LETTING DATE 07-30-2019

SLIDE REPAIR

ER-092-9(158)--28-58

LOUISA Co.

INDEX OF SHEETS

IOWA DOT

Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

LOUISA COUNTY

SLIDE REPAIR

0.2 mi W of Co Rd X17 (MP 249.1)

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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

IOWA ONE CALL 1-800-292-8989 811 www.iowaonecall.com

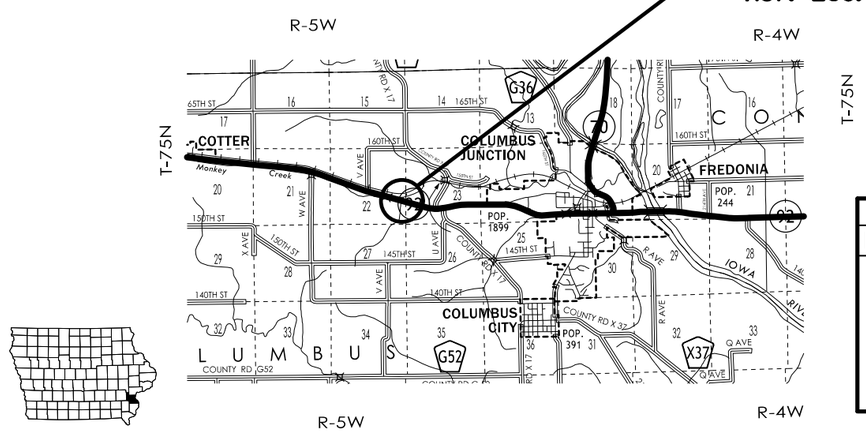
REVISIONS

	TOTAL
	47
PROJECT IDENTIFICATION NUMBER	
20-58-092-010	
PROJECT NUMBER	
ER-092-9(158)--28-58	
R.O.W. PROJECT NUMBER	

Project Location

Sta. 228+09.20

Ref. Loc. Sign 249.1



DESIGN DATA RURAL		
2019 AADT	3500	V.P.D.
2039 AADT	3900	V.P.D.
2039 DHV	410	V.P.H.
TRUCKS	24	%
Total Design ESALs	--	

INDEX OF SEALS

SHEET NO.	NAME	TYPE
A.1	Yanxiao Jia	Primary Signature Block
CD.1	David Claman	HYDRAULIC DESIGN
CS.1	MARK DELL	GEOTECHNICAL 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 — 07-17-2019

Signature — Date

Yanxiao Jia

Printed or Typed Name

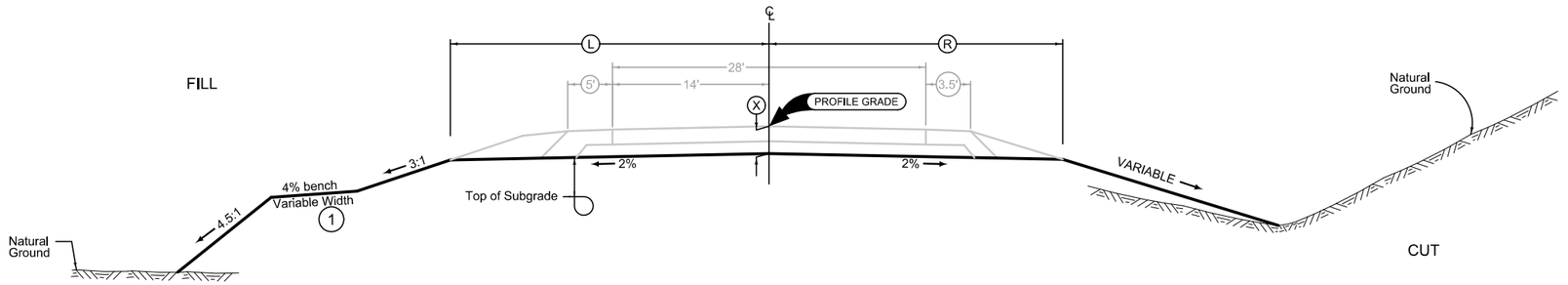
My license renewal date is December 31, 2020

Pages or sheets covered by this seal: A.1, B.1-7, C.1-9, D.1-2, G.1-5, J.1-2, T.1-5, W.1-3

FILE NO.	ENGLISH	DESIGN TEAM Jia \ Altenhofen	LOUISA COUNTY	PROJECT NUMBER ER-092-9(158)--28-58	SHEET NUMBER A.1

10:34:44 AM 7/19/2019 raltenh pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\5809201020\Design\SHT\58092158_A01.dgn

LOCATION			DIMENSIONS			
ROAD IDENTIFICATION	STATION TO STATION		(L) Feet	(R) Feet	(X) Inches	
IA92	225+55.08	227+69.60	28	(1)	21	



G_2_Grade
MODIFIED

Normal section shown may be modified appropriately in areas of superelevated curves or other locations specifically designated by the Engineer.

See plan & profile sheets and cross sections for additional details of ditches and backslopes.

2 LANE GRADING (2)

(1) Refer to cross sections

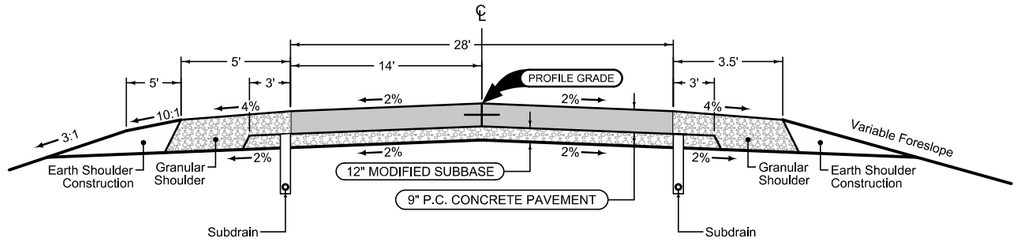
(2) Refer to Q and T sheets for additional excavation

FILE NO.	ENGLISH	DESIGN TEAM J1a \ Altenhofen	LOUISA COUNTY	PROJECT NUMBER ER-092-9(158)--28-58	SHEET NUMBER B.1

10:25:06 AM 7/18/2019 raltenh pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\5809201020\Design\SHT\58092158_B01.dgn

Granular Shoulder

		2_G
STATION TO STATION		
225+55.08	227+69.60	



Granular Shoulder

		2_G
STATION TO STATION		
225+55.08	227+69.60	

Mainline Jointing:
Transverse joints: CD at 17' spacing
Longitudinal joint: L-2

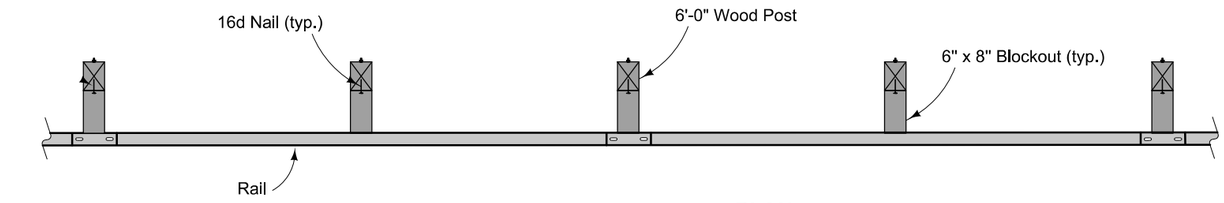
	2P_ MODIFIED
STATION TO STATION	
225+55.08	227+69.60

See Tab 100-24 or 100-25 for pavement quantities.

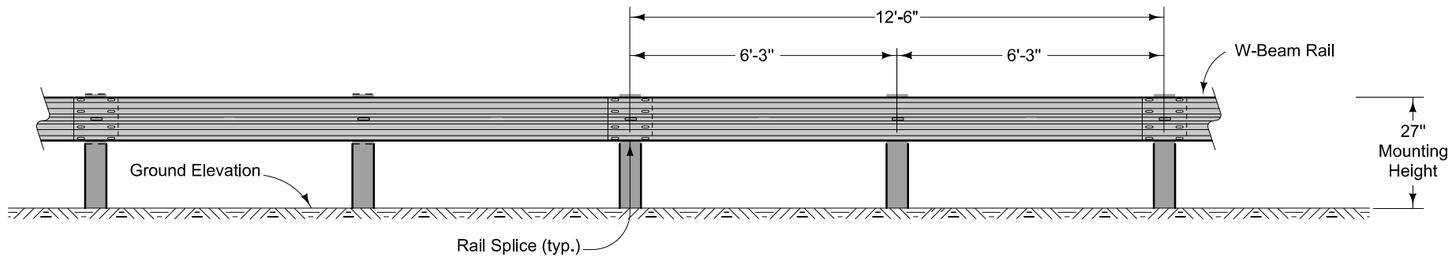
See Tab 112-9 for shoulder quantities.

IA 92

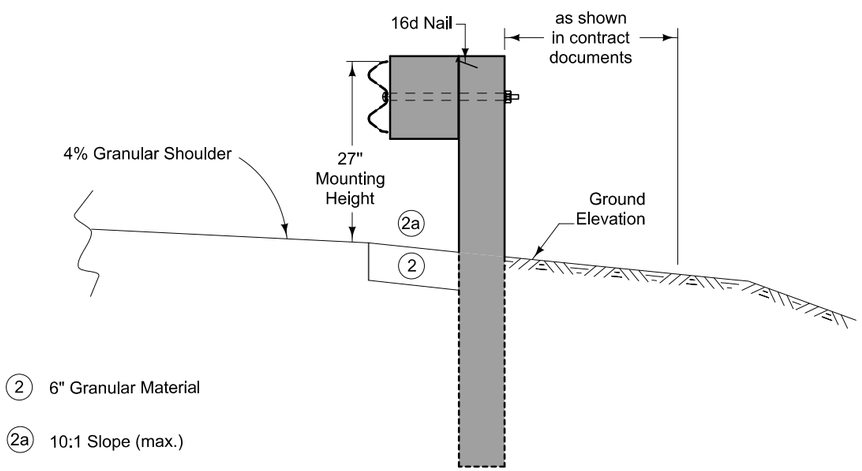
Comply with Section 2505 of the Specifications



PLAN



ELEVATION

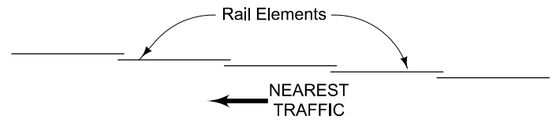


SECTION

W-BEAM INSTALLATION

(1) Wood or composite only. Steel blockouts will not be allowed.

(2) Bid as Granular Shoulders, Type A



LAPPING PROCEDURE

MODIFIED

STANDARD ROAD PLAN

REVISION

5	07-30-19

BA-200

SHEET 1 of 2

MODIFICATIONS: Changed mounting height from 31" to 27".

STEEL BEAM GUARDRAIL COMPONENTS

FILE NO.	ENGLISH	DESIGN TEAM J1a \ Altenhofen	LOUISA COUNTY	PROJECT NUMBER ER-092-9(158)--28-58	SHEET NUMBER B.3

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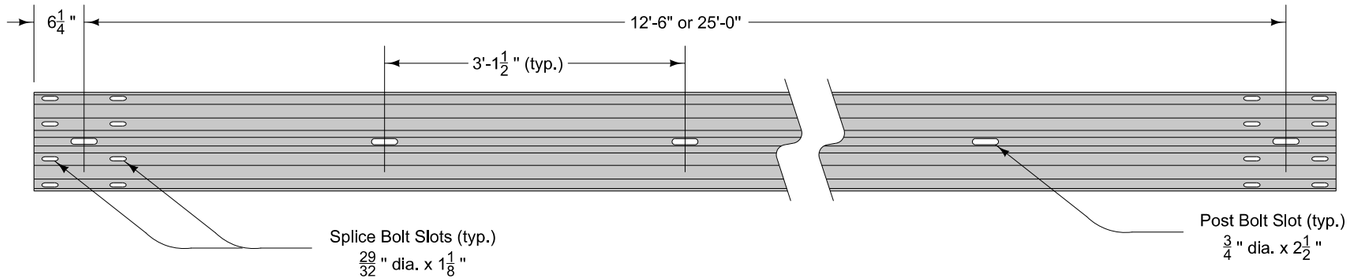
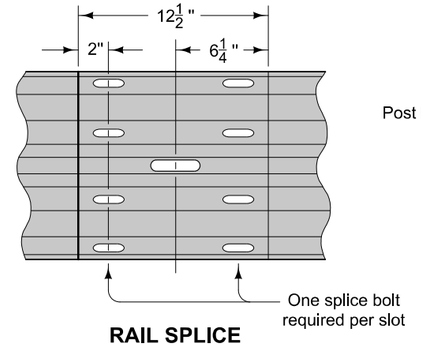
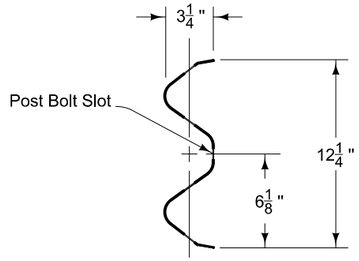


ELEVATION



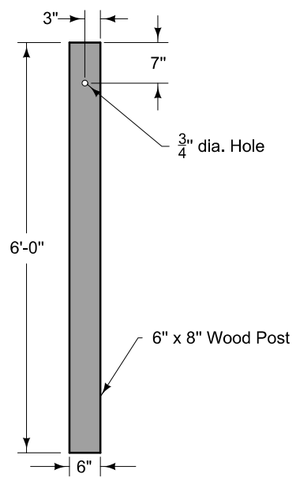
RAIL SPLICE



SECTION

W-BEAM RAIL

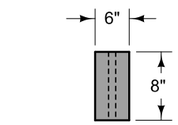
WOOD POST AND BLOCKOUT DETAILS



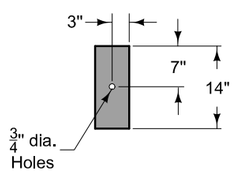
W-BEAM

POSTS

① Wood or composite only. Steel blockouts will not be allowed.



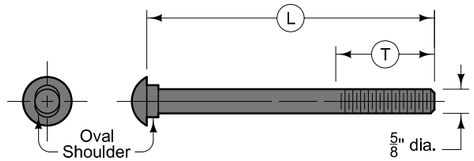
PLAN



ELEVATION

W-BEAM BLOCKOUT ①

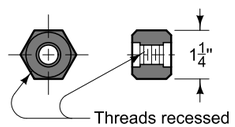
BOLT DETAILS



BOLT

APPLICATION	(T)	(L)
Splice Bolt	1 1/16"	1 1/4"
Bolt for Wood Post with 8" Blockout	2 1/2"	18"

(T) = Min. Thread Length (L) = Bolt Length



NUT

HARDWARE

MODIFIED

STANDARD ROAD PLAN

REVISION 5 07-30-19

BA-200

SHEET 2 of 2

MODIFICATIONS: Changed to only show W-Beam

STEEL BEAM GUARDRAIL COMPONENTS

FILE NO.	ENGLISH	DESIGN TEAM J1a \ Altenhofen	LOUISA COUNTY	PROJECT NUMBER ER-092-9(158)--28-58	SHEET NUMBER B.4

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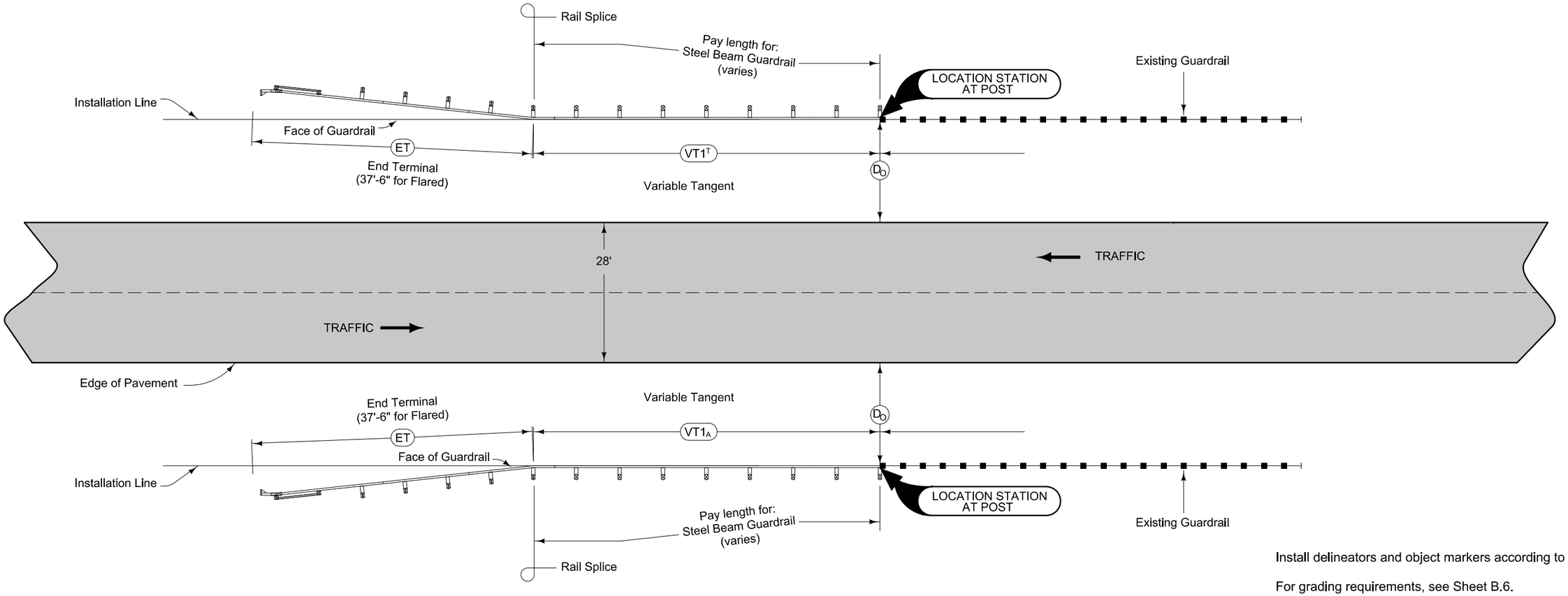
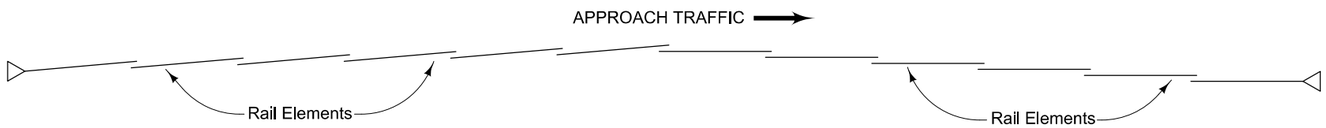




LAPPING PROCEDURE

Install delineators and object markers according to SI-211.

For grading requirements, see Sheet B.6.

For general guardrail details, see Sheet B.3 - B.4.

MODIFIED

STANDARD ROAD PLAN

REVISION	
3	07-30-19

BA-251

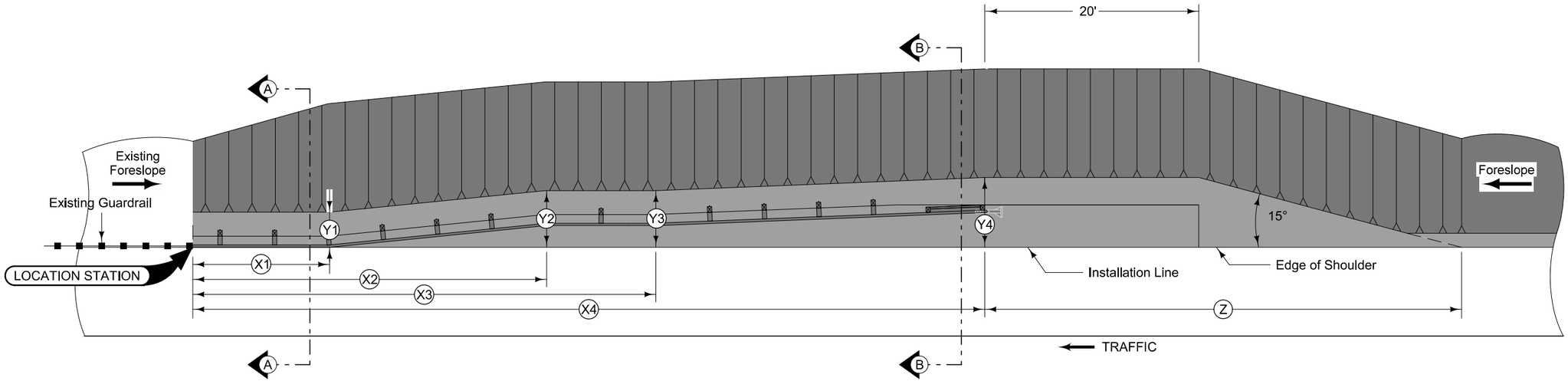
SHEET 1 of 1

MODIFICATIONS: Changed Location Station

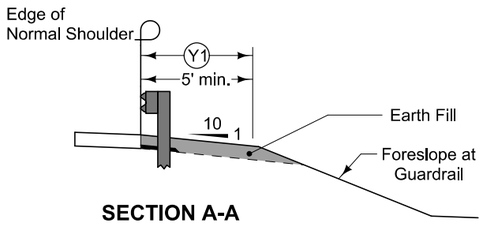
STEEL BEAM GUARDRAIL INSTALLATION AT SIDE OBSTACLE (TWO-WAY PROTECTION)

FILE NO.	ENGLISH	DESIGN TEAM J1a \ Altenhofen	LOUISA COUNTY	PROJECT NUMBER ER-092-9(158)--28-58	SHEET NUMBER B.5

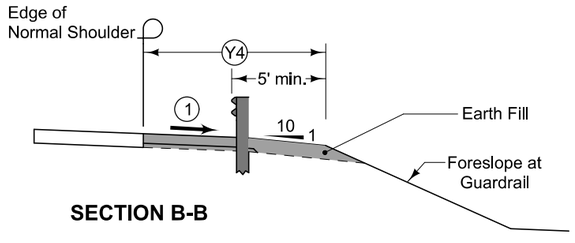
10:25:11 AM 7/18/2019 raltenh pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\5809201020\Design\SHT\58092158_B01.dgn



PLAN



SECTION A-A



SECTION B-B

LEGEND

- Foreslope at Guardrail
- Slope - 10:1

Y4 feet	Z feet
5	39
6	43
7	47
8	50
9	54
10	57
11	61
12	65
13	69
14	72
15	76
16	80
17	83
18	87
19	91
20	95

(1) 10:1 Slope on Westbound
Refer to cross sections for slope on eastbound

(X) Measured from Location Station.

