

Standard Road Plans

Standard Road Plans are listed Sheet Number C.4

Design Data Urban

2024 AADT 5,900 V.P.D.
TRUCKS 3 %



PLANS OF PROPOSED IMPROVEMENT ON THE
PRIMARY ROAD SYSTEM
CERRO GORDO COUNTY
Bridge Deck Overlay

N.B. US 65 over Willow Creek
0.1 mi N of W.B. IA 122 in Mason City

Refer to the Plan Sheets for list of applicable specifications.

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

Revisions

Index of Sheets	
No.	Description
Bridge Sheets	Bridge Plan
A.1	Title Sheet
A.2	Location Map Sheet
V.1	Estimated Quantities - Design 0528
V.2 - V.16	Design 0528
Road Sheets	Road Plan
A.3-U.1	Road Plans
C.1	Estimated Quantities - Road
C.4	Standard Plans - Road



Iowa DOT Bridges and Structures
Consultant Reviewer: Christian Yi

Index of Seals

Sheet No.	Name	Type
A.1	Dallas R. Schechinger *	Structural Design
A.3	Dung T. Ta **	Roadway Design

* Stanley Consultants
** Iowa DOT

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 Dallas R. Schechinger Date 6/19/2026

Printed or Typed Name

My license renewal date is December 31, 2026

Pages or sheets covered by this seal: A.1, A.2, V.1 thru V.16

TOTAL
33
PROJECT IDENTIFICATION NUMBER
23-17-065-010
PROJECT NUMBER
BRF-065-8(082)--38-17
R.O.W. PROJECT NUMBER
PROJECT DIRECTORY NUMBER
1706501023

Estimated Bridge Repair Quantities and Reference Notes - Design No. 528					
Item No.	Item Code	Item	Unit	Quantities Estimated Design No. 528	Estimate Reference Notes
1	2401-6745635	Removal of Existing Handrail	LS	1.0	Includes all work for removal and off-site disposal of existing handrails along the exterior edge of the deck. Removal of scheduled items shall be in accordance with Section 2401, of the Standard Specifications. Any damage to material not to be removed shall be the responsibility of the Contractor and repaired at no extra cost to the state.
2	2401-6750001	Removals, as per Plan	LS	1.0	Includes all work for removal and off-site disposal of concrete abutment diaphragms, portions of deck, sliding plate joint and portions of the abutment backwalls, curbs, and sidewalks adjacent to the joints at the north abutment, and concrete slope protection panels. Removal of scheduled items shall be in accordance with Section 2401, of the Standard Specifications. Any damage to material not to be removed shall be the responsibility of the Contractor and repaired at no extra cost to the state.
3	2403-0100000	Structural Concrete (Misc.)	CY	13.6	Includes all resilient joint filler required.
4	2404-7775005	Reinforcing Steel, Epoxy Coated	LB	1,793	Includes mechanical splicers in the north abutment diaphragm, backwall, and end of deck.
5	2413-0698074	Deck Repair, Class A	SY	192.2	----
6	2413-1200000	Steel Extrusion Joint with Neoprene	LF	58.0	Includes all necessary hardware and accessories including the anchorage system, temporary erection material, sidewalk sliding plates and their anchorages, and the 3/8" steel curb plates with their anchorage system. Excludes installation of neoprene gland. Skew and expansion conditions do not allow the use of the DS Brown joint for this installation.
7	2413-1200100	Neoprene Gland Installation and Testing	LF	58.0	Includes installation of neoprene gland and water testing of joint.
8	2413-1300000	Preformed, Pre-Compressed, Self-Expanding, Sealant System With Silicone Pre-Coated Surface	LF	60.1	Includes water testing of joints. Refer to Design Sheet 15 for additional information. The number of linear feet installed shall be paid for at the contract unit price per foot based on the plan quantities. The contract unit price bid shall be full compensation for furnishing and installing the joint sealant system including removal of existing joint material, surface preparation, and water testing joint. All work and all material shall comply with the written recommendations of the joint sealant manufacturer.
9	2414-6431100	Retrofit Concrete Barrier Railing	LF	396.6	Includes 25.3 cu yd of Class C or Class BR structural concrete and 4,536 lbs of Grade 60 epoxy coated reinforcing steel.
10	2426-6772016	Concrete Repair	SF	542.0	----
11	2499-0800000	Paving Notch Replacement	LF	107.6	Includes 7.5 CY of structural concrete Class C, 1,722 LB of epoxy-coated reinforcing steel, 140 LB of stainless reinforcing steel, excavation, concrete removed to form the shear keyways, drilling holes for dowel bars, polymer grout material and mechanical splice assemblies.
12	2510-6745640	Removal of Existing P.C. Overlay	SY	961.2	----
13	2519-1002072	Fence, Chain Link, 72 in. Height	LF	418.6	----
13	2523-6765009	Removal and Reinstall Light Pole and Luminaire	EACH	2.0	Refer to situation plan for locations.
14	2533-4980005	Mobilization	LS	1.0	----
Alternate AA Option 1					
15	2413-0698066	Deck Overlay (Class O PCC)	SY	961.2	Includes cleaning existing concrete at curbs, abutment seats, abutment wash areas, and abutment backwalls. Includes furnishing and placing concrete sealer at curbs, abutment seats, abutment wash areas, and abutment backwalls.
Alternate AA Option 2					
16	2403-1000010	Trial Batch and Test Replacement	LS	1.0	Refer to Developmental Specification for Fiber Reinforcement of Structural Concrete.
17	2413-0698067	Deck Overlay (Class HPC-0 PCC)	SY	961.2	Includes cleaning existing concrete at curbs, abutment seats, abutment wash areas, and abutment backwalls. Includes furnishing and placing concrete sealer at curbs, abutment seats, abutment wash areas, and abutment backwalls.
18	2413-1000005	Fiber Reinforcement for Concrete Repair/Overlay	SY	961.2	Refer to Developmental Specification for Fiber Reinforcement of Structural Concrete.

Roadway Quantities shown elsewhere in these plans.

Design For Repairs to 20°-39° RA

196'-0" x 44'-0" Continuous Welded Girder Bridge

57'-0" & 59'-0" End SpansVariable Interior Span

Estimated Bridge Quantities

STA. 11+93.36 (N.B. US 65)Turn-in Date: Aug 2026

Cerro Gordo County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 528Design Sheet No. 1 of 16FHWA No. 018932

FILE NO. 32557	ENGLISH	DESIGN TEAM Stanley Consultants	Cerro Gordo COUNTY	PROJECT NUMBER BRF-065-8(082)--38-17	SHEET NUMBER V.1
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8:33:55 AM6/19/202610876pw:\\projectwise.dot.int.lan:PWMMain\Documents\Projects\1706501023\Bridge\082_Bridge Deck Overlay\SHT_17065082_Stanley_0528_018932_Z02.dgn

General Notes:

This design is for repairs to the existing 196'-0" x 44'-0" continuous welded girder bridge located on northbound US 65 over Willow Creek in Cerro Gordo County. 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 repairs.

Faint lines on plans indicate the existing structure.

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

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

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

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

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

The interior faces of the existing concrete curbs are to be cleaned and sealed in accordance with Article 2403.03, P, of the Standard Specifications. If new sections of rail are constructed, the new sections shall not be sealed. All costs associated with cleaning and sealing of the concrete rails shall be include in the unit price bid item "Bridge Deck Overlay".

In addition to the requirements of Article 2413.03, G, of the Standard Specifications, both exposed abutment bridge seats and wash surfaces shall have an application of concrete sealer in accordance with Article 2403.03, P, 3, of the Standard Specifications.

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 lump sum bid for "Removals, as Per Plan" shall include all costs associated with removing the concrete abutment diaphragms and portions of deck, sliding plate joints, and portions of the abutment backwalls, curbs, and sidewalks adjacent to the joints. 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.

Present deck thickness is about 9.5 inches, including existing overlay. The Contractor shall exercise care in removing concrete in order to prevent unnecessary unbonding of reinforcing steel.

No preliminary deck survey is shown. The plan quantity for "Class A Bridge Deck Repair" is estimated as 20% of the total deck area. The actual quantity is determined by the Engineer after the P.C. Overlay has been removed. Actual spalled and hollow areas as determined by the Engineer shall be repaired.

Surface preparation shall be according to Article 2413.03, B and C of the Standard Specifications. The Contractor shall ensure the vertical edge of the Stage 1 overlay is prepared for placement of the new concrete for Stage 2 by sandblasting or shot blasting, followed by an air blast. Ensure this cleaning removes all dirt, oil, and other foreign material. Ensure it removes all unsound concrete, laitance, or loose material from the surface and edges against which the surface mixture is to be placed. The cleaning should roughen the surface in order to provide satisfactory bond with the surfacing mixture.

The bridge deck is covered with a 1¾ inch thick portland cement concrete surcace. The Contractor shall note the redefining of the classification line (boundary between repair and overlay) for this project due to the existing 1¾ inch surface. The classification line will be defined as 2 inches below the top of existing overlay. This will necessitate the removal of the existing bridge deck overlay before placing the proposed new bridge deck overlay. The bridge deck may have been epoxy-injected. The contractor shall remove all exposed epoxy. Removal of epoxy is incidental to "Removal of Existing P.C.C. Overlay" and "Deck Repair, Class A" as appropriate.

All costs associated with the removal of the existing overlay shall be included in the bid item "Removal of Existing P.C.C. Overlay". Removal of existing overlay shall be computed in square yards from the measurement of areas removed. The Contractor will be paid the contract price per square yard for furnishing all equipment and labor necessary to remove the concrete to within ¼ inch above the classification line. All costs, including furnishing equipment and labor, associated with removal of the next ¼ inch of concrete (to the classification line) shall be included in the bid item "Deck Overlay".

Upon completion of the removal of concrete down to the classification line, the Engineer shall determine the areas of bridge deck to be repaired as "Deck Repair, Class A". Actual hollow areas, as determined by the Engineer, shall be repaired.

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

Construction Stages I & II as detailed on these plans may be reversed at the Contractor's option subject to the Engineer's approval.

Ready mix trucks are not allowed on the prepared portion of the bridge deck.

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

The tops of the abutment backwalls as shown shall be constructed using structural concrete Class C. Promptly after the concrete has been placed and vibrated as provided in Articles 2403.03, C, and 2403.03, D, of the Standard Specifications, it shall be hand finished to provide a smooth surface with the proper crown. The contractor may elect to use formwork which is marked or trimmed to the correct elevation and crown to provide the limits for the hand finishing.

The city and utility companies whose facilities are shown on the plans or known to be within the construction limits shall be notified by the bridge contractor of the construction starting date.

Screed extension or overlay beyond the longitudinal construction joint may be less than the 6 inches required by Article 2413.03, A, 4, of the Standard Specifications. The engineer may require additional vibration or special finishing procedures adjacent to the longitudinal construction joint.

Specifications:

Design:
AASHTO series of 2002.

Construction:

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

- Developmental Specification for Fiber Reinforcement of Structural Concrete

Design Stresses:

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

Reinforcing steel in accordance with Section 8, Grade 60.
Concrete in accordance with Section 8, f'c = 4.0 ksi.

Working Drawing and Calculation Submittals			
Working drawings and calculations shall be submitted for the following items shown in the table below. (Note additional working drawings and calculations may be required in accordance with Article 1105.03 of the Standard Specifications.)			
Submittal requirements for working drawings and calculations shall be in accordance with 1105.03 of the Standard Specifications for Highway and Bridge Construction of the Iowa Department of Transportation. The absence of a certification requirement for a submittal does not relieve the Contractor of the responsibility to attain certification.			
Calculation submittals in this table which are associated with working drawing submittals shall be submitted on the same day. Review time for calculation submittals shall be of the same duration as and run concurrently with review time for associated working drawings. The calculation submittals listed in the table are not meant to be an exhaustive list and do not relieve the Contractor from providing additional calculation submittals if requested by the Engineer.			
No.	Working Drawing Description	Working Drawing File Name Convention For Submittal	Certified by Iowa P.E. (Yes/No)
1	New Expansion Joint	(082)_Cerro Gordo_528_NewExpansionJoint.pdf	No
2			
X			
X			
X			
No.	Calculation Description	Calculation File Name Convention For Submittal	Certified by Iowa P.E. (Yes/No)
X			
X			
X			
X			

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

Design History at this Site	
(Includes this Design)	
Des. No.	Type of Work
NA	Original Design
NA	Bridge Deck Overlay
528	This Design

Design For Repairs to 20°-39° RA

196'-0" x 44'-0" Continuous Welded Girder Bridge

57'-0" & 59'-0" End SpansVariable Interior Span

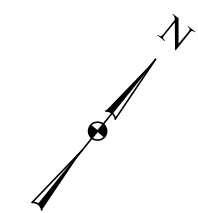
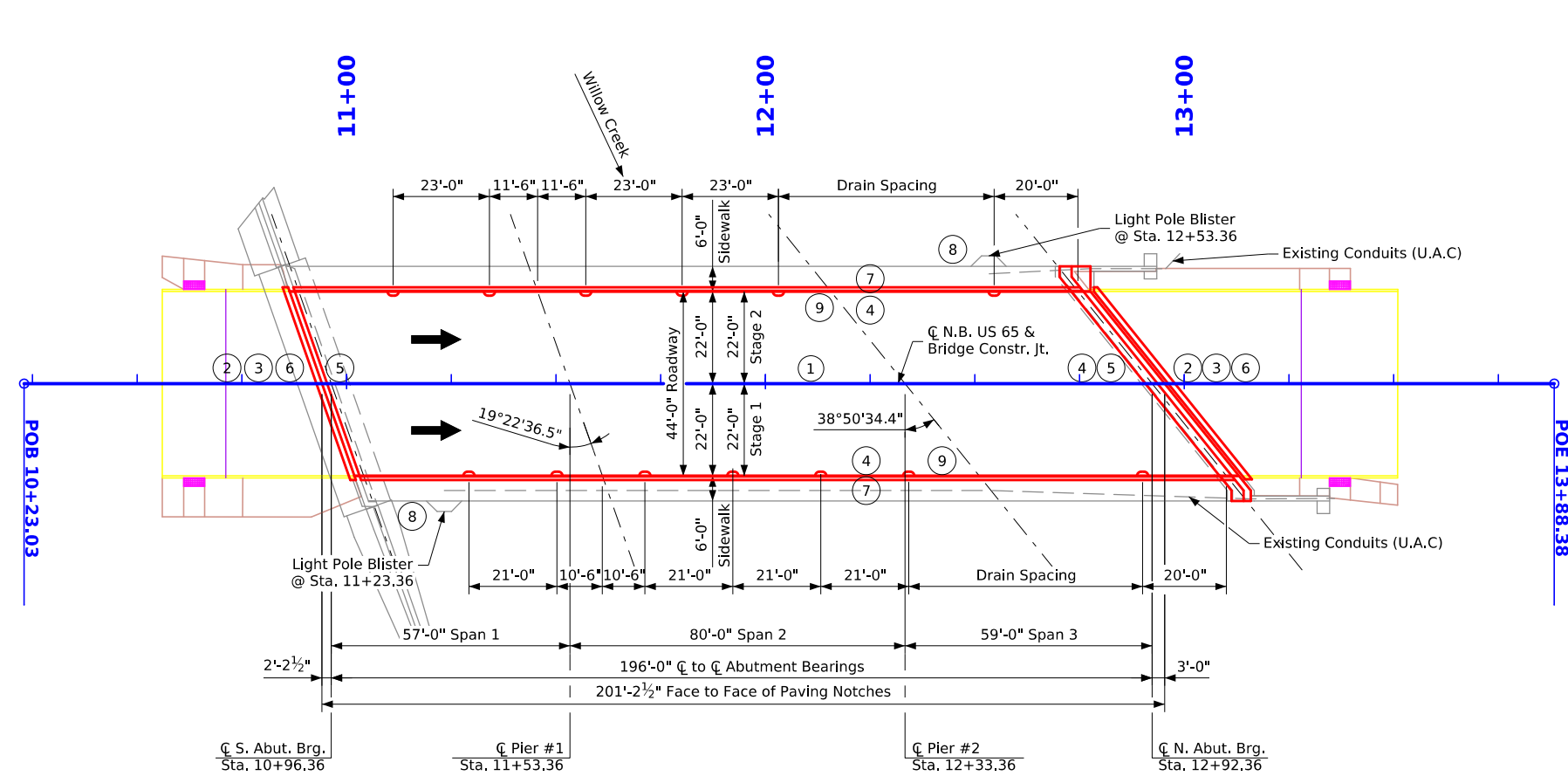
General Notes

STA. 11+93.36 (N.B. US 65)Turn-in Date: Aug 2026

Cerro Gordo County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 528Design Sheet No. 2 of 16FHWA No. 018932



Repairs shall consist of:

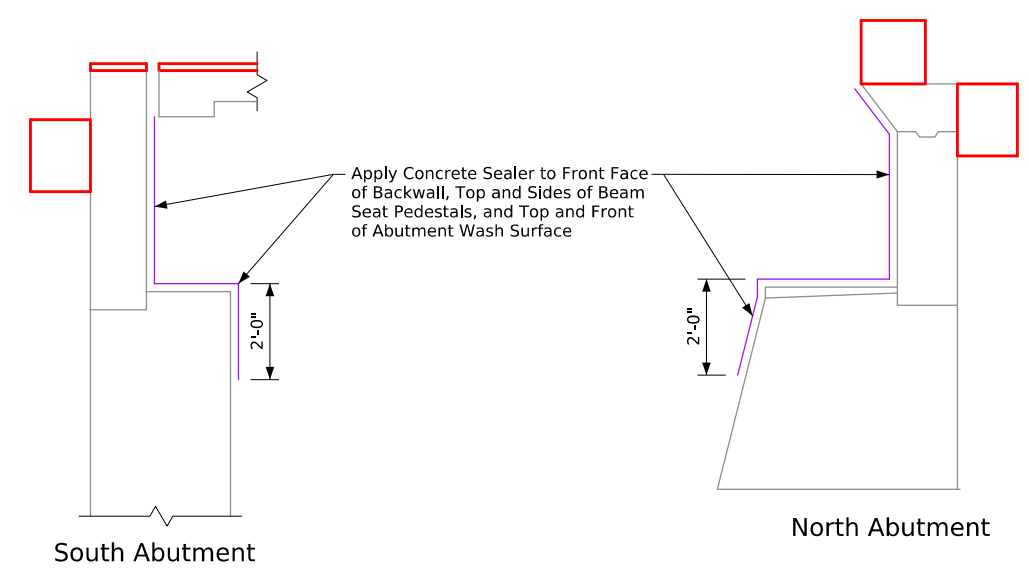
1. Remove existing overlay, scarify deck, complete Class A repairs, and overlay bridges with PCC.
2. Remove and replace paving notches with standard retrofit paving notches.
3. Remove existing sliding plate joint at north abutment and replace with steel extrusion and neoprene gland strip seal, including the sidewalks. Remove existing foam joint at the south abutment and replace with new pre-compressed foam joints.
4. Perform concrete repair at north abutment, both sidewalk and sidewalk curbs, and north abutment slope protection cutoff wall.
5. Clean and seal abutment bearing seats and backwalls
- * 6. Remove and replace standard bridge approaches, including sidewalks as needed. At the south approach limits to be 5' past existing EF joint. Reincorporate ADA ramps.
7. Remove aluminum handrails and replace with concrete rails and fencing, similar to Bridge Maint No. 1796.1L065. Include tapered end sections on the new concrete rails.
8. Remove and reinstall city lights.
9. Seal top and inside face of barrier rails and barrier rail end sections

