INDEX OF SHEETS

INDEX OF SEALS

SHEET NO.	NAME	TYPE
A.1	Yanxiao Jia	Primary Signature Block
CD.1	Dave Claman	Hydraulic Design
CS.1	Mark Dell	Geotechnical Design
P.1	Steve Junod	Lighting Design
RC.1	Seana Godbold	Landscape Design

ROADWAY DESIGN

LICENSED PROFESSIONAL ENGINEER
Yanxiao. Jia 14837
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.

Yanxiao Jia — Signature — 8-24-2021 — Date

Yanxiao Jia — Printed or Typed Name

My license renewal date is December 31, 2022

Pages or sheets covered by this seal: A.1,B.1-B.5,C.1-C.9,D.1-D.3,G.1-G.4,H.1,J.1-J.6 L.1-L.4,M.1-M.5,T.1C-T.3,U.1-U.15,W.1-W.9

FILE NO. 31892	ENGLISH	DESIGN TEAM Jia \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER A.1

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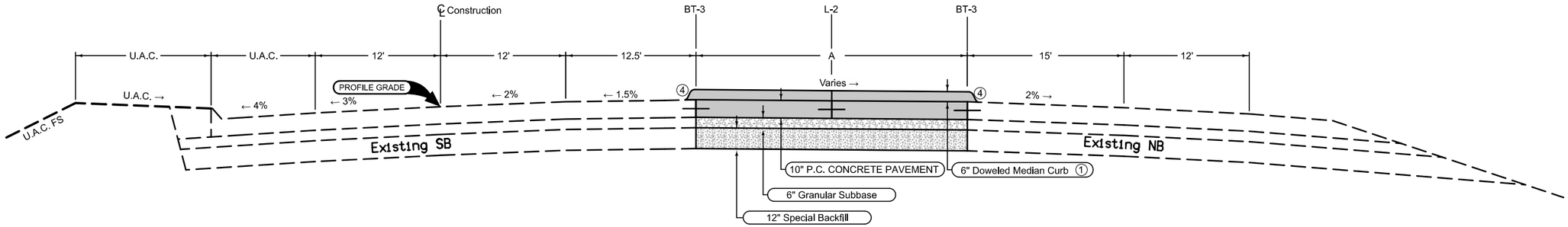


Transverse joints: Match Mainline Joint Spacing

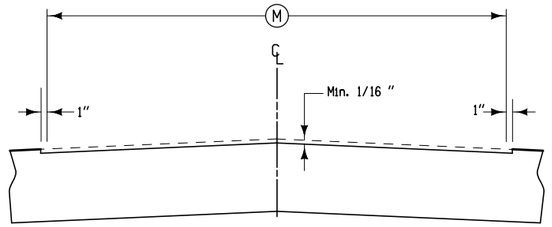
BEGIN STATION	END STATION	Curb Type See Typical 6149	A ②
43+40.77	43+50.43	6" Standard	Nose
43+50.43	46+00.42	6" Standard	17.5'
46+00.42	46+66.58	6" Standard	17.5'-24.1'
46+66.58	47+43.37	6" Standard	24.1'
47+43.37	48+05.04	6" Standard	24.1'-7.1'
48+05.04	48+10.99	6" Standard	Nose
57+17.39	57+90.37	6" Standard	Nose
57+90.37	57+66.60	6" Standard	8.0'-17.0'
57+66.60	57+85.39	6" Standard	17.0'-15.1
57+85.39	59+05.83	6" Standard	15.1'-14.6
59+03.83	59+92.99	6" Standard	14.6'-7.2'
59+92.81	59+97.53	6" Standard	Nose

① Refer to Typcial 6149. Refer to L Sheets for additional information
② 'A' Dimension is for dowelled median.
③ Refer to L Sheets for additional information on edge of median pavement
④ Remove Existing Curb

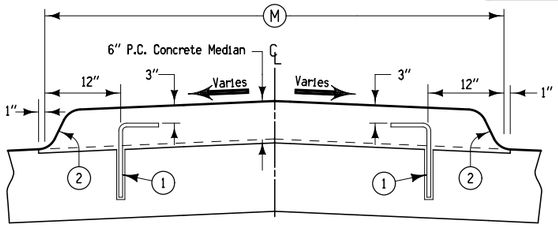
See Tab 100-24 or 100-25 for pavement quantities.
See Tab 112-9 for shoulder quantities.

IA 28

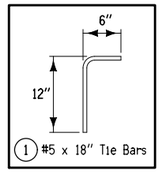
6149
Modified



Details of Milling



Details of Median Placement

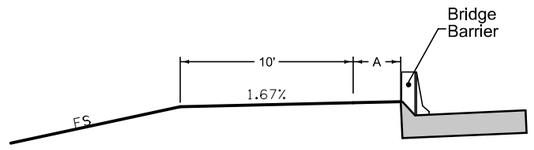


2 6" Standard Curb

Notes:
This section may be appropriately modified in areas specifically designated by the Engineer.
Use 'C' joints in the doweled median and match the location of all transverse and longitudinal joints to the joints in the existing pavement.
Place tie bars at 24" C-C longitudinal spacing between joints in existing pavement.
Drill ¾" holes for tie bars and epoxy to new pavement. See Tabulation 112-5 for additional details. Epoxy material shall be as specified in Materials IM491.11, appendix C.

DOWELED MEDIAN WITH STANDARD CURB

Trail

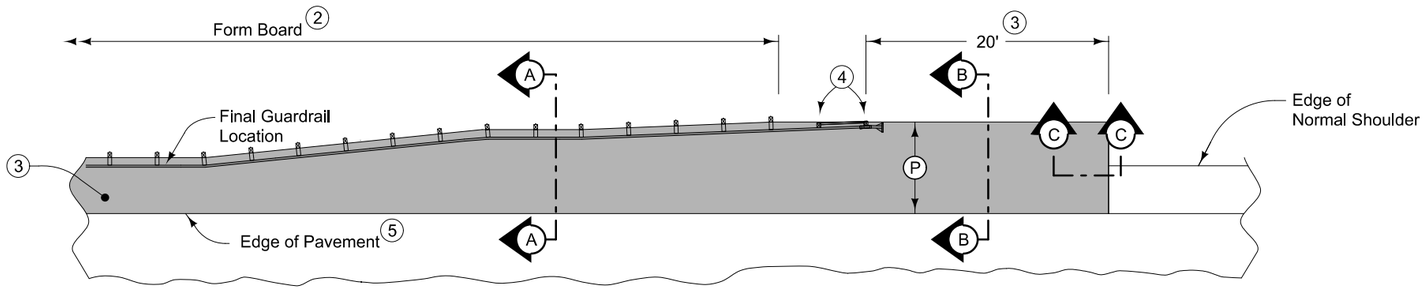


Sta.	Sta.	Side	A
55+89.06	56+27.61	LT	0'-3.7'

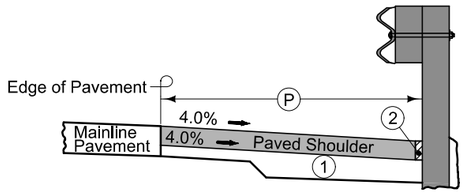
1 See Sheet U.1 for additional information

Trail Grading

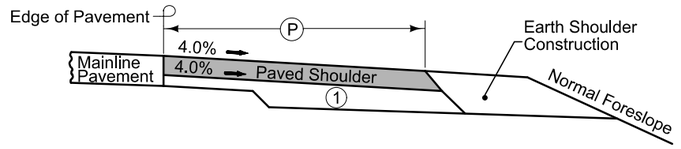
7156
Modified



PLAN VIEW

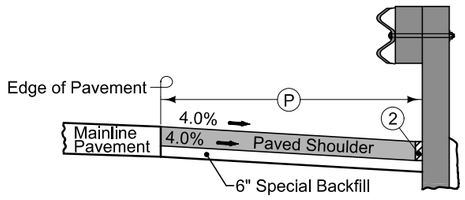


Section A-A

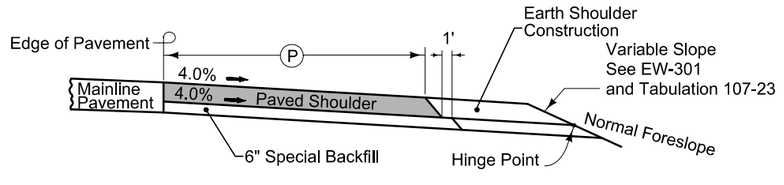


Section B-B

NEW CONSTRUCTION



Section A-A



Section B-B

EXISTING SHOULDER

8" PCC Paved Shoulder at guardrail. Joint 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.

Refer to Tabulation 112-9 for shoulder quantities.

For subgrade treatment, refer to other details in the plan.

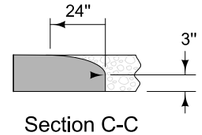
(1) When guardrail posts are installed prior to construction of PCC paved shoulder, fasten form board to the face of guardrail posts for the length shown. Refer to note 4 for final 2 posts.

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

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

(4) 'KT-1 joint for PCC shoulder.

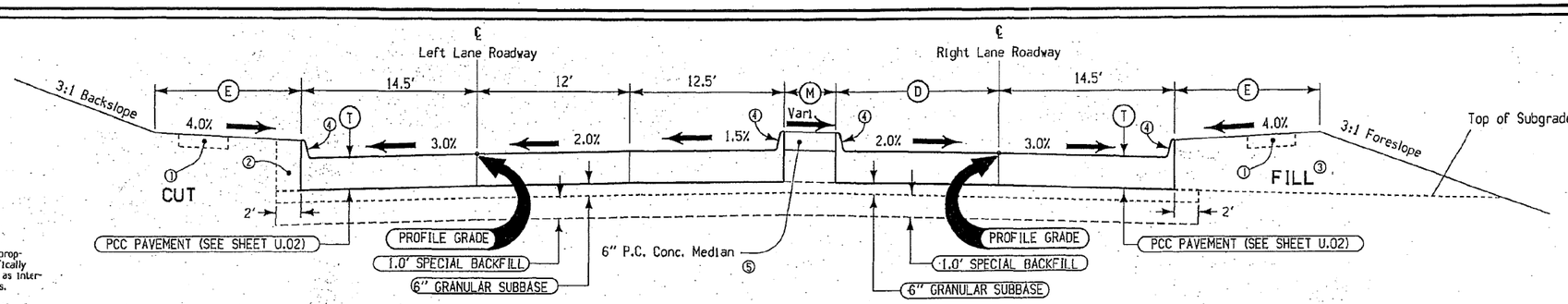
(5) Refer to other details in the plan.



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

PAVED SHOULDER AT GUARDRAIL

3207D
11-04-92



Notes:

Normal sections shown may be appropriately modified for areas specifically designated by the engineer such as intersections or super elevated curves.

Refer to other drawings for details of P.C. Conc. Median.

① Refer to other drawings for details of shoulder and possible sidewalk construction.

② Excavate and backfill 2.0′

③ Backfill

④ 6″ Intergral Standard Curb

⑤ See Typical 6139 for details of median.

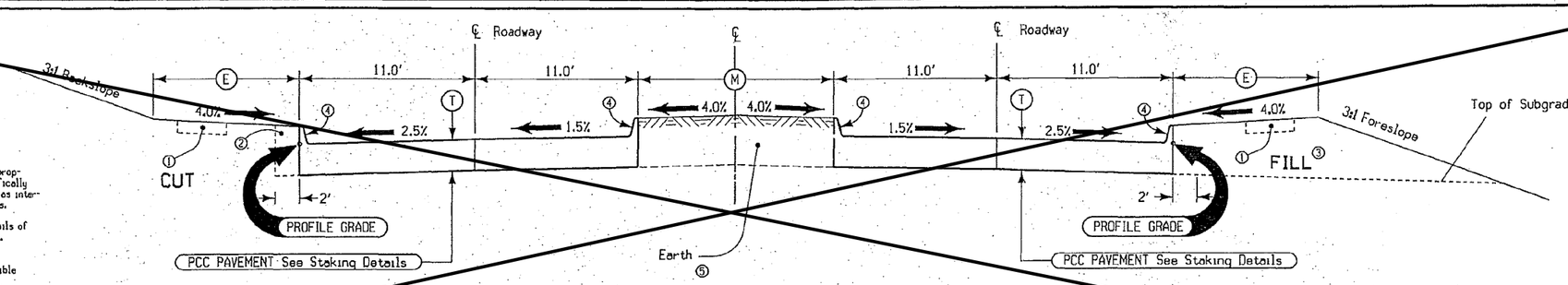
LOCATION			Ⓣ	Ⓓ	Ⓔ	Ⓜ
IDENT.	STATION TO STATION					
Lt. Lane	34+25.00	35+75.00	10″	13.0′	12′	17′ *
Lt. Lane	43+49.00	44+99.00	10″	13.0′	12′	17′ *
Lt. Lane	61+10.00	62+10.00	10″	13.0′	12′	Vari.*
Lt. Lane	69+95.00	71+20.00	10″	12.5′	12′	Vari.
~~Lt. Lane~~	~~77+55.00~~	~~78+30.00~~	~~10″~~	~~12.5′~~	~~12′~~	~~Vari.~~
Lt. Lane	83+50.00	85+00.00	10″	12.5′	12′	3′
Lt. Lane	92+85.00	94+35.00	10″	12.5′	12′	3′
Lt. Lane	99+57.00	101+07.00	10″	12.5′	12′	3′
Lt. Lane	106+15.00	107+35.00	10″	12.5′	12′	3′
Lt. Lane	109+48.78	110+68.78	10″	12.5′	12′	3′
Lt. Lane	112+74.00	114+24.00	10″	12.5′	12′	3′

* Median Curbs are 6″ Sloped Curb (Typical 6128 and 6140).

* See Geometric Sheets for Special Lane Widths.

TYPICAL CROSS SECTION
4 LANE PCC PAVEMENT
WITH CURBS
WITH LEFT TURN LANE

3207E
11-04-92



Notes:

Normal sections shown may be appropriately modified for areas specifically designated by the engineer such as intersections or super elevated curves.

Refer to other drawings for details of shoulder design and construction.

① Refer to other drawings for details of shoulder and possible sidewalk construction.

② Excavate and backfill 2.0′

③ Backfill

④ 6″ Intergral Standard Curb

⑤ See Typical 6135 for details of median.

LOCATION			Ⓣ	Ⓔ	Ⓜ
ROAD IDENTIFICATION	STATION TO STATION		Inches	Feet	Feet
Creston Ave.	1043+58.03	1046+58.00	10	10	20

TYPICAL CROSS SECTION
4 LANE PCC PAVEMENT
WITH CURBS

For Information Only

TYPICAL CROSS SECTIONS

ROAD DESIGN * CADD * PRODUCED	STATE OF IOWA	FHWA REGION 7	FISCAL YEAR	POLK COUNTY	PROJECT NUMBER NHS-28-2(9)--19-77	SHEET NUMBER B.04

FILE NO. 31892	ENGLISH	DESIGN TEAM J1a \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER B.4

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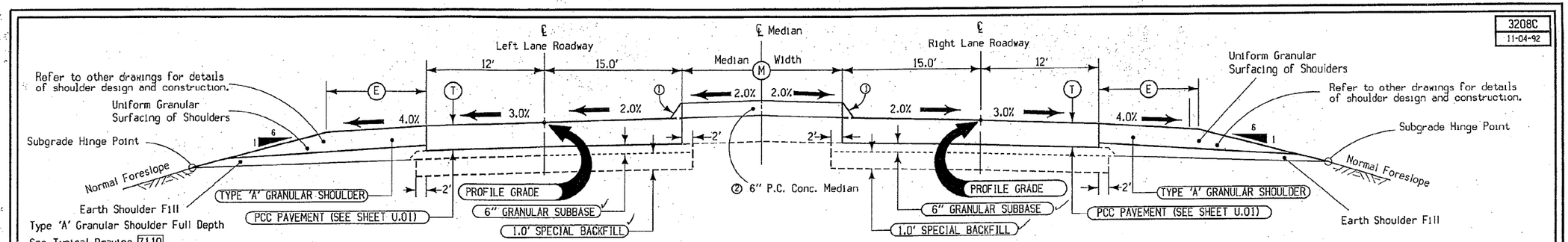
11-04-92



See Typical Drawing 7110

① See Typical 6128 for details of 6" Sloped Curb.

② See Typical 6140 for details of median.

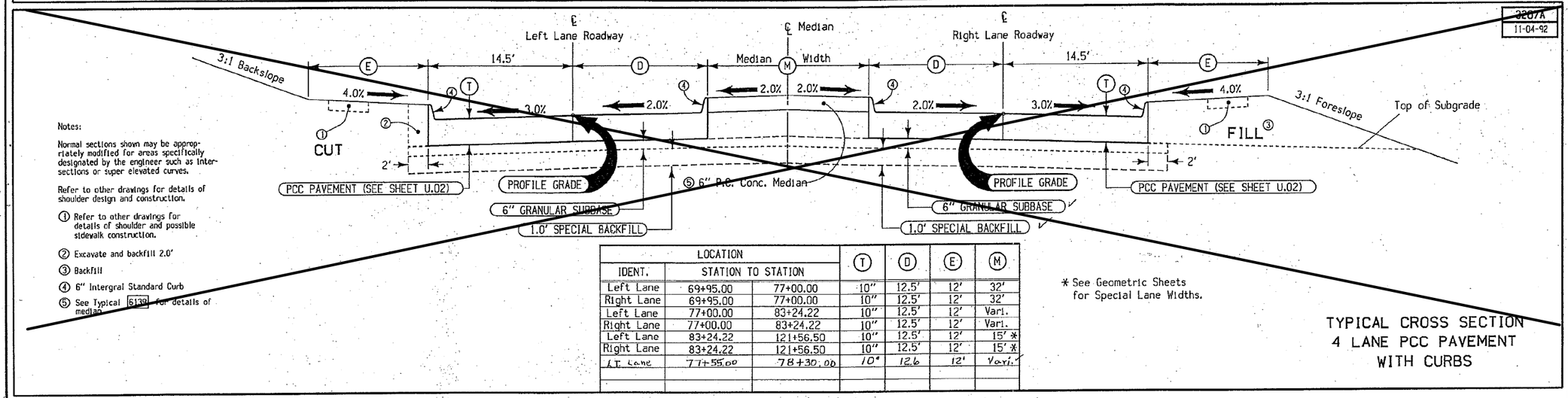
NOTE: Normal section shown may be appropriately modified for areas specifically designated by the engineer such as intersections or superelevated curves.

LOCATION			(T)	(M)	(E)	SHOULDER TYPE
ROAD IDENTIFICATION	STATION TO STATION		Inches	Feet	Feet	
Left Lane	55+60.70	69+95.00	10"	27'	10'	Granular
Right Lane	55+60.00	69+95.00	10"	27'	10'	Granular

Type 'A' Granular Shoulder Full Depth
See Typical Drawing 7110

TYPICAL CROSS SECTION 4 LANE PCC PAVEMENT WITH CURBED MEDIAN

~~3207A~~
11-04-92



Notes:

Normal sections shown may be appropriately modified for areas specifically designated by the engineer such as intersections or super elevated curves.

Refer to other drawings for details of shoulder design and construction.

① Refer to other drawings for details of shoulder and possible sidewalk construction.

② Excavate and backfill 2.0'

③ Backfill

④ 6" Intergral Standard Curb

⑤ See Typical 6139 for details of median

LOCATION			(T)	(D)	(E)	(M)
IDENT.	STATION TO STATION					
Left Lane	69+95.00	77+00.00	10"	12.5'	12'	32'
Right Lane	69+95.00	77+00.00	10"	12.5'	12'	32'
Left Lane	77+00.00	83+24.22	10"	12.5'	12'	Vari.
Right Lane	77+00.00	83+24.22	10"	12.5'	12'	Vari.
Left Lane	83+24.22	121+56.50	10"	12.5'	12'	15' *
Right Lane	83+24.22	121+56.50	10"	12.5'	12'	15' *
Lt. Lane	77+55.00	78+30.00	10"	12.6	12'	Vari.

* See Geometric Sheets for Special Lane Widths.

TYPICAL CROSS SECTION 4 LANE PCC PAVEMENT WITH CURBS

For Information Only

TYPICAL CROSS SECTIONS

ROAD DESIGN • CADD • PRODUCED	STATE OF IOWA	FHWA REGION 7	FISCAL YEAR	POLK COUNTY	PROJECT NUMBER NHS-28-2(9)--19-77	SHEET NUMBER B.02

FILE NO. 31892	ENGLISH	DESIGN TEAM J1a \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER B.5

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ESTIMATED PROJECT QUANTITIES AND REFERENCE NOTES

Division 1 :

Item no.	Item Code	Item	Unit	Quantities	Estimate Reference Notes
				Estimated	
				Division 1	
1	2101-0850001	CLEARING AND GRUBBING	ACRE	1	Refer to Tab. 110-17 in C Sheets and U Sheets.
2	2102-0425070	SPECIAL BACKFILL	TON	1,267.5	Refer to Tab.100-24 and Tab. 112-9 in C Sheets.
3	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW	CY	259	Refer to Tab. 107-22 in C Sheets and T Sheets. Item is for all fill material on wing dike.
4	2102-2710090	EXCAVATION, CLASS 10, WASTE	CY	3,010	Refer to T Sheets.
5	2102-2712015	EXCAVATION, CLASS 12, BOULDERS OR ROCK FRAGMENTS	CY	3	Refer to Tab. 103-7 in CS Sheets.
6	2105-8425005	TOPSOIL, FURNISH AND SPREAD	CY	101	Refer to Tab. 103-10 in the CS Sheets and the T Sheets. Quantity includes all fill material on IA 28 and 6" in wing dike.
7	2105-8425015	TOPSOIL, STRIP, SALVAGE AND SPREAD	CY	36	Refer to Tab. 103-10 in the CS Sheets and the T Sheets. Item is for the Wing Dike on the north side of the bridge.
8	2107-0875100	COMPACTION WITH MOISTURE CONTROL	CY	199	Refer to Tab. 103-6 on the CS Sheet. Item is for all fill for the wing dike. Shrinkage will not be included in the moisture control quantity.
9	2111-8174100	GRANULAR SUBBASE	SY	1,920.5	Refer to B Sheets and Tab. 100-24 in C Sheets.
10	2122-5190008	PAVED SHOULDER, P.C. CONCRETE, 8 IN.	SY	197.9	Refer to Tab. 112-9 in C Sheets. Item also includes 55' of 4" sloped curb beyond the bridge approach. Refer to L Sheets for additional information.
11	2123-7450000	SHOULDER CONSTRUCTION, EARTH	STA	1.5	Requires 31.4 cu. yds. of Class 10 for Earth Shoulder Fill. ---------- Requires a minimum of 4 inches of topsoil. Place according to Article 2105.03,B of the Standard Specifications.
12	2213-6745500	REMOVAL OF CURB	STA	16.8	Refer to Tab. 110-4 in C Sheets.
13	2301-0690203	BRIDGE APPROACH, BR-203	SY	675.8	Refer to Tab. 112-6 in C Sheets.
14	2301-1033100	STANDARD OR SLIP FORM PORTLAND CEMENT CONCRETE PAVEMENT, CLA SS C, CLASS 3 DURABILITY, 10 IN.	SY	1,997.7	Refer to B Sheets and Tab. 100-24 in C Sheets. Includes 77.2 SY for median nose.
15	2301-4874106	MEDIAN, DOWELLED P.C. CONCRETE, 6 INCH	SY	1,507.7	Refer to Typical 6149 in B Sheets and L Sheets.
16	2312-8260051	GRANULAR SURFACING ON ROAD, CLASS A CRUSHED STONE	TON	79.6	Refer to D Sheets and Bullnose Detail in U Sheets. Item is for area behind bullnose guardrail. Quantity is based on 3" thickness.
17	2402-2720000	EXCAVATION, CLASS 20	CY	106	Refer to Tab. 104-3 in the CD Sheets and Bridge Situation Plan for additional information.
18	2412-0000100	LONGITUDINAL GROOVING IN CONCRETE	SY	3,119.8	Refer to Tab. 100-28 in C Sheets.

Item no.	Item Code	Item	Unit	Quantities	Estimate Reference Notes
				Estimated	
				Division 1	
19	2416-0100024	APRONS, CONCRETE, 24 IN. DIA.	EACH	3	Refer to Tab. 104-3 in CD Sheets and M Sheets.
20	2416-1180024	CULVERT, CONCRETE ROADWAY PIPE, 24 IN. DIA.	LF	62	Refer to Tab. 104-3 in CD Sheets.
21	2417-0225024	APRONS, METAL, 24 IN. DIA.	EACH	1	Refer to M Sheets.
22	2435-0140148	MANHOLE, STORM SEWER, SW-401, 48 IN.	EACH	2	
23	2435-0250700	INTAKE, SW-507	EACH	2	
24	2435-0900000	BRIDGE END DRAIN, SW-538	EACH	1	Refer to Tab. 104-8 in C Sheets.
25	2503-0111024	STORM SEWER GRAVITY MAIN, TRENCHED, HIGH DENSITY POLYETHYLENE PIPE (HDPE), 24 IN.	LF	56	Refer to M Sheets.
26	2503-0114224	STORM SEWER GRAVITY MAIN, TRENCHED, REINFORCED CONCRETE PIPE (RCP), 2000D (CLASS III), 24 IN.	LF	158	
27	2503-0200036	REMOVE STORM SEWER PIPE LESS THAN OR EQUAL TO 36 IN.	LF	175	Refer to Tab. 110-14 in C Sheets.
28	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL	LF	568.8	Refer to Tab. 110-7 in C Sheets.
29	2505-4008300	STEEL BEAM GUARDRAIL	LF	100	Refer to 108-8A. Item includes both W Beam and Thrie Beam guardrail. Refer to Tab. 108-8 in C Sheets, L, and U Sheets.
30	2505-4008410	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION, BA-201	EACH	1	Refer to Tab. 108-8A in C Sheets.
31	2505-4008500	STEEL BEAM GUARDRAIL BULLNOSE SECTION, DETAIL 8220	EACH	2	Refer to detail 8220 in U Sheets.
32	2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED	EACH	1	Refer to Tab. 108-8A in C Sheets.
33	2505-4021720	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-205	EACH	1	Refer to Tab. 108-8 in C Sheets.
34	2510-6745850	REMOVAL OF PAVEMENT	SY	919.1	Refer to Tabs. 110-1 and 102-5 in C Sheets. Item includes 491.6' of full depth saw cut.
35	2510-6750600	REMOVAL OF INTAKES AND UTILITY ACCESSES	EACH	3	Refer to Tab. 110-15 in C Sheets.
36	2523-0000310	HANDHOLES AND JUNCTION BOXES	EACH	1	A. Refer to the Standard Specifications. B. Refer to the P Sheet for location and details.
37	2527-9263109	PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED	STA	84.17	Refer to J Sheets and Tab. 108-22 in C Sheets.
38	2527-9263131	WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS	STA	2.57	
39	2527-9263180	PAVEMENT MARKINGS REMOVED	STA	49.34	
40	2528-2518000	SAFETY CLOSURE	EACH	3	Refer to Tab. 108-13 in C Sheets.

Item no.	Item Code	Item	Unit	Quantities Estimated Division 1	Estimate Reference Notes
41	2528-8400048	TEMPORARY BARRIER RAIL, CONCRETE	LF	300	Item is to be placed at the north median bridge end post on NB bridge. Item includes the use of a tapered end section. Refer to J Sheets and Tab. 108-33 in C Sheets. Refer to U Sheets for additional information.
42	2528-8400055	TEMPORARY TO PERMANENT BARRIER CONNECTION	EACH	1	Item is to be placed at the north median bridge end post on NB bridge. Refer to Sheet U.15.
43	2528-8445110	TRAFFIC CONTROL	LS	1	Refer to Traffic Control Plan in J Sheets.
44	2528-9109020	TEMPORARY LANE SEPARATOR SYSTEM	LF	1,570	Refer to J Sheets and Tab. 108-35 in C Sheets.
45	2599-9999005	('EACH' ITEM) Steel Beam Guardrail Barrier Transition Section, Modified BA-201	EACH	4	This item is for the Modified BA-201 for the bullnose. Refer to U Sheets for additional information. Section 2505 of the Standard Specifications applies.
46	2599-9999009	('LINEAR FEET' ITEM) 2 SCH-80 PVC Conduit, Empty	LF	60	A. Refer to the P Sheets for additional information and location of empty conduit to be installed. B. Provide and install empty conduit as per Standard Road Plans and Standard Specifications. C. Method of Measurement: Per each lineal foot of empty conduit installed. D. Basis of Payment: The Contractor will be paid the contract unit price for each lineal foot of empty conduit installed. Payment shall be full compensation for furnishing all materials, equipment, and labor required to install each lineal foot of empty conduit including excavation, backfill, compaction, fittings, terminations, and pull rope.

100-1D
10-18-05

PROJECT DESCRIPTION

This project is for a bridge and approach replacement IA 28 SB over the Raccoon River, 3.7 miles North of IA 5.

111-25
10-18-11

INDEX OF TABULATIONS

262-5
10-18-05

UTILITIES
(POINT 25 PROJECT)

This is a POINT 25 project and is subject to the provisions of IAC 761-115.25.

105-4
10-18-11

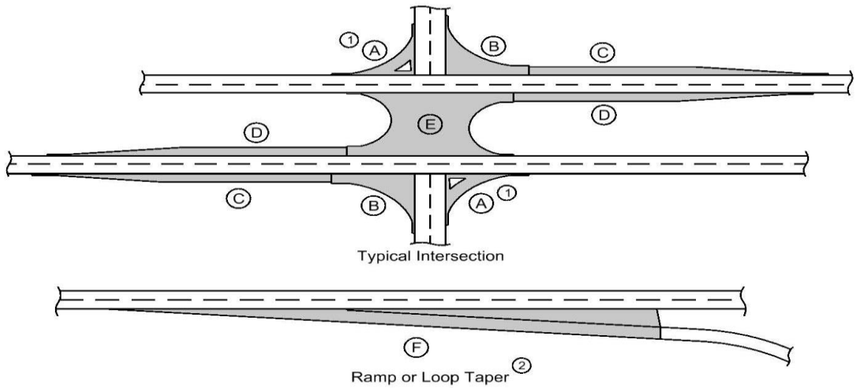
STANDARD ROAD PLANS

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

Number	Date	Title
BA-200	04-20-21	Steel Beam Guardrail Components
BA-201	04-18-17	Steel Beam Guardrail Barrier Transition Section (MASH TL-3)
BA-202	10-20-15	Steel Beam Guardrail Bolted End Anchor
BA-205	10-19-21	Steel Beam Guardrail Tangent End Terminal (MASH TL-3)
BA-250	04-20-21	Steel Beam Guardrail Installation at Concrete Barrier or Bridge End Post (MASH TL-3)
BA-401	04-20-21	Temporary Barrier Rail (Precast Concrete)
BR-203	10-19-21	Double Reinforced 12" Approach
BR-211	10-19-21	Bridge Approach (Abutting PCC or Composite Pavement)
BR-231	10-17-17	Bridge Approach (Multi-Lane, Curbed Roadway)
DR-121	10-17-17	Connected Pipe Joints
DR-122	10-18-16	Construction of Type "C" Concrete Adaptors for Pipe Culvert Connections
DR-201	04-21-20	Concrete Aprons
DR-203	04-21-20	Metal Pipe Aprons and Beveled Ends
DR-303	10-17-17	Subdrains (Longitudinal)
DR-306	10-16-18	Precast Concrete Headwall for Subdrain Outlets
DR-601	04-18-17	Reinforced Concrete Pipe Culvert
DR-641	04-21-20	Concrete/Corrugated Pipe Culvert Letdown Structure with Metal Apron
EW-201	04-19-16	Bridge Berm Grading without Recoverable Slope (Barnroof Section)
EW-210	10-20-15	Standard Wing Dikes
EW-301	04-20-21	Guardrail Grading
LI-103	04-20-21	Conduit and Precast Handholes
LI-104	10-21-14	Junction box (cast Iron)
PM-110	04-21-20	Line Types
PV-101	04-21-20	Joints
PV-102	04-21-20	PCC Curb Details
PV-104	04-21-20	Ramped Median Nose
SI-173	04-19-16	Object Markers
SI-211	10-18-16	Object Marker and Delineator Placement with Guardrail
SI-881	04-16-19	Special Signs for Workzones
SW-401	04-20-21	Circular Storm Sewer Manhole
SW-507	04-21-20	Single Open-Throat Intake, Small Box
SW-538	10-15-19	Intake for Bridge End Drain
SW-602	04-21-20	Castings for Storm Sewer Manholes
TC-1	10-15-19	Work Not Affecting Traffic (Two-Lane or Multi-Lane)
TC-61	04-21-20	Two-Lane, Two-way Operation
TC-402	10-19-21	Work Within 15 ft of Traveled Way
TC-418	04-21-20	Lane Closure on Divided Highway

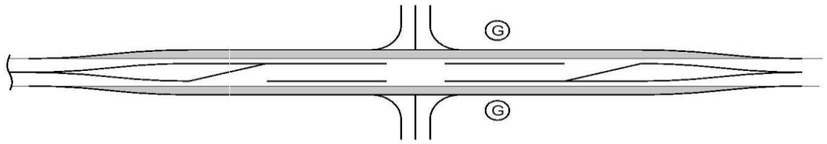
SEE P AND RC SHEETS FOR ADDITIONAL BID ITEMS AND QUANTITIES.

PCC PAVEMENT

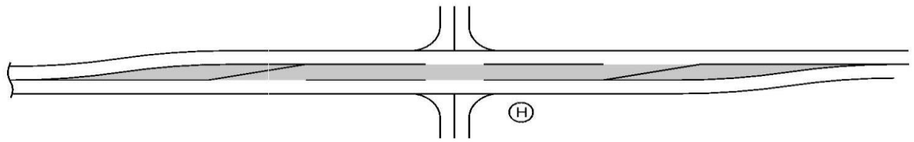


Typical Intersection

Ramp or Loop Taper (2)



Channelized Intersection
Widen Existing Roadway



Channelized Intersection
Reconstructed Roadway

(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.

Location				Mainline			Area (3)								Total Area By Pavement Thickness		Special Backfill	Modified Subbase	Granular Subbase	Remarks
Road Identification	Direction of Travel	Station to Station		Width	Length	Area	A (1)	B	C	D	E	F (2)	G	H	SY					
				FT	FT	SY	SY	SY	SY	SY	SY	SY	SY	SY	10 IN	10½ IN	TONS	CY	SY	
IA 28	Both	43+40.77	44+95.40	16.9	154.6	283.5									283.5		178.6		283.5	
		44+95.40	45+98.69	16.9-26.9	103.3	248.6									248.6		156.6		248.6	
		45+98.69	47+97.15	26.9	198.5	591.8									591.8		372.8		591.8	
		47+97.15	48+32.21	26.9-18.1	35.1	86.7									86.7		54.6		86.7	
		48+32.21	48+65.99	2.1-2.0	33.8	7.6									7.6		4.8		7.6	
		56+65.02	56+86.01	0.0-1.9	21.0	2.5									2.5		1.6		2.5	
		56+86.01	57+17.39	18.4-26.7	31.4	79.4									79.4		50.0		79.4	
		57+17.39	57+90.37	26.7	73.0	217.4									217.4		137.0		217.4	
		57+90.37	58+90.69	26.7-17.0	100.3	244.0									244.0		153.7		244.0	
		58+90.69	59+97.53	17.0-8.2	106.8	159.0									159.0		100.2		159.0	
Median Nose Boxout		43+32.42	43+49.13	21.7	16.7	43.0									43.0					
		48+04.77	48+15.13	12.5-11.3	10.4	13.0									13.0					
		57+06.33	57+15.53	11.6-12.7	9.2	10.6									10.6					
		59+91.42	60+02.02	9.4-8.9	10.6	10.6									10.6					
														Total:	1997.7		1209.9		1920.5	

REMOVAL OF PAVEMENT

Refer to Tabulation 102-5

* Not a Bid Item

Begin Station	End Station	Side	Pavement Type	Area	Saw Cut*	Remarks
				SY	LF	
43+40.85	48+74.94	Both	PCC	103.3	106.8	
48+69.95	49+57.47	SB	PCC	362.7	41.0	
55+62.00	56+48.98	SB	PCC	267.0	29.9	
56+40.58	59+91.51	Both	PCC	109.0	111.7	
43+32.42	43+49.13	Both	PCC	43.0	79.1	(1)
48+04.77	48+15.13	Both	PCC	13.0	43.5	(1)
57+06.33	57+15.53	Both	PCC	10.6	40.4	(1)
59+91.42	60+02.02	Both	PCC	10.6	39.2	(1)
	Totals:			919.1	491.6	

(1) Median Nose Boxout

CURB REMOVAL

Begin Station	End Station	Side	Length	Remarks
			STA	
43+39.62	48+32.21	Both	9.9	Remove curb
48+32.21	48+71.33	SB	0.4	Remove curb
56+56.93	56+86.01	NB	0.3	Remove curb
56+86.01	59+97.26	Both	6.2	Remove curb
	Total		16.8	

102-5
04-18-17

EXISTING PAVEMENT

No.	Location					Year	Type	Project Number	Surface		Base		Subbase		Removal		Coarse Aggregate			Reinforcement	Remarks
	County	Route	Dir. of Travel	Begin Ref. Loc. Sign	End Ref. Loc. Sign				Type	Depth IN	Type	Depth IN	Type	Depth IN	Type	Depth IN	Source	Type	Durability Class	Type	
	Polk	IA 28	1	15.6	17.71	1994		NHS--28-2(9)--19-77	PCC	10	GSB	6					Ames Mine	C. LST.			

