details. Includes R11-4 at the US 18/County Road X32 intersection and at the US 18/US 52 intersection.
18	2548-0000100	MILLED SHOULDER RUMBLE STRIPS, HMA SURFACE
19	2548-0000110	ASPHALT EMULSION FOR FOG SEAL (SHOULDER RUMBLE STRIPS)
20	2548-0000200	MILLED SHOULDER RUMBLE STRIPS, PCC SURFACE
21	2548-0000320	MILLED CENTERLINE RUMBLE STRIPS, PCC SURFACE Refer to Tab 112-10 on Sheet C.4 for locations and additional details.
22	2555-0000010	DELIVER AND STOCKPILE SALVAGED MATERIALS Refer to Tab 110-13 on Sheet C.2 for locations and additional details.
23	2602-0000312	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA.
24	2602-0000351	REMOVAL OF PERIMETER AND SLOPE OR DITCH CHECK SEDIMENT CONTROL DEVICE Refer to Tab 100-19 on Sheet C.3 for details and locations.

105-4
10-18-11

STANDARD ROAD PLANS

The following Standard Road Plans apply to construction work on this project.

Number	Date	Title
BA-200	04-20-21	Steel Beam Guardrail Components
BA-201	04-19-22	Steel Beam Guardrail Barrier Transition Section (MASH TL-3)
BA-202	10-20-15	Steel Beam Guardrail Bolted End Anchor
BA-205	10-19-21	Steel Beam Guardrail Tangent End Terminal (MASH TL-3)
BA-250	04-20-21	Steel Beam Guardrail Installation at Concrete Barrier or Bridge End Post (MASH TL-3)
BR-203	10-19-21	Double Reinforced 12" Approach
BR-211	10-19-21	Bridge Approach (Abutting PCC or Composite Pavement)
DR-306	10-16-18	Precast Concrete Headwall for Subdrain Outlets
DR-402	04-19-22	Rock Flume for Bridge End Drain
EC-204	10-19-21	Perimeter, Slope and Ditch Check Sediment Control Devices
EC-502	04-21-15	Seeding in Rural Areas
EW-301	04-20-21	Guardrail Grading
PM-110	04-21-20	Line Types
PV-12	10-20-20	Milled Shoulder Rumble Strips
PV-13	10-17-17	Milled Centerline Rumble Strips
PV-101	04-19-22	Joints
SI-173	04-19-16	Object Markers
SI-211	10-18-16	Object Marker and Delineator Placement with Guardrail
SI-881	04-16-19	Special Signs for Workzones
TC-1	10-15-19	Work Not Affecting Traffic (Two-Lane or Multi-Lane)
TC-202	10-19-21	Work Within 15 ft of Traveled Way
TC-232	10-21-14	Shoulder Rumble Strip Operations
TC-233	10-17-17	Pavement Marking Operations Two-Lane
TC-252	04-21-20	Routes Closed to Traffic

110-1
04-16-13

REMOVAL OF PAVEMENT

Refer to Tabulation 102-5

* Not a Bid Item

Begin Station	End Station	Side	Pavement Type	Area	Saw Cut*	Remarks
				SY	LF	
750+24.00	751+23.00	Both	Composite	319.2	24.0	West approach
754+03.00	754+81.00	Both	Composite	319.2	24.0	East approach
748+96.00	750+24.00	Rt	Composite	56.9	132.0	West approach shoulder south side
749+26.00	750+24.00	Lt	Composite	54.4	103.0	West approach shoulder north side
754+81.00	755+86.00	Rt	Composite	46.7	109.0	East approach shoulder south side
754+81.00	756+16.00	Lt	Composite	90.0	141.0	East approach shoulder north side
Totals:				886.4	533.0	

110-13
04-20-10

DELIVERY AND STOCKPILING

Item Description	Quantity	Units	Delivery Location	Contact Name & Number	Remarks
Steel Beam Guardrail & Components	520	LF	IADOT Elkader Maintenance Yard	Gabriel Zittergruen Supervisor 563-245-2724	22347 Iowa 128 Elkader, IA 52043

110-7A
04-17-12

REMOVAL OF STEEL BEAM GUARDRAIL

① Lane(s) to which the installation is adjacent.
② Includes length of End Terminals and End Anchors.