* Note: Refer to roadway plans for additional information

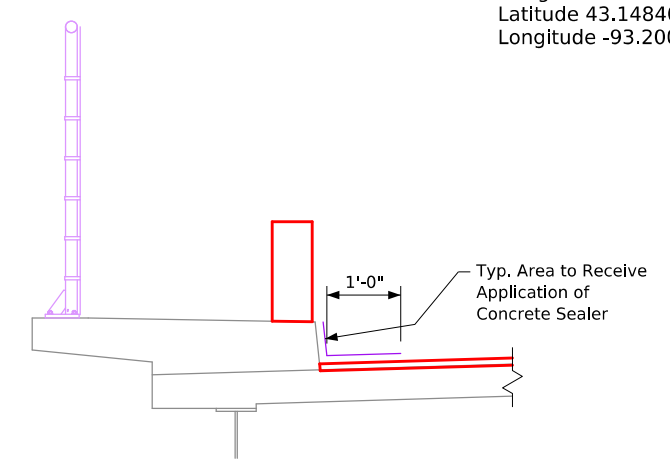
Situation Plan

Location

N.B. US 65 over Willow Creek
T-96N R-20W
Section 10
City of Mason City
Cerro Gordo County
FHWA No. 018932
Bridge Maint. No. 1796.1R065
Latitude 43.148401°
Longitude -93.200768°



Abutment Concrete Sealer Details



Detail of Concrete Sealer Area

Design For Repairs to 20°-39° RA

196'-0" x 44'-0" Continuous Welded Girder Bridge

57'-0" & 59'-0" End SpansVariable Interior Span

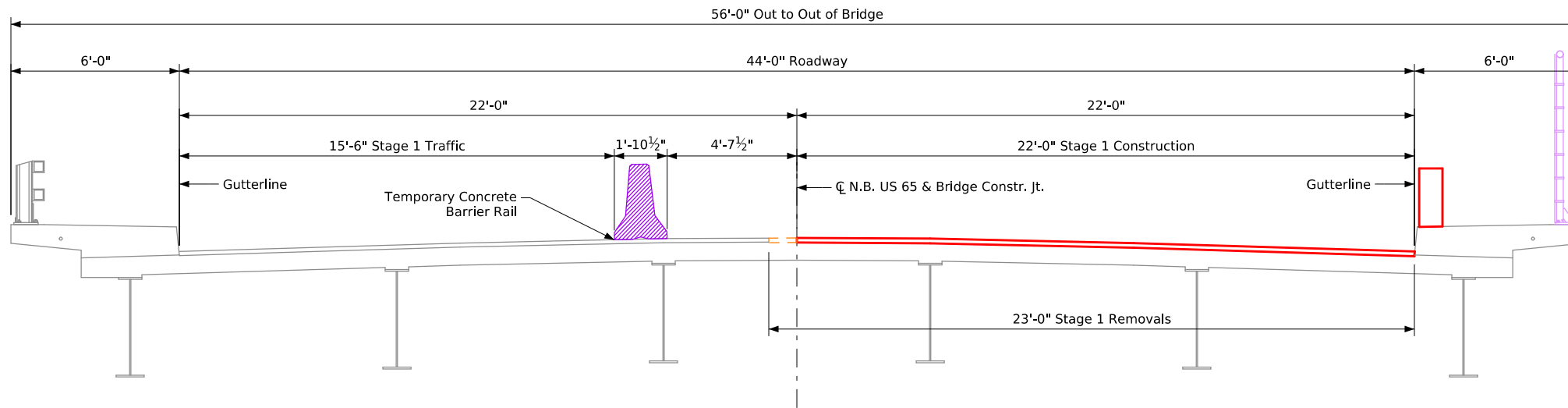
Situation Plan

STA. 11+93.36 (N.B. US 65)Turn-in Date: Aug 2026

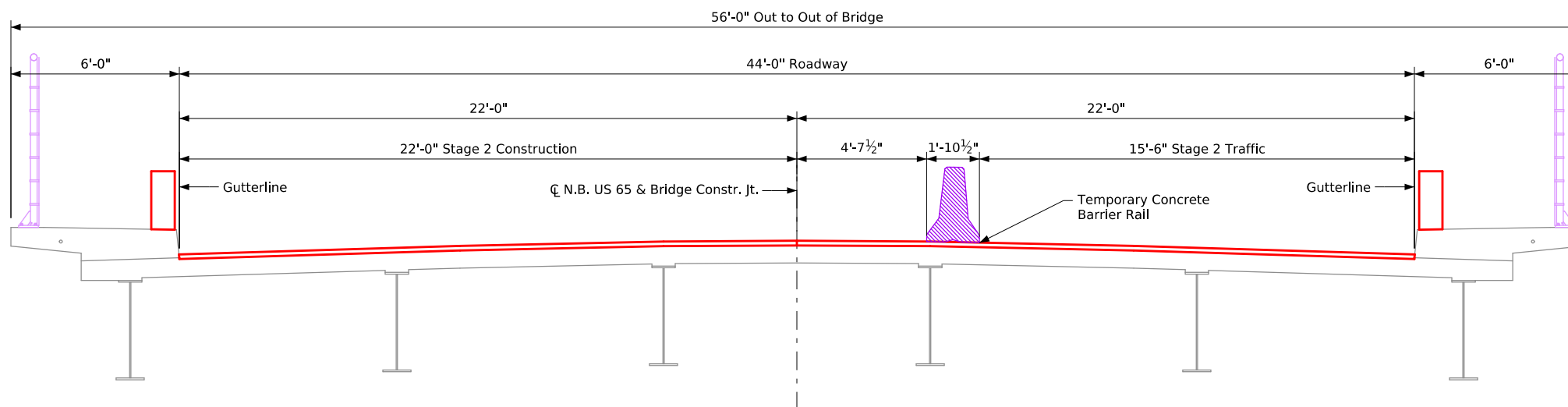
Cerro Gordo County

IOWA DEPARTMENT OF TRANSPORTATION

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Typical Section Stage 1 Construction
(Looking North)



Typical Section Stage 2 Construction
(Looking North)

Design For Repairs to 20°-39° RA

196'-0" x 44'-0" Continuous Welded Girder Bridge

57'-0" & 59'-0" End Spans Variable Interior Span

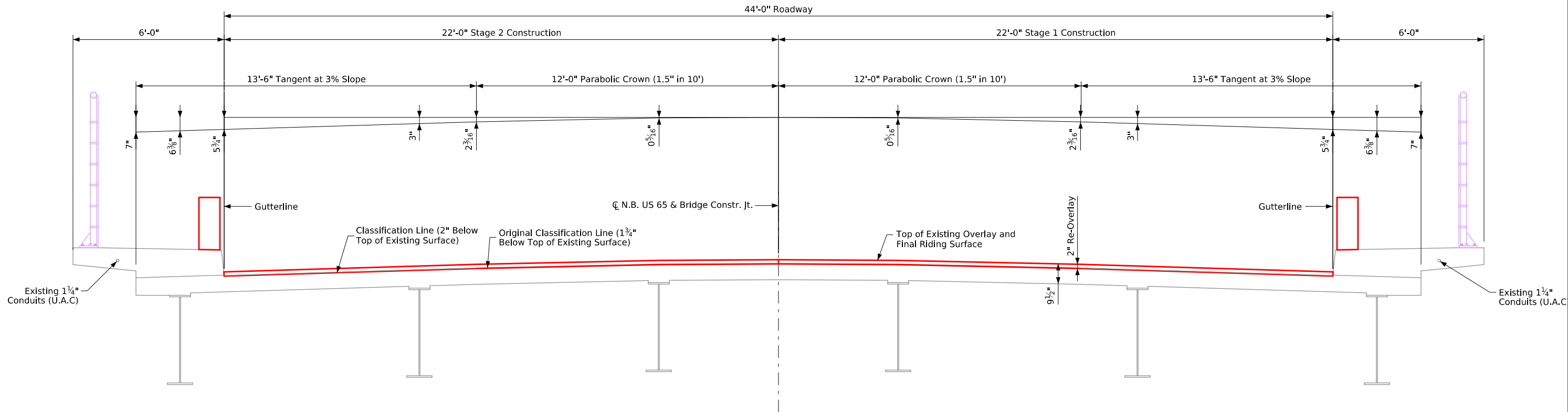
Staging Details

STA. 11+93.36 (N.B. US 65) Turn-in Date: Aug 2026

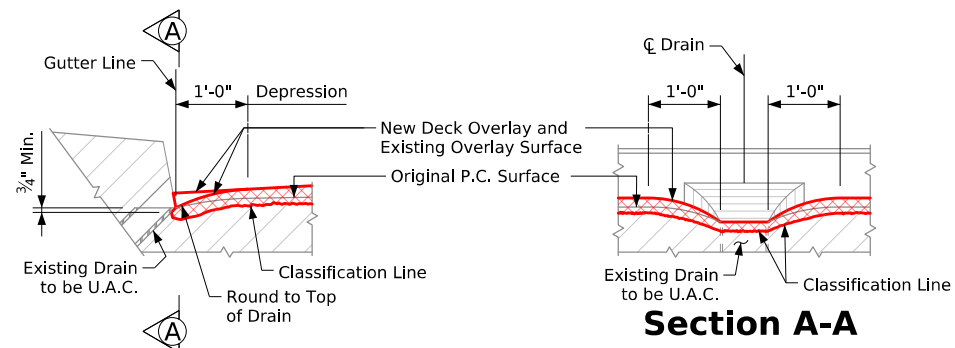
Cerro Gordo County

IOWA DEPARTMENT OF TRANSPORTATION

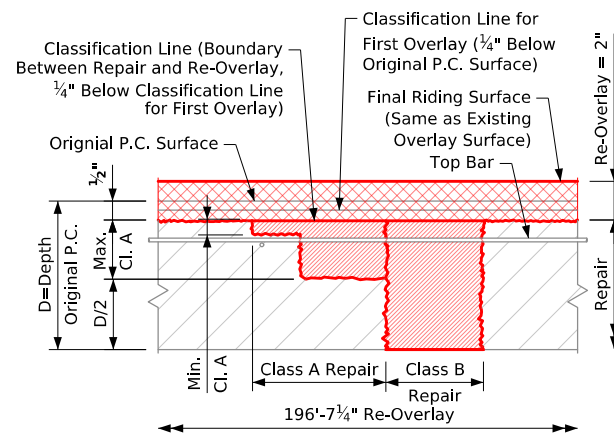
Design No. 528 Design Sheet No. 4 of 16 FHWA No. 018932



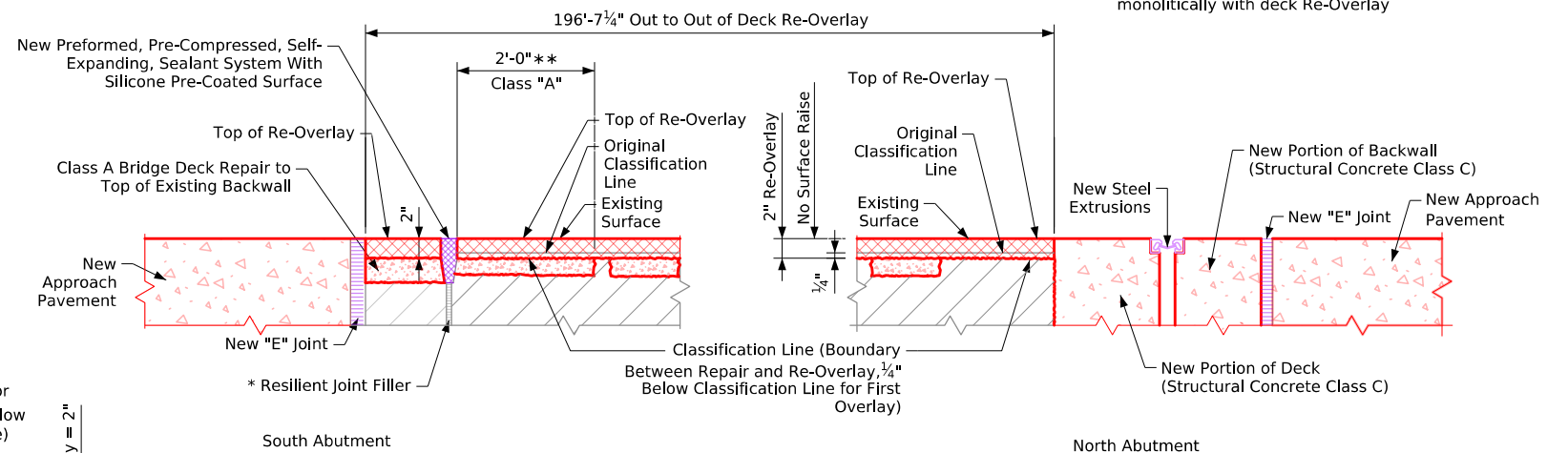
Typical Section
(Looking North)



Deck Repair Detail at Drain
(Required at 13 Locations)



Repair and Overlay Definition



Part Longitudinal Section Along Roadway

* Engineer will determine in the field if existing joint filler may be left in place or if it shall be removed and new joint filler will be required.

Note: The 2'-0" Class "A" repair area shown at the joint shall be removed to a minimum depth 1" below the existing top mat of reinforcing. The existing bridge deck reinforcing bars shall be carefully exposed and incorporated into the new construction work.

Design For Repairs to 20°-39° RA

196'-0" x 44'-0" Continuous Welded Girder Bridge

57'-0" & 59'-0" End Spans Variable Interior Span

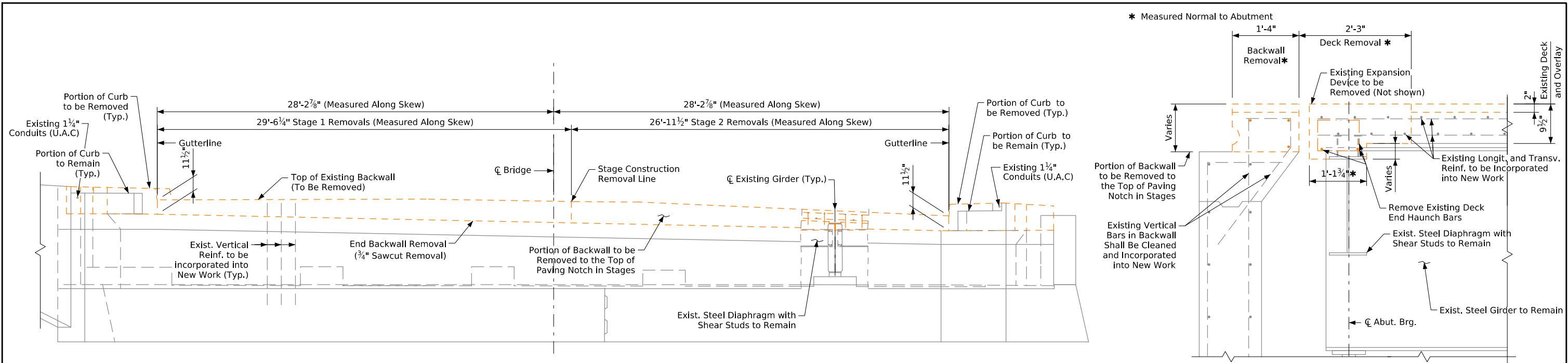
Deck Repair Details

STA. 11+93.36 (N.B. US 65) Turn-in Date: Aug 2026

Cerro Gordo County

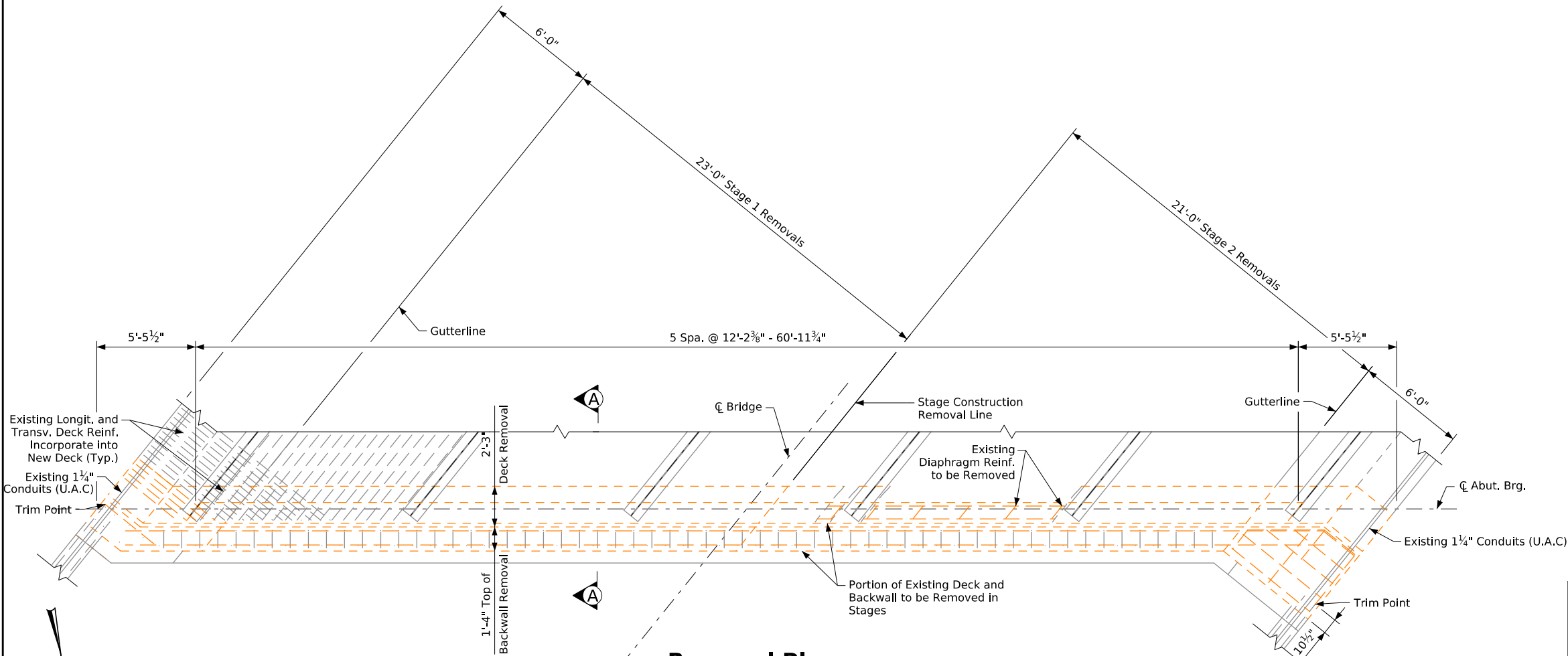
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 528 Design Sheet No. 5 of 16 FHWA No. 018932



North Abutment Backwall Rear Elevation
(Looking South)