108-8A
10-16-18

STEEL BEAM GUARDRAIL AT CONCRETE BARRIER OR BRIDGE RAIL END SECTION

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

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

No.	Location				Layout Lengths BA-250, BA-260, LS-630, or LS-635				Long-Span System		Delineators and Object Markers (2)					Bid Items											Remarks
	(1) Direction of Traffic	Side O = Outside M = Median	Station	Offset	VT1	VF	VT2	ET	BA-211		SI-211	Delineator SI-172 Type 1	Object Marker SI-173 Type 2	Type 3		Bolted End Anchor		Post Adapter	Steel Beam Guardrail	BA-250 or LS-630 Barrier Transition Section	End Terminal				BA-260 or LS-635 Barrier Transition Section	End Terminal	
																					Tangent	Flared	Tangent	Flared		Tangent	
				FT	LF	LF	LF	LF	STATION	TYPE	TYPE	White EACH	OM2-2 EACH	OM3-L EACH	OM3-R EACH	TYPE	EACH	EACH	LF	EACH	BA-205 EACH	BA-206 EACH	LS-625 EACH	LS-626 EACH	BA-221 EACH	BA-225 EACH	
	SB	O	56+24.73	0.0	103.125			47.7			3				1	A	1		62.5	1	1						
	NB	M	49+46.37	2.0	18.750														18.8	1							(1)
	NB	M	55+72.26	1.0	18.750														18.8	1							(1)
																		Total:	100.0								

(1) For extra thrie beam sections for median bullnose on NB bridge

107-23
10-18-11

GRADING FOR GUARDRAIL INSTALLATIONS

(1) Lane(s) to which the installation is adjacent. Refer to EW-301

No.	Location (1) Direction of Traffic	Station	Side	Foreslope at Guardrail	Dimensions (Feet) X1	Y1	X2	Y2	X3	Y3	X4	Y4	Z	Earthwork Excavation Class 10 CY	Embankment In Place CY	Remarks
1	SB	56+17.73	O	6:1	97.0	5.0					157.3	17.6	97.7	(1)	(1)	

(1) Quantities included in T Sheets.

110-7A
04-17-12

REMOVAL OF STEEL BEAM GUARDRAIL

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

No.	Location (1) Direction of Traffic	Station to Station		Side	Removal of Guardrail (2) LF
1	Both	48+76.95	49+59.13	LT	156.3
2	Both	55+60.34	56+37.61	LT	150.0
3	SB	55+60.24	58+19.63	RT	262.5
			Total:		568.8

112-6
04-18-17

BRIDGE APPROACH SECTION

Refer to the BR Series.

* Not a bid item

Location				Approach Pavement					Standard Road Plans BR Series			Subdrain					* Modified Subbase	* Polymer Grid	* Special Backfill	Remarks
Bridge Station	End	Skew Ahead Degrees LEFT	Skew Ahead Degrees RIGHT	(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				
													STA	Side						
				Inches	FT	SY	SY	SY				LF			CY	CY	TON	SY	TON	
52+59.31	South	0	0	12.0	73.7	137.7	91.7	108.5	BR-203	Movable	BR-211	41.3	48+83.81	West	1.3	0.1	212.200	370.6		
	North	0	0	12.0	73.7	137.7	91.7	108.5	BR-203	Movable	BR-211	41.3	56+35.31	West	1.3	0.1	212.200	370.6		
				Subtotals:		275.4	183.4	217.0												
				Totals:		675.8									2.6	0.2	424.400	741.2		

104-8
04-21-15

BRIDGE END DRAINS

(1) Refer to Standard Road Plan SW-538
(2) Not a Bid Item

Location			Shoulder		Polymer Grid (2)	Installation Information						Modified Subbase (2)	Remarks
						Elevation				Length			
Bridge Station	Bridge Corner	Distance DI-1 or DI-2 (1)	Panels Required	PCC		Form Grade	(A)	(B)	(C)	(L1)	(L2)		
			A B C or D	Sq.Yds.	Sq.Yds.							Tons	
49+43.31	NW	92.7				821.7	821.6	815.9	812.2	11.6	46.5		

107-22
04-16-13

WING DIKES

Refer to Standard Road Plan EW-210.

Location Station	Top Elevation	Length	Bridge Skew	Earthwork
		FT		CY
55+77.74	815.5	97.5	0.0	(1)

(1) Included in T Sheets
(2) Refer to Bridge Situation Plan for additional information

110-15
04-16-13

REMOVAL OF INTAKES AND UTILITY ACCESSES

No.	Location/Description	Type	Remarks
1	Intake located on Southern side of bridge at Sta. 49+29	Intakes	
2	Intake located on Northern side of bridge at Sta. 55+88	Intakes	
3	Intake located on Northern side of bridge at Sta. 55+88	Intakes	

100-28
10-19-10

LONGITUDINAL GROOVING

Location	Total	Remarks
	SY	
52+99.31	2444.2	Bridge
48+69.65	337.8	Bridge Approach
56+48.98	337.8	Bridge Approach
Total:	3119.8	

110-14
04-16-13

SANITARY OR STORM SEWER ABANDONMENT OR REMOVAL

* Not a bid item

Location/Description	Sanitary or Storm Sewer	Abandonment, Plug Only or Abandonment, Plug and Fill or Removal	Length of Pipe		Fill Material*	Remarks
			≤ 36 inch diameter	> 36 inch diameter	Flowable Mortar or CLSM	
			LF	LF	CY	
Pipe located on Southern side of bridge at Sta. 49+29	Storm Sewer	Removal	89			
Pipe located on Northern side of bridge at Sta. 55+88	Storm Sewer	Removal	51			
Pipe located on Northern side of bridge at Sta. 55+89	Storm Sewer	Removal	35			
		Total:	175			

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.

BCY4: Broken Centerline (Yellow) @ 0.25 DCY4: Double Centerline (Yellow) @ 2.00 NPY4: No Passing Zone Line (Yellow) @ 1.25 BLW4: Broken Lane Line (White) @ 0.25 ELW4: Edge Line Right (White) @ 1.00
ELY4: Edge Line Left (Yellow) @ 1.00

Location								Length by Line Type (Unfactored)													Remarks
Road ID	Station to Station		Dir. of Travel	Marking Type	Side			BCY4*	DCY4	NPY4**	BLW4	ELW4	ELY4								
					L	C	R	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	
IA 28	48+70.90	56+47.73	SB	Waterborne/Solvent Paint		X					7.77										
	48+70.90	57+94.95	SB	Waterborne/Solvent Paint			X					9.24									
	43+32.60	45+86.74	SB	Waterborne/Solvent Paint			X					2.54									
	46+99.74	59+95.00	SB	Waterborne/Solvent Paint	X								12.95								
	43+48.93	48+42.62	NB	Waterborne/Solvent Paint	X								4.94								
	56+76.01	59+98.30	NB	Waterborne/Solvent Paint	X								3.22								
Crossover	43+01.08	43+94.79	SB	Wet Retroreflective Removable Tape			X					1.00									
	43+94.79	61+24.03	SB	Waterborne/Solvent Paint			X					17.34									
	43+49.82	43+46.53	SB	Waterborne/Solvent Paint	X							0.95									
	43+46.53	45+02.01	SB	Wet Retroreflective Removable Tape	X							0.56									
	43+94.81	48+94.81	SB	Waterborne/Solvent Paint	X								5.03								
	45+31.42	48+94.81	NB	Waterborne/Solvent Paint	X								4.60								
	48+94.81	56+23.81	BOTH	Waterborne/Solvent Paint		X			7.29												
	56+23.81	58+08.13	NB	Waterborne/Solvent Paint	X								1.81								
	56+23.81	61+24.11	SB	Waterborne/Solvent Paint	X								5.03								
	58+08.13	59+08.59	NB	Wet Retroreflective Removable Tape	X								1.01								
	43+01.08	43+94.79	SB	Removal of Removable Tape			X					1.00									
	43+94.79	61+24.03	SB	Removal of Paint	X							17.34									
	43+49.82	43+46.53	SB	Removal of Paint	X							0.95									
	43+46.53	45+01.96	SB	Removal of Removable Tape	X							0.56									
	43+94.81	48+94.81	SB	Removal of Paint	X								5.03								
	45+31.42	48+94.81	NB	Removal of Paint		X							4.60								
	48+94.81	56+23.81	BOTH	Removal of Paint	X				7.29												
	56+23.81	58+08.13	NB	Removal of Paint	X								1.81								
	56+23.81	61+24.11	SB	Removal of Paint			X						5.03								
	58+08.13	59+08.59	NB	Removal of Removable Tape			X						1.01								
				Factored Total: WaterBourne/Solvent Paint:					14.58		1.94	30.07	37.58								
				Factored Total: Wet Retroreflective Removable Tape:								1.56	1.01								
				Factored Total: Pavement Markings Removed:					14.58			18.29	16.47								
				Factored Total: Removal of Removable Tape:								1.56	1.01								
				Bid Quantities:																	
				Painted Pavement Markings, Waterbourne or Solvent Based					84.17													
				Wet Retroreflective Removalbe Tape Markings					2.57													
				Pavement Markings Removed					49.34													
				Incidental Removal of Removable Tape					2.57													

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 Screen System	Remarks
				Concrete	Steel			
			LF	BA-401	560-7	(Y/N)	(Y/N)	
	55+73.76	58+74.46	300.0	X		(1)		
				(1) Refer to U Sheets				

108-13A
08-01-08

SAFETY CLOSURES

Refer to Section 2518 of the Standard Specifications

Station	Closure Type		Remarks
	Road Qty.	Hazard Qty.	
48+69.65		1	Bridge
56+48.98		1	Bridge
58+74.00	1		
Subtotal:	1	2	
Total:	3		

108-35
04-17-12

TEMPORARY LANE SEPARATOR SYSTEM

See TC-61

Station to Station		Length	Remarks
		LF	
45+44.52	61+10.28	1570	

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.

Location					Quantities																	
Road Identification	Direction (1) Of Traffic	Station to Station		Side	(P) Width	(P_{SG}) Width	(G) Width	(L) Length	Class 13 (4) Excavation	Hot Mix Asphalt		Binder	Paved Shoulder	8" Paved Shoulder at Guardrail	Reinforced Paved Shoulder	Special Backfill				Modified Subbase	Granular Shoulder		Earth Shoulder Construction Alternates			Remarks
																HMA Alternate		PCC Alternate								
					FT	FT (2)	FT	FT	CY (3)	TON	TON/STA	TONS	SY (3)	SY (5)	SY (3)	TON (3)	TON/STA	TON (3)	TON/STA	CY (3)	TON (3)	TON/STA	STA (3)	HMA CY (6)	PCC CY (6)	
IA 28	SB	56+48.98	57+27.44	O		11.6		78.5	(1)					101.1				27.990	35.675				0.8		16.6	
	SB	57+27.44	57+74.95	O		11.6 to 13.6		47.5	(1)					66.5				19.936	41.962				0.5		10.4	
	SB	57+74.95	57+94.95	O		13.6		20.0	(1)					30.2				9.650	48.250				0.2		4.4	
									Total:					197.9				57.577	125.887				1.5		31.4	

(1) Included in the T Sheets as Class 10 Excavation

CLEARING AND GRUBBING

Location		Work and Material Type	Trees, Stumps, and Logs and Down Timber Material Diameters												All Other Materials		Estimated Quantities			Remarks
Station to Station or Ref. Loc. Sign to Ref. Loc. Sign or Description	Direction of Travel		3"-6"	>6"-9"	>9"-12"	>12"-15"	>15"-18"	>18"-24"	>24"-30"	>30"-36"	>36"-42"	>42"-48"	>48"-60"	>60"-72"	>72"	Length	Width	Units	Area	Herbicide Application	
																FT	FT	Units	Acres	Each	
Sta. 48+70.90 to Sta. 49+43.31	SB																		0.4		
Sta. 55+75.31 to Sta. 58+15.00	SB																		0.6		
																		Total:	1.0		

DRAINAGE STRUCTURE BY ROAD CONTRACTOR

Length of unclassified pipe calculated is based on using Reinforced Concrete Pipe.
* Not a bid item
(1) Diameter or equivalent diameter
(2) UNCL = Unclassified Pipe CMP = Corrugated Metal Pipe RCP = Reinforced Concrete Pipe LCP = Arch or Elliptical Low Clearance Pipe SARC = Steel Arch Pipe
(3) Backfill according to DR-101

Drainage Area	Location	Type	Size (1)	Kind Of Pipe (2)	Length New Const.	Bedding Class	Design Cover (H)	Camber* (DR-102)	Apron No.		Apron Guard* (DR-213)	Elbow* (DR-141)	Diaphragm* (DR-501)	Tee Section* (DR-142)	"D" Section* (DR-141)	Reducer*	Type 'C' Connections* (DR-122)		Connected Pipe Joint* (DR-121)	4" Perforated Subdrain*	Flow Line Elevations				Dimensions Lin. Ft. Total		Dimensions Lin. Ft. Extensions		Skew Ahead Degrees		Dike Rt. \ Lt.	Dike Location Station	Dike Top Elevation	Dike Type	Class 20	Flowable Mortar	Floodable* Backfill (A)	Porous* Backfill (B)	Flooded Backfill (3) (A+B)	Remarks
ACRE			IN		LF		FT	FT	IN	OUT	No.	No.	No.	No.	No.	No.	Type	No.	Type	FT	Lt.	Rt.	Other	Other	Lt.	Rt.	Lt.	Rt.	Lt.	Rt.	Lt.				CY	CY	CY	CY	CY	
	56+00.08	DR-601	24	RCP	62	B	3.1	0.08	1	1											809.22	811.70			38.8	23.2				20		55+77.81	815.47		105.5					-1
	Pipe Size	Length	Aprons																																				
	24" RCP	62'	2																																				
(1) CULVERT UNDER WING DIKE. LEFT LENGTH IS SOUTH OF WING DIKE CENTERLINE; RIGHT LENGTH IS NORTH OF WING DIKE CENTERLINE. SKEW IS BASED ON VIEWING WING DIKE FROM EAST TO WEST.																																							

HYDRAULIC DESIGN

LICENSED PROFESSIONAL ENGINEER
David R. Claman
11571
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.

David R. Claman — Signature — 8/19/2021 Date

Printed or Typed Name

My license renewal date is December 31, 20 22

Pages or sheets covered by this seal: CD.1

103-7
08-01-08

SHRINKAGE DATA

Material	%	Remarks
Class 10	30%	
Topsoil	40%	
Boulders		3 CY

103-6
10-17-17

EMBANKMENT WITH MOISTURE CONTROL

Moisture Control is required for all Class 10 fill placed in all locations and depths. Stability berms placed outside the normal foreslope template and topsoil will not require Moisture Control

103-10
04-18-17

TOPSOIL STRIPPING AND PLACEMENT

Location				Topsoil Stripping Thickness	Topsoil Placement Thickness	Remarks
Road Identification	Dir. of Traffic	Begin Station	End Station	IN	IN	
IA 28		43+32.00	60+05.00			All Fill Shall Be Contractor Provided Topsoil
Wing Dike				6.0	6.0	

GEOTECHNICAL DESIGN

LICENSED PROFESSIONAL ENGINEER
Mark A. Dell
21208
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.

Mark A Dell 8/25/21
Signature Date

Mark A. Dell
Printed or Typed Name

My license renewal date is December 31, 2021

Pages or sheets covered by this seal: CS.1

FILE NO. 31892	ENGLISH	DESIGN TEAM MEGIVERN\DELL\MOYLE	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER CS.1

8/25/2021 7:13:18 AM gmoyle c:\pw_work\pwmain\gmoyle\d0810951\7702804S.xlsm

SURVEY SYMBOLS

- Existing Water Line
- Existing Water Line (Second Company)
- Existing Sanitary Sewer Line
- Existing Telephone Line
- Existing Telephone Line (Second Company)
- Existing Fiber Optics Telephone Line
- Existing Storm Sewer Line
- Existing Gas Line
- Existing High Pressure Gas Line
- Existing Gas Line (Second Company)
- Existing High Pressure Gas Line (Second Company)
- Existing Power Line
- Existing Power Line (Second Company)
- Cable Television Line
- FP Filler Pipe
- GV Gas Valve
- WV Water Valve
- SL Speed Limit Sign
- MM Mile Marker Post
- SIGN Sign
- TCB Traffic Signal Control Box
- RRB Rail Road Signal Control Box
- TSB Telephone Switch Box
- EB Electric Box
- Timber

UTILITY LEGEND

Aureon Network Services
Jeff Klocko
7760 Office Plaza Drive South
West Des Moines IA 50266
jeff.klocko@aureon.com
(515) 830-0445

CenturyLink
Steve Parker
2103 E. University Ave.
Des Moines IA 50317
steven.parker4@centurylink.com
(515)265-0968

Consolidated Communications
Westen Grow
2859 99th St.
Urbandale IA 50322
weston.grow@eventis.com
(515) 867-4769

City of Des Moines
Steve Naber
400 Robert D Ray Dr.
Des Moines IA 50309
slnaber@dmgov.org
(515) 283-4920

Des Moines Water Works
Danny Klopfer
2201 George Flag Parkway
Des Moines IA 50321
dannyklopfer@dmww.com
(515) 283-8754

Mediacom Communications Corp.
Paul May
2205 Ingersoll Ave.
Des Moines IA 50312
pmay@mediacomcc.com
(515) 246-2252

MidAmerican Electric Dist. & Gas
Tim Davis
3500 104th St.
Urbandale IA 50322
tldavis@midamerican.com
(515) 242-4224

MidAmerican Electric Trans.
William Schierbrock
106 East Second St.
Davenport IA 52801
wjschierbrock@midamerican.com
(563) 333-8155

Unite Private Networks
Clark Lundy
2320 Wakonda View Dr.
Des Moines IA 50321
clark.lundy@upnfiber.com
(515) 321-3336

West Des Moines Water Works
William Mabuce
4200 Mills Civic Parkway,
Suite 1D
West Des Moines IA 50265
william.mabuce@wdmww.com
(515) 222-3464

Windstream Communications
Jim Wiand
115 S. 2nd Ave. W.
Newton IA 50208
james.wiand@windstream.com
(641) 787-2270

PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Magenta	(5)	Existing Utilities
SHADING	**Design Color No.**	
Yellow	(4)	Highlight for Critical Notes or Features
Red	(3)	Delineates Restricted Areas
Lavender	(9)	Temporary Pavement Shading
Gray, Light	(48)	Proposed Pavement Shading
Gray, Med	(80)	Proposed Granular Shading
Gray, Dark	(112)	Proposed Dowelled Down Median Shading
Brown, Light	(236)	Grading Shading
Tan	(8)	Proposed Sidewalk Shading
Blue, Light	(230)	Proposed Sidewalk Landing Shading
Pink	(11)	Proposed Sidewalk Ramp Shading

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Ground Line Profile
Blue	(1)	Proposed Profile and Annotation
Magenta	(5)	Existing Utilities
Blue, Light	(230)	Proposed Ditch Grades, Left
Black	(0)	Proposed Ditch Grades, Median
Rust	(14)	Proposed Ditch Grades, Right

- Reference Point / Station — Survey Line
- Section Corner
- Ground Line Intercept
- Saw Cut
- Guardrail
- Trench Drain
- HighTension Cable Guardrail
- Sheet Pile
- Pavement Removal
- Clearing & Grubbing Area

RIGHT-OF-WAY LEGEND

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

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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

FILE NO. 31892	ENGLISH	DESIGN TEAM J1a \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER D.1

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Sta. 44+90
15" X 116' RCP
DA = 1.55 ACRES F-H
(UAC)

Bloomfield TWP.
T-78N R-25W
SEC. 14

Sta. 52+59.86
601.8'x28'
Steel I Beam Bridge
D.A.=3533 Sq. Mi. (Per Plans)
(Remove)

1 12" x 89' C.M.P.
(Remove)

Sta. 48+69.65
Begin Bridge Approach

STA. 49+43.31
Build
626'0"-x 38'
Pretensioned Prestressed
Conrete Beam Bridge

POT Sta 43+01.08

45

50

IA 28 (SB)

IA 28 (NB)

APPROX. SEC. LINE

APPROX. SEC. LINE

APPROX. SEC. LINE

43+39.61
Begin Project

1 See Sheet U.2 for Clearing and Grubbing
2 Refer to L Sheets for median details.

0 FEET 50

IA 28 SB

860
855
850
845
840
835
830
Lt
Rt

Sta. 48+69.65
Begin Bridge Approach

-2.72%

UAC
UAC
Bridge
Bridge

841.71 840.35 838.99 837.64 836.28 834.92 833.56 832.20 830.84

44 45 46 47 48 49 50 51 52 53

FILE NO. 31892	ENGLISH	DESIGN TEAM J1a \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER D.2

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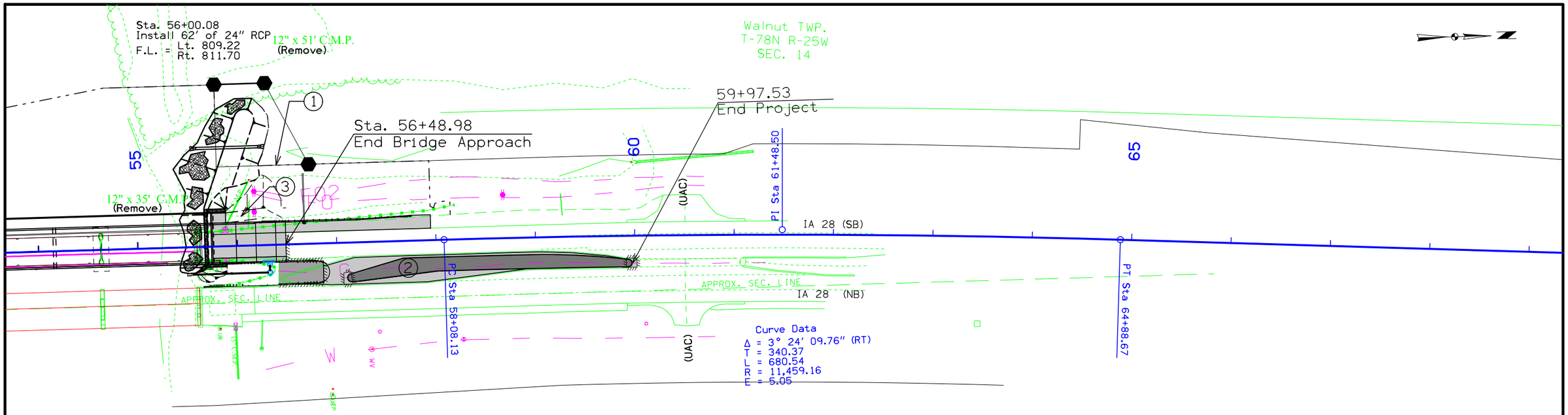
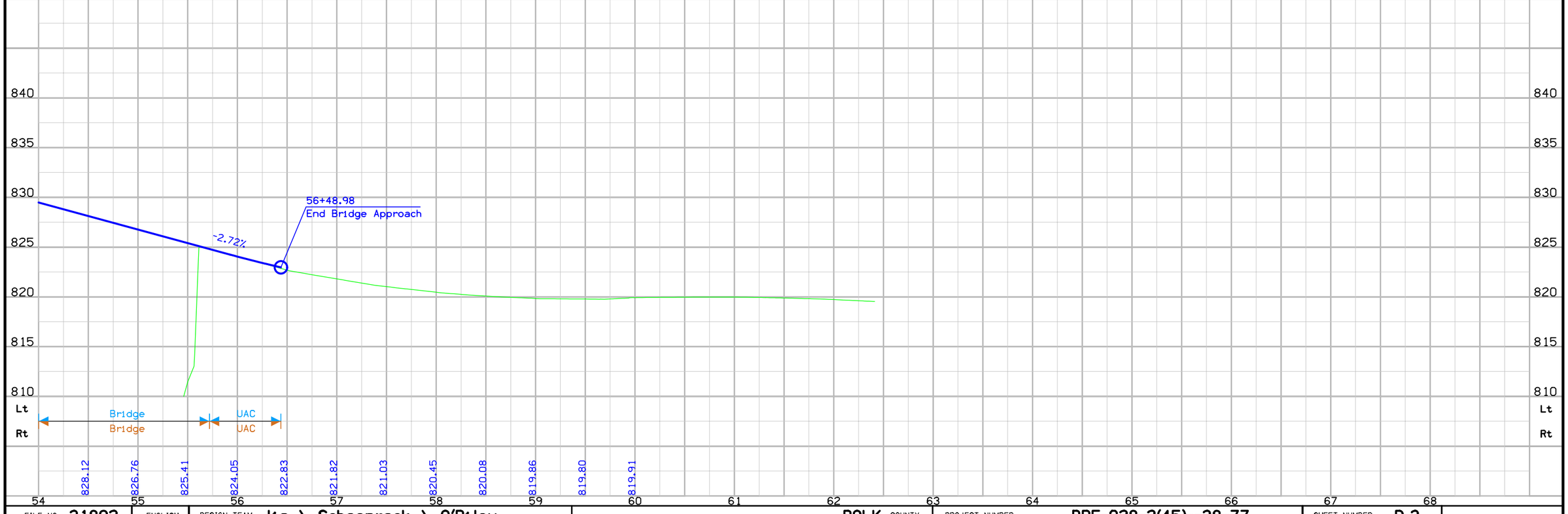


1. See Sheet U.2 for Clearing and Grubbing
2. Refer to L Sheets for median details.
3. Grading for Future Trail. See Sheet U.1 for additional information

IA 28 SB



FILE NO. 31892	ENGLISH	DESIGN TEAM J1a \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER D.3

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Polk County
BRFN-028-2(45)—39-77
SB IA 25 Bridge over Racoon River
PIN 17-77-028-010
Sap-0936

Party Personnel

Jeffrey Duncan- Party Chief
Paul Harry-Assistant Party Chief

Date(s) of Survey

Begin Date	04/15/2019
End Date	05/09/2019

General Information

Measurement units for this survey are US survey feet. This survey is for proposed bridge replacement along Iowa Highway 28 over the Racoon River. Project datum and control information is provided by Design Survey Office. This project is a Full DTM without Photo control.

Vertical Control

The vertical datum is NAVD88. Vertical Control was established on 3 monuments designated as points B117,WD55, and FENO1. These monuments are expected to hold vertical reasonably well. Datum was transferred from Iowa RTN reference stations to the projects monuments by using concurrent 6-hour static measurements and post processing connecting vectors. Geoid 12 B was used in processing. Additional control points were placed throughout the project using a GNSS Base-Rover setups.

This survey observed 1 NGS Control Monument with published NAVD88 heights to compare to local ground control:

NGS 2nd. order class Posted designated B117 has a published Elev. of 836.10
Survey Elev. = 836.211

This survey observed 1 City of West Des Moines Control Monument with published NAVD88 heights to compare to local ground control:

City of West Des Moines mark designated WD455 has a published Elev. Of 813.168
Survey Elev. = 813.168

Horizontal Control

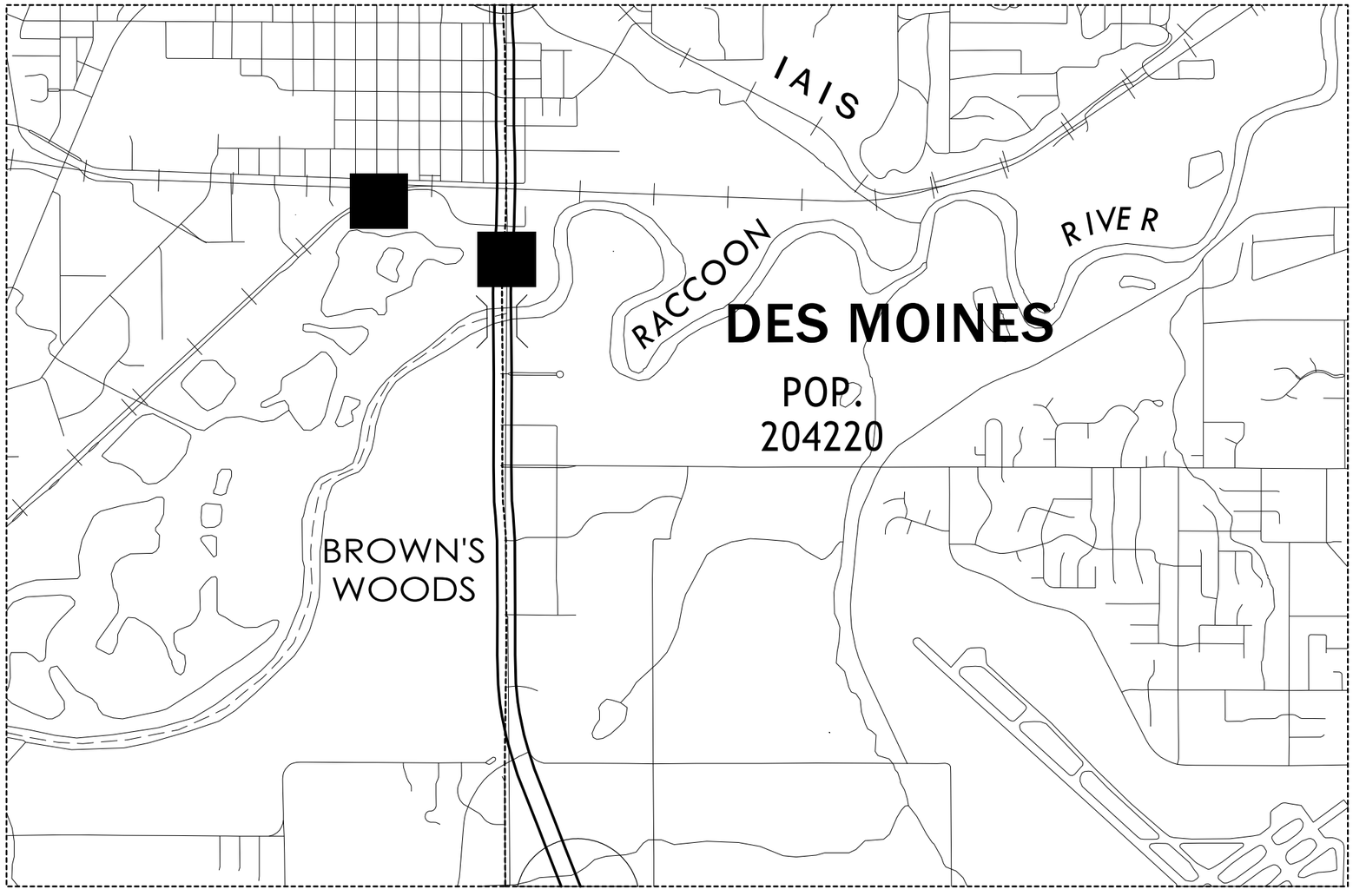
The project coordinate system for this survey is Iowa RCS Zone 8 (U.S. Survey Feet). This survey control is relative to IaRTN reference stations. IaRTN Reference Station coordinate are relative to the National Reference Station network datum NAD83 (2011) for Epoch 2010.00. Coordinates were determined by using concurrent 6-hour static measurements and post processing connecting vectors. Additional control points were placed throughout the project using a GNSS Base-Rover setups.

Alignment Information

The horizontal alignment for this survey is provided by District 1 ROW.

CONTROL POINT VICINITY MAP

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



HORIZ. DATUM: NAD83(2011) EPOCH 2010.00
VERT. DATUM: NAVD88
Ia. Regional Coordinate System Zone 8

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

HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING

HORIZ. DATUM: NAD83(2011) EPOCH 2010.00

VERT. DATUM: NAVD88

Ia. Regional Coordinate System Zone 8

Point Name	North Coordinate	East Coordinate	Elevation	Feature Code-Description
B117	7470386.27	18510611.73	836.21	CP FOUND USGS BENCH MARK DISC SET IN TOP OF CURB AT THE SOUTHEAST CORNER OF BRIDGE ON MCKINLEY AVE. IN DES MOINES_ IA. MONUMENT IS10.5FT SOUTH OF CENTERLINE 110.9FT WEST OF PK NAIL IN CENTER OF GREAT WESTERN TRAIL AT CENTERLINE OF MCKINLEY AVE. 5.2FT NW OF
WDMS5	7480430.723	18501413.56	813.17	CP FOUND WEST DES MOINES ALUMINUM CAP ON IRON PIN ENCASED IN 5FT PIPE WITH LID. 0.5 MILES WEST ALONG LINCOLN AVE. FROM THE INTERSECTION OF LINCOLN AVE. AND HWY 28 (63RD ST.) IN DES MOINES_ IA. AND 45.6FT SOUTH OF CENTERLINE LINCOLN AVE. MONUMENT IS 48.8FT NO
FENO1	7479386.994	18503682.21	815.76	FENO SET FENO MON 0.1 MILES S OF INT OF HWY 28 AND LINCOLN ST 12.8FT E OF PAVED SHOULDER EDGE 67.0FT N OF LUM POLE

ALIGNMENT COORDINATES

Name	Location	Point on Tangent			Begin Spiral			Begin Curve			Simple Curve PI or Master PI of SCS			End Curve			End Spiral		
		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates	
			Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easti
1	ML028	43+01.08 R1	7477346.30	18503581.99															
2	ML028							58+08.13 R1	7478853.35	18503581.74	61+48.50 R1	7479193.72	18503581.68	64+88.67 R1	7479533.49	18503601.82			
3	ML028	73+19.10 R1	7480362.47	18503650.97															

N

(1)
POLK COUNTY
BROWN'S WOODS

TEMPORARY EASEMENT FOR
CLEARING AND GRUBBING

48+45
℄128'

51+14±P
℄128'

55+81.14 EX R/W COR
℄162.97'

(2)
CITY OF WEST DES MOINES

56+32
℄163'

56+74
℄80'±Ex R/W

0 100
FEET

Right of Way Design Information
THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: ATINKEN /JLARSON
ROW #: NHSN-028-2(46)--2R-77
Plan Date: 08/18/21
Color Legend:
Property Lines
Temporary Easement
Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM	J1a\Schoenrock\O'Riley		POLK	COUNTY	PROJECT NUMBER	BRF-028-2(45)--38-77	SHEET NUMBER	H.1	

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108-23A
08-01-08

TRAFFIC CONTROL PLAN

1. At least one lane of IA 28 traffic shall be maintained in each direction at all times.

2. The Contractor shall contact the following canoe/kayak rental business about the upcoming bridge work as soon as possible so they can plan accordingly
   Name: Agro Adventures
   Email: goargoadventures@gmail.com
   Waterbody: Raccoon River
   Phone: 515-996-0063
   Street: 2201 George Flagg Pkwy
   City: Des Moines
   Zip: 50321

3. Use Iowa DNR's warning signage and requirements as stated and defined on roadway plan sheet J.6 to help paddling public avoid injury during removal and reconstruction of SB IA 28 bridge. See chapter six on signage in "Developing Water Trails in Iowa" found at this link: https://www.iowadnr.gov/things-to-do/canoeing-kayaking/water-trail-development [iowadnr.gov].

