LETTING DATE 05/17/2022

SLIDE REPAIR

ER-014-2(42)--28-59

LUCAS COUNTY

IOWA DOT

REVISIONS

TOTAL 31

PROJECT IDENTIFICATION NUMBER
21-59-014-010
PROJECT NUMBER
ER-014-2(42)--28-59
R.O.W. PROJECT NUMBER
STPN-014-2(43)--2J-59

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

LUCAS COUNTY

SLIDE REPAIR

2.1 mi S of US 34 to 3.6 mi N of Co Rd J22 - 7 Locations

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.

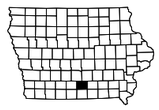
H Sheets

INDEX OF SHEETS

* Color Plan Sheets

SCHEDULE:

D6 - 03-01-2022



See Sheet A.2 for Project Map

DESIGN DATA RURAL

2018	AADT	1980	V.P.D.
20 --	AADT	--	V.P.D.
20 --	DHV	--	V.P.H.
TRUCKS		12.6	%
Total Design ESALs		--	

INDEX OF SEALS

SHEET NO.	NAME	TYPE
A.1	X	Primary Signature Block
X	X	X

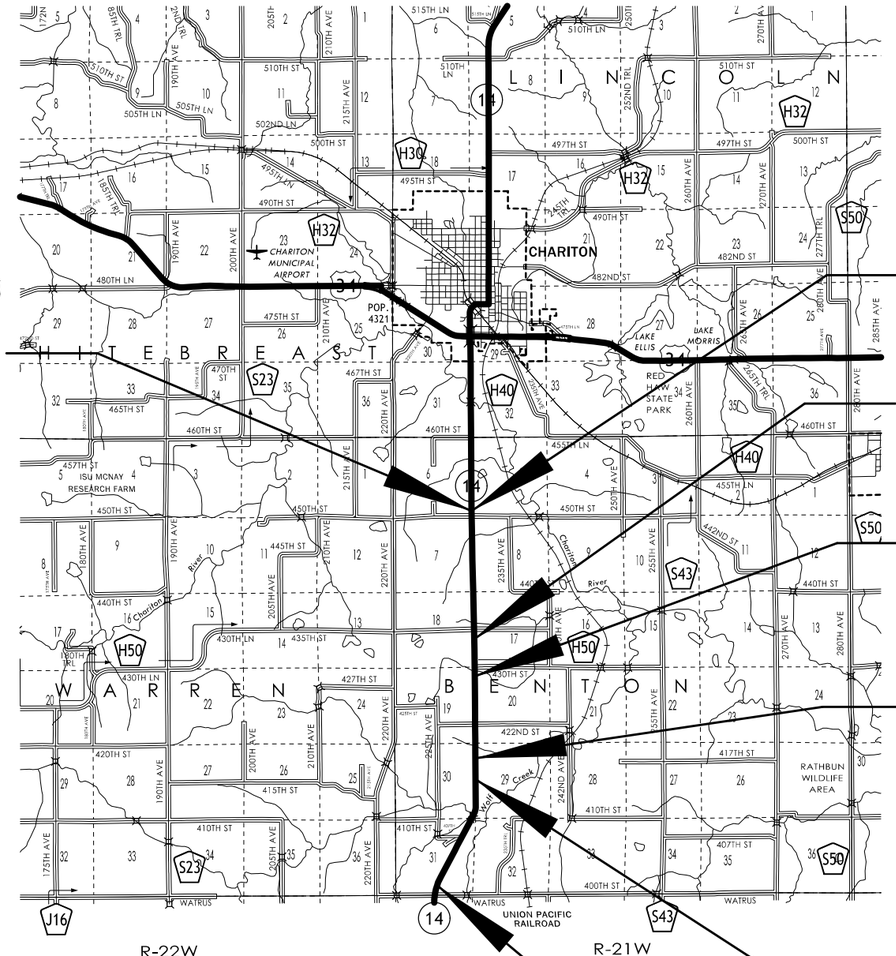
PRELIMINARY PLANS

Subject to change by final design.

D5 PLAN – Date: 10–15–2021

FILE NO. | ENGLISH | DESIGN TEAM HOLST/TAMRAKAR/ACKERMAN | LUCAS COUNTY | PROJECT NUMBER ER-014-2(42)--28-59 | SHEET NUMBER A.1

7:41:34 AM 10/26/2021 JACKER1 pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\5901401021\Design\CADD_Files\Sheet_Files\SHT_59014042Z12_A01.dgn



PROJECT AREA
AREA 1 REFERENCE LOCATION 15.16
STA. 770+77 RT

PROJECT AREA
AREA 2 REFERENCE LOCATION 15.11
STA. 769+57 LT

PROJECT AREA
AREA 3 REFERENCE LOCATION 13.5
STA. 684+29 LT

PROJECT AREA
AREA 4 REFERENCE LOCATION 12.8
STA. 647+20 RT

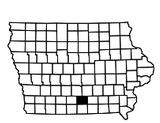
PROJECT AREA
AREA 5 REFERENCE LOCATION 11.89
STA. 599+22 RT

PROJECT AREA
AREA 6 REFERENCE LOCATION 11.47
STA. 577+14 RT

PROJECT AREA
AREA 7 REFERENCE LOCATION 9.94
STA. 495+80 LT

N

LOCATION MAP SCALE
0 1 2 3
Miles



FILE NO.	ENGLISH	DESIGN TEAM HOLST/TAMRAKAR/ACKERMAN	LUCAS COUNTY	PROJECT NUMBER ER-014-2(42)--28-59	SHEET NUMBER A.2

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SURVEY SYMBOLS

BL, Topo Breakline
BL, Topo Breakline
BM, Bench Mark
CON, Concrete or A/C Slab
CON, Concrete or A/C Slab
CP, Control Point
CUL, Culvert
CUL, Culvert
D, Centerline Draw or Stream -Down
D, Centerline Draw or Stream -Down
ENT, Centerline BL of Entrance
ENT, Centerline BL of Entrance
ENU, Edge Unpaved Entrance and Parking
ENU, Edge Unpaved Entrance and Parking
EP, Edge of Paved Roads -ML or SR
EP, Edge of Paved Roads -ML or SR
EW, Edge of Water
EW, Edge of Water
Existing Contours
FENO, FENO Monument
FW, Wire Fence
FW, Wire Fence
GR, Ground Shot
OUT, Tile Outlet
PIP, Pipe Culvert
PIP, Pipe Culvert
PLG, Location of General Photo
PRO, Profile Shot
SH, Paved Shoulder
SH, Paved Shoulder
SI, Sign
SNP, Unpaved Shoulder
SNP, Unpaved Shoulder
SOP, Size of Pipe or Culvert
TIL, Tile Line
TIL, Tile Line
TPD, Telephone Pedestal

UTILITY LEGEND

ELID, Clarke Electric Coop - Quality D
FOID, Iowa Communications Network - Quality D
PPA, Clarke Electric Coop
TLID, Windstream Communications - Quality D
WLID, Rathbun Regional Water - Quality D

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.**	
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

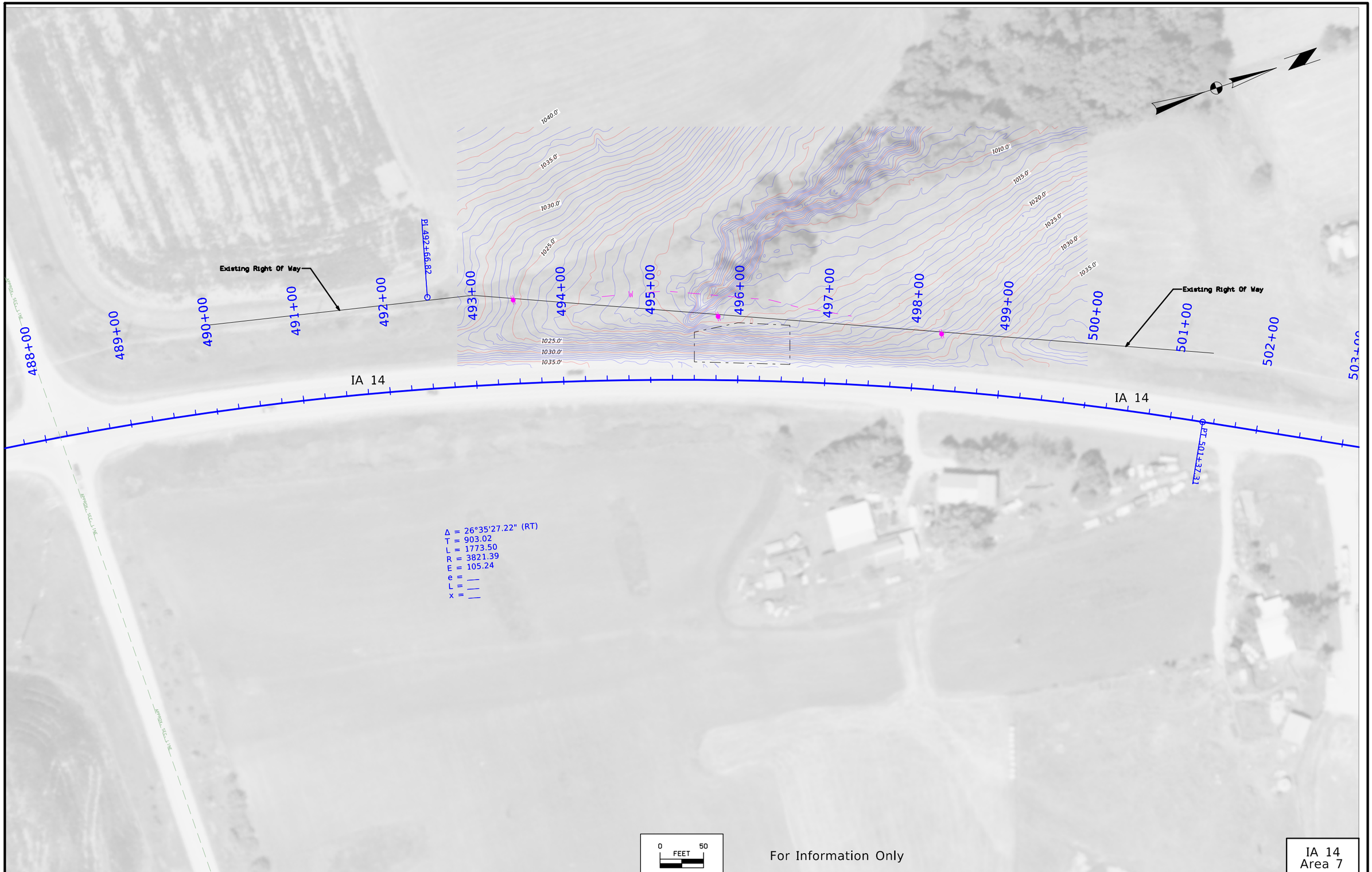
Proposed Right-of-Way
Existing Right of Way
Existing and Proposed Right-of-Way
Easement and Existing Right-of-Way
Easement (Temporary)
Easement
C/A Access Control
Property Line

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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

FILE NO.	ENGLISH	DESIGN TEAM HOLST/TAMRAKAR/ACKERMAN	LUCAS COUNTY	PROJECT NUMBER ER-014-2(42)--28-59	SHEET NUMBER D.1

4:03:03 PM 1/18/2022 jacker1 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\5901401021\Design\CADD_Files\Sheet_Files\SHT_59014042Z12_D01.dgn



FILE NO.	ENGLISH	DESIGN TEAM HOLST/TAMRAKAR/ACKERMAN	LUCAS COUNTY	PROJECT NUMBER ER-014-2(42)--28-59	SHEET NUMBER D.2

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Benton TWP.
T-71N R-21W
SEC. 30

Sta. 577+14.0 (Survey)
2'x2'x89' RCB
D.A.=2 A-H (From Plan)
(U.A.C.)

569+00 570+00 571+00 572+00 573+00 574+00 575+00 576+00 577+00 578+00 579+00 580+00 581+00 582+00 583+00 584+00

APPROX. SEC. LINE

IA 14

IA 14

1000.0'
995.0'
990.0'
985.0'

E1

SIGN

Existing Right Of Way

Existing Right Of Way

Sect. No. 29

0 50
FEET

For Information Only

IA 14
Area 6

FILE NO.	ENGLISH	DESIGN TEAM HOLST/TAMRAKAR/ACKERMAN	LUCAS COUNTY	PROJECT NUMBER ER-014-2(42)--28-59	SHEET NUMBER D.3

8:36:41 AM 1/5/2022 jacker1 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\5901401021\Design\CADD_Files\Sheet_Files\SHT_59014042Z12_D02.dgn

Benton TWP.
T-71N R-21W
SEC. 30

Sta. 599+71.7 (Survey)
5'x4'x58.7' RCB With 5'x7'x6.9' Drop Inlet
Extended 21' LT & 16' RT
D.A.=122 A-H (From Plan)
(U.A.C.)

592+00 593+00 594+00 595+00 596+00 597+00 598+00 599+00 600+00 601+00 602+00 603+00 604+00 605+00 606+00 607+00

IA 14 IA 14

PT 593+00.00

1010.0'
1005.0'
1000.0'
995.0'
995.0'

SIGN

1005.0'
1000.0'

Existing Right Of Way

Sect. No. 29

0 50
FEET

For Information Only

IA 14
Area 5

FILE NO.	ENGLISH	DESIGN TEAM HOLST/TAMRAKAR/ACKERMAN		LUCAS COUNTY	PROJECT NUMBER ER-014-2(42)--28-59	SHEET NUMBER D.4	

8:36:42 AM 1/5/2022 jacker1 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\5901401021\Design\CADD_Files\Sheet_Files\SHT_59014042Z12_D02.dgn

Sta. 646+30.8 (Survey)
Skew 55° RT AH
3'x3'x175' RCB
D.A.=72 A-H (From Plan)
(U.A.C.)

Benton TWP.
T-71N R-21W
SEC. 19

639+00 640+00 641+00 642+00 643+00 644+00 645+00 646+00 647+00 648+00 649+00 650+00 651+00 652+00 653+00 654+00

IA 14

IA 14

Clear and Grub
Slide/Drainage Repair Area

1005.0'
1000.0'

T1

T1

Existing Right Of Way

Existing Right Of Way

Sect. No. 20

0 50
FEET

For Information Only

IA 14
Area 4

FILE NO.	ENGLISH	DESIGN TEAM HOLST/TAMRAKAR/ACKERMAN	LUCAS COUNTY	PROJECT NUMBER ER-014-2(42)--28-59	SHEET NUMBER D.5

8:37:29 AM 1/5/2022 jacker1 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\5901401021\Design\CADD_Files\Sheet_Files\SHT_59014042Z12_D02.dgn

Benton TWP.
T-71N R-21W
SEC. 18

677+00 678+00 679+00 680+00 681+00 682+00 683+00 684+00 685+00 686+00 687+00 688+00 689+00 690+00 691+00

Existing Right Of Way

IA 14 IA 14

Sect. No. 17

0 50
FEET

For Information Only

IA 14
Area 3

FILE NO.	ENGLISH	DESIGN TEAM HOLST/TAMRAKAR/ACKERMAN	LUCAS COUNTY	PROJECT NUMBER ER-014-2(42)--28-59	SHEET NUMBER D.6

8:38:21 AM 1/5/2022 jacker1 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\5901401021\Design\CADD_Files\Sheet_Files\SHT_59014042Z12_D02.dgn

Benton TWP.
T-71N R-21W
SEC. 6

Sta. 771+98.8 (Survey)
Skew 9° RT AH
3'x2'x45.9' RCB W/3'x4'x31' Ext LT and 3'x4'x42.5' Ext RT
D.A.=24 A-H (From Plan)
(U.A.C.)

