SLIDE REPAIR
NHSN-061-8(158)--2R-31
LETTING DATE 02-16-2021
DUBUQUE Co.

INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	**Title Sheets**
A.1	Title Sheet
C Sheets	**Quantities and General Information**
C.1	Project Description
C.2	Estimated Project Quantities
C.2	Estimate Reference Information
C.3	Standard Road Plans
C.3	Index of Tabulations
C.3	Tabulations
CS Sheets	**Soils Tabulations**
CS.1	Soils Tabulations
J Sheets	**Traffic Control and Staging Sheets**
J.1	Traffic Control Plan
J.1	Coordinated Operations
J.1	511 Travel Restrictions
Q Sheets	**Soils Sheets**
* Q.1	Soils Legend & Symbol Information Sheet
* Q.2	Soils Sheets US 61
Q.3	Soils General Notes
R Sheets	**Erosion Control Sheets**
RC.1 - 3	Est. Quantities, PPP, General Notes and Tabs
* RR.1 - 2	Erosion Control Legend & Symbol Information Sheet
W Sheets	**Mainline Cross Sections**
W.1 - 7	Cross Sections

IOWA DOT

Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

DUBUQUE COUNTY

SLIDE REPAIR

0.6 m1 N of US 151

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

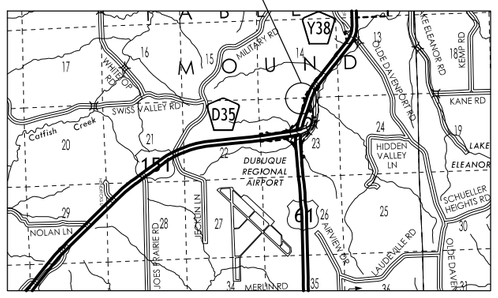
Value Engineering Saves. Refer to Article 1105.14 of the Specifications.

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

REVISIONS

TOTAL 21
PROJECT IDENTIFICATION NUMBER
20-31-061-030
PROJECT NUMBER
NHSN-061-8(158)--2R-31
R.O.W. PROJECT NUMBER

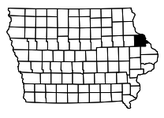
Project Location
Sta. 483+50 - 485+25
M.P. 183.9



T-88N

R-2E

LOCATION MAP SCALE
0 1 2 3
Miles



INDEX OF SEALS		
SHEET NO.	NAME	TYPE
A.1	Yanxiao Jia	Primary Signature Block
CS.1	David Heer	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 — 10-27-2020
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, C.1-3, J.1

FILE NO.	ENGLISH	DESIGN TEAM Jia \ Altenhofen	DUBUQUE COUNTY	PROJECT NUMBER NHSN-061-8(158)--2R-31	SHEET NUMBER A.1

9:03:05 AM 10/27/2020 raltenh pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\3106103020\Design\CADD\31061158_A01.dgn

100-1D
10-18-05

PROJECT DESCRIPTION

The design intent of this project is to repair a backslope slide in Maquoketa shale.

ESTIMATED PROJECT QUANTITIES
(1 DIVISION PROJECT)

Item No.	Item Code	Item	Unit	Total	As Built Qty.
1	2102-2625000	EMBANKMENT-IN-PLACE	CY	6,513.0	
2	2102-2710090	EXCAVATION, CLASS 10, WASTE	CY	6,378.0	
3	2102-2712015	EXCAVATION, CLASS 12, BOULDERS OR ROCK FRAGMENTS	CY	10.0	
4	2102-2712070	EXCAVATION, CLASS 12, ROADWAY AND BORROW	CY	2,420.0	
5	2105-8425005	TOPSOIL, FURNISH AND SPREAD	CY	545.0	
6	2107-0875100	COMPACTION WITH MOISTURE CONTROL	CY	6,513.0	
7	2210-0475290	MACADAM STONE BASE	TON	2,163.0	
8	2502-8212024	SUBDRAIN, LONGITUDINAL, (BACKSLOPE) 4 IN. DIA.	LF	485.0	
9	2502-8221306	SUBDRAIN OUTLET, DR-306	EACH	4	
10	2507-3250005	ENGINEERING FABRIC	SY	5,134.0	
11	2528-8445110	TRAFFIC CONTROL	LS	1.00	
12	2528-8445113	FLAGGERS	EACH	See Proposal	
13	2533-4980005	MOBILIZATION	LS	1.00	

SEE RC.1 SHEETS FOR ADDITIONAL BID ITEMS AND QUANTITIES.

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
1	2102-2625000	**EMBANKMENT-IN-PLACE**
		Class 10 soil is imported to replace shaley and wet slide material.
		Refer to CS, Q and W sheets for quantities and details.
-	-	-
2	2102-2710090	**EXCAVATION, CLASS 10, WASTE**
		This includes silty clay, and Soft Shale defined as Class 10 material in IDOT Std Specs, 2102.02.A.
		Refer to CS, Q and W sheets for quantities and details.
-	-	-
3	2102-2712015	**EXCAVATION, CLASS 12, BOULDERS OR ROCK FRAGMENTS**
		Refer to Tab. 103-12.
		Dispose of excess material according to Article 1106.07 of the current
		specifications.
		This includes native limestone boulders, found in weathered shale in some site borings.
		Notes on sheet Q.3 require Class 12 excavation to be wasted off site.
-	-	-
4	2102-2712070	**EXCAVATION, CLASS 12, ROADWAY AND BORROW**
		Refer to Tab. 103-12 in the CS Sheets.
		Dispose of excess material according to Article 1106.07 of the current
		specifications.
		This includes Hard Shale defined as Class 12 material in IDOT Std. Specs, 2102.02.B.
		Notes on sheet Q.3 require Class 12 excavation to be wasted off site.
-	-	-
5	2105-8425005	**TOPSOIL, FURNISH AND SPREAD**
		See Tabs. 103-10 and 103-12 on Sheets CS.1.
-	-	-
6	2107-0875100	**COMPACTION WITH MOISTURE CONTROL**
		Refer to Tab. 103-6 on Sheet CS.1.
		Shrinkage will not be included in the moisture control quantity.
-	-	-
7	2210-0475290	**MACADAM STONE BASE**
		This drainage mat collects groundwater for removal by subdrains, and adds friction to the base of the
		slope repair.
		Refer to Q sheets and Tab. 103-12 on Sheet CS.1.
-	-	-
8	2502-8212024	**SUBDRAIN, LONGITUDINAL, (BACKSLOPE) 4 IN. DIA.**
9	2502-8221306	**SUBDRAIN OUTLET, DR-306**
		The slide repair includes two collector subdrains to remove groundwater from the backslope.
		Refer to Q sheets and Tab. 104-9 on Sheet CS.1.
	2502-8212024	**SUBDRAIN, LONGITUDINAL, (BACKSLOPE) 4 IN. DIA.**
-	-	-
10	2507-3250005	**ENGINEERING FABRIC**
		Refer to Q sheets and Tab. 103-12 on Sheet CS.1.
-	-	-
11	2528-8445110	**TRAFFIC CONTROL**
		Refer to Traffic Control Plan on Sheet J.1.
-	-	-
12	2528-8445113	**FLAGGERS**
		- -
-	-	-
13	2533-4980005	**MOBILIZATION**
		- -
-	-	-