No.	Direction of Traffic	Location		Side	Removal of Guardrail
		Station to Station			
1	EB	749+65.00	751+20.00	Rt	155.0
2	EB	754+20.00	755+25.00	Rt	105.0
3	WB	749+85.00	750+90.00	Lt	105.0
4	WB	753+90.00	755+45.00	Lt	155.0
Totals:					520.0

100-28
10-19-10

LONGITUDINAL GROOVING

Location	Total	Remarks
	SY	
752+56.00	956.8	Bridge
752+56.00	263.5	West approach
752+56.00	263.5	East approach
Totals:		1483.9

108-13A
08-01-08

SAFETY CLOSURES

Refer to Section 2518 of the Standard Specifications

Station	Closure Type		Remarks
	Road Qty.	Hazard Qty.	
727+50.00	X		
757+50.00	X		

102-5
04-18-17

EXISTING PAVEMENT

No.	Location					Year	Type	Project Number	Surface		Base		Subbase		Removal		Coarse Aggregate			Reinforcement	Remarks
	County	Route	Dir. of Travel	Begin Ref. Loc. Sign	End Ref. Loc. Sign				Type	Depth	Type	Depth	Type	Depth	Type	Depth	Source	Type	Durability Class		
1	Clayton	US 18	Both	295.74	299.32	1969	HMA	F-18-9(4)--20-22	PCC	9							BENTE/ELKADER	C.LST.	2		
2	Clayton	US 18	Both	295.74	299.32	1986	AAC	FN-18-9(51)--21-22	AAC	1.5	BAC	1.5					BENTE/ELKADER	C.LST.			
3	Clayton	US 18	Both	295.74	299.32	2006	HMA	NHSN-018-9(83)--2R-22	HMA	2	HMA	2									
4	Clayton	US 18	Both	295.74	299.32	2006	HMA	NHSN-018-9(83)--2R-22	HMA	2	HMA	3			MIL	3					

262-6
10-18-05

UTILITIES

(NOT A POINT 25 PROJECT)

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

281-1
10-18-16

SECTION 404 PERMIT AND CONDITIONS

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

PERIMETER, SLOPE AND DITCH CHECK SEDIMENT CONTROL DEVICES

100-19
10-19-21

Possible Standards: EC-204

Location			Perimeter and Slope			Ditch Check		Remarks
Begin Station	End Station	Side	Length of Installation			Length of Installation		
			9 inch Dia	12 inch Dia	20 inch Dia	12 inch Dia	20 inch Dia	
			LF	LF	LF	LF	LF	
748+80.00	752+50.00	Rt		370.0				
753+20.00	756+00.00	Rt		280.0				
749+10.00	751+70.00	Lt		260.0				
752+60.00	756+30.00	Lt		370.0				
Totals:				1280.0				

GRADING FOR GUARDRAIL INSTALLATIONS

107-23
10-18-11

① Lane(s) to which the installation is adjacent.

Refer to EW-301

Location				Dimensions (Feet)									Earthwork		Remarks	
No.	Direction of Traffic	Station	Side	Foreslope at Guardrail	X1	Y1	X2	Y2	X3	Y3	X4	Y4	Z	Excavation Class 10		Embankment In Place
														Excavation Class 10		Embankment In Place
														CY		CY
1	EB	751+16.00	Rt	3:1	144.0	5.0					200.0	8.1	50.4		46.4	
2	EB	754+28.00	Rt	3.5:1	81.6	5.0					137.0	8.1	50.4		34.7	
3	WB	750+84.00	Lt	3.5:1	81.6	5.0					137.0	8.1	50.4		34.7	
4	WB	753+96.00	Lt	4:1	144.0	5.0					200.0	8.1	50.4		46.4	
Totals:															162.1	

STEEL BEAM GUARDRAIL AT CONCRETE BARRIER OR BRIDGE RAIL END SECTION

108-8A
10-16-18

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

① Lane(s) to which the obstacle is adjacent.

② Not a bid item. Incidental to guardrail installation.

