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PLANS OF PROPOSED IMPROVEMENT ON THE
PRIMARY ROAD SYSTEM
WARREN COUNTY
1571-Bridge Approach Repair
North River 0.9 mi S of US 65 (NB/SB)

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

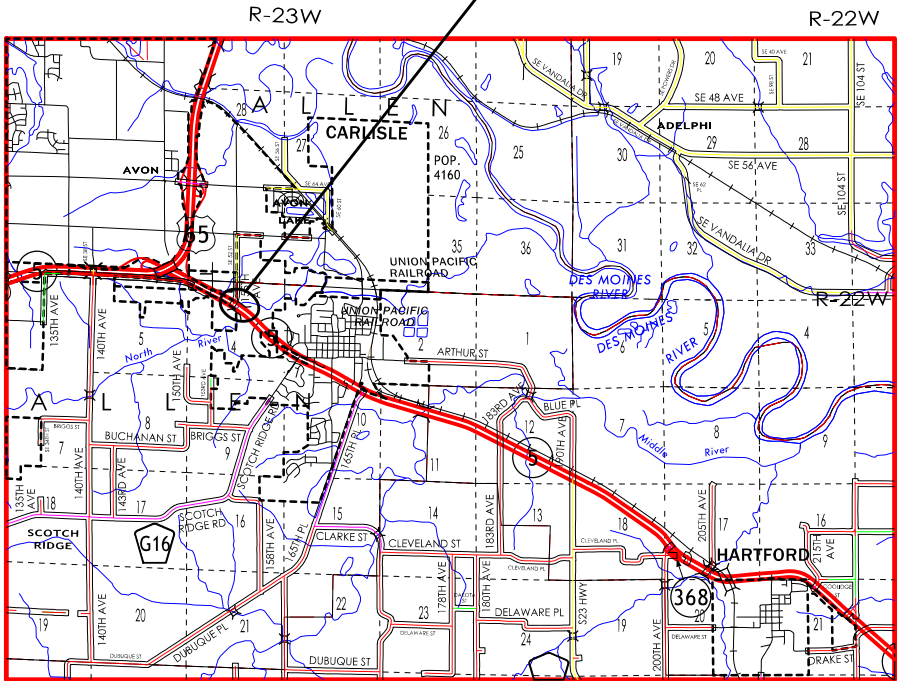
Value Engineering Saves. Refer to Article 1105.14 of the Specifications.



REVISIONS

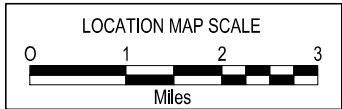
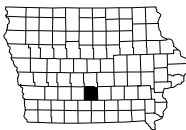
TOTAL
31
PROJECT IDENTIFICATION NUMBER
26-91-005-010
PROJECT NUMBER
MB-005-1(505)90--77-91
R.O.W. PROJECT NUMBER
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PROJECT LOCATION



T-78N

T-77N



INDEX OF SEALS			
SHEET NO.	NAME	TYPE	BID QUANTITY SHEETS
A.1	DEVENDRA TAMRAKAR	Primary Signature Block	C.1
V.1	HAIPING CHEN	Structural Design	V.1
V.5	HAIPING CHEN	Structural Design	V.1

ROADWAY DESIGN



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

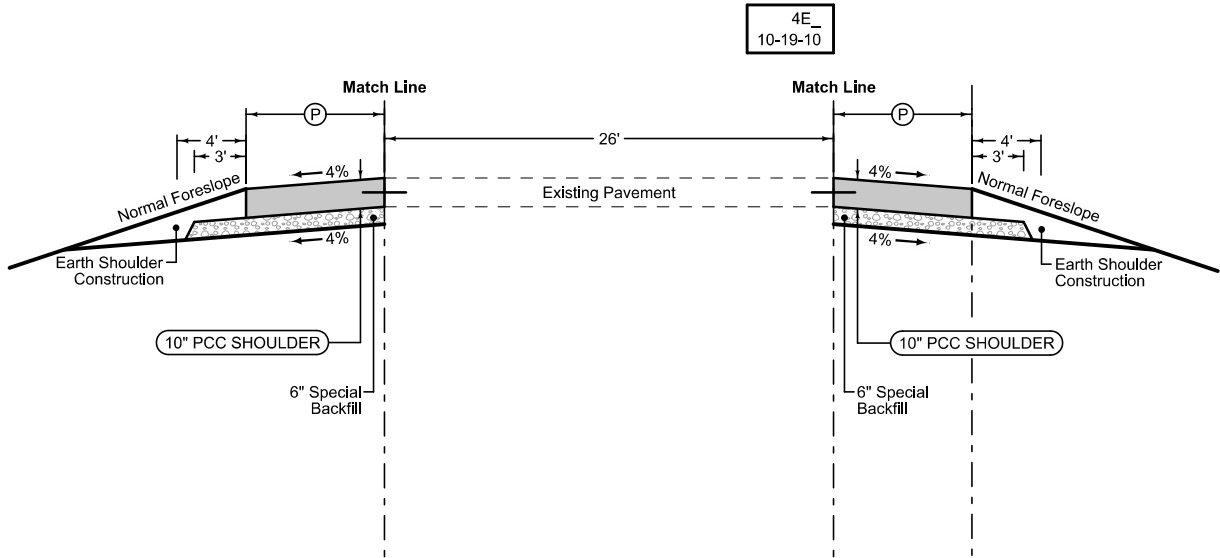
Signature: Date: 07-30-2026
Printed or Typed Name: Devendra Tamrakar
My license renewal date is December 31, 20 27

Pages or sheets covered by this seal: A.1; B.1-B.6; C.1-C.8; D.1-D.3; J.1-J.5
X

Full Depth PCC Shoulder

Shoulder Jointing:
Longitudinal joint: BT-2,
Transverse joints: C - Match existing spacing

2_P_FullPCC_ 04-15-25		
STATION TO STATION		(P) Feet
115+22.70	118+38.60	6
124+03.70	128+53.70	6



Full Depth PCC Shoulder

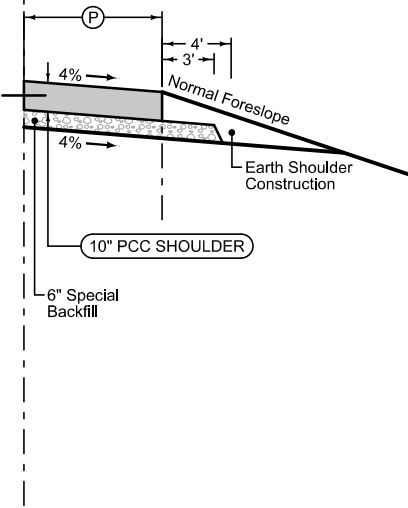
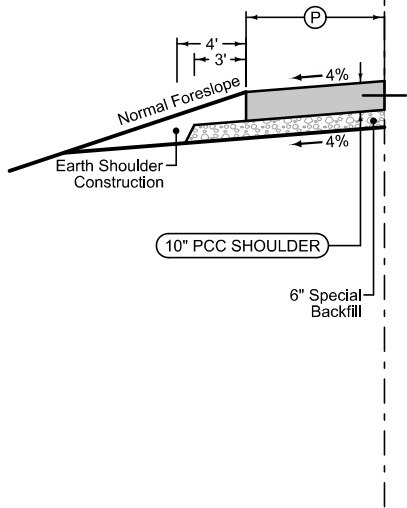
Shoulder Jointing:
Longitudinal joint: BT-2,
Transverse joints: C - Match existing spacing

2_P_FullPCC_ 04-15-25		
STATION TO STATION		(P) Feet
115+22.70	120+22.70	8
123+53.70	128+53.70	8

Paved Shoulder at Guardrail

PCC Shoulder Jointing:
Longitudinal joint: BT-3
Transverse joints: C at mainline spacing
HMA Shoulder Jointing:
Longitudinal joint: B

2_P_Guard_ 04-21-20		
STATION TO STATION		(P) Feet
118+38.60	120+42.70	Var.



Paved Shoulder at Guardrail

PCC Shoulder Jointing:
Longitudinal joint: BT-3
Transverse joints: C at mainline spacing
HMA Shoulder Jointing:
Longitudinal joint: B

2_P_Guard_ 04-21-20		
STATION TO STATION		(P) Feet
118+62.03	120+42.70	Var.

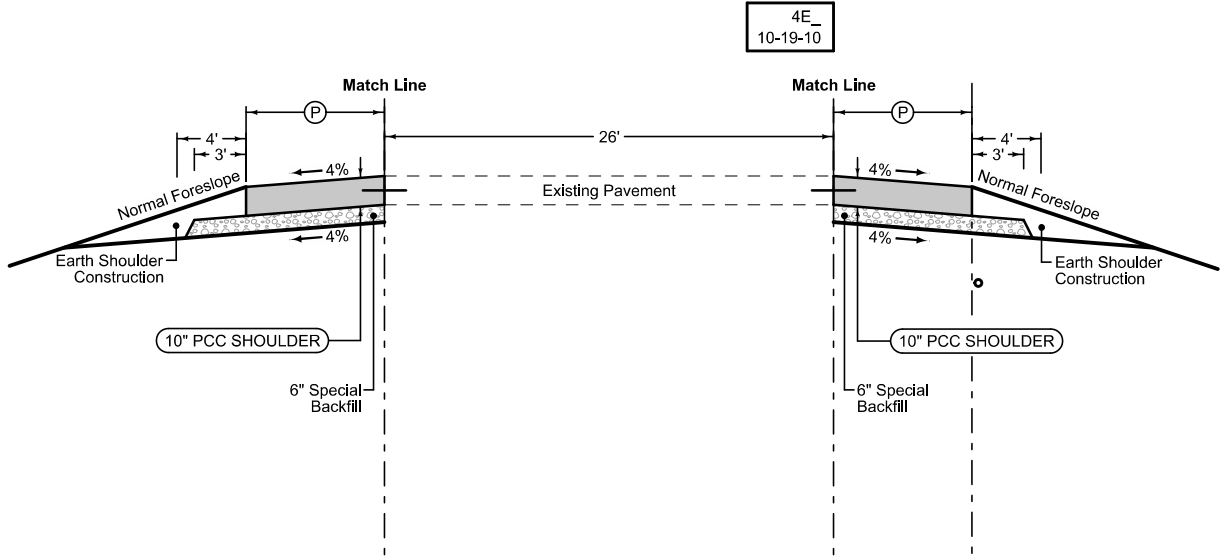
- Notes:
1. Typical shown is in the direction of traffic.
 2. See Tab. 112-9 for shoulder quantities.
 3. Refer Modified Road design detail 7156 for guardrail shoulder at Median side.
 4. Refer Modified Road design detail 7158 for guardrail shoulder at outside lane side.
 5. Refer BR-203 and D sheets for Bridge Approach details.

IA 5
South Bound

Full Depth PCC Shoulder

Shoulder Jointing:
Longitudinal joint: BT-2,
Transverse joints: C - Match existing spacing

2_P_FullPCC_ 04-15-25		
STATION TO STATION		(P) Feet
115+22.70	119+72.70	10
125+15.85	128+53.70	10



Full Depth PCC Shoulder

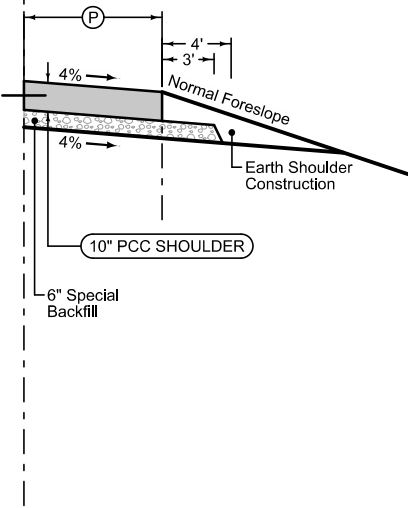
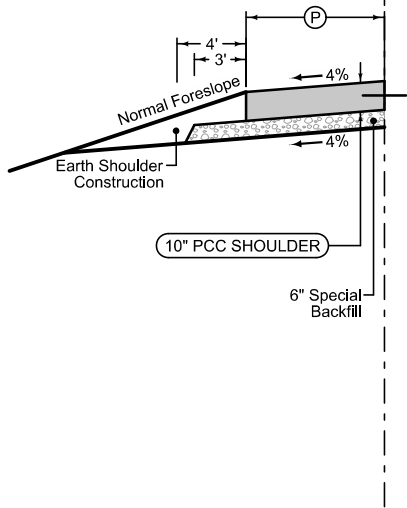
Shoulder Jointing:
Longitudinal joint: BT-2,
Transverse joints: C - Match existing spacing

2_P_FullPCC_ 04-15-25		
STATION TO STATION		(P) Feet
115+22.70	120+22.70	8
123+53.70	128+53.70	8

Paved Shoulder at Guardrail

PCC Shoulder Jointing:
Longitudinal joint: BT-3
Transverse joints: C at mainline spacing
HMA Shoulder Jointing:
Longitudinal joint: B

2_P_Guard_ 04-21-20		
STATION TO STATION		(P) Feet
123+33.70	125+14.37	Var.



