

Iowa DOT Bridges and Structures
Consultant Coordinator:
Christian Yi

**Standard Road
Plans**
Standard Road Plans are listed on Sheet C.4

Design Data Urban		
2024 AADT	5,300	V.P.D.
TRUCKS	6.8	%
Total Design ESALs	2,300,000	

Index of Seals		
Sheet No.	Name	Type
A.1	Edward Sowder *	Structural Design
A.3	Xingwei Weng *	Roadway Design

* HNTB

Edward M. Sowder
P21120
IOWA

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.

Edward M. Sowder 07-02-2026
Signature Date
Edward M. Sowder
Printed or Typed Name
My license renewal date is December 31, 2027

Pages or sheets covered by this seal: Sheets A.1, A.2, V.1 thru V.13

Index of Sheets	
No.	Description
A Sheets	Bridge Plan
A.1	Title Sheet
A.2	Location Map Sheet
V Sheets	Bridge Plan
V.1	Estimated Quantities - Design 128
V.2 - V.13	Design No. 128
Road Sheets	Road Plan
A.3 - U.1	Road Plans
C.1 - C.2	Estimated Quantities - Road
C.4	Standard Plans - Road



PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

PLYMOUTH COUNTY

Bridge Deck Overlay

IA 3 over Floyd River
1.0 mi E of US 75 in Le Mars

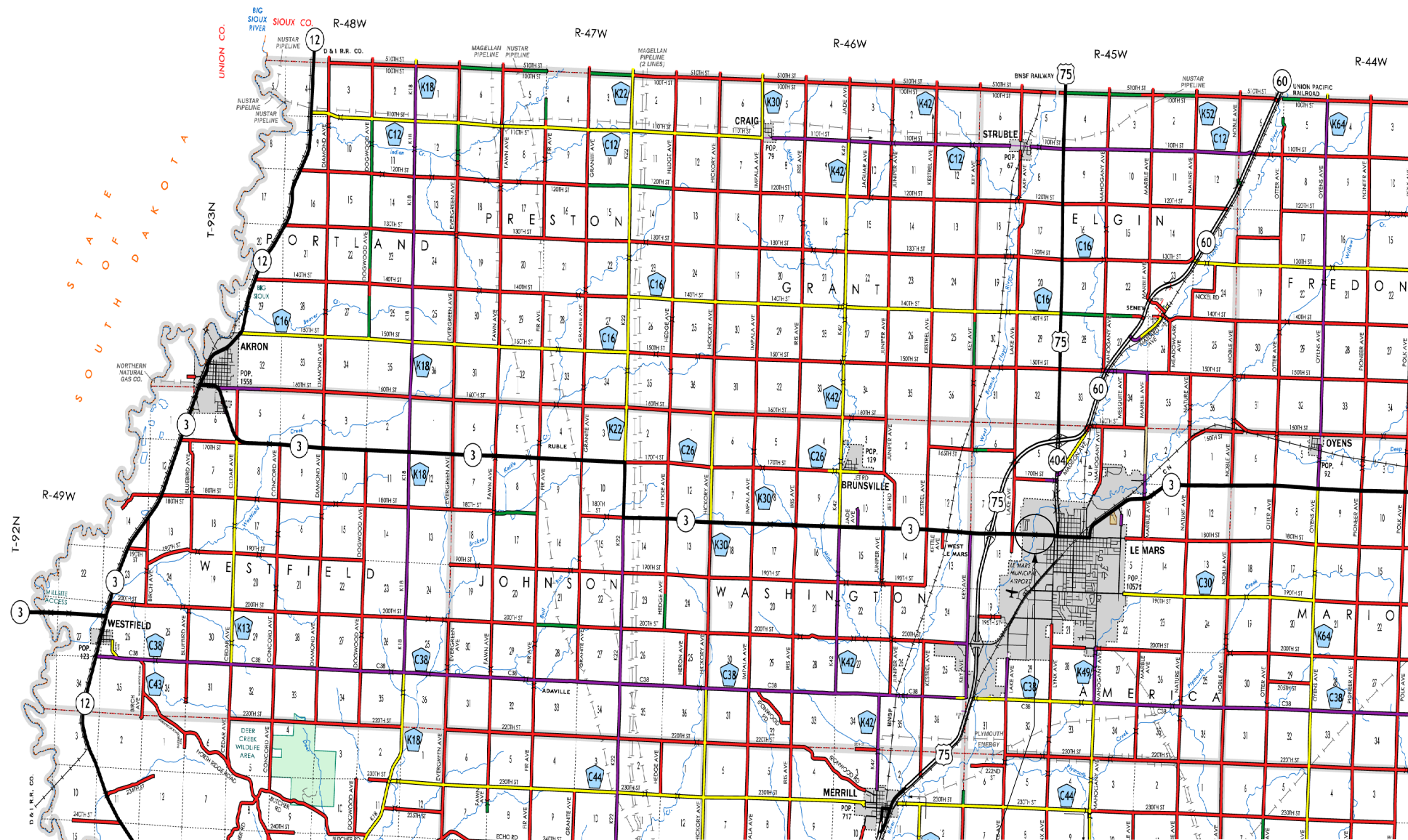
Refer to the Plan Sheets for list of applicable specifications.

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



Revisions

	TOTAL
	55
PROJECT IDENTIFICATION NUMBER	
23-75-003-030	
PROJECT NUMBER	
BRF-003-1(112)--38-75	
R.O.W. PROJECT NUMBER	
-	
PROJECT DIRECTORY NUMBER	
7500303023	



Plymouth County Location Map

Not To Scale

Part of City of Le Mars

Design No. 128
FHWA No. 039851

LEGEND

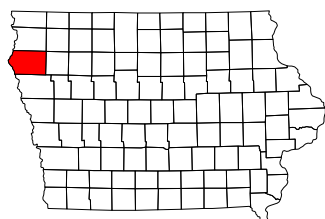
INTERSTATE HIGHWAY
PRIMARY HIGHWAY-DIVIDED
PRIMARY HIGHWAY
PORTLAND CEMENT CONCRETE ROAD
ASPHALT ROAD
BITUMINOUS ROAD
GRAVEL ROAD
EARTHEN ROAD

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



Estimated Bridge Repair Quantities and Reference Notes - Design #128									
Item No.	Item Code	Item	Unit	Quantities Estimated Design No. 128	Estimate Reference Notes				
1	2401-6750001	REMOVALS, AS PER PLAN	LS	1	Includes all work for removal and off-site disposal of items as described in the General Notes and as shown on the Situation Plan Sheet. 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. Asbestos present: No				
2	2402-2720000	EXCAVATION, CLASS 20	CY	41	Includes excavation for bridge abutments.				
3	2403-0100000	STRUCTURAL CONCRETE (MISCELLANEOUS)	CY	61.1	Includes abutment backwall, deck, rail, abutment diaphragm, and endposts. Includes all resilient joint filler required. Includes drilling holes for dowel bars.				
4	2404-7775005	REINFORCING STEEL, EPOXY-COATED	LB	5,645	--				
5	2413-0698074	DECK REPAIR, CLASS A	SY	55.5	--				
6	2426-6772013	REPAIR BEAM ENDS	EACH	4	--				
7	2501-8400172	TEMPORARY SHORING	LS	1	Includes all costs for designing, furnishing, installing and removing temporary shoring.				
8	2508-0970000	CONTAINMENT	LS	1	--				
9	2508-0991000	PAINTING OF STRUCTURAL STEEL	LS	1	Includes cost of cleaning and painting existing beam bearings at abutments.				
10	2533-4980005	MOBILIZATION	LS	1	--				
		ALTERNATE AA OPTION 1							
11	2413-0698066	DECK OVERLAY (CLASS O PCC)	SY	1666.3	Includes cleaning existing concrete rails and abutment seats, and furnishing and placing concrete sealer. See details on Situation Plan.				
		ALTERNATE AA OPTION 2							
12	2403-1000010	TRIAL BATCH AND TEST PLACEMENT (FIBER REINFORCED CONCRETE)	LS	1	Refer to the Developmental specification for Fiber Reinforcement for Structural Concrete for additional information.				
13	2413-0698067	DECK OVERLAY (CLASS HPC-O PCC)	SY	1666.3	Includes cleaning existing concrete rails and abutment seats, and furnishing and placing concrete sealer. See details on Situation Plan.				
14	2413-1000005	FIBER REINFORCEMENT FOR CONCRETE REPAIR/OVERLAY	SY	1666.3	Refer to the Developmental specification for Fiber Reinforcement for Structural Concrete for additional information.				

Note:
Roadway quantities shown elsewhere in these plans.

Design For Repair To 0° Skew

343'-6" x 44'-0" Pretensioned Prestressed Concrete Beam Bridge

68'-3" End Spans3 - 69'-0" Interior Spans

Estimated Bridge Quantities

STA. 500+50.00 (C IA 3)Turn-in Date: Sept 2026

Plymouth County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 128Design Sheet No. 1 of 13FHWA No. 039851

FILE NO. 32560ENGLISHDESIGN TEAM HNTBPLYMOUTH COUNTYPROJECT NUMBER BRF-003-1(112)--38-75SHEET NUMBER V.1

11:58:34 AM7/2/2026jwilkepw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7500303023\Bridge\112_Bridge Deck Overlay\SHT_75003112_HNTB_128_039851_Z04.dgn

General Notes:

This design is for repairs to the existing 343'-6" x 44'-0" Pretensioned Prestressed Concrete Beam Bridge on IA 3 over Floyd River. 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. 578, deck joint repair design No. 118). See Situation Plan for list of repair items.

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

Faint lines on plans indicate the existing structure.

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 Contractor of the construction starting date.

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 ¾ 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 top and interior faces of the existing concrete railing 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 included in the Unit Price Bid Item "Deck Overlay (Class O PCC)" or "Deck Overlay (Class HPC-O PCC)".

Present deck thickness is about 8 inches. The Contractor shall exercise care in removing concrete in order to prevent unnecessary unbounding of reinforcing steel.

Plan quantity of deck repair is based on the "survey plot" as shown in these plans. Hatched portions represent Class A bridge repair. Cross hatched portions, if shown, represent Class B bridge deck repair. The plan quantity for "Class A Deck Repair" is estimated as 55.5 SY based on automated sounding of the deck plus 25% increase for estimating purposes. Actual spalled and 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.

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

Surface preparation shall be according to Article 2413.03, B and C of the Standard Specification. The Contractor shall ensure the vertical edges 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.

Surface raise, as shown on these plans, shall be considered a minimum. In order to limit the additional dead load surface raise shall be restricted to a maximum of ½" more than shown on the plans. Profile may be adjusted to the extent possible within these limits.

The Lump Sum Bid for "Removals, as Per Plan" shall include all costs associated with removing a portion of the existing deck, barriers, compression seals and abutment backwalls. Removal of scheduled items shall be in accordance with Section 2401 of the Specifications. Any damage to any steel or concrete not to be removed shall be the responsibility of the Contractor and repaired at no extra cost to the State.

The semi-integral abutment, rail, and endposts reconstruction 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 lump sum bid for "Painting of Structural Steel" shall include the cost of preparing all existing structural steel for painting (including bearings) and field painting existing structural steel as noted in these plans. Cleaning and painting shall be in accordance with Section 2508, of the Standard Specifications. An epoxy paint system shall be used.

Containment and disposal of waste shall be in accordance with Section 2508, of the Standard Specifications. All costs associated with hauling and depositing of waste at the designated site/facility shall be the responsibility of the Contractor and included in the contract price bid for the "Containment" item.

A scrape sample was taken from an area of this bridge to get an indication of the existence of and level of total lead and total chromium. Analysis of total lead on this sample was 150,000 parts per million (PPM). Analysis of total chromium on this sample was 8,800 PPM. These analyses show the existence of these two toxic constituents. Levels indicated by these tests could create conditions above regulatory limits for health and safety requirements. No other constituents were analyzed. The Bidder should not rely on the Iowa DOT's testing and analysis for any purpose other than as an indication of the existence of these two toxic constituents.

The Bridge Contractor is to provide a method of removal that will prevent feather edging at the bottom of the existing deck. Care shall be taken when exposing existing reinforcing so the bond to existing concrete is not broken at the concrete break lines.

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.

It will be necessary to support the earth and/or granular material behind the abutment during reconstruction of the abutment backwalls by some method approved by the Engineer. All costs for supporting the earth and/or granular material shall be included in the price bid for "Class 20 Excavation".

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

It will be necessary to support the earth and/or granular material behind the abutment during reconstruction of the abutment backwalls by some method approved by the Engineer. All costs for supporting the earth and/or granular material shall be included in the price bid for "Class 20 Excavation".

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

Temporary shoring (sheet pile or other) shall be required as necessary to prevent the earth under the traffic lane from sloughing in during construction.

The Contractor shall submit a temporary shoring plan for review. The temporary shoring plan shall be designed and certified by a professional engineer licensed in the State of Iowa. When determining slope stability to support structures such as bridges, culverts and retaining walls, a global stability analysis shall be included in the design of temporary shoring in accordance with Chapter 200F-1 in the Design Manual of the Iowa DOT, Design Bureau. The Contractor shall not proceed with installation of the temporary shoring without notice to proceed from the Engineer.

- The temporary shoring submittal shall include:
- Design calculations (including a global stability analysis)
 - Soil properties
 - Shoring material properties
 - Shoring plan layout (showing location of traffic)
 - Shoring details

Temporary shoring shall be paid for as a lump sum including all cost for designing, furnishing, installing and removal. All material used for shoring shall remain the property of the Contractor. Shoring is to be removed only after backfilling has been completed. In addition to the requirements noted above, Article 1107.07 of the Standard Specifications still applies.

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.

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	Temporary Shoring	(112)_Plymouth_Design128_TemporaryShoring.pdf	Yes
No.	Calculation Description	Calculation File Name Convention For Submittal	Certified by Iowa P.E. (Yes/No)
2	Temporary Shoring Calculations	(112)_Plymouth_Design128_TemporaryShoringCalculations.pdf	Yes

Design History At This Site (Includes this Design)	
Des. No.	Type Of Work
578	Original Design
118	Deck Joint Repair
128	Bridge Deck Overlay

Design For Repair To 0° Skew

343'-6" x 44'-0" Pretensioned
Prestressed Concrete Beam Bridge

68'-3" End Spans3 - 69'-0" Interior Spans

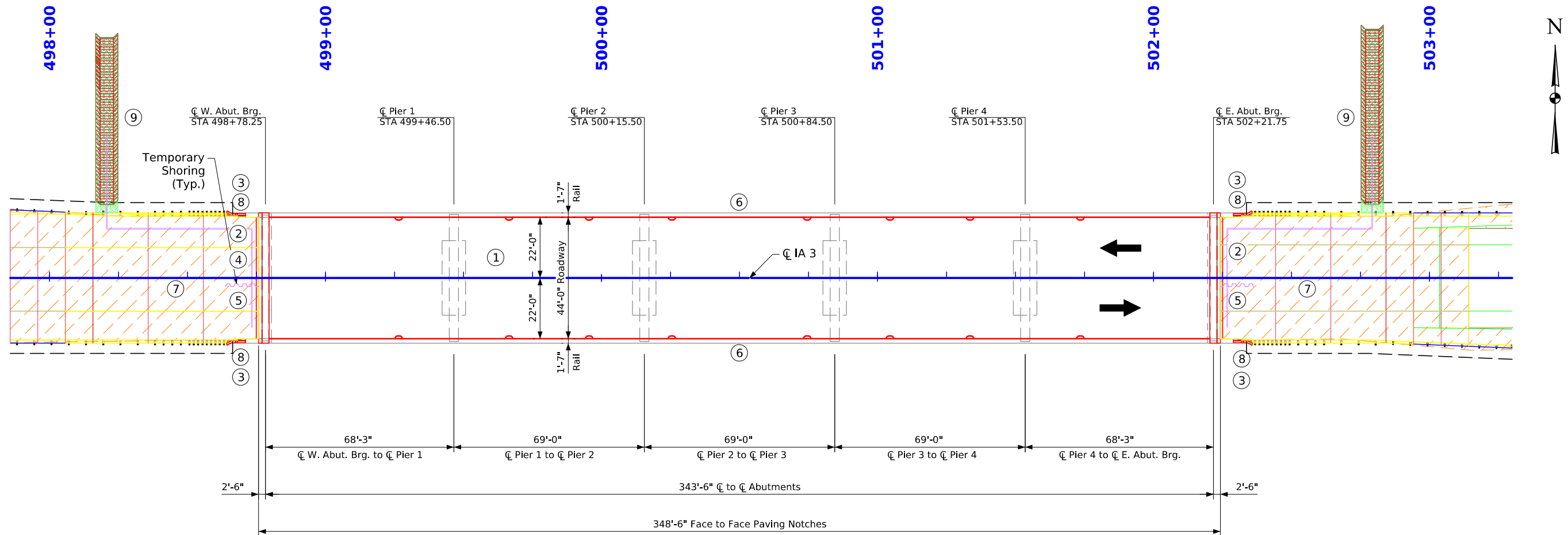
General Notes

STA. 500+50.00 (☞ IA 3)Turn-in Date: Sept 2026

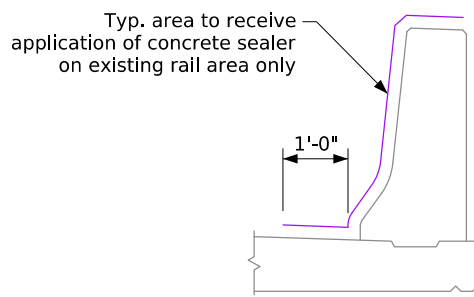
Plymouth County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 128Design Sheet No. 2 of 13FHWA No. 039851



Situation Plan



Detail of Concrete Sealer Area

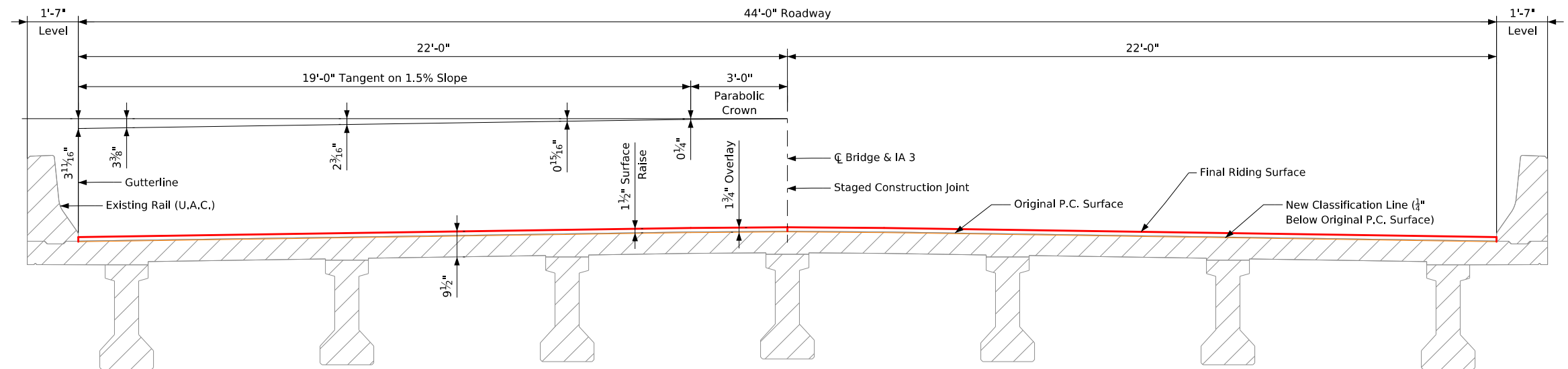
Repairs shall consist of:

- 1 Scarify deck, complete Class A repairs, and overlay the bridge with PCC.
- 2 Remove existing deck, barriers, compression seals and abutment backwalls and replace with a semi-integral abutment.
- 3 Remove top of barrier end and install retrofit bridge barrier end.
- 4 Repair spalled beam ends at West abutment.
- 5 Clean and paint corroded bearings.
- 6 Clean and seal inside and top of existing barrier rails and barrier rail end sections.
- 7 Remove and replace approach pavement. Remove extra 4' width of approach pavement in Stage 1 for temporary shoring.
- 8 Remove and replace existing guardrails and install paved shoulders at guardrails.
- 9 Install bridge end drains.