4. Contractor shall notify John Wenck via e-mail at John.Wenck@dnr.iowa.gov when temporary channel obstruction is placed and removed so that hazard symbol can be added to the DNR's interactive river mapping system and removed once project is complete.

5. Contractor shall notify Conservation Officer Nate Anderson via emial at Nate.Anderson@dnr.iowa.gov.

6. Contractor shall contact owner of boat ramp, Walnut Woods State Park, John Shipman at josh.shipman@dnr.iowa.gov regarding sign placement and management.

7. All construction debris shall be removed from the river channel when the temporary construction platform is removed.

108-26A
08-01-08

STAGING NOTES

Stage Construction for PPCB Bridge

Stage 1:
   Construction: Remove exisiting median curbs on both sides of the bridge and build median crossovers.
   Traffic: On existing outside lanes of both NB and SB directions.

Stage 2:
   Construction: New SB PPCB bridge and approaches.
   Traffic: IA SB traffic on NB inside lane via median crossovers. NB traffic on NB outside lane.
            Traffic cannot be switched to head to head until after 4/1/22.
Stage 3
   Construction: Dowelled median on both sides of the bridge.
   Traffic: On outside lanes of both NB and SB directions.

111-01
04-17-12

COORDINATED OPERATIONS

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

Project	Type of Work
None Provided	

108-25
10-21-14

511 TRAVEL RESTRICTIONS

Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No., Structure ID, or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
			No Restrictions									

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
			Temporary Lane Seperator

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
ς	Delineator		Type A Warning Light
	Temporary Barrier Rail		Direction of Traffic
	Pavement Removal		Safety Closure
	Sand Barrel Layout	1	Lane Identification

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

TRAFFIC CONTROL AND STAGING LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES J)

Sta. 44+90
15" X 116' RCP
DA = 1.55 ACRES F-H

IA 28 SB

IA 28 NB

Refer to TC-418
For Advanced Signing

Creston Ave

Refer to TC-418
For Advanced Signing

IA 28 SB

IA 28 NB

2" HMA Pad. (1)

(1) Refer to U Sheets.

Stage 1

FILE NO. 31892	ENGLISH	DESIGN TEAM J1a \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER J.3

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TC-418
d Signing
Limit: 35 mph

IA 28 SB

IA 28 NB

43+01.08
11.75 LT
Begin ELW4 Tape

43+94.81
1.90 LT
Begin ELW4 Paint

43+94.81
1.90 LT
End ELW4 Tape

43+94.81
11.26 RT
Begin ELY4 Paint

43+49.82
24.97 RT
Begin ELW4 Paint

44+46.53
24.57 RT
End ELW4 Paint

45+02.01
16.98 RT
End ELW4 Tape

44+46.53
24.57 RT
Begin ELW4 Tape

45+31.42
57.58 RT
Begin ELY4 Paint

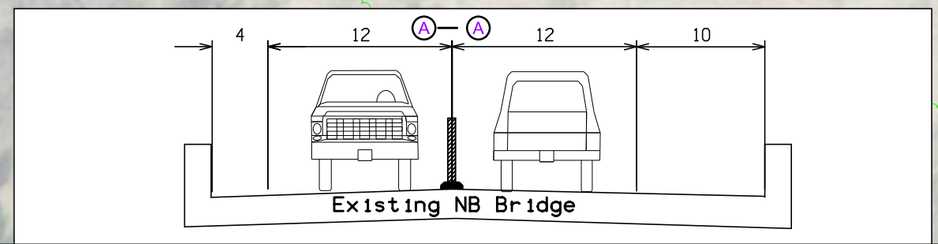
48+94.81
56.84 RT
Begin CLY4 Paint

48+94.81
56.84 RT
End ELY4 Paint

SPEED LIMIT 35
R2-1
48" x 60"

Creston Ave

Sta. 44+90
15" X 116' RCP
DA = 1.55 ACRES F-H



Close Outside Lane

61+24.02
2.75 RT
End ELW4 Paint

61+24.11
10.75 RT
End ELW4 Paint

58+08.12
57.59 RT
End ELY4 Paint

59+08.59
44.85 RT
End ELY4 Tape

58+08.12
57.59 RT
Begin ELY4 Tape

56+23.81
57.00 RT
Begin ELY4 Paint

56+23.81
57.00 RT
End CLY4 Paint

Refer to TC-418
For Advanced Signing
Regulatory Speed Limit: 35 mph

Stage 2

FILE NO. 31892	ENGLISH	DESIGN TEAM J1a \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER J.4

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Sta. 44+90
15" X 116' RCP
DA = 1.55 ACRES F-H

IA 28 SB

IA 28 NB

Refer to TC-418
For Advanced Signing

Creston Ave

Place Dowelled Median

Refer to TC-418
For Advanced Signing

IA 28 SB

IA 28 NB

Place Dowelled Median

Stage 3

FILE NO. 31892	ENGLISH	DESIGN TEAM J1a \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER J.5

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3″ Letterheight

2″ Letterheight

Warning

Bridge Construction
Downstream at 63rd St

No Thru Traffic
Recommended

30″ × 18″

[1]

8″ Letterheight

6″ Letterheight

Warning

Bridge Construction
Downstream at 63rd St

No Thru Traffic
Recommended

96″ × 64″

[2]

9″ Letterheight

7″ Letterheight

Danger

No Thru Traffic

66″ × 30″

[3] [4]

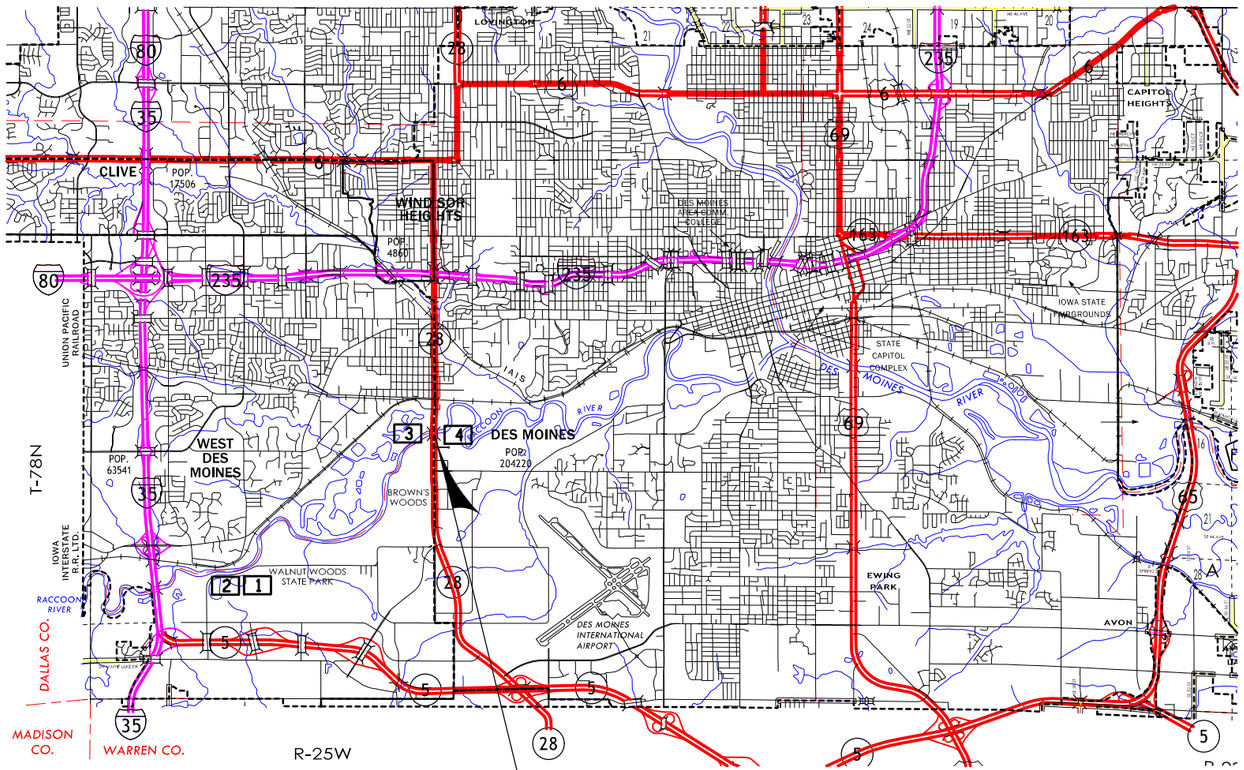
PADDLING ROUTE SIGNAGE COORDINATION

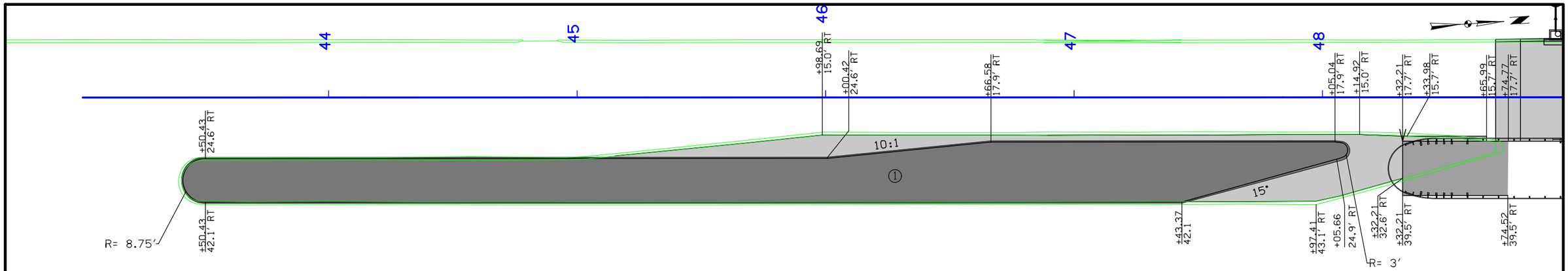
[1] Place sign facing parking lot from Walnut Woods Access.

[2] Place sign in close association with the boat ramp so it is visible upstream at a 45° angle toward the center of the river

[3] Place sign at the center of upstream bridge facing upstream. Sign should remain visible at all times from upstream, which may mean they need to be relocated a couple times during the construction project when old bridge is deolished and new bridge is being erected.

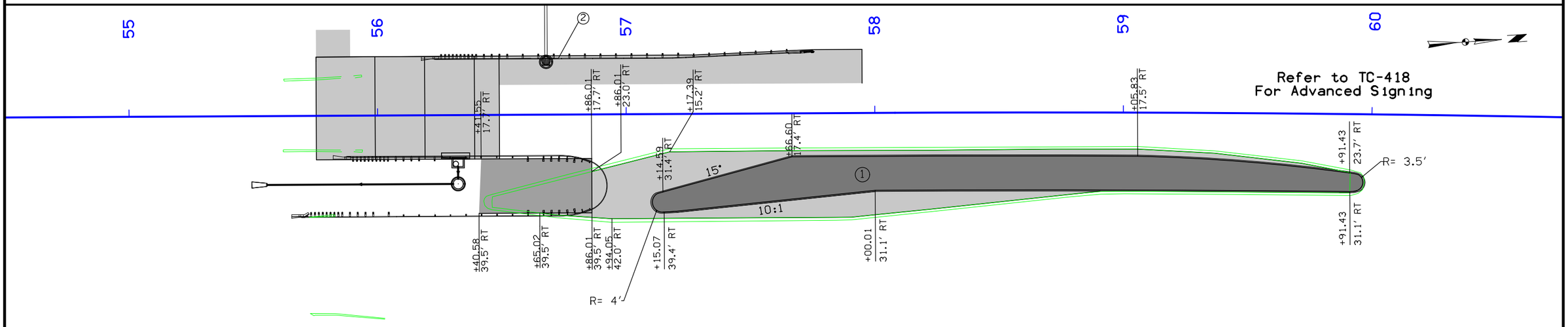
[4] Place sign at the center of downstream bridge facing downstream. Sign should remain visible at all times from downstream.





① Dowelled 6" Median quantity: 1072.3 SY

IA 28 South Median Geometrics



① Dowelled 6" Median quantity: 435.4 SY

② Extend 4" sloped curb to sta. 56+72.85. Refer to BA-203 for curb details.

③ Total Quantity of 6" Dowelled Median: 1507.7 SY

IA 28 North Median Geometrics

FILE NO. 31892	ENGLISH	DESIGN TEAM J1a \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER L.1

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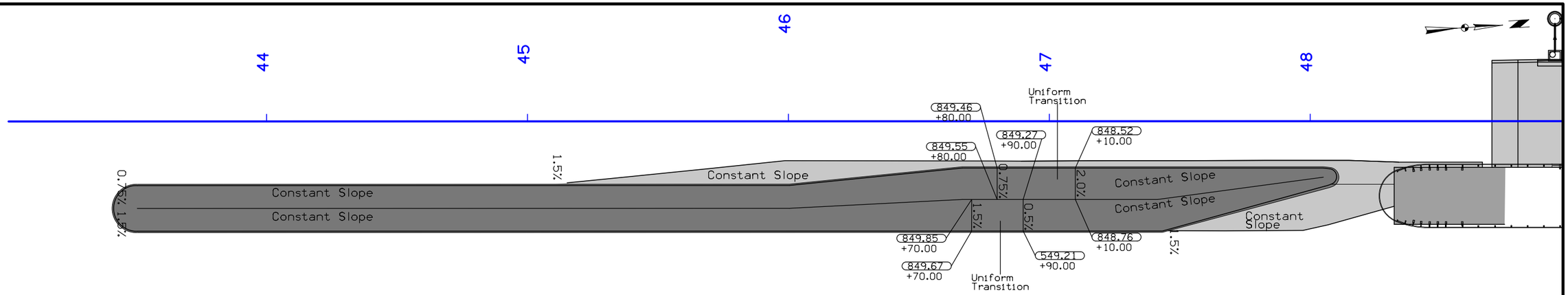
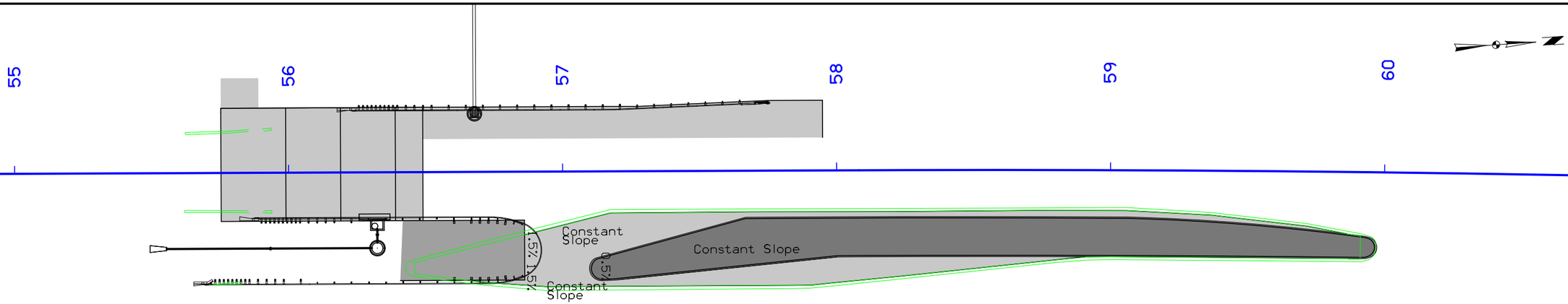


IA 28
South Median
Staking



IA 28
North Median
Staking

FILE NO. 31892	ENGLISH	DESIGN TEAM J1a \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER L.2

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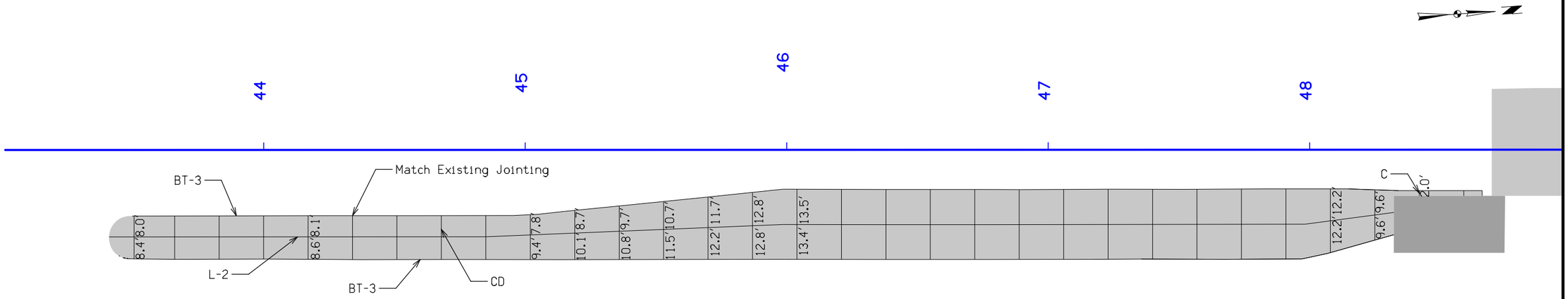
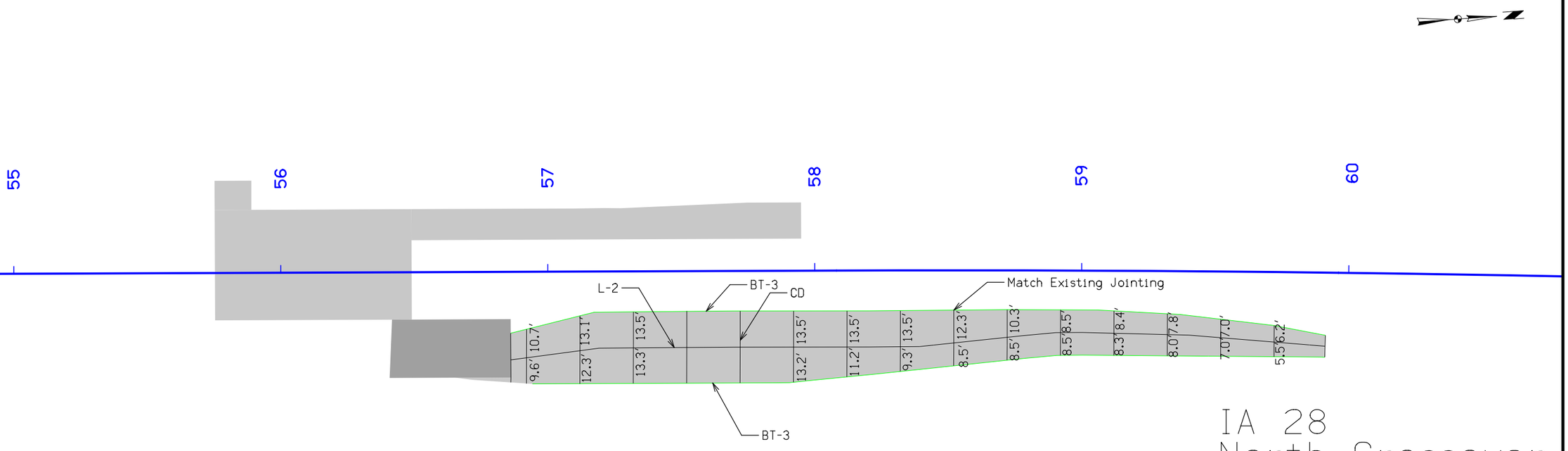


IA 28
South Crossover
Jointing



IA 28
North Crossover
Jointing

FILE NO. 31892	ENGLISH	DESIGN TEAM J1a \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER L.3

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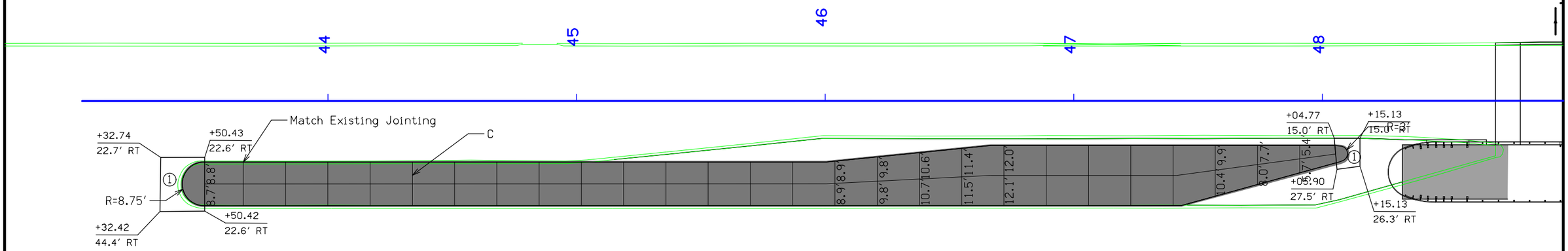
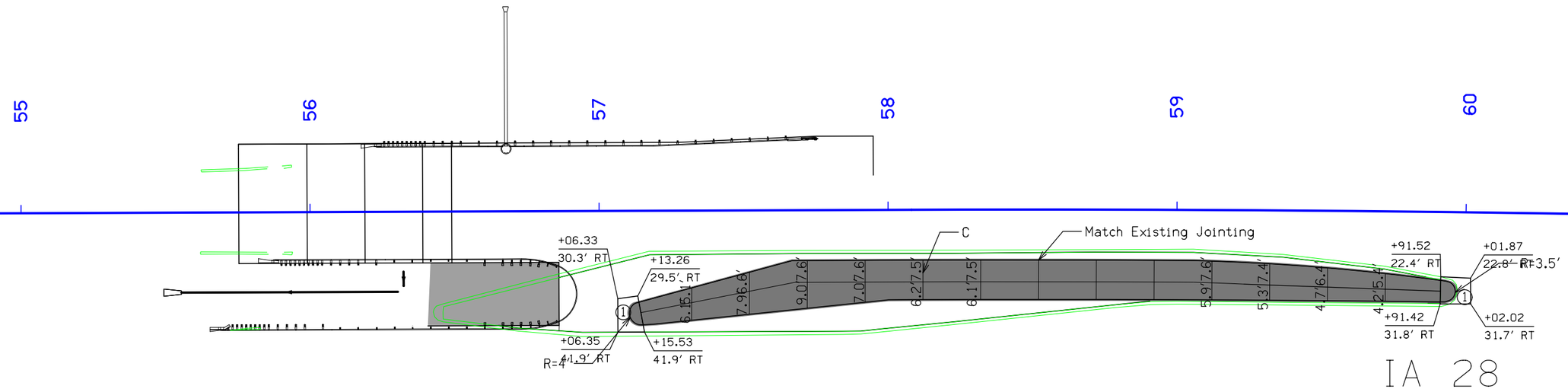


① Ramped Median nose boxout.

IA 28 South Median Jointing



① Ramped Median nose boxout.

IA 28 North Median Jointing

FILE NO. 31892	ENGLISH	DESIGN TEAM J1a \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER L.4

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STORM SEWER

(1) Diameter or equivalent diameter
* Bid Item
** For SW-545

INTAKES AND UTILITY ACCESSES

No.	Location Station and Offset	*Type or Standard Road Plan	Form Grade Elev.	Bottom Well Elev.	Extension Length** FT	Notes
I-1	48+93.81, 23.5' RT	SW-507	842.75	836.75		
I-2	48+93.81, 37.6' RT	SW-401	839.44	829.68		
O-1	50+14.75, 54.6' RT	DR-203				
I-3	56+26.03, 21.2' RT	SW-507	823.05	819.05		
I-4	56+26.03, 27.6' RT	SW-401	823.48	818.62		
O-2	55+55.36, 27.6' RT	DR-201				

PIPES

Design Length, Slope, and Flowlines are calculated from inside wall to inside wall along CL of pipe. An additional 2 ft length is added to each side of the Design Length to account for estimated length to center of structures.

Line Number	Intake/ Utility Access No. From	To	Class 'D'	Pipe Size (1) IN	Bid* Length FT	Design Length FT	Slope %	Connected Pipe Joint (DR-121) Type	Flow Lines: Inlet Elevation	Outlet Elevation	Other Elevation	Pipe Profile Sheet No.	Notes
P-1	I-1	I-2	2000	15	15	10.6	2		837.05	836.84		M.4	
P-2	I-2	O-1	2000	15	118	116.0	2.0	3	830.18	811.27		M.4	(1)
P-3	I-3	I-4	2000	15	9	5.0	2.6		819.55	819.42		M.5	
P-4	I-4	O-2	2000	15	72	70.0	3.8	3	819.12	816.25		M.5	
				Totals:									
				24" RCP	158								
				24" HDPE	56								
				Intakes	2			(1) DR-641. A= 60',B= 38',C= 2',E= 18'					
				Manholes	2								

SURVEY SYMBOLS

—--W—--	Existing Water Line
—--W2—--	Existing Water Line (Second Company)
—-San.—-·	Existing Sanitary Sewer Line
---T---	Existing Telephone Line
---T2---	Existing Telephone Line (Second Company)
--FO-1--	Existing Fiber Optics Telephone Line
—-St.S.—-	Existing Storm Sewer Line
—--G—--	Existing Gas Line
—-G-HP—-	Existing High Pressure Gas Line
—--G2—--	Existing Gas Line (Second Company)
—-G2-HP—-	Existing High Pressure Gas Line (Second Company)
------E------	Existing Power Line
------E2------	Existing Power Line (Second Company)
----TV----	Cable Television Line
⊙ FP	Filler Pipe
⊙ GV	Gas Valve
⊙ WV	Water Valve
⊙ SL	Speed Limit Sign
⊙ MM	Mile Marker Post
□ SIGN	Sign
□ TCB	Traffic Signal Control Box
□ RRB	Rail Road Signal Control Box
□ TSB	Telephone Switch Box
□ EB	Electric Box
	Timber

UTILITY LEGEND

--FO-1--

Aureon Network Services
Jeff Klocko
7760 Office Plaza Drive South
West Des Moines IA 50266
jeff.klocko@aureon.com
(515) 830-0445

--FO-1--
---T---

CenturyLink
Steve Parker
2103 E. University Ave.
Des Moines IA 50317
steven.parker4@centurylink.com
(515)265-0968

--FO-1--

Consolidated Communications
Westen Grow
2859 99th St.
Urbandale IA 50322
weston.grow@eventis.com
(515) 867-4769

--FO-1--

City of Des Moines
Steve Naber
400 Robert D Ray Dr.
Des Moines IA 50309
sinaber@dmgov.org
(515) 283-4920

—--W—--

Des Moines Water Works
Danny Klopfer
2201 George Flag Parkway
Des Moines IA 50321
dannyklopfer@dmww.com
(515) 283-8754

----TV----

Mediacom Communications Corp.
Paul May
2205 Ingersoll Ave.
Des Moines IA 50312
pmay@mediacomcc.com
(515) 246-2252

—--G—--

MidAmerican Electric Dist. & Gas
Tim Davis
3500 104th St.
Urbandale IA 50322
tldavis@midamerican.com
(515) 242-4224

------E------

MidAmerican Electric Trans.
William Schierbrock
106 East Second St.
Davenport IA 52801
wjschierbrock@midamerican.com
(563) 333-8155

--FO-1--

Unite Private Networks
Clark Lundy
2320 Wakonda View Dr.
Des Moines IA 50321
clark.lundy@upnfiber.com
(515) 321-3336

—--W—--

West Des Moines Water Works
William Mabuce
4200 Mills Civic Parkway,
Suite 1D
West Des Moines IA 50265
william.mabuce@wdmww.com
(515) 222-3464

--FO-1--
---T---

Windstream Communications
Jim Wiand
115 S. 2nd Ave. W.
Newton IA 50208
james.wiand@windstream.com
(641) 787-2270

PLAN VIEW COLOR LEGEND OF STORM SEWER SHEETS

LINEWORK	Design Color No.	
Gray, Dark	(112)	Existing Topographic Features, Utilities, and Labels
Black	(17)	Proposed Storm Sewer Details, Alignment, Stationing, Tic Marks, and Alignment Annotation
SHADING	Design Color No.	
Gray, Light	(48)	Proposed Pavement Shading

PROFILE VIEW COLOR LEGEND OF STORM SEWER SHEETS

LINEWORK	Design Color No.	
Gray, Dark	(112)	Existing Ground Line Profile and Existing Utilities Information
Black	(17)	Proposed Pipes and Intakes

PLAN VIEW LINE STYLE LEGEND OF STORM SEWER SHEETS

- Plug and Abandon Existing Pipe or Structure
- Removal of Existing Pipe or Structure
- Previously Constructed Pipe or Structure
- Direction of Pipe Flow

PROFILE VIEW LINE STYLE LEGEND OF STORM SEWER SHEETS

- Existing Ground
- Proposed Ground
- Previously Constructed Pipe or Structure
- Proposed Pipe or Structure

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

RIGHT-OF-WAY LEGEND

- Proposed Right-of-Way
- Existing and Proposed Right-of-Way
- Easement and Existing Right-of-Way
- Borrow
- Easement (Temporary)
- Easement
- Excess
- A/C Access Control

STORM SEWER LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES M)

FILE NO. 31892	ENGLISH	DESIGN TEAM Jia \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER M.2

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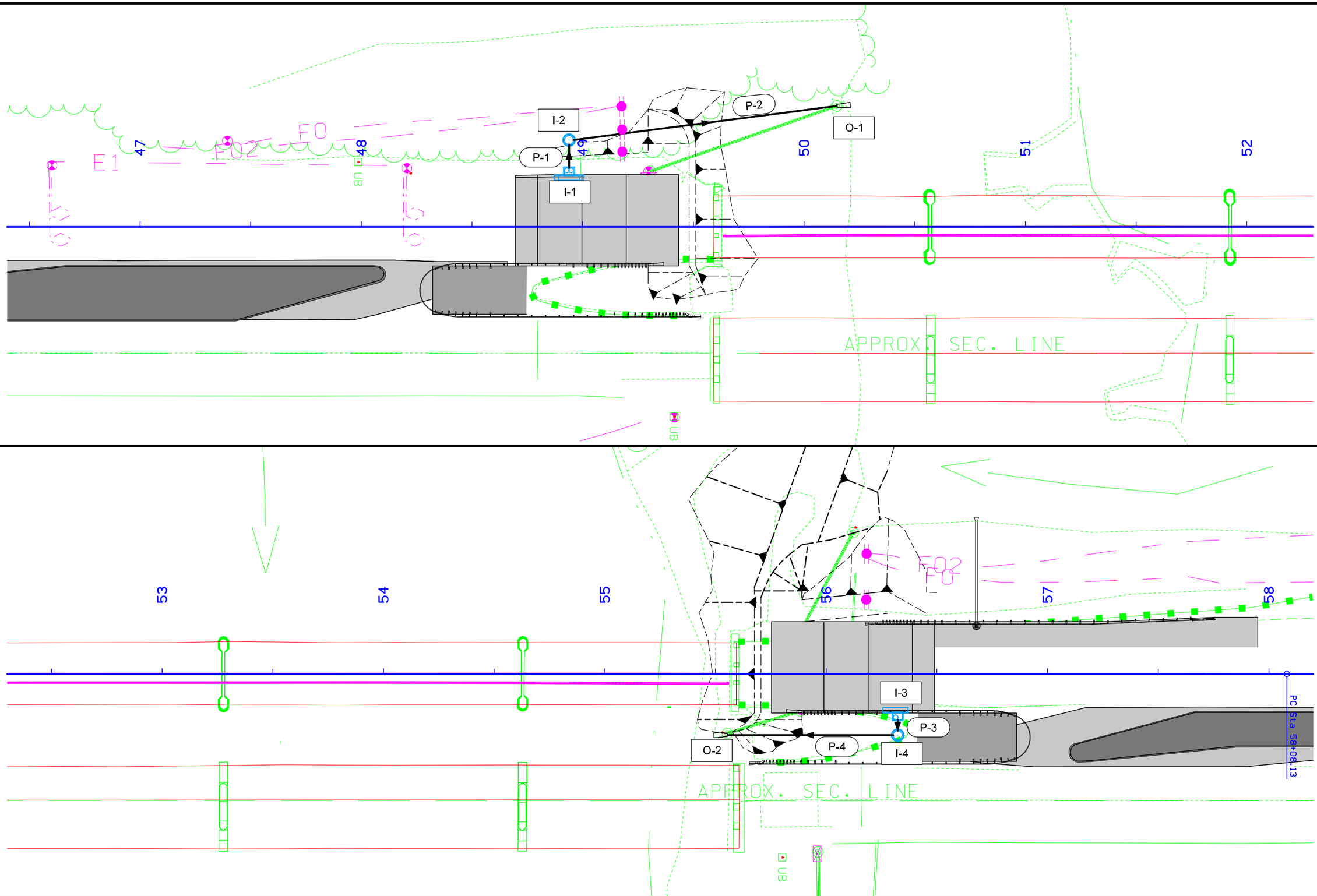

FILE NO. 31892	ENGLISH	DESIGN TEAM Jia \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER M.3

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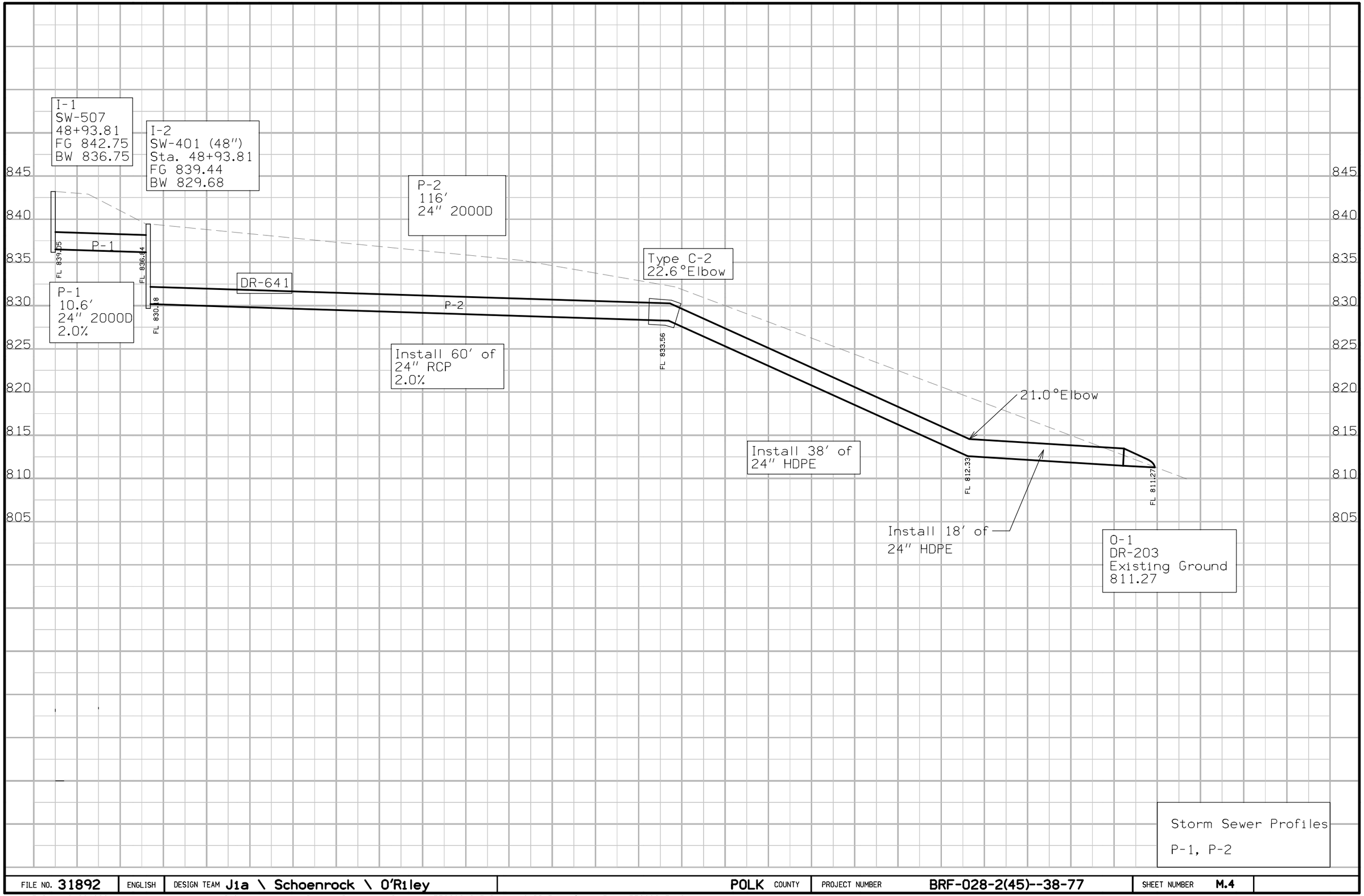