Area 2

765+00 766+00 767+00 768+00 769+00 770+00 771+00 772+00 773+00 774+00 775+00 776+00 777+00 778+00 779+00 780+00

Existing Right Of Way

1010.0'
1015.0'
1020.0'

IA 14

Clear and Grub
Slide/Drainage Repair Area

IA 14

PT 766+72.14

RT)

W

T1

SIGN

1020.0'
1015.0'
1010.0'

Area 1

Existing Right Of Way

Sect. No. 5

0 FEET 50

For Information Only

IA 14
Areas 1 & 2

FILE NO.	ENGLISH	DESIGN TEAM HOLST/TAMRAKAR/ACKERMAN		LUCAS COUNTY	PROJECT NUMBER ER-014-2(42)--28-59	SHEET NUMBER D.7	

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SURVEY INDEX

County: Lucas
PIN: 21-59-014-010
Project Number: ER-014-2(42)--28-59
Location: 2.1 mi S of US 34 to 3.6 mi N of Co Rd J22 - 7 Locations
Type of Work: Slide Repair
Project Directory: 5901401021

Survey Personnel

Nels Sutherland – Survey Party Chief
Myron Fox – Assistant Survey Party Chief

Date(s) of Survey

Begin Date	04/12/2021
End Date	05/25/2021

General Information

Measurement units for this survey are US survey feet. This survey is for Slide Repair 2.1 mi S of US 34 to 3.6 mi N of Co Rd J22 on State Hwy14, 7 locations. Project datum and control information is provided by Design Survey Office. This project is a Full Field Survey.

Project Control

Primary geodetic style three-dimensional project control monuments are found or placed at approximate ½ to 1mile intervals throughout this project. Datum was accessed via GNSS static survey observations using Iowa Real Time Network reference stations in the area. Other legacy datum monuments in the area were surveyed comparing legacy coordinates to validate the results of the local project network adjustment. Comparisons validate results. For additional details of the control survey see the control survey report in the CONTROL file folder of the PrelimSurvey project directory.

PROJECT DATUM: NAD83(2011) EPOCH 2010.00
VERTICAL DATUM: NAVD88
COORDINATE SYSTEM: IOWA REGIONAL COORDINATE SYSTEM ZONE 12

Alignments Information

The horizontal alignment for this survey is a retrace of As-built Plans No. F-252-(2). Survey stationing was equated to the plan at PC Sta. 587+00 and was ran back and ahead without equation throughout the survey.

Survey stationing relates to as built plan stationing as follows:

PT Sta.451+08.75 Plan
= Survey PT Sta. 451+11.30
PC Sta. 483+62.6 Plan
= Survey PC Sta. 483+63.8
PT Sta. 501+35.9 Plan
= Survey PT Sta. 501+37.31
TS Sta. 549+21.01 Plan
= Survey TS Sta. 549+17.81
SC Sta. 551+21.01 Plan
= Survey SC Sta. 551+17.81
CS Sta. 556+32.71 Plan
= Survey CS Sta. 556+29.52
ST Sta. 558+32.71 BK, 558+30.61 AH Plan
= Survey ST Sta. 558+29.52
PC Sta. 587+00 Plan
= Survey PC Sta. 587+00
PT Sta. 593+00 Plan
= Survey PT Sta. 593+00
PI Sta. 621+65 Plan
= Survey PI Sta. 621+65.10
PC Sta. 666+97.9 Plan
= Survey PC Sta. 666+96.57
PT Sta. 672+97.9 Plan
= Survey PT Sta. 672+96.56
PC Sta. 725+58.6 Plan
= Survey PC Sta. 725+55.88
PT Sta. 731+58.6 Plan
= Survey PT Sta. 731+55.88
PC Sta. 760+75 Plan
= Survey PC Sta. 760+72.14
PT Sta. 766+75 Plan
= Survey PT Sta. 766+72.14
POT Sta. 790+69.7
= Survey Sta. 790+65.63

Utility Information

For logging data and other utility details see Utility Survey and Ownership Report in the Utility folder of the PrelimSurvey project directory.

CONTROL POINT VICINITY MAP

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

HORIZ. DATUM: NAD83(2011) EPOCH 2010.00
VERT. DATUM: NAVD88
Ia. Regional Coordinate System Zone 12

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

HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING

HORIZ. DATUM: NAD83(2011) EPOCH 2010.00

VERT. DATUM: NAVD88

Ia. Regional Coordinate System Zone 12
Project Control Marks are Bench Marks

Point Name	North	East	Height	Code Description
23	6192267.972	22615617.144	1043.308	CP Wayne Co GPS CCP Mon inside can with lid_ from the intersection of Watrous and 220th ave proceed S 1132ft along 220th ave_point is 26ft E of centerline of 220th ave
5026	6209323.051	22630974.643	995.586	CP Wayne Co GPS CCP 5/8th rebar 0.20ft above surface_ from the intersection of S43 and H50 proceed W along H50 4461ft_point is 34ft S of centerline of H50
590140112	6200440.489	22622371.917	1003.727	FENO monument with IDOT brass disc set 4in below surface_from the intersection of 422nd st and hwy14 proceed S 4968ft along hwy14_point is 64ft W of centerline of hwy14
590140118	6203243.578	22622478.395	1024.71	FENO monument with IDOT brass disc set 4in below surface_from the intersection of 422nd st and hwy14 proceed S 2162ft along hwy14_point is 77ft W of centerline of hwy14
590140123	6206281.403	22622322.498	1049.846	FENO monument with IDOT brass disc set 4in below surface_from the intersection of 422nd st and hwy14 proceed N 875ft along hwy14_point is 55ft W of centerline of hwy14
590140129	6208999.898	22622398.286	997.217	FENO monument with IDOT brass disc set 4in below surface_from the intersection of 430th st and hwy14 proceed S 361ft along hwy14_point is 53ft E of the centerline of hwy14
590140133	6211498.965	22622248.910	1046.31	FENO monument with IDOT brass disc set 4in below surface_from the intersection of 435th st and hwy14 proceed S 510ft along hwy14_point is 59ft W of the centerline of hwy14
590140149	6219957.572	22622021.670	1023.833	FENO monument with IDOT brass disc set 4in below surface_from the intersection of 450th st and hwy14 proceed N 49ft along hwy14_point is 78ft W of the centerline of hwy14
FENO_1-Prev	6218113.218	22622161.307	997.836	FENO Set Feno Monument_1780 S of 450TH St_300ft N of entrance at 44604 IA Hwy 14_136ft NW of Station 70 Sign_27ft E of IA Hwy 14
FENO_2-Prev	6218952.073	22622092.024	991.593	FENO Set Feno monument_946ft S of 450th Ave_26ft W of IA Hwy 14_114ft SE of Power Pole_71 NE of Center Gate for Field Entrance
590140154	6222412.882	22622125.812	1009.491	FENO monument with IDOT brass disc set 4in below surface_from the intersection of 450th st and hwy14 proceed N 2503ft along hwy14_point is 53ft E of the centerline of hwy14
NGS-59_38	6234978.18	22621857.701	1037.488	BM NGS Mon AT CHARITON_ON THE CHICAGO_BURLINGTON AND QUINCY RAILROAD_4 POLES NORTH OF OVERPASS 333.81_70 FEET EAST OF THE TRACK_134 FEET SOUTH OF THE INTERSECTION OF MAIN AND ARMORY STREETS_53 FEET SOUTH AND 36 FEET EAST OF THE SOUTHEAST CORNER OF THE HOUSE AT 301 SOUTH MAIN STREET_AND OPPOSITE A POLE_ A STATE SURVEY STANDARD DISK_SET IN THE TOP OF A CONCRETE POST

NOTE:
The first two digits in the control point name refer to the county number.
The next 3 digits refer to the highway number.
The next 3 digits refer to the highway milepost.
The last digit refers to the distance from the referenced milepost to the nearest tenth of a mile.

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	ML014	451+11.30 R1	6189761.10	22619504.31															
2	ML014							483+63.81 R1	6193012.95	22619569.65	492+66.82 R1	6193915.79	22619587.80	501+37.31 R1	6194715.01	22620008.14			
4	ML014				549+17.81 R1	6198946.00	22622233.43				550+51.18 R1	6199064.04	22622295.52				551+17.81 R1	6199125.09	22622322.37
5	ML014							551+17.81 R1	6199125.09	22622322.37	553+76.42 R1	6199361.81	22622426.49	556+29.52 R1	6199620.00	22622441.27			
6	ML014				556+29.52 R1	6199620.00	22622441.27				556+96.22 R1	6199686.59	22622445.08				558+29.52 R1	6199819.94	22622443.40
8	ML014							587+00.00 R1	6202690.19	22622407.12	590+00.00 R1	6202990.17	22622403.32	593+00.00 R1	6203290.17	22622401.00			
10	ML014	621+65.10 R1	6206155.18	22622378.80															
11	ML014							666+96.57 R1	6210686.33	22622325.48	669+96.57 R1	6210986.31	22622321.95	672+96.56 R1	6211286.20	22622313.53			
13	ML014							725+55.88 R1	6216543.45	22622166.07	728+55.88 R1	6216843.34	22622157.66	731+55.88 R1	6217143.28	22622152.06			
15	ML014							760+72.14 R1	6220059.03	22622097.59	763+72.14 R1	6220358.98	22622091.99	766+72.14 R1	6220658.97	22622089.14			

SPIRAL OR CIRCULAR CURVE DATA

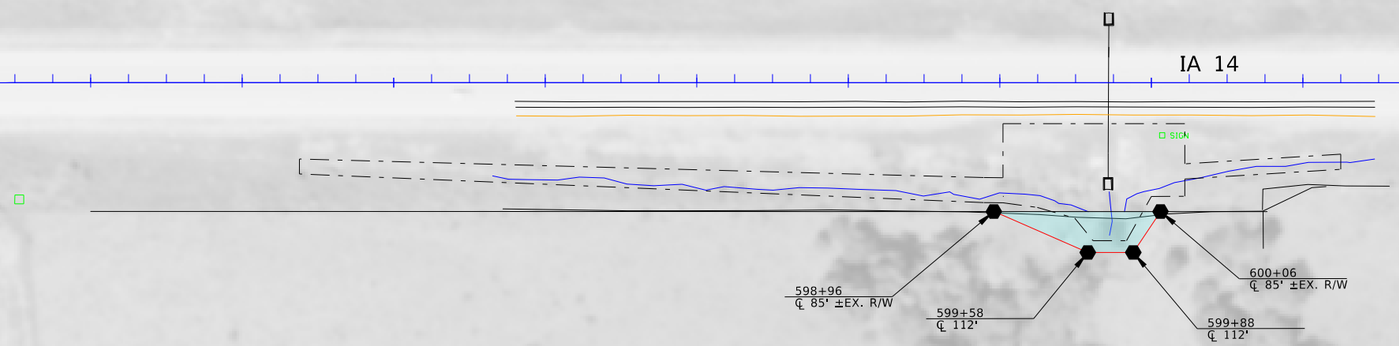
Name	Location	ΔSCS	Horizontal Alignment Data												Remarks
			Spiral Data								Curve Data				
			θS	Ls	Ts	Es	Xc	Yc	L.T.	S.T.	ΔC	T	L	R	E	
C1	ML014										26°35'27.22"	903.02	1773.50	3821.39	105.24	
C2	ML014	28°27'58.64"	03°59'58.94"	200.00	463.64	46.57	199.90	4.65	133.37	66.70	20°28'00.76"	258.61	511.71	1432.50	23.16	
C3	ML014										00°16'48.55"	300.00	600.00	122711.00	0.37	
C4	ML014										00°55'56.85"	300.01	600.00	36867.50	1.22	
C5	ML014										00°32'11.30"	300.00	600.00	64080.00	0.70	
C6	ML014										00°31'31.39"	300.00	600.00	65433.00	0.69	

Benton TWP.
T-71N R-21W
SEC. 30

Sta. 599+71.7 (Survey)
5'x4'x58.7' RCB With 5'x7'x6.9' Drop Inlet
Extended 21' LT & 16' RT
D.A.=122 A-H (From Plan)

592+00 593+00 594+00 595+00 596+00 597+00 598+00 599+00 600+00 601+00 602+00 603+00 604+00 605+00 606+00 607+00

IA 14



1

THOMAS GERARD SELLERS
& JOSEPH HARRIS

Benton TWP.
T-71N R-21W
SEC. 29

0 50
FEET

Right of Way Design Information
THIS SHEET INCLUDED
FOR INFORMATION ONLY

ROW Team: LARSON / CUVA
ROW #: STPN-014-2(43)--2J-59
Plan Date: 11/29/2021
Color Legend:
Property Lines
Temporary Easement
Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM HOLST/TAMRAKAR/ACKERMAN	LUCAS COUNTY	PROJECT NUMBER ER-014-2(42)--28-59	SHEET NUMBER H.1	

8:22:37 AM 11/29/2021 jlarso1 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\5901401021\ROW\ROW_59014043.dgn

Benton TWP.
T-71N R-21W
SEC. 6

Sta. 771+98.8 (Survey)
Skew 9° RT AH
3'x2'x45.9' RCB W/3'x4'x31' Ext LT and 3'x4'x42.5' Ext RT
D.A.=24 A-H (From Plan)

766+00 767+00 768+00 769+00 770+00 771+00 772+00 773+00 774+00 775+00 776+00 777+00 778+00 779+00 780+00

IA 14

SIGN

770+93
℄ 60' ±EX. R/W

772+80
℄ 60' ±EX. R/W

771+99
℄ 104'

772+24 ±P
℄ 104'

2

BRIAN D. BRIGGS
& JODI A. BRIGGS

3

RICHARD A. MCCORMICK

Benton TWP.
T-71N R-21W
SEC. 5

0 50
FEET

Right of Way Design Information
THIS SHEET INCLUDED
FOR INFORMATION ONLY

ROW Team: LARSON / CUVA
ROW #: STPN-014-2(43)--2J-59
Plan Date: 11/29/2021
Color Legend:
Property Lines
Temporary Easement
Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM HOLST/TAMRAKAR/ACKERMAN	LUCAS COUNTY	PROJECT NUMBER ER-014-2(42)--28-59	SHEET NUMBER H.2

9:06:27 AM 11/29/2021 jlarso1 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\5901401021\ROW\ROW_59014043.dgn

108-23A
08-01-08

TRAFFIC CONTROL PLAN

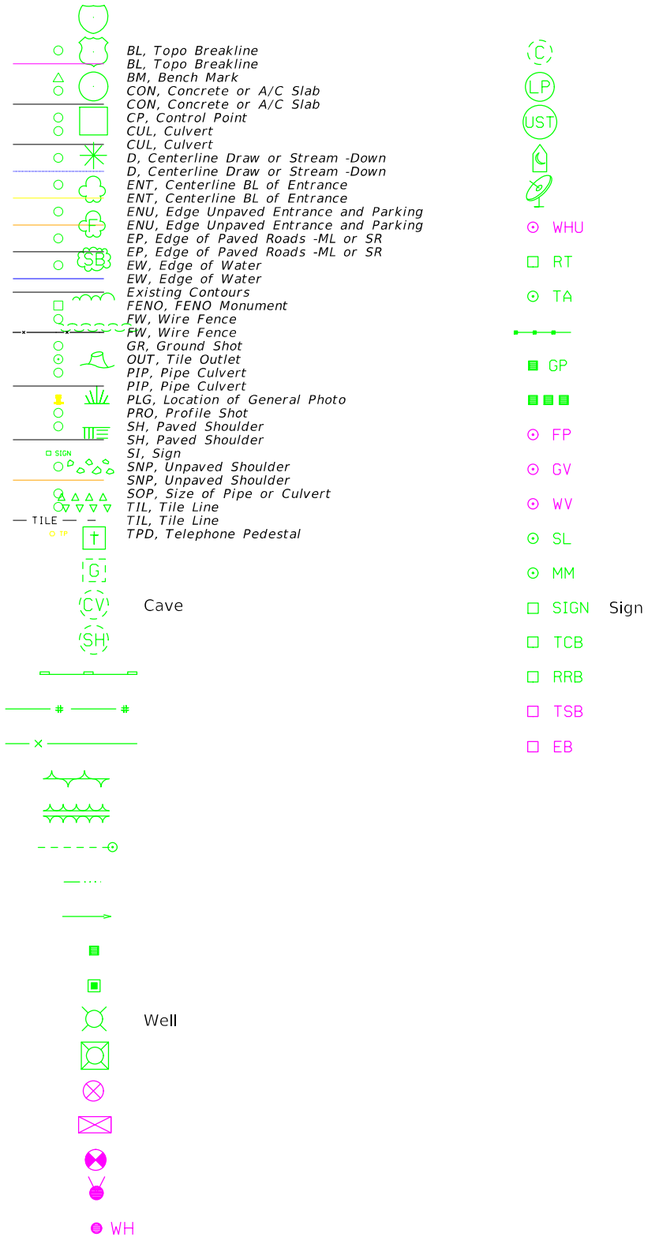
Traffic on IA 14 shall be maintained at all times.

