LETTING DATE
Dec 15, 2026

Bridge Deck Overlay
BRF-034-4(048)--38-88

UNION COUNTY

Index of Sheets

No.	Description
Sheets	Bridge Plan
A.1	Title Sheet
A.2	Location Map Sheet
V.1	Estimated Quantities - Design No. 127
V.1 - V.10	Design No. 127
Road Sheets	Road Plan
A.3 - U.1	Road Plans
C.1 - C.2	Estimated Quantities - Road
C.4	Standard Plans - Road

IOWA DOT

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM
UNION COUNTY
Bridge Deck Overlay

US 34 over Twelve Mile Creek
3.2 Mi. W. of W. Jct. US 169

Refer to the Plan Sheets for list of applicable specifications.

Value Engineering Saves. Refer to Article 1105.13 of the Specifications.

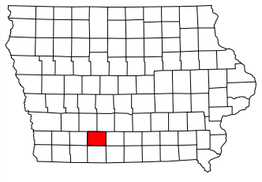
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Revisions

	TOTAL
	47
PROJECT IDENTIFICATION NUMBER	
22-88-034-020	
PROJECT NUMBER	
BRF-034-4(048)--38-88	
R.O.W. PROJECT NUMBER	
PROJECT DIRECTORY NUMBER	
8803402022	

Scan the QR code or click the link below to leave plan quality feedback and help us improve future projects.

Design QR Feedback Link



Standard Road Plans

Standard Road Plans are listed on Sheet Number C.4

Design Data Rural

2024 AADT	4,800 V.P.D.
TRUCKS	14 %

Iowa DOT Bridges and Structures
Consultant Coordinator Contact:
Zahrah Alghalibi

Index of Seals

Sheet No.	Name	Type
A.1	Casey V. Faber	Structural Design
A.3	Lucas D. Fatka	Roadway Design

Structural Design

LICENSED PROFESSIONAL ENGINEER
Casey V. Faber
22283
IOWA

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

Signature 9/14/2027 Date

Casey V. Faber
Printed or Typed Name

My license renewal date is December 31, 2027

Pages or sheets covered by this seal: A.1 - A.2, V.1 - V.10

R-31W R-30W R-29W

T-73N

T-72N

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

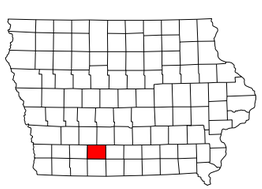
STATE BOUNDARY
COUNTY BOUNDARY
CORPORATE BOUNDARY
TOWNSHIP LINE
SECTION LINE
ROAD NAMES
UNINCORPORATED PLACE

STATE PARKS
STATE INSTITUTIONS
FEDERAL LAND

LINCOLN
DODGE
UNION
CRESTON
POP. 7536
AFTON
POP. 874
SOUTHWESTERN COMMUNITY COLLEGE
GREEN VALLEY STATE PARK
THREE MILE LAKE
TWELVE MILE LAKE
MIDAMERICAN ENERGY
CRESTON MUNICIPAL AIRPORT
Design No. 127
FHWA No. 50040

Union County Location Map

Not To Scale



FILE NO. 32396	ENGLISH	DESIGN TEAM WHKS & Co.	UNION COUNTY	PROJECT NUMBER BRF-034-4(048)--38-88	SHEET NUMBER A.2

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ESTIMATED BRIDGE REPAIR QUANTITIES

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL
1	2104-2710020	EXCAVATION, CLASS 10, CHANNEL	CY	113.2
2	2413-0698074	DECK REPAIR, CLASS A	SY	50.6
3	2426-6772016	CONCRETE REPAIR	SF	123
4	2499-0800000	PAVING NOTCH REPLACEMENT	LF	94
5	2502-8212304	SUBDRAIN, STANDARD, PERFORATED, 4 IN., AS PER PLAN	LF	168
6	2507-2638650	BRIDGE WING ARMORING - EROSION STONE	SY	18.8
7	2507-3250005	ENGINEERING FABRIC	SY	303.5
8	2507-6799000	BANK SHAPING	LS	1
9	2507-6800061	REVETMENT, CLASS E	TON	169.9
10	2533-4980005	MOBILIZATION	LS	1
Design No. 127-Alternate AA Option 1				
11	2413-0698066	DECK OVERLAY (CLASS O PCC)	SY	836.9
Design No. 127-Alternate AA Option 2				
12	2403-1000010	TRIAL BATCH AND TEST PLACEMENT (FIBER REINFORCED CONCRETE)	LS	1
13	2413-0698067	DECK OVERLAY (CLASS HPC-O PCC)	SY	836.9
14	2413-1000005	FIBER REINFORCEMENT FOR CONCRETE REPAIR/OVERLAY	SY	836.9

ESTIMATE REFERENCE INFORMATION

ITEM NO.	ITEM CODE	ITEM DESCRIPTION
1	2104-2710020	EXCAVATION, CLASS 10, CHANNEL Includes all necessary equipment and labor to excavate, shape, trim, and dress the berm to prepare for placement of Engineering Fabric and Class E Revetment. Approximate limits are shown on the situation plan. Dispose of excess material according to Article 1106.07 of the current specifications.
2	2413-0698074	DECK REPAIR, CLASS A - -
3	2426-6772016	CONCRETE REPAIR - -
4	2499-0800000	PAVING NOTCH REPLACEMENT Includes 6.5 cu yd of structural concrete Class C, 1,492 lbs of epoxy-coated reinforcing steel, excavation, removing and disposing of the existing paving notch and concrete removed to form the shear keyways, drilling holes for dowel bars, and polymer grout material.
5	2502-8212304	SUBDRAIN, STANDARD, PERFORATED, 4 IN., AS PER PLAN Includes cost of furnishing and placing subdrain (including excavation), porous backfill, and subdrain outlet as detailed in these plans.
6	2507-2638650	BRIDGE WING ARMORING - EROSION STONE Includes furnishing and placing engineering fabric, erosion stone, and all required excavating, shaping and compacting for wing armoring.
7	2507-3250005	ENGINEERING FABRIC Use material specified for embankment erosion control according to Article 4196.01, B, 3. Material will be measured in sq. yds. of actual area covered. Refer to details on Design Sheet No. 7.
8	2507-6799000	BANK SHAPING - -
9	2507-6800061	REVETMENT, CLASS E Estimated at 1.5 ton/cu. yd.. Class E revetment shall meet requirements of Article 4130.
10	2533-4980005	MOBILIZATION - -
11	2413-0698066	DECK OVERLAY (CLASS O PCC) - -
12	2403-1000010	TRIAL BATCH AND TEST PLACEMENT (FIBER REINFORCED CONCRETE) Refer to the Developmental Specification for Fiber Reinforcement for Structural Concrete for additional information.
13	2413-0698067	DECK OVERLAY (CLASS HPC-O PCC) - -
14	2413-1000005	FIBER REINFORCEMENT FOR CONCRETE REPAIR/OVERLAY Refer to the Developmental Specification for Fiber Reinforcement for Structural Concrete for additional information.

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Roadway Quantities shown elsewhere in these plans.

Design For Repair to 20° Skew RA

168' x 44' Pretensioned Prestressed Beam Bridge

43'-3" & 55'-9" End Spans 69'-0" Interior Span

Estimated Quantities

STA. 282+62.00 (US 34) Turn-in Date: Oct, 2026

Union County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 127 Design Sheet No. 1 of 10 FHWA No. 50040

General Notes

This design is for repairs to the existing 168'-0" x 44'-0" Pretensioned Prestressed Concrete Beam Bridge on US 34 over Twelve Mile Creek in Union County.

Electronic copies of original design plans are available to the Contractor as part of the E-Files supplied with the contract documents. Dimensions shown on these plans are based on design plans (Original Design No. 770, Retrofit Rail No. 491).

See Design Sheet No. 3 for list of repair items.

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.

Faint lines on plans indicate the existing structure.

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

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

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

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

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

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 2 & 3 as detailed on these plans may be reversed at the Contractor's option subject to the Engineer's approval.

Plan quantity of deck repair is based on the "Survey Plot" as shown in these plans. Hatched portions represent Class A Bridge Deck Repair. Cross hatched portions, if shown, represent Class B Bridge Deck Repair. The plan quantity for "Class A Deck Repair" is estimated as 50.6 sy based on automated sounding of the deck plus 25% increase for estimating purposes. Actual spalled and hollow areas as determined by the Engineer at the time of construction, shall be repaired.

Present deck thickness is about $7\frac{1}{2}$ inches. The Contractor shall exercise care in removing concrete in order to prevent unnecessary unbonding of reinforcing steel.

Surface raise, as shown on the plans, shall be considered a minimum. In order to limit the additional dead load surface raise shall be restricted to a maximum of $\frac{1}{2}$" more than shown on the plans. Profile may be adjusted to the extent possible within these limits.

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

Areas of curb indicated on the "Survey Plot" and Design Sheet No. 9 or designated by the Engineer are to be repaired using concrete repair notes and details included in these plans.

The top and interior faces of the existing concrete curb and retrofit railing are to be cleaned and sealed in accordance with Article 2403.03, P, of the Standard Specifications. All costs associated with cleaning and sealing of the concrete rails shall be include in the unit price bid item "Concrete Repair".

The Bridge Contractor is to retain earth and/or granular material behind the portion of abutments subjected to traffic during staged construction of the paving notch by methods approved by the Engineer. All costs for retaining the earth and/or granular material shall be included in the price bid for "Paving Notch Replacement".

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.

Surface preparation shall be in accordance 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 surface mixture.

Bank Shaping Notes:

The Contractor shall repair berm erosion in front of the abutments. Material shall be placed and compacted to restore the berm to the satisfaction of the Engineer. Excess excavated material from other project activities may be used as fill as approved by the engineer.

All costs for material, equipment, and labor required to perfrom the work noted and directed by the Engineer shall be included in the lump sum unit price bid for "Bank Shaping", no additional measurement or payment shall be made.

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

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 Specifications for Fiber Reinforcement for Structural Concrete.
Developmental Specifications for Electronic Ticketing.

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.

Design History at this Site
(Includes this Design)

Des. No.	Type of Work
770	Original Design
491	Retrofit Rail
127	Deck Overlay

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

Design For Repair to 20° Skew RA

168' x 44' Pretensioned Prestressed Beam Bridge

43'-3" & 55'-9" End Spans — 69'-0" Interior Span

General Notes

STA. 282+62.00 (US 34) — Turn-in Date: Oct, 2026

Union County

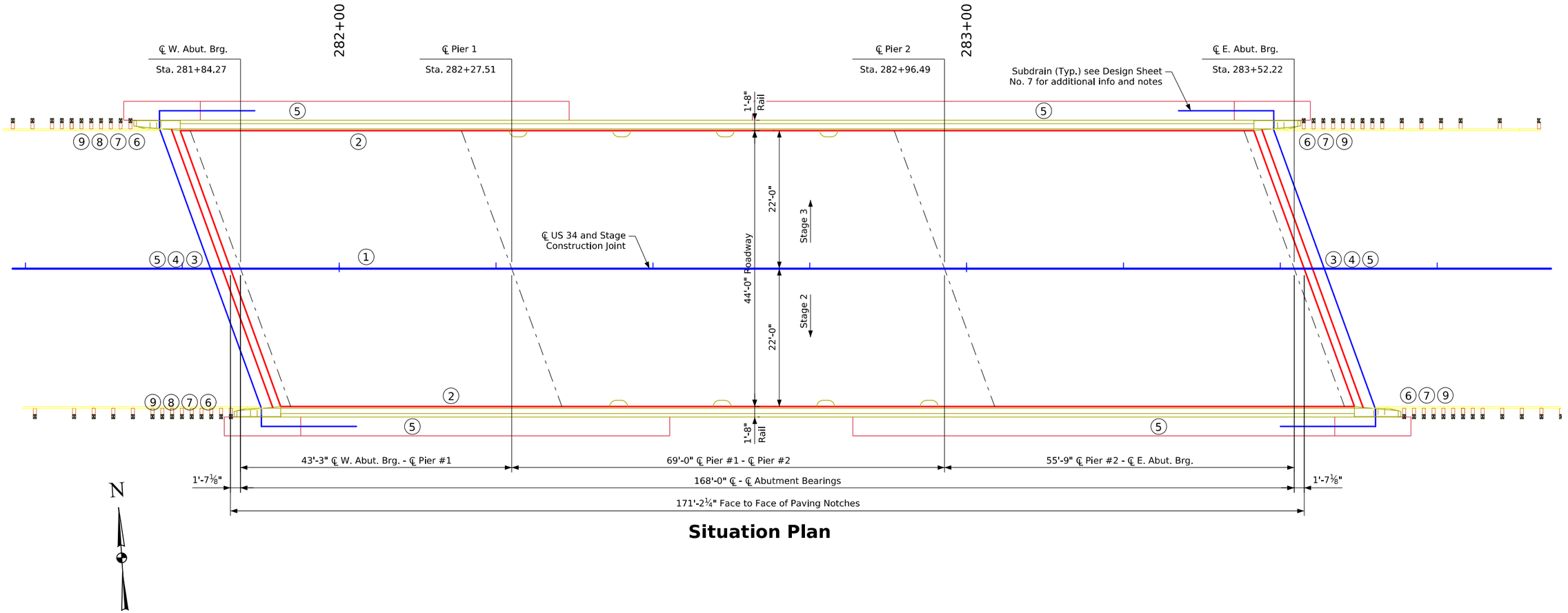
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 127 — Design Sheet No. 2 of 10 — FHWA No. 50040

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FILE NO. 32396	ENGLISH	DESIGN TEAM TJL/CVF	UNION COUNTY	PROJECT NUMBER BRF-034-4(048)--38-88	SHEET NUMBER V.2	

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Situation Plan

Repairs Shall Consist Of:

1. Scarify the deck, perform Class A repairs, and overlay the bridge deck.
2. Perform concrete repairs to the curbs, and clean and seal concrete curbs and retrofit barrier rails.
3. Remove and replace paving notches.
4. Remove and replace the existing approaches, and install new 'BE' joints.
5. Install new subdrain and wing armoring. Reshape the berm and install slope protection.
6. Remove and replace the existing guardrails.
7. Install paved shoulders in front of guardrails.
8. Install bridge end drains.
9. Construct shoulder strengthening as required for staged construction.