Storm Sewer Profiles

P-1, P-2

FILE NO. 31892	ENGLISH	DESIGN TEAM Jia \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER M.4

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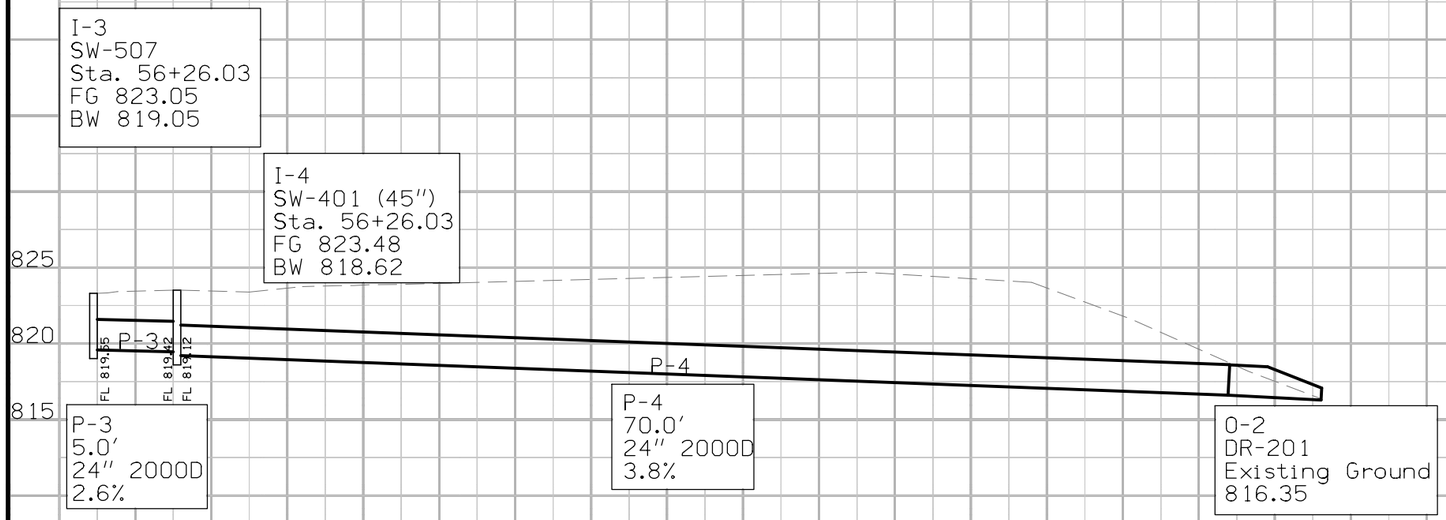


Storm Sewer Profiles

P-3, P-4

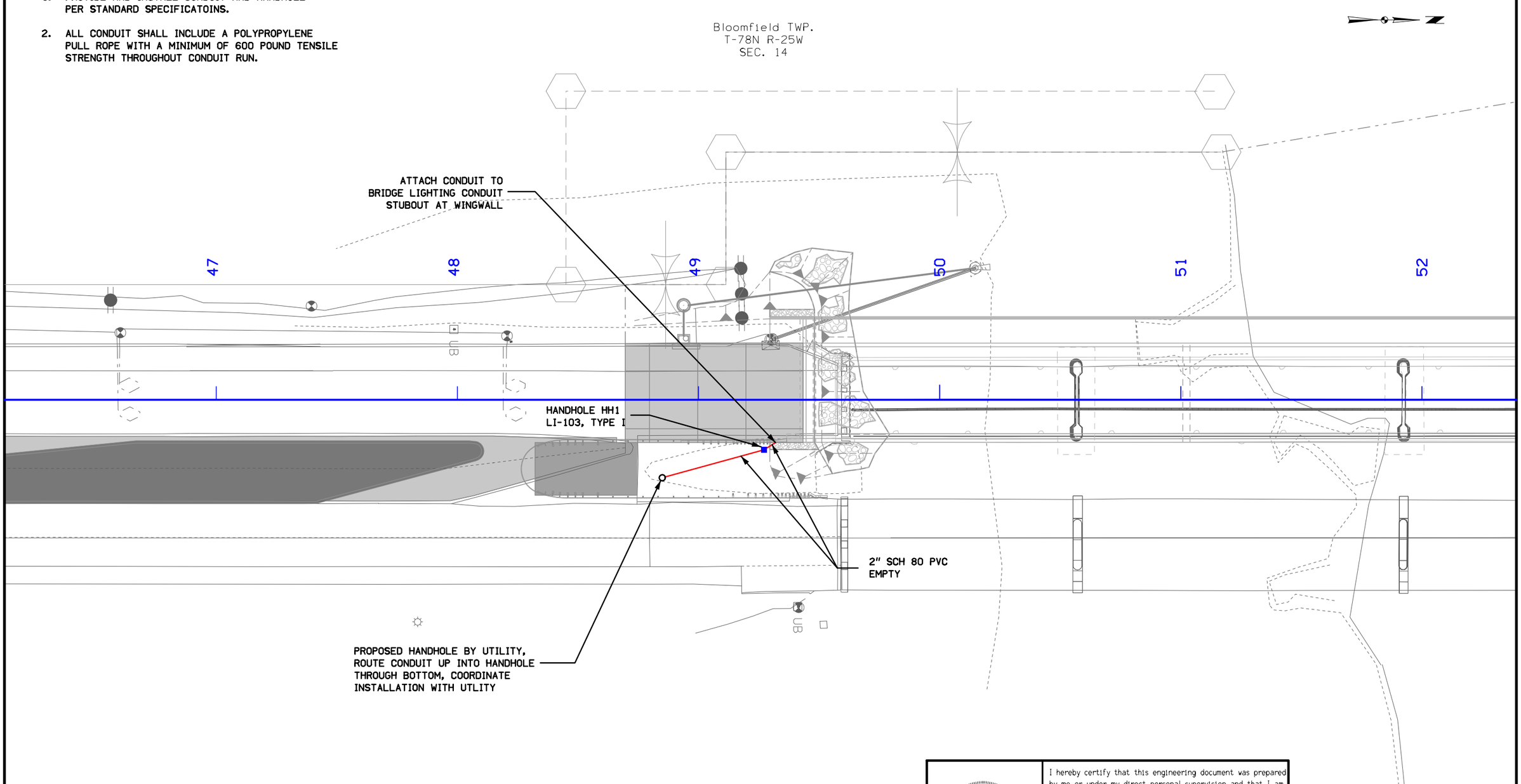
FILE NO. 31892	ENGLISH	DESIGN TEAM J1a \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER M.5

2:23:45 PM 9/28/2021 tschoen pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\7702801017\Design\CADD_Files\Sheet_Files\77028045_M04.dgn

NOTES

1. PROVIDE AND INSTALL CONDUIT AND HANDHOLE PER STANDARD SPECIFICATOINS.

2. ALL CONDUIT SHALL INCLUDE A POLYPROPYLENE PULL ROPE WITH A MINIMUM OF 600 POUND TENSILE STRENGTH THROUGHOUT CONDUIT RUN.



ESTIMATED ELECTRICAL QUANTITIES		
ITEM	UNIT	TOTAL
2" SCH 80 PVC CONDUIT, EMPTY	LF	60
HANDHOLE, LI-103, TYPE I	EACH	1

0 20 FEET

LICENSED PROFESSIONAL ENGINEER
STEVEN R. JUNOD
13829
IOWA

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

Signature 9 / 20 / 2021 Date

STEVEN R. JUNOD, P.E.
Printed or Typed Name

My license renewal date is December 31, 2022

Pages or sheets covered by this seal: P.1

CONDUIT LAYOUT

FILE NO.	ENGLISH	DESIGN TEAM IOWA DOT \ HNTB \ HR GREEN	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER P.1

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LANDSCAPE DESIGN

STATE OF IOWA
Seana K. Godbold
LANDSCAPE ARCHITECT NO. 508
PROFESSIONAL LANDSCAPE ARCHITECT

I hereby certify that the portion of this technical submission described below was prepared by me or under my direct supervision and responsible charge. I am a duly licensed professional landscape architect under the laws of the state of Iowa.

Signature — Date: 8/2/2021

Seana K. Godbold
Printed or Typed Name

My license renewal date is June 30, 2021

Pages or sheets covered by this seal: RC.01 - 05; RR.01 - 05

FILE NO. 31892	ENGLISH	DESIGN TEAM GODBOLD\POHLEN\MCDONALD	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER RC.1

ESTIMATED PROJECT QUANTITIES AND REFERENCE NOTES

Roadside :

Item no.	Item Code	Item	Unit	Quantities	Estimate Reference Notes
				Estimated	
				Roadside	
1	2601-2634100	MULCHING	ACRE	1.2	Perform mulching according to Article 2601.03, E, 2, of the Standard Specifications. Anchor mulch into the soil using mulch anchoring equipment with a minimum of two passes. Item is included for areas requiring reshaping and seedbed preparation. Use mulch that is Certified Noxious Weed Seed Free Mulch as certified by the Iowa Crop Improvement Association or adjacent states Crop Improvement Associations. Mulch Rate: 1 1/2 tons of dry cereal straw or native grass straw per acre.MULCHING Mulching shall be applied as described in standard speification section 2601. After seeding, mulch all areas disturbed by grading except where slope protection has been applied.
2	2601-2636043	SEEDING AND FERTILIZING (RURAL)	ACRE	1.2	Seed and fertilize all areas 8 foot adjacent to the shoulder mainline, medians, and side according to Article 2601.03, C, 3, of the Standard Specifications. Use ground driven equipment.
3	2602-0000020	SILT FENCE	LF	462.5	Refer to Tab. 100-17. The tabulation includes estimated locations for placement of "Silt Fence" 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.
4	2602-0000030	SILT FENCE FOR DITCH CHECKS	LF	99	Refer to Tab 100-18. The tabulation includes estimated locations for placement of "Silt Fence for Ditch Checks" to address erosion to be encountered during construction. Verify the specific locations with the Engineer prior to beginning placement. Bid item includes 50% additional quantity for field adjustments and replacements.
5	2602-0000071	REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS	LF	56.2	This item is included for silt fence and silt fence for ditch check removal required for staging reasons, removal to allow for replacement (replacement to be paid separately), or for areas that have achieved 70% permanent growth.This item is included for silt fence and silt fence for ditch check removal. Remove silt fence and posts after mulching or vegetation is established and approved by the engineer.
6	2602-0000101	MAINTENANCE OF SILT FENCE OR SILT FENCE FOR DITCH CHECK	LF	561.5	This item is included for clean-out and repair of the silt fence and silt fence for ditch checks during the project.
7	2602-0000150	STABILIZED CONSTRUCTION ENTRANCE, EC-303	LF	200	
8	2602-0000212	FLOATING SILT CURTAIN (HANGING)	LF	385	
9	2602-0000240	MAINTENANCE OF FLOATING SILT CURTAIN	LF	192.5	
10	2602-0010010	MOBILIZATIONS, EROSION CONTROL	EACH	1	
11	2602-0010020	MOBILIZATIONS, EMERGENCY EROSION CONTROL	EACH	1	

111-25
10-18-11

INDEX OF TABULATIONS

Tabulation	Tabulation Title	Sheet No.
RC Sheets		
	SIGNATURE PAGE	RC.1
	ESTIMATED PROJECT QUANTITIES AND REFERENCE NOTES	RC.2
100-10	FLOATING SILT CURTAINS	RC.3
100-17	TABULATION OF SILT FENCES	RC.3
100-18	SILT FENCES FOR DITCH CHECKS	RC.3
100-23	ROCK EROSION CONTROL	RC.3
100-34	STORMWATER DRAINAGE BASIN AND STORAGE	RC.3
105-4	STANDARD ROAD PLANS	RC.3
110-12	POLLUTION PREVENTION PLAN	RC.4 - RC.5
111-25	INDEX OF TABULATIONS	RC.3
281-1	SECTION 404 PERMIT AND CONDITIONS	RC.3
281-3	STORM WATER BEST MANAGEMENT PRACTICES	RC.3
282-1	RESTRICTED STREAM ACCESS	RC.3

105-4
10-18-11

STANDARD ROAD PLANS

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

Number	Date	Title
EC-201	04-20-21	Silt Fence
EC-202	10-21-14	Floating Silt Curtain
EC-301	10-18-16	Rock Erosion Control (REC)
EC-303	10-19-21	Stabilized Construction Entrance
EC-502	04-21-15	Seeding in Rural Areas
TC-1	10-15-19	Work Not Affecting Traffic (Two-Lane or Multi-Lane)

100-17
04-20-10

TABULATION OF SILT FENCES

Refer to EC-201

Location			Length	Remarks
Begin Station	End Station	Side	LF	
48+45.00	49+45.00	Lt	100.0	
49+00.00	49+85.00	Lt	100.0	
56+00.00	57+70.00	Lt	170.0	
Total			**370.0**	
SF Bid Totals:			**462.5**	**125% of Tab Total**
SF maintenance Totals:			**46.3**	**10% of Bid Total**
SF Removal Totals:			**462.5**	**100% of Bid Total**

281-1
10-18-16

SECTION 404 PERMIT AND CONDITIONS

Construct this project according to the requirements of U.S. Army Corps of Engineers Nationwide permit #6, Permit No. 2020-1319. A copy of this permit is available from the Iowa DOT website (http://www.envpermits.iowadot.gov/). The U.S. Army Corps of Engineers reserves the right to visit the site without prior notice.

281-3
10-17-17

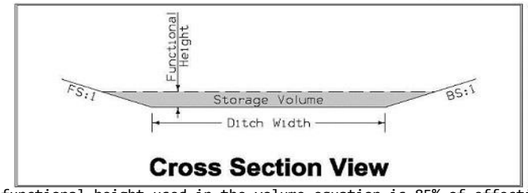
STORM WATER BEST MANAGEMENT PRACTICES

When the following best management practices are used, they are intended to account for disturbed areas where storage volume cannot be provided: Silt Fence, Silt Fence for Ditch Protection Floating Silt Curtain, Seeding

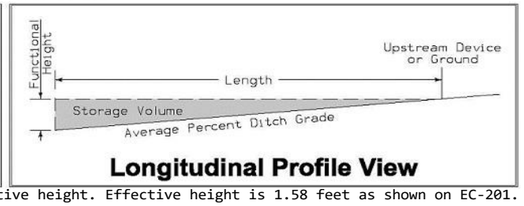
100-18
10-16-18

SILT FENCES FOR DITCH CHECKS

Possible Standard: EC-201



Cross Section View



Longitudinal Profile View

* The functional height used in the volume equation is 85% of effective height. Effective height is 1.58 feet as shown on EC-201.
* Volume equation: $[0.5*Spacing*(0.5*H^2*FS+DW*H+0.5*H^2*BS)]$

Basin No.	Type	Location	Side	Bid Items			Stormwater Storage Volume Summary					Remarks
		Station		Installation	Maintenance	Removal	Foreslope	Backslope	Ditch Width	Avg.% Slope	Volume*	
				LF	LF	LF	FS:1	BS:1	FT	Ditch Grade	CF	
2	1	56+80.00	Lt	22.0	2.2	22.0	3.0	3.0	10.0	2.7%	471.0	
2	1	57+30.00	Lt	22.0	2.2	22.0	3.0	3.0	10.0	2.7%	471.0	
2	1	57+80.00	Lt	22.0	2.2	22.0	3.0	3.0	10.0	2.7%	471.0	
		SFDC Tab Totals:		**66.0**	**6.6**	**66.0**						
		SFDC Bid Totals:		**99.0**			**150% of Tab Total**					
		SFDC Main. Totals:			**9.9**		**10% of Bid Total**					
		SFDC Rem. Totals:				**99.0**	**100% of Bid Total**					

100-10
10-21-14

FLOATING SILT CURTAINS

Refer to EC-202

Station	Hanging	Containment	Clean-out (Containment)	Maintenance of Floating Silt Curtain	Remarks
	LF	LF	LF	LF	
51+35.00	160.0			80.0	
54+64.00	225.0			112.5	
Totals:	**385.0**			**192.5**	

282-1
10-19-10

RESTRICTED STREAM ACCESS

A low water crossing for the Contractor's convenience is not allowed on this project. Stream bank disturbance and access to Racoon River is not allowed unless specifically designated in the plans. No other access will be allowed.

100-23
04-17-18

ROCK EROSION CONTROL

Refer to EC-301 and Detail 570-8

Location				L	W	Rock Erosion Control (REC)					Material Bid Quantities			Remarks
Road Identification	Begin Station	End Station	Side			Type 1 Rock Ditch Check	Type 2 Rock Ditch	Type 3 Rock Flume	Type 4 Rock Splash Basin	Type 5 Rock Slope Protection	Eng. Fabric	Class E Revetment	Erosion Stone	
			Lt./Rt.	FT	FT						SY	TON	TON	
Hwy 28	55+49.00	55+55.00	Lt	6	6				X		4.0		4.3	
								Rock Erosion Control Tab Totals:			**4.0**		**4.3**	
									Engineering Fabric Bid Totals:		**5.2**			**130% of Tab Total**
									Erosion Stone Bid Totals:				**5.6**	**130% of Tab Total**

100-34
10-17-17

STORMWATER DRAINAGE BASIN AND STORAGE

Refer to EC Standards and 570s Details.

Drainage Basin Location						Summary of Stormwater Storage							Remarks
Basin No.	Station to Station		Side	Discharge Point		Total Disturbed Area	Disturbed Area with Storage Provided	Disturbed Area without Storage Provided	Best Management Practice	Total Storage Volume Provided	Total Storage Volume Required	Storage Volume Met?	
				Station	Side	Acres	Acres	Acres		CF	CF	Yes/No	
1	48+69.00	51+81.00	Lt	51+81.00	North	0.5	0.5	0.0		0.0	1944.0	No	
2	54+74.00	58+14.00	Lt	54+74.00	South	0.7	0.7	0.0	Silt Fence for Ditch Check (EC-201)	1413.1	2592.0	No	

FILE NO. 31892	ENGLISH	DESIGN TEAM GODBOLD\POHLEN\MCDONALD	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER RC.3

POLLUTION PREVENTION PLAN

This project is regulated by the requirements of the Iowa Department of Natural Resources (DNR) National Pollutant Discharge Elimination System (NPDES) General Permit No. 2 OR an Iowa Department of Natural Resources (DNR) National Pollutant Discharge Elimination System (NPDES) individual storm water permit. The Contractor shall carry out the terms and conditions of this permit and the Pollution Prevention Plan (PPP).

This Base PPP includes information on Roles and Responsibilities, Project Site Description, Controls, Maintenance Procedures, Inspection Requirements, Non-Storm Water Controls, Potential Sources of Off Right-of-Way Pollution, and Definitions. This plan references other documents rather than repeating the information contained in the documents. A copy of this Base Pollution Prevention Plan, amended as needed during construction, will be readily available for review.

All contractors shall conduct their operations in a manner that controls pollutants, minimizes erosion, and prevents sediments from entering waters of the state and leaving the highway right-of-way. The Contractor shall be responsible for compliance and implementation of the PPP for their entire contract. This responsibility shall be further shared with subcontractors whose work is a source of potential pollution as defined in this PPP.

I. ROLES AND RESPONSIBILITES

A. Designer:
1. Prepares Base PPP included in the project plan.
2. Prepares Notice of Intent (NOI) submitted to Iowa DNR.
3. Is signature authority on the Base PPP. If consultant designed, signature from Contracting Authority is also required.

B. Contractor:
1. Signs a co-permittee certification statement adhering to the requirements of the NPDES permit and this PPP. All co-permittees are legally required under the Clean Water Act and the Iowa Administrative Code to ensure compliance with the terms and conditions of this PPP.
2. Designates a Water Pollution Control Manager (WPCM), who has the duties and responsibilities as defined in Section 2602 of the Standard Specifications.
3. Submits an Erosion Control Implementation Plan (ECIP) and ECIP updates according to Section 2602 of the Standard Specifications.
4. Installs and maintains appropriate controls. This work may be subcontracted as documented through Subcontractor Request Forms (Form 830231).
5. Supervises and implements good housekeeping practices according to Paragraph III, C, 2.
6. Conducts joint required inspections of the site with inspection staff. When Contractor is not mobilized on site, Contractor may delegate this responsibility to a trained or certified subcontractor. Contracting Authority also may waive joint inspection requirement during winter shutdown. In both circumstances, WPCM (or trained or certified delegate from the Contractor) is still responsible to review and sign inspection reports.
7. Complies with training and certification requirements of Section 2602 of the Standard Specifications.
8. Submits amended PPP site map according to Section 2602 of the Standard Specifications.

C. Subcontractors:
1. Sign a co-permittee certification statement adhering to the requirements of the NPDES permit and this PPP if: responsible for sediment or erosion controls; involved in land disturbing activities; or perorming work that is a source of potential pollution as defined in this PPP. Subcontracted work items are identified in Subcontractor Request Forms (Form 830231). All co-permittees are legally required under the Clean Water Act and the Iowa Administrative Code to ensure compliance with the terms and conditions of this PPP.
2. Implement good housekeeping practices according to Paragraph III, C, 2.

D. RCE/Project Engineer:
1. Is Project Storm Water Manager.
2. On projects where DOT is the Contracting Authority, is current with erosion control training or certification.
3. Takes actions necessary to ensure compliance with storm water requirements including, where appropriate, issuing stop work orders, and directing additional inspections at construction project sites that are experiencing problems with achieving permit compliance.
4. Orders the taking of measures to cease, correct, prevent, or minimize the consequences of non-compliance with the storm water requirements of the Applicable Permit.
5. Supervises all work necessary to meet storm water requirements at the Project, including work performed by contractors and subcontractors.
6. Requires employees, contractors, and subcontractors to take appropriate responsive action to comply with storm water requirements, including requiring any such person to cease or correct a violation of storm water requirements, and to order or recommend such other actions as necessary to meet storm water requirements.
7. Is familiar with the Project PPP and storm water site map.
8. On projects where DOT is Contracting Authority, is responsible for periodically monitoring inspection reports to determine whether deficiencies identified in inspection reports were adequately and timely addressed, and if not, has the authority and responsibility to direct immediate actions to correct the deficiencies.
9. Is the point of contact for the Project for regulatory officials, Inspector, contractors, and subcontractors regarding storm water requirements.
10. Is signature authority on Notice of Discontinuation.
11. Maintains an up-to-date record of contractors, subcontractors, and subcontracted work items through Subcontractor Request Forms (Form 830231).
12. Makes information to determine permit compliance available to the DNR upon their request.

E. Inspector:
1. Updates PPP through fieldbook entries and storm water site inspection reports if there is a change in design, construction, operation, or maintenance which has a significant effect on the discharge of pollutants from the project.
2. Makes information to determine permit compliance available to the DNR upon their request.
3. Conducts joint required inspections of the site with the contractor/subcontractor.
4. Completes an inspection report after each inspection.
5. Is signature authority on storm water inspection reports.

II. PROJECT SITE DESCRIPTION

A. This Pollution Prevention Plan (PPP) is for the construction of a Pridge replacement - PPCB, 3.7 mi. N of IA 5 in Polk County.

B. This PPP covers approximately 8.84 acres with an estimated 1.24 acres being disturbed. The portion of the PPP covered by this contract has 1.24 acres disturbed.

C. The PPP is located in an area of Sharpsburg - Shelby - Adair soil association.
The estimated weighted average runoff coefficient number for this PPP after completion will be 0.36.

D. Storm Water Site Map is located in the R sheets. Proposed slopes are shown in cross sections, details, or standard road plans. Supplemental information is located in the Tabulations in the C or CE sheets.

E. The base storm water site map is amended by contract modifications and progress payments (fieldbook entries) of completed erosion control work. Also, due to project phasing, erosion and sediment controls shown on project plans may not be installed until needed, based on site conditions. For example, silt fence ditch checks will typically not be installed until the ditch has been

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POLLUTION PREVENTION PLAN

installed. Installed locations may also be modified from tabulation locations by field staff. Installed locations will be documented by fieldbook entries and amended PPP site map.

F. Runoff from this work will flow into Racoon River.

III. CONTROLS

A. The Contractor's ECIP specified in Article 2602.03 of the Standard Specifications for accomplishment of storm water controls should clearly describe the intended sequence of major activities, and for each activity define the control measure and the timing during the construction process that the measure will be implemented.

B. Preserve vegetation in areas not needed for construction.

C. Sections 2601 and 2602 of the Standard Specifications define requirements to implement erosion and sediment control measures. Actual quantities used and installed locations may vary from the Base PPP and amendment of the plan will be documented via fieldbook entries, amended PPP site map, or by contract modification. Additional erosion and sediment control items may be required as determined by the inspector and/or contractor during storm water site inspections. If the work involved is not applicable to any contract items, the work will be paid for according to Article 1109.03 paragraph B of the Standard Specifications.

1. EROSION AND SEDIMENT CONTROLS

a. Stabilization Practices
1) Site plans will ensure that existing vegetation or natural buffers are preserved where attainable and disturbed portions of the site will be stabilized.
2) Initialize stabilization of disturbed areas immediately after clearing, grading, excavating, or other earth disturbing activities have:
a) Permanently ceased on any portion of the site, or
b) Temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days.
3) Staged permanent and/or temporary stabilizing seeding and mulching shall be completed as the disturbed areas are completed. Incomplete areas shall be stabilized according to paragraph III, C, 1, a, 2, b above.
4) Permanent and Temporary Stabilization practices to be used for this project are located in the storm water site map, Estimated Project Quantities (100-0A, 100-1A, or 100-1C), and Estimate Reference Information (100-4A) located in the C or R sheets. Typical drawings detailing construction of the practices to be used on this project are referenced in the Standard Road Plans Tabulation (105-4) in the C or R sheets.
5) Preservation of existing vegetation within right-of-way or easements will act as vegetative buffer strips.
6) Preservation of topsoil: Bid items to be used for this project are located in the Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located in the C or R sheets. Additional information may be found in the Tabulations in the C or T Tabulation sheets, or is referenced in Section 2105 of the Standard Specifications.

b. Structural Practices
1) Structural practices will be implemented to divert flows from exposed soils and detain or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Additionally, structural practices may include: silt basins that provide 3600 cubic feet of storage per acre drained or equivalent sediment controls, outlet structures that withdraw water from surface when discharging basins, and controls to direct storm water to vegetated areas.
2) Structural practices to be used for this project are located in the storm water site map, Estimated Project Quantities (100-0A, 100-1A, or 100-1C), and Estimate Reference Information (100-4A) located in the C or R sheets, as well as all other item specific Tabulations. Typical drawings detailing construction of the devices to be used on this project can be found on the B or R sheets or are referenced in the Standard Road Plans Tabulation (105-4) located in the C or R sheets.

c. Storm Water Management
Measures shall be installed during the construction process to control pollutants in storm water discharges that will occur after construction operations have been completed. This may include velocity dissipation devices at discharge locations and along length of outfall channel as necessary to provide a non-erosion velocity flow from structure to water course. If included with this project, these items are located in the storm water site map and Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located in the C or R sheets, as well as all other item specific Tabulations. Typical drawings detailing construction of the practices to be used on this project are referenced in the Standard Road Plans Tabulation. The installation of these devices may be subject to Section 404 of the Clean Water Act.

2. OTHER CONTROLS
Contractor disposal of unused construction materials and construction material wastes shall comply with applicable state and local waste disposal, sanitary sewer, or septic system regulations. In the event of a conflict with other governmental laws, rules and regulations, the more restrictive laws, rules or regulations shall apply.
a. Vehicle Entrances and Exits - Construct and maintain entrances and exits to prevent tracking of sediments onto roadways.
b. Material Delivery, Storage and Use - Implement practices to prevent discharge of construction materials during delivery, storage, and use.
c. Stockpile Management - Install controls to reduce or eliminate pollution of storm water from stockpiles of soil and paving.
d. Waste Disposal - Do not discharge any materials, including building materials, into waters of the state, except as authorized by a Section 404 permit.
e. Spill Prevention and Control - Implement chemical spill and leak prevention and response procedures to contain and clean up spills and prevent material discharges to the storm drain system and waters of the state.
f. Concrete Residuals and Washout Wastes - Waste shall not be discharged to a surface water and is not allowed to adversely affect a water of the state. Designate temporary concrete washout facilities for rinsing out concrete trucks. Provide directions to truck drivers where designated washout facilities are located. Designated washout areas should be located at least 50 feet away from storm drains, streams or other water bodies. Care should be taken to ensure these facilities do not overflow during storm events.
g. Concrete Grooving/Grinding Slurry – Do not discharge slurry to a waterbody or storm drain. Slurry may be applied on foreslopes or removed from the project.
h. Vehicle and Equipment Storage and Maintenance Areas - Perform on site fueling and maintenance in accordance with all environment laws such as proper storage of onsite fuels and proper disposal of used engine oil or other fluids on site. Employ washing practices that prevent contamination of surface and ground water from wash water. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge.
i. Litter Management - Ensure employees properly dispose of litter. Minimize exposure of trash if exposure to precipitation or storm water would result in a discharge of pollutants.
j. Dewatering – Properly treat water to remove suspended sediment before it re-enters a waterbody or discharges off-site. Measures are also to be taken to prevent scour erosion at dewatering discharge point.

3. APPROVED STATE OR LOCAL PLANS
During the course of this construction, it is possible that situations will arise where unknown materials will be encountered. When such situations are encountered, they will be handled according to all federal, state, and local regulations in effect at the time.

POLLUTION PREVENTION PLAN

IV. MAINTENANCE PROCEDURES

The Contractor is required to maintain all temporary erosion and sediment control measures in proper working order, including cleaning, repairing, or replacing them throughout the contract period. This shall begin when the features have lost 50% of their capacity.

V. INSPECTION REQUIREMENTS

A. Inspections shall be made jointly by the Contractor and the Contracting Authority's inspector at least once every seven calendar days. Storm water site inspections will include:
   1. Date of the inspection.
   2. Summary of the scope of the inspection.
   3. Name and qualifications of the personnel making the inspection.
   5. Review of erosion and sediment control measures within disturbed areas for the effectiveness in preventing impacts to receiving waters.
   6. Major observations related to the implementation of the PPP.
   7. Identification of corrective actions required to maintain or modify erosion and sediment control measures.

B. Include storm water site inspection reports in the Amended PPP. Incorporate any additional erosion and sediment control measures determined as a result of the inspection. Immediately begin corrective actions on all deficiencies found within 3 calendar days of the inspection and complete within 7 calendar days following the inspection. If it is determined that making the corrections less than 72 hours after the inspection is impracticable, it should be documented why it is impracticable and indicate an estimated date by which the corrections will be made.

VI. NON-STORM WATER DISCHARGES

This includes subsurface drains (i.e. longitudinal and standard subdrains) and slope drains. The velocity of the discharge from these features may be controlled by the use of headwalls or blocks, Class A stone, erosion stone or other appropriate materials. This also includes uncontaminated groundwater from dewatering operations, which will be controlled as discussed in Section III of the PPP.

VII. POTENTIAL SOURCES OF OFF RIGHT-OF-WAY (ROW) POLLUTION

Silts, sediment, and other forms of pollution may be transported onto highway right-of-way (ROW) as a result of a storm event. Potential sources of pollution located outside highway ROW are beyond the control of this PPP. Pollution within highway ROW will be conveyed and controlled per this PPP.

VIII. DEFINITIONS

A. Base PPP - Initial Pollution Prevention Plan.

B. Amended PPP - Base PPP amended during construction. May include Plan Revisions or Contract Modifications for new items, storm water site inspection reports, fieldbook entries made by the inspector, amended PPP site map by the Contractor, ECIP, NOI, co-permittee certifications, and Subcontractor Request Forms. Items amending the PPP are stored electronically and are readily available upon request.

C. Fieldbook Entries – This contains the inspector’s daily diary and bid item postings.

D. Controls - Methods, practices, or measures to minimize or prevent erosion, control sedimentation, control storm water, or minimize contaminants from other types of waste or materials. Also called Best Management Practices (BMPs).