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 Restrictions Expected									

SURVEY SYMBOLS



UTILITY LEGEND

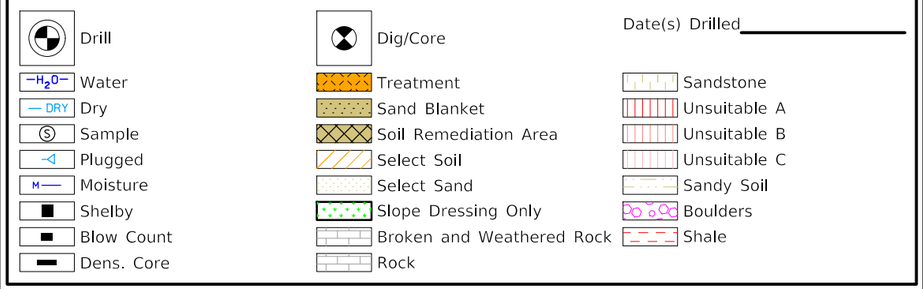
PLAN VIEW COLOR LEGEND OF SOILS SHEETS

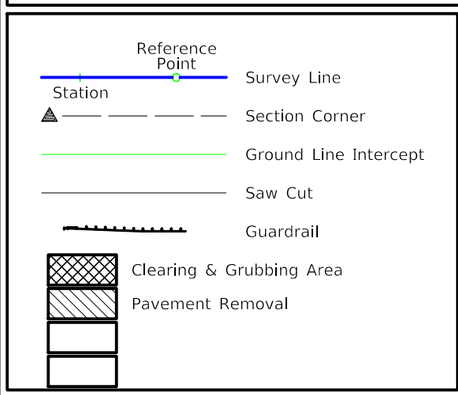
LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Purple (Halo)	(15)	Backslope Drains
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
SHADING	**Design Color No.**	
Brown, Light	(236)	Core Out

PROFILE VIEW COLOR LEGEND OF SOILS SHEETS

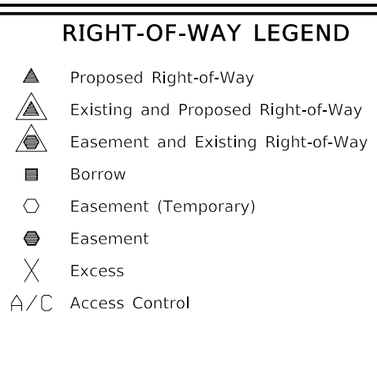
LINEWORK	Design Color No.	
Blue	(1)	Proposed Alignment, Stationing, and Alignment Annotation
Green	(2)	Existing Ground Line Profile
Green, Med	(2)	Topsoil
Green, Med	(2)	Slope Dressing Only
Orange	(6)	Loam
Aqua (Cyan)	(7)	Class 10
Brown, Med	(4)	Sand
Red	(3)	Unsuitable A
Pink, Dark	(13)	Unsuitable B
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





RIGHT-OF-WAY LEGEND



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\ Dell\ Moyle	Lucas COUNTY	PROJECT NUMBER ER-014-2(42)--28-59	SHEET NUMBER Q.01	REVISED

2:25:23 PM 10/12/2021 gmoyle pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\5901401021\Soils\CADD\SHT_59014042Z12_Q01.dgn

IA 14, Lucas Co.
Slide Repairs

GENERAL NOTES:
The design intent is to repair foreslope instability and any areas of erosion that has occurred at seven (7) separate sites along both the east and west sides of IA 14 located south of the City of Chariton, Iowa. Be aware that the actual limits of the repairs discussed below may be found to have changed (enlarged) at the time of construction due to continued slope movements and/or erosion.

Site No. 1 (Station 770+17 to Station 772+45):
Existing Conditions
The foreslope instability has resulted in some minor raveling of the gravel shoulder. An existing 3' x 2' RCB culvert with a previously constructed 3' x 4' RCB culvert extensions is located at Station 771+97.5, within the limits of foreslope instability. An existing dike is located within the roadside ditch south of the RCB culvert outlet at Station 771+29.5. Based on as-built culvert plans, an 18-inch diameter CMP culvert extends through dike and then outlets within the side wall of the culvert. The roadside ditch has degraded about 60 feet further south of the foreslope instability, stopping at about Station 770+17.

Proposed Foreslope Repair
From Station 770+57 to Station 772+45, cut benches in the existing right side foreslope as shown on the associated cross-sections and waste excavated material off-site.
The foreslope repair shall start at the toe of the existing foreslope and then extend up-slope to the outside edge of the gravel shoulder. Install bench subdrains on specific cut benches to more efficiently move water away from the rebuilt foreslope. Please refer to the subdrain tab (104-9) for additional details in regards to the drain locations.
The cut benches shall then be backfilled with suitable cohesive furnished embankment to rebuild the foreslope back to pre-existing conditions. Place 8 inches of furnished topsoil on the final foreslope surface. Subdrains shall then outlet on the rebuilt foreslope using DR-306 outlets. The rebuilt foreslope shall transition back to the existing foreslope at the limits of the repair.

Ditch Drainage Repair
Remove the existing dike and 18-diameter CMP culvert. Plug the hole in the existing culvert which was created as a result of removing the CMP culvert. The approximately 60 feet of degradation that has occurred within the roadside ditch shall be backfilled with suitable cohesive furnished embankment and entire roadside ditch regraded to flow to the RCB culvert. Install a rock-lined ditch within the roadside ditch beginning at Station 770+17 and then extending to the RCB culvert (Station 771+97.5). The rock-lined ditch shall be constructed using Erosion Stone underlain with Engineering Fabric.

Site No. 2 (Station 769+37 to Station 770+72):
Existing Conditions
The foreslope instability has resulted in some minor raveling of the gravel shoulder.

Proposed Foreslope Repair
From Station 769+55 to Station 770+72, cut benches in the existing left side foreslope as shown on the associated cross-sections and waste excavated material off-site. The foreslope repair shall start at the toe of the existing foreslope and then extend up-slope to the outside edge of the gravel shoulder. Install bench subdrains on specific cut benches to more efficiently move water away from the rebuild foreslope back to pre-existing conditions. Please refer to the subdrain tab (104-9) for additional details in regards to the drain locations.
The cut benches shall then be backfill with suitable cohesive furnished embankment to rebuilt the foreslope. Place 8 inches of furnished topsoil on the final foreslope surface.
Subdrains shall then outlet on the rebuilt foreslope using DR-306 outlets. The rebuilt foreslope shall transition back to the existing foreslope at the limits of the repair.

IA 14, Lucas Co.
Slide Repairs

Site No. 3 (Station 684+29 to Station 687+04):
Existing Conditions
A drainage swale enters the Right of Way and drains into the roadside ditch at the southern limits of the foreslope instability (Station 684+29). An existing transverse 4' x 4' RCB culvert is located about 195 feet north of the foreslope instability at Station 687+04. The roadside ditch has degraded from this RCB culvert inlet south. This degradation then extends up the drainage swale beyond the ROW limits to the southwest. It appears that this ditch degradation has resulted in the foreslope instability. The instability has resulted in some minor raveling of the gravel shoulder.

Proposed Foreslope Repair
From Station 684+09 to Station 685+29 cut benches in the existing left side foreslope as shown on the associated cross-sections and waste excavated material off-site.
The foreslope repair shall start at the toe of the existing foreslope and then extend up-slope to the outside edge of the gravel shoulder. Install bench subdrains on specific cut benches to more efficiently move water away from the rebuilt foreslope. Please refer to the subdrain tab (104-9) for additional details in regards to the drain locations.
The cut benches shall then be backfill with suitable cohesive furnished embankment to rebuild the foreslope back to pre-existing conditions. Place 8 inches of furnished topsoil on the final foreslope surface. Subdrains shall then outlet on the rebuilt foreslope using DR-306 outlets. The rebuilt foreslope shall transition back to the existing foreslope at the limits of the repair.

Ditch Drainage Repair
The approximate 275 lineal feet of degradation that has occurred within the left side roadside ditch shall be backfilled with suitable cohesive furnished embankment, if necessary, and regraded to flow to the RCB culvert. The new ditch grades, including that portion of the swale that extends into the ROW, will most likely need to be lower in elevation than what existed prior to degradation to avoid backing water onto private property.

Install a rock-lined ditch beginning where the drainage swale crosses into the ROW (Station 684+29) and then within the roadside ditch extending to the existing RCB culvert (Station 687+04). Taper the rock-lined ditch at the southern end where it transitions off the ROW. The rock-lined ditch shall be constructed using Erosion Stone underlain with Engineering Fabric.

Site No. 4 (Station 645+70 to Station 647+65):
Existing Conditions
It appears that erosion of the foreslope toe directly north of the culvert outlet has resulted in the observed instability. The existing culvert is a 3' x 3' RCB located at Station 646+30.9. This culvert is skewed so that its outlet is located at about Station 647+20. Based on the as-built culvert plans, an existing dike is located in the roadside ditch south of the RCB culvert outlet at about Station 646+64. A 24-inch diameter CMP culvert extends through the dike and outlets near the wing wall of the culvert outlet. This dike has failed and the roadside ditch has degraded further south for about 150 feet from the culvert outlet with the head-cut at approximate Station 645+70.

Proposed Foreslope Repair
From Station 647+10 to Station 647+45, cut benches in the existing right side foreslope as shown on the associated cross-sections and waste excavated material off-site.
The foreslope repair shall start at the toe of the existing foreslope and then extend up-slope to the outside edge of the gravel shoulder. Place engineering fabric meeting Standard Specification 4196.01-3 on the benches, overlapping the edges of the laid fabric a minimum of 2 feet on the sides and ends. Place Erosion Stone on the fabric to rebuild the slope to an approximate 1.5:1 or slightly flatter angle of repose. Erosion Stone on the rebuilt foreslope shall then be capped with a 1-foot thick layer of Macadam Stone Base Materials (Gradation No. 13, without choke stone coarse). Due to the relative steepness of the rebuilt slope, minor benches in the Erosion Stone may be necessary prior to placing the Macadam Stone. The rebuilt foreslope shall transition back to the existing foreslope at the limits of the repair.

Channel Armoring
In order to protect the toe of the rebuilt foreslope, install Class E Revetment underlain with Engineering Fabric within the drainage channel beginning at the culvert outlet and then extending for 15 feet beyond tapering down from the invert elevation of the culvert outlet to the existing bottom of the natural channel. The revetment shall have a minimum thickness of 2 feet at the outlet of the culvert.

Ditch Drainage Repair
Remove the existing dike and 24-diameter CMP culvert. The approximately 150 feet of degradation that has occurred within the roadside ditch shall be backfilled with suitable cohesive furnished embankment and entire roadside ditch regraded to flow to the RCB culvert. Install a rock-lined ditch within the roadside ditch beginning at Station 645+70 and then extending to the RCB culvert (Station 646+64). The rock-lined ditch shall be constructed using Erosion Stone underlain with Engineering Fabric.

IA 14, Lucas Co.
Slide Repairs

Site No. 5 (Station 594+37 to Station 601+22):
Existing Conditions
The foreslope instability has resulted in some minor raveling of the right side gravel shoulder. An existing 5' x 4' RCB culvert is located within the limits of foreslope instability at Station 599+72. Scour has occurred at the outlet of this culvert. The roadside ditches to the north and south of the culvert outlet has degraded, and this loss of toe support from degradation has likely caused the foreslope instability. The roadside ditch degradation to the south of the culvert outlet extends for about 535 feet to the outlet of an existing 2' x 2' RCB culvert at Station 594+37. The as-built road plans show a dike within the roadside ditch north of the 5' x 4' RCB culvert at Station 599+92. This dike is no longer evident. Roadside ditch degradation extends to the north of the 5' x 4' RCB culvert outlet for about 150 feet (Station 601+22).

Proposed Foreslope Repair
From Station 599+02 to Station 600+22, cut benches in the existing right side foreslope as shown on the associated cross-sections and waste excavated material off-site. The foreslope repair shall start at the toe of the existing foreslope and then extend up-slope to the outside edge of the gravel shoulder. Install bench subdrains on specific cut benches to more efficiently move water away from the rebuilt foreslope. Please refer to the subdrain tab (104-9) for additional details in regards to the drain locations. The cut benches shall then be backfilled with suitable cohesive furnished embankment to rebuild the foreslope back to pre-existing conditions. Place 8 inches of furnished topsoil on the final foreslope surface. Subdrains shall then outlet on the rebuilt foreslope using DR-306 outlets. The rebuilt foreslope shall transition back to the existing foreslope at the limits of the repair.

Channel Armoring
Fill the scour hole located at the outlet end of the culvert with Class E Revetment underlain with Engineering Fabric. The revetment backfill shall extend up to the invert elevation of the RCB culvert outlet and then tapper down in elevation to the natural channel bottom at the ROW limits. Please refer to the site plan sheet for the limits of the revetment.

Ditch Drainage Repair
The approximately 685 feet of degradation that has occurred within the roadside ditch shall be backfilled with suitable cohesive furnished embankment and entire roadside ditch within the limits of degradation regraded to flow to the 5' x 4' RCB culvert. Install a rock-lined ditch within the roadside ditch extending 150 feet to the north and 300 feet to the south of the culvert. The rock-lined ditch shall be constructed using Class E Revetment underlain with Engineering Fabric.

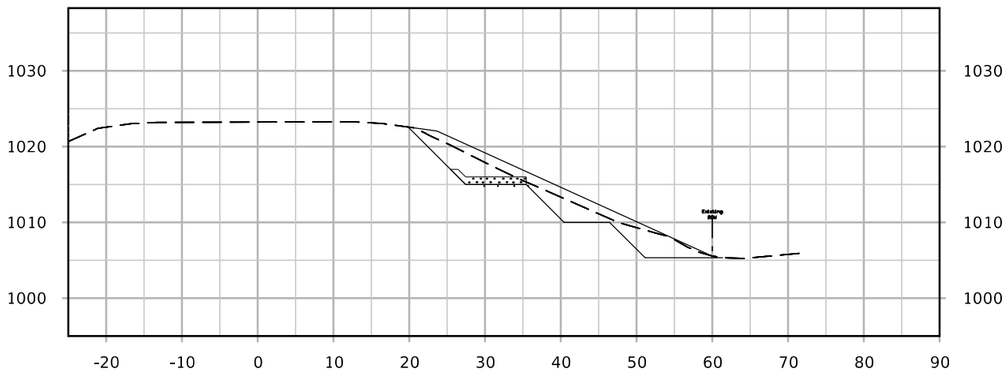
Site No. 6 (Station 577+05 to Station 577+70):
Existing Conditions
The foreslope instability has resulted in some minor raveling of the gravel shoulder.

Proposed Foreslope Repair
From Station 577+05 to Station 577+70, cut benches in the existing right side foreslope as shown on the associated cross-sections and waste excavated material off-site. The foreslope repair shall start at the toe of the existing foreslope and then extend up-slope to the outside edge of the gravel shoulder. Install bench subdrains on specific cut benches to more efficiently move water away from the rebuilt foreslope. Please refer to the subdrain tab (104-9) for additional details in regards to the drain locations. The cut benches shall then be backfill with suitable cohesive furnished embankment to rebuild the foreslope back to pre-existing conditions. Place 8 inches of furnished topsoil on the final foreslope surface. Subdrains shall then outlet on the rebuilt foreslope using DR-306 outlets. The rebuilt foreslope shall transition back to the existing foreslope at the limits of the repair.