(Y) Distance from edge of normal shoulder to toe of 10:1 slope

Possible Tabulation:
107-23

MODIFIED

STANDARD ROAD PLAN

REVISION	
1	07-30-19

EW-301

SHEET 1 of 1

MODIFICATIONS: Changed 10:1 Slope area

GUARDRAIL GRADING

FILE NO.	ENGLISH	DESIGN TEAM J1a \ Altenhofen	LOUISA COUNTY	PROJECT NUMBER ER-092-9(158)--28-58	SHEET NUMBER B.6

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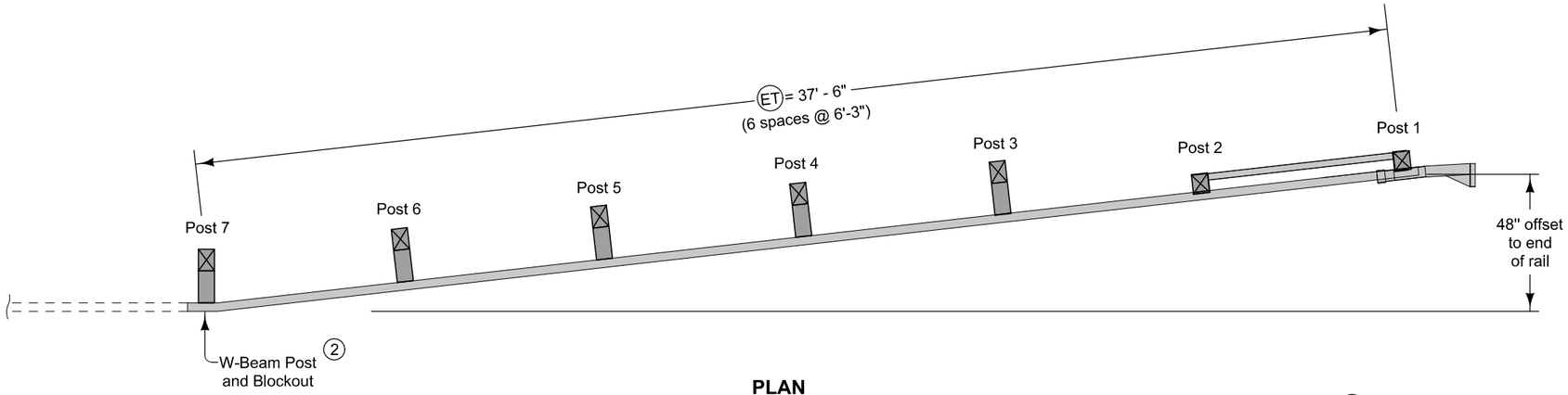
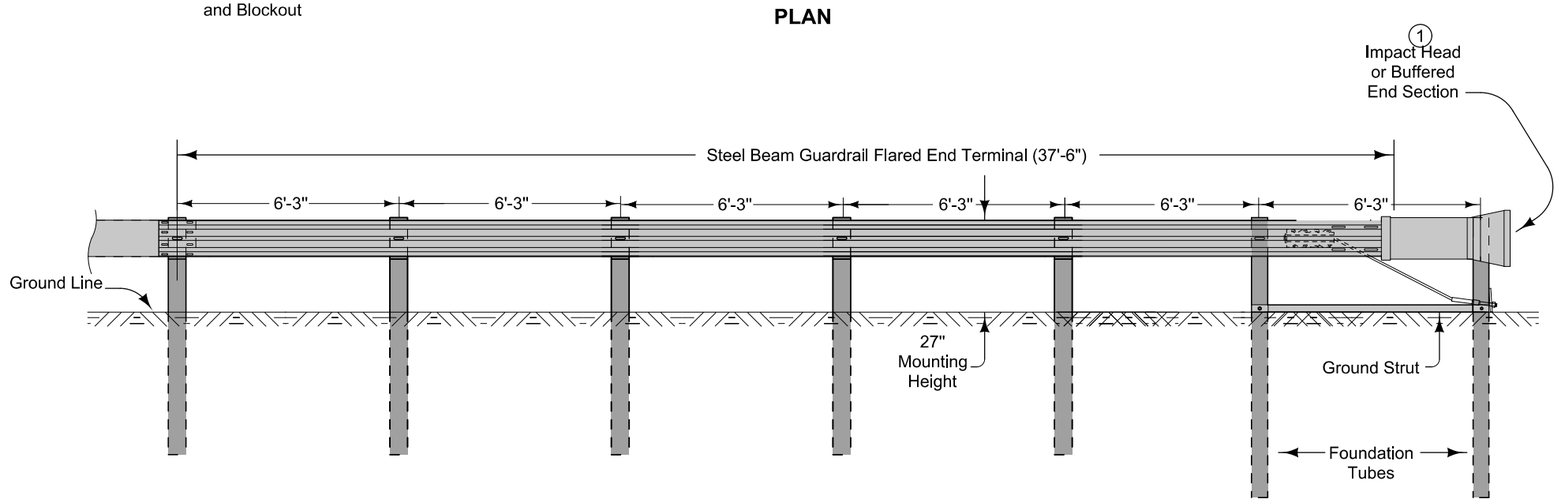
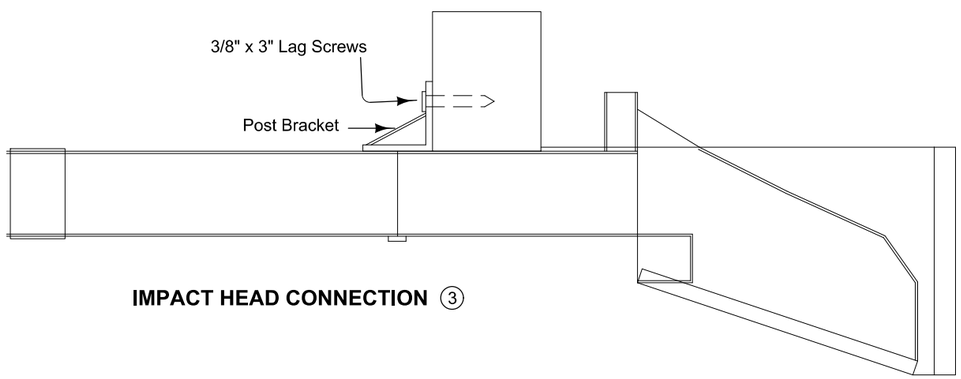


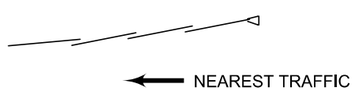
PLAN



ELEVATION



IMPACT HEAD CONNECTION (3)



LAPPING PROCEDURE

FLEAT-350 guardrail terminals shall be designed, manufactured and supplied by Road Systems, Inc. or a designated distributor, and shall consist of materials manufactured to their specifications. The contractor shall install the FLEAT-350 according to the manufacturer's recommendations.

Note: at the Contractor's option, and at no additional cost to the Contracting Authority, alternate post designs developed by the manufacturer and accepted by the FHWA for use within the end terminal may be substituted for the post design shown. When such a substitution is made, provide the Engineer with three copies of the most current installation and maintenance manual for the alternate design.

(1) Cover entire face of impact head or buffered end section with alternating black and yellow striped adhesive sheeting meeting the following requirements:

-Stripes are approximately 3 inches wide and slope down at a 45 degree angle toward the side on which traffic is to pass the end terminal.

-Yellow stripes meet the retroreflectivity requirements for Type III or Type IV reflective sheeting.

(2) Refer to Sheets B.3 - B.4.

(3) Place lag screws in post bracket holes located closest to center of wood post. Drill 1/4" pilot holes before screwing in lag screws. Support the impact head during installation of lag screws to ensure impact head remains parallel to W-Beam guardrail.

MODIFIED

STANDARD ROAD PLAN

REVISION	
New	07-30-19

LS-626

SHEET 1 of 1

MODIFICATIONS: Changed mounting height from 31" to 27"

STEEL BEAM GUARDRAIL
FLARED END TERMINAL
(NCHRP 350 TL-3)

FILE NO.	ENGLISH	DESIGN TEAM Jla \ Altenhofen	LOUISA COUNTY	PROJECT NUMBER ER-092-9(158)--28-58	SHEET NUMBER B.7

10:25:13 AM 7/18/2019 raltenh pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\5809201020\Design\SHT\58092158_B01.dgn

PROJECT DESCRIPTION

Emergency project to repair a slide on IA 92 in Louisa County.

Major work involved includes: excavating existing roadway embankment, over-excavating to place yugos at certain locations, removing/ and replacing existing pavement and guardrails.

ESTIMATED PROJECT QUANTITIES
(1 DIVISION PROJECT)

Item No.	Item Code	Item	Unit	Total	As Built Qty.
1	2101-0850001	CLEARING AND GRUBBING	ACRE	0.8	
2	2102-2625001	EMBANKMENT-IN-PLACE, CONTRACTOR FURNISHED	CY	11,545.0	
3	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW	CY	4,752.0	
4	2102-2710090	EXCAVATION, CLASS 10, WASTE	CY	9,629.0	
5	2102-2712015	EXCAVATION, CLASS 12, BOULDERS OR ROCK FRAGMENTS	CY	5.0	
6	2105-8425005	TOPSOIL, FURNISH AND SPREAD	CY	373.7	
7	2107-0875100	COMPACTION WITH MOISTURE CONTROL	CY	11,545.0	
8	2115-0100000	MODIFIED SUBBASE	CY	274.1	
9	2121-7425010	GRANULAR SHOULDERS, TYPE A	TON	194.0	
10	2123-7450000	SHOULDER CONSTRUCTION, EARTH	STA	4.90	
11	2301-1033090	STANDARD OR SLIP FORM PORTLAND CEMENT CONCRETE PAVEMENT, CLA SS C,	SY	667.4	
		CLASS 3 DURABILITY, 9 IN.			
12	2402-2720100	EXCAVATION, CLASS 20, FOR ROADWAY PIPE CULVERT	CY	8.0	
13	2422-0360066	APRONS, UNCLASSIFIED, 66 IN. DIA.	EACH	1	
14	2422-1723066	CULVERT, UNCLASSIFIED ROADWAY PIPE, 66 IN. DIA.	LF	160	
15	2499-6000100	CLEAN OUT PIPE CULVERT	LF	158.2	
16	2502-8212034	SUBDRAIN, LONGITUDINAL, (SHOULDER) 4 IN. DIA.	LF	258.0	
17	2502-8212206	SUBDRAIN, PERFORATED PLASTIC PIPE, 6 IN. DIA.	LF	667	
18	2502-8221306	SUBDRAIN OUTLET, DR-306	EACH	4	
19	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL	LF	450.0	
20	2505-4008300	STEEL BEAM GUARDRAIL	LF	375.0	
21	2507-3250005	ENGINEERING FABRIC	SY	1,513.0	
22	2507-6800061	REVETMENT, CLASS E	TON	48.0	
23	2507-8029000	EROSION STONE	TON	3,872.0	
24	2510-6745850	REMOVAL OF PAVEMENT	SY	667.4	
25	2518-6910000	SAFETY CLOSURE	EACH	2	
26	2526-8285000	CONSTRUCTION SURVEY	LS	1.00	
27	2527-9263109	PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED	STA	8.56	
28	2528-8445110	TRAFFIC CONTROL	LS	1.00	
29	2533-4980005	MOBILIZATION	LS	1.00	
30	2548-0000200	MILLED SHOULDER RUMBLE STRIPS, PCC SURFACE	STA	4.3	
31	2599-9999005	('EACH' ITEM) GUARDRAIL TERMINAL FLEAT-350	EACH	2	

Additional Bid Items located on RC.1

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
1	**2101-0850001**	**CLEARING AND GRUBBING**
		A. Item is for clearing and grubbing within the construction needs line as shown on sheet D.2.
		B. Article 2101.01A, of the Standard Specification is not required for this project.
		C. Refer to Tab. 110-17 for locations and details.
-	-	-
2	**2102-2625001**	**EMBANKMENT-IN-PLACE, CONTRACTOR FURNISHED**
		Refer to T sheets.
-	-	-
3	**2102-2710070**	**EXCAVATION, CLASS 10, ROADWAY AND BORROW**
		A. Refer to T sheets.
		B. Overhaul is incidental to roadway excavation on this project and will not be paid for separately.
-	-	-
4	**2102-2710090**	**EXCAVATION, CLASS 10, WASTE**
		A. Refer to T Sheets. Excavation (1479 cu. yds.) for Yugo placement is included in the T sheets.
		B. Includes additional 660 cu. yds. of waste material from the trench excavation on both sides of IA 92 to place trench drains. Refer to CS and Q sheets for additional information.
-	-	-
5	**2102-2712015**	**EXCAVATION, CLASS 12, BOULDERS OR ROCK FRAGMENTS**
		A. Refer to Tab. 103-7 on sheet CS.1.
		B. Dispose of excess material according to Article 1106.07 of the current specifications.
-	-	-
6	**2105-8425005**	**TOPSOIL, FURNISH AND SPREAD**
		A. Refer to T sheets.
		B. Overhaul is incidental to roadway excavation on this project and will not be paid for separately.
		C. Includes an additional 13.7 cu. yds. of topsoil to be placed over the trench drain on the south side. Refer to CS and Q sheets for additional information.
-	-	-
7	**2107-0875100**	**COMPACTION WITH MOISTURE CONTROL**
		Moisture Control is only required for fill under the roadway embankment. Fill in the Berm area shown on sheet T.1 does not require Moisture Control.
-	-	-
8	**2115-0100000**	**MODIFIED SUBBASE**
		Refer to Typicals on B sheets and Tab. 100-24 in the C sheets.
-	-	-
9	**2121-7425010**	**GRANULAR SHOULDERS, TYPE A**
10	**2123-7450000**	**SHOULDER CONSTRUCTION, EARTH**
		A. Refer to Typicals on B sheets and Tab. 112-9 in the C sheets.
		B. Quantity includes granular material to be placed in front of the guardrail.
		C. Requires 61 cu. yds. of Class 10 material for Earth Shoulder Fill. No payment for overhaul is allowed.
		D. Requires a minimum of 4 inches of topsoil (approximately 36 cu. yds.). Place according to Article 2105.03,B of the Standard Specifications.
-	-	-
11	**2301-1033090**	**STANDARD OR SLIP FORM PORTLAND CEMENT CONCRETE PAVEMENT, CLA SS C, CLASS 3 DURABILITY, 9 IN.**
		Refer to Typicals on B sheets and Tab. 100-24 in the C sheets.
-	-	-
12	**2402-2720100**	**EXCAVATION, CLASS 20, FOR ROADWAY PIPE CULVERT**
13	**2422-0360066**	**APRONS, UNCLASSIFIED, 66 IN. DIA.**
14	**2422-1723066**	**CULVERT, UNCLASSIFIED ROADWAY PIPE, 66 IN. DIA.**
		Refer to sheet V.1 and Tab. 104-3M on sheet CD.1.
-	-	-
15	**2499-6000100**	**CLEAN OUT PIPE CULVERT**
		A. Item is for cleanout silt and other debris within the existing 5' x 5' RCB at Sta. 228+09.2.
		B. Assumed RCB is 50% silted.
		C. Method of Measurement: Linear feet of RCB cleaned as measured in field.
		D. Basis of Payment: Full compensation for all labor, equipment, and disposal of material to fully clean RCB.
-	-	-
16	**2502-8212034**	**SUBDRAIN, LONGITUDINAL, (SHOULDER) 4 IN. DIA.**
17	**2502-8212206**	**SUBDRAIN, PERFORATED PLASTIC PIPE, 6 IN. DIA.**
18	**2502-8221306**	**SUBDRAIN OUTLET, DR-306**
		Refer to CS and Q Sheets.
-	-	-
19	**2505-4008120**	**REMOVAL OF STEEL BEAM GUARDRAIL**
		Refer to Tab. 110-7A in the C sheets for locations and details.
-	-	-
20	**2505-4008300**	**STEEL BEAM GUARDRAIL**
		Refer to Tabs. 108-8B and 107-23 in the C sheets for locations and details.
-	-	-
21	**2507-3250005**	**ENGINEERING FABRIC**
22	**2507-6800061**	**REVETMENT, CLASS E**
		A. Refer to CS and Q sheets.
		B. Refer to CD and V sheets.
-	-	-
23	**2507-8029000**	**EROSION STONE**
		Refer to CS and Q Sheets.
-	-	-
24	**2510-6745850**	**REMOVAL OF PAVEMENT**
		Refer to Tabs. 102-5 and 110-1 in the C Sheets for locations and details.
-	-	-

100-4A
10-29-02

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
25	**2518-6910000**	**SAFETY CLOSURE**
		Refer to Tab. 108-13A in the C sheets for locations and details.
-	-	-
26	**2526-8285000**	**CONSTRUCTION SURVEY**
		- -
-	-	-
27	**2527-9263109**	**PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED**
		Refer to Tab. 108-22 in the C sheets for locations and details.
-	-	-
28	**2528-8445110**	**TRAFFIC CONTROL**
		IA 92 has been closed to traffic. Traffic is currently on a detour route shown on sheet J.2. Detour route will be maintained by others.
-	-	-
29	**2533-4980005**	**MOBILIZATION**
		- -
-	-	-
30	**2548-0000200**	**MILLED SHOULDER RUMBLE STRIPS, PCC SURFACE**
		Refer to Tab. 112-10 for locations and details.
-	-	-
31	**2599-9999005**	**('EACH' ITEM) GUARDRAIL TERMINAL FLEAT-350**
		A. Refer to B sheets and Tab. 108-8B in the C sheets for locations and details.
		B. Section 2505 of the Standard Specification applies.
-	-	-

105-4
10-18-11

STANDARD ROAD PLANS

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

Number	Date	Title
DR-101	04-18-17	Pipe Culvert (Bedding and Backfill)
DR-122	10-18-16	Construction of Type "C" Concrete Adaptors for Pipe Culvert Connections
DR-203	04-21-15	Metal Pipe Aprons and Beveled Ends
DR-303	10-17-17	Subdrains (Longitudinal)
DR-306	10-16-18	Precast Concrete Headwall for Subdrain Outlets
PM-110	10-16-18	Line Types
PV-12	04-19-16	Milled Shoulder Rumble Strips
PV-101	04-16-19	Joints
SI-173	04-19-16	Object Markers
SI-211	10-18-16	Object Marker and Delineator Placement with Guardrail
TC-1	04-16-13	Work Not Affecting Traffic (Two-Lane or Multi-Lane)

111-25
10-18-11

INDEX OF TABULATIONS

Tabulation	Tabulation Title	Sheet No.
C Sheets		
100-1A	ESTIMATED PROJECT QUANTITIES (1 DIVISION PROJECT)	C.2
100-1D	PROJECT DESCRIPTION	C.1
100-4A	ESTIMATE REFERENCE INFORMATION	C.3
100-24	PCC PAVEMENT	C.5
102-5	EXISTING PAVEMENT	C.5
103-10	TOPSOIL STRIPPING AND PLACEMENT	C.6
105-4	STANDARD ROAD PLANS	C.4
107-23	GRADING FOR GUARDRAIL INSTALLATIONS	C.7
108-8B	STEEL BEAM GUARDRAIL FOR SIDE OBSTACLE (TWO-WAY PROTECTION)	C.8
108-13A	SAFETY CLOSURES	C.4
108-22	PAVEMENT MARKING LINE TYPES	C.8
110-1	REMOVAL OF PAVEMENT	C.5
110-7A	REMOVAL OF STEEL BEAM GUARDRAIL	C.8
110-17	CLEARING AND GRUBBING	C.9
111-25	INDEX OF TABULATIONS	C.4
112-9	SHOULDERS	C.9
112-10	MILLED RUMBLE STRIPS	C.6

108-13A
08-01-08

SAFETY CLOSURES

Refer to Section 2518 of the Standard Specifications

Station	Closure Type		Remarks
	Road Qty.	Hazard Qty.	
225+55.08		1	
227+69.06		1	
Totals:		**2**	

262-6
10-18-05

UTILITIES
(NOT A POINT 25 PROJECT)

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

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 No. 3.
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.