Note: See Roadway Sheets elsewhere in these plans for repair items 4 and 6-9.

Location

US 34 over Twelve Mile Creek
T-72N R-30W
Section 12
Highland Township
Union County
FHWA No. 50040
Bridge Maint. No. 8890.0S034
Latitude 41.048374°
Longitude -94.251694°

Design For Repair to 20° Skew RA

168' x 44' Pretensioned Prestressed Beam Bridge

43'-3" & 55'-9" End Spans — 69'-0" Interior Span

Situation Plans

STA. 282+62.00 (US 34) — Turn-in Date: Oct, 2026

Union County

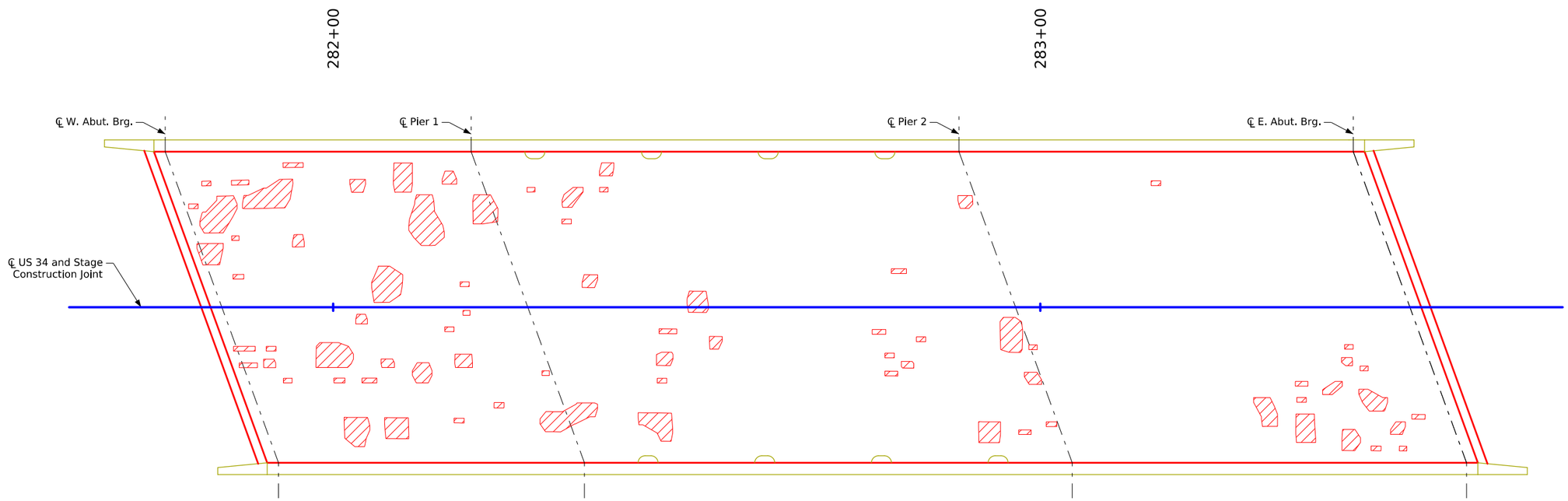
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Design No. 127 — Design Sheet No. 3 of 10 — FHWA No. 50040

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Sounding Plot

Delamination

Date of Completion: October 2025

Note:
Class A repair is based on area of delamination plus 25%
Class A Repair = 50.6 SY (6.2% of Deck Area)

N

Notes:
Data shown was provided by the Iowa DOT.

Limits on Class A repair areas are approximate. Actual areas as designated by the Engineer shall be repaired.

Design For Repair to 20° Skew RA

168' x 44' Pretensioned Prestressed Beam Bridge

43'-3" & 55'-9" End Spans — 69'-0" Interior Span

Sounding Plot

STA. 282+62.00 (US 34) — Turn-in Date: Oct, 2026

Union County

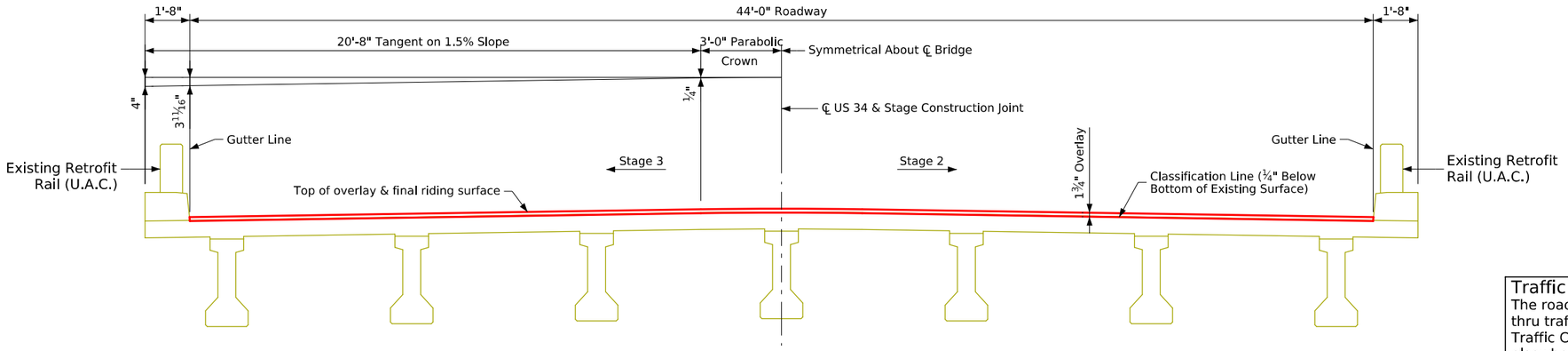
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Design No. 127 — Design Sheet No. 4 of 10 — FHWA No. 50040

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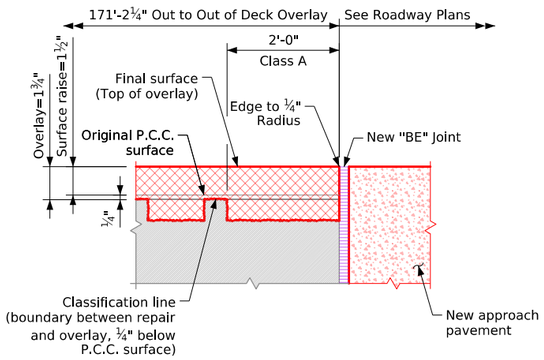
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Typical Cross Section

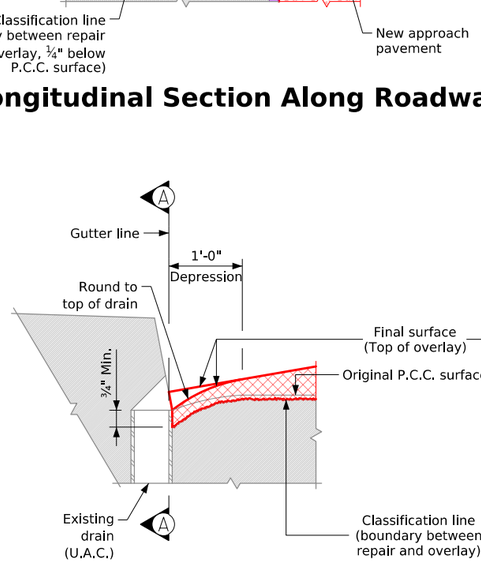
(Looking Upstation)

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



Part Longitudinal Section Along Roadway

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

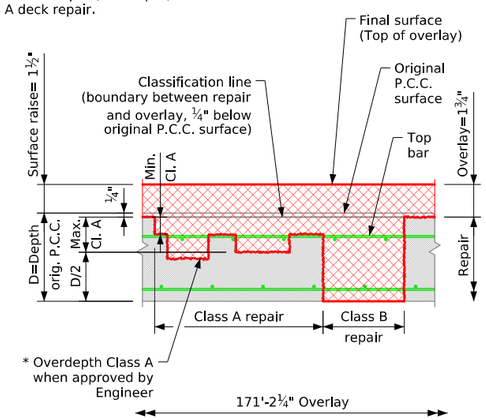


Section A-A

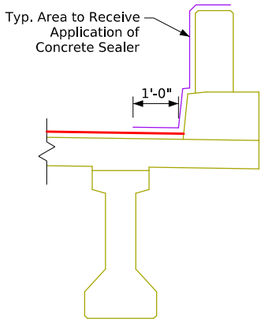
Deck Repair Detail at Drain

(Required at 8 Locations)

* Per IDOT Std. Spec. 2413.03.C.3.b, limited areas of Class A removal may exceed 50% of the floor thickness at the Engineer's direction. These limited areas of excess depth (overdepth) will be measured as Class A deck repair.



Repair and Overlay Definition



Detail of Concrete Sealer Area

Design For Repair to 20° Skew RA

168' x 44' Pretensioned Prestressed Beam Bridge

43'-3" & 55'-9" End Spans — 69'-0" Interior Span

Deck Repair Details

STA. 282+62.00 (US 34) — Turn-in Date: Oct, 2026

Union County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 127 — Design Sheet No. 5 of 10 — FHWA No. 50040

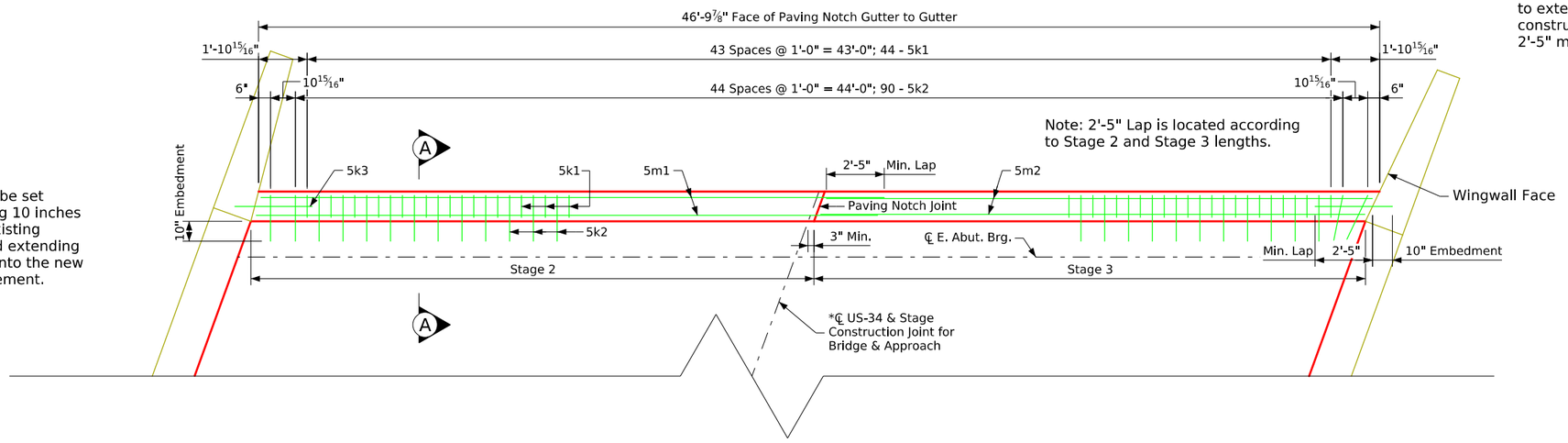
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FILE NO. 32396	ENGLISH	DESIGN TEAM TJL/CVF	UNION COUNTY	PROJECT NUMBER BRF-034-4(048)--38-88	SHEET NUMBER V.5

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∗ Construction joint for notch repair to extend a minimum of 3 inches past construction joint for pavement. Provide 2'-5" minimum lap for reinforcement.

Note: 5k3 bars shall be set as dowels embedding 10 inches minimum into the existing bridge wingwalls and extending a minimum of 2'-5" into the new paving notch replacement.





Part Plan View At Abutment

(East Abutment Shown, West Abutment Similar)

Note: New Paving Notch Replacement should extend from bridge wingwall to bridge wingwall.

Paving Notch Replacement Notes:

The Paving Notch Replacement is to be Class "C" structural concrete.

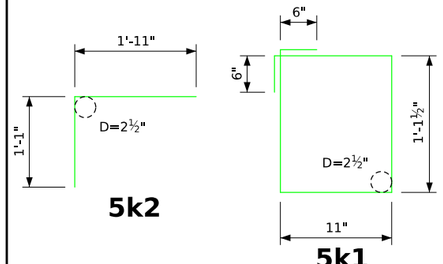
Minimum clear distance from face of concrete to near reinforcing bar is to be 2", unless otherwise noted or shown.

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 #4 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 and 16.0 pounds of epoxy coated reinforcing steel per foot. Removals shall be in accordance with Section 2401, of the Standard Specifications.

Dowel Setting Note:

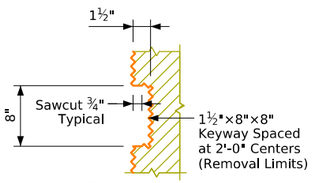
The deformed 5k2 & 5k3 bars shall be set as dowels in drilled holes. Holes are to be 10" deep. Polymer grout system shall be used to install the deformed dowel bars in accordance with Article 2301.03,E, of the Standard Specifications and the Grout Manufacturer's recommendations.

Bent Bar Details

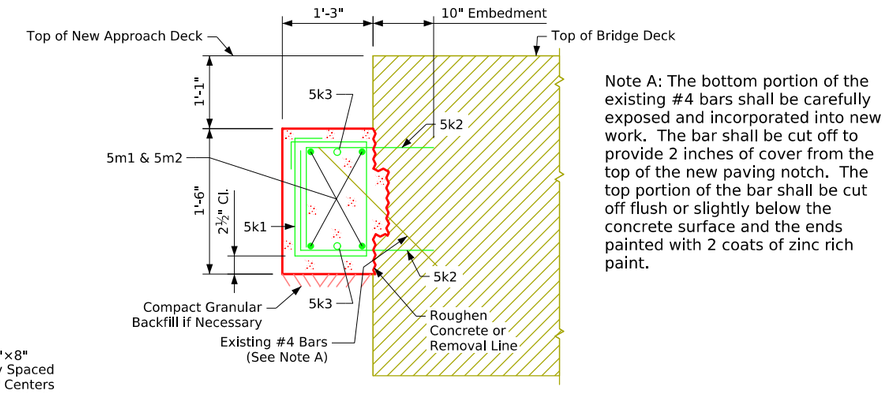


Note: All reinforcing is to be epoxy coated.

