LETTING DATE 03/20/2018

SLIDE REPAIR

NHSN-092-5(65)--2R-91

WARREN/MARION

IOWADOT

Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

WARREN/MARION COUNTY

SLIDE REPAIR

Approx 1 mi W of Sandyville and Approx 5 mi W of IA 14

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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

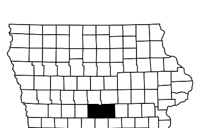
IOWA ONE CALL
1-800-292-8989
www.iowaonecall.com
811 Know what's below. Call before you dig.

For Project Location Map
Refer to Sheet No. A.02

REVISIONS

TOTAL	37
PROJECT IDENTIFICATION NUMBER	
17-91-092-020	
PROJECT NUMBER	
NHSN-092-5(65)--2R-91	
R.O.W. PROJECT NUMBER	
NHSN-092-5(66)--2R-91	

INDEX OF SHEETS



Ref. Loc. 136
Sta. 430

DESIGN DATA RURAL		
2015 AADT	2170	V.P.D.
2012 AADT	2050	V.P.D.
2015 DHV	91	V.P.H.
TRUCKS	16.91	%
Total Design ESALs	--	

Ref. Loc. 67.3
Sta. 1199

DESIGN DATA RURAL		
2015 AADT	7400	V.P.D.
2014 AADT	7100	V.P.D.
2015 DHV	309	V.P.H.
TRUCKS	12.03	%
Total Design ESALs	--	

INDEX OF SEALS

SHEET NO.	NAME	TYPE
A.1	Paul W. Flattery	Primary Signature Block
CD.1	David R. Claman	Hydraulic Design
CS.1	Mark A. Dell	Geotechnical Design

ROADWAY DESIGN

LICENSED PROFESSIONAL ENGINEER Paul W. Flattery 15282 IOWA

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

Signature: Paul Flattery Date: XX-XX-XXXX

Paul W. Flattery
Printed or Typed Name

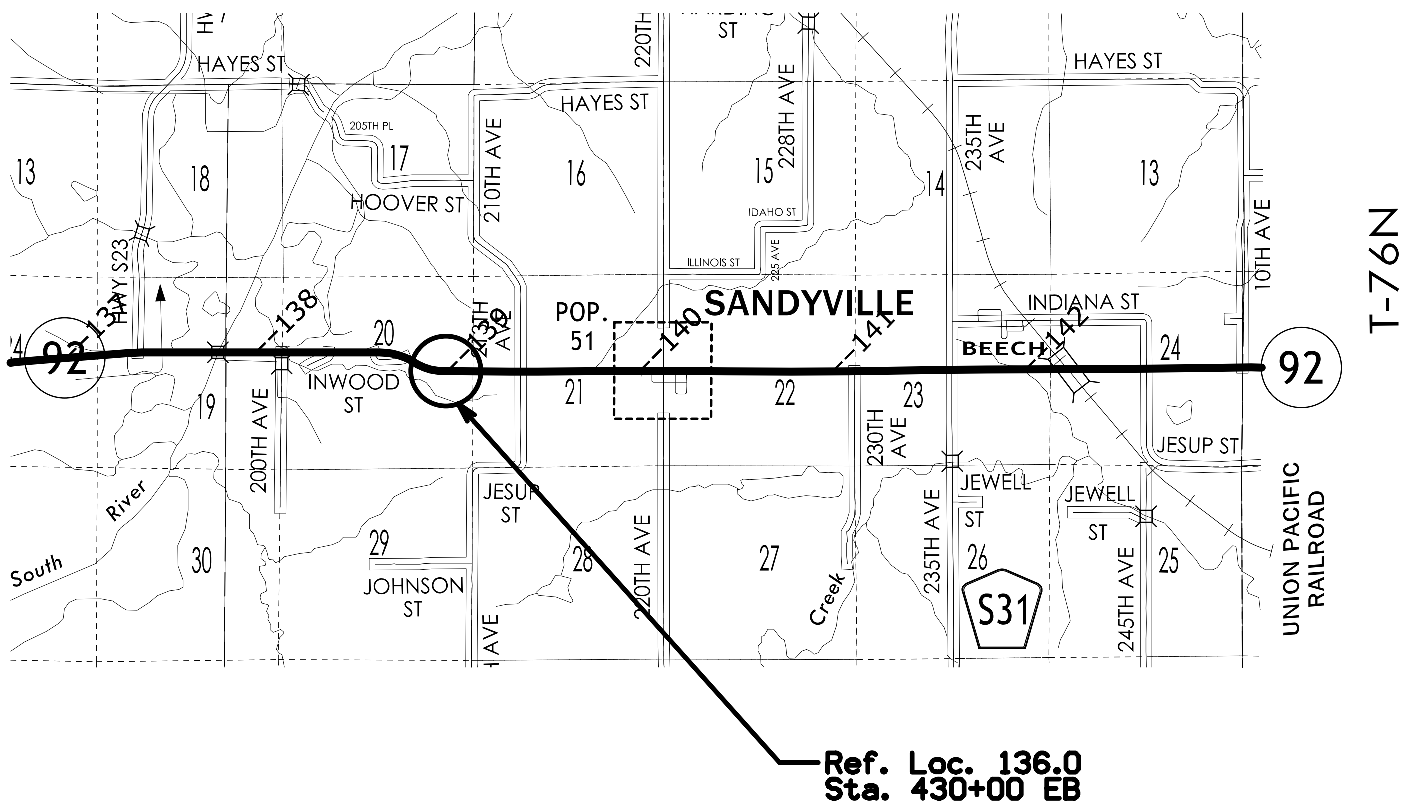
My license renewal date is December 31, 2019

Pages or sheets covered by this seal: A.1-2,B.1,C.1-3,D.1-3,G.1-6,H.1,J.1

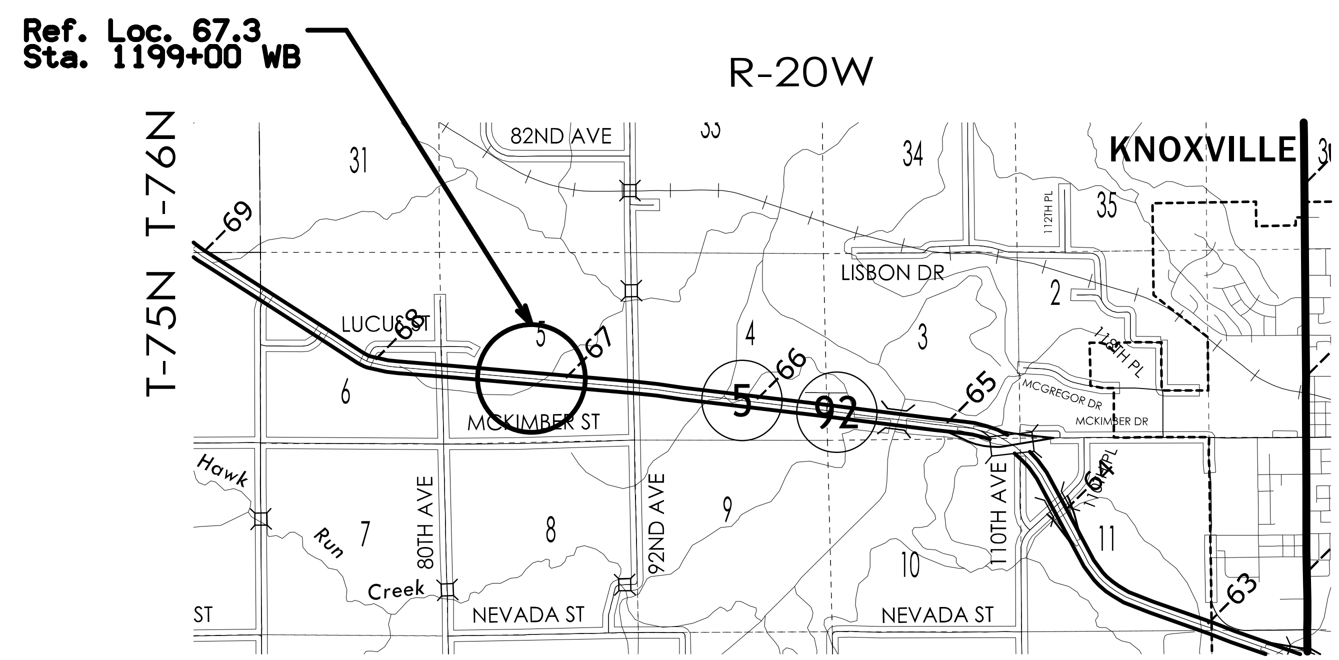
FILE NO.	ENGLISH	DESIGN TEAM FLATTERY \ PAUL	WARREN/MARION COUNTY	PROJECT NUMBER NHSN-092-5(65)--2R-91	SHEET NUMBER A.1

4:45:41 PM 12/28/2017 npaul pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9109202017\Design\CADD Files\Sheet_Files\91092065_A01.dgn

Warren County



Marion County

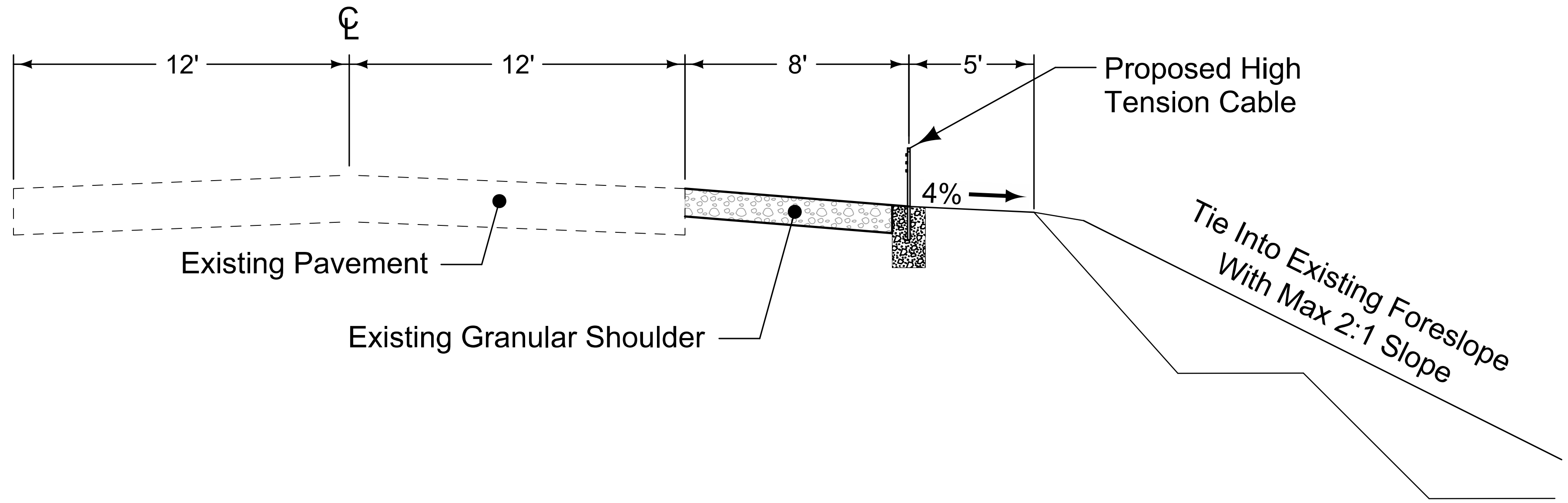


FILE NO.	ENGLISH	DESIGN TEAM FLATTERY \ PAUL	WARREN/MARION COUNTY	PROJECT NUMBER NHSN-092-5(65)--2R-91	SHEET NUMBER A.2

4:45:43 PM 12/28/2017 npaul pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9109202017\Design\CADD Files\Sheet_Files\91092065_A01.dgn

CP2-M
MODIFIED

ROADSIDE HIGH TENSION CABLE GUARDRAIL
Typical Cross Section at Existing Granular Shoulder



100-1D
10-18-05

PROJECT DESCRIPTION

Site 1 - Bench and rebuild the foreslope from Station 430+00 extending to about Station 431+00, extend the existing pipe, and install high tension cable gaurdrail.
Site 2 - Remove the existing subdrains and outlets from Station 1197+32 to Station 1201+50. Install four (4) Yugoslavian Drains perpendicular to the slope face in the current slide.

100-0A
10-28-97

ESTIMATED ROADWAY QUANTITIES
(1 DIVISION PROJECT)

Item No.	Item Code	Item	Unit	Total	As Built Qty.
1	2101-0850001	CLEARING AND GRUBBING	ACRE	0.4	
2	2102-2625000	EMBANKMENT-IN-PLACE	CY	513.0	
3	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW	CY	372.0	
4	2102-2710090	EXCAVATION, CLASS 10, WASTE	CY	1,275.0	
5	2102-2712015	EXCAVATION, CLASS 12, BOULDERS OR ROCK FRAGMENTS	CY	10.0	
6	2105-8425015	TOPSOIL, STRIP, SALVAGE AND SPREAD	CY	1,449.0	
7	2416-0100030	APRONS, CONCRETE, 30 IN. DIA.	EACH	1	
8	2416-1180030	CULVERT, CONCRETE ROADWAY PIPE, 30 IN. DIA.	LF	12	
9	2505-6000111	HIGH TENSION CABLE GUARDRAIL	LF	236.0	
10	2505-6000121	HIGH TENSION CABLE GUARDRAIL, END ANCHOR	EACH	2	
11	2505-6000131	HIGH TENSION CABLE GUARDRAIL, SPARE PARTS KIT	EACH	1	
12	2507-3250005	ENGINEERING FABRIC	SY	1,728.0	
13	2507-6800061	REVETMENT, CLASS E	TON	710.0	
14	2507-8029000	EROSION STONE	TON	2,570.0	
15	2526-8285000	CONSTRUCTION SURVEY	LS	1.00	
16	2528-8445110	TRAFFIC CONTROL	LS	1.00	
17	2528-8445113	FLAGGERS	EACH	See Proposal	
18	2533-4980005	MOBILIZATION	LS	1.00	
19	2602-0000030	SILT FENCE FOR DITCH CHECKS	LF	180.0	
20	2602-0000071	REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS	LF	180.0	
21	2602-0000101	MAINTENANCE OF SILT FENCE OR SILT FENCE FOR DITCH CHECK	LF	18.0	
22	2602-0000312	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA.	LF	2,825.0	