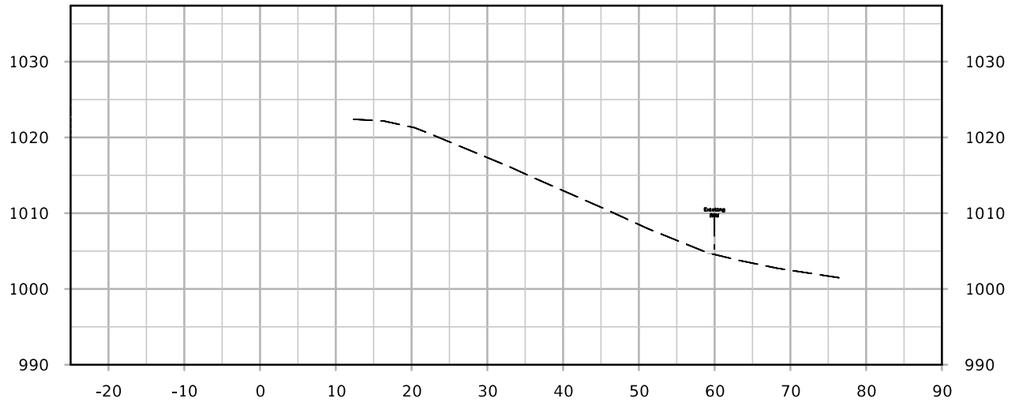
Site No. 7 (Station 495+40 to Station 496+60):
Existing Conditions
The foreslope instability has resulted in some minor raveling of the gravel shoulder.

Proposed Foreslope Repair
From Station 495+40 to Station 496+60, cut benches in the existing left side foreslope as shown on the associated cross-sections and waste excavated material off-site. The foreslope repair shall start at the toe of the existing foreslope and then extend up-slope to the outside edge of the gravel shoulder. Install bench subdrains on specific cut benches to more efficiently move water away from the rebuilt foreslope. Please refer to the subdrain tab (104-9) for additional details in regards to the drain locations. The cut benches shall then be backfill with suitable cohesive furnished embankment to rebuild the foreslope back to pre-existing conditions. Place 8 inches of furnished topsoil on the final foreslope surface. Subdrains shall then outlet on the rebuilt foreslope using DR-306 outlets. The rebuilt foreslope shall transition back to the existing foreslope at the limits of the repair.

Area 1



STA. 771+50.00



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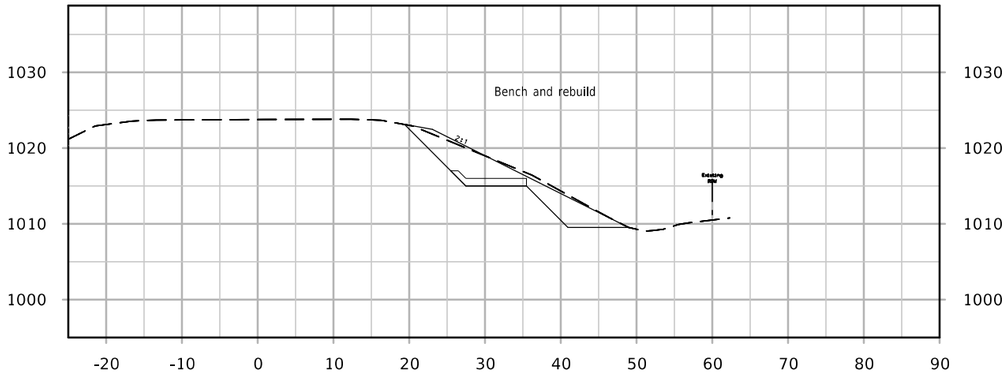

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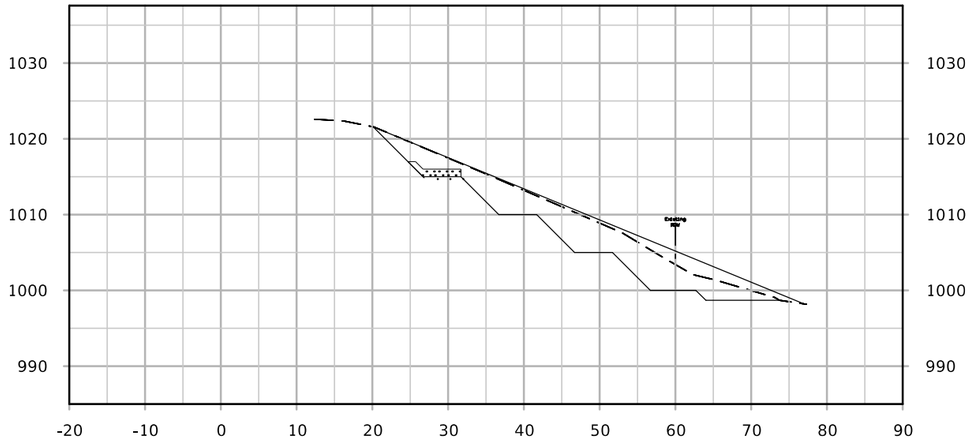

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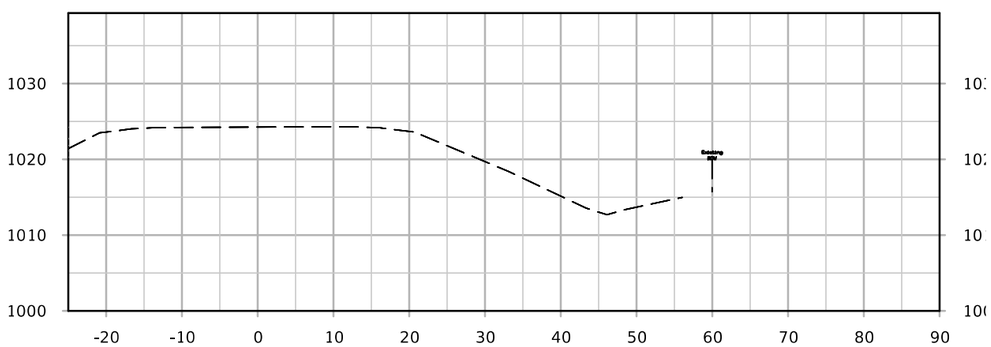

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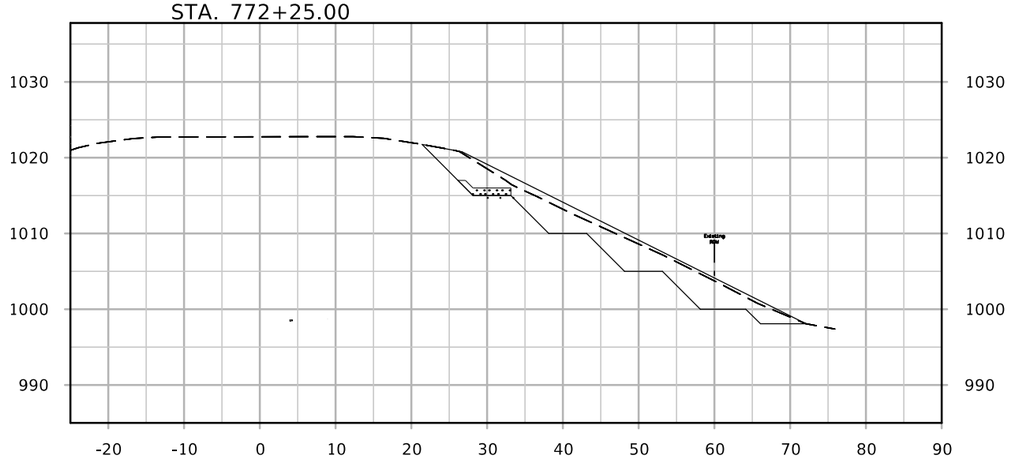

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FILE NO.	ENGLISH	DESIGN TEAM Megivern\ Dell \ Moyle	Lucas COUNTY	PROJECT NUMBER ER-014-2(42)--28-59	SHEET NUMBER W.1

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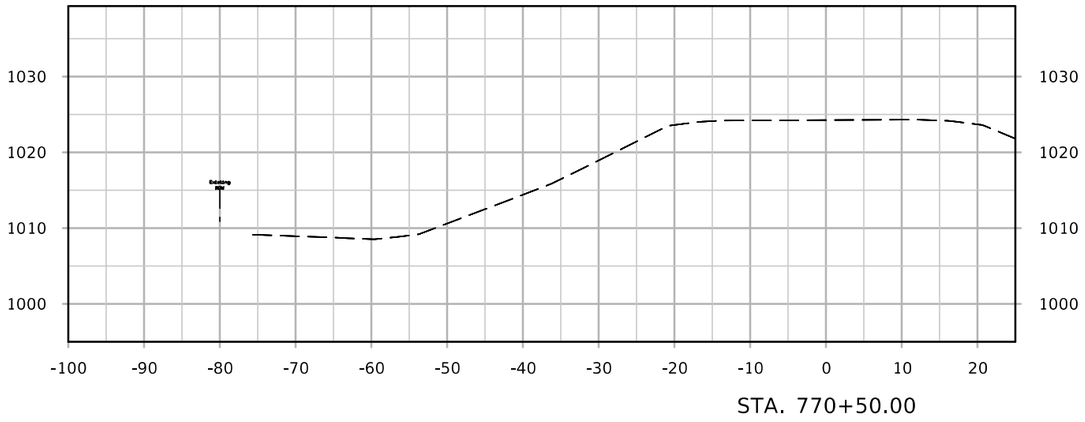
Area 2



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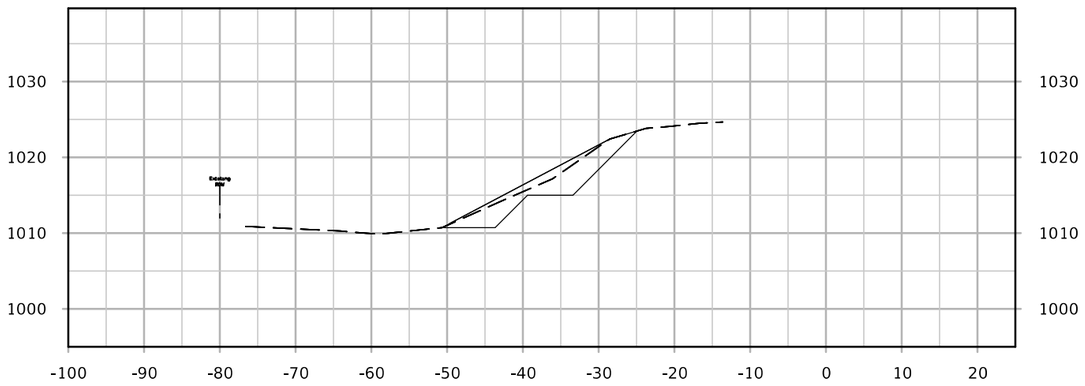

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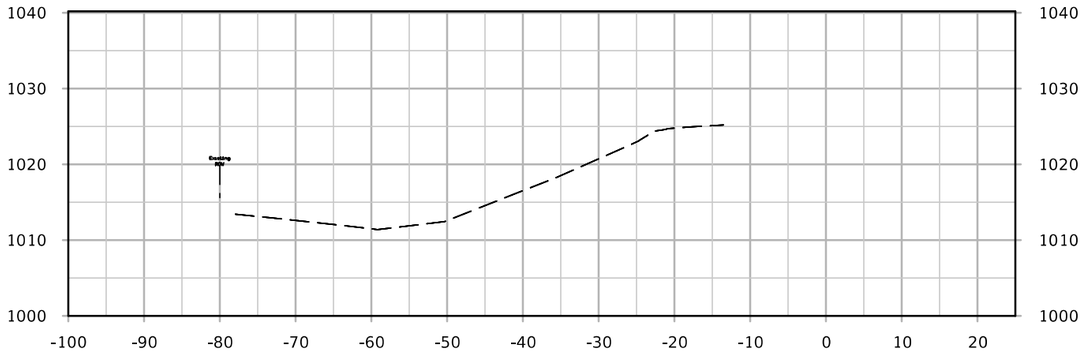

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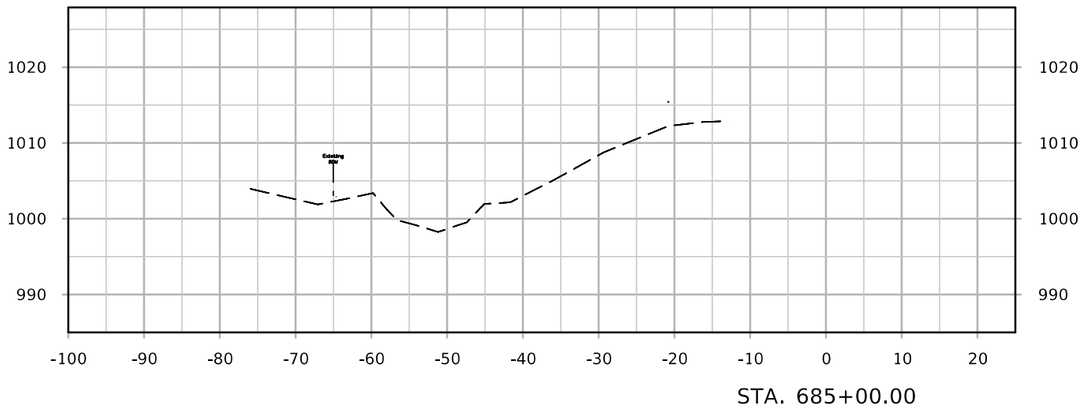

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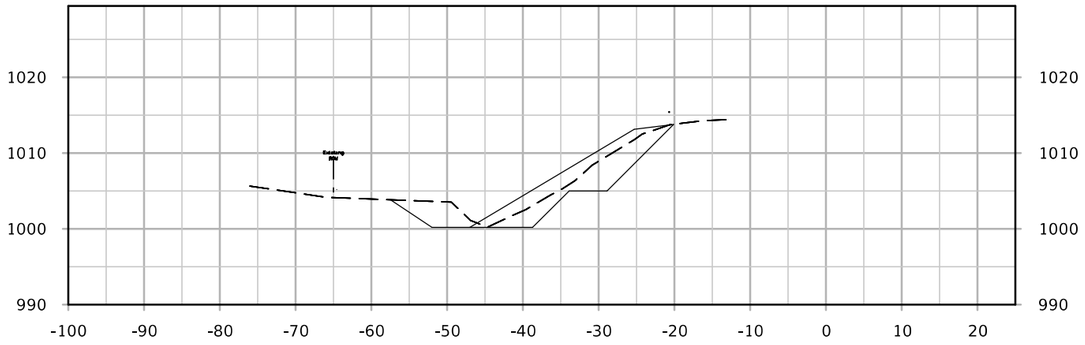

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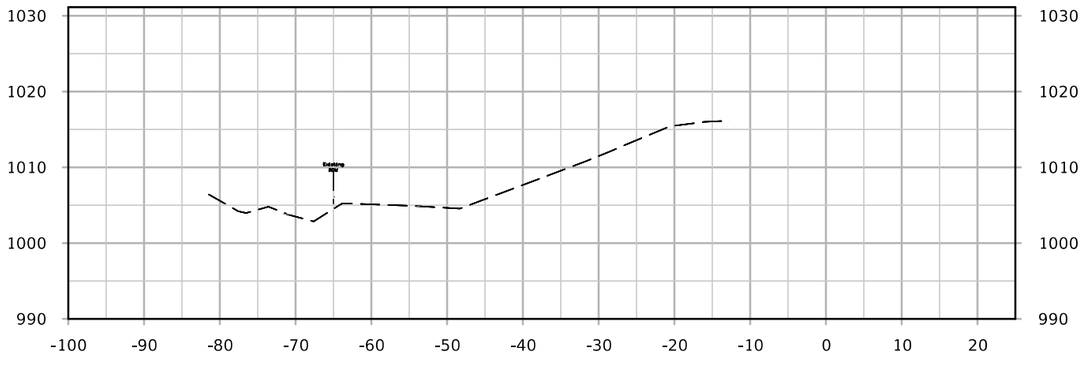