105-4
10-18-11

STANDARD ROAD PLANS

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

Number	Date	Title
DR-303	10-17-17	Subdrains (Longitudinal)
DR-306	10-16-18	Precast Concrete Headwall for Subdrain Outlets
TC-1	10-15-19	Work Not Affecting Traffic (Two-Lane or Multi-Lane)
TC-202	04-21-15	Work Within 15 ft of Traveled Way
TC-213	10-15-19	Lane Closure with Flaggers

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.2
105-4	STANDARD ROAD PLANS	C.3
111-25	INDEX OF TABULATIONS	C.3

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.

103-12
MOD

SLIDE REPAIR

Site No.	Location		Side	Class 12 Excavation Boulder/Rock Fragment	Embankment-in-Place	Excavation		Class "E" Revetment	Engineering Fabric	Macadam Stone	Gra. Material Blankets & Subdrain	Macadam Stone Slope Protection	Topsoil		Remarks
	Begin Sta.	End Sta.				Class 12 Roadway + Borrow	Waste Class 10						Furnish & Spread	Strip, Salvage & Spread	
				CY	CY	CY	CY	Tons	SY	Tons	CY	SY	CY	CY	
1	483+50.00	485+25.00	Lt.	10	6513	2420	6378		5134	2163			545		

103-6
10-17-17

EMBANKMENT WITH MOISTURE CONTROL

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

103-10
04-18-17

TOPSOIL STRIPPING AND PLACEMENT

Location				Topsoil Stripping Thickness	Topsoil Placement Thickness	Remarks
Road Identification	Dir. of Traffic	Begin Station	End Station			
				IN	IN	
US 61	SBL	483+50.00	485+25.00		8.0	

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			Side	Depth	Longitudinal Subdrain (DR-303)							Subdrain Outlet		Porous* Backfill	Class "A"* Crushed Stone	Remarks
	Road or Lane Identification	Station to Station			D	Shoulder		Backslope		Bridge Berm (EW-203 or EW-204)			DR-303, DR-305 or DR-306				
						Size	Length	Size	Length	Standard Road Plan and Type	Size	Length	Station	Standard Road Plan and Type			
					IN	IN	FT	IN	FT		IN	FT			CY	CY	
1	US 61	483+70.00	485+10.00	LT	24.0			4.0	250.0				484+00.00	DR-306	3.9		Place on bench at elevation 795
													485+00.00	DR-306			
2	US 61	483+70.00	485+10.00	LT	24.0			4.0	235.0				484+25.00	DR-306	3.6		Place on bench at elevation 785
													485+05.00	DR-306			
Total							0.0		485.0					DR-306 = 4	7.5	0.0	

GEOTECHNICAL DESIGN

LICENSED PROFESSIONAL ENGINEER
David J. Heer
12100
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 Heer — Signature — 10/26/2020 — Date

David J. Heer — Printed or Typed Name

My license renewal date is December 31, 2020

Pages or sheets covered by this seal: CS.1, Q.1-3, W.1-7

108-23A
08-01-08

TRAFFIC CONTROL PLAN

Traffic shall be maintained on US 61.