100-4A
10-29-02

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
1	2101-0850001	**CLEARING AND GRUBBING**
2	2102-2625000	**EMBANKMENT-IN-PLACE**
3	2102-2710070	**EXCAVATION, CLASS 10, ROADWAY AND BORROW**
4	2102-2710090	**EXCAVATION, CLASS 10, WASTE**
		Refer to Q Sheets.
	2102-2625000	**EMBANKMENT-IN-PLACE**
		Provide borrow material according to Section 2102 of the Standard Specifications. Refer to Q sheets.
-	-	-
5	2102-2712015	**EXCAVATION, CLASS 12, BOULDERS OR ROCK FRAGMENTS**
		A. Refer to Tab. 103-7 in CS sheets.
		B. Dispose of excess material according to Article 1106.07 of the current specifications.
-	-	-
6	2105-8425015	**TOPSOIL, STRIP, SALVAGE AND SPREAD**
		Refer to Q Sheets.
-	-	-
7	2416-0100030	**APRONS, CONCRETE, 30 IN. DIA.**
		- -
-	-	-
8	2416-1180030	**CULVERT, CONCRETE ROADWAY PIPE, 30 IN. DIA.**
		- -
-	-	-
9	2505-6000111	**HIGH TENSION CABLE GUARDRAIL**
10	2505-6000121	**HIGH TENSION CABLE GUARDRAIL, END ANCHOR**
		Refer to Tab 108-9A on C sheets.
-	-	-
11	2505-6000131	**HIGH TENSION CABLE GUARDRAIL, SPARE PARTS KIT**
		- -
-	-	-
12	2507-3250005	**ENGINEERING FABRIC**
13	2507-6800061	**REVETMENT, CLASS E**
14	2507-8029000	**EROSION STONE**
		Refer to Q Sheets.
	2507-3250005	**ENGINEERING FABRIC**
		Use material specified for embankment erosion control according to Article 4196.01, B, 3. Material will be measured in sq. yds. of actual area covered. Refer to details.
-	-	-
15	2526-8285000	**CONSTRUCTION SURVEY**
		- -
-	-	-
16	2528-8445110	**TRAFFIC CONTROL**
		- -
-	-	-
17	2528-8445113	**FLAGGERS**
		- -
-	-	-
18	2533-4980005	**MOBILIZATION**
		- -
-	-	-
19	2602-0000030	**SILT FENCE FOR DITCH CHECKS**
		Refer to Tab 100-18.
		The tabulation includes estimated locations for placement of "Silt Fence for Ditch Checks" to address erosion to be encountered during construction. Verify the specific locations with the Engineer prior to beginning placement. Bid item includes 50% additional quantity for field adjustments and replacements.
-	-	-
20	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.
-	-	-
21	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.
-	-	-
22	2602-0000312	**PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA.**
		(Use this note if specific locations have been determined)
		Refer to Tab. 100-19.
		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.
-	-	-

INDEX OF TABULATIONS

111-25
10-18-11

HIGH TENSION CABLE GUARDRAIL

108-9A
04-20-10

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

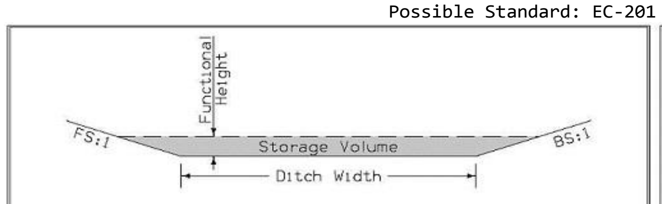
Refer to BA-351.

No.	Direction of 1 Traffic (Location)	Station (Location)	Side (Location)	Offset D_0 (Dimensions)	Approach C_A (Dimensions)	Obstacle C_O (Dimensions)	Trailing C_T (Dimensions)	Protection Length $(C_A+C_0+C_T)$ (Bid Items)	End Anchor (Bid Items)	Remarks
				FT	FT	FT	FT	FT	No.	
1	Eastbound	428+84.00	Rt.	20.0	98.0	40.0	98.0	236.0	2	

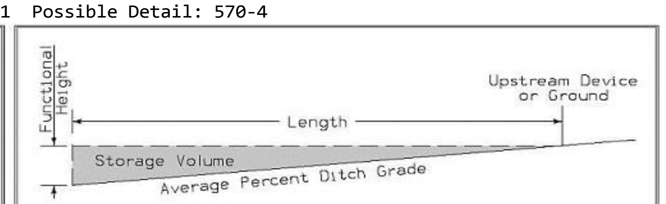
SILT FENCES FOR DITCH CHECKS

100-18
10-17-17

Possible Standard: EC-201 Possible Detail: 570-4



Cross Section View



Longitudinal Profile View

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

Basin No.	Type	Station (Location)	Side (Location)	Installation (Bid Items)	Maintenance (Bid Items)	Removal (Bid Items)	Foreslope (Stormwater Storage Volume Summary)	Backslope	Ditch Width	Avg.% Slope Ditch Grade	Volume*	Remarks
				LF	LF	LF	FS:1	BS:1	FT		CF	
1	1	424+65.00	Rt.	30.0	3.0	45.0	3.0	3.0	10.0	5.0%	329.7	
1	1	428+00.00	Rt.	30.0	3.0	45.0	3.0	3.0	10.0	5.0%	329.7	
2	1	1201+00.00	Lt.	30.0	3.0	45.0	3.0	3.0	10.0	2.0%	706.5	
2	1	1201+75.00	Lt.	30.0	3.0	45.0	3.0	3.0	10.0	2.0%	706.5	
		Total		120.0							2072.5	
		+50%		60.0								
		Bid Total		**180.0**	**18.0**	**180.0**						

PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE

100-19
04-19-16

Possible Standards: EC-204

Begin Station (Location)	End Station (Location)	Side (Location)	9 inch Dia (Length of Installation)	12 inch Dia	20 inch Dia	Remarks
			LF	LF	LF	
429+00.00	432+00.00	Rt.		400.0		Site 1
1197+97.00	1198+03.00	Lt.		200.0		Site 2 Yugo Drain #1
1198+03.00	1198+03.00	Lt.		200.0		Site 2 Yugo Drain #1
1198+47.00	1198+53.00	Lt.		200.0		Site 2 Yugo Drain #2
1198+53.00	1198+53.00	Lt.		200.0		Site 2 Yugo Drain #2
1198+97.00	1199+03.00	Lt.		190.0		Site 2 Yugo Drain #3
1199+03.00	1199+03.00	Lt.		190.0		Site 2 Yugo Drain #3
1199+47.00	1199+53.00	Lt.		180.0		Site 2 Yugo Drain #4
1199+53.00	1199+53.00	Lt.		180.0		Site 2 Yugo Drain #4
1199+97.00	1200+03.00	Lt.		160.0		Site 2 Yugo Drain #5
1200+03.00	1200+03.00	Lt.		160.0		Site 2 Yugo Drain #5
	Total			2260.0		
+25% for maintenance				565.0		
	Bid Total			**2825.0**		

STANDARD ROAD PLANS

105-4
10-18-11

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

Number	Date	Title
BA-351	04-20-10	High Tension Cable Guardrail
DR-101	04-18-17	Pipe Culvert (Bedding and Backfill)
DR-102	04-21-15	Pipe Culvert (Cover and Camber)
DR-103	04-21-15	Pipe Culvert (Installation Details)
DR-104	04-19-16	Depth of Cover Tables for Concrete and Corrugated Pipe
DR-121	10-17-17	Connected Pipe Joints
DR-122	10-18-16	Construction of Type "C" Concrete Adaptors for Pipe Culvert Connections
DR-201	04-21-15	Concrete Aprons
DR-621	04-18-17	Pipe Extension
EC-502	04-21-15	Seeding in Rural Areas
EW-105	04-21-15	Reshaping Slopes and Ditches
SI-881	10-17-17	Special Signs for Workzones
TC-1	04-16-13	Work Not Affecting Traffic (Two-Lane or Multi-Lane)
TC-202	04-21-15	Work Within 15 ft of Traveled Way
TC-213	04-17-12	Lane Closure with Flaggers
TC-283	10-18-11	Surveying Operations
TC-402	04-21-15	Work Within 15 ft of Traveled Way
TC-418	10-15-13	Lane Closure on Divided Highway
TC-419	04-19-16	Lane Closure on Undivided Highway

232-10
04-18-17

EMERALD ASH BORER

Any living, dead, cut or fallen material of the ash (Fraxinus spp.) including trees, nursery stock, logs, firewood, stumps, roots, branches, and composted or uncomposted ash chips can be freely moved within the yellow areas of the most recent Federal EAB Quarantine & Authorized Transit.

https://www.aphis.usda.gov/plant_health/plant_pest_info/emerald_ash_b/downloads/eab_quarantine_map.pdf.

Obtain appropriate Compliance Agreements from USDA APHIS PPQ prior to moving any of the above listed ash articles to areas outside the yellow zone on the map.

For questions, concerns, and general assistance, contact:

USDA APHIS PPQ, Iowa office, 515-414-3295

Or

Iowa Department of Agriculture & Land Stewardship
515-725-1470
Entomology@IowaAgriculture.gov

232-11
10-20-15

EROSION CONTROL (STABILIZING CROP SEEDING)

Following the completion of work in a disturbed area, place stabilizing crop, fertilizer, and mulch on the disturbed area as follows:

Use seed mix and fertilizer meeting the requirements of Article 2601.03,C,1 and Section 4169 of the Standard Specifications.

Use mulch meeting the requirements of Articles 2601.03,E,2,a and 4169.07,A of the Standard Specifications.

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

232-3A
10-20-15

EROSION CONTROL (RURAL SEEDING)

Following the completion of work in a disturbed area, place seed, fertilizer, and mulch on the disturbed area lying 8 feet adjacent to shoulder and median as follows:

Use seed mix and fertilizer meeting the requirements of Article 2601.03,C,3 and Section 4169 of the Standard Specifications.

Use mulch meeting the requirements of Articles 2601.03,E,2,a and 4169.07,A of the Standard Specifications.

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

232-3C
10-20-15

EROSION CONTROL (NATIVE GRASS SEEDING)

Following the completion of work in a disturbed area, place seed and mulch on the disturbed area lying 8 feet or more beyond the shoulder as follows:

SEED MIX:

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

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

Furnish seed certified as Source Identified Class (Yellow Tag) Source G0-Iowa. Oats are excluded from this requirement.

Use seed meeting requirements of Article 4169.02 of the Standard Specifications.

Use mulch meeting the requirements of Articles 2601.03,E,2,a and 4169.07,A of the Standard Specifications.

Preparing the seedbed and furnishing and applying seed and mulch is incidental to mobilization and will not be paid for separately.

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.

DRAINAGE STRUCTURE BY ROAD CONTRACTOR

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

Drainage Area	Location	Type	Size 1	Kind Of Pipe 2	Length New Const.	Bedding Class	Design Cover (H)	Camber* (DR-102)	Apron No.		Apron Guard* (DR-213)	Elbow* (DR-141)	Diaphragm* (DR-501)	Tee Section* (DR-142)	"D" Section* (DR-141)	Reducer*	Type 'C' Connections* (DR-122)		Connected Pipe Joint* (DR-121)	4" Perforated Subdrain*	Flow Line Elevations				Dimensions Lin. Ft. Total		Dimensions Lin. Ft. Extensions		Skew Ahead Degrees		Dike				Class 20	Flowable Mortar	Floodable* Backfill (A)	Porous* Backfill (B)	Flooded Backfill 3 (A+B)	Remarks
ACRE			IN		LF		FT	FT	IN	OUT	No.	No.	No.	No.	No.	No.	Type	No.	Type	FT	Lt.	Rt.	Other	Other	Lt.	Rt.	Lt.	Rt.	Lt.	Rt.	Rt. / Lt.	Location Station	Top Elevation	Type	CY	CY	CY	CY	CY	
2.6	431+62.40	Extend	30	RCP	12				1	1							C-1	1	Type 3	12	878.78	878.78			21.8	26.5		12.0												

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.

Signature 12/20/2017 Date

David R. Claman
Printed or Typed Name

My license renewal date is December 31, 20 18

Pages or sheets covered by this seal: CD.01

103-7
08-01-08

SHRINKAGE DATA

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

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 11/16/17
Signature Date

Mark A. Dell
Printed or Typed Name
My license renewal date is December 31, 2017

Pages or sheets covered by this seal: CS.1, Q.1-4, W.1-14

FILE NO.	ENGLISH	DESIGN TEAM MEGIVER\DELL\MOYLE	WARREN\MARION COUNTY	PROJECT NUMBER NHSN-092-5(65)--2R-91	SHEET NUMBER CS.1

11/2/2017 1:09:11 PM gmoyle c:\pw_work\pwmain\gmoyle\d0804406\91092065_CS1.xlsm

SURVEY SYMBOLS

GR Ground Shot
OUT Tile Outlet
PC Curve Point
PI Tangent Point
POT Tangent Point
PPA Power Pole Co. 1
PT Curve Point
TDC Tree Deciduous
BL Topo Breakline
BNK Stream Bank
C Centerline BL of Road (ML or SR)
D Centerline Draw or Stream (Down)
DU Centerline Draw or Stream (Up)
ENT Centerline BL of Entrance
ENU Edge Unpaved Entrance & Parking
EP Edge of Paved Roads (ML or SR)
FW Wire Fence
RET Retaining Walls
SF Silt Fence (Wetlands)
SNP Unpaved Shoulder
Tile TIL Tile Line
TLNR Tree Line Right
W WL1D Water Line Co. 1 - Quality D

UTILITY LEGEND

W WL1D Marion County Rural Water District - Quality D
PPA Power Pole MidAmerican Electric