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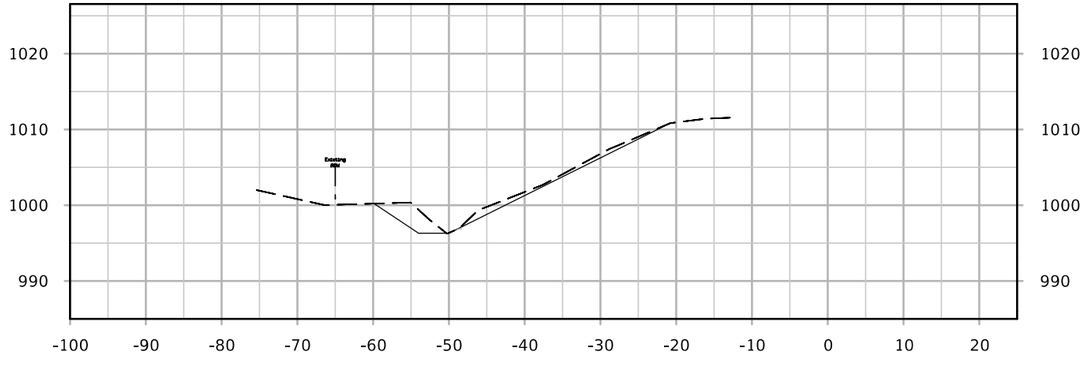
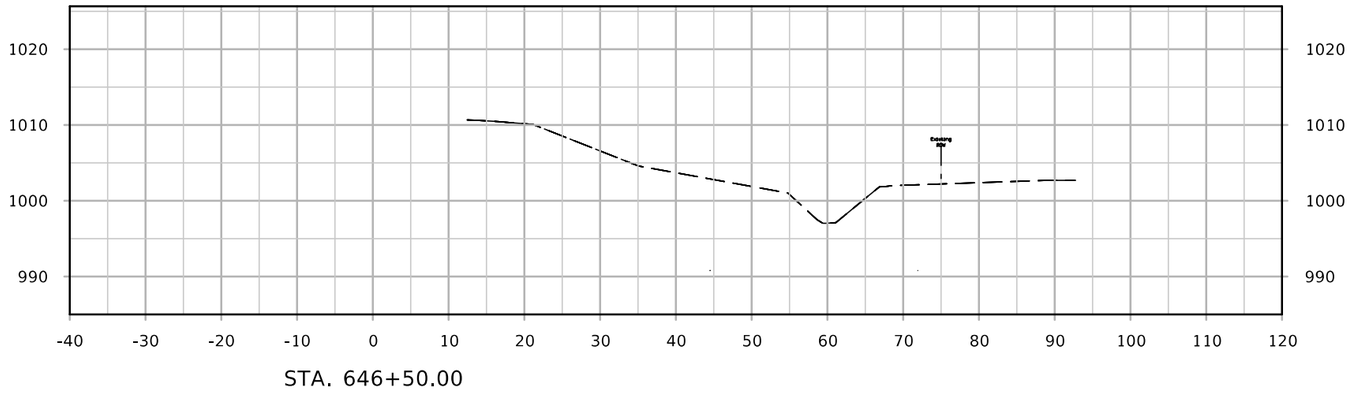


STA. 685+50.00

FILE NO.	ENGLISH	DESIGN TEAM Megivern \ Dell \ Moyle	LUCAS COUNTY	PROJECT NUMBER ER-014-2(42)--28-59	SHEET NUMBER W.3

9:15:27 AM 10/20/2021 gmoyle pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\5901401021\Soils\CADD\sol_59014042.dgn

Area 4



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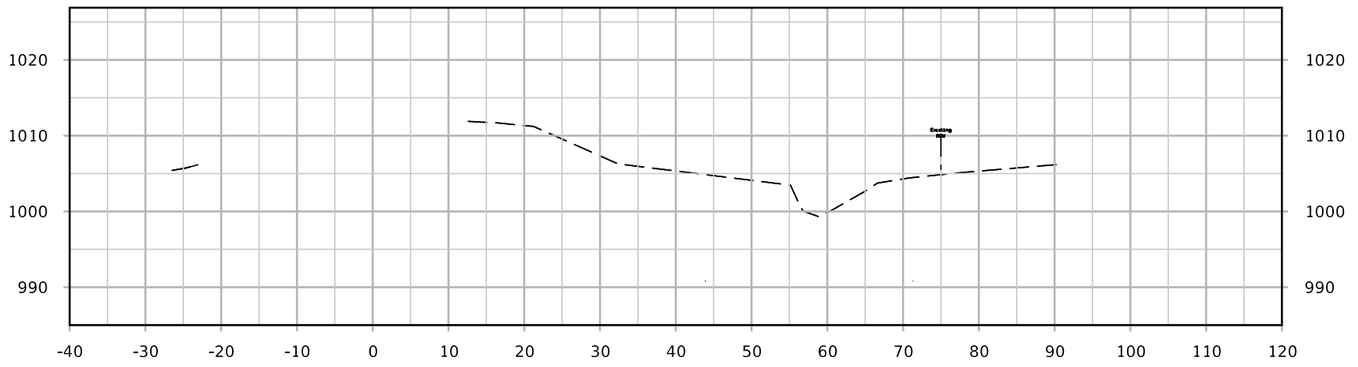

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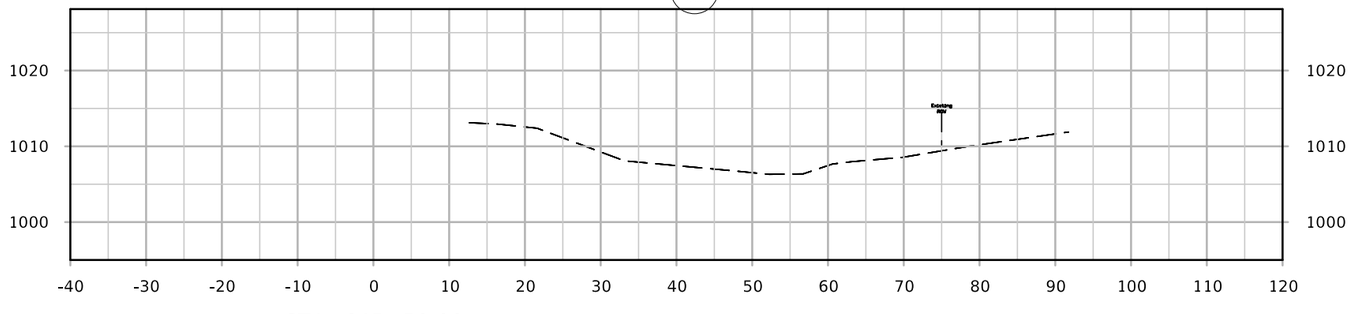

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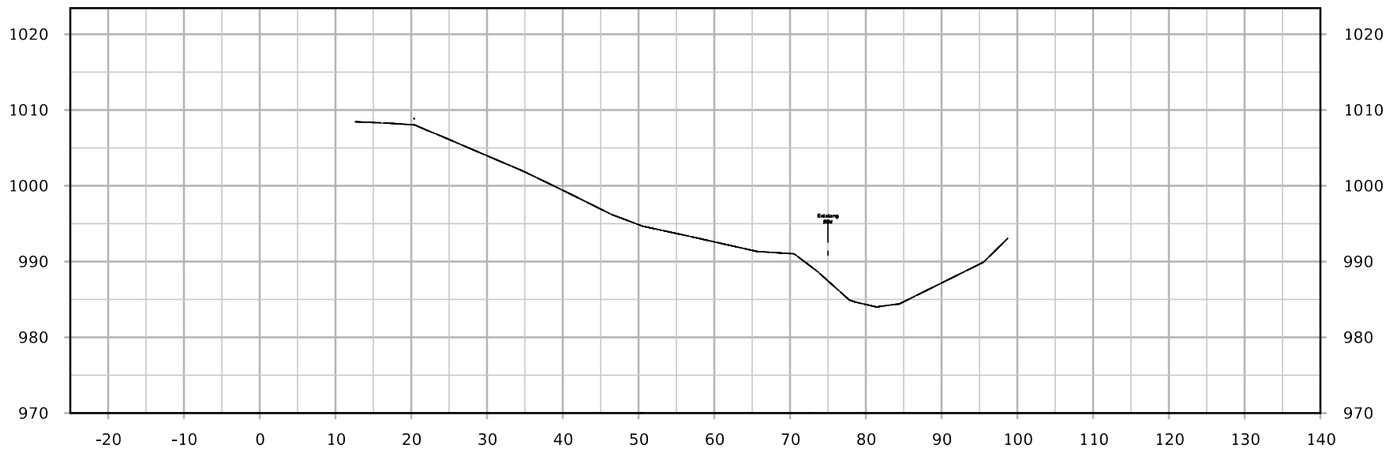

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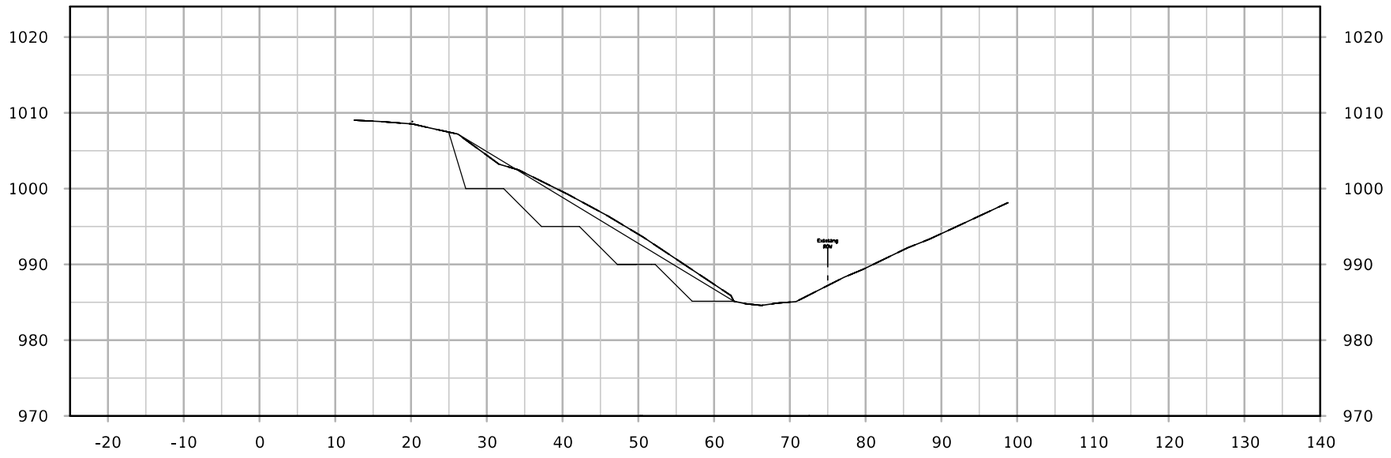

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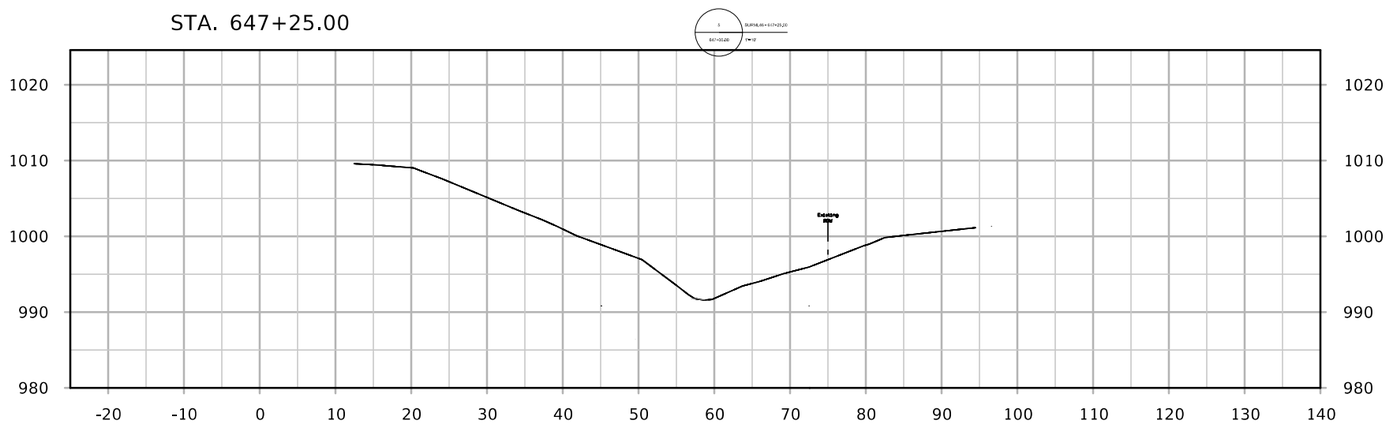
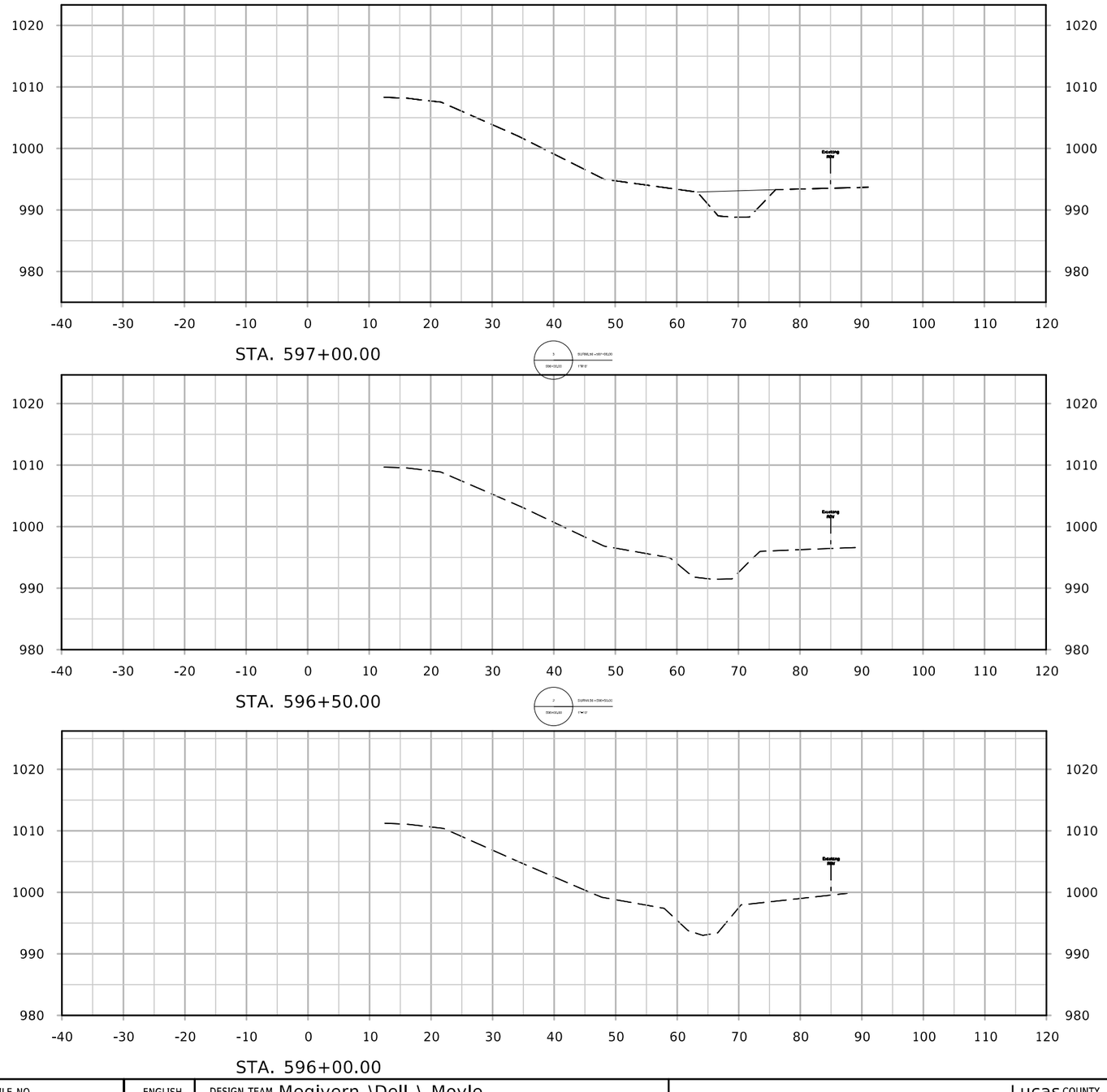