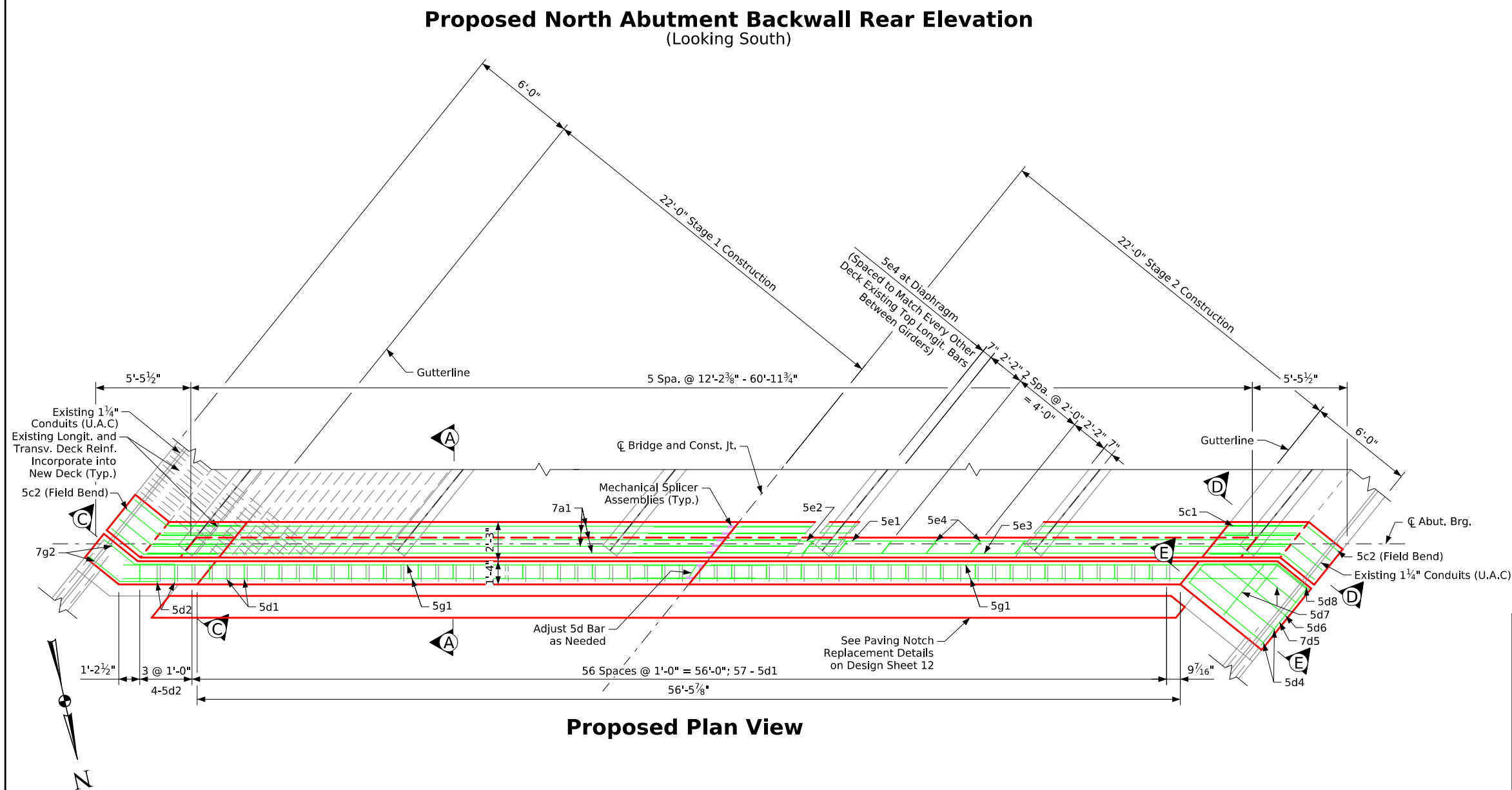
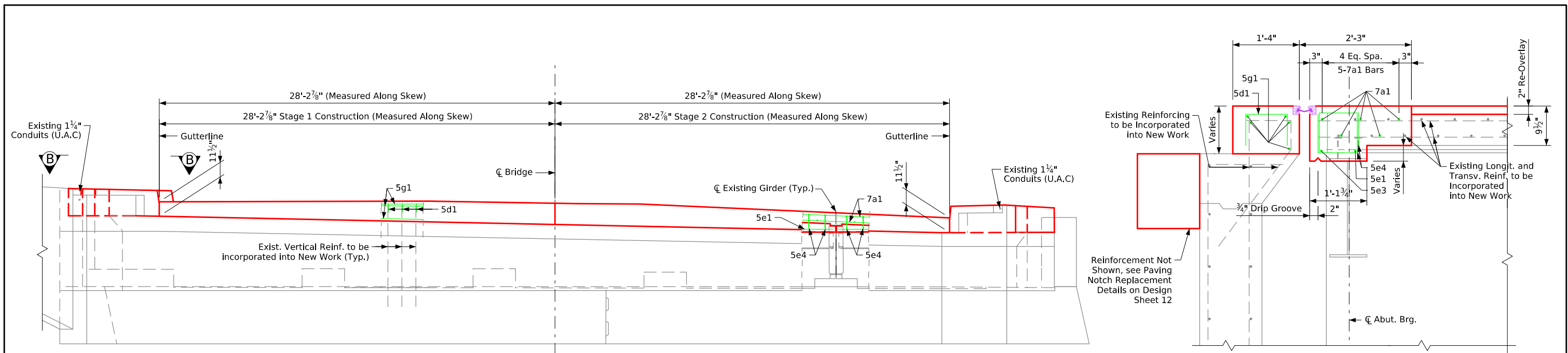
Section A-A



Removal Plan

Removal Notes:
Existing vertical bars in backwall, and longitudinal bars in deck shall be cleaned and incorporated into new work. Cut all existing bars incorporated into new work as needed to maintain 2" clear. Bars or dowels to remain that are damaged or rendered unserviceable by removal operations shall be replaced by contractor at no extra cost.

Design For Repairs to 20°-39° RA
196'-0" x 44'-0" Continuous Welded Girder Bridge
57'-0" & 59'-0" End Spans Variable Interior Span
Removal Details
STA. 11+93.36 (N.B. US 65) Turn-in Date: Aug 2026
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Design No. 528 Design Sheet No. 6 of 16 FHWA No. 018932



Note: See Design Sheet 7 for Sections B-B, C-C, D-D, and E-E.

Design For Repairs to 20°-39° RA

196'-0" x 44'-0" Continuous Welded Girder Bridge

57'-0" & 59'-0" End Spans Variable Interior Span

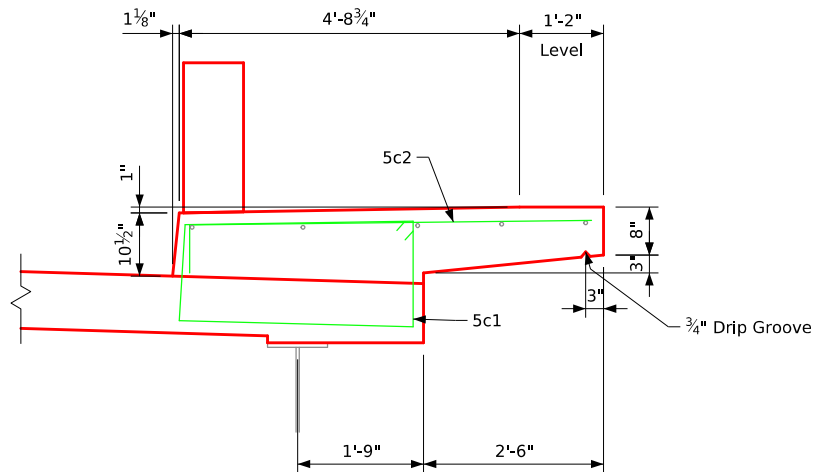
Abutment Details

STA. 11+93.36 (N.B. US 65) Turn-in Date: Aug 2026

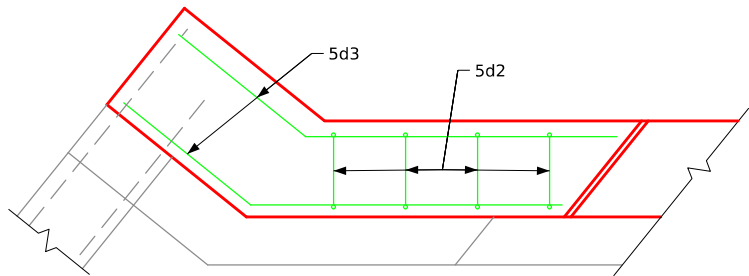
Cerro Gordo County

IOWA DEPARTMENT OF TRANSPORTATION

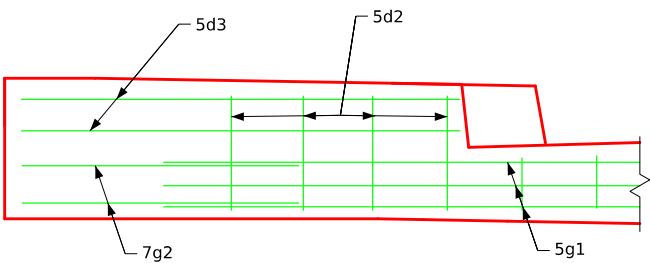
Design No. 528 Design Sheet No. 7 of 16 FHWA No. 018932



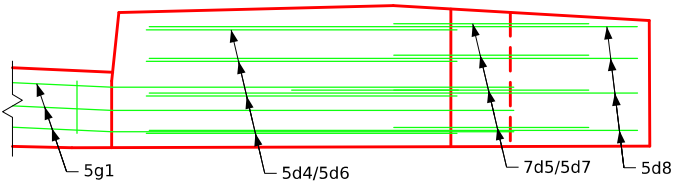
Section D-D



Section B-B



Section C-C



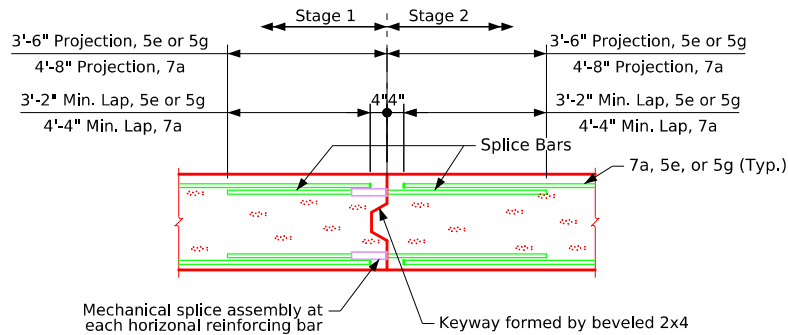
Section E-E

Mechanical Splice Assembly Notes:

The 7a1 deck bars, 5e2 & 5e3 diaphragm bars, and 5g1 bars in the abutment backwalls shall be spliced at the locations shown using mechanical splice assemblies. Mechanical splice assemblies consist of mechanical splicers and reinforcing splice bars as required to facilitate the use of the mechanical splicer. The mechanical splice assembly used shall meet the requirements of Materials I.M. 451 Appendix E. Reinforcing splice bars shall be a minimum of 5/8 inch dia.

All mechanical splice assemblies to be used shall be epoxy coated.

The cost of all splice assemblies is to be included in the price bid for "Reinforcing Steel Epoxy Coated" and no separate payment will be made. A total of 12 epoxy coated splice assemblies will be required

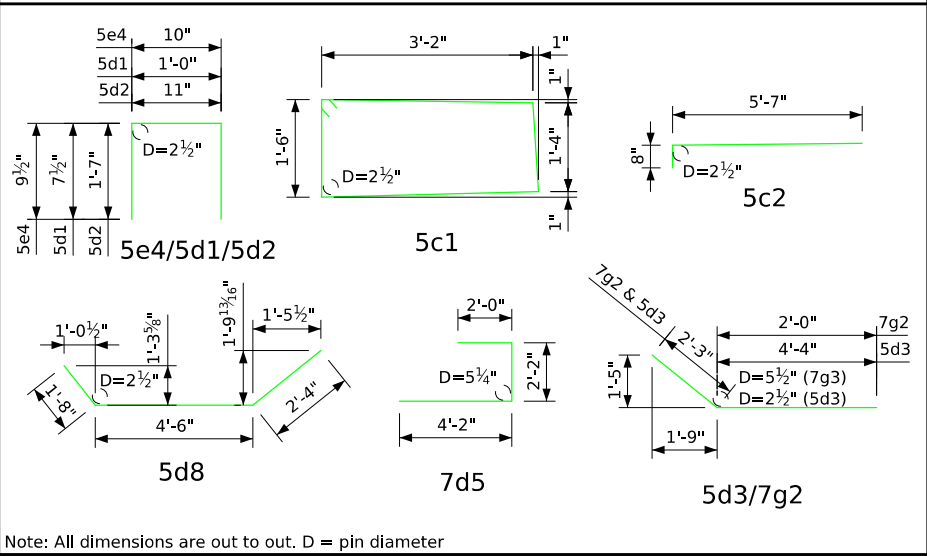


Mechanical Splice Detail

Epoxy Reinforcing Steel - North Abutment and Deck End

Bar	Location	Shape	No.	Length	Weight
7a1	Deck Transverse Top & Bott.		10	32'-2"	657
5c1	Slab to Sidewalk Hoops		8	10'-0"	83
5c2	Sidewalk, Transverse		8	6'-2"	51
5d1	Abutment Backwall		57	2'-3"	134
5d2	East Curb Top		4	4'-1"	17
5d3	East Curb Top		4	6'-7"	27
5d4	West Cub Top		8	5'-8"	47
7d5	West Cub Top		4	8'-4"	68
5d6	West Cub Top		4	4'-9"	20
5d7	West Cub Top		8	3'-8"	31
5d8	West Cub Top		4	8'-6"	35
5e1	Diaphragm, Between Girders (Outside)		4	11'-8"	49
5e2	Diaphragm, Between Girders (Inside)		2	5'-6"	11
5e3	Diaphragm, Horizontal		2	30'-0"	63
5e4	Diaphragm, Hoops		50	2'-5"	126
5g1	Backwall, Longitudinal		10	32'-6"	339
7g2	Backwall, Longitudinal at End		4	4'-3"	35
Total (lbs.)					1,793

Bent Bar Details



Concrete Placement Summary

Location	Stage 1	Stage 2
South Abutment Backwall & Curb	2.4	3.2
South End of Deck, Diaphragm, & Curb	4.0	4.0
Total (cy)	6.4	7.2

Design For Repairs to 20°-39° RA
196'-0" x 44'-0" Continuous Welded Girder Bridge
57'-0" & 59'-0" End Spans Variable Interior Span
Abutment Details
STA. 11+93.36 (N.B. US 65) Turn-in Date: Aug 2026
Cerro Gordo County
IOWA DEPARTMENT OF TRANSPORTATION
Design No. 528 Design Sheet No. 8 of 16 FHWA No. 018932



Epoxy Reinforcing Steel - Both Rails					
Bar	Location	Shape	No.	Length	Weight
6b1	Standard Rail, Vert.		633	2'-9"	2,634
5f1	Standard Rail, Longit.		48	38'-0"	1,902
Total (lbs.)					4,536



Concrete Placement Summary		
Section		Total
West Barrier Rail	188.04 at 0.064 Cu. Yds. Per Lin. Ft	12.0
East Barrier Rail	208.13 at 0.064 Cu. Yds. Per Lin. Ft	13.3
Total (Cu. Yds.)		25.3

Design For Repairs to 20°-39° RA

**196'-0" x 44'-0" Continuous
Welded Girder Bridge**

57'-0" & 59'-0" End Spans Variable Interior Span

Retrofit Barrier Rail Details

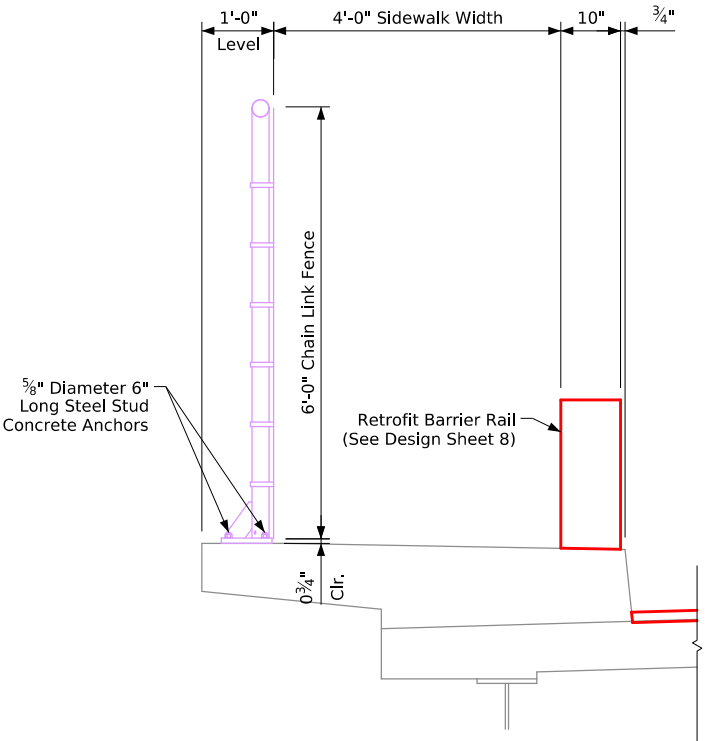
STA. 11+93.36 (N.B. US 65) Turn-in Date: Aug 2026

Cerro Gordo County

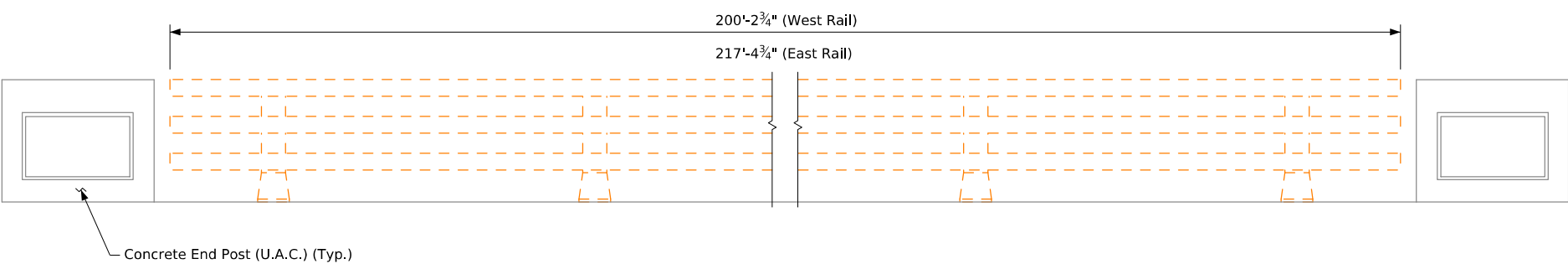
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 528 Design Sheet No. 9 of 16 FHWA No. 018932

Fence Placement Quantity		
Item	Unit	Total
Fence, Chain Link, 72in. Height	L.F.	418.63