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

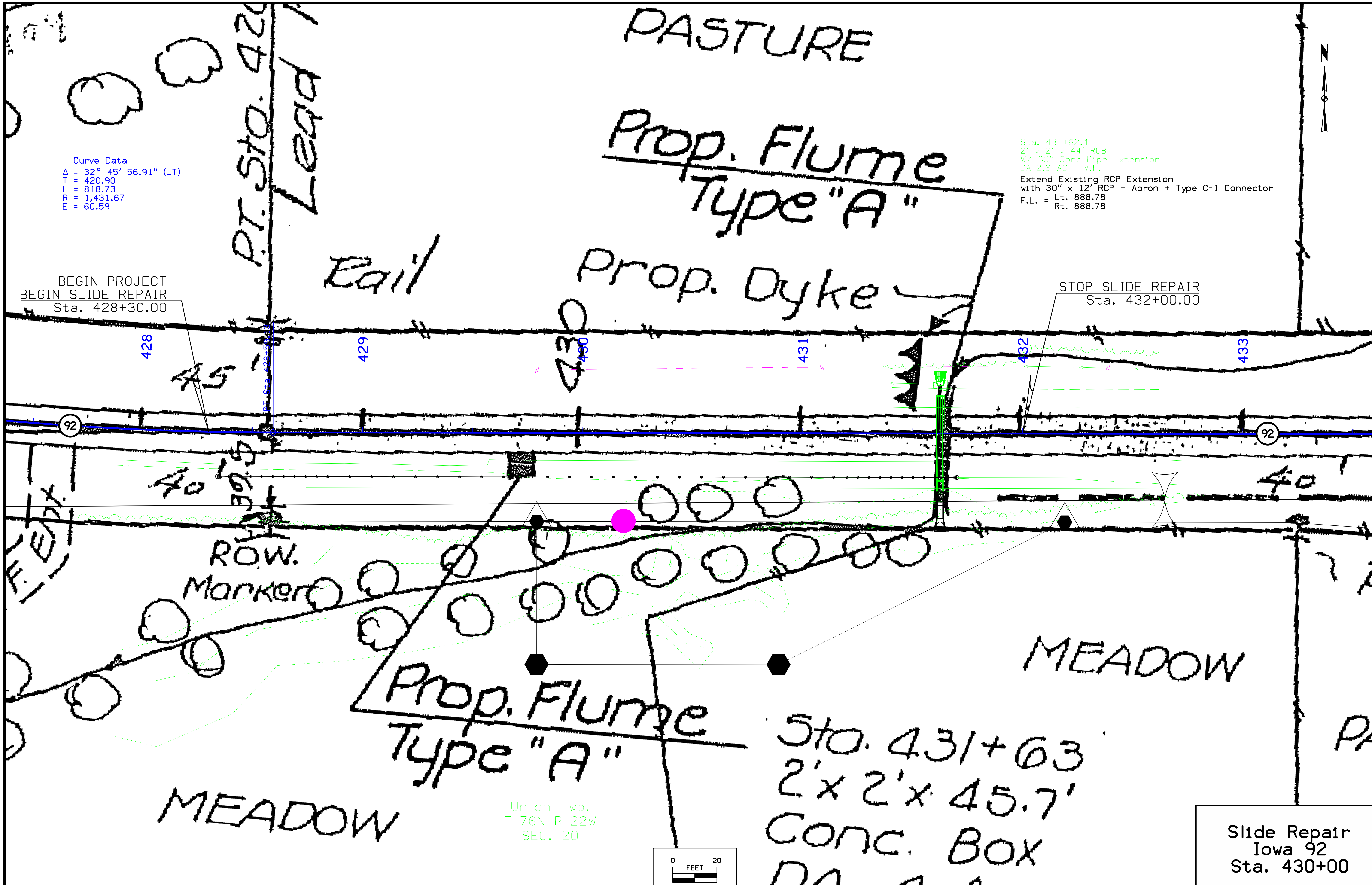
Reference Point
Station
Survey Line
Section Corner
Ground Line Intercept
Saw Cut
Guardrail
Trench Drain
HighTension Cable Guardrail
Sheet Pile
Pavement Removal
Clearing & Grubbing Area

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 FLATTERY \ PAUL | WARREN/MARION COUNTY | PROJECT NUMBER NHSN-092-5(65)--2R-91 | SHEET NUMBER D.2

9:08:11 AM 12/28/2017 npaul pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9109202017\Design\CADD Files\Sheet_Files\91092065_D02.dgn

Slide Repair
Iowa 92
Sta. 1197+32

FILE NO.	ENGLISH	DESIGN TEAM FLATTERY \ PAUL	WARREN/MARION COUNTY	PROJECT NUMBER NHSN-092-5(65)--2R-91	SHEET NUMBER D.3

Survey Information

Warren County
Project # NHSN-092-5(65)—2R-91
Slide Repair Approximately
1 miles W of Sandyville
Sap-909
PIN 17-91-092-020

General Information

Measurement units for this survey are US survey feet. This survey is for slide repair approximately 1 miles west of Sandyville in Warren County. Project datum and control information is provided by Design Survey Office.

Vertical Control

Vertical datum for this survey is NAVD88 (Computed using Geoid12B)
Ellipsoidal Height
GRS80 was computed at project Pts. Feno6 and Feno7 by conducting a six hour static session.

Horizontal Control

The project coordinate system for this survey is Iowa RCS Zone 8 (U.S. Survey Feet).
This survey control is relative to IARTN reference stations. IARTN Reference Station
coordinates are relative to the National Reference Station network datum: NAD83
(2011) for Epoch 2010.00. Coordinates were determined by conducting a six hour static observation at Pts. Feno6 and Feno7.

Alignment Information

IA Hwy 92

The alignment for this survey is a retrace of As-built Plans Project # 335. Survey stationing was equated to the plan at PI Sta. 424+61.3, and was run back and ahead with no equation throughout the survey.

Survey stationing relates to as built plan stationing as follows:

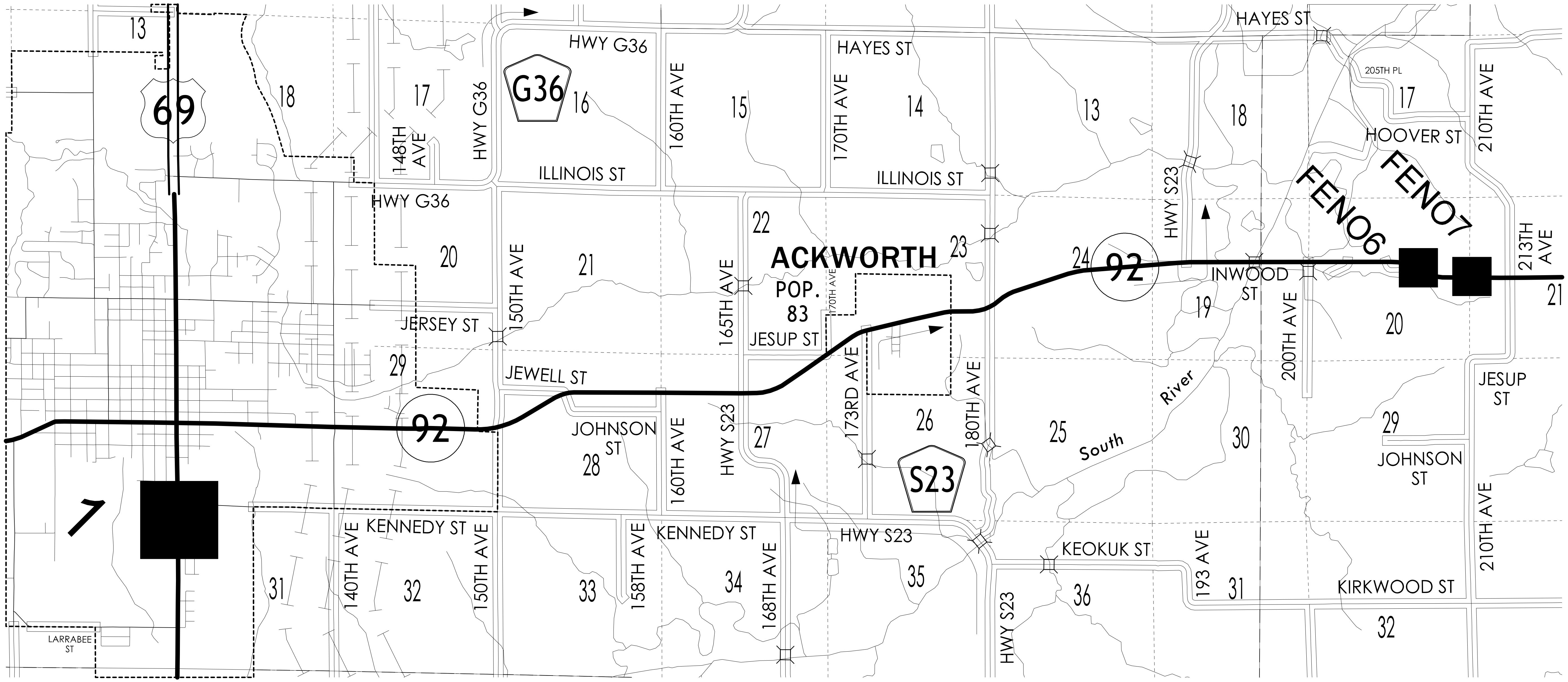
CP Sta. 415+23.4 This Survey
= PI Sta. 415+51.7 As-built Plans Project # 335

PI Sta. 421+61.3 This Survey
= PI Sta. 421+61.3 As-built Plans Project # 335

PI Sta. 450+44.8 This Survey
= PI Sta. 450+45.0 As-built Plans Project # 335

CONTROL POINT VICINITY MAP

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



HORIZ. DATUM: NAD83(2011) EPOCH 2013.00
VERT. DATUM: NAVD88
Ia. Regional Coordinate System Zone 8
Coordinate listing from next sheet will be used with IaRTN for monument recovery. No other reference ties are given.

HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING

HORIZ. DATUM: NAD83(2011) EPOCH 2013.00

VERT. DATUM: NAVD88

Ia. Regional Coordinate System Zone 8

Point Name	Northing	Easting	Elevation	Feature Definition	Description
1	7400682.10	18543556.72	957.78	FENO	SET FENO_99' S FROM S COR ENT TO GRAVE YARD_158' SE POWER POLE_111' SW WATER HYDRANT_111' NE POWER POLE
FENO6	7408875.41	18583817.15	843.47	FENO	SET FENO_36.2' NE OF HWY 92_41' SE OF ENT @ 20673 HWY 92_20' SE OF POWER POLE_242' NW OF NW COR HDWL
FENO7	7408595.96	18585555.23	927.85	FENO	SET FENO_38.7' N OF HWY 92_51' E OF ENT @ 21005 HWY 92_34' E OF TEL PED_191' W FROM CENTER FACE HDWL

Survey Information

Marion County
Project # NHSN-092-5(65)2R-91
Slide Repair Approximately

5 miles W of IA Hwy 14
Sap-909
PIN 17-91-092-020

General Information

Measurement units for this survey are US survey feet. This survey is for slide repair approximately 5 miles west of IA Hwy 14 in Marion County. Project datum and control information is provided by Design Survey Office.

Vertical Control

Vertical datum for this survey is NAVD88 (Computed using Geoid12B)
Ellipsoidal Height
GRS80 was computed at project Pts. Feno8 and Feno9 by conducting
A six hour static session.

Horizontal Control

The project coordinate system for this survey is Iowa RCS Zone 9 (U.S. Survey Feet).
This survey control is relative to IARTN reference stations. IARTN Reference Station
coordinates are relative to the National Reference Station network datum: NAD83
(2011) for Epoch 2010.00. Coordinates were determined by conducting a six hour static observation at Pts. Feno8 and Feno9.

Alignment Information

IA Hwy 92

The alignment for this survey is a retrace of As-built Plans Project # STP-5-3(15)—2C-63. Survey stationing was equated to the plan at PI Sta. 1236+01.54, and was run back and ahead with no equation throughout the survey.

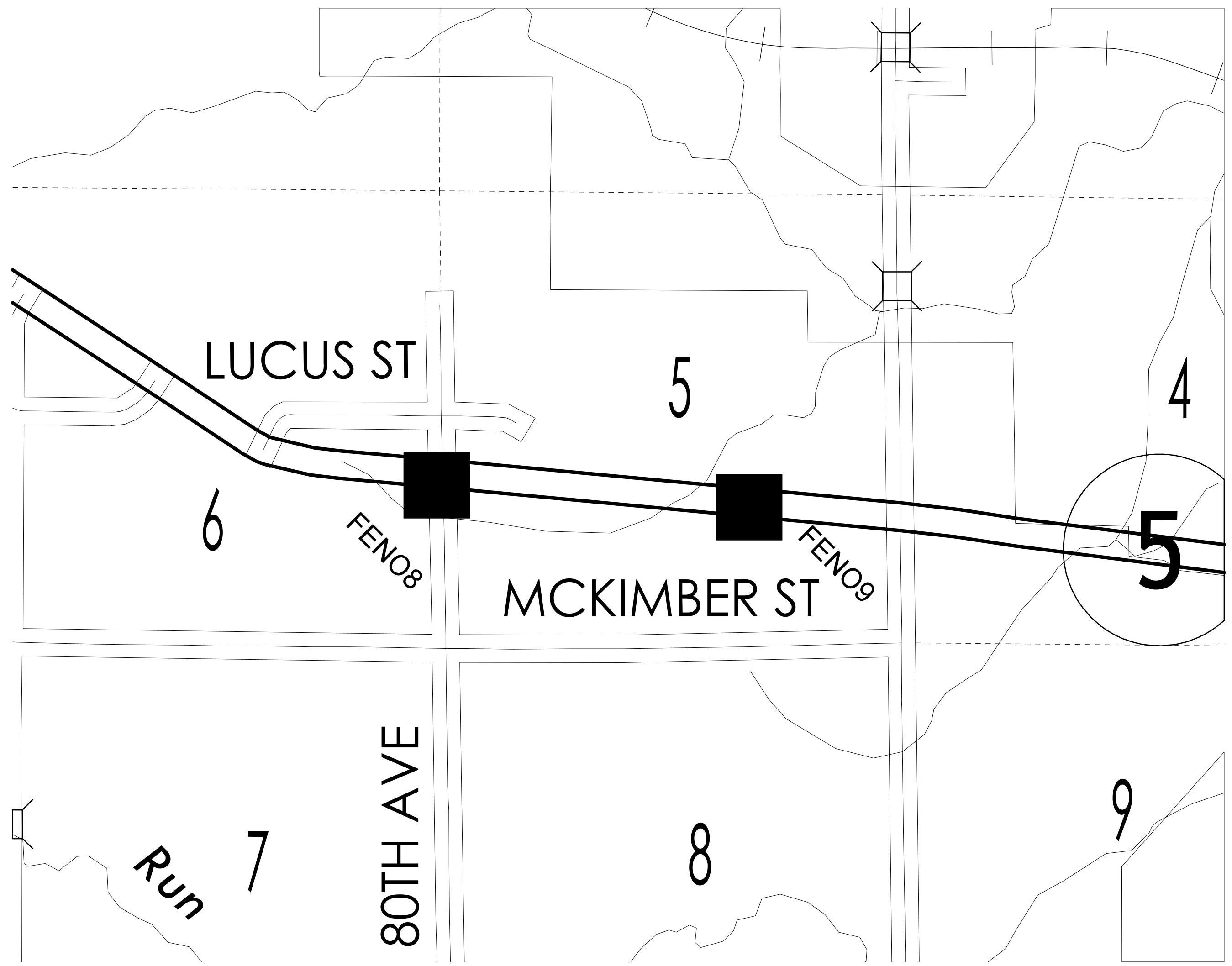
Survey stationing relates to as built plan stationing as follows:

PI Sta. 1236+01.54 This Survey
= PI Sta. 1236+01.54 As-built Plans Project # STP-5-3(15)—2C-63
= PI Sta. 376+73.825 (Metric) As-built Plans Project # STP-5-3(15)—2C-63

CP Sta. 1163+01.63 This Survey
= PI Sta. 1163+20.42 As-built Plans Project # STP-5-3(15)—2C-63
= PI Sta. 354+54.534 (Metric) As-built Plans Project # STP-5-3(15)—2C-63

CONTROL POINT VICINITY MAP

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



HORIZ. DATUM: NAD83(2011) EPOCH 2013.00
VERT. DATUM: NAVD88
Ia. Regional Coordinate System Zone 9
Coordinate listing from next sheet will be used with IaRTN for monument recovery. No other reference ties are given.