E. Signature Authority - Representative authorized to sign various storm water documents.

CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature

Seana K. Godbold
Print Name

LINE STYLE LEGEND OF EROSION CONTROL SHEETS

- Silt Fence
- Perimeter and Slope Sediment Control Device (9")
- Perimeter and Slope Sediment Control Device (12")
- Perimeter and Slope Sediment Control Device (20")
- Open-Throat Curb Intake Sediment Filter
- Concentrated Flow
- Sheet Flow

CELL LEGEND OF EROSION CONTROL SHEETS

- Temporary Sediment Control basin
- Erosion Control for Circular Intake or Manhole Well
- Erosion Control for Rectangular Intake or Manhole Well
- Grate Intake Sediment Filter Bag
- Silt Basin
- Silt Fence Tail
- Stormwater Drainage Basin Discharge Point

PLAN VIEW COLOR LEGEND OF EROSION CONTROL SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Magenta	(5)	Existing Utilities
Black	(Ø)	Permanent Erosion Control Features
Blaze Orange	(222)	Temporary Erosion Control Features

SHADING	Design Color No.		Transparency
Citron	(234)	Mulching, All Types	50%
Light Brown	(238)	Special Ditch Control, Wood Excelsior Mat	Ø%

PATTERN LEGEND OF EROSION CONTROL SHEETS

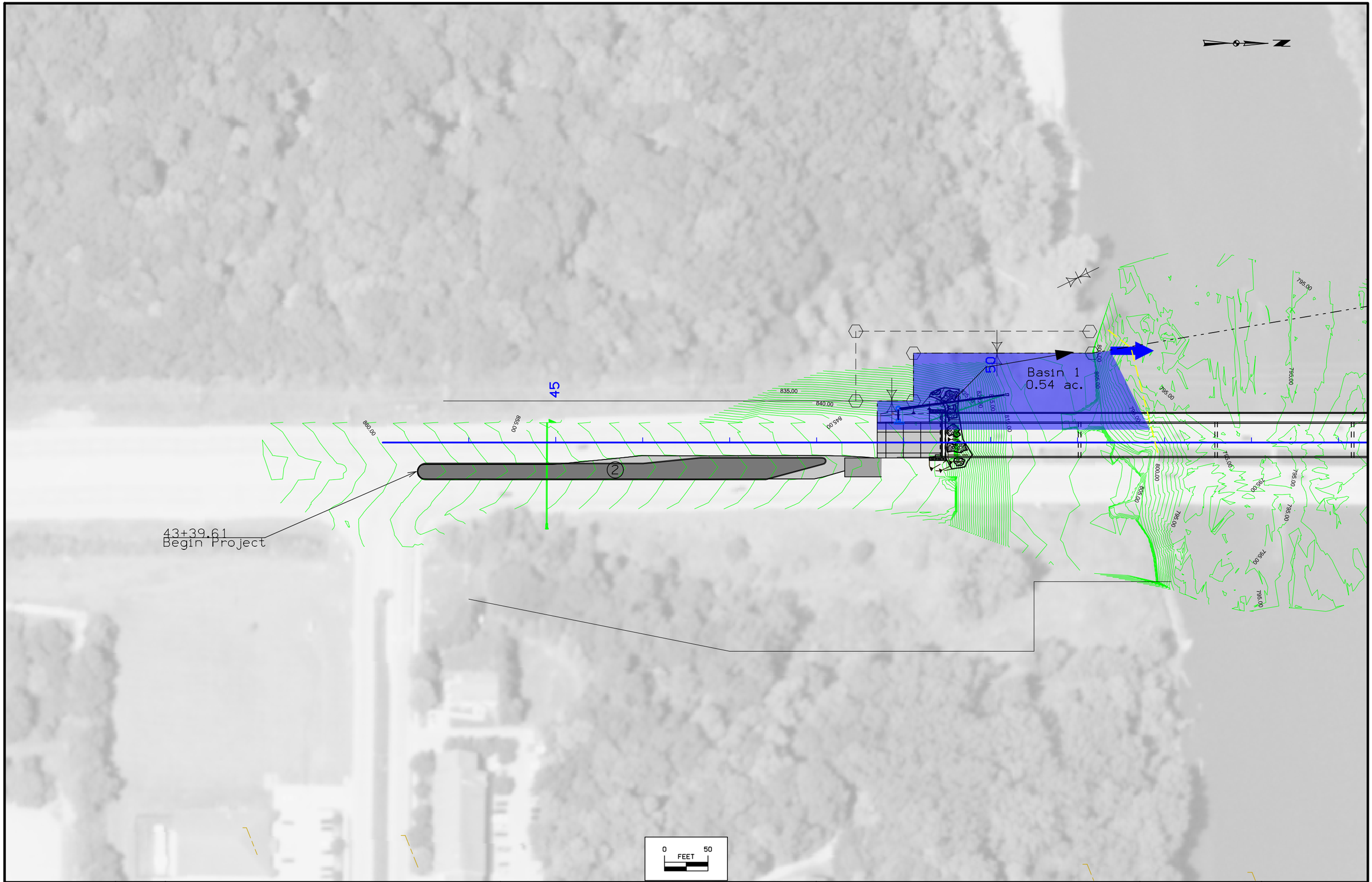
- Seeding and Fertilizing
- R — Seeding and Fertilizing (Rural)
- U — Seeding and Fertilizing (Urban)
- N — Native Grass Seeding
- ST — Salt Tolerant Seeding
- WL — Wetland Grass Seeding
- WF — Wildflower Seeding
- SOD — Sodding
- Turf Reinforcement Mat Type 1
- Turf Reinforcement Mat Type 2
- Turf Reinforcement Mat Type 3
- Turf Reinforcement Mat Type 4
- Slope Protection, Wood Excelsior Mat
- Transition Mat
- Rock Features, Permanent
- Rock Features, Temporary

EROSION CONTROL LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES R)

FILE NO. 31892	ENGLISH	DESIGN TEAM GODBOLD \ POHLEN \ MCDONALD	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER RR.1

2:47:49 PM 6/28/2021 bmcdona pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\7702801017\Roadside\77028045_LGD.dgn



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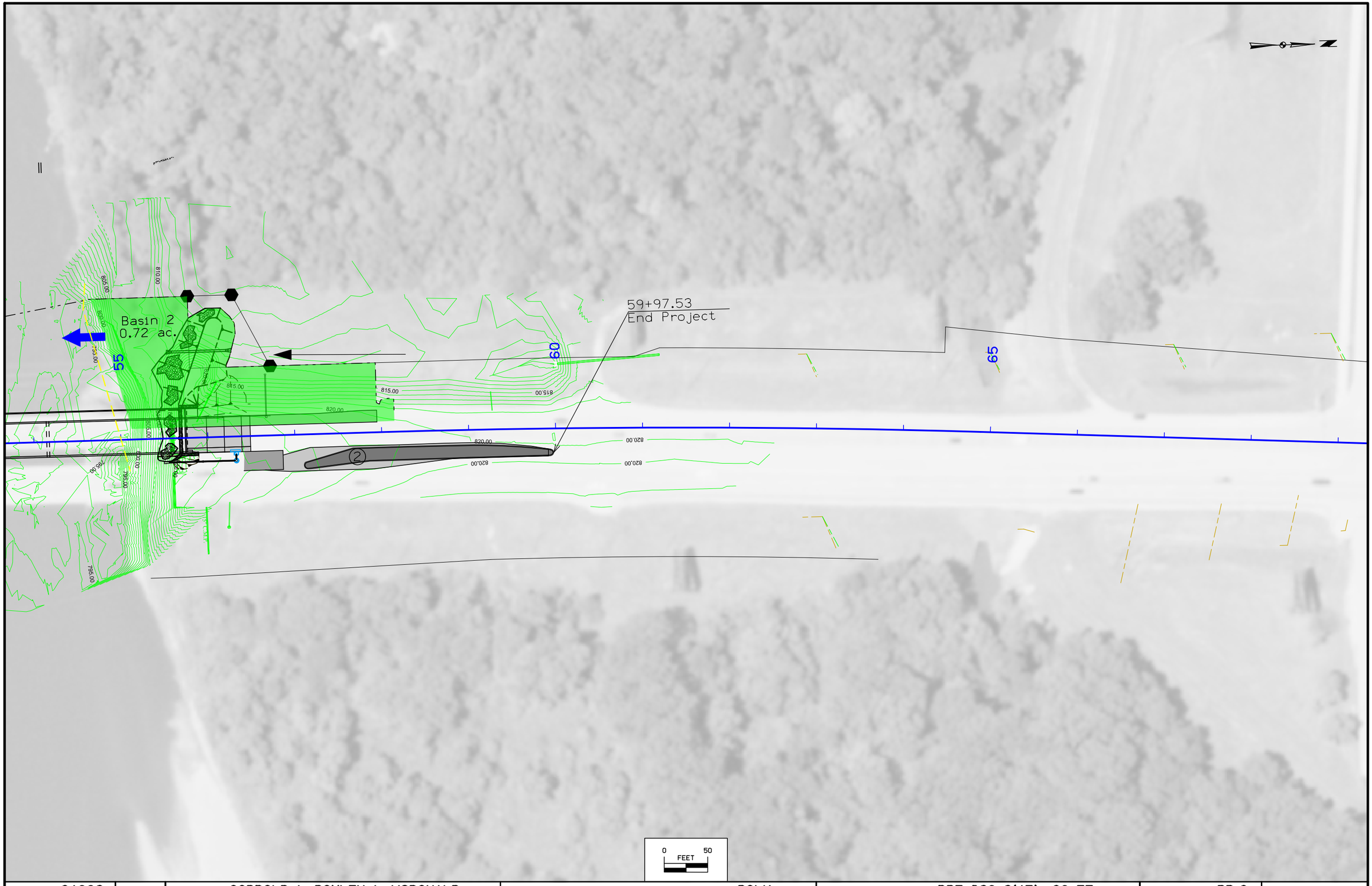

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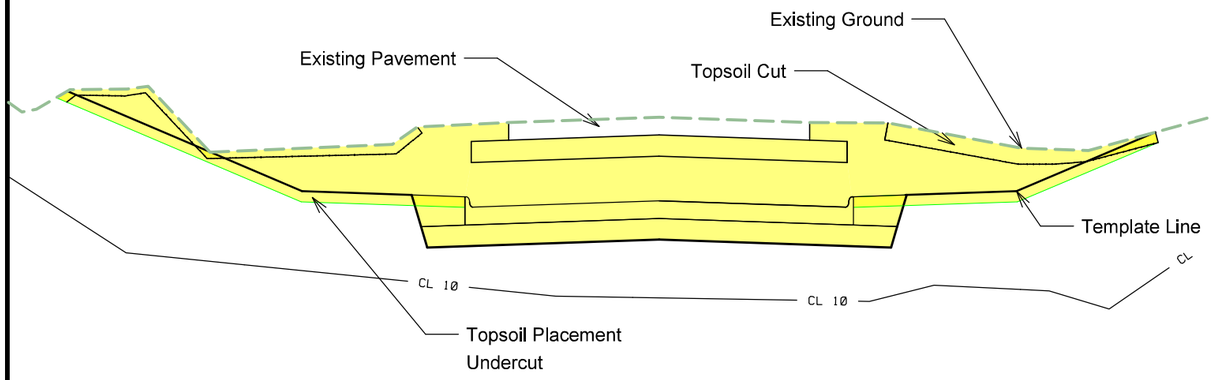
FILE NO. 31892	ENGLISH	DESIGN TEAM GODBOLD \ POHLEN \ MCDONALD	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER RR.4

2:35:11 PM 9/27/2021 bmcdona pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\7702801017\Roadside\77028045_Siteplan_RR04.dgn

FILE NO. 31892	ENGLISH	DESIGN TEAM GODBOLD \ POHLEN \ MCDONALD	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER RR.5

2:35:16 PM 9/27/2021 bmcdona pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\7702801017\Roadside\77028045_Siteplan_RR04.dgn

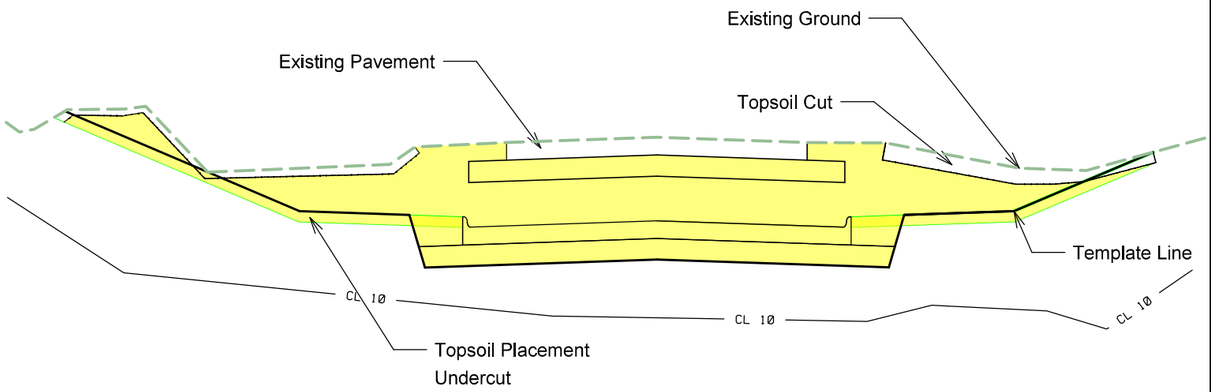
CUT SIDE Total Cut Unadjusted — URBAN



Notes:

1. "Total Cut Unadjusted" Column includes all cut values in the Station Range based on Typical, Topsoil and Subgrade Treatment needs.
2. "Total Cut Unadjusted" does not include and Existing Pavement values inside or outside the cut template as shown on cross sections.
3. Tabulated Plowing and Shaping operations are included in the "Total Cut Unadjusted" values.

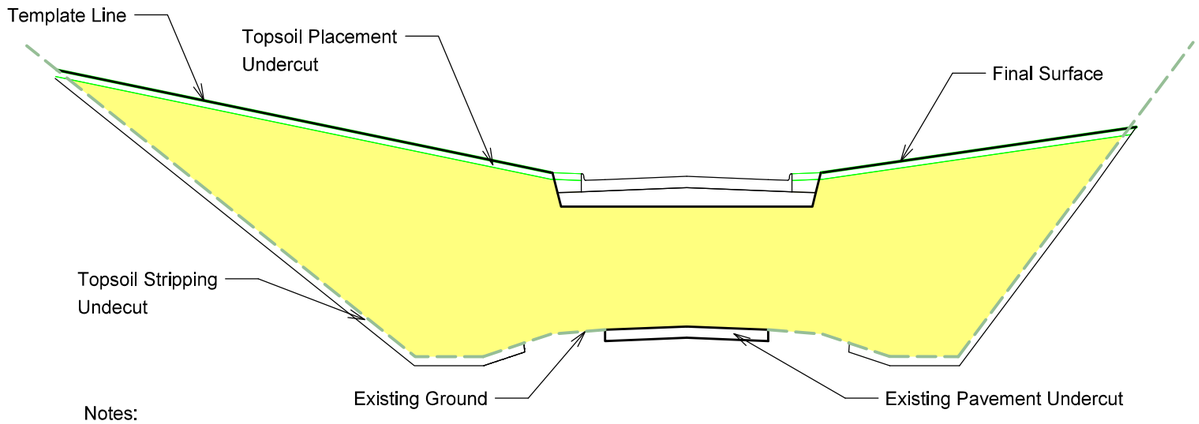
CUT SIDE Total Cut Adjusted — URBAN



Notes:

1. "Total Cut Adjusted" Column includes all cut values usable as Class 10 material.
2. "Total Cut Adjusted" does not include and Existing Pavement , Existing Topsoil, or material to be wasted.

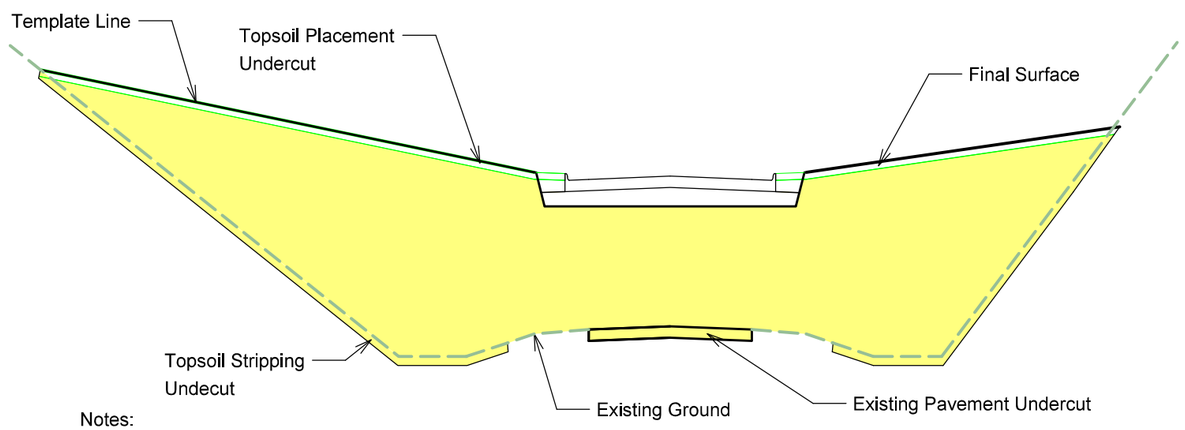
FILL SIDE Total Fill Unadjusted — URBAN



Notes:

1. "Total Fill Unadjusted" Column includes all Class 10, 12, and 13 fill. This excludes the topsoil, subgrade treatment, subbase, new pavement, and shoulder fill needs in that station range.
2. "Total Fill Unadjusted" Column does not include adjustments for additional fill from cuts such as existing pavement removed, plowing and shaping operations, entrances, dikes, or topsoil stripping.

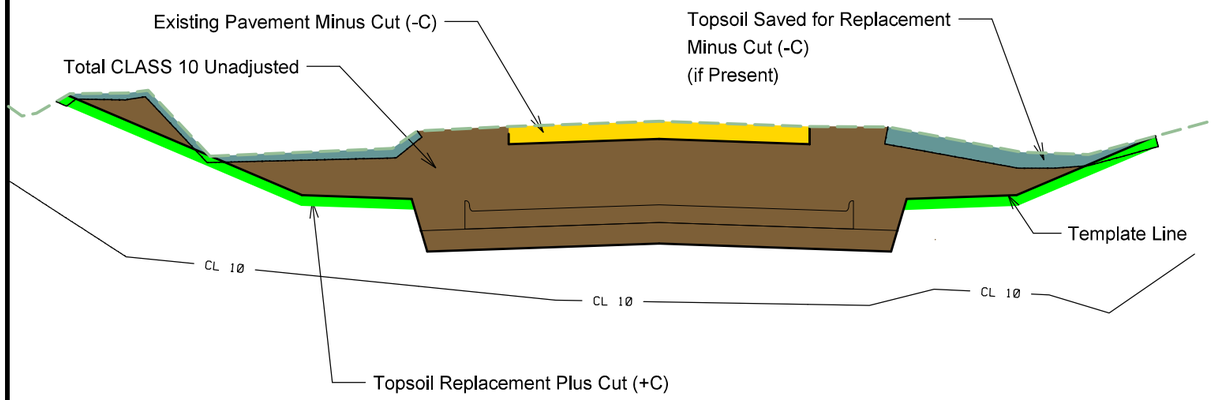
FILL SIDE Total Fill Adjusted — URBAN



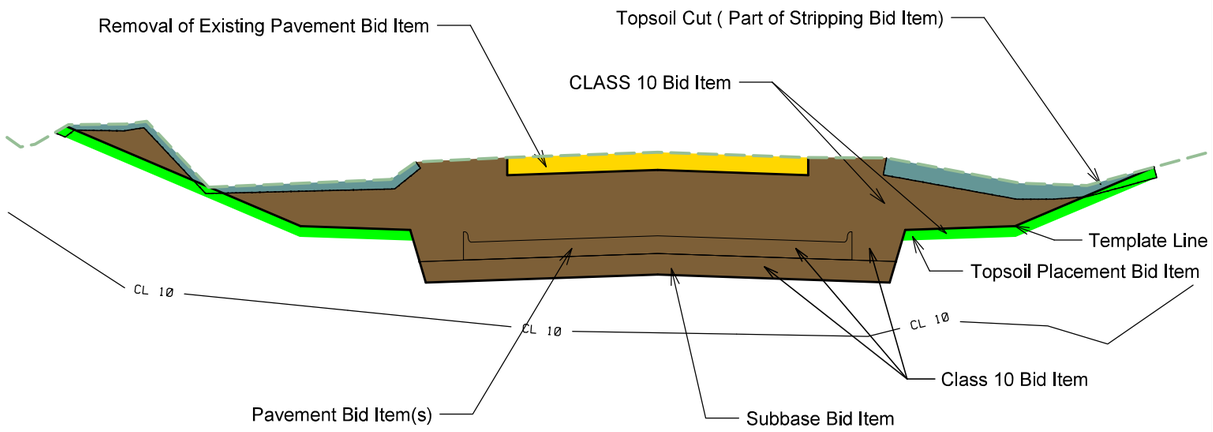
Notes:

1. "Total Fill Adjusted" Column includes all Class 10, 12, and 13 fill and adjustments for additional fill from cuts such as existing pavement, plowing and shaping operations, entrances, dikes, and topsoil stripping.
2. The available area to place unsuitable materials in the T Sheet tabulation does not include the undercut values from the topsoil stripping, existing pavement, or plowing and shaping

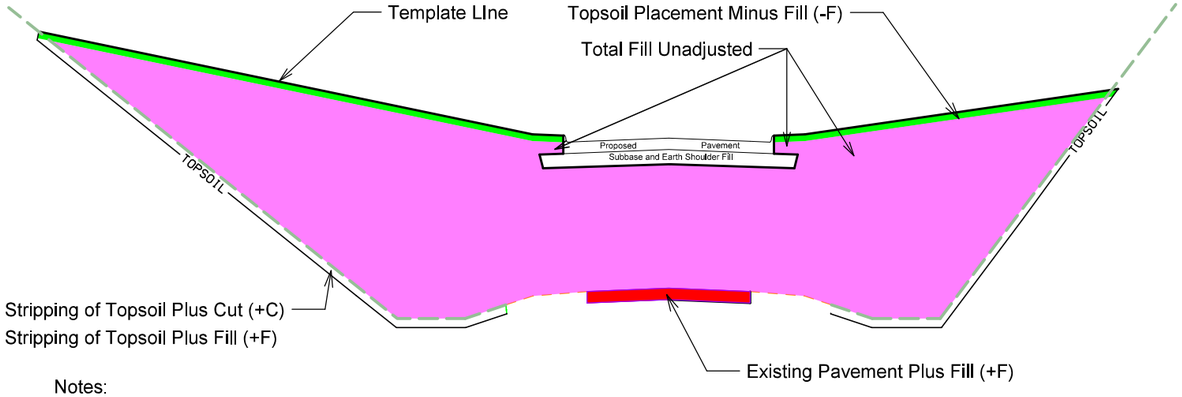
CUT SIDE (+/- Cuts) — URBAN



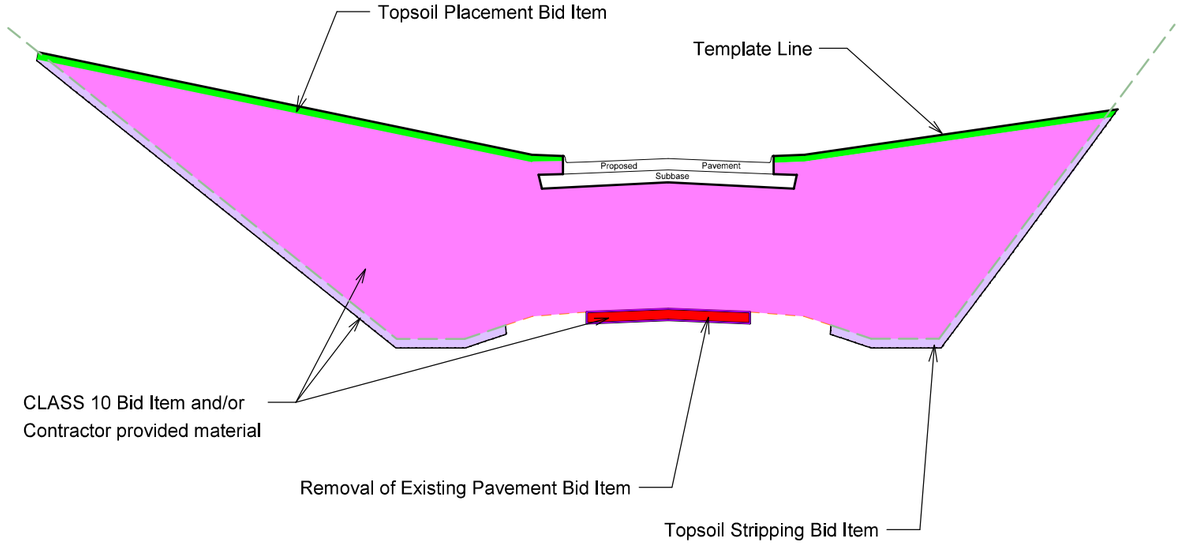
CUT SIDE (Bid Items) — URBAN



FILL SIDE (+/- Fills) — URBAN



FILL SIDE (Bid Items) — URBAN



Notes:

1. "Manually Calculated Cut Adjustments +C" columns are additional cut encountered that is not Typical, Topsoil, or Subgrade Treatment Based. (Entrance, Dike, Etc.)
2. "-C" columns are either soil types or Class 10, 12, or 13 designated material that is encountered in the cut station range that is paid for by other bid items.
3. The "(SoilType) Cut" columns are soil types encountered in the cut that are paid by either Class 10, 12 or 13.
4. The "Adjusted Clas (10,12 or 13)" columns are the sum of all various soil types encountered in that station range, that are paid by Class 10, 12, or 13 bid items.

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut					Fill						Checks (EW-102)		Topsoil								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Template Pavement Removal Volume	Manually Calculated Cut Adjustments (+/- Cut)	Total Cut Adjusted	Total Fill Unadjusted Volume	Existing Pavement Undercut (+Fill)	Manually Calculated Fill Adjustments (+/- Fill)	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink					
ML028																						
43+51.00	38	38	8		38	0			0	0	38	0	0	0	0	0	0					
43+75.00	39	39	9		39	0			0	0	39	0	0	0	0	0	0					
44+00.00	40	40	9		40	0			0	0	40	0	0	0	0	0	0					
44+25.00	41	41	9		41	0			0	0	41	0	0	0	0	0	0					
44+50.00	41	41	9		41	0			0	0	41	0	0	0	0	0	0					
44+75.00	40	40	9		40	0			0	0	40	0	0	0	0	0	0					
45+00.00	42	42	9		42	0			0	0	42	0	0	0	0	0	0					
45+25.00	47	47	11		47	0			0	0	47	0	0	0	0	0	0					
45+50.00	52	52	12		52	0			0	0	52	0	0	0	0	0	0					
45+75.00	58	58	13		58	0			0	0	58	0	0	0	0	0	0					
46+00.00	61	61	13		61	0			0	0	61	0	0	0	0	0	0					
46+25.00	62	62	13		62	0			0	0	62	0	0	0	0	0	0					
46+50.00	62	62	13		62	0			0	0	62	0	0	0	0	0	0					
46+75.00	63	63	13		63	0			0	0	63	0	0	0	0	0	0					
47+00.00	62	62	13		62	0			0	0	62	0	0	0	0	0	0					
47+25.00	62	62	13		62	0			0	0	62	0	0	0	0	0	0					
47+50.00	63	63	13		63	0			0	0	63	0	0	0	0	0	0					
47+75.00	64	64	13		64	0			0	0	64	0	0	0	0	0	0					
48+00.00	55	55	12		55	0			0	0	55	0	0	0	0	0	0					
48+25.00	111	111	39		111	0			0	0	111	0	0	0	0	0	0					
48+75.00	74	74	29		74	0			0	0	74	0	0	0	0	0	0					
49+00.00	92	92	31		92	1			1	1	91	0	0	0	0	0	0					
49+25.00	76	76	22		76	6			6	8	68	0	0	0	2	3	-3					
49+43.31	0	0	0	284	284	0			0	0	284	0	0	0	2	3	-3					
Gap	0	0	0		0	0			0	0	0	0	0	0	0	0	0					
55+75.31	106	106	24	737	843	0					843	0	0	0	0	0	0					
56+00.00	84	84	24		84	25			25	33	52	0	0	0	8	11	-11					
56+25.00	42	42	11		42	25	1		26	34	8	0	0	0	9	13	-13					
56+50.00	16	16	0		16	1	1		2	3	13	0	0	0	3	4	-4					
56+75.00	44	44	6		44	0			0	0	44	0	0	0	2	3	-3					
57+00.00	74	74	13		74	0			0	0	74	0	0	0	1	1	-1					
57+25.00	78	78	14		78	0			0	0	78	0	0	0	0	0	0					
57+50.00	80	80	14		80	0			0	0	80	0	0	0	4	6	-6					
57+75.00	69	69	13		69	0			0	0	69	0	0	0	4	6	-6					
58+00.00	55	55	12		55	0			0	0	55	0	0	0	0	0	0					
58+25.00	50	50	11		50	0			0	0	50	0	0	0	0	0	0					
58+50.00	45	45	10		45	0			0	0	45	0	0	0	0	0	0					
58+75.00	41	41	9		41	0			0	0	41	0	0	0	0	0	0					
59+00.00	38	38	9		38	0			0	0	38	0	0	0	0	0	0					
59+25.00	35	35	8		35	0			0	0	35	0	0	0	0	0	0					
59+50.00	30	30	7		30	0			0	0	30	0	0	0	0	0	0					
59+75.00	16	16	4		16	0			0	0	16	0	0	0	0	0	0					
59+93.00	0	0	0		0	0			0	0	0	0	0	0	0	0	0					
ML028																						
Totals:	2,248	2,248	524	1,021	3,269	58	2		60	78	3,191	0	0	0	35	49	-49					

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

Station	Cut					Fill						Checks (EW-102)		Topsoil								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Template Pavement Removal Volume	Manually Calculated Cut Adjustments (+/- Cut)	Total Cut Adjusted	Total Fill Unadjusted Volume	Existing Pavement Undercut (+Fill)	Manually Calculated Fill Adjustments (+/- Fill)	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink					
Summary:																						
ML028 Wing Dike	2,248	2,248	524	1,021	3,269	58	2		60	78	3,269	0	0	0	0	0	0					
						199			199	259	-259			36	38	53	-17					
Project Totals:	2,248	2,248	524	1,021	3,269	199	2		199	259	3,010	0	0	36	98	137	-101					

Bid Item Quantities

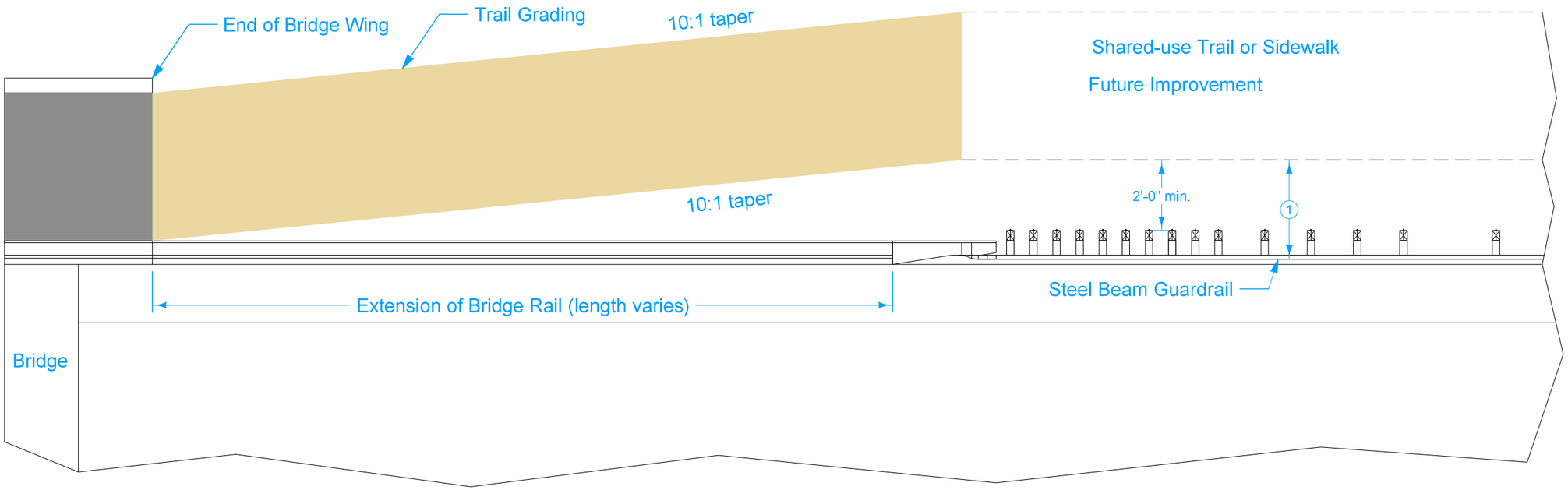
Excavation, Class 10, Roadway and Borrow: 259 [10]
Excavation, Class 10, Waste: 3010 [11]
Topsoil, Furnish and Spread: 101 [17]
Topsoil, Strip, Salvage, and Spread: 36 [14]

Topsoil, Furnish and Spread:
IA 28: 84= [9]*1.4
Wing Dike: 17 [17]
Total: 101 [17]
Topsoil, Strip, Salvage, and Spread
Wing Dike: 36 [14]

Excavation Bid items include Bridge Berms and Wing Dike cuts

(1) Refer to table below for minimum distance between face of guardrail and edge of Shared-use Trail or Sidewalk.

Posted Speed Limit (mph)	Minimum Distance (feet)
<45	4
45 or greater	5



MODIFIED

ROAD DESIGN DETAIL

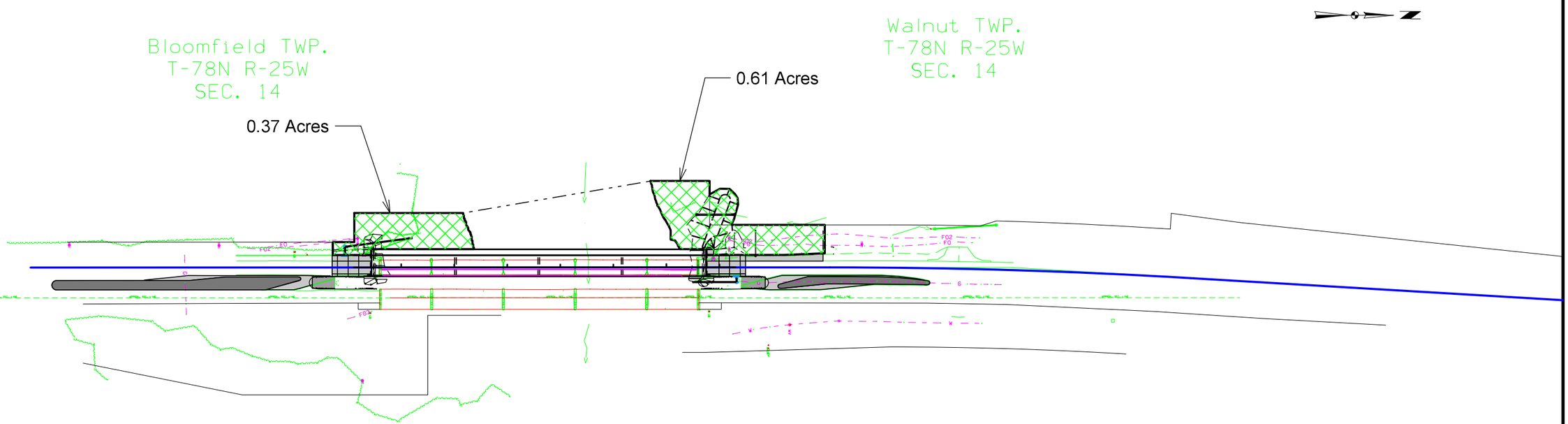
REVISION
NEW 10-18-16

560-6

SHEET 1 of 1

MODIFICATIONS: Changed Shared-use Trail or Sidewalk to Future Improvement.