111-01
04-17-12

COORDINATED OPERATIONS

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

Project	Type of Work
None given	

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									

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

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

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

RIGHT-OF-WAY LEGEND

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

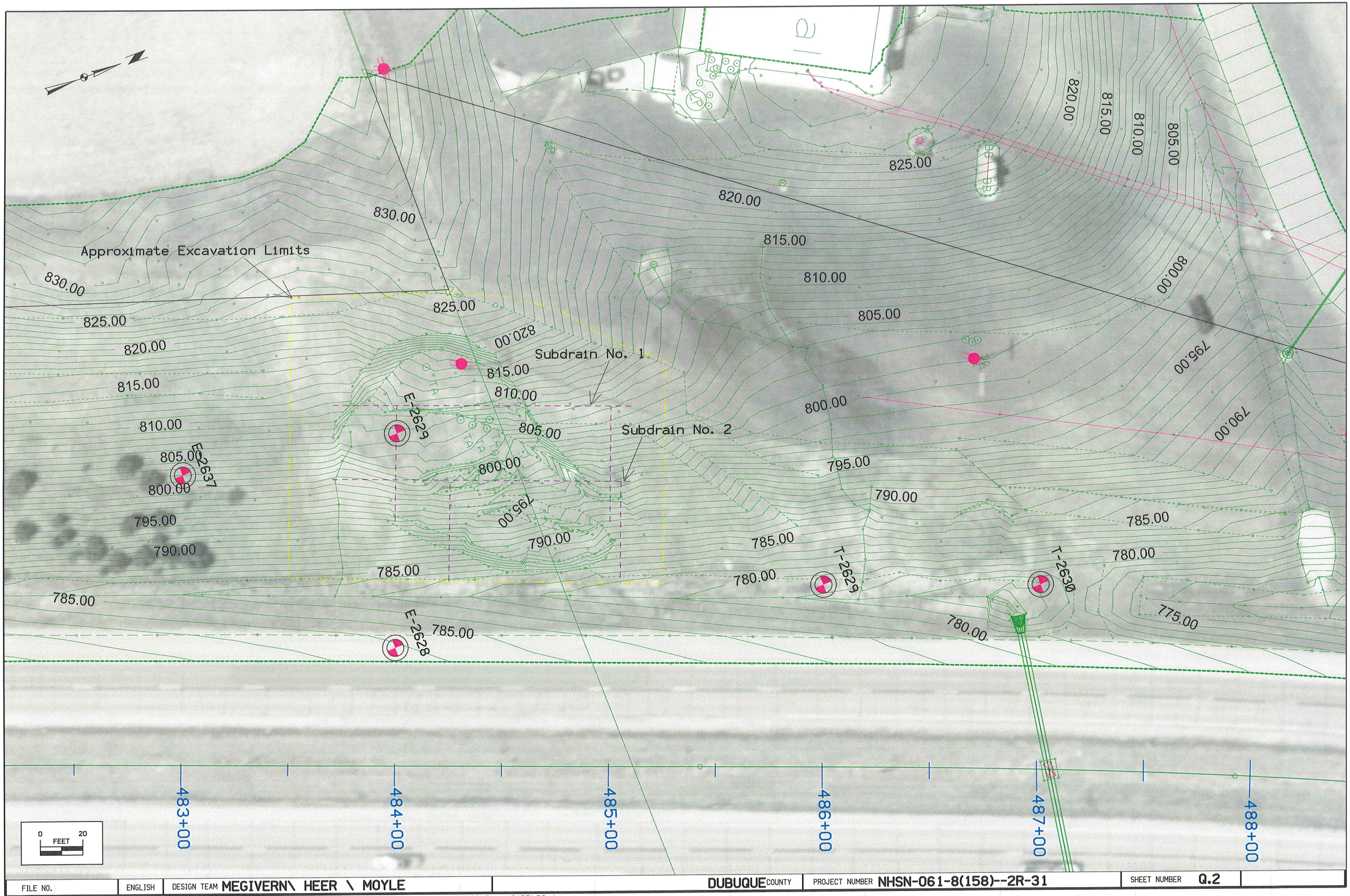
NOTE: Sounding and test boring data shown in the plans were accumulated for designing and estimating purposes. Their appearance on the plans does not constitute a guarantee that conditions other than those indicated will be encountered. Details and notes shown elsewhere shall be used for roadway and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

SOILS LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES Q)

FILE NO.	ENGLISH	DESIGN TEAM MEGIVERN \ HEER \ MOYLE	DUBUQUE COUNTY	PROJECT NUMBER NHSN-061-8(158)--2R-31	SHEET NUMBER Q.1

10:51:51 AM 10/13/2020 gmoyle pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\3106103020\Soils\CADD\31061158_LGD.sht



FILE NO.	ENGLISH	DESIGN TEAM MEGIVERN\ HEER \ MOYLE	DUBUQUE COUNTY	PROJECT NUMBER NHSN-061-8(158)--2R-31	SHEET NUMBER Q.2

1:35:46 PM 10/19/2020 gmoyle pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\3106103020\Soils\CADD\20.sht

Dubuque County
NHSN-061-8(158)--2R-31 Slide Repair US 61
Station 483+50 to Station 485+25

GENERAL NOTES
The design intent of this project is to repair a backslope slide in Maquoketa shale. The location is Milepost 183.9 of Southbound US 61, 0.6 mi. N of the junction with US 151 south of Dubuque.

SOIL BORINGS
New soil borings were not done for this project. Borings from previous US 61 grade/pave project FN-61-8(12)--21-31 (in year 1968) were used to plot soil layers and bedrock. Borings are shown on the cross sections. The general soil section from top to bottom is:
Silty Clay (Loess), 3 - 6 ft
Shale with broken limestone or occasional limestone boulders (weathered shale), 4 - 10 ft
Shale, 10 - 30 ft
Soil borings and site rock outcrops indicate that that the silty clay and weathered shale are sliding over harder shale at depth.

STAGING
Stage the slide repair in sections approx. 25 ft wide perpendicular to the backslope. Begin slope repair at the toe of slope and work up the backslope. Monitor slope stability during construction.

CLASS 10 EXCAVATION
Template grading for benches is shown on cross sections from Stations 483+50 to Station 485+25. Shale is expected to be Soft Shale to be handled as Class 10 excavation.
Waste excavated soil (Silty Clay, and Soft Shale with broken limestone) off site at a location to be provided by the Contractor.

CLASS 12 EXCAVATION
A bid item for Class 12 Excavation is provided for removal of Hard Shale as needed to level the backslope benches.
If Hard Shale is found above the elevations of benches on cross sections, stop excavation after Soft Shale has been removed. Remove any visible slick failure surface in shale at the base of the slide. Contact the Engineer to adjust elevations of benches and survey the top of Class 12 Hard Shale for calculating quantities. Limestone boulders shall be paid as Class 12 Boulder Excavation. Waste excavated Class 12 Excavation (Hard Shale and Boulders/Rock Fragments) off site at a location to be provided by the Contractor.

MACADAM STONE MAT
Place a 2 ft thick mat of Macadam Stone to provide drainage and friction strength at the base of the slide repair. Wrap Macadam Stone mat with Engineering Fabric.

EMBANKMENT IN PLACE
Import Class 10 material for Embankment in Place to rebuild the backslope above the Macadam Stone mat. The backfill material shall consist of suitable cohesive soil meeting IDOT Std. Spec. 2102.02,D,1,a, (Select Treatment material) except that it does not need to be of glacial origin.

SUBDRAINS AND OUTLETS
Install 4 inch dia. perforated subdrain pipe in trenches, with porous backfill, as shown on sheet Q.2 and cross sections. Install four DR-306 subdrain outlets. See details on W Sheets and Tab 104-9 on sheets CS.1.