FILE NO.	ENGLISH	DESIGN TEAM FLATTERY \ PAUL		WARREN/MARION COUNTY	PROJECT NUMBER NHSN-092-5(65)--2R-91	SHEET NUMBER G.5

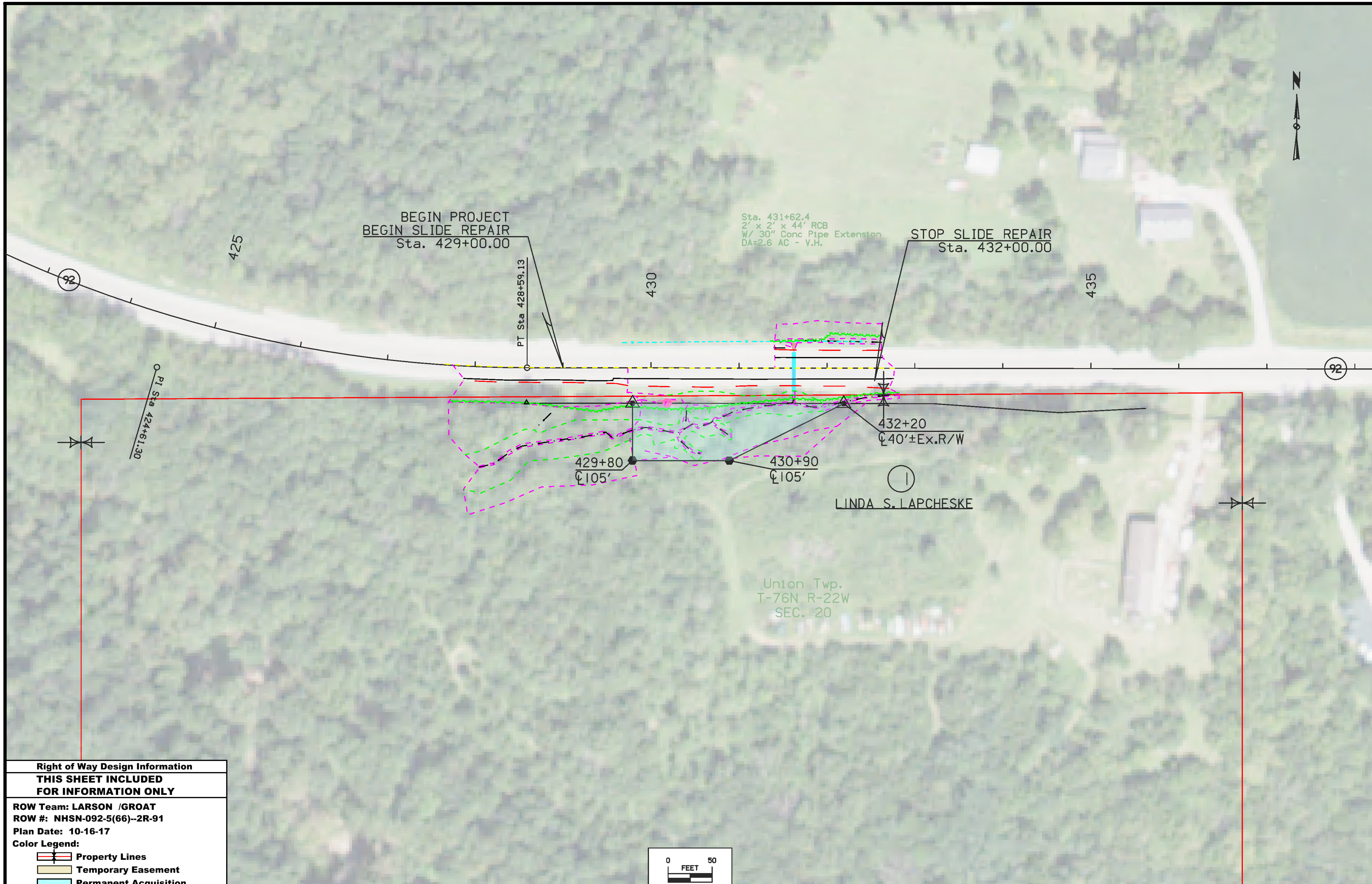
HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING

HORIZ. DATUM: NAD83(2011) EPOCH 2013.00

VERT. DATUM: NAVD88

Ia. Regional Coordinate System Zone 9

Point Name	Northing	Easting	Elevation	Feature Definition	Description
1	7601509.96	19296436.22	957.78	FENO	SET FENO_99' S FROM S COR ENT TO GRAVE YARD_158' SE POWER POLE_111' SW WATER HYDRANT_111' NE POWER POLE
FENO8	7592140.77	19395788.20	857.36	FENO	SET FENO_40.5' S OF EB HWY 92/5_77.5' W OF 80TH AVE_15' SE ONE WAY SIGN_256' N OF DRY HYDRANT
FENO9	7591889.21	19399378.72	841.55	FENO	SET FENO_40.5' N OF EB HWY 92/5_31' E OF CROSSOVER_55' S OF TOP INLET CMP_191' NE OF MM 67



Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: NHSN-092-5(66)--2R-91
Plan Date: 10-16-17
Color Legend:
Property Lines
Temporary Easement
Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM	Flattery \ Paul	WARREN	COUNTY	PROJECT NUMBER	NHSN-092-5(65)--2R-91	SHEET NUMBER	H.1

3:47:05 PM 10/16/2017 sgroat pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9109202017\ROW\91092066H1.dgn

108-23A
08-01-08

TRAFFIC CONTROL PLAN

Traffic shall be maintained on Iowa Highway 92 at all times.

108-25
10-21-14

511 TRAVEL RESTRICTIONS

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

SURVEY SYMBOLS

UTILITY LEGEND

PLAN VIEW COLOR LEGEND OF SOILS SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Purple (Halo)	(15)	Backslope Drains
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
SHADING	**Design Color No.**	
Brown, Light	(236)	Core Out

PROFILE VIEW COLOR LEGEND OF SOILS SHEETS

LINEWORK	Design Color No.	
Blue	(1)	Proposed Alignment, Stationing, and Alignment Annotation
Green	(2)	Existing Ground Line Profile
Green, Med	(227)	Topsoil
Green, Med	(227)	Slope Dressing Only
Orange	(6)	Loam
Brown, Dark	(238)	Class 10
Brown, Med	(237)	Sand
Red	(3)	Unsuitable A
Pink, Dark	(13)	Unsuitable B
Pink	(11)	Unsuitable C
Red	(3)	Shale
Red	(3)	Waste
Gray, Light	(48)	Broken and Weathered Rock
Gray, Med	(80)	Rock
Gray, V.Dark	(128)	Boulders

PATTERN AND SYMBOL LEGEND OF SOILS SHEETS

Date(s) Drilled________

Drill	Dig/Core	
$-H_2O-$ Water	Treatment	Sandstone
— DRY Dry	Sand Blanket	Unsuitable A
Ⓢ Sample	Soil Remediation Area	Unsuitable B
Plugged	Select Soil	Unsuitable C
M — Moisture	Select Sand	Sandy Soil
Shelby	Slope Dressing Only	Boulders
Blow Count	Broken and Weathered Rock	Shale
Dens. Core	Rock	

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

RIGHT-OF-WAY LEGEND

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

NOTE: Sounding and test boring data shown in the plans were accumulated for designing and estimating purposes. Their appearance on the plans does not constitute a guarantee that conditions other than those indicated will be encountered. Details and notes shown elsewhere shall be used for roadway and structure construction.

SOILS LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES Q & R)

Site 1
Slide Repair/Ditch Regrade
IA 92, Station 429+70 to Station 431+90

Reshape/regrade the existing roadside ditch on the right from Station 429+70 to Station 431+90. The new ditch will then be armored with a 2-foot thick layer of Class E Revetment underlain with Engineering Fabric.

Complete the slide repair from about Station 430+20 to Station 430+60 by benching and rebuilding the right foreslope to an approximate 3:1 slope using suitable cohesive embankment.

Benches shall extend a minimum of 5 feet into the undisturbed foreslope.

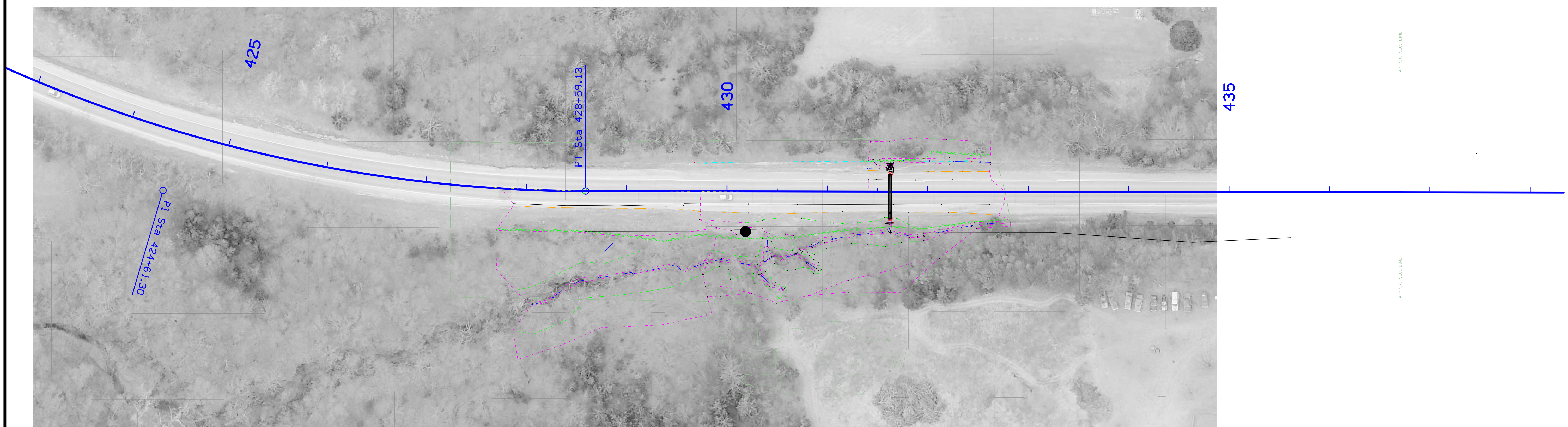
Extend the existing culvert at Station 431+62.48. See Structure Plan Sheet for details.

The top 12 inches of excavated material shall be considered "topsoil" and should be stripped, stockpiled, and reused to topsoil the site.

Some amount of Clearing and Grubbing will be necessary to complete the proposed project.

The existing power pole located near Station 430+20 will need to be relocated, either temporarily or permanently, to complete the slide repair.

Actual limits of the slide repair will depend on the conditions at the time of construction.



N

Quantities	
Class 10 Excavation & Borrow	372 CY
Class 10 Excavation & Waste	201 CY
Class E Revetment	710 Tons
Engineering Fabric	930 SY
Clearing and Grubbing	0.35 Acres

Site 2
Slide Repair - Iowa 5/92
Station 1198+00 to Station 1200+00

The design intent of this project is to install five (5) "Yugoslavian" (Yugo) Drains at approximate 50 foot centers as depicted on Sheet Q.4. Drains shall extend from the top of the slope down to the roadway ditch. The length of the trenches will vary across the site ranging from approximately 152 to 181 feet. The width of each drain shall be a nominal 4 feet. The depth of the excavation is estimated to be a minimum of 12 feet but with a design intent to be deeper, if necessary, to extend below all disturbed soil and into firm glacial clay or to weathered shale bedrock.

The contractor shall be responsible for wasting the 1,074 CY of Class 10 material from the excavations to an off-site location.

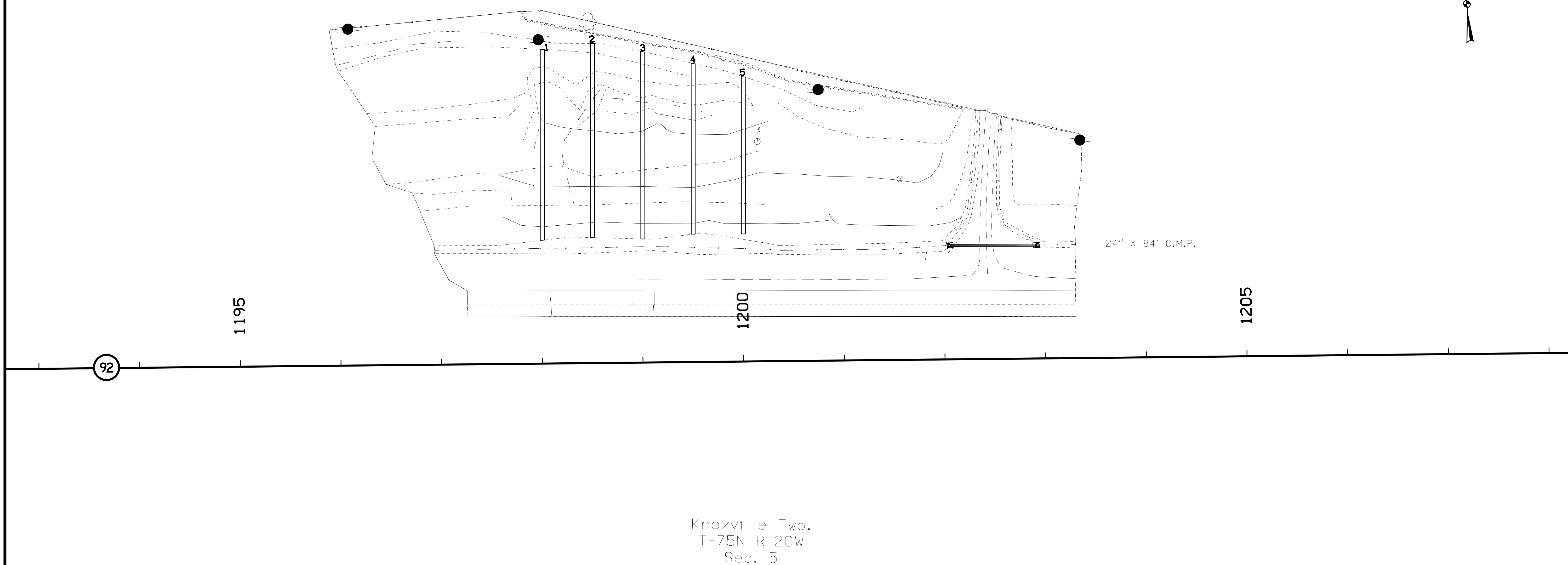
Backfill the Yugo trenches with Erosion Stone to within 12 inches of the existing ground surface. The top of the Erosion Stone and upper 2 feet of the sides of the trenches shall be covered with Engineering Fabric.