STA. 647+00.00

Area 5



STA. 597+00.00

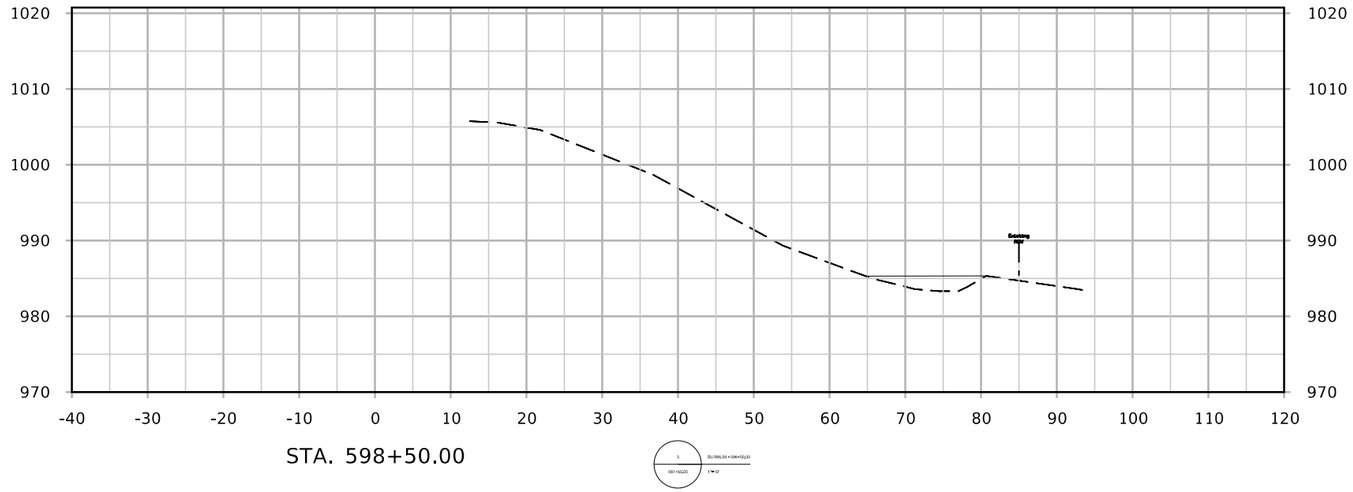
STA. 596+50.00

STA. 596+00.00

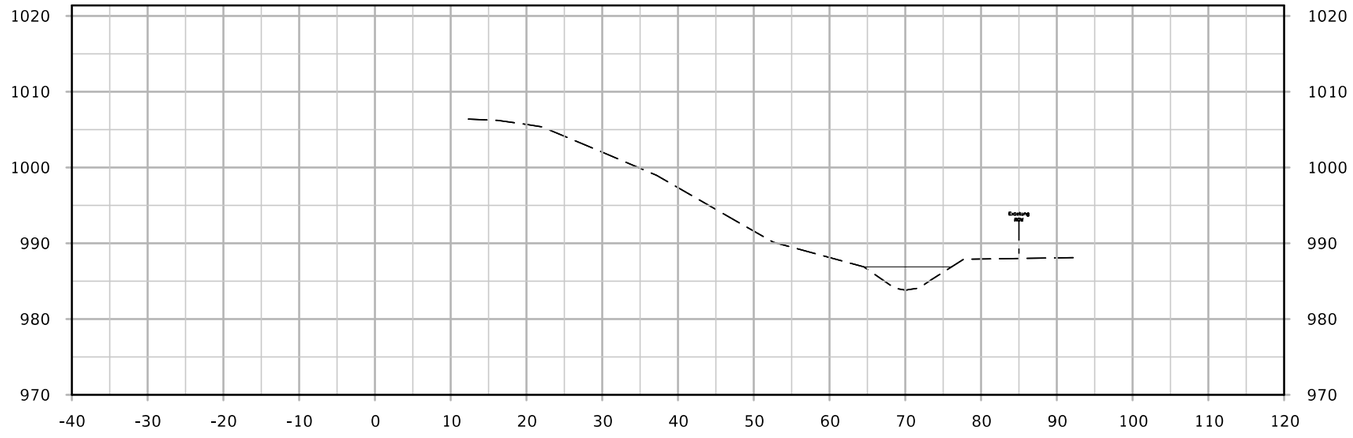
FILE NO.	ENGLISH	DESIGN TEAM Megivern \Dell \ Moyle		Lucas COUNTY	PROJECT NUMBER ER-014-2(42)--28-59	SHEET NUMBER W.6

9:15:49 AM 10/20/2021 gmoyle pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\5901401021\Soils\CADD\sol_59014042.dgn

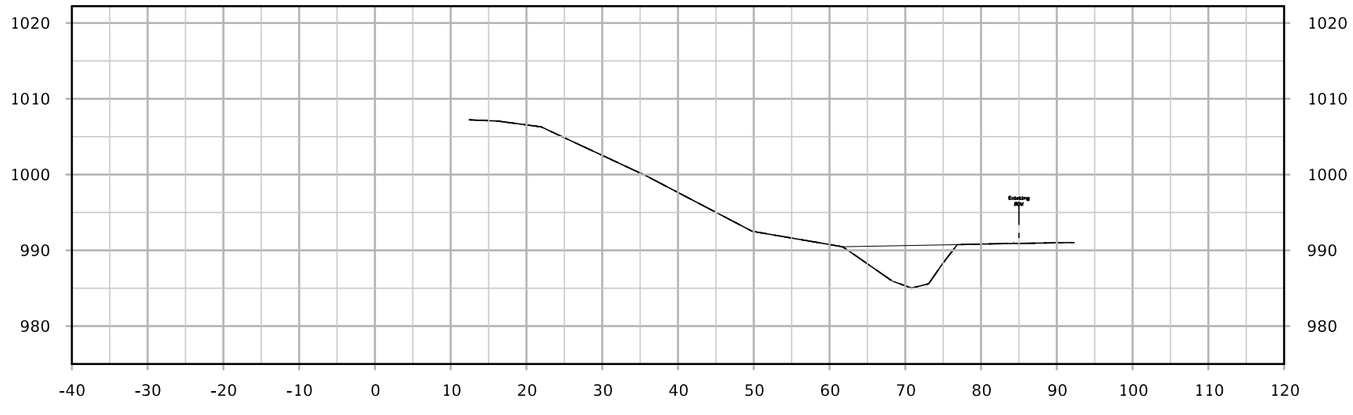
Area 5



STA. 598+50.00



STA. 598+00.00

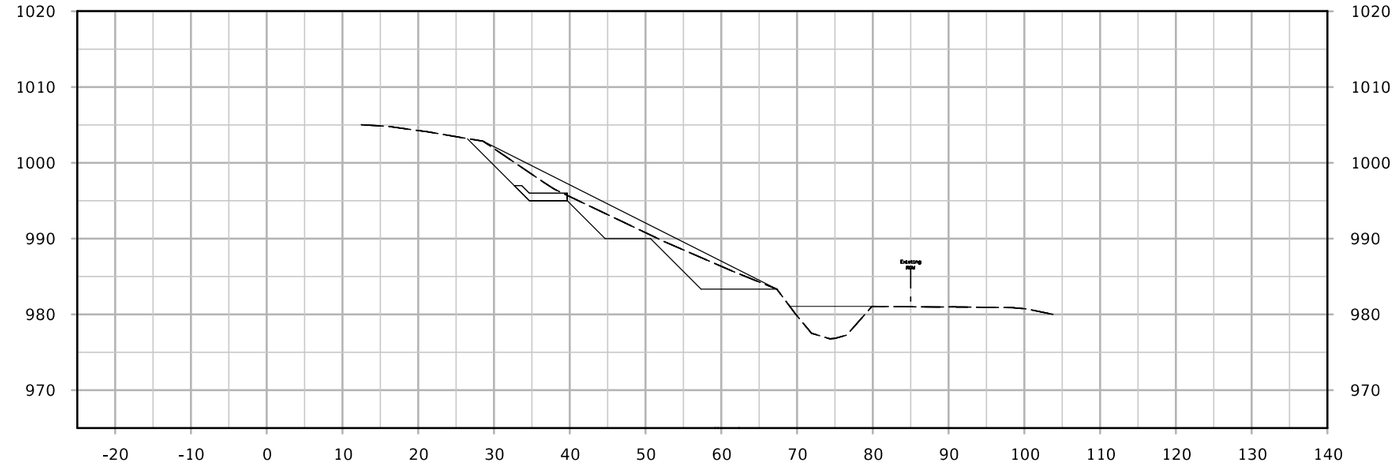


STA. 597+50.00

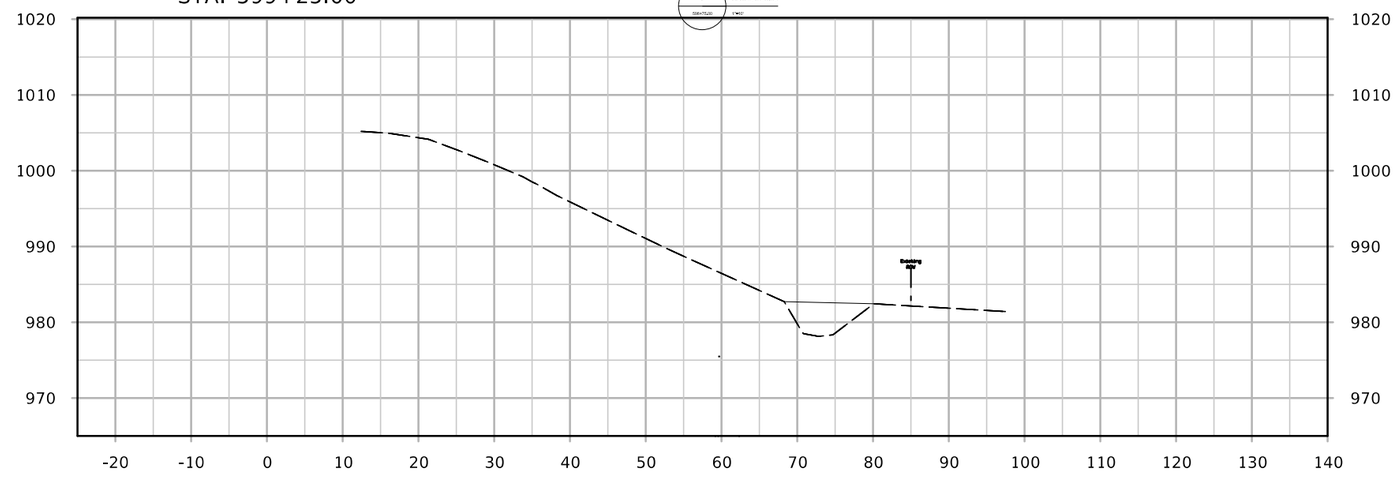
FILE NO.	ENGLISH	DESIGN TEAM Megivern \ Dell \ Moyle	Lucas COUNTY	PROJECT NUMBER ER-014-2(42)--28-59	SHEET NUMBER W.7

9:15:56 AM 10/20/2021 gmoyle pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\5901401021\Soils\CADD\sol_59014042.dgn