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



1½"×8" Keyway Detail



Part Section A-A

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

Note A: The bottom portion of the existing #4 bars shall be carefully exposed and incorporated into new work. The bar shall be cut off to provide 2 inches of cover from the top of the new paving notch. The top portion of the bar shall be cut off flush or slightly below the concrete surface and the ends painted with 2 coats of zinc rich paint.

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Design For Repair to 20° Skew RA

168' x 44' Pretensioned Prestressed Beam Bridge

43'-3" & 55'-9" End Spans — 69'-0" Interior Span

Paving Notch Replacement

STA. 282+62.00 (US 34) — Turn-in Date: Oct, 2026

Union County

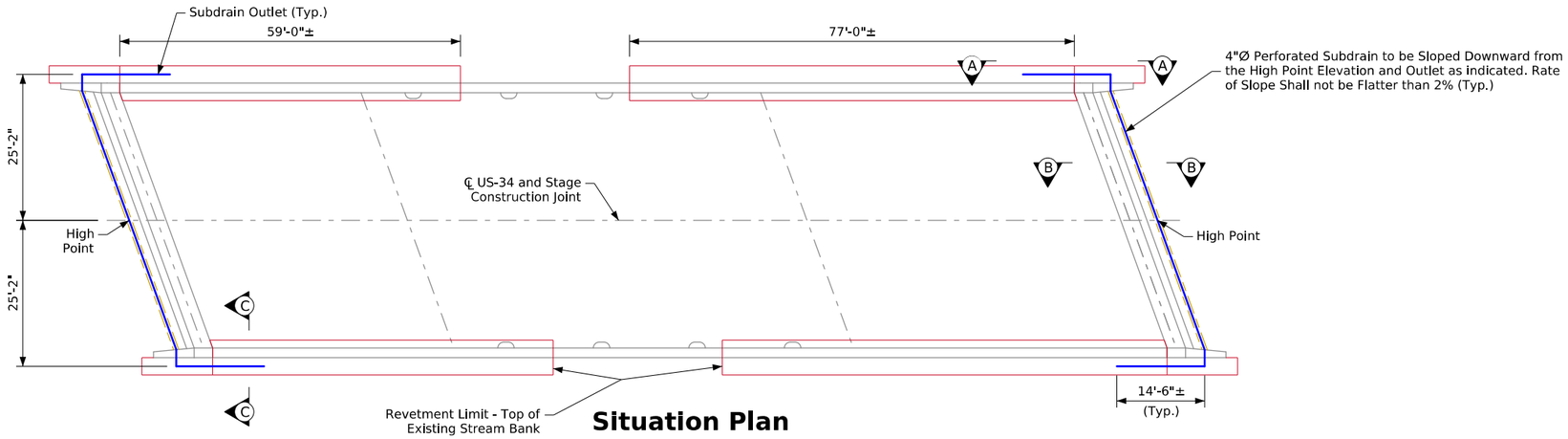
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 127 — Design Sheet No. 6 of 10 — FHWA No. 50040

FILE NO. 32396	ENGLISH	DESIGN TEAM TJL/CVF	Paving Notch Replacement	Standard Sheet 1068	UNION COUNTY	PROJECT NUMBER BRF-034-4(048)--38-88	SHEET NUMBER V.6	

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Revised 07-2019: Changed Bent Ends (Hook Leg) of 5k1 Bar to 6" (Was 4½"), Changed All References of "Slab" to "Deck". MiscellaneousBridges.dgn - 1068 - This Sheet Re-Issued 11-2023. Sheet Format Update.



Situation Plan

Showing Subdrain Locations

Subdrain Notes:

This plan sheet shows details for placing all subdrains and subdrain outlets required for this structure.

The subdrains shall be 4"∅ and shall be in accordance with Article 4143.01, B, of the Standard Specifications. The Subdrain outlet shall consist of a 10'-0" length of pipe with a removable rodent guard as detailed on this sheet.

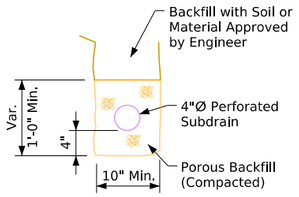
The Contractor is to ensure the outlet pipe is adequately strong enough and will not be damaged when Class E Revetment is placed. A check will be made at the subdrain outlet to ensure that the subdrain is not damaged and is draining properly.

If a metal outlet pipe outlet is used, it shall be 6 inches in diameter and coupled to the 4 inch diameter subdrain in one of the two following ways:

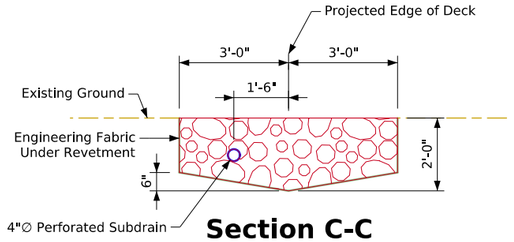
1. Use an inside fit reducer coupler, coupler must be inserted a minimum of 1'-0" into the metal outlet pipe.
2. Insert 1'-0" of the 4 inch diameter subdrain into the 6 inch diameter metal pipe, then fully seal the entire opening with grout.

The cost of furnishing and placing subdrain, including trench excavation, porous backfill, and the subdrain outlet is to be included in the price bid for "Subdrain, Standard, Perforated, 4 in., As Per Plan". No extra payment will be made.

The dimensions shown for the proposed subdrains are based on the existing 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.

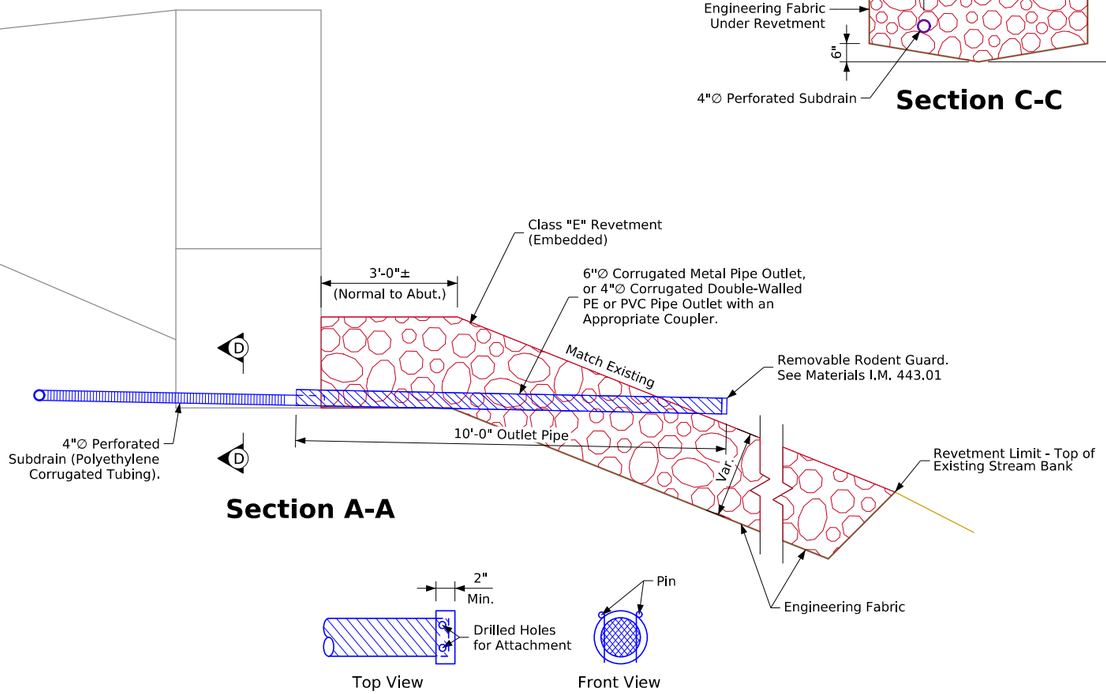


Section D-D



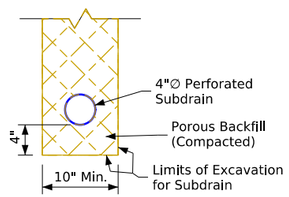
Section C-C

Note:
Care shall be taken when excavating around pier footings. If pier footing is encountered, overlay with engineering fabric, and place revetment to match existing ground.

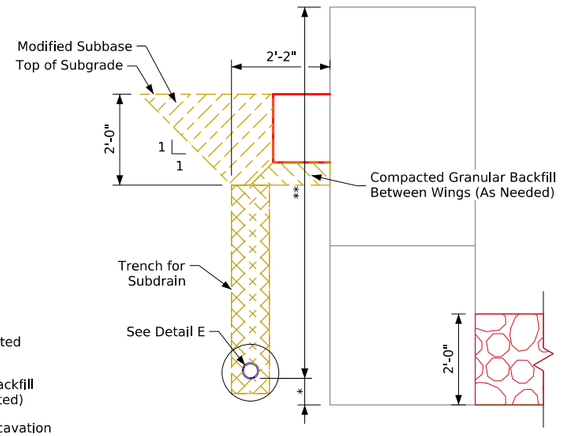


Section A-A

Removable Rodent Guard Details



Detail E



Section B-B

*Bottom of subdrain shall be 1" minimum above bottom of footing where the subdrain passes under the wing.

**Bottom of Subdrain at Highpoint after overlay surface raise:
7'-7½"± Below Top of West Abut.
7'-8¾"± Below Top of East Abut.

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Design For Repair to 20° Skew RA

168' x 44' Pretensioned Prestressed Beam Bridge

43'-3" & 55'-9" End Spans — 69'-0" Interior Span

Subdrain Details

STA. 282+62.00 (US 34) — Turn-in Date: Oct, 2026

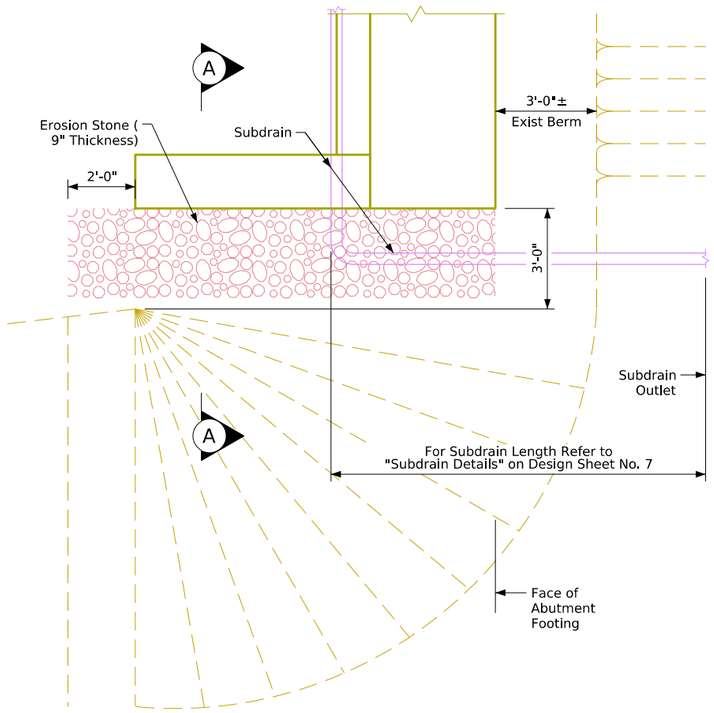
Union County

IOWA DEPARTMENT OF TRANSPORTATION

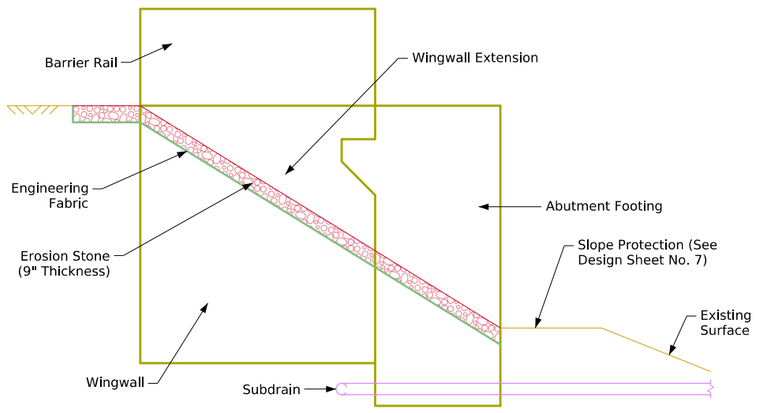
Design No. 127 — Design Sheet No. 7 of 10 — FHWA No. 50040

FILE NO. 32396	ENGLISH	DESIGN TEAM TJL/CVF	Union COUNTY	PROJECT NUMBER BRF-034-4(048)--38-88	SHEET NUMBER V.7

12:25:07 PM 8/28/2026 tlangel pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\8803402022\Bridge\(048)_Bridge Deck Overlay\BRG_88034048_WHKS_127_50040_Z12

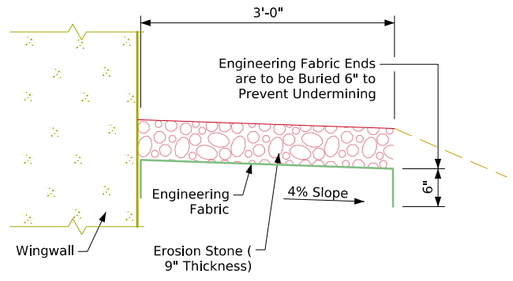


Top View of Wing Armoring



Profile View of Wing Armoring

(Shown for Integral Abutment)



Section A-A

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 underlayed 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 inch 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".

A Check Shall be Made at the Subdrain Outlet to Insure that it is Draining Properly.

Revised 06-14 - Added 2 Feet of Length of Erosion Stone in Front of the Bridge Wing.
Revised 09-2023: Changed direction of Section Director Arrows "A-A" to match what section view "Section A-A" is showing.
ForeSlopeProtectionBridges.dgn - 1005A - This Sheet Issued 06-02.
ForeSlopeProtectionBridges.dgn - 1005A - This Sheet Issued 07-23.