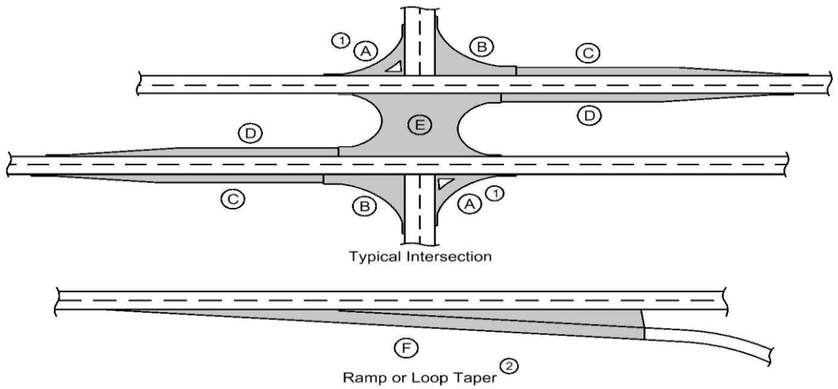
102-5
04-18-17

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	
1	58	IA 92	1	244.72	250.92	2004		STPN-92-9(112)--2J-92	AAC	2	AAC	2			MIL	1	COLUMBUS JCT	C. LST.			
2	58	IA 92	1	244.72	250.92	2004	W	STPN-92-9(112)--2J-92	AAC	1.5	AAC	2	BAC	3.5			COLUMBUS JCT	C. LST.			
3	58	IA 92	1	244.72	250.92	1985		FN-92-9(40)--21-58	AAC	1.5	TBB	1.5					COLUMBUS JCT	C. LST.			
4	58	IA 92	1	244.72	250.92	1936		FA-250ABC	PC7	7							MUSCATINE	GRAVEL	3		

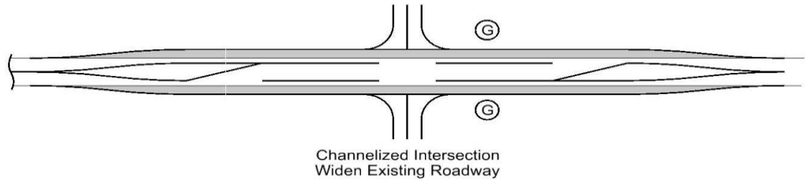
100-24
04-21-15

PCC PAVEMENT

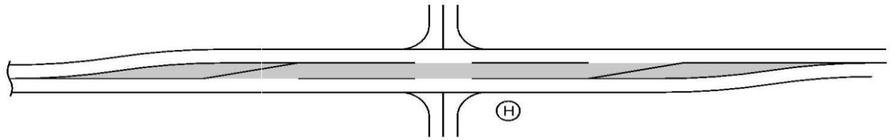


Typical Intersection

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 SY		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	9 IN	10½ IN	TONS	CY	SY	
				FT	FT	SY	SY	SY	SY	SY	SY	SY	SY	SY						
IA 92	EB	225+55.08	227+69.60	14.0	214.5	333.7									333.7			137.1		
IA 92	WB	225+55.08	227+69.60	14.0	214.5	333.7									333.7			137.1		
												Totals:			**667.4**			**274.1**		

110-1
04-16-13

REMOVAL OF PAVEMENT

Refer to Tabulation 102-5

* Not a Bid Item

Begin Station	End Station	Side	Pavement Type	Area SY	Saw Cut* LF	Remarks
225+55.08	227+69.60	Both	PCC/AAC	667.4	56.0	
		Totals:		**667.4**	**56.0**	

112-10
04-16-19

MILLED RUMBLE STRIPS

See PV-12 and PV-13.

* Calculated at 18" width for Shoulder.

Location								Effective Shoulder Width			
Road Identification	Station to Station		Shoulder Pavement Type	Rumble Strip Type (Centerline, Rt or Lt Shoulder)	Length PCC	Length HMA	Fog Seal* (Milled Rumble Strip) Shoulder	PCC Paved	HMA Paved	Granular\ Earth	Remarks
					STA	STA	GAL	FT	FT	FT	
IA 92	225+55.08	227+69.06	PCC	Left Shoulder	2.14		0.0	2.0		5.0	
	225+55.08	227+69.06	PCC	Right Shoulder	2.14		0.0	2.0		3.5	
				Totals	**PCC**	**HMA**	**Fog Seal**				
				HMA Shoulders		**0.00**	**0.0**				
				PCC Shoulders	**4.28**						
				PCC or HMA Shoulders	**0.00**	**0.00**	**0.0**				
				HMA Centerlines		**0.00**					
				PCC Centerlines	**0.00**						
				PCC or HMA Centerlines	**0.00**	**0.00**					

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 92	EB	225+55.08	227+69.60		4.0	
IA 92	WB	225+55.08	227+69.60		4.0	

GRADING FOR GUARDRAIL INSTALLATIONS

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

Location					Dimensions (Feet)									Earthwork		
No.	(1) Direction of Traffic	Station	Side	Foreslope at Guardrail	X1	Y1	X2	Y2	X3	Y3	X4	Y4	Z	Excavation Class 10	Embankment In Place	Remarks
														CY	CY	
1	WB	227+73.82	Lt	3:1	187.5	5.0	--	--	--	--		9.0	20.0	***	***	*** Earthwork quantities included in T Sheets
2	EB	227+75.36	Rt	3:1	187.5		--	--	--	--			20.0	***	***	*** Earthwork quantities included in T Sheets

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 L	Side C	Side R	BCY4* STA	DCY4 STA	NPY4** STA	BLW4 STA	ELW4 STA	ELY4 STA								
IA 92	225+55.08	227+69.06	BOTH	Waterborne/Solvent Paint		X			2.14												
	225+55.08	227+69.06	WB	Waterborne/Solvent Paint	X								2.14								
	225+55.08	227+69.06	EB	Waterborne/Solvent Paint			X						2.14								
				Factored Total: Waterborne/Solvent Paint				**-**	**4.28**	**-**	**-**	**-**	**4.28**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	
				Bid Quantity: Painted Pavement Markings, Waterborne or Solvent-Based							**8.56**										

REMOVAL OF STEEL BEAM GUARDRAIL

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

Location					Removal of Guardrail (2)
No.	Direction (1) of Traffic	Station to Station		Side	LF
1	EB	225+48.82	227+73.82	RT	225.0
2	WB	225+50.36	227+75.36	LT	225.0
			Totals:		**450.0**

STEEL BEAM GUARDRAIL FOR SIDE OBSTACLE (TWO-WAY PROTECTION)

Possible Standards: BA-200, BA-205, BA-206, BA-210, BA-211, BA-251, LS-625, LS-626, LS-631, SI-172, SI-173, and SI-211.

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

Location				Layout Lengths BA-251 or LS-631								Long-Span System		Delineators and Object Markers					Bid Items				Remarks
				Approach Side (A)				Trailing Side (T)															
No.	Direction (1) of Traffic	Side O= Outside M= Median	Station	O_L	D_O	ET	$VT2_A$	VF_A	$VT1_A$	$VT1_T$	VF_T	$VT2_T$	ET	BA-211		SI-211	Delineator SI-172 Type 1	Object Marker SI-173 Type 2	Object Marker SI-173 Type 3		Steel Beam Guardrail	End Terminal Standard	End Terminal Count	Post Adapter	
				FT	FT	LF	LF	LF	LF	LF	LF	LF	LF	STATION	TYPE	TYPE	White EACH	OM2-2 EACH	OM3-L EACH	OM3-R EACH	BA-200 LF		EACH	BA-210 EACH	
1	EB	O	227+75.36	3.50		37.5			187.50							5			1	1	187.5	(1)	1		Connect to existing guardrail
2	WB	O	227+73.82	5.00						187.50			37.5			5			1	1	187.5	(1)	1		Connect to existing guardrail
																									(1) See Sheet B.7
																			Totals:		**375.0**		**2**		

SHOULDERS

(1) Lane(s) to which the shoulder is adjacent.
(2) Bid Item
(3) Applies only for Paved Shoulders constructed on project with existing granular shoulders.
(4) 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	(G) Width	(L) Length	Class 13 (3) Excavation	Hot Mix Asphalt		Binder	Paved Shoulder	Reinforced Paved Shoulder	Special Backfill				Modified Subbase	Granular Shoulder		Earth Shoulder Construction Alternates			Remarks
														HMA Alternate		PCC Alternate					STA (2)	HMA	Granular	
					FT	FT	FT	CY (2)	TON	TON/STA	TONS	SY (2)	SY (2)	TON (2)	TON/STA	TON (2)	TON/STA	CY (2)	TON (2)	TON/STA		CY (4)	CY (4)	
IA 92	EB	225+29.10	227+75.36	RT		3.5	246.3												59.734	24.256	2.5		16.0	
IA 92	WB	225+29.10	227+73.82	LT		5.0	244.7												101.712	41.563	2.4		45.0	
IA 92	EB	225+29.10	227+75.36	RT		5 to 1.3	246.3												16.430					blister and
IA 92	WB	225+29.10	227+73.82	LT		5 to 1.3	244.7												16.160					in front of
																								g-rail posts
			Totals:				**982.0**												**194.036**		**4.9**			

CLEARING AND GRUBBING

Location			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	Work and Material Type	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	
IA 92																					
225+55.08 to 227+69.06	EB/WB	Trees - Clearing and Grubbing																	**0.8**		

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.				Skew Ahead Degrees		Dike				Class 20	Flowable Mortar	CLASS E REVETMENT	Eng. Fabric	Flooded Backfill (3)	Remarks
																									Total		Extensions				Rt. / Lt.	Location Station	Top Elevation	Type						
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	0 TONS	0 SY	0 CY	
103.0	228+09.2	CMP	66	CMP	160		NA			1							C-2	1			614.80						160.0			38					8.0		12.0	22.0		

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 — 7/18/2019
Signature — Date

David R. Claman
Printed or Typed Name

My license renewal date is December 31, 20 20

Pages or sheets covered by this seal: CD.1, V.1

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.

103-7
08-01-08

SHRINKAGE DATA

Material	%	Remarks
Class 10	30%	
Topsoil	40%	
Boulders		5 CY

103-12
10-16-18

SLIDE REPAIR

Site No.	Location		Side	Boulders Cl. 12 Exc.	Class 10			Class "E" Revetment	Engineering Fabric	Erosion Stone	Gra. Material Blankets & Subdrain	Macadam Stone	Top Soil		Remarks
	Begin Sta.	End Sta.			Contractor Provided	Excavation & Waste	Roadway & Borrow						Furnish & Spread	Strip, Slavage & Spread	
				CY	CY	CY	CY	Tons	SY	Tons	Tons	Tons	CY	CY	
1	225+75.00	227+45							1019	3136					Yugo Drains See Q.1-3, excavation for Yugo included in T sheets
2	225+00.00	227+75	Rt.			408			250	648					Cutoff Trench Drain See Q.1-3
3	275+77.00	227+43	Lt.			252			160	88					Collector Trench Drain See Q.1-3

104-9
10-17-17

LONGITUDINAL SUBDRAIN SHOULDER AND BACKSLOPE

Refer to Soils Sheets

* Not a bid item. Bridge berm quantities assume a trench depth of 24 inches.

Line No.	Location: Road or Lane Identification	Station to Station		Side	Depth (D)	Longitudinal Subdrain (DR-303): Shoulder Size	Shoulder Length	Backslope Size	Backslope Length	Bridge Berm (EW-203 or EW-204): Standard Road Plan and Type	Bridge Berm Size	Bridge Berm Length	Subdrain Outlet DR-303, DR-305 or DR-306: Station	Standard Road Plan and Type	Porous* Backfill	Class "A"* Crushed Stone	Remarks
					IN	IN	FT	IN	FT		IN	FT			CY	CY	
1	IA 92	225+55.00	227+68.00	LT	42.0	4.0	243.0						227+68.00	DR-306	22.5		
2	IA 92	224+95.00		LT	48.0	4.0	15.0						224+95.00	DR-306	1.6		Install new outlet onto existing subdrain
3	IA 92	225+00.00	228+50.00	RT				6.0	350.0				228+50.00	DR-306	32.4		Place in bottom of Cutoff Trench Drain, install subdrain with sock
4	IA 92	225+75.00	227+45.00	LT				6.0	187.0								Place in bottom of Collector Trench Drain, install subdrain with sock and connect to outlet drain
5	IA 92	227+00.00		LT				6.0	130.0				226+40.00	DR-306	12.0		Daylight into creek near outlet of new CMP Extension, drain shall connect into above drain
Total:							258.0		667.0					DR-306 = 4	68.5	0.0	

NOTE: ALL LONGITUDINAL SUBDRAINS ARE TYPE 7 WITH PCC OR TYPE 8 WITH HMA (ACC) UNLESS OTHERWISE NOTED IN REMARKS COLUMN.

100-23
04-17-18

ROCK EROSION CONTROL

Refer to EC-301 and Detail 570-8

Location: Road Identification	Begin Station	End Station	Side	L	W	Rock Erosion Control (REC): Type 1 Rock Ditch Check	Type 2 Rock Ditch	Type 3 Rock Flume	Type 4 Rock Splash Basin	Type 5 Rock Slope Protection	Material Bid Quantities: Eng. Fabric	Class E Revetment	Erosion Stone	Remarks
			Lt./Rt.	FT	FT						SY	TON	TON	
IA 92	226+35.00	226+85.00	Lt	50	6		X				62.0	36.0		See Q.3

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 7/19/19
Signature Date

Mark A. Dell
Printed or Typed Name

My license renewal date is December 31, 2019

Pages or sheets covered by this seal: CS.1, Q.1-3

FILE NO.	ENGLISH	DESIGN TEAM MEGIVERN\DELL\MOYLE	LOUISA COUNTY	PROJECT NUMBER ER-092-9(158)--28-58	SHEET NUMBER CS.1

7/19/2019 9:23:52 AM gmoyle c:\pw_work\pwmain\gmoyle\d0980333\58092158.xlsm

SURVEY SYMBOLS

- PPA Power Pole Co. 1
- TP TPD Telephone Pedestal
- PR Electic Riser Pole
- EB EB Electrical Box
- LUM Luminaire
- PLG Location of General Photo
- FHD Fire Hydrants
- WV WV Water Valve
- IN Storm Sewer Intake
- MH Utility Access (Manhole)
- MIS Miscellaneous
- GDL Guard Rail Steel
- CUL Culvert
- PIP Pipe Culvert
- INB Storm Sewer Beehive Intake
- TIL Tile Line
- BM Bench Mark
- RET Retaining Walls
- BRG Bridge
- WEL Well
- DU Centerline Draw or Stream (Up)
- BNK Stream Bank
- D Centerline Draw or Stream (Down)
- RIP Rip-Rap
- RR Centerline of Railroad Tracks
- SH Paved Shoulder
- ENP Edge Paved Entrance & Park Lot
- EP Edge of Paved Roads (ML or SR)
- SWK Sidewalk
- SNP Unpaved Shoulder
- ENT Centerline BL of Entrance
- GU Gutter In Front of Curb
- EG Edge of Gravel Road
- CON Concrete or A/C Slab
- CU Back of Curb
- ENU Edge Unpaved Entrance & Parking
- T1 TL1D Telephone Line Co. 1 - Quality D
- G GL1D Gas Line Co. 1 - Quality D
- E1 EL1D Electric Line Co. 1 - Quality D
- FO FO1D Fiber Optic Co. 1 - Quality D
- W WL1D Water Line Co. 1 - Quality D
- TV TV1D TV Cable Co. 1 - Quality D
- FO2 FO2D Fiber Optic Co. 2 - Quality D
- FO2(B) FO2B Fiber Optic Co. 2 - Quality B
- TV2 TV2D TV Cable Co. 2 - Quality D
- SAN. SA1D Sanitary Sewer Co. 1- Quality D
- ST S ST1D Storm Sewer Co. 1 - Quality D
- G2 GL2D Gas Line Co. 2 - Quality D
- T3 TL3D Telephone Line Co. 3 - Quality D

UTILITY LEGEND

Alliant Energy
Heather Dee
200 1st St. SE
Cedar Rapids, IA 52401
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REROw@alliantenergy.com

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Burlington, IA 52655
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Kinder-Morgan
Billy Meier
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Harper, IA 52591
(641)635-2431
billy-meier@kindermorgan.com

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 Grade and Pave Shading "In conjunction with a paving project"
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.	ENGLISH	DESIGN TEAM Jia \ Altenhofen	LOUISA COUNTY	PROJECT NUMBER ER-092-9(158)--28-58	SHEET NUMBER D.1

8:16:41 AM 7/15/2019 raltenh pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\5809201020\Design\SHT\58092158_LGD.dgn

Sta. 226+94.47
232.69 LT

Sta. 225+08.70
230.60 LT

Sta. 225+36.96
130.02 LT

Existing ROW

Sta. 228+09.2
Skew 37° (RA)
158.2' of 5' x 5' X X 158.2' RCB S end (UAC)
72' from end of RCB 9° bend in 60" CMP (invert elev 615.86) (REMOVE)
44.4' from bend end of 60" CMP
D.A. = 10 Ac - H
EXTEND WITH 66" x 160'
F.L. Lt. = 614.80
F.L. Other = 616.2±

Sta. 228+26.45
130.24 LT

Columbus TWP.
T-75N R-5W
SEC. 22

220

225

230

235

15" x 46'
R.C.P.
(UAC)

STA. 225+55.08
BEGIN PAVING

STA. 227+69.08
END PAVING

18" x 30'
C.M.P.

Trail

TS Sta 230+81.74

SC Sta 232+56.74

PI Sta 231+98.42

Existing ROW

STA. 225+19.26
BEGIN PROJECT

STA. 227+75.36
END PROJECT

Sta. 231+14.1
Skew 30° (LA)
2' X 2' X 99.4' RCB
D.A. = 6 Ac - H
(UAC)

18" x 43'
R.C.P.
(UAC)

0 50
FEET

IA 92

VPI +67.82
Elv 659.67
Len 25.00 ft
K = 25

Begin Construction
Sta. 225+55.08
Elev. 659.92

VPI +82.70
Elv 656.22
Len 75.00 ft
K = 75

VPI +56.93
Elv 654.74
Len 25.00 ft
K = 27

End Construction
Sta. 227+69.60
Elev. 654.60

VPI +55.08
Elv 659.92

-2.00%

-3.00%

-2.00%

-1.06%

-100.00%

VPI +65.00
Elv 650.00

VPI +75.00
Elv 650.00

-20.00%

VPI +00.00
Elv 645.00

VPI +25.00
Elv 645.00

-20.00%

VPI +50.00
Elv 640.00

VPI +75.00
Elv 640.00

-20.00%

VPI +00.00
Elv 635.00

VPI +25.00
Elv 635.00

VPI +50.00
Elv 635.00

+100.00%

VPI +45.00
Elv 635.00

VPI +69.60
Elv 654.60

Excavation Elev. at Centerline
(Yugo excavation below this profile)

660.53 660.03 659.45 658.70 657.95 657.20 656.51 655.90 655.38 654.88 654.55 654.28

670 665 660 655 650 645 640 635

220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235

FILE NO.	ENGLISH	DESIGN TEAM Jia \ Altenhofen	LOUISA COUNTY	PROJECT NUMBER ER-092-9(158)--28-58	SHEET NUMBER D.2

8:45:37 AM 7/19/2019 raltenh pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\5809201020\Design\Design Events\D6thru9_11-0929-158_E_Files_(DataFiles)\CADD_Files\58092158_D2.dgn

Survey Information

General Information

Measurement units for this survey are US survey feet. This survey is for a partial DTM survey for Highway 92 between U.S. 218 and Columbus Junction.