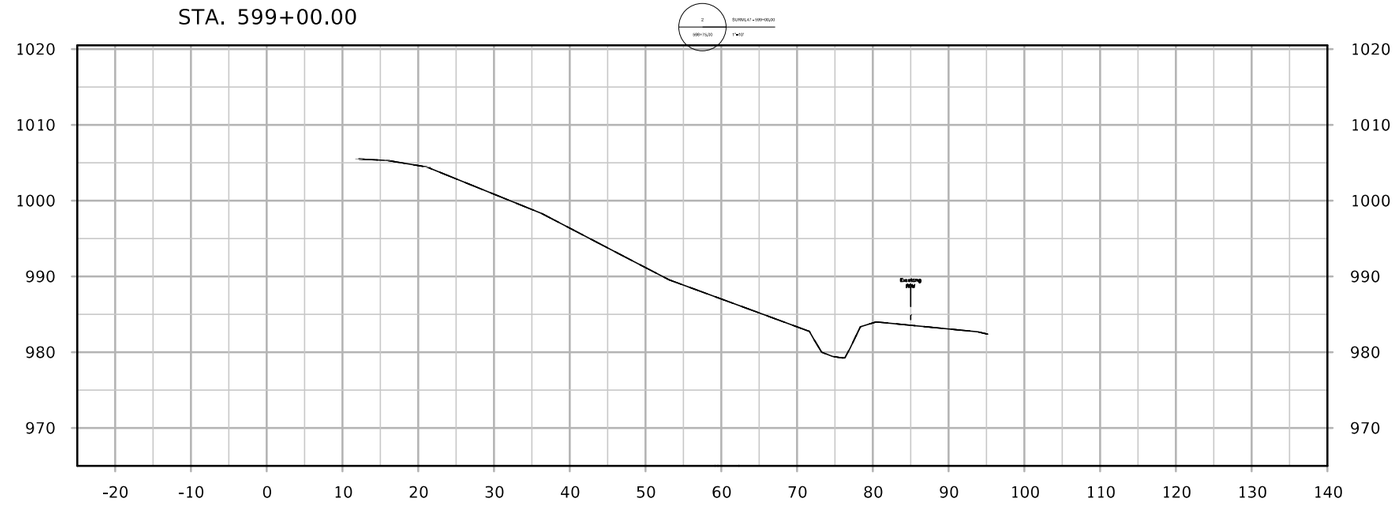
Area 5



STA. 599+25.00



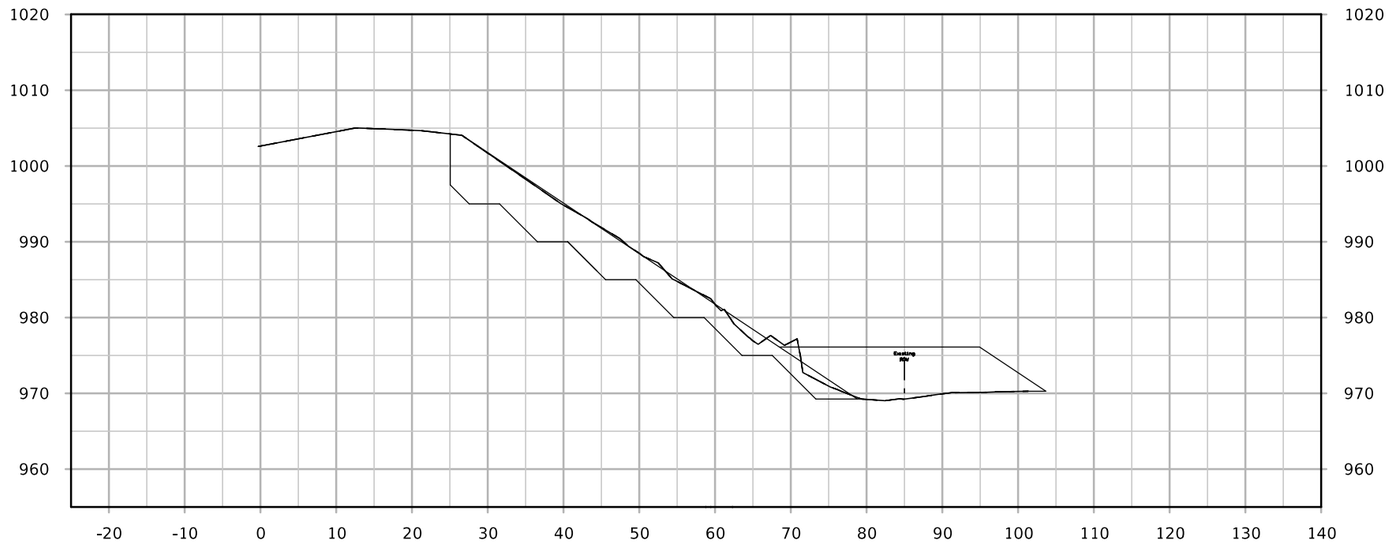
STA. 599+00.00



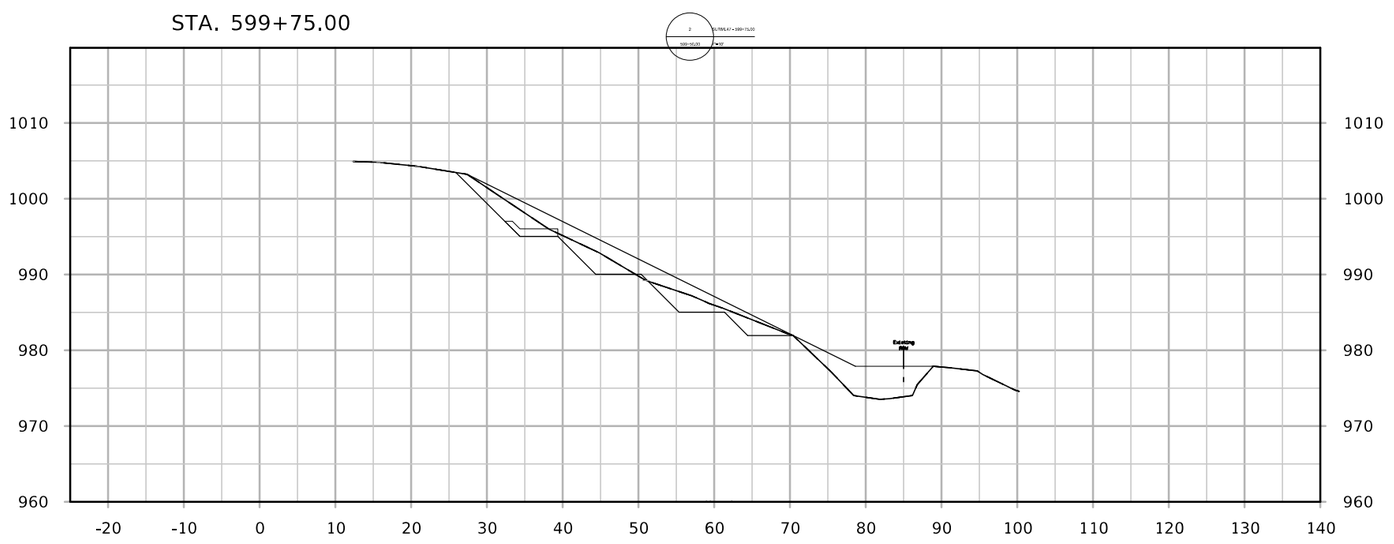
STA. 598+75.00

FILE NO.	ENGLISH	DESIGN TEAM Megivern \ Dell \ Moyle	Lucas COUNTY	PROJECT NUMBER ER-014-2(42)--28-59	SHEET NUMBER W.8

Area 5



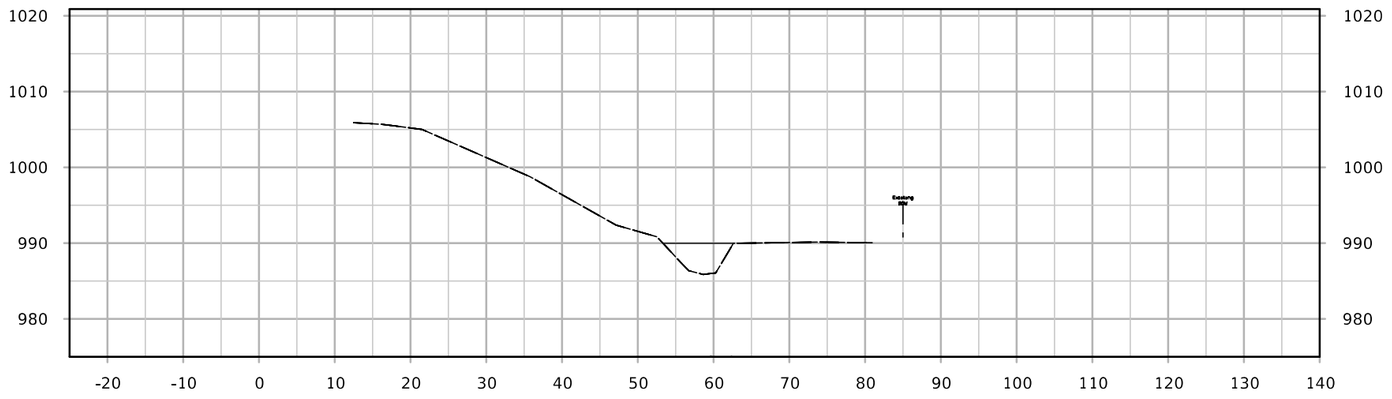
STA. 599+75.00



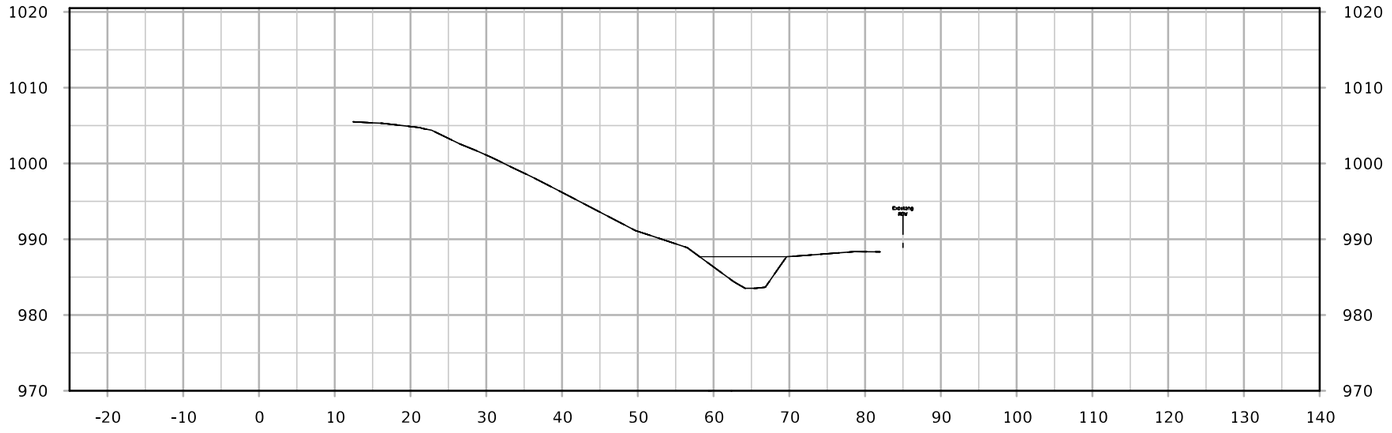
STA. 599+50.00

FILE NO.	ENGLISH	DESIGN TEAM		COUNTY	PROJECT NUMBER	SHEET NUMBER W.9	

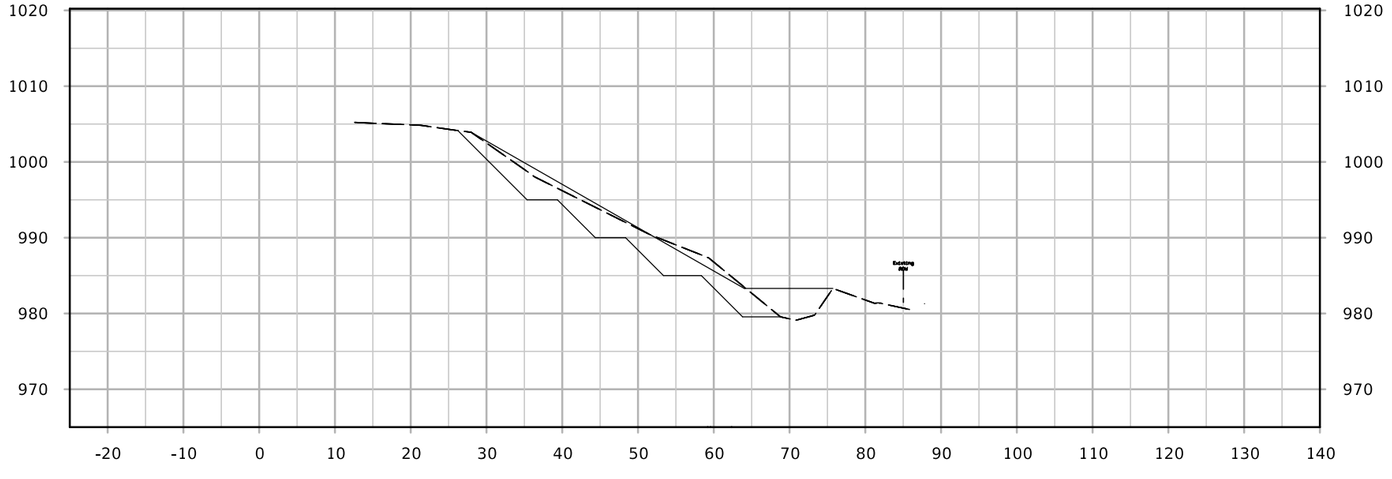
9:16:11 AM 10/20/2021 gmoyle pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\5901401021\Soils\CADD\sol_59014042.dgn



STA. 600+50.00



STA. 600+25.00

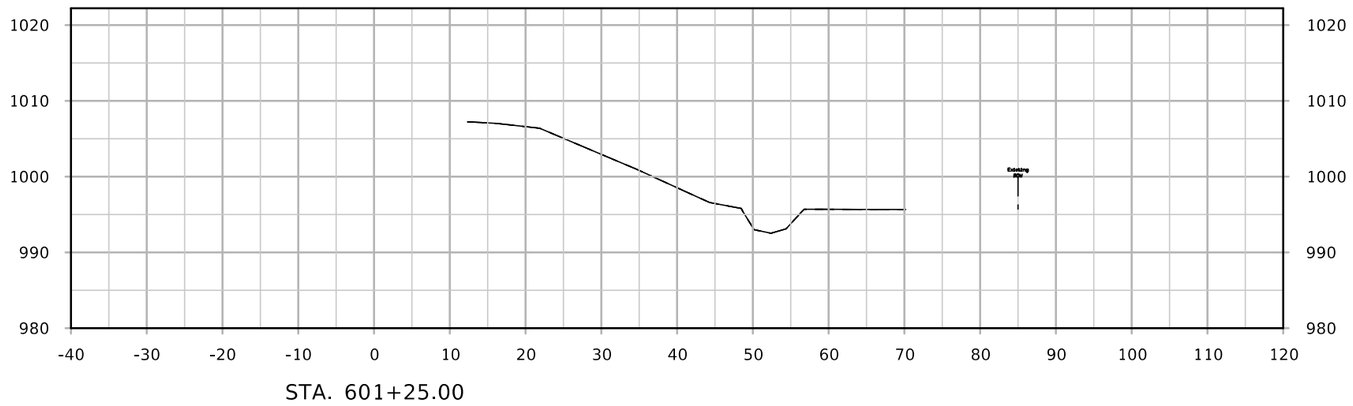


STA. 600+00.00

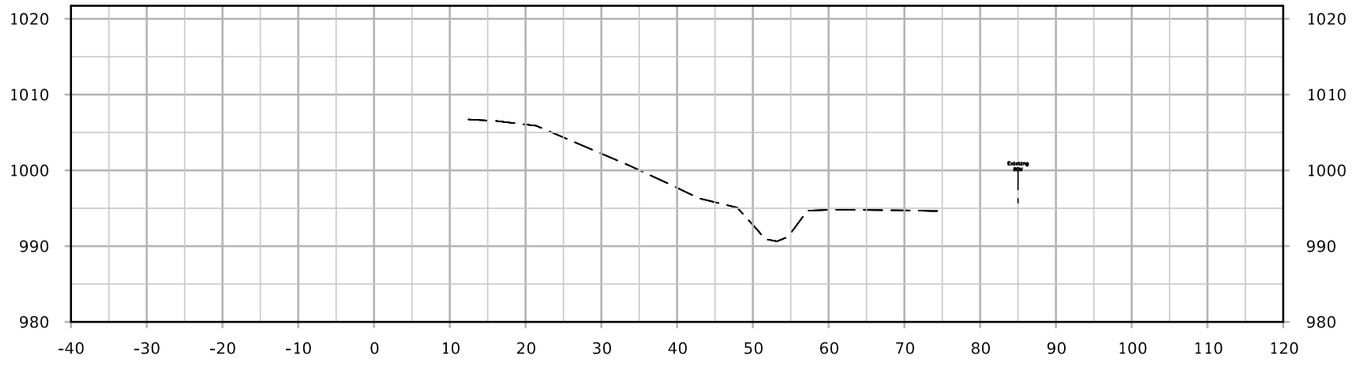
FILE NO.	ENGLISH	DESIGN TEAM Megivern \ Dell \ Moyle	Lucas COUNTY	PROJECT NUMBER ER-014-2(42)--28-59	SHEET NUMBER W.10

9:14:40 AM 10/20/2021 gmoyle pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\5901401021\Soils\CADD\sol_59014042.dgn