Prior to installation of the Yugo Drains, the contractor shall strip and salvage topsoil within affected areas as practical and as directed by the Engineer. After Yugo drain installation, the backslope shall be regraded to an approximate 3.5:1 slope and in a manner to blend uniformly into the unaffected slope to the east and west.
The contractor shall clean out and shape the ditch as needed to allow for proper drainage.

The completed Yugo drain trenches, in addition to areas between them that were regraded to an approximate 3.5:1 slope, shall be covered with 12 inches of topsoil.

Site 2
Slide Repair - Iowa 5/92
Station 1198+00 to Station 1200+00

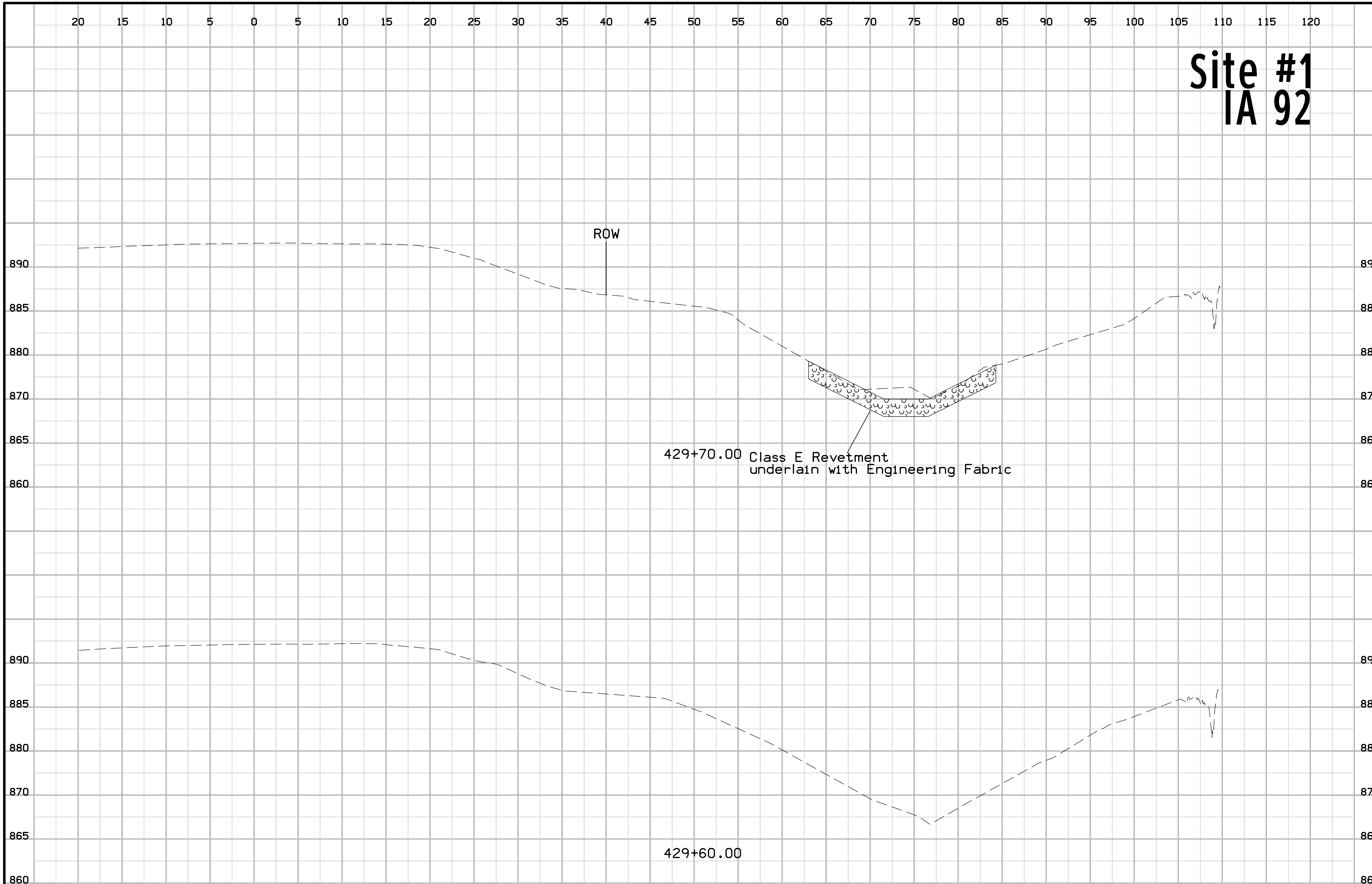
From Station 1198+00 to 1200+00 on the North side of IA 5/92, install 5 Yugoslavian (Yugo) Drains at approximately 50' centers as depicted on the Q & W sheets. Yugoslavian Drains shall extend from the top (North end) of the slide area down to the roadway ditch below. The Yugo drains will be an estimated 12 feet deep and 4 feet wide, with lengths varying from about 152 to 181 feet. Total length of the Yugo Drains is estimated to be 849 feet.



Trench Drain Lengths		Offset from ℄
1	190'	290' - 112'
2	193'	296' - 115'
3	186'	295' - 115'
4	170'	278' - 120'
5	155'	267' - 115'

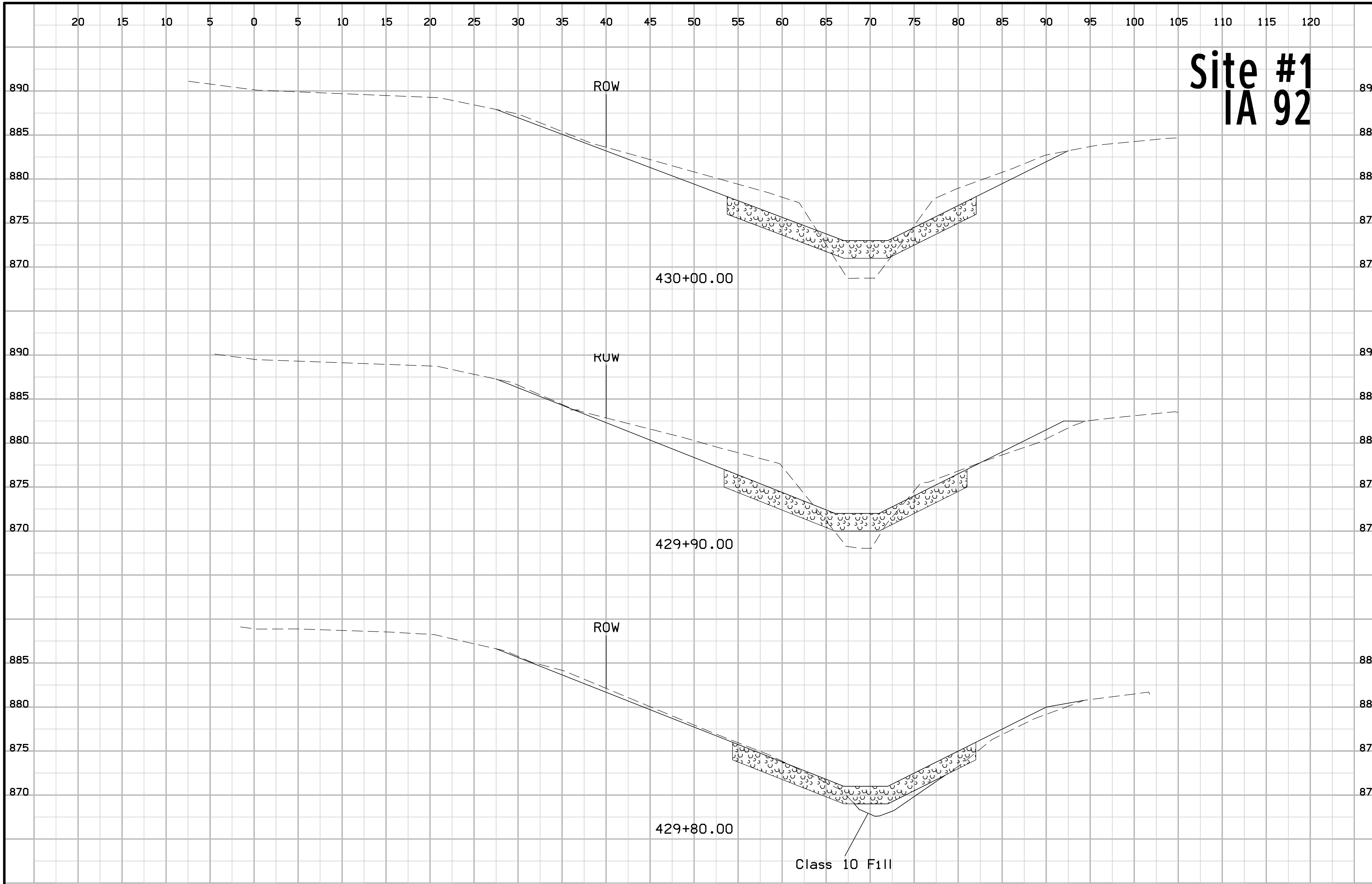
Quantities	
Class 10 Embankment in Place	513 CY
Class 10 Excavation and Waste	1,074 CY
Topsoil Strip, Salvage, & Spread	1,449 CY
Erosion Stone	2,570 Tons
Engineering Fabric	798 SY

0 FEET 50



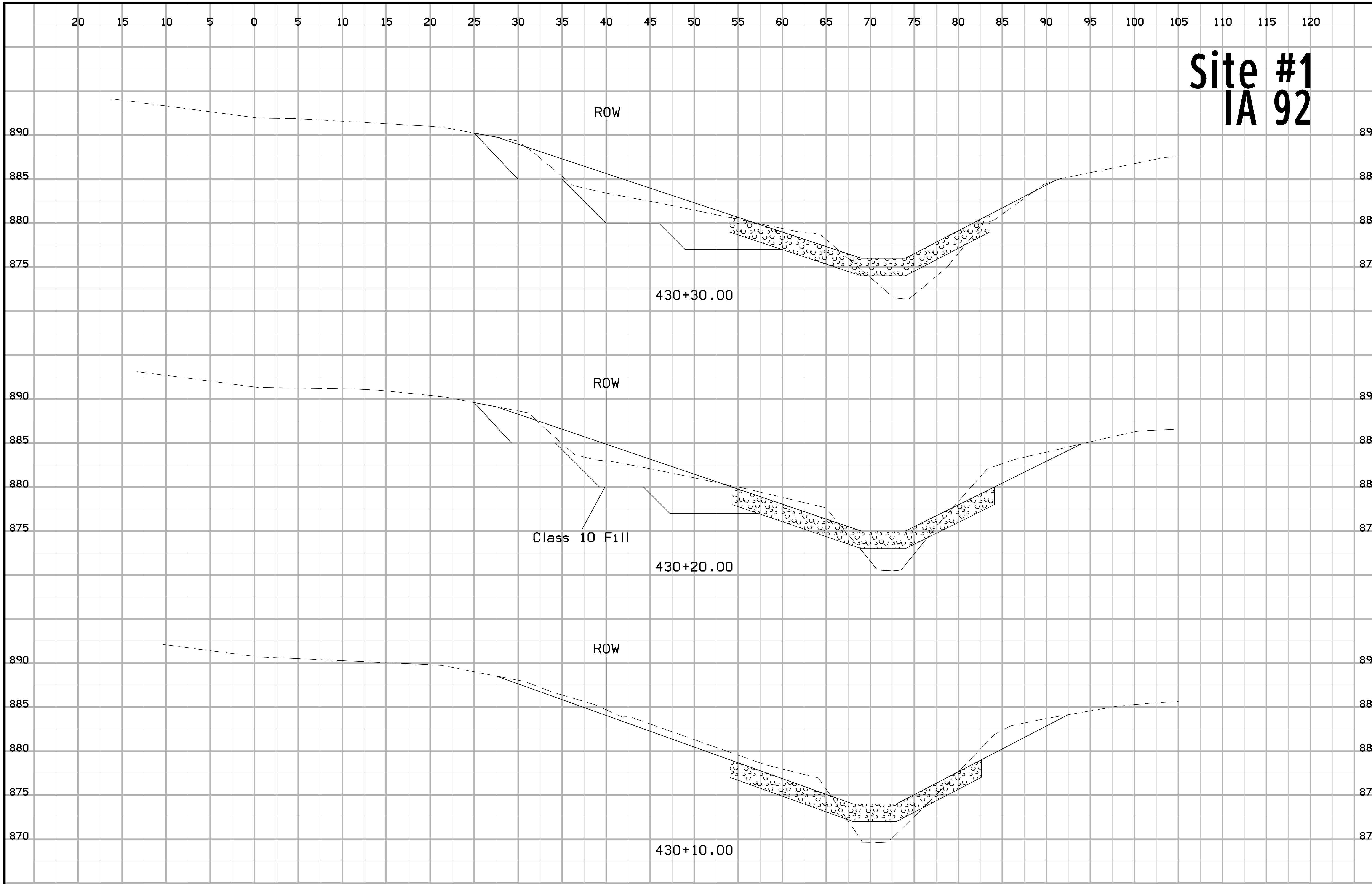
FILE NO.	ENGLISH	DESIGN TEAM MEGIVERN\DELL\MOYLE	WARREN COUNTY	PROJECT NUMBER NHSN-092-5(65)--2R-91	SHEET NUMBER W.1

8:31:28 AM 11/8/2017 gmoyle pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9109202017\Soils\xs_91092067Z08.sht