Vertical Control

(IARTN)
Vertical datum for this survey is NAVD88 (Computed using Geoid12A). The Ellipsoidal Height was computed using Louisa County monuments 10 and 11 and Washington County monuments 201 (NGS Harn Designation B 8), 137, 138, and 142. Elevations were established for benchmarks and control points were benchmark circuits ran from County Monuments 10, 11, 138, and 142.
Horizontal Control

The project coordinate system for this survey is Iowa State Plane South Zone (U.S. Survey Feet). The horizontal datum was computed using Louisa County monuments 10 and 11 and Washington County monuments 201 (NGS Harn Designation B 8), 137, 138, and 142. All control point coordinates were scaled to ground around Louisa County point 11 using a grid to ground factor of 1.000079

Alignment Information

The horizontal alignment for this survey was established using As-built Plans Washington County - IaDOT Project Number NHS-218-3(20)—19-92 and As-built Plans Louisa County Primary Road No. 2 from the Washington County line East to Columbus Junction (F.A. Project No. 250)

VERTICAL CONTROL

Point	North	East	Elevation	Station	Offset	Feature	Description
BM1	476744.050	2181331.772	707.470	1434+48.86	45.577	BM	NORTHEAST BOLT LIGHT BASE AT THE SOUTHEAST CORNER HIGHWAY 92 AND U.S. HIGHWAY 218 NORTH BOUND RAMP
BM2	476901.936	2181943.164	690.200	1440+78.37	95.067	BM	CUT X TOP SOUTHEAST CORNER REINFORCED CONCRETE BOX UNDER HIGHWAY 92 - APPROXIMATELY 1280 FEET EAST
BM3	477282.011	2183087.281	744.590	1452+95.45	85.577	BM	60D SPIKE IN POWER POLE AT SOUTHWEST CORNER HIGHWAY 92 AND YUCCA AVENUE
BM4	477351.449	2184258.177	743.910	1464+86.92	85.145	BM	60D SPIKE IN POWER POLE SOUTH SIDE HIGHWAY 92 - WEST SIDE LANE TO FARM BUILDINGS APPROXIMATELY 200
BM5	477365.030	2185203.798	745.980	1474+32.68	85.527	BM	60D SPIKE IN POWER POLE SOUTH SIDE HIGHWAY 92 - 5TH POWER POLE WEST (APPROXIMATELY 1020 FEET) OF Y
BM6	477378.882	2186144.928	738.690	1483+73.92	85.274	BM	60D SPIKE IN POWER POLE AT SOUTHWEST CORNER HIGHWAY 92 AND YUCCA AVENUE
BM7	477524.821	2186969.563	712.270	1492+00.63	-47.913	BM	60D SPIKE IN NORTH SIDE 6IN X 6IN POST MARKING PEDISTAL NORTH SIDE HIGHWAY 92 APPROXIMATELY 800 FEE
BM8	477538.223	2188358.838	701.040	1505+89.94	-39.736	BM	CUT X NORTHEAST CORNER REINFORCED CONCRETE BOX UNDER HIGHWAY 92 APPROXIMATELY 2170 FEET EAST OF YUC
BM9	477485.754	2189690.883	732.250	1519+21.10	31.236	BM	PK NAIL END WOOD FENCE POST SOUTH SIDE HIGHWAY 92 AT HOUSE NUMBER 3320
BM10	477499.156	2191421.007	696.690	1536+51.25	39.954	BM	CUT X SOUTHWEST CORNER REINFORCED CONCRETE BOX UNDER HIGHWAY 92 APPROXIMATELY 2690 FEET WEST OF COU
BM11	477528.772	2192982.062	741.090	1552+12.41	32.892	BM	T OF RIGHT-OF-WAY RAIL SOUTH SIDE HIGHWAY 92 APPROXIMATELY 1300 FEET WEST OF COUNTY LINE ROAD

Point	North	East	Elevation	Station	Offset	Feature	Description
BM12	477531.571	2194138.513	734.750	0+45.08	49.598	BM	CENTER BALL RIGHT-OF-WAY RAIL AT SOUTHEAST CORNER HIGHWAY 92 AND COUNTY LINE ROAD
BM13	477619.361	2195230.612	718.010	11+37.24	-37.484	BM	CUT X TOP NORTH END REINFORCED CONCRETE BOX UNDER HIGHWAY 92 APPROXIMATELY 1100 FEET EAST OF COUNT
BM14	477632.033	2196102.155	738.380	20+08.79	-49.590	BM	60D SPIKE IN POWER POLE WITH LIGHT NORTH SIDE HIGHWAY 92 AT EAST ENTRANCE TO STEAK HOUSE
BM15	477487.043	2196849.750	736.130	27+65.52	49.718	BM	CENTER BALL RIGHT-OF-WAY RAIL SOUTH SIDE HIGHWAY 92 AT FIELD ENTRANCE APPROXIMATELY 2700 FEET EAST
BM16	477507.892	2197519.576	721.180	34+26.56	-60.439	BM	RAILROAD SPIKE IN TELEPHONE POLE NORTH SIDE HIGHWAY 92 AT ENTRANCE TO HOUSE NUMBER 28346
BM17	477406.196	2198271.387	714.750	41+85.22	-60.104	BM	60D SPIKE IN TELEPHONE POLE NORTH SIDE HIGHWAY 92 APPROXIMATELY 1200 FEET WEST OF COUNTY LINE ROAD
BM18	477087.189	2199526.811	697.230	54+71.58	89.142	BM	CUT X TOP SOUTHEAST CORNER REINFORCED CONCRETE BOX UNDER COUNTY ROAD W66 APPROXIMATELY 95 FEET SOUT
BM19	476944.582	2200848.559	688.830	68+00.46	64.545	BM	CENTER BALL RIGHT-OF-WAY RAIL SOUTH SIDE HIGHWAY 92 APPROXIMATELY 1300 FEET EAST OF COUNTY ROAD W6
BM20	476787.074	2202170.518	684.510	81+30.37	65.276	BM	PK NAIL IN WOODCORNER POST SOUTH SIDE HIGHWAY 92 APPROXIMATELY 2700 FEET EAST OF COUNTY ROAD W66
BM21	476790.698	2203207.217	682.790	91+61.33	-43.955	BM	60D SPIKE IN TELEPHONE POLE NORTH SIDE HIGHWAY 92APPROXIMATELY 1500 FEET WEST OF X AVENUE
BM22	476725.659	2203915.171	676.360	98+72.24	-49.632	BM	X CUT TOP 48IN CAST IRON PIPE UNDER RAILROAD NORTH SIDE HIGHWAY 92 APPROXIMATELY 920 FEET WEST OF X
BM23	476620.811	2204819.744	668.850	107+82.76	-35.247	BM	X CUT TOP WEST END REINFORCED CONCRETE PIPE UNDER X AVENUE BETWEEN HIGHWAY 92 AND RAILROAD
BM24	476481.504	2206346.989	665.490	123+16.29	-48.267	BM	SOUTHWEST BOLT RAILROAD RADIO TOWER BASE BETWEEN HIGHWAY 92 AND RAILROAD APPROXIMATELY 1500 FEET EA
BM25	476373.306	2207406.591	658.650	133+81.40	-45.809	BM	60D SPIKE IN TELEPHONE POLE NORTH SIDE HIGHWAY 92 AT HOUSE NUMBER 26545
BM26	476322.351	2207847.067	657.500	138+24.76	-38.839	BM	X CUT TOP NORTH END REINFORCED CONCRETE PIPE UNDER HIGHWAY 92 APPROXIMATELY 1050 FEET WEST OF W AVE
BM27	475871.065	2208873.916	650.370	149+36.33	214.792	BM	BRASS PLUG TOP CENTER HEADWALL OF REINFORCED CONCRETE BOX EAST SIDE W AVENUE APPROXIMATELY 220 FEET
BM28	475774.773	2209928.018	650.960	159+74.40	-42.888	BM	60D SPIKE IN TELEPHONE POLE NORTH SIDE HIGHWAY 92 APPROXIMATELY 1000 FEET EAST OF W AVENUE
BM29	475171.658	2211588.559	647.170	177+41.08	-44.210	BM	60D SPIKE IN TELEPHONE POLE NORTH SIDE HIGHWAY 92 APPROXIMATELY 1200 FEET WEST OF V AVENUE
BM30	474768.801	2212823.015	639.060	190+44.86	-66.452	BM	60D SPIKE IN TELEPHONE POLE AT NORTHEAST CORNER HIGHWAY 92 AND V AVENUE
BM31	474308.005	2214082.007	625.830	203+80.97	44.042	BM	FOUND X CUT TOP CENTER SOUTH HEADWALL TRIPLE REINFORCED CONCRETE BOX SOUTH SIDE HIGHWAY 92 APPROXIM
BM32	474049.643	2215114.409	641.470	214+44.92	19.426	BM	60D SPIKE IN GUARD RAIL POST CENTER OF REINFORCED CONCRETE BOX SOUTH SIDE HIGHWAY 92 APPROXIMATELY
BM33	473690.540	2216421.213	654.320	228+00.17	19.189	BM	60D SPIKE IN GUARD RAIL POST CENTER OF REINFORCED CONCRETE BOX SOUTH SIDE HIGHWAY 92 APPROXIMATELY
BM34	473460.615	2217419.556	698.440	238+17.84	50.880	BM	60D SPIKE IN POWER POLE SOUTH SIDE HIGHWAY 92 AT COUNTY ROAD X17 NORTH
BM35	473521.852	2218172.969	696.950	245+63.33	54.653	BM	60D SPIKE IN POWER POLE SOUTHEAST CORNER HIGHWAY 92 AND COUNTY ROAD X17 SOUTH INFRONT OF CAR DEALER
BM36	473728.487	2219329.586	693.690	257+44.73	60.178	BM	CENTER BALL RIGHT-OF-WAY RAIL SOUTH SIDE HIGHWAY 92 AT NORTHEAST CORNER FAST STOP FUEL AT HOUSE NUM
BM37	473752.147	2220474.081	673.760	268+95.05	48.844	BM	RAILROAD SPIKE IN POWER POLE SOUTH SIDE HIGHWAY 92 ACROSS FROM ABANDONED HOUSE NUMBER 24074 APPROXI
BM38	473752.682	2221683.724	693.950	281+04.70	49.068	BM	60D SPIKE IN POWER POLE SOUTH SIDE HIGHWAY 92 APPROXIMATELY 750 FEET WEST OF HILLTOP ROAD
BM39	473826.289	2222625.024	697.200	290+40.11	-52.097	BM	60D SPIKE IN POWER POLE NORTHEAST CORNER HIGHWAY 92 AND HILLTOP ROAD AT FORD DEALER
BM40	473340.667	2223751.959	652.660	302+62.56	52.785	BM	60D SPIKE IN POWER POLE SOUTH SIDE HIGHWAY 92 EAST SIDE PURDY HILL ROAD
BM41	473009.025	2224589.488	602.060	311+53.09	58.440	BM	60D SPIKE IN POWER POLE SOUTH SIDE HIGHWAY 92 APPROXIMATELY 70 FEET EAST OF ENTRANCE TO HOUSE NUMBE
BM42	473004.242	2225217.030	594.110	317+68.00	52.804	BM	RAILROAD SPIKE IN POWER POLE SOUTH SIDE HIGHWAY 92 AT ENTRANCE TO HOUSE NUMBER 23236 IN COLUMBUS JU
BM43	473120.819	2226472.319	596.990	330+28.29	21.070	BM	X CUT TOP OF CONCRETE BARRIER WALL AT THE SOUTHWEST CORNER BRIDGE APPROXIMATELY 100 FEET EAST OF WE
BM44	473196.156	2227313.622	630.450	338+72.12	-19.458	BM	60D SPIKE IN POWER POLE WITH LIGHT NORTH SIDE HIGHWAY 92 APPROXIMATELY 400 FEET WEST OF THIRD STREE
BM45	473216.496	2228044.314	643.600	346+03.00	-31.151	BM	TOP CENTER BOLT HYDRANT AT THE NORTHWEST CORNER HIGHWAY 92 AND SECOND STREET IN COLUMBUS JUNCTION
BM46	473203.788	2228168.761	640.810	347+27.29	-16.971	BM	CUT X TOP CONCRETE BARRIER RAIL AT NORTHWEST CORNER HIGHWAY 92 BRIDGE APPROXIMATELY 115 FEET EAST O

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CP921, SET IRON PIN
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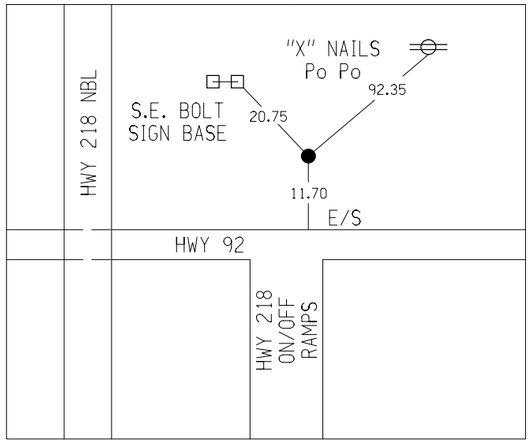

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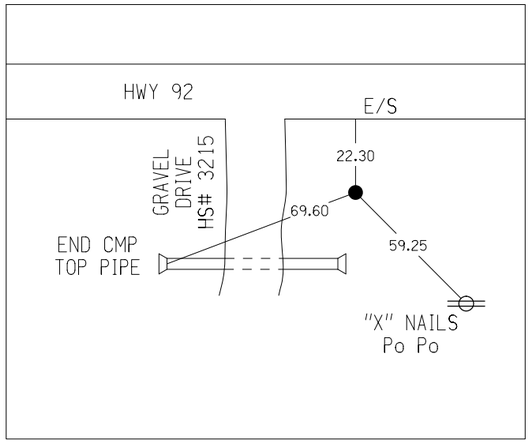

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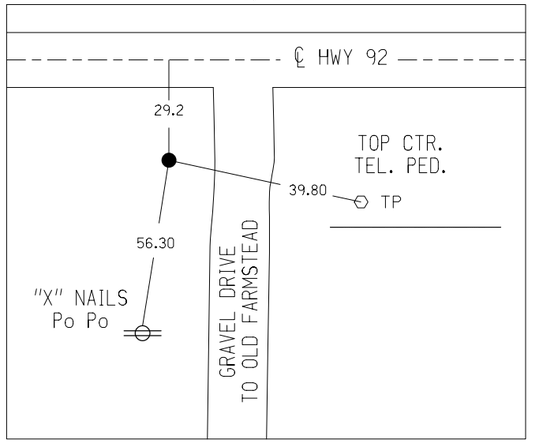

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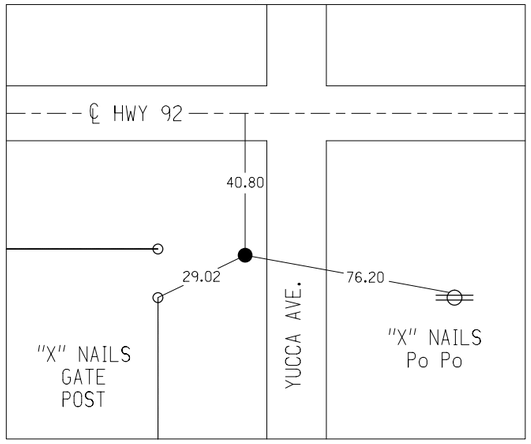

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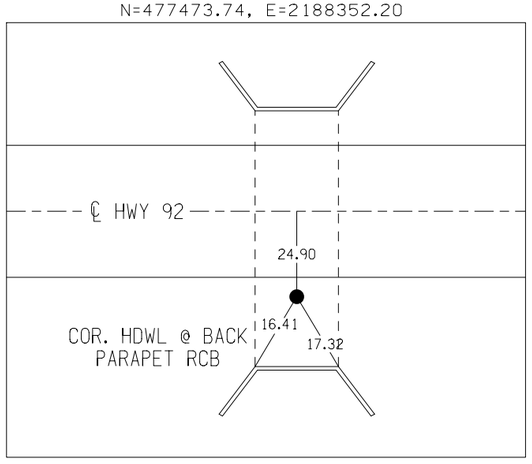

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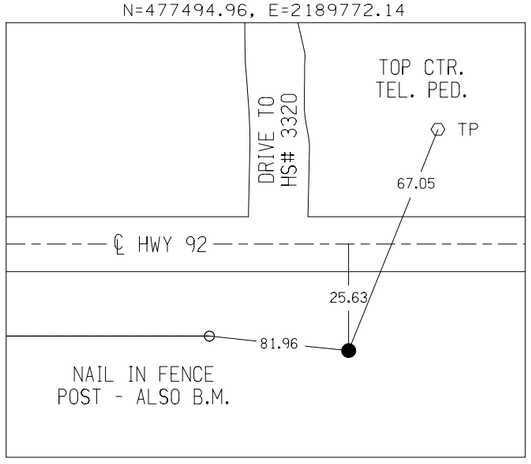

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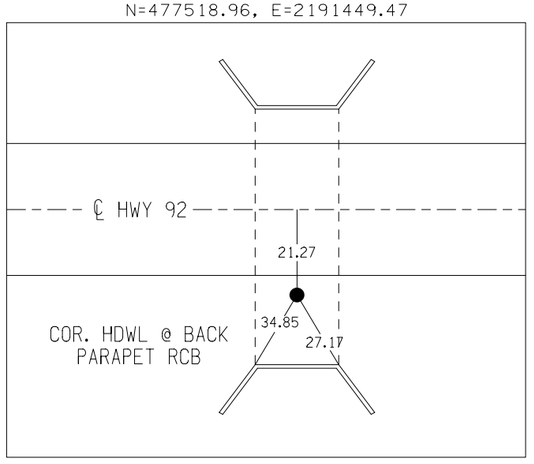

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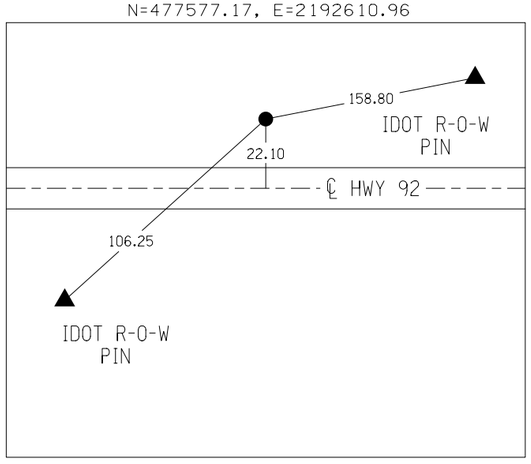

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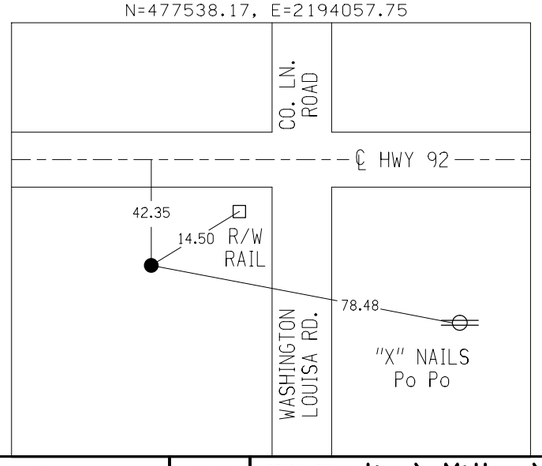

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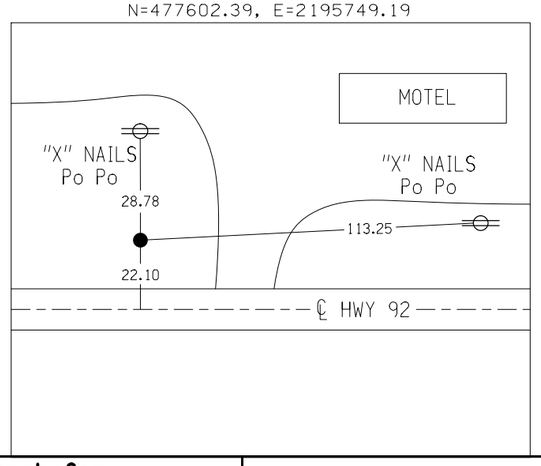

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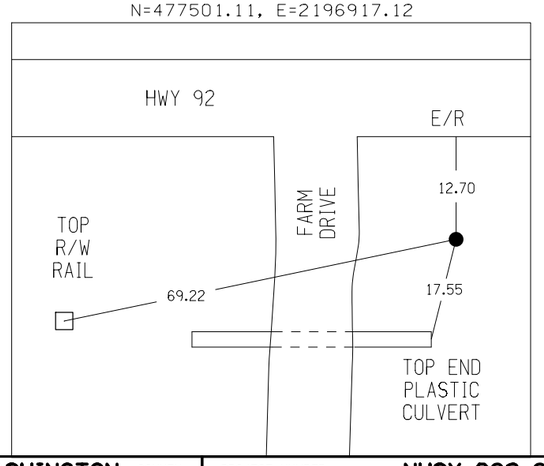

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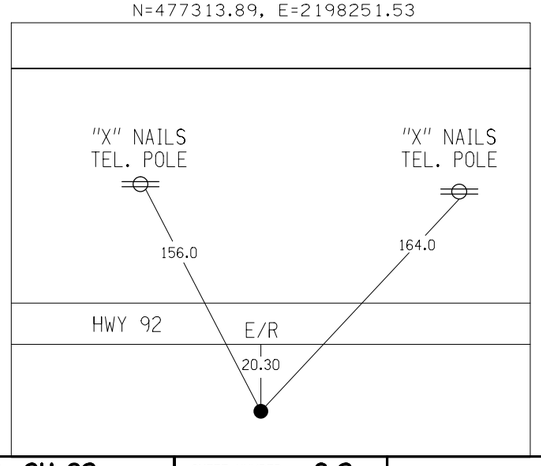