No.	Direction of Traffic	Side O = Outside M = Median	Station	Offset	Layout Lengths				Long-Span System	Delineators and Object Markers ②				Bid Items								Remarks					
					BA-250, BA-260, LS-630, or LS-635					SI-211	Delineator SI-172	Object Marker SI-173		Bolted End Anchor	Post Adapter	Steel Beam Guardrail	Barrier Transition Section	BA-250 or LS-630					BA-260 or LS-635				
					VT1	VF	VT2	ET				Type 1	Type 2					Type 3	End Terminal				Barrier Transition Section	End Terminal			
					FT	LF	LF	LF			LF	White	OM2-2	OM3-L	OM3-R	BA-202	BA-210	BA-200	BA-201	Tangent	Flared		Tangent	Flared	BA-221	BA-225	
					STATION	TYPE	TYPE	EACH		EACH	EACH	EACH	TYPE	EACH	EACH	LF	EACH	EACH	EACH	EACH	EACH		EACH	EACH	EACH	EACH	
1	EB		751+15.78	16.8' Rt	137.500		12.50	47.7		2		6		1	A	1			112.5		1		1				
2	EB		754+28.18	16.8' Rt	75.000		12.50	47.7		2		4		1	A	1			50.0		1		1				
3	WB		750+83.82	16.8' Lt	75.000		12.50	47.7		2		4		1	A	1			50.0		1		1				
4	WB		753+96.18	16.8' Lt	137.500		12.50	47.7		2		6		1	A	1			112.5		1		1				
Totals:												20		2		2			4		325.0		4		4		

SCOUR PROTECTION OR ROCK FLUME FOR BRIDGE END DRAIN

104-8A
04-19-22

Refer to Standard Road Plan DR-401 and DR-402

Location			Bid Items	Scour Protection (DR-401)			Rock Flume (DR-402)			Remarks	
Bridge Station	Bridge Corner	Distance DI-1 or DI-2		Bridge End Drain	Special Ditch Control, Wood Excelsior Mat	Turf Reinforced Mat (TRM), Type 2	Transition Mat	Macadam Stone Base	Engineering Fabric		Erosion Stone
					EC-101	EC-104	EC-105				
FT			TYPE	SQ	SQ	SF	TONS	SY	TONS		
752+56.00	NW	41.0	DR-402				1.5	122.7	83.7		
752+56.00	SW	53.0	DR-402				1.5	66.4	44.1		

Survey Information

Clayton County
BRFN-018-9(103)--39-22
US 18 over Dry Run Creek
PIN 12-22-018-020
Sap-0000

Party Personnel

Matt Fouts- Surveyor/PLS
Brandon Wood- Survey Technician
Will Riordan- Survey Senior Technician
Dirk Janssen- Survey Technician

Date(s) of Survey

Begin Date 11/21/2019
End Date 12/03/2019

General Information

Measurement units for this survey are US survey feet. This survey is for Preliminary/Engineering for the proposed bridge replacement on US Highway 18 over Dry Run Creek and 0.6 miles West of East US 52 Junction. This project is a Full Field Survey.

Vertical Control

Vertical datum for this survey is relative to NAVD88, Geoid 12BUS.

Vertical positions were established by static observations and post processed using concurrent observations from the IaRTN Elkader reference station.

Horizontal Control

The project coordinate system is the Iowa Regional Coordinate System, Zone 3. Horizontal datum is NAD83 (2011) for Epoch 2010.00. The projection parameters for Zone 3 of the IaRCS is defined below:

Lambert Conformal Conic Projection North American Datum of 1983
Origin Lat: 40°15'00"N
Origin Central Meridian: 91°12'00"W
Central Meridian Scale: 1.000035
False Northing: 8,300,000
False Easting: 13,500,000

Horizontal positions for site control were established by static observations and post processed using concurrent observations from the IaRTN Elkader reference station

Alignment Information

The horizontal alignment for this survey is a retrace of the Construction centerline of Plans No. o, F-18-9(1)**22-7. Survey stationing was equated to the plan PI at STA 730+23.6 and run ahead without equation throughout the survey.