Location

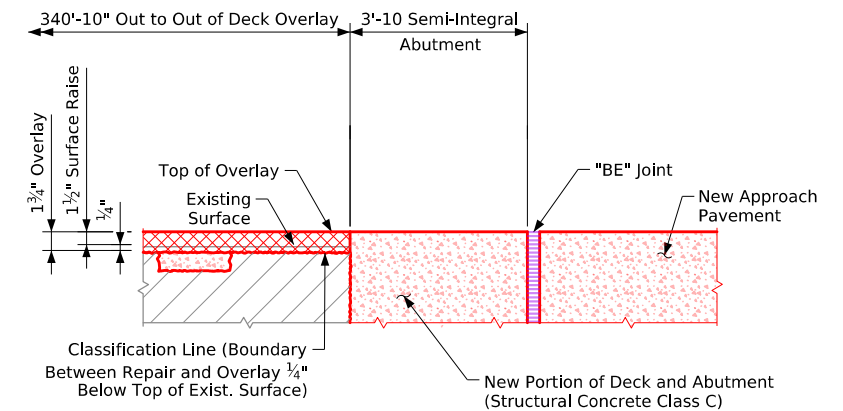
IA 3 over Floyd River
T-92N R-45W
Section 8
America Township
Plymouth County
FHWA No. 039851
Bridge Maint. No. 7526.9S003
Latitude 42.793250°
Longitude -96.184779°

Design For Repair To 0° Skew
**343'-6" x 44'-0" Pretensioned
Prestressed Concrete Beam Bridge**
68'-3" End Spans 3 - 69'-0" Interior Spans
Situation Plan
STA. 500+50.00 (CL IA 3) Turn-in Date: Sept 2026
Plymouth County
IOWA DEPARTMENT OF TRANSPORTATION
Design No. 128 Design Sheet No. 3 of 13 FHWA No. 039851

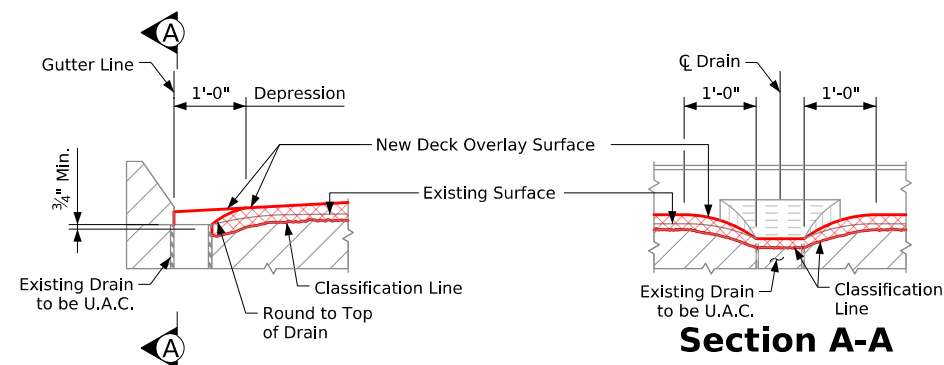


Typical Section
(Looking East)

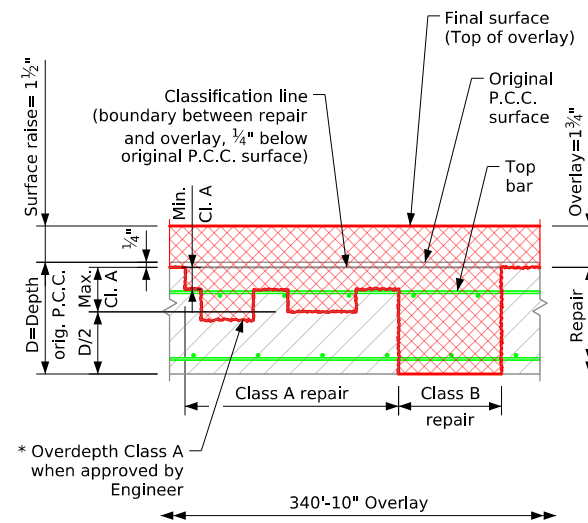
* Per IDOT Std. Spec. 2413.03.C.3.b, limited areas of Class A removal may exceed 50% of the floor thickness at the Engineer's direction. These limited areas of excess depth (overdepth) will be measured as Class A deck repair.



Part Longitudinal Section Along Roadway



Deck Repair Detail at Drain
(Required at 16 Locations)



Repair and Overlay Definition

Design For Repair To 0° Skew

343'-6" x 44'-0" Prestressed Concrete Beam Bridge

68'-3" End Spans 3 - 69'-0" Interior Spans

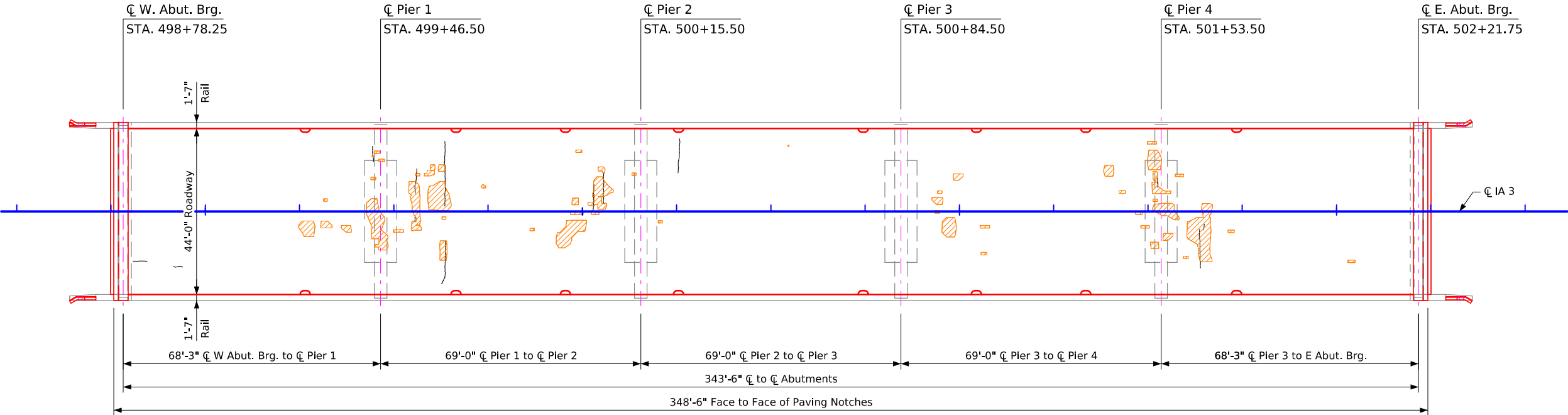
Deck Repair Details

STA. 500+50.00 (C IA 3) Turn-in Date: Sept 2026

Plymouth County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 128 Design Sheet No. 4 of 13 FHWA No. 039851



Survey Plot

(Hatched Areas = Areas of Delamination = Approximately 400 Sq. Ft.)
(Not to Scale)

Estimated Class A Repair		
Deck Sounding Area	Sq. Yd.	44.4
Deck Sounding Increase (25%)	Sq. Yd.	11.1
Total Class A (SY)		55.5

Notes:
Data shown was provided by Iowa DOT District personnel.

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



Legend

Class A Repair Area

Crack

Design For Repair To 0° Skew

343'-6" x 44'-0" Prestensioned
Prestressed Concrete Beam Bridge

68'-3" End Spans3 - 69'-0" Interior Spans

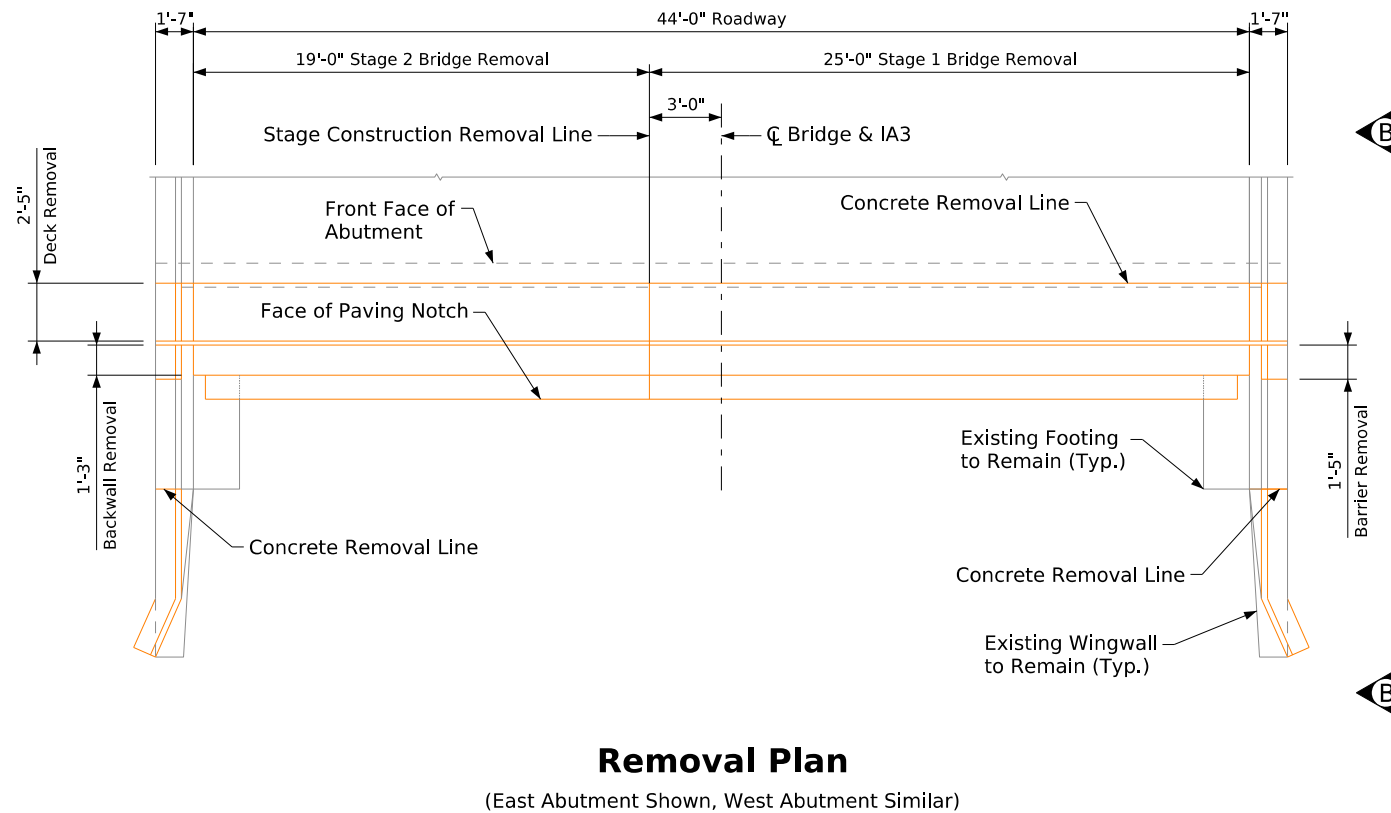
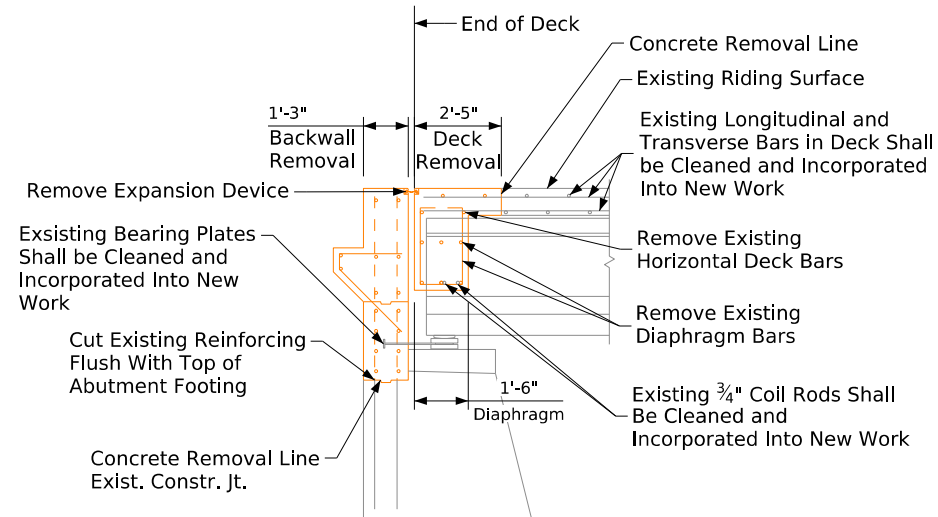
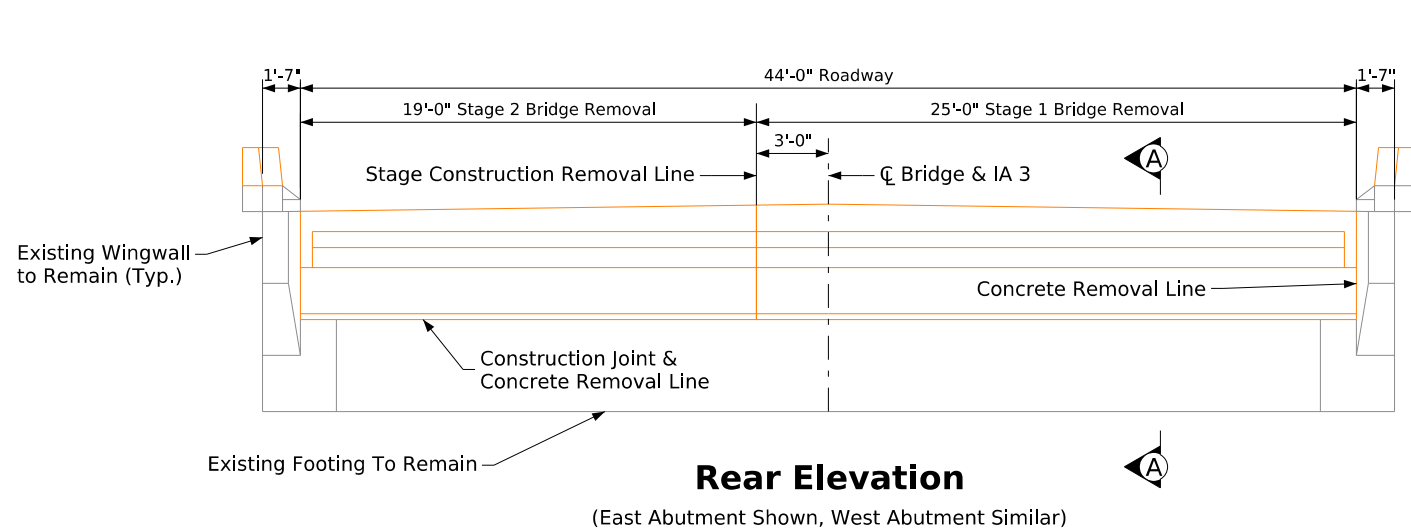
Deck Sounding Details

STA. 500+50.00 (CL IA 3)Turn-in Date: Sept 2026

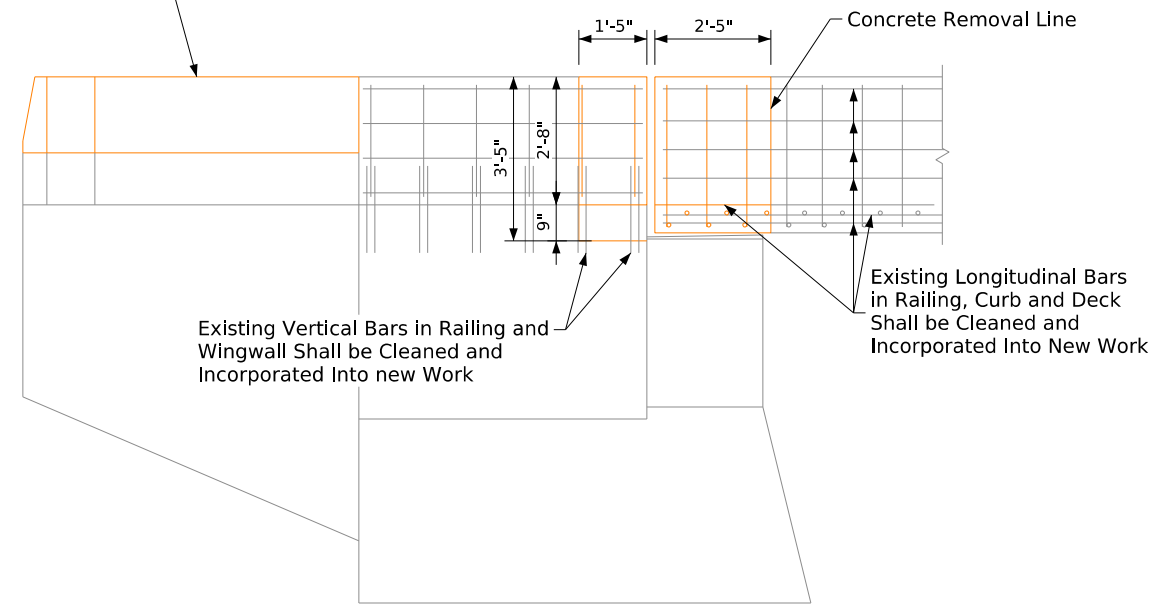
Plymouth County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 128Design Sheet No. 5 of 13FHWA No. 039851



See Design Sheet 7 for End Section Removal Details



Design For Repair To 0° Skew

343'-6" x 44'-0" Pretensioned Prestressed Concrete Beam Bridge

68'-3" End Spans 3 - 69'-0" Interior Spans

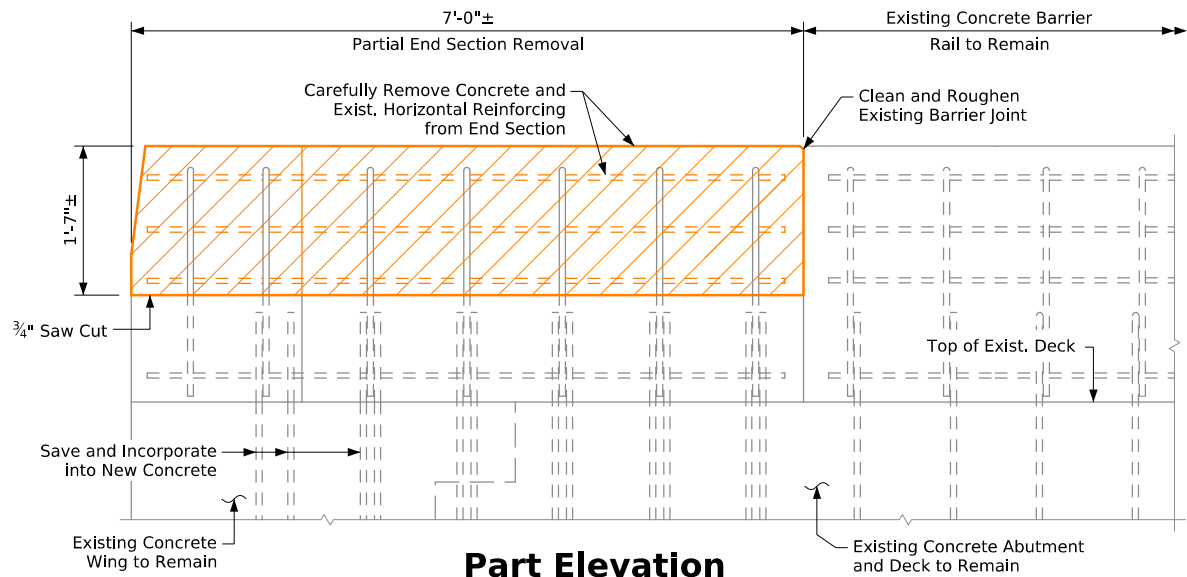
Abutment Removal Details

STA. 500+50.00 (CL IA 3) Turn-in Date: Sept 2026

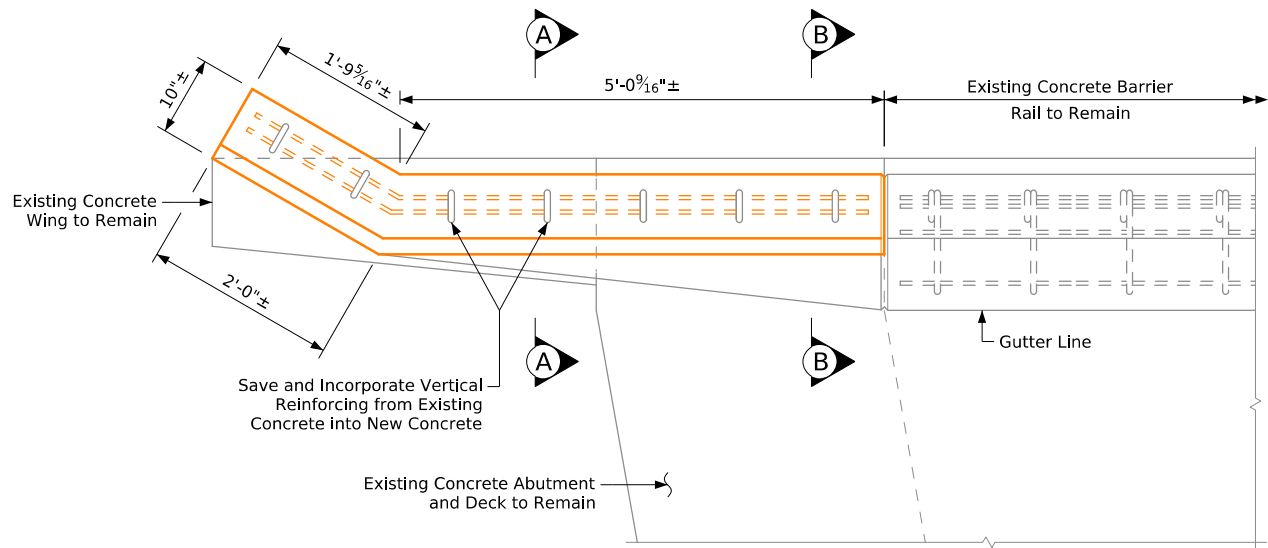
Plymouth County

IOWA DEPARTMENT OF TRANSPORTATION

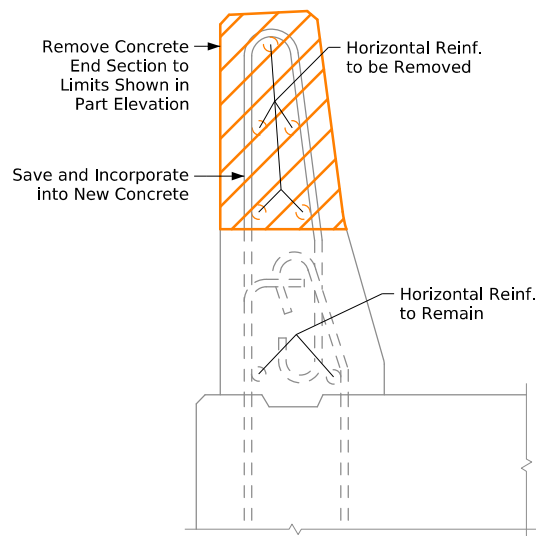
Design No. 128 Design Sheet No. 6 of 13 FHWA No. 039851



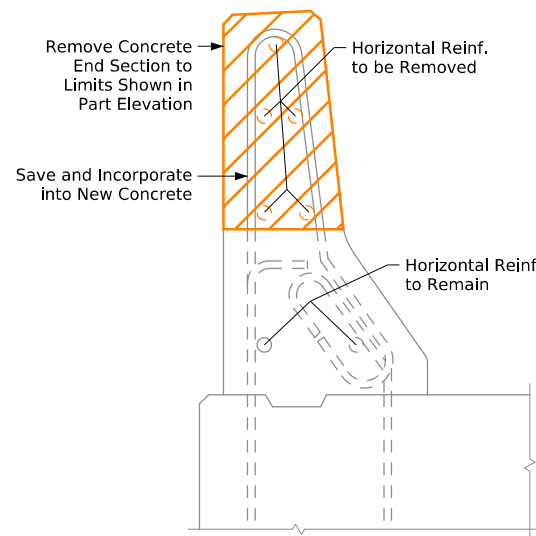
Part Elevation



Part Plan



Section A-A



Section B-B

Removal Notes:

Hatched areas indicate Concrete Removal.