FILE NO.	ENGLISH	DESIGN TEAM J1a \ Miller \ Altenhofen	WASHINGTON COUNTY	PROJECT NUMBER NHSX-092-9(57)--3H-92	SHEET NUMBER G.2

8:35:00 AM 7/15/2019 raltenh pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\9209201085\Design\CADD Files\SHT\92092057_G01.dgn

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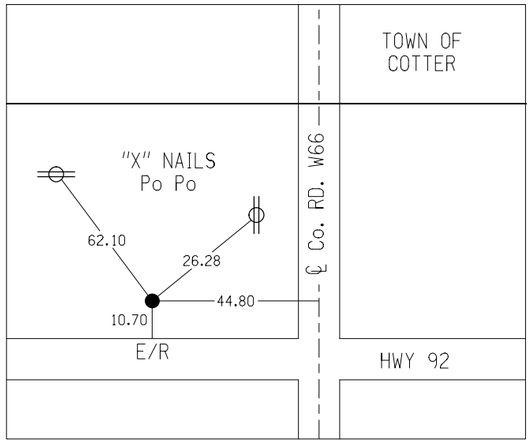

C.P. STA. 69+46.89, RT. 26.24 L-IA92
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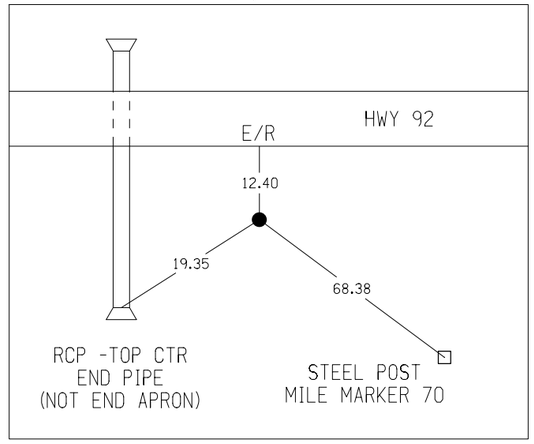

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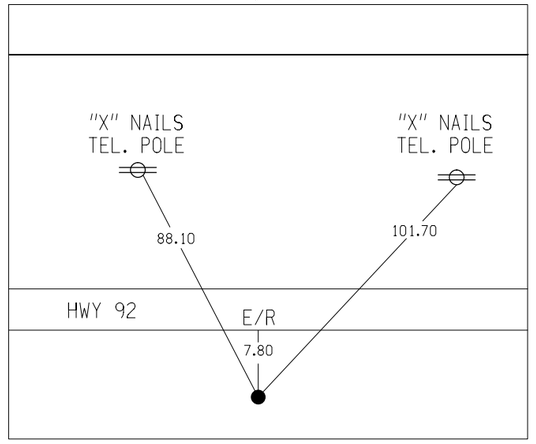

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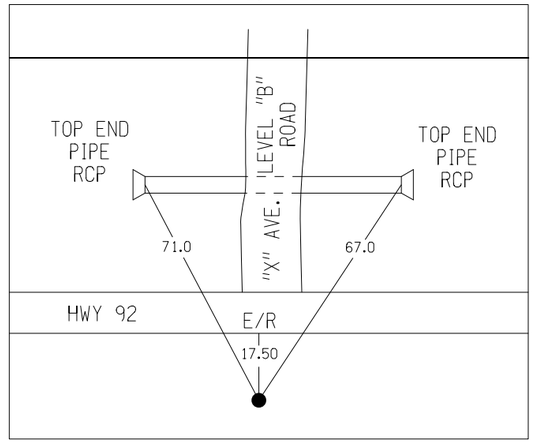

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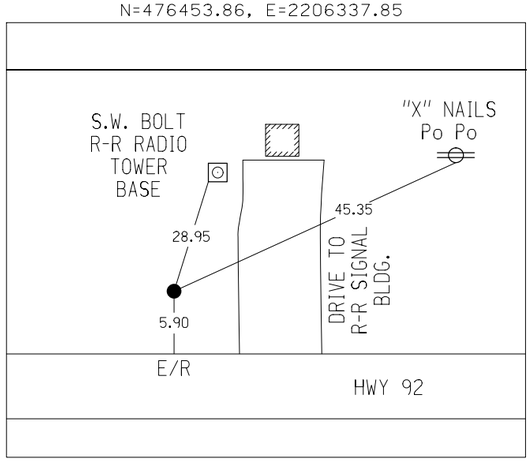

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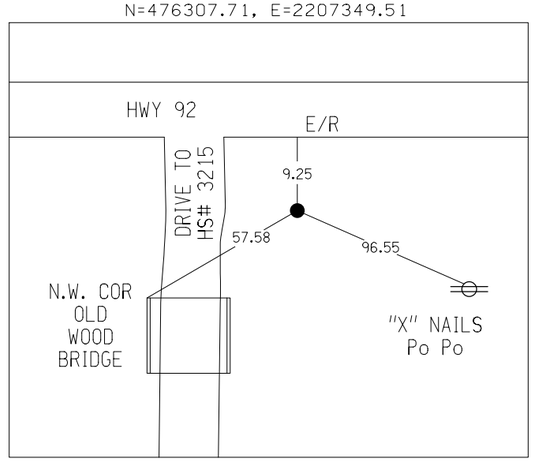

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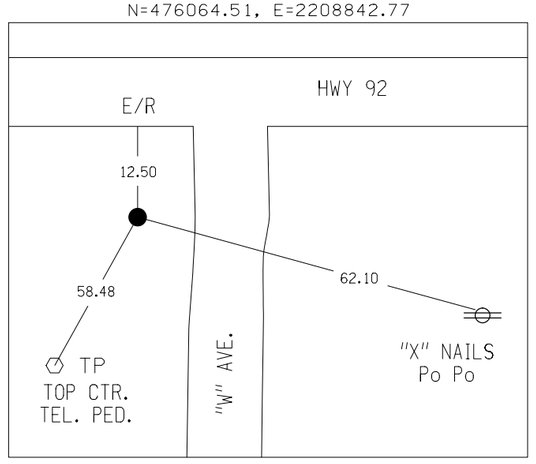

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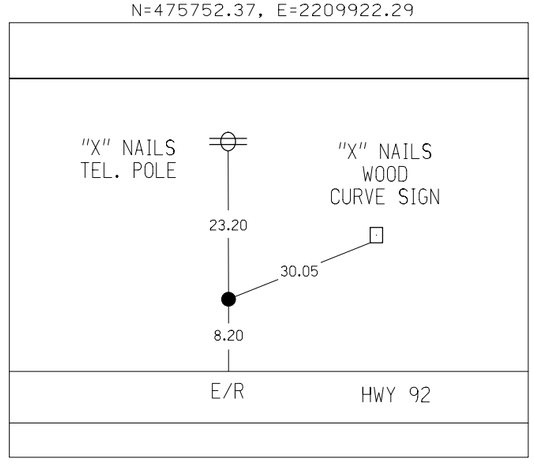

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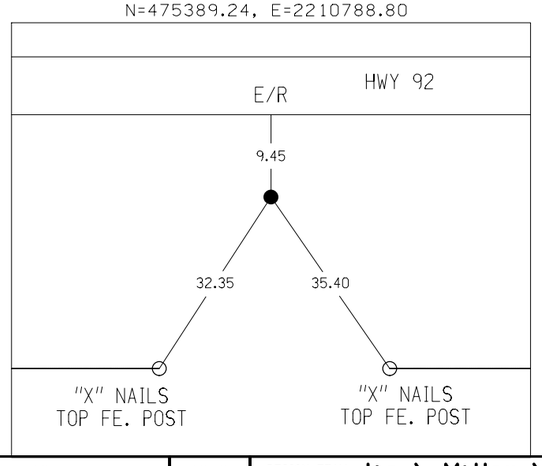

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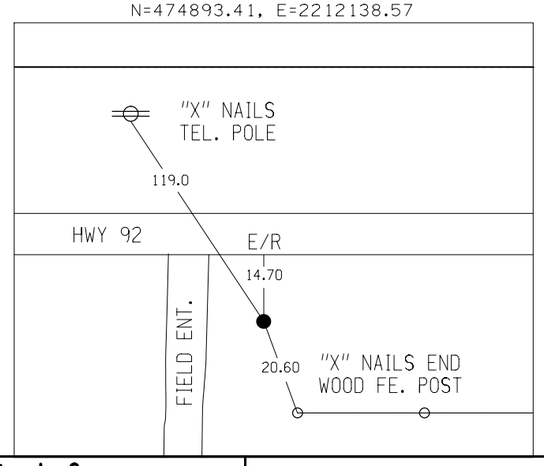

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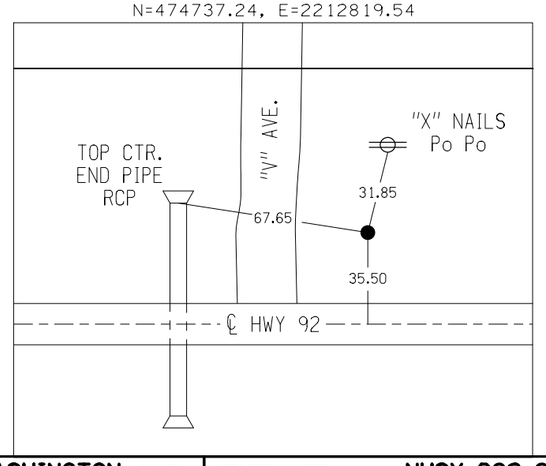

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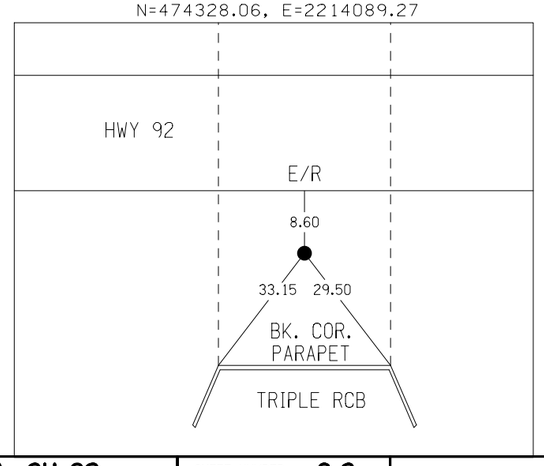

FILE NO.	ENGLISH	DESIGN TEAM Jia \ Miller \ Altenhofen	WASHINGTON COUNTY	PROJECT NUMBER NHSX-092-9(57)--3H-92	SHEET NUMBER G.3

8:35:05 AM 7/15/2019 raltenh pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\9209201085\Design\CADD Files\SHT\92092057_G01.dgn

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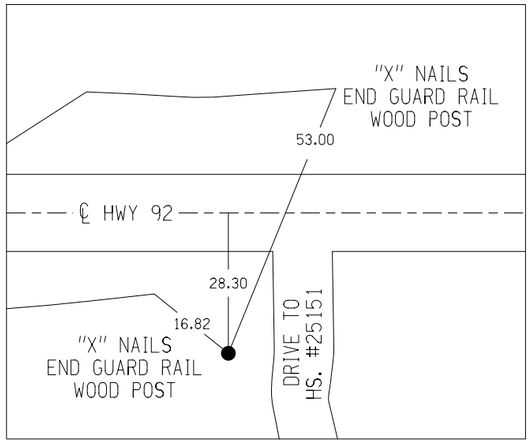

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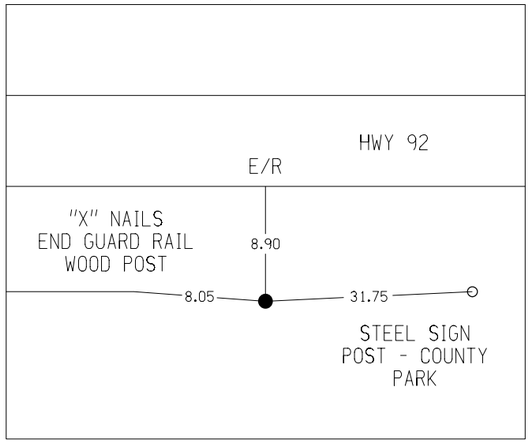

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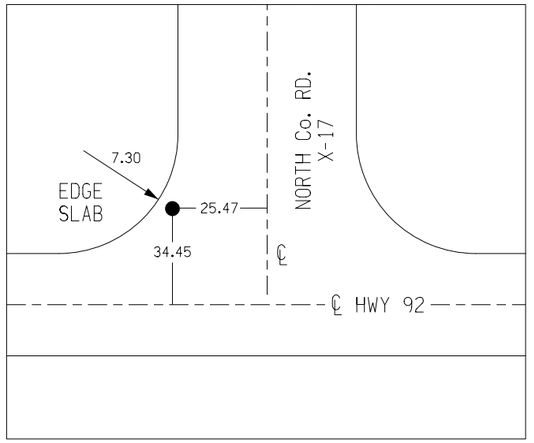

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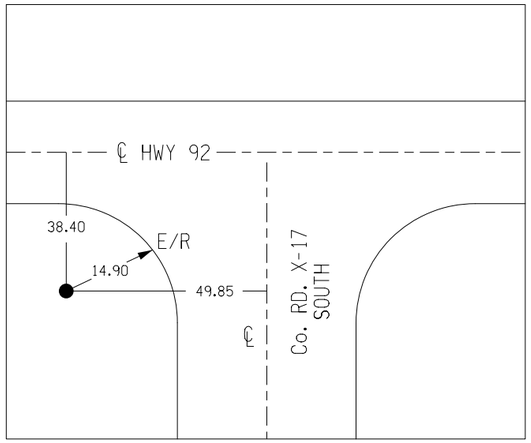

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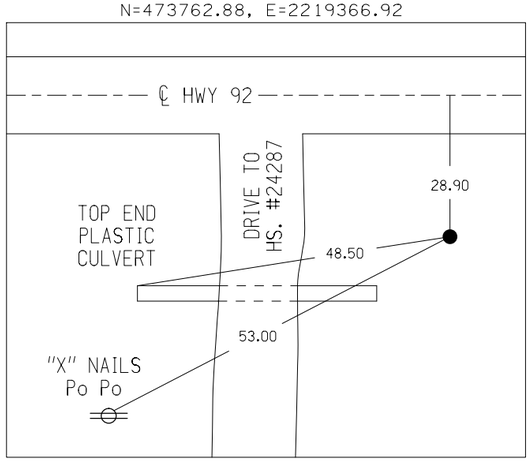

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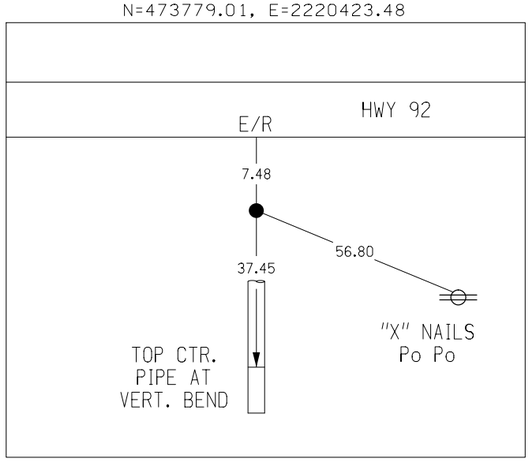

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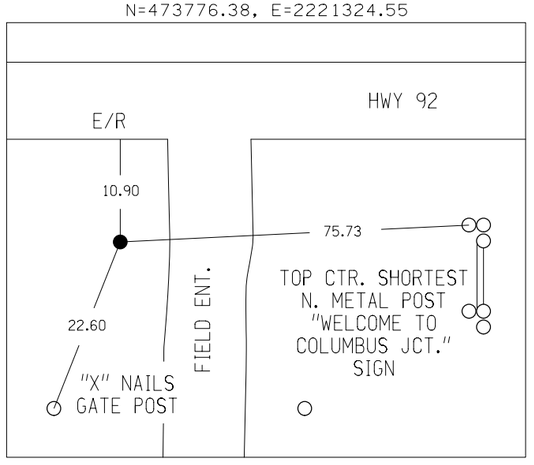

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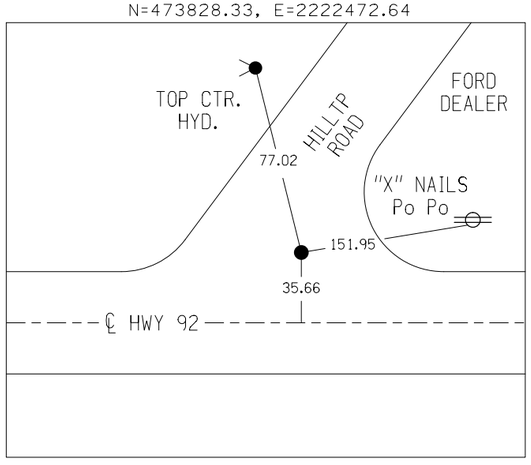

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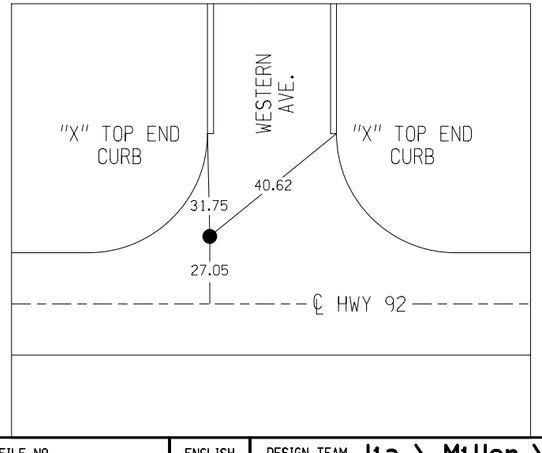

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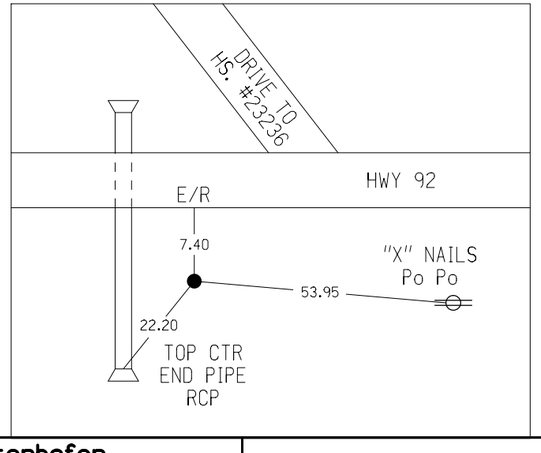

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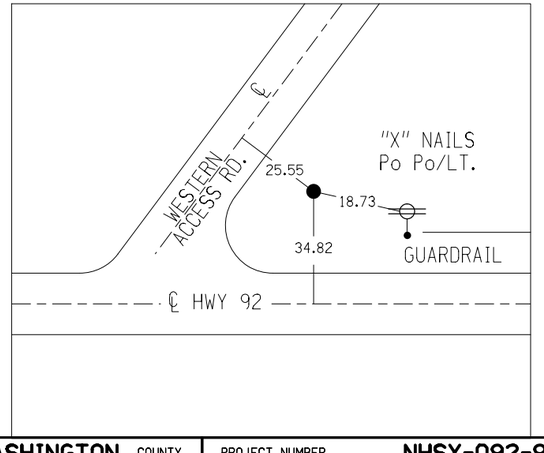

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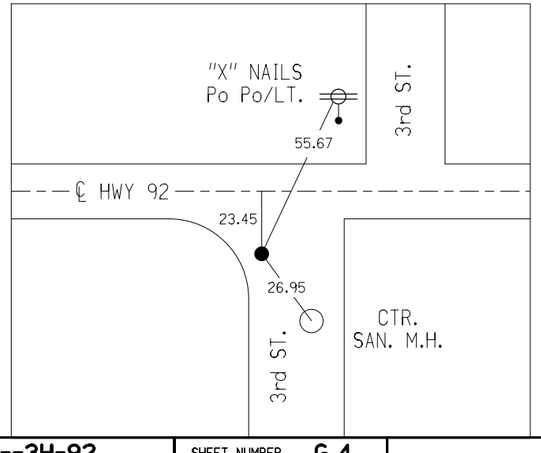

FILE NO.	ENGLISH	DESIGN TEAM J1a \ Miller \ Altenhofen	WASHINGTON COUNTY	PROJECT NUMBER NHSX-092-9(57)--3H-92	SHEET NUMBER G.4

8:35:23 AM 7/15/2019 raltenh pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\9209201085\Design\CADD Files\SHT\92092057_G01.dgn

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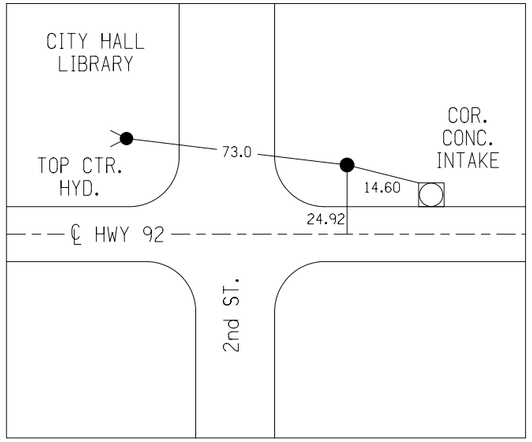