CROSS SECTIONS
Template fill will be paid as Embankment in Place. Compact Embankment in Place with Moisture Control.

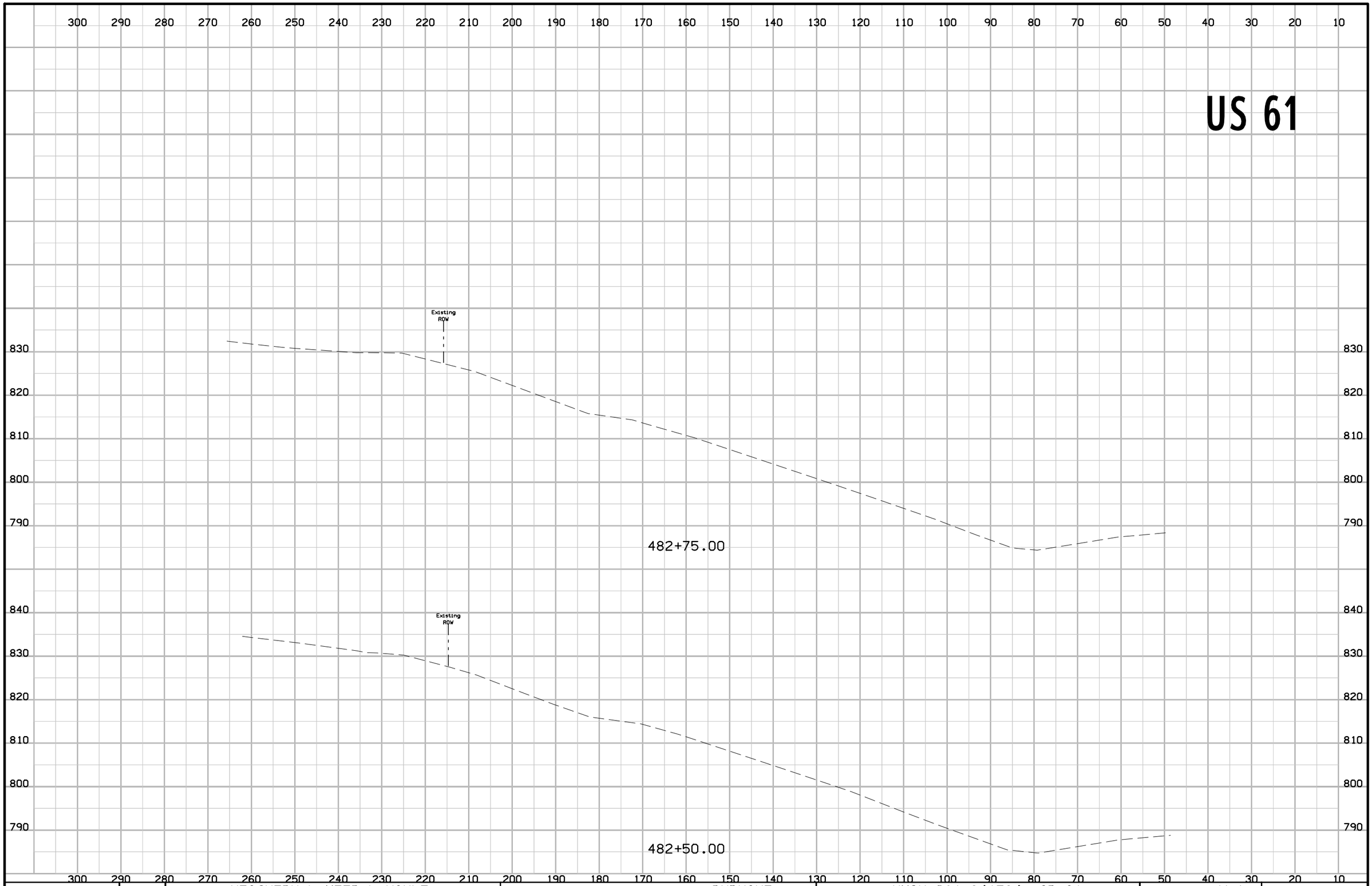
TOPSOIL
Spread 8 inches of Contractor furnished topsoil material after rebuilding the backslope.

Hold for R Sheets

FILE NO.	ENGLISH	DESIGN TEAM Jia \ Altenhofen	DUBUQUE COUNTY	PROJECT NUMBER NHSN-061-8(158)--2R-31	SHEET NUMBER R.1

11:07:50 AM 10/23/2020 raltenh pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\3106103020\Design\31061158_A01.dgn