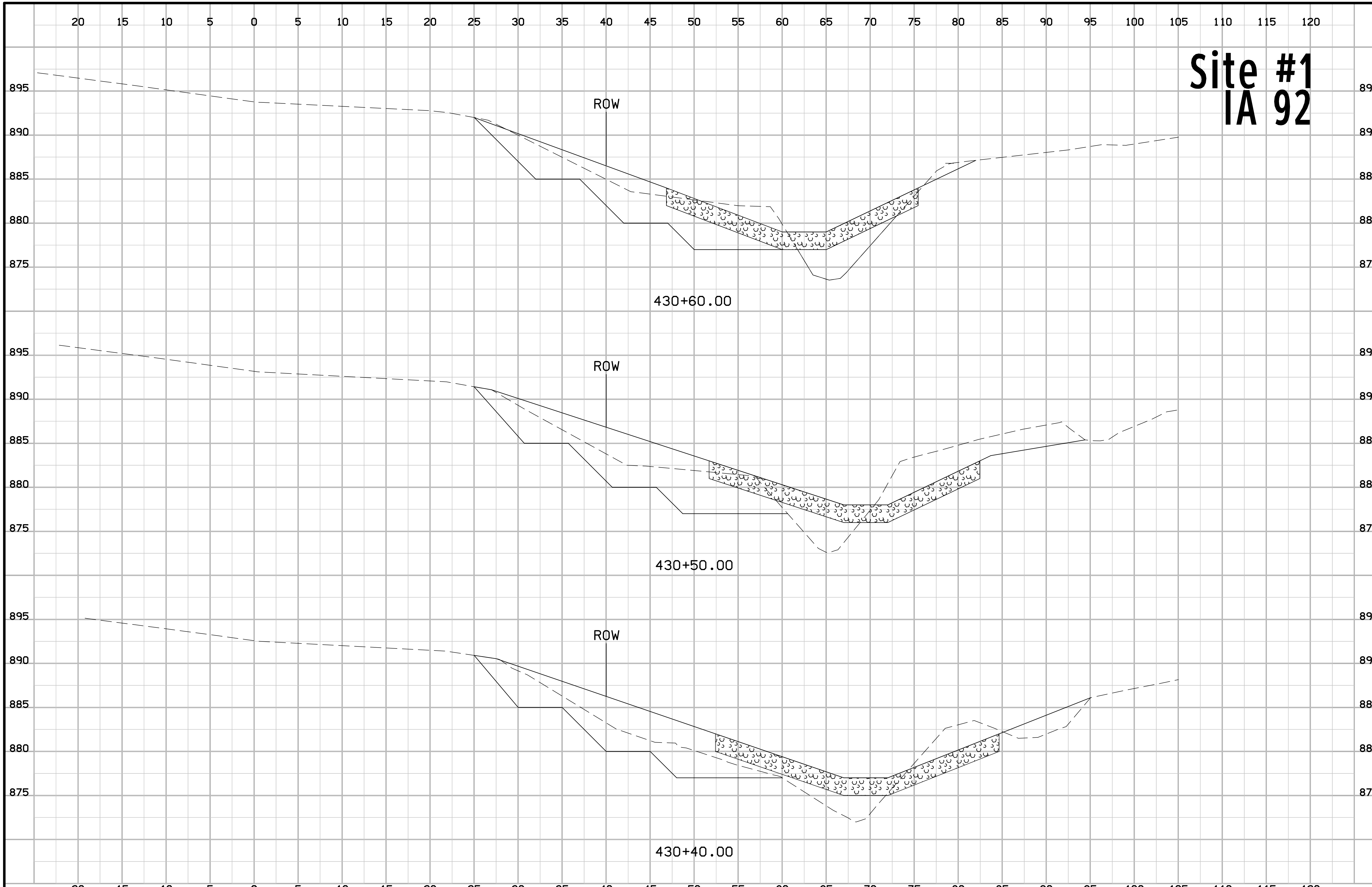


FILE NO.	ENGLISH	DESIGN TEAM MEGIVERN\DELL\MOYLE	WARREN COUNTY	PROJECT NUMBER NHSN-092-5(65)--2R-91	SHEET NUMBER W.2

8:31:23 AM 11/8/2017 gmoyle pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9109202017\Soils\xs_91092067Z08.sht

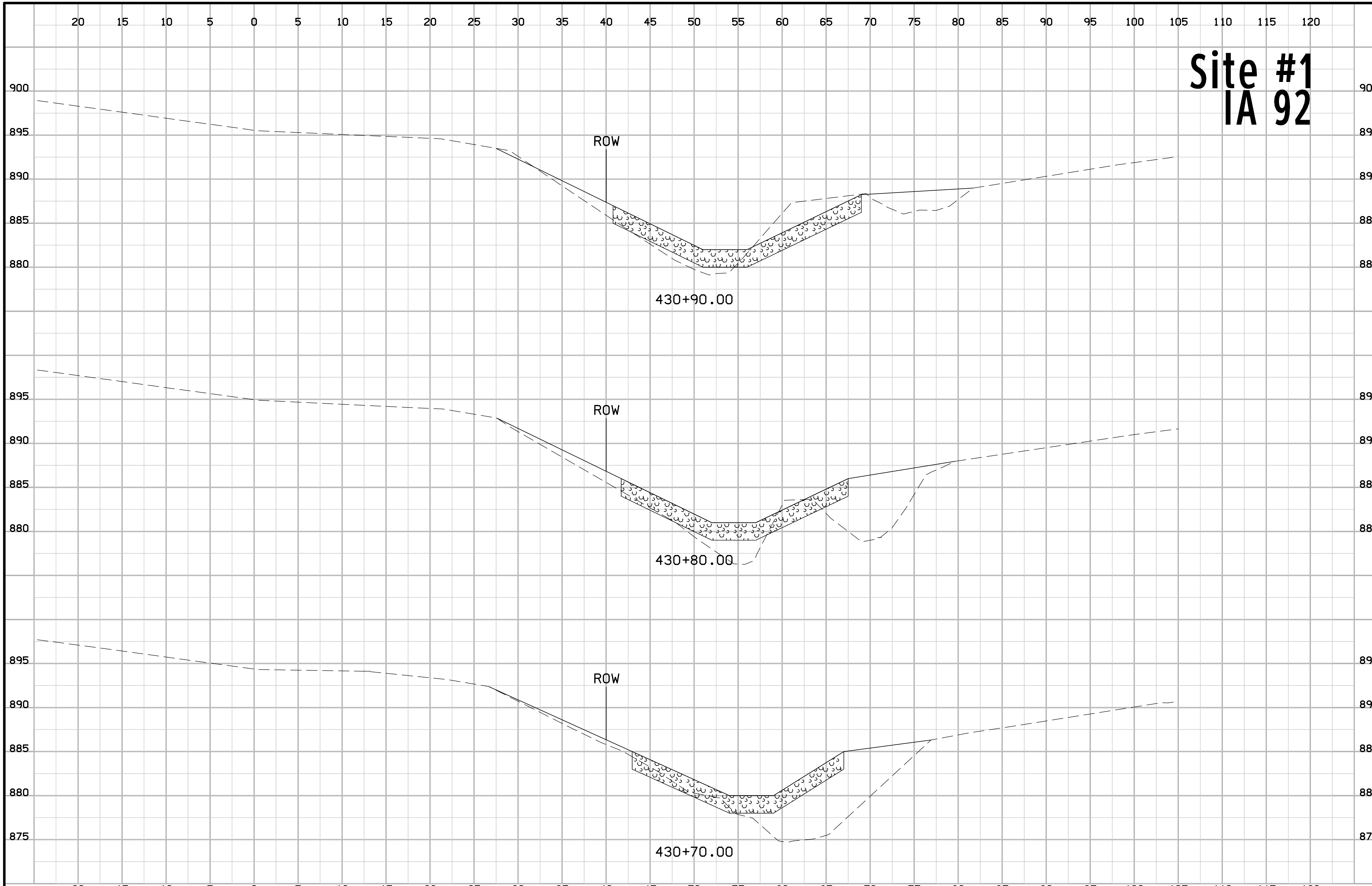


FILE NO.	ENGLISH	DESIGN TEAM MEGIVERN\DELL\MOYLE		WARREN COUNTY	PROJECT NUMBER NHSN-092-5(65)--2R-91	SHEET NUMBER W.3

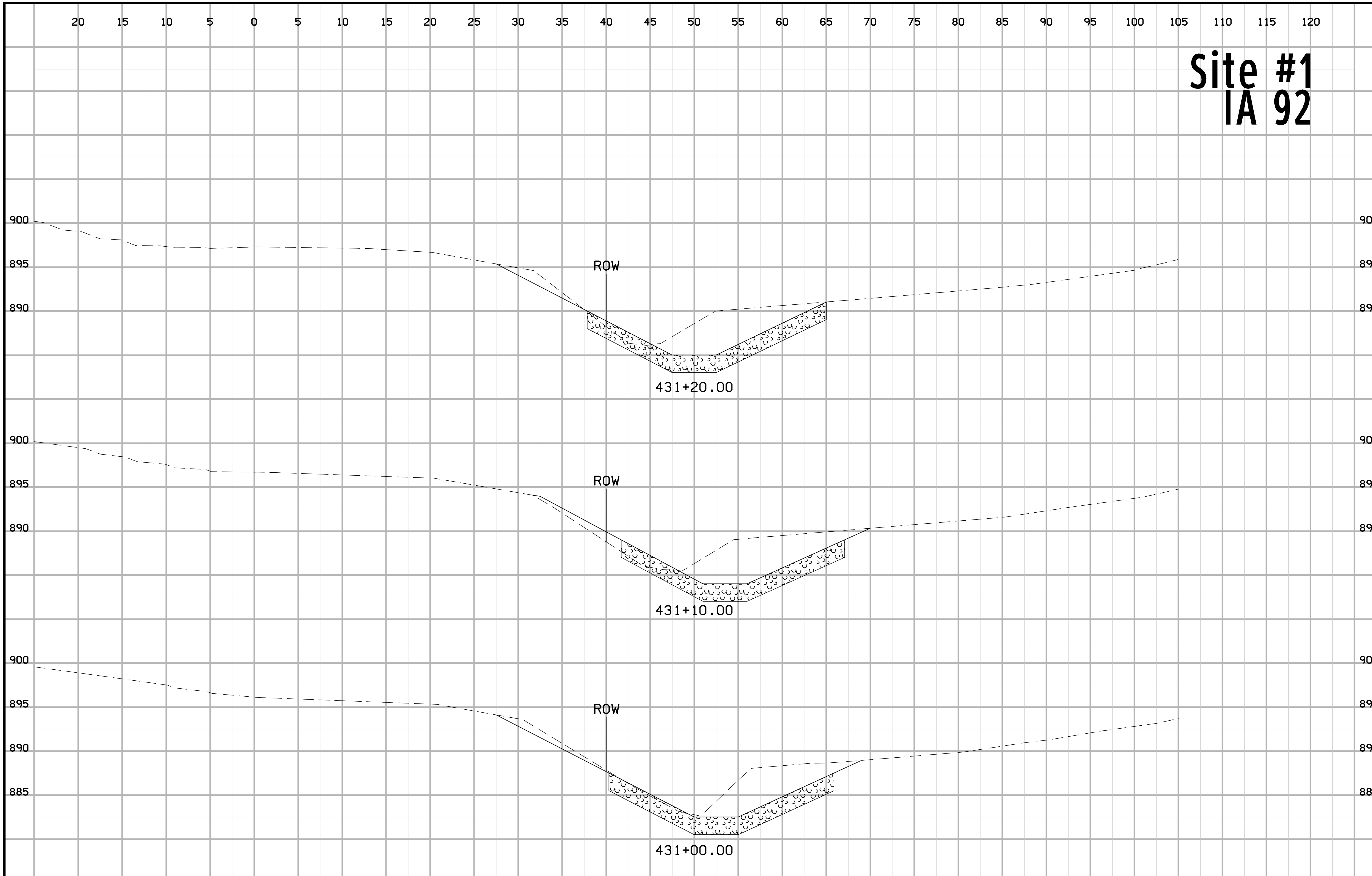


FILE NO. | ENGLISH | DESIGN TEAM MEGIVERN\DELL\MOYLE | WARREN COUNTY | PROJECT NUMBER NHSN-092-5(65)--2R-91 | SHEET NUMBER W.4

8:31:24 AM 11/8/2017 gmoyle pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9109202017\Soils\xs_91092067Z08.sht