FILE NO.	ENGLISH	DESIGN TEAM J1a \ Miller \ Altenhofen	WASHINGTON COUNTY	PROJECT NUMBER NHSX-092-9(57)--3H-92	SHEET NUMBER G.5

8:35:24 AM 7/15/2019 raltenh pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\9209201085\Design\CADD Files\SHT\92092057_G01.dgn

ALIGNMENT COORDINATES

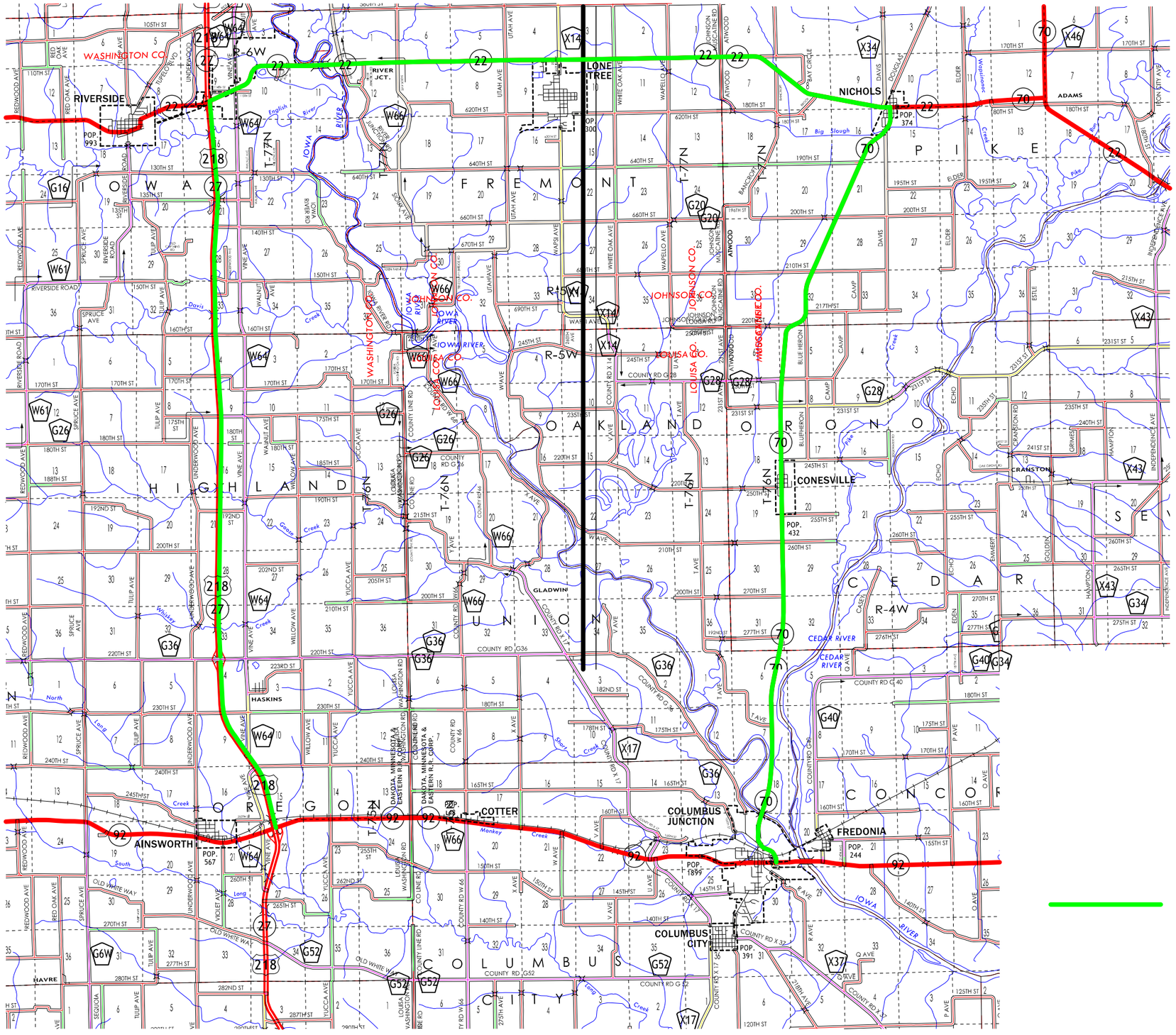
Name	Location	Point on Tangent			Begin Spiral			Begin Curve			Simple Curve PI or Master PI of SCS			End Curve			End Spiral		
		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates	
			Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)
1	L-IA92	0+00.00 R1	477581.14	2194093.40															
2	L-IA92							22+26.08 R1	477582.58	2196319.48	24+18.87 R1	477582.71	2196512.27	26+11.08 R1	477556.95	2196703.34			
4	L-IA92							51+25.59 R1	477220.99	2199195.30	54+25.59 R1	477180.90	2199492.61	57+25.59 R1	477143.31	2199790.25			
6	L-IA92							73+63.32 R1	476938.09	2201415.06	76+75.83 R1	476898.93	2201725.11	79+88.32 R1	476866.67	2202035.96			
8	L-IA92							84+97.47 R1	476814.11	2202542.39	87+97.47 R1	476783.14	2202840.79	90+97.47 R1	476753.31	2203139.30			
10	L-IA92	108+04.23 R1	476583.60	2204837.60															
11	L-IA92							138+71.94 R1	476279.02	2207890.15	145+87.51 R1	476207.97	2208602.19	152+95.94 R1	475966.57	2209275.81			
13	L-IA92							185+49.13 R1	474853.69	2212332.73	187+78.15 R1	474775.52	2212548.00	190+06.92 R1	474714.79	2212768.82			
15	L-IA92				230+81.74 R1	473634.38	2216697.80				231+98.42 R1	473603.43	2216810.29				232+56.74 R1	473589.67	2216866.98
16	L-IA92							232+56.74 R1	473589.67	2216866.98	238+39.33 R1	473452.31	2217433.15	244+06.24 R1	473546.99	2218007.99			
17	L-IA92				244+06.24 R1	473546.99	2218007.99				244+64.58 R1	473556.47	2218065.55				245+81.24 R1	473578.93	2218180.04
19	L-IA92							254+51.32 R1	473746.69	2219033.79	257+28.83 R1	473800.19	2219306.10	260+04.62 R1	473800.38	2219583.61			
21	L-IA92	270+52.43 R1	473801.10	2220631.43															
22	L-IA92							286+41.84 R1	473802.08	2222220.84	292+32.47 R1	473802.45	2222811.47	298+06.78 R1	473569.18	2223354.08			
24	L-IA92	304+02.90 R1	473333.74	2223901.73															
25	L-IA92							308+56.88 R1	473154.43	2224318.81	312+02.56 R1	473017.90	2224636.38	315+35.26 R1	473041.24	2224981.26			
27	L-IA92							331+60.22 R1	473150.73	2226602.53	334+77.80 R1	473172.03	2226919.40	337+95.22 R1	473175.79	2227236.96			
28	L-IA92	347+40.65 R1	473186.98	2228182.32															

108-23A
08-01-08

TRAFFIC CONTROL PLAN

The detour for this project is in place and shall be maintained by others.
J.2 includes the detour map.

IA 92 Traffic:
Detour During Construction



FILE NO.	ENGLISH	DESIGN TEAM J1a \ Altenhofen	LOUISA COUNTY	PROJECT NUMBER ER-092-9(158)--28-58	SHEET NUMBER J.2

10:51:25 AM 7/18/2019 raltenh pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\5809201020\Design\SHT\J_info\92092057_J03.dgn

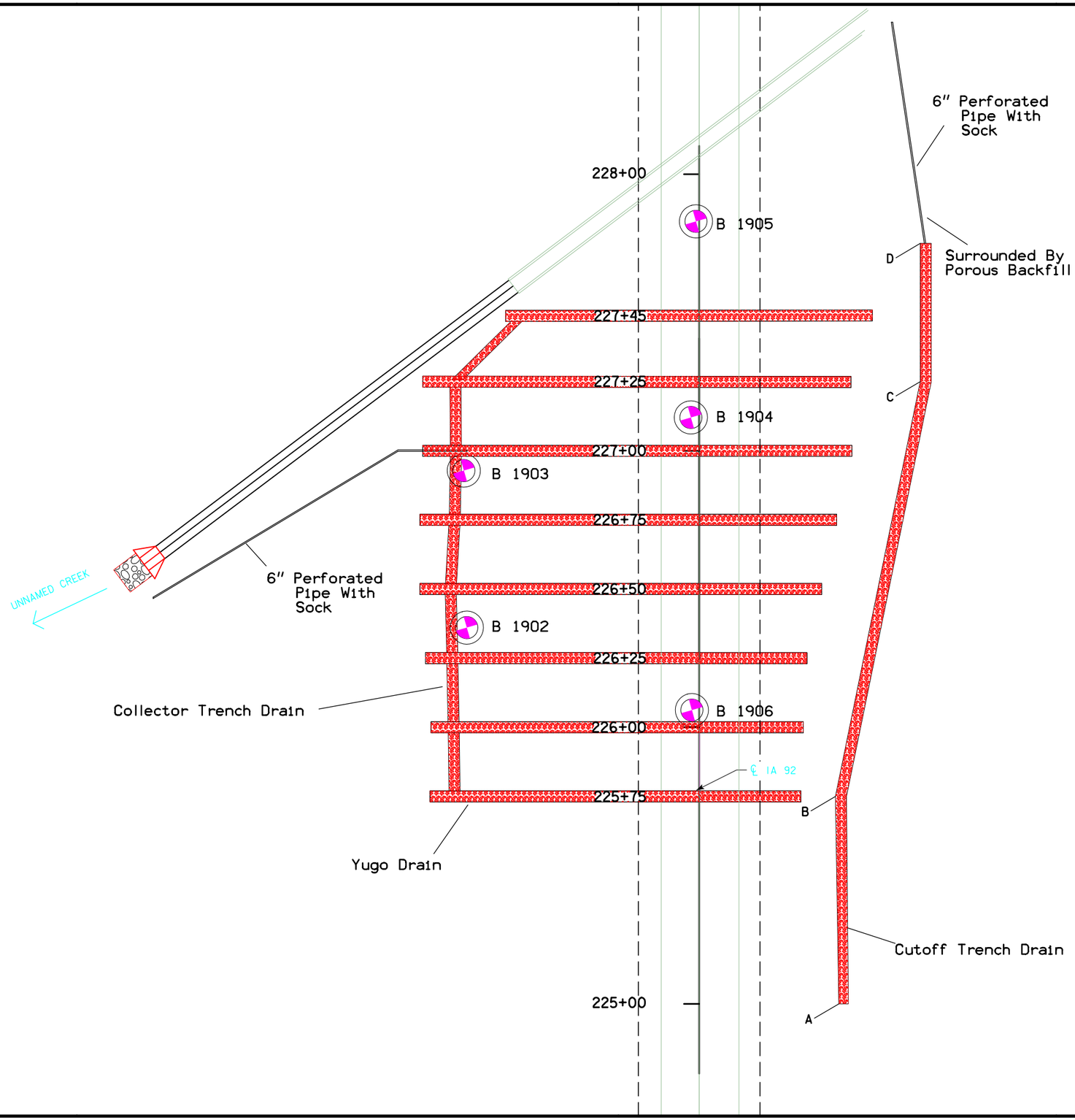


Table 1
Collector Drain Elevations at intersection with Yugo Drains

Yugo Drain Station	Offset from Project Centerline (Ft.)	Elevation at Yugo Drain (Ft.)
225+75	88	630
226+00	88	630
226+25	88	630
226+50	88	625
226+75	88	625
227+00	88	620
227+25	88	620
227+45	66	621

Table 2
Layout Points for Cutoff Trench Drain (South Side)

Point	Station	Offset(Ft.)
A	225+00	51
B	225+75	51
C	227+25	82
D	227+75	82

A Total of six (6) soils borings, identified as SB-1902 through SB-1907, were performed to aid in design of this slide repair. The plan location of these borings, except for SB-1907 (outside the rebuild area), are shown on this sheet. The boring logs for Borings SB-1902 through SB-1907 are available electronically in the contract e-file.

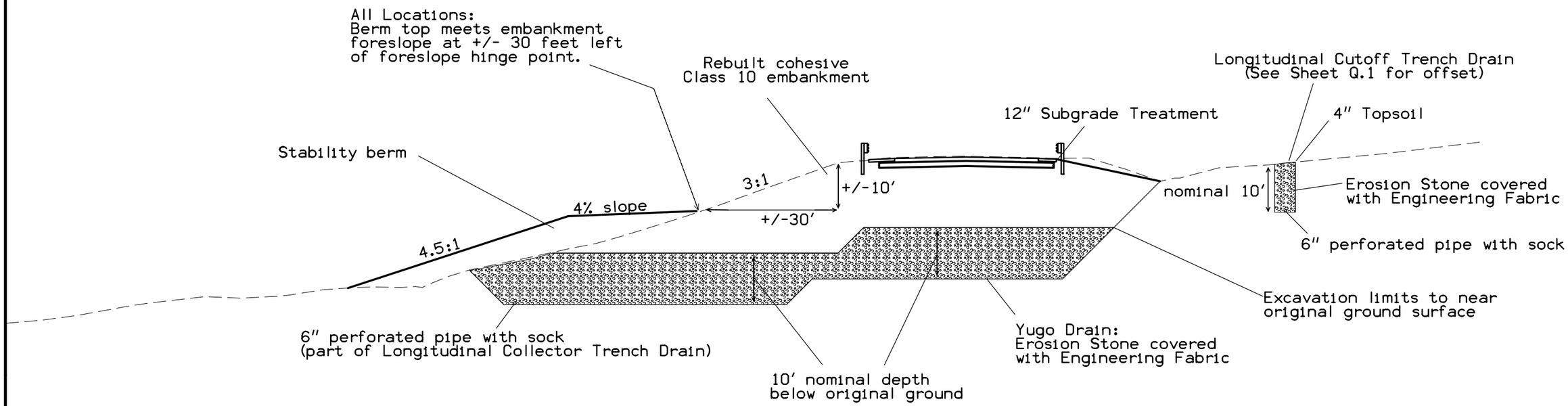
N

0 ENGLISH 40
SCALE IN FEET

DESIGN TEAM MEGIVERN \ DELL \ MOYLE | LOUISA COUNTY | PROJECT NUMBER ER- 092-9(158)--28-58 | SHEET NUMBER Q.1

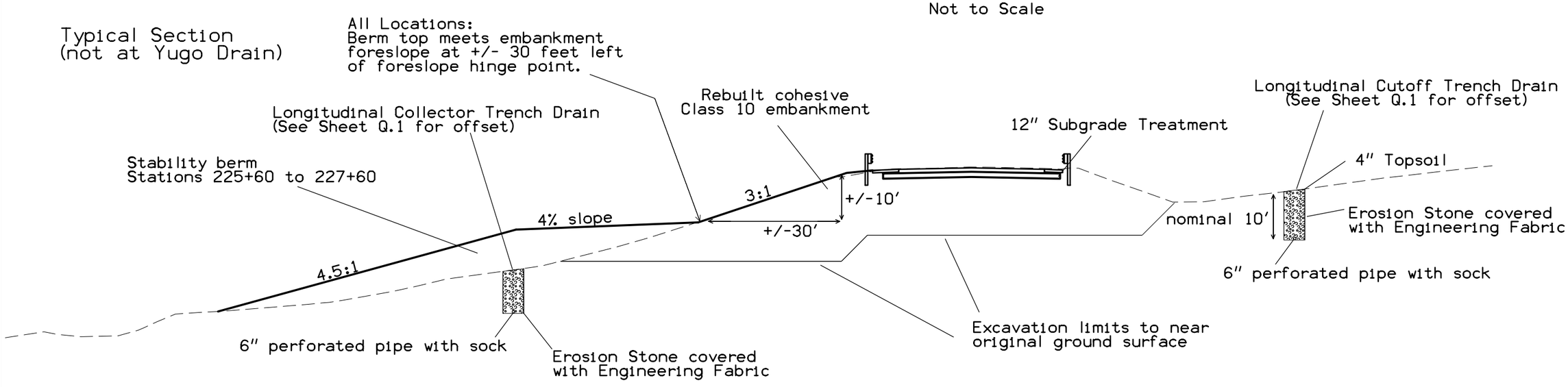
Typical Section*
(at Yugo Drain)
* Stations 225+75, 226+00,
226+25, 226+50, 226+75,
227+00, 227+25, 227+45

Not to Scale



Typical Section
(not at Yugo Drain)

Not to Scale



FILE NO.	ENGLISH	DESIGN TEAM MEGIVERN \ DELL \ MOYLE	LOUISA COUNTY	PROJECT NUMBER ER-092-9(158)--28-58	SHEET NUMBER Q.2

10:24:15 AM 7/19/2019 gmoyle pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\5809201020\Soils\92092057_Q2.dgn

General Overview
This slide repair involves removing the existing fill embankment to the near original ground surface between approximate Stations 225+75 and 227+45, then rebuilding the embankment, generally to pre-existing conditions with new cohesive Class 10 soil material. A stability berm will be constructed on the rebuilt north (left) foreslope between Stations 225+60 and 227+60. Suitable cohesive Class 10 material from the existing embankment can be reused in the new stability berm, but not in the main roadway embankment.

Before rebuilding the roadway embankment, "Yugoslavian" (Yugo) drains shall also be installed below the embankment to collect groundwater and to increase the overall bearing capacity of the embankment foundation soils. A Collector Trench Drain shall be installed to the north (left) of the roadway alignment to hydraulically interconnect the individual Yugo drains and connect them to a daylighted 6-inch diameter outlet drain. A Cutoff Trench Drain shall be installed to the south (right) of the roadway alignment to collect surface water and shallow groundwater flowing toward the new roadway embankment.

A total of six (6) soil borings, identified as SB-1902 through SB-1907, were performed to aid in design of this slide repair. The plan locations of these borings, except for SB-1907 (outside the rebuild area), are shown on Sheet Q.1. The boring logs for Borings SB-1902 through SB-1907 are available electronically in the contract e-file.

Within the project area, two (2) of the five (5) borings encountered sand lenses below an elevation of about 620 feet. Sand lenses may contribute to excavation instability if/where encountered. Any sloughing material that collects in the bottom of the trench excavations shall be removed prior to placing the subdrains and/or Erosion Stone. If trench bottom elevations as shown in the plans are not attainable due to trench instability, notify the Engineer immediately.

Yugoslavian Drains
Install eight (8) Yugo drains at approximate 25-foot centers as depicted on Sheet Q.1. The length of the trenches will vary from approximately 132 to 155 feet. The width of each drain shall be a nominal 4 feet, and the depth of excavation is estimated to be about 10 feet below the original ground surface. The bottom of each Yugo drain shall be graded to have a positive slope to the Collector Trench Drain elevations as listed on Sheet Q.1. Backfill the Yugo trenches with Erosion Stone. The top of the Erosion Stone and upper 2 feet of the sides of the trenches shall be covered with Engineering Fabric.

Collector Trench Drain (North Side)
The Yugo drains are hydraulically interconnected with the installation of a perpendicular, longitudinal collector trench drain located at an offset of approximately 88 feet left of roadway centerline. The depth of this trench will extend down to the bottom of each Yugo drain at elevations provided in Table 1 on Sheet Q.1. Place a 6-inch diameter perforated pipe (with sock) in the bottom of the trench. Backfill this collector drain with Erosion Stone, taking care not to crush the perforated pipe. The top of the Erosion Stone and upper 2 feet of the sides of the trench shall be covered with Engineering Fabric. At Station 227+00, the drain pipe will extend northward, more-or-less perpendicular to the collector trench drain, and daylight at the stream's edge near the outlet of the new CMP extension.

Cutoff Trench Drain (South Side)
Install a nominal 4-foot wide, 10-foot deep trench along the south side of IA 92 beginning at Station 225+00 and ending at Station 227+50. The offset of this trench from roadway centerline varies within these limits as shown in the Table 2 on Sheet Q.1. Place a 6-inch diameter perforated pipe (with sock) in the bottom of the trench. Backfill this cutoff trench drain with Erosion Stone to within approximately 4 inches of the ground surface, taking care not to crush the perforated pipe. The top of the Erosion Stone and upper 2 feet of the sides of the trench shall be covered with Engineering Fabric. The 6-inch diameter pipe shall extend further east beyond the limits of the cutoff trench at Station 227+25, daylighting near the inlet of existing RCB culvert located at Station 228+09.2. The 6-inch pipe shall outlet at an Elevation near 618.6 feet, approximately 3 feet above the invert elevation of the RCB culvert. Refer to Sheet Q.1 for additional details regarding this cutoff trench.

Stability Berm
Install a Stability Berm on the rebuilt north side (left) foreslope of IA 92 between Stations 225+60 and 227+60. The berm top will vary in width from 10 to 45 feet and have a 4 percent transverse slope for drainage away from the 3:1 foreslope. The berm top will start on the foreslope at a point that is about 10 feet below the hinge point of the typical cross-section (24 feet left of project centerline). The berm will have a 4.5:1 foreslope. Suitable cohesive Class 10 material from the existing embankment or other on-site excavations can be reused in the new stability berm.