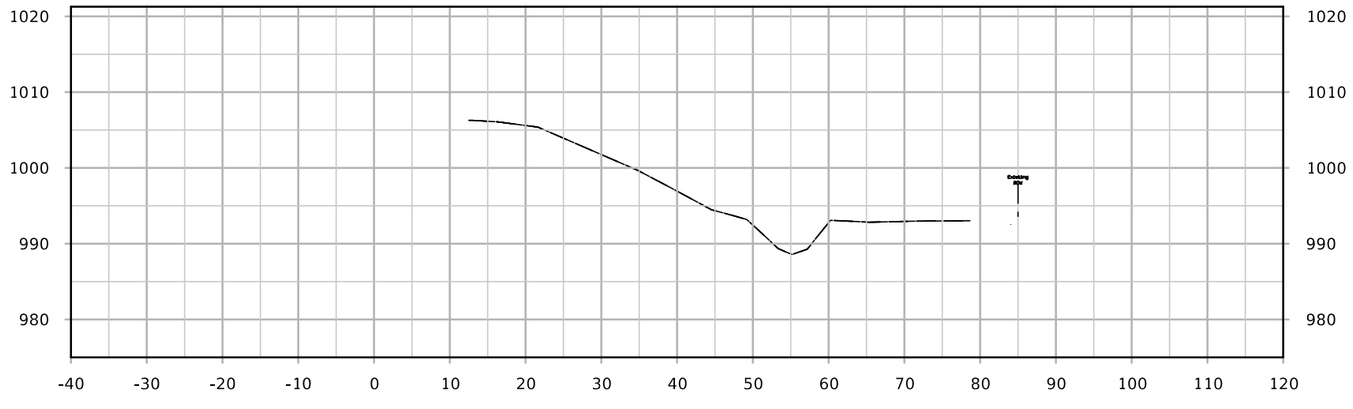
Area 5



STA. 601+25.00



STA. 601+00.00

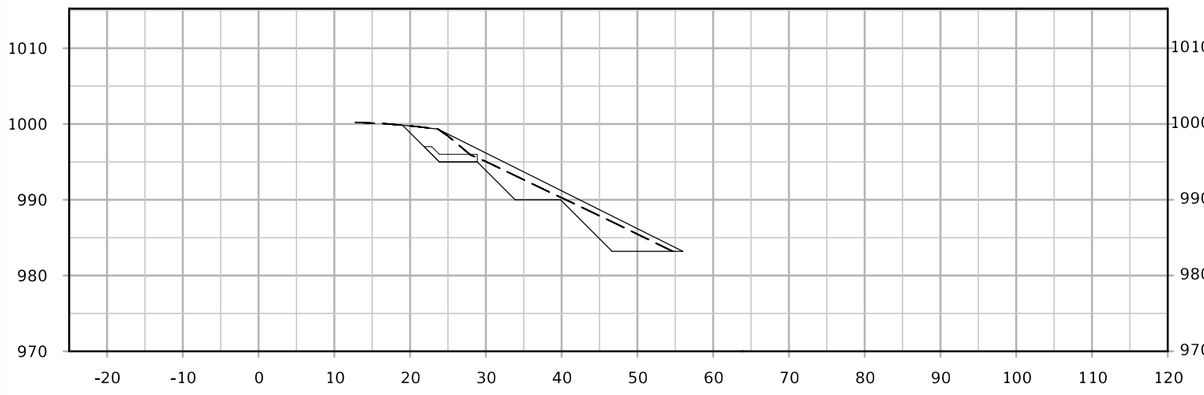


STA. 600+75.00

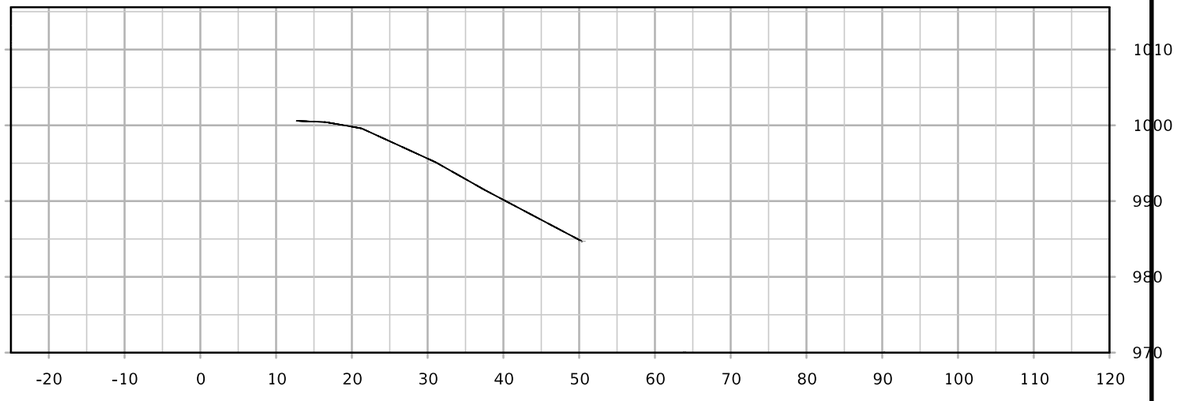
FILE NO.	ENGLISH	DESIGN TEAM Megivern \ Dell \ Moyle	Lucas COUNTY	PROJECT NUMBER ER-014-2(42)--28-59	SHEET NUMBER W.11

9:14:46 AM 10/20/2021 gmoyle pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\5901401021\Soils\CADD\sol_59014042.dgn

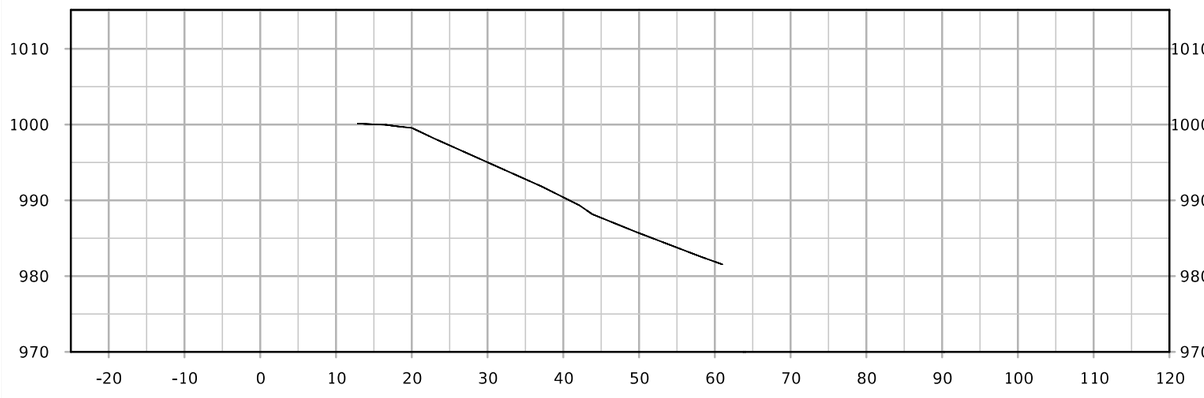
Area 6



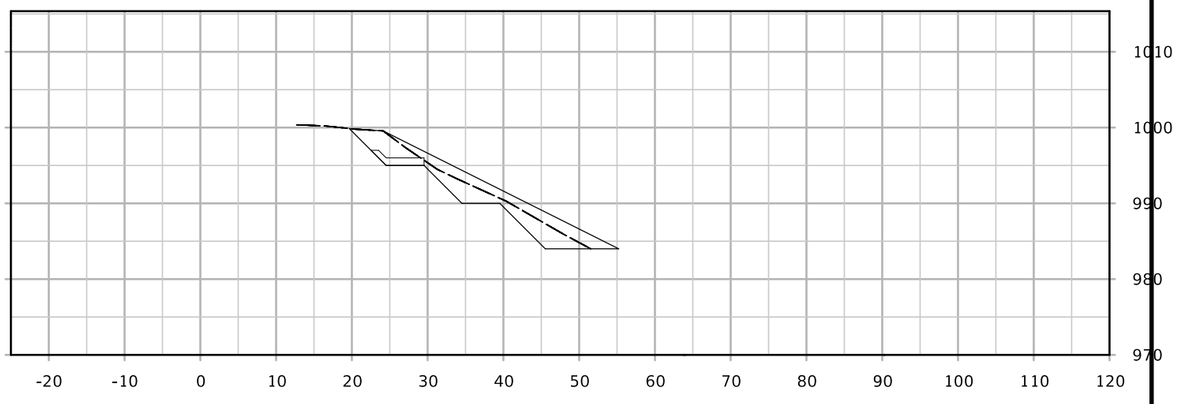
STA. 577+25.00



STA. 577+75.00



STA. 577+00.00

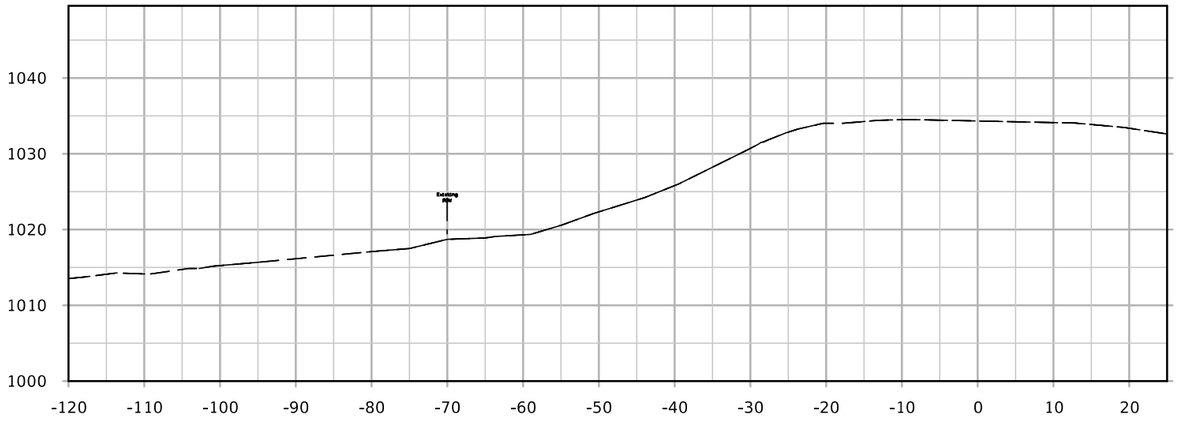


STA. 577+50.00

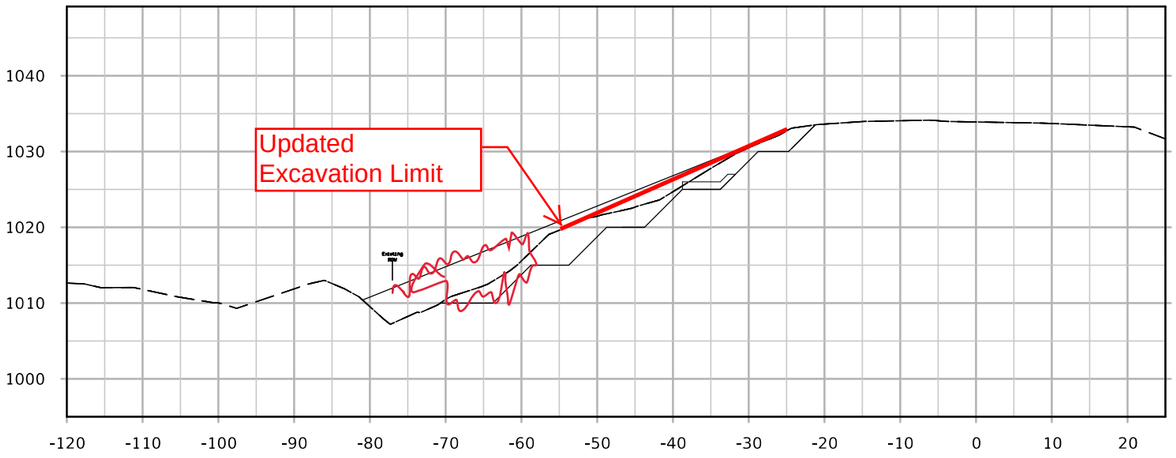
FILE NO.	ENGLISH	DESIGN TEAM Megivern \ Dell \ Moyle	Lucas COUNTY	PROJECT NUMBER ER-014-2(42)--28-59	SHEET NUMBER W.12

9:14:56 AM 10/20/2021 gmoyle pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\5901401021\Soils\CADD\sol_59014042.dgn

Area 7



STA. 497+00.00



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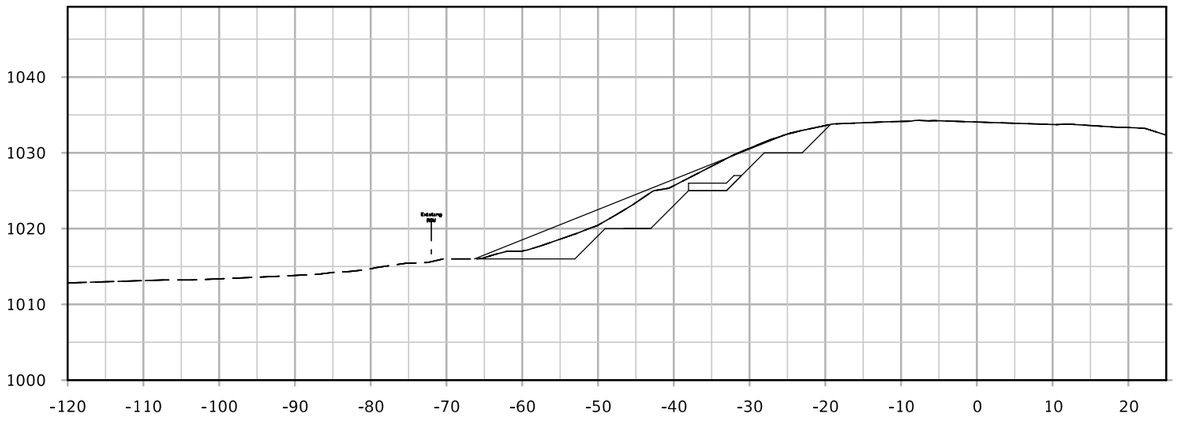

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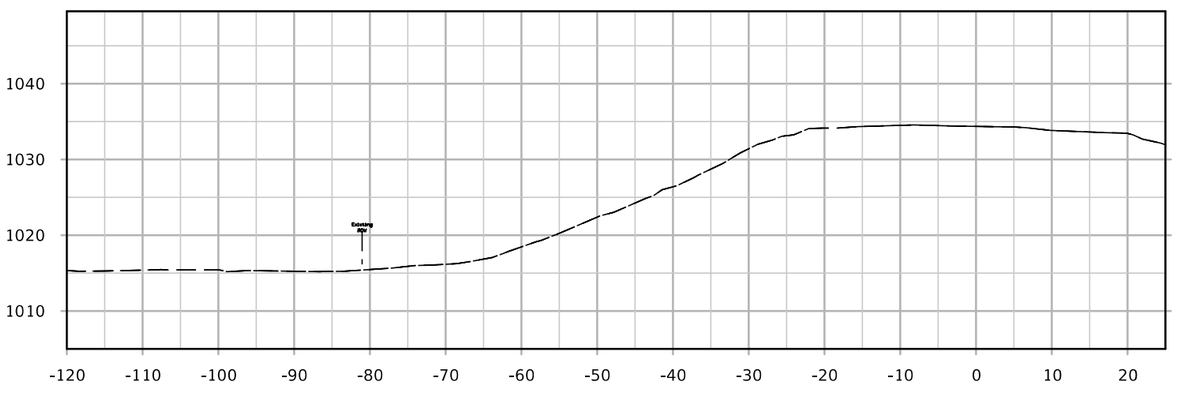
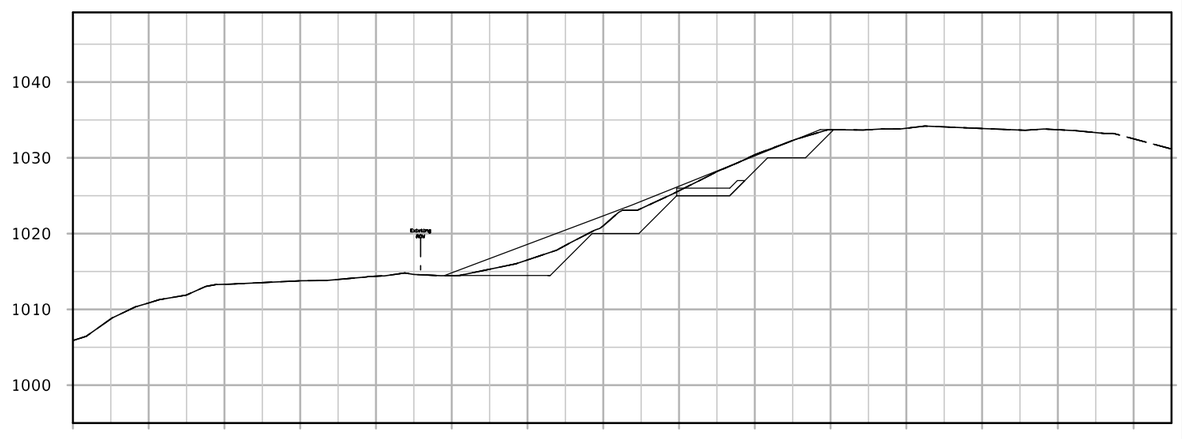


STA. 495+00.00



STA. 496+00.00

FILE NO.	ENGLISH	DESIGN TEAM Megivern \ Dell \ Moyle	Lucas COUNTY	PROJECT NUMBER ER-014-2(42)--28-59	SHEET NUMBER W.13

9:15:07 AM 10/20/2021 gmoyle pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\5901401021\Soils\CADD\sol_59014042.dgn