SHARED-USE TRAIL OR SIDEWALK BEHIND STEEL BEAM GUARDRAIL AT BRIDGE APPROACH



Clearing and Grubbing Detail

FILE NO. 31892	ENGLISH	DESIGN TEAM J1a \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER U.2

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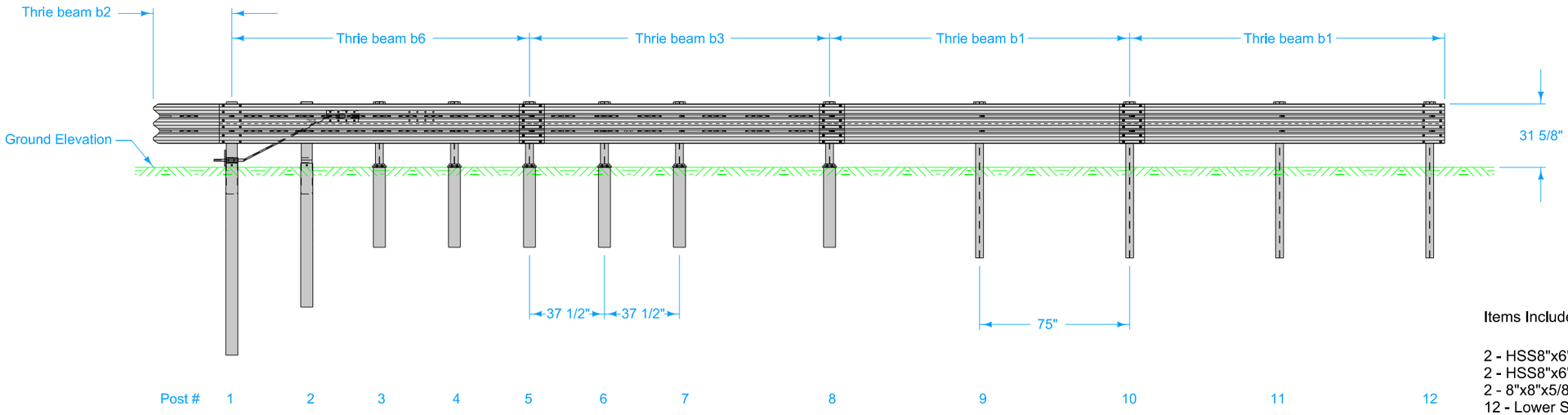
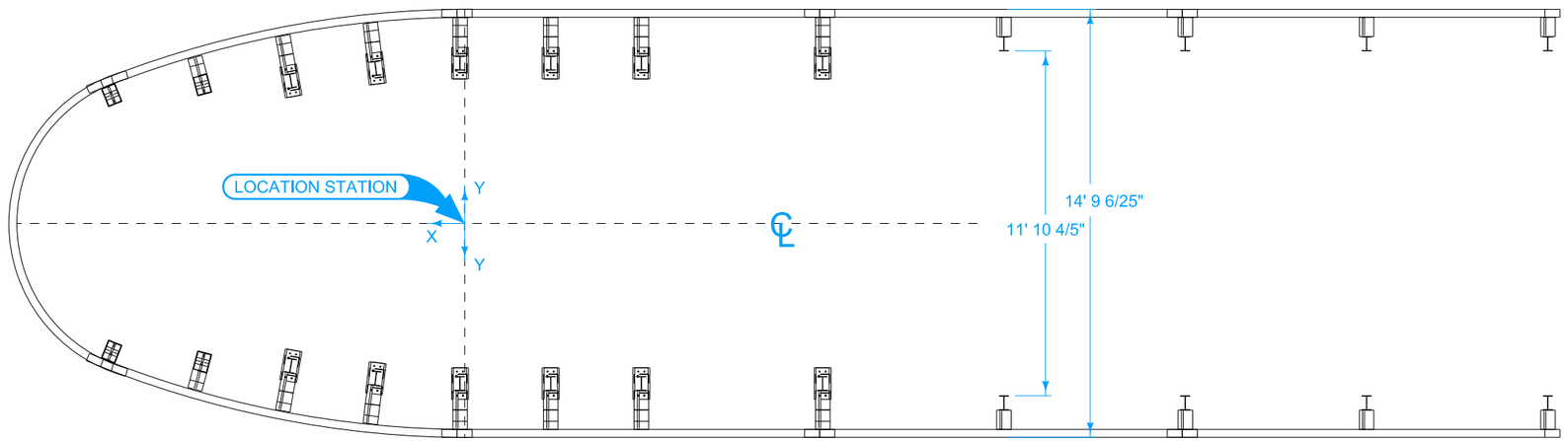
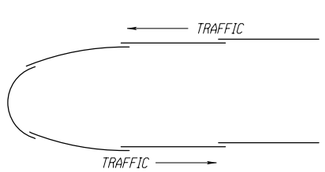
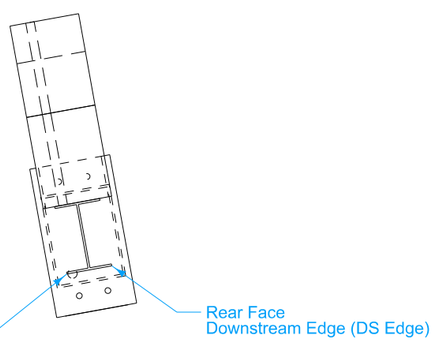






GUARDRAIL LAPPING DETAIL



X and Y dimensions are distance from location station.

Post #	Rear Face - DS Edge		Rear Face - US Edge	
	X	Y	X	Y
	ft.	ft.	ft.	ft.
1	11.84	9.06	12.27	8.89
2	8.75	9.38	9.20	9.26
3	5.79	9.54	6.11	9.48
4	2.88	9.96	3.20	9.93
5	0.00	10.12	0.33	10.12

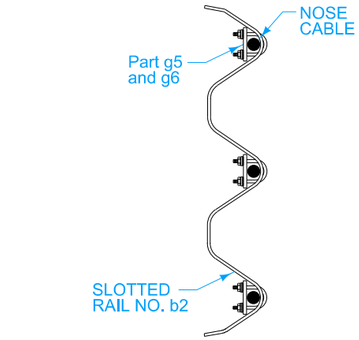
Items Included:

2 - HSS8"x6"x3/16", 96" Long Foundation Tube (a1)
2 - HSS8"x6"x3/16", 72" Long Foundation Tube (a2)
2 - 8"x8"x5/8" Anchor Bearing Plate (a3)
12 - Lower Slip Post Assembly (a4)
12 - Upper Slip Post Assembly (a5)
20 - 6"x8"x14 1/4" Timber Blockout (a6)
12 - 6"x8"x14 1/4" Tapered Timber Blockout (a7)
2 - 6"x8"x14 1/4" Tapered Timber Blockout (a8)
4 - 12' 6" 12 gauge Thrie Beam Section (b1)
1 - 12' 6" 12 gauge Bent Thrie Beam Section (b2)
2 - 12' 6" 12 gauge Thrie Beam Section (b3)
2 - 12' 6" 12 gauge Bent Thrie Beam Section (b6)
48 - 7/16" - 14 UNC, 2 1/2" Long Hex Tap Bolt and nut (c1)
4 - 5/8" - 11 UNC, 10" Long Hex Head Bolt (c2)
120 - 5/8" - 11 UNC, 1 1/4" Long Guardrail Bolt and Nut (c3)
48 - 5/8" - 11 UNC, 1 1/2" Long Hex Head Bolt and Nut (c4)
14 - 5/8" - 11 UNC, 18" Long Guardrail Bolt and Nut (c5)
4 - 7/8" - 9 UNC, 8" Long Hex Head Bolt and Nut (c6)
12 - 5/8" - 11 UNC, 10" Long Guardrail Bolt and Nut (c7)
46 - 16D Double Head Nail (c8)
192 - 7/16" Dia. Plain Round Washer (e1)
78 - 5/8" Dia. Plain Round Washer (e2)
8 - 7/8" Dia. Plain Round Washer (e3)
4 - BCT Timber Post (f1)
8 - 78" Long Steel Post (f2)
2 - BCT Anchor Cable Assembly (g1)
2 - 2 3/8" O.D. x 6" Long BCT Post Sleeve (g2)
3 - 5/8" Dia. x 14.4' Long Cable and Swage Button (g3)
6 - 12 5/8" x 13/16" x 3/16" Nose Cable Anchor Plate (g4)
9 - 2 1/4" x 3/4" 11 gauge U-Bolt Plate Washer (g5)
9 - 1/4" Dia. U-Bolt and Nut (g6)
2 - Anchor Bracket Assembly (h2)

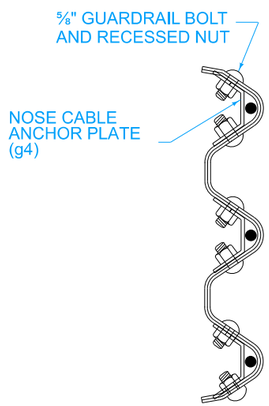
Each correctly installed bullnose guardrail will be counted.

The price bid for "Steel Beam Guardrail bullnose section, detail 8220", each, is considered full compensation for furnishing all materials, tools, and work necessary to construct the barricade as detailed heron.

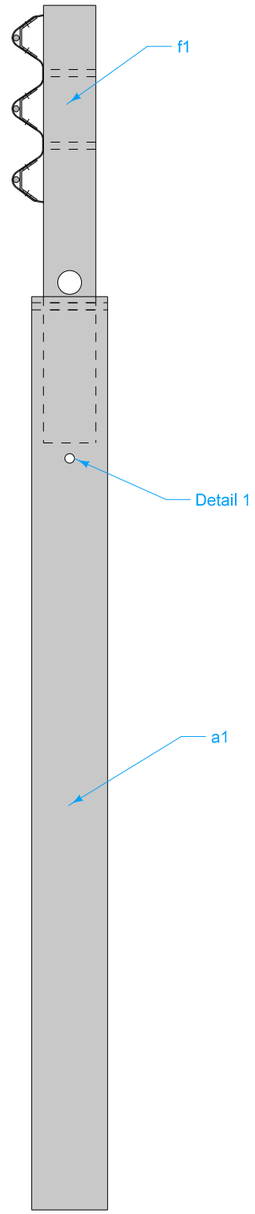
Bullnose Guardrail

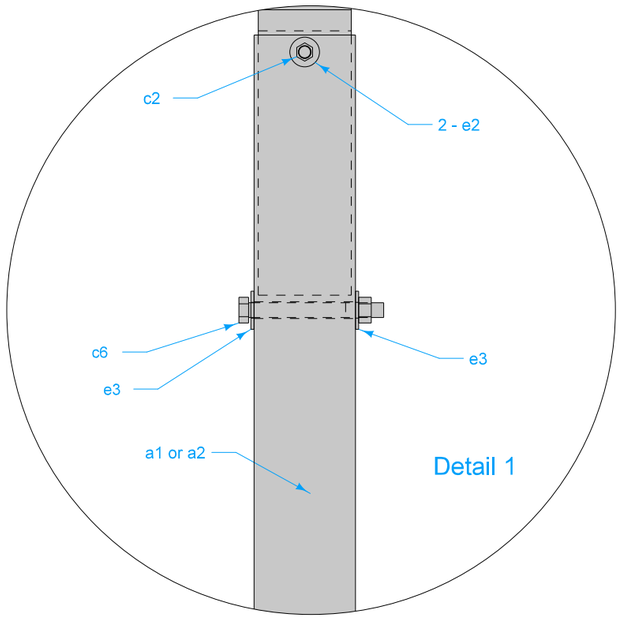


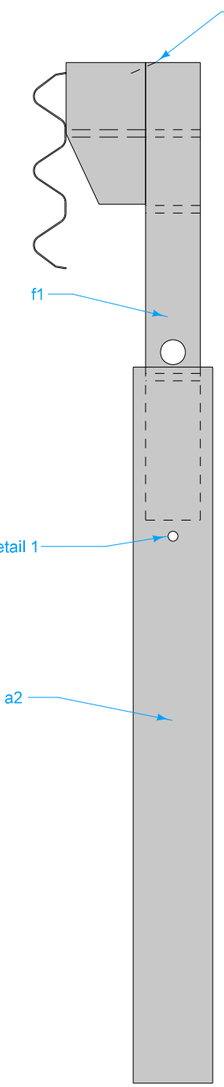
U-BOLT CABLE CLIP DETAIL at quarter points of b2

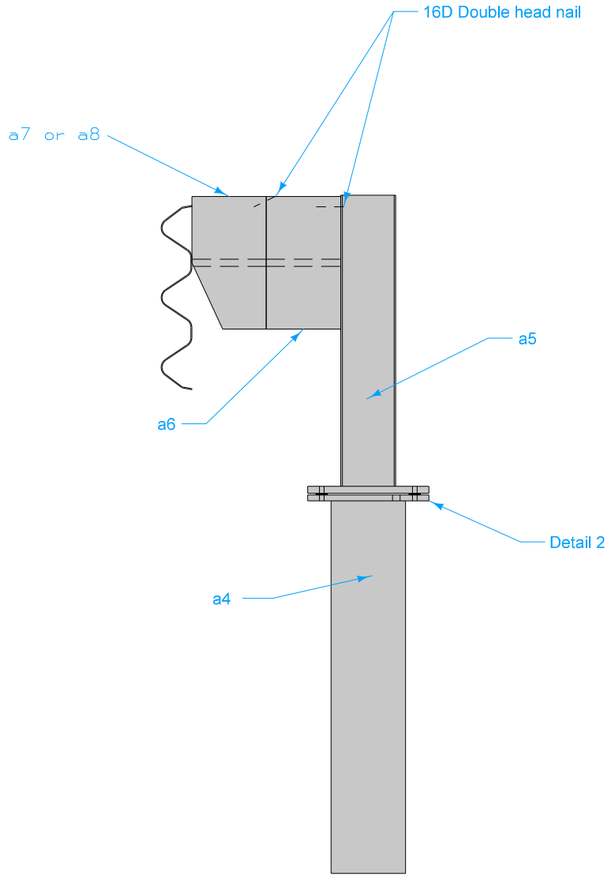


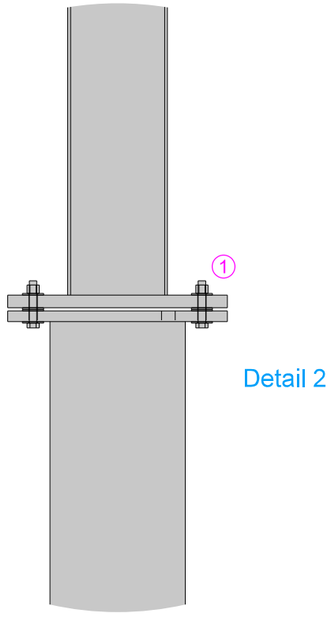
END VIEW at post #1



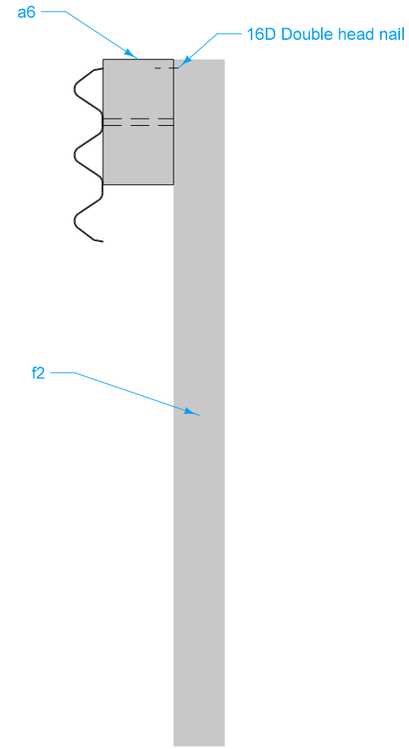


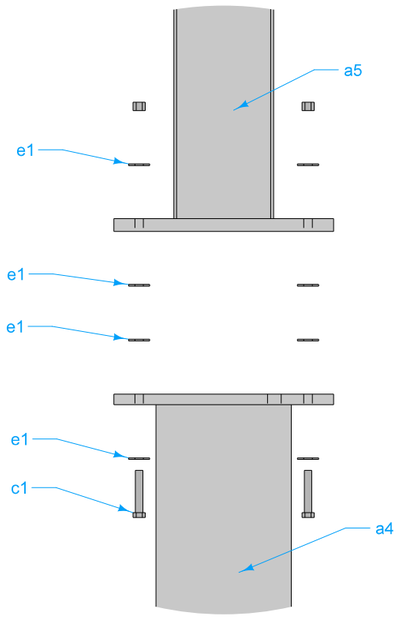






Detail 2





Expanded Detail 2

1. Vertical throught bolts are to be torqued to 60-75 ft-lbs.

FILE NO. 31892	ENGLISH	DESIGN TEAM J1a \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER U.5

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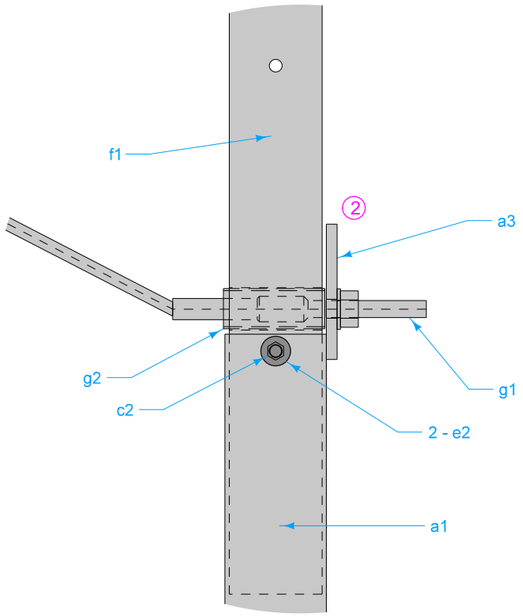
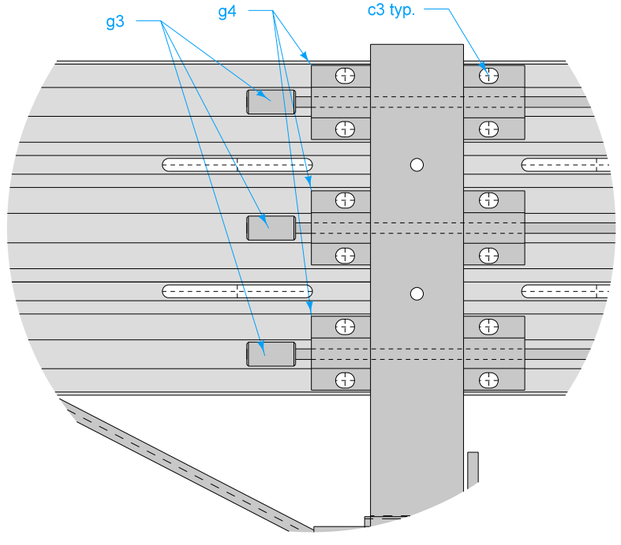
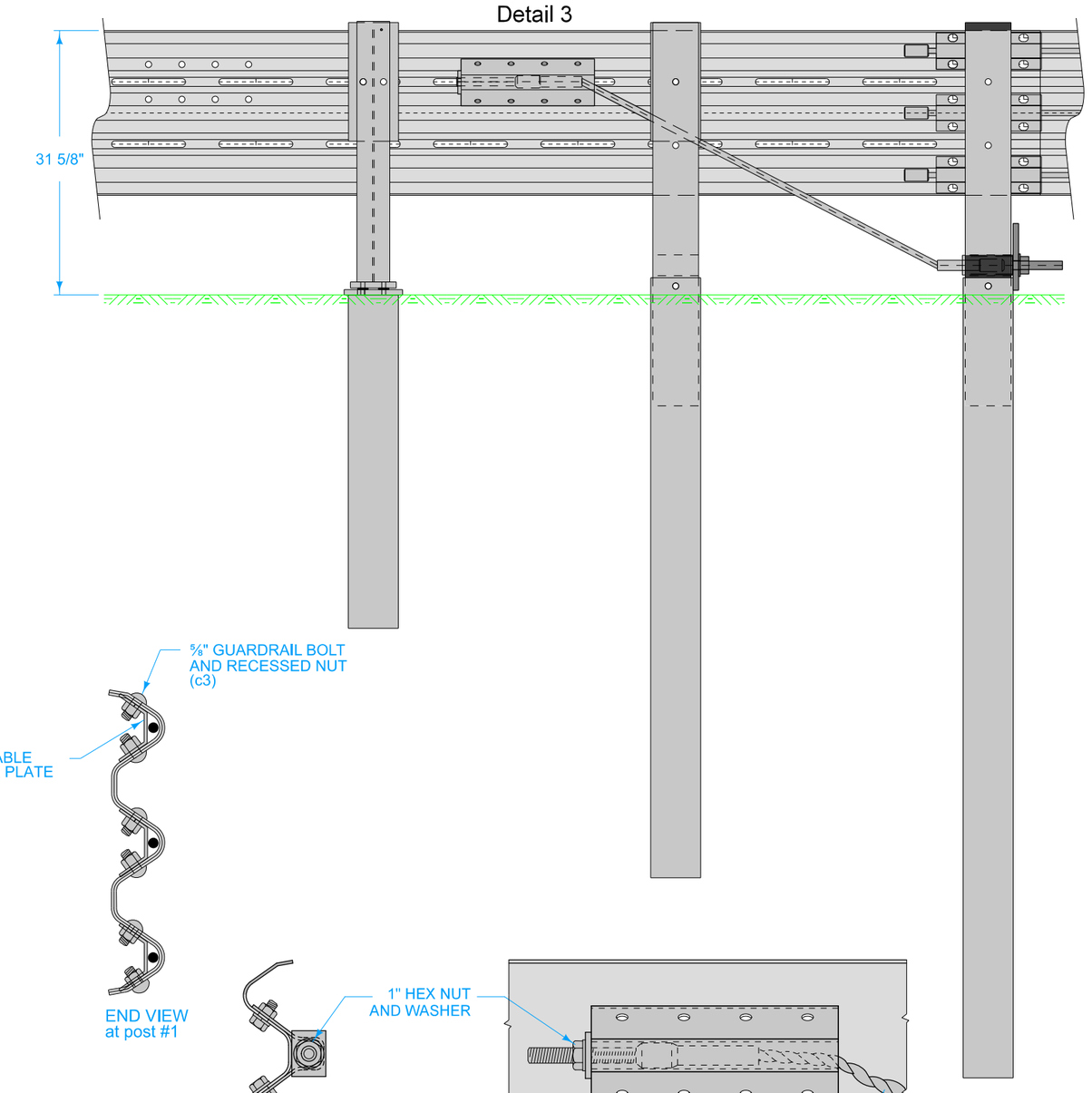


Detail post #1



Detail post #1

Detail 3



Detail 3

DETAILS OF ANCHOR PLATE

(2) Two nails bent over bearing plate to prevent rotation.

FILE NO. 31892	ENGLISH	DESIGN TEAM J1a \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER U.6

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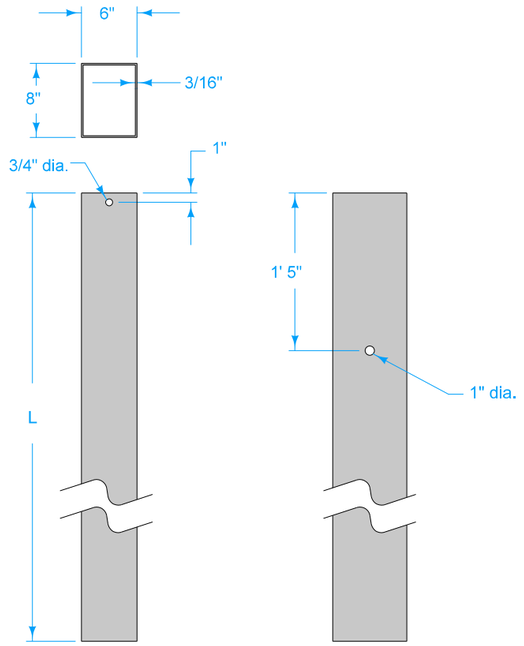
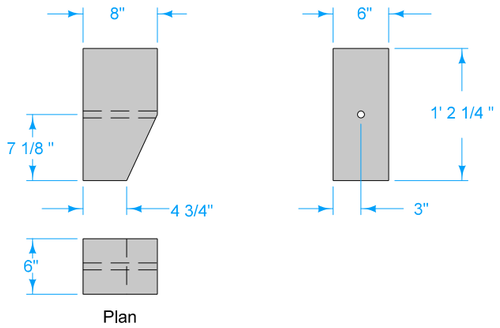
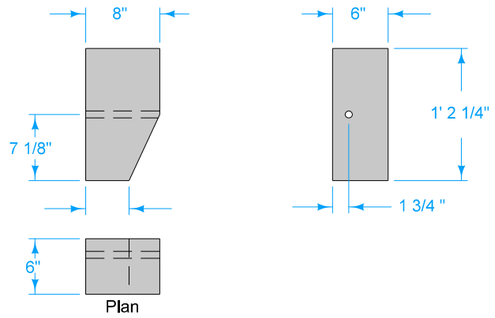


Part a1, Post #1 - L-8'
Part a2, Post #2 - L-6'

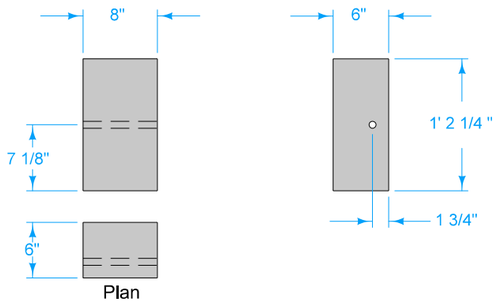
Part a8



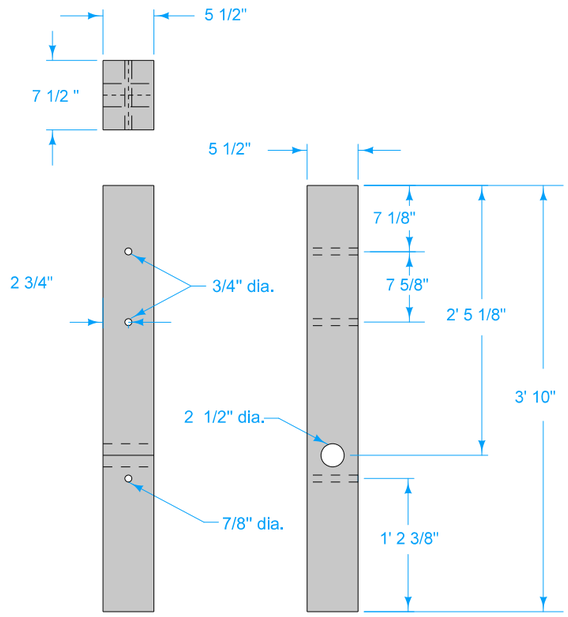
Part a7



Part a6

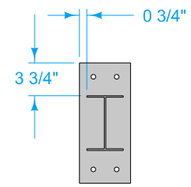


Part f1



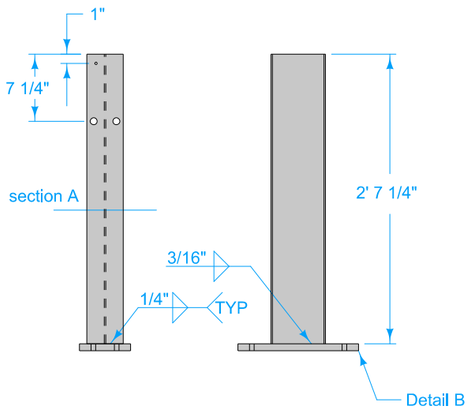
Wood Post
(Post # 1 & 2)

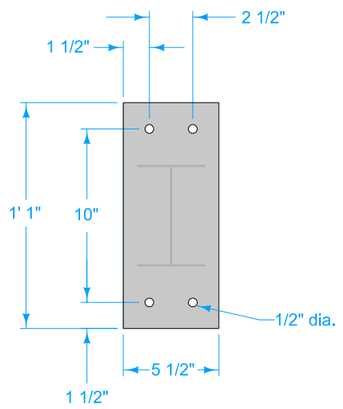
Part a5, Posts 3-8



Steel Post
W6x9 or W6x8.5

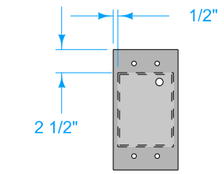
Section A

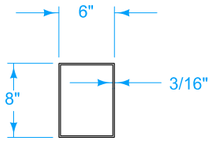




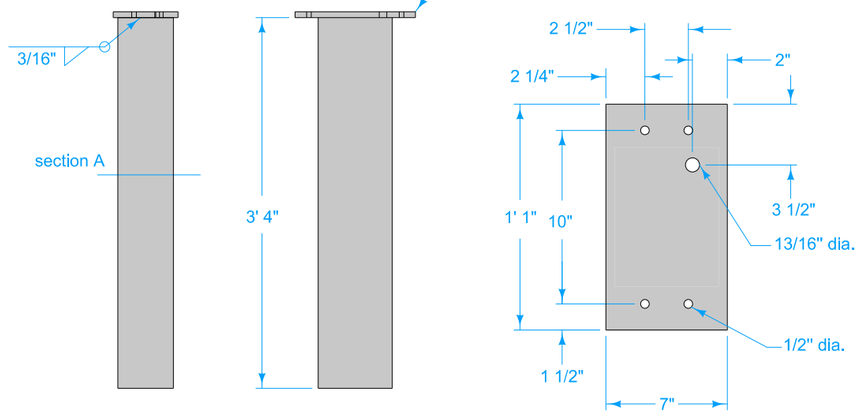
Detail B
(Thickness = 3/4")

Part a4



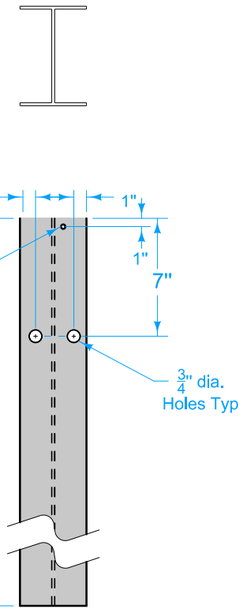


Section A



Detail B
(Thickness = 5/8")

Part f2



Steel Post

Post # 9-12
W6x9 or W6x8.5

FILE NO. 31892	ENGLISH	DESIGN TEAM J1a \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER U.7

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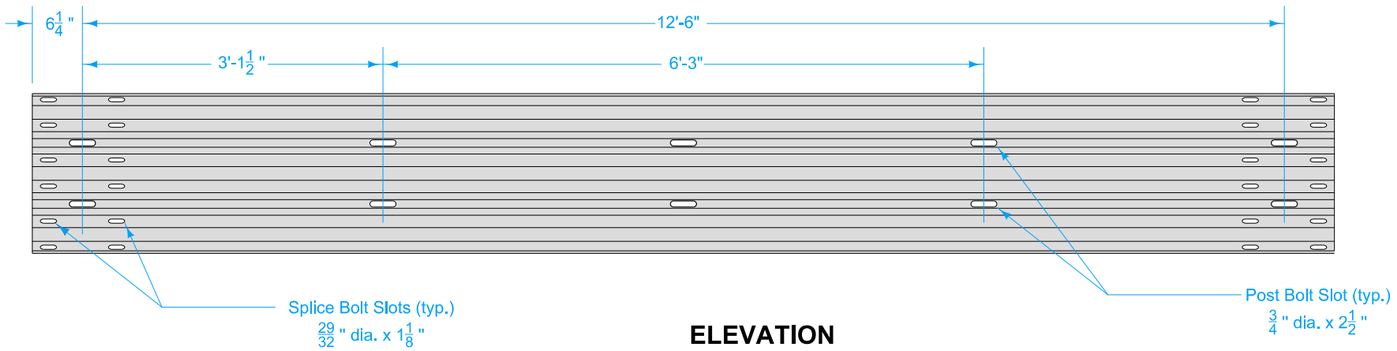
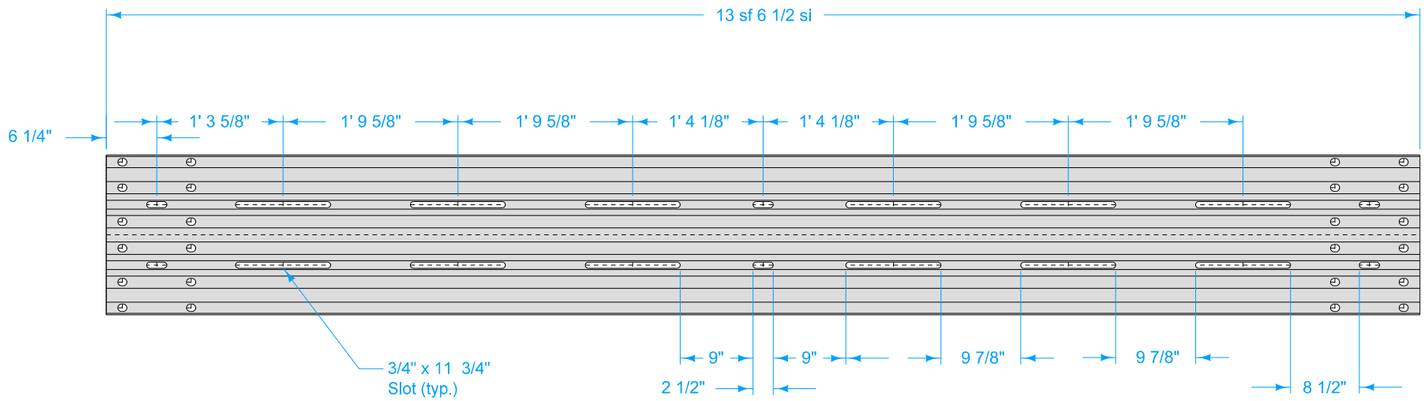
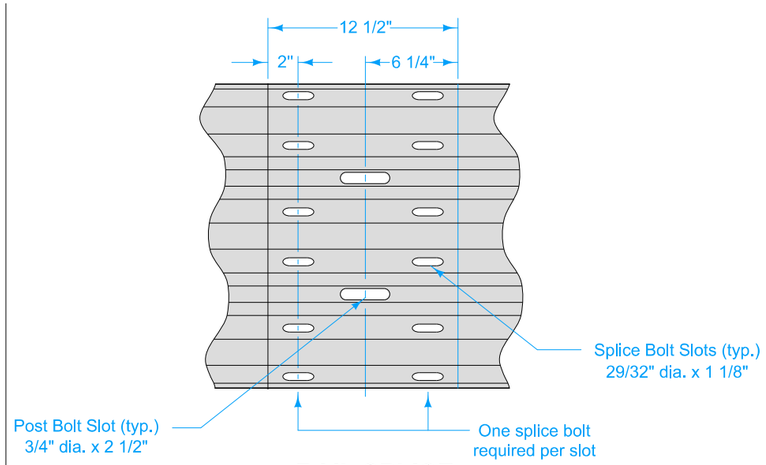


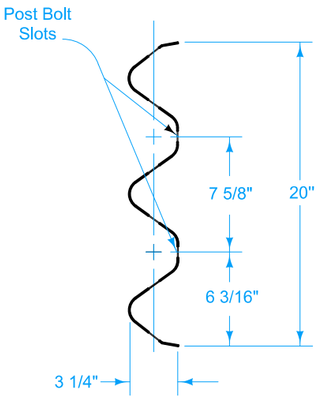
ELEVATION
Part b1



Part b3



RAIL SPLICE
(typ.)