Ditch Grading and Armoring
Grade the north (left) roadside ditch within the limits of repair to the outlet of the new CMP extension. Line the ditch with Class E Revetment underlain with Engineering Fabric extending from the outlet a distance of 25 feet away to the east and west. Refer to Sheet CS.1 for additional details.

100-1A
07-15-97

ESTIMATED PROJECT QUANTITIES
(1 DIVISION PROJECT)

Item No.	Item Code	Item	Unit	Total	As Built Qty.
1	2601-2633100	MOWING	ACRE	8.4	
2	2601-2634100	MULCHING	ACRE	1.2	
3	2601-2636015	NATIVE GRASS SEEDING	ACRE	1.2	
4	2601-2642100	STABILIZING CROP - SEEDING AND FERTILIZING	ACRE	1.3	
5	2602-0000020	SILT FENCE	LF	675.0	
6	2602-0000071	REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS	LF	675.0	
7	2602-0000101	MAINTENANCE OF SILT FENCE OR SILT FENCE FOR DITCH CHECK	LF	68.0	
8	2602-0000150	STABILIZED CONSTRUCTION ENTRANCE, EC-303	LF	200.0	
9	2602-0000312	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA.	LF	450.0	
10	2602-0000320	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 20 IN. DIA.	LF	320.0	
11	2602-0000350	REMOVAL OF PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE	LF	770.0	
12	2602-0010010	MOBILIZATIONS, EROSION CONTROL	EACH	1	
13	2602-0010020	MOBILIZATIONS, EMERGENCY EROSION CONTROL	EACH	1	

100-4A
10-29-02

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
1	**2601-2633100**	**MOWING**
		Estimate is based on seven mowings of all native grass seeded areas. In areas inaccessible to field equipment, cut with appropriate hand equipment and keep current with the mowing of adjacent areas.
		The first critical mowing occurs prior to seeding (if weed pressure/stabilization crop present).
		Mow all seeded areas 3 times in the first year of establishment. Mow when the vegetation is between 12 to 18 inches tall. Mow vegetation to the height of 6 inches.
		Mow all seeded areas 3 times in the second year of establishment.
		Perform second year mowings when vegetation is between 12 to 18 inches tall. Mow native vegetation to a height of 10 inches.
-	-	-
2	**2601-2634100**	**MULCHING**
		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.
-	-	-
3	**2601-2636015**	**NATIVE GRASS SEEDING**
		Seed all areas outside eight feet adjacent to outside shoulder along mainline, side roads, and infield areas at interchanges with "Native Grass Seeding".
		Supply all seed for "Native Grass Seeding".
		Apply all forb seed through the native grass drill wildflower or small seed box.
		Do not mix and apply Forb seed with the native grass seed.
		Apply cover crop through the cool season or through cover crop seed box.
		Do not mix and apply cover crop seed with the native grass seed.
		Remove seed remaining in the drill at the end of each day. At the completion of all seeding, remove remaining seed from the drill by vacuum or other means. Hand broadcast remaining seed on the project.
		The Engineer will review the limits with the Contractor prior to seeding.
-	-	-
4	**2601-2642100**	**STABILIZING CROP - SEEDING AND FERTILIZING**
		Item is included for stabilizing disturbed areas until areas are seeded to permanent vegetation.
		Seed and fertilize all disturbed areas according to Article 2601.03, C, 1, of the Standard Specifications.
-	-	-
5	**2602-0000020**	**SILT FENCE**
		Refer to Tab. 100-17. Refer to Standard Road Plan EC-201.
		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.
-	-	-

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 — 7/16/2019 Date

Seana K. Godbold
Printed or Typed Name

My license renewal date is June 30, 2021

Pages or sheets covered by this seal: RC.1 - RC.4; RR.1 - RR.2

100-4A
10-29-02

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
6	2602-0000071	**REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS**
		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.
-	-	-
7	2602-0000101	**MAINTENANCE OF SILT FENCE OR SILT FENCE FOR DITCH CHECK**
		This item is included for clean-out and repair of the silt fence and silt fence for ditch
		checks during the project.
-	-	-
8	2602-0000150	**STABILIZED CONSTRUCTION ENTRANCE, EC-303**
		Refer to Standard Road Plan EC-303.
		Verify the specific locations with the Engineer prior to beginning placement.
-	-	-
9	2602-0000312	**PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA.**
		Refer to Tab. 100-19. Refer to Standard Road Plan EC-204.
		The tabulation includes estimated locations for placement of "Perimeter and Slope Sediment
		Control Device, 12 in. dia." to address erosion to be encountered during construction.
		Verify the specific locations with the Engineer prior to beginning placement. Bid item
		includes 25% additional quantity for field adjustments and replacements.
		Use Perimeter and Slope Sediment Control Devices fabricated using wood excelsior.
-	-	-
10	2602-0000320	**PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 20 IN. DIA.**
		Refer to Tab. 100-19. Refer to Standard Road Plan EC-204.
		The tabulation includes estimated locations for placement of "Perimeter and Slope Sediment
		Control Device, 20 in. dia." to address erosion to be encountered during construction.
		Verify the specific locations with the Engineer prior to beginning placement. Bid item
		includes 25% additional quantity for field adjustments and replacements.
		Use Perimeter and Slope Sediment Control Devices fabricated using wood excelsior.
-	-	-
11	2602-0000350	**REMOVAL OF PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE**
		Item is included for the removal of all perimeter and slope protection devices.
		All material will become the property of the Contractor and shall be removed
		within 24 hours.
-	-	-
12	2602-0010010	**MOBILIZATIONS, EROSION CONTROL**
		- -
-	-	-
13	2602-0010020	**MOBILIZATIONS, EMERGENCY EROSION CONTROL**
		- -
-	-	-

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	10-16-18	Silt Fence
EC-204	04-18-17	Perimeter and Slope Sediment Control Devices
EC-303	04-16-19	Stabilized Construction Entrance
EC-502	04-21-15	Seeding in Rural Areas

111-25
10-18-11

INDEX OF TABULATIONS

232-3A
04-16-19

EROSION CONTROL (RURAL SEEDING)

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

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

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

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

281-3
10-17-17

STORM WATER BEST MANAGEMENT PRACTICES

Storm water storage volumes are not calculated for this project. The following best management practices are used in place of storm water detention: Undisturbed foreslope and ditches will act as vegetated buffers. Silt fence is placed downstream of disturbed areas in ditches where drainage leaves the ROW and at roadway culverts.

100-19
04-19-16

PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE

Possible Standards: EC-204

Location			Length of Installation			
Begin Station	End Station	Side	9 inch Dia	12 inch Dia	20 inch Dia	Remarks
			LF	LF	LF	
225+35.00	227+75.00	Lt		240.0		
225+70.00	225+70.00	Rt			20.0	Ditch Check
225+95.00	225+95.00	Rt			20.0	Ditch Check
226+15.00	226+15.00	Rt			20.0	Ditch Check
226+25.00	226+25.00	Lt			30.0	Ditch Check
226+35.00	226+35.00	Rt			20.0	Ditch Check
226+55.00	226+55.00	Rt			20.0	Ditch Check
226+40.00	226+90.00	Lt		120.0		
226+75.00	226+75.00	Rt			20.0	Ditch Check
226+95.00	226+95.00	Rt			20.0	Ditch Check
227+15.00	227+15.00	Rt			20.0	Ditch Check
227+35.00	227+35.00	Rt			20.0	Ditch Check
227+55.00	227+55.00	Rt			20.0	Ditch Check
227+75.00	227+75.00	Rt			20.0	Ditch Check
	PSSCD Tab Totals:			**360.0**	**250.0**	
	12 inch PSSCD Bid Totals:		**450.0**	**125% of Tab Total**		
	20 inch PSSCD Bid Totals:		**320.0**	**125% of Tab Total**		
	PSSCD Removal Totals:		**770.0**	**100% of Bid Total**		

100-17
04-20-10

TABULATION OF SILT FENCES

Refer to EC-201

Location			Length	Remarks
Begin Station	End Station	Side	LF	
225+65.00	226+55.00	Lt	100.0	
226+10.00	227+25.00	Lt	120.0	
226+55.00	227+50.00	Lt	110.0	
226+65.00	227+70.00	Rt	115.0	
227+25.00	227+60.00	Lt	95.0	
	Silt Fence Tab Totals:		**540.0**	
	Silt Fence Bid Totals:		**675.0**	**125% of Tab Total**
	Silt Fence Maintenance Totals:		**68.0**	**10% of Bid Total**
	Silt Fence Removal Totals:		**675.0**	**100% of Bid Total**

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 per plan revisions or by contract modification, 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 prime 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.

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.
5. Supervises and implements good housekeeping practices.
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.

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 or involved in land disturbing activities. 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.

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 monitoring inspection reports on a monthly basis, 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.

E. Inspector:
1. Updates PPP whenever there is a change in design, construction, operation, or maintenance which has a significant effect on the discharge of pollutants from the project.
2. Maintains an up-to-date record that identifies contractors and subcontractors as co-permittees.
3. Makes these plans available to the DNR upon their request.
4. Conducts joint required inspections of the site with the contractor/subcontractor.
5. Completes an inspection report after each inspection.
6. Is signature authority on storm water inspection reports.

II. PROJECT SITE DESCRIPTION

A. This Pollution Prevention Plan (PPP) is for the construction of grading and paving for a slide repair.

B. This PPP covers approximately 2.6 acres with an estimated 1.2 acres being disturbed. The portion of the PPP covered by this contract has 1.2 acres disturbed.

C. The PPP is located in an area of Otley - Ladoga soil association. The estimated weighted average runoff coefficient numer for this PPP after completion will be 0.24.

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 installed. Installed locations may also be modified from tabulation locations by field staff. Installed locations will be documented by fieldbook entries.

F. Runoff from this work will flow into Unnamed Creek then into Short Creek.

110-12
04-16-19

POLLUTION PREVENTION PLAN

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 or by contract modification. Additional erosion and sediment control items may be required as determined by the inspector and/or contractor during storm water monitoring 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 (when included), Estimated Project Quantities (100-0A, 100-1A, or 100-1C), and Estimate Reference Information (100-4A) located in the C 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 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 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 (when included), Estimated Project Quantities (100-0A, 100-1A, or 100-1C), and Estimate Reference Information (100-4A) located in the C 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 sheets or are referenced in the Standard Road Plans Tabulation (105-4) located in the C sheets.

c. Storm Water Management
1) 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 (when included) and Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located in the C 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

a. 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.
1) Vehicle Entrances and Exits - Construct and maintain entrances and exits to prevent tracking of sediments onto roadways.
2) Material Delivery, Storage and Use - Implement practices to prevent discharge of construction materials during delivery, storage, and use.
3) Stockpile Management - Install controls to reduce or eliminate pollution of storm water from stockpiles of soil and paving.
4) Waste Disposal - Do not discharge any materials, including building materials, into waters of the state, except as authorized by a Section 404 permit.
5) 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.
6) 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.
7) 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.
8) 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.
9) 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.
10) 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.

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.

POLLUTION PREVENTION PLAN

V. INSPECTION REQUIREMENTS

A. Inspections shall be made jointly by the Contractor and the Contracting Authority at least once every seven calendar days. Storm water monitoring 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 monitoring 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 - May include Plan Revisions or Contract Modifications for new items, storm water monitoring inspection reports, and fieldbook entries made by the inspector.
C. IDR - Inspector’s Daily Report – 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.	ENGLISH	DESIGN TEAM **GODBOLD \ BULTMAN \ MCDONALD**	**LOUISA** COUNTY	PROJECT NUMBER **ER-Ø92-9(158)--28-58**	SHEET NUMBER **RR.1**

9:08:04 AM 7/9/2019 jbultma pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\5809201020\Roadside\58092158_LGD.sht

Unnamed Creek

ROW

224 225 226 227 228 229

92

STA. 225+00.00
Begin Construction

STA. 227+75.00
End Construction

ROW

0 100
FEET

FILE NO.	ENGLISH	DESIGN TEAM GODBOLD \ BULTMAN \ MCDONALD	LOUISA COUNTY	PROJECT NUMBER ER-092-9(158)--28-58	SHEET NUMBER RR.2

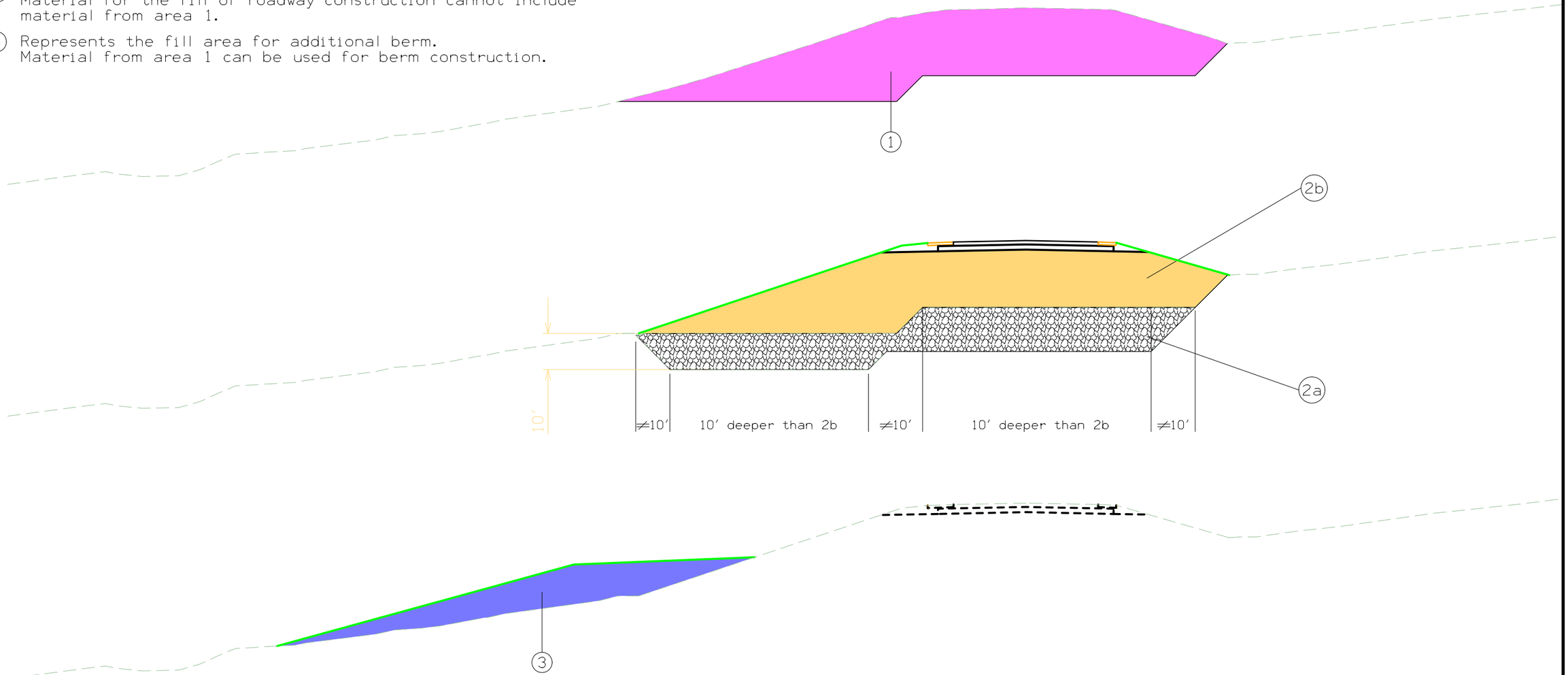
10:05:23 AM 7/16/2019 jbultma pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\5809201020\Roadside\58092158_RR2.dgn

(1) Represents the excavation of roadway to excavation limits.

(2a) 4' wide (bucket width) yugo. 25' centers from Sta. 225+75 - 227+25, one additional yugo at Sta. 227+45. (Shifted to avoid the UAC 5x5 RCB.) See Soils sheets for more information.

(2b) Represents the fill area for the construction of new roadway. Material for the fill of roadway construction cannot include material from area 1.

(3) Represents the fill area for additional berm. Material from area 1 can be used for berm construction.



FILE NO.	ENGLISH	DESIGN TEAM Jia \ Altenhofen	LOUISA COUNTY	PROJECT NUMBER ER-092-9(158)--28-58	SHEET NUMBER T.1

11:41:41 AM 7/17/2019 raltenh pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\5809201020\Design\SHT\58092158_LGD.dgn

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]
				[2]+[3]			[6] x 1.3	[4]-[7]					[12] x 1.4	[11]-[13]								
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Manually Calculated Cut Adjustments (+/- Cut)	Total Cut Adjusted	Total Fill Unadjusted Volume	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								
Excavation																						
225+50.00	364	364		364	0	0	0	364	0	0	0	0	0	0								
225+75.00	904	904	147	1,051	0	0	0	1,051	0	0	0	0	0	0								
226+00.00	1,083	1,083	163	1,246	0	0	0	1,246	0	0	0	0	0	0								
226+25.00	1,333	1,333	169	1,502	0	0	0	1,502	0	0	0	0	0	0								
226+50.00	1,592	1,592	180	1,772	0	0	0	1,772	0	0	0	0	0	0								
226+75.00	1,873	1,873	192	2,065	0	0	0	2,065	0	0	0	0	0	0								
227+00.00	2,134	2,134	196	2,330	0	0	0	2,330	0	0	0	0	0	0								
227+25.00	1,997	1,997	208	2,205	0	0	0	2,205	0	0	0	0	0	0								
227+50.00	962	962	224	1,186	0	0	0	1,186	0	0	0	0	0	0								
227+75.00																						
Excavation Totals:	12,242	12,242	1,479	13,721	0	0	0	13,721	0	0	0	0	0	0								

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]
				[2]+[3]			[6] x 1.3	[4]-[7]					[12] x 1.4	[11]-[13]								
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Manually Calculated Cut Adjustments (+/- Cut)	Total Cut Adjusted	Total Fill Unadjusted Volume	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								
Roadway																						
225+50.00	0	0		0	326	326	424	-424	0	0	0	5	7	-7								
225+75.00	0	0		0	848	848	1,102	-1,102	0	0	0	10	14	-14								
226+00.00	0	0		0	1,012	1,012	1,316	-1,316	0	0	0	12	17	-17								
226+25.00	0	0		0	1,227	1,227	1,595	-1,595	0	0	0	13	18	-18								
226+50.00	0	0		0	1,454	1,454	1,890	-1,890	0	0	0	15	21	-21								
226+75.00	0	0		0	1,737	1,737	2,258	-2,258	0	0	0	17	24	-24								
227+00.00	0	0		0	2,041	2,041	2,653	-2,653	0	0	0	18	25	-25								
227+25.00	0	0		0	1,960	1,960	2,548	-2,548	0	0	0	20	28	-28								
227+50.00	0	0		0	940	940	1,222	-1,222	0	0	0	10	14	-14								
227+75.00																						
Roadway Totals:	0	0	0	0	11,545	11,545	15,009	-15,009	0	0	0	120	168	-168								

FILE NO.	ENGLISH	DESIGN TEAM JIA\ALTENHOFEN	LOUISA COUNTY	PROJECT NUMBER ER-092-9(158)--28-58	SHEET NUMBER T.3

7/12/2019 11:57:47 AM adewolf C:\Users\adewolf\Desktop\Louisa Co ER Slide EW\58092158_T02.xlsm

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]
				[2]+[3]			[6] x 1.3	[4]-[7]					[12] x 1.4	[11]-[13]								
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Manually Calculated Cut Adjustments (+/- Cut)	Total Cut Adjusted	Total Fill Unadjusted Volume	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								
Berm																						
225+50.00	0	0		0	33	33	43	-43	0	0	0	7	10	-10								
225+75.00	0	0		0	148	148	192	-192	0	0	0	17	24	-24								
226+00.00	0	0		0	286	286	372	-372	0	0	0	25	35	-35								
226+25.00	0	0		0	393	393	511	-511	0	0	0	31	43	-43								
226+50.00	0	0		0	684	684	889	-889	0	0	0	41	57	-57								
226+75.00	0	0		0	907	907	1,179	-1,179	0	0	0	45	63	-63								
227+00.00	0	0		0	718	718	933	-933	0	0	0	37	52	-52								
227+25.00	0	0		0	378	378	491	-491	0	0	0	26	36	-36								
227+50.00	0	0		0	108	108	140	-140	0	0	0	11	15	-15								
227+75.00																						
Berm																						
Totals:	0	0	0	0	3,655	3,655	4,752	-4,752	0	0	0	240	336	-336								

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]
				[2]+[3]			[6] x 1.3	[4]-[7]					[12] x 1.4	[11]-[13]								
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Manually Calculated Cut Adjustments (+/- Cut)	Total Cut Adjusted	Total Fill Unadjusted Volume	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:																						
Excavation	12,242	12,242	1,479	13,721	0	0	0	13,721	0	0	0	0	0	0								
Roadway	0	0	0	0	11,545	11,545	15,009	-15,009	0	0	0	120	168	-168								
Berm	0	0	0	0	3,655	3,655	4,752	-4,752	0	0	0	240	336	-336								
Project Totals:	12,242	12,242	1,479	13,721	15,200	15,200	19,761	-6,040	0	0	0	360	504	-504								