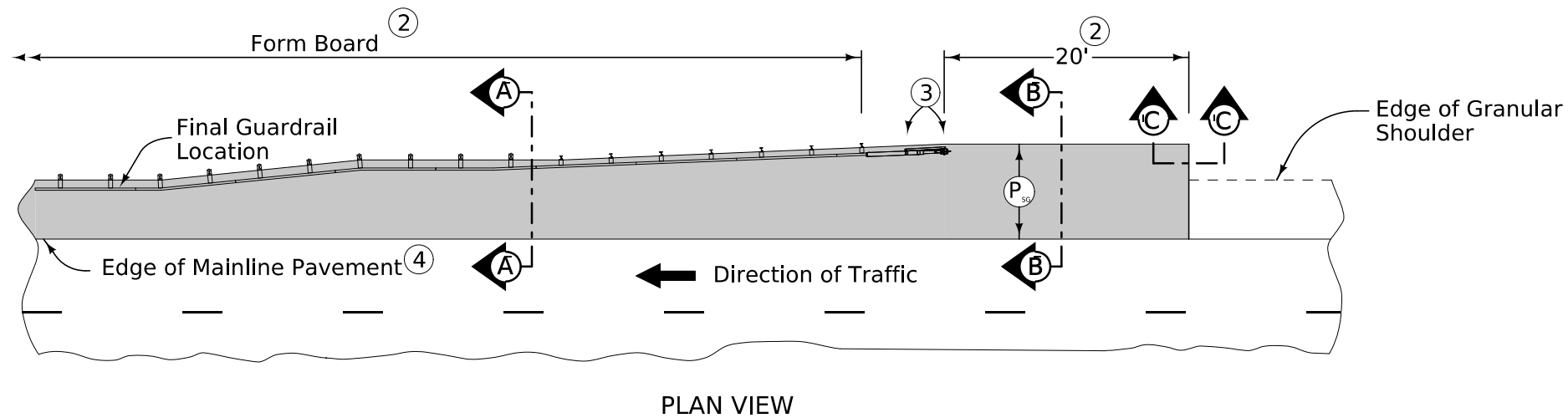
Paved Shoulder at Guardrail

PCC Shoulder Jointing:
Longitudinal joint: BT-3
Transverse joints: C at mainline spacing
HMA Shoulder Jointing:
Longitudinal joint: B

2_P_Guard_ 04-21-20		
STATION TO STATION		(P) Feet
123+33.70	125+14.37	Var.

- Notes:
1. Typical shown is in the direction of traffic.
 2. See Tab. 112-9 for shoulder quantities.
 3. Refer Modified Road design detail 7156 for guardrail shoulder at Median side.
 4. Refer Modified Road design detail 7158 for guardrail shoulder at outside lane side.
 5. Refer BR-203 and D sheets for Bridge Approach details.

IA 5
North Bound

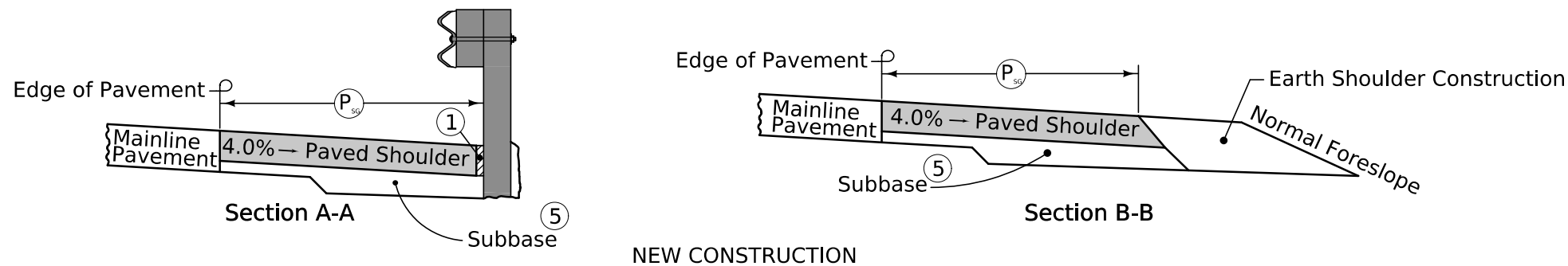


10" PCC Paved shoulder at the guardrail with the following jointing layout:

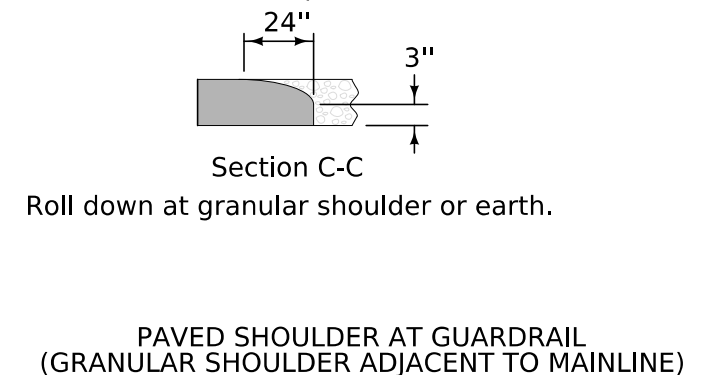
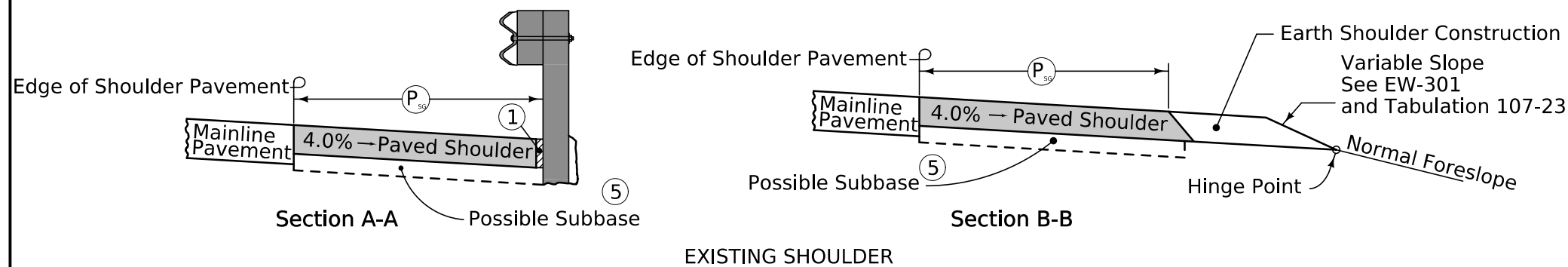
Match mainline pavement joint spacing. When mainline pavement is 8" or greater in thickness, place additional transverse 'C' joints in shoulder at mid-panel of the mainline pavement. Place longitudinal 'C' joint at P/2 from edge of mainline pavement when P is greater than 10' wide. Terminate longitudinal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

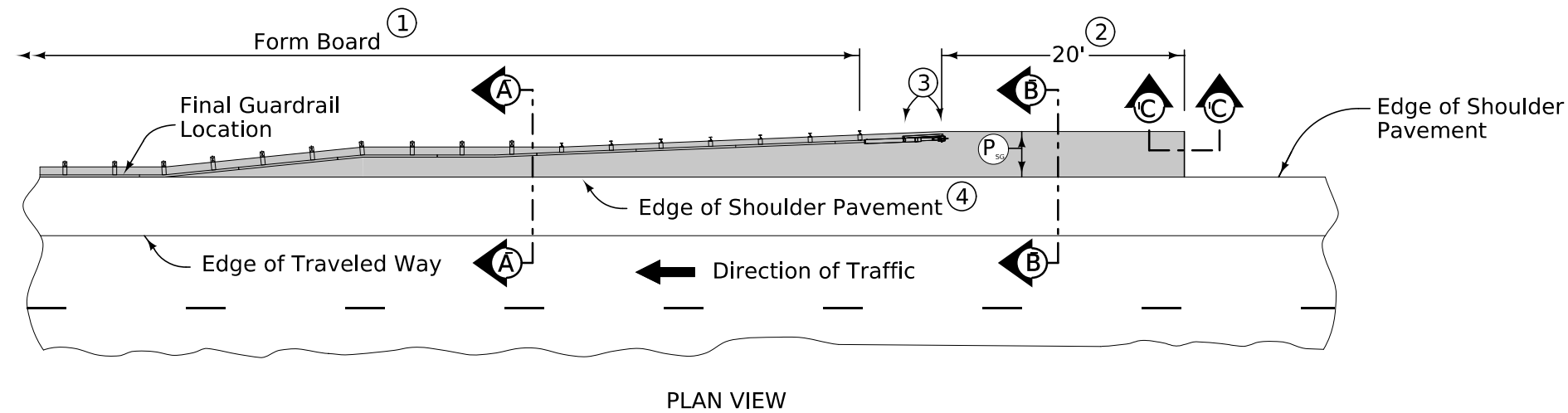
Compaction of HMA is required to face of guardrail post. Hand compaction will be allowed under guardrail. Removal and reinstallation of guardrail will be allowed with no additional payment.

Refer to Tabulation 112-9 for shoulder quantities.



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





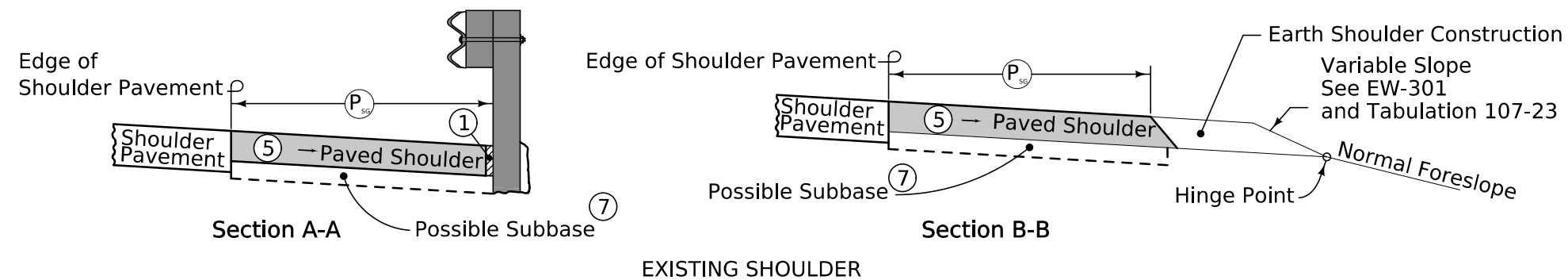
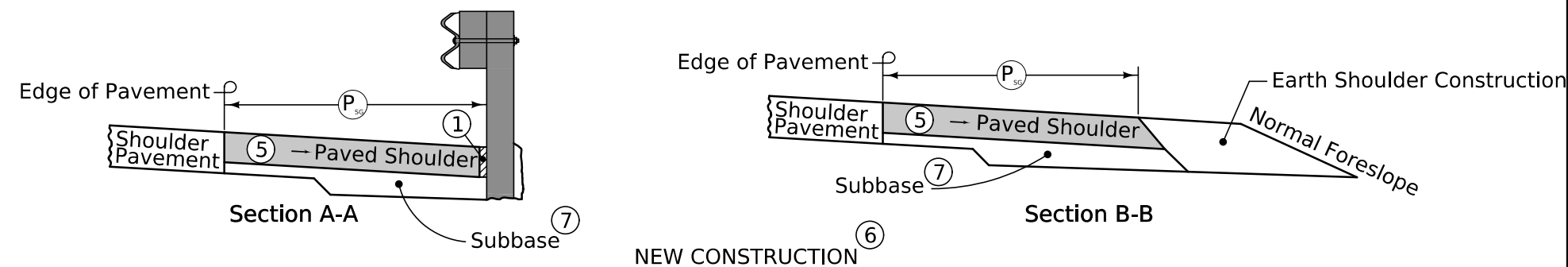
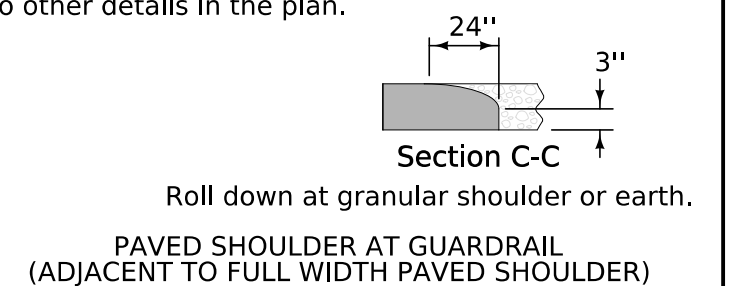
10" PCC Paved shoulder at the guardrail with the following jointing layout:

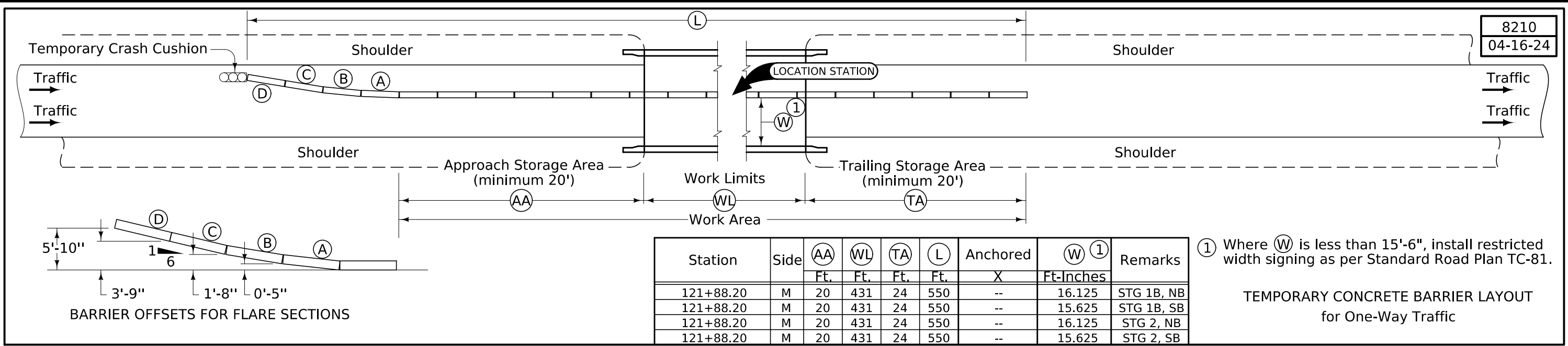
Match mainline pavement joint spacing. When mainline pavement is 8" or greater in thickness, place additional transverse 'C' joints in shoulder at mid-panel of the mainline pavement. Place longitudinal 'C' joint at P/2 from edge of mainline pavement when P is greater than 10' wide. Terminate longitudinal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





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	1,526.2	Refer to Tab. 112-9 on C Sheets.
2	2102-2625000	EMBANKMENT-IN-PLACE	CY	119	Refer to Tab. 107-23 on C Sheets.
3	2102-2713090	EXCAVATION, CLASS 13, WASTE	CY	2,326.8	Refer to Tab. 112-9 on C Sheets.
4	2122-5190010	PAVED SHOULDER, P.C. CONCRETE, 10 IN.	SY	3,532.4	Refer to Tab. 112-9 on C Sheets. Includes 3163.8 SY for Paved shoulder adjacent to Mainline. Includes 368.6 SY for Guardrail Paved shoulders.
5	2123-7450000	SHOULDER CONSTRUCTION, EARTH	STA	39.4	Refer to Tab. 112-9 on C Sheets.
6	2301-0690203	BRIDGE APPROACH, BR-203	SY	1,334.6	Refer to Tab. 112-6 on C Sheets.
7	2503-0500402	BRIDGE END DRAIN, DR-402	EACH	8	Refer to Tab. 104-8A on C Sheets.
8	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL	LF	485	Refer to Tab. 110-7A on C Sheets.
9	2505-4008300	STEEL BEAM GUARDRAIL	LF	275	Refer to Tab. 108-8A on C Sheets.
10	2505-4008410	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION, BA-201	EACH	4	
11	2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED	EACH	4	
12	2505-4021720	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-205	EACH	4	
13	2510-6745850	REMOVAL OF PAVEMENT	SY	177.8	Refer to Tab. 110-1 on C Sheets.
14	2527-9263181	PAVEMENT MARKINGS REMOVED	STA	35.67	Refer to Tab. 108-22 on C Sheets.
15	2527-9263209	PAINTED PAVEMENT MARKINGS, WATERBORNE OR SOLVENT-BASED	STA	55.4	
16	2527-9263231	REMOVABLE TAPE MARKINGS, WET RETROREFLECTIVE	STA	53.24	
17	2527-9270112	GROOVES CUT FOR PAVEMENT MARKINGS	STA	42.09	
18	2528-2518000	SAFETY CLOSURE	EACH	3	Refer to Tab. 108-13A on C Sheets.
19	2528-8400048	TEMPORARY BARRIER RAIL, CONCRETE	LF	2,150	Refer to Tab. 108-33 on C Sheets and Staging sheets (J.4 and J.5)
20	2528-8445110	TRAFFIC CONTROL	LS	1	Refer to Traffic Control Plan on J.1 Sheet.
21	2528-9290050	PORTABLE DYNAMIC MESSAGE SIGN (PDMS)	CDAY	14	Put two PDMS units in place-one at the beginning of the project and one at the end for a duration of 7 days. Total = 2*7 = 14 CDAYS
22	2533-4980005	MOBILIZATION	LS	1	--

Item no.	Item Code	Item	Unit	Quantities	Estimate Reference Notes
				Estimated	
				Roadway Items	
23	2548-0000200	MILLED SHOULDER RUMBLE STRIPS, PCC SURFACE	STA	36.8	Refer to Tab. 112-10 on C Sheets.
24	2551-0000110	TEMP CRASH CUSHION	EACH	4	Winterize sand filled or water filled crash cushions according to the manufacturer's recommendations if they are to remain in place during winter months. Refer to Tab. 108-30 on C Sheets.
25	2555-0000010	DELIVER AND STOCKPILE SALVAGED MATERIALS	LS	1	Refer to Tab. 110-13 on C sheets.

PROJECT DESCRIPTION		100-1D 10-18-05
This is a bridge approach repair project that includes removal and replacement of the approach pavement at both ends of two bridges with 70-foot standard approach slabs. Additional work includes installation of rock flumes/Bridge end drains (DR-402) on both sides of each bridge, removal of existing paving notches and construction of retrofit paving notches at all bridge ends, and replacement of guardrail along all bridge approaches. This project is tied to the HMA Shoulder Project, HSIPX-005-4(085)-3L-91.		

STANDARD ROAD PLANS			105-4 10-18-11
The following Standard Road Plans apply to construction work on this project.			
Number	Date	Title	
BA-200	10/20/2026	Steel Beam Guardrail Components	
BA-201	10/18/2022	Steel Beam Guardrail Barrier Transition Section (MASH TL-3)	
BA-202	10/20/2026	Steel Beam Guardrail Bolted End Anchor	
BA-203	10/15/2019	Steel Beam Guardrail W-Beam End Anchor	
BA-204	10/18/2022	Steel Beam Guardrail Thrie-Beam End Anchor	
BA-205	10/17/2023	Steel Beam Guardrail Tangent End Terminal (MASH TL-3)	
BA-250	10/20/2026	Steel Beam Guardrail Installation at Concrete Barrier or Bridge End Post (MASH TL-3)	
BA-401	4/20/2021	Temporary Barrier Rail (Precast Concrete)	
BA-500	10/18/2022	Temporary Crash Cushions Sand Barrel	
BR-203	10/20/2026	Double Reinforced 12" Approach	
BR-211	4/21/2026	Bridge Approach (Abutting PCC or Composite Pavement)	
DR-306	10/17/2023	Precast Concrete Headwall for Subdrain Outlets	
DR-402	4/16/2024	Rock Flume for Bridge End Drain	
EW-301	10/20/2026	Guardrail Grading	
PM-110	10/15/2024	Line Types	
PM-115	10/20/2026	Grooving for Line Types	
PV-12	10/20/2026	Milled Shoulder Rumble Strips	
PV-101	10/20/2026	Joints	
SI-211	10/18/2022	Object Marker and Delineator Placement with Guardrail	
SI-881	10/20/2026	Special Signs for Workzones	
TC-1	10/15/2019	Work Not Affecting Traffic (Two-Lane or Multi-Lane)	
TC-402	4/18/2023	Work Within 15 ft of Traveled Way	
TC-418	4/18/2023	Lane Closure on Divided Highway	
TC-421	10/21/2025	Lane Closure with TBR	
TC-432	10/17/2017	Shoulder Rumble Strip Operations	
TC-433	10/17/2017	Pavement Marking Operations	

111-25 10-18-11		
INDEX OF TABULATIONS		
Tabulation	Tabulation Title	Sheet No.
C Sheets		
100-1D	PROJECT DESCRIPTION	C.3
100-27	PROPOSED POSTED SPEED LIMIT	C.4
104-8A	SCOUR PROTECTION OR ROCK FLUME FOR BRIDGE END DRAIN	C.4
105-4	STANDARD ROAD PLANS	C.3
107-23	GRADING FOR GUARDRAIL INSTALLATIONS	C.6
108-8A	STEEL BEAM GUARDRAIL AT CONCRETE BARRIER OR BRIDGE RAIL END SECTION	C.6
108-13A	SAFETY CLOSURES	C.6
108-22	PAVEMENT MARKING LINE TYPES	C.8
108-30	CRASH CUSHIONS	C.7
108-33	TEMPORARY BARRIER RAIL	C.7
110-1	REMOVAL OF PAVEMENT	C.6
110-13	DELIVERY AND STOCKPILING	C.6
110-7A	REMOVAL OF STEEL BEAM GUARDRAIL	C.6
111-25	INDEX OF TABULATIONS	C.3
112-6	BRIDGE APPROACH SECTION	C.4
112-9	SHOULDERS	C.5
112-10	MILLED RUMBLE STRIPS	C.5

100-27 04-17-18						
PROPOSED POSTED SPEED LIMIT						
Road Identification	Begin Station	End Station	Proposed Posted Speed Limit			Remarks
			35 or less	40 - 45	over 45	
IA 5 SB	115+22.70	128+53.70			X	
IA 5 NB	115+22.70	128+53.70			X	

112-6 04-18-17																				
BRIDGE APPROACH SECTION																				
Refer to the Series.																				
* Not a bid item																				
Location				Approach Pavement					Standard Road Plans BR Series			Subdrain					*	*	*	
Bridge Station	End	Skew Ahead		T Thickness	Pay Length	Non-Reinf. Pavement Area	Single-Reinf. Pavement Area	Double-Reinf. Pavement Area	Approach	Fixed or Movable Abutment	Abutting Pavement	Perforated Subdrain 4"	Subdrain Outlet		Porous Backfill	Class 'A' Crushed Stone Backfill	Modified Subbase	Polymer Grid	Special Backfill	Remarks
		Degrees											STA	Side						
		LEFT	RIGHT														Inches	FT	SY	
121+88.20	North	--	--	12.0	70.0	133.4	88.9	95.8	BR-203	Movable	PCC	52.0	119+82.70	Right	1.5	0.2	316.800	360.9		IA 5 SB Bridge, North Approach
121+88.20	South	--	--	12.0	70.0	133.4	88.9	95.8	BR-203	Movable	PCC	52.0	123+93.70	Right	1.5	0.2	316.800	360.9		IA 5 SB Bridge, South Approach
121+88.20	North	--	--	12.0	70.0	146.7	97.8	104.7	BR-203	Movable	PCC	56.0	119+82.70	Right	1.6	0.2	345.400	393.4		IA 5 NB Bridge, North Approach
121+88.20	South	--	--	12.0	70.0	146.7	97.8	104.7	BR-203	Movable	PCC	56.0	123+93.70	Right	1.6	0.2	345.400	393.4		IA 5 NB Bridge, South Approach
					Totals:	560.2	373.4	401.0												
					Total Bridge Approach :	1334.6														

104-8A 04-19-22										
SCOUR PROTECTION OR ROCK FLUME FOR BRIDGE END DRAIN										
Refer to Standard Road Plan DR-401 and DR-402										
Location			Bid Items	Scour Protection (DR-401)			Rock Flume (DR-402)			Remarks
Bridge Station	Bridge Corner	Distance DI-1 or DI-2	Bridge End Drain	Special Ditch Control, Wood Excelsior Mat	Turf Reinforced Mat (TRM), Type 2	Transition Mat	Macadam Stone Base	Engineering Fabric	Erosion Stone	
		EC-101		EC-104	EC-105					
		FT		TYPE	SQ	SQ				
121+88.20	NE	30.0	DR-402				1.219	42.6	28.800	IA 5 SB
121+88.20	NW	30.0	DR-402				1.219	42.6	28.800	IA 5 SB
121+88.20	SE	30.0	DR-402				1.219	42.6	28.800	IA 5 SB
121+88.20	SW	30.0	DR-402				1.219	42.6	28.800	IA 5 SB
121+88.20	NE	30.0	DR-402				1.219	42.6	28.800	IA 5 NB
121+88.20	NW	30.0	DR-402				1.219	42.6	28.800	IA 5 NB
121+88.20	SE	30.0	DR-402				1.219	42.6	28.800	IA 5 NB
121+88.20	SW	30.0	DR-402				1.219	42.6	28.800	IA 5 NB
		Totals:	8							