SECTION

FILE NO. 31892	ENGLISH	DESIGN TEAM J1a \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER U.8

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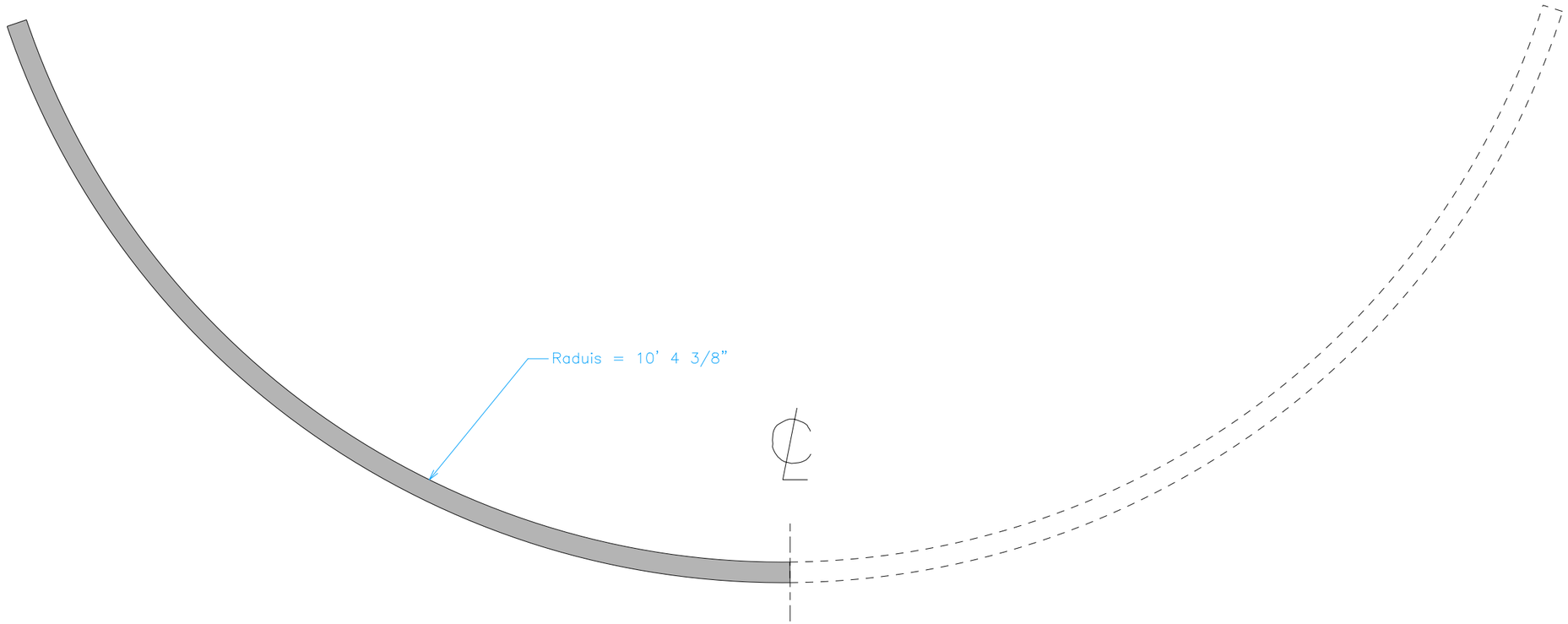
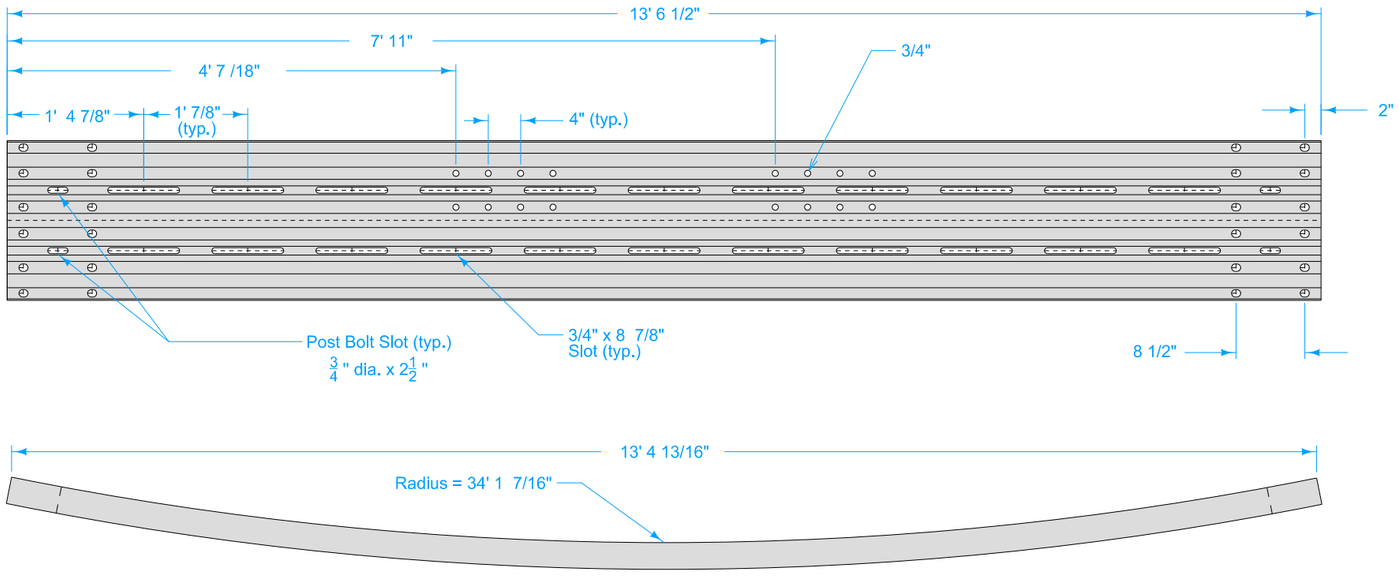
Part b2



Part b6



FILE NO. 31892	ENGLISH	DESIGN TEAM J1a \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER U.9

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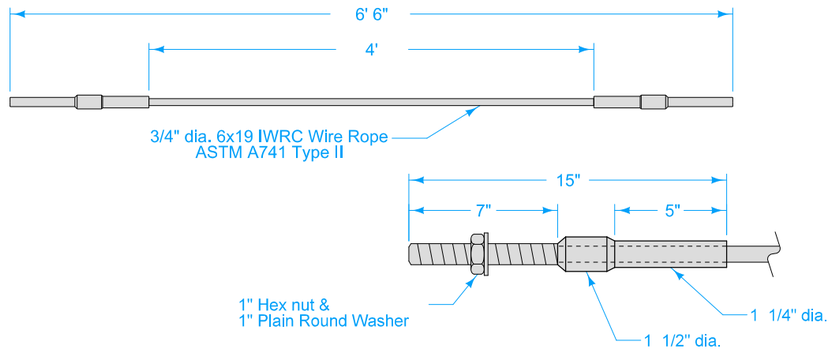
Part g1



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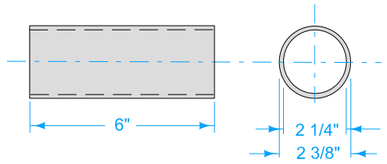
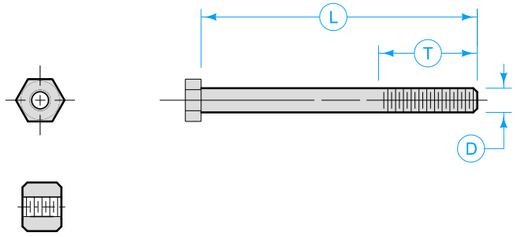


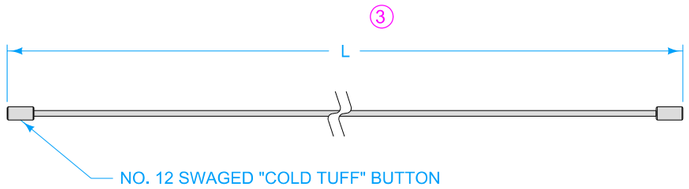
Breakaway Terminal Post Sleeve

Part c6



APPLICATION	(T)	(L)	(D)	Thread
Hex Bolt (c1)	2 1/2"	2 1/2"	7/16"	14 UNC
Hex Bolt (c2))	1 3/4"	10"	5/8"	11 UNC
Hex Bolt (c4)	1 1/2"	1 1/2"	5/8"	11 UNC
Hex Bolt (c6)	2 1/4"	8"	7/8"	9 UNC

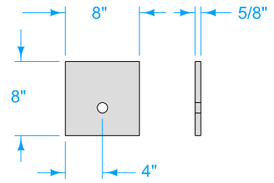
Part g3



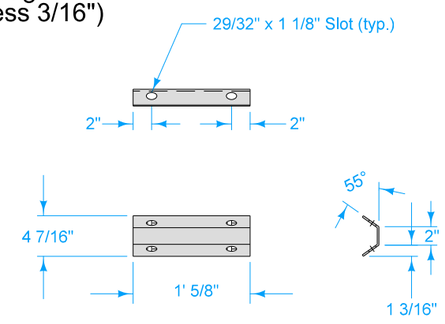
(3) Length will depend on layout width.
Width = 14 feet 9 1/4 inches,
L = 14 feet 6 inches
Width = 19 feet 7 5/16 inches,
L = 20 feet 9 5/8 inches
Width = 24 feet 5 7/16 inches,
L = 27 feet 1/16 inches

Nose Cable

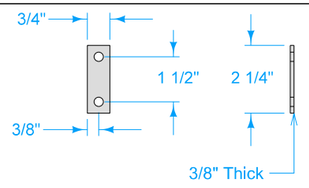
Part a3



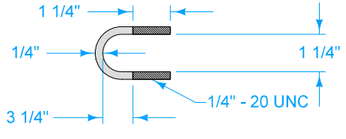
Part g4 (thickness 3/16")



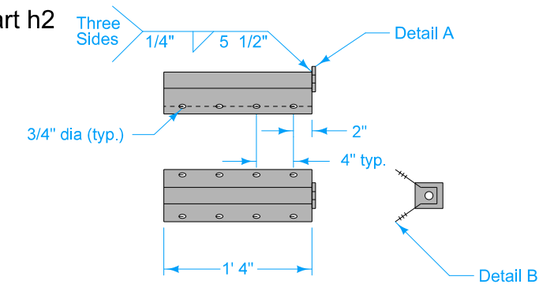
Part g5



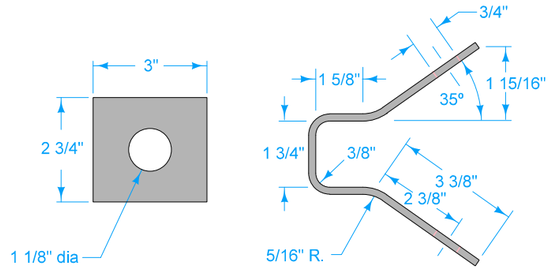
Part g6



Part h2

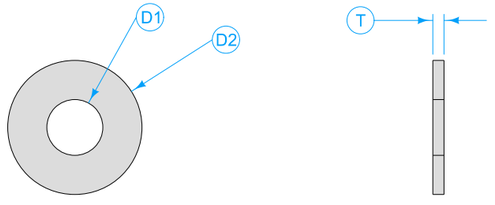


Anchor Plate



Detail A
(thickness 3/8")

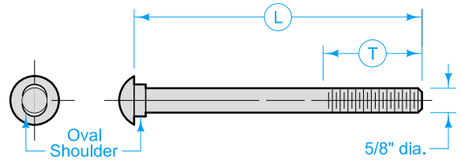
Detail B
(thickness 3/16)



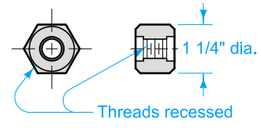
APPLICATION	(D1)	(D2)	(T)
Washer (e1)	1/2"	1 1/4"	3/32"
Washer (e2)	11/16"	1 3/4"	1/8"
Washer (e3)	15/16"	2 1/4"	3/16"

D1 = Inner Diameter

D2 = Outer Diameter



Bolt

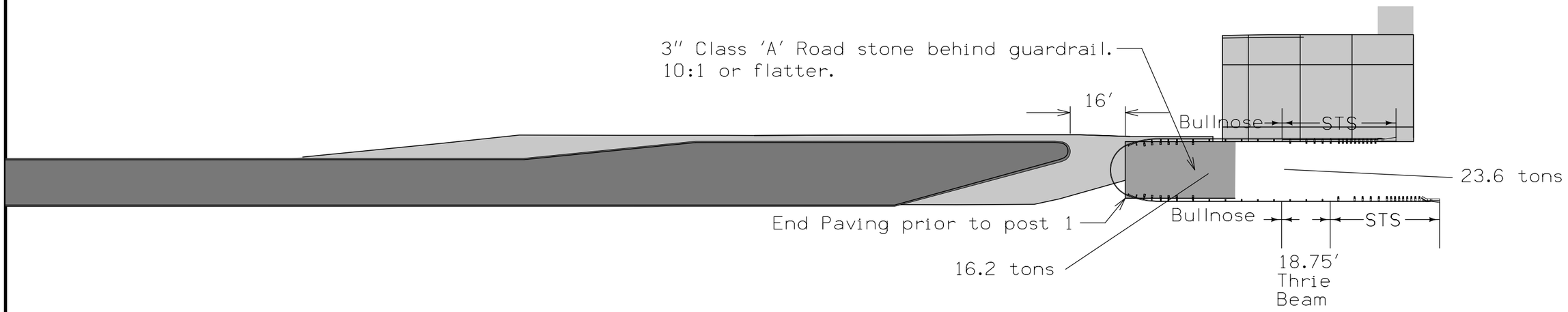


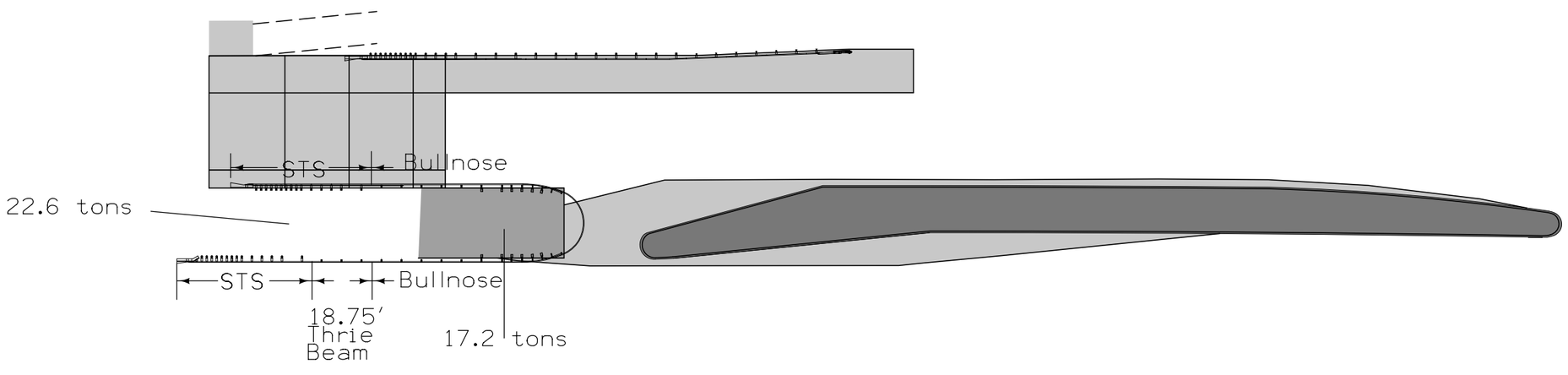
Nut

APPLICATION	(T)	(L)
Splice Bolt (c3)	1 1/16"	1 1/4"
Post Bolt (c7)	4"	10"
Post Bolt (c5)	4"	18"

(T) = Min. Thread Length

(L) = Bolt Length





Bid Item Quantity
Granular Surfacing on Road, Class A Crushed Stone
79.6 tons

Median Guardrail Layout

FILE NO. 31892	ENGLISH	DESIGN TEAM J1a \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER U.11

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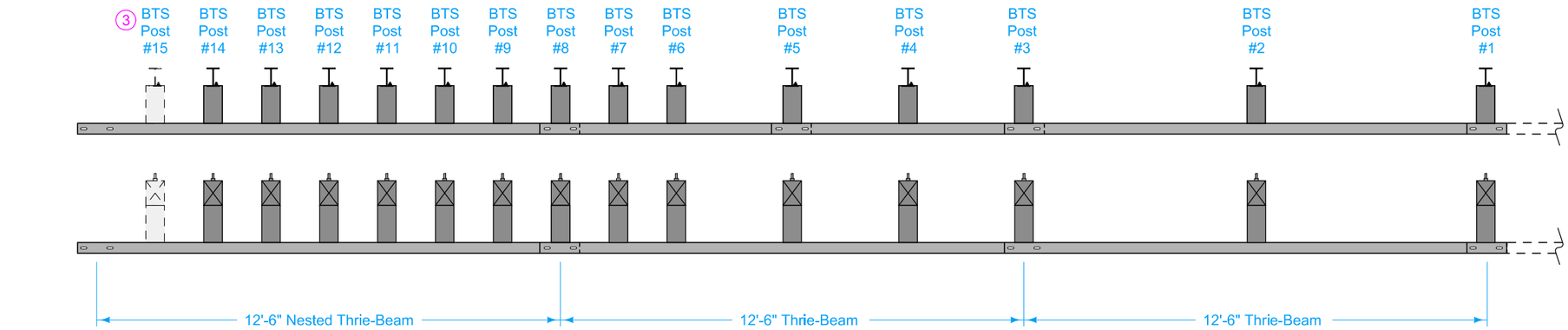
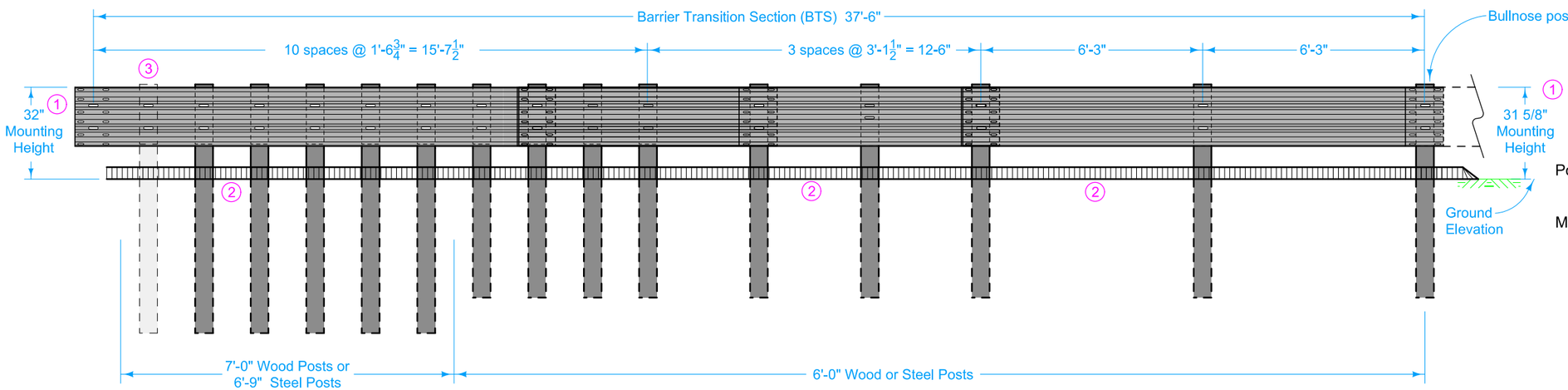
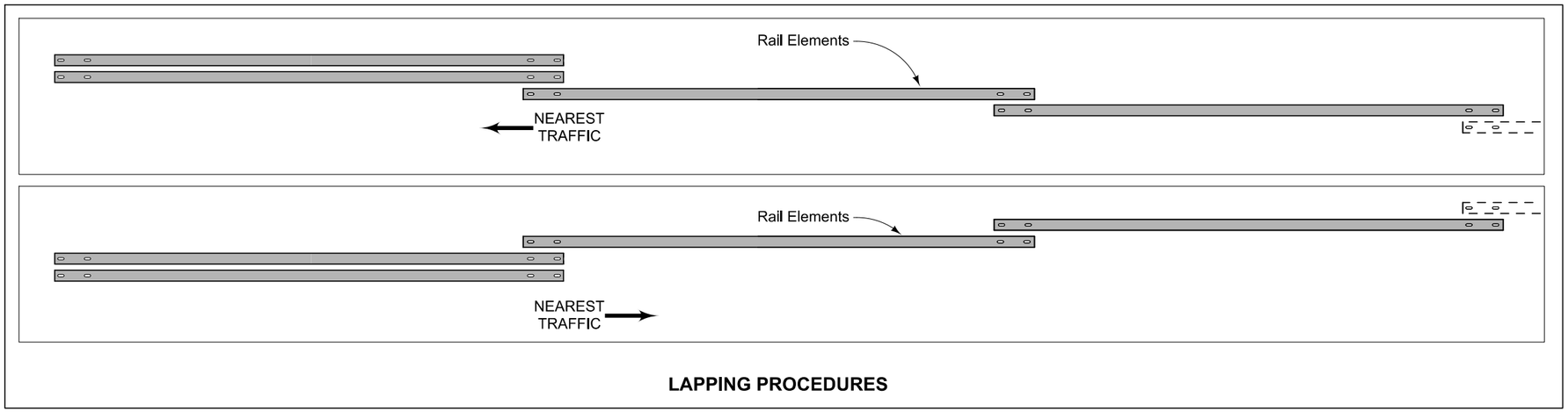


PLAN



ELEVATION



LAPPING PROCEDURES

At Bridge End Drains, cut Scour Protection (Transition Mat and Turf Reinforcement Mat) or remove rock as required to place post(s) such that Bridge End Drains abut post(s).

1. Guardrail mounting height at barrier connection is 32 inches. Transition guardrail mounting height down to 31 5/8 inches between BTS Posts #1 and #3.
2. Possible 4 inch sloped curb. See project plans.
3. Depending on end anchor type, BTS Post #15 may be eliminated or modified. See BA-202.

Possible Contract Item:
Steel Beam Guardrail Barrier Transition Section, BA-201

Materials included in the Contract Item:
Steel Post Option:
(9) 6" x 8" x 6'-0" posts
(6) 6" x 8" x 6'-9" posts
(15) 6" x 12" x 19" blockouts
Wood Post Option:
(9) 6" x 8" x 6'-0" posts
(6) 6" x 8" x 7'-0" posts
(15) 6" x 12" x 19" blockouts
(4) 12'-6" Thrie-Beam rail sections
Approved bolts, nuts, and washers
Refer to BA-200 for guardrail components

MODIFIED
STANDARD ROAD PLAN

BA-201
SHEET 1 of 3

MODIFICATIONS: Changed W-beam to thrie beam, adjusted post spacing.

STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION (MASH TL-3)

FILE NO. 31892	ENGLISH	DESIGN TEAM J1a \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER U.12

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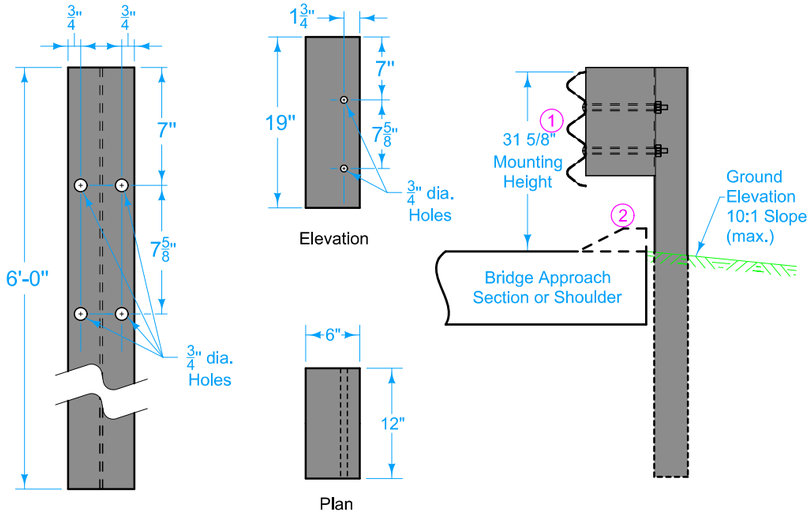
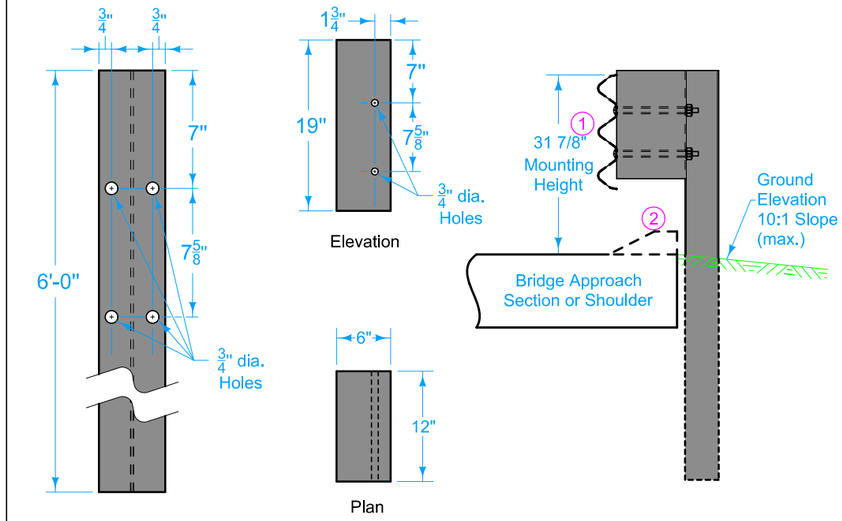
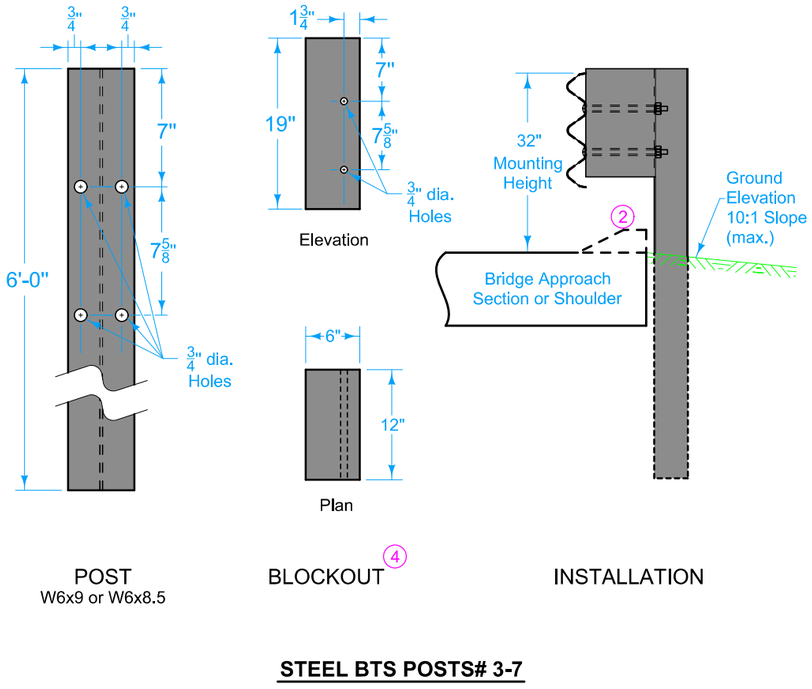


STEEL BTS POST #1

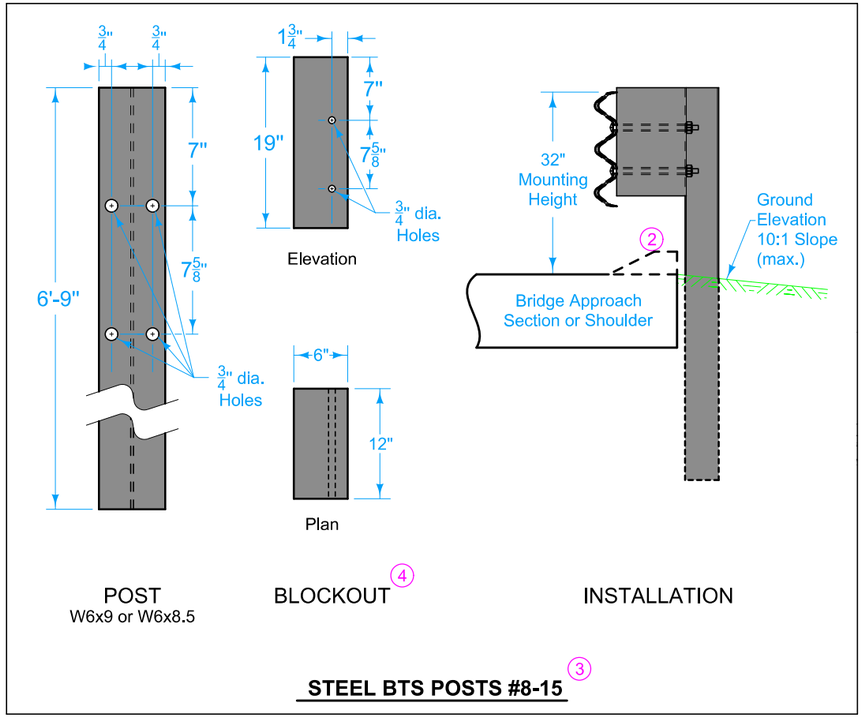


STEEL BTS POST #2

1. Guardrail mounting height at barrier connection is 32 inches. Transition guardrail mounting height down to 31 5/8 inches between BTS Posts #1 and #3.
2. Possible 4 inch sloped curb. See project plans.
3. Depending on end anchor type, BTS Post #15 may be eliminated or modified. See BA-202.
4. Wood or composite only. Steel blockouts will not be allowed.
5. Place bolt in top hole only.



STEEL BTS POSTS# 3-7



STEEL BTS POSTS #8-15 (3)

MODIFIED
STANDARD ROAD PLAN

BA-201
SHEET 2 of 3

MODIFICATIONS: Changed W-beam to thrie beam, adjusted post spacing.

STEEL BEAM GUARDRAIL
BARRIER TRANSITION SECTION
(MASH TL-3)

FILE NO. 31892	ENGLISH	DESIGN TEAM J1a \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER U.13

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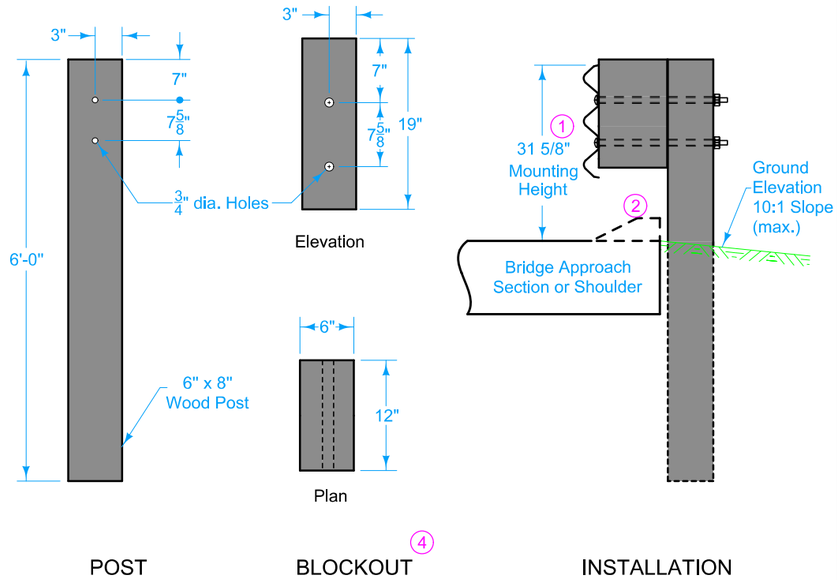
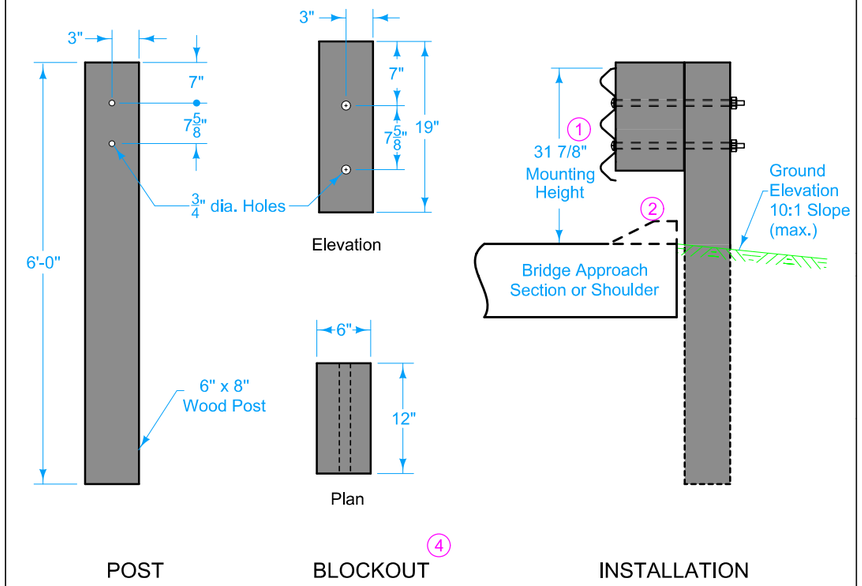
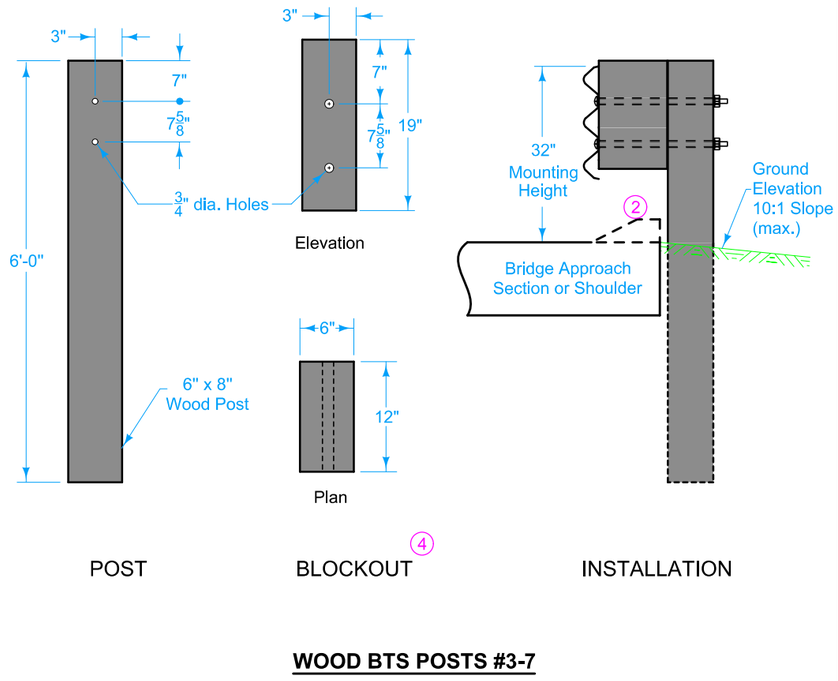


WOOD BTS POST #1

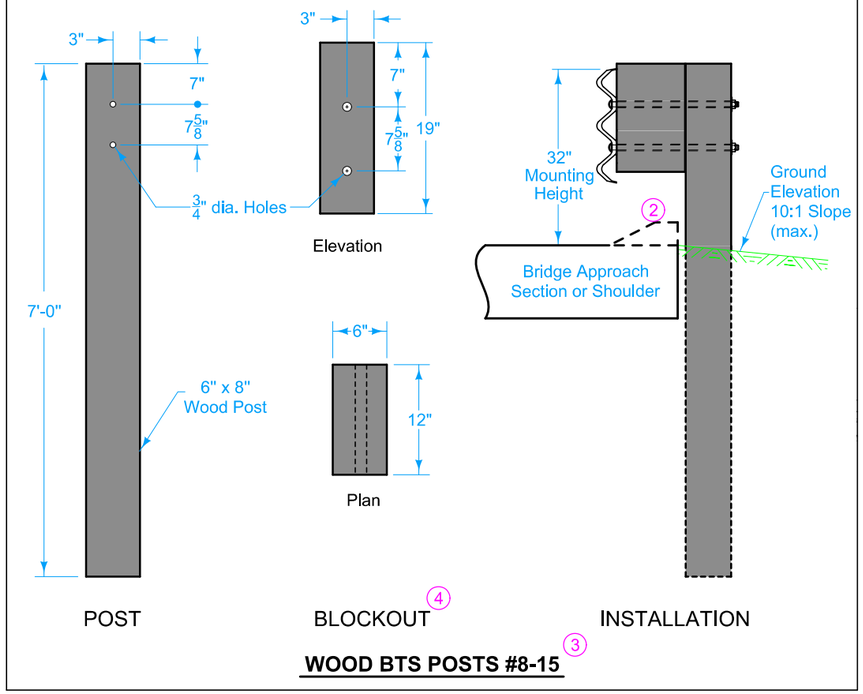


WOOD BTS POST #2

1. Guardrail mounting height at barrier connection is 32 inches. Transition guardrail mounting height down to 31 5/8 inches between BTS Posts #1 and #3.
2. Possible 4 inch sloped curb. See project plans.
3. Depending on end anchor type, BTS Post #15 may be eliminated or modified. See BA-202.
4. Wood or composite only. Steel blockouts will not be allowed.
5. Place bolt in top hole only.
6. 16d nail to prevent blockout rotation.



WOOD BTS POSTS #3-7



WOOD BTS POSTS #8-15 3

MODIFIED
STANDARD ROAD PLAN

BA-201
SHEET 3 of 3

MODIFICATIONS: Changed W-beam to thrie beam, adjusted post spacing.