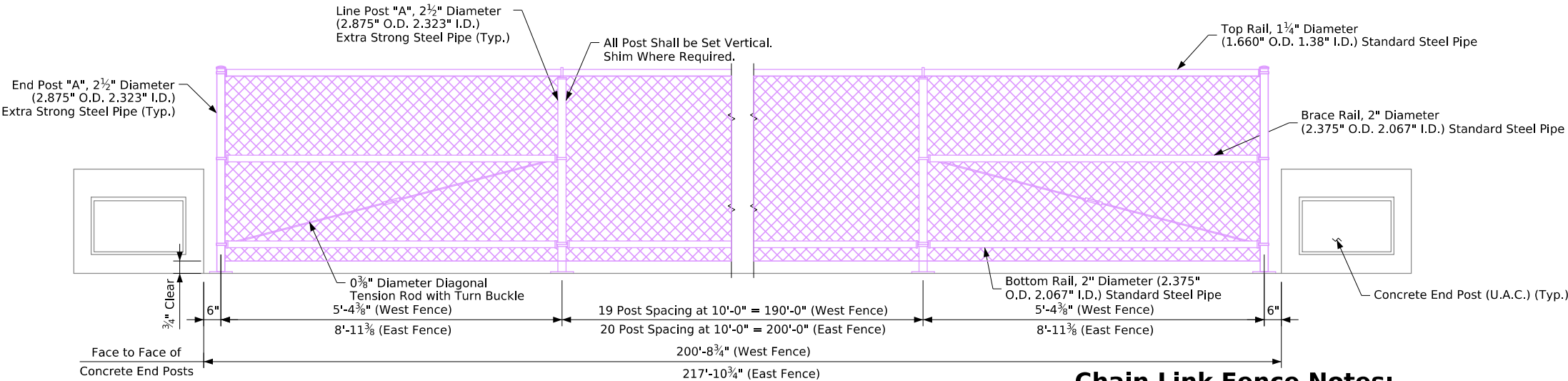


Typical Section



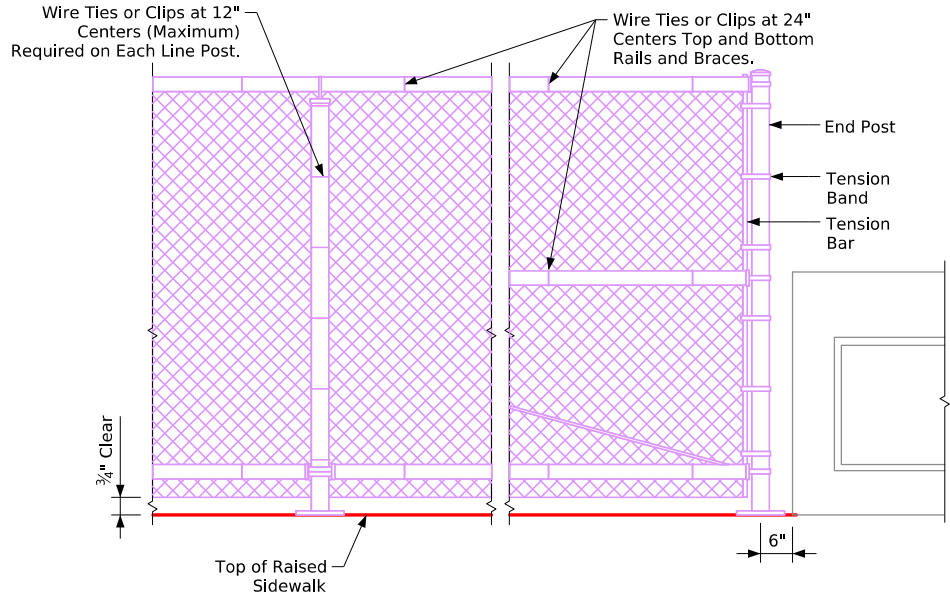
Removal Elevation

(For Removal Notes, See Design Sheet 2)



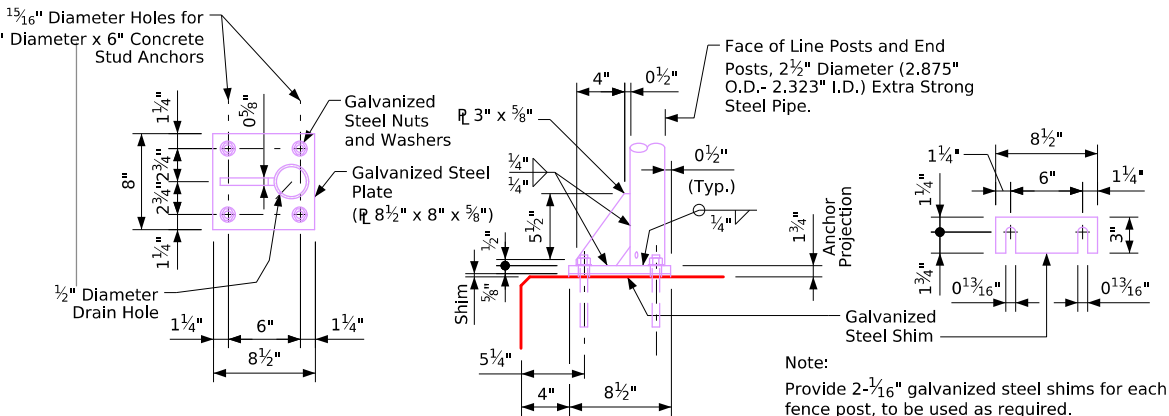
Elevation of Fence

Looking Towards Traffic (Maximum Post Spacing 10'-0")



Fence Detail View

Looking towards Traffic



Base Plate Details for End Posts and Line Posts

Post and base plates shall be galvanized, after fabrication, in accordance with the requirements of ASTM A123.

Chain Link Fence Notes:

The chain link fence is to be bid on a linear foot basis measured from centerline to centerline of end posts. The price bid for "FENCE, CHAIN LINK, 72IN. HEIGHT" shall be full compensation for furnishing all material, including concrete anchors and shims, and all of the equipment and labor required to erect the fence in accordance with these Plans and Specifications.

The chain link fence shall be either zinc or aluminum coated fabric, 2" mesh, no. 9 wires, 72" height with knuckled selvages top and bottom.

The stud concrete anchors shall be galvanized and have a minimum pullout strength of 8000 pounds based on 4000 psi concrete.

The material for posts, braces and rails shall be steel pipe in accordance with Article 4154.10, A, of the Standards Specifications. As an alternate, ASTM A500 Grade B pipe material may be substituted for the posts. Base plates and shims shall meet the requirements of ASTM A36. Posts and base plates shall be galvanized, after fabrication, in accordance with the requirements of ASTM A123. Special fittings shall be in accordance with Article 4154.11, of the Standard Specifications, unless otherwise noted.

The fence shall be true to line, taut, and comply with the best practice for fence construction of this type. All ends of wires shall be turned so that they extend away from the sidewalk side of the fence.

Do not attach signs, company advertising, or other insignia to the completed fence.

Design For Repairs to 20°-39° RA

196'-0" x 44'-0" Continuous Welded Girder Bridge

57'-0" & 59'-0" End Spans Variable Interior Span

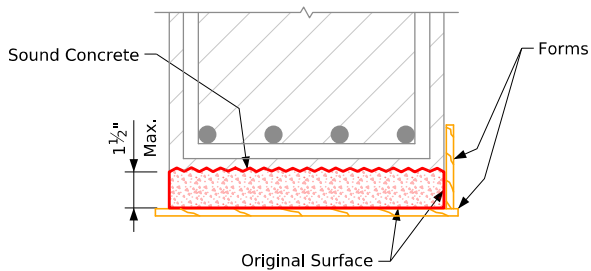
Fence Details

STA. 11+93.36 (N.B. US 65) Turn-in Date: Aug 2026

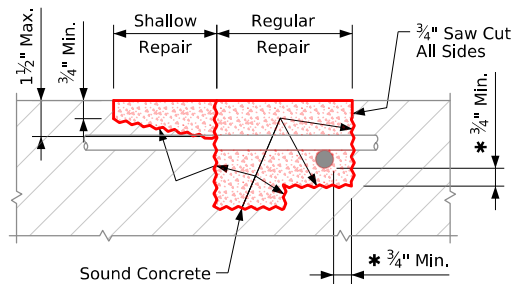
Cerro Gordo County

IOWA DEPARTMENT OF TRANSPORTATION

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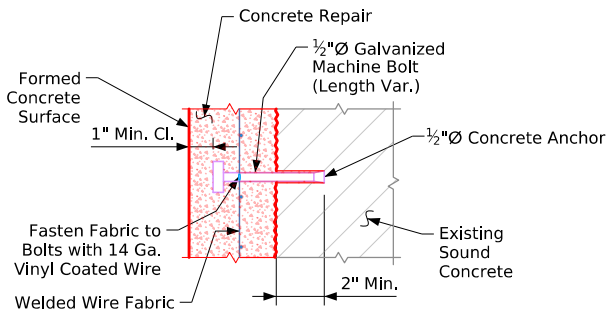


Shallow Repair
Bottom Surface



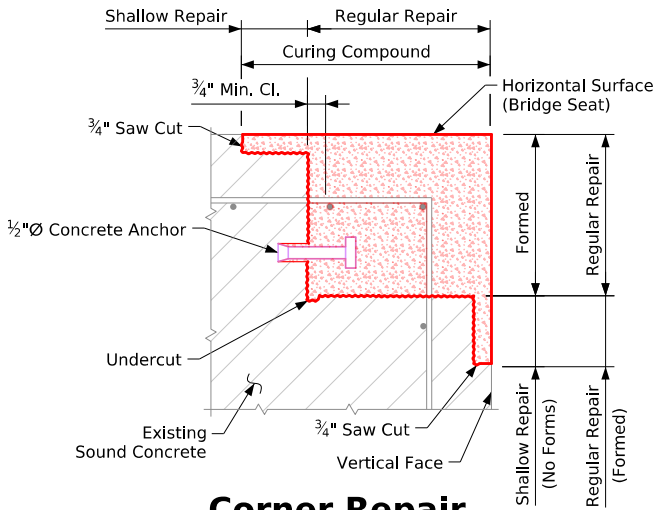
Repair Definition

* Indicates Clearance for an Un-Bonded Rebar.

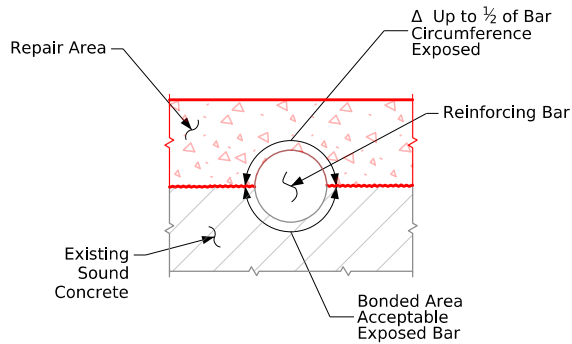


Anchor Detail

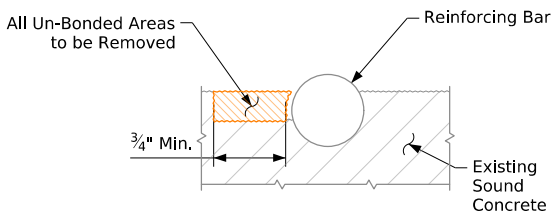
For Spacing and Use of Concrete Anchors and WWF See the Repair Notes.



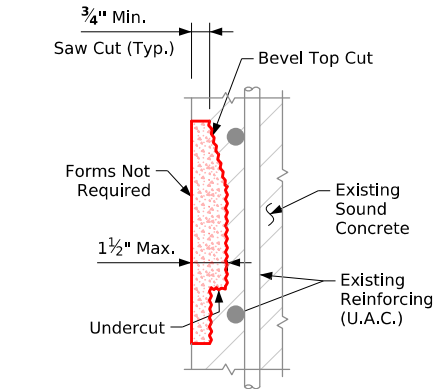
Corner Repair



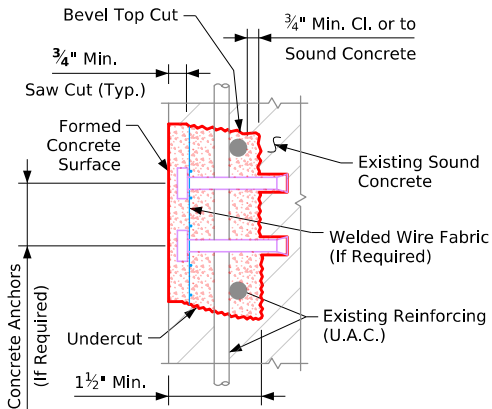
Δ If more than 1/2 of the rebar is exposed it shall be treated as an un-bonded rebar.



Concrete Removal
Adjacent to Reinforcing



Shallow Repair
Vertical Face



Regular Repair
Vertical Face

Repair Notes:

- The spalled and hollow areas of this bridge as noted and shown in these plans shall be repaired as follows:
- All the costs of equipment and materials required to repair the spalled and hollow areas of this bridge shall be included in the price bid for "Concrete Repair".
 - The price bid for "Concrete Repair" shall include the cost of all concrete anchors and welded wire fabric required by the plans.
 - The Engineer shall determine and outline by visual and audible inspection the actual areas of the concrete repairs. The Contractor shall be paid for the actual amount of repairs made on a square foot basis based on the price bid per square foot.
 - All existing reinforcing bars that are exposed by the concrete removal shall be cleaned and carefully incorporated into the new work, except badly deteriorated existing reinforcing which shall be replaced as directed by the Engineer.
 - The concrete anchors required shall have a minimum pull out of 5,000 lbs based on 4,000 psi concrete. An anchor meeting the requirements of Iowa D.O.T. Materials I.M. 453.09 and the pull out load above is required. The anchors shall be galvanized and shall be installed according to recommendations of the Manufacturer. The cost of furnishing and installing the concrete anchors shall be included in the price bid for "Concrete Repair".
 - The welded wire fabric shall be ASTM A185 and galvanized as per ASTM A-641. The WWF wires shall be spaced 3x3 or 4x4 and the wires shall have a nominal area of 0.014 to 0.029 square inch inclusive, example "WWF 3x3 - W1.4xW2.9".
- Where reinforcement has been exposed and clearance around the periphery of the existing bar is provided, no supplemental reinforcing is required, except where existing reinforcement density and pattern are such that individual open spaces between bars are of 1.5 square feet or larger. For this condition 1/2"Ø concrete anchors and welded wire fabric shall be installed at the rate of one concrete anchor with WWF per each 1.5 square feet of area within each open space.
- Repairing the structural concrete shall be in accordance with Section 2426 of the Standard Specifications.

Concrete Placement Quantities			
Mark	Type	Units	Quantity
①	Shallow Repair	Sq. Ft.	77.7
②	Regular Repair	Sq. Ft.	464.3
		Total (Sq. Ft.)	542.0

Estimated Concrete Repair Quantities		
Description	Units	Amount
Concrete Repair	Sq. Ft.	542.0

Note: Concrete repairs to be made on the existing north abutment, both sidewalk and sidewalk curbs, and north abutment slope protection cutoff wall. Approximate locations of some repairs are shown on Design Sheet 11. Actual locations to be repaired shall be determined in the field by the engineer.

Design For Repairs to 20°-39° RA

196'-0" x 44'-0" Continuous
Welded Girder Bridge

57'-0" & 59'-0" End SpansVariable Interior Span

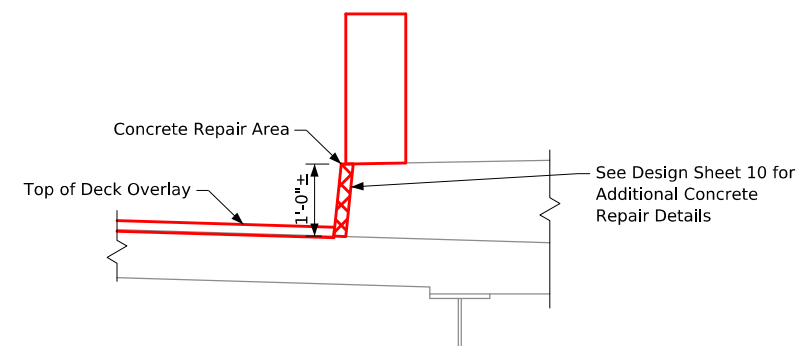
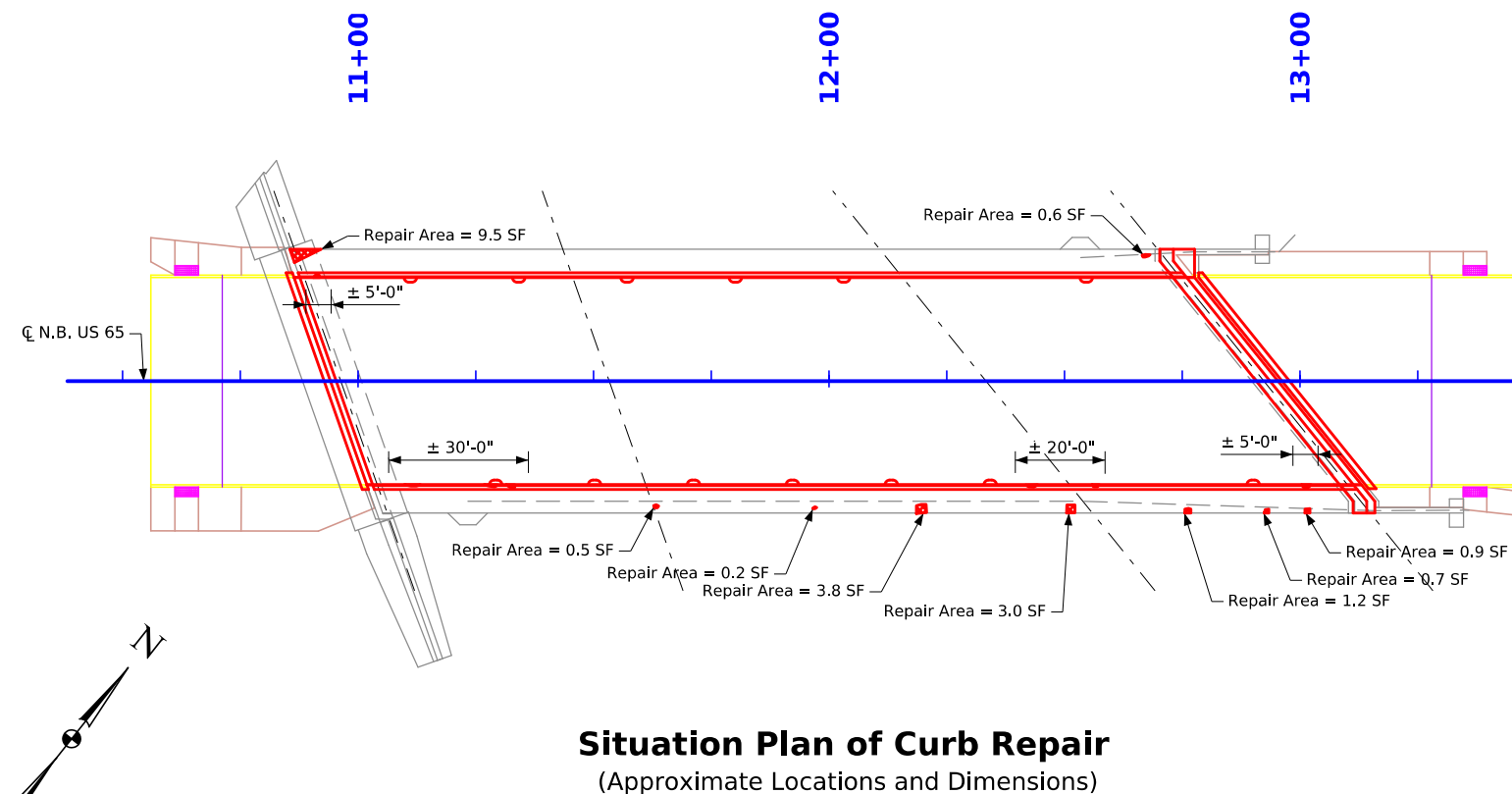
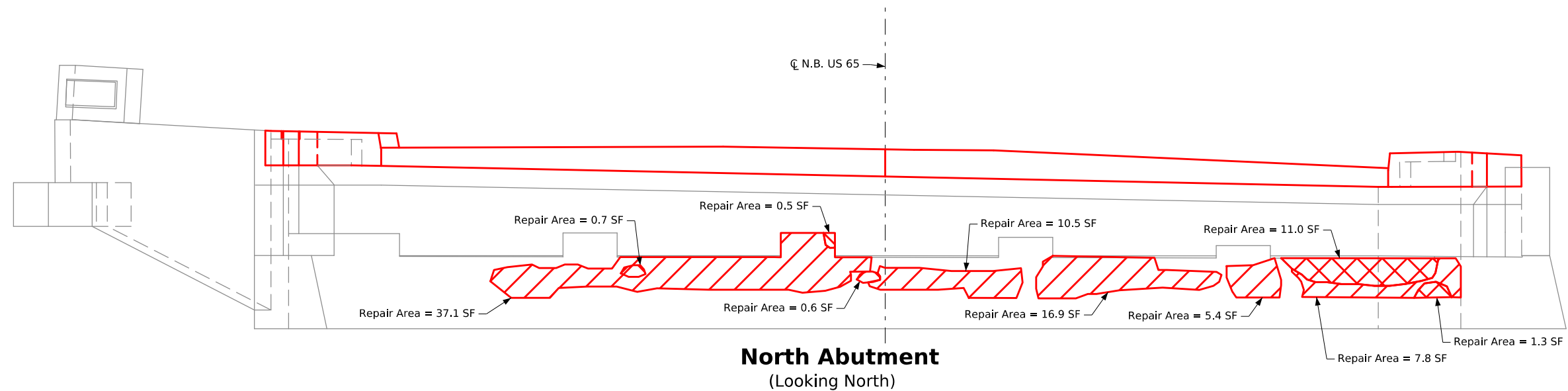
Concrete Repairs