This sheet shows details of the Partial Superstructure Removal on the existing bridge. All partial removals shall be in accordance with Section 2401 of the Standard Specifications. All such removals shall be to neat saw cuts to provide clean straight surfaces at interfaces between new concrete and remaining concrete. The removal shall be done in a manner which will prevent any damage to the existing structure to remain. The Contractor shall assume full responsibility for any damage caused, and shall repair any damaged area to its original condition, as directed by the Engineer, at the Contractor's expense. Any existing reinforcing steel which is to be "saved" that is exposed during removal operations is to be carefully protected, cleaned and incorporated into new construction unless noted otherwise.

Start all removals with 3/4" saw cut.

Design For Repair To 0° Skew

343'-6" x 44'-0" Prestressed Concrete Beam Bridge

68'-3" End Spans 3 - 69'-0" Interior Spans

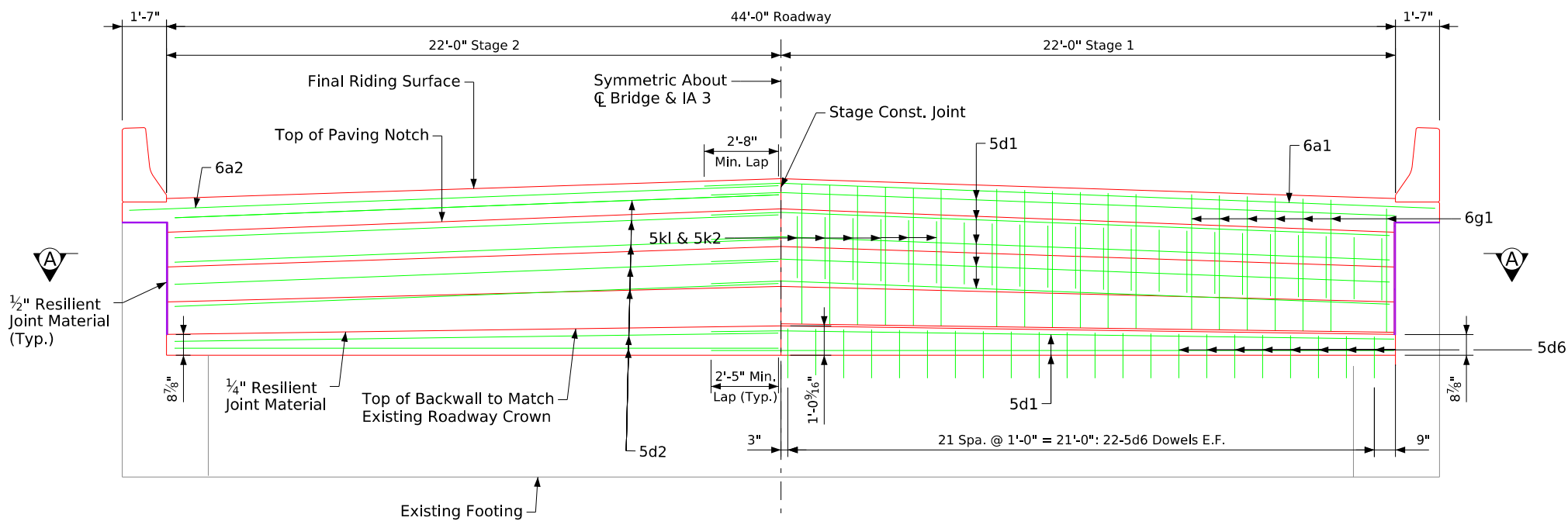
Rail Removal Details

STA. 500+50.00 (C IA 3) Turn-in Date: Sept 2026

Plymouth County

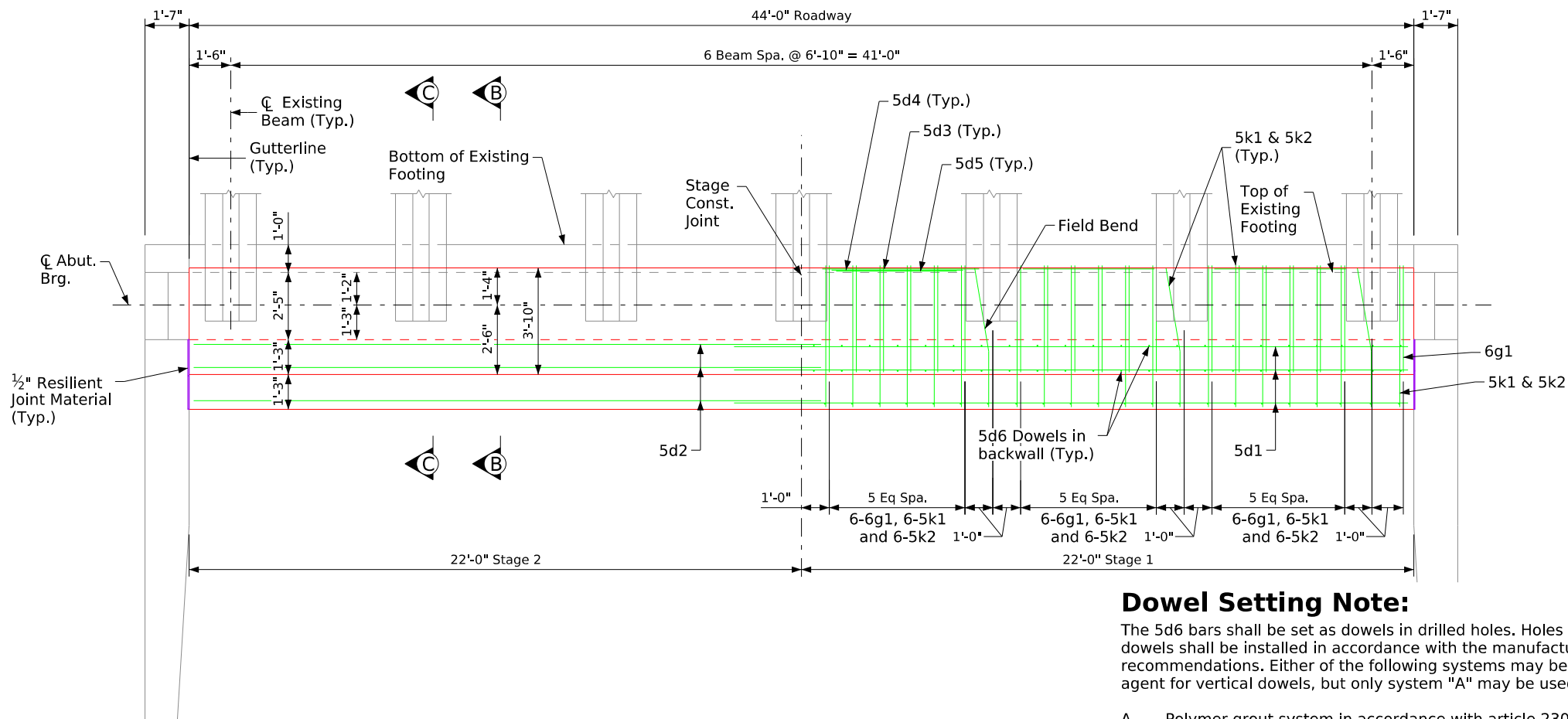
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 128 Design Sheet No. 7 of 13 FHWA No. 039851



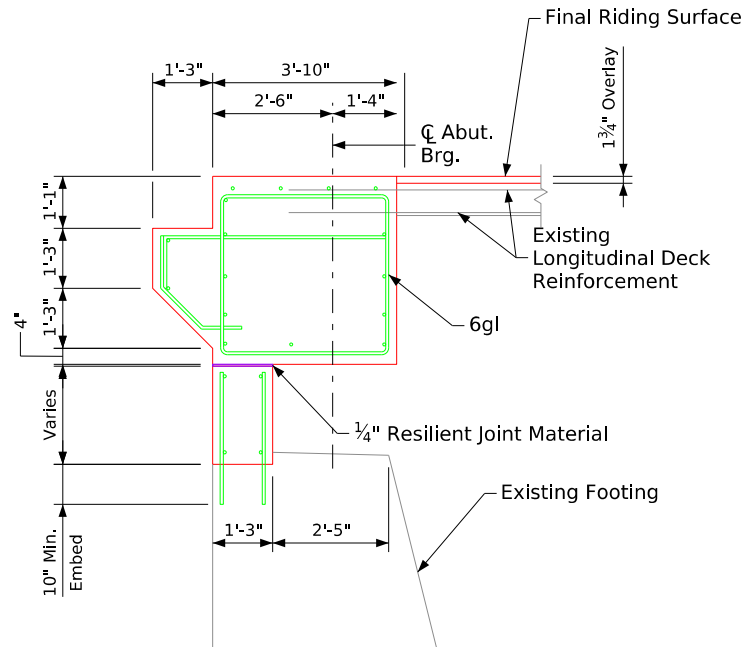
Rear Elevation

(East Abutment Shown, West Abutment Similar)



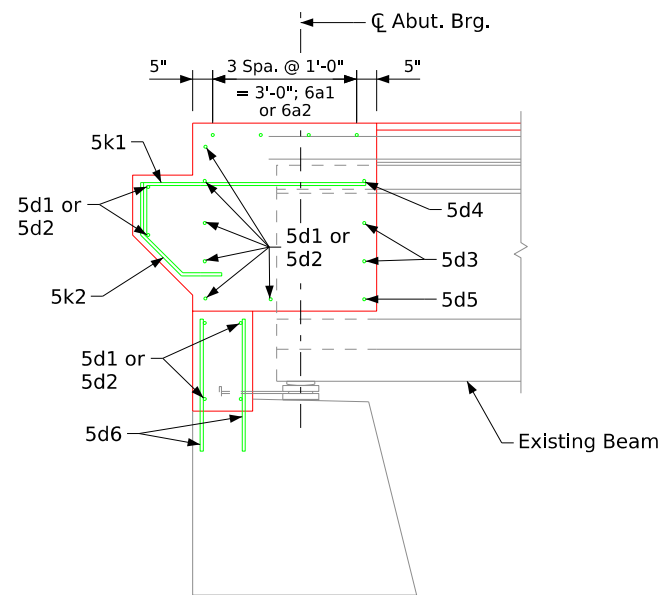
Section A-A

(East Abutment Shown, West Abutment Similar)



Section B-B

Note:
Existing beam coil ties shall be cleaned and incorporated into new construction.



Section C-C

(For information not shown, see section B-B)

Dowel Setting Note:

The 5d6 bars shall be set as dowels in drilled holes. Holes are to be 10" deep. The dowels shall be installed in accordance with the manufacturer's recommendations. Either of the following systems may be used as a bonding agent for vertical dowels, but only system "A" may be used for horizontal dowels:

- Polymer grout system in accordance with article 2301.03 E, of the Standard Specifications.
- Hydraulic cement grout systems. Drilled holes are to be $2\frac{1}{2}$ times the dowel diameter and are to be blown clean with compressed air immediately prior to placing grout. The hydraulic cement grout shall be one of those approved in materials I.M. 491.13 and shall be used in accordance with the manufacturer's recommendations.

Design For Repair To 0° Skew

343'-6" x 44'-0" Prestressed Concrete Beam Bridge

68'-3" End Spans 3 - 69'-0" Interior Spans

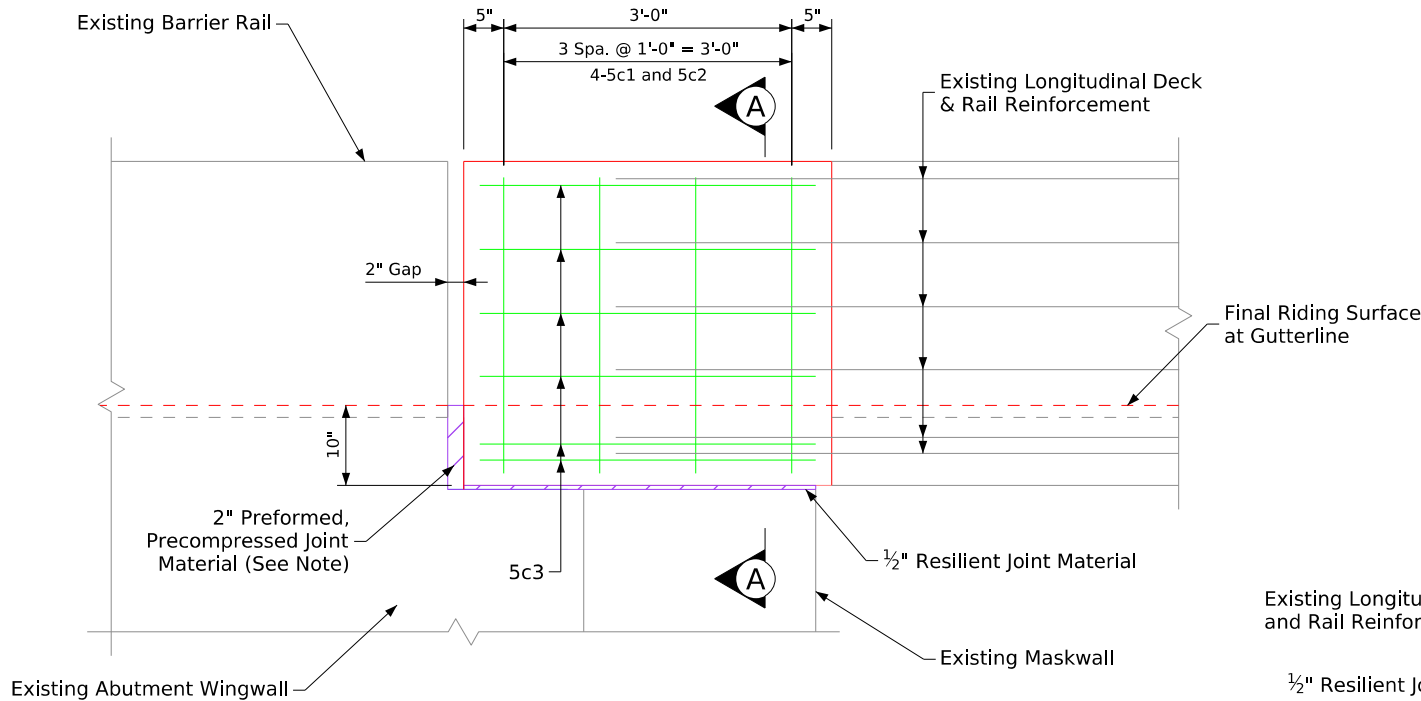
Abutment Details

STA. 500+50.00 (¢ IA 3) Turn-in Date: Sept 2026

Plymouth County

IOWA DEPARTMENT OF TRANSPORTATION

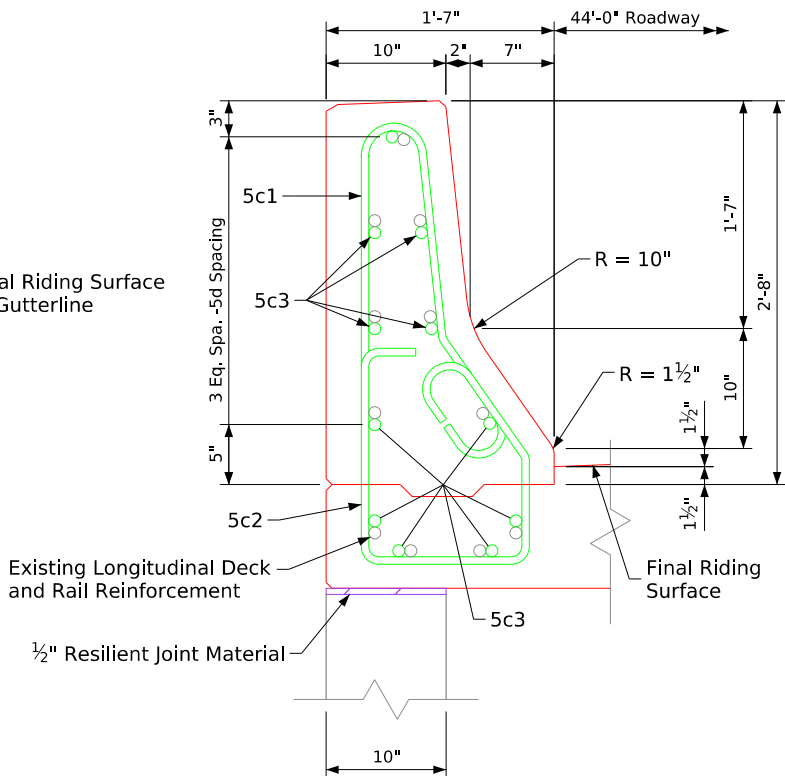
Design No. 128 Design Sheet No. 8 of 13 FHWA No. 039851



Abutment Rail Elevation

(Southwest Wing Shown, Others Similar)

Note:
Joint material shall be a "Preformed, Precompressed Self Expanding sealant system with Silicone Pre-coated Surface" in accordance with section 4136.03, E of the Standard Specifications. Sealant shall be applied to fill gaps. Space below joint shall be filled with tire buffings lightly compressed. Joint material shall be included in the price bid for "Structural Concrete (Miscellaneous)". Expected movement of joint opening is approximately 1/2" for 50°F change in temperature.



Section A-A

Reinforcing Bar List - Both Abuts.

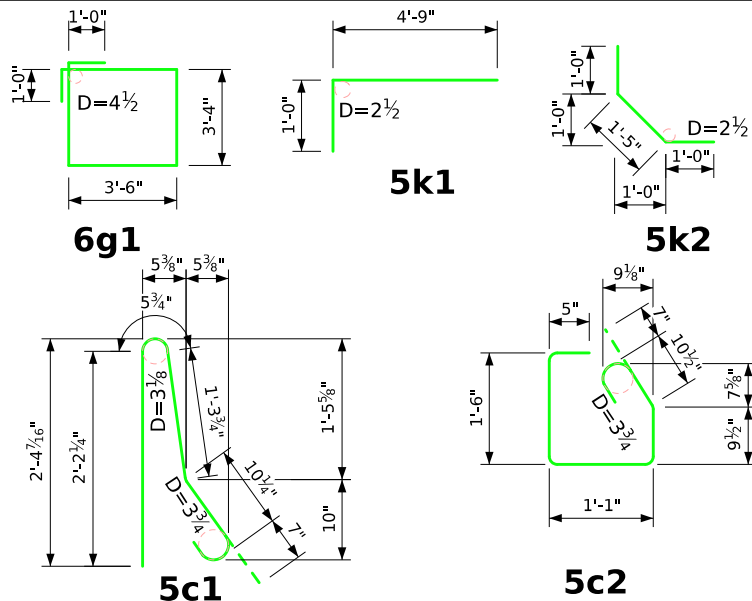
Bar	Location	Shape	No.	Length	Weight
6a1	Deck, Transverse, Stage 1		8	26'-3"	315
6a2	Deck, Transverse, Stage 2		8	23'-3"	279
5c1	Rail, Vertical		16	5'-5"	90
5c2	Rail, Vertical		16	5'-3"	88
5c3	Deck and Rail, Longitudinal		44	3'-6"	161
5d1	Abut., Horizontal, Stage 1		24	24'-5"	611
5d2	Abut., Horizontal, Stage 2		24	21'-8"	542
5d3	Abut. Diaph., Horizontal, Front Face		24	5'-9"	144
5d4	Abut. Diaph., Horizontal, Front Face		12	5'-2"	65
5d5	Abut. Diaph., Horizontal, Front Face		12	4'-10"	60
5d6	Backwall Dowel		176	1'-9"	321
6g1	Abut. Diaph. Vert.		76	15'-8"	1,788
5k1	Paving Notch		88	5'-9"	528
5k2	Paving Notch		88	3'-5"	314

Reinforcing Steel Epoxy Coated - Total (lbs.) 5,306

Concrete Placement Summary

Location	Total
Abutment & Rail, Stage 1 (2 @ 14.9 Cy)	29.8
Abutment & Rail, Stage 2 (2 @ 14.9 Cy)	29.8
Total (Cy)	59.6

Bent Bar Details

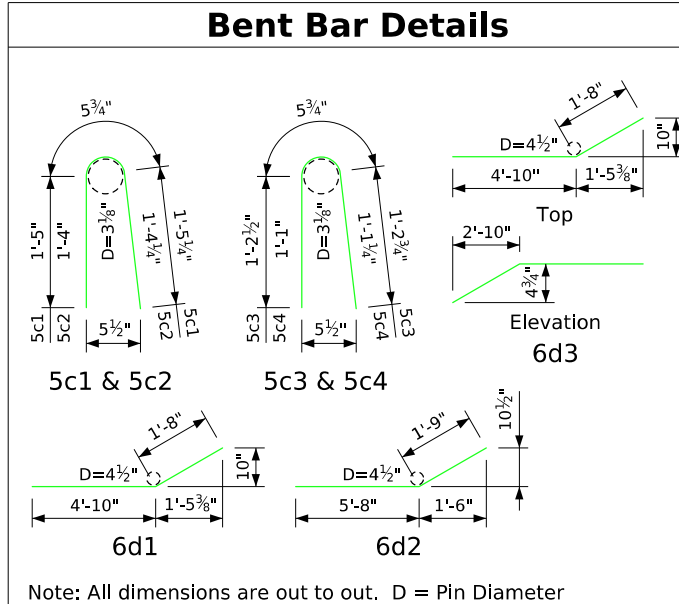


Note: All dimensions are out to out. D=pin diameter.