112-9 10-20-20																																	
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.																																	
Calculations assume a HMA unit weight (lbs/cf) of 0, a Special Backfill unit weight (lbs/cf) of 140, and a Granular Shoulder unit weight (lbs/cf) of 140.																																	
Road Identification	Location				P Width FT	P _{SG} Width FT ②	G Width FT	L Length FT	Class 13 ④ Excavation CY ③	Hot Mix Asphalt		Binder TONS	Paved Shoulder SY ③	" Paved Shoulder at Guardrail SY ⑤	Reinforced Paved Shoulder SY ③	Quantities				Subbase CY ③	Granular Shoulder		Earth Shoulder Construction Alternates			Remarks							
	Direction Of Traffic	Station to Station		Side						Special Backfill						TON	TON/STA	TONS	HMA Alternate		PCC Alternate		TON ③	TON/STA	TON ③		TON/STA	TON ③	TON/STA	STA ③	HMA CY ⑥	PCC CY ⑥	
										TON ③	TON/STA								TON ③		TON/STA												
IA 5	SB	115+22.70	118+38.60	M	6.0			315.9	152.1				210.6					99.508	31.500					3.2									
IA 5	SB	115+22.70	120+22.70	O	8.0			500.0	321.0				444.4					192.500	38.500					5.0									
IA 5	SB	124+03.70	128+53.70	M	6.0			450.0	216.7				300.0					141.750	31.500					4.5									
IA 5	SB	123+53.70	128+53.70	O	8.0			500.0	321.0				444.4					192.500	38.500					5.0									
IA 5	SB	118+38.60	118+58.60	M		9.4		20.0	15.1					20.9				8.687	43.435					0.2			(1)						
IA 5	SB	118+58.60	119+07.25	M		9.4to7.42		48.6	32.8					45.5				19.428	39.935					0.5			(1)						
IA 5	SB	119+07.42	119+72.70	M		7.4		65.3	38.8					53.7				23.762	36.400					0.7			(1)						
IA 5	SB	119+72.70	120+42.70	M		1.4		70.0	8.0					11.0				10.829	15.470					0.7			(1)						
IA 5	SB	118+62.03	118+82.03	O		3.4		20.0	5.5					7.6				2.380	11.900								(2)						
IA 5	SB	118+82.03	119+30.69	O		3.4to1.42		48.7	9.4					13.0				4.104	8.435								(2)						
IA 5	SB	119+30.69	120+42.70	O		1.4		112.0	12.6					17.4				5.488	4.900								(2)						
IA 5	NB	115+22.70	119+72.70	M	10.0			450.0	216.7				500.0					204.750	45.500					4.5									
IA 5	NB	115+22.70	120+22.70	O	8.0			500.0	321.0				444.4					192.500	38.500					5.0									
IA 5	NB	125+15.85	128+53.70	M	10.0			337.9	271.2				375.4					153.722	45.500					3.4									
IA 5	NB	123+53.70	128+53.70	O	8.0			500.0	240.8				444.4					192.500	38.500					5.0									
IA 5	NB	123+33.70	124+03.70	M		1.4		70.0	8.0					11.0				10.829	15.470					0.7			(1)						
IA 5	NB	124+03.70	124+45.71	M		11.4		42.0	38.5					53.3				21.202	50.470					0.4			(1)						
IA 5	NB	124+45.71	124+94.37	M		1.42to13.4		48.7	48.5					67.1				26.255	53.953					0.5			(1)						
IA 5	NB	124+94.37	125+14.37	M		13.4		20.0	21.5					29.8				11.480	57.400					0.2			(1)						
IA 5	NB	123+33.70	124+45.71	O		1.4		112.0	12.8					17.7				5.567	4.970								(2)						
IA 5	NB	124+45.71	124+94.37	O		1.4to3.41		48.7	9.4					13.0				4.096	8.418								(2)						
IA 5	NB	124+94.37	125+14.37	O		3.4		20.0	5.5					7.6				2.387	11.935								(2)						
								Totals:	2326.8				3163.8	368.6				1526.225					39.4										
(1) Refer to 7156 in B sheets for guardrail along Median.																																	
(2) Refer to 7158 in B sheets for guardrail along outside lane.																																	

112-10 10-20-20												
MILLED RUMBLE STRIPS												
See PV-12 and PV-13												
* Calculated at 18" width for Shoulder.												
Road Identification	Station to Station		Location			Installation Length		Fog Seal* (Milled Rumble Strip)	Effective Shoulder Width			Remarks
			Shoulder Pavement Type	Rumble Strip Type (Centerline, Rt or Lt Shoulder)	L				PCC Paved	HMA Paved	Granular\ Earth	
		IN	STA	STA	GAL	FT	FT	FT				
IA 5 SB	115+22.70	119+82.70	PCC	Right Shoulder	12"	4.60		0.0	8.0	0.0	0.0	
IA 5 SB	115+22.70	119+82.70	PCC	Left Shoulder	12"	4.60		0.0	6.0	0.0	0.0	
IA 5 SB	123+93.70	128+53.70	PCC	Right Shoulder	12"	4.60		0.0	8.0	0.0	0.0	
IA 5 SB	123+93.70	128+53.70	PCC	Left Shoulder	12"	4.60		0.0	6.0	0.0	0.0	
IA 5 SB	115+22.70	119+82.70	PCC	Right Shoulder	12"	4.60		0.0	8.0	0.0	0.0	
IA 5 SB	115+22.70	119+82.70	PCC	Left Shoulder	12"	4.60		0.0	10.0	0.0	0.0	
IA 5 SB	123+93.70	128+53.70	PCC	Right Shoulder	12"	4.60		0.0	8.0	0.0	0.0	
IA 5 SB	123+93.70	128+53.70	PCC	Left Shoulder	12"	4.60		0.0	10.0	0.0	0.0	
				Totals		PCC	HMA	Fog Seal				
				HMA Shoulders			0.00	0.0				
				PCC Shoulders		36.80						
				PCC or HMA Shoulders		0.00	0.00	0.0				
				HMA Centerlines			0.00					
				PCC Centerlines		0.00						
				PCC or HMA Centerlines		0.00	0.00					

108-33 10-15-19								
TEMPORARY BARRIER RAIL								
Possible Standard: BA-401 Possible Detail: 560-7								
* Not a bid item. Anchorage requirements are based on TBR locations shown in the plans. TBR alignments that vary from what is shown in the plans may result in additional TBR sections requiring anchorage.								
No.	Station to Station		Length	(Select One)		Anchored*	Modular Glare	Remarks
			LF	Concrete	Steel		Screen System	
				BA-401	560-7	(Y/N)	(Y/N)	
1	118+88.95	124+27.70	537.5	X		No	No	Stage 1B - IA 5 SB
2	119+48.70	124+87.15	537.5	X		No	No	Stage 1B - IA 5 NB
	118+88.95	124+27.70	537.5	X		Yes	No	Stage 2 - IA 5 SB
	119+48.70	124+87.15	537.5	X		Yes	No	Stage 2 - IA 5 NB
		Totals:	2150.0					

108-30

04-16-13

CRASH CUSHIONS

* Bid Item

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

② Complete this section when using the Temporary Crash Cushion bid item and Earthwork is needed for Sand Barrel placement. Refer to BA-500

No.	① Direction of Traffic	Location Station	Side	Obstacle width	Crash Cushion (Select One)*					Sand Barrel Details ②					Earthwork*		Spare Parts Kit (Select One)*		Obstacle Description	Remarks
					Temporary	Temporary Redirective	Temporary Severe Use	Permanent	Permanent Severe Use	V	W	X	Y	Z	Excavation Class 10	Embankment in Place	Permanent	Permanent Severe Use		
										Length	Length	Length	Length	Length						
				FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	CY	CY	EACH	EACH		
1	SB	118+88.95			X													Temporary barrier Rails	Stage 1B	
2	NB	124+87.15			X													Temporary barrier Rails	Stage 1B	
3	SB	118+88.95			X													Temporary barrier Rails	Stage 2	
4	NB	124+87.15			X													Temporary barrier Rails	Stage 2	
				Totals:	4															

PAVEMENT MARKING LINE TYPES

See PM-110

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

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

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

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

BLW6: Broken Lane Line (White) @ 0.25

Location				Length by Line Type (Unfactored)															Remarks
Road ID	Station to Station		Dir. of Travel	Marking Type	Side			ELW4	ELW6	ELY4	ELY6	BLW6							
					L	C	R	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	
Stage 1A																			
IA 5	115+22.70	128+53.70	SB	PAVEMENT MARKINGS REMOVED			X	13.31											
IA 5	115+22.70	128+53.70	NB	PAVEMENT MARKINGS REMOVED			X	13.31											
IA 5	115+22.70	128+53.70	SB	WET RETRORREFLECTIVE REMOVABLE TAPE MARKINGS			X		13.31										
IA 5	115+22.70	128+53.70	NB	WET RETRORREFLECTIVE REMOVABLE TAPE MARKINGS			X		13.31										
Stage 1B																			
IA 5	115+22.70	128+53.70	SB	PAVEMENT MARKINGS REMOVED	X					13.31									
IA 5	115+22.70	128+53.70	NB	PAVEMENT MARKINGS REMOVED	X					13.31									
IA 5	115+22.70	128+53.70	SB	WET RETRORREFLECTIVE REMOVABLE TAPE MARKINGS	X						13.31								
IA 5	115+22.70	128+53.70	NB	WET RETRORREFLECTIVE REMOVABLE TAPE MARKINGS	X						13.31								
Stage 2																			
IA 5	115+22.70	128+53.70	SB	REMOVAL OF REMOVABLE TAPE			X		13.31										
IA 5	115+22.70	128+53.70	NB	REMOVAL OF REMOVABLE TAPE			X		13.31										
IA 5	115+22.70	128+53.70	SB	PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED			X		13.31										
IA 5	115+22.70	128+53.70	NB	PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED			X		13.31										
IA 5	119+72.70	124+03.70	SB	PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED		X						4.31							
IA 5	119+72.70	124+03.70	NB	PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED								4.31							
IA 5	115+22.70	128+53.70	SB	GROOVES CUT FOR PAVEMENT MARKINGS			X		13.31										
IA 5	115+22.70	128+53.70	NB	GROOVES CUT FOR PAVEMENT MARKINGS			X		13.31										
IA 5	119+72.70	124+03.70	SB	GROOVES CUT FOR PAVEMENT MARKINGS								4.31							
IA 5	119+72.70	124+03.70	NB	GROOVES CUT FOR PAVEMENT MARKINGS								4.31							
Stage 3																			
IA 5	115+22.70	128+53.70	SB	REMOVAL OF REMOVABLE TAPE	X						13.31								
IA 5	115+22.70	128+53.70	NB	REMOVAL OF REMOVABLE TAPE	X						13.31								
IA 5	115+22.70	128+53.70	SB	PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED	X						13.31								
IA 5	115+22.70	128+53.70	NB	PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED	X						13.31								
IA 5	115+22.70	128+53.70	SB	GROOVES CUT FOR PAVEMENT MARKINGS	X						13.31								
IA 5	115+22.70	128+53.70	NB	GROOVES CUT FOR PAVEMENT MARKINGS	X						13.31								
				Factored Total: PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED				-	26.62	-	26.62	2.16	-	-	-	-	-	-	-
				Factored Total: WET RETRORREFLECTIVE REMOVABLE TAPE MARKINGS				-	26.62	-	26.62	-	-	-	-	-	-	-	-
				Factored Total: PAVEMENT MARKINGS REMOVED				17.84	-	17.84	-	-	-	-	-	-	-	-	-
				Factored Total: GROOVES CUT FOR PAVEMENT MARKINGS				-	26.62	-	13.31	2.16	-	-	-	-	-	-	-
				Factored Total: REMOVAL OF REMOVABLE TAPE				-	26.62	-	26.62	-	-	-	-	-	-	-	-
				Bid Quantity: 2527-9263209 - PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED							55.40								
				Bid Quantity: 2527-9263231 - WET RETRORREFLECTIVE REMOVABLE TAPE MARKINGS							53.24								
				Bid Quantity: 2527-9263181 - PAVEMENT MARKINGS REMOVED							35.67								
				Bid Quantity: 2527-9270112 - GROOVES CUT FOR PAVEMENT MARKINGS							42.09								
				NOT A BID ITEM: REMOVAL OF REMOVABLE TAPE							53.24								

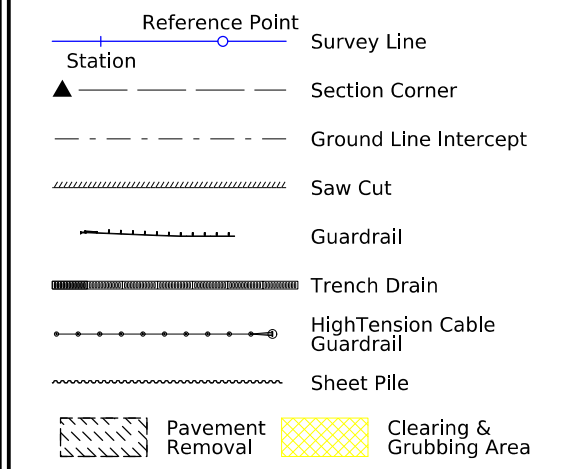
	Interstate Highway Symbol
	U.S. Highway Symbol
	Iowa Highway Symbol
	County Road Highway Symbol
	Evergreen Tree
	Deciduous Tree
	Fruit Tree
	Shrub (Bushes)
	Timber
	Hedge
	Stump
	Swamp
	Rock Outcrop
	Broken Concrete
	Revetment (Rip Rap)
	Cemetery
	Grave
	Cave
	Sink Hole
	Board Fence
	Chain Link or Security 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