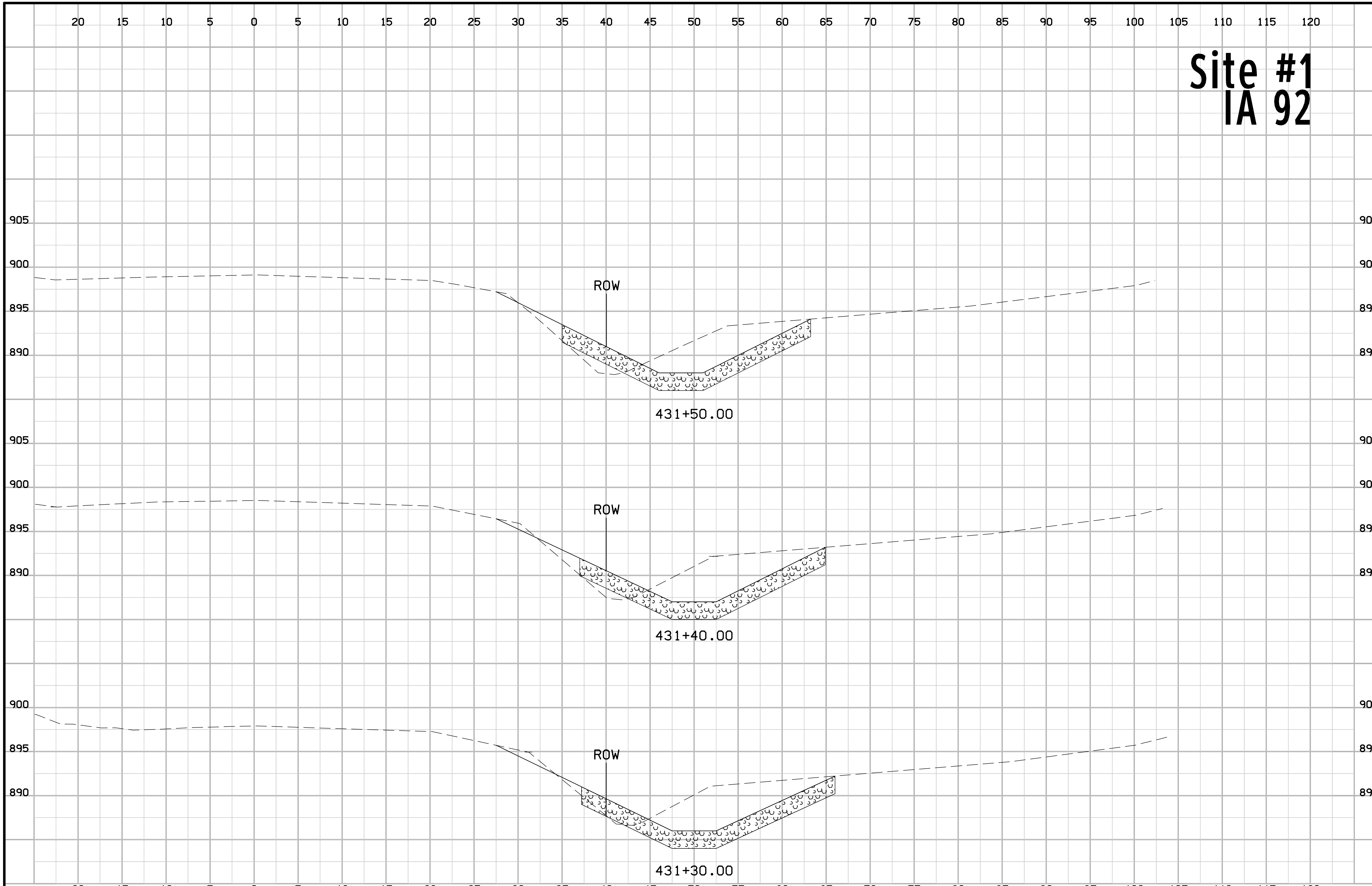


FILE NO.	ENGLISH	DESIGN TEAM MEGIVERN\DELL\MOYLE		WARREN COUNTY	PROJECT NUMBER NHSN-092-5(65)--2R-91	SHEET NUMBER W.5



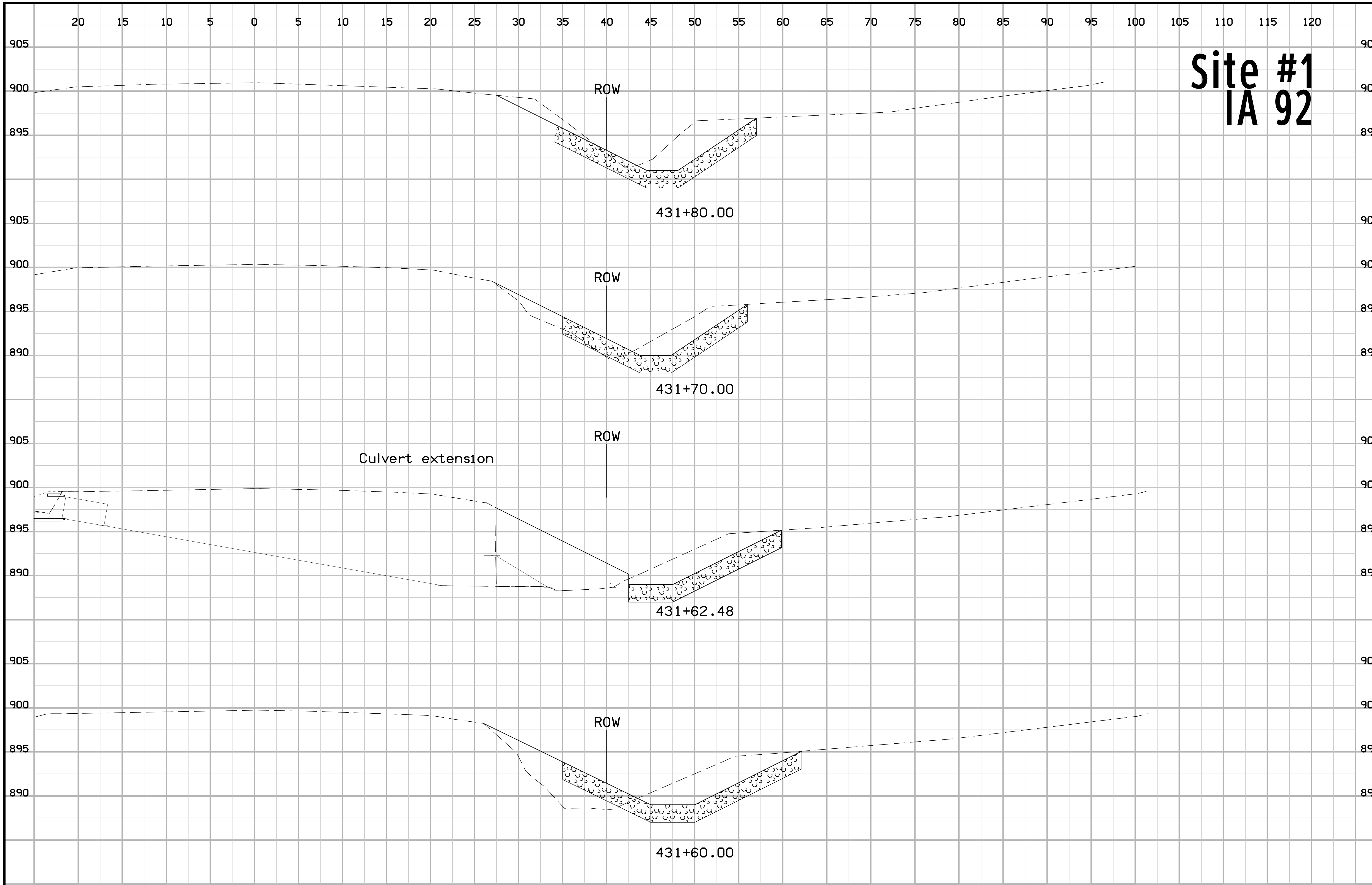
FILE NO.	ENGLISH	DESIGN TEAM MEGIVERN\DELL\MOYLE		WARREN COUNTY	PROJECT NUMBER NHSN-092-5(65)--2R-91	SHEET NUMBER W.6

8:31:25 AM 11/8/2017 gmoyle pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9109202017\Soils\xs_91092067Z08.sht

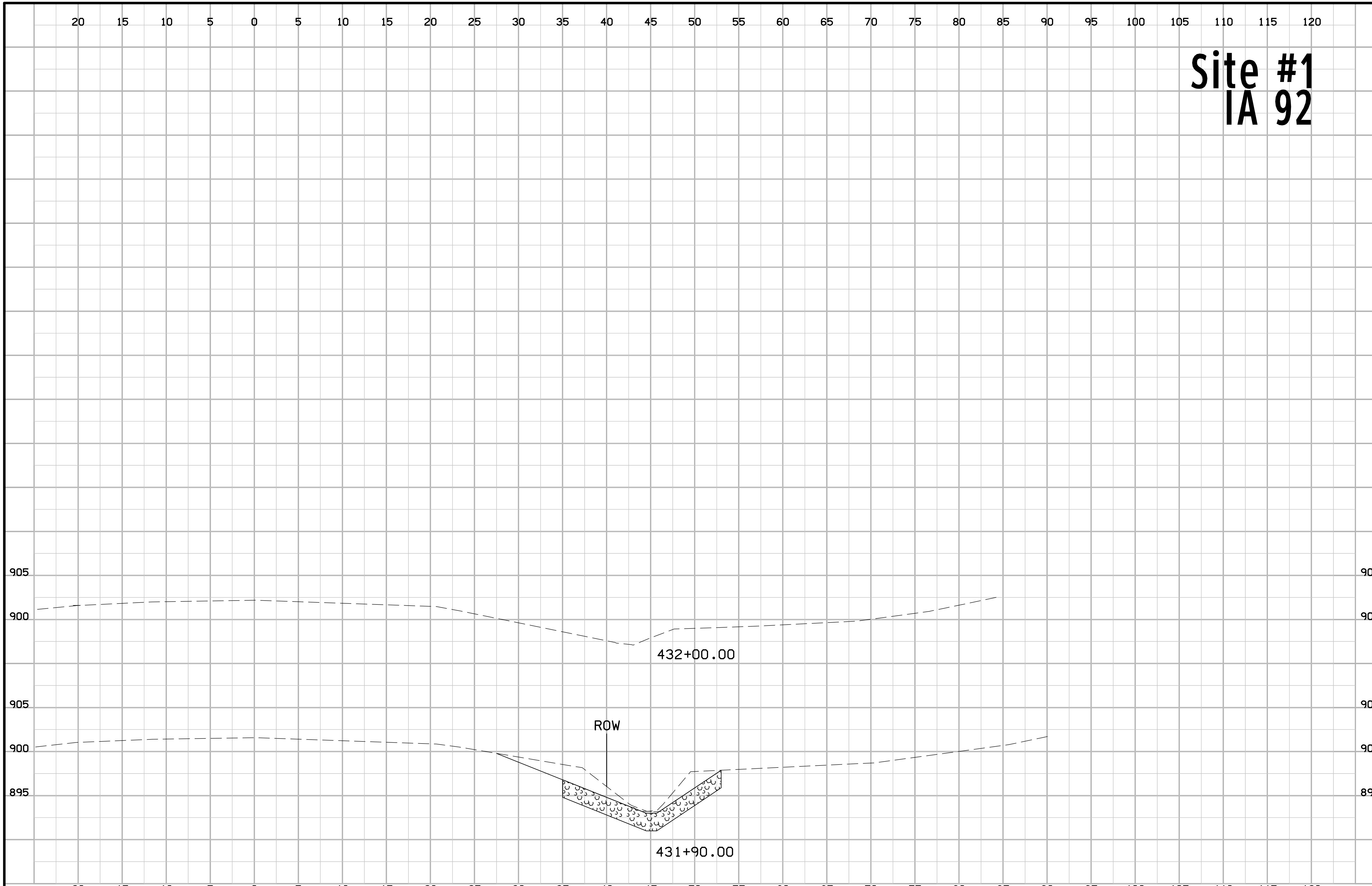


FILE NO.	ENGLISH	DESIGN TEAM MEGIVERN\DELL\MOYLE	WARREN COUNTY	PROJECT NUMBER NHSN-092-5(65)--2R-91	SHEET NUMBER W.7

8:31:26 AM 11/8/2017 gmoyle pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9109202017\Soils\xs_91092067Z08.sht

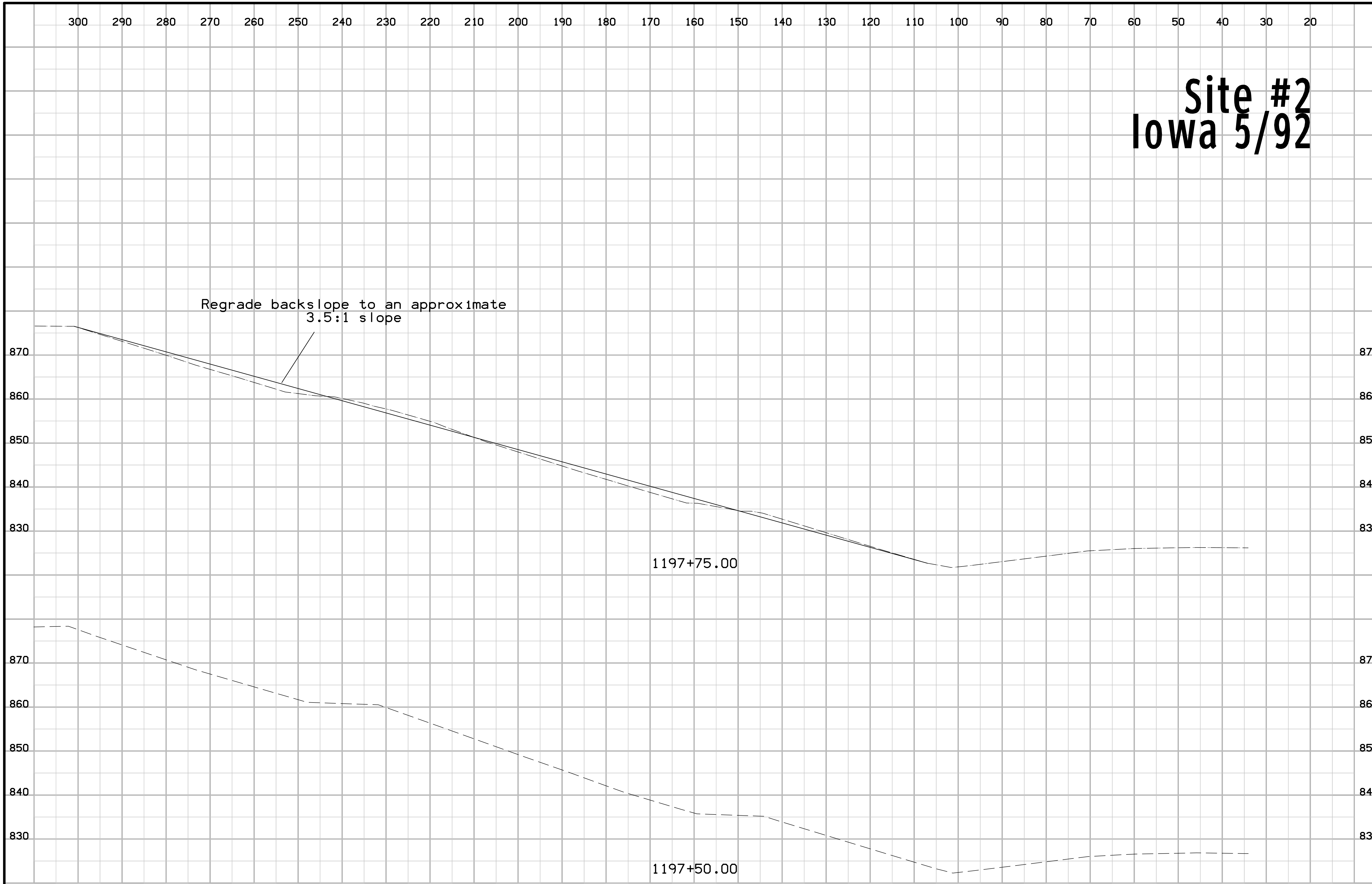


FILE NO.	ENGLISH	DESIGN TEAM MEGIVERN\DELL\MOYLE		WARREN COUNTY	PROJECT NUMBER NHSN-092-5(65)--2R-91	SHEET NUMBER W.8



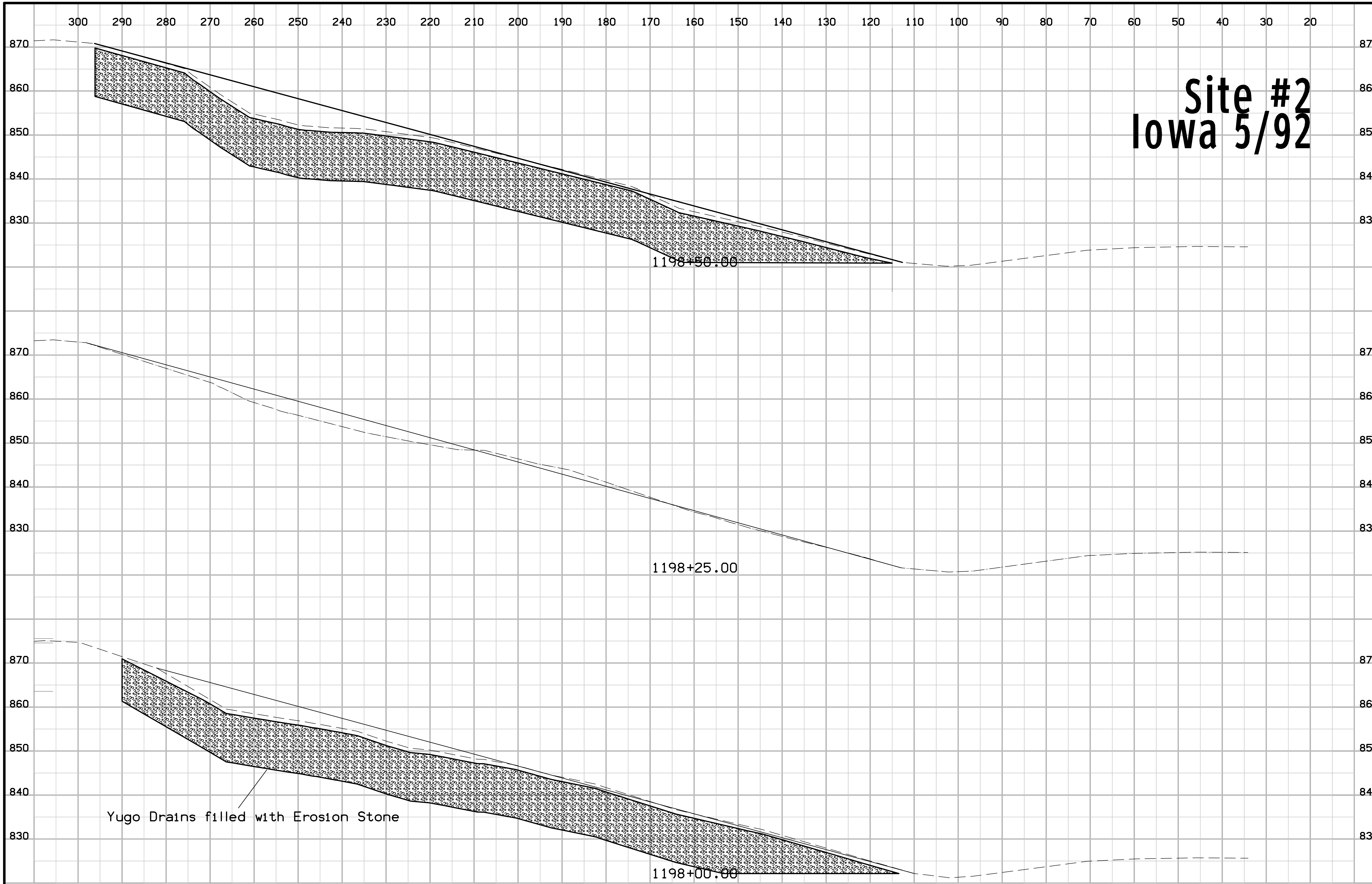
FILE NO.	ENGLISH	DESIGN TEAM MEGIVERN\DELL\MOYLE		WARREN COUNTY	PROJECT NUMBER NHSN-092-5(65)--2R-91	SHEET NUMBER W.9