Design For Repair To 0° Skew
343'-6" x 44'-0" Prestressed Concrete Beam Bridge
68'-3" End Spans 3 - 69'-0" Interior Spans
Abutment Details
STA. 500+50.00 (C 1A 3) Turn-in Date: Sept 2026
Plymouth County
IOWA DEPARTMENT OF TRANSPORTATION
Design No. 128 Design Sheet No. 9 of 13 FHWA No. 039851



Bar	Location	Shape	No.	Length	Weight
5c1	End Section, Vert.		4	3'-4"	14
5c2	End Section, Vert.		1	3'-2"	3
5c3	End Section, Vert.		1	2'-11"	3
5c4	End Section, Vert.		1	2'-8"	3
5c5	Curb Block, Vert.		3	1'-0"	3
6d1	Back Face, Horiz.		3	6'-6"	29
6d2	Traffic Face, Horiz. Dowels		2	7'-5"	22
6d3	Top, Horiz.		1	6'-6"	10
Total					84
Total with Curb Block (lbs.)					87



Section	Total
Barrier Rail One End Section	0.37 Cu. Yd.
Total	0.37 Cu. Yd.

The 6d2 bars shall be set as dowels in drilled holes. Holes are to be 10" deep. The dowels shall be installed in accordance with the manufacturer's recommendations. The following systems shall be used as a bonding agent:

A. Polymer grout system in accordance with Article 2301.03, E, of the Standard Specifications.

The price bid for "Structural Concrete, Misc." shall include the costs of setting bars as dowels in the Existing Barrier.

Note:
Construction Joints shall be cleaned and roughened.



Design For Repair To 0° Skew
343'-6" x 44'-0" Pretensioned
Posttensioned Concrete Beam Bridge
End Spans 3 - 69'-0" Interior Spans

Rail Details

STA. 500+50.00 (C IA 3)

Turn-in Date: Sept 2026

Plymouth County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 128

Design Sheet No. 10 of 13

FHWA No. 039851

Beam End Repair Notes:

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

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

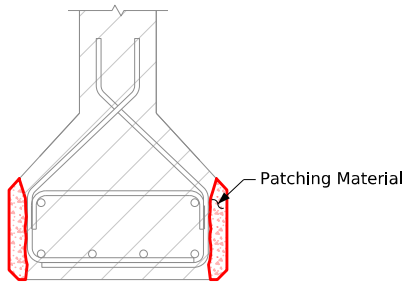
The Contractor shall report tendon or reinforcing bar section loss, exposed during removal work, to the Engineer prior to performing any repair work. The Engineer shall be given adequate time (7 days max.) to determine whether beam reinforcing is required. The Contractor shall incorporate this time into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

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

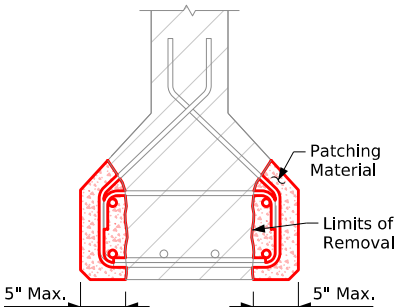
The Contractor shall perform the concrete repair work in accordance with the following procedures and/or as directed by the Engineer:

1. Initiate removal of unsound concrete with ½" saw cuts at perimeter. Do not cross cut at corners. Stop saw cuts short of corners and remove concrete by hand. Adjust depth of saw cut as required to prevent cutting of existing reinforcing steel or strands. Extreme care shall be exercised during concrete removal so that exposed strands and reinforcing bars are not damaged. Any damage done to the strands or bars by the Contractor shall be repaired by the Contractor at no additional cost to the State.
2. Remove deteriorated areas to sound concrete and chip square. Boundaries to be square with no feathered edges. Sandblast concrete surfaces in the repair area and the exposed steel to bare metal. Remove all dust and debris resulting from chipping and blasting by using clean compressed air.
3. If concrete removal results in more than half the diameter of any reinforcing bar or prestressing strand being exposed, then removal shall continue to a minimum of ¾" behind the first interior strand. If removals could exceed the 5" maximum horizontal depth, contact the Engineer prior to removal.
4. Report to the Engineer, prior to repair, section loss of tendons or reinforcing steel exposed during removals.
5. Apply two coats of protective coating/bonding agent (products are listed in the table on this sheet) to exposed prestressing strands and reinforcing bars according to manufacturer's recommendations.
6. Apply patching material. Type of material and application of material depends upon the extent of concrete removal and the two types of repair are to be as follows:
 - A. Shallow repair: Shallow repair areas are those where concrete removal did not result in reinforcing bars or prestressing strands being exposed for more than half their diameters. Patching material shall be as listed in the table on this sheet. Patching materials contain corrosion inhibitors. Apply patching material to match original beam surface. Patch need not be formed. Follow manufacturer's instructions and recommendations for mixing, placing and curing.
 - B. Regular repair: Regular repair areas are those where concrete removal extended behind the reinforcing bars and/or prestressing strands. These areas are to be placed using forms to match the original beam surface. Patching material shall be one of the grouts as listed in the table on this sheet. Patching materials contain corrosion inhibitors. Follow manufacturer's instructions and recommendations for mixing, placing and curing. Forms are to remain in place for seven days.
7. Sandblast 6'-0" of the ends of the repaired beams as shown on this sheet. The sandblasting shall be a light blast just enough to expose the fine aggregates. Do not sandblast patching material. All costs associated with sandblasting are to be included in the price bid for "Repair Beam Ends".
8. Apply concrete sealer to sandblasted portions of beams ends. Do not seal patching material.

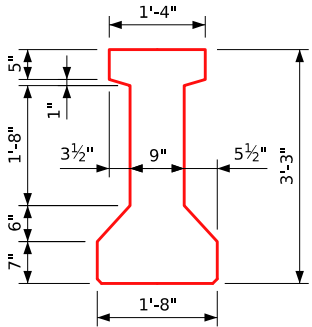
All costs include equipment and materials required to repair deteriorated beam ends as detailed in these plans. These details shall be included in the price bid for "Repair Beam Ends". The Engineer will count each end of each beam properly repaired, and the Contractor will be paid the contract unit price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



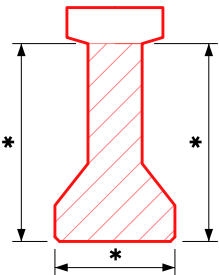
Shallow Repair Areas



Regular Repair Areas



Beam Section



Limits of Sandblasting

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

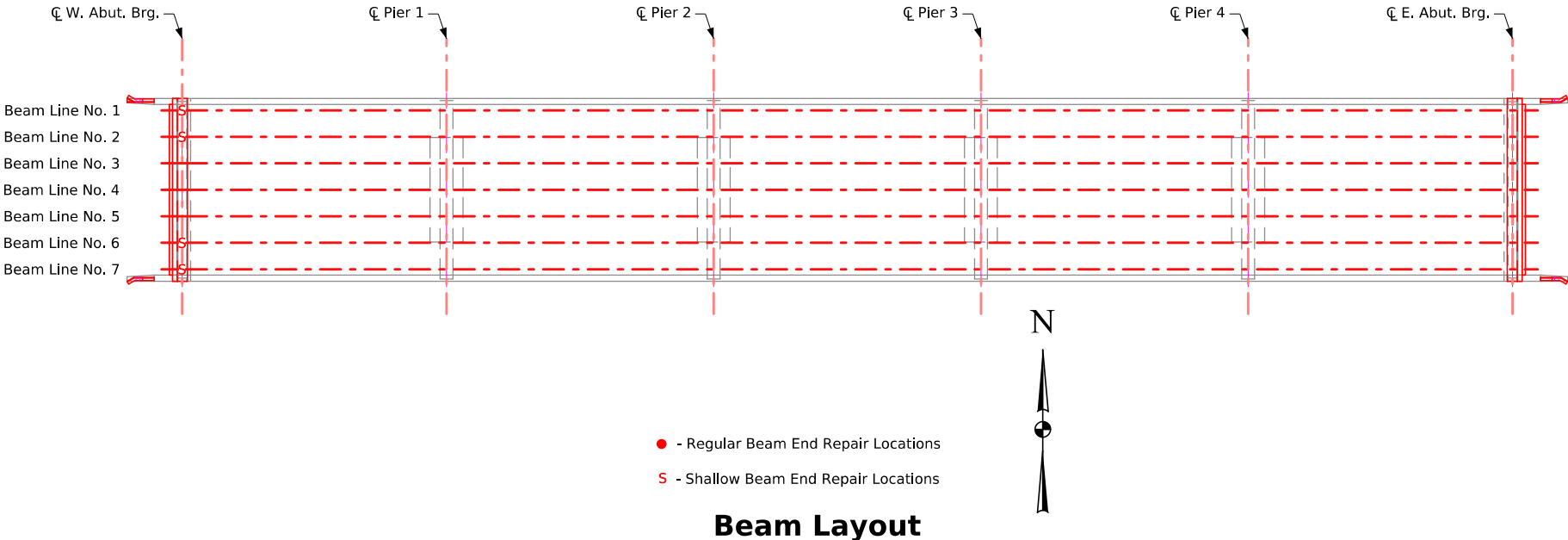


Table of Manufacturers			
Manufacturer	Bonding Agent	Shallow Repair	Regular Repair
BASF	Mastermaco P 124	Masteremaco N 350 CI	Masteremaco S 477CI
Euclid	Duralprep A.C.	Verticoat Supreme	Eucorepair
Sika	Sika Armathec 110 Epocem	Sikatop 123 Plus	Sikatop 111 Plus

Design For Repair To 0° Skew

343'-6" x 44'-0" Pretensioned
Prestressed Concrete Beam Bridge

68'-3" End Spans3 - 69'-0" Interior Spans

Beam End Repair

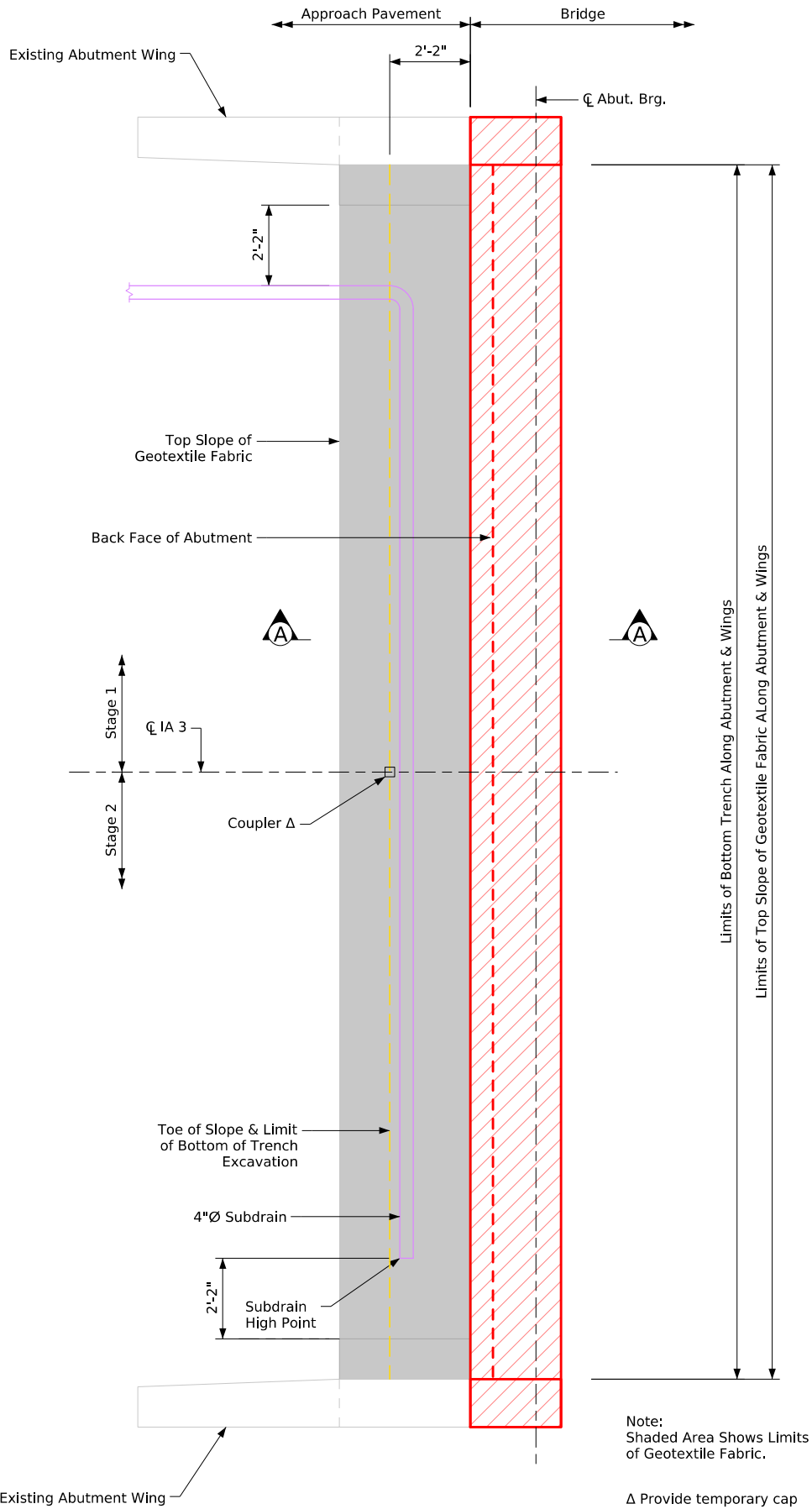
STA. 500+50.00 (C IA 3)Turn-in Date: Sept 2026

Plymouth County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 128Design Sheet No. 11 of 13FHWA No. 039851

Revised 09-14 - The Technical Data Information Table was Removed and is Located in the Standard Specifications. Changed Surface Flooding Time to 5 Minute Increments.
Revised 09-2016 - Changed the Bridge Approach Pavement Standard to "BR" (WAS "RK").
ForeSlopeProtectionBridges.dgn - 1007E - This Sheet Issued 08-07.
ForeSlopeProtectionBridges.dgn - 1007E - This Sheet Redrawn 07-23.



Abutment Plan

(West Abutment Shown, East Abutment Similar)

Abutment Backfill Process:

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

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

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

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

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

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

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

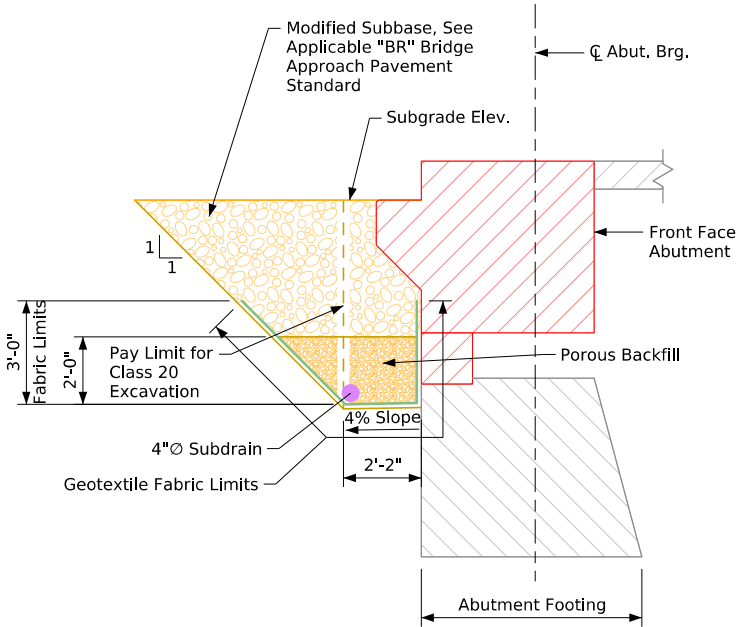
Water required for flooding, subdrains, porous backfill, floodable backfill, and geotextile fabric furnished at the bridge abutments will not be measured separately for payment.

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

Note:

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

The geotextile fabric shall be in accordance with Article 4196.01, B, 6 of the Standard Specifications. If the engineering fabric is lapped the laps shall be a minimum of 1 ft in length, shingle fashion with up slope lap piece on top and stapled for continuity.



Section A-A

Backfill Details

Note: Geotextile Fabric will be Attached to Face of Abutment Footing and Wings.

★ Dimension Varies Due to 2% Subdrain Slope.

Note:
For Details not Shown on this Sheet which are Pertinent to this Structure See Subdrain Details Sheet on Design Sheet No. 13

Design For Repair To 0° Skew

343'-6" x 44'-0" Pretensioned
Prestressed Concrete Beam Bridge

68'-3" End Spans3 - 69'-0" Interior Spans

Abutment Backfill Details

STA. 500+50.00 (C/ IA 3)Turn-in Date: Sept 2026

Plymouth County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 128Design Sheet No. 12 of 13FHWA No. 039851

Revised 10-14 - Two Additional Foreslope Protection Details were Added Outside of the Border to Show Revetment up to Back of Abutment Footing.
Revised 06-2024; Changed Control Point text (was Bench Mark).
ForeslopeProtectionBridges.dgn - 1007C - This Sheet Issued 06-02 for Water Crossings.
ForeslopeProtectionBridges.dgn - 1007C - This Sheet Redrawn 07-23.

Subdrain Notes:

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

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

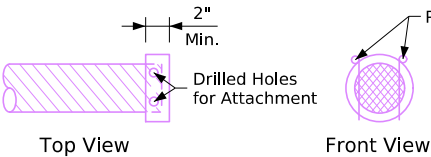
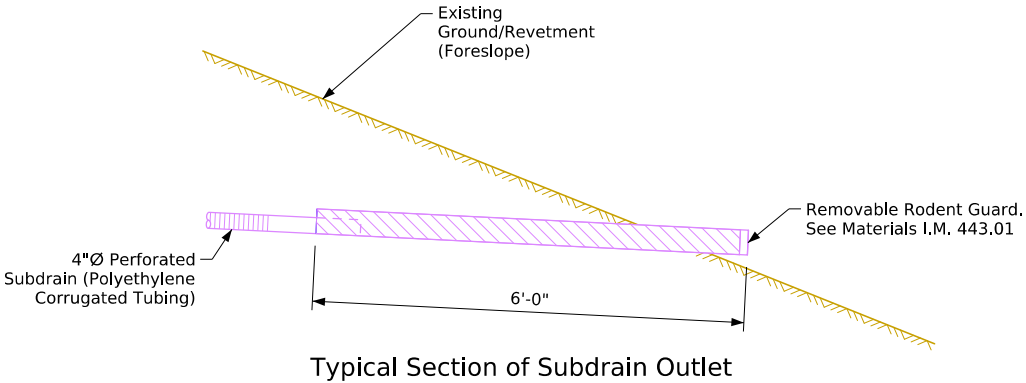
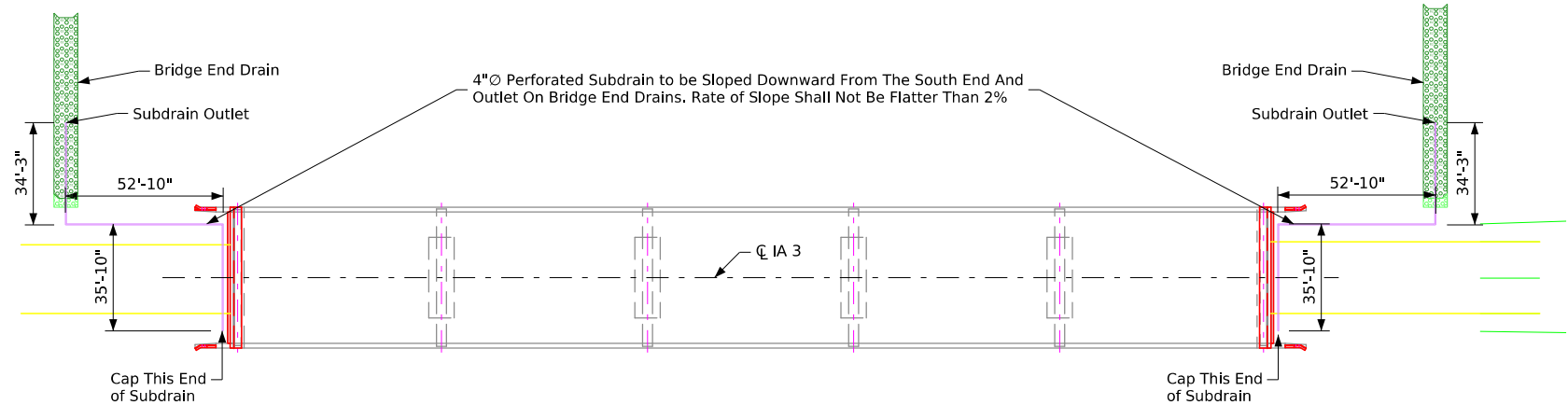
The subdrain outlet shall consist of a length of pipe with a removable rodent guard as detailed on this sheet. The length of the outlet pipe shall be determined by the revetment and it's placement location. The Contractor is to insure the outlet pipe is adequately strong enough and will not be damaged when revetment is placed. A check will be made at the subdrain outlet to insure that the subdrain is not damaged and is draining properly during the backfill flooding process. If a metal outlet pipe is used, it shall be 6"Ø and coupled to the 4"Ø subdrain in one of the two following ways.

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

The cost of furnishing and placing subdrain (including excavation), granular backfill, porous backfill, and subdrain outlet is to be included in the price bid for "Structural Concrete (Miscellaneous)". No extra payment will be made.

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

Subdrain Outlet Elevations	
Location	Elevation
West Abutment	3'-3" Below Brg. Seat Elev.
East Abutment	3'-3" Below Brg. Seat Elev.