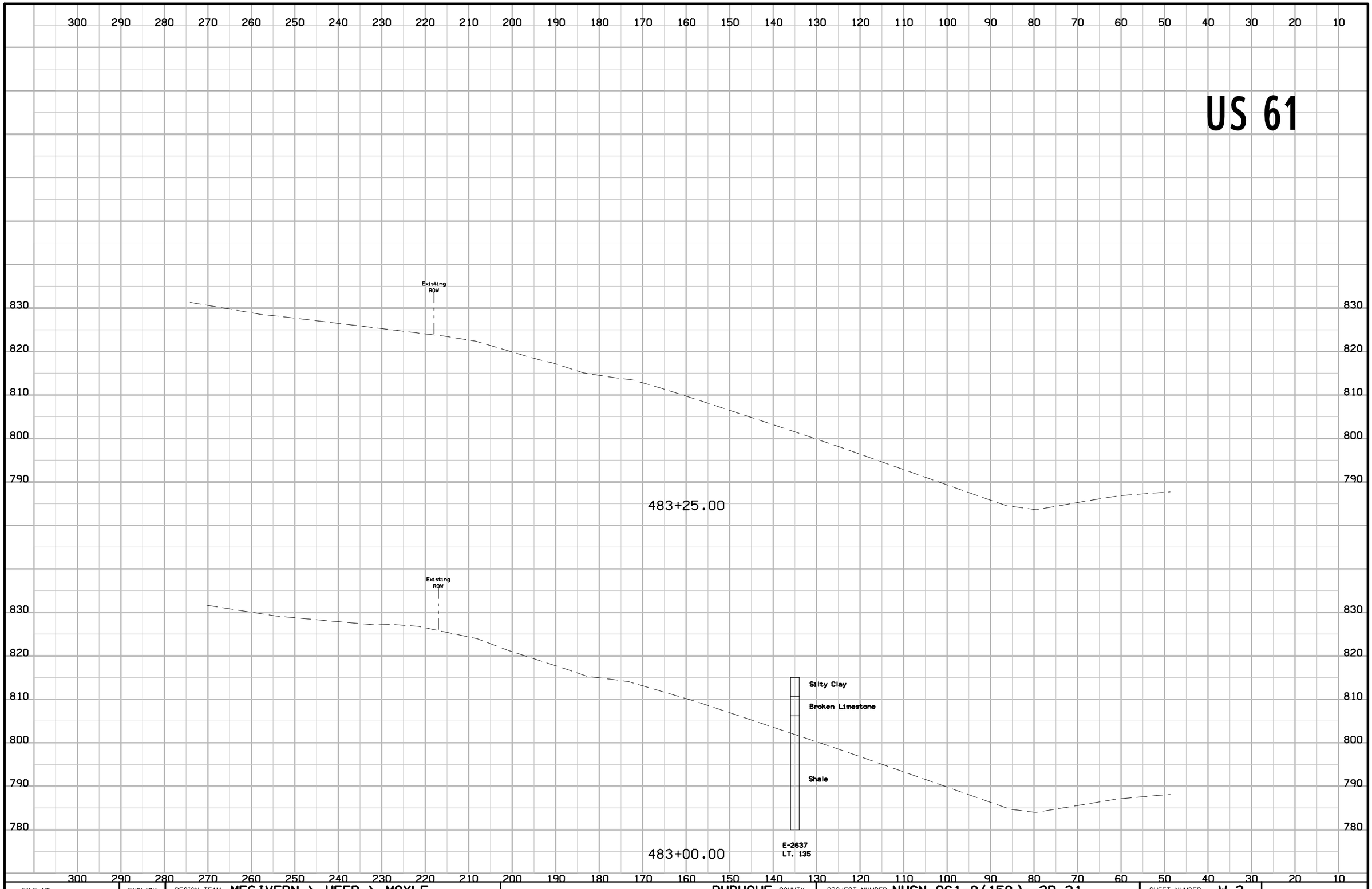
US 61



FILE NO.	ENGLISH	DESIGN TEAM MEGIVERN \ HEER \ MOYLE	DUBUQUE COUNTY	PROJECT NUMBER NHSN-061-8(158)--2R-31	SHEET NUMBER W.1

11:18:07 AM 10/26/2020 gmoyle pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\3106103020\Soils\CADD\xs_31061158.sht

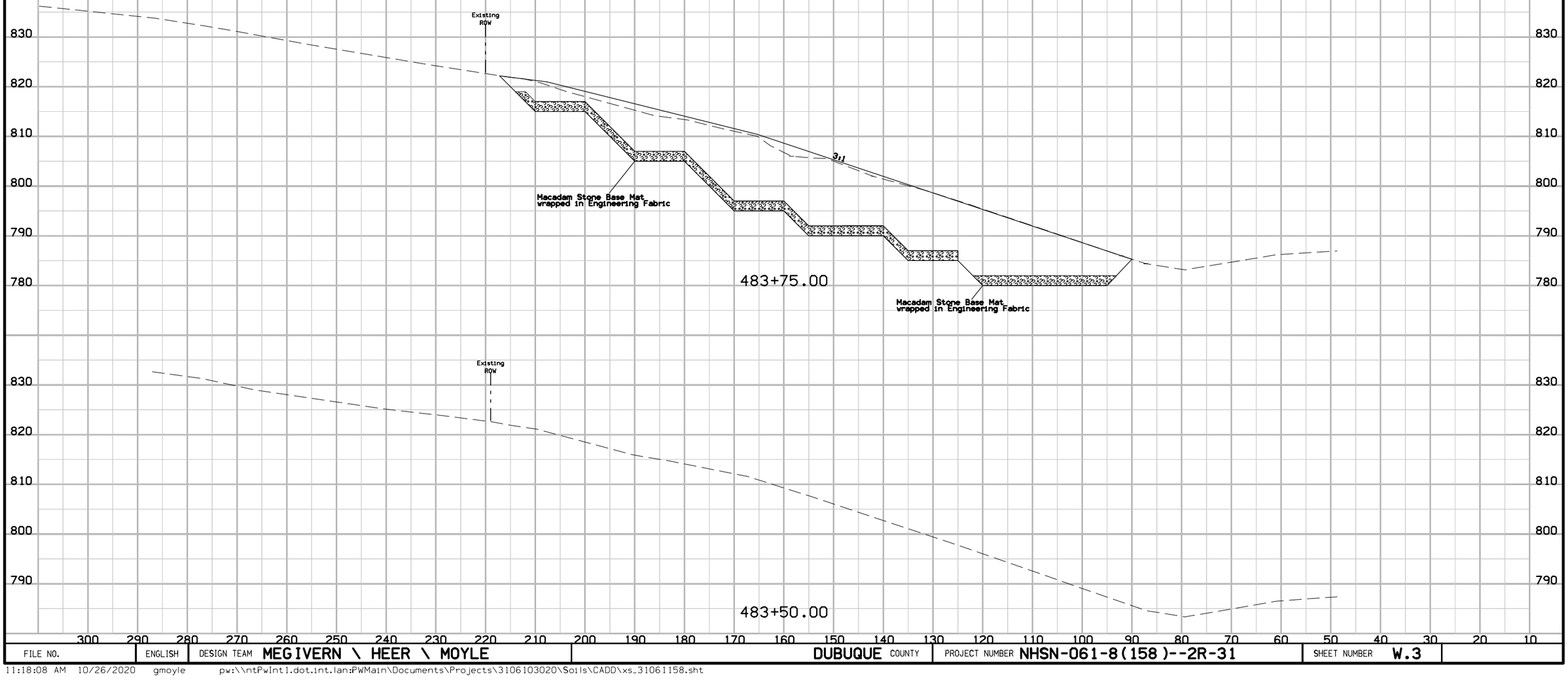
US 61



FILE NO.	ENGLISH	DESIGN TEAM MEGIVERN \ HEER \ MOYLE	DUBUQUE COUNTY	PROJECT NUMBER NHSN-061-8(158)--2R-31	SHEET NUMBER W.2