STA. 11+93.36 (N.B. US 65)Turn-in Date: Aug 2026

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Detail of Concrete Curb Repair

Legend	
	Indicates Regular Repair
	Indicates Shallow Repair

Design For Repairs to 20°-39° RA

196'-0" x 44'-0" Continuous Welded Girder Bridge

57'-0" & 59'-0" End Spans Variable Interior Span

Concrete Repairs

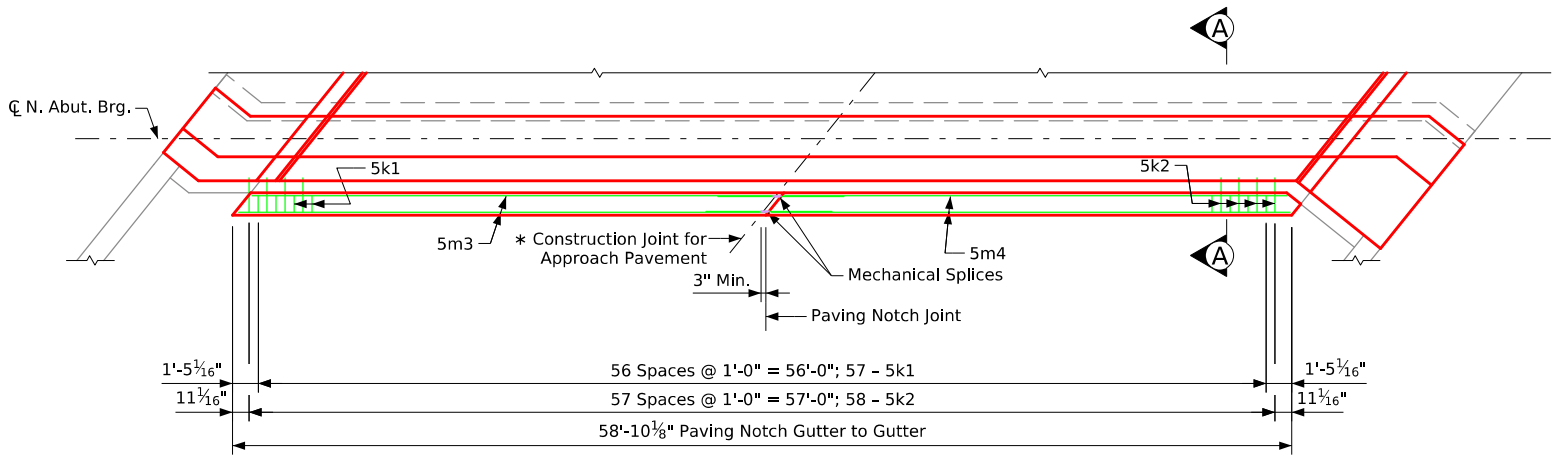
STA. 11+93.36 (N.B. US 65) Turn-in Date: Aug 2026

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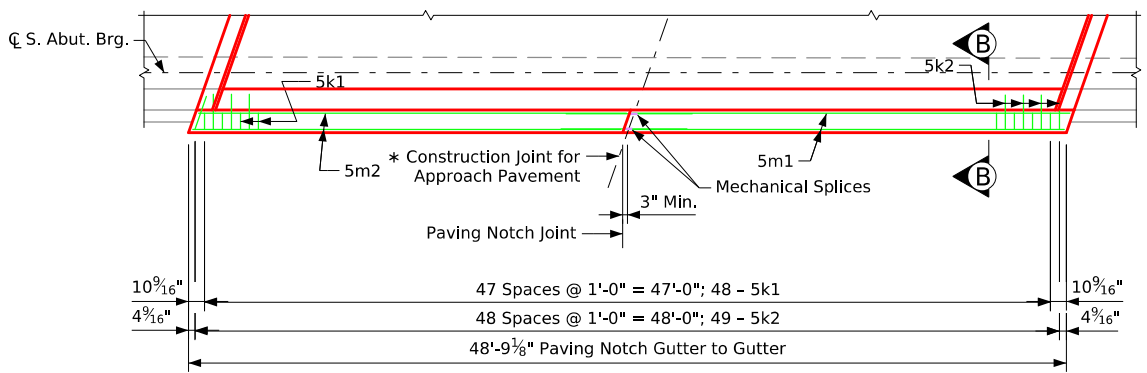
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 528 Design Sheet No. 12 of 16 FHWA No. 018932

* Construction joint for notch repair to extend a minimum of 3 inches past construction joint for pavement.

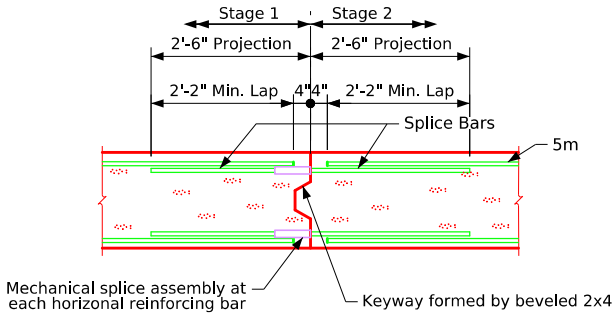


Part Plan View At North Abutment



Part Plan View At South Abutment

Note: New paving notch replacement should extend from bridge wingwall to bridge wingwall.



Mechanical Splice Detail

Paving Notch Replacement Notes:

The Paving Notch Replacement is to be Class "C" structural concrete. Minimum clear distance from face of concrete to near reinforcing bar is to be 2", unless otherwise noted or shown. The bid item "Paving Notch Replacement" linear feet, shall include all costs of labor and materials associated with excavation, removing, and disposing of the existing paving notch, granular backfill and compaction as needed, and installing the new paving notch. This work shall include, cutting of the existing #5 bars, removing the concrete for the shear keyways, drilling the holes for the deformed dowels, and constructing the new notch to the dimensions shown. The new notch is estimated at 0.07 cubic yards per foot of structural concrete, 16.0 pounds of epoxy coated reinforcing steel per foot, and 1.3 pounds of stainless steel per foot. Removals shall be in accordance with Section 2401, of the Standard Specifications.

Dowel Setting Note:

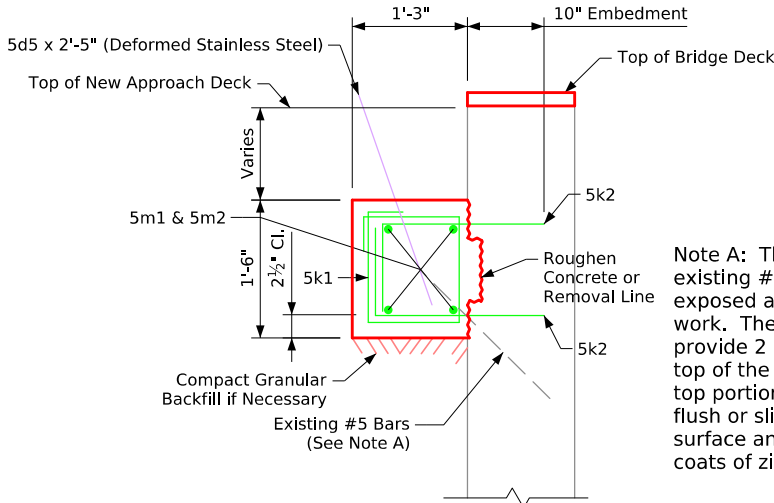
The deformed 5k2 & 5k3 bars shall be set as dowels in drilled holes. Holes are to be 10" deep. Polymer grout system shall be used to install the deformed dowel bars in accordance with Article 2301.03,E, of the Standard Specifications and the Grout Manufacturer's recommendations.

Mechanical Splice Assembly Notes:

The 5m1, 5m2, 5m3, and 5m4 bars in the paving notch shall be spliced at the locations shown using mechanical splice assemblies. Mechanical splice assemblies consist of mechanical splicers and reinforcing splice bars as required to facilitate the use of the mechanical splicer. The mechanical splice assembly used shall meet the requirements of Materials I.M. 451 Appendix E. Reinforcing splice bars shall be a minimum of 5/8 inch dia.

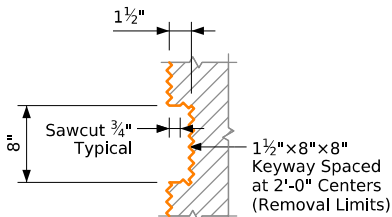
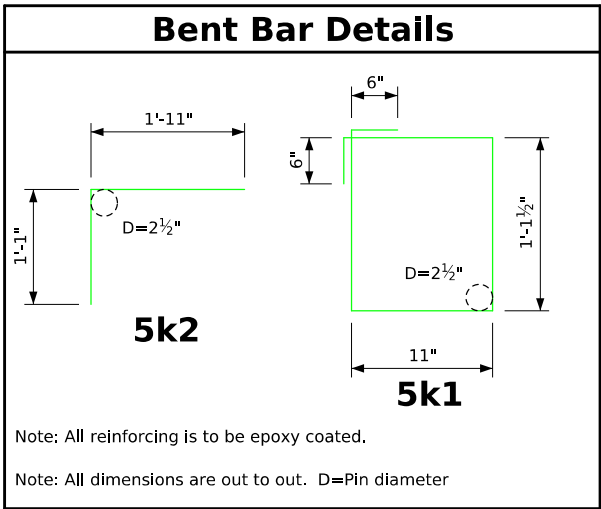
All mechanical splice assemblies to be used shall be epoxy coated.

The cost of all splice assemblies is to be included in the price bid for "Paving Notch Replacement" and no separate payment will be made. A total of 8 epoxy coated splice assemblies will be required

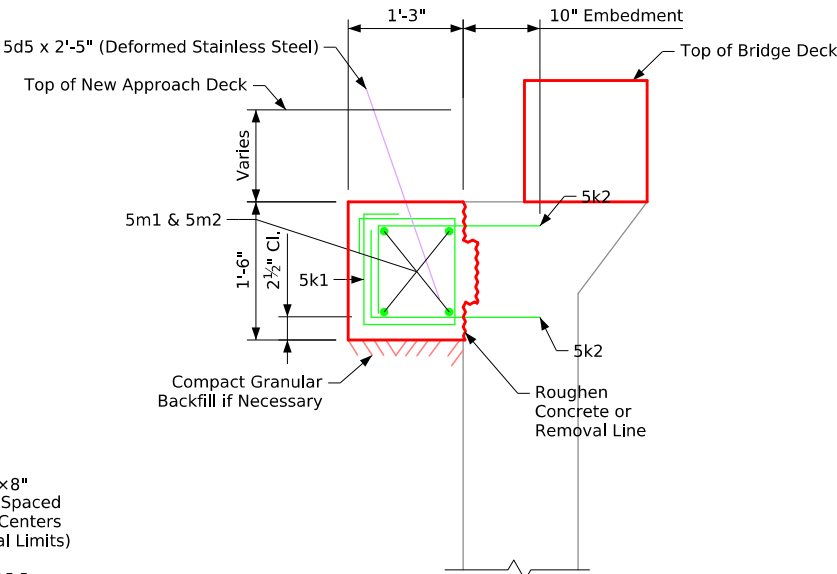


Part Section B-B

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



1 1/2" x 8" Keyway Detail

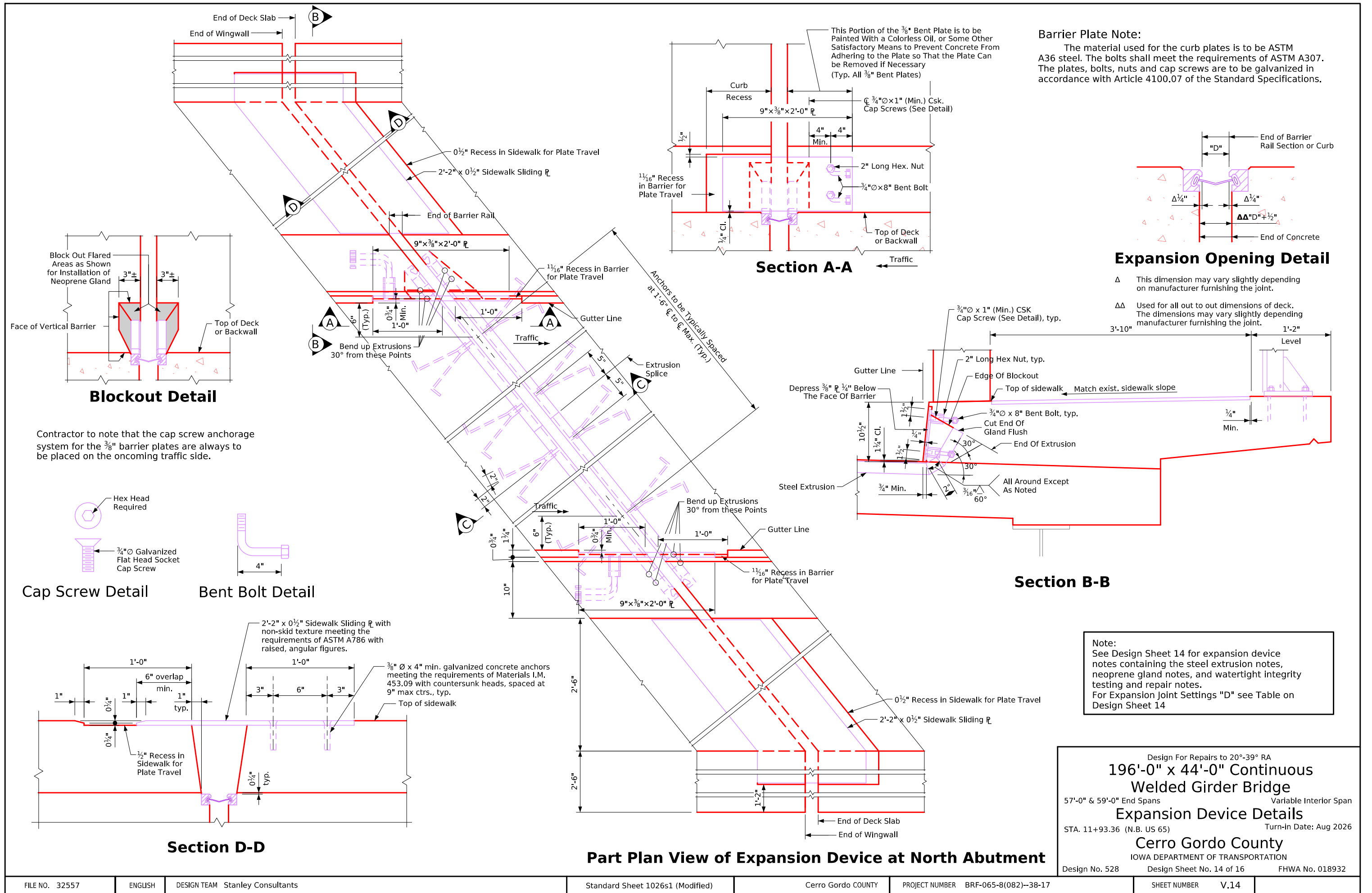


Part Section A-A

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

Note: Refer to roadway plans for approach pavement standard road plans.

Design For Repairs to 20°-39° RA
196'-0" x 44'-0" Continuous Welded Girder Bridge
57'-0" & 59'-0" End Spans Variable Interior Span
Paving Notch Replacement Details
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The Contractor shall submit for approval shop drawings of the expansion devices showing layout, material to be used, and provisions for the holding device during placement of concrete.

The expansion device is to be parallel to grade.

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

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

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

Technical drawings of a bolted connection, showing End View and Section Thru Extrusion.

End View: Shows a 5/8" Ø Galvanized Bolt passing through a 3" x 4 1/2" x 1 1/2" (Tab Plate). The bolt is secured with a 3/16" x 60° washer. A note states: "All surfaces not in contact with concrete to be ground flush".

Section Thru Extrusion: Shows the bolt passing through a 3" x 4 1/2" x 1 1/2" (Tab Plate) and a 5/8" Ø x 0'-2 1/4" H.T.S. Bolt. The drawing includes dimensions for the bolt, washer, and tab plate, as well as a note: "Typ. 3/16 60°".

Design For Repairs to 20°-39° RA

**196'-0" x 44'-0" Continuous
Welded Girder Bridge**

57'-0" & 59'-0" End Spans Variable Interior Span

Expansion Device Notes

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Self Expanding Sealant System Notes:

The self-expanding sealant system shall be in accordance with Article 4136.03, E of the Standard Specifications, and Iowa dot Materials I.M. 436.07. the self-expanding sealant system shall be from the Iowa DOT Materials Approved Product Listing Enterprise (MAPLE).

A technical representative of the Manufacturer shall be provided at the jobsite during installation to review procedures.

The sealant system shall be installed per Manufacturer's recommendations with the following possible exception: a field-applied silicone sealant edge bead as noted and shown on this sheet shall be applied regardless of whether or not the manufacturer requires this step. If the Manufacturer does not include this step in their standard procedure the silicone sealant used in this step shall be identical to the sealant provided by the manufacturer for use on the butt splice.

The sealant system shall extend full width out-to-out of structure. To prevent open drainage onto the abutments, upturned ends shall be created in the curbs using a notch and miter method. Follow the guidance provided by Manufacturer's recommendations and/or technical representative.

Sealant width must be sized so that it can be installed in the proper width opening. Contact the Manufacturer for information required by them to assure appropriate size is ordered. The Contractor shall be responsible for coordinating the actual product dimensions with the technical representative. Dimensions in these plans are based on a joint opening of 1¼" (perpendicular to the joint) at the west abutment.