Outlet Details

Design For Repair To 0° Skew

343'-6" x 44'-0" Prestensioned
Prestressed Concrete Beam Bridge

68'-3" End Spans3 - 69'-0" Interior Spans

Subdrain Details

STA. 500+50.00 (Ç IA 3)Turn-in Date: Sept 2026

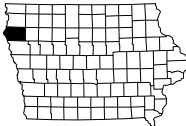
Plymouth County

IOWA DEPARTMENT OF TRANSPORTATION

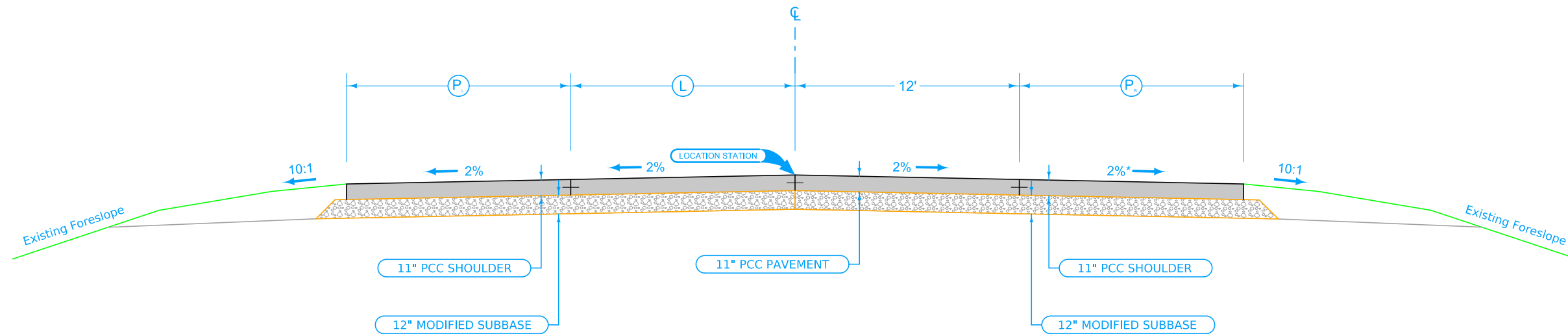
Design No. 128Design Sheet No. 13 of 13FHWA No. 039851

Situation Plan
Showing Subdrain Locations

INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	Title Sheets
A.3	Title Sheet
B Sheets	Typical Cross Sections and Details
* B.1 - B.4	Typical Cross Sections and Details
C Sheets	Quantities and General Information
C.1 - C.2	Estimated Project Quantities & Reference Notes
C.3 - C.23	Tabulations
D Sheets	Mainline Plan and Profile Sheets
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2 - D.3	IA 3 Plan Sheets
J Sheets	Traffic Control and Staging Sheets
J.1 - J.4	Traffic Control Plan, Staging Notes and Tabulations
* J.5	Traffic Control & Staging Legend & Symbol Info. Sheet
* J.6	Staging Typical
* J.7 - J.8	Staging and Traffic Control Sheets
U Sheets	Modified Standards and Details
* U.1	Guardrail Detail
	 * Color Plan Sheets



ROADWAY DESIGN	
LICENSED PROFESSIONAL ENGINEER Xingwei Weng P27644 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 Xingwei Weng Xingwei Weng Printed or Typed Name 07-02-2026 Date My license renewal date is December 31, 2027
Pages or sheets covered by this seal: A.3, B.1 - B.4, C.1 - C.23, D.1 - D.3, J.1 - J.8 U.1	



Full Depth PCC Shoulder

Shoulder Jointing:
Longitudinal joint: BT-2, or L-2
Transverse joints: CD, Match Mainline

2_P_FullPCC_04-15-25		
STATION TO STATION		P Feet
497+65.75	498+05.75	12
502+94.25	503+14.25	10

Longitudinal joint: L-2 or BT-2
Transverse joint: CD, Match Mainline

BEGIN STATION	END STATION	L Feet
497+65.75	498+05.75	11
502+94.25	503+14.25	12

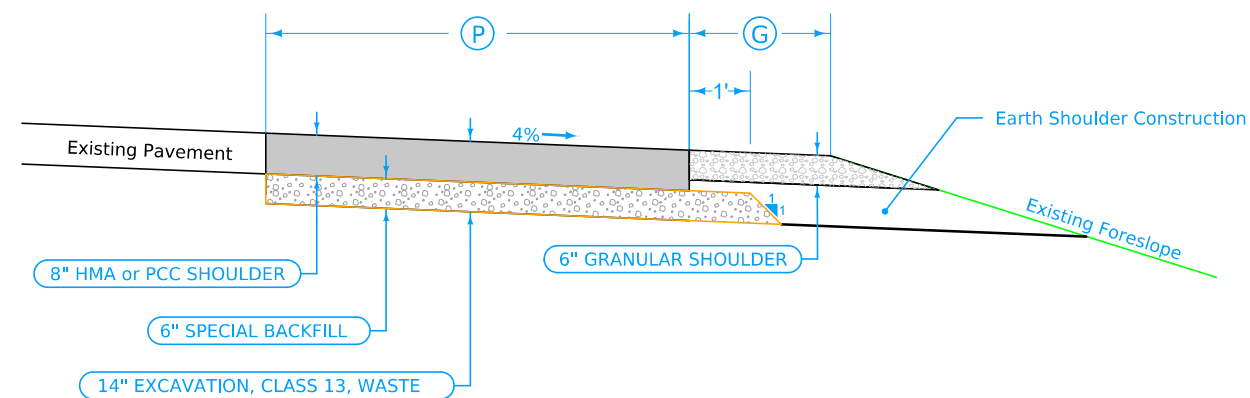
Full Depth PCC Shoulder

Shoulder Jointing:
Longitudinal joint: BT-2, or L-2
Transverse joints: CD, Match Mainline

2_P_FullPCC_04-15-25		
STATION TO STATION		P Feet
497+65.75	498+05.75	10
502+94.25	503+14.25	10

* Shoulder Slope Transitions from 4% at Sta 497+65.75 to 2% at 498+05.75

IA 3 PAVING

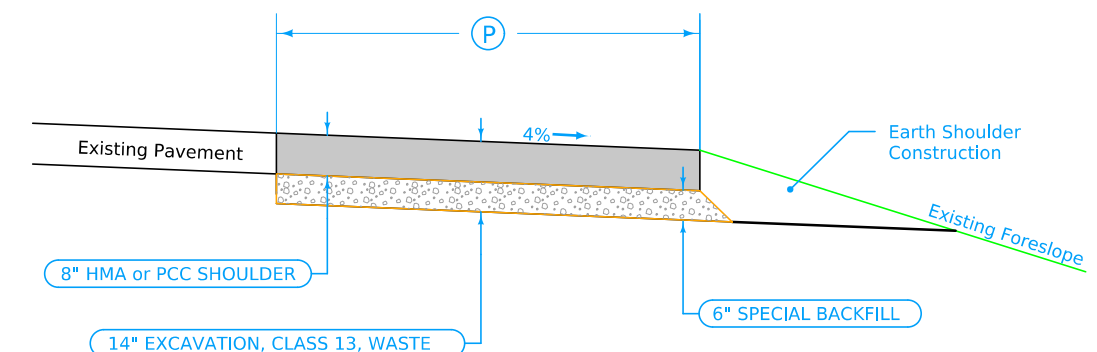


HNTB-1

8" HMA or PCC Paved Shoulder shall be used by matching mainline pavement joint spacing and placing additional transverse 'C' joints in the shoulder at mid-panel of the mainline pavement. The paved shoulder shall be tied to the mainline paving with a 'BT-2' joint. 'B' joints shall be used for HMA Pavement.

Refer to Tab. 112-9 for P and G width and shoulder quantities.

SHOULDER STRENGTHENING

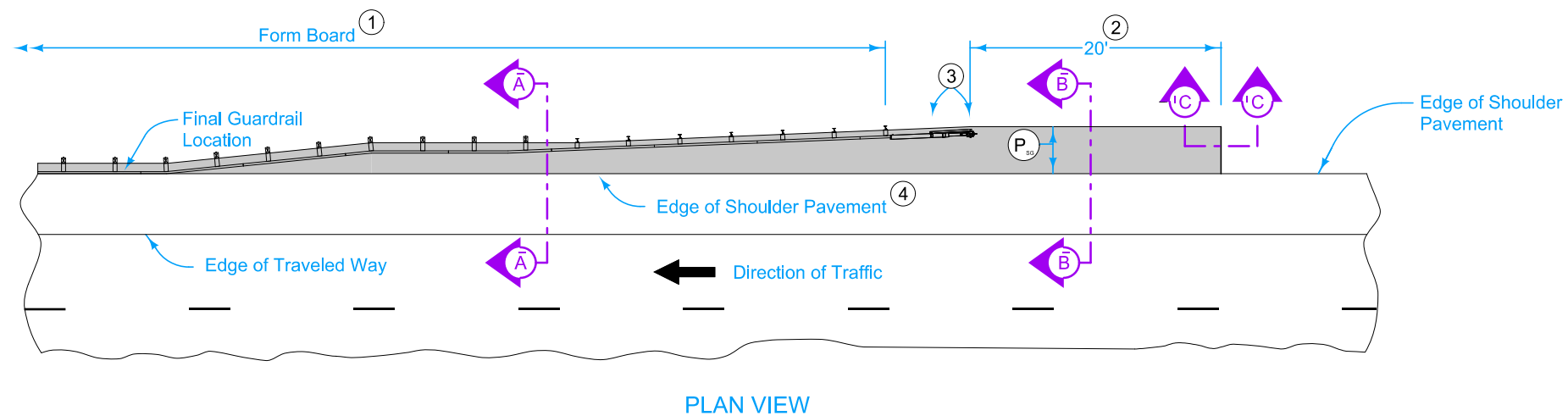


HNTB-2

8" HMA or PCC Paved Shoulder shall be used by matching mainline pavement joint spacing and placing additional transverse 'C' joints in the shoulder at mid-panel of the mainline pavement. The paved shoulder shall be tied to the mainline paving with a 'BT-2' joint. 'B' joints shall be used for HMA Pavement.

Refer to Tab. 112-9 for P width and shoulder quantities.

SHOULDER STRENGTHENING



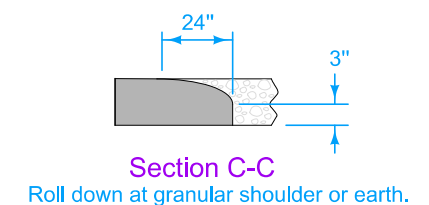
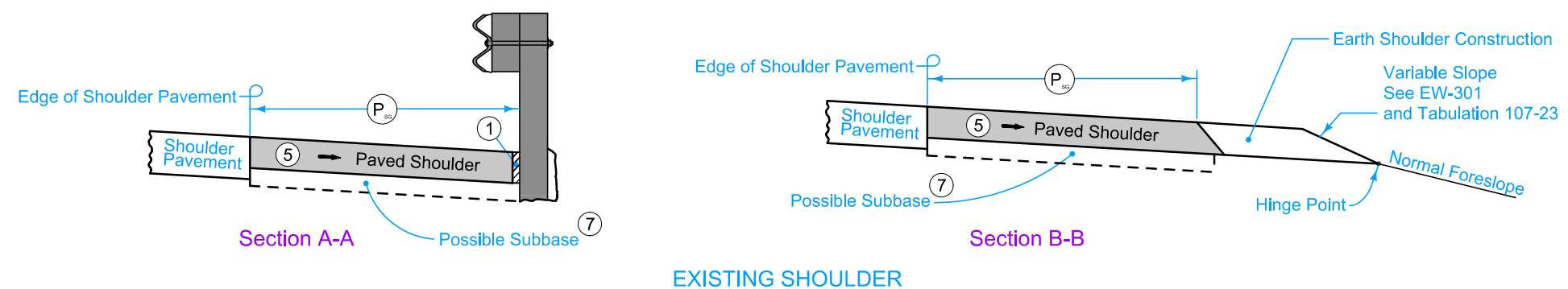
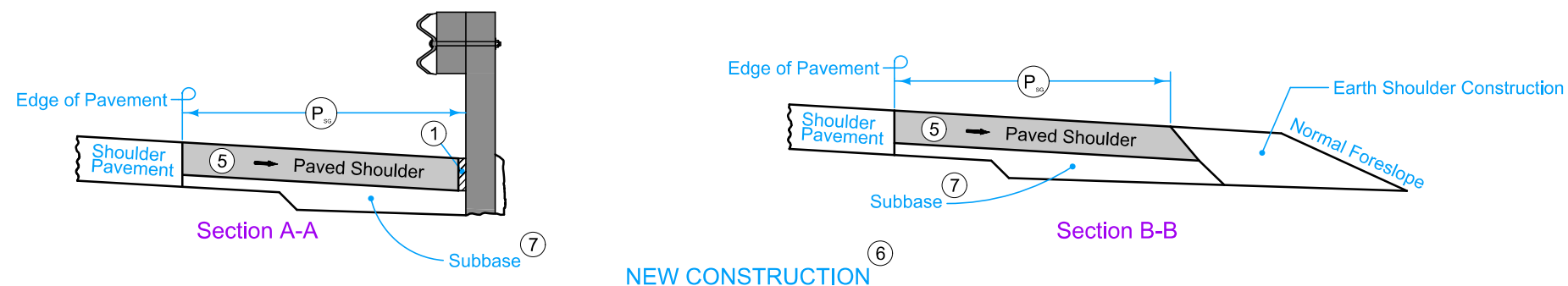
9" HMA Paved Shoulder at guardrail. 8" PCC may be substituted with the following jointing layout:

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

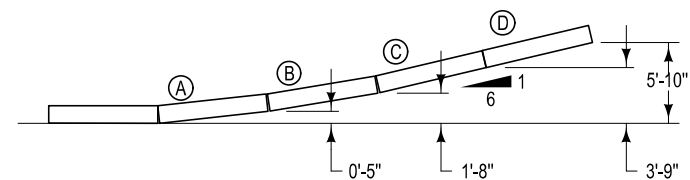
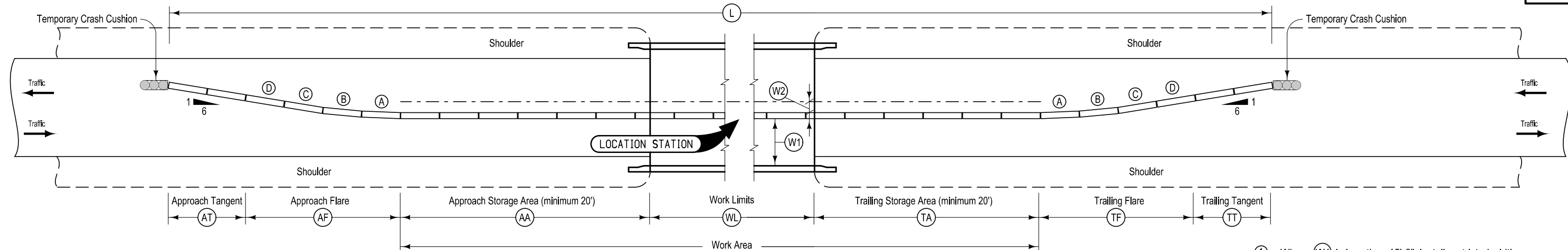
Compaction of HMA is required to face of guardrail post. Hand compaction will be allowed under guardrail. Removal and reinstallation of guardrail will be allowed with no additional payment.

Refer to Tabulation 112-9 for shoulder quantities.

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



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

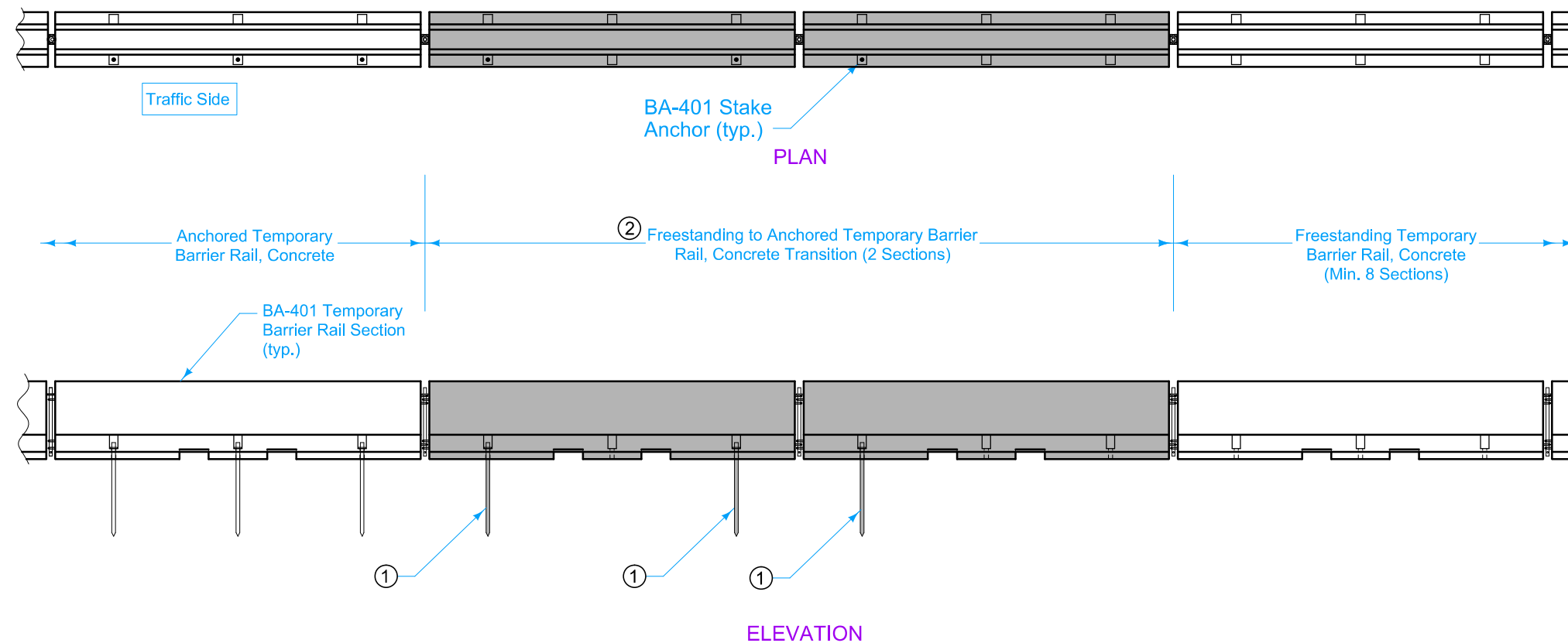


BARRIER OFFSETS FOR FLARE SECTIONS

Station	Side	AT	AF	AA	WL	TA	TF	TT	L	Anchored	W1 ^①	W2 ^②	Remarks
		Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	X	Feet-Inches	Feet-Inches	
Stage 1 500+50.00	Left	25	50	20	548.5	20	50	25	725	X	15 - 6	4 - 6	Stage 1: 58 - 12.5' TBR Sections
Stage 2 500+50.00	Right	25	50	20	548.5	20	50	25	725		15 - 6	4 - 6	Stage 2: 58 - 12.5' TBR Sections

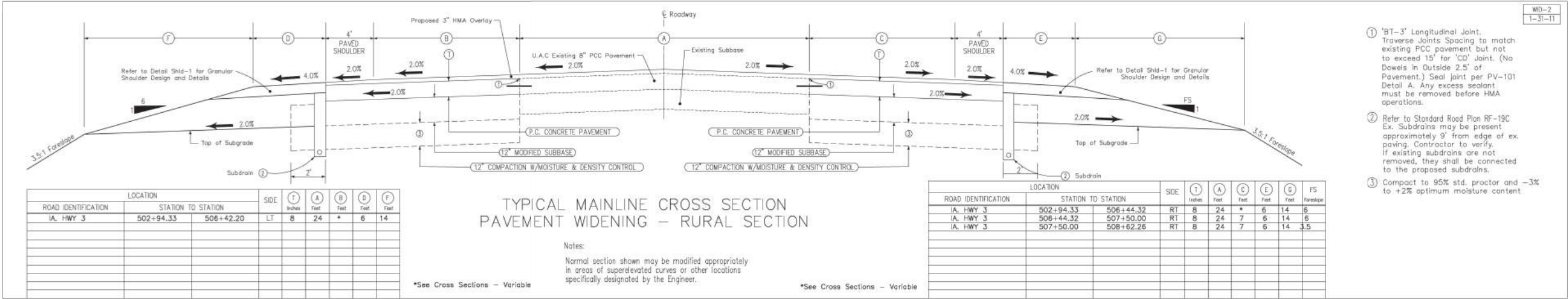
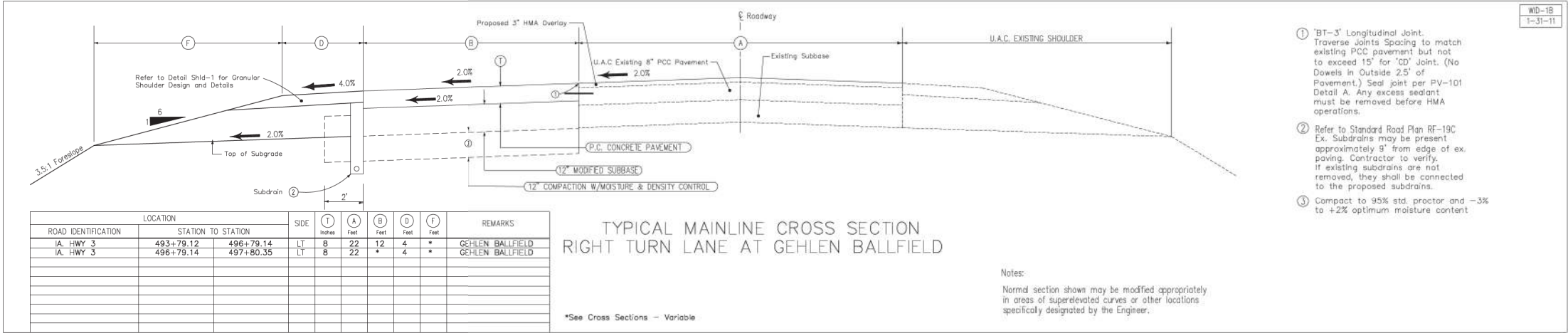
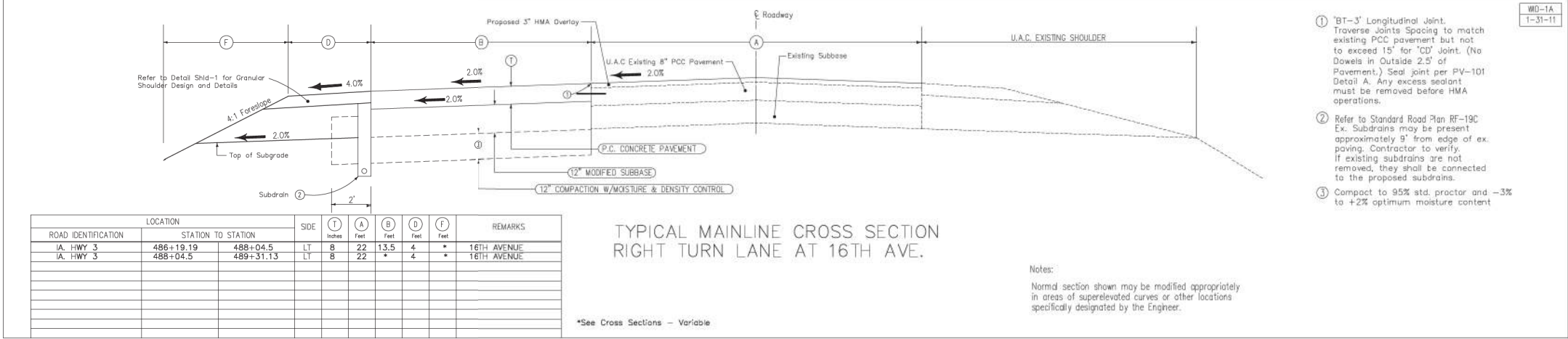
- ① Where W1 is less than 15'-6", install restricted width signing as per Standard Road Plan TC-81.
- ② In Stage 1, W2 offset to drop off is 0'-6" at the abutments. See Sheet J.7, Bridge Sheet V.3 and the TBR Anchoring Transition on this sheet for details.