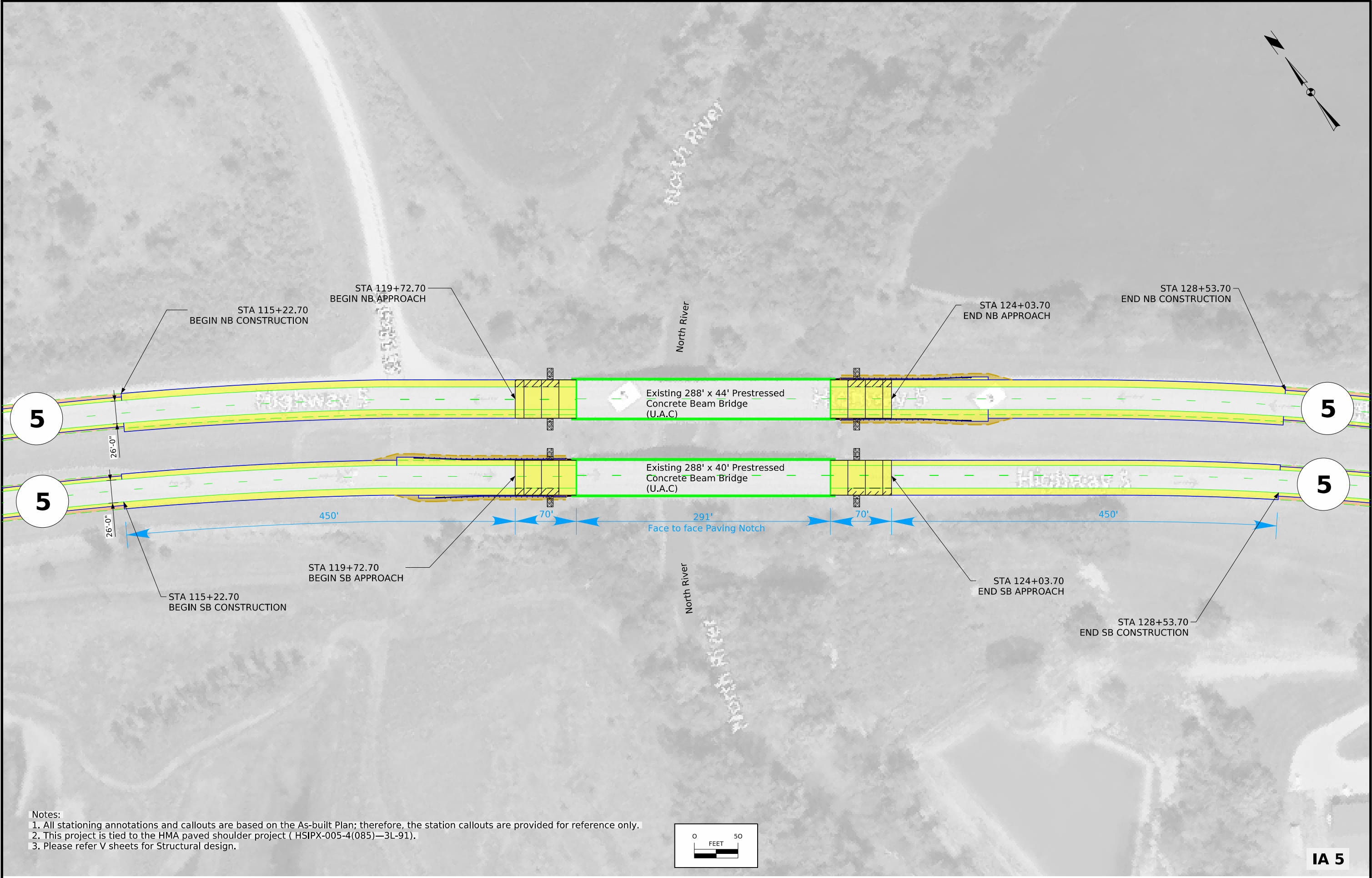
SHADING	Design Color No.		Transparency	
Pink, Dark	(13)		Temporary Pavement Shading	50%
Yellow	(4)		Proposed Pavement Shading	50%
Orange	(6)		Proposed Granular Shading	50%
Orange	(70)		Proposed Shoulder Granular Shading	50%
Yellow	(68)		Proposed Shoulder Paved Full Depth Shading	50%
Yellow	(132)		Proposed Shoulder Paved Partial Depth Shading	50%
Brown, Light	(236)		Grading Shading	50%
Orange, Light	(134)		Proposed Granular Entrance Shading	50%
Yellow	(220)		Proposed Paved Entrance Shading	50%
Tan	(8)		Proposed Sidewalk Shading	50%
Blue, Light	(230)		Proposed Sidewalk Landing Shading	50%
Pink	(11)		Proposed Sidewalk Ramp Shading	50%
Red	(3)		Proposed Structure Shading	50%
Red	(3)		Delineates Restricted Areas	0%

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

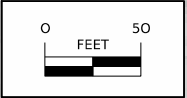


- Proposed Right-of-Way Symbol
- Proposed Right-of-Way Line
- Existing Right of Way
- Existing and Proposed Right-of-Way
- Easement and Existing Right-of-Way
- Easement (Temporary) Symbol
- Easement (Temporary) Line
- Easement
- Access Control
- Property Line Symbol
- Property Line

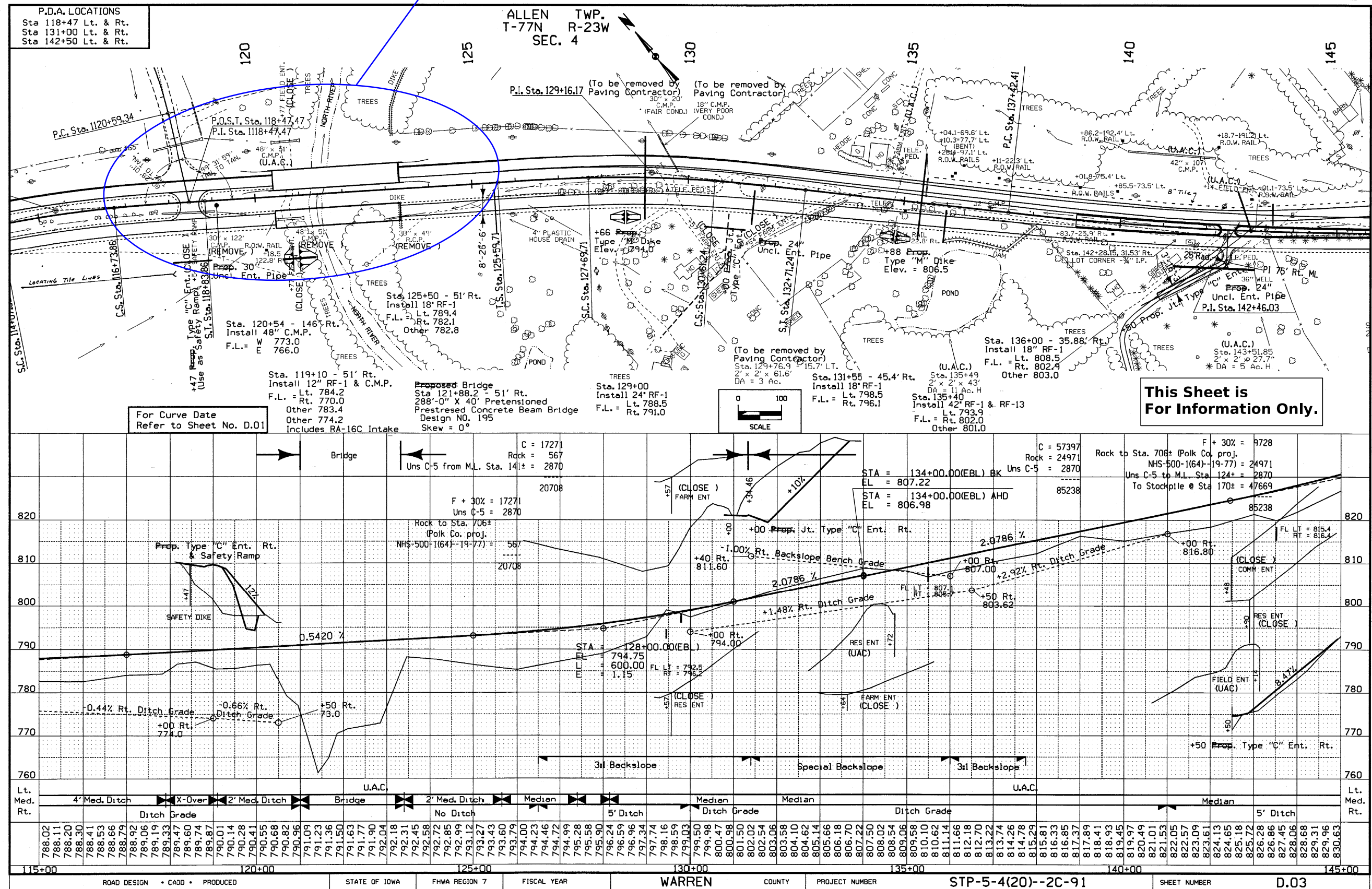
(COVERS SHEET SERIES D, E, F, & K)



Notes:
1. All stationing annotations and callouts are based on the As-built Plan; therefore, the station callouts are provided for reference only.
2. This project is tied to the HMA paved shoulder project (HSIPX-005-4(085)—3L-91).
3. Please refer V sheets for Structural design.



Project location



108-23A
08-01-08

TRAFFIC CONTROL PLAN

Traffic will be maintained with one lane open at all times during construction.

Standard Road Plan TC-418 will be used during the full-width and full-depth shoulder strengthening work adjacent to the outside lane, with traffic shifted to the inside lane.

For the remaining two construction stages, including bridge approach work (completed in two stages) and inner shoulder strengthening (first stage), Traffic control will be in accordance with Standard Road Plan TC-421 (Lane Closure with Temporary Barrier Rail (TBR)).

111-01
04-17-12

COORDINATED OPERATIONS

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

Project	Type of Work
HSIPX-005-4(085)-3L-91	HMA Paved Shoulder

108-25
10-21-14

511 TRAVEL RESTRICTIONS

Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No., Structure ID, or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
IA 5	NB/SB	Warren	North River 0.9 mi S of US 65 (NB/SB)		Barrier	N/A	Horizontal					

108-26A
08-01-08

STAGING NOTES

Stage 1A:
Traffic:
- One lane of traffic will be maintained in the inside lane for both directions.

Construction:
- Full-width, full-depth construction of the outside shoulder as shown in the staging plan.

Stage 1B:
Traffic:
- One lane of traffic will be maintained in the outside lane and new paved shoulder for both directions.

Construction:
- Full-width, full-depth construction of the inside shoulder as shown in the staging plan.
- Construction of half of the bridge approach, including installation of the paving notch as shown in staging plan.

Stage 2:
Traffic:
- One lane of traffic will be maintained in the inside lane and new paved shoulder and approach for both directions.

Construction:
- Completion of the remaining half of the bridge approach, including installation of the paving notch as shown in staging plan.

Stage 3:
Traffic:
- Traffic operations will be maintained in the final configuration under normal conditions.

FILE NO.