Survey stationing relates to as built plan stationing as follows:

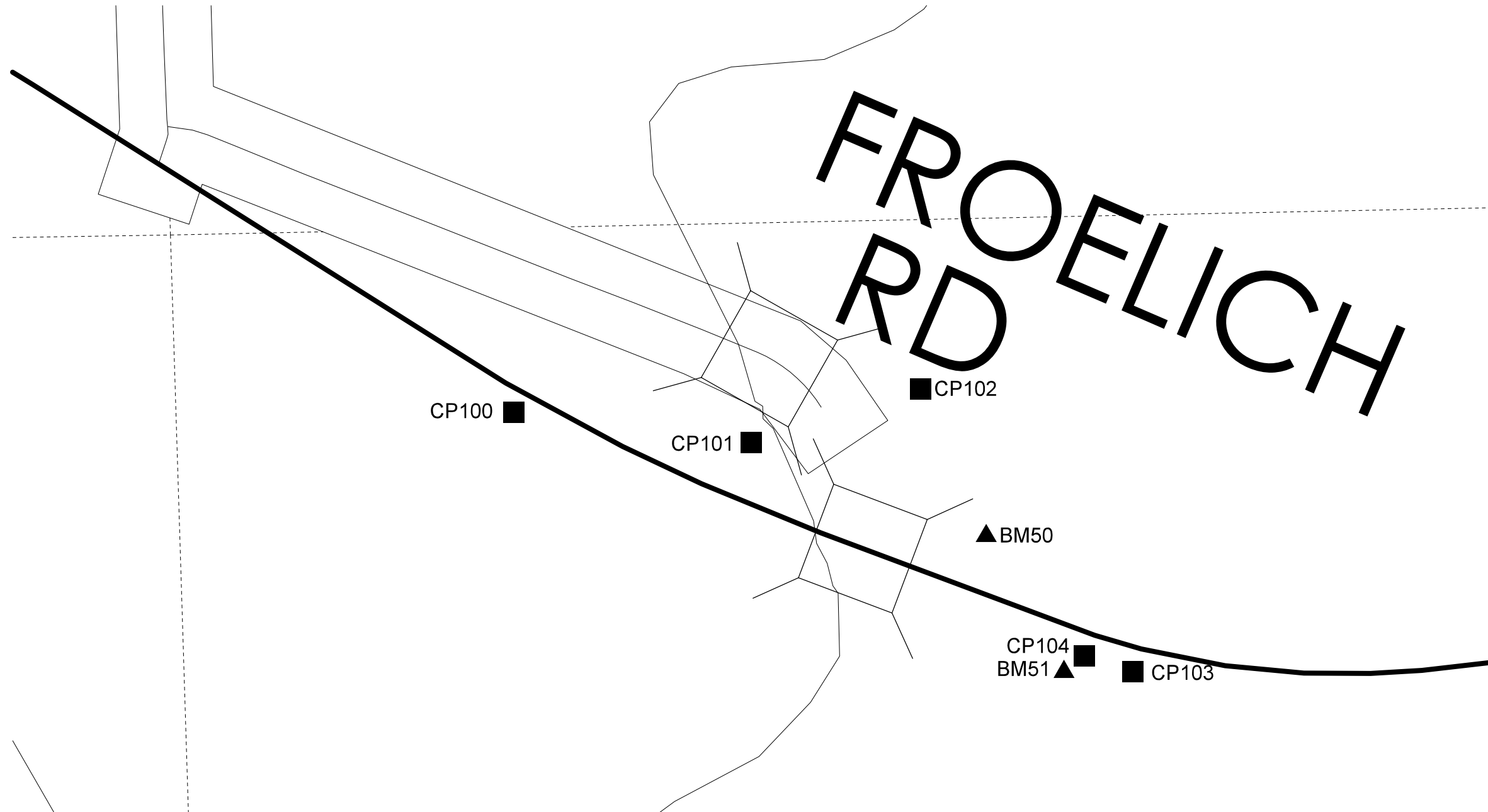
PC Sta. 738+32.3 Const. CL Project Project No. F-18-9(1)**22-7
Survey PC Sta. 738+32.3

PT Sta 749+24.0 Const. CL Project Project No. F-18-9(1)**22-7
Survey PT STA 749+24.0

POT STA 757+10.4 Const. CL Project Project No. F-18-9(1)**22-7
Survey POT STA 757+10.5

CONTROL POINT VICINITY MAP

This map is a guide to the vicinity of the primary project control points
Primary control is for use with RTK base stations and for RTN validation.
Future surveys will use primary project control to establish temporary
control as needed for construction or other surveying applications.