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Design For Repair to 20° Skew RA

168' x 44' Pretensioned Prestressed Beam Bridge

43'-3" & 55'-9" End Spans — 69'-0" Interior Span

Wing Armoring

STA. 282+62.00 (US 34) — Turn-in Date: Oct, 2026

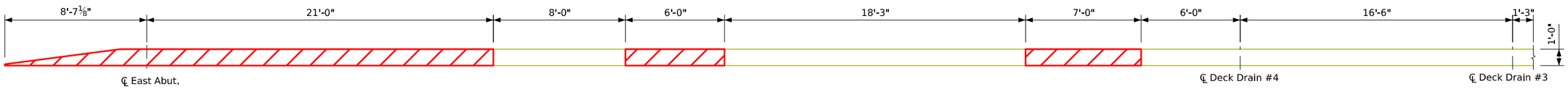
Union County

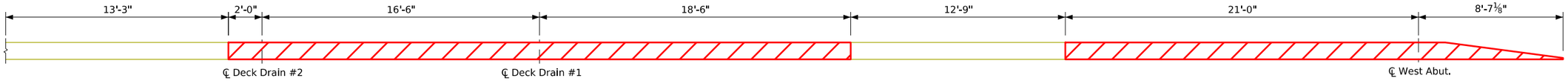
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 127 — Design Sheet No. 8 of 10 — FHWA No. 50040

FILE NO. 32396	ENGLISH	DESIGN TEAM TJL/CVF	Bridge Wing Armoring for Slope Protection	Standard Sheet 1005A	Union COUNTY	PROJECT NUMBER BRF-034-4(048)--38-88	SHEET NUMBER V.8	

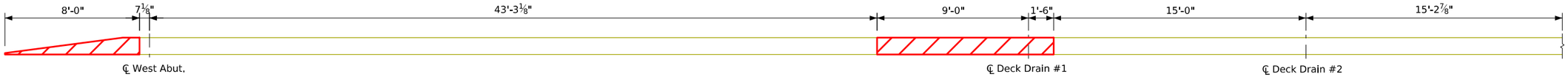
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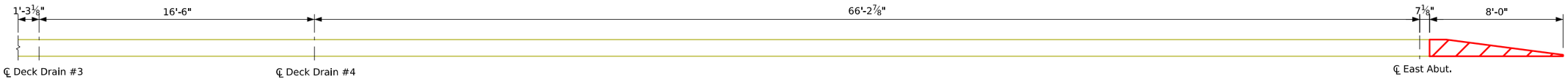




South Curb

(Looking South)





North Curb

(Looking North)

Note:
See Design Sheet No. 10 for concrete repair notes and details.

Shallow Repair

Design For Repair to 20° Skew RA

168' x 44' Pretensioned Prestressed Beam Bridge

43'-3" & 55'-9" End Spans — 69'-0" Interior Span

Curb Repair Limits

STA. 282+62.00 (US 34) — Turn-in Date: Oct, 2026

Union County

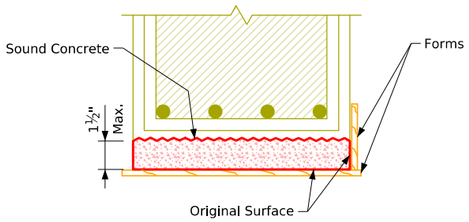
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 127 — Design Sheet No. 9 of 10 — FHWA No. 50040

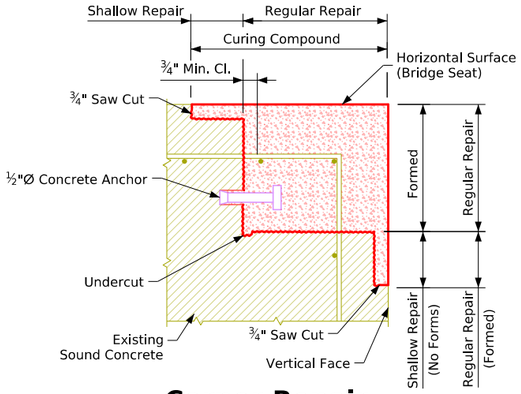
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FILE NO. 32396	ENGLISH	DESIGN TEAM TJL/CVF	UNION COUNTY	PROJECT NUMBER BRF-034-4(048)--38-88	SHEET NUMBER V.9	

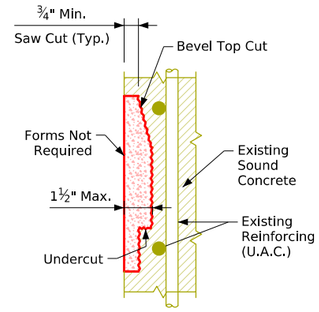
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Shallow Repair Bottom Surface



Corner Repair



Shallow Repair Vertical Face

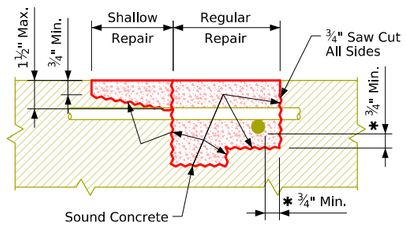
Repair Notes:

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 sq in inclusive, example "WWF 3x3 - W1.4xW2.9".

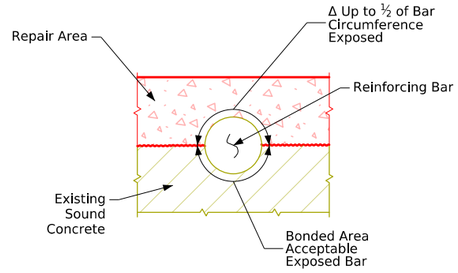
Where reinforcement has been exposed and clearance around the periphery of the existing bar is provided, no supplemental reinforcing is required, except where existing reinforcement density and pattern are such that individual open spaces between bars are of 1.5 sq ft or larger. For this condition ½"Ø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

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

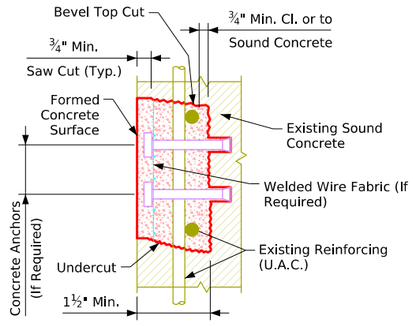


Repair Definition

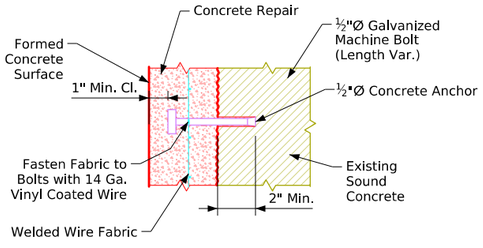
✱ Indicates Clearance for an Un-Bonded Rebar.



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

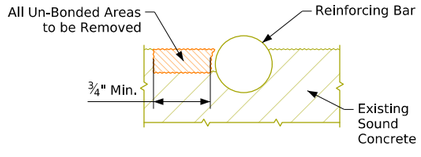


Regular Repair Vertical Face



Anchor Detail

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



Concrete Removal Adjacent to Reinforcing

Concrete Placement Quantities

Mark	Type	Units	Quantity
①	Shallow repair	Sq. Ft.	123
②	Regular repair	Sq. Ft.	0
		Total (Sq. Ft.)	123

Estimated Concrete Repair Quantities

Description	Units	Amount
Concrete Repair	Sq. Ft.	123

Note:
See Design Sheet No. 9 for estimated concrete repair areas and locations.

Design For Repair to 20° Skew RA

168' x 44' Pretensioned Prestressed Beam Bridge

43'-3" & 55'-9" End Spans — 69'-0" Interior Span

Concrete Repair

STA. 282+62.00 (US 34) — Turn-in Date: Oct, 2026

Union County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 127 — Design Sheet No. 10 of 10 — FHWA No. 50040

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Revised 10-2014 - Deleted All References to Grout, Section 2426 Covers this Requirement and Doesn't Need to be Stated on the Plans.
RepairRetrofitBridges.dgn - 10_Concrete Repair - This Sheet Redrawn 09-27-1990.
RepairRetrofitBridges.dgn - 10_Concrete Repair - This Sheet Re-Issued 07-23.

FILE NO. 32396	ENGLISH	DESIGN TEAM TJL/CVF	Concrete Repairs	Standard Sheet 1045	UNION COUNTY	PROJECT NUMBER BRF-034-4(048)--38-88	SHEET NUMBER V.10	

12:25:08 PM 8/28/2026 tlangel pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\8803402022\Bridge\(048)_Bridge Deck Overlay\BRG_88034048_WHKS_127_50040_Z12

INDEX OF SHEETS

No.	DESCRIPTION
A Sheets	**Title Sheets**
* A.3	Title Sheet
B Sheets	**Typical Cross Sections and Details**
B.1 - 2	Typical Cross Sections and Details
C Sheets	**Quantities and General Information**
C.1 - 2	Estimated Project Quantities
C.1 - 2	Estimate Reference Information
C.3	Project Description
C.4	Standards
C.5	Index of Tabulations
C.6 - 21	Tabulations
C.22	Standard Notes
D Sheets	**Mainline Plan Sheets**
* D.1	Legend Sheet
* D.2	Plan Sheets
J Sheets	**Traffic Control and Staging Sheets**
J.1	Traffic Control Plan
* J.2	Staging Notes
* J.3	511 Travel Restrictions
* J.4	Traffic Control Legend and Symbol Information Sheet
* J.5	Staging Cross Sections
* J.6 - 7	Traffic Control Plan Sheets
U Sheets	**500 Series, Mod.Stds. and Detail Sheets**
* U.1	Modified Standard Road Plan TC-217
	*Color Plan Sheets

LICENSED PROFESSIONAL ENGINEER
Lucas D. Fatka
23466
IOWA

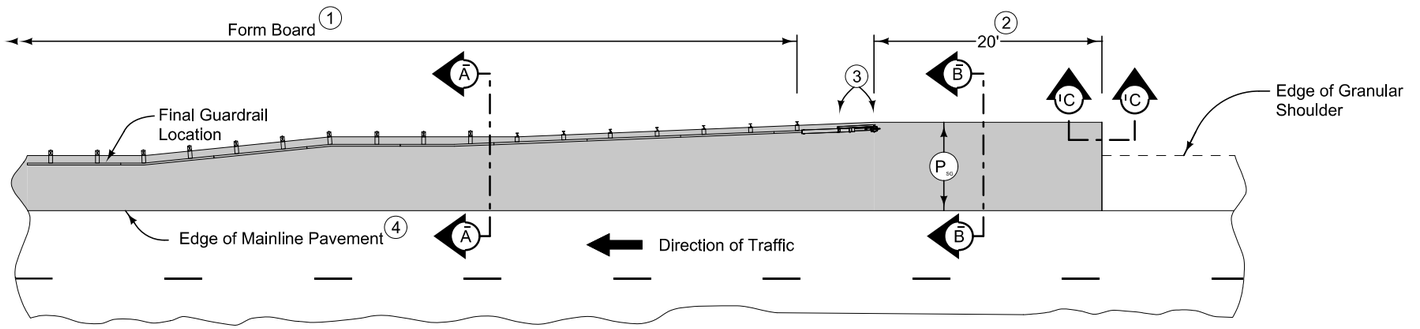
I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature 9/15/2027 Date

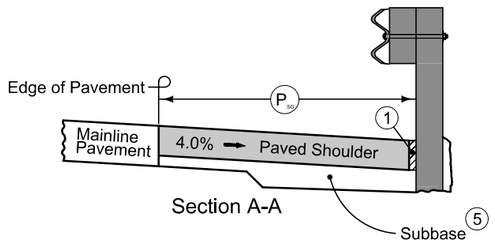
Lucas D. Fatka
Printed or Typed Name

My license renewal date is December 31, 2027

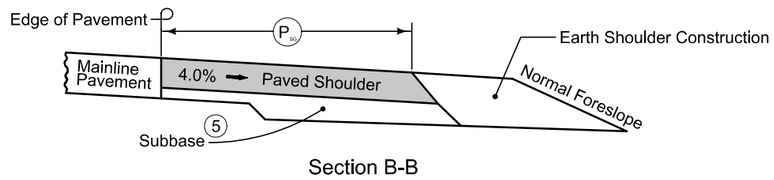
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PLAN VIEW

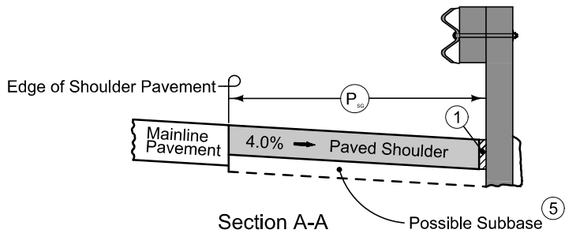


Section A-A

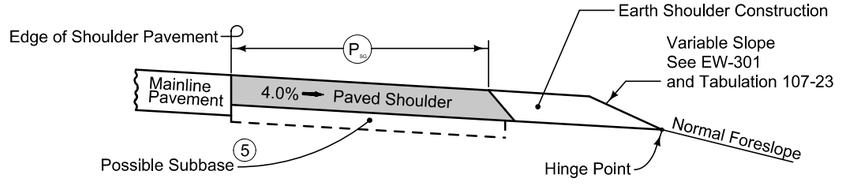


Section B-B

NEW CONSTRUCTION



Section A-A



Section B-B

EXISTING SHOULDER

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

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

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

Refer to Tabulation 112-9 for shoulder quantities.

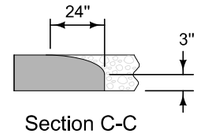
(1) PCC option only: When guardrail posts are installed prior to construction of PCC paved shoulder, fasten form board to the face of guardrail posts for the length shown.