DESIGN TEAM VORTHERMS\ADEY\TAMRAKAR

WARREN COUNTY

PROJECT NUMBER MB-005-1(505)90--77-91

SHEET NUMBER J.1

6/4/2026

9:30:39 AM

dtamrak

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

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

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

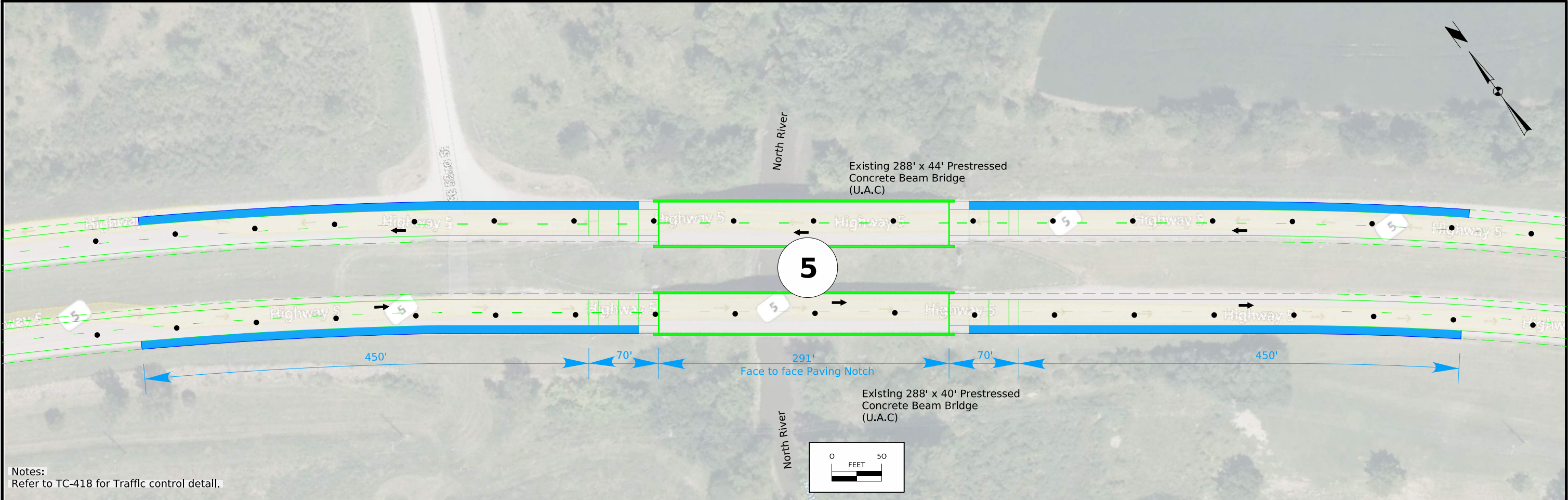
SHADING	Design Color No.		
Green, Light	(225)		Existing Pavement Shading
Gray, Light	(48)		Previously Constructed Pavement Shading
Orange	(6)		Proposed Granular Surface Shading
Gray, Med	(80)		Previously Constructed Granular Surface Shading
Blue, Light	(230)		Proposed Pavement Shading
Pink, Dark	(13)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

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

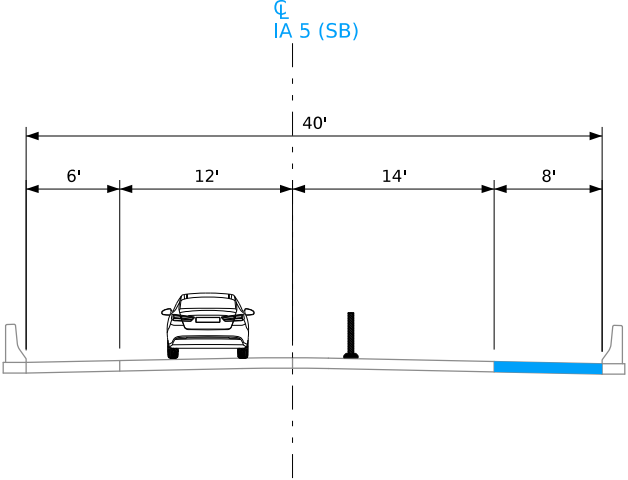
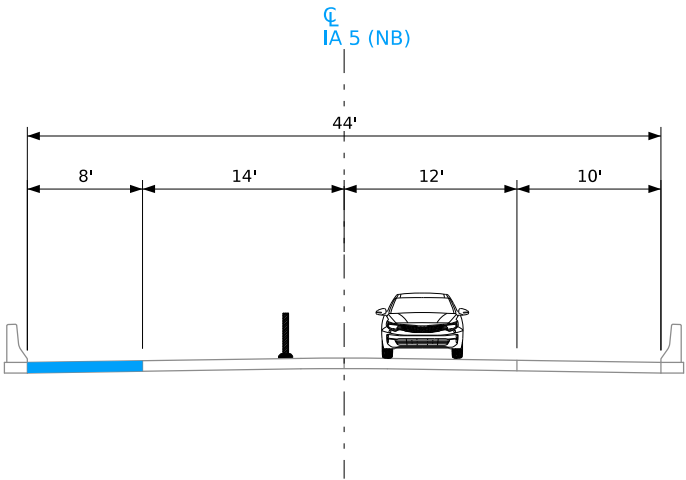
NOTE: Device spacing according to Standard Road Plans unless specifically dimensioned.

TRAFFIC CONTROL
AND
STAGING
LEGEND AND SYMBOL
INFORMATION SHEET

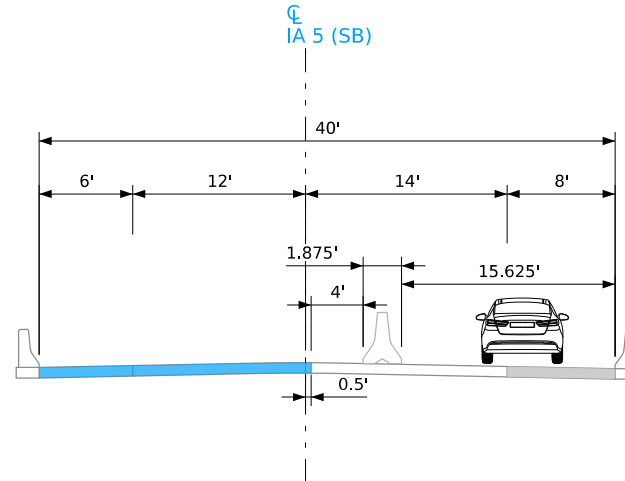
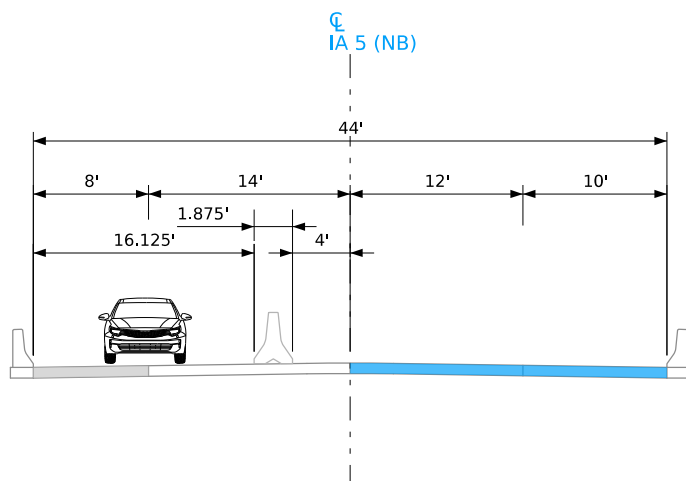
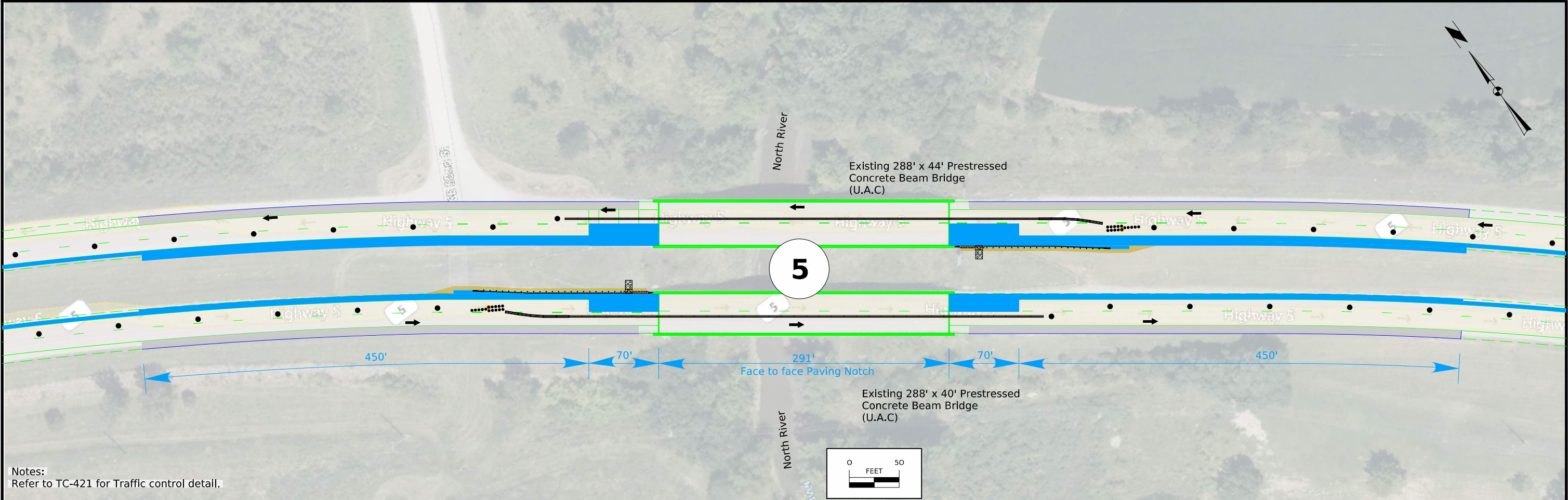
(COVERS SHEET SERIES J)



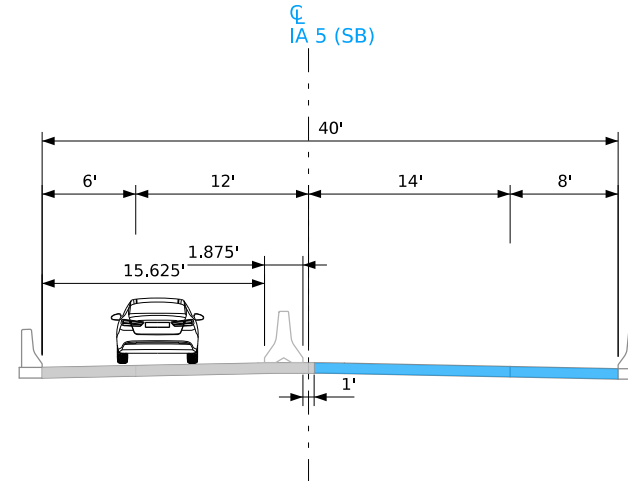
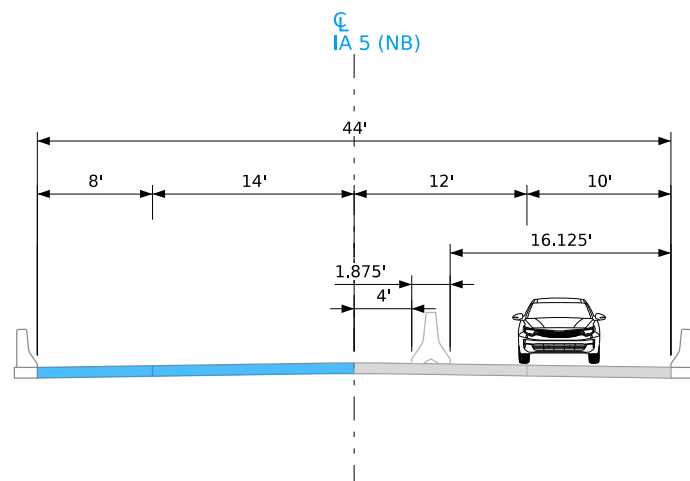
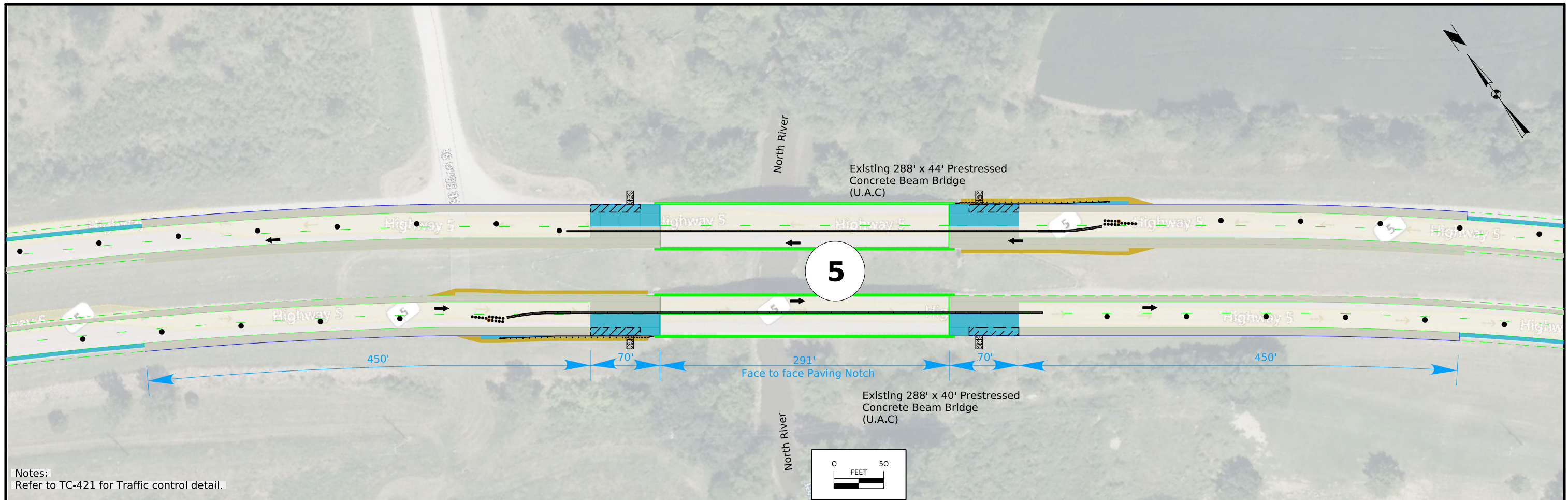
Notes:
Refer to TC-418 for Traffic control detail.