HORIZ. DATUM: NAD83(2011) EPOCH 2010.00

VERT. DATUM: NAVD88

1a. Regional Coordinate System Zone 3

Coordinate listing from next sheet will be used with 1aRTN for monument
recovery. No other reference ties are given.

HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING

HORIZ. DATUM: NAD83(2011) EPOCH 2010.00

VERT. DATUM: NAVD88

Ia. Regional Coordinate System Zone 3

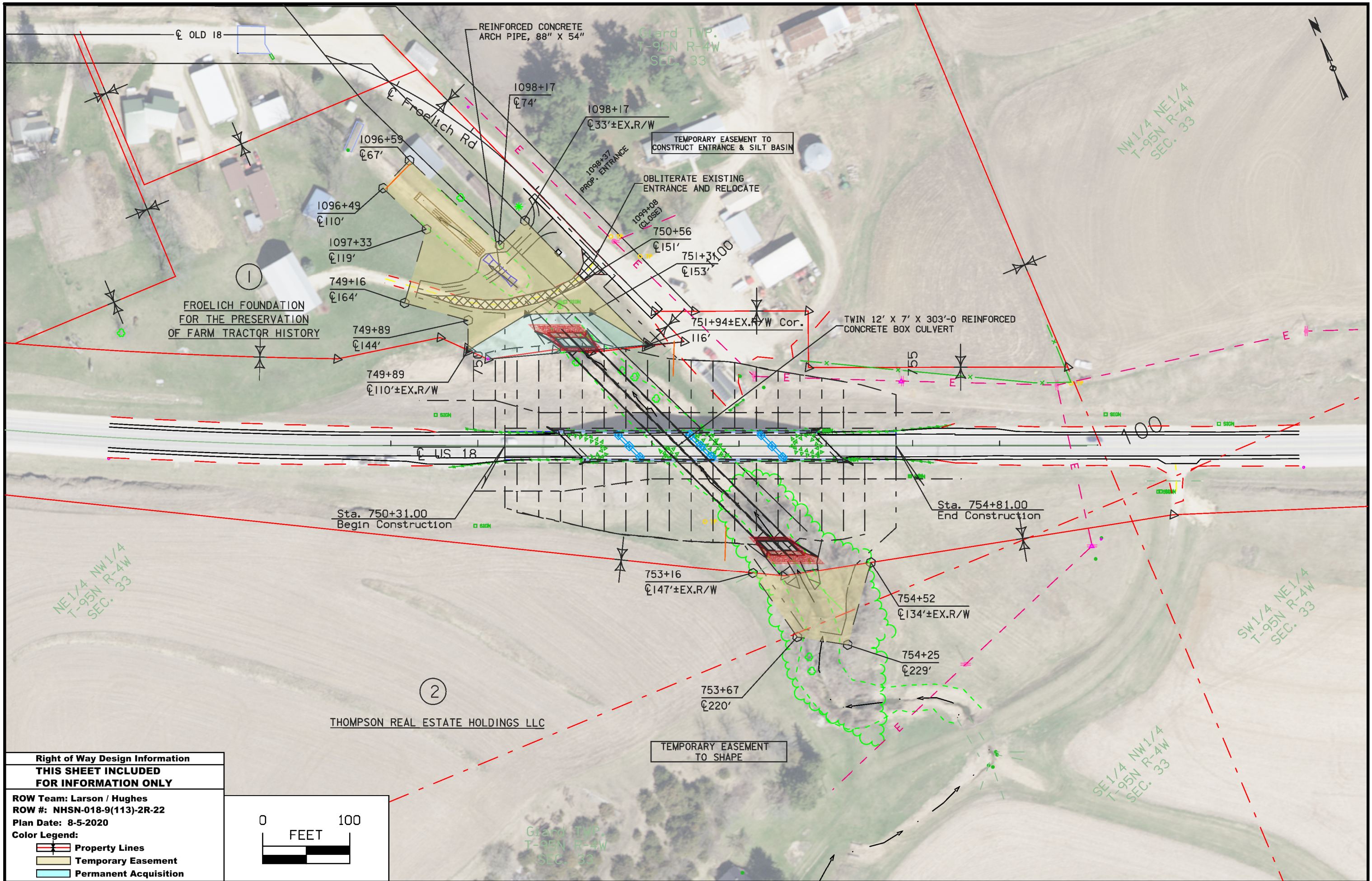
Point Name	Northing	Easting	Elevation	Feature Definition	Description
CP100	9304287.90	13467010.14	1049.05	CP	1/2" REBAR WITH ORANGE PLASTIC CAP SOUTH OF HIGHWAY 18 AND AT THE WEST END OF SITE
CP101	9304223.77	13467456.36	1025.55	CP	ROW MONUMENT NORTH OF HIGHWAY 18 AND WEST OF BRIDGE
CP102	9304499.57	13467548.30	1023.25	CP	1/2" REBAR WITH ORANGE PLASTIC CAP NORTH OF HIGHWAY 18 AND SOUTH OF SHELTER BY ROAD
CP103	9303744.20	13468272.09	1055.57	CP	1/2" REBAR WITH ORANGE PLASTIC CAP SOUTH OF HIGHWAY 18 AND AT THE EAST END OF SITE
CP104	9303758.83	13468025.26	1048.33	CP	ROW MONUMENT EAST OF POWER POLE AND SOUTHEAST OF BRIDGE
BM50	9304014.80	13467884.13	1044.78	BM	RAILROAD SPIKE IN THE 1ST POWER POLE EAST OF BRIDGE AND NORTH OF HIGHWAY 18
BM51	9303755.42	13468012.12	1047.87	BM	RAILROAD SPIKE IN A POWER POLE EAST OF BRIDGE AND SOUTH OF HIGHWAY 18