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

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

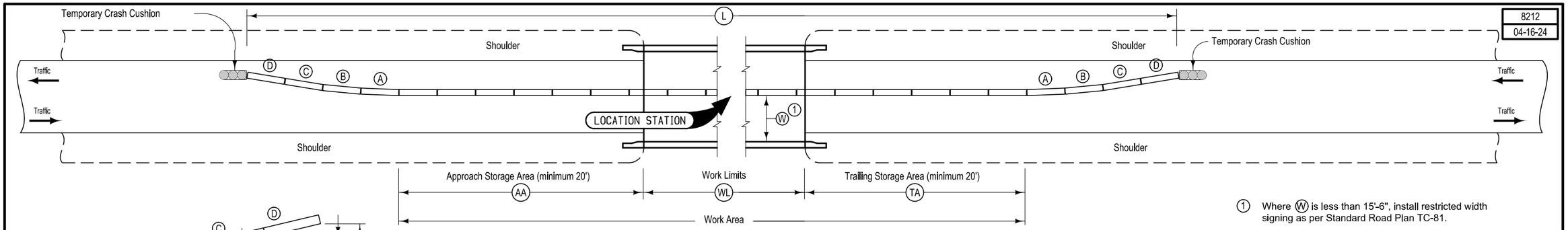
(4) 'BT' joint (per PV-101) for PCC shoulder.
'B' joint (per PV-101) for HMA shoulder.

(5) Refer to other details in the plan.

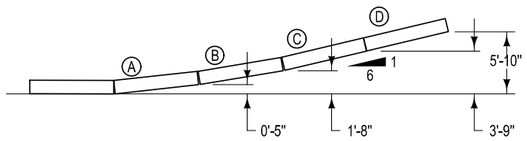


Section C-C
Roll down at granular shoulder or earth.

PAVED SHOULDER AT GUARDRAIL
(GRANULAR SHOULDER ADJACENT TO MAINLINE)



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



BARRIER OFFSETS FOR FLARE SECTIONS

TEMPORARY CONCRETE BARRIER LAYOUT for Two-Way Traffic

Station	Side	AA	WL	TA	L	Anchored	W (1)	Remarks
		Feet	Feet	Feet	Feet	X	Ft-Inches	
								STAGE 2
282+62.00	EB	25.0	472.5	25.0	612.5		17-0	49 Sections of 12.5' TBR in Accordance with TC-217
								STAGE 3
282+62.00	WB	25.0	472.5	25.0	612.5		17-0	49 Sections of 12.5' TBR in Accordance with TC-217

ESTIMATED PROJECT QUANTITIES AND REFERENCE NOTES

Item no.	Item Code	Item	Unit	Quantities	Estimate Reference Notes
				Estimated	
				Roadway Items	
1	2102-0425071	SPECIAL BACKFILL	CY	332.2	Refer to Typical 7156 and Tab. 112-09.
2	2102-2625000	EMBANKMENT-IN-PLACE	CY	40	Refer to Tab. 107-23. Provide borrow material according to Section 2102 of the Standard Specifications. Material shall be provided by the Contractor. No cross sections will be provided.
3	2102-2713070	EXCAVATION, CLASS 13, ROADWAY AND BORROW	CY	596.8	Refer to Typical 7156 and Tab. 112-09. Dispose of excess material according to Article 1106.07 of the current Specifications.
4	2105-8425015	TOPSOIL, STRIP, SALVAGE AND SPREAD	CY	40	Refer to Tab. 103-10. Strip 6 inches of topsoil with the limits of grading. After excavating to the sub grade elevations spread the stockpiled topsoil to an 4 inch depth across the grading area. Seed the disturbed topsoil stockpile area as per Section 2601.05 of the Standard Specifications. Seeding of the stockpile areas shall be considered incidental to this bid item.
5	2122-5500090	PAVED SHOULDER, HOT MIX ASPHALT MIXTURE, 9 IN.	SY	409.2	Refer to Typical 7156 and Tab. 112-09.
6	2122-7450080	SHOULDER STRENGTHENING, OPTIONAL HOT MIX ASPHALT MIXTURE OR PORTLAND CEMENT CONCRETE, 8 IN.	SY	1,583.2	Refer to J Sheets and Tab. 112-09.
7	2301-0690203	BRIDGE APPROACH, BR-203	SY	749.6	Refer to Tab. 112-06.
8	2412-0000100	LONGITUDINAL GROOVING IN CONCRETE, BRIDGE DECK	SY	1,448.1	Refer to Tab. 100-28.
9	2503-0500402	BRIDGE END DRAIN, DR-402	EACH	2	Refer to Tab. 104-08A.
10	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL	LF	440	Refer to Tab. 110-07A.
11	2505-4008300	STEEL BEAM GUARDRAIL	LF	150	Refer to Tab. 108-08A.
12	2505-4008410	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION, BA-201	EACH	4	
13	2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED	EACH	4	
14	2505-4021720	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-205	EACH	4	
15	2510-6745850	REMOVAL OF PAVEMENT	SY	1,388.8	Refer to Tab. 110-1.
16	2527-9263181	PAVEMENT MARKINGS REMOVED	STA	75.91	Refer to Tab. 108-22.
17	2527-9263209	PAINTED PAVEMENT MARKINGS, WATERBORNE OR SOLVENT-BASED	STA	81.57	

Item no.	Item Code	Item	Unit	Quantities	Estimate Reference Notes
				Estimated	
				Roadway Items	
18	2527-9263231	REMOVABLE TAPE MARKINGS, WET RETROREFLECTIVE	STA	25.6	
19	2528-8400048	TEMPORARY BARRIER RAIL, CONCRETE	LF	1,225	Refer to J Sheets, Sheet B.2, and Tab. 108-33. Temporary barrier rail shall be 128 nominal 12'-6" long concrete units.
20	2528-8400256	TEMPORARY TRAFFIC SIGNALS	EACH	1	Refer to J Sheets and Tab. 108-28. This setup of Temporary Traffic Signals is considered one group installation.
21	2528-8445110	TRAFFIC CONTROL	LS	1	Refer to J Sheets.
22	2551-0000110	TEMP CRASH CUSHION	EACH	4	Refer to J Sheets and Tab. 108-30.
23	2602-0000320	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 20 IN. DIA.	LF	900	Refer to Tab 100-19. The tabulation includes estimated locations for placement of "Perimeter and Slope Sediment Control Device, 20 in. dia." to address erosion to be encountered during construction. Verify the specific locations with the Engineer prior to beginning placement. Bid item includes 25% additional quantity for field adjustments and replacements. Use Perimeter and Slope Sediment Control Devices fabricated using wood excelsior.
24	2602-0000351	REMOVAL OF PERIMETER AND SLOPE OR DITCH CHECK SEDIMENT CONTROL DEVICE	LF	900	

100_01D
8/15/22

PROJECT DESCRIPTION

This project is for the bridge deck overlay and bridge approach of the 171' x 44' bridge (FHWA No. 50040) over Twelve Mile Creek, 6 miles east of the town of Creston. It also includes replacing the guardrails.

STANDARDS

The following Standards apply to construction work on this project.

Number	Date	Title
BA-200	10-20-26	Steel Beam Guardrail Components
BA-201	10-18-22	Steel Beam Guardrail Barrier Transition Section (MASH TL-3)
BA-202	10-20-26	Steel Beam Guardrail Bolted End Anchor
BA-205	10-17-23	Steel Beam Guardrail Tangent End Terminal (MASH TL-3)
BA-250	10-20-26	Steel Beam Guardrail Installation at Concrete Barrier or Bridge End Post (MASH TL-3)
BA-401	04-20-21	Temporary Barrier Rail (Precast Concrete)
BA-500	04-20-21	Temporary Crash Cushions Sand Barrel
BR-203	10-20-26	Double Reinforced 12in Approach
DR-402	04-16-24	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	10-20-26	Guardrail Grading
PM-110	10-15-24	Line Types
PV-101	10-20-26	Joints
PV-102	10-21-25	PCC Curb Details
SI-211	10-18-22	Object Marker and Delineator Placement with Guardrail
TC-1	10-15-19	Work Not Affecting Traffic (Two-Lane or Multi-Lane)
TC-202	04-18-23	Work Within 15 ft of Traveled Way
TC-213	04-18-23	Lane Closure with Flaggers
TC-217	10-20-26	Lane Closure with Signals and TBR

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PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE

Possible Standards: EC-204

Line No.	Station From	Station To	Side	Sediment Control Device Type	Diameter Size	Length (LF)	Remarks
1.0	280+20.00	281+80.00	Left	Perimeter and Slope	20 inch	160.00	West of Bridge
2.0	280+00.00	282+00.00	Right	Perimeter and Slope	20 inch	200.00	West of Bridge
3.0							
4.0	283+40.00	285+40.00	Left	Perimeter and Slope	20 inch	200.00	East of Bridge
5.0	283+60.00	285+20.00	Right	Perimeter and Slope	20 inch	160.00	East of Bridge
6.0							
7.0				Perimeter and Slope	20 inch	720.00	TOTAL
8.0							
9.0				Perimeter and Slope	20 inch	180.00	+25% INCLUDED FOR REPLACEMENTS
10.0							
11.0				Perimeter and Slope	20 inch	900.00	TOTAL WITH REPLACEMENTS

LONGITUDINAL GROOVING

Location	Total (SY)	Remarks
281+09.69	336.7	West Bridge Approach
283+53.80	336.7	East Bridge Approach
282+62.00	774.7	Bridge Deck
	673.4	TOTAL: Bridge Approach
	774.7	TOTAL: Bridge Deck

EXISTING PAVEMENT

County	Route	Direction of Travel	Begin Ref. Location Sign	End Ref. Location Sign	Year	Type	Project Number	Surface Type	Surface Depth (IN)	Base Type	Base Depth (IN)	Subbase Type	Subbase Depth (IN)	Removal Type	Removal Depth (IN)	Coarse Aggregate Source	Coarse Aggregate Type	Course Aggregate Durability Class	Reinforcement Type	Remarks
Union	US 34	Both	84.77	92.80	2022	M	MP-034-4(710)85--76-88	PCC												PCC Patching
Union	US 34	Both	84.77	92.80	2006	W	HES-34-4(41)--2H-88	HMA	1.5	HMA	2.0	HMA	3.0			Van Meter	Gravel			
Union	US 34	Both	84.77	92.80	2006		HES-34-4(41)--2H-88	HMA	1.5	HMA	2.0	HMA	2.0			Van Meter	Gravel			
Union	US 34	Both	84.77	92.80	1973		F-FG-34-4(8)--24-88	PCC	8.5							Thayer	Gravel	1		DUR=0

TOPSOIL STRIPPING AND PLACEMENT

Road Identification	Dir. of Traffic	Station From	Station To	Topsoil Stripping Thickness (IN)	Topsoil Placement Thickness (IN)	Remarks
US Highway 34	2-Lane	280+30.00	281+65.00	6.0	4.0	Left (North) Ditch - West of Bridge - 400 SF
US Highway 34	2-Lane	280+00.00	281+80.00	6.0	4.0	Right (South) Ditch - West of Bridge - 555 SF
US Highway 34	2-Lane	283+55.00	285+35.00	6.0	4.0	Left (North) Ditch - East of Bridge - 555 SF
US Highway 34	2-Lane	283+70.00	285+05.00	6.0	4.0	Right (South) Ditch - East of Bridge - 400 SF
						TOTAL CY = 40.0

104_08A
8/15/22

SCOUR PROTECTION OR ROCK FLUME FOR BRIDGE END DRAIN

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

Bridge Station	Bridge Corner	Distance DI-1 or DI-2 (FT)	Bridge End Drain Type	Macadam Stone Base (TONS)	Engineering Fabric (SY)	Erosion Stone (TON)	Remarks
282+62.00	NW	39.2	DR-402	1.500	31.4	19.000	Left (North) Side - W. of Bridge - STA 281+35.50
282+62.00	NW	39.2	DR-402	1.500	50.4	32.100	Right (South) Side - W. of Bridge - STA 281+51.52
				3.000	81.8	51.100	TOTAL

GRADING FOR GUARDRAIL INSTALLATIONS

Refer to EW-301.

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

Direction of Traffic (1)	Station	Side	X1 (FT)	Y1 (FT)	X4 (FT)	Y4 (FT)	Z (FT)	Embankment-in-Place (CY)	Remarks
2-Lane	281+67.67	Left	43.9	5.0	100.0	7.3	48.0	10.0	Northwest Corner of Bridge
2-Lane	281+83.27	Right	93.9	5.0	150.0	7.3	48.0	10.0	Southwest Corner of Bridge
2-Lane	283+53.21	Left	93.9	5.0	150.0	7.3	48.0	10.0	Northeast Corner of Bridge
2-Lane	283+69.23	Right	43.9	5.0	100.0	7.3	48.0	10.0	Southeast Corner of Bridge
								40.0	TOTAL

STEEL BEAM GUARDRAIL AT CONCRETE BARRIER OR BRIDGE RAIL END SECTION

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

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

Direction of Travel (1)	Side	Station	Offset (FT)	Barrier Transition Section	Barrier Transition Section (EA)	End Terminal	End Terminal Count (EA)	VT1 (LF)	VF (LF)	VT2 (LF)	ET (LF)	SI-211 (Type) (2)	Object Marker Type 2 (EA) (2)	Object Marker Type 3 Lt (EA)(2)	Object Marker Type 3 Rt (EA)(2)	Bolted End Anchor BA-202 (Type)	Bolted End Anchor BA-202 (EA)	Steel Beam Guardrail BA-200 (LF)	Remarks
2-Lane	Left	281+69.86	22.8	BA-201	1	BA-205	1	52.600			47.70	3		1	1	B	1	12.5	Northwest Corner of Bridge
2-Lane	Right	281+85.87	22.8	BA-201	1	BA-205	1	102.600			47.70	3		1	1	B	1	62.5	Southwest Corner of Bridge
2-Lane	Left	283+50.61	22.8	BA-201	1	BA-205	1	102.600			47.70	3		1	1	B	1	62.5	Northeast Corner of Bridge
2-Lane	Right	283+66.62	22.8	BA-201	1	BA-205	1	52.600			47.70	3		1	1	B	1	12.5	Southeast Corner of Bridge
					4		4				47.70			4	4		4	150.0	TOTAL