IA 5
Stage 1A



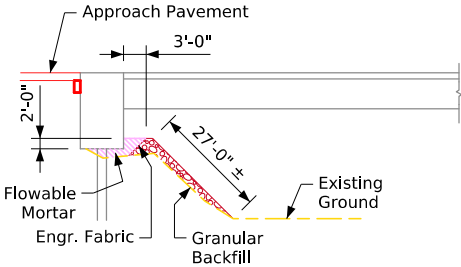
IA 5
Stage 1B



IA 5
Stage 2

ESTIMATED BRIDGE REPAIR QUANTITIES				
ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL
1	2499-0800000	PAVING NOTCH REPLACEMENT	LF	80
2	2506-4984000	FLOWABLE MORTAR	CY	1
3	2507-6799000	BANK SHAPING	LS	1

ESTIMATE REFERENCE INFORMATION		
ITEM NO.	ITEM CODE	ITEM DESCRIPTION
1	2499-0800000	PAVING NOTCH REPLACEMENT Includes 5.6 cu yd of structural concrete Class C, 1,280 lbs of epoxy-coated reinforcing steel, excavation, removing and disposing of the existing paving notch and concrete removed to form the shear keyways, drilling holes for dowel bars, and polymer grout material.
2	2506-4984000	FLOWABLE MORTAR Includes all material, equipment, and labor to fill the voids below both abutments.
3	2507-6799000	BANK SHAPING Includes all materials, equipment, and labor necessary to repair berm erosion on both abutments of the southbound bridge, in accordance with Section 2507 of the Standard Specifications. This includes the granular backfill and engineering fabric as shown in these plans.



Flowable Mortar Below Footing Detail at Both Abutments

Notes:

Use Granular Backfill to Restore Berm to Elevation Shown Above Bottom of Footing.

Line Granular Backfill With Engr. Fabric to Help Contain Flowable Mortar.

Finish Elevation of Flowable Mortar Should be Approximately 2 Feet Above the Bottom of Footing in the Locations of the Erosion Holes.

Flowable Mortar is Required at Both Abutments.

Roadway Quantities shown elsewhere in these plans.

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

Design History at this Site (Includes this Design)	
Des. No.	Type of Work
195	Original Design
227	Bridge Approach Repair

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. <i>Haiping Chen</i> 06-05-2026 Signature Date Haiping Chen Printed or Typed Name My license renewal date is December 31, 2026 Pages or sheets covered by this seal: V.1 through V.4

Design For Repairs to 0° Skew		
288'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge		
95'-9" End Spans		96'-6" Interior Span
General Notes & Quantities		
STA. 121+88.20 (IA 5)		Turn-in Date: August, 2026
Warren County		
IOWA DEPARTMENT OF TRANSPORTATION		
Design No. 0227	Design Sheet No. 1 of 4	FHWA No. 606315

General Notes:

This design is for repair to the existing 288'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge, built in 1996, carrying Southbound Iowa 5 over North River, 0.9 miles south of Jct. U.S. 65. Electronic copies of original design plans will be made available to the Contractor as part of the E-Files supplied with the contract documents.

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 existing portions of the bridge.

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

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

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

No preliminary abutment bank erosion survey is provided. Approximately 40 cubic yards of material will be required to repair the abutment banks on both abutments of the Southbound bridge. The actual quantity will be determined by the Engineer at the time of repair.

Voids beneath the existing bridge approach were previously grouted.

Specifications:

Design:

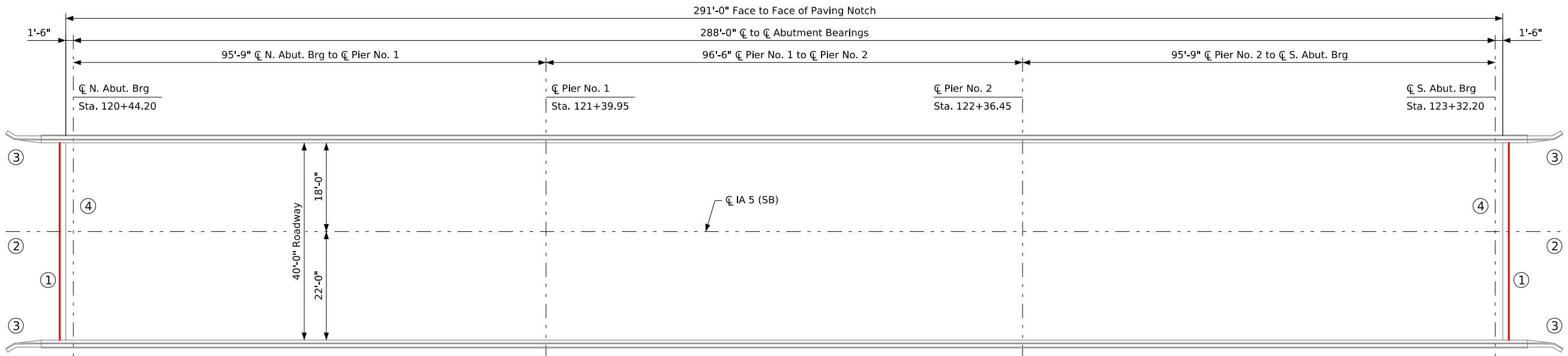
AASHTO Series of 2002.

Construction:

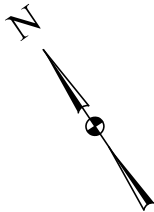
Iowa Department of Transportation Standard Specifications for Highway and Bridge Construction, series 2023, plus applicable General Supplemental Specifications, Developmental Specifications, Supplemental Specifications and Special Provisions shall apply to construction work on this project.

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.



Situation Plan



Repairs shall consist of:

1. Build Paving Notches at both Abutments.
2. Remove and replace Bridge Approach Pavement.
3. Remove and install new Guardrails.
4. Erosion and undermining repair beneath bridge.

Location

IA 5 (SB) over the North River
T-77N R-23W
Section 4
Allen Township
Warren County
FHWA No. 606315
Bridge Maint. No. 9189,8L005
Latitude 41.50626631°
Longitude -93.51059543°

Design For Repairs to 0° Skew

**288'-0" x 40'-0" Pretensioned
Prestressed Concrete Beam Bridge**

95'-9" End Spans 96'-6" Interior Span

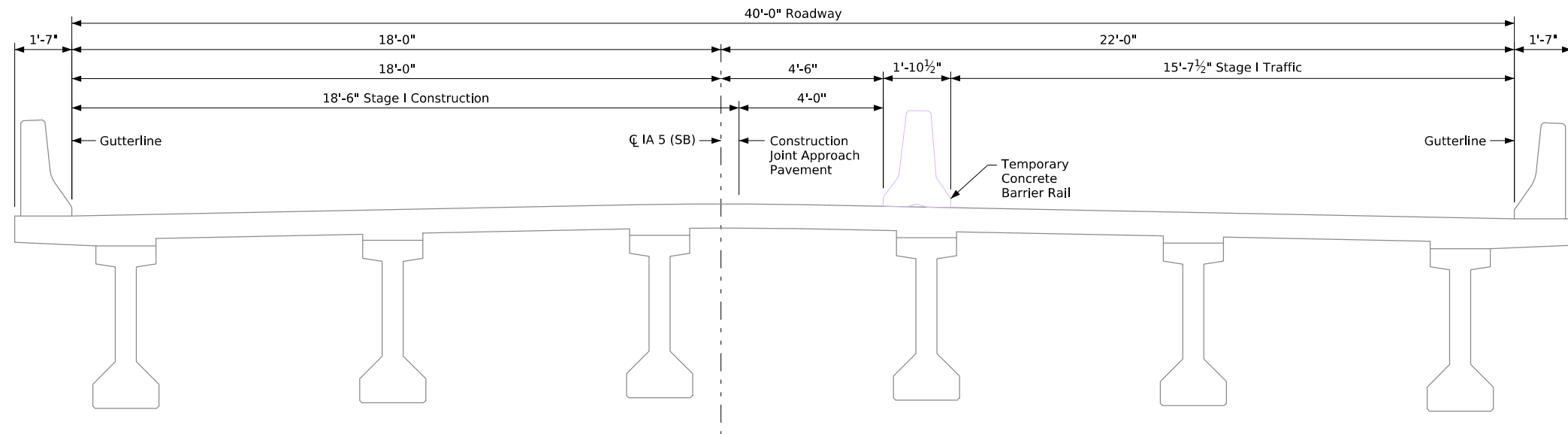
Situation Plan

STA. 121+88.20 (IA 5) Turn-in Date: August, 2026

Warren County

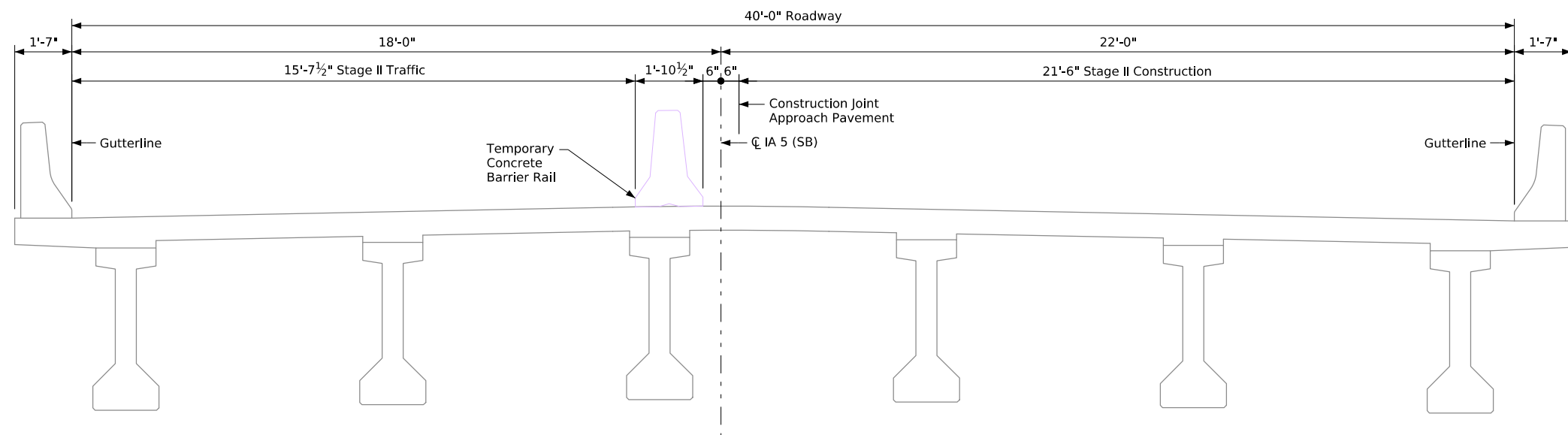
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0227 Design Sheet No. 2 of 4 FHWA No. 606315



Typical Section Stage I Construction

(Looking South)



Typical Section Stage II Construction

(Looking South)

Design For Repairs to 0° Skew

**288'-0" x 40'-0" Pretensioned
Prestressed Concrete Beam Bridge**

95'-9" End Spans 96'-6" Interior Span

Staging Details

STA. 121+88.20 (IA 5) Turn-in Date: August, 2026

Warren County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0227 Design Sheet No. 3 of 4 FHWA No. 606315

ESTIMATED BRIDGE REPAIR QUANTITIES				
ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL
1	2499-0800000	PAVING NOTCH REPLACEMENT	LF	88

ESTIMATE REFERENCE INFORMATION		
ITEM NO.	ITEM CODE	ITEM DESCRIPTION
1	2499-0800000	PAVING NOTCH REPLACEMENT Includes 6.2 cu yd of Class C structural concrete, 1,408 lbs of epoxy-coated reinforcing steel, excavation, removal and disposal of the existing paving notch and concrete to form the shear keyways, drilling holes for dowel bars, and polymer grout material.

General Notes:

This design is for repair to the existing 288'-0" x 44'-0" Pretensioned Prestressed Concrete Beam Bridge, built in 1983, carrying Northbound Iowa 5 over North River, 0.9 miles south of Jct. U.S. 65. Electronic copies of original design plans will be made available to the Contractor as part of the E-Files supplied with the contract documents.

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 existing portions of the bridge.

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

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

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

Voids beneath the existing bridge approach were previously grouted.

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.

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.

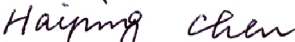
Roadway Quantities shown elsewhere in these plans.

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

Design History at this Site (Includes this Design)	
Des. No.	Type of Work
182	Original Design
327	Bridge Approach Repair



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.