ALIGNMENT COORDINATES

Name	Location	Point on Tangent			Begin Spiral			Begin Curve			Simple Curve PI or Master PI of SCS			End Curve			End Spiral		
		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates	
			Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)
C1	US 18	749+00.00	9304174.71	13467314.43															
C2	US 18	756+00.00	9303903.39	13467959.71															

NO ACCESS RIGHTS ARE TO BE ACQUIRED ON THIS PROJECT.

ACCESS CONTROL PREVIOUSLY ACQUIRED.



FROELICH FOUNDATION
FOR THE PRESERVATION
OF FARM TRACTOR HISTORY

TEMPORARY EASEMENT TO
CONSTRUCT ENTRANCE & SILT BASIN

OBLITERATE EXISTING
ENTRANCE AND RELOCATE

TWIN 12' X 7' X 303'-0 REINFORCED
CONCRETE BOX CULVERT

Sta. 750+31.00
Begin Construction

Sta. 754+81.00
End Construction

THOMPSON REAL ESTATE HOLDINGS LLC

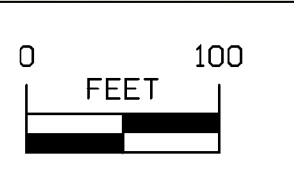
TEMPORARY EASEMENT
TO SHAPE

Right of Way Design Information
THIS SHEET INCLUDED
FOR INFORMATION ONLY

ROW Team: Larson / Hughes
ROW #: NHSN-018-9(113)-2R-22
Plan Date: 8-5-2020

Color Legend:

- Property Lines
- Temporary Easement
- Permanent Acquisition



511 TRAVEL RESTRICTIONS

Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No., Structure ID, or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
			None anticipated									

108-23A
08-01-08

TRAFFIC CONTROL PLAN

US 18 to be closed and detoured to remove existing bridge superstructure and construct new roadway.
Contractor shall give Iowa DOT 14 days notice prior to the start of the detour. Detour signs will be placed by others.
US 18 Detour - US 18 will be closed and an off-site detour will be utilized. The detour would follow County Road X28 south to County Road B60, then east to IA 13, then northeast to US 52, then north to US 18.

111-01
04-17-12

COORDINATED OPERATIONS

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

Project	Type of Work
None provided	