Bid Items:

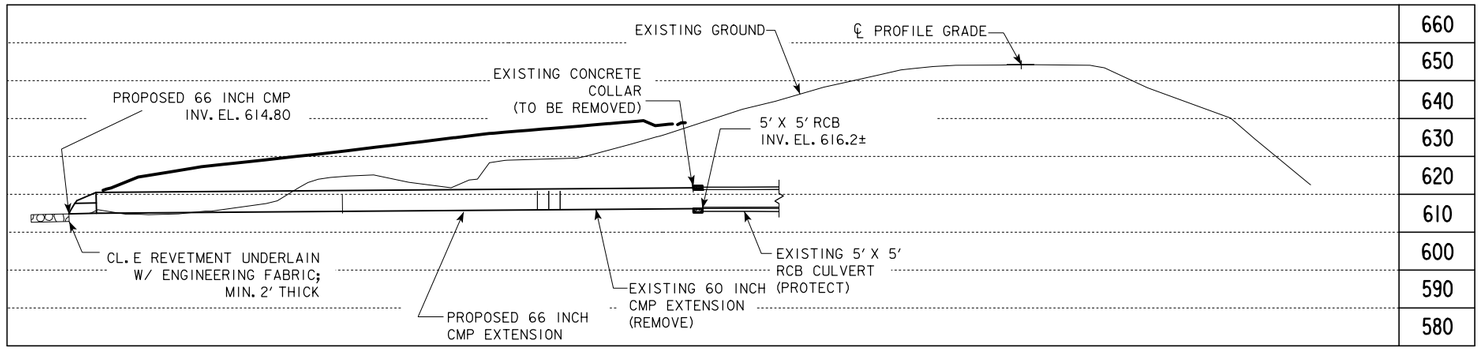
Class 10, Roadway and Borrow: ***	4,752 = [7] Berm
Class 10, Waste:	8,969 = [4] Excavation - [7] Berm
Embankment-In-Place, Contractor Furnished:	11,545 = [7] Roadway/1.3
Topsoil, Furnish and Spread:	360 = [14]/1.4

*** Excavation cut can only be used in Berm fill

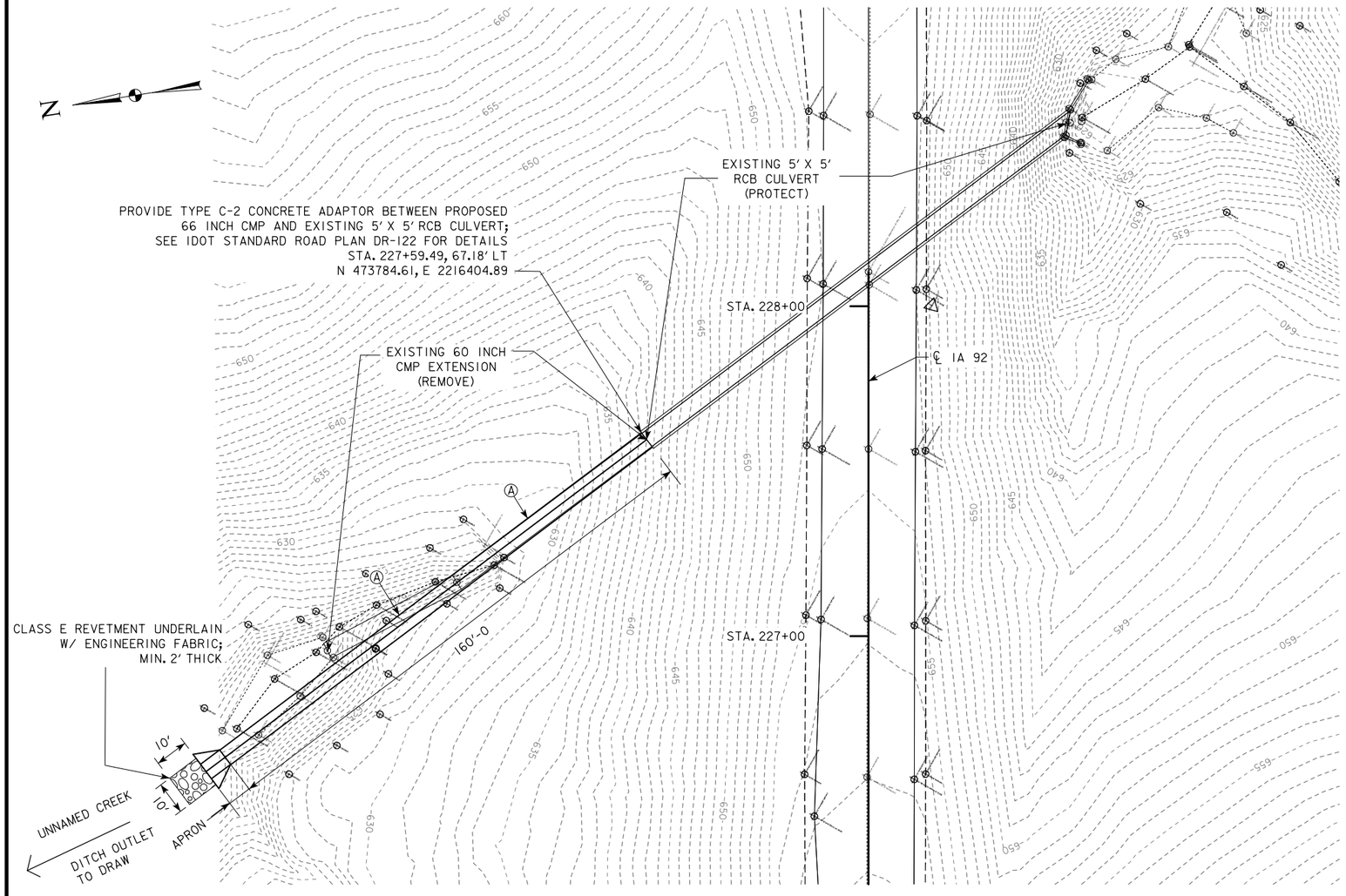
FILE NO.	ENGLISH	DESIGN TEAM JIA\ALTENHOFEN	LOUISA COUNTY	PROJECT NUMBER ER-092-9(158)--28-58	SHEET NUMBER T.5

7/18/2019 11:28:08 AM raltenh c:\pw_work\pwmain\raltenh\d0986913\58092158_T02.xlsm

BM33 N 473690.540, E 2216421.213, STA. 228+00.17, 19.189' RT, 60D SPIKE IN GUARD RAIL POST CENTER OF RCB SOUTH SIDE OF IA 92, EL. 654.32
BM34 N 473460.615, E 2217419.556, STA. 238+17.84, 50.880' RT, 60D SPIKE IN POWER POLE SOUTH SIDE OF IA 92 AT COUNTY ROAD X17 NORTH, EL. 698.44



LONGITUDINAL SECTION ALONG ℄ OF CULVERT



SITUATION PLAN

NOTES
1. ALL PROPOSED 66 INCH CMP AT 0.88% SLOPE.
2. REMOVAL OF IA 92 PAVEMENT IS PERMISSIBLE FOR TRENCH EXCAVATION. SEE ROAD DESIGN SHEETS FOR PAVEMENT REMOVAL AND REPLACEMENT DETAILS.
3. TYPE C-2 ADAPTOR AS SHOWN ON IDOT STANDARD ROAD PLAN DR-122 IS FOR A CONCRETE PIPE TO CONCRETE BOX CONNECTION. DETAILS AND NOTES AS SHOWN ON DR-122 SHALL APPLY FOR A CMP CONNECTION.

LOCATION

IA 92 OVER UNNAMED CREEK
T-75N R-5W
SECTION 23
COLUMBUS CITY TOWNSHIP
LOUISA COUNTY
LATITUDE 41.281555°
LONGITUDE -91.404184°

HYDRAULIC DATA

DRAINAGE AREA = 103 ACRES
Q_{50} = 201 CFS
HW ELEV. = 623.86
STREAM SLOPE = 200 FT./MI

TRAFFIC ESTIMATE

2018 AADT	4,470	V.P.D.
202_ AADT	_	V.P.D.
202_ DHV	_	V.P.H.
TRUCKS	-	%
TOTAL DESIGN ESALs	_	

UTILITIES LEGEND:

⬡ TP - TELEPHONE PEDESTAL - WINDSTREAM COMMUNICATIONS
● - POWER POLE - ALLIANT ENERGY

0 ENGLISH 40
SCALE IN FEET

PRELIMINARY

DESIGN FOR

5' X 5' RCB W/66" CMP EXTENSION REPAIR

SITUATION PLAN

STATION 228+09.2 JUNE 2019

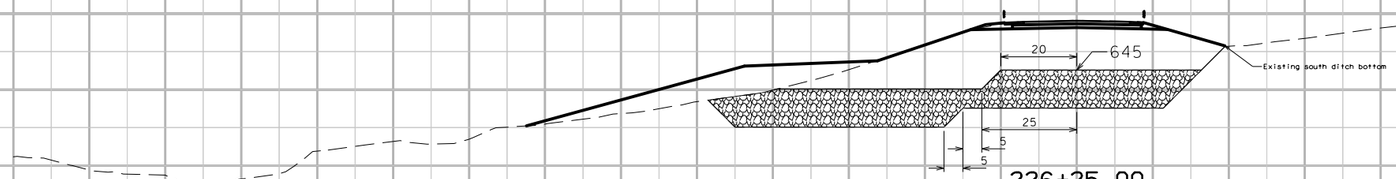
LOUISA COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

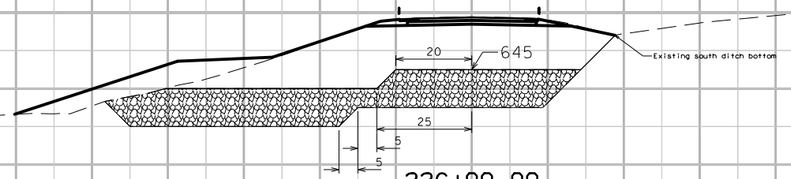
DESIGN SHEET NO. 1 OF 1 FILE NO. 31778 DESIGN NO. ?

DESIGN TEAM	LOUISA COUNTY	PROJECT NUMBER ER-092-9(158)--28-58	SHEET NUMBER V.1

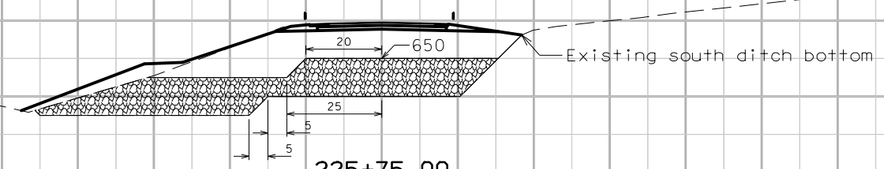
IA92
Final



226+25.00



226+00.00



225+75.00

Remove and replace west end guardrail.

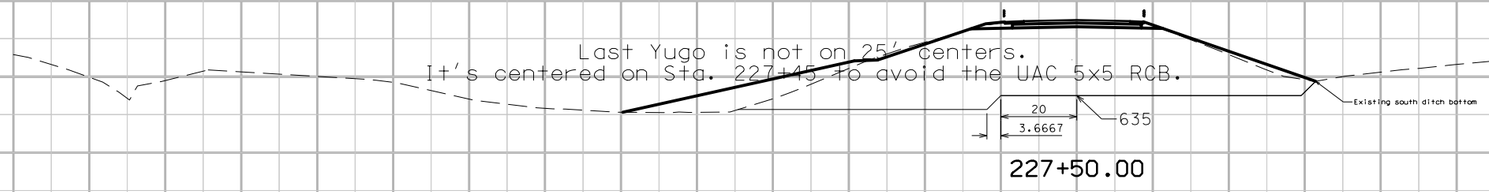
225+50.00

FILE NO.	ENGLISH	DESIGN TEAM Jia \ Altenhofen	LOUISA COUNTY	PROJECT NUMBER ER-092-9(158)--28-58	SHEET NUMBER W.1

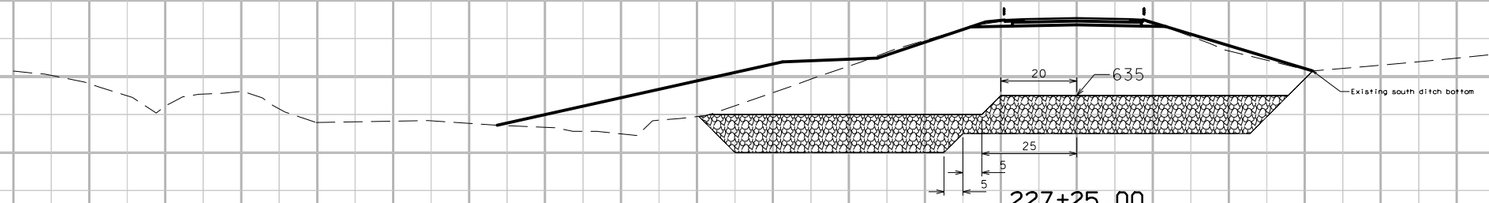
10:22:04 AM 7/15/2019 raltenh pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\5809201020\Design\XS\XS_58092158_560sht.dgn

IA92
Final

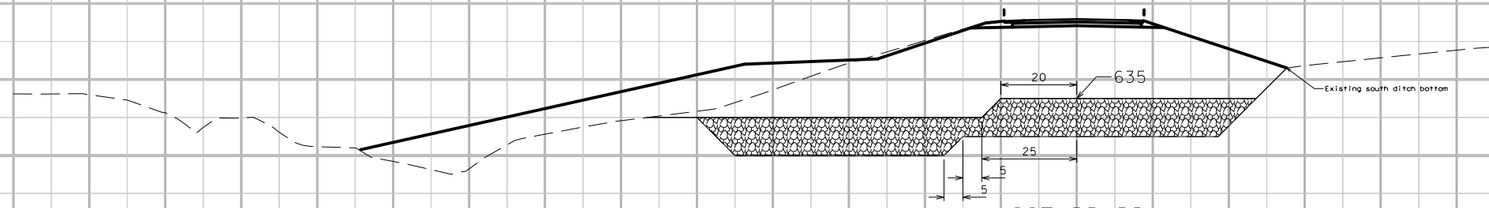
Last Yugo is not on 25' centers.
It's centered on Sta. 227+45 to avoid the UAC 5x5 RCB.



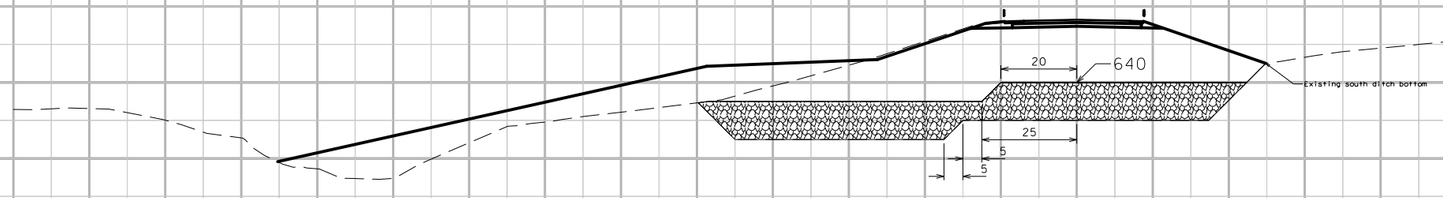
227+50.00



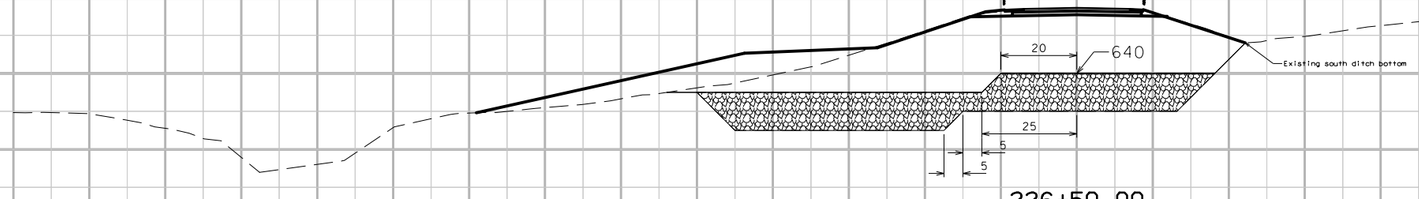
227+25.00



227+00.00



226+75.00



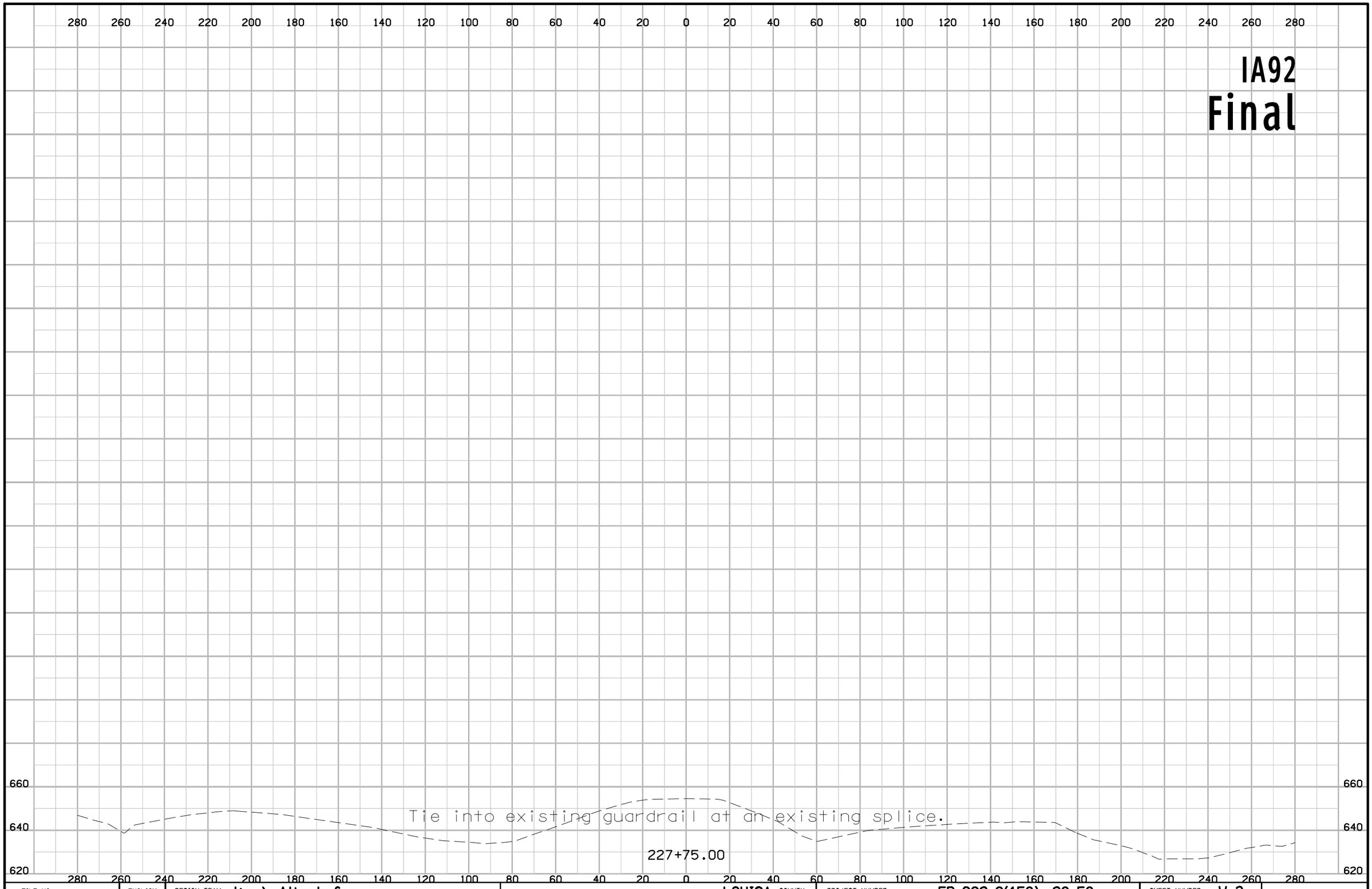
226+50.00

FILE NO.	ENGLISH	DESIGN TEAM J1a \ Altenhofen	LOUISA COUNTY	PROJECT NUMBER ER-092-9(158)--28-58	SHEET NUMBER W.2

10:22:05 AM 7/15/2019 raltenh pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\5809201020\Design\XS\XS_58092158_560sht.dgn

IA92

Final



FILE NO.	ENGLISH	DESIGN TEAM J1a \ Altenhofen	LOUISA COUNTY	PROJECT NUMBER ER-092-9(158)--28-58	SHEET NUMBER W.3

10:22:06 AM 7/15/2019 raltenh pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\5809201020\Design\XS\XS_58092158_560sht.dgn