TEMPORARY CONCRETE BARRIER LAYOUT
for Two-Way Traffic



- ① Install 3 stakes at the locations shown. Stake Anchorage with stop plate shall be installed as shown on Standard Road Plan BA-401
- ② Freestanding to Anchored Temporary Barrier Rail, Concrete Transition (2 Sections)
- Freestanding Temporary Barrier Rail, Concrete (Min. 8 Sections)
- ② Freestanding to Anchored Temporary Barrier Rail Connection shall be considered incidental to the Temporary Barrier Rail, Concrete Item quantified on Tab 108-33.

TEMPORARY CONCRETE BARRIER
ANCHORING TRANSITION



FOR INFORMATION ONLY

ESTIMATED PROJECT QUANTITIES AND REFERENCE NOTES

Roadway Items : Roadway Items

Item no.	Item Code	Item	Unit	Quantities	Estimate Reference Notes
				Estimated	
				Roadway Items	
1	2102-0425070	SPECIAL BACKFILL	TON	349.2	Refer to B Sheets and Tab. 112_09 for locations and details. Existing HMA and PCC from Pavement removal may be used on the project as special backfill.
2	2102-2625000	EMBANKMENT-IN-PLACE	CY	109.3	Refer to Tab. 107_23 and Standard Road Plan EW-301. Provide borrow material according to Section 2102 of the Standard Specifications. Material shall be provided by the Contractor.
3	2102-2713090	EXCAVATION, CLASS 13, WASTE	CY	496.1	Refer to Tabs. 100_24, 112_09 and B Sheets for locations and details. This item is for the removal of existing granular shoulder and existing pavement base material. Dispose of excess material according to Article 1106.07 of the current specifications. No payment for overhaul will be allowed.
4	2105-8425015	TOPSOIL, STRIP, SALVAGE AND SPREAD	CY	62.5	Refer to Tab. 103_10. This item is for stripping and salvaging 8 inches of topsoil from grading for guardrail installations. Topsoil shall be spread to an 8 inch thickness, after shrinkage, over disturbed areas to finished grade. No cross sections are provided with the contract documents.
5	2115-0100000	MODIFIED SUBBASE	CY	145.2	Refer to Tabs. 100_24, 112_09 and B Sheets for locations and details.
6	2121-7425020	GRANULAR SHOULDERS, TYPE B	TON	28.2	Refer to Tab. 112_09 and B Sheets for details. This item is for the placement of granular shoulders adjacent to the paved shoulder strengthening due to material lost from construction activities.
7	2122-5190008	PAVED SHOULDER, P.C. CONCRETE, 8 IN.	SY	163.1	Refer to Tab. 112_09 and B sheets for details. This item is for the paved shoulder at guardrail.
8	2122-5190110	PAVED SHOULDER, P.C. CONCRETE, 11 IN.	SY	53.3	Refer to Tab. 112_09 and B Sheets for details.
9	2122-7450080	SHOULDER STRENGTHENING, OPTIONAL HOT MIX ASPHALT MIXTURE OR PORTLAND CEMENT CONCRETE, 8 IN.	SY	792.3	
10	2123-7450000	SHOULDER CONSTRUCTION, EARTH	STA	9.87	Refer to Tab. 112_09 for details.
11	2301-0690203	BRIDGE APPROACH, BR-203	SY	726.4	Refer to Tab. 112_06.
12	2301-1033080	STANDARD OR SLIP FORM PORTLAND CEMENT CONCRETE PAVEMENT, CLASS C, CLASS 3 DURABILITY, 8 IN.	SY	115.5	Refer to Tab. 100_24 and B Sheets for locations and details.
13	2301-1033110	STANDARD OR SLIP FORM PORTLAND CEMENT CONCRETE PAVEMENT, CLASS C, CLASS 3 DURABILITY, 11 IN.	SY	235.5	
14	2412-0000100	LONGITUDINAL GROOVING IN CONCRETE, BRIDGE DECK	SY	2,077.5	Refer to Tab. 100_28 for details.
15	2503-0500401	BRIDGE END DRAIN, DR-401	EACH	2	Refer to Tab.104_08A.
16	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL	LF	440	Refer to Tab. 110_07A for details.

Item no.	Item Code	Item	Unit	Quantities	Estimate Reference Notes
				Estimated	
				Roadway Items	
17	2505-4008300	STEEL BEAM GUARDRAIL	LF	162.5	Refer to Tab. 108_08A for details.
18	2505-4008410	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION, BA-201	EACH	4	
19	2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED	EACH	4	
20	2505-4021720	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-205	EACH	4	
21	2510-6745850	REMOVAL OF PAVEMENT	SY	1,601.7	Refer to Tabs. 102_05 and 110_01 for location and quantities.
22	2526-8285040	CONSTRUCTION SURVEY, LOCATION SURVEY	LS	1	Survey required to be furnished for the construction of the project includes, but is not limited to, guardrail, bridge approaches, sidewalk, and grading for guardrail as needed.
23	2527-9263155	PRE-CUT SYMBOLS AND LEGENDS, PREFORMED THERMOPLASTIC MARKING MATERIAL	EACH	2	Refer to Tab. 108_29 for location and details.
24	2527-9263181	PAVEMENT MARKINGS REMOVED	STA	43.2	Refer to Tab. 108_22 for locations and quantities. Refer to J Sheets for details.
25	2527-9263190	SYMBOLS AND LEGENDS REMOVED	EACH	2	Refer to Tab. 108_29 for location and details.
26	2527-9263209	PAINTED PAVEMENT MARKINGS, WATERBORNE OR SOLVENT-BASED	STA	52.12	Refer to Tab. 108_22 for locations and quantities. Refer to J Sheets for details.
27	2527-9263225	PERMANENT TAPE MARKINGS, PREFORMED THERMOPLASTIC MARKING MATERIAL	STA	13.08	
28	2527-9263231	REMOVABLE TAPE MARKINGS, WET RETROREFLECTIVE	STA	41.5	
29	2527-9270112	GROOVES CUT FOR PAVEMENT MARKINGS	STA	57.61	Refer to Tab. 108_22 for locations and quantities.
30	2527-9270120	GROOVES CUT FOR SYMBOLS AND LEGENDS	EACH	2	Refer to Tab. 108_29 for details.
31	2528-8400048	TEMPORARY BARRIER RAIL, CONCRETE	LF	1,450	Refer to Tab. 108_33 for location and quantities. Refer to B and J Sheets for details and layout. All temporary barrier rail shall be nominal 12'-6" long concrete units.
32	2528-8400256	TEMPORARY TRAFFIC SIGNALS	EACH	1	Refer to Tab. 108_28 and J Sheets for location and details.
33	2528-8445110	TRAFFIC CONTROL	LS	1	Refer to Traffic Control Plan on J Sheets.
34	2528-8445116	FLAGGER WITH AFAD	EACH	0	See Proposal. Flaggers shall be used to construct paved shoulder prior to Stage 1 and to set up traffic control for Stages 1 and 2. Flaggers shall also be used for short term closure of the trail when paving the bridge directly over the trail.
35	2551-0000110	TEMP CRASH CUSHION	EACH	4	Refer to Tab. 108_30, B and J Sheets for location and 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.
36	2602-0000320	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 20 IN. DIA.	LF	2,240	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.
37	2602-0000351	REMOVAL OF PERIMETER AND SLOPE OR DITCH CHECK SEDIMENT CONTROL DEVICE	LF	2,240	

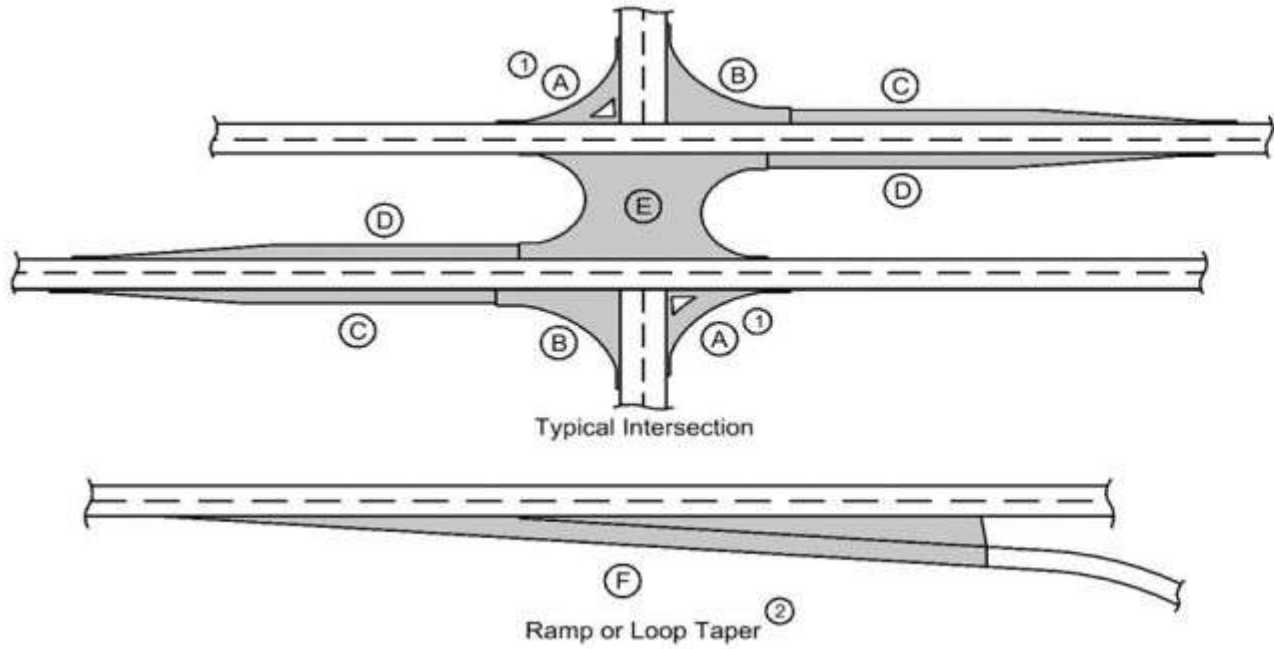
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105_04 10/20/26 STANDARDS The following Standards apply to construction work on this project.		
Number	Date	Title
BA-200	10-20-26	Steel Beam Guardrail Components
BA-201	10-18-22	Steel Beam Guardrail Barrier Transition Section (MASH TL-3)
BA-202	10-20-26	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 12 Inch Approach
BR-211	04-21-26	Bridge Approach (Abutting PCC or Composite Pavement)
DR-306	10-17-23	Precast Concrete Headwall for Subdrain Outlets
DR-401	04-16-24	Scour Protection for Bridge End Drain
EC-101	04-19-16	Wood Excelsior Mat for Ditch Protection
EC-104	04-17-18	Turf Reinforced Mat (TRM)
EC-105	04-17-18	Transition Mat
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
PM-111	04-21-20	Symbols and Legends
PM-115	10-20-26	Grooving for Line Types
PM-116	04-16-24	Grooving for Symbols and Legends
PV-101	10-20-26	Joints
PV-102	10-21-25	PCC Curb Details
SI-173	04-19-16	Object Markers
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
TC-233	10-17-17	Pavement Marking Operations Two-Lane

100_19 10/15/24 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	493+00.00	495+85.00	Right	Perimeter and Slope	20 inch	300.00	
2.0	496+25.00	499+00.00	Right	Perimeter and Slope	20 inch	320.00	
3.0	496+50.00	499+00.00	Left	Perimeter and Slope	20 inch	380.00	
4.0	502+00.00	505+50.00	Right	Perimeter and Slope	20 inch	400.00	
5.0	502+00.00	504+75.00	Left	Perimeter and Slope	20 inch	380.00	
Total:						1780	

Perimeter and Slope Sediment Control Device, 20 In. Dia. = 2,240 LF (Includes an additional 25% for field adjustments and replacements.)

PCC PAVEMENT



(1) Does not include raised island area or curb. Refer to tabulation 112-4 for quantities.
(2) Refer to PV-410, PV-411, PV-412, and PV-414.
(3) Quantity includes Pavement Header.

Line No.	Road Identification	Direction of Travel	Station From	Station To	Width (FT)	Length (FT)	Area (SY)	Area A(1) (SY)(3)	Area B (SY)(3)	Area C (SY)(3)	Area D (SY)(3)	Area E (SY)(3)	Area F(2) (SY)(3)	Area G (SY)(3)	Area H (SY)(3)	Area by Thickness - Thickness(IN)	Area by Thickness - Area (SY)	Polymer Grid (SY)	Special Backfill (TON)	Modified Subbase (CY)	Granular Subbase (SY)	Remarks
1.0	IA 3	WB	496+79.14	497+65.75	12.0	86.61				115.48						8.0	115.5			48.92		Class 13 Excavation: 48.92 CY
Area by Thickness - Thickness(IN) 8.0:																115.5				48.92		
2.0	IA 3	WB	497+65.75	498+05.75	12.0	40.00				53.33						11.0	53.3			17.78		Class 13 Excavation: 17.78 CY
2.0	IA 3	2-Lane	497+65.75	498+05.75	23.0	40.00	102.22									11.0	102.2			34.07		Class 13 Excavation: 34.07 CY
3.0	IA 3	2-Lane	502+94.25	503+14.25	36.0	20.00	80.00									11.0	80.0			26.67		Class 13 Excavation: 26.67 CY
Area by Thickness - Thickness(IN) 11.0:																235.5				78.52		
Total:																351				127.44		

Class 13 Excavation = 127.4 CY

LONGITUDINAL GROOVING			
Line No.	Location	Total (SY)	Remarks
1.0	500+50.00	211.1	West Approach Pavement
2.0	500+50.00	1583.1	Bridge Deck
3.0	500+50.00	283.3	East Approach Pavement
Total:		2077.5	

100_28
8/15/22

102_05 9/29/23																					
EXISTING PAVEMENT																					
Line No.	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
1.0	Plymouth	IA 3	2-Lane	26.87	27.46	2012		STP-003-1(83)--2C-75	HMA	1.5	HMA	1.5	Modified	12.0			DELL RAPIDS_ASD0		2		
2.0	Plymouth	IA 3	2-Lane	26.87	27.44	1981		NA	PCC	8.5							UNKNOWN				
3.0	Plymouth	IA 3	2-Lane	26.04	26.87	1954		F-910(3)	PCC	8.0							HAWARDEN-NORTH	GRAVEL	2		

TOPSOIL STRIPPING AND PLACEMENT							103_10 4/30/25
Line No.	Road Identification	Dir. of Traffic	Station From	Station To	Topsoil Stripping Thickness (IN)	Topsoil Placement Thickness (IN)	Remarks
1.0	IA 3	EB	496+70.30	498+64.00	8.0	8.0	Stage 2 - 17.80 CY (Stripping)
2.0	IA 3	WB	497+27.76	498+64.00	8.0	8.0	Stage 1 - 12.75 CY (Stripping)
3.0	IA 3	EB	502+36.00	503+75.96	8.0	8.0	Stage 2 - 13.24 CY (Stripping)
4.0	IA 3	WB	502+36.00	504+36.27	8.0	8.0	Stage 1 - 18.66 CY (Stripping)

Topsoil, Strip, Salvage and Spread = 62.5 CY

SCOUR PROTECTION OR ROCK FLUME FOR BRIDGE END DRAIN Refer to Standard Road Plan DR-401 and DR-402											104_08A 8/15/22
Line No.	Bridge Station	Bridge Corner	Distance DI-1 or DI-2 (FT)	Bridge End Drain Type	Special Ditch Control, Wood Excelsior Mat EC-101 (SQ)	Turf Reinforced Mat (TRM) Type 2 EC-104 (SQ)	Transition Mat EC-105 (SF)	Macadam Stone Base (TONS)	Engineering Fabric (SY)	Erosion Stone (TON)	Remarks
1.0	500+50.00	NW	55.0	DR-401	4.8	5.1	32.0				
2.0	500+50.00	NE	55.0	DR-401	5.0	5.3	32.0				
Total:					9.8	10.4	64				

107_23
8/15/22

GRADING FOR GUARDRAIL INSTALLATIONS																
Refer to EW-301.																
(1) Lane(s) to which the installation is adjacent.																
Line No.	Direction of Traffic (1)	Station	Side	Foreslope at Guardrail	X1 (FT)	Y1 (FT)	X2 (FT)	Y2 (FT)	X3 (FT)	Y3 (FT)	X4 (FT)	Y4 (FT)	Z (FT)	Excavation Class 10 (CY)	Embankment-in-Place (CY)	Remarks
1.0	EB	498+66.33	Right	MatchExist	94.7	5.0					150.7	7.2	47.6		31.1	Stage 2
2.0	WB	498+66.33	Left	MatchExist	44.7	5.0					100.9	7.2	47.6		22.3	Stage 1
3.0	EB	502+33.66	Right	MatchExist	44.7	5.0					100.9	7.2	47.6		23.2	Stage 2
4.0	WB	502+33.66	Left	MatchExist	107.2	5.0					163.4	7.2	47.6		32.7	Stage 1
Total:															109.3	

108_08A
4/25/25

STEEL BEAM GUARDRAIL AT CONCRETE BARRIER OR BRIDGE RAIL END SECTION

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

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

Line No.	Direction of Travel (1)	Side	Station	Offset (FT)	Barrier Transition Section	Barrier Transition Section (EA)	End Terminal	End Terminal Count (EA)	VT1 (LF)	VF (LF)	VT2 (LF)	ET (LF)	BA-211 Station	BA-211 (Type)	SI-211 (Type) (2)	Delineator SI-172 Type 1 (EA) (2)	Object Marker Type 2 (EA) (2)	Object Marker Type 3 Lt (EA)(2)	Object Marker Type 3 Rt (EA)(2)	Bolted End Anchor BA-202 (Type)	Bolted End Anchor BA-202 (EA)	Steel Beam Guardrail BA-200 (LF)	Remarks
1.0	EB	Right	498+66.33	22.3	BA-201	1	BA-205	1	103.125			47.70			3				1	C	1	62.5	SW Corner of Bridge
2.0	WB	Left	498+66.33	22.3	BA-201	1	BA-205	1	53.125			47.70			3			1		C	1	12.5	NW Corner of Bridge
3.0	EB	Right	502+33.66	22.3	BA-201	1	BA-205	1	53.125			47.70			3			1		C	1	12.5	SE Corner of Bridge
4.0	WB	Left	502+33.66	22.3	BA-201	1	BA-205	1	115.625			47.70			3				1	C	1	75.0	NE Corner of Bridge
Total:						4		4										2	2		4	162.5	

108_22
11/25/25

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 (Yellow) @ 1.33 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