8:31:27 AM 11/8/2017 gmoyle pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9109202017\Soils\xs_91092067Z08.sht



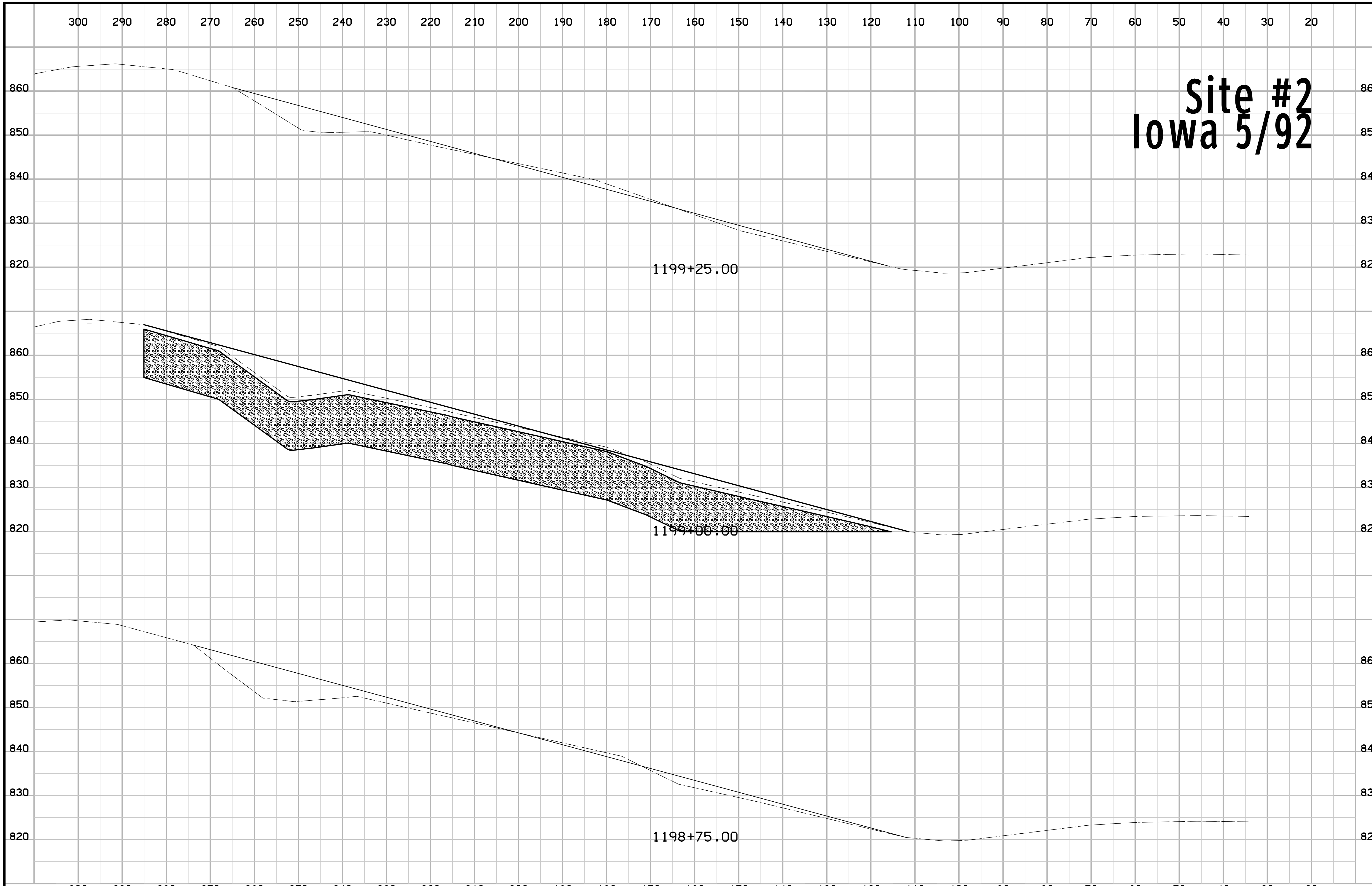
FILE NO.	ENGLISH	DESIGN TEAM MEGIVERN\DELL\MOYLE	WARREN\MARION COUNTY	PROJECT NUMBER NHSN-092-5(65)--2R-91	SHEET NUMBER W.10

8:39:11 AM 11/8/2017 gmoyle pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9109202017\Soils\xs_yugo.sht

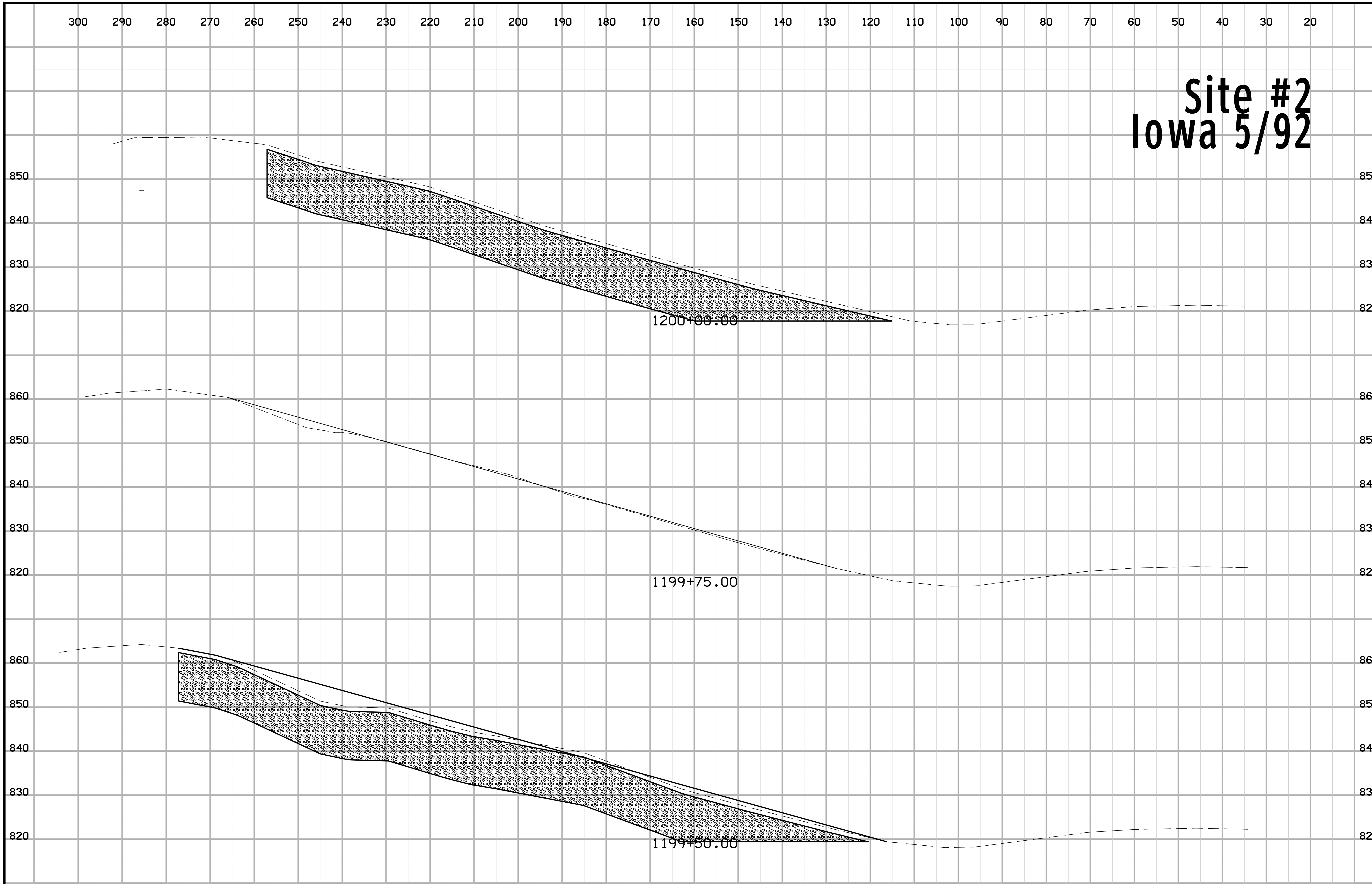


FILE NO. | ENGLISH | DESIGN TEAM MEGIVERN\DELL\MOYLE | WARREN\MARION COUNTY | PROJECT NUMBER NHSN-092-5(65)--2R-91 | SHEET NUMBER W.11

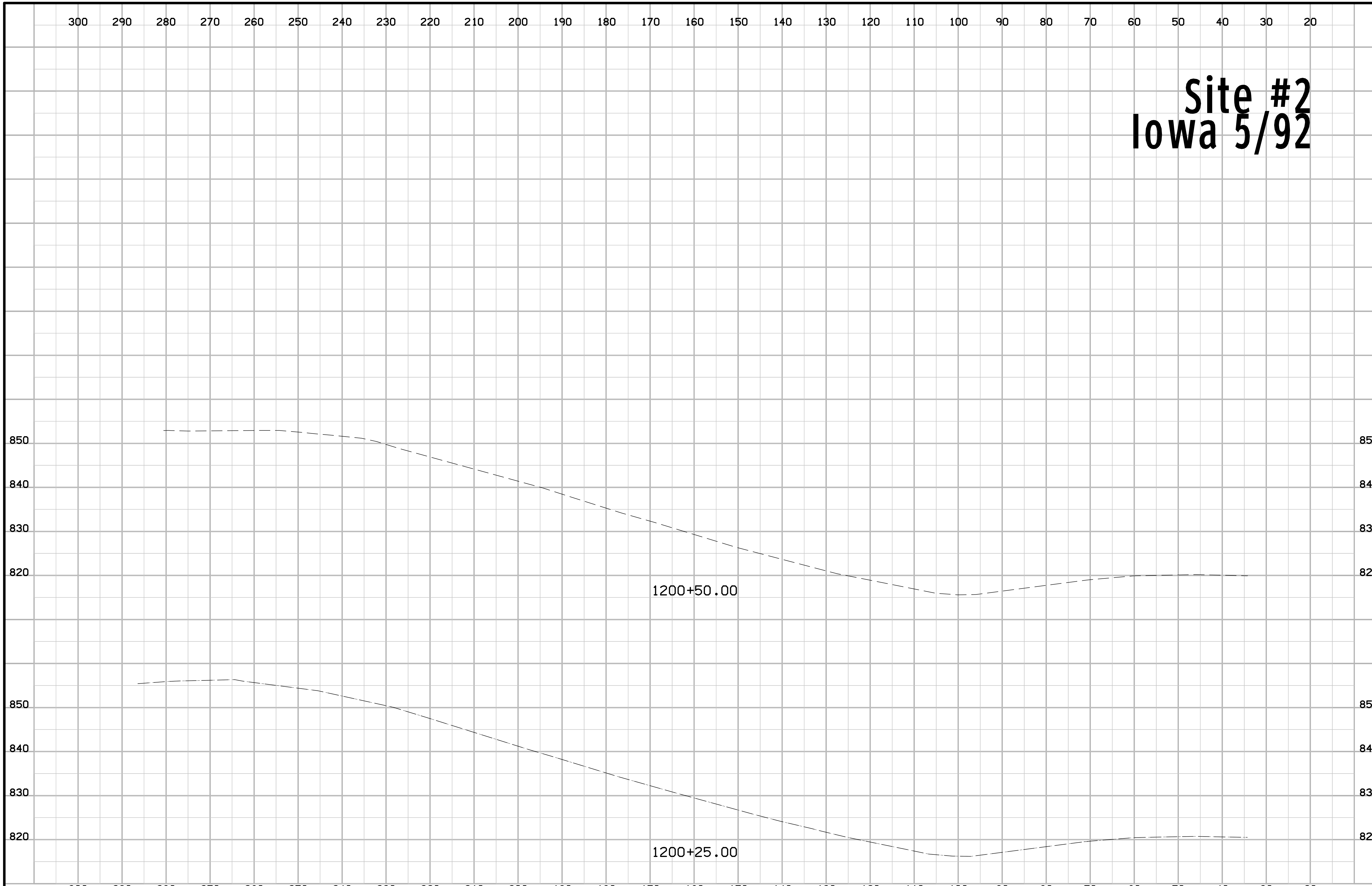
8:39:12 AM 11/8/2017 gmoyle pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9109202017\Soils\xs_yugo.sht



FILE NO. | ENGLISH | DESIGN TEAM MEGIVERN\DELL\MOYLE | WARREN\MARION COUNTY | PROJECT NUMBER NHSN-092-5(65)--2R-91 | SHEET NUMBER W.12



FILE NO.	ENGLISH	DESIGN TEAM MEGIVERN\DELL\MOYLE	WARREN\MARION COUNTY	PROJECT NUMBER NHSN-092-5(65)--2R-91	SHEET NUMBER W.13



FILE NO.	ENGLISH	DESIGN TEAM MEGIVERN\DELL\MOYLE	WARREN\MARION COUNTY	PROJECT NUMBER NHSN-092-5(65)--2R-91	SHEET NUMBER W.14