11:18:07 AM 10/26/2020 gmoyle pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\3106103020\Soils\CADD\xs_31061158.sht

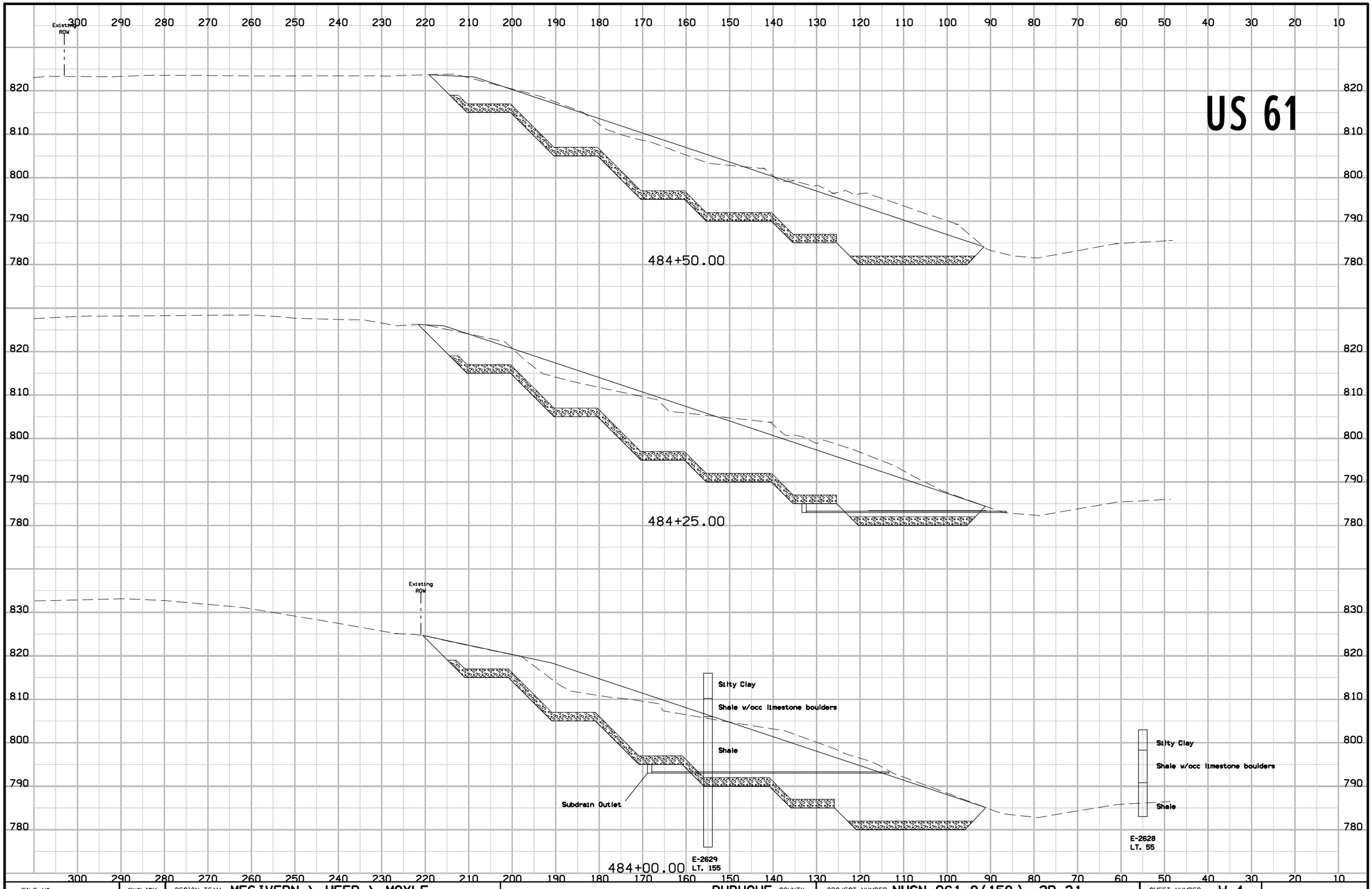
US 61



FILE NO.	ENGLISH	DESIGN TEAM MEGIVERN \ HEER \ MOYLE	DUBUQUE COUNTY	PROJECT NUMBER NHSN-061-8(158)--2R-31	SHEET NUMBER W.3

11:18:08 AM 10/26/2020 gmoyle pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\3106103020\Soils\CADD\xs_31061158.sht