All costs associated with installing the self-expanding sealant system shall be included in the price bid for "Preformed, Pre-Compressed, Self-Expanding, Sealant System with Silicon Pre-Coated Surface". The price for "Preformed, Pre-Compressed, Self-Expanding, Sealant System with Silicon Pre-Coated Surface" shall include full compensation for furnishing, installing, and testing of the new sealant system. This work will consist of installation of the sealant system and watertight testing of the sealant system. All work and materials necessary for the installation of the sealant system shall comply with the recommendations of the sealant system Manufacturer except as noted and shown. The price bid for this item shall include all watertight integrity testing, leak repairs as directed by the Engineer, and subsequent watertight testing until a leak free installation is achieved.

Self-Expanding Sealant System Watertight Integrity Testing And Repair Notes:

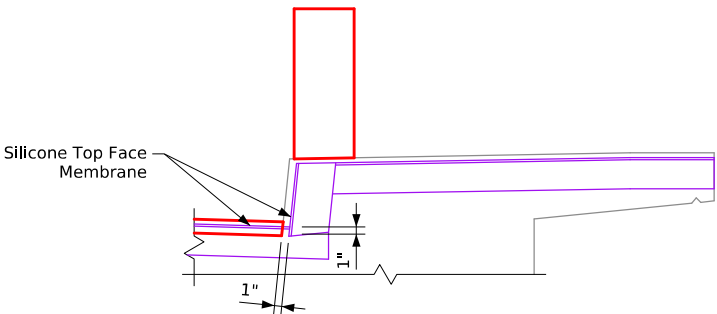
After installation of the glued-in foam seal, the Contractor shall perform watertight integrity tests at the deck level to detect any leakage. The tests are to check for leakage at the upturned ends of the expansion device and for leakage along the expansion device across the deck. The Contractor may conduct separate tests of upturned ends and one or more tests of overlapping lengths between the upturned ends.

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

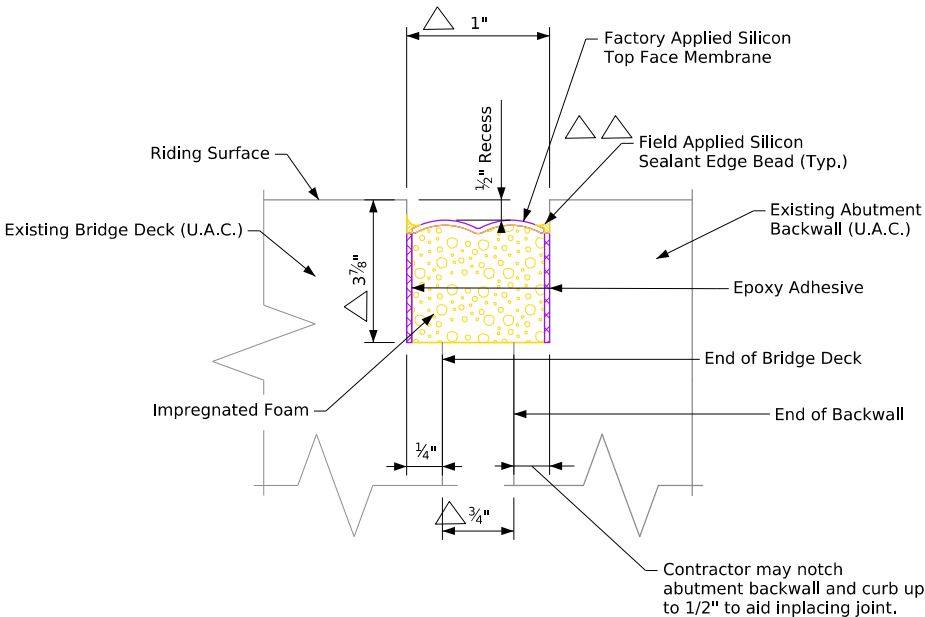
The Contractor shall test the expansion device between upturned ends by blocking out and covering the device with ponded or flowing water to a depth of at least 1" at all points, for at least 30 minutes. Vertical curb surfaces may be tested with an unnozzled hose delivering approximately one gallon per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

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

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



Section Thru Joint At Curb



Section Thru South Abutment Joint

(Section Normal To Joint)

△ Contractor shall verify joint dimensions prior to ordering joint sealant system material from the manufacturer.

△△ Before the epoxy adhesive cures, force the tip of the sealant tube between the substrate and foam. Inject a 3/4" deep silicone top face membrane and substrate. Using a caulk knife, tool the overflow silicone sealant into a cove bead between the silicone top face membrane and the substrate.

Design For Repairs to 20°-39° RA

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57'-0" & 59'-0" End SpansVariable Interior Span

Joint Details

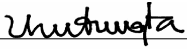
STA. 11+93.36 (N.B. US 65)Turn-in Date: Aug 2026

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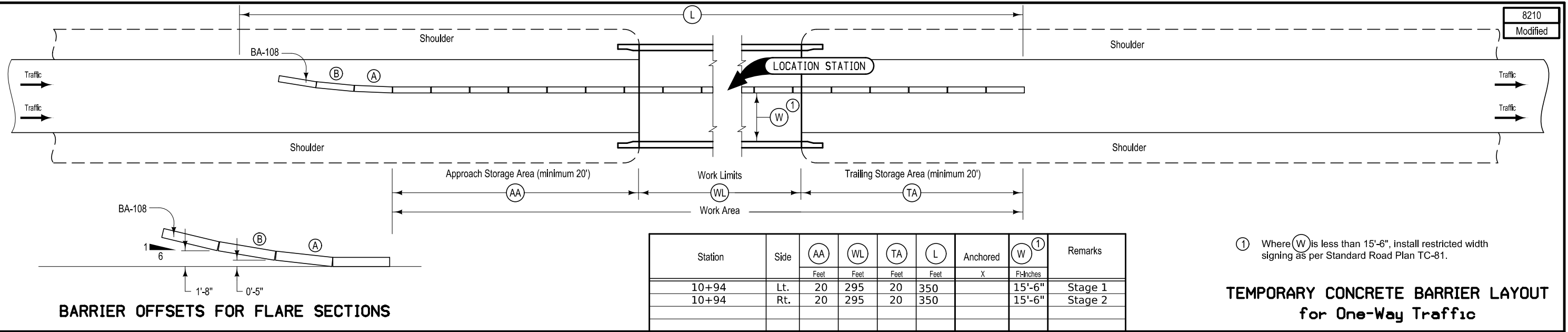
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 528Design Sheet No. 16 of 16FHWA No. 018932

INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	Title Sheets
A.3	Title Sheet
B Sheets	Typical Cross Sections and Details
B.1	Typical Cross Sections and Details
C Sheets	Quantities and General Information
C.1	Estimated Project Quantities
C.2 - 3	Tabulations
C.4	Standard Road Plans
D Sheets	Mainline Plan and Profile Sheets
D.1	Plan & Profile Legend & Symbol Informatin Sheet
D.2	US-65
J Sheets	Traffic Control and Staging Sheets
J.1 - 3	Traffic Control Plan
S Sheets	Sidewalk Sheets
U Sheets	500 Series, Mod.Stds. and Detail Sheets
U.1	Modified Standard Road Plan BA-108

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.
	 04-24-2026
	Signature Dung T. Ta Printed or Typed Name
	Date
	My license renewal date is December 31, 20 27
Pages or sheets covered by this seal: A.03; B.1; C.1-C.4; D.1-D.2; J.1-J.3; S.1-S.3 and U.1	

DESIGNER INFORMATION



ESTIMATED PROJECT QUANTITIES AND REFERENCE NOTES

Roadway Items : Roadway Items

Item no.	Item Code	Item	Unit	Quantities	Estimate Reference Notes
				Estimated	
				Roadway Items	
1	2301-0690203	BRIDGE APPROACH, BR-203	SY	469	Refer to Tabulation 112-6 in the C sheets for details.
2	2412-0000100	LONGITUDINAL GROOVING IN CONCRETE, BRIDGE DECK	SY	1,427	Refer to Tab 100-28 in the C sheets for details.
3	2510-6745850	REMOVAL OF PAVEMENT	SY	469	Refer to Tabs.110-1 in the C sheets for details.
4	2511-6745900	REMOVAL OF SIDEWALK	SY	115	Sidewalk will be closed during construction.
5	2511-7526004	SIDEWALK, P.C. CONCRETE, 4 IN.	SY	130.56	Refer to Typical 7401 in the S sheets for details.
6	2511-7526006	SIDEWALK, P.C. CONCRETE, 6 IN.	SY	25.1	Refer to S sheets for details. Sidewalk will be closed during construction.
7	2511-7528101	DETECTABLE WARNINGS	SF	20	Refer to S sheets for details.
8	2513-0001081	CONCRETE BARRIER, TAPERED END, BA-108	EACH	2	Refer to Tab. 108-30 in the C sheets for details.
9	2527-9263181	PAVEMENT MARKINGS REMOVED	STA	9.87	Refer to Tab. 108-22 in the C sheets for details.
10	2527-9263209	PAINTED PAVEMENT MARKINGS, WATERBORNE OR SOLVENT-BASED	STA	8.51	Refer to Tab. 108.22 in the C sheets for details.
11	2527-9263212	PAINTED PAVEMENT MARKINGS, HIGH-BUILD WATERBORNE	STA	1.36	Refer to Tab. 108-22 in the C sheets for details.
12	2527-9263231	REMOVABLE TAPE MARKINGS, WET RETROREFLECTIVE	STA	4.42	
13	2528-2518000	SAFETY CLOSURE	EACH	2	Refer to J sheets for location Stage 1 and Stage2.
14	2528-8400048	TEMPORARY BARRIER RAIL, CONCRETE	LF	700	Refer to sheet B.01, Tab.108-33 in the C sheets and J sheets for details. All temporary barrier rail shall be nominal 12'-6 long concrete units.
15	2528-8445110	TRAFFIC CONTROL	LS	1	Refer to J sheets for Traffic Control.
16	2551-0000110	TEMP CRASH CUSHION	EACH	4	Refer to Tab 108-30 on the C sheets for details. Winterize sand filled or water filled crash cushions according to the manufacturer's recommendations if they are to remain in place during winter months.

PAVEMENT MARKING LINE TYPES

See PM-110
***MNY4 - Factor of 1.00 as value includes number of 4-inch passes to cover median nose area.

*BCY4 - Place on the same side of the roadway to match existing markings near the project.
**NPY4 - For estimating purposes only. No Passing Zone Lines will be located in the field.

BLW4: Broken Lane Line (White) @ 0.17 ELW4: Edge Line Right (White) @ 0.67 ELY4: Edge Line Left (Yellow) @ 0.67

Location								Length by Line Type (Unfactored)														Remarks
Road ID	Station to Station		Dir. of Travel	Marking Type	Side			BLW4	ELW4	ELY4												
					L	C	R															
US 65		16+88.83	EB	PAVEMENT MARKINGS REMOVED		X		8.00														Removal
US 65			EB	WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS	X				1.65													Stage 1
US 65			EB	PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED	X				6.35													Stage 1
US 65			EB	WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS	X				1.65													Removal Stage 1
US 65			EB	PAVEMENT MARKINGS REMOVED	X				6.35													Removal Stage 1
US 65																						Stage 2
			EB	WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS			X			1.65												Stage 2
			EB	PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED			X			6.35												Removal Stage 2
			EB	WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS			X			1.65												Removal Stage 32
			EB	PAVEMENT MARKINGS REMOVED			X			6.35												
			EB	PAINTED PAVEMENT MARKINGS, HIGH-BUILD WATERBORNE		X		8.00														Back to original
				Factored Total: PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED				-	4.25	4.25	-	-	-	-	-	-	-	-	-	-	-	
				Factored Total: PAINTED PAVEMENT MARKINGS, HIGH-BUILD WATERBORNE				1.36	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Factored Total: WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS				-	2.21	2.21	-	-	-	-	-	-	-	-	-	-	-	
				Factored Total: PAVEMENT MARKINGS REMOVED				1.36	4.25	4.25	-	-	-	-	-	-	-	-	-	-	-	
				Bid Quantity: 2527-9263209 - PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED							8.51											
				Bid Quantity: 2527-9263212 - PAINTED PAVEMENT MARKINGS, HIGH-BUILD WATERBORNE							1.36											
				Bid Quantity: 2527-9263231 - WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS							4.42											
				Bid Quantity: 2527-9263181 - PAVEMENT MARKINGS REMOVED							9.87											

REMOVAL OF PAVEMENT							110-1 04-16-13
Refer to Tabulation 102-5							
* Not a Bid Item							
Begin Station	End Station	Side	Pavement Type	Area	Saw Cut*	Remarks	
				SY	LF		
10+56.00	10+94.15			190.5	44.0	South Bridge Approach Pavement	
12+95.36	13+51.00			278.5	44.0	North Bridge Approach Pavement	

SAFETY CLOSURES				108-13A 03-27-25
Refer to Section 2528 of the Standard Specifications				
Station	Closure Type		Remarks	
	Road Qty.	Hazard Qty.		
	1		Refer to J sheets for	
	1		location Stage 1 and	
			Stage 2	

105_04 10/20/26 STANDARDS The following Standards apply to construction work on this project.		
Number	Date	Title
BA-108	10/18/2022	Concrete Barrier Tapered End Section
BA-401	4/20/2021	Temporary Barrier Rail (Precast Concrete)
BA-500	4/20/2021	Temporary Crash Cushions Sand Barrel
BR-203	10/20/2026	Double Reinforced 12in Approach
BR-211	4/21/2026	Bridge Approach (Abutting PCC or Composite Pavement)
PM-110	10/15/2024	Line Types
PV-101	10/20/2026	Joints
TC-252	10/20/2026	Routes Closed to Traffic
TC-402	4/18/2023	Work Within 15 ft of Traveled Way

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

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

UTILITY LEGEND

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	50%
Yellow	(4)		Proposed Pavement Shading	50%
Orange	(6)		Proposed Granular Shading	50%
Orange	(70)		Proposed Shoulder Granular Shading	50%
Yellow	(68)		Proposed Shoulder Paved Full Depth Shading	50%
Yellow	(132)		Proposed Shoulder Paved Partial Depth Shading	50%
Brown, Light	(236)		Grading Shading	50%
Orange, Light	(134)		Proposed Granular Entrance Shading	50%
Yellow	(220)		Proposed Paved Entrance Shading	50%
Tan	(8)		Proposed Sidewalk Shading	50%
Blue, Light	(230)		Proposed Sidewalk Landing Shading	50%
Pink	(11)		Proposed Sidewalk Ramp Shading	50%
Red	(3)		Proposed Structure Shading	50%
Red	(3)		Delineates Restricted Areas	0%

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



Section Corner



Ground Line Intercept



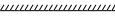
Saw Cut



Guardrail



Trench Drain



HighTension Cable Guardrail



Sheet Pile



Pavement Removal



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

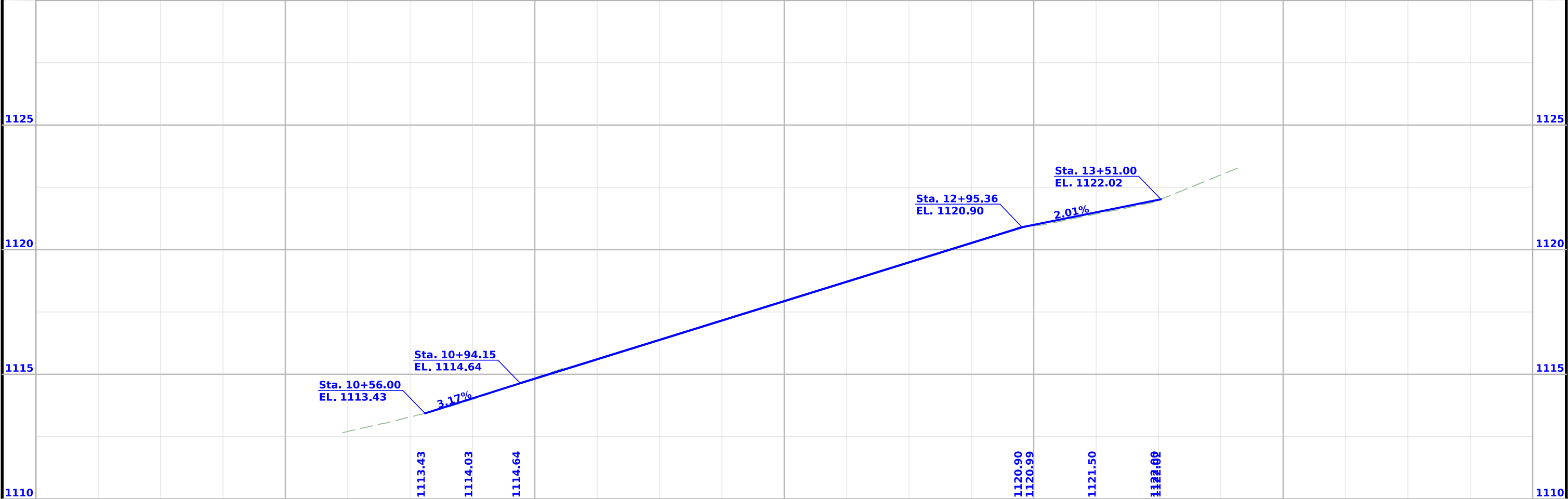
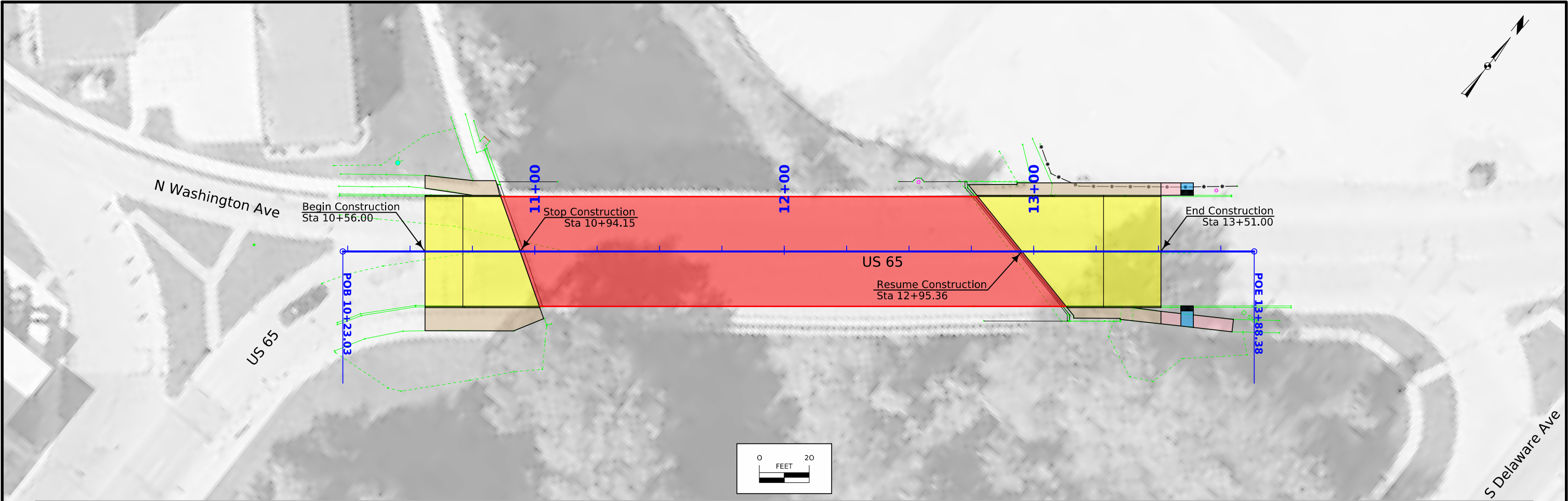
C/A Access Control

 Property Line Symbol

 Property Line

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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



108-23A
08-01-08

TRAFFIC CONTROL PLAN

Traffic on US 65 shall be maintained at all times utilizing the Standard Road Plans listed in the Tab.105-4 in the C sheets.Refer to J Sheets for Traffic Control details.