Road ID	Station From	Station To	Lane	Marking Type	Left	Center	Right	Groove Marking Needed?	Groove Qty. (STA)	CHW8 Factored (STA)	CHY8 Factored (STA)	CHY10 Factored (STA)	DCY6 Factored (STA)	ELW6 Factored (STA)	LDW8 Factored (STA)	NPY6** Factored (STA)	SLW2 Factored (STA)	SLW6 Factored (STA)	Remarks
IA 3	493+41.00	496+75.00	Center	Removal of Paint	x			No								4.17			Prior to Stage 1
IA 3	496+75.00	497+65.75	Center	Removal of Paint	x			No					1.82						Prior to Stage 1
IA 3	493+41.00	506+60.14	EB	Removal of Paint			x	No						13.19					Prior to Stage 1
IA 3	503+14.25	506+60.14	Center	Removal of Paint	x			No				13.08	0.52						Prior to Stage 1
IA 3	495+37.00	496+79.14	WB	Removal of Paint			x	No										1.42	Prior to Stage 1
IA 3	496+60.73	498+05.75	EB	Removal of Paint			x	No						1.45					Prior to Stage 2
IA 3	502+94.25	504+19.32	EB	Removal of Paint			x	No						1.25					Prior to Stage 2
IA 3	503+14.25	506+60.14	WB	Removal of Paint			x	No						3.46					Prior to Stage 2
IA 3	494+46.00	495+37.00	WB	Removal of Paint			x	No										0.91	Stage 2
IA 3	494+86.00	496+79.14	WB	Removal of Paint			x	No						1.93					Stage 2
IA 3	493+41.00	496+60.73	EB	Removal of Removable Tape			x	No		4.26									Prior to Stage 2
IA 3	503+34.32	506+60.14	WB	Removal of Removable Tape			x	No		4.34									Prior to Stage 2
IA 3	504+19.32	506+60.14	EB	Removal of Removable Tape			x	No		3.21									Prior to Stage 2
IA 3	505+83.00	506+60.14	Center	Removal of Removable Tape	x			No			2.06								Prior to Stage 2
IA 3	493+41.00	493+41.00	EB	Removal of Removable Tape			x	No									0.48		Stage 2
IA 3	494+14.00	494+26.00	SB	Removal of Removable Tape			x	No									0.48		Stage 2, Entrance
IA 3	493+41.00	497+46.00	EB	Removal of Removable Tape			x	No		5.39									Stage 2
IA 3	495+37.00	496+61.00	WB	Removal of Removable Tape			x	No							0.41				Stage 2
IA 3	496+61.06	506+60.14	WB	Removal of Removable Tape			x	No		13.29									Stage 2
IA 3	503+35.00	506+60.14	EB	Removal of Removable Tape			x	No		4.32									Stage 2
IA 3	505+56.80	506+60.14	Center	Removal of Removable Tape	x			No			2.78								Stage 2
IA 3	506+60.14	506+60.14	WB	Removal of Removable Tape			x	No									0.48		Stage 2
IA 3	503+39.96	506+60.14	Center	Thermoplastic	x			Yes	13.08			13.08							Final Pavement Marking
IA 3	496+60.73	504+19.32	EB	Waterborne/Solvent Paint			x	No						7.59					Stage 1
IA 3	493+50.00	496+75.00	Center	Waterborne/Solvent Paint	x			Yes	4.06							4.06			Final Pavement Marking
IA 3	493+50.00	506+60.14	EB	Waterborne/Solvent Paint			x	Yes	13.10					13.10					Final Pavement Marking
IA 3	494+46.00	496+79.14	WB	Waterborne/Solvent Paint			x	Yes	2.33									2.33	Final Pavement Marking
IA 3	494+86.00	506+60.14	WB	Waterborne/Solvent Paint			x	Yes	11.74					11.74					Final Pavement Marking
IA 3	496+75.00	503+39.96	Center	Waterborne/Solvent Paint	x			Yes	13.30				13.30						Final Pavement Marking
IA 3	493+41.00	493+41.00	EB	Wet Retroreflective Removable Tape			x	No									0.48		Stage 1
IA 3	493+41.00	496+60.73	EB	Wet Retroreflective Removable Tape			x	No		4.26									Stage 1
IA 3	494+14.00	494+26.00	SB	Wet Retroreflective Removable Tape			x	No									0.48		Stage 1, Entrance
IA3	503+34.32	506+60.14	WB	Wet Retroreflective Removable Tape			x	No		4.34									Stage 1
IA 3	504+19.32	506+60.14	EB	Wet Retroreflective Removable Tape			x	No		3.21									Stage 1
IA 3	505+83.00	506+60.14	Center	Wet Retroreflective Removable Tape	x			No			2.06								Stage 1

108_22
11/25/25

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

Road ID	Station From	Station To	Lane	Marking Type	Left	Center	Right	Groove Marking Needed?	Groove Qty. (STA)	CHW8 Factored (STA)	CHY8 Factored (STA)	CHY10 Factored (STA)	DCY6 Factored (STA)	ELW6 Factored (STA)	LDW8 Factored (STA)	NPY6** Factored (STA)	SLW2 Factored (STA)	SLW6 Factored (STA)	Remarks
IA 3	506+60.14	506+60.14	WB	Wet Retroreflective Removable Tape			x	No									0.48		Stage 1
IA 3	493+41.00	497+46.00	EB	Wet Retroreflective Removable Tape			x	No		5.39									Stage 2
IA 3	495+37.00	496+61.00	WB	Wet Retroreflective Removable Tape			x	No							0.41				Stage 2
IA 3	496+61.06	506+60.14	WB	Wet Retroreflective Removable Tape			x	No		13.29									Stage 2
IA 3	503+35.00	506+60.14	EB	Wet Retroreflective Removable Tape			x	No		4.32									Stage 2
IA 3	505+56.80	506+60.14	Center	Wet Retroreflective Removable Tape	x			No			2.78								Stage 2
Total:									57.61	69.62	9.68	26.16	15.64	53.71	0.82	8.23	2.88	4.66	

Removal of Paint = 43.20 STA
Waterborne / Solvent Paint = 52.12 STA
Thermoplastic = 13.08 STA
Removal of Removable Tape = Wet Retroflective Removable Tape = 41.50 STA
The final turn lane shall be painted 11' wide and final thru lane 12' wide on the northwest corner of the bridge.

TEMPORARY TRAFFIC SIGNALS				
Line No.	Item No.	Station	Signal Type	Remarks
1.0	1	494+20.00	Intersection	
2.0	2	505+90.00	One Lane Traffic	

Total: 1 Set

108_28
8/15/22

PAVEMENT MARKING SYMBOLS AND LEGENDS							108 29 4/15/25
Refer to PM-111							
Line No.	Roadway Identification	Station	Side	Pavement Symbol	Quantity (EA)	Groove Marking Needed?	Remarks
1.0	IA 3	495+88.00	Left	RTAW	1	Yes	Final Pavement Symbol
2.0	IA 3	495+13.00	Left	RTAW	1	Yes	Final Pavement Symbol
Total:					2		

CRASH CUSHIONS

108_30
4/16/24

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

Line No.	Lane	Station	Side	Obstacle Width (FT)	Crash Cushion Type	Crash Cushion Quantity	V (FT) (2)	W (FT) (2)	X (FT) (2)	Y (FT) (2)	Z (FT) (2)	Excavation Class 10* (CY)	Embankment in Place* (CY)	Obstacle Description	Remarks
1.0	EB	496+69.50	Right	1.9	Temporary	1								TBR	Stage 1
2.0	EB	504+11.00	Right	1.9	Temporary	1								TBR	Stage 1
3.0	WB	496+69.50	Left	1.9	Temporary	1								TBR	Stage 2
4.0	WB	504+11.00	Left	1.9	Temporary	1								TBR	Stage 2

Total: 4

108_33 8/15/22 TEMPORARY BARRIER RAIL Possible Standard: BA-401 Possible Detail: 560-7 * Not a bid item. Anchorage requirements are based on TBR locations shown in the plans. TBR alignments that vary from what is shown in the plans may result in additional TBR sections requiring anchorage.								
Line No.	No.	Station From	Station To	Length (FT)	Barrier Rail Type	Anchored*	Modular Glare Screen System	Remarks
1.0	1	496+69.50	504+11.00	725.0	Concrete BA-401	Yes	No	Stage 1
2.0	2	496+69.50	504+11.00	725.0	Concrete BA-401	No	No	Stage 2
Total:				1450				

REMOVAL OF PAVEMENT Refer to Tabulation 102-5.							110_01 4/5/24
* Not a bid item.							
Line No.	Station From	Station To	Side	Pavement Type	Area (SY)	Saw Cut* (LF)	Remarks
1.0	493+25.00	498+75.75	EB	Composite	281.2	561.0	Prior to Stage 1
2.0	502+24.25	505+25.00	EB	Composite	157.8	317.0	Prior to Stage 1
3.0	496+79.14	498+75.75	WB	Composite	359.8	220.0	Stage 1
4.0	502+24.25	504+44.32	WB	Composite	314.1	243.0	Stage 1
5.0	497+65.75	498+75.75	EB	Composite	269.5	132.0	Stage 2
6.0	502+24.25	503+14.25	EB	Composite	219.3	132.0	Stage 2
Total:					1601.7	1605	

110_07A 8/15/22 REMOVAL OF STEEL BEAM GUARDRAIL (1) Lane(s) to which the installation is adjacent. (2) Includes length of End Terminals and End Anchors.							
Line No.	No.	Direction of Traffic (1)	Station From	Station To	Side	Removal of Guardrail (2) (LF)	
1.0	1	EB	497+45.00	498+75.00	Right	130.0	
2.0	2	WB	497+84.00	498+77.00	Left	93.0	
3.0	3	EB	502+24.00	502+13.00	Right	89.0	
4.0	4	WB	502+24.00	503+51.00	Left	128.0	
Total:						440	

FILE NO.32560

ENGLISH

DESIGN TEAMHNTB

PLYMOUTH COUNTY

PROJECT NUMBERBRF-003-1(112)--38-75

SHEET NUMBERC.20

7/1/2026 5:42:20 PM

ROSE.BERBERSOLIS@IOWAID

112_06

10/20/26

BRIDGE APPROACH SECTION

Refer to the BR Series.

* Not a bid item

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

Line No.	Bridge Station	End	Skew Ahead Left (Degrees)	Skew Ahead Right (Degrees)	(T) Thickness (IN)	Pay Length (FT)	Right Edge Offset (FT) **	Left Edge Offset (FT) **	Non-Reinf. Area (SY)	Single-Reinf. Area (SY)	Double-Reinf. Area (SY)	SRP Approach	SRP Abutment Type	SRP Abutting Pavement	Perforated * 4" Subdrain (LF)	Subdrain * Outlet (STA)	Subdrain * Outlet Side	Porous * Backfill (CY)	Modified * Subbase (TON)	Polymer * Grid (SY)	Special * Backfill (TON)	Remarks
1.0	500+50.00	W			12.0	70.0	23.6	23.6	157.4	104.8	101.0	BR-203	Movable	BR-211	70.0	498+15.75	Left	2.4	350.161	389.6		
2.0	500+50.00	E			12.0	70.0	23.6	23.6	157.4	104.8	101.0	BR-203	Movable	BR-211	70.0	502+84.25	Left	2.4	349.724	389.1		
Total:									314.8	209.6	202											

Bridge Approach, BR-203 = 726.4 SY

112.09
4/21/26

SHOULDERS

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

Roadway Identification	Direction of Travel (1)	Station From	Station To	Side	P Width (FT)	P SG Width (2) (FT)	G Width (FT)	L Length (FT)	Class 13 Excavation (CY)(3)(4)	Paved Shoulder (3) (SY)	Shoulder at Grd rail (5)(7)	Reinforced Paved Shoulder(3) (SY)	Special Backfill HMA Alt. (3) (TON)	Special Backfill HMA Alt. (TON/STA)	Special Backfill PCC Alt. (3) (TON)	Special Backfill PCC Alt. (TON/STA)	Subbase (3) (8) (CY)	Granular Shoulder (3) (TON)	Granular Shoulder (TON/STA)	Shoulder Const. Alt (3) (STA)	Shoulder Const. Alt HMA (6) (CY)	Shoulder Const. Alt PCC (6) (CY)	Remarks
IA 3	EB	493+25.00	498+75.75	Right	10			550.75	210.9	611.9					216.858	39.410				2.30		120.55	Prior to Stage 1. Notes: 2, 4
IA 3	EB	502+24.25	502+94.25	Right	10			70.00	17.3	77.8					24.500	35.000							Prior to Stage 1. Notes: 2, 4
IA 3	EB	502+94.25	503+54.53	Right	4			60.28	6.7	26.8					8.439	14.000							Prior to Stage 1. Notes: 2, 4
IA 3	EB	503+54.53	505+25.00	Right	4			170.47	30.4	75.8					31.324	18.410							Prior to Stage 1. Notes: 2, 4
IA 3	WB	496+79.14	497+45.44	Left			2	66.30	2.5									4.641	7.000	0.66			Stage 1. Notes: 3
IA 3	WB	497+45.44	497+65.75	Left		2.5		20.31	3.3		5.6				2.666	13.160				0.20		4.45	Stage 1. Notes: 2, 5
IA 3	WB	497+65.75	498+05.75	Left		1.69		40.00	5.1		7.5				4.116	10.290				0.40		8.76	Stage 1. Notes: 2, 5
IA3	WB	502+94.25	503+49.31	Left		5.59		55.06	9.3		34.2				13.181	23.940				0.55		12.05	Stage 1. Notes: 2, 5
IA 3	WB	503+49.31	503+97.03	Left		6.54		47.72	12.6		34.7				13.011	27.300				0.48		10.45	Stage 1. Notes: 2,5
IA 3	WB	503+97.03	504+18.59	Left		7.49		21.56	6.4		17.9				6.595	30.590				0.22		4.72	Stage 1. Notes: 2, 5
IA 3	WB	504+18.59	504+44.32	Left	5		2	25.73	4.0	14.3					5.628	21.910		1.801	7.000	0.26		5.63	Stage 1. Notes: 2, 5
IA 3	EB	496+95.45	497+15.45	Right		3.54		20.00	4.1		7.9				3.353	16.800				0.20		4.38	Stage 2. Notes: 2, 5
IA 3	EB	497+15.45	497+62.84	Right		2.565		47.39	7.8		13.5				6.328	13.370				0.47		10.37	Stage 2. Notes: 2, 5
IA 3	EB	497+62.84	497+65.75	Right		1.59		2.91	0.4		0.5				0.289	9.940				0.03		0.64	Stage 2. Notes: 2, 5
IA 3	EB	497+65.75	498+05.75	Right	10	1.59		40.00	26.9	44.4	7.1				3.976	9.940	14.81			0.40		8.76	Stage 2. Notes: 1, 2, 5, 6
IA 3	EB	502+94.25	503+14.25	Right	4	2.305		20.00	7.9	8.9	5.1				2.489	12.460	2.96			0.20		4.38	Stage 2. Notes: 1, 2, 5, 6
IA 3	EB	503+14.25	503+33.61	Right		3.105		19.36	2.9		6.7				2.951	15.260				0.19		4.24	Stage 2. Notes: 2, 5
IA 3	EB	503+33.61	503+54.53	Right		3.5		20.92	4.3		8.1				3.478	16.660				0.21		4.58	Stage 2. Notes: 2, 5
IA 3	EB	495+55.00	496+95.45	Right			2	140.45	5.2									9.832	7.000	1.40			Stage 2. Notes: 3
IA 3	EB	503+54.53	505+25.00	Right			2	170.47	0.7									11.933	7.000	1.70			Stage 2. Notes: 3
Total:									368.7	859.9	148.8				349.182		17.77	28.207		9.87			

1. 12" Modified Subbase
2. 6" Special Backfill
3. 6" Granular Shoulder
4. 8" Paved Shoulder Strengthening
5. 8" PCC Shoulder
6. 11" PCC Shoulder

232_038
9/28/22

EROSION CONTROL (URBAN 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 as follows:

Place seed and fertilize according to the requirements of Article 2601.03,C,4 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 incidental to mobilization and will not be paid for separately.

232_030
8/28/24

EROSION CONTROL (NATIVE GRASS 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 and mulch on the disturbed area lying 8 feet or more beyond the shoulder as follows:

SEED MIX:

Big bluestem (Andropogon geradii)	6 lbs. PLS/Acre (7.0 kg/ha)
Indiangrass (Sorghastrum nutans)	6 lbs. PLS/Acre (7.0 kg/ha)
Little bluestem (Schizachyrium scoparium)	6 lbs. PLS/Acre (7.0 kg/ha)
Partridge Pea (Chamaecrista fasciculata)	4 lbs. PLS/Acre (4.5 kg/ha)
Sideoats grama (Bouteloua curtipendula)	4 lbs. PLS/Acre (4.5 kg/ha)
Canada wildrye (Elymus canadensis)	2 lbs. PLS/Acre (2.2 kg/ha)
Switchgrass (Panicum virgatum)	1 lbs. PLS/Acre (1.1 kg/ha)
Oats (Avena sativa)	32 lbs./Acre (36.0 kg/ha)

Furnish Big bluestem, Indiangrass, Canada wildrye and Little bluestem that is debarbed or equal to facilitate the application of seed.

Furnish seed certified as Source Identified Class (Yellow Tag) Source G0-Iowa. Oats are excluded from this requirement. Place seed according to the requirements of Article 4169.02 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 and mulch are incidental to mobilization and will not be paid for separately.

232_11
6/21/23

EROSION CONTROL (STABILIZING CROP 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.

If outside of permanent seeding dates in Section 2601 of the Standard Specifications, or if required by a storm water permit, place stabilizing crop, fertilizer, and mulch on the disturbed area as follows:

Place seed and fertilize according to the requirements of Article 2601.03,C,1 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 incidental to mobilization and will will not be paid for separately.

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.

	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

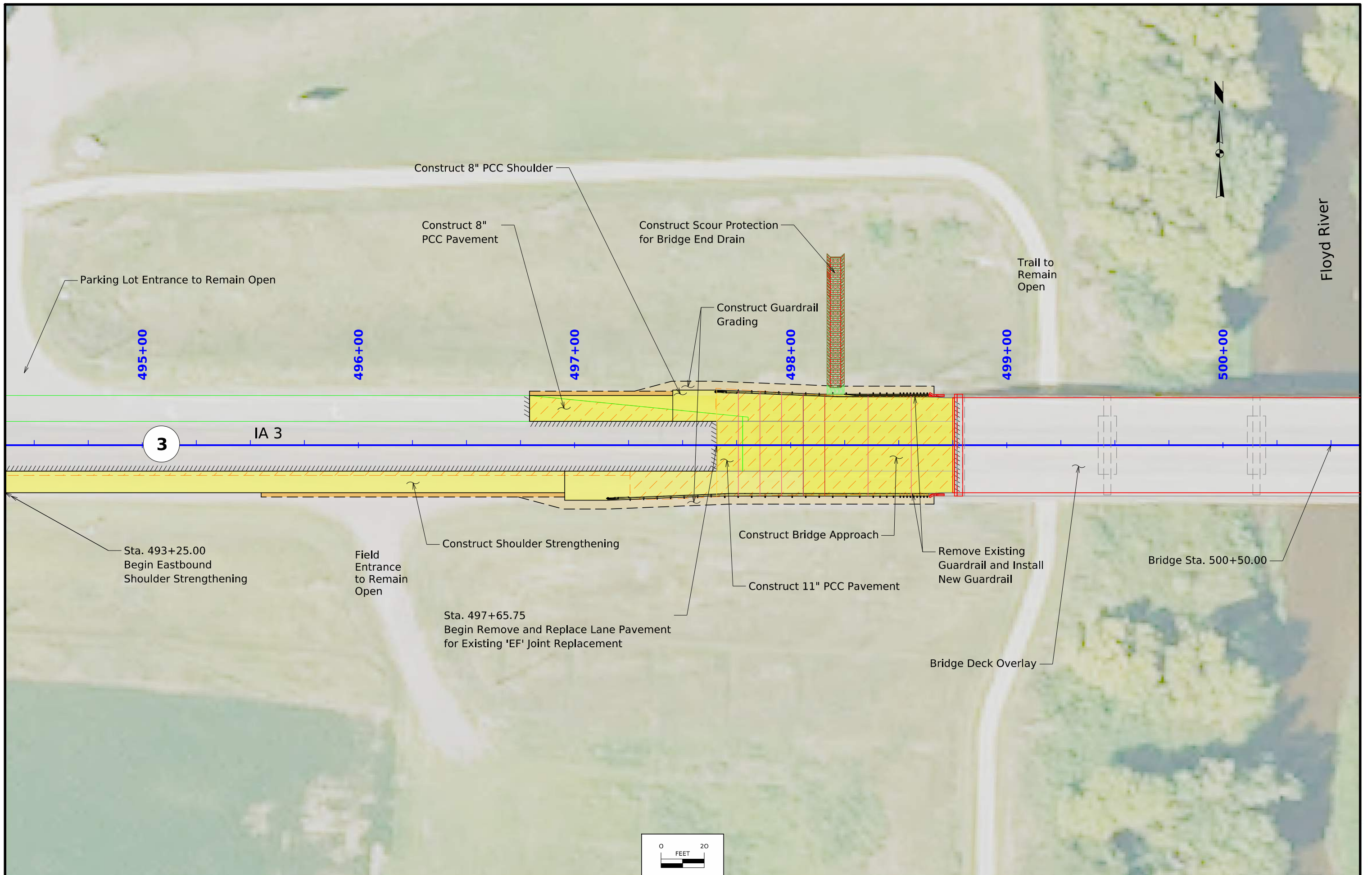
LINEWORK		Design Color No.
Green	(2)	Existing Topographic Features and Labels
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Magenta	(5)	Existing Utilities
SHADING		Design Color No.
Lavender	(9)	Temporary Pavement Shading
Yellow	(4)	Proposed Pavement Shading
Orange	(6)	Proposed Granular Shading
Orange	(70)	Proposed Shoulder Granular Shading
Yellow	(68)	Proposed Shoulder Paved Full Depth Shading
Yellow	(132)	Proposed Shoulder Paved Partial Depth Shading
Gray, Dark	(112)	Proposed Grade and Pave Shading "In conjunction with a paving project"
Brown, Light	(236)	Grading Shading
Orange, Light	(134)	Proposed Granular Entrance Shading
Yellow	(220)	Proposed Paved Entrance Shading
Tan	(8)	Proposed Sidewalk Shading
Blue, Light	(230)	Proposed Sidewalk Landing Shading
Pink	(11)	Proposed Sidewalk Ramp Shading
Green, Light	(225)	Existing Pavement Shading
Red	(3)	Proposed Structure Shading
Red	(3)	Delineates Restricted Areas
Gray	(64)	Revetment