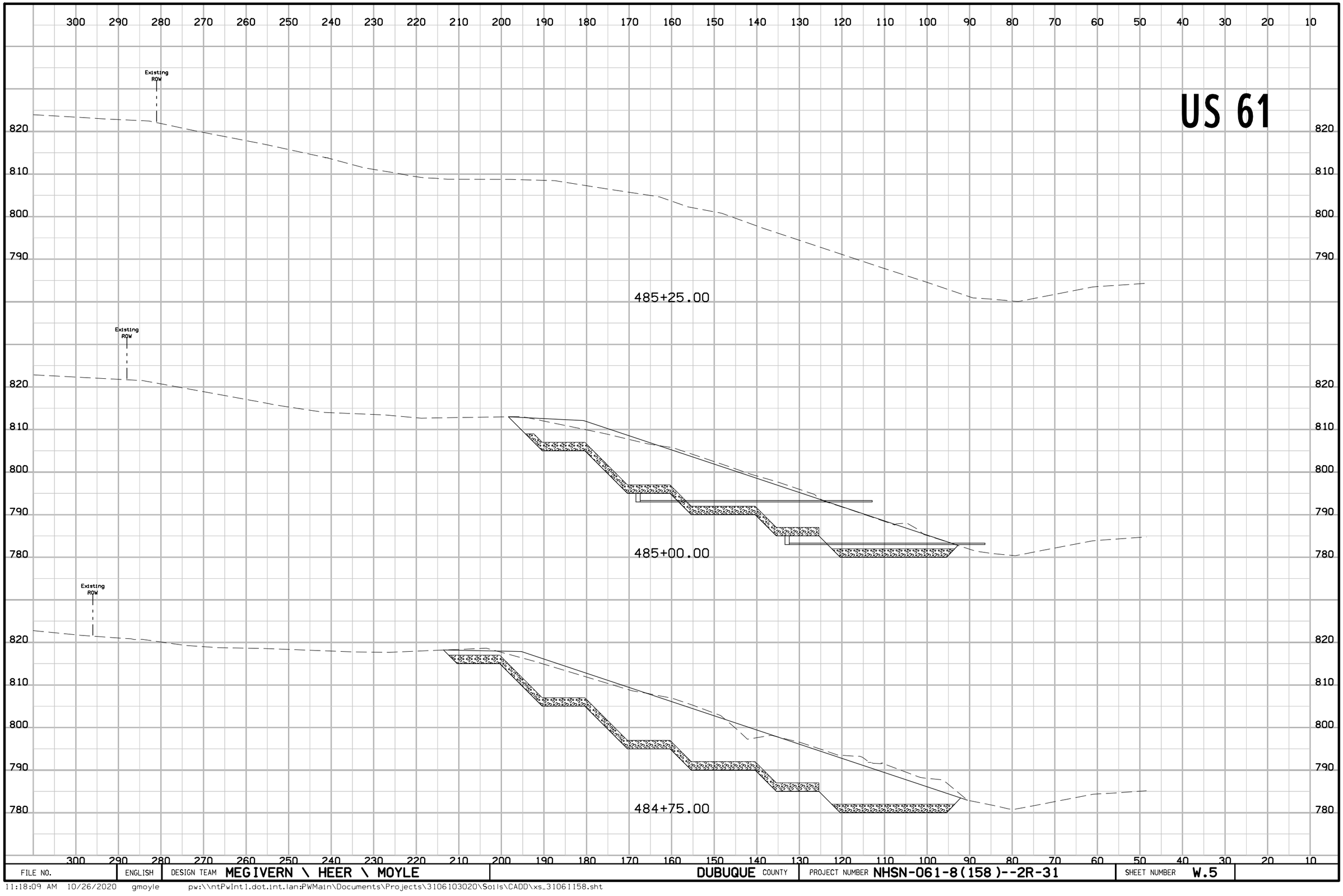
US 61



FILE NO.	ENGLISH	DESIGN TEAM MEGIVERN \ HEER \ MOYLE	DUBUQUE COUNTY	PROJECT NUMBER NHSN-061-8(158)--2R-31	SHEET NUMBER W.4

11:18:08 AM 10/26/2020 gmoyle pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\3106103020\Soils\CADD\xs_31061158.sht