Sidewalk will be closed during construction refer to J sheets for locations.

111-01
04-17-12

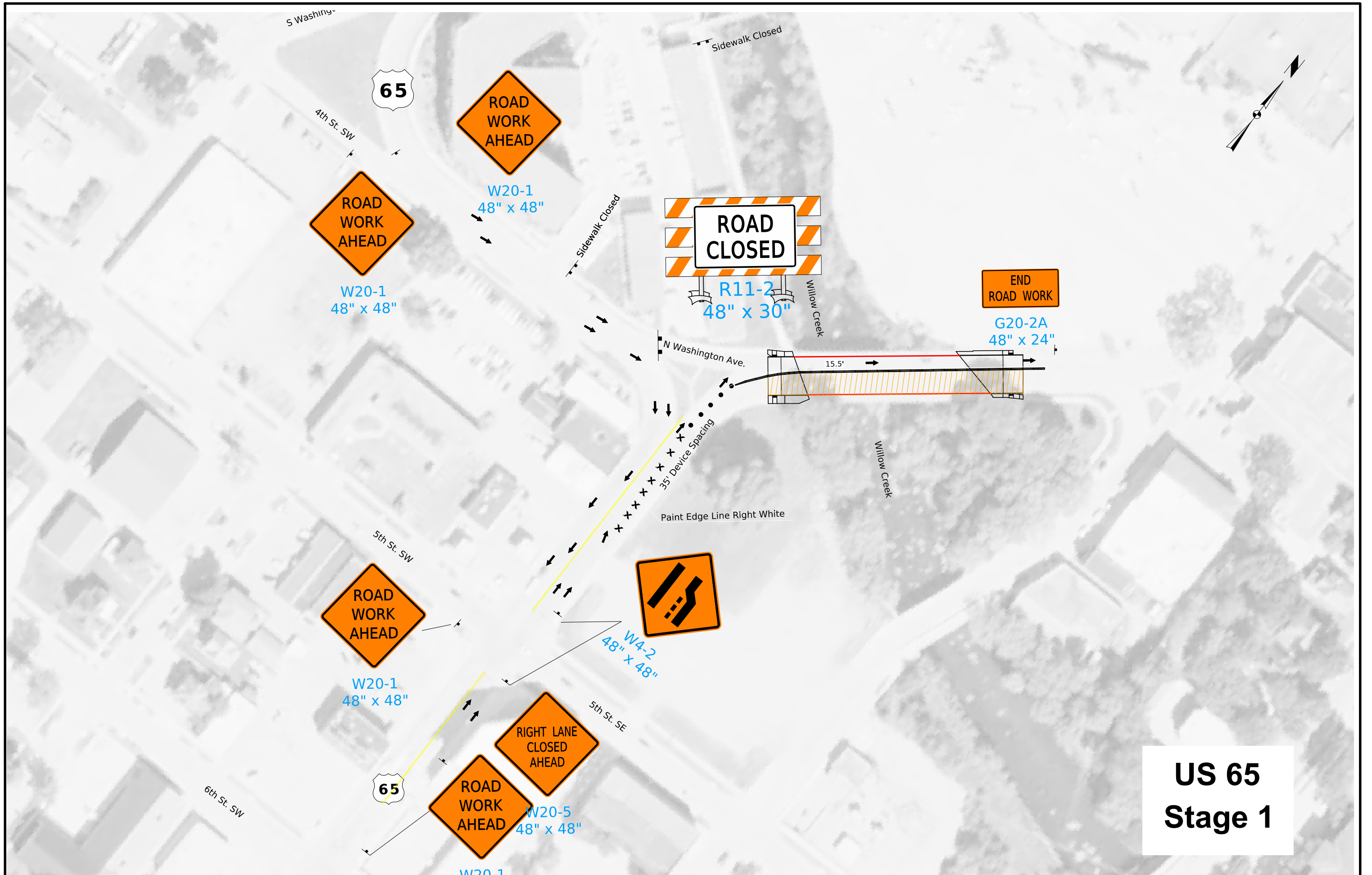
COORDINATED OPERATIONS

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.

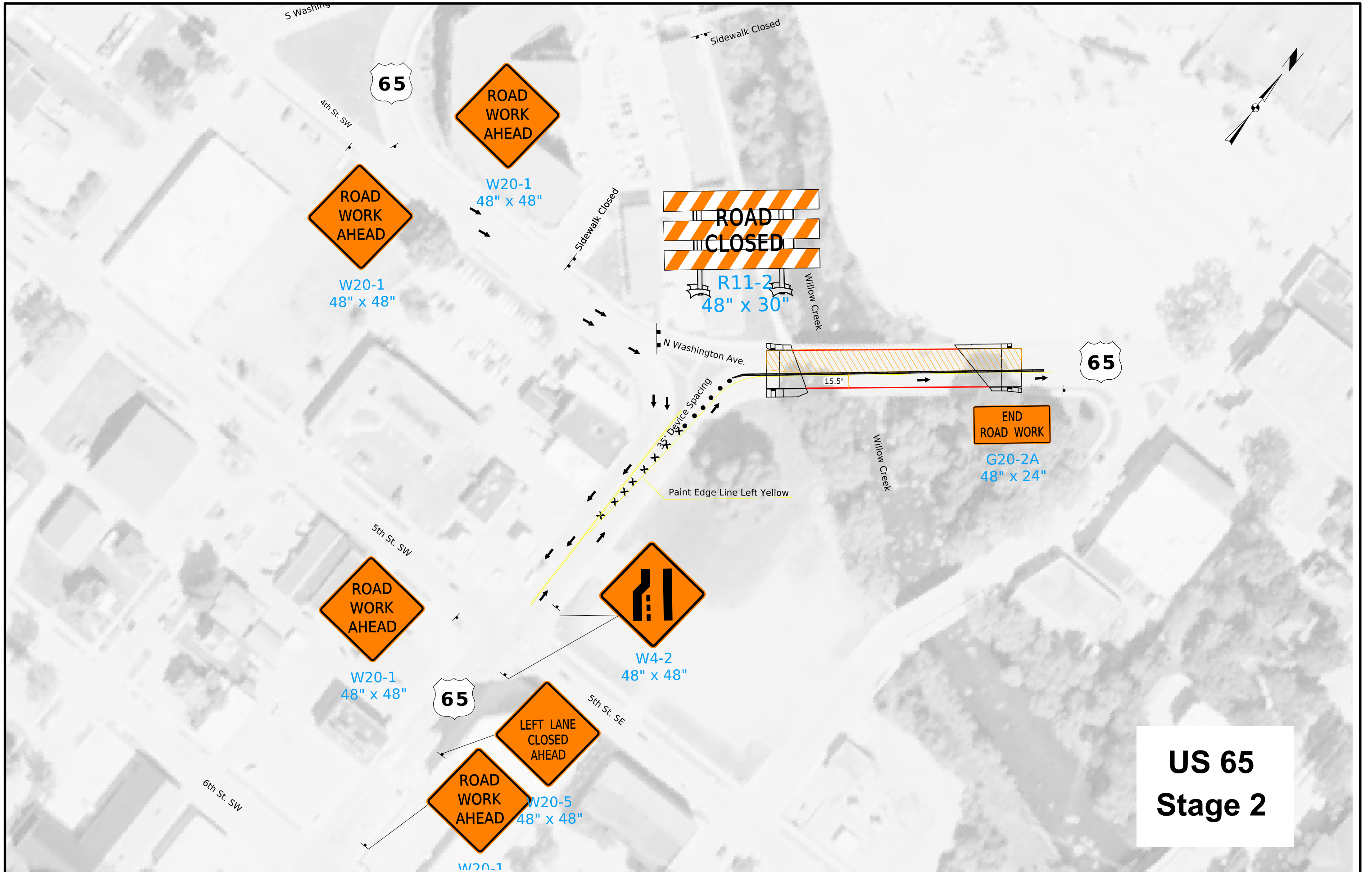
Project	Type of Work
None Provided	

108-25
10-21-14

511 TRAVEL RESTRICTIONS												
Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No., Structure ID, or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
NB US 65	NB	Cerro Gordo	The Bridge on MB US over Willow Creek, 0.1 mi N of WB IA 22 in Mason City.	Willow Creek	Barrier	18932	Horizontal	44'	15-6"	14-6"		Stage 1
NB US 65	NB	Cerro Gordo		Willow Creek	Barrier	18932	Horizontal	44'	15-6"	14-6"		Stage 2
											</	



**US 65
Stage 1**



**US 65
Stage 2**

SURVEY SYMBOLS

	Interstate Highway Symbol		Septic Tank
	U.S. Highway Symbol		Cistern
	Iowa Highway Symbol		L.P. Gas Tank (No Footing)
	County Road Highway Symbol		Underground Storage Tank
	Evergreen Tree		Latrine
	Deciduous Tree		Satellite TV Dish
	Fruit Tree		Water Hook Up
	Shrub (Bushes)		Radio Tower
	Timber		Tower Anchor
	Hedge		Guardrail (Beam or Cable)
	Stump		Guard Post (one or two)
	Swamp		Guard Post (over two)
	Rock Outcrop		Filler Pipe
	Broken Concrete		Gas Valve
	Revetment (Rip Rap)		Water Valve
	Cemetery		Speed Limit Sign
	Grave		Mile Marker Post
	Cave		Sign
	Sink Hole		Traffic Signal Control Box
	Board Fence		Rail Road Signal Control Box
	Chain Link or Security Fence		Telephone Switch Box
	Wire Fence		Electric Box
	Terrace		
	Earth Dam or Dike (Existing)		
	Tile Outlet		
	Edge of Water		
	Existing Drainage		
	Right of Way Rail or Lot Corner		
	Concrete Monument		
	Well		
	Windmill		
	Beehive Intake		
	Existing Intake		
	Existing Utility Access (Manhole)		
	Fire Hydrant		
	Water Hydrant (Rural)		

UTILITY LEGEND

PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

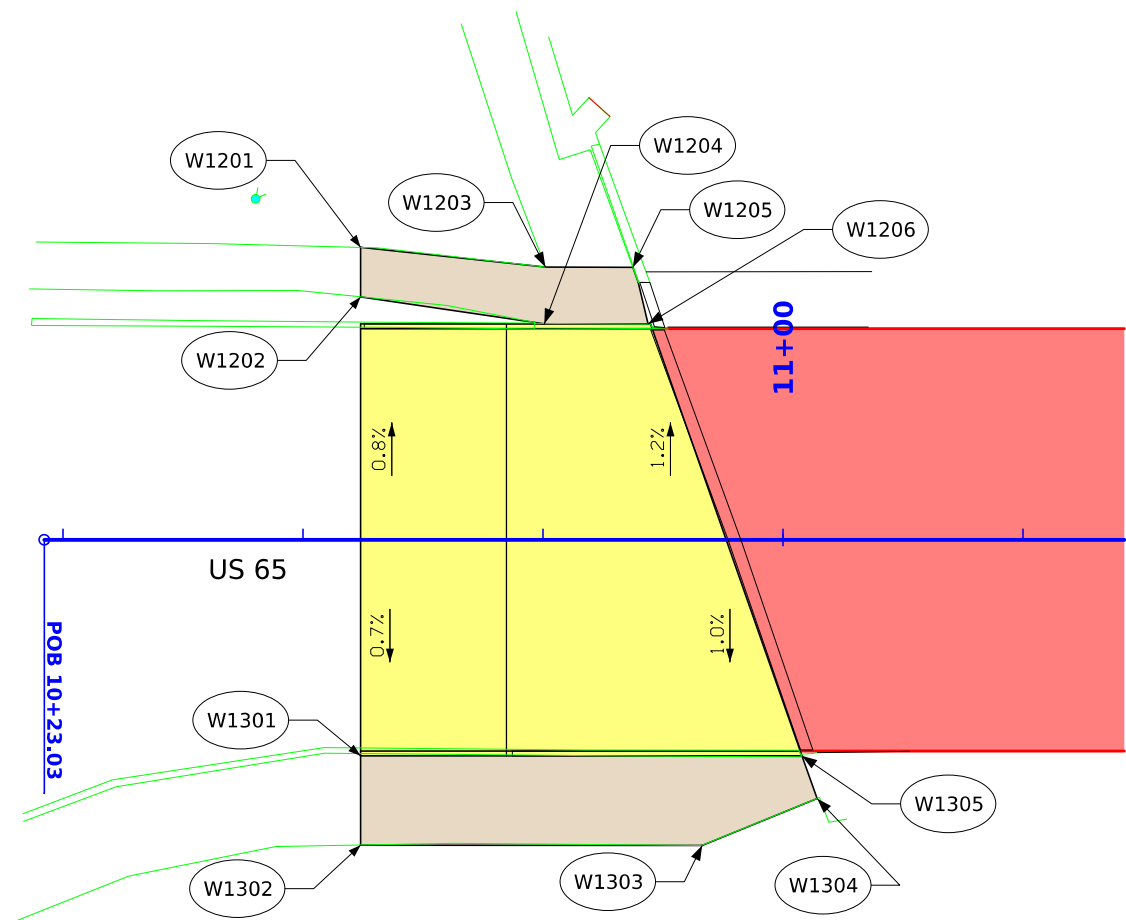
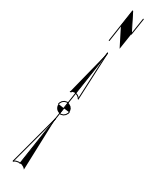
LINEWORK		Design Color No.		
Green	(2)		Existing Topographic Features and Labels	
Blue	(1)		Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation	
Magenta	(5)		Existing Utilities	
SHADING		Design Color No.		Transparency
Tan	(8)		Proposed Sidewalk Shading	50%
Blue, Light	(230)		Proposed Sidewalk Landing Shading	50%
Pink	(11)		Proposed Sidewalk Ramp Shading	50%
Magenta	(5)		Detectable Warning	0%
Yellow	(4)		Highlight for Critical Notes or Features	0%
Red	(3)		Delineates Restricted Areas	0%
Lavender	(9)		Temporary Pavement Shading	0%
Yellow	(4)		Proposed Pavement Shading	0%
Orange	(6)		Proposed Granular Shading	0%
Purple	(15)		Proposed Grade and Pave Shading	0%
Brown, Light	(236)		Grading Shading	0%

RIGHT-OF-WAY LEGEND	
	Proposed Right-of-Way
	Existing and Proposed Right-of-Way
	Easement and Existing Right-of-Way
	Borrow
	Easement (Temporary)
	Easement
	Excess
	Access Control

	Reference Point
	Station
	Survey Line
	Section Corner
	Ground Line Intercept
	Saw Cut
	Guardrail
	Clearing & Grubbing Area
	Pavement Removal

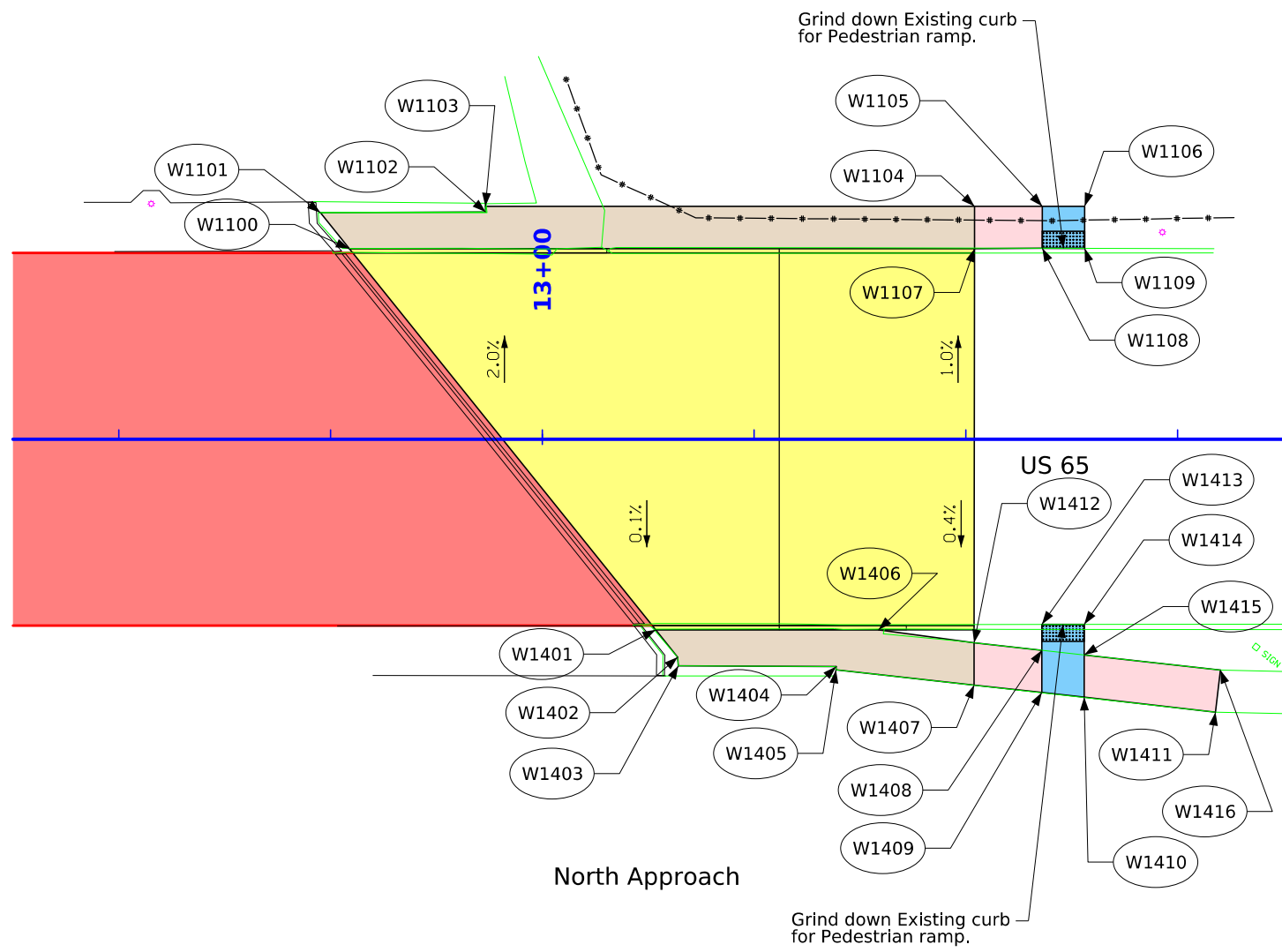
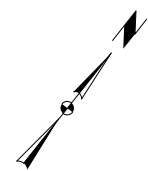
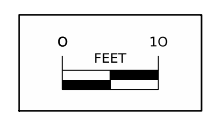
SIDEWALK
LEGEND AND SYMBOL
INFORMATION SHEET

(COVERS SHEET SERIES S)



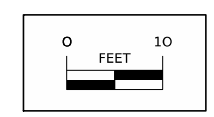
South Approach

Note: Field Adjust Sidewalk points as needed.