06-05-2026

Signature

Haiping Chen

Date

Printed or Typed Name

My license renewal date is December 31, 2026

Pages or sheets covered by this seal: V.5 through V.8

Design For Repairs to 0° Skew

288'-0" x 44'-0" Pretensioned Prestressed Concrete Beam Bridge

95'-9" End Spans96'-6" Interior Span

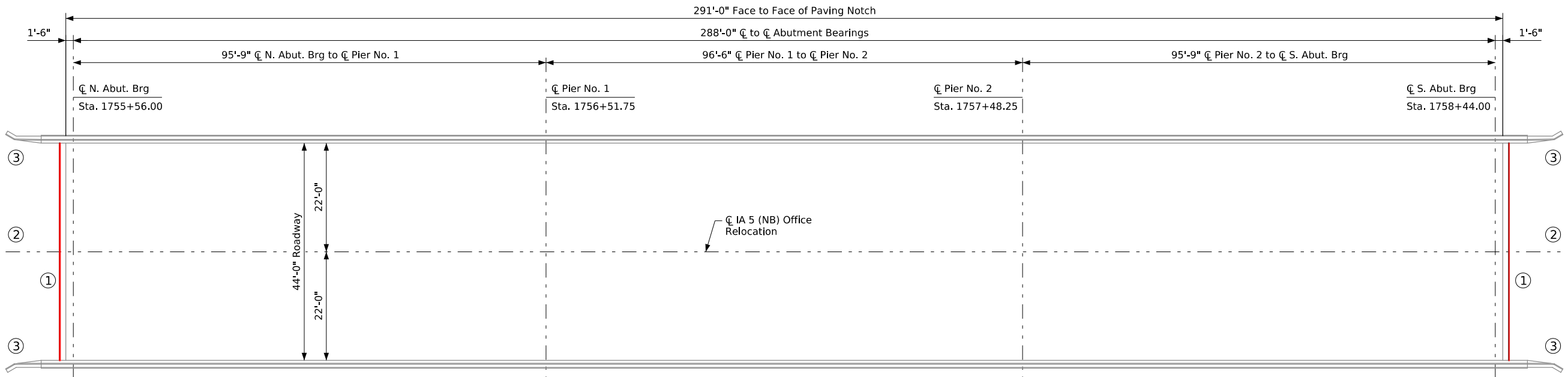
General Notes and Quantities

STA. 1757+00.00 (O.R.)Turn-in Date: August, 2026

Warren County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0327Design Sheet No. 1 of 4FHWA No. 051031



Situation Plan

Repairs shall consist of:

1. Build Paving Notches at both Abutments.
2. Remove and replace Bridge Approach Pavement.
3. Remove and install new Guardrails.

Location

IA 5 (NB) over the North River
T-77N R-23W
Section 4
Allen Township
Warren County
FHWA No. 051031
Bridge Maint. No. 9189,8R005
Latitude 41.50597159°
Longitude -93.50951733°

Design For Repairs to 0° Skew

**288'-0" x 44'-0" Pretensioned
Prestressed Concrete Beam Bridge**

95'-9" End Spans 96'-6" Interior Span

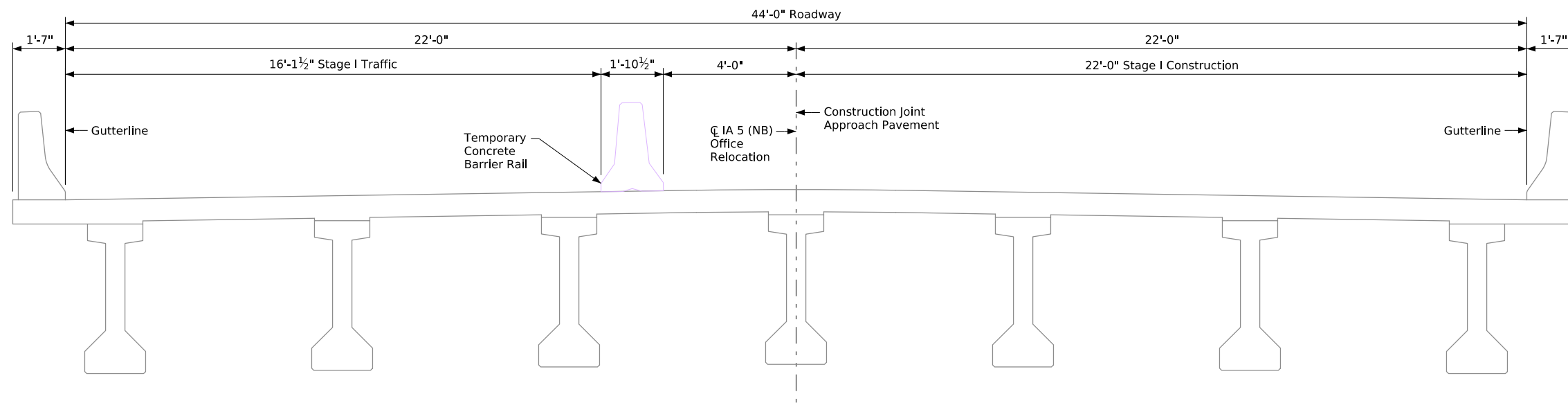
Situation Plan

STA. 1757+00.00 (O.R.) Turn-in Date: August, 2026

Warren County

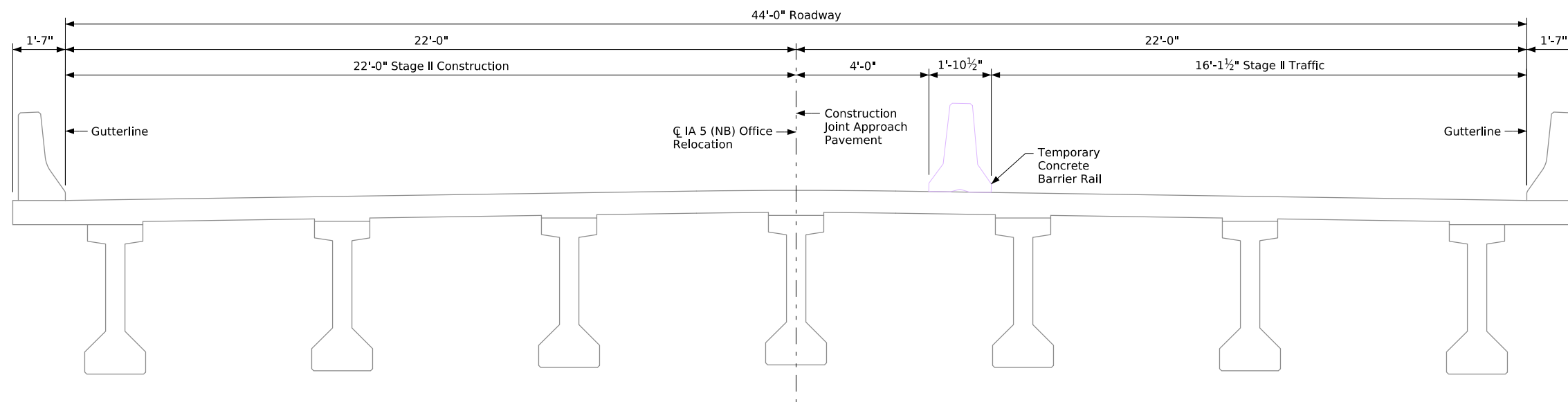
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0327 Design Sheet No. 2 of 4 FHWA No. 051031



Typical Section Stage I Construction

(Looking South)



Typical Section Stage II Construction

(Looking South)

Design For Repairs to 0° Skew

**288'-0" x 44'-0" Prestensioned
Prestressed Concrete Beam Bridge**

95'-9" End Spans 96'-6" Interior Span

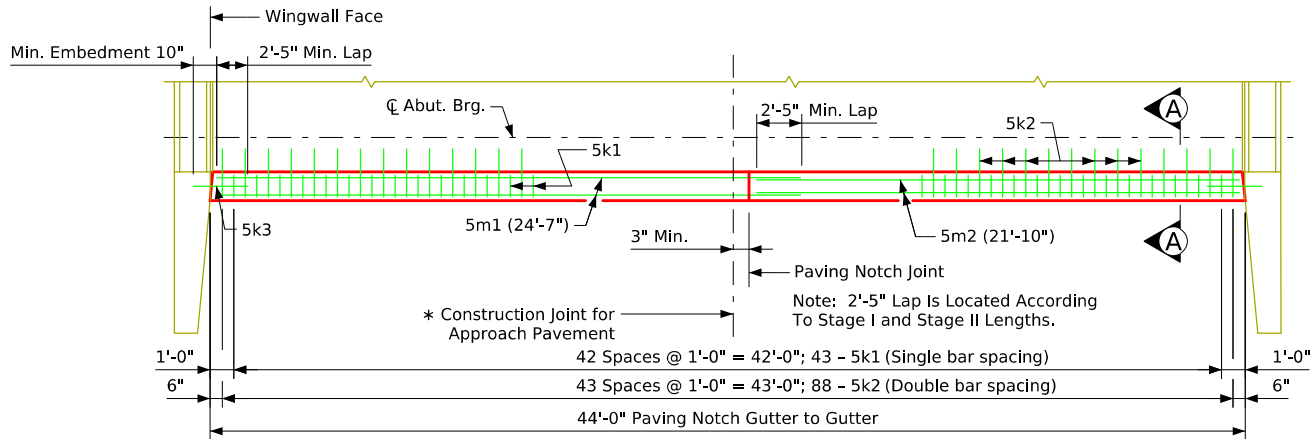
Staging Details

STA. 1757+00.00 (O.R.) Turn-in Date: August, 2026

Warren County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0327 Design Sheet No. 3 of 4 FHWA No. 051031



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

Part Plan View At Abutment

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

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

Note: Use "BR-203" Approach Pavement Standard for Moveable Abutment.

Paving Notch Replacement Notes:

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

The bid item "Paving Notch Replacement" linear feet, shall include all costs of labor and materials associated with excavation, removing, and disposing of the existing paving notch, granular backfill and compaction as needed, and installing the new paving notch.

This work shall include, cutting of the existing #4 bars, removing the concrete for the shear keyways, drilling the holes for the deformed dowels, and constructing the new notch to the dimensions shown.

The new notch is estimated at 0.07 cubic yards per foot of structural concrete and 16.0 pounds of epoxy coated reinforcing steel per foot.

Removals shall be in accordance with Section 2401, of the Standard Specifications.

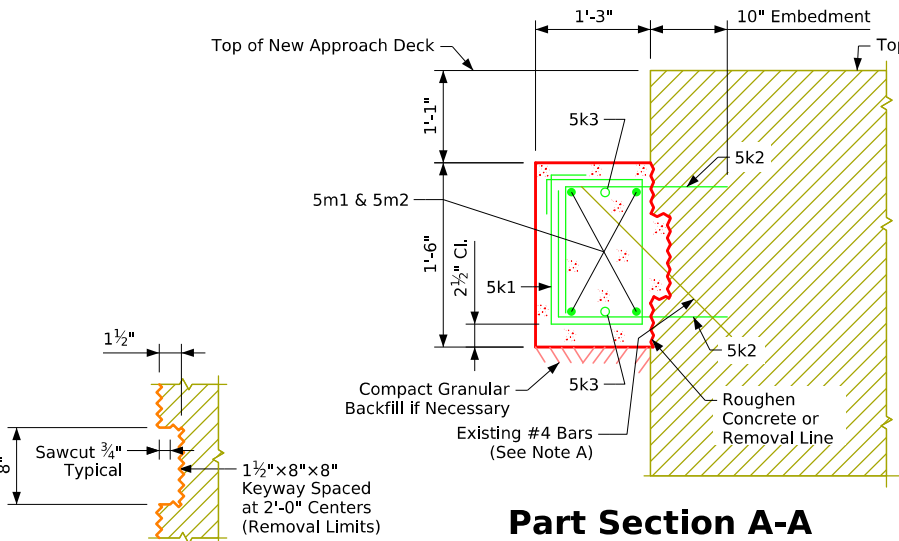
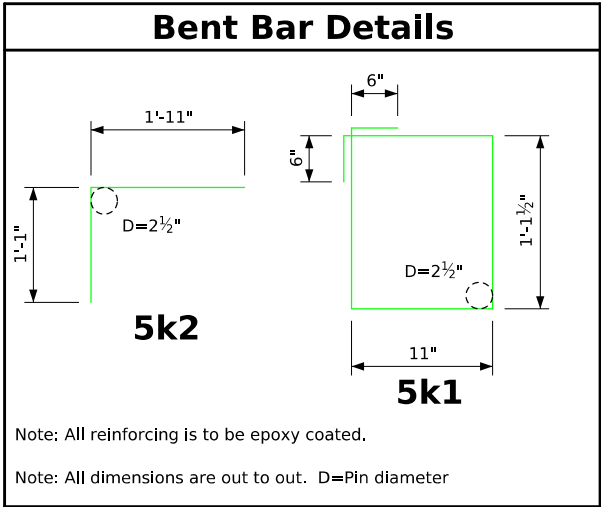
GENERAL NOTES:

It will be necessary to support the earth and/or granular material behind the abutment during reconstruction of the paving notches by some method approved by the engineer. All cost for supporting the earth and/or granular material shall be included in the price bid for "Paving Notch Replacement".

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.

Dowel Setting Note:

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



1 1/2"x8" Keyway Detail

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

Design For Repairs to 0° Skew

288'-0" x 44'-0" Prestressed

Prestressed Concrete Beam Bridge

95'-9" End Spans96'-6" Interior Span

Paving Notch Replacement

STA. 1757+00.00 (O.R.)Turn-in Date: August, 2026

Warren County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0327Design Sheet No. 4 of 4FHWA No. 051031