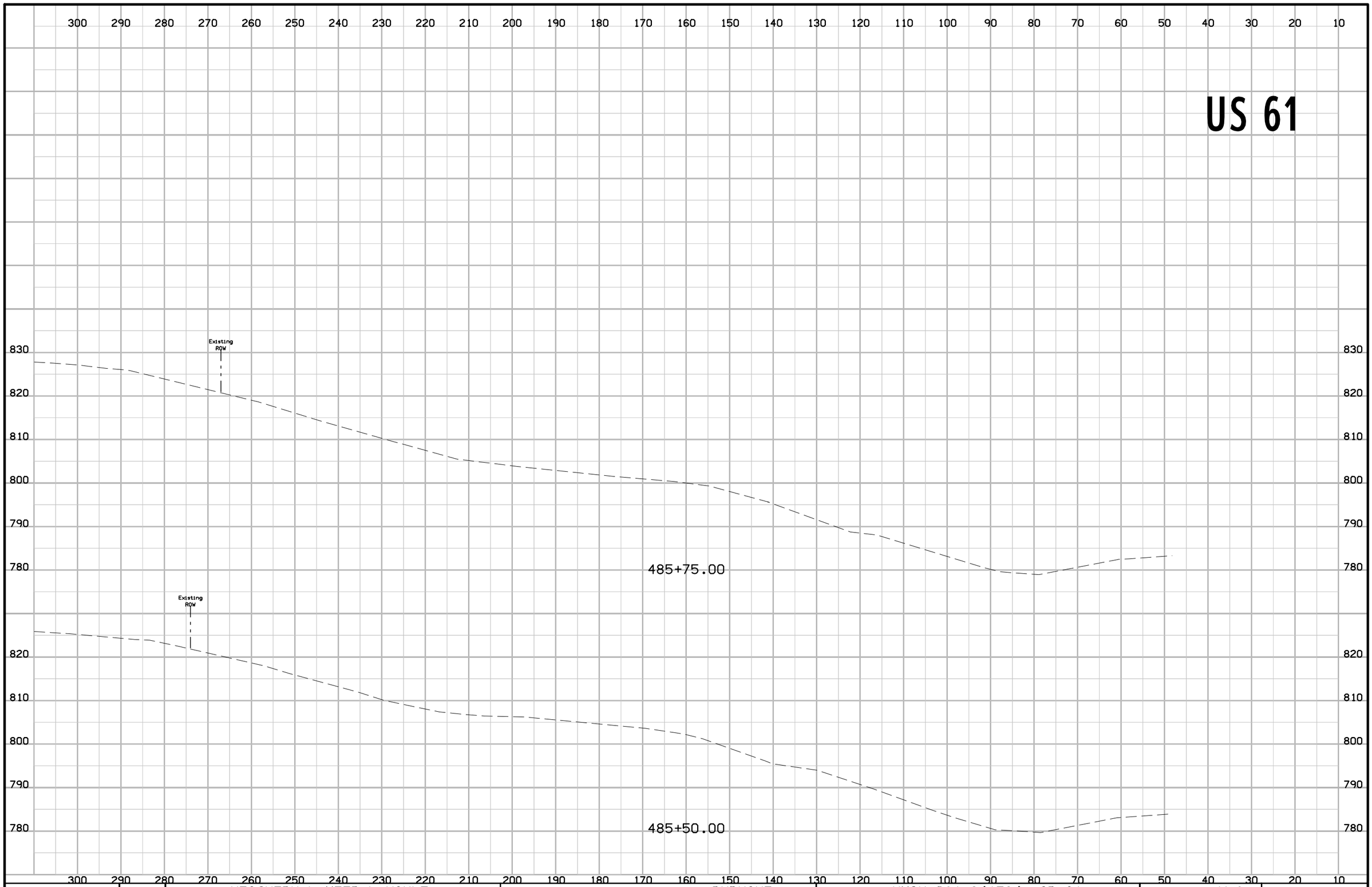
US 61



FILE NO.	ENGLISH	DESIGN TEAM MEGIVERN \ HEER \ MOYLE	DUBUQUE COUNTY	PROJECT NUMBER NHSN-061-8(158)--2R-31	SHEET NUMBER W.5

11:18:09 AM 10/26/2020 gmoyle pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\3106103020\Soils\CADD\xs_31061158.sht

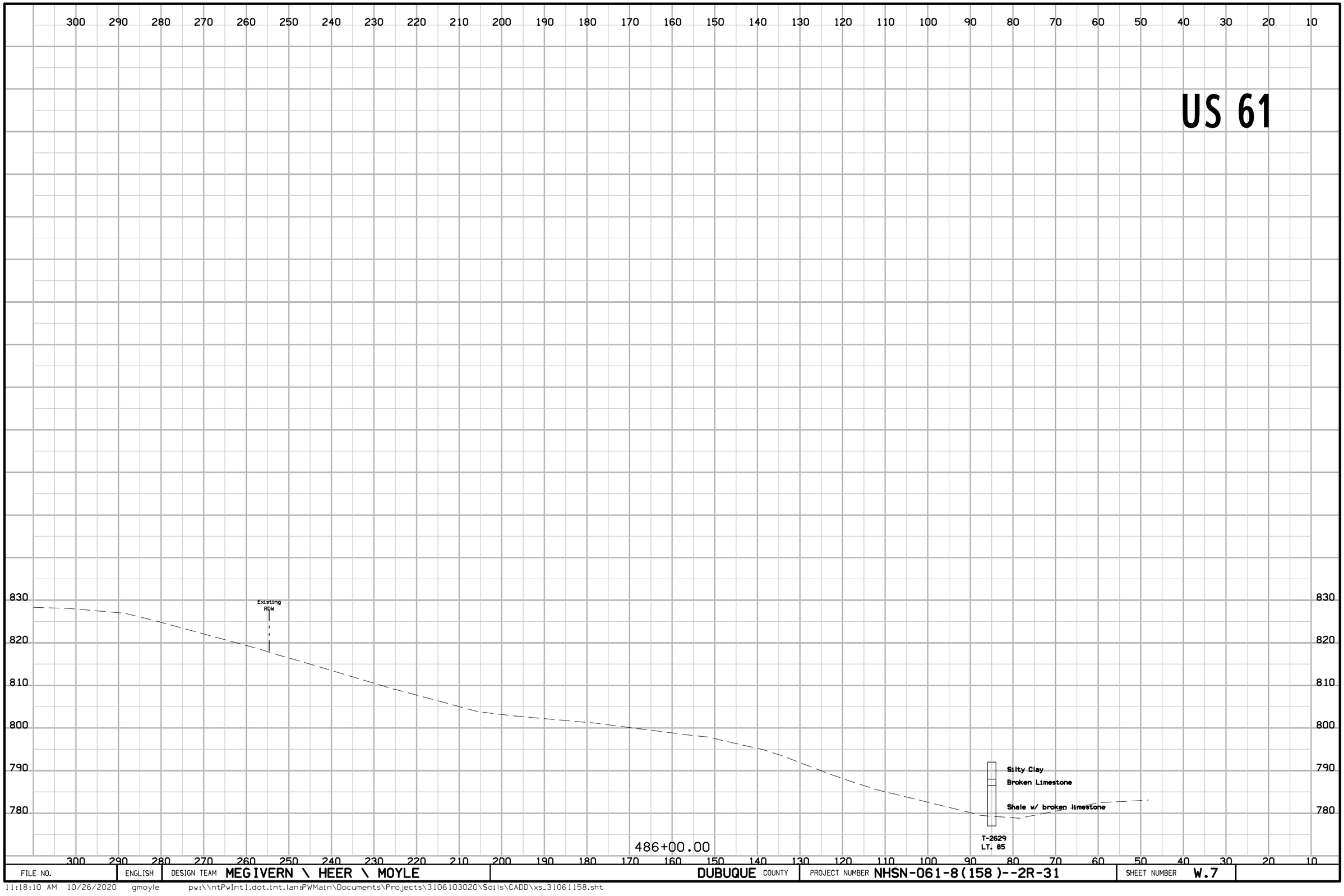
US 61



FILE NO.	ENGLISH	DESIGN TEAM MEGIVERN \ HEER \ MOYLE	DUBUQUE COUNTY	PROJECT NUMBER NHSN-061-8(158)--2R-31	SHEET NUMBER W.6

11:18:09 AM 10/26/2020 gmoyle pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\3106103020\Soils\CADD\xs_31061158.sht

US 61



FILE NO.	ENGLISH	DESIGN TEAM MEGIVERN \ HEER \ MOYLE	DUBUQUE COUNTY	PROJECT NUMBER NHSN-061-8(158)--2R-31	SHEET NUMBER W.7

11:18:10 AM 10/26/2020 gmoyle pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\3106103020\Soils\CADD\xs_31061158.sht