PAVEMENT MARKING LINE TYPES

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

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

Line No.	Station From	Station To	Lane	Marking Type	Left	Center	Right	BCY6 (STA)	BCY6 Factored (STA)	CHW8 (STA)	CHW8 Factored (STA)	DCY6 (STA)	DCY6 Factored (STA)	ELW6 (STA)	ELW6 Factored (STA)	NPY6** (STA)	NPY6** Factored (STA)	SLW2 (STA)	SLW2 Factored (STA)	Remarks
																				US Highway 34
																				BEFORE STAGE 2
																				REMOVALS
6.0	276+90.00	288+10.00	Both	Removal of Paint	x	x	x	11.20	2.80					22.40	22.40					Existing Broken Centerline and White Edge Line
																				PROPOSED PAVEMENT MARKINGS
9.0	261+90.00	276+90.00	Both	Waterborne/Solvent Paint		x										15.00	18.75			No Passing Zone Line Right
10.0	276+90.00	276+90.00	EB	Waterborne/Solvent Paint		x												0.12	0.48	Stop Bar
11.0	276+90.00	279+30.00	Both	Wet Retroreflective Removable Tape	x		x			4.80	6.38									Taper - White Edge Lines
12.0	279+30.00	285+70.00	Both	Waterborne/Solvent Paint	x		x							12.80	12.80					White Edge Lines
13.0	285+70.00	288+10.00	Both	Wet Retroreflective Removable Tape	x		x			4.80	6.38									Taper - White Edge Lines
14.0	288+10.00	288+10.00	WB	Waterborne/Solvent Paint		x												0.12	0.48	Stop Bar
15.0	288+10.00	289+75.00	Both	Waterborne/Solvent Paint		x						1.65	3.30							Double Centerline
																				BEFORE STAGE 3
																				REMOVALS
21.0	261+90.00	262+25.00	Both	Removal of Paint		x										0.35	0.44			Stage 2 NPZY Right
22.0	276+90.00	276+90.00	EB	Removal of Paint		x												0.12	0.48	Stage 2 Stop Bar
23.0	276+90.00	279+30.00	Both	Removal of Removable Tape	x		x			4.80	6.38									Stage 2 Taper - White Edge Lines
24.0	279+30.00	285+70.00	Both	Removal of Paint	x		x							12.80	12.80					Stage 2 White Edge Lines
25.0	285+70.00	288+10.00	Both	Removal of Removable Tape	x		x			4.80	6.38									Stage 2 Taper - White Edge Lines
26.0	288+10.00	288+10.00	WB	Removal of Paint		x												0.12	0.48	Stage 2 Stop Bar
27.0	288+10.00	288+45.00	Both	Removal of Paint	x	x	x					0.35	0.70	0.70	0.70					Stage 2 DCY and Existing White Edge Line
																				PROPOSED PAVEMENT MARKINGS
30.0	261+90.00	262+25.00	Both	Waterborne/Solvent Paint		x		0.35	0.09											Broken Centerline
31.0	276+90.00	277+25.00	Both	Waterborne/Solvent Paint	x	x	x							0.70	0.70	0.35	0.44			NPZY Right and White Edge Lines
32.0	277+25.00	277+25.00	EB	Waterborne/Solvent Paint		x												0.12	0.48	Stop Bar
33.0	277+25.00	279+65.00	Both	Wet Retroreflective Removable Tape	x		x			4.80	6.38									Taper - White Edge Lines
34.0	279+65.00	286+05.00	Both	Waterborne/Solvent Paint	x		x							12.80	12.80					White Edge Lines
35.0	286+05.00	288+45.00	Both	Wet Retroreflective Removable Tape	x		x			4.80	6.38									Taper - White Edge Lines
36.0	288+45.00	288+45.00	WB	Waterborne/Solvent Paint		x												0.12	0.48	Stop Bar
																				FINAL
																				REMOVALS
42.0	262+25.00	277+25.00	Both	Removal of Paint		x										15.00	18.75			Stage 2 and 3 No Passing Zone Line Right
43.0	277+25.00	277+25.00	EB	Removal of Paint		x												0.12	0.48	Stage 3 Stop Bar

PAVEMENT MARKING LINE TYPES

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

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

Line No.	Station From	Station To	Lane	Marking Type	Left	Center	Right	BCY6 (STA)	BCY6 Factored (STA)	CHW8 (STA)	CHW8 Factored (STA)	DCY6 (STA)	DCY6 Factored (STA)	ELW6 (STA)	ELW6 Factored (STA)	NPY6** (STA)	NPY6** Factored (STA)	SLW2 (STA)	SLW2 Factored (STA)	Remarks
44.0	277+25.00	279+65.00	Both	Removal of Removable Tape	x		x			4.80	6.38									Stage 3 Taper - White Edge Lines
45.0	279+65.00	286+05.00	Both	Removal of Paint	x		x							12.80	12.80					Stage 3 White Edge Lines
46.0	286+05.00	288+45.00	Both	Removal of Removable Tape	x		x			4.80	6.38									Stage 3 Taper - White Edge Lines
47.0	288+45.00	288+45.00	WB	Removal of Paint		x												0.12	0.48	Stage 3 Stop Bar
48.0	288+45.00	289+75.00	Both	Removal of Paint		x						1.30	2.60							Stage 2 and 3 Double Centerline
																				EXISTING REINSTALLED
51.0	262+25.00	277+25.00	Both	Waterborne/Solvent Paint		x		15.00	3.75											Broken Centerline
52.0	277+25.00	288+25.00	Both	Waterborne/Solvent Paint	x	x	x	11.00	2.75					22.00	22.00					Broken Centerline and White Edge Line
53.0	288+25.00	288+45.00	Both	Waterborne/Solvent Paint	x	x	x							0.40	0.40	0.20	0.25			NPZY Right and White Edge Line
54.0	288+45.00	289+75.00	Both	Waterborne/Solvent Paint		x										1.30	1.63			NPZY Right
				Waterborne/Solvent Paint				26.35	6.59			1.65	3.30	48.70	48.70	16.85	21.06	0.48	1.92	Sum: Waterborne/Solvent Paint
				Wet Retroreflective Removable Tape						19.20	25.60									Sum: Wet Retroreflective Removable Tape
				Removal of Paint				11.20	2.80			1.65	3.30	48.70	48.70	15.35	19.19	0.48	1.92	Sum: Removal of Paint
				Removal of Removable Tape						19.20	25.60									Sum: Removal of Removable Tape
																			81.57	STA - TOTAL: Painted Pavement Markings, Waterborn.
																			25.60	STA - TOTAL: Removable Tape Markings, Wet Retrore.
																			75.91	STA - TOTAL: Pavement Markings Removed
																			25.60	STA - TOTAL: Rem. of Rem. Tape (Incidental)

110_01
4/5/24

REMOVAL OF PAVEMENT

Refer to Tabulation 102-5.

* Not a bid item.

Station From	Station To	Side	Pavement Type	Area (SY)	Saw Cut* (LF)	Remarks
						BRIDGE APPROACH
281+09.69	281+82.68	All	HMA over PCC	292.1	33.0	West of Bridge
283+53.80	284+26.81	All	HMA over PCC	292.1	33.0	East of Bridge
				584.2	66.0	TOTAL
						EXISTING HMA SHOULDER
276+40.00	281+09.67	Left	HMA	208.7	469.7	Left (North) Side - West of Bridge
276+74.00	281+09.67	Right	HMA	193.6	435.7	Right (South) Side - West of Bridge
284+26.81	288+62.48	Left	HMA	193.6	435.7	Left (North) Side - East of Bridge
284+26.81	288+96.47	Right	HMA	208.7	469.7	Right (South) Side - East of Bridge
				804.6	1810.8	TOTAL
				1388.8	1876.8	TOTAL - Approach and Shoulder

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 (1)	Station From	Station To	Side	Removal of Guardrail (2) (LF)
1	EB	280+60.00	281+70.00	Left	110.0
2	EB	280+75.00	281+85.00	Right	110.0
3	WB	283+50.00	284+60.00	Left	110.0
4	WB	283+60.00	284+70.00	Right	110.0
					Total: 440.0 LF

BRIDGE APPROACH SECTION

Refer to the BR Series.

* Not a bid item
** Verify layout of bridge approach does not conflict with guardrail posts.

Line No.	Bridge Station	End	Skew Ahead Left (Degrees)	Skew Ahead Right (Degrees)	(T) Thickness (IN)	Pay Length (FT)	Right Edge Offset (FT) **	Left Edge Offset (FT) **	Non-Reinf. Area (SY)	Single-Reinf. Area (SY)	Double-Reinf. Area (SY)	SRP Approach	SRP Abutment Type	SRP Abutting Pavement	Perforated * 4" Subdrain (LF)	Subdrain * Outlet (STA)	Subdrain * Outlet Side	Porous * Backfill (CY)	Modified * Subbase (TON)	Polymer * Grid (SY)	Special * Backfill (TON)	Remarks
1.0	282+62.00	W	20.0	20.0	12.0	73.0	23.2	23.2	154.7	103.1	117.0	BR-203	Movable	BR-211	56.0	281+19.69	Left	1.6	363.200	403.6		Subdrain Outlet on the North Side
2.0	282+62.00	E	20.0	20.0	12.0	73.0	23.2	23.2	154.7	103.1	117.0	BR-203	Movable	BR-211	56.0	284+16.81	Left	1.6	363.200	403.6		Subdrain Outlet on the North Side
3.0																						
4.0									309.4	206.2	234.0				112.0			3.2	726.400	807.2		TOTAL AREA (SY) = 749.6

SHOULDERS

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

Roadway Identification	Direction of Travel (1)	Station From	Station To	Side	P Start Width (FT)	P End Width (FT)	L Length (FT)	Class 13 Excavation (CY)(3)(4)	Paved Shoulder (3) (SY)	Paved Shoulder at Grdrail (5)(7)(SY)	Subbase (3) (8) (CY)	Remarks
US Highway 34												6" Special Backfill Subbase for All Shoulders
												PAVED SHOULDER AT GUARDRAIL
	WB	280+48.97	281+09.69	Right	12.7	11.0	60.70	27.8		82.0	13.70	Northwest Corner of Bridge
	EB	280+14.99	281+09.69	Right	12.7	10.7	94.70	41.4		122.6	20.40	Southwest Corner of Bridge
	WB	284+26.81	285+21.48	Right	10.7	12.7	94.70	41.4		122.6	20.40	Northeast Corner of Bridge
	EB	284+26.81	284+87.48	Right	11.0	12.7	60.70	27.8		82.0	13.70	Southeast Corner of Bridge
												SHOULDER STRENGTHENING
	WB	276+40.00	280+48.97	Right	9.5	9.5	409.00	125.0	431.7		72.00	Northwest Corner of Bridge
	EB	276+74.00	280+14.99	Right	9.5	9.5	341.00	104.2	359.9		60.00	Southwest Corner of Bridge
	WB	285+21.48	288+62.48	Right	9.5	9.5	341.00	104.2	359.9		60.00	Northeast Corner of Bridge
	EB	284+87.48	288+96.47	Right	9.5	9.5	409.00	125.0	431.7		72.00	Southeast Corner of Bridge
								596.8	1583.2	409.2	332.20	TOTAL

CRASH CUSHIONS

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

Lane	Station	Side	Obstacle Width (FT)	Crash Cushion Type	Crash Cushion Quantity	Obstacle Description	Remarks
EB	279+38.00	Right	2.0	Temporary	1	Temporary Barrier Rail	Stage 2 - West End of TBR
EB	285+65.00	Right	2.0	Temporary	1	Temporary Barrier Rail	Stage 2 - East End of TBR
WB	279+38.00	Left	2.0	Temporary	1	Temporary Barrier Rail	Stage 3 - West End of TBR
WB	285+65.00	Left	2.0	Temporary	1	Temporary Barrier Rail	Stage 3 - East End of TBR
					4		TOTAL

TEMPORARY BARRIER RAIL

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

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

No.	Station From	Station To	Length (FT)	Barrier Rail Type	Anchored*	Modular Glare Screen System	Remarks
							STAGE 2
1	279+38.00	285+65.00	612.5	Concrete BA-401		No	49 Sections of 12.5' TBR in Accordance with TC-217
							STAGE 3
2	279+38.00	285+65.00	612.5	Concrete BA-401		No	49 Sections of 12.5' TBR in Accordance with TC-217
			1225.0				TOTAL

108_28
8/15/22

TEMPORARY TRAFFIC SIGNALS

Item No.	Station	Signal Type	Remarks
1	282+62.00	One Lane Traffic	Refer to the J Sheets and SRP TC-217

262_06
9/28/22

UTILITIES (NOT A POINT 25 PROJECT)

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

262_07
10/15/24

TABULATION OF UTILITIES

Company name : ALLIANT ENERGY
Design contact: Alliant Energy Field Engineer
Phone: 800-255-4268
Email: locate_IPL@alliantenergy.com

Company name : WINDSTREAM ENTERPRISE
Design contact: CLEC LOCATE DESK
Phone: 800-941-3430
Email: wci.clec.locate@windstream.com

Company name : CRESTON, CITY OF (WATER WORKS)
Design contact: RICK REED
Phone: 641-782-5817
Email: crestonwaterworks@gmail.com

Company name : AUREON NETWORK SERVICES
Design contact: Jeff Klocko
Phone: 515-830-0445
Email: jeff.klocko@aureon.com

Company name : SOUTHERN IOWA RURAL WATER ASSO
Design contact: Chad Mahan
Phone: 641-782-5744
Email: cmahan@sirwa.org

Company name : WINDSTREAM COMMUNICATIONS
Design contact: LOCATE DESK
Phone: 800-289-1901
Email: LOCATE.DESK@WINDSTREAM.COM

232_03A
9/28/22

EROSION CONTROL (RURAL SEEDING)

Area to be seeded is estimated to be less than 1 acre. If the contractor determines the area exceeds 2 acres, notify the Engineer. Approved quantity in excess of 2 acres will be paid for as extra work according to Article 1109.03,B of the Standard Specifications.

Following the completion of work in a disturbed area and according to the seeding dates in Section 2601 of the Standard Specifications, place seed, fertilizer, and mulch on the disturbed area lying 8 feet adjacent to shoulder and median as follows:

Place seed and fertilize according to the requirements of Article 2601.03,C,3 and Section 4169 of the Standard Specifications.