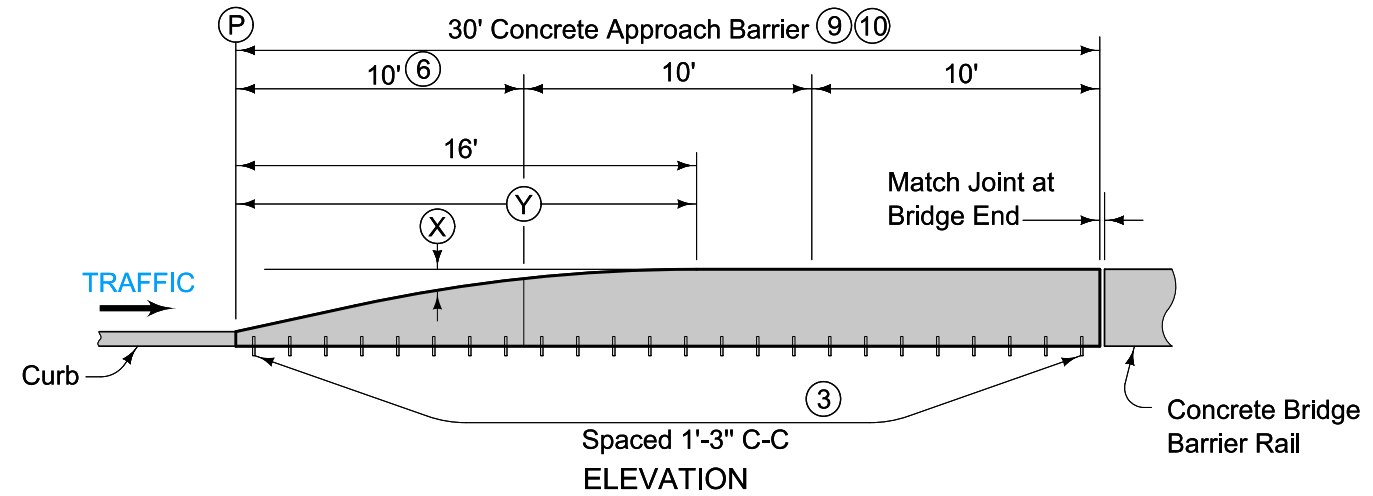
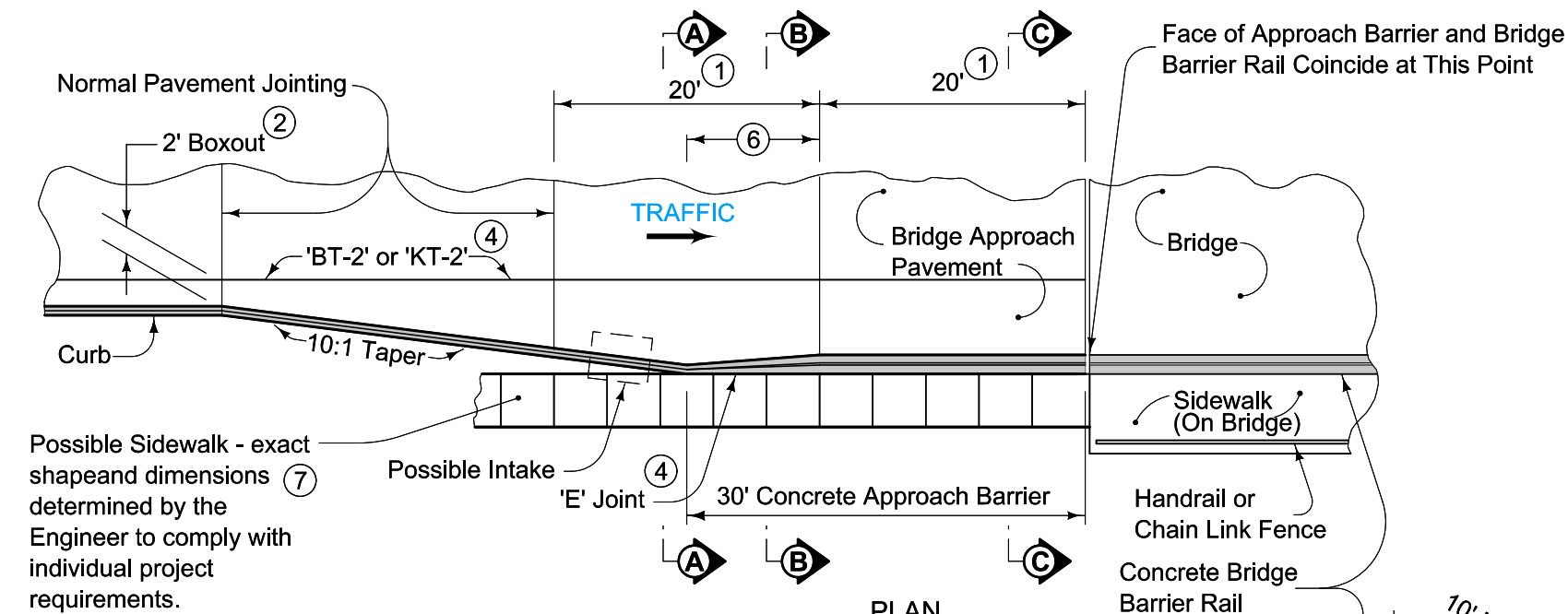


North Approach

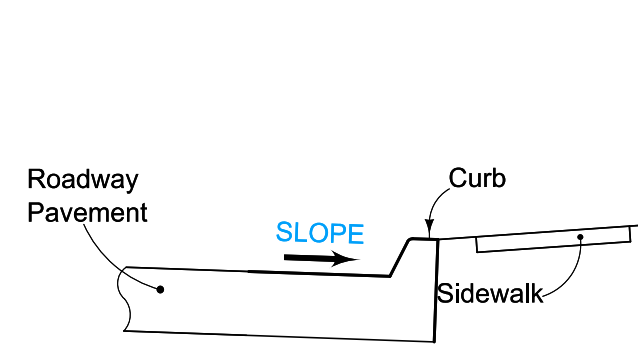
Note: Field Adjust Sidewalk points as needed.



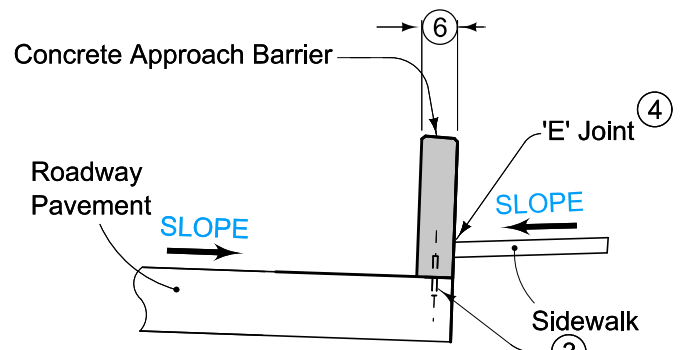
113-10 04-18-17															
SIDEWALK COMPLIANCE															
See S Sheets															
* Does not include curb															
① Staking required by Contracting Authority per Article 2511.03 of the Standard Specifications.															
② Refer to tabulation 113-01 for bid quantities.															
Point to Point		Sidewalk Designation	- " PCC Sidewalk ②	Distance*	Δ Elevation	Slope	Acceptable Constructed Range	Staking Required on this Quadrant? ①	Measured Slope	Initials	Remarks	FOR INFORMATION ONLY: VALUES USED TO DETERMINE DESIGNED SLOPES			
				FT	FT	%	Pos. or Neg.		%			Point	Station	Offset	Elevation
W1100	W1101	Sidewalk Cross Slope	4	5.46	0.13	2.4%	0.5% to 3.4%				Slope required to match existing conditions	W1100	12+77.22	22.50	1120.51
W1101	W1102	Sidewalk Running Slope	4	19.51	0.36	1.8%	0.5% to 5.0%					W1101	12+73.80	26.75	1120.64
W1103	W1104	Sidewalk Running Slope	4	57.75	1.36	2.4%	0.5% to 5.0%					W1102	12+93.31	26.83	1121.00
W1104	W1105	Ramp Running Slope	6	8.00	-0.20	-2.5%	0.5% to 8.3%					W1103	12+93.28	27.57	1121.01
W1104	W1107	Sidewalk Cross Slope	4	5.00	-0.08	-1.6%	0.5% to 2.0%	Yes				W1104	13+51.03	27.50	1122.37
W1105	W1106	Landing/Turning Space	6	5.00	0.09	1.8%	0.1% to 2.0%	Yes				W1105	13+59.03	27.50	1122.17
W1105	W1108	Landing/Turning Space	6	5.00	-0.08	-1.6%	0.1% to 2.0%	Yes				W1106	13+64.03	27.50	1122.26
W1106	W1109	Landing/Turning Space	6	5.00	-0.04	-0.8%	0.1% to 2.0%					W1107	13+51.03	22.50	1122.29
W1107	W1108	Ramp Running Slope	6	8.00	-0.20	-2.5%	0.5% to 8.3%					W1108	13+59.03	22.50	1122.09
W1108	W1109	Crosswalk Cross Slope - No Yield Condition	6	5.00	0.13	2.6%	0.0% to 5.0%				Slope required to match existing conditions	W1109	13+64.03	22.50	1122.22
W1201	W1202	Sidewalk Cross Slope	4	5.16	0.01	0.2%	0.5% to 2.0%				Slope required to match existing conditions	W1201	10+56.00	30.46	1113.68
W1201	W1203	Sidewalk Running Slope	4	19.33	0.66	3.4%	0.5% to 5.0%					W1202	10+56.00	25.30	1113.69
W1202	W1204	Sidewalk Running Slope	4	18.08	0.61	3.4%	0.5% to 5.0%					W1203	10+75.22	28.39	1114.34
W1203	W1204	Sidewalk Cross Slope	4	5.89	-0.04	-0.7%	0.5% to 2.0%					W1204	10+75.12	22.50	1114.30
W1203	W1205	Sidewalk Running Slope	4	9.12	0.50	5.5%	0.5% to 6.5%				Slope required to match existing conditions	W1205	10+84.34	28.38	1114.84
W1204	W1206	Sidewalk Running Slope	4	10.81	0.54	5.0%	0.5% to 5.0%	Yes			Slope required to match existing conditions	W1206	10+85.93	22.50	1114.84
W1205	W1206	Sidewalk Cross Slope	4	6.10	0.00	0.0%	0.5% to 2.0%				Slope required to match existing conditions				
W1301	W1302	Sidewalk Cross Slope	4	9.31	0.15	1.6%	0.5% to 2.0%	Yes				W1301	10+56.00	22.50	1113.70
W1302	W1303	Sidewalk Running Slope	4	35.52	1.08	3.0%	0.5% to 5.0%					W1302	10+56.00	31.81	1113.85
W1303	W1304	Sidewalk Running Slope	4	12.97	0.60	4.6%	0.5% to 5.0%	Yes				W1303	10+91.57	31.84	1114.93
W1304	W1305	Sidewalk Cross Slope	4	4.71	-0.13	-2.8%	0.5% to 3.8%				Slope required to match existing conditions	W1304	11+03.53	26.95	1115.53
												W1305	11+01.97	22.50	1115.40
W1401	W1402	Sidewalk Cross Slope	4	4.15	0.09	2.2%	0.5% to 3.2%				Slope required to match existing conditions	W1401	13+39.39	22.50	1121.75
W1402	W1403	Sidewalk Cross Slope	4	1.02	0.02	2.0%	0.5% to 2.0%	Yes			Slope required to match existing conditions	W1402	13+15.98	25.73	1121.84
W1403	W1404	Sidewalk Running Slope	4	18.64	0.34	1.8%	0.5% to 5.0%					W1403	13+16.06	26.75	1121.86
W1405	W1407	Sidewalk Running Slope	4	16.40	0.23	1.4%	0.5% to 5.0%					W1404	13+34.69	26.85	1122.20
W1406	W1412	Sidewalk Running Slope	4	11.39	0.18	1.6%	0.5% to 5.0%					W1405	13+34.67	27.25	1122.21
W1407	W1409	Ramp Running Slope	6	8.00	-0.16	-2.0%	0.5% to 8.3%					W1406	13+39.69	22.50	1122.22
W1407	W1412	Sidewalk Cross Slope	4	5.00	-0.04	-0.8%	0.5% to 2.0%					W1407	13+50.97	29.03	1122.44
W1408	W1409	Landing/Turning Space	6	5.00	0.07	1.4%	0.1% to 2.0%					W1408	13+58.98	24.92	1122.21
W1408	W1413	Landing/Turning Space	6	3.00	-0.05	-1.7%	0.1% to 2.0%	Yes				W1409	13+58.98	29.91	1122.28
W1408	W1415	Landing/Turning Space	6	5.00	0.10	2.0%	0.1% to 2.0%	Yes			Proposed slope is maximum allowed	W1410	13+63.97	30.46	1122.38
W1409	W1410	Landing/Turning Space	6	5.00	0.10	2.0%	0.1% to 2.0%	Yes			Proposed slope is maximum allowed	W1411	13+79.47	32.23	1123.65
W1410	W1415	Landing/Turning Space	6	5.00	-0.07	-1.4%	0.1% to 2.0%					W1412	13+50.98	24.04	1122.40
W1410	W1411	Sidewalk Running Slope	4	15.61	1.27	8.1%	0.5% to 9.1%				Slope required to match existing conditions	W1413	13+59.98	21.86	1122.16
W1411	W1416	Sidewalk Cross Slope	4	5.00	-0.10	-2.0%	0.5% to 2.0%	Yes			Slope required to match existing conditions	W1414	13+63.98	21.86	1122.37
W1412	W1408	Ramp Running Slope	6	8.00	-0.19	-2.4%	0.5% to 8.3%					W1415	13+63.98	25.48	1122.31
W1413	W1414	Crosswalk Cross Slope - No Yield Condition	6	5.00	0.21	4.2%	0.0% to 5.0%					W1416	13+80.05	27.26	1123.55
W1414	W1415	Landing/Turning Space	4	3.10	-0.06	-1.9%	0.1% to 2.0%	Yes							
W1415	W1416	Ramp Running Slope	6	16.17	1.24	7.7%	0.5% to 8.3%	Yes							



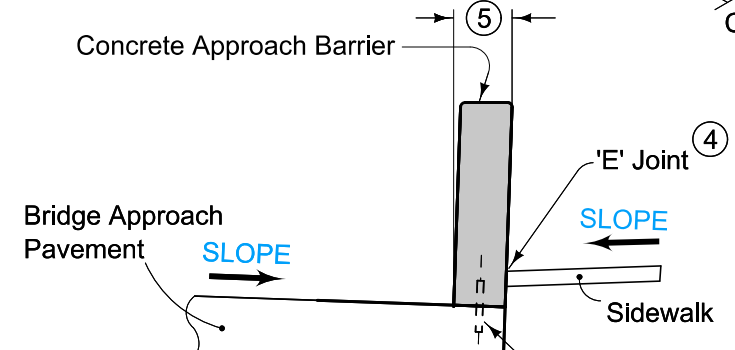
OFFSETS FOR ROUNDED BARRIER TOP																	
Y = Distance from P	ft.	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0
X = Offset to Rounded Top	ft.	2.13	1.91	1.70	1.48	1.26	1.06	0.87	0.70	0.54	0.42	0.30	0.20	0.12	0.06	0.02	0.00



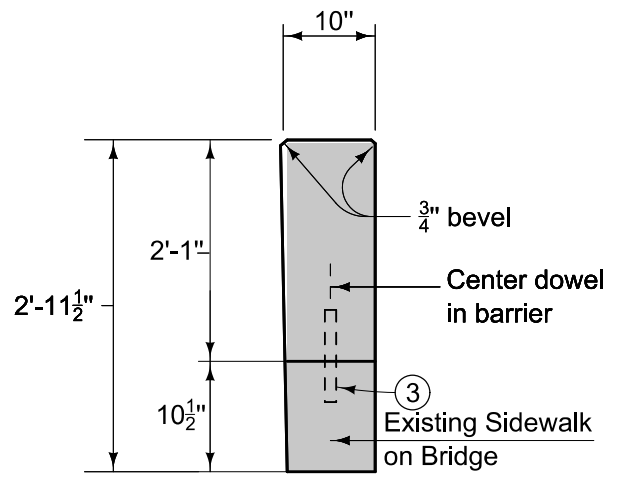
SECTION A-A



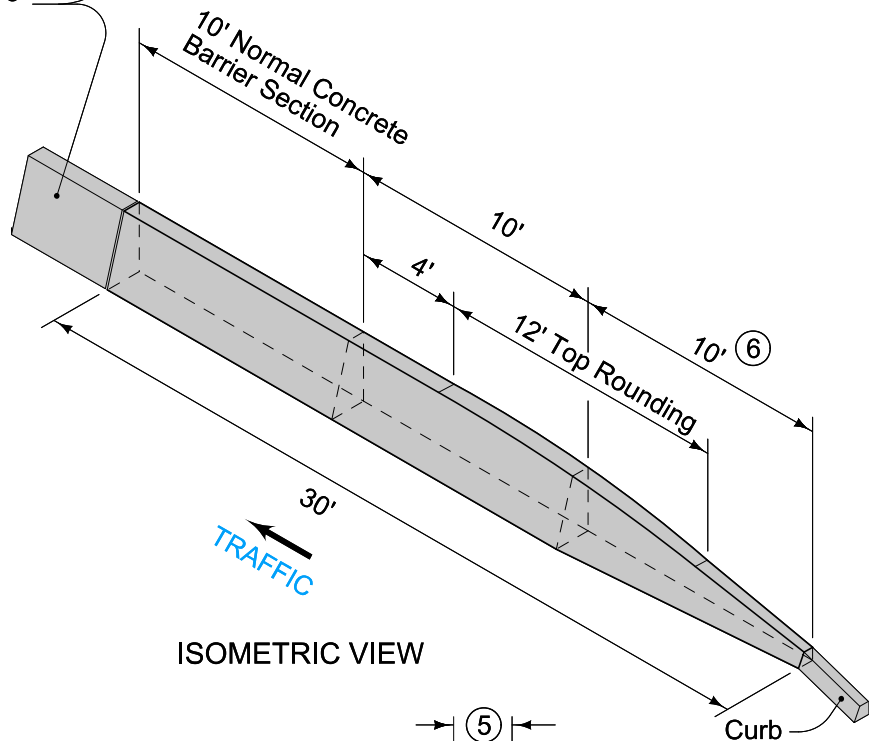
SECTION B-B



SECTION C-C



FULL BARRIER RAIL SECTION



ISOMETRIC VIEW

Install a 'C' joint in concrete approach barrier to match the location of each joint in both roadway and bridge approach pavement.

- ① Typical joint spacing and location. Follow specific project requirements as directed by the Engineer.
- ② Match boxout width to existing curb and gutter joint. Use 2 foot wide boxout where curb and gutter are not constructed.
- ③ #8 x 8 inch deformed bars or 1 inch diameter smooth.
- ④ For joint detail, see PV-101.
- ⑤ Bottom width of barrier is maintained at 10 inches
- ⑥ Bottom width of barrier transitions from 8 to 10 inches.
- ⑦ Required sidewalk will be measured and paid for separately.
- ⑧ Place no delineator or object marker in front of, or on, the barrier.
- ⑨ Approximately 2 cubic yards of concrete are required to construct barrier as shown. Amount may vary depending on individual site requirements.

Possible Contract Item:
Concrete Barrier, Tapered End, BA-108 Modified

Possible Tabulation:
108-18B

MODIFIED		REVISION	
		3	10-18-22
STANDARD ROAD PLAN		BA-108	
		SHEET 1 of 1	
REVISIONS: Rectangular Barrier .			
APPROVED BY DESIGN METHODS ENGINEER			
CONCRETE BARRIER			
TAPERED END SECTION			