STEEL BEAM GUARDRAIL
BARRIER TRANSITION SECTION
(MASH TL-3)

FILE NO. 31892	ENGLISH	DESIGN TEAM Jia \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER U.14

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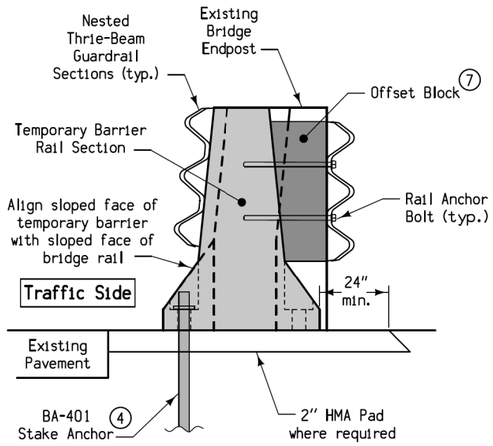
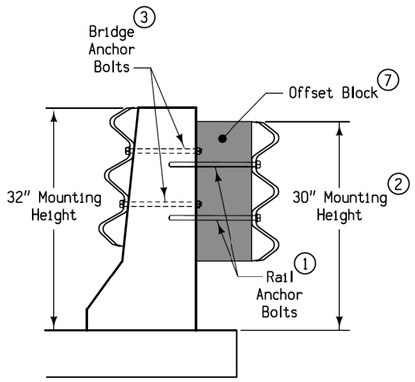
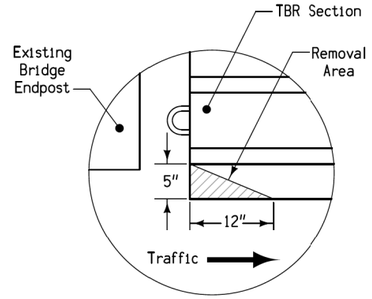


SECTION A-A



SECTION B-B



DETAIL 'A'

Where TBR is installed on the trailing end of a bridge, remove the toe of the first TBR section to the dimensions shown above.

Install temporary barrier rail on a flat, level surface. Removal of curb adjacent to bridge end posts may be necessary. Where anchored TBR sections are not located on existing pavement, construct a 2" minimum thickness HMA pad as shown. When required, removal of curb and construction of HMA pad will be considered incidental to this contract item.

Upon removal of Temporary to Permanent Barrier Connection, use non-shrink grout complying with Materials I.M. 491.13 to fill any holes that were drilled for attachment of Terminal Connectors to bridge rail.

Contract Item: Temporary to Permanent Barrier Connection

Item includes:
- 4 - 6'-3" Thrie-Beam Guardrail Sections
- 4 - BA-202 Terminal Connectors
- 48 - 5/8" dia. Guardrail Splice Bolts and Nuts
- 5 - 7/8" dia. x 12" Bridge Anchor Bolts and Nuts
- 10 - Washers for Bridge Anchor Bolts
- 19 - 3/4" dia. Rail Anchor Bolts: Powers Fasteners Wedge-Bolt Anchor OR Red Head Large Diameter Tapcon OR Simpson Titen HD Screw Anchor

The number of Temporary to Permanent Barrier Connections will be counted. The Contractor will be paid the contract unit price for each Temporary to Permanent Barrier Connection measured as provided above.

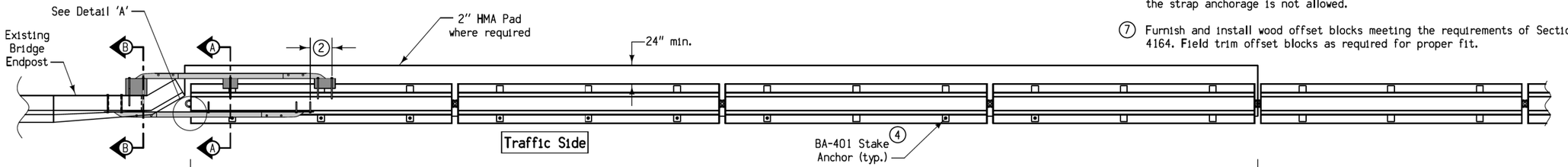
(1) Install five (5) Rail Anchor Bolts in each Terminal Connector as shown. Ensure a minimum embedment depth of 6". Drill pilot holes with a core bit. Avoid drilling or cutting through reinforcing steel within TBR sections.

(2) Shift non-traffic-side thrie-beam sections 16" farther from bridge and 2" lower in order to prevent interference with Bridge Anchor Bolts.

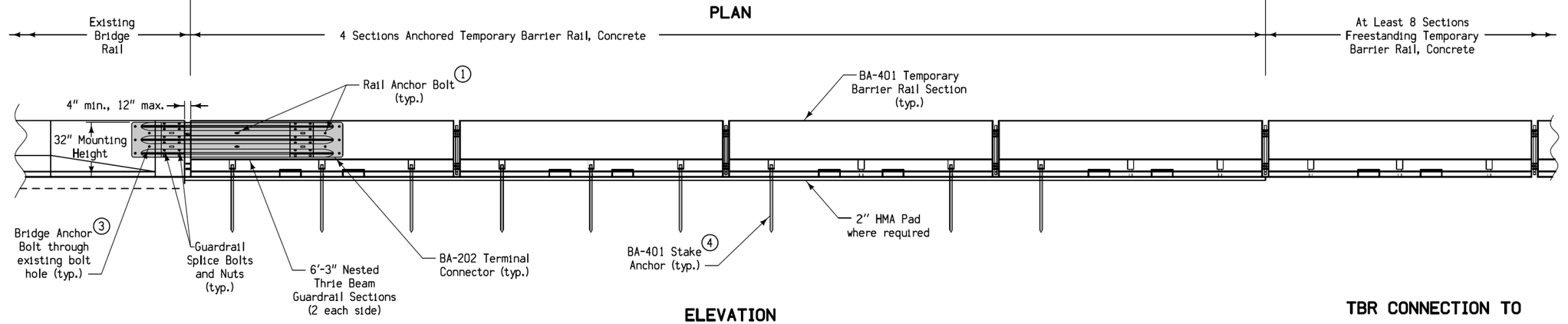
(3) Attach traffic-side Terminal Connector to bridge endpost through existing holes. Use Bridge Anchor Bolts, Nuts, and Washers complying with Article 4155.02 for connecting steel beam guardrail to bridge barrier rail.

(4) Each connection requires nine (9) BA-401 stake anchors as shown. Use of the strap anchorage is not allowed.

(7) Furnish and install wood offset blocks meeting the requirements of Section 4164. Field trim offset blocks as required for proper fit.



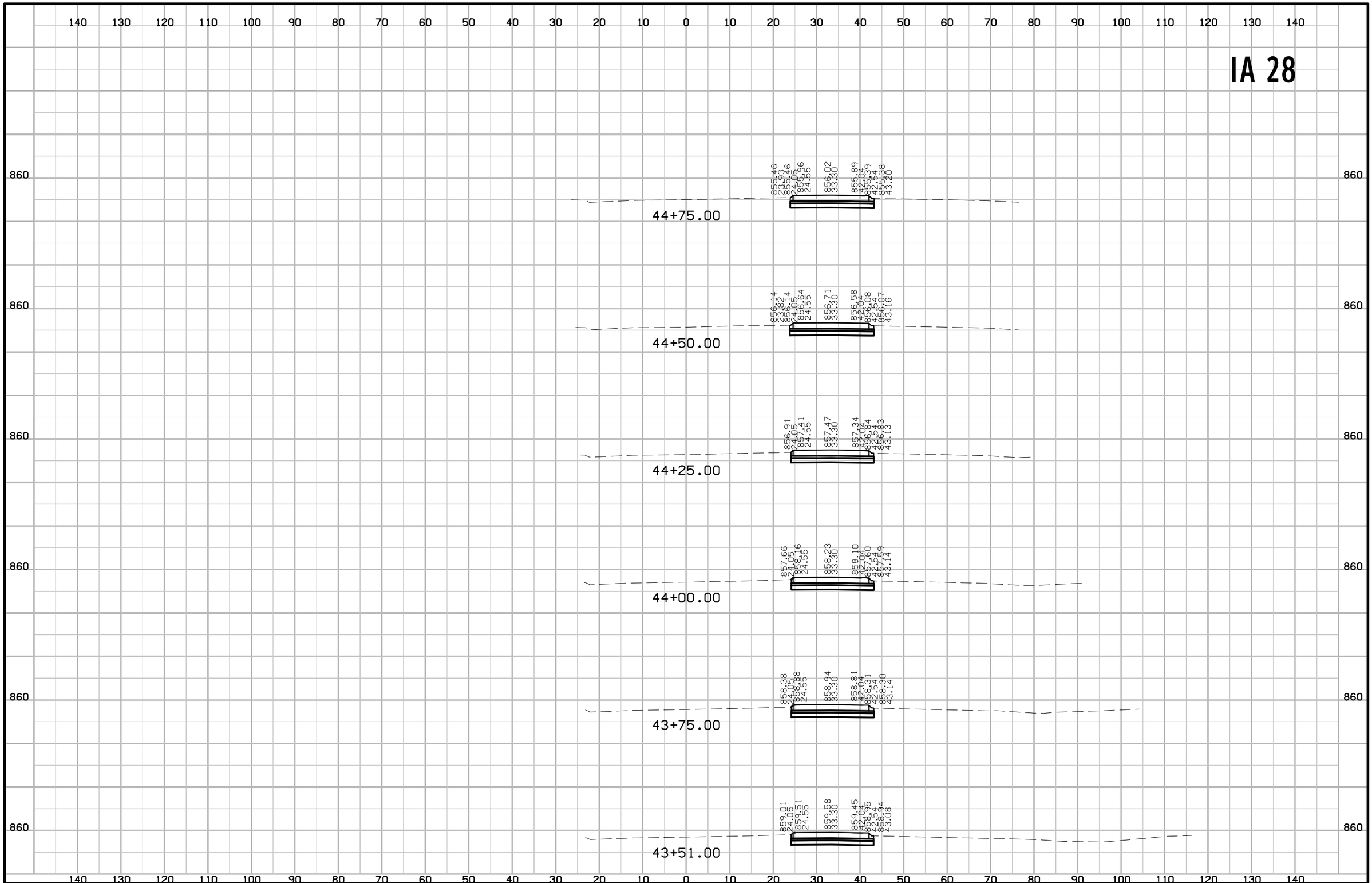
PLAN



ELEVATION

TBR CONNECTION TO NJ-SHAPE BRIDGE RAIL WITH FLARED END SECTIONS

IA 28



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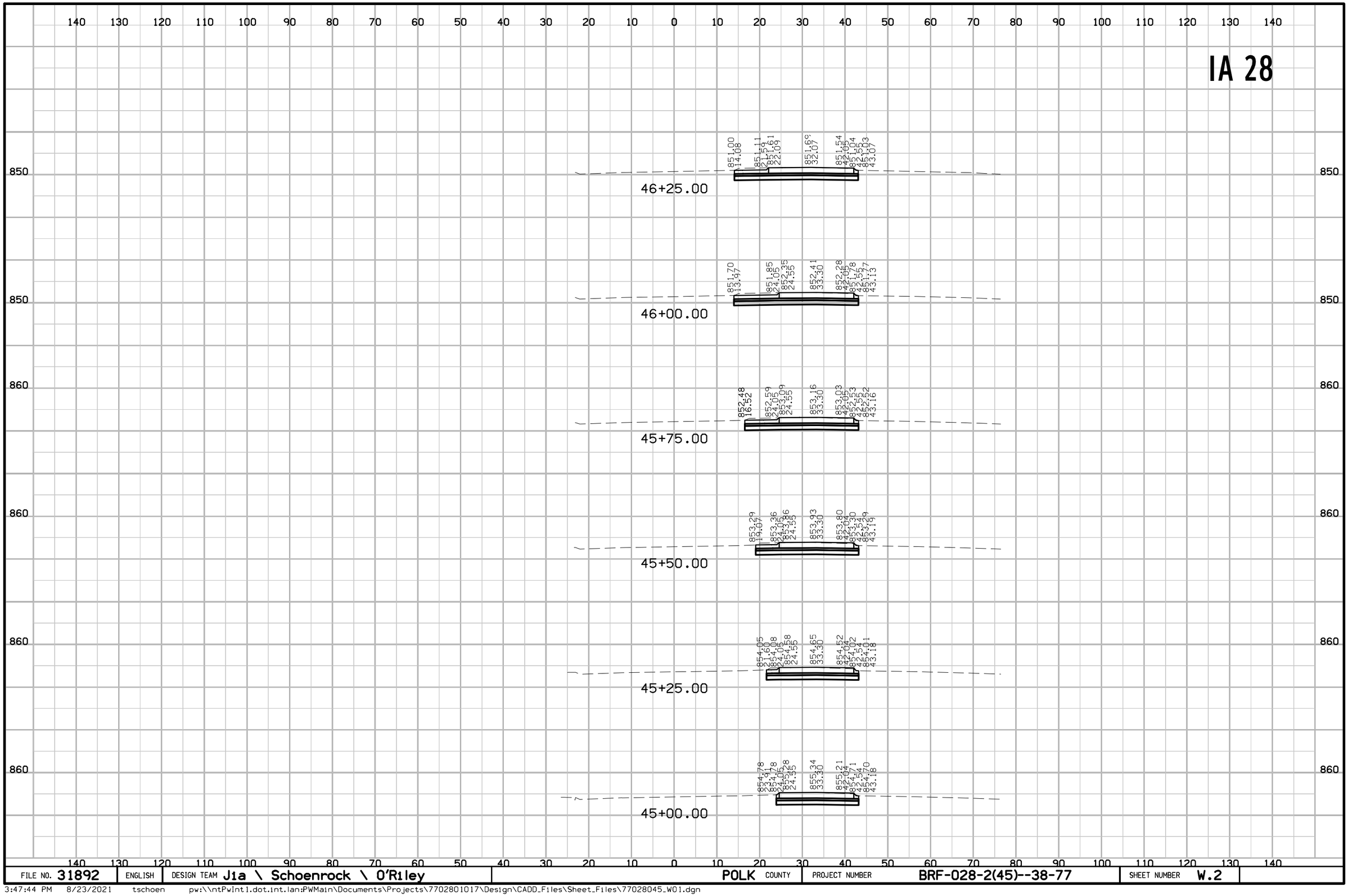
IA 28



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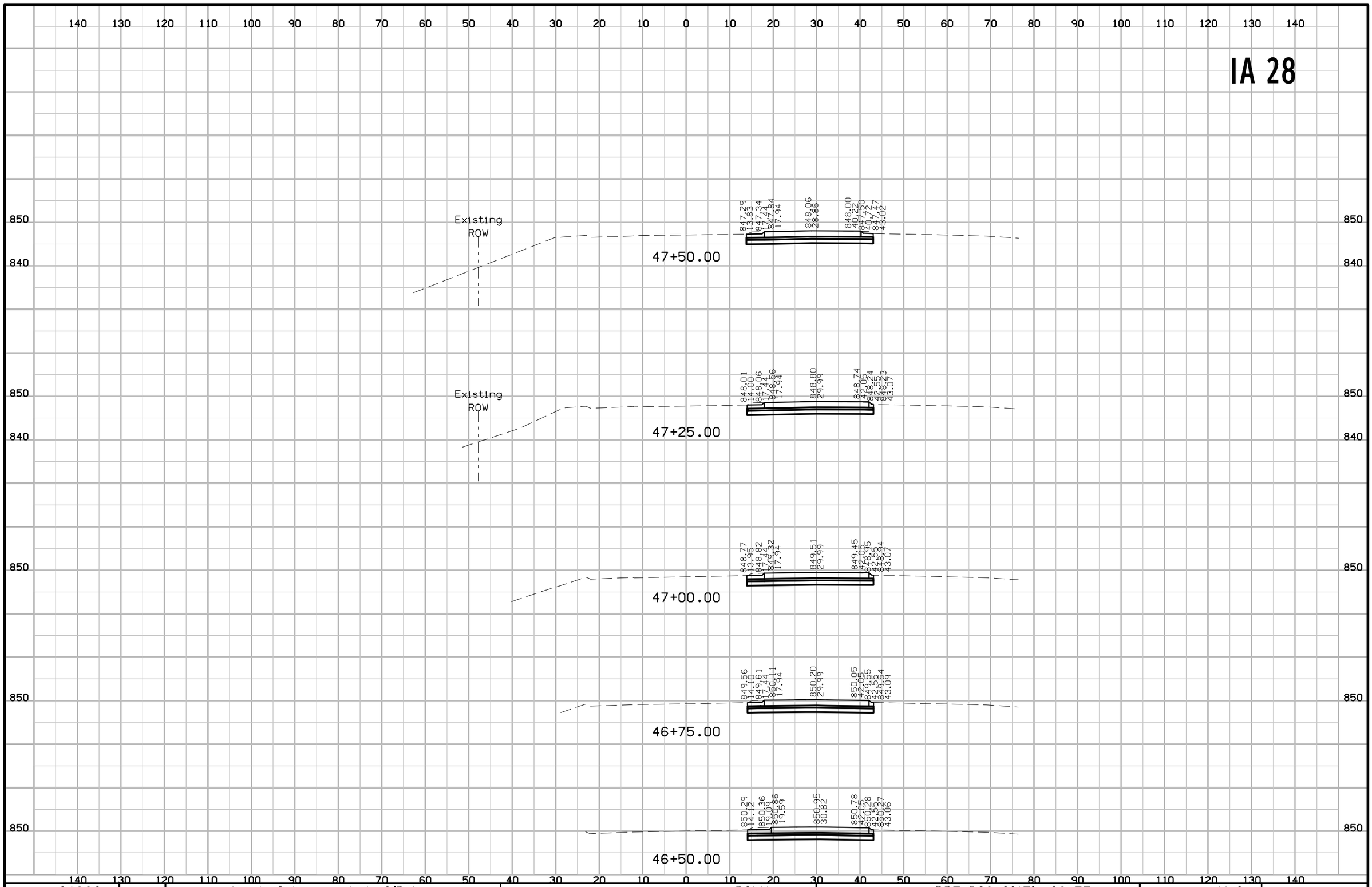
IA 28



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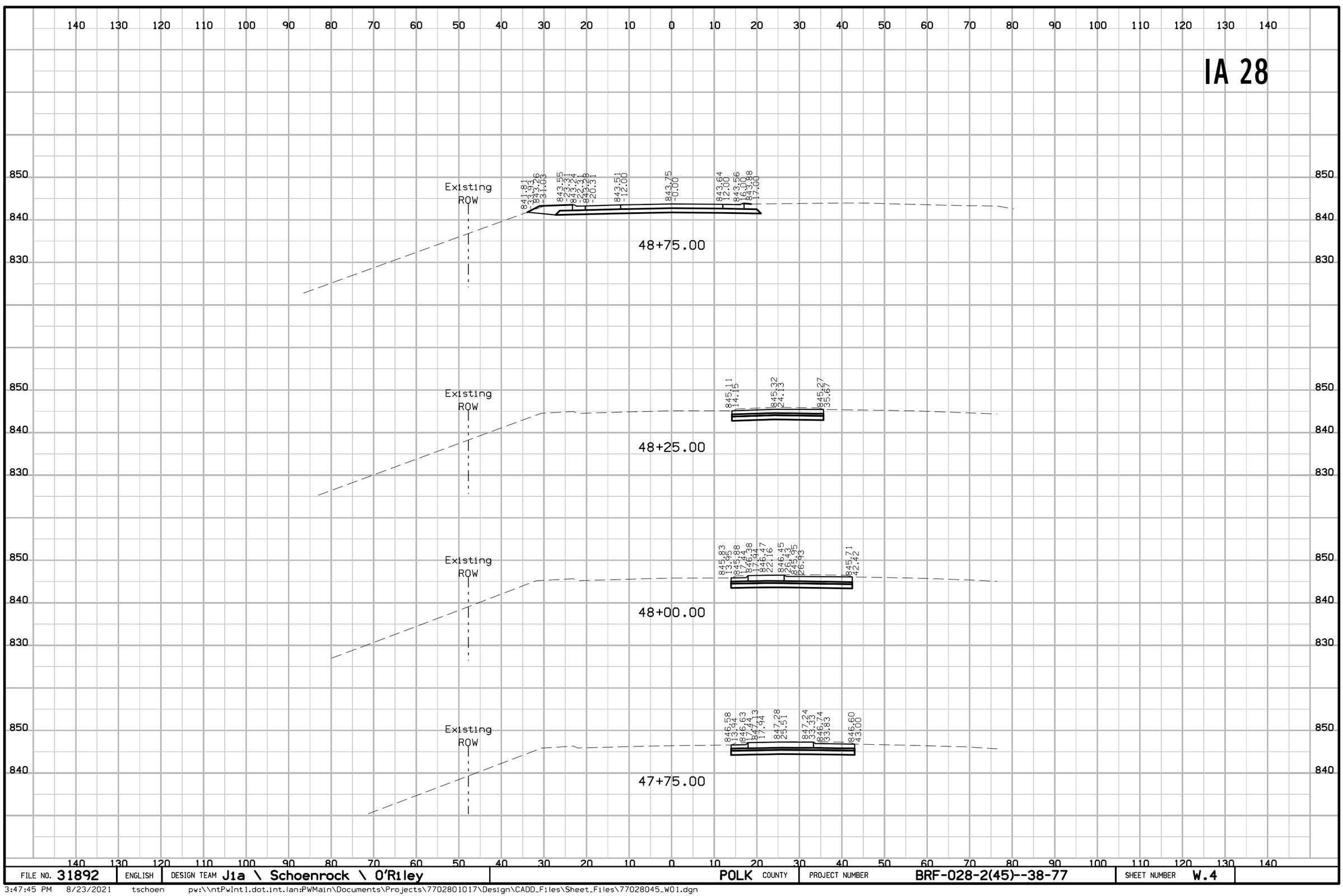
IA 28



FILE NO. 31892	ENGLISH	DESIGN TEAM J1a \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER W.4

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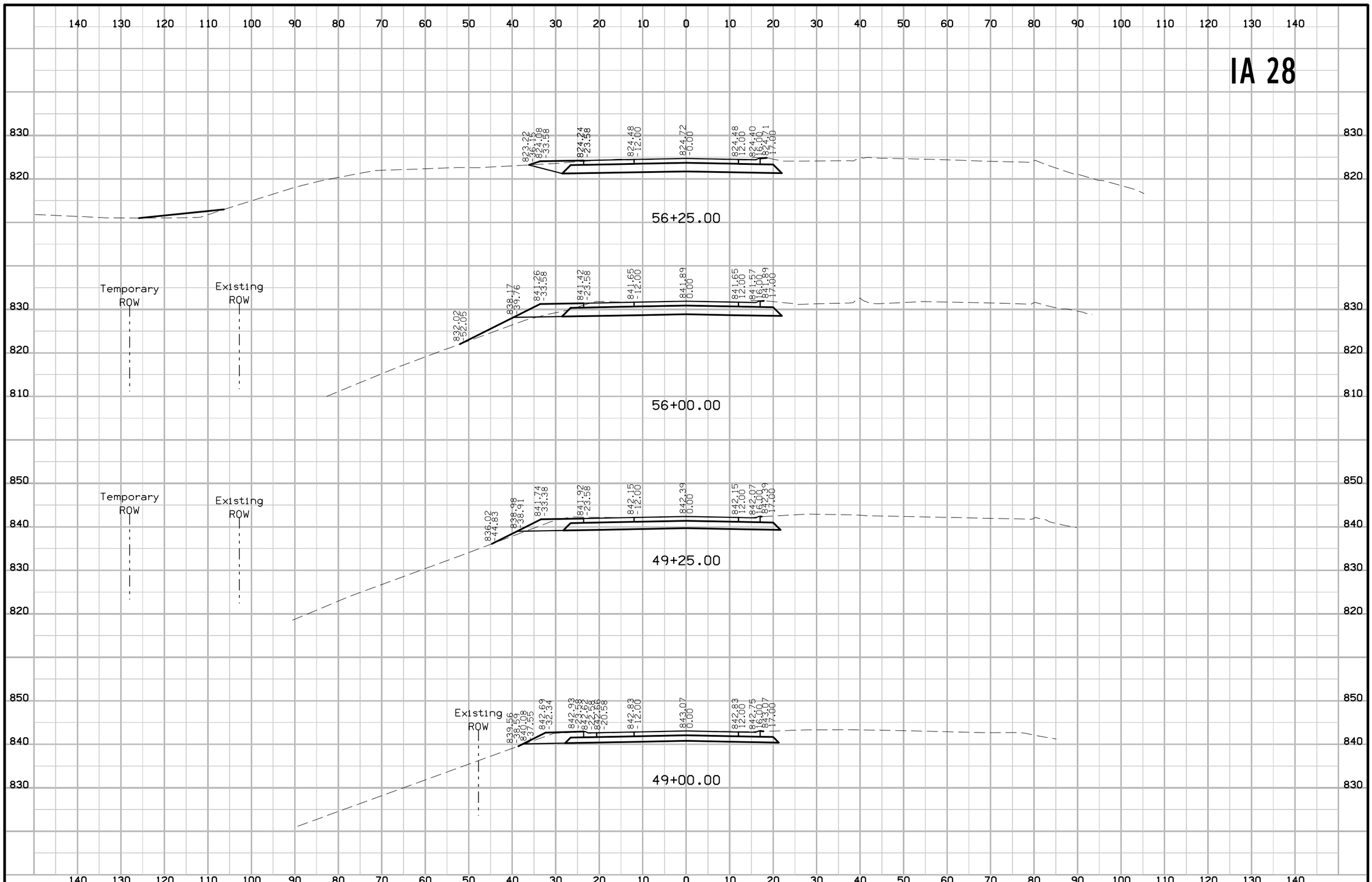
IA 28



FILE NO. 31892	ENGLISH	DESIGN TEAM J1a \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER W.5

12:40:35 PM 9/15/2021 tschoen pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\7702801017\Design\CADD_Files\Sheet_Files\77028045_W01.dgn

IA 28

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

820
810

Existing ROW

819.16
-36.24
816.00
-36.00
820.09
-33.44

821.44
-27.35
821.59
-23.63

822.06
-12.00

57+25.00

820
810

Proposed ROW

Existing ROW

819.33
-36.28
816.00
-36.00
820.64
-32.84

822.02
-27.35
822.12
-23.63

822.59
-12.00

57+00.00

820
810

① Proposed Wing Dike.

Existing ROW

820.23
-147.50

813.10
-141.30

814.50
-129.50

814.40
-122.00

812.50
-86.00

812.70
-73.30

812.99
-69.81

820.57
-45.17

823.05
-37.09

823.22
-27.06

823.27
-23.58

823.00
-20.58

823.17
-12.00

823.41
-0.00

823.17
12.00

823.09
16.00

823.41
17.00

56+75.00

830
820
810
800

① Proposed Wing Dike.

Existing ROW

820.23
-147.50

815.47
-128.00

814.47
-67.00

820.23
-58.40

820.23
-44.10

820.75
-42.53

823.39
-34.59

823.56
-24.59

823.58
-23.58

823.81
-12.00

824.05
0.00

823.81
12.00

823.73
16.00

824.04
17.00

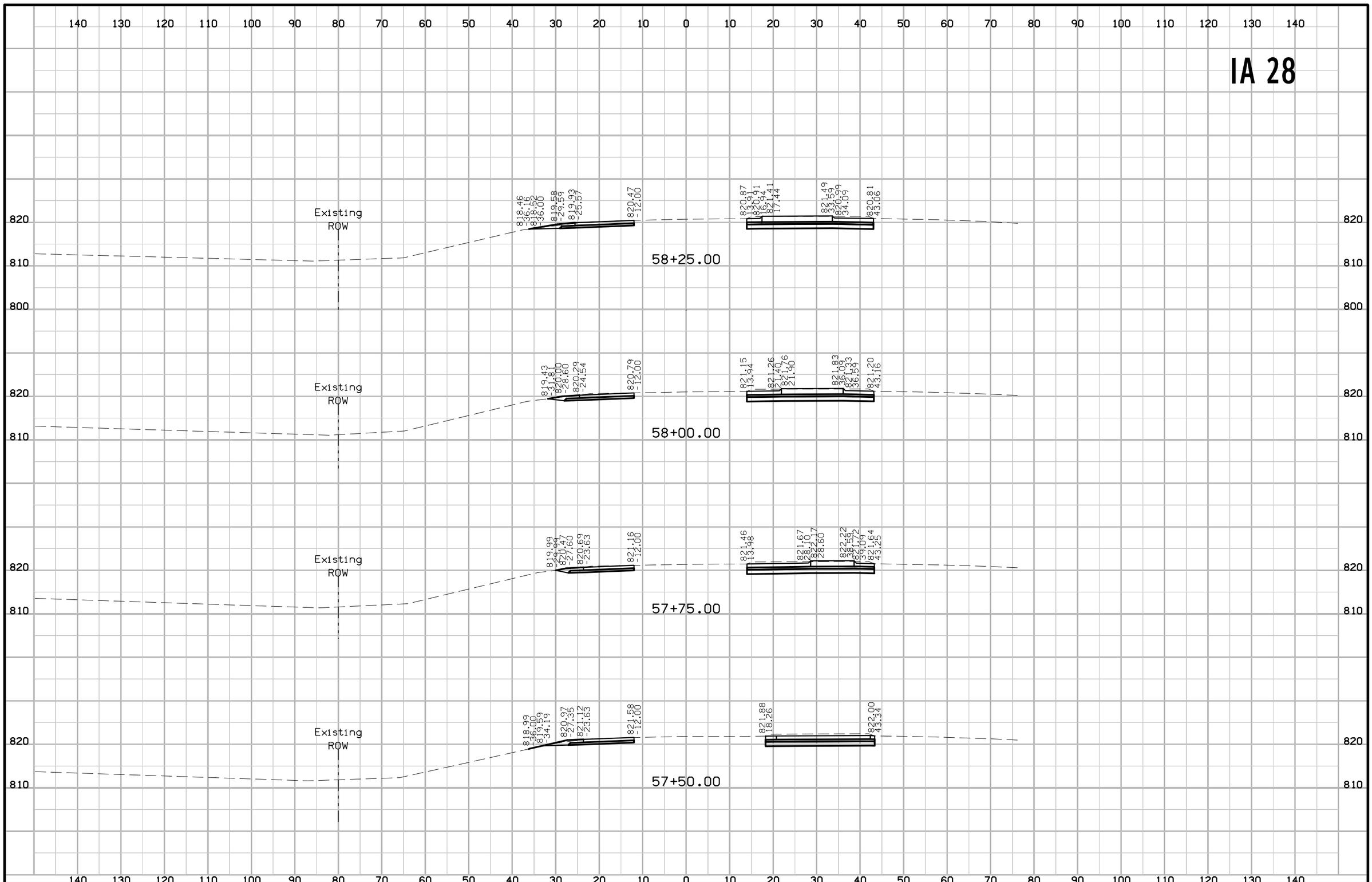
56+50.00

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

FILE NO. 31892	ENGLISH	DESIGN TEAM J1a \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER W.6

12:46:24 PM 10/5/2021 tschoen pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\7702801017\Design\CADD_Files\Sheet_Files\77028045_W01.dgn

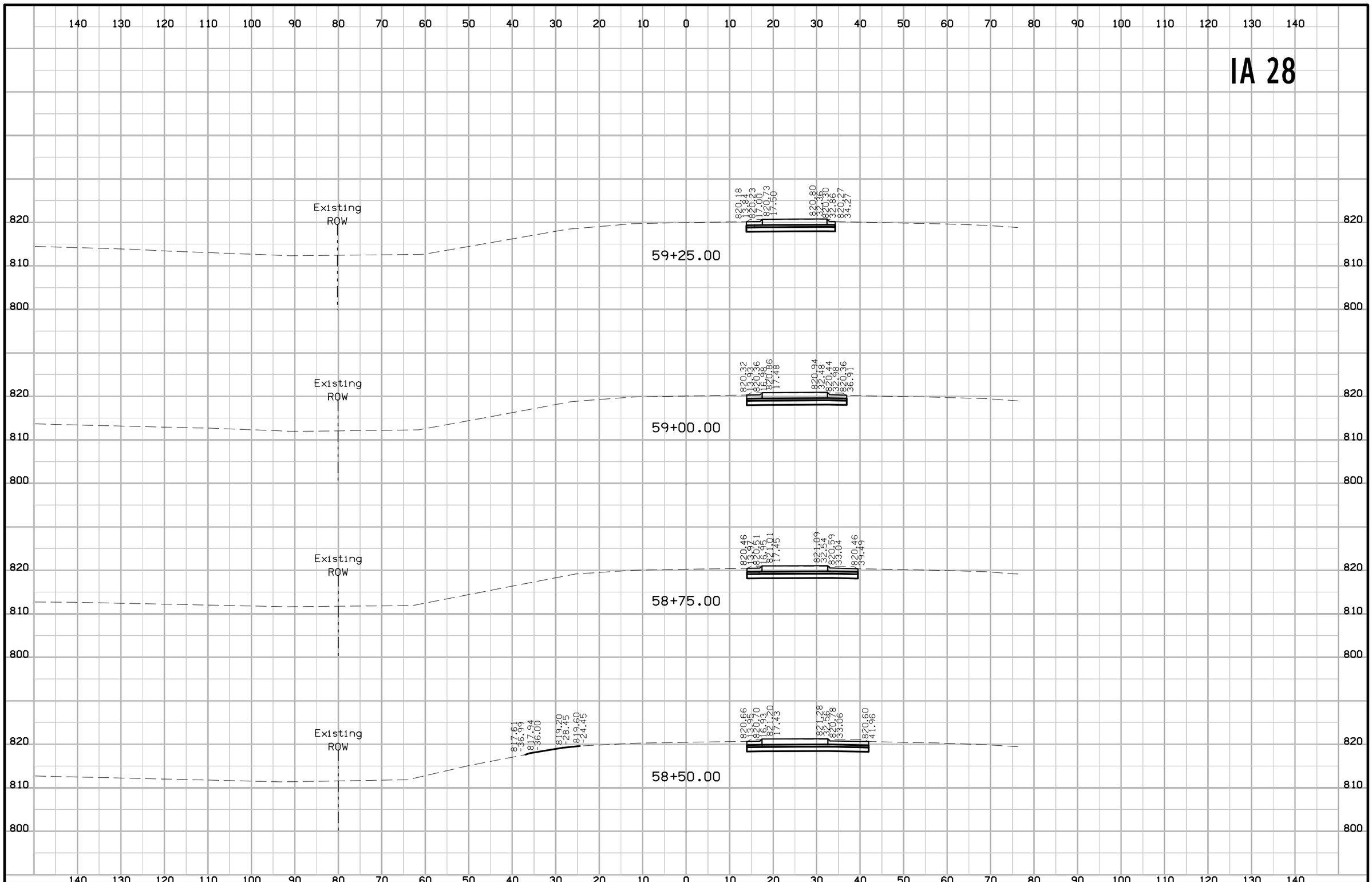
IA 28



FILE NO. 31892	ENGLISH	DESIGN TEAM J1a \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER W.7

12:46:24 PM 10/5/2021 tschoen pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\7702801017\Design\CADD_Files\Sheet_Files\77028045_W01.dgn

IA 28



FILE NO. 31892	ENGLISH	DESIGN TEAM J1a \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER W.8

12:46:25 PM 10/5/2021 tschoen pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\7702801017\Design\CADD_Files\Sheet_Files\77028045_W01.dgn

IA 28

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

820
810

Existing
ROW

59+93.00

820.10
16.85
820.14
19.09
820.64
19.59
820.70
31.68
820.20
32.18
820.19
32.70

820
810

Existing
ROW

59+75.00

820.07
14.63
820.12
17.12
820.62
18.17
820.69
31.66
820.19
32.16
820.18
32.68

820
810

Existing
ROW

59+50.00

820.10
13.66
820.15
17.02
820.65
17.52
820.73
32.19
820.23
32.69

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

FILE NO. 31892	ENGLISH	DESIGN TEAM J1a \ Schoenrock \ O'Riley	POLK COUNTY	PROJECT NUMBER BRF-028-2(45)--38-77	SHEET NUMBER W.9

3:47:48 PM 8/23/2021 tschoen pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\7702801017\Design\CADD_Files\Sheet_Files\77028045_W01.dgn