Place mulch according to the requirements of Articles 2601.03,E,2,a and 4169.07,A of the Standard Specifications.

Preparing the seedbed, furnishing and applying seed, fertilizer, and mulch are all incidental to mobilization and will not be paid for separately.

SURVEY SYMBOLS

- 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
- WH Water Hydrant (Rural)

- ST Septic Tank
- C Cistern
- LP L.P. Gas Tank (No Footing)
- UST Underground Storage Tank
- Latrine
- Satellite TV Dish
- WHU Water Hook Up
- RT Radio Tower
- TA Tower Anchor
- Guardrail (Beam or Cable)
- GP Guard Post (one or two)
- Guard Post (over two)
- FP Filler Pipe
- GV Gas Valve
- WV Water Valve
- SL Speed Limit Sign
- MM Mile Marker Post
- SIGN Sign
- TCB Traffic Signal Control Box
- RRB Rail Road Signal Control Box
- TSB Telephone Switch Box
- EB Electric Box

UTILITY LEGEND

E2(B)
ALLIANT ENERGY
Alliant Energy Field Engineer
800-255-4268
locate_IPL@alliantenergy.com

E3
CRESTON, CITY OF (WATER WORKS)
RICK REED
641-782-5817
crestonwaterworks@gmail.com

E1(B)
AUREON NETWORK SERVICES
Jeff Klocko
515-830-0445
jeff.klocko@aureon.com

W
SOUTHERN IOWA RURAL WATER ASSO
Chad Mahan
641-782-5744
cmahan@sirwa.org

T1
WINDSTREAM COMMUNICATIONS
LOCATE DESK
800-289-1901
LOCATE.DESK@WINDSTREAM.COM

T1(B)

FO(B)
WINDSTREAM ENTERPRISE
CLEC LOCATE DESK
800-941-3430
wci.clec.locate@windstream.com

FO2(B)

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 — Survey Line
- 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

LINE STYLE LEGEND OF EROSION CONTROL SHEETS

LINESTYLE	Design Element
	Silt Fence
9	Perimeter and Slope Sediment Control Device (9")
12	Perimeter and Slope Sediment Control Device (12")
20	Perimeter and Slope Sediment Control Device (20")
	Open-Throat Curb Intake Sediment Filter
	Concentrated Flow
	Rock Check and Rock Check Dam
	Sheet Flow

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES D)

FILE NO. 32396	ENGLISH	DESIGN TEAM WHKS & CO.	UNION COUNTY	PROJECT NUMBER BRF-034-4(048)--38-88	SHEET NUMBER D.1

2:36:34 PM 6/1/2026 jfeldmann pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\8803402022\Bridge\(048)_Bridge Deck Overlay\WHKS\Roadway\CADD_Files\Seed Files\Seed Files\LegendSheet_Seed.dgn

N

12 Mile Creek

280+00

281+00

282+00

283+00

284+00

285+00

STA: 281+9.69
End Paved Shoulders and Begin
12" PCC Approach per BR-203 (typ.)

STA: 281+35.50
Rock Flume per DR-402 (typ.)

STA: 284+26.81
Begin Paved Shoulders Per Detail 7156 (typ.) and
Remove and Replace Guardrail per BA-250 (typ.) and
End 12" PCC Approach

STA: 285+21.48
End Paved Shoulders

STA: 280+48.97
Begin Paved Shoulder Per Detail
7156 (typ.) and Remove and
Replace Guardrail per BA-250 (typ.)

E2(B)

Limits of Construction

STA: 281+82.68
End 12" PCC Approach

Remove Existing Guardrail
Refer to Tab. 110_07A for Details

US 34

Proposed 8"
Shoulder Strengthening

STA: 280+14.99
Begin Paved Shoulder Per Detail
7156 (typ.) and Remove and
Replace Guardrail per BA-250 (typ.)

STA: 283+53.80
Begin 12" PCC Approach per BR-203 (typ.)

Limits of Construction

STA: 284+87.48
End Paved Shoulders

Proposed 8" Shoulder Strengthening

E3

T1(B)

T1

STA: 281+51.52
Rock Flume per DR-402 (typ.)

FO2(B)

FO(B)

0 30
FEET

12 Mile Creek

UNION COUNTY (DEED)

FILE NO. 32396	ENGLISH	DESIGN TEAM WHKS & CO.	UNION COUNTY	PROJECT NUMBER BRF-034-4(048)--38-88	SHEET NUMBER D.2

2:47:43 PM 6/1/2026 jfeldmann pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\8803402022\Bridge\(048)_Bridge Deck Overlay\WHKS\Roadway\CADD_Files\Sheet Files\SHT_88034048_D02.dgn

108_23A
8/15/22

TRAFFIC CONTROL PLAN

Traffic on US Highway 34 at the bridge over 12 Mile Creek will be maintained per Standard Road Plan TC-213 and as outlined on the U Sheet and J Sheets.

Refer to Tab. 108_26A on Sheet J.2 for staging details.

The contractor must coordinate with and notify the Union County Engineering Department and the RCE prior to beginning work.

Union County Engineer:
Christian Boehmer
Phone - 641-782-7417
cboehmer@unioncountyiowa.gov

Iowa DOT District Engineer:
Dave Dorsett
Phone - 712-366-0568
Email - david.dorsett@iowadot.us

108_26A
8/15/22

STAGING NOTES

Stage 1: Westbound lane closed.

Construction:
- Westbound HMA shoulder strengthening.

Traffic Control:
- Close westbound lane. Maintain traffic in accordance with Standard Road Plan TC-213.

Stage 2: Eastbound lane closed.

Construction:
- Bridge approach pavement.
- Eastbound HMA paved shoulder adjacent to guardrail.
- Steel beam guardrail and guardrail grading.
- Bridge end drain.
- HMA shoulder strengthening.

Traffic Control:
- Close eastbound lane. Maintain traffic in accordance with Modified Standard Road Plan TC-217 shown on Sheet U.1.

Stage 3: Westbound lane closed.

Construction:
- Bridge approach pavement.
- Westbound HMA paved shoulder adjacent to guardrail.
- Steel beam guardrail and guardrail grading.
- Bridge end drain.

Traffic Control:
- Close westbound lane. Maintain traffic in accordance with Modified Standard Road Plan TC-217 shown on Sheet U.1.

511 TRAVEL RESTRICTIONS

Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No. or Structure ID or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
US 34	2-Lane	Union	6 Miles East of Creston	12 Mile Creek	Barrier	50040	Horizontal	44'	17'	16'	44'	Stage 2
US 34	2-Lane	Union	6 Miles East of Creston	12 Mile Creek	Barrier	50040	Horizontal	44'	17'	16'	44'	Stage 3

CROSS SECTION VIEW COLOR LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

SHADING	Design Color No.	
Green, Light	(225)	Existing Pavement Shading
Gray, Light	(48)	Previously Constructed Pavement Shading
Gray, Med	(80)	Previously Constructed Granular Surface Shading
Blue, Light	(230)	Proposed Pavement Shading
Lavender	(9)	Temporary Pavement Shading
Brown, Med	(237)	Future Proposed Pavement Shading

CROSS SECTION VIEW PATTERN AND SYMBOL LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

	Pavement Removal		Proposed Granular Shoulder
	Proposed Granular Subbase		Temporary Shoulder
	Proposed Special Backfill		Existing Shoulder Strengthening
	Temporary Barrier Rail		Permanent Barrier Rail
			Channelizing Device

PLAN VIEW COLOR LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

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

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

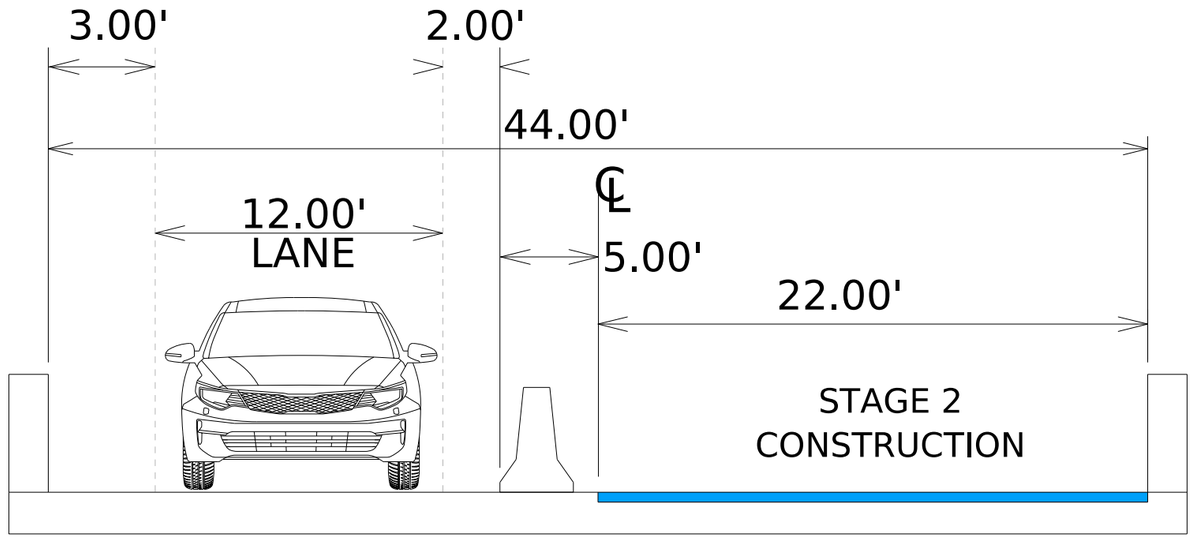
PLAN VIEW PATTERN AND SYMBOL LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

●	Channelizing Device		Crash Cushion (Temp or Perm)
✕	Drum		Traffic Signal
◘	Temporary Lane Separator		Flagger
◆	Tubular Marker		Temporary Floodlighting
♦	Channelizer Marker		Traffic Sign
△	Concrete Barrier Marker		Type III Barricade
☇	Delineator		Type A Warning Light
	Temporary Barrier Rail		Direction of Traffic
	Pavement Removal		Safety Closure
	Sand Barrel Layout	1	Lane Identification

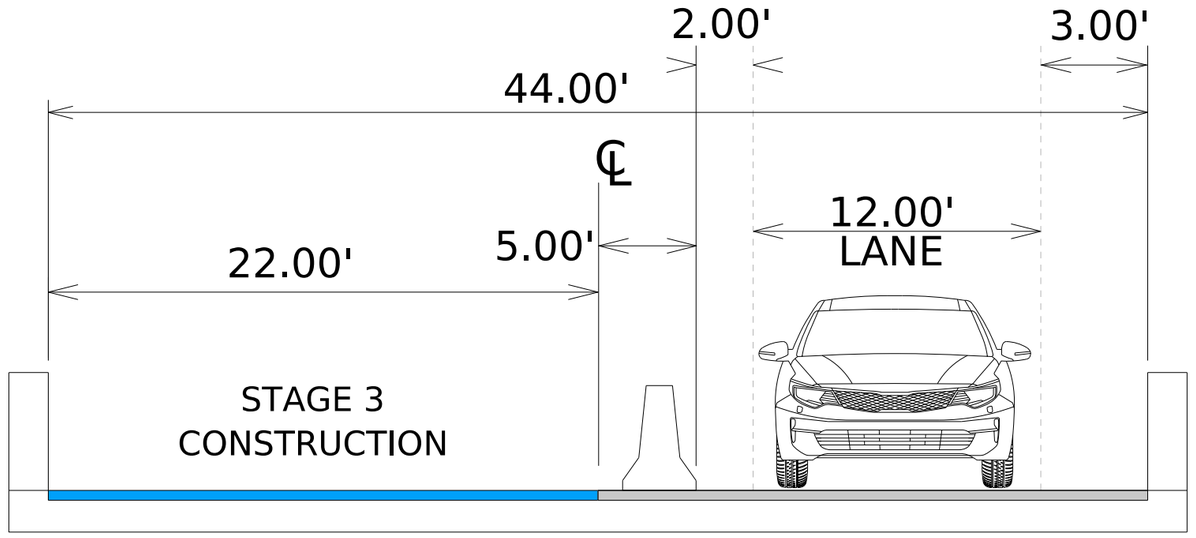
NOTE: Device spacing according to Standard Road Plans unless specifically dimensioned.