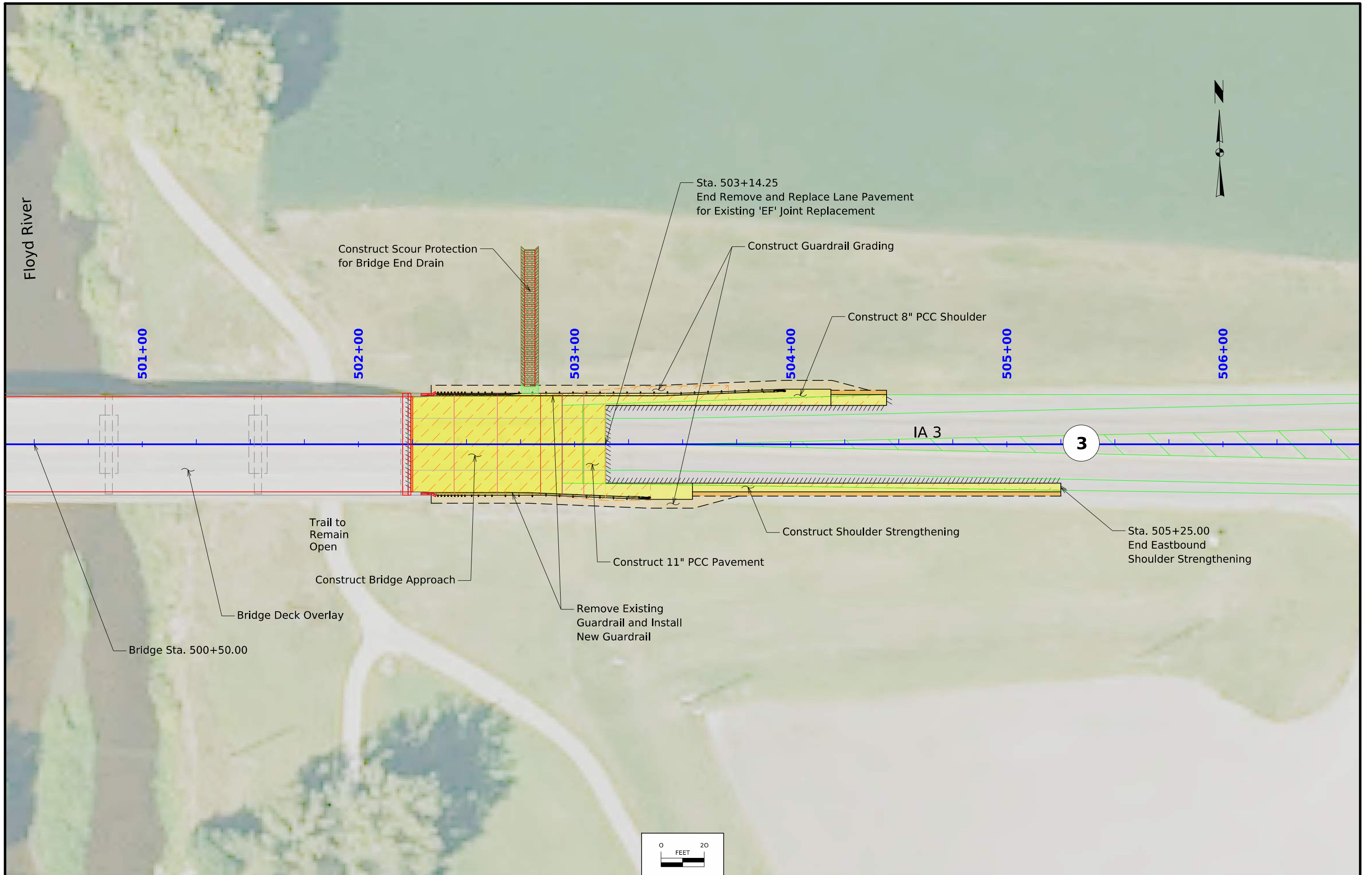
LINEWORK	Design Color No.
Green	(10) Existing Ground Line Profile
Blue	(1) Proposed Profile and Annotation
Magenta	(5) Existing Utilities
Blue, Light	(230) Proposed Ditch Grades, Left
Black	(0) Proposed Ditch Grades, Median
Rust	(14) Proposed Ditch Grades, Right

- Proposed Right-of-Way
- Existing Right of Way
- Existing and Proposed Right-of-Way
- Easement and Existing Right-of-Way
- Easement (Temporary)
- Easement
- Access Control
- Property Line

	Reference Point
	Station
	Section Corner
	Ground Line Intercept
	Saw Cut
	Guardrail
	Trench Drain
	High Tension Guardrail
	Sheet Pile
	Pavement Removal
	Clearing & Grubbing Area

(COVERS SHEET SERIES D)





TRAFFIC CONTROL PLAN

Maintain traffic on IA 3 at all times in accordance with Standard Road Plans listed in Tab. 105_04.
For additional information, refer to Part 6 of the Manual on Uniform Traffic Control Devices and the current Standard Specifications.
Refer to Tab. 108_26A for Staging Notes.
The trail shall remain open except when paving directly over the trail. Short term closure and flaggers will be needed for the trail when paving on the bridge.
Field and parking lot entrances on both sides of the bridge shall remain open at all times.

511 TRAVEL RESTRICTIONS													108_25 3/28/24
Line No.	Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No. or Structure ID or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
1.0	IA 3	Both	Plymouth	1.0 mi E of US 75 in Le Mars	Floyd River	Barrier	FHWA No. 039851	Horizontal	N/A	15'-6"	N/A	N/A	
2.0	IA 3	Both	Plymouth	1.0 mi E of US 75 in Le Mars	Floyd River	Temporary Signal	FHWA No. 039851	Vertical	N/A	15'-0"	14'-0"	N/A	

108_26A
8/15/22

STAGING NOTES	
Prior to Stage 1	
Traffic:	Maintain two-way traffic on IA 3 in accordance with Standard Road Plan TC-202 and TC-213.
Construction:	Construct shoulder strengthening on the eastbound shoulder as noted in Tab. 112_09 and J Sheets.
Stage 1	
Traffic:	Maintain two-way traffic on the eastbound lane in accordance with Standard Road Plan TC-217 using temporary traffic signals and temporary barrier rail. Existing field and parking lot entrances west and east of the bridge to remain open during construction. The entrances will have restricted turn movements as shown on the J Sheets. Trail is to remain open except when paving directly over trail. See J Sheets and Standard Road Plan TC-217 for details.
Construction:	Construct bridge deck overlay on the north half of the bridge. Remove and replace 70' of approach pavement and additional westbound lane pavement to the existing 'EF' joint on each end of the bridge on the north side. Remove and replace guardrail on the north side of the bridge, construct scour protection for bridge end drain and pave shoulders at guardrail. Construct westbound paved shoulder for shifting traffic in Stage 2. Complete other Stage 1 construction.
Stage 2	
Traffic:	Maintain two-way traffic on the westbound lane in accordance with Standard Road Plan TC-217 using temporary traffic signals and temporary barrier rail. Existing field and parking lot entrances west and east of the bridge to remain open during construction. The entrances will have restricted turn movements as shown on the J Sheets. Trail is to remain open except when paving directly over trail. See J Sheets and Standard Road Plan TC-217 for details.
Construction:	Construct bridge deck overlay on the south half of the bridge. Remove and replace 70' of approach pavement and additional eastbound lane pavement to the existing 'EF' joint on each end of the bridge on the south side. Remove and replace guardrail on the south side of the bridge and pave shoulders at guardrail. Complete other Stage 2 construction.
Final	
Traffic:	Open both lanes to traffic. Complete final pavement markings operations in accordance with Standard Road Plan TC-233.
Construction:	Complete final pavement markings.

111_01
10/14/22

COORDINATED OPERATIONS

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

Project	Type of Work
None Provided	

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, Unpinned		Permanent Barrier Rail
	Temporary Barrier Rail, Pinned		Channelizing Device

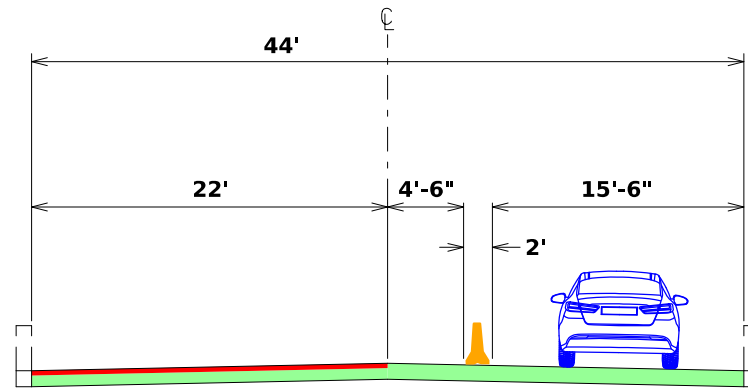
PLAN VIEW COLOR LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS			
LINEWORK	Design Color No.		
Green	(2)	Existing Topographic Features and Labels	
Magenta	(5)	Pavement Marking Call Outs	
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation	
Yellow	(4)	Pavement Markings, Yellow	
Off 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	
Gray, Med	(80)	Proposed Granular Surface Shading	
Gray, Med	(80)	Previously Constructed Granular Surface Shading	
Blue, Light	(230)	Proposed Pavement Shading	
Lavender	(9)	Temporary Pavement Shading	
Brown, Light	(236)	Proposed Grading Limits Shading	
Pink, Dark	(13)	Proposed MSE or CIP Wall Shading	
Red	(3)	Proposed Bridge Shading and Sign Trusses	
Black w/Gray, Light Fill	(0,48)	Previously Constructed Structure	

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

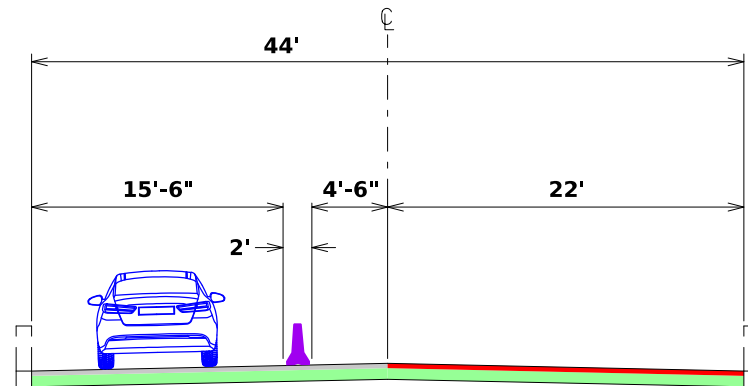
NOTE: Device spacing according to Standard Road Plans unless specifically dimensioned.

TRAFFIC CONTROL
AND
STAGING
LEGEND AND SYMBOL
INFORMATION SHEET

(COVERS SHEET SERIES J)

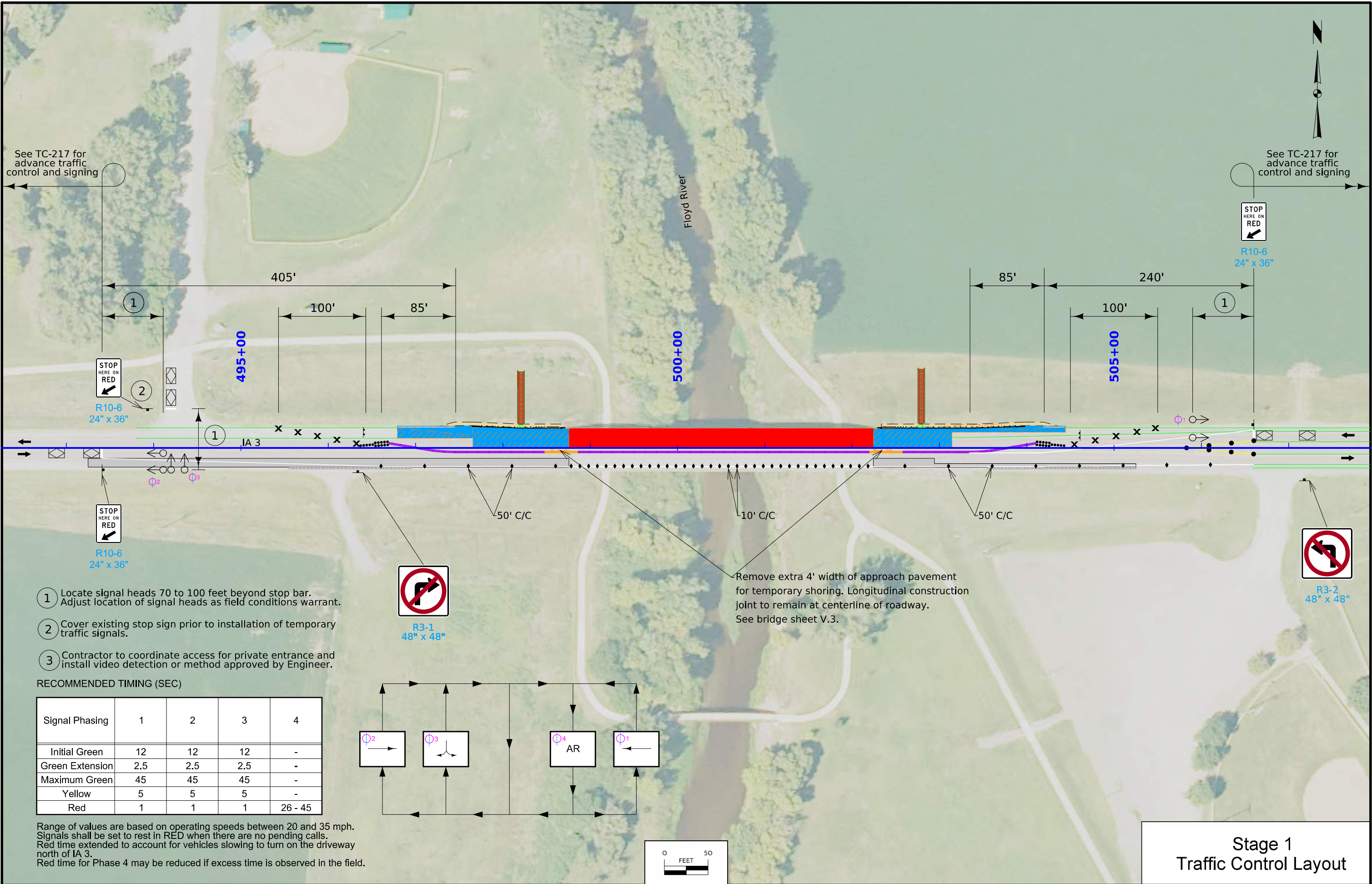


**STAGE 1
(LOOKING AHEAD STATION)**



**STAGE 2
(LOOKING AHEAD STATION)**

STAGING TYPICALS

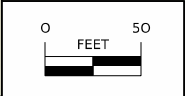
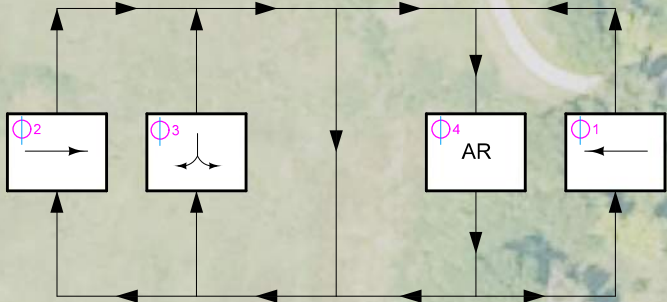


- 1 Locate signal heads 70 to 100 feet beyond stop bar. Adjust location of signal heads as field conditions warrant.
- 2 Cover existing stop sign prior to installation of temporary traffic signals.
- 3 Contractor to coordinate access for private entrance and install video detection or method approved by Engineer.

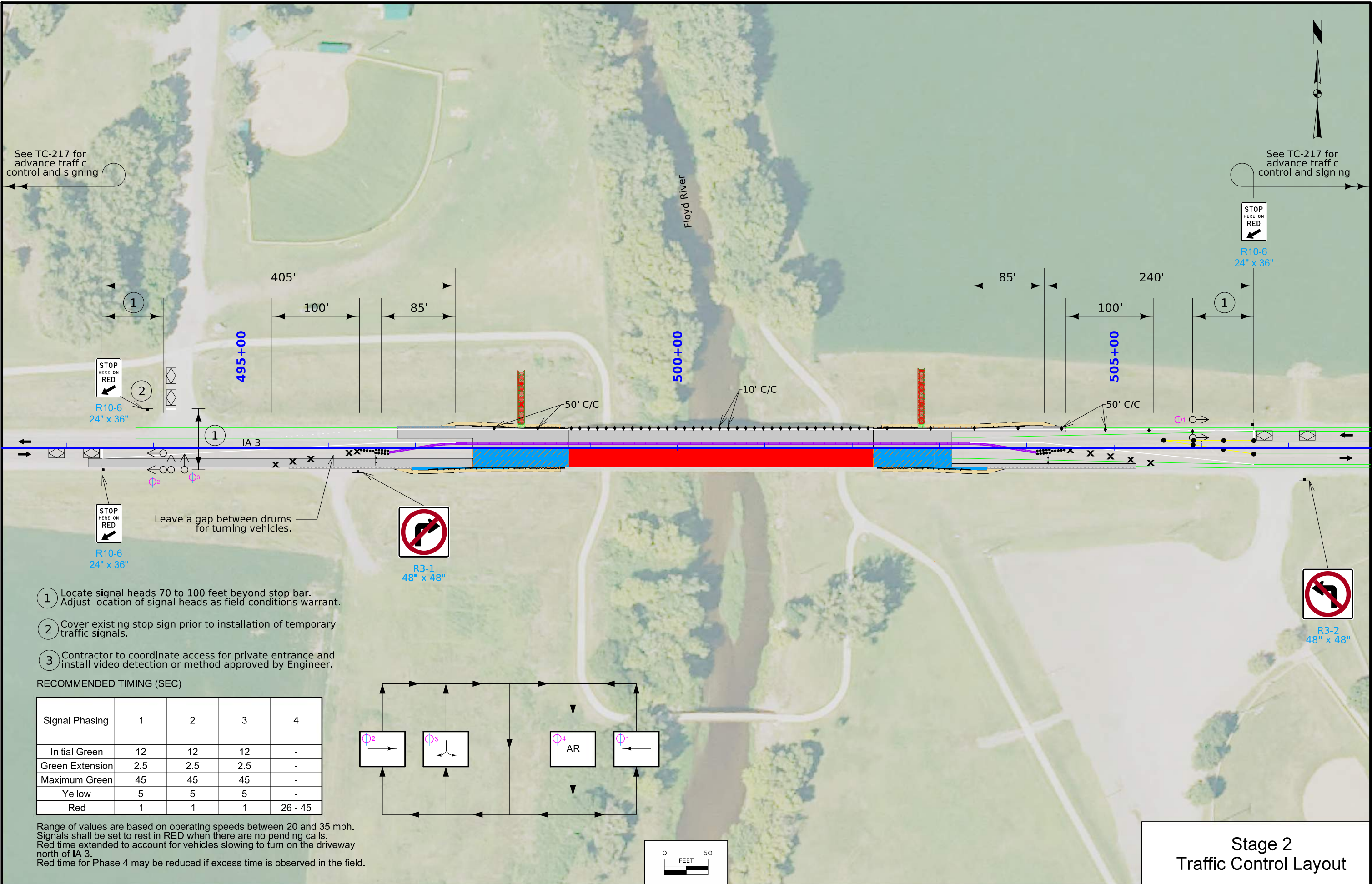
RECOMMENDED TIMING (SEC)

Signal Phasing	1	2	3	4
Initial Green	12	12	12	-
Green Extension	2.5	2.5	2.5	-
Maximum Green	45	45	45	-
Yellow	5	5	5	-
Red	1	1	1	26 - 45

Range of values are based on operating speeds between 20 and 35 mph. Signals shall be set to rest in RED when there are no pending calls. Red time extended to account for vehicles slowing to turn on the driveway north of IA 3. Red time for Phase 4 may be reduced if excess time is observed in the field.



Stage 1
Traffic Control Layout

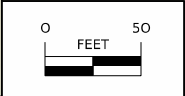
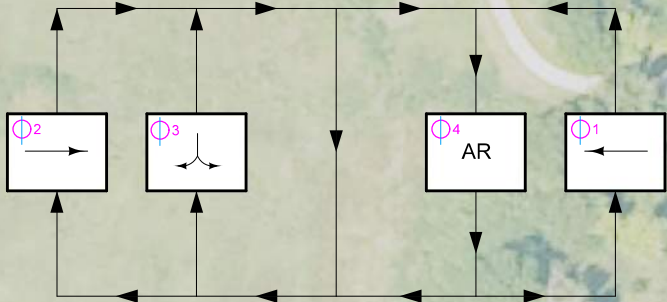


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Range of values are based on operating speeds between 20 and 35 mph. Signals shall be set to rest in RED when there are no pending calls. Red time extended to account for vehicles slowing to turn on the driveway north of IA 3. Red time for Phase 4 may be reduced if excess time is observed in the field.



Stage 2
Traffic Control Layout

1. Dimensions on this sheet are to the face of the guardrail.
Refer to Tab. 112_09 for the shoulder pavement details.

2. Location Station is based on rail splice and end of the concrete barrier rail.

3. X and Y are for grading purposes, not for guardrail placement.

496+00 497+00 498+00

IA 3

Line #2

Line #1

STA 498+66.33

13'-6.1\"

11'-3.8\"

10'-3.8\"

12'-6.1\"

20' 47'-8.4\" 103'-1.5\"

0 10 FEET

115'-7.5\" 47'-8.4\" 20'

STA 502+33.66

Line #4

Line #3

STA 502+33.66

10'-3.8\"

4'-3.8\"

6'-6.1\"

6'-6.6\"

53'-1.5\" 47'-8.4\" 20'

503+00 504+00 505+00

IA 3

Line No.	Direction of Travel	Station	Side	X1 FT	Y1 FT	X2 FT	Y2 FT	X3 FT	Y3 FT	X4 FT	Y4 FT	Z FT
1	EB	498+66.33	Right	94.7	5.0					150.7	7.2	47.6
2	WB	498+66.33	Left	44.7	5.0					100.9	7.2	47.6
3	EB	502+33.66	Right	44.7	5.0					100.9	7.2	47.6
4	WB	502+33.66	Left	107.2	5.0					163.4	7.2	47.6

0 10 FEET

GUARDRAIL DETAIL

FILE NO. 32560 ENGLISH DESIGN TEAM HNTB PLYMOUTH COUNTY PROJECT NUMBER BRF-003-1(112)--38-75 SHEET NUMBER U.1

Line No.	Direction of Travel	Station	Side	X1 FT	Y1 FT	X2 FT	Y2 FT	X3 FT	Y3 FT	X4 FT	Y4 FT	Z FT
1	EB	498+66.33	Right	94.7	5.0					150.7	7.2	47.6
2	WB	498+66.33	Left	44.7	5.0					100.9	7.2	47.6
3	EB	502+33.66	Right	44.7	5.0					100.9	7.2	47.6
4	WB	502+33.66	Left	107.2	5.0					163.4	7.2	47.6

GUARDRAIL DETAIL