TRAFFIC CONTROL AND STAGING LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES J)

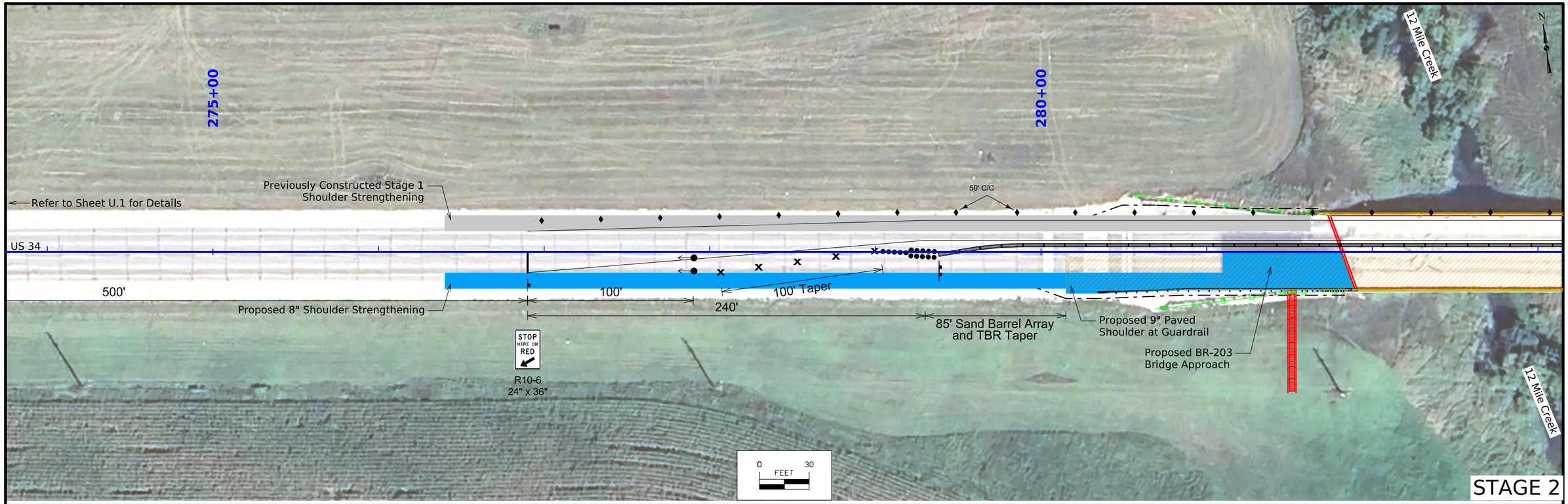


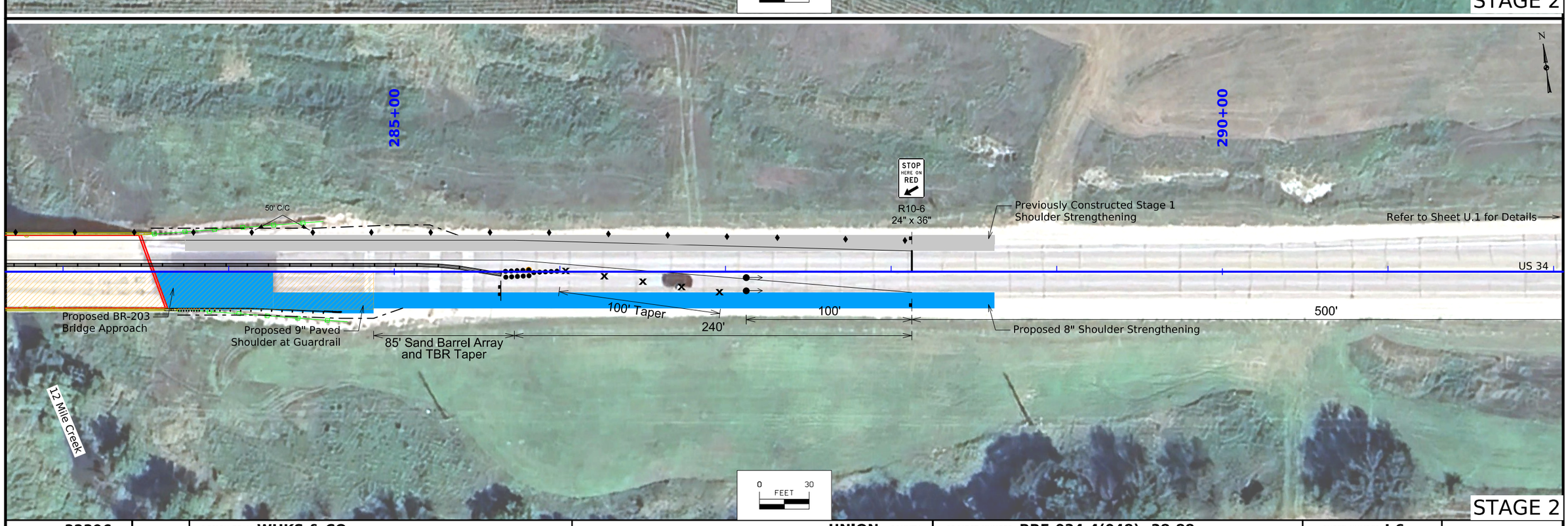
STAGE 2
Looking Ahead Station



STAGE 3
Looking Ahead Station

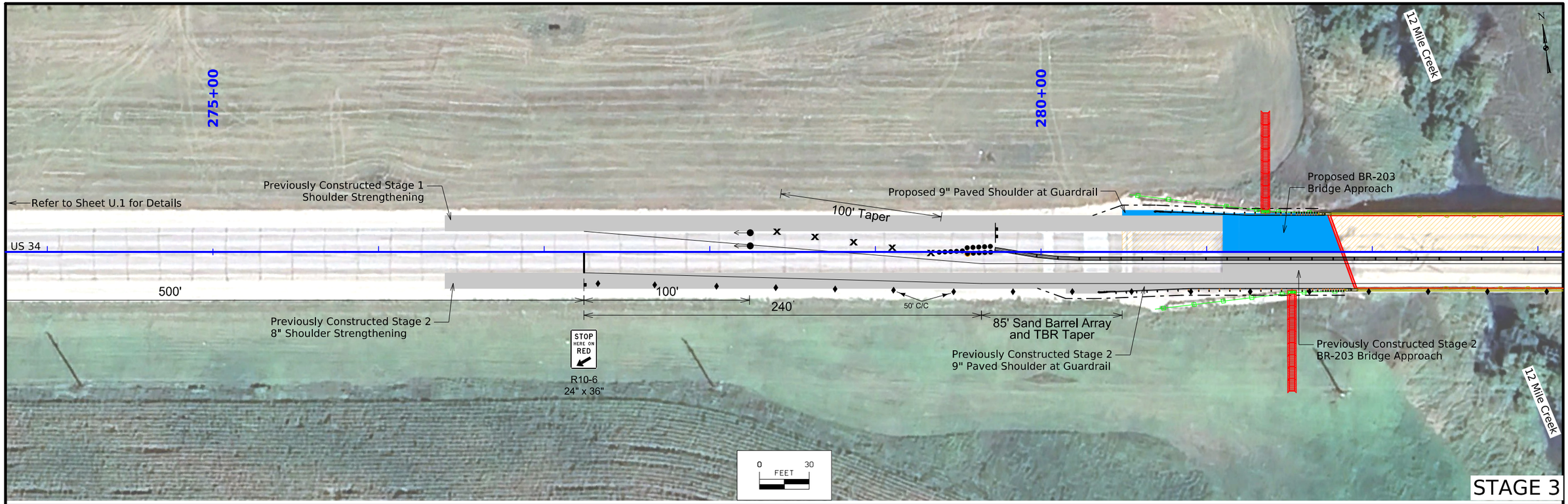
Typical Staging Sections (Not To Scale)

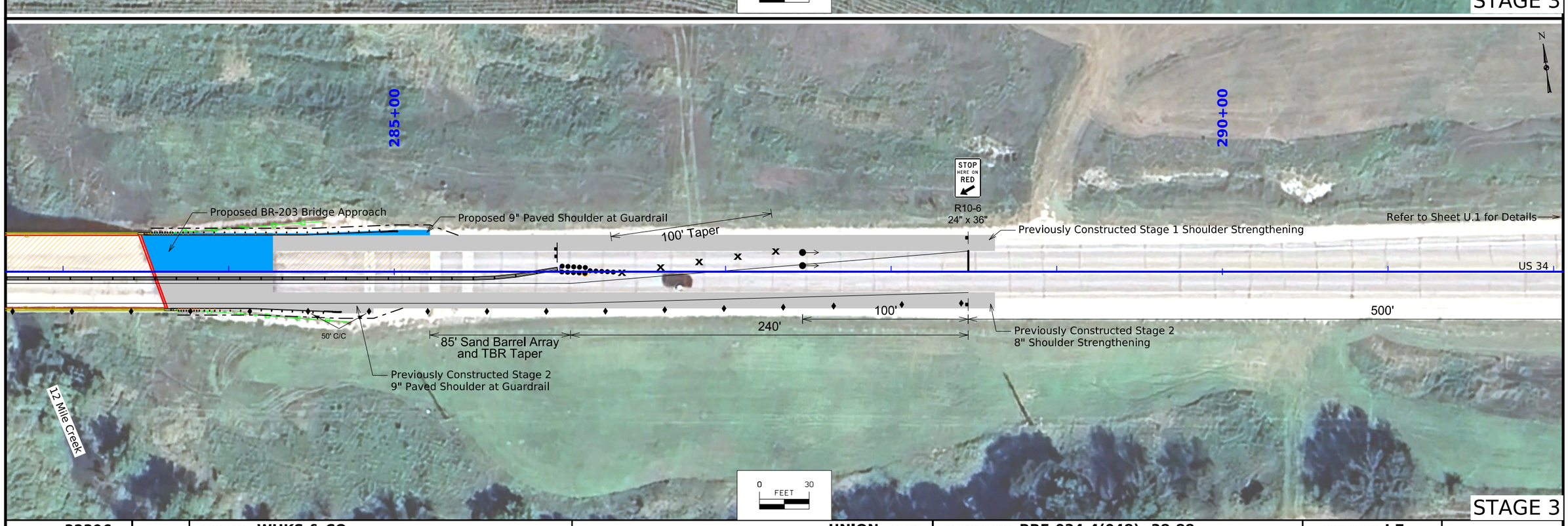




FILE NO. 32396	ENGLISH	DESIGN TEAM WHKS & CO.	UNION COUNTY	PROJECT NUMBER BRF-034-4(048)--38-88	SHEET NUMBER J.6

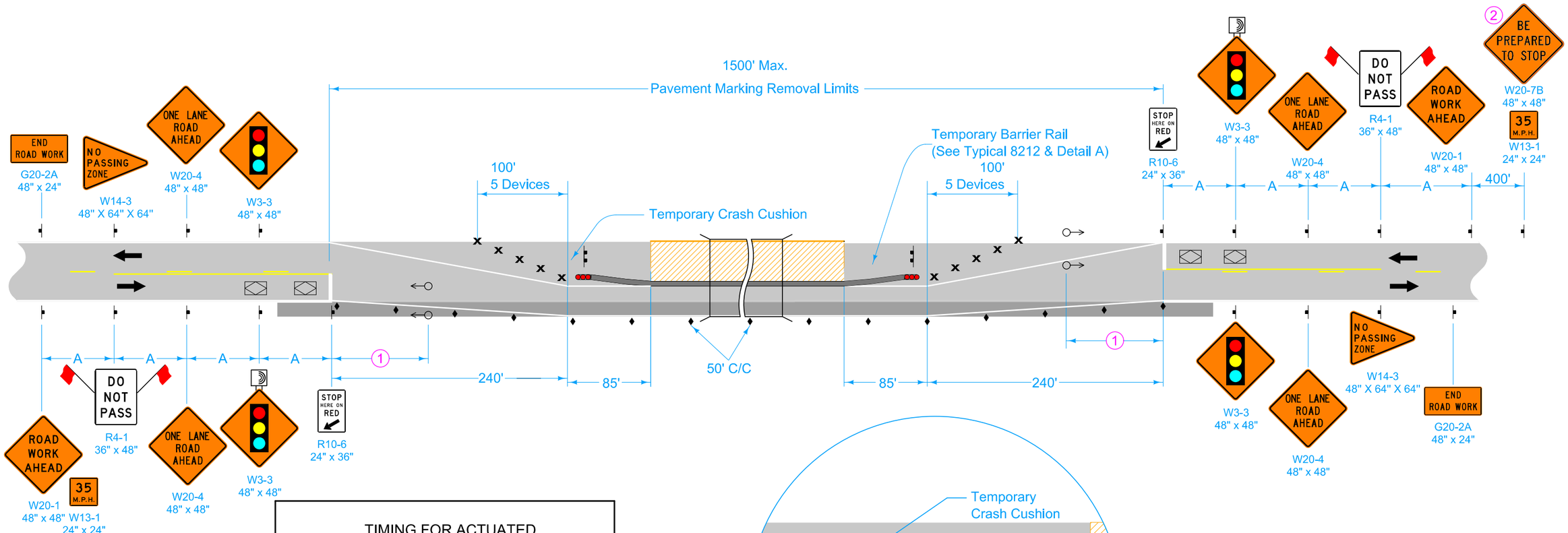
2:12:06 PM 12/18/2025 jfeldmann pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\8803402022\Bridge\(048)_Bridge Deck Overlay\WHKS\Roadway\CADD_Files\Sheet Files\SHT_88034048_J06.dgn

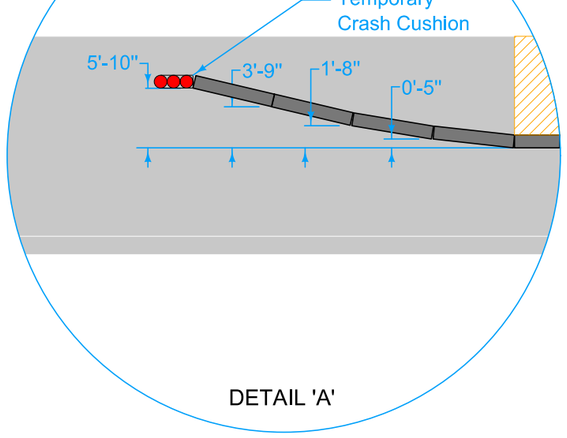




FILE NO. 32396	ENGLISH	DESIGN TEAM WHKS & CO.	UNION COUNTY	PROJECT NUMBER BRF-034-4(048)--38-88	SHEET NUMBER J.7

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DETAIL 'A'

LEGEND

- Type III Barricade
- Single White Delineators (mount back to back)
- Vehicle Detection Area
- Temporary Crash Cushion
- Direction of Traffic
- Traffic Sign
- Drum
- Type 'B' High-Intensity Flashing Warning Light
- Work Area
- Temporary Traffic Signal

TIMING FOR ACTUATED SIGNALS

Recommended Settings, (secs.)

Initial = 12.0
Extension = 2.5
Maximum Green = 45.0
Yellow = 5.0
All Red = (see table)

Distance Between Stop Lines (ft)	All Red (secs.)
1550	**27-36
1450	**25-33
1350	**23-31
1250	**21-29
1150	**20-26
1050	*21-36
950	*19-33
850	*17-30
750	*15-27
650	*14-23
550	*12-20

* Range of values are based on operating speeds between 20 and 35 mph

** Range of values are basedon operating speeds between 30 and 40 mph

SPEED LIMIT (mph)*	A
35 or less	250'
40 - 45	350'
50 or greater	500'

* Speed Limit refers to regulatory speed limit before road work.

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

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

(2) W20-7B sign to be installed along with W20-1 and W13-1 on the upstation (East) portion of traffic control during Stages 2 and 3.

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

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

REVISION 10 MODIFIED

STANDARD ROAD PLAN

TC-217

SHEET 2 of 2

REVISIONS: Added W20-7B Sign

APPROVED BY DESIGN METHODS ENGINEER

LANE CLOSURE WITH SIGNALS AND TBR